PREFACE

Thank you for purchasing the GP Screen Editor Software, "GP-PRO/PB III for Windows Ver. 6.0" for use with Pro-face's GP series operator interfaces.

Please read this manual carefully in order to use this software properly, and be sure to keep this manual handy for future reference.

NOTES

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Trademark / Trade Name	Right Holder
Microsoft, MS, MS-DOS, Windows, Windows 95, Windows 98, Windows Me, Windows XP, Windows NT, Windows 2000, Windows Explorer, Microsoft Excel	Microsoft Corporation, USA
Intel, Pentium	Intel Corporation, USA
Pro-face	Digital Electronics Corporation (in Japan and other countries)
Ethernet	Western Digital Electric Corporation, USA
IBM, VGA, IBM Compatible	International Business Machines Corporation (IBM), USA

The following terms differ from the above mentioned formal trade names and trademarks.

Term used in this manual	Formal Trade Name or Trademark
Windows 95	Microsoft® Windows®95 Operating System
Windows 98	Microsoft® Windows®98 Operating System
Windows Me	Microsoft® Windows®Me Operating System
Windows XP	Microsoft® Windows®XP Operating System
Windows NT	Microsoft® Windows NT® Operating System
Windows 2000	Microsoft® Windows®2000 Operating System
MS-DOS	Microsoft® MS-DOS® Operating System

LIST OF SUPPORTED MODELS

The following table lists the models compatible with GP-PRO/PB III for Windows Ver.6.0. The following series names or product names are used in the descriptions contained in this manual.

■ List of Supported GPs

	Series	Product Name	Model	GP Type
		GP-H70L	GPH70-LG11-24V	GPH70L
	GP-H70 series	002	GPH70-LG41-24VP	002
	Gr Tiro donico	GP-H70S	GPH70-SC11-24V	GPH70S
			GPH70-SC41-24VP	
		00.0701	GP270-LG11-24V	000701
		GP-270L	GP270-LG21-24VP	GP270L
	GP-270 series		GP270-LG31-24V	
	C. 2. C CCCC	00.0700	GP270-SC11-24V	000700
		GP-270S	GP270-SC21-24VP	GP270S
			GP270-SC31-24V	
			GP370-LG11-24V	
		GP-370L	GP370-LG21-24VP	GP370L
			GP370-LG31-24V	
	GP-370 series		GP370-LG41-24VP	
	J. 0.0001100		GP370-SC11-24V	
		GP-370S	GP370-SC21-24VP	GP-370S
P70 series		0. 0.00	GP370-SC31-24V	<u> </u>
70 301103			GP370-SC41-24VP	
			GP470-EG11	
	GP-470 series	GP-470E	GP470-EG21-24VP	GP470
			GP470-EG31-24V	
	GP-570 series		GP570-SC11	
		GP-570S	GP570-SC21-24VP	
			GP570-SC31-24V	
			GP570-TC11	GP570
		GP-570T	GP570-TC21-24VP	
			GP570-TC31-24V	
		GP-57JS	GP57J-SC11	
		GP-570VM	GP570-TV11	GP570VM
	GP-571 series	GP-571T	GP571-TC11	GP571T
		GP-675S	GP675-SC11	
	GP-675 series	GP-675T	GP675-TC11	GP675
		GF-0751	GP675-TC41-24VP	
	GP-870 series	GP-870VM	GP870-PV11	GP870VM
		GP-377L	GP377-LG11-24V	GP377L
	GP-377 series	OI -017L	GP377-LG41-24V	OFFIC
P77 series	GF-311 Selles	GP-377S	GP377-SC11-24V	GP377S
			GP377-SC41-24V	
	GP-37W2 series	GP-37W2B	TP37W2-BG41-24V	GP37W2
	GP-377R series	GP-377RT	GP377R-TC11-24V	GP377R
GP77R series	OI -3111 SELIES	01 -0771(1	GP377R-TC41-24V	013771
	GP-477R series	GP-477RE	GP477R-EG11	GP477R
	GP-4//K Series	OF-4//NL	GP477R-EG41-24VP	GF41/K
	GP-577R series	GP-577RS	GP577R-SC11	
		GF-311N3	GP577R-SC41-24VP	GP577R
		GP-577RT	GP577R-TC11	GF3//K
		GE-SIIKI	GP577R-TC41-24VP	

PREFACE

Se	Series		Model	GP Type
CDannal	I GP-2301H series	GP-2301HL	GP2301H-LG41-24V	GP2301HL
series	GP-2301 in Series	GP-2301HS	GP2301H-SC41-24V	GP2301HS
Series	GP-2401H series	GP-2401HT	GP2401H-TC41-24V	GP2401H
<u>-</u>	GP-2300 series	GP-2300L	GP2300-LG41-24V	GP2300L
	GF-2300 Series	GP-2300T	GP2300-TC41-24V	GP2300
	GP-2301 series	GP-2301L	GP2301-LG41-24V	GP2301L
	GF-2301 Series	GP-2301S	GP2301-SC41-24V	GP2301S
	GP-2400 series	GP-2400T	GP2400-TC41-24V	GP2400
CDOOO	GP-2500 series	GP-2500L	GP2500-LG41-24V	GP2500L
GP2000 series		GP-2500S	GP2500-SC41-24V	GP2500S
Series		GP-2500T	GP2500-TC11	GP2500
			GP2500-TC41-24V	GF2500
	GP-2501 series	GP-2501S	GP2501-SC11	GP2501S
	GE-2301 Series	GP-2501T	GP2501-TC11	GP2501
	GP-2600 series GP	GP-2600T	GP2600-TC11	GP2600
		G1 -20001	GP2600-TC41-24V	01 2000

♦ GLC Series

	Series	Product Name	Model	GP Type
GLC100	GLC100 series	GLC 100L	GLC100-LG41-24V	GLC100L
series	GLC 100 Series	GLC100S	GLC100-SC41-24V	GLC100S
GLC300 series	GLC300 series	GLC300T	GLC300-TC41-24V	GLC300T
	GLC2300 series	GLC2300L	GLC2300-LG41-24V	GLC2300L
GLC2000		GLS2300T	GLC2300-TC41-24V	GLC2300
series	GLC2400 series	GLC2400T	GLC2400-TC41-24V	GLC2400
	GLC2600 series	GLC2600T	GLC2600-TC41-24V	GLC2600

HOW TO USE THIS MANUAL

■Structure of this Manual

The "Device/PLC Connection Manual" is the fourth of four manuals for this product, and explains how to use the "GP-PRO/PB III for Windows Ver. 6.0" software (hereafter referred to as "this product"). Please refer to all of these manuals when using this product.

In addition to these manuals, data files containing supplemental information on updated functions are also provided.

To read these files, click on the [Start] button in your Windows OS main screen and select the [Programs] \rightarrow [Pro-face] \rightarrow [ProPB3Win] menu. Then click on the [Read Me] selection.

For detailed information about GP series products, please refer to each GP's "User Manual" . (Optionally available)

Vol. 1	Operation Manual	Describes this product's operation procedures and all standard functions. (provided as PDF data)
Vol. 2	Tag Reference Manual	Describes the function of and detailed settings for all GP-PRO/PBIII Tags. (provided as PDF data)
Vol. 3	Parts List	Describes this product's pre-made Parts and symbols. (provided as PDF data)
Vol. 4	Device/PLC Connection Manual (this manual)	Describes the methods for connecting the GP to other, supported manufacturer PLCs. (provided as PDF data)

^{*} The GP-PRO/PB III Manual describes the procedures for developing GP screens. When developing GLC, simply substitute "GLC" for "GP".

The PDF Manual CD-ROM also contains "Screen Data Layout Sheets" in Excel format. To view this data, use your Excel program to open any of the files shown below.

These sheets are useful for designing tag address settings, etc. and example sheets are installed as part of the GP-PRO/PBIII for Windows standard installation.

The following two layout sheets, "Device Allocation Table" and "Tag Layout Sheet", are in Microsoft Excel format and are located in the PDF Manual CD-ROM.

The following file location and file names are used.

Folder Name	File Name	Contents
Pro-face/propbwin/s	Device1E.xls	Device Allocation Table
heet	TAG1E.xls	Tag Layout Sheet
	TAG2E.xls	
	TAG3E.xls	
	TAG4E.xls	

For information on the use of Microsoft Excel, please refer to the Excel software's User Manual.

■ Designation of Supported Models

The functions and settings supported by each model may vary depending on the supported models. In this manual, explanations given are based on the variation of the "Series" and "Product name" described in the "List of Supported Models".

MANUAL SYMBOLS AND TERMINOLOGY

This manual uses the following symbols and terminology.

If you have any questions about the contents of this manual, please contact your local GP distributor.

Also, if you have any question about your personal computer or Windows, please contact your PC distributor or manufacturer.

■ Safety Symbols and Terms

This manual uses the following symbols and terms to identify important information related to the correct and safe operation of this product.

Symbol	Description
WARNING	Indicates a potentially hazardous situation that could result in serious injury or death.
CAUTION	Indicates a potentially hazardous situation that could result in minor injury or equipment damage.
Important	Indicates a potentially damaging action or dangerous situation that could result in abnormal equipment operation or data loss.
Careful!	Indicates instructions or procedures that must be performed to ensure correct product use.
STOP	Indicates instructions or procedures that must not be performed.

■ General Information Symbols and Terms

This manual uses the following symbols and terms for general information.

Symbol	Description
Note:	Provides hints on correct product use, or supplementary information.
▼ Reference ▲	Indicates an item's related information (manual name, page number).
IBM Compatible	Indicates a PC that can run the Windows® operating system.
PLC	Abbreviation for Programmable Logic Controller. Includes programmable logic controllers and sequencers.
GP	Generic name for the "GP Series" of programmable operator interface made by the Digital Electronics Corporation.
GLC	Generic name for the "GLC Series" of Graphic Logic Controller made by the Digital Electronics Corporation.

PREFACE

The meaning of symbols used in the section titled "Supported Devices" in Chapter 2 and Chapter 5 are described below.

<u>ост8</u> 1	Setup the address as Octal	
[XXXO]	Word address' bottom column bit can only be set to 0	
<u>÷16</u>	Word address can only be set to multiples of 16	
<u>÷16+</u>])	Word address can only be set to multiples of 16 + 1	
<u>÷2</u>	Word address can only be set to even numbers	
<u>:8</u>	Word address can only be set to multiples of 8	
<u>Bit 1 51</u>	Bit setup possible. After the word address, set the bit position, from 0~15	
Bit F	Bit setup possible. After the word address, set the bit position, from 0~F	
Bit 7	Bit setup possible. After the word address, set the bit position, from 0~7	
Bit 31)	Bit setup possible. After the word address, set the bit position, from 0~31	
L/H	When using 2 words (32 bit data), the relationship between the top and bottom data is: 0 L (low pos.) 1 H (high pos.)	
H/L	When using 2 words (32 bit data), the relationship between the top and bottom data is: 0 H (high pos.) 1 [low pos.]	

The device ranges listed in the sections titled "Supported Devices" are the maximum setup ranges. The ranges may be smaller than illustrated, depending on your PLC type. For further details, refer to the corresponding PLC manual.

Setup the System Area in the devices that are shaded.

Reference For information on System Area, refer to "1.1 Communication Method"

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1

Direct Access Communication

The *Direct Access* (Programless) format, which does not burden the PLC with protocol programs, runs communication between the GP and PLC. This chapter describes Direct Access Communication.

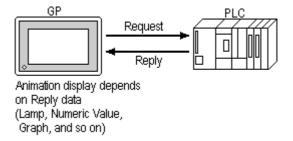
1.1

Communication Method

Depending on the part or tag setup, the GP can easily specify the PLC device. By doing so, the GP automatically requests the data required for operations (System Data) and the screen display from the PLC. Then the GP, depending on the PLC response, changes its screen display corresponding to its animation settings. Plus, data can be sent to the PLC using GP touch key input.

With Direct Access communication, the GP is always the master in the communication link.

In Direct Access Communication, data required by the screen display is automatically sent and received from the GP. Therefore, a PLC program for screen display operations is not necessary, thereby simplifying installation of the graphical control panel.





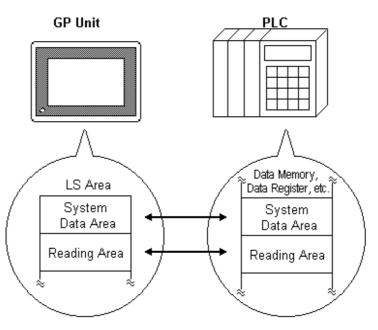
When an error occurs because data is read or written outside the PLC device range, the read/write operation continues retrying until the error is restored. For this reason, the action on the GP display screen may not seem to work. Check to make sure the device used for the part or tag is within the designated range for the PLC in use.

System Area Start Address

Setting up GP's INITIALIZE/STARTING ADDRESS OF SYSTEM DATA AREA automatically prepares the System Area in the PLC to make communication with the GP possible.

Reference For more information on setting starting address of System Data Area, refer to "PLC SETUP" in each GP unit's User's manual (sold separately).

Data Read/Write between GP and PLC





- Depending on the PLC, the System Data Area can be set to a certain device. In that device, only the addresses not used by the PLC can be used for the System Data Area.
- Devices that are highlighted with a double lined box in the device table described in Chapter 2 and Chapter 5 are the only device areas that can be used for the System Area.
- The starting address of the system data area can also be specified using the GP-PRO/PBIII software's "system settings" area.

▼Reference For more information, refer to the GP-PRO/PBIII for Windows Operation Manual.

LS Area Structure

The LS Area, located in the GP memory, is the area used for the GP's operations. The LS Area structure is as follows.

, 1
System Data Area
Reading Area
User Area
Special Relays
Reserved
User Area

System Data Area

This is the data write area for GP screen control data

or error information necessary for operations.

Reading Area

Stores data common to all screens, the block display data for trend graph, or video control data.*2 Up to

256 words can be designated here.

User Area

The devices which are only for the GP's internal use, and cannot be allocated in the PLC. This area is used to process Parts and Tags which can only be processed by the GP internally and cannot be controlled by the PLC. This area can also store the video control data*².



When using the Device Monitor feature, the User Area (LS2096 to LS4095) will be reserved and cannot be used.

Special Relays

This area, during GP communications, is where the various status information is setup.



The following describes how to access the LS Area.

• Word Address access

Bit Address access

LS **** ** Bit position 00~15 *3 Word Address 0000~4095

Reference Each unit's User Manual (sold separately)

^{*1} GP2000 series units can use up to LS8191.

^{*2} When using the GP-570VM, be sure to set the video control area (22 words). The video control area is designated in either the reading area or the user's area.

^{*3} When using Yaskawa Electronic CP9200SH Series protocol, Bit No. is from 0 to F.

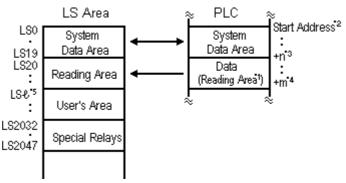
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Reserved

Please do not use this area. It is only for GP's internal use. If you use this area, the GP will not operate properly.

1.1.3 About Each Address

Up to 20 words can be set as the System Data Area; up to 256 words can be set as the Reading Area.*1 The size of these determines each area's number of addresses.





- Part or Tag addresses cannot be set so that they include the System Area and the Reading Area, or the Reading Area and the User's Area.
- When setting Parts or Tags inside the System Data Area's addresses, specify their data length as 16 bits.
- *1 If the device range of your PLC is less than 256 words, the size of the PLC's device range minus the size of System Data Area gives the maximum size for the Reading Area.
- *2 The Start Address means the start address of System Data Area specified in the INITIALIZE menu.

Reference For more information, refer to "5.5 PLC SETUP" in each unit's User's Manual (sold separately)

*3 n = 0~20: Differs with the number of items selected for the System Data Area in the **INITIALIZE** menu.

*4 m = Reading Area Size

*5 \mathscr{L} = Reading Area Start Address (20) + Reading Area Size(m)

1.1.4 Contents and Range of System Data Area

The following table describes the data write contents of the System Area for each address.

■ For a PLC using 16-bit addressing



- If your PLC supports only 8-bit addresses, please refer to the table on page 1-1-9.
- When you wish to turn off the GP's display, use the display's ON/OFF bit (word address +9). Do not use the Control area's Backlight OFF bit (word address +14).



- The Word Address values assume that all the items have been selected for the System Data Area in the GP's INITIALIZE menu.
- Here, "item #" represents the item numbers shown in the System Environment Setup area's SYSTEM AREA SETUP; found in the GP OFFLINE mode's INITIALIZE area.

	Item #	Word Addr	Contents	Bit	Detail
	1	+0	Display Screen Number	1 to 8999 (Housing BCD in	owever, 1 to 1999 when aput)
GP → PLC E x c I u	2	+1	Error Status Each bit changes to reflect the GP error status. When an error occurs, the bit is set ON. A bit that has turned ON remains ON until the power is turned OFF and back ON, or until RUN mode is re-entered from OFFLINE mode. For Error Status data and processing notes, refer	0,1 2 3 4 5 6 7,8 9	Not used System ROM/RAM Memory Checksum SIO Framing SIO Parity SIO Over-run Not used Memory requires Initialization Timer Clock Error
s i v			to the end of this section.	11 12 to 15	PLC Not used
e W	3	+2 +3 +4 +5	Current YEAR, BCD 2 digits Current MONTH, BCD 2 digits Current DAY, BCD 2 digits Current TIME, BCD 4 digits	Dast two digital of to 12 (mo of to 31 (date of to 23 hr, control of the control	nth) e)
r i t i n g A r e a	4	+6	Status *5	0,1 2 3 4 to 6 7 8	Reserved Now Printing *1 Writes a set value *2 Reserved PLC monopoly *3 K-tag entry error *4 Display 0: Possible, 1: Not Possible *6
		.7	December	10 11 12 to 15	Backlight OFF *7 Touch-panel input error *8 Reserved
	5	+7	Reserved		

	Item #	Word Addr	Contents	Bit	Detail	
	6	+8	Change Screen Number	1 to 8999 (Housing BCD in	owever, 1 to 1999 when nput)	
PLC ↓ GP	7	+9	Screen Display On/Off *15	immediately.	en clears almost 0h: Screen turns ON. are reserved.	
Е		+10	Clock's YEAR set value, BCD 2 digits (+flag)	Last 2 digits write change	(bit #15 is the clock's data flag *9)	
Х	8	+11	Clock's MONTH set value, BCD 2 digits	01 to 12		
С		+12	Clock's DATE set value, BCD 2 digits	01 to 31		
I		+13	Clock's TIME set value, BCD 4 digits	00 to 23 Hr:	00 to 59 Min	
u				0	Backlight OFF *10	
S				1	Buzzer ON	
I				2	Starts printing	
V				3	Reserved	
е					Buzzer *11	
_				4	0: Enabled, 1: Disabled	
R					AUX Output *11	
е				5	0: Enabled, 1: Disabled	
a	9	+14	Control *16	6	Reserved	
d i		' ' '	1	Control	_	PLC monopoly *12
n '				7	0: Disabled, 1: Enabled	
					+40	
g				8	VGA Display 13 0: Disabled, 1: Enabled	
Α				9,10	Reserved	
r				3,10		
e				11	Hard copy output *14	
a				10 15 15	0: Enabled, 1: Disabled	
<u> </u>	Λ	. 1 5	Dagamed	12 to 15 Set to 0	Reserved	
	Α	+15	Reserved		Display - 0: OFF, 1: ON	
				0	Display - 0: OFF, 1: ON Changing the order of	
	В	+16	Window Control *17	1	window overlapping	
		110		'	0: Possible, 1: Not Possible	
				2 to 15	Reserved	
	С	+17	Window Registration Number *17	Global Windo	ow registration number ndirect setup (Bin/BCD)	
	D	+18	Window Display Position (X coordinate data) *17	Global Window display coordinates		
	J	+19	Window Display Position (Y coordinate data) *17	selected by l	ndirect setup (Bin/BCD)	

^{*1} This bit turns on during printing. Changing to OFFLINE mode while this bit is ON can scramble the print output.

^{*2} Every time a value is written with the K-tag or Keypad Input Display, the bit is reversed.

^{*3} When using Multi-link, the bit turns ON in the middle of PLC Monopolize.

^{*4} When an alarm is setup in the middle of K-tag input, and a value outside the alarm range is entered, the bit turns ON. When you enter a value within the alarm range, or a screen change takes place, the bit turns OFF.

- *5 Monitor, in bit units, only the necessary bits. Since reserved bits may be used for GP system maintenance, etc., their ON/OFF status is not defined.
- *6 < Display ON/OFF status >

The screen display ON/OFF can be detected from the PLC. This bit will change in the following cases:

- (1) "FFFF" is written to the system data area's screen display ON/OFF bit (LS9 when using link type), to turn the screen display OFF. (Bit 9 = 1)
- (2) After the stand-by time has elapsed, the screen display OFF bit is turned ON automatically. (Bit 9 = 1)
- (3) The screen display OFF status has been changed to the screen display ON status via screen switching, etc. (Bit 9 = 0)
- (4) The screen display ON/OFF status bit will not change via turning ON/OFF the system data area backlight OFF bit (Bit 0).
- *7 < Backlight Burnout Detection>

The bit turns ON when backlight burnout is detected. This feature is available only on GP-377R, GP-377, GP2000, and GLC2000 series unit.

*8 < Touch-panel input error>

The touch-panel input error bit is turned ON when input in the same position continues for longer than the specified time.

*9 When the data write flag changes (OFF—>ON, or ON—>OFF), the clock data is rewritten.

E.g. October 16, 1995, 9:57 pm

The current data in word address +10 *is* 0000.

Month, Date, Time data is written as follows:

- *In word address* +11 0010
- *In word address* +12 0016
- *In word address* +13 2157

When the YEAR's 15th bit is turned on, the data is written.

- *Inputting* 8095 *into word address* +10 *causes the clock datato rewrite.*
- *10 With the GP series except GP-477R, GP-470 and GP870 series units, the backlight turns OFF when this bit is ON(LCD display does not change) and turns ON when the bit is OFF.

When the Backlight OFF bit (word address +14) turns ON, only the backlight will turn OFF, however, the LCD display will remain ON and all touch switches set up on the display can still be used. Use the Screen display ON/OFF bit (word address +9) to actually turn the screen display OFF.

*11 Control Bit 1(Buzzer On) is output as shown below.

Buzzer output When control bit 1 is ON, the GP internal buzzer is activated.

*12 When using n:1 (multi-link), PLC is monopolized when ON.

Reference Refer to Chapter 4.5, "About PLC Monopolize."

*13 < Control VGA display>

When the control VGA display bit is turned ON, the entire screen becomes a VGA display in the compatible mode using the VM unit with the GP-570VM, GP-870VM, or GP-2500/GP-2600.

When the VM unit is used with the GP-570VM, GP-870VM, or GP-2500/GP-2600 in the compatible mode, turning the control VGA display bit ON makes the entire screen a VGA display. Touching any position on the screen during the VGA display turns this bit OFF.

- *14 Turning ON bit 11(Hard Copy Output) in the Control Area (word address +14) cancels the current printing of the display's hard copy.
 - After printing is cancelled, bit 11, however, will not turn OFF automatically. Therefore, after checking the Status Area's Now Printing bit, turn OFF the Control Area's bit 11.
 - When bit 11 in the Control Area is turned ON, hard copy cannot be created. If you cancel printing before it is completed, printing will stop after the last line of data on the panel's current display has been output. Data already input in the printer buffer's memory will not be deleted.
- *15 After the screen display ON/OFF bit (word address +13) is set to OFF, simply touching the screen will turn the display ON again.
- *16 Be sure to turn all reserved bits OFF since they may be used for GP system maintenance, etc.



When writing data to the Control Area (Address +14) be sure to use bit units. Writing data in Word units can cause values to change.

*17 **Reference** For more about windows, refer to "2.26 U-tag (Window Display)" in the Tag Reference Manual.

■ For a PLC using 8-bit addressing



- The Byte Address values assume all the items have been selected for INITIALIZE's System Area.
- The High and Low positions of the Byte Address of all items vary among PLCs.
- Use the Screen Display ON/OFF bit (word address +22) to turn OFF the screen display. Do not use the Backlight OFF bit in the Control area (word address +34).



Here, "item numbers" represent the item numbers shown in the [System Environment Setup] area's [SYSTEM AREA SETUP]; found in the GP OFFLINE mode's [INITIALIZE] area.

	Item #	Byte Addr	Contents	Bit	Detail		
	1	+0	Display Screen Number	1 to 8999 (However, 1 to 1999 when			
GP	•	+1	Diopidy Colocil Italia Del	using BCI	D input)		
V			Error Status	0,1	Not used		
PLC			Each bit changes to reflect the GP error status.	2	System ROM/RAM		
Е			When an error occurs, the bit is set ON. A bit	3	Memory Checksum		
х		+2	that has turned ON remains ON until the power is turned OFF and back ON, or until RUN mode is	4	SIO Framing		
С			re-entered from OFFLINE mode.	5	SIO Parity		
u				6	SIO Over-run		
s	2			7	Not used		
i v			For details and the handling process about the	0	Not used		
e		0	Error Status contents, refer to the end of this section.	1	Memory requires Initialization		
W		+3		2	Timer Clock Error		
r				3	PLC SIO Error		
t t				4 to 7	Not used		
i		+4	Current YEAR	Last 2 dig	its		
n		+5	BCD 2digits				
g		+6	Current MONTH	01 to 12 (month)			
Α	3	+7	BCD 2digits	,	,		
r		+10	Current DAY	01 to 31 (d	date)		
е		+11	BCD 2digits				
а		+12	Current TIME	00 to 23 hr, 00 to 59 min			
		+13	BCD 4digits				

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	Item #	Byte Addr	Contents	Position	Bit	Detail				
					0,1	Reserved				
					2	Now Printing *1				
		+14		Low	3	K-tag write *2				
				-	4 to 6	Reserved				
GP	4		Ctatus *7		7	PLC Monopoly *3				
↓	_		Status '		0	K-tag entry error *4				
PLC					1	Display: 0:ON, 1:OFF				
		+15		High	2	Backlight Burnout Detection *5				
					3	Touch-panel input error *6				
					4 to 7	Reserved				
	5	+16	Reserved							
		+17 +20								
	6	+20	Change Screen Number	1 to 8999 (Howe	ever, 1 to 1	1999 when using BCD input)				
PLC	7	+22	Screen Display On/Off *16	FFFFh: Screen	clears alm	ost immediately. 0h: Screen turns ON.				
↓	,	+23	Screen display On/Oil	All other bits are reserved.						
GP	8	+24	Clock's YEAR setup value	Last 2 digits (15th bit of high address is the clock's						
		+25	BCD 2 digits (+flag)	data write change flag *8)						
E		+26 +27	Clock's MONTH setup value BCD 2 digits	01 to 12						
X C		+30	Clock's DATE setup value	01 to 21						
1		+31	BCD 2 digits	01 to 31						
u s		+32 +33	Clock's TIME setup value BCD 4 digits	00 to 23 Hr: 00 to 59 Min						
i V		+34	5		0	Backlight OFF *9				
l e				Low	1	Buzzer ON				
					2	Starts printing				
R					3	Reserved				
e a					4	Buzzer *10 0: Enabled, 1: Disabled				
d i					5	AUX Output *10				
n					J	0: Enabled, 1: Disabled				
g	9				6	Reserved				
А					7	PLC Monopoly *11 0: Disabled, 1: Enabled				
r e		+35			0	VGA Display *12 0: Disabled, 1: Enabled				
а				∐i≈h	1 to 2	Reserved				
				High	3	Hard Copy output				
					3	0: Enabled, 1: Disabled				
					4 to 7	Reserved				
	Α	+36 +37	Reserved	Set to 0						
		+37								

	Item #	Byte Addr	Contents	Position	Bit	Detail		
PLC ↓				Low	0	Display 0: Possible, 1: Not Possible		
GP	В	+40	Window Control *13 *15		1	Changing the order of window overlapping		
E R					2 to 15	0: Possible, 1: Not Possible Reserved		
c a		+41		High		Reserved		
u i	С	+42	Window Registration	Selected Global registration number for Indirect setup (Bin/BCD)				
s n		+43	Number *13					
v g		+44	Window Display Position	Global W	Global Window display coordinates for Indirect			
e A	D	+45	(X coordinate data) *13	setup (Bin/BCD)				
e a		+46	Window Display Position	Global Window display coordinates for Indirect setup (Bin/BCD)				
		+47	(Y coordinate data) *13					

^{*1} This bit turns ON during printing. Changing to OFFLINE mode while this bit is ON can scramble the print output.

The bit turns ON when backlight burnout is detected. This feature is available only on GP-377R, GP-377, GP2000, and GLC2000 series unit.

*6 < Touch-panel input error>

The touch-panel input error bit is turned ON when input in the same position continues for longer than the specified time.

*7 The vertical relationship of addresses differs depending on the PLC type.

Monitor, in bit units, only the necessary bits.

Since reserved bits may be used for GP system maintenance, etc., their ON/OFF status is not defined.

*8 When the data write flag changes (OFF—>ON, or ON—>OFF), the clock data is rewritten.

E.g. October 16, 1995, 9:57 pm

The current data in byte data addresses +24 and +25 is 0000.

Month, Date, Time byte data is written as follows:

• *In byte addresses* +26,27 0010

• *In byte addresses* +30,31 0016

• *In byte addresses* +32,33 2157

When the YEAR's 15th bit is turned on, the data is written.

- Inputting 8095 into byte addresses +24 and +25 causes the clock data to rewrite.
- *9 For GP-675, GP-570, GP-577R, GP-370, GP-270, and GP-H70, the backlight turns OFF when this bit is ON. (LCD displays do not change.) Lights up when this bit turns OFF. When the Backlight OFF bit (byte address +34) turns ON, only the backlight will turn OFF, however, the LCD display will remain ON, and all touch switches set up on the display can still be operated. Use the Screen display ON/OFF bit (byte address +22) to turn OFF the screen display.

^{*2} Every time a value is written with the K-tag, the bit is reversed.

^{*3} When using Multi-link, the bit turns on in the middle of PLC Monopolize.

^{*4} When an alarm is set up in the middle of K-tag input, and a value outside the alarm range is entered, the bit turns ON. When you enter a value within the alarm range, or a screen change takes place, the bit turns OFF.

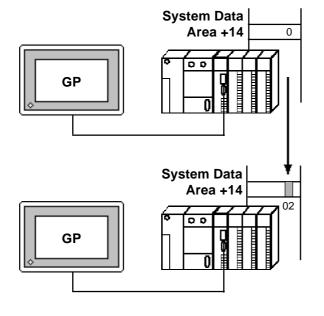
^{*5 &}lt; Backlight Burnout Detection>

- *10 Control Bit 1(Buzzer On) is output as shown below.
 - Buzzer output When control bit 1 is ON, the GP internal buzzer is activated. AUX output When control bit 1 is ON, the AUX buzzer is activated.
- *11 When using n:1 (multi-link), PLC is monopolized when ON.
 - **Reference** Refer to Chapter 4.5, "About PLC Monopolize."
- *12 For GP-570VM, the entire screen becomes a VGA display. Pressing a free position on the screen in the middle of VGA display turns this OFF.
- *13 **Reference** For more about windows, refer to "2.26 U-tag (Window Display)" in the Tag Reference Manual.
- *14 The vertical relationship of addresses differs depending on the PLC type. Be sure to keep all Reserved bits turned OFF, since these bits may be needed for the GP system maintenance.
- *15 The vertical relationship of addresses differs depending on the PLC type.
- *16 After the screen display ON/OFF bit in byte address +22 is set to OFF, simply touching the screen will turn the display ON again.
- *17 Turning ON bit 3(Hard Copy Output) in the Control Area (byte address +35) cancels the current printing of the display's hard copy.
 - After printing is cancelled, bit 3, however, will not turn OFF automatically. Therefore, after checking the Status area's Now Printing bit, turn OFF Control area bit 3.
 - When bit 3 in the Control area is turned ON, hard copy cannot be created. If you cancel printing before it is completed, printing will stop after the last line of data on the panel's current display has been output. Data already input in the printer buffer's memory will not be deleted.

■ Error Status Contents and Correction Process

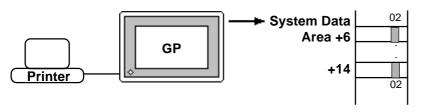
Error	Origin	Solution			
System ROM/RAM	Problem with the hardware	Run Self-Diagnosis.			
Memory Checksum	Because the screen file is	After powering up, check the screen			
	corrupted, the screen memory	where the error developed. (For			
	data checksum does not	details, refer to your Use's Manual,			
	match.	"Error Message" section.)			
SIO Framing	Framing error	Check the SIO Setup. (For details,			
SIO Parity	Parity error	refer to you User's Manual, "Would Not Communicate" section.)			
SIO Over-run	Over-run error				
Memory requires	Internal Memory has not been	Initialize internal memory.			
Initialization	initialized.				
Timer clock Error	The GP internal clock has	The GP internal battery may be			
	been interrupted.	drained. Contact your local GP			
		distributor for service.			
PLC SIO Error (only	Either the SIO setup between	Check the SIO Setup. (For details,			
for Direct Access	the GP and PLC do not match,	refer to you User's Manual, "Would			
type)	or an error has developed on	Not Communicate" section.)			
	the PLC side.				

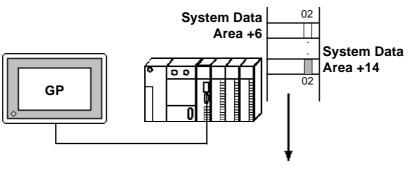
■ Printing out from the GP



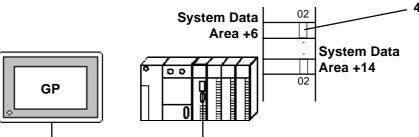
- 1) When the second bit in PLC System Data Area +14 is turned ON, (data 4) is written.
- 2) When the second bit in System Data Area +14 is turned ON, the on-screen data is output to the printer for (hard copy).

At the same time, the second bit in System Data Area +6 is turned ON.





3) After printing is finished, the second bit in System Data Area +6 turns OFF,however, the second bit in System Data Area +14 remains ON.



4) After checking the second bit in System Area +6 turned OFF, please turn OFF the second bit in System Area +14. Be sure to use the PLC to turn this bit OFF.

1.1.5 Special Relays

The structure of the GP-*70 Series' Special Relays is as follows.

LS2032	Common Relay Information	
LS2033	Base Screen Information	
LS2034	Reserved	
LS2035	1 Second Binary Counter	
LS2036	Tag Scan Time	
LS2037	SIO Cycle Time	
LS2038	Tag Scan Counter	
LS2039	SIO Error Code	
LS2040	max Token Circulation Speed	≀ Used only with n:1
LS2041	current Token Circulation Speed	3 multi-link connection
LS2042		
:	Reserved	
LS2047		

■ Common Relay Information (LS2032)

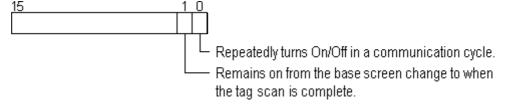
•	15	12	11	10	9	8	7	6	5	4	3	2	1	0	

Bit	Contents			
0	Repeatedly turns ON/OFF in a communication cycle.			
1	Remains ON after when a screen change (base, window)occurs until the tag scan is complete.			
2	ON only in the middle of an SIO error developing.			
3	ON when displaying the Initial screen after powering up.			
4	Always ON			
5	Always OFF			
6	Turns ON when backup SRAM data has been delated (Only for GP's equipped with backup SRAM).			
7	Turns ON if a BCD error occurs while D script is being used. For more information about D script, refer to the Tag Reference Manual's section 3.1 "D script".			
8	Turns ON if a zero division error occurs while D script is being used.			
9	Filing data. Turns ON if the data is not transferred to Backup SRAM.			
10	Filing data transfer is triggered by the Control Word Address. Turns ON if the data can not be transferred from PLC to SRAM. Also data transfer between PLCs is triggered by the Filing Data Display. Turns ON if the data is not transferred from PLC to SRAM only when the transfer complete bit address is used.			
11	Filing data. Via transfer data to and from SRAM to LS area, via Filing Data Display.			
When using D-script, turns ON if a communication error occurs function memcpy () is used, or reading the data from designated Offset. Turns OFF when data read is normally completed.				
13-15	Reserved			

Reference

For more information about D script, refer to Tag Reference Manual "3.1 D-Script/ Global D-Script".

■ Base Screen Information (LS2033)



■ Reserved (LS2034)

The *Reserved* area value is indeterminate. Do not use this area.

■ 1 Second Binary Counter (LS2035)

Begins counting in 1 second units, after powering up. The data is in binary format.

■ Tag Scan Time (LS2036)

The time it takes to scan the setup screen display tags. The data is stored in binary ms units. The data renews at the point when the management of all the object tags is complete. The initial data value is $\mathbf{0}$. The measured time may differ by \pm 10ms with the actual time.

■ SIO Cycle Time (LS2037)

The time it takes in 1 cycle, from the beginning to the end, to scan the SIO object (PLC internal System Area) and various devices. The data renews at the point when the management of the System Area and all the object devices is complete. The initial data value is **0**. The unit is 10ms.

■ Tag Scan Counter (LS2038)

Begins counting in binary units, roughly when the scan of the tags setup on the display screen is complete.

■ SIO Error Code (LS2039)

When an SIO error arises, the SIO error code displayed last is stored in binary data.

■ Maximum Token Circulation Speed (LS2040)

(only when using **n:1** Multi-link connection)

The maximum time it takes for the *token packet* (the right to communicate exclusively to the PLC) to circulate to the **n** number of connected GP's. The data is stored in binary *ms* units. The data renews when the maximum value changes or a screen change occurs. Its initial data

value is **0**. The unit is 10ms.

■ Current Token Circulation Speed (LS2041)

(only when using **n:1** Multi-link connection)

The current time it takes for the *token packet* (the right to communicate exclusively to the PLC) to circulate to the **n** number of connected GP's. The data is stored in binary *ms* units. The data renews when the current value changes or a screen change occurs. The initial data value is **0**. The unit is 10ms.



- If a problem occurs which causes an SIO error for an extended period of time, such as the unit's data transmission cable becomes loose or disconnected, etc., it may ultimately create a System Error. When this occurs, reset the GP.
- When using the 1 Second Binary Counter and Tag Scan Counter value as the W-tag's monitor bit or D script's trigger bit, and the SIO error condition continues, it may develop into a System Error. When this occurs, reset the GP.



Special Relays are not write protected. Be careful not to use a tag to overwrite this data.



When using a 1:1 connection, the initial Token Circulation Speed values remain (0).

1.2 Efficient Data Communication

When using the PLC Direct Access Type, the GP unit communicates based on the device addresses set on each screen. As a result, the more parts or tags set on a screen, the more data is transferred, reducing the communication speed. For this reason, to speed up the response times, make data communication as efficient as possible.

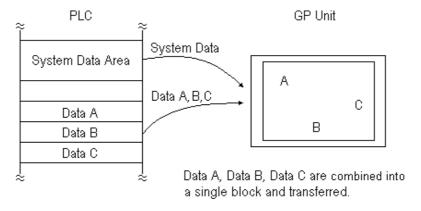
On the GP, in addition to the ordinary communication method, there are the *Block Transfer* and *LS Area Communication* methods, which upgrade data transfer efficiency.

1.2.1 Block Transfer

When displaying consecutive PLC devices on the GP, the GP automatically groups the transmission data into a block, which increases the communication speed.

The addresses in the determined data number range*1 must be consecutive to use Data Block Transfer.

When parts or tags are set up in consecutive addresses, the GP automatically reads the data as a single block. When you wish to transfer a block, design your part or tag layout so that the addresses are consecutive.



^{*1} The maximum number of consecutive addresses is limited by the PLC device. Refer to the Appendix, "Maximum Number of Consecutive Addresses".

1.2.2

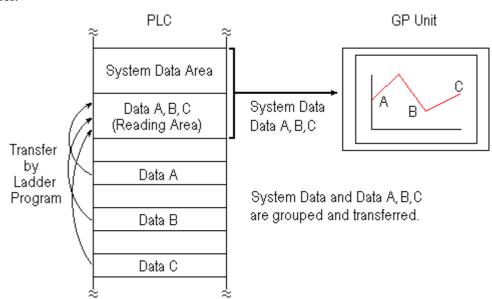
LS Area Communication

Use the LS area for communication in the following cases: when there is display data common to all screens, when there is Trend Graph block display data, or when a video window display is used. (GP-570VM only)

To run LS Area communication, first set up the size of the Reading Area in GP's INITIALIZE setting. Then transfer the common display data or block display trend graph data to the Reading Area, allocated in the PLC's internal memory. (Transfer according to the PLC ladder program.)

By doing so, the data transferred into the Reading Area *and* the System Data is transmitted to the GP unit in one transmission.

By using the LS Area Communication method, no matter what screen is displayed on the GP, the System Data is transmitted continually. Therefore, to change screens quicker, use LS Area Communication instead of Block Transfer.





- Use LS Area transmission only when there is data common to all screens, when Trend Graph block display data is available, or when a video window display is being used. Otherwise, communication efficiency will not be realized.
- Setting up a Reading Area that is too large can cause the display of tags that do not use the Reading Area, or can slow data communication speed.
- When there are many parts or tags on a screen, set all the parts or tags to consecutive addresses. Block data transfer can be utilized as a result, speeding up transmission.

1.2.3 Reset GP on Data Write Error

If a Write error occurs, you can cancel the error from the error display. You will need to set up this feature beforehand via the GP's OFFLINE mode's INITIALIZE area.

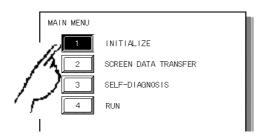
TReference Each GP User's Manual OFFLINE Mode



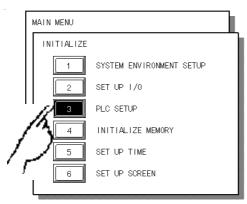
- This feature is available only with GP77R, GP-377, GP-2000 series units.
- The factory setting is OFF.

The following list shows the PLC types which do not support this feature.

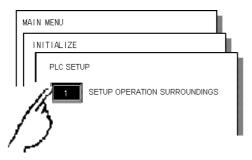
SIEMENS	Profibus				
	Interbus-S Slave				
Allen-Bradley	PLC-5 DataHighway+				
	SLC 500 DH 485				
	Remote I/O				
Modicon	Modibus Master				
	Modibus Slave				
	Modibus Plus				
Device Net Slave I/O					
CC-Link					
Memory Link SIO					
Memory Link Etherne	t				



1) Touch item #1, INITIALIZE. The INITIALIZE menu will appear.

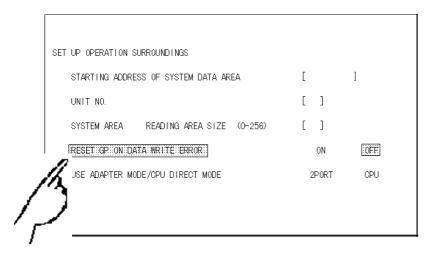


2) Touch item #3, PLC SETUP. The PLC SETUP menu appears.



3) Touch item #1, SET UP OPERATION SURROUNDINGS. The SET UP OPERATION SURROUNDINGS menu will appear.

1.2 Efficient Data Communication Chapter 1 - Direct Access Communication



4) Touch the "RESET GP ON DATA WRITE ERROR" selection. The selected item is highlighted.





5) When DATA WRITE ERROR occurs, select ON to cancel the data write error.

When a DATA WRITE ERROR occurs, the screen shown here will be displayed.

*OFFLINE Mode **TReference**GP User Manual OFFLINE Mode

PLC NOT RESPONDING(02:FE)

Please check the data transfer cable, data transfer settings, device addresses, etc.

OFFLINE

RESET

- If you select "OFFLINE": The main menu will be displayed.
- If you select "RESET": The GP will be reset, then change automatically to "OFFLINE" mode and a DATA WRITE ERROR will not occur.

1.3

Connectable PLCs

The following tables list the PLCs that can be connected and used with the GP.

Reference For more information on connectable PLC models that are also Multi-Link unit compatible, "4.2 Connectable PLCs".

Co.	Series Name	СРИ	Link Unit	Comments	PLC name in PRO/PBIII	GP Series GLC 2000 Series	GLC 100 Series GLC 300 Series
	MELSEC-A	A2A, A3A , A4U	AJ71C24-S6 AJ71C24-S8 AJ71UC24		MITSUBISHI MELSEC-AnA (LINK)	0	0
			CPU Direct Connection	Can use the A-series exclusive Programming Console I/F cable (GP430-IP10-O). (Sold separately.)	MITSUBISHI MELSEC-AnA (CPU)	0	x
		A2U, A3U	AJ71C24-S6 AJ71C24-S8 AJ71UC24		MITSUBISHI MELSEC-AnA (LINK)	0	0
		A2U-S1, A3U, A2US-S1	CPU Direct Connection	Can use the A-series exclusive Programming Console I/F cable (GP430-IP10-O). (Sold separately.)	MITSUBISHI MELSEC-AnA (CPU)		
	А0Ј2Н	A0J2, A0J2H	A0J2-C214-S1	, , , ,	MITSUBISHI MELSEC-AnN (LINK)	-	
M I T S		A0J2H	CPU Direct Connection	Can use the A-series exclusive Programming Console I/F cable (GP430-IP10-O). (Sold separately.)	MITSUBISHI MELSEC-AnN (CPU)		
U B I S H		A1N, A2N, A3N	AJ71C24 AJ71C24-S3 AJ71C24-S6 AJ71C24-S8 AJ71UC24	The link unit, AJ71UC24 has been confirmed only with A2N CPU.	MITSUBISHI MELSEC-AnN (LINK)	0	x
I			CPU Direct Connection	Can use the A-series exclusive Programming	MITSUBISHI MELSEC-AnN		
		A3H, A2CJ-S3	CPU Direct Connection	Console I/F cable (GP430-IP10-O). (Sold separately.)	(CPU)		
		A1S	A1SJ71C24-R2 A1SJ71UC24-R2 A1SJ71C24-R4		MITSUBISHI MELSEC-AnN (LINIK)		
		CPU Direct Connection Connection Console I/F cable (GP430-IP10-O). (Sold separately.) CPU Direct Can use the A-series MITSUBISHI MELSEC-AnN (CPU)					
		A2US	A1SJ71C24-R2 A1SJ71UC24-R2 A1SJ71C24-R4		MITSUBISHI MELSEC-AnA (LINK)	0	0
			CPU Direct Connection	Can use the A-series exclusive Programming Console I/F cable (GP430-IP10-O). (Sold separately.)	MITSUBISHI MELSEC-AnA (CPU)	0	х

Co.	Series Name	СРИ	Link Unit	Comments	PLC name in PRO/PBIII	GP Series GLC 2000 Series	GLC 100 Series GLC 300 Series
	MELSEC-A	A1SJ, A2SH, A1SH	A1SJ71UC24-R4 A1SJ71UC24-R2		MITSUBISHI MELSEC-AnN (LINK)		
			CPU Direct Connection	Can use the A-series exclusive Programming Console I/F cable (GP430-IP10-O). (Sold separately.)	MITSUBISHI MELSEC-AnN (CPU)	0	х
		A2USH-S1	A1SJ71UC24-R4 A1SJ71UC24-R2		MITSUBISHI MELSEC-AnA (LINK)	0	0
			CPU Direct Connection	Can use the A-series exclusive Programming Console I/F cable (GP430-IP10-O). (Sold separately.)	MITSUBISHI MELSEC-AnA (CPU)		
		A2CCPU24	Link I/F on CPU unit		MITSUBISHI MELSEC-AnN (LINK)		
			CPU Direct Connection	Can use the A-series exclusive Programming Console I/F cable (GP430-IP10-O). (Sold separately.)	MITSUBISHI MELSEC-AnN (CPU)		
	MELSEC-F ₂	F ₂ -20M, F ₂ -40M, F ₂ -60M	F ₂ -232GF		MITSUBISHI MELSEC-F2 series		
M I T S U B	MELSEC-FX	FX ₀ , FX ₁ ,FX ₂ C, FX ₂ FX ₂ N-64MR FX _{2NC} -32MT FX _{0N} -60MR FX _{1S}	CPU Direct Connection	* When using a RS- 232C connection, an FX-232AW interface unit is necessary with the RS-232C/RS-422 adapter.	MITSUBISHI MELSEC-FX (CPU)	0	x
S H I		15		* If you use the FX Series' exclusive Programing Console I/F Interface cable (GP430-IP11-O), you can connect directly to the CPU unit without having to use the adapter.			
		A1FX	CPU Direct Connection	You can use the A Series' exclusive Programing Console I/F Interface cable	MITSUBISHI MELSEC-AnN (CPU)		
		FX _{2N}	FX2N-232-BD FX2N-485-BD	PLC's system must be Ver.1.06 or later.	MITSUBISHI MELSEC-FX2 (LINK)		
	MELSEC- QnA	Q2A, Q2A-S1, Q4A	AJ71QC24 AJ71QC24-R4		MITSUBISHI MELSEC-QnA (LINK)		
			AJ71UC24	Usable devices are limited	MITSUBISHI MELSEC-AnA (LINK)	0	0
		Q2AS Q2ASH	A1SJ71QC24		MITSUBISHI MELSEC-QnA (LINK)		
			A1SJ71UC24	Usable devices are limited	MITSUBISHI MELSEC-AnA (LINK)		

Co.	Series Name	СРИ	Link Unit	Comments	PLC name in PRO/PBIII	GP Series GLC 2000 Series	GLC 100 Series GLC 300 Series
	MELSEC-QnA	Q2AS-S1	A1SJ71QC24N		MITSUBISHI MELSEC-QnA (LINK)	0	O
			A1SJ71UC24-R2 A1SJ71UC24-R4	Usable devices are limited	MITSUBISHI MELSEC-AnA (LINK)		
		Q2A Q4A Q2AS Q2AS-S1 Q4AR	CPU Direct Connection	Can use the A-series exclusive Programming Console I/F cable (GP430-IP10-O). (Sold separately.)	MITSUBISHI MELSEC-QnA (CPU)		
M I T		Q4AR	AJ71QC24N		MITSUBISHI MELSEC-QnA (LINK)		
S U B	MELSEC-Q	Q02CPU-A Q02HCPU-A Q06HCPU-A	A1SJ71UC24-R2 A1SJ7aUC24-R4		MITSUBISHI MELSEC-AnA (LINK)		
S			CPU Direct Connection		MITSUBISHI MELSEC-AnA (CPU)	0	Х
'		Q02CPU Q02HCPU Q06HCPU	QJ71C24 QJ71C24-R2		MITSUBISHI MELSEC-QnA (LINK)		
		Q12HCPU Q25HCPU	CPU Direct Connection	Cannot connect to USB port on CPU unit.	MITSUBISHI MELSEC-Q (CPU)		
		Q00CPU Q01CPU Q00JCPU Q00CPU	QJ71C24 QJ71C24-R2 CPU Direct	Cannot connect to USB	MITSUBISHI MELSEC-QnA (LINK)		
		C01CPU	Connection	port on CPU unit.			
	SYSMAC C	C500 C500F C1000H C1000HF C2000 C2000H	C500-LK201-V1 C500-LK203	C1000HF can only use C500-LK203 link unit.	OMRON SYSMAC-C series		
		C200H C200HS C20H	C200H-LK201 C200H-LK202 Link I/F on CPU				
		C28H C40H C200HS CQM1-CPU42	unit (RS-232C Port)				
O M R O N		C120 C120F C200H C500 C500F C1000H C2000	C120-LK201-V1 C120-LK202-V1 C500-LK203			0	0
		C1000HF SRM1-CO2, CPM1-20CDR-A CPM2A	CPM1-CIF01 CPM1-CIF11				
		C200HS, SRM1-C02, CQM1-CPU11, CQM1-CPU42, CPM1-20CDR-A CPM2A, CQM1H-CPU2I	CPU Direct Connection	Omron's isolation cable (CQM1-CIF01) is necessary.			

Co.	Series Name	СРИ	Link Unit	Comments	PLC name in PRO/PBIII	GP Series GLC 2000 Series	GLC 100 Series GLC 300 Series
	SYSMAC C	CPM2C	CPU Direct Connection CPM2C-CIF01	Omron's isolation cable CS1W-CN114 and CQM1-CIF01 are necessary.	OMRON SYSMAC-C series		
	SYSMAC-α	C200HX-CPU85-Z C200HX-CPU64	C200HW-COM06	RS422 can use only the 4-wire type.			
		C200HX-CPU44 C200HE-CPU42 C200HG-CPU63 C200HG-CPU43 C200HE-CPU42-Z	RS-232C Port on CPU unit			0	0
		C200HX-CPU64-Z	C200H-LK202-V1				
O M R O	SYSMAC CV	CV500 CV1000 CVM1	Link I/F on CPU unit, CV500- LK201 (Host Link)	Tested with the CVM1-CPU01 for the CVM1 Series	OMRON SYSMAC-CV series		
N	SYSMAC CS1	CS1H-CPU67 CS1H-CPU66 CS1H-CPU65 CS1H-CPU64	RS-232C Port on CPU unit Peripheral port on CPU unit		OMRON SYSMAC-CS1 series		
		CS1H-CPU63 CS1G-CPU45 CS1G-CPU44 CS1G-CPU43 CS1G-CPU42	CS1W-SCB21 CS1W-SCB41 CS1W-SCU21			0	х
	SYSMAC CJ	CJ1G-CPU44 CJ1G-CPU45	Peripheral port on CPU unit RS-232C port on CPU unit CJ1W-SCU41				
	MICREX-F	F80H, F120H F250 F80H	FFU120B FFK100A-C10	*When using	FUJI MICREX-F series		
FU		F120H F250 F30 F50 F60 F80 F81 F120 F120S F200 F70S	FFK120A-C10	FFK100A-C10, the ROM casette FMC312A-T (PC exclusive) is necessary. *To use FFK120A-C10, use the command setup type synchronous nonprocedure mode 1. The ROM cassette is unnecessary. Tested with the NC1P-			
J		F80H F250	CPU Direct Connection Use the loader	S0 CPU Use the PC loader adapter (FLT-ASFK) made by Fuji Electric.	FUJI MICREX-F series (FLT)	0	х
			port. T-link I/F unit	Refer to T-link I/F unit User's Manual	FUJI MICREX-F series (T-link)	-	
	FLEX-PC	NB1, NB2, NB3 NJ NS	NB-RS1-AC NJ-RS2, NJ-RS4 NS-RS1		FUJI FLEX-PC series (Link)		
		NB1, NB2, NB3 NJ, NS	CPU Direct Connection		FUJI FLEX-PC (CPU)		

				Comments	PRO/PBIII	GLC 2000 Series	Series GLC 300 Series	
	Memocon-SC		JAMSC-C8110		YASKAWA			
		U84J U84S	JAMSC-C8610		Memocon SC series			
					Selles			
		GL40S	JAMSC-IF61 JAMSC-IF41A					
			(extension)					
		GL60S	JAMSC-IF60		†			
		GL60H	JAMSC-IF61					
		GL70H GL60S	JAMSC-IF612		4			
					4			
		GL120	CPU Direct Connection					
Υ	MP900	MP930	MEMOBUS Port		YASKAWA			
Α			onCPU unit		OP9200SH			
S		MP920	MEMOBUS Port		series			
K			onCPU unit JEPMC-CM200		4	0	Х	
A W	Control Pack	CD 0200			YASKAWA	1		
A	Contion Pack	CP-9200 CP-9200H	CPU Direct Connection		Memocon SC			
		01 020011	Connection		series			
		CP-9200SH	Link I/F on CPU		YASKAWA			
			unit		CP9200SH			
	N.4	N. 6	ODI I Direct		series			
	Memocon Micro	Micro	CPU Direct Connection		YASKAWA Memocon SC			
	IVIICIO		Connection		series			
	PROGIC-8	PROGIC-8	Link I/F on CPU		YASKAWA	1		
		PC01	unit		PROGIC 8			
					series			
	MEMCON-SC		JAMSC-		YASKAWA			
		GL130	120MON27100		GL120/130 series			
	HIDIC-S10α	2α	Link I/F on CPU unit		HITACHI HIDIC-S10α			
		2αE 4α	LWE805	-	series			
		4αF						
	HIDIC H	H20	CPU Direct	Previously known as	HITACHI			
		H28	Connection	HIZAC H Series.	HIDIC-H series			
		H40 H64		Refer to Procedure 1 for data				
		H-200	-	communication				
		H-300		control.				
H		H-302						
I T		H-700						
ı A		H-702					х	
C		H-2000 H-2002				0	^	
Н		H-252C						
I		H-4010						
		EH-150						
		MICRO-EH	Serial Port 1 or 2					
		H-300	on CPU unit COMM-H	1				
		H-700	COMM-2H					
		H-2000						
		H-2002				1		
	l	H-302	COMM-2H	1	I			
		H-702						

Co.	Series Name	СРИ	Link Unit	Comments	PLC name in PRO/PBIII	GP Series GLC 2000 Series	GLC 100 Series GLC 300 Series
H I T A	HIDIC H	EH-150 (EH-CPU448) MICRO-EH H-302 H702 H-2002 H-4010	Serial Port 1 on CPU unit Serial Port 1 or 2 on CPU unit COMM-2H	Refer to Procedure 2 for data communication control.	HITACHI HIDIC-H2 series	0	x
C H I	HIZAC EC	EC-40HR LQP000 LQP010 LQP011	CPU Direct Connection		HITACHI HIZAC-EC series HITACHI HIDIC-S10α series		
S H A R P	New Satellite JW	JW20 JW70 JW100 JW-32CUH JW-33CUH3 JW20 JW20 JW-32CUH	Link I/F on CPU unit (COMM Port)	CPU module equipped with a communication port is necessary. JW20, JW70, and JW100 is equipped as the standard for JW- 22CU, JW-70CU, and JW-100CU.	SHARP New Satelite JW series	0	x
<u>'</u>		JW-32CUH1 JW-33CUH3 JW50 JW70 JW100	ZW-10CM, JW-10CM	JW-10CM tested only with 4-line.			
	MEWNET	FP3 FP5 FP10(S)	AFP3462 AFP5462 COM. Port on CPU unit AFP3462		MATSUSHITA MEWNET-FP series		
M A T		FP1	RS-232C Port on CPU unit CPU Direct Connection Serial port	Tested using C24C and C40C.			
S U S H I		FP10SH	connector on Board CPU Direct Connection COM.Port on CPU			0	х
T A		FP2	unit COM.Port on CPU unit CPU Direct Connection				
		FP0	RS-232C Port on CPU unit CPU Direct connection	CPU unit builted-in RS-232C is required.			

Co.	Series Name	СРИ	Link Unit	Comments	PLC name in PRO/PBIII	GP Series GLC 2000 Series	GLC 100 Series GLC 300 Series
	FACTORY ACE	FA-M3	LC01-0N LC02-0N	A-type CPU MP*0/AP*0 are not supported. Use together with B-type or higher. Can also use together with A-type CPU MP*1/AP*1. Can communicate with	YOKOGAWA FACTORY ACE *1 1:1 Comm.	0	0
			F3LC11-1N F3LC11-2N F3LC11-1F	F3SP10-0N CPU.			
			CPU Direct Connection			0	Х
	FACTORY	FA500	LC02-0N	Instead of the FA500,	YOKOGAWA		
Y O K O G A W	ACE	(1:n connection)		the digital indication controller (UT37/38/2000) and the MR series recorder can be used in a multilink connection, without programming.	FACTORY ACE *2 1:n Comm.		
A		FA-M3 (1:n connection)	F3LC11-2N	Instead FA-M3, a digital indicating controller (UT37/38/2000) can be used with and recorder (mR Series) multi-link connections, without programming. Communication is tested with F3SP20-ON and F3SP35-5N CPUs.		0	0
	STARDOM Standalone Type Controller	FCN FCJ	COM. port on CPU unit		YOKOGAWA FACTORY ACE 1:1 Comm.		
	TOYOPUC	PC2, L2	TLU-2652		ТОҮОТА		
T O Y	-PC2	PC2J PC2J (1:n connection)	THU-2755 THU-2755		TOYOPUC-PC2 TOYOTA TOYOPUC-PC2 1:n Comm.	0	0
O T A	TOYOPUC -PC3	PC3J (1:n connection)	Link I/F on CPU unit THU-2755 Link I/F on CPU unit		TOYOTA TOYOTA TOYOTA TOYOPUC-PC3J	0	х
		(7.11 connection)	THU-2755		1:n Comm.		
T O	PROSEC EX	EX2000 T3,T3H,	Link I/F on CPU unit Link I/F on CPU		TOSHIBA PROSEC -EX2000 series TOSHIBA		
S H I B A	PROVISOR B	T2N,T2E T2E	unit CM231E B2000LM		PROSEC-T series TOSHIBA MACHINE TC200 series	0	х

^{*1} Previously titled "FA-500" software on the GP-PRO II and GP-PRO III software.

^{*2} It was known as "FA-500M" software on GP-PRO II and GP-PRO III.

Co.	Series Name	СРИ	Link Unit	Comments	PLC name in PRO/PBIII	GP Series GLC 2000 Series	GLC 100 Series GLC 300 Series
M T A O C S H H	PROVISOR TC200	TCCUH	TCCMW TCCMO Link I/F on CPU unit	When connecting the GP and PLC directly, set the Unit No. in the SET UP OPERATION SURROUNDINGS menu to 64.	TOSHIBA MACHINE TC200 series	0	X
N B E A		TCCUHS TCCUSS	Connector for RS- 232C on CPU module TCCMWA TCCMOA		TOSHIBA MACHINE TC200-S series	0	0
	KOSTAC SG	SG-8	Link I/F on CPU unit	Disconnect the programming console when communicating	KOYO KOSTAC-SG8 series		
	KOSTAC SU	SU-5 SU-6 SU-6B	Link /F on CPU unit U-01DM Link /F on CPU			0	
К О Ү	KOSTAC SZ		unit Link I/F on CPU unit E-02DM-R1		KOYO		х
	DL205	D2-240	Link VF on CPU unit*1		KOSTA C-SR21 /22 series KOY O DL-205/405		
	DL405	D4-430 D4-440	D4-DCM D4-DCM Link I/F on CPU unit ¹		Series		
	DL305	D3-330	D3-DCM		KOYO DL-305 Series		
	Series 90-30	CPU311 CPU331	CPU Direct Connection IC693CMM311		GE FANUC SERIES 90 SNP-X		
G E		CPU311 CPU360 CPU313 CPU363 CPU323 CPU364 CPU331 CSE311 CPU340 CSE313 CPU341 CSE323 CPU350 CSE331 CPU351CSE340 CPU352	Serial port on CPU unit		GE FANUC SERIES 90-30/70 SNP		
FANUC		CPU731 CPU772 CPU732 CPU781 CPU771 CPU782 CPU731 CPX935 CPU771 CGR935 CPU772 CPM790 CPU780 CSE784 CPU781 CSE924 CPU782 CSE925 CPU788 CPX772 CPU789 CPX782 CPM915 CPX928 CPM925 CGR772	IC693CMM711 Serial port on CPU unit *2		GE FANUC SERIES 90 SNP-X GE FANUC SERIES 90-30/70 SNP	0	X

^{* 1} Connected to CPU module's general communication port.

^{*2} For CPX772, CPX782, CPX928, CPX935 CGR772 and CGR935, only Serial port2 can be used.

Co.	Series Name	СРИ	Link Unit	Comments	PLC name in PRO/PBIII	GP Series GLC 2000 Series	GLC 100 Series GLC 300 Series
F A N U C	FANUC Pow er Mate (Motion controller) FANUC Series	Pow er Mate	CPU Direct Connection Link I/F on CPU unit	Designate the GPs host as a Fanuc PLC. The GP series cannot connect to the CRT/MDI. The handy-type programmer DPL/MDI can be used jointly with the GP series connection type. Designate the GPs host as a Fanuc PLC. Only RS232C Serial Port 2 (JP5B) can be used at this time.	FANUC Pow er Mate series	0	х
	FA-2J FA-3S MICRO ³	PF2-CPU1 PF2-CPU5M PF2J-CPU1 PF3S-CP11, PF3S-CP12, PF3S-CP13 PF3S-CP12, PF3S-CP13 MICRO ³	CPU Direct Connection CPU Direct Connection CPU Direct Connection PF3S-SIF2 PF3S-SIF4 CPU Direct Connection	For an RS-232C connection, a link adapter PF2-CLA or computer link interface unit PFA-1U51 is necessary. For RS-422 connection, a link unit PFJ-U21 is necessary.	TZUMI	0	Х
I D E C	MICROSmart FC4A series (All-in-one type)	FC4A-C10R2B FC4A-C16R2B FC4A-C24R2B	RS-232C port on CPU module RS-232C Communication Board (Mini DIN type) FC4A-PC1 RS-485 Communication Board (Mini DIN type) FC4A-PC2 RS-485 Communication Board (Terminal type) FC4A-PC3		IDEC FC3/FC4A Series	0	0

^{*1} When connecting the GP with Izumi Electric's FA Series PLC, setup the object PLC to match the CPU.

CPU	PLC name in PRO/PBIII
PF2-CPU1	IZUMI IDEC_1
PF2J-CPU1, PF3S-CP11	IZUMI IDEC_2
PF2-CPU5M, PF3S-CP12, PF3S-CP13	IZUMI IDEC_3

Co.	Series Name	СРИ	Link Unit	Comments	PLC name in PRO/PBIII	GP Series GLC 2000 Series	GLC 100 Series GLC 300 Series
I D E C	OpenNet Controller FC3 series	FC4A-D20K3 FC4A-D20S3 FC4A-D20RK1 FC4A-D20RS1 FC4A-D40K3 FC4A-D40S3	RS-232C port on CPU module RS-232C Communication Board (Mini DIN type) FC4A-PC1 RS-485 Communication Board (Mini DIN type) FC4A-PC2 RS-485 Communication Board (Terminal type) FC4A-PC3 RS-232C Communication Board (Mini DIN type) FC4A-HPC1 RS-485 Communication Board (Mini DIN type) FC4A-HPC1 RS-485 Communication Board (Terminal type) FC4A-HPC2 RS-485 Communication Board (Terminal type) FC4A-HPC2 RS-485 Communication Board (Mini DIN type) FC4A-HPC2 RS-232C port 1 on CPU module RS-232C port 2 on CPU module RS-485 port on CPU module	HMI base module (FC4A-HPH1) is required.	IDEC FC3/FC4A Series	0	×
s	SIMATIC S5	90 95U 100U	CPU Direct Connection		SIEMENS S5 3964(R) Protocol SIEMENS S5 90-115 series		
I E M E N S		115U	CP524, CP525 CPU Direct Connecton CP524, CP525		SIEMENS S5 3964(R) Protocol SIEMEMS S5 90-115 series SIEMENS	0	x
		155U	CPU Direct Connection		S5 3964(R) Protocol SIEMENS S5 135-155 series		

Co.	Series Name	СРИ	Link Unit	Comments	PLC name in PRO/PBIII	GP Series GLC 2000 Series	GLC 100 Series GLC 300 Series
	SIMATIC S7-200	CPU212, CPU214	CPU Direct Connection		SIEMENS S7-200PPI		
	SIMATIC S7-300	CPU312IFM, CPU313, CPU314, CPU315, CPU315-2DP	CPU Direct (via MPI Port)		SIMATIC S7-300 / 400 via MPI		
		CPU313, CPU314, CPU315, CPU315-2DP	CP340	3964R via RK512	SIMATIC S7 via 3964 / RK512		
S I			CP341				
M E N	SIMATIC S7-400	CPU413-2DP	CPU Direct (via MPI Port)		SIMATIC S7-300/400 via MPI	0	х
S			CP441-2		SIMATIC S7 via 3964/RK512		
	SIMATIC 505	SIMATIC 545-1101, SIMATIC 545-1102, SIMATIC 545-1103, SIMATIC 545-1104, SIMATIC 545-1106, SIMATIC 555-1101, SIMATIC 555-1102, SIMATIC 555-1103, SIMATIC 555-1104, SIMATIC 555-1106, SIMATIC 555-1106	unit		SIMATIC 545/555 CPU Allen-Bradley		
(A L L E N I R	PLC-5	SLC-5/04 All PLC-5 processors w hich connect to the link units show n on the right	1785-KE		SLC 500 series Allen-Bradley PLC-5 series		
RWELL BRADLEY)		PLC-5/11 PLC-5/20 PLC-5/30 PLC-5/40 PLC-5/40L PLC-5/60 PLC-5/60L	CPU Direct Connection			0	х

Co.	Series Name	СРИ	Link Unit	Comments	PLC name in PRO/PBIII	GP Series GLC 2000 Series	GLC 100 Series GLC 300 Series
	KZ-300	KZ-300	KZ-L2		Keyence		
		KZ-350			KZ-300 series	_	
	KZ-500	KZ-A500	CPU Direct		Keyence		х
			Connection		KZ-A500 (CPU)] ~	
K			KZ-L10		Keyence		
E					KZ-A500 (Link)		
Y	KV	KV-10	CPU Direct		Keyence		
E		KV-16	Connection		KV-10/16/24/40		
N		KV-24			series		
C	101	KV-40				1 _	
E	KV-700	KV-700	KV-L20		Keyence	0	0
					KZ-300 series	_	
					Keyence		
					KZ-A500 series		
					(LINK)		
S	SELMART	SELMART	UC1-6		SHINKO		
Н					SELMART		
I					series		x
N							^
K							
0							
М	Panadac	P7000-PLC-001	GCP001		MATSUSHITA		
Α	7000	P7000-PLC-031H			Panadac P7000		
Т		P7000-PLC-031S			series		
S		P7000-PLC-A01					
U							x
S							^
Н							
T							
A	004/004	204 2044 2045	1		I TODIOONI		
M	884/984	884, 984A, 984B	Modbus Port on		MODICON		
0			CPU		(Master)		
D							
						0	Х
С							
0							
N O	E1	CPU11	MM01		ORIM VEXTA		
	- '	CFOTT	IVIIVIO		E1 Series		
R					LI OCITES		
I M							
М							
V						0	х
l v					1		
X					1		
Ιĵ					1		
A					1		
	Facon FB	20MC	Programming		FATEK		
F	aconii	201010	Port on CPU		FACON FB		
A			I OIL OIL OFU		I AWN FB		
T					1	0	Х
E					1		
K							



- If a PLC maker changes their PLC specifications or upgrades a PLC version, there is a possibility that communication with the GP may not work.
- Depending on the CPU or Link I/F being used, communication speed varies. When designing your system, please check the communication speed.
- If the PLC has a Data Reception (Write) ENABLE/DISABLE feature, used to control the reception of data from external devices while the PLC is in RUN mode, be sure to select [ENABLE] when using the unit.
- The range of devices covered in this manual are only those which can communicate with a GP unit. However, among the PLC maker series names and device names mentioned here, certain devices may not be able to be used with all GP models.
- Please be aware that necessary explanations, not reflected here, concerning GP-PLC connections may be added later.
- GP77R and GP 2000 series unit's baud rate can be set to either 115.2kbps or 57600bps, however, if the PLC does not support the baud rate set on the GP, an error message will appear on the GP's display. The messages will differ depending on the PLC type.
- When screen data is sent at 57600bps or higher to a GP series unit which does not support that rate, the baud rate will automatically change to 38400bps.



PLC-GP Connection

This chapter describes the system configuration of PLC made by various manufacturers and the GP, and shows connection diagrams, supported devices, and examples of setting up the operating environment.

Mitsubishi Electric

2.1.1

System Structure

The following describes the system structure for connecting the GP to Mitsubishi Electric PLCs.

The Cable Diagrams mentioned in the following tables are listed in the section titled "2.1.2 Cable Diagrams".

■ MELSEC-A Series (using Link I/F)

CPU	Link I/F	Cable Diagram	Cables	GP
	Computer Link Unit	•	•	
A2A,A3A,A2U,	AJ71C24-S6	RS-232C	Digital's	
A3U,A4U	AJ71C24-S8	(Cable Diagram 1)	GP410-IS00-0(5m)	
	AJ71UC24	RS-422	Digital's	
		(Cable Diagram 2)	GP230-IS11-0(5m)	
A2US	A1SJ71C24-R2	RS-232C	Digital's	GP Series
	A1SJ71UC24-R2	(Cable Diagram 3)	GP000-IS02-MS(3m)	
	A1SJ71UC24-R4	RS-422	Digital's	
		(Cable Diagram 2)	GP230-IS11-0	
A2USH-S1	A1SJ71UC24-R4	RS-422	Digital's	
		(Cable Diagram 2)	GP230-IS11-0	
	A1SJ71UC24-R2	RS-232C	Digital's	
		(Cable Diagram 3)	GP000-IS02-MS(3m)	

■ MELSEC-N Series (using Link I/F)

CPU	Link I/F	Cable Diagram	Cables	GP
	Computer Link Unit	•	•	
A1N,A2N,A3N,	AJ71C24	RS-232C	Digital's	
	AJ71C24-S3	(Cable Diagram 1)	GP410-IS00-0(5m)	
	AJ71C24-S6	RS-422	Digital's	
	AJ71C24-S8	(Cable Diagram 2)	GP230-IS11-0	
	AJ71UC24(Only A2N)			
A0J2,AOJ2H	AOJ2-C214-S1	1		
A1S	A1SJ71C24-R2	RS-232C	Digital's	GP Series
	A1SJ71UC24-R2	(Cable Diagram 3)	GP000-IS02-MS(3m)	
	A1SJ71C24-R4	RS-422	Digital's	ı
A1SJ,A2SH,A1SH	A1SJ71UC24-R4	(C able Diagram 2)	GP230-IS11-0(5m)	
	A1SJ71UC24-R2	RS-232C	Digital's	
		(Cable Diagram 3)	GP000-IS02-MS(3m)	
A2CCPU24	Link I/F unit on CPU	RS-232C	Digital's	
		(Cable Diagram 3)	GP000-IS02-MS(3m)	

■ MELSEC-A Series (CPU Direct Connection)

CPU *1	Adapter	Cable Diagram	Cables	GP
		-	•	Ū
A2A,A3A,A4U,A3U,		RS-422	Digital's	
A2U-S1,A2US-S1,		(Cable Diagram 10) *4	A-Series	
A2USH-S1,A2US			Programing Console I/F	
A2A,A3A,A4U,A3U,	Digital's	RS-422	Cable (isolation type)	
A2U-S1,A2US-S1,	2 Port Adapter *2	(Refer to Mitsubishi's A Series	GP430-IP10-O(5m)	
A2USH-S1,A2US	GP030-MD11-0	PLC Manual "2 Port adapter II "		
		for cable diagram information)		GP Series
A2A,A4U,A2U-S1	Digital's	RS-422	Digital's GP070-	
A2US,A3A,A2USH-S1	2 Port Adapter II *3	(Refer to Mitsubishi's A Series	MDCB11(5m) cable or	
	GP070-MD11	PLC Manual "2 Port adapter II "	user's own made RS-	
		for cable diagram information)	422C able	
	Mitsubishi's I/F unit FX-	Refer to Mitsubishi's manual		
	2PIF			

^{*1} Connect to the Programming Console I/F port.

^{*2} When a Read/Write command is sent from ladder software while data is being transmitted between the PLC and the GP, there is a possibility the data transmission will not be completed normally.

^{*3} When using 2 Port Adapter II, refer to its manual for the connectable PLCs.

^{*4} This connection is used for only GP2000 series unit. When using other series unit, use the GP430-IP10-0.

CPU *1 Adapter Cable Diagram Cables GP A1N, A2N, A3N, A3H, Digital's A-Series A1S, A2SH, ex clusive Programing A2CJ-S3,A1SH, Console I/F A2CCPUC24,A1SJ, Cable(isolation type) A0J2H GP430-IP10-0(5m) A1N, A2N, A3N, A3H, Digital's RS-422 2 Port Adapter *2 (Refer to Mitsubishi's A Series A1S,A2SH,A1SJ, **GP** Series A1SH GP030-MD11-0 PLC Manual "2 Port adapter " for cable diagram information) A1S.A2N.A3H. Digital's RS-422 Digital's 2 Port Adapter II *3 A3N, A1SJ, A2SH (Refer to Mitsubishi's A Series GP070-MDCB11(5m) A1SH, A2CJ-S3, GP070-MD11 PLC Manual "2 Port adapter " or user's own made cable A0J2H for cable diagram information) (RS-422) Mitsubishi's Refer to Mitsubishi's Interface Unit PLC Manual FX-2PIF

■ MELSEC-N Series (CPU Direct Connection)

- *1 Connect to the Programming Console I/F port.
- *2 When a Read/Write command is sent from ladder software while data is being transmitted between the PLC and the GP, there is a possibility the data transmission will not be completed normally.
- *3 When using 2 Port Adapter II, refer to its manual for the connectable PLCs.



- If you connect a CPU not listed here via the Direct CPU connection, you may damage the PLC.
- If the PLC has two ports, both of them cannot be connected to a GP at the same time.

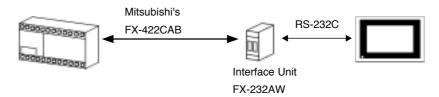
■ MELSEC-F₂ Series (using Link I/F)

CPU	Adapter	Cable Diagram	Cables	GP
00000000000	Interface Unit	•	•	
F2-20M,	F2-232GF	RS-232C	Digital's	
F2-40M,		(Cable Diagram 1)	GP410-IS00-O(5m)cable,	GP Series
F2-60M			Mitusbishi's	
			F2-232CAB(3m)cable	

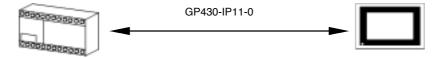
CPU Adapter Cable Diagram Cables GP 0000000000000 FX 1 *2 Digital's FX Series exclusive FX 2 *2 Programming Console FX 2c *2 I/F Cable (isolation type) FX o, *3 *4 GP430-IP11-O (5m) FX 2N-64MR *3 *4 Mitsubishi's I/F unit RS-232C Digital's FX 2NC-32MT *3 FX-232AW *1 (Cable Diagram 1) GP410-IS00-0(5m) FX on-60MR *3 *4 Mitusbishi's F2-232C AB(3m) FX_{1S} FX 2 *5 Digital's Refer to Digital's FX 2N-64MR *6 2 Port Adapter II Mitsubishi's PLC GP070-MDCB11 or FX 2NC-32MT *6 GP070-MD11 *8 2 Port Adapter II User-Prepared cable **GP** Series FX on-60MR *6 for A series Manual (RS-422) AIFX *7 FX_{1S} A1FX *7 Digital's GP410-IS00-0(5m) Mitusbishi's F2-232C AB(3m) Digital's Refer to Digital's 2 Port Adapter II Mitsubishi's PLC GP070-MDCB11 or GP070-MD11 *8 2 Port Adapter II User-Prepared cable for A series Manual (RS-422)

■ MELSEC-FX Series (CPU Direct Connection)

When connecting to FX_1 , FX_2 , and FX_{2C} , it is necessary to connect the Interface Unit with the PLC using Mitsubishi's FX-422CAB.

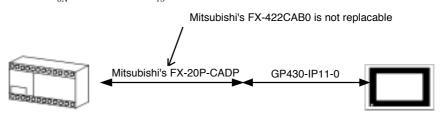


*2 When using Digital's GP430-IP11-0 for connecting an FX_1 , FX_2 , or FX_{2C} , use the Cable Diagram 2 shown below.

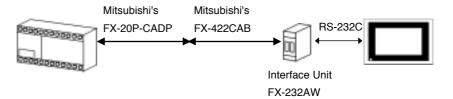


^{*1} Although MELSEC-FX Series and the GP uses a CPU direct connection, to change an RS-422 signal to RS-232C's, the FX-232AW interface unit is necessary.

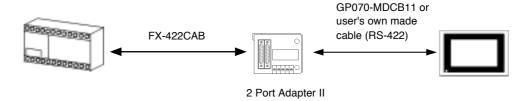
*3 When using Digital's GP430-IP11-0 for connecting FX_0 , FX_{2N} -64MR, FX_{2NC} -32MT, FX_{0N} -60MR or FX_{1S} use Cable Diagram 3 shown.



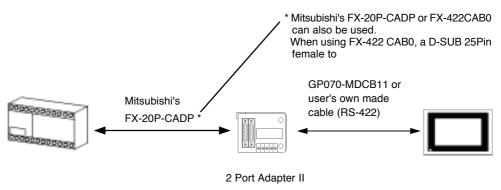
*4 When connecting to FX_0 , FX_{2N} -64MR, FX_{0N} -60MR, it is necessary to connect the Interface Unit with the PLC using Mitsubishi's RS-422CAB and FX-20P-CADP (see Diagram 4).



*5 When using Digital's 2 Port Adapter II, it is necessary to connect the unit to the GP as shown below.



*6 When using Digital's 2 Port Adapter II, it is necessary to connect the units to the GP as shown below.



*7 When using an A1FX, choose the MELSEC-N series as the GP-PRO/PBIII project file's PLC type (refer to the MELSEC-N series manuals for the range of devices available). You will also need an adaptor to adjust the connector's height to align it with that of the PLC's CPU cover.

*8 When using 2 Port Adapter II, refer to its manual for the connectable PLCs

■ MELSEC-FX Series (using Expansion Board with Link Protocol)*1

CPU	Adapter	Cable Diagram	GP
I BOORD .	(Expansion board)	*	
FX _{2N} *2	FX2N-232-BD	(Cable Diagram 6)	
		(RS-232C)	GP Series
	FX2N-485-BD	(Cable Diagram 7) (RS-422)	Of Jules

- *1 Choose the Mitsubishi MELSEC-FX₂(LINK) selection as the GP-PRO/PB III project file's PLC type.
- *2 The PLC's system version should be at least 1.06 or later. Check the PLC's version by reading out the data from the register (D8001). For detailed information refer to the Mitsubishi's FX 2N Series Micro Sequencer manuals.

■ MELSEC-FX Series (Expansion board using CPU Direct Connection protocol)*1

CPU	Adapter	Cable Diagram	Cables	GP
00000000000	(Expansion board)	◀	•	
FX _{1S}	FX _{1N} -232-BD * 2 (Diagram 1)	RS-232C	Digital's GP410-IS00-0 (5m)	
FX 2N-64MR	FX 2N-232-BD * 3	RS-232C	Digital's	
	(Diagram 2)	(Cable Diagram 1)	GP410-IS00-O (5m)	
			Mitusbishi's	
			F2-232C AB (5m)	GP Series
		RS-232C		GF Selles
		(Cable Diagram 4)		
	FX 2N-422-BD *4		Digital's FX-Series exclusive	
	(Diagram 3)		Programming Console	
			I/F Cable (isolation type)	
			GP430-IP11-O (5m)	

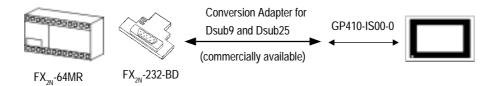
- *1 Choose the Mitsubishi MELSEC-FX(CPU) selection as the PLC type in the GP-PRO/PB III screen creation software.
- *2 Since a 9-pin connector is used by the PLC, a 25-pin conversion adapter is required.

Diagram 1

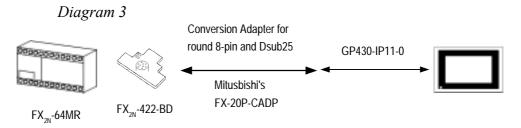


*3 Since a 9-pin connector is used by the PLC, a 25-pin conversion adapter is required.

Diagram 2



*4 A round 8-pin to 25-pin conversion cable, (Mitsubishi Electronic FX-20P-CADP) is required.



■ MELSEC-QnA Series (using Link I/F)

CPU	Adapter	Cable Diagram	Cables	GP
	Serial Communication Unit / Computer Link Unit	•	-	
Q2A	AJ71QC24 (Serial	RS-232C	Digital's	
Q2A-S1	Communication Unit) *1	(Cable Diagram 1)	GP410-IS00-0(5m)	
Q4A	AJ71UC24	RS-422	Digital's	
	(Computer Link Unit)	(Cable Diagram 2)	GP230-IS-11-0(5m)	
	AJ71QC24N-R4	RS-422	Digital's	
		(Cable Diagram 2)	GP230-IS-11-0(5m)	
		for CN-2		
		RS-422		
		(Cable Diagram 5)		
		for CN-1		
Q2AS	A1SJ71QC24 (Serial	RS-232C	Digital's	
Q2ASH	Communication Unit)	(Cable Diagram 3)	GP000-IS02-MS (3m)	
	A1SJ71UC24 (Computer	RS-422	Digital's	GP Series
	Link Unit)	(Cable Diagram 2)	GP230-IS-11-0(5m)	GI Sches
Q2AS-S1	A1SJ71UC24-R2	RS-232C	Digital's	
	A1SJ71UC24-R4	(Cable Diagram 3)	GP000-IS02-MS (3m)	
		RS-422	Digital's	
		(Cable Diagram 2)	GP230-IS-11-0(5m)	
	A1SJ71QC24N	RS-232C	Digital's	
		(Cable Diagram 3)	GP000-IS02-MS (3m)	
		RS-422	Digital's	
		(Cable Diagram 2)	GP230-IS-11-0(5m)	
Q4AR	AJ71QC24N	RS-232C	Digital's	
		(Cable Diagram 1)	GP410-IS00-0(5m)	
		RS-422	Digital's	
		(Cable Diagram 2)	GP230-IS-11-0(5m)	

*1 ROM: must be 7179B or higher. *2 ROM: must be 7179M or higher.

CPU Adapter Cable Diagram Cables GP Q2A RS-422 Digital's A Series Q4A ex clusive Programing (Cable Diagram 10) *3 Q2AS Console I/F cable (isolation Q2AS-S1 type) GP430-IP10-O (5m) Q4AR Digital's RS-422 Q2A 2 Port Adapter *1 Q4A (Refer to "Mitsubishi's **GP** Series GP030-MD11-0 *2 Q2AS PLC 2 Port Adapter Q2AS-S1 Manual" for cable diagram information) Q2A Digital's Refer to " Mitsubishi's Digital's 2 Port Adapter II *1 Q4A PLC A Series GP070-MDCB11 or GP070-MD11 *2 Q2AS-S1 2 Port Adapter II *1 user's own cable Q2ASH Manual" (RS422)

■ MELSEC-QnA Series (CPU Direct Connection)

- *1 When using 2 Port Adapter II, refer to its manual for the connectable PLCs.
- *2 When a Read/Write command is sent from ladder software while data is being transmitted between the PLC and the GP, there is a possibility the data transmission will not be completed normally. You may need to set the GP to the OFFLINE mode before you Read/Write in the program
- *3 This connection is used for only GP2000 series unit. When using other series unit, use the GP430-IP10-0.





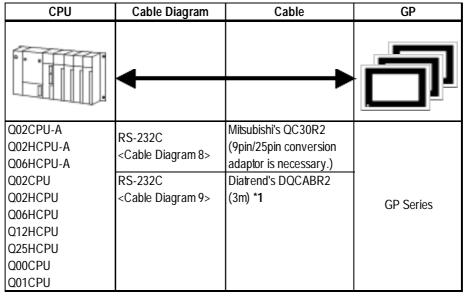
Digital's 2-port Adapter (GP030-MD11-0) will have this identification label.

Adapters that support the MELSEC-QnA unit have a circle around the "B" or later character.

■ MELSEC-Q Series (using Link I/F)

CPU	Link I/F	Cable Diagram	Cable	GP
	Serial Communication Unit / Computer Link Unit	•	•	
Q02CPU-A	A1SJ71UC24-R4	RS-422	Digital's	
Q02HCPU-A		<cable 2="" diagram=""></cable>	GP230-IS11-0	
Q06HCPU-A	A1SJ71UC24-R2	RS-232C	Digital's	
		<cable 3="" diagram=""></cable>	GP000-IS02-MS (3m)	
Q02CPU	QJ71C24	RS-422	Digital's	
Q02HCPU		<cable 2="" diagram=""></cable>	GP230-IS11-0	GP Series
Q06HCPU		RS-232C	Digital's	Of School
Q12HCPU		<cable 3="" diagram=""></cable>	GP000-IS02-MS (3m)	
Q25HCPU	QJ71C24-R2	RS-232C	Digital's	
Q00CPU		<cable 3="" diagram=""></cable>	GP000-IS02-MS (3m)	
Q01CPU				
Q00JCPU				

■ MELSEC-Q Series (CPU Direct Connection)



^{*1} When designating the length of a cable, be sure to use meters (*m).

For the available range of cable lengths, please contact the Diatrend company.

2.1.2 Cable Diagrams

The cable diagram illustrated below and the cable diagrams recommended by Mitsubishi Electric Corporation may differ. Using these cables for your PLC, however, will not cause any problems.

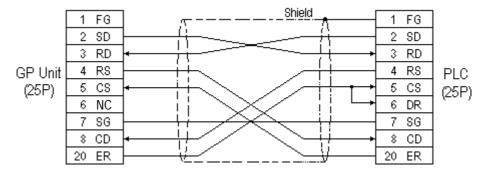


Ground your PLC's FG terminal according to your country's applicable standard. For details, refer to the corresponding PLC manual.



- Connect the FG line of the Shield cable to either the GP or PLC, depending on your environment. When using a connector hood and grounding the FG line, be sure to use an electrical conductor. The following connection diagrams show examples for connecting a shielded cable to the PLC.
- For the RS-232C connection, use a cable length less than 15m.
- If a shielded cable is connected to the RS-422 port, it must be no longer than 600 m.
- If a communications cable is used, it must be connected to the SG (signal ground).

Cable Diagram 1 (RS-232C)

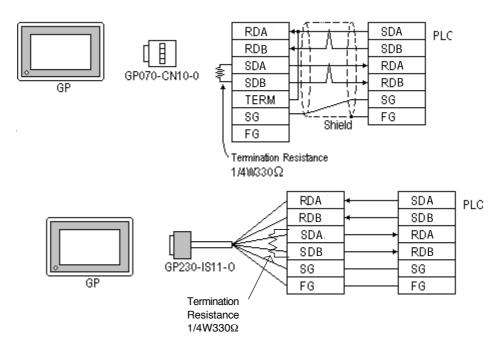


Cable Diagram 2 (RS-422)

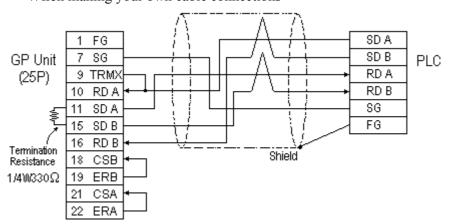
• When using Digital's RS-422 connector terminal adapter GP070-CN10-0



- Turn on the PLC's termination resistance switch.
- Depending on the type of PLC used, a termination resistance of 330Ω 1/2W is needed between SDA and SDB, and also between RDA and RDB if no DIP switch is available.



• When making your own cable connections

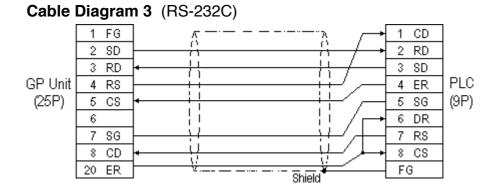




- When making your own cable connections, we recommend using Mitsubishi's SPEV (SB)-MPC-0.2*3P for the cable.
- When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.



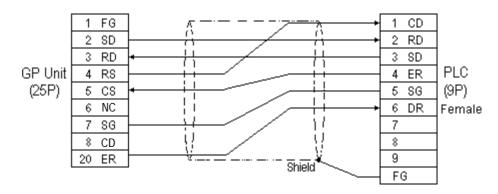
A termination resistance of 1/2W 330 Ω is needed between the PLC connector's SDA and SDB, and also between RDA and RDB.





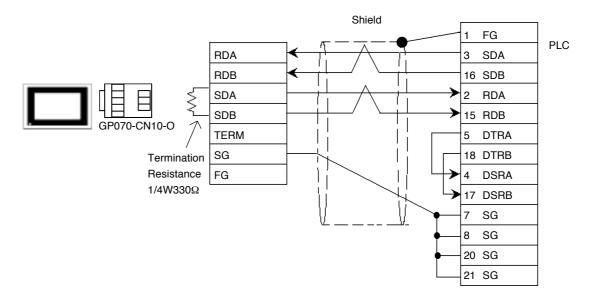
Connect the Shield to the PLC's FG terminal.

Cable Diagram 4 (RS-232C)

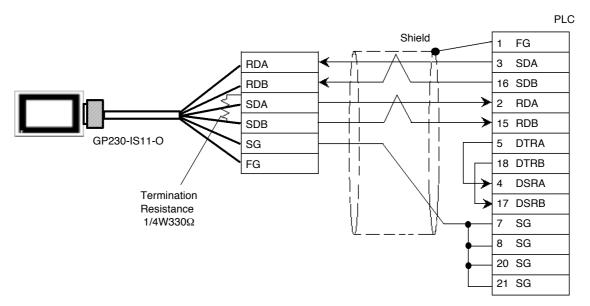


Cable Diagram 5 (RS-422)

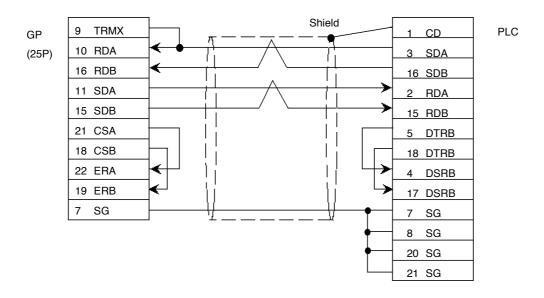
• When using Digital's RS-422 connector terminal adapter GP070-CN10-0



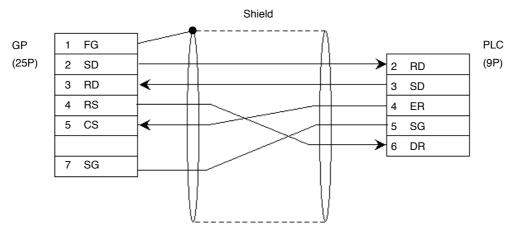
• When using Digital's RS-422 connector terminal adapter GP230-IS11-0



• When making your own cable



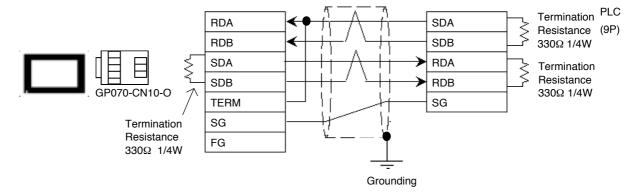
Cable Diagram 6 (RS-232C)



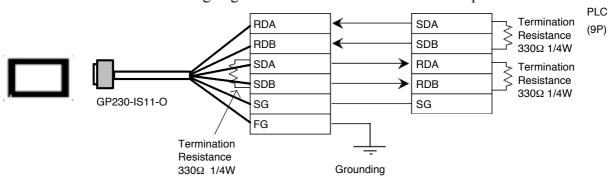
Cable Diagram 7 (RS-422)



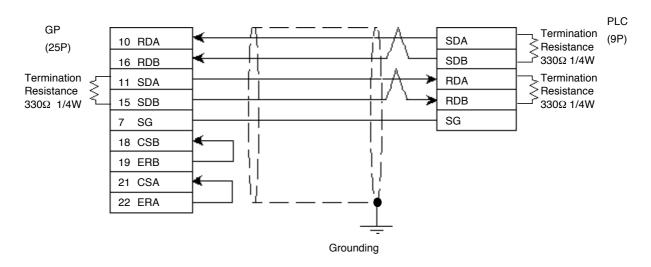
- A termination resistance of 330Ω is needed between the PLC connector's SDA and SDB, and also between RDA and RDB.
- When using the FX2N-485-BD, be sure the cable is less than 50 meters.
- When using Digital's RS-422 connector terminal adapter GP070-CN10-0



• When using Digital's RS-422 connector terminal adapter GP230-IS11-0



• When making your own cable



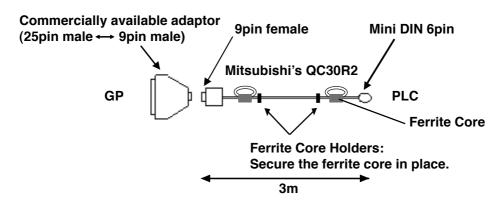


Digital recommends Mitsubishi Electric's SPEV(SB)-0.2-2P cable for this connection.



- Attaching a Ferrite Core will reduce the amount of noise in your cable.
- Attach two (2) Ferrite Cores to your cable, one at each end. Also, as shown in the drawing below, loop the cable once around the Ferrite Core.
- When using a data communication cable that is 3m(approx. 10ft.) or longer, please use a cable made by the Diatrend company.
- Be sure all cables are less than 15 meters long.

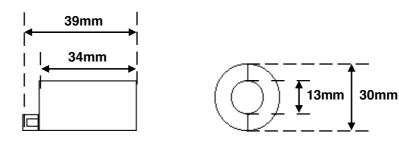
Cable Diagram 8 (RS-232C)



< Reccomended Ferrite Core>

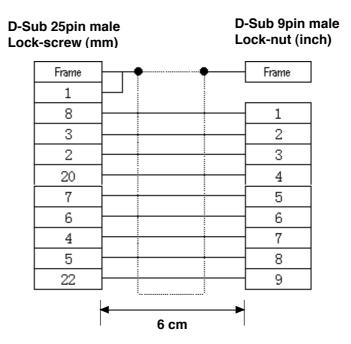
Maker :Seiwa Electronics Corporation

Model :E04SR301334



Conversion Adaptor Specifications

- Straight connection type
- D-Sub 25pin male Lock-screw (mm)
- D-Sub 9pin male Lock nut (inch)

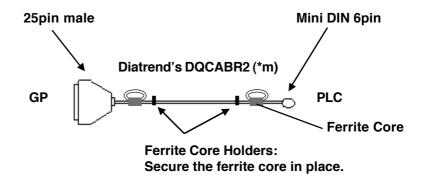


<Adaptor: Roas Co. Model No. ZA-403>



- Attaching a Ferrite Core will reduce the amount of noise in your cable.
- Attach two (2) Ferrite Cores to your cable, one at each end. Also, as shown in the drawing below, loop the cable once around the Ferrite Core.
- When using a data communication cable that is 3m(approx. 10ft.) or longer, please use a cable made by the Diatrend company.
- Be sure all cables are less than 15 meters long.

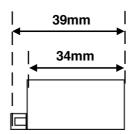
Cable Diagram 9 (RS-232C)

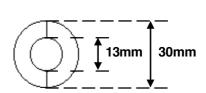


< Reccomended Ferrite Core>

Maker :Seiwa Electronics Corporation

Model :E04SR301334







Any other maker's ferrite core can be also used. (The size should be the same as shown here.)

2.1.3 Supported Devices

The following table describes the range of devices supported by the GP.

■ MELSEC-A Series (AnA/ AnU/ A2US/ A2USH-S1)

Setup System Area here.

Device	Bit Address	Word Address	Particulars	
Input Relay	X0000 ~ X1FFF	X0000 ~ X1FF0	*** 0	
Output Relay	Y0000 ~ Y1FFF	Y0000 ~ Y1FF0	*** 0	
Internal Relay	M0000 ~ M8191	M0000 ~ M8176	<u>÷16</u>)	
Latch Relay	L0000 ~ L8191	L0000 ~ L8176	<u>÷</u> 16)	
Special Relay	M9000 ~ M9255	M9000 ~ M9240	<u>÷16</u>)	
Annunciator	F0000 ~ F2047	F0000 ~ F2032	<u>÷</u> 16j	
Link Relay	B0000 ~ B1FFF			
Timer (contact)	TS0000 ~ TS2047			
Timer (coil)	TC 0000 ~ TC 2047			
Counter (contact)	CS0000 ~ CS1023			L/H
Counter (coil)	CC0000 ~ CC1023			
Timer (current value)		TN 0000 ~ TN 2047		
C ounter (current v alue)		CN0000 ~ CN1023		
Data Register		D0000 ~ D8191	<u>ві t</u> 15)	
Special Register		D9000 ~ D9255	B i t 15	
Link Register		W0000 ~ W1FFF	Bit F	
File Register		R0000 ~ R8191	<u>B i t</u> 15] *1	

^{*1} When using the File Register on AnA or AnU, use the User's Memory area in the memory cassettes listed below.

A3NMCA-0 A3NMCA-2 A3NMCA-4 A3NMCA-8

A3NMCA-16 A3NMCA-24 A3NMCA-40 A3NMCA-56

A4UMCA-8E (only when using CPU Direct Communication)

When the File Register is setup and the memory cassette is not in use, an error will develop when communicating.



If a ladder program is stored in ROM when a direct connection is used, there may be cases where the file register may not be used.

■ MELSEC-N Series (AnN/ A2C/ A1S/ A3H/A0J2/A1SJ/A2SH/A1SH/A2CJ-S3)

	Setup	System	Area	here.
--	-------	--------	------	-------

Device	Bit Address	Word Address	Particulars	
Input Relay	X0000 ~ X07FF	X0000 ~ X07F0	<u>***</u> 0]	
Output Relay	Y0000 ~ Y07FF	Y0000 ~ Y07F0	<u>***</u> 0] *1	
Internal Relay	M0000 ~ M2047	M0000 ~ M2032	<u>÷ 16</u>)	
Latch Relay	L0000 ~ L2047			
Special Relay	M9000 ~ M9255	M9000 ~ M9240	<u>÷ 16</u>] *2	
Annunciator	F000 ~ F255	F000 ~ F240	<u>÷ 16</u>)	
Link Relay	B0000 ~ B03FF			
Timer (contact)	TS000 ~ TS255			L/H
Timer (coil)	TC000 ~ TC255			
C ounter (contact)	CS000 ~ CS255			
C ounter (coil)	CC000 ~ CC255			
Timer (current value)		TN000 ~ TN255		
Counter (current value)		CN000 ~ CN255		
Data Register		D0000 ~ D1023	<u>ві т</u> 15)	
Link Register		W0000 ~ W03FF	Bit F)	
File Register		R0000 ~ R8191	<u>ві т</u> 15ј *3	

^{* 1} With the A2C, the Output Relays Y01F0~Y01FF (the word is Y01F0) cannot be setup for use on the PLC (only for A2C).

A3NMCA-0 A3NMCA-2 A3NMCA-4 A3NMCA-8
A3NMCA-16 A3NMCA-24 A3NMCA-40 A3NMCA-56
A4UMCA-8E (only when using CPU Direct Connection)

When the File Register is setup when the memory cassette is not in use, an error will develop when communicating.



If a ladder program is stored in ROM when a direct connection is used, there may be cases where the file register can not be used.

^{* 2} MELSEC-AnN and AJ71C24-S3 (or AJ71C24) cannot be matched and used.

^{* 3} When using the File Register on AnN or A3H, use the User's Memory area in the memory cassettes listed below.

■ MELSEC-F₂ Series

Setup System Area here.

Device	Bit Address	Word Address	Particulars
Input Relay (X)	000 ~ 013, 400 ~ 413, 500 ~ 513		ост 8)
Output Relay (Y)	030 ~ 037, 430 ~ 437, 530 ~ 537		ост 81
Timer (contact)(T)	050 ~ 057, 450 ~ 457, 550 ~ 557, 650 ~ 657		<u>ост</u> 8]
C ounter (contact)(C)	060 ~ 067, 460 ~ 467, 560 ~ 567, 660 ~ 667		<u>ост</u> 8]
Hold Relay (M)	070 ~ 077, 100 ~ 177, 200 ~ 277, 470 ~ 477, 570 ~ 577		ост 81
Keep Relay (M)	300 ~ 377		ост 81
State (S)	800 ~ 877, 900 ~ 977, 600 ~ 647		ост 8]
Timer (current v alue)		TC 050 ~ TC 057 TC 450 ~ TC 457 TC 550 ~ TC 557 TC 650 ~ TC 657	ост 8]
Timer (set value)		TS050 ~ TS057 TS450 ~ TS457 TS550 ~ TS557 TS650 ~ TS657	<u>ост</u> 8]
C ounter (current v alue)		C C 060 ~ C C 067 C C 460 ~ C C 467 C C 560 ~ C C 567 C C 660 ~ C C 667	ост 8]
C ounter (set v alue)		C S 060 ~ C S 067 C S 460 ~ C S 467 C S 560 ~ C S 567 C S 660 ~ C S 667	<u>ост</u> 8]
Data Register		DW700 ~ DW777	<u>ост</u> 8) _{віт} 15)



Since the word addresses in F₂ Series' *Timer*, *Counter*, and *Data Register* bit length is 12, some tag functionality (i.e. N-tag, S-tag, C-tag, etc.) is limited.



You cannot use 2 word (32 bit) data.

\blacksquare MELSEC-FX Series (FX₀)

Setup System Area here.

Device	Bit Address	Word Address	Particulars	
Input Relay	X000 ~ X017	X000	ост 8)	
Output Relay	Y000 ~ Y015	Y000	ост 8)	
Internal Relay	M000 ~ M511	M000 ~ M496	<u>÷16</u>)	
State	S000 ~ S063	S000 ~ S048	<u>÷16</u>)	L/H
Timer (contact)	TS000 ~ TS055			
Counter (contact)	CS000 ~ CS015			
Timer (current value)		TN 000 ~ TN 055		
Counter (current value)		CN000 ~ CN015		
Data Register		D000 ~ D031	<u>в і т</u> 15)	

■ MELSEC-FX Series (Using Expansion Board with Link Protocol)

Setup System Area here.

Device	Bit Address	Word Address	Particulars	
Input Relay	X0000 ~ X0267	X0000 ~ X0240	<u>ост</u> 8] [*** 0]	
Output Relay	Y0000 ~ Y0267	Y0000 ~ Y0240	<u>ост</u> 8] [*** 0]	
Auxilary Relay	M0000 ~ M3071	M0000 ~ M3056	<u>÷16</u>)	
State	S0000 ~ S0991	S0000 ~ S0976	<u>÷16</u>)	
Special Auxilary relay	M8000 ~ M8255	M8000 ~ M8240	<u>÷16</u>) *1	L/H
Timer (contact)	TS000 ~ TS255			
Counter (contact)	CS000 ~ CS255			
Timer (current)		TN 000 ~ TN 255		
Counter (current)		CN000 ~ CN255	*2	
Data Register		D0000 ~ D7999	B i t 151	
Special Data Register		D8000 ~ D8255	<u>ві t</u> 15ј *1	

^{*1} The Special Auxiliary Relay and the Special Data Register are divided into three areas. These are the Exclusive Reading Area, the Exclusive Writing Area and the System Area. For details, refer to your PLC's manual.

^{*2} Word addresses CN200 to CN255 are 32 bit counters.

■ MELSEC-FX Series (FX₁/FX₂/FX_{2N}-64MR/FX_{0N}-60MR, using CPU Direct Connection) Setup System Area here.

Device	Bit Address	Word Address	Particulars	
Input Relay	X000 ~ X337	X000 ~ X320	OCT 8 *** 0 *2	
Output Relay	Y000 ~ Y337	Y000 ~ Y320	<u>ост</u> 8] [*** 0]	
Internal Relay	M0000 ~ M1535	M0000 ~ M1520	<u>÷16</u>)	
State	S000 ~ S999	S000 ~ S976	<u>÷16</u>)	
Timer (contact)	TS000 ~ TS255			ĽH
Counter (contact)	CS000 ~ CS255			
Timer (current value)		TN 000 ~ TN 255		
Counter (current value)		CN000 ~ CN255 *1		
Data Register		D000 ~ D999	B : t15)	

^{* 1} Addresses CN200 to CN255 are 32 bits long.

^{* 2} Cannot perform data write.



- The $\mathrm{FX}_{\mathrm{2N}}$ -64MR can only be used for the range of devices listed above.
- Refer to the MELSEC-N series manuals for the A1FX's range of available devices.

■ MELSEC-QnA Series (using Computer Unit AJ71QC24/A1SJ71QC24N/AJ71QC24N-R4/AJ71QC24N or using CPU Direct Connection)

Setup System Area here.

Device	Bit Address	Word Address	Particulars	
Input Relay	X0000 ~ X1FFF	X0000 ~ X1FF0	*** 0]	
Output Relay	Y0000 ~ Y1FFF	Y0000 ~ Y1FF0	[***]	
Internal Relay	M00000 ~ M32767	M00000 ~ M32752	<u>÷16</u>)	
Special Relay	SM0000 ~ SM2047	SM0000 ~ SM2032	<u>÷</u> 16j	
Latch Relay	L00000 ~ L32767	L00000 ~ L32752	<u>÷16</u>)	
Annunciator	F00000 ~ F32767	F00000 ~ F32752	<u>÷16</u>)	
Edge Relay	V00000 ~ V32767	V00000 ~ V32752	<u>÷16</u>)	
Step Relay	S0000 ~ S8191	S0000 ~ S8176	<u>÷16</u>)	L/H
Link Relay	B0000 ~ B7FFF	B0000 ~ B7FF0	[*** 0]	
Special Link Relay	SB000 ~ SB7FF	SB000 ~ SB7F0	<u>***</u> 0]	
Timer (contact)	TS00000 ~ TS22527			
Timer (coil)	TC 00000 ~ TC 22527			
Aggregate Timer (contact)	SS00000 ~ SS22527			
Aggregate Timer (coil)	SC00000 ~ SC22527			
Counter (contact)	CS00000 ~ CS22527			
Counter (coil)	C C 00000 ~ C C 22527			
Timer (current value)		TN 00000 ~ TN 22527		
Aggregate Timer (current value)		SN00000 ~ SN22527		
Counter (current value)		CN00000 ~ CN22527		
Data Register		D00000 ~ D25599	<u>в і т</u> 15)	
Special Data Register		SD0000 ~ SD2047	<u>в і т</u> 15)	
Link Data Register		W0000 ~ W63FF	Bit F)	
Special Link Register		SW000 ~ SW7FF	Bit F	
File Register (normal)		R00000 ~ R32767	_{Ві т} 15] *1	
File Degister (eggi-1)		0R0000 ~ 0R7FFF	B i t F) *1	
File Register (serial)		: 1R0000 ~ 1R7FFF		

^{* 1} When using File Register, a Memory Card is necessary.

Usable capacity of the File Register varies depending on the capacity of the Memory Card.

■ MELSEC-QnA Series (using Computer Unit AJ71UC24/A1SJ71UC24-R2/A1SJ71UC24-R4)

Setup System Area here.

Device	Bit Address	Word Address	Particulars	
Input Relay	X0000 ~ X03FF	X0000 ~ X03F0	[*** 0]	
Output Relay	Y0000 ~ Y03FF	Y0000 ~ Y03F0	<u>***</u> 0]	
Internal Relay	M00000 ~ M8191	M00000 ~ M8176	<u>÷ 16</u>)	
Special Relay	SM1000 ~ SM1255	SM1000 ~ SM1240	<u>÷ 16</u>) *1	
Annunciator	F0000 ~ F2047	F0000 ~ F2032	<u>÷ 16</u>)	
Link Relay	B0000 ~ B0FFF		[*** 0]	
Timer (contact)	TS0000 ~ TS2047			
Timer (coil)	TC 0000 ~ TC 2047			L/H
Counter (contact)	CS0000 ~ CS1023			
Counter (coil)	CC0000 ~ CC1023			
Timer (current value)		TN 0000 ~ TN 2047		
Counter (current value)		CN0000 ~ CN1023		
Data Register		D0000 ~ D6143	в ; 15)	
Special Data Register		SD1000 ~ SD1255	В і т 15] *1	
Link Register		W0000 ~ W0FFF	Bit F	

^{*1} Table data will change depending on whether the perspective is from the PLC or the User's PC.

Device	GP-PRO/PBIII	PLC Manual
Special	M9000 ~ M9255	SM1000 ~ SM1255
Relay	1019000 ~ 1019200	(cannot use SM0000~SM0999)
Special	D0000 D03FF	SD1000 ~ SD1255
Register	D9000 ~ D9255	(cannot use SD0000~SD0999)

♦ MELSEC-QnA series communications mode selection (when using a link unit)

When using the MELSEC-QnA series unit, either mode 2 or mode 1 can be selected during the entering of the initial settings, when the GP is in the OFFLINE mode.

- **Mode 2:** This is a new communications mode. It is enabled when less than 64 devices have been designated by a single screen's tags. The communications speed has been improved. Select this mode when using less than 64 devices.
- **Mode 1:** This mode is equivalent to the communications mode used previously. This mode is valid for 64 or more devices have been specified by a single screen's tags. The communications speed has been improved. Select this mode when using 64 or more devices.



- If the on-screen data memory area in the GP is initialized or if the on-screen data is transferred from the drawing software, the GP returns to mode 1 (its initial setting). Use the offline settings area to select mode 2.
- In mode 2, the communications speed may not always be improved depending on which tags and system area are used, as well as how the PLC's read areas are allocated.

■ MELSEC-Q Series (A mode, CPU Direct)

Setup System Area here.

Device	Bit Address	Word Address	Particulars	
Input Relay	X0000 ~ X1FFF	X0000 ~ X1FF0	[*** 0]	
Output Relay	Y0000 ~ Y1FFF	Y0000 ~ Y1FF0	[***0]	
Internal Relay	M0000 ~ M8191	M0000 ~ M8176	<u>÷16</u>)	
Latch Relay	L0000 ~ L8191	L0000 ~ L8176	<u>÷</u> 16)	
Special Relay	M9000 ~ M9255	M9000 ~ M9240	<u>÷16</u>)	
Annunciator	F0000 ~ F2047	F0000 ~ F2032	<u>÷16</u>)	
Link Relay	B0000 ~ B1FFF			
Timer (contact)	TS0000 ~ TS2047			
Timer (coil)	TC 0000 ~ TC 2047			L/H
Counter (contact)	CS0000 ~ CS1023			
Counter (coil)	CC0000 ~ CC1023			
Timer (current value)		TN 0000 ~ TN 2047		
Counter (current value)		CN0000 ~ CN1023		
Data Register		D0000 ~ D8191	_{в і т} 15)	
Special Data Register		D9000 ~ D9255	_{B i 1} 15]	
Link Register		W0000 ~ W1FFF	Bit F)	
File Register		R0000 ~ R8191	<u>ві т15</u>) *1	

^{* 1} When using a File Register, a Memory Card is necessary. Usable capacity of the File Register will vary depending on the capacity of the Memory Card.

■ MELSEC-Q Series (Q mode Link I/F, CPU Direct)

Setup System Area here.

Device	Bit Address	Word Address	Notes	
Input Relay	X0000 ~ X1FFF	X0000 ~ X1FF0	<u>***</u> 0]	
Output Relay	Y0000 ~ Y1FFF	Y0000 ~ Y1FF0	*** 0	
Internal Relay	M00000 ~ M32767	M00000 ~ M32752	<u>÷16</u> 1	
Special Relay	SM0000 ~ SM2047	SM0000 ~ SM2032	<u>÷16</u>)	
Latch Relay	L0000 ~ L32767	L0000 ~ L32752	<u>÷16</u>	
Annunciator	F0000 ~ F32767	F0000 ~ F32752	<u>÷16</u>	
Edge Relay	V0000 ~ V32767	V0000 ~ V32752	<u>÷16</u>	
Step Relay	S0000 ~ S8191	S0000 ~ S8176	<u>÷16</u>	
Link Relay	B0000 ~ B7FFF	B0000 ~ B7FF0	*** 0	
Special Link Relay	SB000 ~ SB7FF	SB000 ~ SB7F0	[*** 0]	
Timer (contact)	TS00000 ~ TS23087			
Timer (coil)	TC 00000 ~ TC 23087			
Aggregate Timer (contact)	SS00000 ~ SS23087			
Aggregate Timer (coil)	SC00000 ~ SC23087			L/H
Counter (contact)	CS00000 ~ CS23087			ВΠ
Counter (coil)	CC00000 ~ CC23087			
Timer (current value)		TN 00000 ~ TN 23087		
Aggregate Timer (current value)		SN00000 ~ SN23087		
Counter (current value)		CN00000 ~ CN23087		
Data Register		D00000 ~ D25983	<u>в і т</u> 15)	
Special Data Register		SD0000 ~ SD2047	<u>в і т</u> 15)	
Link Data Register		W0000 ~ W657FF	Bit F	
Special Link Register		SW000 ~ SW7FF	Bit F	
File Register (normal)		R00000 ~ R32767	B i t 15 *1	
		0R0000 ~ 0R7FFF	B i t F) *1	
File Register (serial)		1R0000 ~ 1R7FFF	B i t F) *1	
i iic izegisici (seilal)	:	:	:	
		31R0000 ~ 31R67FF	B i t F) *1	

^{*1} When using a File Register, a Memory Card is necessary. Usable capacity of the File Register will vary depending on the capacity of the Memory Card.



Each device range represents the maximum range available, given the parameter settings.

Depending on your CPU, the usable device type and range may differ. Before using only a CPU, refer to your CPU User Manual.

GP-PRO/PBIII for Windows Ver.6.0 PLC Connection Manual

2.1.4 Environment Setup

The following lists Digital's recommended PLC and GP communication settings.



Items affecting the PLC program cycle—

Please be aware that PLC program cycle time slows by approximately 8% when you connect the GP to the programming port and begin communications with the GP.

■ MELSEC-A Series / N Series (using Calculation Link Unit)

GP Setup		Computer Link	CUnit Setitings
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	7 bits	Data Bit	7 bits
Stop Bit	2 bits	Stop Bit	2 bits
Parity Bit	Even	Parity Check Parity setting even/odd	Yes Even
Data Flow Control	ER Control	-	
Communication Format (RS-232C)	RS-232C	Channel Setup ¹ Mode Setup (RS-232C)	RS-232C 4 (Format 4 protocol)
Communication Format (RS-422)	4-wire type	Channel Setup ¹ Mode Setup (RS-422)	RS-422 8 (Format 4 protocol)
		Write possible in RUN mode.	Possible
		Sum Check	Yes
		Enable Sender Termination Resistor *2	Yes
		Enable Receiver Termination Resistor *2	Yes
Unit No.	0	Station Number	0

^{*1} AISJ71C24-R2, AISJ71UC24-R2, and AISJ71C24-R4 do not have this setting.

^{*2} The A171UC24 does not have this setting.

■ MELSEC-A Series / N Series (CPU Direct Connection)

GP Setup		PLC Setitings
Baud Rate	9600 bps (fixed)	
Data Length	8 bit (fixed)	
Stop Bit	1 bit (fixed)	
Parity Bit	Odd (fixed)	
Data Flow Control	ER Control	
Communication Format *1 (RS-232C)	RS-232C	
Communication Format (RS-422)	4-wire type	
Unit No.	0 (fixed)	

^{*1} Only when using Digital's Programming Console I/F cable(GP430-IP10-0) for the A series unit. Otherwise a 4-wire type cable is required.

■ MELSEC-A2C

GP Setup		A2C Setitings	
Baud Rate	19200 bps	Baud Rate 19200 bps	
Data Length	8 bits	Data Bit	8 bits
Stop Bit	1 bit	Stop Bit	1 bit
Parity Bit	Even	Parity Check Parity setting even/oddd	Yes Even
Data Flow Control	ER Control		
Communication Format	RS-232C	Channel Setup RS-232C Mode Setup 4 (Format 4 protocol)	
		Write possible in RUN mode	Possible
	Sum Check Yes		Yes
Unit No.	0	Station Number	0

■ MELSEC-F₂ Series

GP Setup		Interface Setitings	
Baud Rate	9600 bps	Baud Rate	9600 bps
Data Length	7 bits	Data Bit	7 bits
Stop Bit	1 bit (fixed)	Stop Bit	1 bit (fixed)
Parity Bit	Even	Parity Bit	Even
Data Flow Control ER Control			
Communication Format	RS-232C		
		Resistor Setting	Yes
		Sum Check	Yes
Unit No.	0	Station Number	0

■ MELSEC-FX Series (using Expansion Board with Link Protocol)

GP Setup		Computer	Computer Link Unit Settings	
Baud Rate	19200 bps	Baud Rate	19200 bps	
Data Length	7 bits	Data Bit	7 bits	
Stop Bit	2 bits	Stop Bit	2 bits	
Parity Bit	Even	Parity Bit	Even	
Data Flow Control	ER Control			
Communication Format (RS-232C)	RS-232C	Computer Link	RS-232C I/F	
Communication Format (RS-422)	4-wire type	Computer Link	RS485 (RS422) I/F	
Unit No.	0	Station Number	0	
		Sum Check	Yes	
		Protocol	Yes	
		Control Method	4	
		Header	No	
		Terminator	No	



The PLC's Station Number setting must be written to data register D8121, and all other PLC settings for the PLC must be written to data register D8120. For details, please refer to the Mitsubishi Electronics FX Series User Manual.

■ MELSEC-FX Series *1 (CPU Direct Connection)

GP Setup		FX Series Settings
Baud Rate	9600 bps (fixed)	
Data Length	7 bits (fixed)	
Stop Bit	1 bit (fixed)	
Parity Bit	Even (fixed)	
Data Flow Control	ER Control	
Communication Format	RS-232C	
Unit No.	0 (fixed)	

^{*1} The A1FX unit's settings are the same as the MELSEC-N Series (CPU Direct Connection).



When the adapter (FX $_{2N}$ -232-BD) is used, store "0" data in D8120.

■ MELSEC-QnA (using Serial Communication Unit)

GP Setup		Serial Communication Unit Settings	
Baud Rate	19200 bps *1	Baud Rate	19200 bps
Data Length	7 bits	Data Bit	7 bits
Stop Bit	2 bits	Stop Bit	2 bits
Parity Bit	Even	Parity Check Parity setting even/odd	Yes Even
Data Flow Control	ER Control		
Communication Format (RS-232C)	RS-232C	Mode Setup (RS-232C)	4 (Format 4 Protocol Mode)
Communication Format (RS-422)	4-wire type	Mode Setup (RS-422)	4 (Format 4 Protocol Mode)
		Sum Check	Yes
		Enable Sender Termination Resistor	Yes
		Enable Receiver Termination Resistor	Yes
Unit No.	0	Station Number	0

^{*1} AJ71QC24-R4, A1SJ71QC24N and AJ71QC24N can use a baud rate of 115200bps.



- When your environment setup involves using MELSEC-QnA and the Computer Link Unit AJ71UC24 together, refer to the MELSEC A Series' table.
- Serial communication units CH1 and CH2 can communicate at the same time, given any of the following conditions are true.
 - Condition 1: The sticker on the top of the communication unit indicates the version is AB or later.
 - Condition 2: The date shown on the side of the communication unit indicates it was produced in September 1996(9609) or later.
 - Condition 3: The communication unit's ROM version is 7179M or later.

■ MELSEC-QnA (CPU Direct Connection)

GP Setup		PLC Settings
Baud Rate	19200 bps	
Data Length	8 bits	
Stop Bit	1 bit	
Parity Bit	Odd	
Data Flow Control	ER Control	
Communication Format *1 (RS-232C)	RS-232C	
Communication Format (RS-422)	4-wire type	
Unit No.	0 (fixed)	

^{*1} Only when using Digital 's Programming Console I/F cable (GP430-IP10-0) for the A series unit. Otherwise a 4-wire type cable is required.

■ MELSEC-Q Series (A Mode CPU Direct Connection)

GP Setup		PLC Settings
Baud Rate	9600bps (fixed)	
Data Length	8bit (fixed)	
Stop Bit	1bit (fixed)	
Parity Bit	Odd (fixed)	
Data Flow Control	ER Control	
Communication Format	RS-232C	
Unit No.	0 (fixed)	

■ MELSEC-Q Series (Q Mode CPU Direct Connection)

GP Setup		PLC Settings
Baud Rate	19200 bps	
Data Length	8bit (fixed)	
Stop Bit	1bit (fixed)	
Parity Bit	Odd (fixed)	
Data Flow Control	ER Control (fixed)	
Communication Format	RS-232C (fixed)	
Unit No.	0 (fixed)	

■ MELSEC-Q Series (using A Mode CPU Computer Link Unit)

GP Setup		Computer Link Unit Settings	
Baud Rate	19200bps (fixed)	Baud Rate	19200 bps
Data Length	7bits (fixed)	Data Bit	7 bits
Stop Bit	2bits (fixed)	Stop Bit	2 bits
Parity Bit	Even	Parity Check Parity setting even/odd	Yes Even
Data Flow Control	ER Control		
Communication Format (RS-232C)	RS-232C	Mode Setup (RS-232C)	4 (Format 4 Protocol Mode)
Communication Format (RS-422)	4-wire type	Mode Setup (RS-422)	4 (Format 4 Protocol Mode)
	-	Write possible in RUN mode	Possible
	-	Sum Check	Yes
Unit No.	0 (fixed)	Station Number	0

■ MELSEC-Q Series (Q Mode CPU Serial Communication Unit)

GP Setup		Serial Communication Unit Settings 1	
Baud Rate	19200bps	Baud Rate	19200 bps
Data Length	7 bits	Data Bit	7 bits
Stop Bit	2 bits	Stop Bit	2 bits
Parity Bit	Even	Parity Check Parity setting even/odd	Yes Even
Data Flow Control	ER Control		
Communication Format (RS-232C)	RS-232C	Mode Setup (RS-232C)	4 (Format 4 Protocol Mode)
Communication Format (RS-422)	4-wire type	Mode Setup (RS-422)	4 (Format 4 Protocol Mode)
<u> </u>		Sum Check	Yes
Unit No.	0	Station Number	0

^{*1} The setting is made by Mitsubishi's GPP function software.

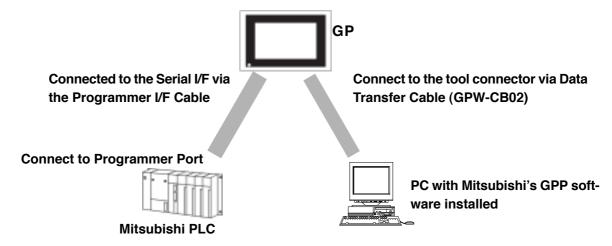
2.1.5 2-Port Feature

The 2-Port feature can be used in two ways:

- (1) Via the GP's built-in 2-Port feature
- (2) Via the external 2-Port Adapter II.

Both methods are described below:

■When Using GP unit's Internal 2-Port feature *1



^{*1} The Device Monitor feature can also be used at the same time.

◆PLC models supporting Internal 2-Port Feature

Series	CPU
MELSEC-AnA Series	A2A, A2U-S1, A2USH-S1, A3A, A2US
MELSEC-AnN Series	A1S, A1SH, A2N, A3H, A2SH, A3N, A0J2H
MELSEC-QnA Series	Q2A, Q2A-S1, Q2AS-S1, Q2ASH, Q4A
MELSEC-FX Series *1	FX2N, FX2NC, FX0N
MELSEC-Q Series	Q02CPU-A,Q02HCPU-A,Q06HCPU-A, Q02CPU,Q02HCPU,Q06HCPU, Q12HCPU,Q25HCPU

^{*1} MELSEC-FX Series' FX2 cannot use the internal 2-Port feature.

◆GP models supporting Internal 2-Port Feature

Series			GP type
GP-377 Series			GP-377L
GP-377 3	Delle3		GP-377S
		GP-377R Series	GP-377RT
GP77R S	orios	GP-477R Series	GP-477RE
GF / / K 3	DCI 103	GP-577R Series	GP-577RT
		GF-577K Selles	GP-577RS
	GP2000H	GP-2301H Series	GP-2301HL
	Series	GF-2301FI Selles	GP-2301HS
	Series	GP-2401H Series	GP-2401HT
		GP-2300 Series	GP-2300L
			GP-2300T
		GP-2301 Series	GP-2301L
GP2000			GO-2301S
Series		GP-2400 Series	GP-2400T
		GP-2500 Series	GP-2500L
			GP-2500S
			GP-2500T
		GP-2501 Series	GP-2501S
		GF-2001 Series	GP-2501T
		GP-2600 Series	GP-2600T

◆GPP Feature Software Package

MELSEC-A Series	NEC 98 Series SW2NX-GPPA type GPP feature software package or later DOS/V Series SW31VD-GPPA type GPP feature software package or later Windows95, Windows NT SW0D5*-GPPW type GPP feature software package or later
MELSEC-QnA Series	NEC 98 Series SW0NX-GPPQ type GPP feature software package DOS/V Series SW01VD-GPPQ type GPP feature software package Windows95, Windows NT SW0D5*-GPPW type GPP feature software package or later
MELSEC-FX Series	Windows 95 SW0PC-FXGP/WIN type GPP feature software package Windows 95, Windows NT SW4D5C-GPPW type GPP feature software package or later
MELSEC-Q Series	Windows 95, Windows NT SW4D5C-GPPW type GPP feature software package or later

■Internal 2-Port Feature Usage Notes



- The selections "USE ADAPTER MODE/CPU DIRECT MODE" will be displayed only when a direct CPU connection is used.
- The factory setting will become "Adapter" (the setting when using 2-Port Adapter II).
- This feature can be used only while the GP is in ONLINE mode.
- Use the Digital's trasnfer cable GPW-CB02.



- If you transfer screen data while the GP is in ONLINE mode, the screen will not change to the data transfer screen automatically. Thus, you will need to change the screen manually to the OFFLINE mode's [Main Menu/ Transfer] screen.
- Since the internal 2-Port feature uses the GP's single tool connector, you will not be able to use optional equipment which requires the tool connector (i.e. a Barcode Reader, etc.)
- Peripheral equipment which cannot be connected to the GP's tool connector (such as a Programming Console) is not compatible with the GP's Internal 2-Port feature. To use this type of equipment, you will need to use the external 2- Port Adapter II.
- When using the GP's built-in 2-Port feature, be sure not to switch to OFFLINE mode while the GPP software is communicating with the PLC. Switching to OFFLINE mode will result in a communication (data transfer) break
- With GP2000, GP77R series units, if the 2-Port feature is designated, the Simulation feature cannot be used. Be sure to select "Adapter" or "Direct" when using the Simulation feature.



• When using the GP's built-in 2-Port feature with the MELSEC-Q Series, be sure to set your PC's data link speed to the same values as used by the GP. If the setting values are different, an error will appear on the GP and your PC. The error will appear as shown bellow.

<GP>

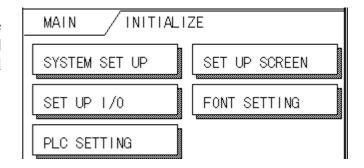
"PC's data link speed is different. (02:F5)"

<PC>

"Cannot communicate with the PC."

<e.g : GP-377 series unit's screen>

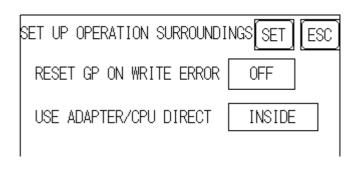
① Touchitem, PLC SETTING. The SET UP OPERATION SURROUNDINGS menu will appear.



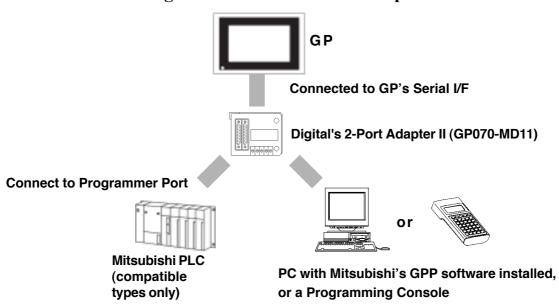
② Touch the button, SET on the upper right on the screen. The SET UP OPERATION SURROUNDINGS 2 menu appears.

SET UP OPERATION SURROUNDI	NGS SET	ESC
SYSTEM AREA START DEV	D	
START ADR	0	
UNIT No.	0	

3 Touch the "2-Port Feature/ CPU Direct" selection's right side setting box until "INSIDE" appears. When using the 2-Port Adapter II unit, select "Adapter", or "CPU" for a direct CPU connection. When using GP2000H Series units, select "Adapter + GPH".



■When Using the External 2-Port Adapter Cable *1



^{*1 2-}Port Adapter can be used for the GP series units supporting the internal 2-Port feature.

■PLCs supported by the 2-Port Adapter II



For information about which CPUs the 2-Port Adapter II (GP070-MD11) can connect to, refer to the 2-Port Adapter II Users Manual.

■When Using the 2-Port Adapter II

Set up from the GP's OFFLINE mode when using 2-Port Adapter II.

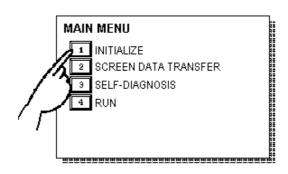
Reference GP User Manual (Sold separately), "OFFLINE Mode"

◆GP70 Series (except GP-377 series)

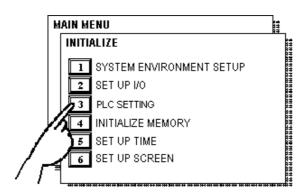


- The selections "USE ADAPTER MODE/CPU DIRECT MODE" will be displayed only when a direct CPU connection is used.
- The factory setting will become "2 Port".

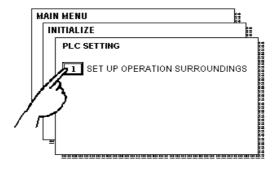
<e.g : GP-570 series unit's screen>



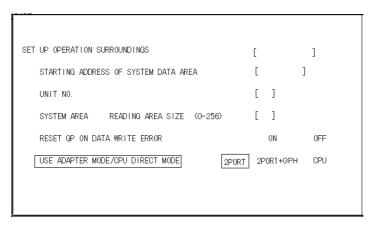
① Touch item #1, INITIALIZE. The INITIALIZE menu will appear.



② Touch item #3, PLC SETTING. The PLC SETTING menu appears.



Touch item #1, SET UP OPERATION SUR-ROUNDINGS. The SET UP OPERATION SUR-ROUNDINGS menu will appear.



Touch the "USE ADAPTER MODE/CPU DIRECT MODE" selection. The selected item is highlighted.

GP70 Series Units

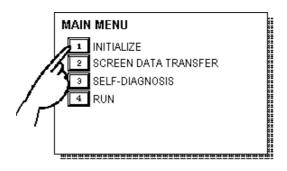
S When using the 2 port adapter II (GP070-MD11), select the 2PORT option. For GPH70 however, select 2PORT + GPH.
Select CPU when connecting CPU directly.

♦GP77R/GP2000 Series

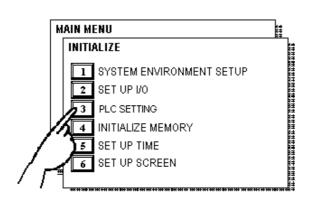


- The selections "2 Port Mode/CPU DIRECT MODE" will be displayed only when a direct CPU connection is used.
- The factory setting will become "Adapter".

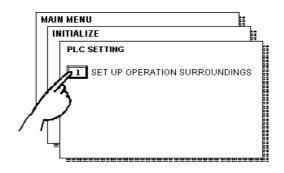
<e.g : GP-577R series unit's screen>



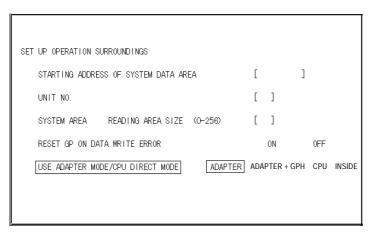
① Touch item #1, INITIALIZE. The INITIALIZE menu will appear.



② Touch item #3, PLC SETTING. The PLC SETTING menu appears.



Touch item #1, SET UP OPERATION SUR-ROUNDINGS. The SET UP OPERATION SUR-ROUNDINGS menu will appear.



Touch the "USE ADAPTER MODE/CPU DIRECT MODE" selection. The selected item is highlighted.

GP77R Series Units

When using the 2 Port Adapter II (GP070-MD11), select the ADAPTER option. When using GP2000H Series units, select "Adapter + GPH". Select CPU when connecting CPU directly. When using the internal 2-Port feature, select INSIDE option.

2.2 Omron

2.2.1 System Structure

The following describes the system structure for connecting the GP to Omron PLCs.

The Cable Diagrams mentioned in the following tables are listed in the section titled "2.2.2 Cable Diagrams".



If the PLC is used in RUN mode, "PLC COM. ERROR (02: 01)" may briefly display. The GP subsequently forces the PLC to enter the MONITOR mode (data can be written to the PLC, while it is in RUN mode); data communication will not be affected.

■ **SYSMAC C Series** (using Link I/F)

CPU	Link I/F	Cable Diagram	Cables	GP
	Upper Link Unit	4	•	
С 200Н	C 200H-LK201 *1 C 120-LK201-V1 *2	RS-232C (Cable Diagram 1)	Digital's GP410-IS00-O (5m)	
	C 200H-LK201-V1 C 200H-LK202 *1 C 120-LK202-V1 *2	RS-422 (Cable Diagram 2)		
C200HS	C 200H-LK201 ^{*1} C 120-LK201-V1 ^{*2}	RS-232C (Cable Diagram 1)	Digital's GP410-IS00-O (5m)	
	C 200H-LK202 *1	RS-422 (Cable Diagram 2)		
	CPU unit Link I/F *3	RS-232C (Cable Diagram 3)	Digital's GP000-IS03-MS (3m)	
C500, C500F,	C120-LK201-V1 *2	RS-232C (Cable Diagram 1)	RS-232C	GP Series
C1000H, C2000, C2000H	C120-LK202-V1 ^{*2}	RS-422 (Cable Diagram 2)	Digital's GP410-IS00-O (5m)	
	C500-LK201-V1 *1	RS-232C (Cable Diagram 1) RS-422 (Cable Diagram 2)		
	C 500-LK203 *1	RS-232C (Cable Diagram 1)		
C1000HF	C500-LK203 *1	RS-422(Cable Diagram 4)		
C20H, C28H, C40H	CPU unit Link I/F *3	RS-232C (Cable Diagram 5)		
C120, C120F	C 120-LK201-V1 *2	RS-232C (Cable Diagram 1)	Digital's GP410-IS00-O (5m)	
	C120-LK202-V1 *2	RS-422 (Cable Diagram 2)		

^{* 1} Base installation type.

^{* 2} CPU installation type.

^{* 3} Connect to the RS-232C port.

СРИ	Link I/F	Cable Diagram	Cables	GP
CQM1-CPU42	RS-232C Port on	RS-232C (Cable Diagram 3)	Omron's RS-232C cable	
	CPU unit		XW2Z-200S (2m)	
			XW2Z-500S (5m)	
			Digital's GP000-IS03-MS (3m)	
SRM1-C02	CPM1-CIF01	RS-232C (Cable Diagram 3)	Omron's RS-232C cable	
CPM2A	DC 222C Dort on		XW2Z-200S (2m)	
	RS-232C Port on		XW2Z-500S (5m)	
	CPU unit		Digital's GP000-IS03-MS (3m)	
	CPM1-CIF11	RS-422 (Cable Diagram 9)		
CPM1-20CDR-A	CPM1-CIF01	RS-232C (Cable Diagram 3)	Omron's RS-232C cable	
			XW2Z-200S (2m)	
			XW2Z-500S (5m)	GP Series
			Digital's GP000-IS03-MS (3m)	
	CPM1-CIF11	RS-422 (Cable Diagram 9)		
CQM1H-CPU21	RS-232C Port on	RS-232C (Cable Diagram 3)	Omron's RS-232C cable	
	CPU unit		XW2Z-200S (2m)	
			XW2Z-500S (5m)	
			Digital's GP000-IS03-MS (3m)	
CPM2C	Peripheral port on	RS-232C	Omron's cable	
	CP2C-CIF01		CS1W-CN114 and CQM1-	
			C1F01are required.	
	RS-232C port on	RS-232C (Cable Diagram 3)	Omron's RS-232C cable	
	CPM2C-CIF01		XW2Z-200S (2m)	
			XW2Z-500S (5m)	
			Digital's GP000-IS03-MS (3m)	

CPU 1 Cables GP C200HS, SRM1-C02, Omron Isolation CQM1-CPU11, CQM1-CPU42, CPM1-20CDR-A, CQM1H-CPU21 2 CPM2C 2 CPM2C 2

■ SYSMAC C Series (CPU Direct Connection)

- * 1 Connect to a peripheral port.
- *2 Omron's cable (CSIW-CN114) is required.



The CQM1-CPU11 has only one peripheral port, so a programming console cannot be used at the same time with the GP.



If power to CQM1 is turned OFF while it is connected to the GP, "RUN" (operation) will stop. To change CQM1 to RUN mode when the power is turned back ON, change the CQM1's [Power ON Operation Mode Setting] to [RUN].

■ SYSMAC-a Series (using Link I/F)

CPU	Link I/F	Cable Diagram	Cables	GP
	Communication board	-	•	
C200HX-CPU85-Z C200HE-CPU64	C200HW-COM06	RS-232C (Cable Diagram 3)	Omron's RS232C cable XW2Z-200S (2m)	
C200HG-CPU44 C200HG-CPU42		RS422 (Cable Diagram 6)	XW2Z-500S (5m) Digital's RS232C cable	
C200HG-CPU63 C200HG-CPU43	RS-232C Port on	RS-232C (Cable Diagram 3)	GP000-IS03-MS (3m) Omron's RS232C cable	
C200HE-CPU42-Z	CPU unit		XW2Z-200S (2m) XW2Z-500S (5m) Digital's RS232C cable GP000-IS03-MS (3m)	GP Series
C200HX-CPU64-Z	C200H-LK202-V1	RS-422 (Cable Diagram 2)	(
	C 200H-LK201-V1	RS-232C (Cable Diagram 1)	Digital's RS232C cable GP410-IS00-0 (5m)	

CPU Link I/F Cable Diagram Cables GP Upper Link Unit CV500, CV500-LK201 RS-232C <SIO port 1 connection> RS232C CV1000, (Cable Diagram 1) (SIO port 1 connection) CVM1 Digital's GP410-IS00-O (5m) RS-232C <SIO port 2 connection> (Cable Diagram 7) **GP** Series RS422 <SIO port 2 connection> (Cable Diagram 8) RS-232C (Cable Diagram 7) CPU unit Link I/F RS422 (Cable Diagram 8)

■ SYSMAC CV Series (using Link I/F)

■ SYSMAC CS1 Series (1:1)

CPU	Link I/F	Cable Diagrams	Cables	GP
		◀	 	
CS1H-CPU67	RS-232C port for	RS-232C	Digital's	
CS1H-CPU66	CPU unit	(Cable Diagram 3)	GP000-IS03-MS(3m)	
CS1H-CPU65				
CS1H-CPU64			Omron's	
CS1H-CPU63			XW2Z-200S (2m)	
CS1G-CPU45			XW2Z-500S (5m)	
CS1G-CPU44	Peripheral Port for	RS-232C *1	Omron's	
CS1G-CPU43	CPU unit	(Cable Diagram 11)	CS1W-CN225 *1	
CS1G-CPU42			CS1W-CN625 *1	GP Series
	CS1W-SCU21	RS-232C (Port 1,2)	Digital's	
		(Cable Diagram 3)	GP000-IS03-MS(3m)	
	CS1W-SCB21	RS-232C (Port 1,2)		
		(Cable Diagram 3)	Omron's	
	CS1W-SCB41	RS-232C (Port 1)	XW2Z-200S (2m)	
		(Cable Diagram 3)	XW2Z-500S (5m)	
		RS-422 (Port 2)		
		(Cable Diagram 10)		

^{*1} When connecting to the peripheral port, a particular cable is needed between GP and the CS1W-CN*25 cable, refer to this section's Cable Diagram 11 for the required cable.

^{*1} Connect to the Host Link Port

■ SYSMAC CJ Series

CPU	Link I/F	Cable Diagrams	Cables	GP
			<u> </u>	
CJ1G-CPU44	Peripheral port on CPU	RS-232C	Digital's	
CJ1G-CPU45	unit	(Cable Diagram 11)	CS1W-CN225 ^{*1}	
			CS1W-CN625 *1	
	RS-232C port on CPU	RS-232C	Digital's	
	unit	(Cable Diagram 3)	GP000-IS03-MS (3m)	
			Omron's	
			XW2Z-200S (2m)	
			XW28-500S (5m)	GP Series
	CJ1W-SCU41	RS-232C (Port 2)	Digital's	
		(Cable Diagram 3)	GP000-IS03-MS (3m)	
			Omron's	
			XW2Z-200S (2m)	
			XW28-500S (5m)	
	CJ1W-SCU41	RS-422 (Port 1)		
		(Cable Diagram 10)		

^{*1} When connecting to the peripheral port, another cable is required between the GP and the CS1W-CN*25 cable. For details, refer to this section's Cable Diagram 11.

2.2.2 Cable Diagrams

The cable diagrams illustrated below and the cable diagrams recommended by Omron Corp. may differ; in any case, using these cables for your PLC operations will not cause any problems.

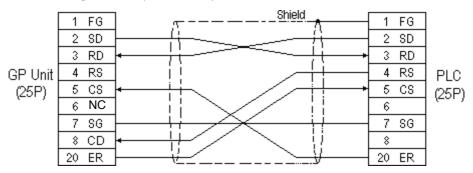


Ground your PLC's FG terminal according to your country's applicable standard. For details, refer to the corresponding PLC manual.



- Connect the FG line of the Shield cable to either the GP or PLC, depending on your environment. When using a connector hood and grounding the FG line, be sure to use an electrical conductor.
- For the RS-232C connection, use a cable length less than 15m.

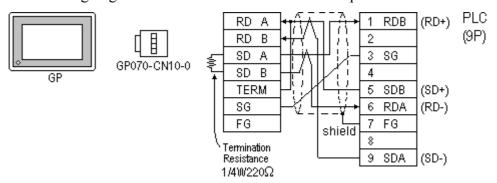
Cable Diagram 1 (RS-232C)



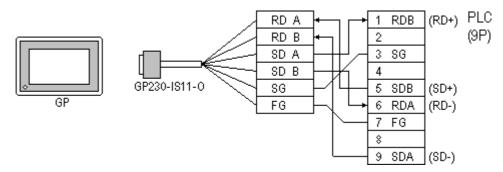
Cable Diagram 2 (RS-422)



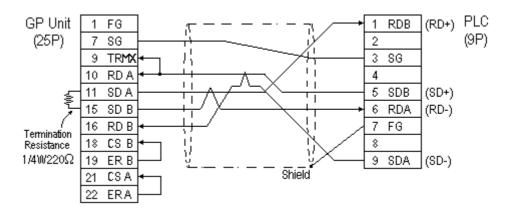
- Turn on the Termination Resistor switch, on the PLC.
- Signals A and B are opposite on the GP and PLC.
- When using Digital's RS-422 connector terminal adapter GP070-CN10-0



• When using Digital's RS-422 Cable, GP230-IS11-0



• When making your own cable connections



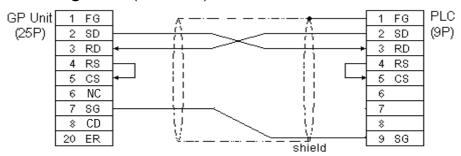


When making your own cable connections, we recommend using Hirakawa Densen's H-9293A (CO-HC-ESV-3P*7/0.2) cable.



- When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.
- If a shielded cable is connected to the RS-422 port, it must be no longer than 500 meters.
- If a communications cable is used, it must be connected to the SG (signal ground).

Cable Diagram 3 (RS-232C)



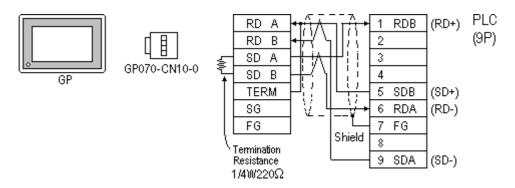


While the above connection diagram will differ slightly from the Omron XW2Z-200S (2m) and XW2Z-500S (5m) RS-232C cables, the system will operate smoothly using this design.

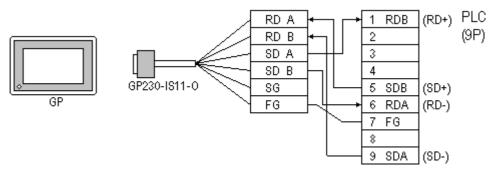
Cable Diagram 4 (RS-422)



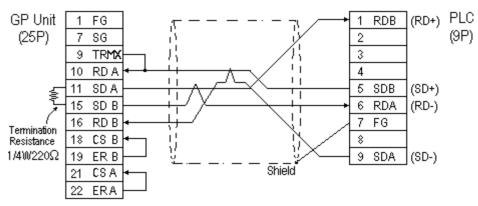
- Turn the PLC's Termination Resistor switch ON.
- Signals A and B are opposite on the GP and PLC.
 - When using Digital's RS-422 connector terminal adapter GP070-CN10-0



• When using Digital's RS-422 Cable, GP230-IS11-0



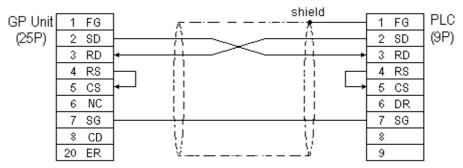
• When making your own cable connections





- When making your own cable connections, we recommend using Hirakawa Densen's H-9293A (CO-HC-ESV-3P*7/0.2) cable.
- When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.

Cable Diagram 5 (RS-232C)





Hirakawa Densen's H-9293A (CO-HC-ESV-3P*7/0.2) cable is recommended as the connection cable.

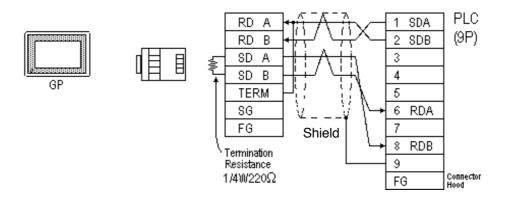
Cable Diagram 6 (RS-422)



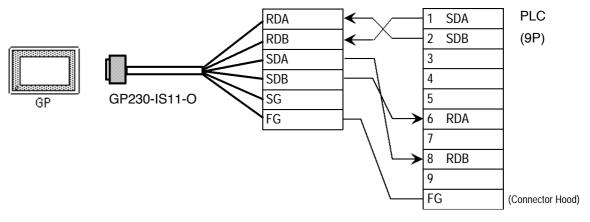
- Turn on the Termination Resistor switch, on the PLC side.
- Signals A and B are opposite on the GP and PLC.
- The connector and the connector hood, listed below, are included with the Communication board.

Connector XW2A-0901
Connector Hood XW2S-0901

• When using Digital's RS-422 connector terminal adapter GP070-CN10-0



• When using Digital's RS-422 connector terminal adapter GP230-IS11-0



PLC GP Unit 1 FG SDA 1 (9P) (25P) 2 SDB 7 SG TRMX 3 10 RD A 4 5 SDA 11 15 SD B 6 RDA 16 RD B Termination 18 CS B 8 RDB Resistance $1/4W220\Omega$ 19 ER B 9 Shield CSA FG (Connector Hood)

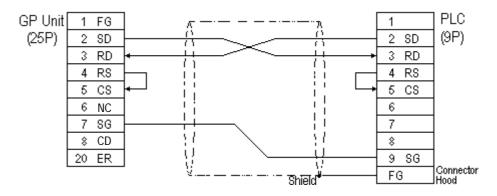
• When making your own cable connections



- When making your own cable connections, we recommend using Hirakawa Densen's H-9293A (CO-HC-ESV-3P*7/0.2) cable.
- When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.

Cable Diagram 7 (RS-232C)

ERA





One each of the connector and connector hood, listed below, are included with the CV500/CV1000 CPU unit. Only these connectors listed below can be used.

Connector XM2A-0901

Connector Hood XM2S-0911

• Hirakawa Densen's H-9293A (CO-HC-ESV-3P*7/0.2) cable is recommended as the connection cable.

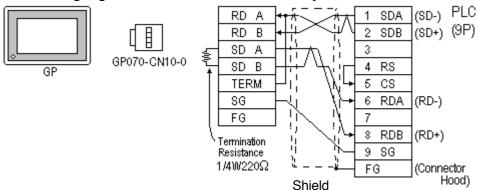
Cable Diagram 8 (RS-422)



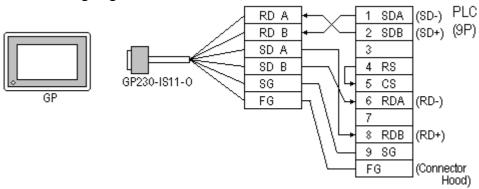
- Setup the PLC's RS-232C/RS-422 toggle switch to RS-422.
- Turn on the Termination Resistor switch, on the PLC side.
- Signals A and B are opposite on the GP and PLC
- The connector and connector hood, listed below, are included with the CV500/CV1000 CPU unit. Only these connectors can be used.

1 Connector XM2A-0901 1 Connector Hood XM2S-0911

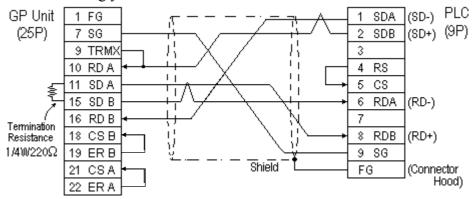
• When using Digital's RS-422 connector terminal adapter GP070-CN10-0



• When using Digital's RS-422 Cable, GP230-IS11-0



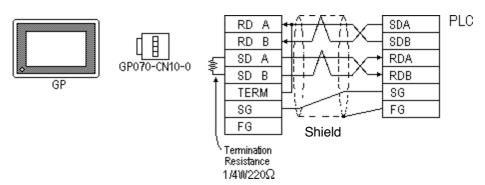
When making your own cable connections



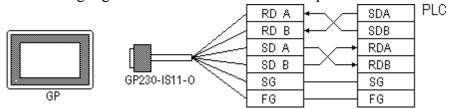


- When making your own cable connections, we recommend using Hirakawa Densen's H-9293A (CO-HC-ESV-3P*7/0.2) cable.
- When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.

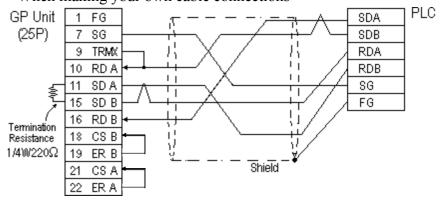
Cable Diagram 9 (RS-422)



• When using Digital's RS-422 connector terminal adapter GP230-IS11-0

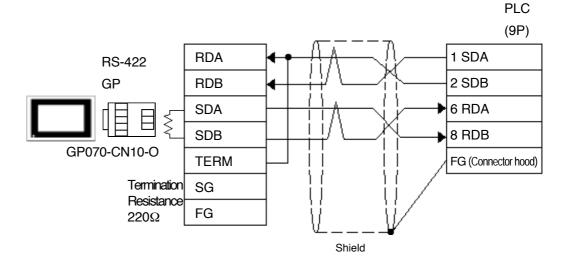


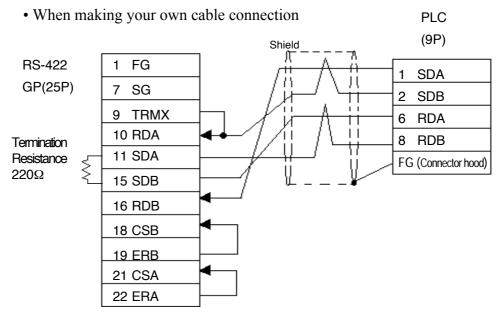
• When making your own cable connections



Cable Diagram 10 (RS-422)

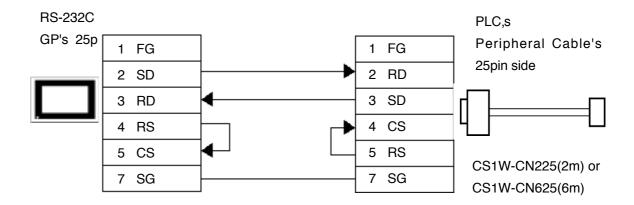
• When using Digital's RS-422 connector terminal adapter GP070-CN10-0





- Note:
 - Note: Turn ON the PLC's termination resistance switch.
 - When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.
 - Be aware the A and B signals of the GP and PLC are opposite to each other.
 - The cable length must be 500 meters or less.
 - The Hiraga Hutech's CO-HC-ESV-3PX7/0.2 cable is recommended for this connection.

Cable Diagram 11 (RS-232C)



2.2.3 Supported Devices

The following describes the range of devices supported by the GP.

■ SYSMAC C Series

	Setup	System	Area	here
--	-------	--------	------	------

Device	Bit Address	Word Address	Particulars	i
I/O Relay				
Internal Hold Relay	00000 ~ 51115	000 ~ 511	*1	
Special Hold Relay				
Analog Setup Value Storage Area	22000 ~ 22315	220 ~ 223	*2	
Data Link Relay	LR0000 ~ LR6315	LR00 ~ LR63		
Auxilary Memory Relay	AR0000 ~ AR2715	AR00 ~ AR27		L/H
Latch Relay	HR0000 ~ HR9915	HR00 ~HR99		
Timer (contact)	ПМ000 ~ ПМ511			
Counter (contact)	CNT000 ~ CNT511			
Timer (current value)		TIM000 ~ TIM511		
Counter (current value)		CNT000 ~ CNT511		
Data Memory		DM0000 ~ DM9999	Bit 1 5 1	

^{* 1} Depending on the CPU, differ the range of each supported device and the possibility of Data wirte. Before using, refer to each CPU User Manual.

^{* 2} Can only be used by CQM1-CPU42.



The method of writing bits will differ depending on the GP series.

<GP-*30 series>

When the bit write operation (other than *Reverse*) is performed, the corresponding word address will set the bits to 0 (except the designated bits).

<Except GP-*30 series>

When the bit write operation is performed, the GP reads the PLC's corresponding word address and turns a bit ON, then send back to PLC. Do not write to the word address from the ladder program in the middle of this operation.

• When running a GP-*30 Series ladder program, be aware of the above points.

■ SYSMAC-\alpha Series

		Setup S	ystem Area he	re.
Device	Bit Address	Word Address	Particulars	
I/O Relay I	00000 ~ 02915	000 ~ 029		
I/O Relay II	30000 ~ 30915	300 ~ 309		
Internal Hold Relay I	03000 ~ 23515	030 ~ 235		
Internal Hold Relay II	31000 ~ 51115	310 ~ 511		
Special Hold Relay I	23600 ~ 25507	236 ~ 255		
Special Hold Relay II	25600 ~ 29915	256 ~ 299		
Latch Relay	HR0000 ~ HR9915	HR00 ~ HR99		L/H
Auxilary Memory Relay	AR0000 ~ AR2715	AR00 ~ AR27		ЦΠ
Link Relay	LR0000 ~ LR6315	LR00 ~ LR63		
Timer (contact)	TIM000 ~ TIM511			
Counter (contact)	CNT000 ~ CNT511			
Timer (current value)		ПМ000 ~ ПМ511		
Conter (current value)		CNT000 ~ CNT511		



• The method of writing bits will differ depending on the GP series.

<GP-*30 series>

Data Memory

When the bit write operation (other than *Reverse*) is performed, the corresponding word address will set the bits to 0 (except the designated bits).

DM0000 ~ DM6655

Bit] 5]

<Except GP-*30 series>

When the bit write operation is performed, the GP reads the PLC's corresponding word address and turns a bit ON, then send back to PLC. Do not write to the word address from the ladder program in the middle of this operation.

When running a GP-*30 Series ladder program, be aware of the above points.

SYSMAC C or α series communications mode selection

When using the SYSMAC C or α series with the GP in OFFLINE mode, either mode 2 or mode 1 can be selected during the entry of the initial settings. Be aware you cannot disignate this settings from GP-PRO/PBIII for Windows.

• Mode 2: This is a newly added communications mode. This mode is enabled when less than 64 devices have been designated by a single screen's tags. The communications speed has been improved. Select this mode when using less than 64 devices.

 Mode 1: A communications mode equivalent to the old one. This mode is valid for 64 or more devices have been specified by a single screen's tags. The communications speed has been improved. Select this mode when using 64 or more devices.



- If the on-screen data memory area in the GP is initialized or if the on-screen data is transferred from the drawing software, the GP returns to mode 1 (its initial setting). Use the offline settings area to select mode 2.
- In mode 2, the communications speed may not always be improved depending on which tags and system area are used, as well as how the read areas are allocated.

■ SYSMAC-CV Series

Setup System Area here.

Device	Bit Address	Word Address	Particulars	i
I/O Relay I	00000 ~ 19915	000 ~ 199		
Internal Hold Relay	00000 - 17713	000 - 177		
Sysmac BUS/2 Remote I/O Relay	020000 ~ 099915	0200 ~0999		
Data Link Relay	100000 ~ 119915	1000 ~ 1199		
Special Hold Relay	A00000 ~ A51115	A000 ~ A511		
Latch Relay	120000 ~ 149915	1200 ~ 1499		
Internal Aux. Relay	190000 ~ 229915	1900 ~ 2299		L/H
SYSBUS Remote I/O Relay	230000 ~ 255515	2300 ~ 2555		
Timer (contact)	T0000 ~ T1023			
Counter (contact)	C 0000 ~ C 1023			
Timer (current value)		T0000 ~ T1023		
Conter (current value)		C 0000 ~ C 1023		
Data Memory		D0000 ~ D9999	Bit 1 51	



- Write operations cannot be performed on the *Timer* and *Counter* bit devices.
- The method of writing bits will differ depending on the GP series.

<GP-*30 series>

When the bit write operation (other than *Reverse*) is performed, the corresponding word address will set the bits to 0 (except the designated bits).

<Except GP-*30 series>

When the bit write operation is performed, the GP reads the PLC's corresponding word address and turns a bit ON, then send back to PLC. Do not write to the word address from the ladder program in the middle of this operation.

• When running a GP-*30 Series ladder program, be aware of the above points.

■ SYSMAC CS1/CJ Series

In this list, "Exp." means "Expansion". Setup system area here.

, ,			. ,	
Device	Bit Address	Word Address	Particulars	
Channel I/O	C10000000 ~ C10614315	C100000 ~ C106143		
Internal Auxiliary Relay	W00000 ~ W51115	W000 ~ W511		
Hold Relay	H00000 ~ H51115	H000 ~ H511		
Special Auxiliary Relay	A00000 ~ A95915	A000 ~ A959	**	1
Timer(Contact)	T0000 ~ T4095		*,	3
C ounter(C ontact)	C 0000 ~ C 4095		*,	3
Timer(Current)		T0000 ~ T4095		
C ounter(C urrent)		C 0000 ~ C 4095		L/H
Data Memory	D0000000 ~ D3276715	D00000 ~ D32767	**	2
Exp. Data Memory (E0 ~ EC)	E00000000 ~ EC3276715	E000000 ~ EC32767	*,	1
Exp. Data Memory (Current Bank)		EM00000 ~ EM32767	B : 15)	5
Task Flag		TK0 ~ TK30	÷ 2] B; 15) *	3
Index Register		IR0 ~ IR15	B i t 31	3
Data Register		DR0 ~ DR15	В і т15	3

^{*1} Addresses A000 to A477 cannot be written to.

When using the Communication Board (CS1W-SCB21/41), addresses D32000 to D32767 are used for PLC settings, should not be written to from the GP.

Reference ★ For details about each device, refer to Omron's SYSMAC CS1/CJ Series Communication Board CS1W-SCB21-/41 Communication CS1W-SCU21/CJ1W-SCU41 Users Manual.

^{*2} When using the Communication Unit (CS1W-SCU21/CJ1W-SCU41), addresses D30000 to D31599, since they are used for PLC system settings, should not be written to from the GP.

^{*3} Cannot be written to while running.

^{*4} The range of Expansion Data Memory varies depending on the CPU type.

^{*5} Expansion Data Memory (Current Bank) does not exist on SYSMAC CJ Series.

2.2.4

Environment Setup

The following lists Digital's recommended PLC and GP communication settings.

■ SYSMAC C Series

GP Setup		Upper Link Unit Setu	Upper Link Unit Setup		
Baud Rate	19200 bps	Baud Rate	19200 bps		
Data Length	7 bits	Data Bit	7 bits		
Stop Bit	2 bits	Stop Bit	2 bits		
Parity Bit	Even	Parity Bit	Even		
Data Flow Control	ER Control				
Communication Format (RS-232C)	RS-232C	Communication Format ¹ (RS-232C)	RS-232C		
Communication Format (RS-422)	4-wire type	Communication Format ¹ (RS422)	RS-422		
	•	Command Level ¹¹	Level 1,2,3 is valid		
		Relation ^{*1}	1:N		
		DC +5V power supply *1	No		
		CTS Setup 1	Normally On		
		Mode Setup *2	Upper Link		
		Communication Conditons Setting Switch *3	OFF		
		Communication Port Function Setting Switch *4	SW1:OFF SW2:ON		
Unit No.	0	Station Number	0		

^{*1} This setup is unavailable for the RS-232C port of C200HS, CQM1 and CPH2A.

■ SYSMAC-a Series (using Communication board)

GP Setup		Communication board	Setup
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	7 bits	Data Bit	7 bits
Stop Bit	2 bits	Stop Bit	2 bits
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER Control		
Communication Format (RS-232C)	RS-232C		
Communication Format (RS-422)	4-wire type	RS-422/485 cable (2-wire/4-wire type) switching setting (dip switch 1)	4
Unit No.	0	Station Number	0



When using the above list's recommended settings, please perform the following. Port A: Store "0001" in DM6555, and store "0304" < HEX > in DM6556.

Port B: Store "0001" in DM6550, and store "0304" < HEX > in DM6551.

^{*2} This setup is available only for the RS-232C port of C200HS and CQM1.

^{*3} This setup is available only for CPM2A.

^{*4} This setup is available only for CPM2C.

■ SYSMAC-\alpha Series (when using the CPU's RS-232C port)

GP Setup		RS-232C port Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	7 bits	Data Bit	7 bits
Stop Bit	2 bits	Stop Bit	2 bits
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER Control		
Communication Format	RS-232C	Using Mode	Host (PLC) Link
Unit No.	0	Station Number	0



When using the above list's recommended settings, please follow the instructions given here.

CPU 232C Part: Stare "0001": B346647 CPU 232C Port: Store "0001" in DM6645, and store "0304" <HEX> in DM6646.

■ SYSMAC CV Series

GP Setup		Upper Link Unit Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	7 bits	Data Bit	7 bits
Stop Bit	2 bits	Stop Bit	2 bits
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER Control		
Communication Format (RS-232C)	RS-232C	Communication Format (RS-232C)	RS-232C
Communication Format (RS-422)	4-wire type	Communication Format (RS-422)	RS-422
Unit No.	0 *1	Station Number	0 *1

^{* 1} When GP is connected to the Port 1 on the Upper Link Unit CV500-LK201, the station number must be fixed as "0". (The station number cannot be set on the PLC.)

■ SYSMAC CS1/CJ Series <CPU unit's RS-232C Port>

GP Setup		PLC Setup	
Baud Rate	19200	Baud Rate	19200
Data Length	7	Data Length	7
Stop Bit	2	Stop Bit	2
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER		
Communication Format	RS-232C		
Unit No.	0	Station No.	0
			SW1: OFF
		Din Cusitah	SW5: OFF
		Dip Switch	SW7: OFF
			SW8: OFF
		Mode Setup	Upper Link

■ SYSMAC CS1/CJ Series <CPU unit's Peripheral Port>

GP	Setup		PLC Setup
Baud Rate	19200	Baud Rate	19200
Data Length	7	Data Length	7
Stop Bit	2	Stop Bit	2
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER		
Communication Format	RS-232C		
Unit No.	0	Station No.	0
			SW1: OFF
		Dip Switch	SW4: ON
		DIP SWIICH	SW7: OFF
			SW8: OFF
		Mode Setup	Upper Link

■ SYSMAC CS1/CJ Series

< When using the Communication Board /Unit>

GP Setu	р	PLC Setup	
Baud Rate	19200	Baud Rate	19200
Data Length	7	Data Length	7
Stop Bit	2	Stop Bit	2
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER		
Communication Format (using RS-232C)	RS-232C		
Communication Format (using RS-422)	4-wire type	WIRE (2-wire/4-wire type Switch)	4-wire type
		TERM (Termination Resistance Switch)	Termiantion Resistance ON
Unit.No	0	Upper Link Station No.	0
		Serial Communicaion mode	Upper Link
		Communication Delay Time	0
		CTS Control	None

2.3 Fuji Electric

2.3.1 System Structure

The following describes the system structure for connecting the GP to Fuji Electric Corporation, Ltd. PLCs.

Reference Cable Diagrams mentioned in the following tables are listed in the section titled "2.3.2 Cable Diagrams".

■ MICREX-F Series (using Link I/F)

CPU	Link I/F	Cable Diagram	Cables	GP
	PC I/F Module/ Generic I/F		-	
F80H, F120H, F250	FFU-120B PC Interface Module	RS-232C (Cable Diagram 1)	RS-232C Digital's GP410-IS00-O (5m)	
		RS-422 (Cable Diagram 2)		GP Series
F70S (NC1P-S0)	NC1L-RS2 (Generic Interface)	RS-232C (Cable Diagram 1)	Digital's GP410-IS00-O (5m)	

■ MICREX-F Series <T-link> (using Link I/F)

CPU	Link I/F	Cable Diagram	Cables	GP
	T-Link PC Interface Module		•	
F80H, F120H,	FFK120A-C10	RS-232C	RS-232C	
F250		(Cable Diagram 1)	Digital's GP410-IS00-O (5m)	
F30, F50, F60,				
F80, F81, F120		RS-422		GP Series
F120S, F200		(Cable Diagram 2)		
	FFK100A-C10	RS-232C		
		(Cable Diagram 3)		

■ MICREX-F Series (FLT-ASFK) (CPU Direct Connection)

CPU	Adapter	Cable Diagram	Cables	GP
	PC Loader adapter			
			*	
F80H, F250	Fuji Electric's FLT-ASFK	RS-232C (Cable Diagram 1)	RS-232C Digital's GP410-IS00-O	GP Series

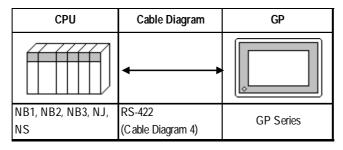
■ FLEX-PC Series (using Link I/F)

CPU	Link I/F	Cable Diagram	Cables	GP
	General SIO Unit/ General I/F Module		*	
NB1, NB2, NB3	NB-RS1-AC	RS-232C	RS-232C	
	(Generic RS-232C/	(Cable Diagram 1)	Digital's GP410-IS00-O (5m)	
	485 SIO unit)			
		RS-422		
		(Cable Diagram 2)		
NJ	NJ-RS2 (Generic RS-	RS-232C	Digital's GP410-IS00-O (5m)	
	232C SIO interface	(Cable Diagram 1)		
	module)			GP Series
	NJ-RS2 (Generic RS-	RS-422		01 001103
	485 SIO interface	(Cable Diagram 2)		
	module)			
NS	NS-RS1 (Generic RS-	RS-232C	RS-232C	
	232C/485 interface	(Cable Diagram 1)	Digital's GP410-IS00-O (5m)	
	module)			
		RS-422		
		(Cable Diagram 2)		



Places noted as RS-422 can also use RS-485 on the PLC side.

■ FLEX-PC Series (CPU Direct Connection)





When using Digital's T-Link I/F Unit, refer to the GP-*50/70 Series T-Link I/F Unit User's Manual.

2.3.2

Cable Diagrams

The cable diagrams illustrated below and the cable diagrams recommended by Fuji Electric Co., Ltd. may differ; in any case, using these cables for your PLC operations will not cause any problems.

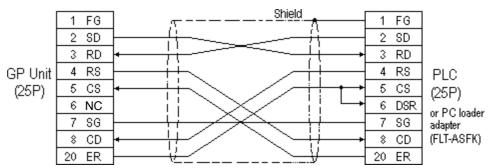


Ground your PLC's FG terminal according to your country's applicable standard. For details, refer to the corresponding PLC manual.



- Connect the FG line of the Shield cable to either the GP or PLC, depending on your environment. When using a connector hood and grounding the FG line, be sure to use an electrical conductor.
- For the RS-232C connection, use a cable length less than 15m.
- If a communications cable is used, it must be connected to the SG (signal ground).

Cable Diagram 1 (RS-232C)

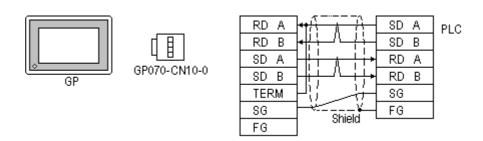


Cable Diagram 2 (RS-422)

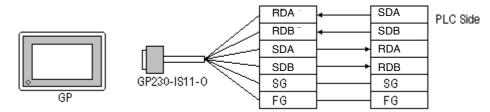


Turn on the Termination Resistor switch, on the PLC side.

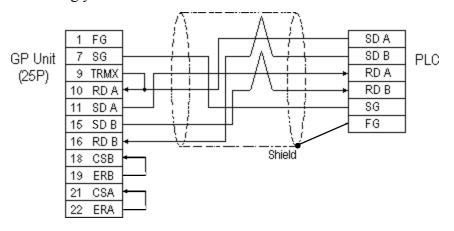
• When using Digital's RS-422 connector terminal adapter GP070-CN10-0



• When using Digital's RS-422 Cable, GP230-IS11-0



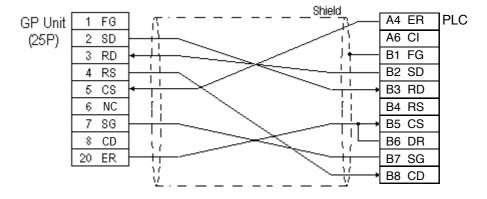
• When making your own cable connections





- When making your own cable connections, we recommend using Hitachi Densen's CO-SPEV-SB(A)3P*0.5S cable.
- When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.

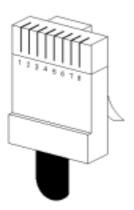
Cable Diagram 3 (RS-232C)



Cable Diagram 4 (RS-422)

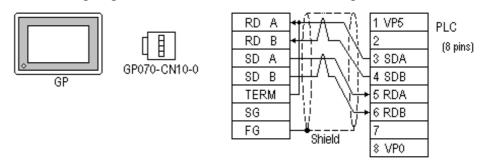


For the PLC side connector (modular-jack) you can use Hirose's TM11P-88P.

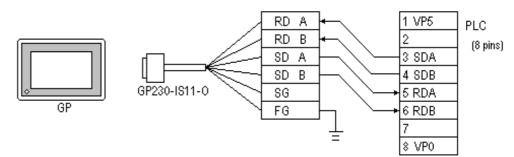


The pin numbers of the modular-jack for the connection diagrams below are based on the order described in the figure at the left.

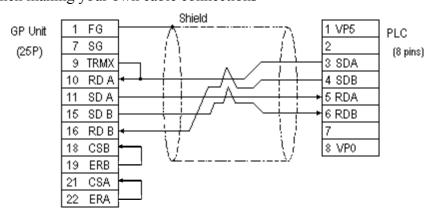
• When using Digital's RS-422 connector terminal adapter GP070-CN10-0



• When using Digital's RS-422 Cable, GP230-IS11-0



• When making your own cable connections





When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.

2.3.3

Supported Devices

The following describes the range of devices supported by the GP.

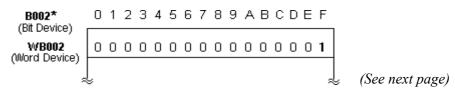
■ MICREX-F Series

Setup System Area here.

Device	Bit Address	Word Address	Particulars	
I/O Relay	B0000 ~ B511F	WB0000 ~ WB0511	*1	
Direct I/O		W24.0000 ~ W24.0159		
Auxilary Relay	M0000 ~ M511F	WM0000 ~ WM0511	*1	
Keep Relay	K0000 ~ K063F	WK000 ~ WK063	*1	
Differential Relay	D0000 ~ D063F	WD000 ~ WD063	*1 *4	
Link Relay	L0000 ~ L511F	WL000 ~ WL0511	*1	
Special Relay	F00000 ~ F4095F	WF0000 ~ WF4095	*1 *4	
Announce Relay	A00000 ~ A4095F	WA0000 ~ WA4095	*1 *4	
Timer 0.01 sec	T0000 ~ T0511			
Timer 0.1 sec	T0512 ~ T1023			
C ounter	C 0000 ~ C 0255			
Timer 0.01 sec (current value)		TR0000 ~ TR0511		
Timer 0.01 sec (setup value)		TS0000 ~ TS0511		H/L
Timer 0.1 sec (current value)		W9.000 ~ W9.511		
Counter (current value)		CR0000 ~ CR0255		
Counter (setup value)		CS0000 ~ CS0255		
Data Memory		BD0000 ~ BD4095	<u>Bit</u> 31)	
		DI0000 ~ DI4095	Bit 31)	
		S10000 ~ S14095	Bit 1 51	
File Memory		W30.0000 ~ W30.4094	Bit 1 5 1 2	
		W31.0000 ~ W31.4094	Bit 1 51 ·2	
		W32.0000 ~ W32.4094	Bit 151 °2	
		W33.0000 ~ W33.4094	<u>Bit</u> 31) ³	
		W34.0000 ~ W34.4094	<u>Bit</u> 31j ³	

^{* 1} The MSB (most significant bit) of a word device corresponds to bit **0** of the device, and the LSB (least significant bit) corresponds to bit **F**.

E.g. When hexadecimal data **0001** is written to a Word device address



(from previous page)

- * 2 Define and use 16 bit length data.
- * 3 Define and use 32 bit length data.
- * 4 This device cannot write. Use it only for reading.



- In this LS area, no 32-bit device is supported. Therefore, when the System Area is allocated to the BD, DL, or W33 devices, no LS Area other than the System Area can be used.
- When using the GP-570VM or GP-870VM, do not allocate the System Area for BD, DI, or W33 word addresses.
- Certain PLC models and versions may not be able to perform bit reading or writing.

```
F30 ....... not possible with versions 0.9 or lower F50 ...... not possible with versions 1.4 or lower F50H ..... not possible with versions 0.7 or lower F80 ..... not possible with any version F81 ..... not possible with any version F120 ..... not possible with any version F200 ..... not possible with any version
```

Check the information plate on the side of the PLC to find the PLC's version information.

When processing 16-bit single word data:

Internally, the GP basically processes 1 word as 16 bit length data. As a result, the reading and writing of 32 bit length data devices are processed as follows:

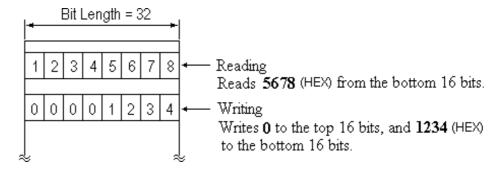
Reading From 32 bit data, reads data only from the bottom

16 bits

Writing From 32 bit data, writes data only to the bottom

16 bits, as 0 is written to the top 16 bits.

E.g. When data is **12345678** hex.

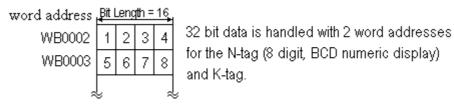


When processing 2 word 32-bit data:

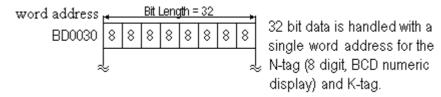
Two word addresses at bit length 16 are necessary to handle 32 bit long data, but when using a 32 bit device, only one word address needs to be specified.

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When using a 16 bit device



When using a 32 bit device



■ FLEX-PC Series

	Setup	System	Area	here.
--	-------	--------	------	-------

Device	Bit Address	Word Address	Particulars	5
Input Relay	X0000 ~ X07FF	WX0000 ~ WX07F		
Output Relay	Y0000 ~ Y07FF	WY0000 ~ WY07F		
Internal Relay	M0000 ~ M03FF	WM000 ~ WM03F		
Extended Internal Relay	M0400 ~ M1FFF	WM040 ~ WM1FF		
Latch Relay	L0000 ~ L03FF	WL000 ~ WL03F		
Extended Latch Relay	L0400 ~ L1FFF	WL040 ~ WL1FF		
Special Relay	M8000 ~ M81 FF	WM800 ~ WM81F		
Timer	T0000 ~ T03FF			
Counter	C0000 ~ C01FF			L/H
Timer (current value)		T0000 ~ T03FF		
Timer (setup value)		TS0000 ~ TS03FF	*1	
Counter (current value)		C0000 ~ C01FF		
Counter (setup value)		CS0000 ~ CS01FF	*1	
Data Register		D0000 - D2FFF	Bit 1 51	
Special Register		D8000 ~ D837F	Bit [5]	
Link Register		W0000 ~ W3FFF	Bit [5]	
File Register		R0000 ~ R7EFF	Bit 1 51	

^{* 1} Define and use 16 bit length data.



• Cannot read the *Timer* and *Counter* setup value. However, the write operation is possible only when the PLC is in program mode.

• When the *Timer* and *Counter* setup values are written from the GP, the ladder is changed so that the setup value uses a relative reference. For this reason, be careful when the setup value for the *Timer* and *Counter* uses an indirect ladder. Normally, *access* is recommended for indirectly referenced devices.

2.3.4

Environment Setup

The following tables list Digital's recommended PLC and GP communication settings.

■ MICREX-F Series (using PC I/F module FFU120B)

GP Setup		FFU120B Set	ир
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	7 bits	Data Length	7 bits
Stop Bit	2 bits	Stop Bit	2 bits
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER Control	Transfer Condition	DTR on/ CTS on
Communication Format (RS-232C)	RS-232C	MODE Switch (RS-232C)	1
Communication Format (RS-422)	4-wire type	MODE Switch (RS-422)	3
		Char. structure Switch	8 (INIT) is Off
		RS-485 Station # setup Switch (Only for RS-485)	0
Unit No.	0 (fixed)		



Setup this data in *File Definition*. Communication is not possible when using a Link I/F switch.

■ MICREX-F Series (using General Interface Module NC1L-RS2)

GP Setup		NC1L-I	NC1L-RS2 Setup		
Baud Rate	19200 bps	Baud Rate	19200 bps		
Data Length	8 bits	Data Bit	8 bits		
Stop Bit	1 bit	Stop Bit	1 bit		
Parlty Bit	None	Parity Bit	None		
Data Flow Control	ER Control	Transfer Condition	DTR on/CTS on		
Communication Format	RS-232C	MODE Setup	1		
		Character Structure Switch 8 (Initialize Setup Process) is Off (Initial file)			
Unit No.	0 (fixed)				



Setup this data in *File Definition*. Communication is not possible when using a Link I/F switch.

■ MICREX-F Series (using PC I/F capsule FFK120A-C10)

GP Setup		FFK120A-C10 S	etup
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	7 bits	Data Length	7 bits
Stop Bit	2 bits	Stop Bit	2 bits
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER Control	Transfer Condition	None
Communication Format (RS-232C)	RS-232C	MODE Switch (RS-232C)	1
Communication Format (RS-422)	4-wire ty pe	MODE Switch (RS-422)	3
		RS-485 Station # setup Switch (Only when using RS-485)	0
Unit No.	0 (fix ed)		



Setup this data in *File Definition*. Communication is not possible when using a Link I/F switch.

■ MICREX-F Series (using PC I/F capsule FFK100A-C10)

GP Setup		FFK100A-C10 Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	7 bits	Data Length	7 bits
Stop Bit	2 bits	Stop Bit	2 bits
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER Control		
Communication Format (When using RS-232C)	RS-232C		
Unit No.	0 (fixed)		
		PK access	Permitted
		Code conversion	Available



Setup this data in *File Definition*. Communication is not possible when using a Link I/F switch.

■ MICREX-F Series (FLT-ASFK)

GP Setup		Adapter Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	8 bits	Data Length	8 bits
Stop Bit	1 bit		
Parity Bit	None	Parity Bit	OFF
		ON/OFF	None
		EVEN/ODD	
Data Flow Control	ER Control		-
Communication Format	RS-232C		-
Unit No.	0		
		MODE	LOADER

■ FLEX-PC Series (using Link I/F)

GP Setup		Communication Unit / Interface Module Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	7 bits	Data Length	7 bits
Stop Bit	1 bit	Stop Bit	1 bit
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER Control	Transfer Condition	DTR on/ CTS on
Communication Format (RS-232C)	RS-232C	MODE Switch (RS-232C)	1
Communication Format (RS-422)	4-wire type	MODE Switch (RS-422)	3
Unit No.	1	Station No.	1

■ FLEX-PC Series (using CPU Direct Connection)

GP Setup		PLC side Setup
Baud Rate	19200 bps(fix ed)	
Data Length	8 bits (fixed)	
Stop Bit	1 bit (fix ed)	
Parity Bit	Odd (fixed)	
Data Flow Control	ER Control (fixed)	
Communication Format	4-wire type (fixed)	
Unit No.	1 (fix ed)	



2.4 Yaskawa Electric

2.4.1 System Structure

The following describes the system structure for connecting the GP to Yaskawa PLCs.

Reference The Cable Diagrams mentioned in the following tables are listed in the section titled "2.4.2 Cable Diagrams".

■ Memocon-SC Series (using Link I/F)

CPU	Link I/F	Cable Diagram	Cables	GP
	SIO Module		•	
U84, 84J	JAMSC-C8110	RS-232C	Yaskawa Electric Corp's	
U84S	JAMSC-C8610	(Cable Diagram 1)	memory bus cable JZMSZ-W1015-21*1	
GL40S	JAMSC-IF61		JZIVI 5Z-VV 1015-21	
GL403	JAMSC-IF41A			
GL60H, GL70H	JAMSC-IF60			GP series
GLOOIT, GL70IT	JAMSC-IF61			
	JAMSC-IF60			
GL60S	JAMSC-IF61			
OL003	JAMSC-IF612	RS-422		
	JANISC-II UIZ	(Cable Diagram 2)		

^{* 1} Due to the size of its connector case, this cable cannot be used for GP-270, GP-370, GP-377 and GP-377R series.



Using Multiple Link I/Fs, maximum of 4 GP units can be connected at one time.

■ Memocon-SC Series (CPU Direct Connection)

CPU	Cable Diagram	Cables	GP
	-	-	
GL120	RS-232C (Cable Diagram 3)	Yaskawa Electric Corp's JZMSZ-120W0200-03	GP Series

Chapter 2 - PLC-GP Connection

■ Control Pack Series (CPU Direct Connection)

CPU	Cable Diagram	Cables	GP
	-	*	
CP-9200	RS-232C	Yaskawa Electric Corp's	GP Series
CP-9200H	(Cable Diagram 1)	Memo BUS Cable JZMSZ-W1015-21 *2	

- * 1 Connect to CP9200/CP9200H's machine controller (4CN, 6CN).
- * 2 Due to the size of its connector case, this cable connot be used for GP-270, GP-370, GP-377, GP-377R series.



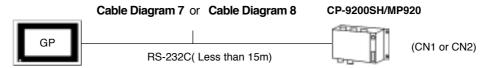
Two GPs can be connected to one CP-9200/CP9200H. When using two GPs, set it up so that the System Area of the GPs do not overlap.

■ Control Pack Series (Link I/F)

CPU	Link I/F	Cables	GP
		+	
	JACP-317217(CN1)	(Cable Diagram 7) (RS-232C)	
CP-9200SH ^{*3}	JACP-317217(CN2)	(Cable Diagram 8) (RS-232C)	GP Series
	JACP-317217(CN3)	(Cable Diagram 9) (RS-422)	

* 3 <1:1 Connection>

The drawing shown below is for the 1:1 connection.(CN means the circuit number.)

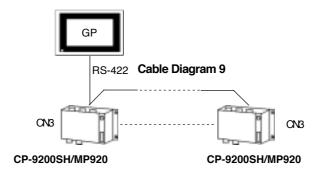




CN1, CN2, CN3 can be connected at the same time, however, only one GP can be connected to one CN since it cannot use the Multi Link connection.

When connecting a GP77R series' unit to a "*****_21700_******" or an older version of a 217IF unit, set the GP-PRO/PB III software "GP settings" Area's "Send Wait Time" to 20ms. ("GP Settings" - "Communication Settings" - "Advanced...")

< 1:n Communication >





- Within this system a total of thirty two (32) CPU units can be connected to one GP. The GP is designed so that it can be connected with a maximum of thirty two (32) CPU units.
- Two GPs can be connected to one CP-9200/CP9200H. When using two GPs, set them up so that their System Areas do not overlap.

■ Memocon Micro (CPU Direct Connection)

СРИ	Cable Diagram	GP
000000		
Micro *1	RS-232C (Cable Diagram 5)	GP Series

^{* 1} Connect to **COM1** port.

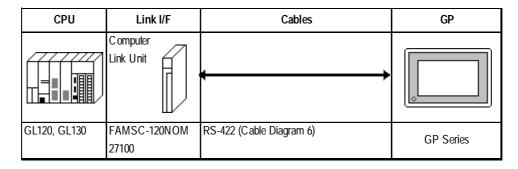
■ PROGIC-8 Series (using CPU unit Link I/F)

CPU	Cable Diagram	Cables	GP	
	•	•		
PROGIC-8 *1	RS-232C	Yaskawa Electric 's	GP Series	
1 10010 0	(Cable Diagram 4)	JEPMC-W5310-03 *2	2. 36/163	

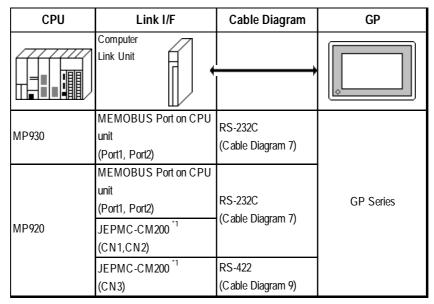
^{* 1} Connect to the PLC unit's PORT1(9P) or PORT2(15P).

^{* 2} Can only use with PORT1 connection; PORT2 cannot be used because it has a 15P connector.

■ Memocon-SC Series (GL 120/GL 130) (using Link I/F)



■ MP900 Series (using Link I/F)



^{*1} Refer to the previous page's CP-9200SH data for connection details.

2.4.2 Cable Diagrams

The cable diagrams illustrated below and the cable diagrams recommended by Yaskawa Corporation may differ. Using these cables for your PLC operations, however, will not cause any problems.

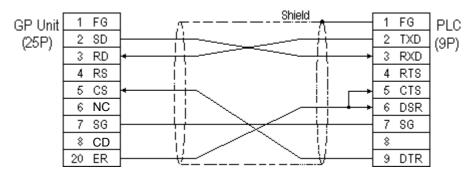


Ground your PLC's FG terminal according to your country's applicable standard. For details, refer to the corresponding PLC manual.



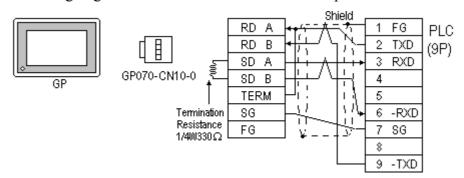
- Connect the FG line of the Shield cable to either the GP or PLC, depending on your environment. When using a connector hood and grounding the FG line, be sure to use an electrical conductor. The following connection diagrams show examples for connecting a shielded cable to the PLC.
- For the RS-232C connection, use a cable length less than 15m.
- If a communications cable is used, it must be connected to the SG (signal ground).

Cable Diagram 1 (RS-232C)

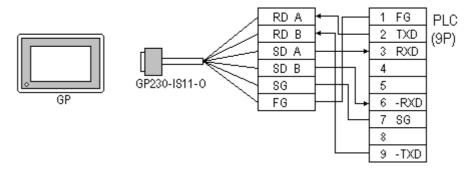


Cable Diagram 2 (RS-422)

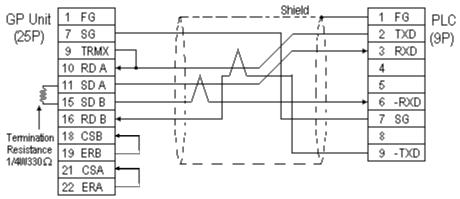
• When using Digital's RS-422 connector terminal adapter GP070-CN10-0



• When using Digital's RS-422 Cable, GP230-IS11-0



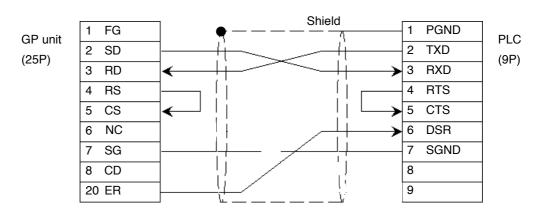
• When making your own cable connections



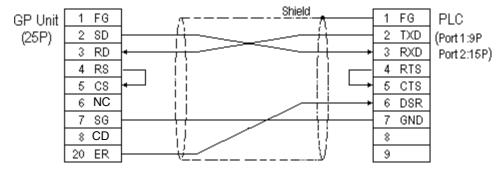


When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.

Cable Diagram 3 (RS-232C)



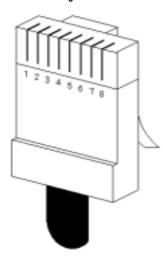
Cable Diagram 4 (RS-232C)



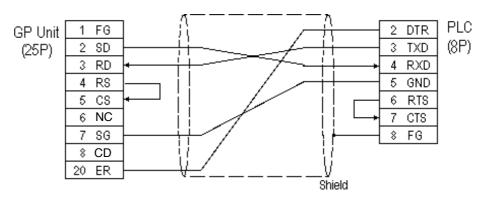
Cable Diagram 5 (RS-232C)



An RJ45 jack is used for the PLC.

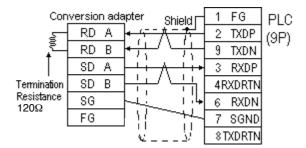


The pin numbers of the modular-jack for the connection diagrams below are based on the order described in the figure at the left.

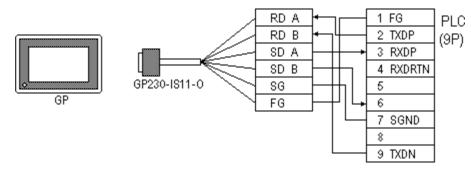


Cable Diagram 6 (RS-422)

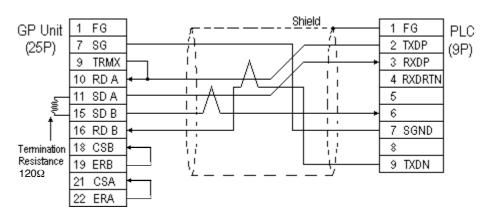
• When using Digital's RS-422 connector terminal adapter GP070-CN10-0



• When using Digital's RS-422 Cable, GP230-IS11-0



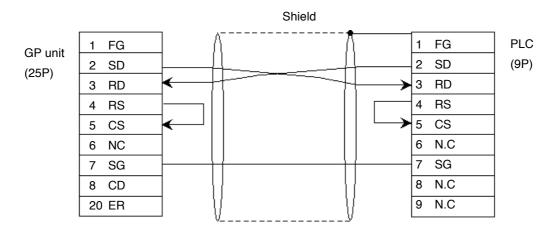
• When making your own cable connections



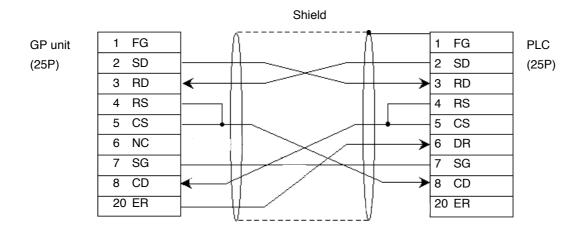


When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.

Cable Diagram 7 (RS-232C)

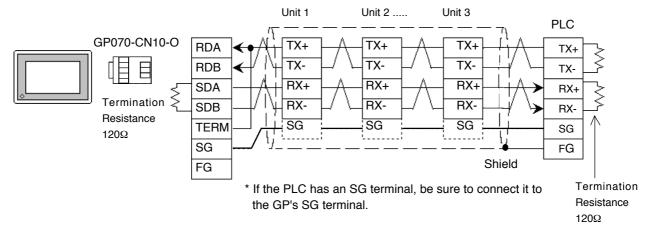


Cable Diagram 8 (RS-232C)

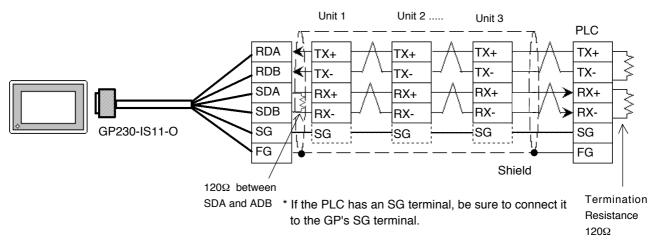


Cable Diagram 9 (RS-422)

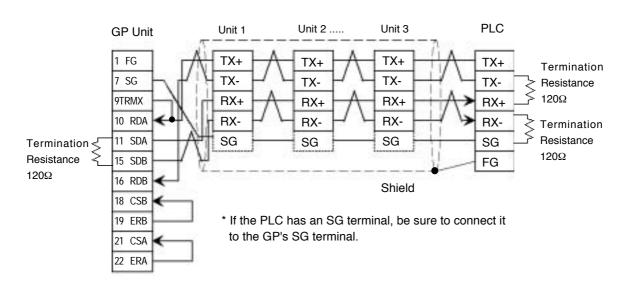
• When using Digital's RS-422 Connector terminal adapter GP070-CN10-0.



• When using Digital's RS-422 Cable, GP230-IS11-O.



• When making your own cable connections



2.4.3 Supported Devices

The following describes the range of devices supported by the GP.

■ Memocon-SC Series

(U84/84J/U84S/GL40S/GL60H/GL70H/GL60S)

Device	Bit Address	Word Address	Particulars
Coil (Output/Internal)	00001 ~ 08192		*1
Input Relay	10001 ~ 14096		*1 *2
Link Coil	D0001 ~ D1024		*1
Input Register		30001 ~ 30512	Bit 1 51 '2 H/L
Output/Keep Register		40001 ~ 49999	Bit 1 51
Link Register		R0001 ~ R1024	Bit 1 51
Constant Register		31001 ~ 35096	Bit 1 51
Extended Register		A0000 ~ A7FFF	Bit 7

■ Memocon-SC Series (GL120/GL130)

Device	Device Bit Address		Particulars	
Coil (Output/Internal)	000001 ~ 008192		*1	
Input Relay	100001 ~ 101024		*1 *2	
Link Coil 1	D10001 ~ D11024		*1	
Link Coil 2	D20001 ~ D21024		*1	
MC Relay 1	X10001 ~ X10256		*1 *2	
MC Relay 2	X20001 ~ X20256		*1 *2	
MC Coil 1	Y10001 ~ Y10256		*1	
MC Coil 2	Y20001 ~ Y20256		*1	
MC Code Relay 1	M10001 ~ M10096		*1 *2	
MC Code Relay 2	M20001 ~ M20096		*1 *2	H/L
MC Control Relay 1	P10001 ~ P10256		*1 *2	11/L
MC Control Relay 2	P20001 ~ P20256		*1 *2	
MC Control Coil 1	Q10001 ~ Q10256		*1	
MC Control Coil 2	Q20001 ~ Q20256		*2	
Input Register		300001 ~ 300512	Bit 1 5 1 2	
Output Register		300001 ~ 300512	Bit 1 5 1	
Keep Register		400001 ~ 409999	Bit 1 5 1	
Link Register 1		R10001 ~ R11024	Bit 1 51	
Link Register 2		R20001 ~ R21024	Bit 1 51	
Constant Register		700001 ~ 704096	Bit 1 5 1	

^{*1} Can also specify as a word (16 bit data)

^{*2} Cannot perform data write.

■ Control Pack Series

Setup System Area here.

Device	Bit Address	CP-9200/CP-9200H's Register No. Corresponding to Address	Particulars
Input Register	00001 ~ 02048	IB00000 ~ IB007FF	*1
Output Register	02049 ~ 04096	OB00000 ~ OB007FF	*1 L/H
System Register	10001 ~ 12048	SB000000 ~ SB00127F (CPU#0's S-Register)	*1

Device	Word Address	CP-9200/CP-9200H's Register No. Corresponding to Address	Particulars	
Input Register	49744 ~ 49871	IB00000 ~ IB007FF	Bit 1 51	
Output Register	49872 ~ 49999	OB00000 ~ OB007FF	Bit 1 51	
System Register	30001 ~ 30256	SW00000 ~ SW00255 (CPU#0's S-Register)	Bit 1.51	
Data Register	31001 ~ 33048 (CP-9200H only)	DW00000 ~ DW02047 (CPU#1's D-Register)	Bit 1 5 1	L/H
	40001 ~ 42048	DW00000 ~ DW02047 (CPU#0's D-Register)	Bit 1 5 1	
Common Register	42049 ~ 49743	MW00000 ~ MW07694	Bit 1 51	

^{* 1} Can also specify as a word (16 bit data).



- If the above devices are used in the Control Pack series, the addresses converted using the above table should be entered.
- When you wish to use CP-9200 with CPU#1's Data Register or System Register, be sure to copy it to the Common Register (MW00000 ~ MW07694) first.

■ Memocon Micro

Device	Bit Address	Word Address	Particulars	
Coil (Output/Internal)	00001 ~ 01531		*1	
Input Relay	10001 ~ 10511		*1 H/L	
Input Register		30001 ~ 30047	Bit 1 51	
Output/Keep Register		40001 ~ 41871	Bit 1 5)	

^{* 1} Can also specify as a word (16 bit data).

■ PROGIC-8 Series

Setup System Area here.

Device	Bit Address	Word Address	Particulars	
Output Coil	O1 ~ O512		*1	
Input Relay	I1 ~ I512		*1 *2	
Internal Coil	N1 ~ N1536		*1	
Link Coil	D1 ~ D1024		*1	
Data Register		W1 ~ W2048	<u>Bit 1 5 1</u>	
Data Register (1-word data)		SW1 ~ SW2048	<u>віт 1.51</u> з н/L	
Data Register (2-word data)		DW1 ~ DW2048	Bit 1 51 .3	
Input Register		Z1 ~ Z128	*2	
Link Register		R1 ~ R1024		
Link (1-word data)		SR1 ~ SR2048	*3	
Link (2-word data)		DR1 ~ DR2048	*3	

- * 1 Can also specify as a word (16 bit data)
- * 2 Cannot perform data write.
- * 3 A data format compatible register. This is a virtual register applicable for the data in the PLC. It uses data register (W) and link register (R). The range of data which can be handled as 1-word is -9999 to 9999.
 - 1) Cautions related to using data register (SW) and link register (SR) are applicable to 1-word data.
 - If the SW and the SR are used, be sure to use values in the range from -9999 to 9999. Data must be displayed in four digits (decimal notation).

Differences in displayed values between SW, SR and W, R

Data in the PLC	SW, SR	W, R
9999	9999	9999
1001	1001	1001
1000	1000	1000
999	999	999
0	0	0
-1	-1	32769
-999	-999	33767
-1000	-1000	33768
-1001	-1001	33769
-9999	-9999	42767

2) Cautions related to using a register applicable for 2-word data. Using data register (DW) and link register (DR)

If the DW and the DR are used, be sure to use values in the range from -9999 to 9999. Data must be displayed in four digits (decimal notation).

Differences in displayed values between DW, DR and W, R (2-word)

Data in the PLC	DW, DR	W, R
9999999	9999999	655304463
1000001	10000001	65536001
10000000	10000000	65536000
999999	999999	65535999
10000	10000	65536
9999	9999	9999
0	0	0
-1	-1	2147483649
-9999	-9999	2147493647
-10000	-10000	2147549184
-10001	-10001	2147549185
-999999	-9999999	2212955111

■ CP-9200SH / MP900 Series

Device	GP Device Address	CP-9200SH Device	Amount	Paticulars	
Coil (bit device)	GMB00000 ~ GMB0624E	MB00000 + OFFSET to MB0624E + OFFSET	9999		
Coil (word device)	GMB0000 ~ GMB0624	MB0000 + OFFSET to MB0624 + OFFSET	625	*2	
Input Relay (bit device)	GIB00000 ~ GIB0270E	IB00000 + OFFSET to IB0270E + OFFSET	9999	*1	
Input Relay (word device)	GIB0000 ~ GIB0270	IB0000 + OFFSET to IB0270 + OFFSET	625	*1 *2	
Hold Register	GMW0000 ~ GMW1023	MW0000 + OFFSET to MW1023 + OFFSET	1024	в і т F)	
(word device)	GMW1024 ~ GMW2047	MW1024 + OFFSET to MW2047 + OFFSET	1024	_{ві т} F)	
	GMW2048 ~ GMW3071	MW2048 + OFFSET to MW3071 + OFFSET	1024	Bit F)	
-	GMW3072 ~ GMW4095	MW3072 + OFFSET to MW4095 + OFFSET	1024	Bit F)	
	GMW4096 ~ GMW5119	MW4096 + OFFSET to MW5119 + OFFSET	1024	Bit F)	
	GMW5120 ~ GMW6143	MW5120 + OFFSET to MW6143 + OFFSET	1024	B i t F	L/H
	GMW6144 ~ GMW7167	MW6144 + OFFSET to MW7167 + OFFSET	1024	Bit F	
	GMW7168 ~ GMW8191	MW7168 + OFFSET to MW8191 + OFFSET	1024	в і т F)	
	GMW8192 ~ GMW9215	MW8192 + OFFSET to MW9215 + OFFSET	1024	Bit F	
	GMW9216 ~ GMW9998	MW9216 + OFFSET to W9998 + OFFSET	783	Bit F	
Input Register (word device)	GIW0000 ~ ~ GIW03FF	IW0000 + OFFSET to IW03FF + OFFSET	1024	B i t F) *1	
	GIW0400 ~ GIW07FF	IW0400 + OFFSET to IW07FF + OFFSET	1024	B i t F	
	GIW0800 ~ GIW08FF	IW0800 + OFFSET to IW08FF + OFFSET	1024	B i t F) *1	
	GIW0C 00 ~ GIW0FFF	IW0C00 + OFFSET to IW0FFF + OFFSET	1024	B i t F) *1	
	GIW1000 ~ GIW13FF	IW1000 + OFFSET to IW13FF + OFFSET	1024 *Device range "0000" indicates it is hexa- decimal	<u>B i t</u> F	

^{*1} Can be read out from a GP, however cannot be written to a GP.

^{*2} Cannot be written in the last (16th) bit of this address.(i.e, GMB0624/GIB0270)

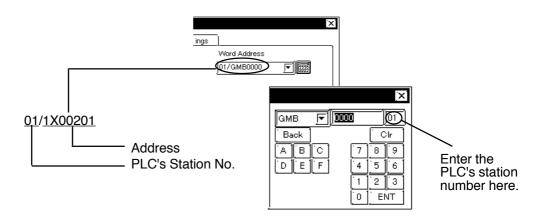


- Designate the LS area bit at the end of the Word Address, using from 0 to F.
- Since the CP-9200SH unit's protocol is applicable to a 1:n connection, it will differ from the MEMOCON-SC's protocol and internal method of representing devices. When you wish to modify the screen data from a MEMOCON-SC, you will need to reenter device data.
- The hold Register and Input Register device settings must be entered within each block. Any settings that extend into other blocks are not allowed.

(Example: You cannot enter a 20 word long setting, starting from GMW1010.)



When you are setting up parts and tags in GP-PRO/PB III, you can designate PLC's station numbers as you are inputting addresses. If you do not designate the station numbers, the number following the one you previously entered will be automatically selected. (The factory setting is "1".)



2.4.4 Environment Setup

The following lists Digital's recommended PLC and GP communication settings.

■ Memocon-SC Series

(GL40S/GL60S/GL60H/GL70H) (GL120CPU Direct Connection)

GP Setup		Communication Module Setup		
Baud Rate	19200 bps	Baud Rate	19200 bps	
Data Length	8 bits (fixed)	Transfer Mode	RTU Mode (fix ed)	
Stop Bit	1 bit	Stop Bit	1 bit	
Dority Dit	Fuen	Parity On/Off	ON	
Parity Bit	Even	EVEN/ODD	EVEN	
Data Flow Control	ER Control			
Communication Format	RS-232C			
		Delay Count ¹ 0		
Unit No.	1	Station Number Setting 1		

■ Memocon-SC Series (U84/U84J/U84S)

GP Setup		Communication Module Setup		
Baud Rate	19200 bps	Baud Rate 19200 bps		
Data Length	8 bits	Transfer Mode RTU Mode		
Stop Bit	1 bit	Stop Bit 1 bit		
Parity Bit	Even	Parity Bit EVEN		
Data Flow Control	ER Control			
Communication Format	RS-232C			
		Port Delay Timer	0	
Unit No.	1	Address	1	

■ Memocon-SC Series (GL120/GL130)

GP Setup		Communication Module Setup		
Baud Rate	19200 bps	Baud Rate	19200 bps	
Data Length	8 bits			
Stop Bit	1 bit	Stop Bit	1 bit	
Parity Bit	Even	ON/OFF	ON	
Data Flow Control	ER Control	Even/ODD	Even	
Communication Format	RS-422	Communicationsport	RS-422	
		Slave address No.	1	
Unit No.	1	Communications bit	RTU mode (fixed)	

^{* 1} There is no Delay Count for the JAMSC-IF60 SIO Module.

■ PROGIC-8

GP Setup		Port 1/Port 2 Setup	
Baud Rate	9600 bps (fixed)		
(for Port 1 connection)	7000 bps (lineu)		
Baud Rate	19200 bps	Baud Rate	19200 bps
(for Port 2 connection)	17200 bps	(for Port 2 connection)	17200 μμ3
Data Length	8 bits		
Stop Bit	1 bit		
Parity Bit	Even		
Data Flow Control	ER Control		
Communication Format	RS-232C		
Unit No.	1		

■ Control Pack Series

GP Setup		Machine Controller 4CN/6CN Setup		
Baud Rate	9600 bps	Baud Rate 9600 bps		
Data Length	8 bits	Data Bit 8 bits		
Stop Bit	1 bit	Stop Bit 1 bit		
Parity Bit	Even	Parity Bit Even		
Data Flow Control	ER Control			
Communication Format	RS-232C			
Unit No.	1	Station Number Setting 1		

■ Memocon Micro

GP Setup		Comm1 Port Setup		
Baud Rate	9600 bps	Baud Rate 9600 bps		
Data Length	8 bits	Data Bit 8 bits		
Stop Bit	1 bit	Stop Bit 1 bit		
Parity Bit	Even	Parity Bit Even		
Data Flow Control	ER Control			
Communication Format	RS-232C			
Unit No.	1	Station Number Setting 1		

■ Control Pack Series for CP-9200SH

	GP Setup	PLC Setup
Baud rate	9600bps	9600bps
Data Length	8	8
Stop Bit	1	1
Parity Bit	Even	Even
Data Flow Control	ER Control	ER Control
Communication Format (RS-232C)	RS-232C	CN1 or CN2
(RS-422)	4 Wire-Type	CN3
System Area Start Address	GMW0000	
Station No.	1 ~ 32	1 ~ 32



- When connecting the GP77R Series unit to the "****-21700-****" or older vesion of 217IF unit, select the "GP Settings" menu's "Communication Settings" tab in 3.0 or later version of GP-PRO/PB III for Windows screen creation software, and click on the "Advanced" field, and then designate "20ms" for the "Send Wait" setting.
- A ladder program is needed when connecting the GP to a Yasukawa CP-217IF link I/F unit.
- Be aware that this sample program enables the GP to communicate with only one CN unit, and when you wish to use more than one CN unit at the same time you will need to create a ladder program for each CN.
- The PLC's communication settings cannot be entered by this program. You will need to enter these settings via the ladder software.

■ Control Pack Series CP-9200SH Sample program

1	0000	"### MSG-RC\	√ ###"					
1	0001	⊢ 00000					⇒DW00018	
1	0003	⊢ 00000					⇒DW00019	
1	0005	⊢ 00000					⇒DW00020	
1	0007	⊢ 00000					⇒DW00021	
1	0009	⊢ 00000					⇒DW00022	/002\$
1	0011	F 09998					⇒D\\000023	/004\$
1	0013	\$FSCAN-L SB000003	-					
1	0014	[H0000					[⇒DW00024]/007\$
1	0016	\$0NC01L SB000004	DB000001 D)B000003	DB00000)4	DB000000	<i>/</i> 012\$
1	0021	DB000002	/018 . DB000003 0	/032 005. 00 T	/034 DW00030) }_	DB000001	/009/018\$/022
1	0025	/030 DB000004	/032	-		,		
1	0027	/034		MSG	-RCV			Message Reception Function (Standard System Function)
1	0028	DB000000		EXECUTE	BUSY FOUT		DB000002	/013/030\$
1	0030	/012 DB000001		ABORT FIN	COMPLETE FOUT		DB000003	/010/014/032\$
1	0032	/018 00005	======>	DEV-TYP FIN	ERROR FOUT		DB000004	/011/017/034\$
1	0033	00001	======>	PRO-TYP FIN			Ü	I
1	0034	00002	======>	CIR-NO FIN			You can change the CN	
1	0035	00001	=====>	CH-NO FIN			(Circuit Number) connected to the GP by changing the value of this step.	
1	0036			PAR/ DAOG	AM 0010		(Example: When using CN2	⁽²⁾
0	0043	DEND				J		

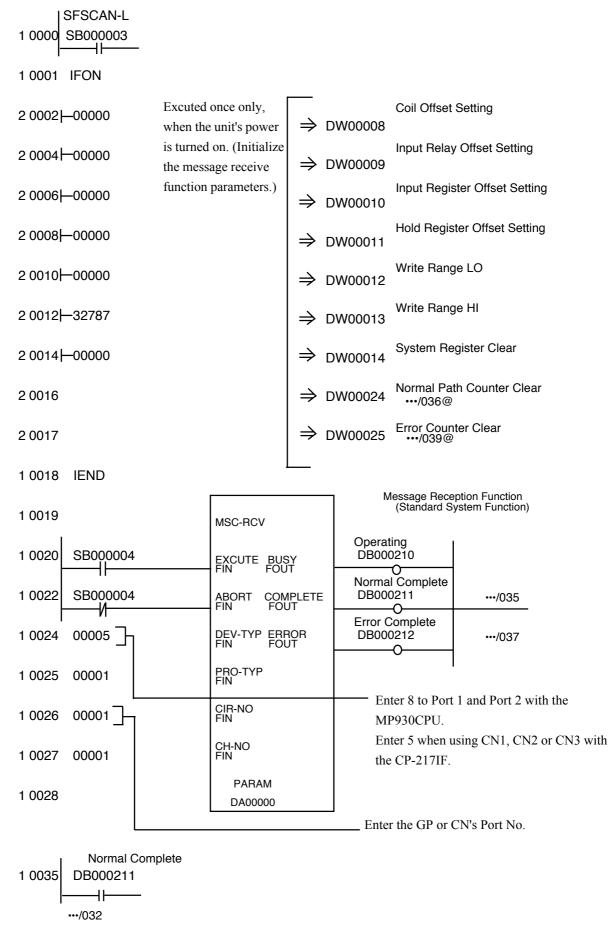
■ MP900 Series

GP S	etup	PLC Setup		
Baud rate	19200bps	Baud rate	19.2Kbps	
Data Length	8	Data Length	8	
Stop Bit	1	Stop Bit	1	
Parity Bit	Even	Parity Bit	Even	
Data Flow Control	ER Control	Send Mode	RTU	
Communication Format (RS-232C)	RS-232C	Serial I/F (RS-232C)	RS-232C	
Communication Format (RS-422)	4 Wire-Type	Serial I/F (RS-422)	RS-485	
Unit No. 1		Device Address	01	
_		Master Slave	Slave	
		Transmission Protocol	MEMOBUS	



- A ladder program is needed when connecting the GP Series unit to a Yasukawa Electric corporation CP-217IF link I/F unit's CN1,CN2,CN3 or to MEMOBUS Ports (Port 1 or Port 2).
- Be aware that this sample program enables the GP to communicate with only one CN unit, and when you wish to use more than one CN unit at the same time you will need to create a ladder program for each CN.
- The PLC's communication settings cannot be entered by this program. You will need to enter these settings via the ladder software.

■ MP900 Series Sample program



Chapter 2 - PLC-GP Connection

Normal Counter 1 0036[INC		
1 0037 Error Complete DB000212		
1 ···/034 1 0038 IFON		1
Error Counter 2 0039 INC DW00025/017		
2 0040 DW00000	⇒ DW00026	Result Save •••/053S
2 0042 DW00001	⇒ DW00027	Status Save
2 0044 DW00002	⇒ DW00028	Command Receiver ST# Hold
2 0046 DW00004	⇒ DW00029	FC Save
2 0048 DW00005	⇒ DW00030	Data Address Hold
2 0050 DW00006	⇒ DW00031	Data Size Hold
2 0052 DW00007	⇒ DW00032	Destination CF# Save
1 0054 IEND		
0 0055 DEND		

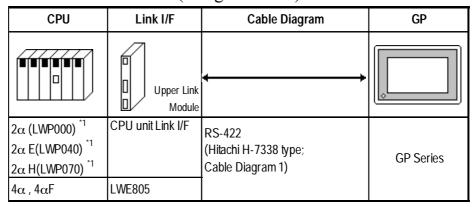
2.5 Hitachi

2.5.1 System Structure

The following describes the system structure for connecting the GP to Hitachi Ltd. PLCs.

The Cable Diagrams mentioned in the following tables are listed in the section titled "2.5.2 Cable Diagrams".

HIDIC-S10\alpha Series (using Link I/F)



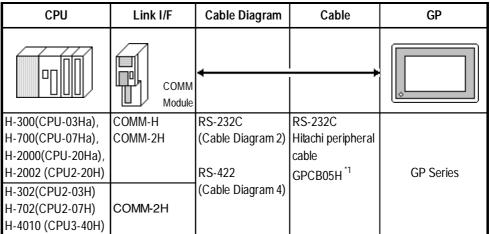
^{* 1} Connect to the CPU Module's HOST LINK COMPUTER LINK Input/Output Terminal (Upper Calculation I/F).

■ S10 mini Series (using Link I/F)

CPU	Link I/F	Cable Diagram	GP
LQP000	LQE060	RS-232C	
LQP010		<cable 6="" diagram=""></cable>	GP Series
LQP011			

■ **HIDIC H Series** (using Link I/F)

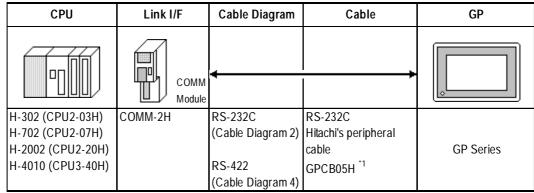
Procedure 1 for transmission control



^{* 1} Due to the size of its connector case, this cable cannot be used for GP-270, GP-370, GP-377, GP-377R and GP-2300 series unit.

■ HIDIC H Series/COMM-2H (using Link I/F)

Procedure 2 for transmission control



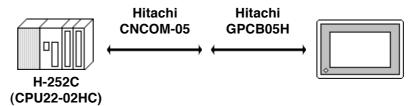
^{*1} Due to the size of its connector case, this cable cannot be used for GP-270, GP-370, GP-377, GP-377R, and GP-2300 series unit.

■ **HIDIC H Series** (CPU Direct Connection)

CPU	Cable Diagram	Cable	GP
H20,H28,H40,H64	RS-232C	Hitachi peripheral cable	
H-200(CPU-02H) *1	(Cable Diagram 2)	GPCB05H *9	
H-300(CPU-03Ha) *1			
H-700(CPU-07Ha) *1			
H-2000(CPU-20Ha) *1			
H-252C(CPU22-02HC) *1 *2	(Cable Diagram 2, 3)*3		
H-302(CPU2-03H)			
H-702(CPU2-07H)			
H-2002(CPU2-20H) *1			
H-4010(CPU3-40H)*1*4			GP Series
EH-150(EH-CPU104, EH-	RS-232C		
CPU208, EH-CPU316) *5 *7	(Cable Diagram 2, 3) *8		
EH-150(EH-CPU448) *6 *7	RS-422		
	(Cable Diagram 7)		
MICRO-EH(EH-D10□□□,	RS-232C (PORT1)		
EH-A14□□□, EH-D14□□□,	(Cable Diagram 2) *7		
EH-A23□□□, EH-A28□□□,			
EH-D28□□□) *10			
MICRO-EH(EH-A23□□□, EH-	RS-422 (PORT2)		
A28□□□, EH-D28□□□) *10	(Cable Diagram 8)		

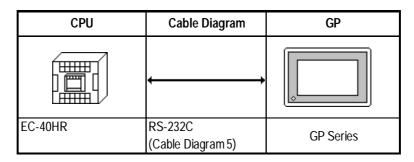
^{* 1} Connect to the CPU module's peripheral port.

* 2 If the CPU is connected to port 2, a Hitachi CNCOM-05 conversion cable between the round connector (8-pin) and the D sub-connector (15-pin) is required. <Fig. 1>



- *3 You will need to change the wiring depending on the baud rate. Use (Cable Diagram 2) when the baud rate is 4800bps, and use (Cable Diagram 3) when the baud rate is 19200bps. <Fig.1> is only for when the baud rate is 4800bps.
- *4 If the CPU's software revision is J or later, and DIPSWI's No.3 and No.4 are turned OFF, you can set the baud rate to 38400bps by using (Cable Diagram3).
- *5 Connect to the CPU module's serial port 1 or serial port 2.
- *6 Connect to the CPU module's serial port 1.
- *7 If the CPU is connected to a GP, a Hitachi EH-RS05 conversion cable between the modular jack (8-pin) and the D sub-connector (5-pin) is required.
- *8 If the CPU is connected to serial port 2, you will need to change the wiring depending on the baud rate.
 - When the baud rate is 19200bps or 38400bps, use Cable Diagram 3.
 - When the baud rate is 4800bps or 9600bps, use Cable Diagram 2.
- * 9 Due to the size of its connector case, this cable cannot be used for GP-270, GP-370, GP-377, GP-377R, and GP-2300 series.
- *10 The Controller's model number " \square " will vary, depending on each controller's specifications.

■ HIZAC EC Series (CPU Direct Connection)



2.5.2 Cable Diagrams

The cable diagrams illustrated below and the cable diagrams recommended by Hitachi Ltd. may differ; however, using these cables for your PLC operations will not cause any problems.



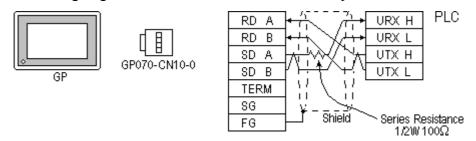
Ground your PLC's FG terminal according to your country's applicable standard. For details, refer to the corresponding PLC manual.



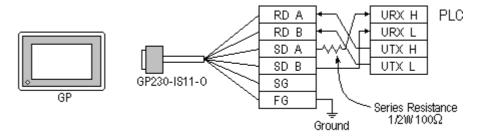
- Connect the FG line of the Shield cable to either the GP or PLC, depending on your environment. When using a connector hood and grounding the FG line, be sure to use an electrical conductor. The following connection diagrams show examples for connecting a shielded cable to the PLC.
- For the RS-232C connection, use a cable length less than 15m.
- If a communications cable is used, it must be connected to the SG (signal ground).
- For the RS-422 connection, refer to Hitachi's PLC manual for the cable length.

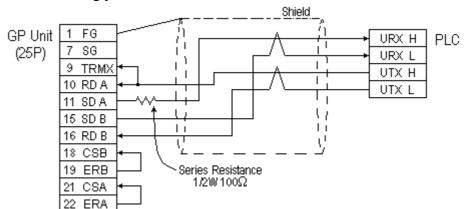
Cable Diagram 1 (RS-422)

• When using Digital's RS-422 connector terminal adapter GP070-CN10-0



• When using Digital's RS-422 Cable, GP230-IS11-0



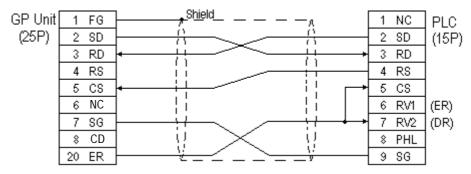


When making your own cable connections



- When making your own connections, we recommend using Hitachi Densen's KPEV-SB-3P0.5mm² cable.
- When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.

Cable Diagram 2 (RS-232C)



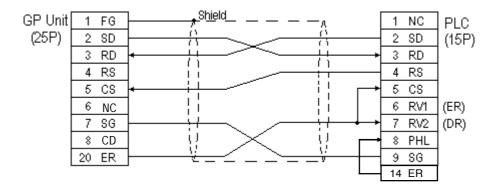


When an error develops during communication, there may be a delay before the error message displays as the unit runs the retry process.



In Procedure 1 for transmission control, when the GP and PLC program console (GPCL) are operated at the same time, a PLC COM ERROR: (02:37) on the GP and a CPU Hold Error in the GPCL may develop. In such cases, the GP automatically reverts to its normal state. Run the GPCL operation again.

Cable Diagram 3 (RS-232C)





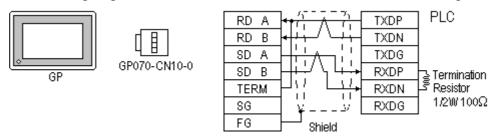
When an error develops during communication, there may be a delay before the error message displays as the unit runs the retry process.



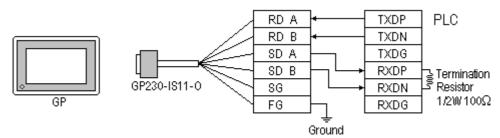
In Procedure 1 for transmission control, when the GP and PLC program console (GPCL) are operated at the same time, a PLC COM ERROR: (02:37) on the GP and a CPU Hold Error in the GPCL may develop. In such cases, the GP automatically reverts to its normal state. Run the GPCL operation again.

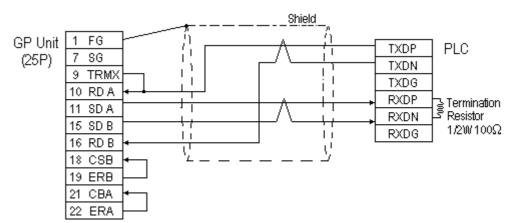
Cable Diagram 4 (RS-422)

• When using Digital's RS-422 connector terminal GP070-CN10-0 adapter



• When using Digital's RS-422 Cable, GP230-IS11-0





• When making your own cable connections



When an error develops during communication, there may be a delay before the error message displays, as the unit runs the *retry* process.

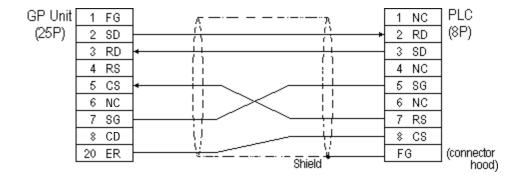


When the GP and PLC program consoles (GPCL) are operated at the same time, a PLC COM ERROR: (02:37) on the GP and a CPU Hold Error in the GPCL may develop. In such cases, the GP automatically reverts to its normal state. Run the GPCL operation again.

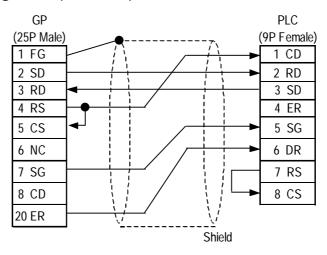


- When making your own connections, we recommend using Hitachi Densen's KPEV-SB-3P0.5mm² cable.
- When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.

Cable Diagram 5 (RS-232C)

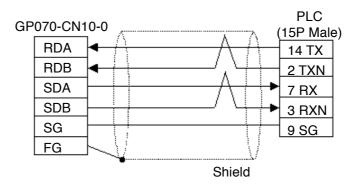


Cable Diagram 6 (RS-232C)

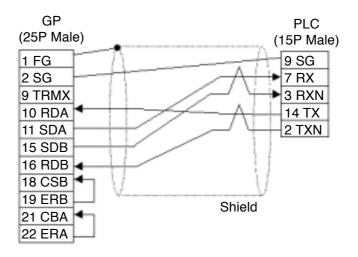


Cable Diagram 7 (RS-422, 4-wire)

• When using Digital's RS-422 connector terminal GP070-CN10-0 adapter

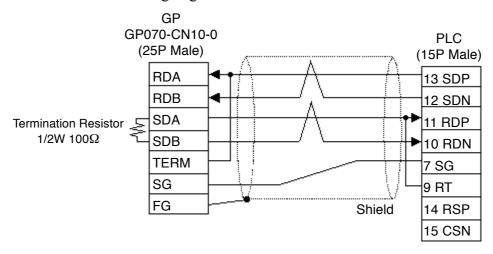


• When making your own cable connections

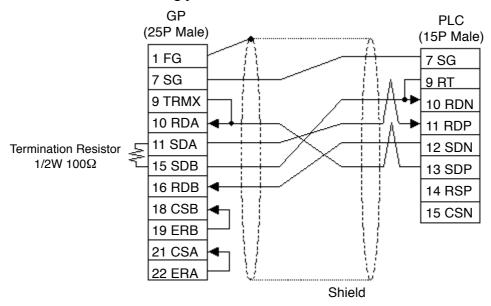


Cable Diagram 8 (RS-422, 4-wire)

• When using Digital's RS-422 connector terminal GP070-CN10-0 adapter



• When making your own cable connections





- Short-circuiting pin Nos. 9 and 10 on the PLC provides a termination resistance of 120Ω

2.5.3

Supported Devices

The following describes the range of devices supported by the GP.

■ HIDIC S10a Series

Setup System Area here.

Device	Bit Address	Word Address	Particulars	
Input Relay	X000 ~ X7FF	XW000 ~ XW7F0	[XXXO]	
Output Relay	Y000 ~ Y77FF	YW000 ~ YW7F0	[xxxO]	
Internal Relay	R000 ~ R7FF	RW000 ~ RW7F0		
Global Link	G000 ~ GFFF	GW000 ~ GWFF0	[XXXO]	
System Register	S000 ~ SBFF	SW000 ~ SWBF0	XXXO) 1	
E Word	EW400 ~ EWFFF	EW400 ~ EWFF0	<u>xxx</u> 01	H/L
Ev ent	E000 ~ E0FF	EW000 ~ EW0F0	<u>xx</u> 01	
Keep Relay	K000 ~ K1FF	KW000 ~ KW1F0	XXXO	
On-Delay Timer	T000 ~ T1FF	TW000 ~ TW1F0	<u> </u>	
One Shot Timer	U000 ~ U07F	UW000 ~ UW070	[XXXO] ²	
Up/Down Counter	C000 ~ C03F	CW000 ~ CW030	[XXXO] ²	
On-Delay Timer (elapsed value)		TC000 ~ TC1FF		
On-Delay Timer (setup value)		TS000 ~ TS1FF		
One Shot Timer (elapsed value)		UC000 ~ UC07F		L/H
One Shot Timer (setup value)		US000 ~ US07F		L/II
Up/Down Counter (elapsed value)		CC000 ~ CC03F		
Up/Down Counter (setup value)		CS000 ~ CS03F		
Data Register		DW000 ~ DWFFF	Bit F	
Work Register		FW000 ~ FWBFF	Bit F	11/1
Extended Register		MS000 ~ MSFFF Address on GP-PRO/PBIII	Bit F	H/L

^{* 1} Cannot perform data write.

^{* 2} Point of Contact.

^{* 3} Access is possible for 4K words of Extended Memory (8 bits per address). The top address of the Extended Memory to be accessed is set in the [SET UP OPERATION SURROUNDINGS] area of the INITIALIZE menu. (Refer to "Extended Memory Top Address Setup.") Be sure to set the address(es) accessed by the GP within the limits of the PLC's specified Extended Memory address area. For PLC Extended Memory address setting procedures, refer to the PLC maker's manual.

■ S10 mini Series

Setup System Area here.

Device	Bit Address	Word Address	Remarks
External Input	X000 ~ XFFF	XW000 ~ XWFF0	<u> </u>
External Output	Y000 ~ YFFF	YW000 ~ YWFF0	XXX O] *1
Internal Resistor	R000 ~ RFFF	RW000 ~ RWFF0	<u> </u>
Global Link Resistor	G000 ~ GFFF	GW000 ~ GWFF0	<u>xxx</u> 0) *1
Event Resistor	E000 ~ E0FF	EW000 ~ EW0F0	<u>xx</u> 0) *1
Event Resistor	EW400 ~ EWFFF	EW400 ~ EWFF0	XXX O] *2
Keep Relay	K000 ~ KFFF	KW000 ~ KWFF0	[xxxO] *1
System Resistor	S000 ~ SBFF	SW000 ~ SWBF0	<u> </u>
On-delay Timer	T000 ~ T1FF	TW000 ~ TW1F0	<u> </u>
One-shot Timer	U000 ~ U0FF	UW000 ~ UW0FF	XXXO] *1
Up-down Counter	C000 ~ C0FF	CW000 ~ CW0FF	<u> </u>
On-delay Timer (Current Value)		TC000 ~ TC1FF	
On-delay Timer (Set Value)		TS000 ~ TS1FF	
One-shot Timer (Current Value)		UC000 ~ UC0FF	
One-shot Timer (Set Value)		US000 ~ US0FF	
Up-down Counter (Current Value)		CC000 ~ CC0FF	
Up-down Counter (Set Value)		CS000 ~ CS0FF	
Work Registor		FW000 ~ FWBFF	Bit F
Data Registor		DW000 ~ DWFFF	Bit F
Expansion Resistor		MS000 ~ MSFFF	Bit F *4

^{*1} Because of the PLC specifications, the highest bit has been designated as 0 and the lowest bit as 15. Therefore, when Bit 0 turns ON, "32768" will be written to the top Word.

^{*2} The higher and lower bit order will be reversed. When EW400 is turned ON, E40F will be turned ON on the PLC.

^{*3} Data cannot be written.

^{*4} In expansion memory (1 address = 8 bits), 4K Words can be accessed. Designate the top address of the expansion memory to be accessed, via [Default Settings] - [Set Up Operation Surroundings] (see the following page). The GP's access address will then be designated within the range of expansion memory address range set up in the PLC. For the detailed information about how to set up the PLC's expansion memory address range, refer to that PLC's manual.

Cautions when using HIDIC S10a and S10 mini

◆ Accessed Extended Memory Address

Access Address = Top Address + Device Address set by GP-PRO/PBIII for Windows

E.g. When the Top Address = 180000 and the Device Address is MS $\underline{1FF}$; $180000 + \underline{3FE} = 1803FE$

Since the PLC uses 8 bits for its extended memory addresses, this number is doubled.

♦ Extended Memory Top Address Setup

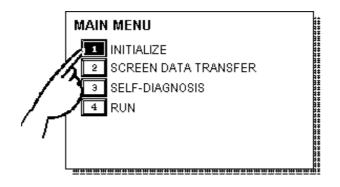
Specify the extended memory address at the initial setup when the GP is in the OFFLINE mode.

Reference OFFLINE mode —> Refer to —> User's Manuals (sold separately), **Chapter 4 "OFFLINE Mode"**

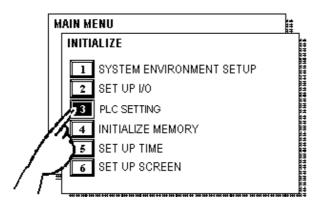


For the input range (values) 0HEX to FE000HEX, be sure to add the offset value (100000HEX) to the range values to create the actual address setting. If, however, the GP does not access Extended Memory, these addresses do not need to be set.

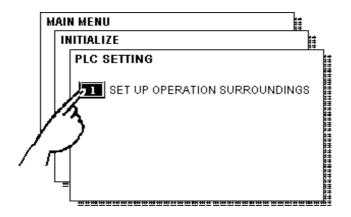
If the GP uses tags or parts to access the PLC's program area, errors in either the PLC or the GP may occur. Therefore, it is recommended that the [Extended Memory Addresses] in an area not used by the PLC.



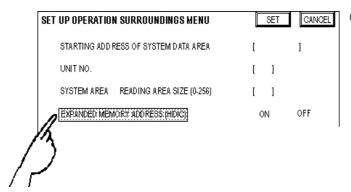
① Touch item #1, INITIALIZE. The INITIALIZE menu will appear.



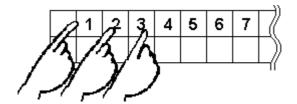
② Touch item #3, PLC SETTING. The PLC SETTING menu will appear.



③ Touch item #1, SET UP OPERATION SURROUNDINGS. The SET UP OPERATION SURROUNDINGS menu will appear.



Touch the "EXPANDED MEMORY ADDRESS (HIDIC)" selection. The selected item is highlighted.



- ⑤ Use the Touch Keys at the bottom of the screens to enter the desired value.
 - <Example> When setting the value of 180000, enter [80000].

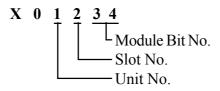
■ HIDIC H (HIZAC H) Series

Scrup System Area nere.		Setup System Area here.
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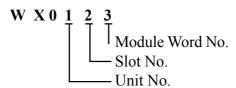
Device	Bit Address	Word Address	Particulars	
External Input	X00000 ~ X05A95	WX0000 ~ WX05A7	*1	
External Output	Y00000 ~ Y05A95	WY0000 ~ WY05A7	*1	
Remote Input Relay	X10000 ~ X49A95	WX1000 ~ WX49A7	*1	
Remote Output Relay	Y10000 ~ Y49A95	WY1000 ~ WY49A7	*1	
Internal Output	R000 ~ R7BF			
CPU Link Area 1	L0000 ~ L3FFF	WL000 ~ WL3FF		
CPU Link Area 2	L10000 ~ L13FFF	WL1000 ~ WL13FF		
Data Area	M0000 ~ M3FFF	WM000 ~ WM3FF		
On Delay Timer	TD000 ~ TD1023			
Single Shot Timer	SS000 ~ SS1023			L/H
Watch Dog Timer	WDT000 ~ WDT1023			
Monostable Timer	MS000 ~ MS1023			
Accumulation Timer	TMR000 ~ TMR1023			
Up Counter	CU000 ~ CU2047			
Ring Counter	RCU000 ~ RCU2047			
Up/Down Counter	CT000 ~ CT2047			
Timer/Counter (Elapsed Time)		TC000 ~ TC2047		
Word Internal Output		WR0000 ~ WRC3FF	Bit F	
Network Link Area		WN0000~WN7FFF		

^{*1} Write your data as follows.

E.g. External Input unit No. 1, Slot No. 2, Module Bit No. 34



E.g. External Input unit No. 1, Slot No. 2, Module Word No. 3.





If the first CPU link (L0000 to L3FFF) and the second CPU link (L10000 to L13FFF) are used with any GP-PRO/PB III for Windows drawing software which is Ver. 1.0 or earlier, enter L00000 to L03FFF for the first CPU link; and enter L100000 to L103FFF for the second CPU link by adding a zero to each one.

If GP-PRO/PB III for Windows Ver. 2.0 or later is used, enter the addresses shown in the previous page's table.

If you upgrade your GP-PRO/PB III for Windows Ver. 1.0 or earlier to Ver. 2.0 or later, your internal data will not be affected. Only the addresses to be entered are different.

The device type, the applicable range, and the ability or disability of writing may be different depending upon your CPU. Check with the manual for your CPU before use.

■ HIZAC EC Series

Setup System Area here.

Device	Bit Address	Word Address	Vertical Address	Particulars	
Ex ternal Input	X000 ~ X015	WX000 ~ WX014	VX000	[÷]6] ^{*1*3}	
	X020 ~ X035	WX020 ~ WX034	VX020		
	X040 ~ X055	WX040 ~ WX054	VX040	Only for Vertical Address)	
	X060 ~ X075	WX060 ~ WX074	VX060		
	X080 ~ X095	WX080 ~ WX094	VX080		
	X100 ~ X115	WX100 ~ WX114	VX100		
	X120 ~ X135	WX120 ~ WX134	VX120		
	X140 ~ X155	WX140 ~ WX154	VX140		
	X160 ~ X175	WX160 ~ WX174	VX160		
	X180 ~ X195	WX180 ~ WX194	VY180		
Ex ternal Output	Y200 ~ Y215	WY200 ~ WY214	VY200	÷161 *2*3	
	Y220 ~ Y235	WY220 ~ WY234	VY220		
	Y240 ~ Y255	WY240 ~ WY254	VY240	(Only for Vertical Address)	L/H
	Y260 ~ Y275	WY260 ~ WY274	VY260		
	Y280 ~ Y295	WY280 ~ WY294	VY280		
	Y300 ~ Y315	WY300 ~ WY314	VY300		
	Y320 ~ Y335	WY320 ~ WY334	VY320		
	Y340 ~ Y355	WY340 ~ WY354	VY340		
	Y360 ~ Y375	WY360 ~ WY374	VY360		
	Y380 ~ Y395	WY380 ~ WY394	VY380		
Internal Output	M400 ~ M655	WM400 ~WM654	VM400 ~ VM640	<u>:2</u>	
	M700 ~ M955	WM700 ~ WM954	VM700 ~ VM940	<u> </u>	
	M960 ~ M991	WM960 ~ WM990	VM960 ~ VM976	(Only for Vertical Address)	
Timer/Counter (contact, or coil)	TC000 ~ TC095				
Timer/Counter (elapsed time)		TC100 ~ TC195			H/L
Timer/Counter (setup value)		TC200 ~ TC295		*4	H/L

^{* 1} Due to the hardware structure, I/O numbers without the external terminals are OFF during RUN mode.

^{* 2} Due to the hardware structure, the I/O numbers without the external terminals will have the same feature as the Internal Output (M).

^{* 3} When writing word data, more than two consecutive word addresses cannot be written.

^{* 4} Even if you change a value using a T/W/K-tag in the middle of running the PLC, restarting the PLC initializes using the values setup in the ladder program.



A maximum of 108 words from WM400, WM700 can be used as the Read Area. However, Word Addresses from EM960 cannot be used as the Read Area. If any address from EM960 is used as the Read Area, the "PLC COM. ERROR(02:FA)" message will appear.



• Bit Address

A bit address (1 point) uses the data area of one byte. The bit address turns the highest bit (b7) on/off in the corresponding data area.

M400								
M401	b7	b6	b5	b4	b3	b2	b1	b0

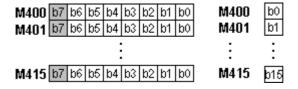
Word Address

Word address uses the data area of 2 bytes. For example, selecting M400 causes the setup of the next address, M401, as well.

M400								
M401	b7	b6	b5	b4	b3	b2	b1	b0

Vertical Address

Uses the highest bit (b7) of 16 consecutive addresses to form word data.



The Vertical Address can only use numbers divisible by 16.

• The Internal Output (bit address) functions as listed below.

M400~M655 Data not preserved when powered off M700~M955 Data preserved when powered off Special Area

2.5.4

Environment Setup

The following tables list Digital's recommended PLC and GP communication settings.

■ HIDIC S10a Series

GP Setup		Upper Computer I/F, Upper Link Module Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps *1
Data Length	8 bits (fixed)		
Stop Bit	1 bit (fix ed)		
Parity Bit	Odd (fixed)		
Data Flow Control	ER Control		
Communication Format	4-wire type		
Unit No.	0		

^{*1} LWP000 is fixed (setup is unnecessary).

■ S10 mini Series

GP Setup		Upper Computer I/F, Upper Link Module Setup		
Baud Rate	19200 bps	Baud Rate 19200 bps		
Data Length	8 bits (fixed)	<u> </u>		
Stop Bit	1 bit (fix ed)			
Parity Bit	Odd (fixed)			
Data Flow Control	ER Control		_	
Communication Format	RS-232C	Communication Format Protocol RS-232C setting switch 8 or 9 *1		
Unit No.	0			

^{*1} When using CN1 and CN2 simultaneously, set them so that their numbers will not duplicate.

■ HIDIC H Series (using COMM module)

Procedure 1 for transmission control

GP Setup		COMM Module Setup		
Baud Rate	19200 bps	Baud Rate	19200 bps	
Data Length	7 bits	Data Bit	7 bits	
Stop Bit	1 bit	Stop Bit	1 bit	
Parity Bit	Even	Parity Bit	Even	
Data Flow Control	ER Control		-	
Communication Format (RS-232C)	RS-232C	Communication Format (RS-232C)	RS-232C	
Communication Format (RS-422)	4-wire type	Communication Format (RS-422) Mode Switch	RS-422 2	
		Sum Check	Yes	
Unit No. (RS-232C)	0	Station No. (RS-232C)	0	
Unit No. (RS-422)	1	Station No. (RS-422)	1	

■ HIDIC-H Series/COMM-2H Procedure 2 for transmission control

GP Setup		COMM Module Setup		
Baud Rate	19200 bps	Baud Rate	19200 bps	
Data Length	7 bits	Data Bit	7 bits	
Stop Bit	1 bit	Stop Bit	1 bit	
Parity Bit	Even	Parity Bit	Even	
Data Flow Control	ER Control			
Communication Format	RS-232C	Communication Format	RS-232C	
(RS-232C)		(RS-232C)		
		Mode Switch	9	
Communication Format	4-wire type	Communication Format	RS-422	
(RS-422)		(RS-422)		
		Mode Switch	9	
		Sum Check	Yes	
Unit No. (RS-232C)	0	Station No. (RS-232C)	0	
Unit No. (RS-422)	1	Station No. (RS-422)	1	

■ **HIDIC-H Series** (CPU Direct Connection)

GP Setup		PLC Setup	
Baud Rate	4800 bps *1	Baud Rate	4800 bps *1
Data Length	7 bits	Data Bit	7 bits
Stop Bit	1 bit	Stop Bit	1 bit
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER Control	Data Flow Control	DTR Control
Communication Format	RS-232C	Communication Format	RS-232C
		Operation Mode	Transmission Control Procedure 1
Unit No.	0	Station No.	0

^{*1} With some CPUs, a baud rate of 19200bps or 38400bps can be used. Refer to"2.5.1 System Structure" for details.

■ HIDIC EH150 Series

GP Setup		PLC Setup	
Baud Rate	19200 bps	Baud Rate *1	19200 bps
Data Length	7 bits	Data Bit	7 bits
Stop Bit	1 bit	Stop Bit	1 bit
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER Control		
Communication Format	RS-232C or	Mode Setting Switch	SW1: OFF
	4-wire type		(Normal mode)
			SW5: ON
			(Exclusive mode)
			SW7 : OFF
			(Normal Operation mode)
			SW8: OFF
			(Normal Operation mode)
		Port ON/OFF Switch	ON (Programer Connection)
		Exclusive Port Setting *2	Special Internal Output
			WRF037 *3
Unit No.	0		

^{*1} Set the Mode Setting Switch. (SW3, 4: Port 1, SW6: Port 2) When using Prot 2, the cable diagram needs to be changed.

Reference refer to 2.5.1 System Structure

RS-232C Procedure 1 : 8000H

RS-232C Procedure 2: C000H

RS-422 Procedure 1 with unit No. : AlxxH (xx indicates GP's Unit No.)

RS-422 Procedure 2 with unit No.: ElxxH (xx indicates GP's Unit No.)

^{*2} Set when using EH-CPU448.

^{*3} Ddepending on the your Interface and Procedure, varies as shown below.

^{*4} Only EH-CPU448's serial port1 can be set.

■ HIZAC EC Series

GP Setup		PLC Setup	
Baud Rate	9600 bps	Baud Rate	9600 bps
Data Length	7 bits	Data Bit	7 bits
Stop Bit	1 bit	Stop Bit	1 bit
Parity Bit	Even	Parity On/Off	On
		Parity	Even
Data Flow Control	ER Control	Data Flow Control	DTR Control
Communication Format	RS-232C	Communication Mode	COM2 Mode
			(Command mode)
		Sum Check	Yes
Unit No.	0 (fixed)		

■ MICRO-EH Series

GP Setup		PLC Setup	
Baud Rate	9600 bps	Baud Rate	19200 bps
Data Length	7 bits (fixed)		
Stop Bit	1 bit (fixed)		
Parity Bit	Even (fixed)		
Data Flow Control	ER Control		
Communication Format	RS-232C, 4-wire		
Unit No.	0	Port 1 Setup	Special Internal Output Set to WRF01A *1
		Port 2 Setup	Special Internal Output Set to WRF03D *2

^{*1} Transmission Control Procedure 1: 000H Transmission Control Procedure 2: 8000H

^{*2} Transmission Control Procedure 1 (with Station Number) (192000 bps): A200H Transmission Control Procedure 2 (with Station Number) (192000 bps): E200H



2.6 Sharp

2.6.1 System Structure

The following describes the system structure for connecting the GP to Sharp PLCs.

Reference The Cable Diagrams mentioned in the following table are listed in the section titled "2.6.2 Cable Diagrams".

■ New Satellite JW Series (using Link I/F)

CPU	Link I/F	Cable Diagram	GP
	Link I/F		
JW20	Link I/F on CPU unit *1	RS-232C	
		(Cable Diagram 1)	
	JW-21CM	RS-422 4-wire type	•
		(Cable Diagram 3)	
		RS-422 2-wire type	
		(Cable Diagram 4)	
JW-32CUH	Link I/F on CPU unit	RS-232C Connected to	
JW-32CUH1		PG/COMM2 port	
JW-33CUH3		(Cable Diagram 2)	
		RS-422 (4 wire type	
		Connected to PG/COMM1	
		port or PG/COMM2 port	
		(Cable Diagram 5)	
	JW-21CM	RS-422 4-wire type	05.0
		(Cable Diagram 3)	GP Series
JW50	JW-10CM	RS-422 4-wire type	
	71110011	(Cabe Diagram 3)	
	ZW-10CM	RS-422 4-wire type	
		(Cabe Diagram 3)	
		RS-422 2-wire type	
114/70 114/100	Link I/F on CPU unit *1	(C abe Diagram 4) RS-232C	
JW70, JW100	LINK I/F ON CPU UNIL 1		
	JW-10CM	(C abe Diagram 1) RS-422 4-wire type	
	JVV-10CIVI	1	
	ZW-10CM	(Cabe Diagram 3)	
	ZVV-10CIVI	RS-422 4-wire type	
		(Cabe Diagram 3)	
		RS-422 2-wire type	
		(Cabe Diagram 4)	

^{*1} Connect to the CPU Module's (JW-22CU, JW-70CU, JW-100CU) communication port.



Places noted as RS-422 can also use RS-485 on the PLC side.

2.6.2 Cable Diagrams

The cable diagrams illustrated below and the cable diagrams recommended by Sharp may differ, however, using these cables for your PLC operations will not cause any problems.

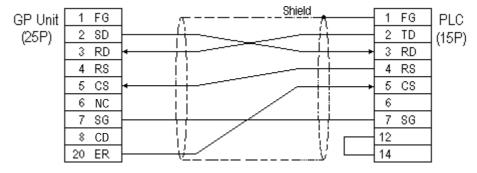


Ground your PLC's FG terminal according to your country's applicable standard. For details, refer to the corresponding PLC manual.



- Connect the FG line of the Shield cable to either the GP or PLC, depending on your environment. When using a connector hood and grounding the FG line, be sure to use an electrical conductor. The following connection diagrams show examples for connecting a shielded cable to the PLC.
- For the RS-232C connection, use a cable length less than 15m.
- If a communications cable is used, it must be connected to the SG (signal ground).
- For the RS-422 connection, refer to Sharp's PLC manual for the cable length.

Cable Diagram 1 (RS-232C)



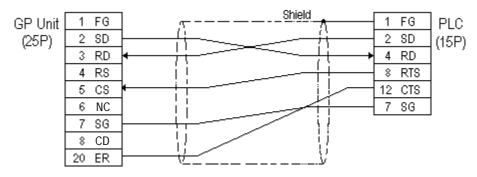


Fujikura Densen's 7P*7/0.18 57VV-SB is recommended for the connection cable.

Cable Diagram 2 (RS-232C)



Do not use pin Nos. 14 and 15 for connection with the GP since their voltage is +5V.

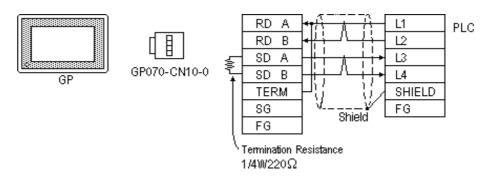


Cable Diagram 3 (RS-422)

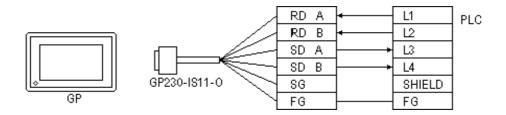


Turn on the PLC's Termination Resistor switch.

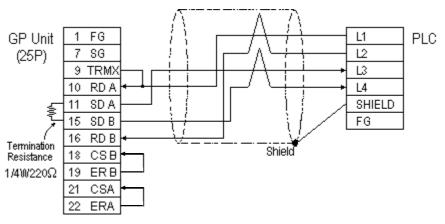
• When using Digital's RS-422 connector terminal adapter GP070-CN10-0



• When using Digital's RS-422 cable, GP230-IS11-0



• When making your own cable connections





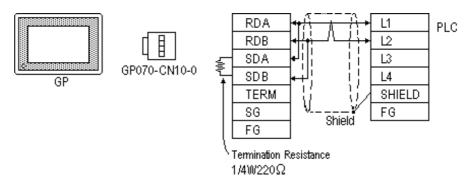
- When making your own cable connections, we recommend using Hitachi Densen's CO-SPEV-SB(A)3P*0.5 cable.
- When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.

Cable Diagram 4 (RS-422)



Turn on the Termination Resistor switch, on the PLC.

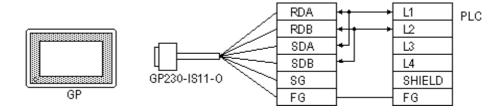
• When using Digital's RS-422 connector terminal adapter GP070-CN10-0





Connect terminals SD A and RD A to terminal base L1, and SD B and RD B to terminal block's L2 line.

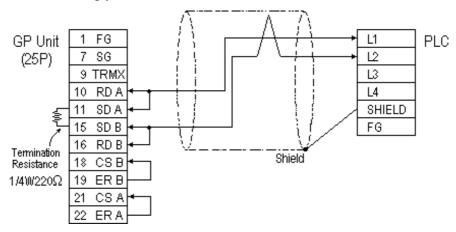
• When using Digital's RS-422 cable, GP230-IS11-0





• Connect terminals SD A and RD A to terminal base L1, and SD B and RD B to terminal block's L2 line.

• When making your own cable connections



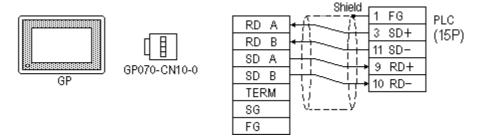


- When making your own cable connections, we recommend using Hitachi Densen's CO-SPEV-SB(A)3P*0.5 cable.
- When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.

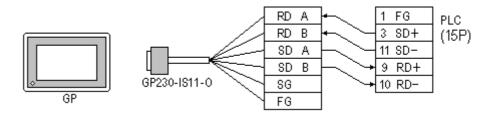
Cable Diagram 5 (RS-422)



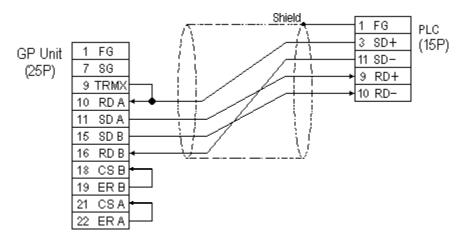
- Do not connect anything to pin Nos. 2, 4, 8, and 12.
- Do not use pin Nos. 14 and 15 for connection with the GP since their voltage is +5V.
- When using Digital's RS-422 connector terminal adapter GP070-CN10-0



• When using Digital's RS-422 cable, GP230-IS11-0



• When making your own cable connections





Our recommendation for making your own cable is Hitachi's CO-SPEV-SB(A) $3P0.5mm^2$.

2.6.3 Supported Devices

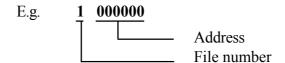
The following describes the range of devices supported by the GP.

■ New Satellite JW Series

Setup System	Area here.
--------------	------------

Device	Bit Address	Word Address	Particulars	
Relay	00000 ~ 15777	A0000 ~ A1576 (□0000 ~ □1576)	<u>÷2</u>	
Timer (contact)	T0000 ~ T0776			
Counter (contact)	C0000 ~ C0776			•
Timer/Counter (current v alue)		T0000 ~ T0777 B0000 ~ B3776 (b0000 ~ b3776)	÷27 Bit 1 51	
Register		09000 ~ 09776	(÷27 (Bit 1.51)	,
		19000 ~ 19776		
		29000 ~ 29776		L/H
		39000 ~ 39776		
		49000 ~ 49776	<u></u>	
		59000 ~ 59776		
		69000 ~ 69776	1	
		79000 ~ 79776	1	
		89000 ~ 89776	1	
		99000 ~ 99776	1	
File Register		1000000 ~ 7177776	±2¬ <u>Bitl5</u> 1	

^{* 1} The file register consists of a file number and an address.





The PLC manual uses the values displayed in brackets for the Relay and Timer/Counter (current value) (B) word addresses; as a result, when entering, be sure to use **A**XXXX or **B**XXXX.



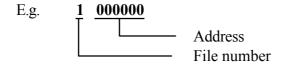
That the range of addresses that can be used will vary depending on the type of PLC.

■ New Satellite JW-32CUH Series

Setup System Area here.

Device	Bit Address	Word Address	Particulars	
Relay	00000 ~ 15777	A0000 ~ A1576 (⊐0000 ~ ⊐1576)	<u>÷</u> 2¬	
rciay	20000 ~ 75777	A2000 ~ A7576 (⊐2000 ~ ⊐7576)		
Timer (contact)	T0000 ~ T1777			
Counter (contact)	C 0000 ~ C 1777			
Timer/C ounter (current v alue)		B0000 ~ B3776 (b0000 ~ b3776)	<u>÷2</u>	
Register		09000 ~ 09776	[÷2] _{[Bit}] 5]	
		19000 ~ 19776		
		29000 ~ 29776		
		39000 ~ 39776		
		49000 ~ 49776		
		59000 ~ 59776		
		69000 ~ 69776	-	L/H
		79000 ~ 79776	-	
		89000 ~ 89776	-	
		99000 ~ 99776	-	
		E0000 ~E0776	1	
		E1000 ~ E1776		
		E2000 ~ E2776		
		E3000 ~ E3776		
		E4000 ~ E4776		
		E5000 ~ E5776		
		E6000 ~ E6776		
		E7000 ~ E7776		
File Register 1		1000000 ~ 1037776	*1	•
File Register 2		2000000 ~ 2177776	÷27 <u>Bit</u> 151	

^{* 1} The file register consists of a file number and an address.





The PLC manual uses the values displayed in brackets for the Relay and Timer/Counter (current value) (B) word addresses; as a result, when entering, be sure to use **A**XXXX or **B**XXXX.



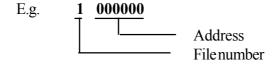
The range of addresses that can be used will vary depending on the type of PLC.

■ New Satellite JW Series (JW-33CUH3)

Setup System Area here.

Device	Bit Address	Word Address	Particulars	
Relay	00000 ~ 15777	A0000 ~ A1576 (⊐0000 ~ ⊐ 1576)	<u>÷2</u>	
	20000 ~ 75777	A2000 ~ A7576 (⊐2000 ~ ⊐7576)		
Timer (contact)	T0000 ~ T1777			
Counter(contact)	C0000 ~ C1777			
Timer/Counter (current value)		B0000 ~ B3776 (b0000 ~ b3776)	÷2¬	
Register		09000 ~ 09776	(÷278ii) 5	
		19000 ~ 19776		
		29000 ~ 29776		
		39000 ~ 39776		
		49000 ~ 49776		
		59000 ~ 59776		L/H
		69000 ~ 69776		
		79000 ~ 79776		
		89000 ~ 89776		
		99000 ~ 99776	1	
		E0000 ~ E0776	1	
		E1000 ~ E1776		
		E2000 ~ E2776		
		E3000 ~ E3776	1	
		E4000 ~ E4776	1	
		E5000 ~ E5776		
		E6000 ~ E6776		
		E7000 ~ E7776	1	
File Register 1		1000000 ~ 1037776	:278it151	
File Register 2		2000000 ~ 2177776		
File Register 3		3000000 ~ 3037776	1	
File Register 10-1F		F10000000 ~ F1F177776	* 1	
File Register 20-2C		F20000000 ~ F2C177776		

^{* 1} The file register consists of a file number and an address.





The PLC manual uses the values displayed in brackets for the Relay and Timer/Counter (current value) (B) word addresses; as a result, when entering, be sure to use AXXXX or BXXXX.



The range of addresses that can be used will vary depending on the type of PLC.

2.6.4

Environment Setup

The following lists Digital's recommended PLC and GP communication settings.

■ New Satellite JW Series (Using Link I/F on CPU unit)

GP Setup		Communication Port Setup		
Baud Rate *1	9600 bps	Baud Rate		9600 bps
Data Length	7 bits	Data Bit		7 bits
Stop Bit	2 bits	Stop Bit		2 bits
Parity Bit	Even	Parity Bit		Even
Data Flow Control	ER Control			
Communication Format	RS-232C			
Communication Format (4-wire)	4 wire type			
Communication Format (2-wire)	2 wire type			
Unit No.	1	Station Number		1

■ New Satellite JW Series (Using Link I/F)

GP Setup		Link Unit Setup	
Baud Rate *1	19200 bps	Baud Rate	19200 bps
Data Length	7 bits (fixed)	Data Bit	7 bits (fixed)
Stop Bit	2 bits (fixed)	Stop Bit	2 bits (fixed)
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER Control		•
Communication Format (4-wire)	4 wire type	Comm Mode (SIO Line#) (4-wire type)	4 wire type
Communication Format (2-wire)	2 wire type	Comm Mode (SIO Line#) (4-wire type)	2 wire type
		Function Setup Switch (S0)	Computer Link
Unit No.	1	Station Number	1

^{*1 115200}bps can be used when the JW-32CUH1 or the JW-33CUH3 is used.

2.7 Matsushita Electric Works

2.7.1 System Structure

The following describes the system structure for connecting the GP to Matsushita Electric Works PLCs.

The Cable Diagrams mentioned in the following tables are listed in the section titled "2.7.2 Cable Diagrams".

■ MEWNET Series (using Link Unit)

CPU	Link I/F	Cable Diagram	Cables	GP
	Computer Communica- tion Unit (C.C.U.)	▼		
FP1 (C24, C40C)	CPU unit Upper Link I/F *1	RS-232C (Cable Diagram 1) *5	Matsushita AFB85813 *4	
FP10SH FP2	CPU unit Upper Link I/F *2		Matsushita AFB85813 *4	
FP3	AFP3462	RS-232C		
FP5	AFP5462	(Cable Diagram 1)		
FP10(S)	AFP3462			GP Series
	Upper Link I/F on CPU *2			
FP-M	Upper Link I/F on CPU *3	RS232C		
		(Cable Diagram 1) *5		
FP0	Upper Link I/F on CPU *1	RS232C (Cable Diagram 6)		

^{*1} Connect to the RS-232C port.

^{*2} Connect to COM port.

^{*3} Connect to Serial port connector.

^{*4} Due to the size of its connector case, this cable cannot be used for GP-270, GP-370, GP-377, GP-377R and GP-2300 series unit.

^{*5} Use < Cable Diagram 2 > if the PLC's version is 2.6 or older.

CPU Cable Diagram Cables GP Adapter RS-422 FP1 *1 (Cable Diagram 3) Matsushita Electric Works' RS-422/232C RS-232C (Cable Diagram 4) terminal changer AFP8550 adapter **GP Series** RS-232C FP-M (Cable Diagram 5) RS-232C (For cable ¹FPO *4 Matsushita's FP diagram, refer to FP2 *1 personal computer Matsushita's FP pc M5 type M5 type (AFC8513) (AFC 8513) users manual)

■ MEWNET Series (using CPUdirect connection)

- * 1 Connect to the Programming Tool connector.
- * 2 It is necessary to connect the RS-422/RS-232C adapter with the PLC using Matsushita's FP1peripheral AFP15205 connection programmable cable.
- * 3 Connect to the Program connector.
- *4 Connect to the Tool port.

2.7.2 Cable Diagrams

The cable diagrams illustrated below and the cable diagrams recommended by Matsushita Electric Works may differ, however, using these cables for your PLC operations will not cause any problems.

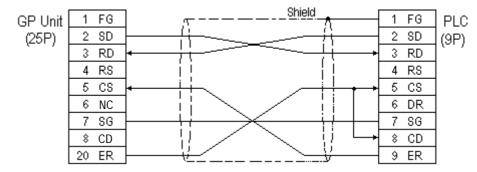


Ground your PLC's FG terminal according to your country's applicable standard. For details, refer to the corresponding PLC manual.

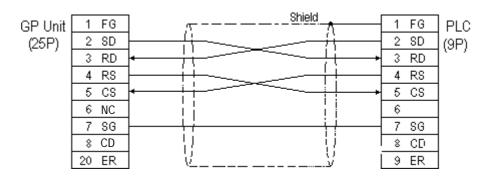


- Connect the FG line of the Shield cable to either the GP or PLC, depending on your environment. When using a connector hood and grounding the FG line, be sure to use an electrical conductor.
- For the RS-232C connection, use a cable length less than 15m.
- If a communications cable is used, be sure to connect the SG (signal ground).
- For the RS-422 connection, refer to Matsushita's PLC manual for the cable length.

Cable Diagram 1 (RS-232C)



Cable Diagram 2 (RS-232C)

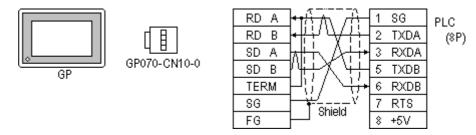


Cable Diagram 3 (RS-422)

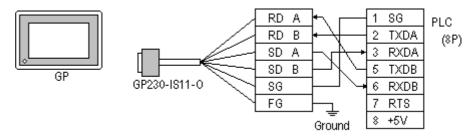


You can use Hirose's circular HR212-10P-8P for the PLC connector.

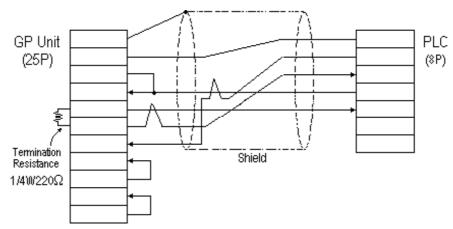
• When using Digital's RS-422 connector terminal adapter GP070-CN10-0



• When using Digital's RS-422 cable, GP230-IS11-0



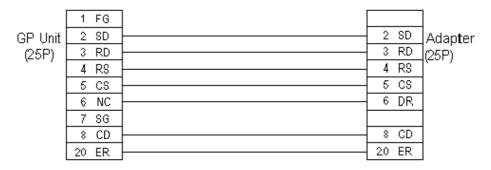
• When making your own cable connections



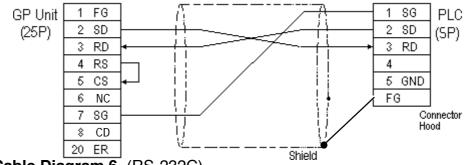


When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.

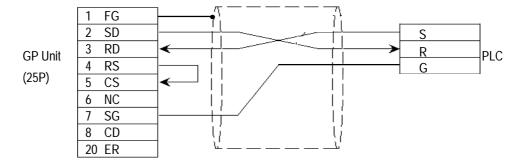
Cable Diagram 4 (RS-232C)



Cable Diagram 5 (RS-232C)



Cable Diagram 6 (RS-232C)



2.7.3 Su

Supported Devices

The following describes the range of devices supported by the GP.

■ MEWNET Series

Setup System Area here.

Device	Bit Address	Word Address	Particulars	
Input Relay	X0000 ~ X511F	WX000 ~ WX511	*1	
Output Relay	Y0000 ~ Y511F	WY000 ~ WY511		
Internal Relay	R0000 ~ R886F	WR000 ~ WR886		
Link Relay	L000 ~ L639F	WL000 ~ WL639		
Special Relay	R9000 ~ R910F	WR900 ~ WR910	*1	
Timer (contact)	T0000 ~ T3071		*1	
Counter (contact)	C 0000 ~ C 3071		*1	L/H
Timer/Counter (elapsed time)		EV0000 ~ EV3071	*1	υп
Timer/Counter (setup value)		SV0000 ~ SV3071	*1	
Data Register		DT0000 ~ DT10239	Bit 1 5 *2	
Link Register		Ld0000 ~ Ld8447	Bit 1 5 1	
File Register		FL00000 ~ FL32764	Bit] 5]	
Special Data Register		DT90000~DT90511	Bit 1 5 *3	

^{*1} Cannot perform data write.

^{*3} Only the FP10SH, FP10S, FP10 and FP2 can use this device.



When using the Timer and Counter with FP-M, setup each range in the System Register.



Some CPU devices also have extensions, but only the device ranges shown here can be used.

♦ Monitor Set-up

With the MEWNET-FP series, be sure to change the GP to offline mode before inputting the initial Monitor settings.

Reference Offline mode -> refer to each Users' manual, Chapter 4
Offline Mode

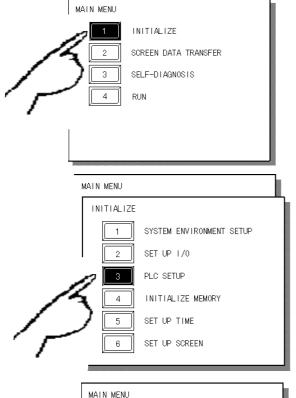


[Monitor is Registered] is preinstalled as the initial value.

When a PLC has 2 or more communication units (CCUs) installed with one CPU, and each of those CCUs is connected to a GP, be sure this setting is [OFF].

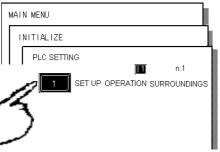
^{*2} Some CPU types use this device's word address DT09000 and higher as the Special Data Register.

Chapter 2 - PLC-GP Connection

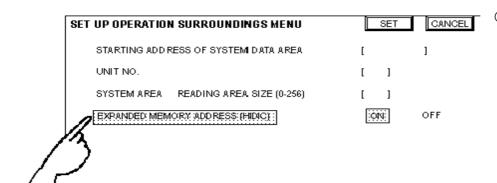


① Touch item #1, INITIALIZE. The INITIAL-IZE menu will appear.

② Touch item #3, PLC SETUP. The PLC SETTING menu will appear.



③ Touch selection [1:1] and then item #1, SET UP OPERATION SURROUND-INGS. The selected option is then highlighted.



Touch MONITOR REGISTER and the text will change to reverse video to show it has been selected.

(S) When the PLC has only a single (1) communication unit (CCU), which is attached to a single GP, select [ON]. When a PLC has 2 or more communication units (CCUs) installed with one CPU, and each of the CCUs is connected to a GP, select [OFF].

MONITOR REGISTER



2.7.4 Environment Setup

The following lists Digital's recommended PLC and GP communication settings.

■ FP1 (using CPU Upper Link I/F)

GP Setup		Computer Communication Unit Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	8 bits	Data Bit	8 bits
Stop Bit	1 bit	Stop Bit	1 bit
Parity Bit	Odd	Parity Bit	Odd
Data Flow Control	ER Control		•
Communication Format	RS-232C		
	-1	RS-232C port Operation Select 1 (Computer Link)	
		RS-422 port Unit No.	1
Unit No.	1	Unit No.	1

■ FP1 (CPU Direct Connection)

GP Setup		Computer Communi	cation Unit Setup
Baud Rate	19200 bps		
Data Length	8 bits (fixed)		
Stop Bit	1 bit (fixed)		
Parity Bit	Odd (fixed)		
Data Flow Control	ER Control		
Communication Format	4-wire type *1		
		RS-232C Port Operation Selection	1 (computer link)
		RS-422 Port Unit No.	1
Unit No.	1 (fixed)		

^{*1} If an RS-422/232C conversion adapter is in use, set the communication format to "RS-232C".

■ FP3/FP5/ FP10(S) (When using Computer Communication Unit)

GP Setup		Computer Communication Unit Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	8 bits	Data Bit	8 bits
Stop Bit	1 bit	Stop Bit	1 bit
Parity Bit	Odd	Parity Bit	Odd
Data Flow Control	ER Control	Control Signal *1	Make CS/CP ineffective
Communication Format	RS-232C	-	
Unit No.	1	Station No.	1

^{*1} The FP-10(S) does not have the Control Signal setting.

■ FP10(S) /FP10SH /FP2(When using COM Port)

GP Setup		COM Port Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps *1
Data Length	8 bits	Data Bit	8 bits
Stop Bit	1 bit	Stop Bit	1 bit
Parity Bit	Odd	Parity Bit	Odd
Data Flow Control	ER Control		
Communication Format	RS-232C		
Unit No.	1	Unit No.	1

^{*1} The FP10SH can also send data at 115200bps.

■ FP2 (CPU Direct Connection)

GP Setup		Tool Port Setup	
Baud Rate	19200bps	Baud Rate 19200bps	
Data Length	8bit	Run Mode Setting Switch	SW1:OFF
Stop Bit	1bit	Data Length	8bit
Parity Bit	Odd		
Data Flow Control	ER Control		
Communication Format	RS-232C		
Unit No.	1	Unit No. 1	
		Modem Connection	No Connection

■ FP-M (When using Serial Port Connector)

GP Setup		FPM Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	8 bits	Data Bit	8 bits
Stop Bit	2 bits	Stop Bit	2 bits
Parity Bit	None	Parity Bit	None
Data Flow Control	ER Control	Start code End code	No STX CR
Communication Format	RS-232C	Communication Format	RS-232C
		Selection of serial port operation	1 (computer link)
Unit No.	1	Station number	1

■ FP-M (When using a Programmable Connector)

GP Setup		FP-M Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	8 bits	Data Bit	8 bits
Stop Bit	1 bit (fixed)	-	
Parity Bit	Odd (fixed)	-	
Data Flow Control	ER Control	-	
Communication Format	RS-232C	-	
Unit No.	1	Station number	1

■ FPO (Using Link I/F on CPU)

GP Setup		FPO Setup	
Baud Rate	9600bps	Baud Rate	9600bps
Data Length	8bit	Data Length	8bit
Stop Bit	1bit	Stop Bit	1bit
Parity Bit	Odd	Parity Bit	Odd
Data Flow Control	ER Control	Data Flow Control	ER Control
Unit No.	1	Unit No.	1

■ FPO (CPU Direct connection)

GP Setup		FPO Setup	
Baud Rate	9600bps	Baud Rate	9600bps
Data Length	8bit	Data Length	8bit
Stop Bit	1bit (fixed)	Stop Bit	
Parity Bit	Odd (fixed)	Parity Bit	
Data Flow Control	ER Control	Data Flow Control	ER Control
Unit No.	1	Unit No.	1

2.8 Yokogawa Electric

2.8.1 System Structure

The following describes the system structure for connecting the GP to Yokogawa Electric Corp. PLCs.

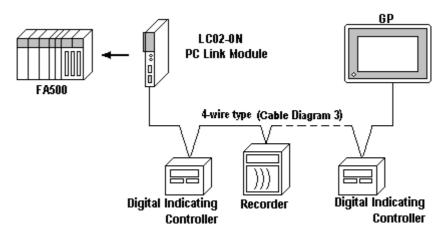
The Cable Diagrams mentioned in the following tables are listed in the section titled "2.8.2 Cable Diagrams".

■ FACTORY ACE Series/FA500 (using Link I/F)

CPU	Link I/F	Cable Diagram	Cables	GP
	PC Link Module		•	
FA500	LC01-ON	RS-232C	Digital's GP-410-IS00-O (5m)	
		(Cable Diagram 1)		
	LC02-ON	RS-232C	RS-232C	
		(Cable Diagram 1)	Digital's	
			GP410-IS00-O (5m)	GP Series
		RS-422		GF Selles
		(Cable Diagram 2)		
		RS-422 1:n		
		communication ^{*1}		
		(Cable Diagram 3)		

* 1 1:n Communication

The system structure of 1:n communication for Yokogawa PLCs (**FA500**), or equipment supporting its protocol (n#), and a GP unit (1) used as an upper link protocol is described here.



(See next page)

(Continued from previous page)

- * FA500 and equipment (Digital Indicating Controller, <UT37/38/2000> and Recorder, <µR-Series>...etc) supporting the same protocol are hereafter referred to as *PA Equipment*.
- Be sure to use only one GP in the system.
- In the Link above, maximum 32 PA Equipment can be connected to one GP.
- When Sequence Control is unnecessary, the system structure is possible without the PLC.
- Using the method above, Unit No. s $1\sim16$ can be setup; a Unit No. of 17 or higher cannot be used.



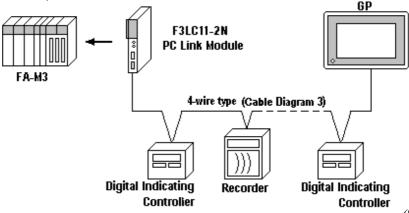
Wherever RS-422 appears in the table, RS-485 can be used on the PLC.

■ FACTORY ACE Series/FA-M3 (using Link I/F)

CPU	Link I/F	Cable Diagram	Cables	GP
	PC Link Module		-	
F3SP10-0N	F3LC 01-1N	RS-232C		
		(Cable Diagram 4)		
F3SP20-0N, F3SP21-0N,	F3LC 11-1N	RS-232C		
F3SP25-2N, F3SP28-3N,	F3LC 11-1F	(Cable Diagram 4)		
F3SP30-0N, F3SP35-5N,	F3LC 11-2N	RS-422 (4-wire type)		
F3SP38-6N, F3SP53-4H,		(Cable Diagram 2)		
F3SP58-6H, F3FP36-3N		RS-422 (2-wire type)		GP Series
		(Cable Diagram 5)		GP Selles
	F3LC 11-2N	RS-422, 4-wire type		
		1:n communication *1		
		(Cable Diagram 3)		
		RS-422, 2-wire type		
		1:n communication		
		(Cable Diagram 6)		

*1 1:n Communication

The system structure of 1:n communication for Yokogawa PLCs (FA-M3), or equipment supporting its protocol (n#), and a GP unit (1) used as an upper link protocol is described here.



(See next page)

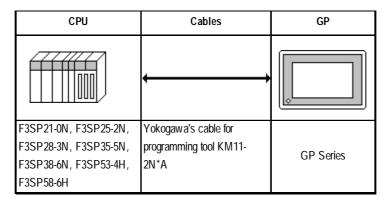
GP-PRO/PBIII for Windows Ver.6.0 PLC Connection Manual

- * FA-M3 and equipment (Digital Indicating Controller, <UT37/38/2000> and Recorder, <mR-Series>...etc) supporting the same protocol is referred to as *PA Equipment*, below.
- Be sure to use only one GP in the system.
- In the Link above, maximum 32 PA Equipment can be connected to one GP.
- When Sequence Control is unnecessary, the system structure can be created without the PLC.
- In the method above, Unit No. of 1~16 can be setup; a Unit No. of 17 or more cannot be used.



Wherever RS-422 appears in the table, RS-485 can be used on the PLC.

■ FACTORY ACE Series/FA-M3 (CPU Direct Connection)





Two GP units cannot be connected at the same time using the PC Link I/F.

■ STARDOM Standalone Type Controller

СРИ	Cables	GP
FCN	RS-232C	CD Corios
FCJ	(Cable Diagram 4)	GP Series

2.8.2

Cable Diagrams

The cable diagrams illustrated below and the cable diagrams recommended by Yokogawa Electric may differ, however, using these cables for your PLC operations will not cause any problems.

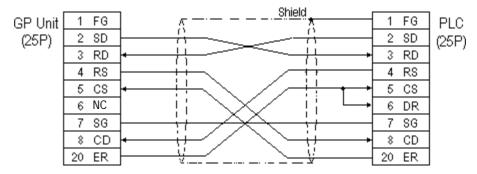


Ground your PLC's FG terminal according to your country's applicable standard. For details, refer to the corresponding PLC manual.



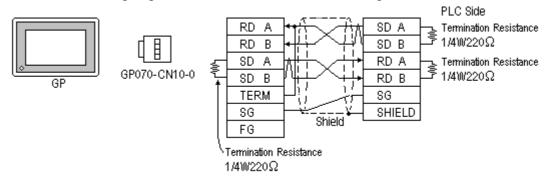
- Connect the FG line of the Shield cable to either the GP or PLC, depending on your environment. When using a connector hood and grounding the FG line, be sure to use an electrical conductor. The following connection diagrams show examples for connecting a shielded cable to the PLC.
- For the RS-232C connection, use a cable length less than 15m.
- If a communications cable is used, it must be connected to the SG (signal ground).
- For the RS-422 connection, refer to Yokogawa's PLC manual for the cable length.

Cable Diagram 1 (RS-232C)

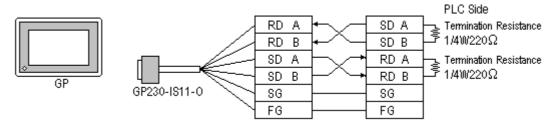


Cable Diagram 2 (RS-422)

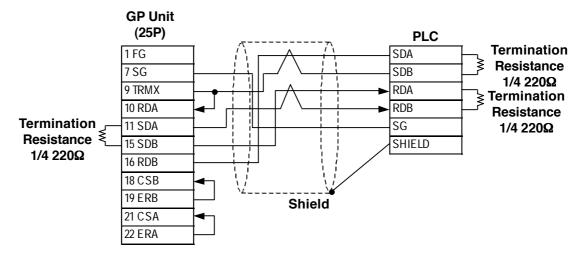
• When using Digital's RS-422 connector terminal adapter GP070-CN10-0



• When using Digital's RS-422 Cable, GP230-IS11-0



• When making your own cable connections





- When making your own connections, we recommend using Hitachi Densen's CO-SPEV-SB(A)3P*0.5SQ cable.
- When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.

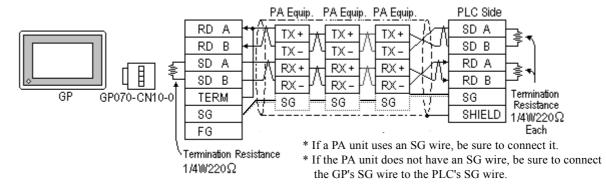
Cable Diagram 3 (RS-422)

The diagrams below are examples of wire connections on both ends of the GP and PLC. Setup the termination resistors on both ends of the equipment, as illustrated.

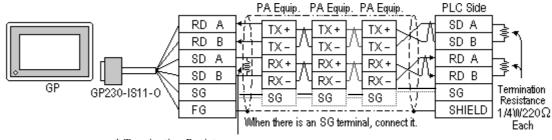


- Be careful as the reading of the A signal and B signal is opposite on the GP and the LC02-0N (PLC).
- Make the PC Link I/F Station Number from 2 to 32.
- Setup the PA unit connected to the GP using different Unit Numbers. An error will develop if multiple PA units are setup using the same Unit Number. When an error occurs, the error message "Recieving Data Error occurs (02:FD:**)" (** indicates the unit No.) will appear.
- Setup the GP (1) and PA units (n#) with the same Communication Settings.

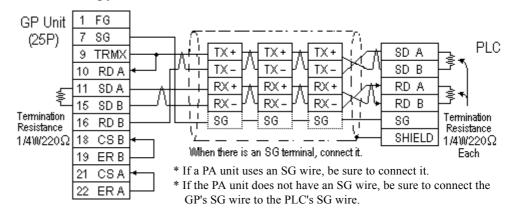
• When using Digital's RS-422 connector terminal adapter GP070-CN10-0



• When using Digital's RS-422 Cable, GP230-IS11-0



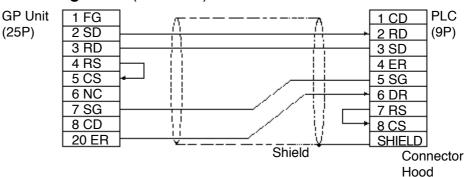
- * Termination Resistance * If a PA unit uses an SG wire, be sure to connect it.
 - * If the PA unit does not have an SG wire, be sure to connect the GP's SG wire to the PLC's SG wire.
- When making your own cable connections





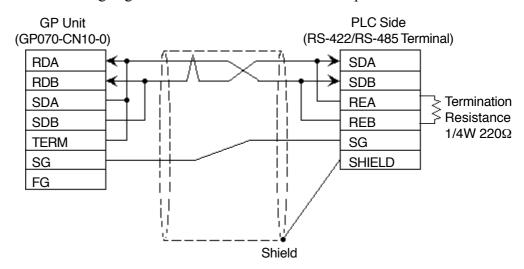
When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.

Cable Diagram 4 (RS-232C)

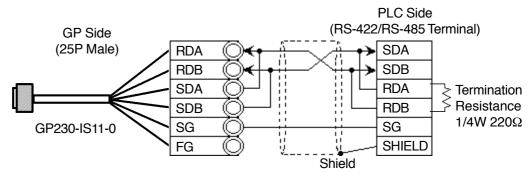


Cable Diagram 5 (RS-422)

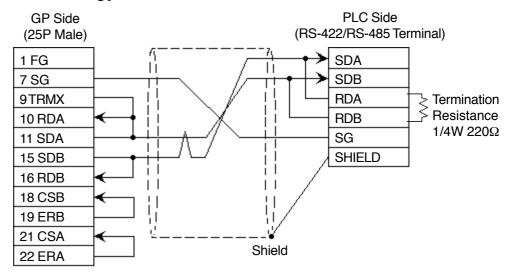
• When using Digital's RS-422 connector terminal adapter GP070-CN10-0



• When using Digital's RS-422 cable, GP230-IS11-0

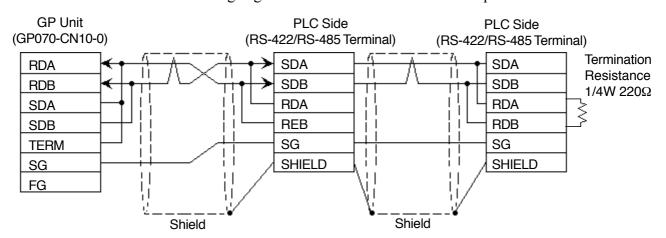


• When making your own cable connections

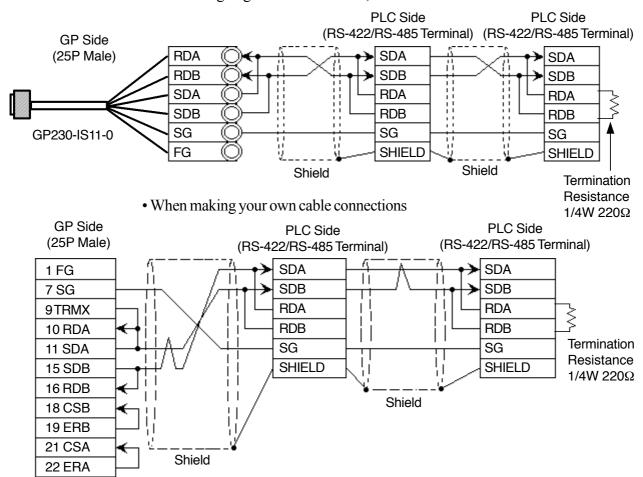


Cable Diagram 6 (RS-422)

• When using Digital's RS-422 connector terminal adapter GP070-CN10-0



• When using Digital's RS-422 cable, GP230-IS11-0





- If the connection is terminated while 2-wire type communication is being carried out, use the 2-wire termination resistance switch on the PC link module (F3LC11-2N).
- The names of the poles A and B are reversed between the GP and the PLC.

2.8.3 Supported Devices

The following describes the range of devices supported by the GP.

■ FA500 (1:1 communication) Setup System Area here.

Device	Bit Address	Word Address	Particulars	
Input Relay	X00201 ~ X61164	X00201 ~ X61149	<u>÷16+</u>]) *1*2	
Output Relay	Y00201 ~ Y61164	Y00201 ~ Y61149	<u>÷16+</u>]) *1*2	
Internal Relay	10001 ~ I2048	10001 ~ I2033	<u>÷16+</u>]] *²	
Joint Relay	E0001 ~ E2048	E0001 ~ E2033	<u>÷16∓</u>])	
Special Relay	M001 ~ M512	M001 ~ M497	÷16+]] *2*3	
Link Relay	L0001 ~ L1024	L0001 ~ L1009	<u>÷16+</u>]) *2 *3	
Timer (contact)	T001 ~ T256		*2	
Counter (contact)	C001 ~ C256		*2	L/H
Timer (current value)		TP001 ~ TP256	*2	L/11
Timer (setup value)		TS001 ~ TS256	*2	
Counter (current value)		CP001 ~ CP256	*2	
Counter (setup value)		CS001 ~ CS256	*2	
Data Register		D0001 ~ D2048	Bit 1 5 1 2	
Common Register		B0001 ~ B2048	Bit 151 *2	
Special Register		Z001 ~ Z128	Bit 151 *2*3	
Link Register		W0001 ~ W1024	Bit 151 *2*3	

^{* 1} The value of the terminal number (bit), $01\sim49$, of the last two digits for the Input Relay and Output Relay can only be a multiple of 16+1.

$$X \xrightarrow{002} \xrightarrow{01}$$
 Slot No. Terminal No.

* 2 Write the CPU Number (1~4) in front of the device name.

E.g. For Internal Relay 10001, CPU #3:

$$\begin{array}{c}
3 & 10001 \\
\hline
Device Name} \\
CPU & No.
\end{array}$$

* 3 Cannot perform data write.

■ FA500 (1:n communication)

Setup System Area here.

Device	Bit Address	Word Address	Particulars
Input Relay	X00201 ~ X61164	X00201 ~ X61149	<u>÷16+</u>]) *1*2
Output Relay	Y00201 ~ Y61164	Y00201 ~ Y61149	<u>÷16+</u>]) *1*2
Internal Relay	10001 ~ I2048	10001 ~ 12033	<u>÷16+</u>]) *²
Joint Relay	E0001 ~ E2048	E0001 ~ E2033	<u>÷16∓</u>])
Special Relay	M001 ~ M512	M001 ~ M497	<u>÷16+</u>]] *2*3
Link Relay	L0001 ~ L1024	L0001 ~ L1009	<u>÷16+</u>]) *2*3
Timer (contact)	T001 ~ T256		*2
Counter (contact)	C001 ~ C256		*2 1/H
Timer (current value)		TP001 ~ TP256	*2
Timer (setup value)		TS001 ~ TS256	*2
Counter (current value)		CP001 ~ CP256	*2
Counter (setup value)		CS001 ~ CS256	*2
Data Register		D0001 ~ D2047	Bit 1 5 1 *2
Common Register		B0001 ~ B2047	Bit 1 5 1 *2
Special Register		Z001 ~ Z128	Bit 151 *2*3
Link Register		W0001 ~ W1024	Bit 1 51 *2*3

* 1 When setting Word Address, set the value of the terminal number, 01~49, of the last two digits for the Input Relay and Output Relay to a multiple of 16+1.

$$X \xrightarrow{002} 01$$
 Slot No. \square Terminal No.

* 2 Write the CPU Number $(1\sim4)$ in front of the device name.

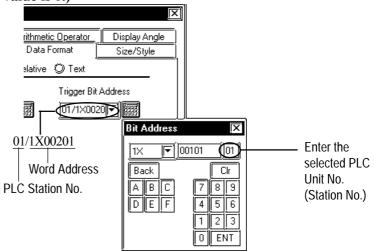
E.g. For Internal Relay 10001, CPU #3:

$$\begin{array}{c}
\frac{3}{10001} \\
Device Name
\end{array}$$
CPU No.

* 3 Cannot perform data write.



When setting tags up in GP-PRO/PBIII for Windows, the PLC Station number can be specified during address Input. If a station number is not indicated, it automatically uses the previously entered station number. (The initial default value is 1.)



■ FA-M3 (1:1 Communication)

Setup System Area here.

Device	Bit Address	Word Address	Particulars
Input Relay	X00201 ~ X71664	X00201 ~ X71649	÷16+]) *1*2
Output Relay	Y00201 ~ Y71664	Y00201 ~ Y71649	<u>÷16∓])</u> *1
Internal Relay	100001 ~ I32768	100001 ~ I32753	<u>÷16∓</u>])
Joint Relay	E0001 ~ E4096	E0001 ~ E4081	<u>÷16∓</u>])
Special Relay	M0001 ~ M9984	M0001 ~ M9969	<u>÷16∓]</u>]
Link Relay	L00001 ~ L78194	L00001 ~ L78177	<u>÷16∓]</u>)
Timer (contact)	T0001 ~ T3072		*2
Counter (contact)	C0001 ~ C3072		*2
Timer (current value)		TP0001 ~ TP3072	
Timer (setup value)		TS0001 ~ TS3072	*2 L/H
Counter (current value)		CP0001 ~ CP3072	
Counter (setup value)		CS0001 ~ CS3072	*2
Data Register		D0001 ~ D32768	Bit] 5]
		B00001 ~ B065536	
File Register		B065537 ~ B131072	Bit 1 5 1 *3*4
File Regisiei		B131073 ~ B196608	<u>Bit i Ci</u>
		B196609 ~ B262144	
Joint Register		R0001 ~ R4096	Bit 1 51
Special Register		Z001 ~ Z1024	Bit 1 51
Link Register		W00001 ~ W74096	<u>Bit</u> 15] *⁵

(See next page)

*1 The value of the terminal number (bit), 01~49, of the last two digits for the Input Relay and

Output Relay can only be a multiple of 16 +1.

E.g. For X00201

$$X \xrightarrow{002} 01$$
Slot No. Terminal No.

- *2 Cannot perform data write.
- *3 File registers are each 65,535 words on your GP application.

You cannot extend over more than a single data "block" when performing the following features.

Be sure to set these features' settings so they are within a single data block.

- 1) "a-tag" settings
- 2) Performing Block read/write from Pro-Server
- 3) Desginating the "Convert from" and "Conver to" address for the "Address Conversion" features
- *4 When using a PC Link module, only Link Register up to B99999 can be used.
- *5 A total of up to 4,096 link registers can be used.



• Write the CPU Number (1~4) in front of the device name.

E.g. For Internal Relay I0001, CPU #3:

• The range of device that can be used will vary depending on the type of PLC.

For detailed information refer to the Yokogawa's Sequnce CPU manual.

■ FA-M3 (1:n Communication)

Setup System Area here.

Device	Bit Address	Word Address	Particulars	
Input Relay	X00201 ~ X71364	X00201 ~ X71349	<u>÷16+</u>]] *1*2	
Output Relay	Y00201 ~ Y71364	Y00201 ~ Y71349	<u>÷16∓])</u> *1	
Internal Relay	10001 ~ 116384	10001 ~ 116369	<u>÷16∓</u>])	
Joint Relay	E0001 ~ E4096	E0001 ~ E4081	<u>÷16∓</u>])	
Special Relay	M0001 ~ M9984	M0001 ~ M9969	<u>÷16∓</u>])	
Link Relay	L00001 ~ L71024	L00001 ~ L71009	<u>÷16∓</u>])	
Timer (contact)	T0001 ~ T2047		*2	
Counter (contact)	C0001 ~ C2047		*2	
Timer (current value)		TP0001 ~ TP2047		L/H
Timer (setup value)		TS0001 ~ TS2047		,
Counter (current value)		CP0001 ~ CP2047		
Counter (setup value)		CS0001 ~ CS2047		
Data Register		D0001 ~ D2047	Bit 1 5 1	
File Register		B0001 ~ B2047	Bit 1 51	
Joint Register		R0001 ~ R2047	Bit 1 51	,
Special Register		Z001 ~ Z1024	Bit 1 5 1	,
Link Register		W0001 ~ W11023	Bit 151 *3	

^{*1} The value of the terminal number (bit), 01~49, of the last two digits for the Input Relay and Output Relay can only be a multiple of 16 +1.

$$X \xrightarrow{002} 01$$
 Slot No. \longrightarrow Terminal No.

^{*3} A total of up to 4,096 link registers can be used.



• Write the CPU Number (1~4) in front of the device name.

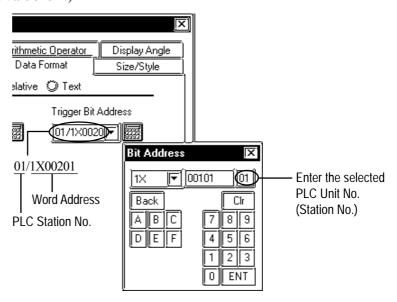
E.g. For Internal Relay I0001, CPU #3:

The range of device that can be used will vary depending on the type of PLC. For detailed information refer to the Yokogawa's Sequnce CPU manual.

^{*2} Cannot perform data write.



• When running tag setup in GP-PRO/PBIII for Windows, the PLC Station number can be specified at address Input. If a station number is not indicated, it automatically uses the previously entered station number. (The initial default value is 1.)



■ STARDOM Standalone Type Controller

Register Image	Bit Address	Word Address	Particulars
Internal Relay	10001 ~ 132767	10001 ~ 32753	<u>÷16+</u>])
Data Register		D00001 ~ D32767	<u>Bit 51</u>
File Register		B000001 ~ B032767	<u>Bit] 5]</u>



• Set each device using a CPU number of 1.

2.8.4

Environment Setup

The following lists Digital's recommended PLC and GP communication settings.

■ FACTORY ACE Series (using Link I/F RS-232C connection)

GP Setup		PC Link Module Setup	
Baud Rate	19200 bps	Baud Rate *1	19200 bps
Data Length	8 bits	Data Length	8 bits
Stop Bit	1 bit	Stop Bit	1 bit
Parity Bit	None	Parity Bit	None
Data Flow Control	ER Control		
Communication Format	RS-232C		
		Check Sum	No
		Specify End Character	Yes
		Protect Function	No
		Data Format Setup Switch	8 OFF
Unit No.	1	Station Number *2	1

^{*1} The PC Link I/F F3LC11-1F can be communicated by 115.2kbps.

■ FACTORY ACE Series (using Link I/F RS-422 connection)

GP Setup		PC Link Module/PA Equipment Setup		
Baud Rate (1:1 comm)	19200 bps	Baud Rate (1:1 comm)	19200 bps	
Baud Rate (1:n comm)	9600 bps	Baud Rate (1:n comm)	9600 bps	
Data Length	8 bits	Data Length	8 bits	
Stop Bit	1 bit	Stop Bit	1 bit	
Parity Bit	None	Parity Bit	None	
Data Flow Control	ER Control			
Communication Format (Select 4-wire type)	4-wire type			
Communication Format (Select 2-wire type)	2-wire ty pe			
		Check Sum	No	
		Specify End Character	Yes	
		Protect Function	No	
		Data Format Setup Switch	8 OFF	
Unit No. (1:1 comm)	FA-500: 2 FA-M3: 1	Station No. (1:1 comm)	FA-500: 2 FA-M3: 1	
Unit No. (1:n comm)	Match with PC Link Module station No.	Station No. (1:n comm)	Set up so that all PA Equip., PC Link module No.s are different	

^{*2} The PC Link I/F F3LC01-1N does not have this setting.

■ FACTORY ACE Series (FA-M3 CPU Direct Connection)

GP Setup		CPU Communication Port Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps *1
Data Length	8 bits		
Stop Bit	1 bit		
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER Control		
Communication Format	RS-232C		
		PC Link Function	Use
		Check Sum	No
		Specify End Character	Yes
		Protect Function	No
Unit No.	1		

^{*1} For F3SP28-3N, F3SP38-6N, F3SP53-4H, and F3SP58-6H, a baud rate of 115200 bps is also available.

■ STARDOM Standalone Type Controller

GP Setup		CPU Communication Port Setup	
Baud Rate	19200 bps *4	Baud Rate	19200 bps *1*4
Data Length	8 bits	Data Length	8 bits *1
Stop Bit	1 bit	Stop Bit	1 bit *1
Parity Bit	None	Parity Bit	None *1
Data Flow Control	ER Control		
Communication Format	RS-232C		
		Check Sum	No *2
		Specify End Character	Yes *2
Unit No.	1	Station No.	1 *2

^{*1} Set these parameters in the COM port setup using the Web browser.

Com1SioDriver=DUONUS_S10 Com2SioDriver=DUONUS_S10 ConsoleComPort=(blank)

^{*2} Pass the settings to the task startup FB parameters.

^{*3} Set the COM port as follows:

^{*4:} Communication at 115.2 kbps is possible.

2.9 Toyota Machine Works

2.9.1 System Structure

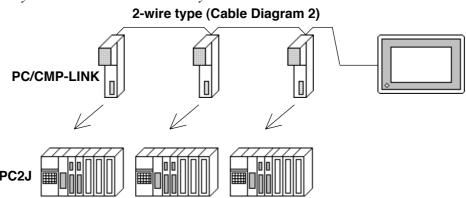
The following describes the system structure for connecting the GP to Toyota Machine Works PLCs.

The Cable Diagram mentioned in the following table is listed in the section titled "2.9.2 Cable Diagrams."

■ TOYOPUC-PC2 Series (using Link I/F)

CPU	Link I/F	Cable Diagram	GP
	Computer Link Module/ Link I/F		
PC2, L2	TPU-2652 (Computer Link Module)	RS-422 (Cable Diagram 1)	
PC2J	THU-2755 (PC/CMP Link Unit) THU-2755	Do 400 *1	GP series
	11 nu-2/55	RS-422 *1 1:n communication (Cable Diagram 2)	

- *1 The following system configuration shows how to communicate between one GP and "n" PC2J PLCs, using a host link protocol.
 - Only one GP can be used in this system.



• Up to 16 PC2J units can be connected to the single GP.

■ TOYOPUC-PC3J

СРИ	Link I/F	Cable Diagram	GP
	I	←	
		RS-422 (4 wires)	
		(Cable Diagram 3)	
		RS-422 (2 wires)	
	Link I/F for CPU unit	(Cable Diagram 4)	GP Series
		RS-422 (4 wires) (1:n)	
PC3J		(Cable Diagram 5)	
1 000		RS-422 (2 wires) (1:n)	
		(Cable Diagram 6)	
	PC/CMP-Link	RS-422 (2 wires)	
	(THU-2755) *1	(Cable Diagram 7)	
	(1110-2755)	RS-422 (2 wires) (1:n)	
		(Cable Diagram 8)	

*I When using PC3J commands to operate the PC/CMP-LINK(THU-2775), a Ver.5.00 or higher link unit is required. This unit, however, will not have the settings for the PC2J or PC3J switches (SW). If a PC3J command is sent to a version5.00 or lower link unit, an error code will appear on the bottom left corner on the GP screen.



- A maximum of 16 PLCs can be connected.
- For the connection cable, the Chugoku Densen Kogyo's double shield twist cable, 0-VCTF-SS 2C*0.75mm² is recommended.
- The maximum cable length is 600 meters.

2.9.2 Cable Diagrams

The cable diagrams illustrated below and the cable diagrams recommended by Toyota Machine Works, Ltd. may differ; however, using these cables for your PLC operations will not cause any problems.



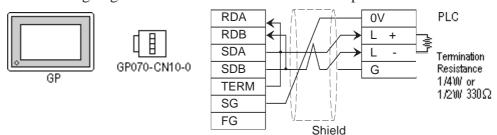
Ground your PLC's FG terminal according to your country's applicable standard. For details, refer to the corresponding PLC manual.



- Connect the FG line of the Shield cable to either the GP or PLC, depending on your environment.
- If a communications cable is used, it must be connected to the SG (signal ground).

Cable Diagram 1 (RS-422)

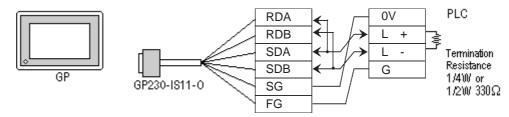
• When using Digital's RS-422 connector terminal adapter GP070-CN10-0





Connect terminals SD A and SD B to terminal L+, and SD B and RD B to terminal L-.

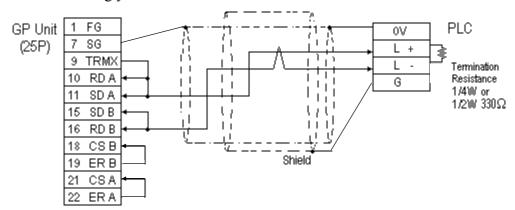
• When using Digital's RS-422 Cable, GP230-IS11-0





Connect terminals SDA and SDB to terminal $L+\mbox{,}$ and SDB and RDB to terminal $L-\mbox{.}$

• When making your own cable connections

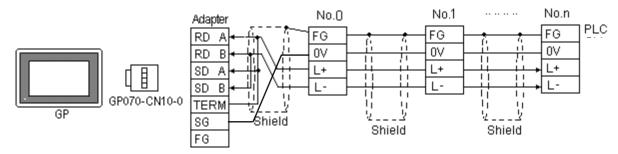




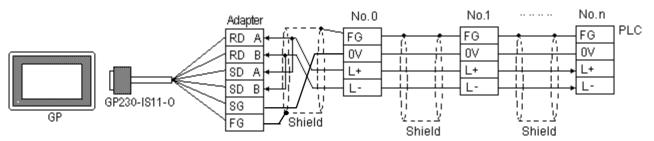
- When making your own connections, we recommend using Chugoku Densen Kogi's O-VCTF-SS2C*0.75mm² (2 overlapping *Shield Twist Pair*) cable.
- When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.

Cable Diagram 2 (RS-422)

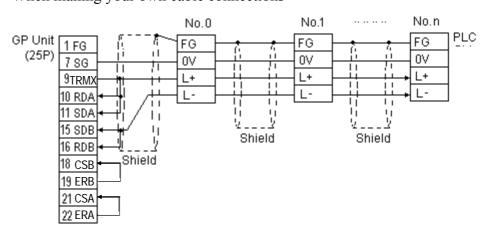
• When using Digital's RS-422 connector terminal adapter GP070-CN10-0



• When using Digital's RS-422 Cable, GP230-IS11-0

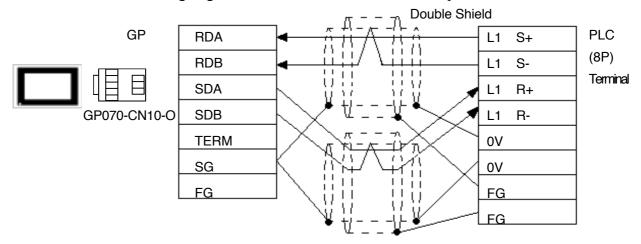


• When making your own cable connections



Cable Diagram 3 RS-422 4-wire type

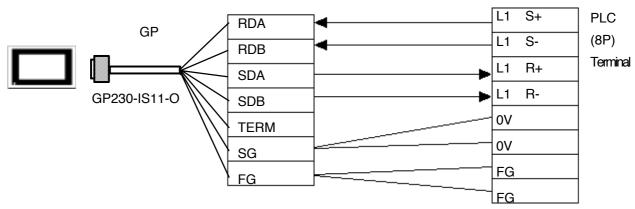
• When using Digital's RS-422 connector terminal adapter GP070-CN10-0



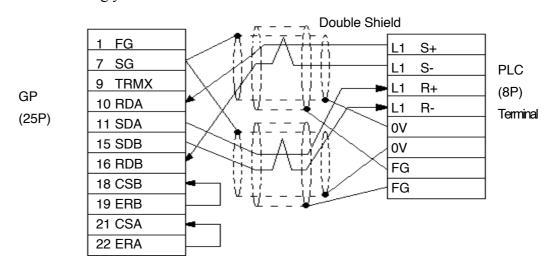
• When using Digital's RS-422 cable, GP230-IS12-0



In areas with excessive noise, use a double shielded cable.

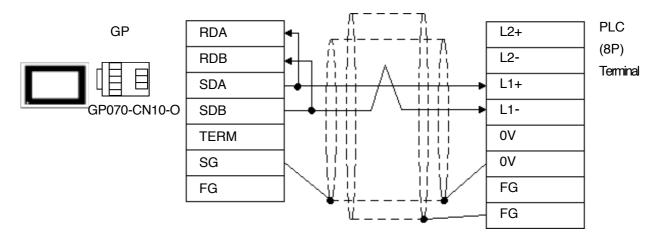


• When making your own cable



Cable Diagram 4 (1:1) RS-422 2-wire type, using I/F unit for CPU

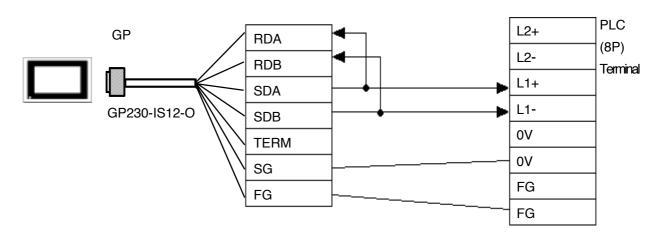
• When using Digital's RS-422 connector terminal adapter GP070-CN10-0



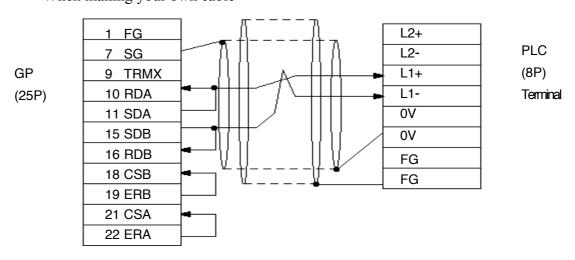
• When using Digital's RS-422 cable, GP230-IS12-0



In areas with excessive noise, use a double shielded cable.

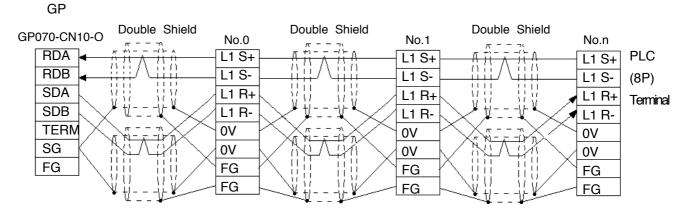


• When making your own cable



Cable Diagram 5 (1:n) RS-422 4-wire type

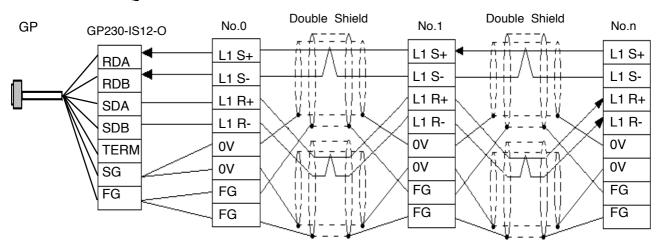
• When using Digital's RS-422 connector terminal adapter GP070-CN10-0

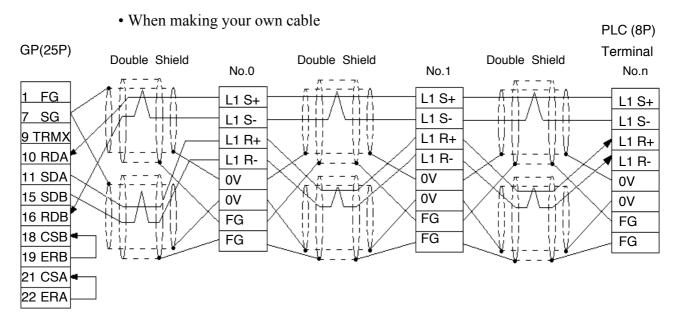


• When using Digital's RS-422 cable, GP230-IS12-0

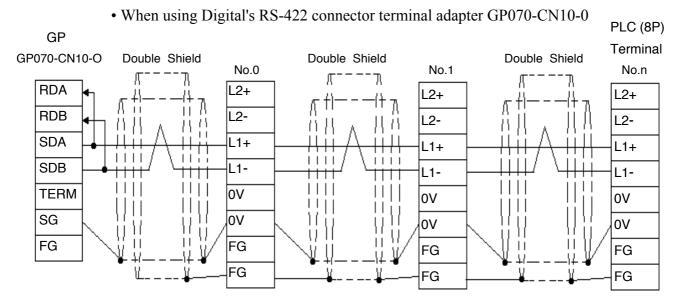
Note:

In areas with excessive noise, use a double shielded cable.

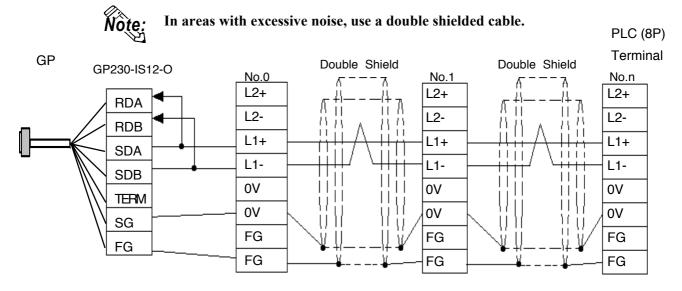




Cable Diagram 6 (1:n) RS-422 2-wire type, using I/F unit for CPU

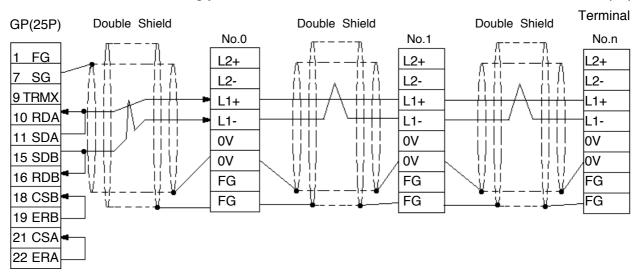


• When using Digital's RS-422 cable, GP230-IS12-0



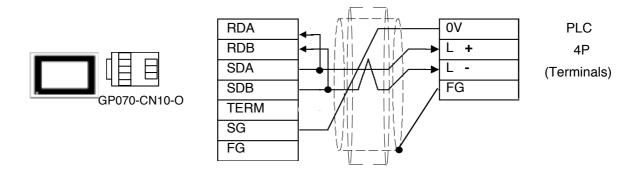
When making your own cable

PLC (8P)



Cable Diagram 7 (1:1) <PC/CMP-Link> RS-422 2-wire type

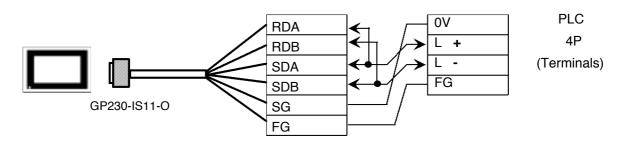
• When using Digital's RS-422 connector terminal adapter GP070-CN10-0



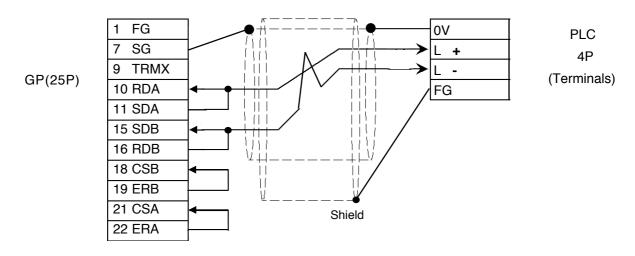
• When using Digital's RS-422 cable, GP230-IS11-0



In areas with excessive noise, use a double shielded cable.

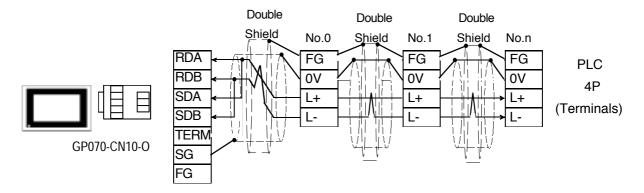


• When making your own cable



Cable Diagram 8 (1:n) <PC/CMP-Link> RS-422 2-wire type

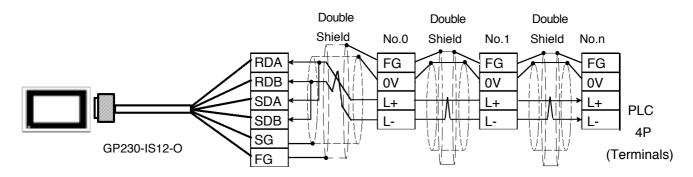
• When using Digital's RS-422 connector terminal adapter GP070-CN10-0



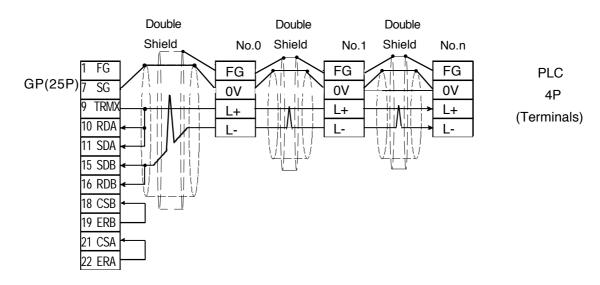
• When using Digital's RS-422 cable, GP230-IS12-0

Note:

In areas with excessive noise, use a double shielded cable.



• When making your own cable



2.9.3 Supported Devices

The following describes the range of devices supported by the GP.

■ TOYOPUC-PC2 Series

Setup System Area here.

Device	Bit Address	Word Address	Particulars	
Input Relay	X000 ~ X7FF	X0000 ~ X007F		L/H
Output Relay	Y000 ~ Y7FF	Y0000 ~ Y007F		
Internal Relay	M000 ~ M7FF	M0000 ~ M007F		
Keep Relay	K000 ~ K2FF	K0000 ~ K002F		
Link Relay	L000 ~ L7FF	L0000 ~ L007F		
Special Relay	V000 ~V0FF	V000~V00F		
Edge Detection	P000 ~ P1FF			
Timer (contact)	T000 ~ T1FF			
Counter (contact)	C000 ~ C1FF			
Current Value Register		N0000 ~ N01FF		
Data Register		D0000 ~ D2FFF	Bit F	
Link Register		R0000 ~ R07FF	Bit F	
File Register		B0000~B1FFF	Bit F	
Special Register		S0000 ~ S03FF	Bit F	

■ TOYOPUC-PC2 Series (1:n Connection)

Device	Bit Address	Word Address	Particulars	
Input Relay	X0000 ~ X07FF	X0000 ~ X007F		
Output Relay	Y0000 ~ Y07FF	Y0000 ~ Y007F		
Internal Relay	M0000 ~ M07FF	M0000 ~ M007F		
Keep Relay	K0000 ~ K02FF	K0000 ~ K002F		
Link Relay	L0000 ~ L07FF	L0000~L007F		
Special Relay	V0000 ~V00FF	V0000~V000F		
Edge Detection	P0000 ~ P01FF			L/H
Timer (contact)	T0000 ~ T01FF			L/11
Counter (contact)	C0000 ~ C01FF			
Current Value Register		N0000 ~ N01FF		
Data Register		D0000 ~ D0FFF	Bit F	
Link Register		R0000 ~ R07FF	Bit F	
File Register		B0000 ~ B0FFF	Bit F	
Special Register		S0000 ~ S03FF	Bit F	

■ TOYOPUC-PC3J (1:1 connection)

In this list, "Exp." means "Expansion". Setup system area here.

Device	Bit Address	Word Address	Comments
	1X0000 ~ 1X03FF	1X0000 ~ 1X003F	
Input	2X0000 ~ 2X03FF	2X0000 ~ 2X003F	
	3X0000 ~ 3X03FF	3X0000 ~ 3X003F	
	1Y0000 ~ 1Y03FF	1Y0000 ~ 1Y003F	
Output	2Y0000 ~ 2Y03FF	2Y0000 ~ 2Y003F	
	3Y0000 ~ 3Y03FF	3Y0000 ~ 3Y003F	
	1M0000 ~ 1M07FF	1M0000 ~ 1M007F	
Internal Relay	2M0000 ~ 2M07FF	2M0000 ~ 2M007F	
,	3M0000 ~ 3M07FF	3M0000 ~ 3M007F	
	1K0000 ~ 1K02FF	1K0000 ~ 1K002F	
Keep Relay	2K0000 ~ 2K02FF	2K0000 ~ 2K002F	
	3K0000 ~ 3K02FF	3K0000 ~ 3K002F	
	1L0000 ~ 1L07FF	1L0000 ~ 1L007F	
Link Relay	2L0000 ~ 2L07FF	2L0000 ~ 2L007F	1
Linertolay	3L0000 ~ 3L07FF	3L0000 ~ 3L007F	
	1V0000 ~ 1V00FF	1V0000 ~ 1V000F	-
Special Relay	2V0000 ~ 2V00FF	2V0000 ~ 2V000F	-
Special Relay	3V0000 ~ 3V00FF	3V0000 ~ 3V000F	-
	1P0000 ~ 1P01FF		-
Edge Detection	2P0000 ~ 2P01FF		-
Luge Delection	3P0000 ~ 3P01FF		-
	1T0000 ~ 3F01FF	1T0000 ~ 1T001F	-
Timor	2T0000 ~ 1T01FF		
Timer		2T0000 ~ 2T001F	_
	3T0000 ~ 3T01FF	3T0000 ~ 3T001F	_
Country	1C0000 ~ 1C01FF	1C0000 ~ 1C001F	┥
Counter	2C0000 ~ 2C01FF	2C0000 ~ 2C001F	L/H
	3C0000 ~ 3C01FF	3C0000 ~ 3C001F	╣
D D	1D00000 ~ 1D2FFFF	1D0000 ~ 1D2FFF	
Data Register	2D00000 ~ 2D2FFFF	2D0000 ~ 2D2FFF	
	3D00000 ~ 3D2FFFF	3D0000 ~ 3D2FFF	-
	1R00000 ~ 1R07FFF	1R0000 ~ 1R07FF	_
Link Register	2R00000 ~ 2R07FFF	2R0000 ~ 2R07FF	_
	3R00000 ~ 3R07FFF	3R0000 ~ 3R07FF	_
	1S00000 ~ 1S03FFF	1S0000 ~ 1S03FF	_
Special Register	2S00000 ~ 2S03FFF	2S0000 ~ 2S03FF	_
	3S00000 ~ 3S03FFF	3S0000 ~ 3S03FF	_
	1N00000 ~ 1N01FFF	1N0000 ~ 1N01FF	
Current Value Register	2N00000 ~ 2N01FFF	2N0000 ~ 2N01FF	
	3N00000 ~ 3N01FFF	3N0000 ~ 3N01FF	
File Register	B00000 ~ B1FFFF	B0000 ~ B1FFF	
Exp. Input	EX0000 ~ EX07FF	EX0000 ~ EX007F	
Exp. Output	EY0000 ~ EY07FF	EY0000 ~ EY007F	
Exp.Internal Relay	EM0000 ~ EM1FFF	EM0000 ~ EM01FF	
Exp. Keep Relay	EK0000 ~ EK0FFF	EK0000 ~ EK00FF	
Exp.n Link Relay	EL0000 ~ EL1FFF	EL0000 ~ EL01FF	
Exp. Special Relay	EV0000 ~ EV0FFF	EV0000 ~ EV00FF	
Exp. Edge Relay	EP0000 ~ EP0FFF		
Exp. Timer	ET0000 ~ ET07FF	ET0000 ~ ET007F	1
Exp. Counter	EC0000 ~ EC07FF	EC0000 ~ EC007F	
Exp. Special Register	ES00000 ~ ES07FFF	ES0000 ~ ES07FF	7
Exp. Current Value Register	EN00000 ~ EN07FFF	EN0000 ~ EN07FF	┥
Exp. Setting Value Register	H00000 ~ H07FFF	H0000 ~ H07FF	┥
Exp. Data Register	U00000 ~ U7FFFF	U0000 ~ U7FFF	┥

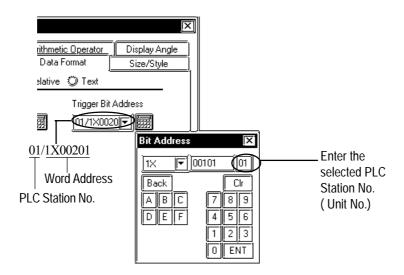
■ TOYOPUC-PC3J (1:n connection)

In this list, "Exp." means "Expansion". Setup system area here.

Device	Bit Address	Word Address	Comments
	1X0000 ~ 1X03FF	1X0000 ~ 1X003F	
Input	2X0000 ~ 2X03FF	2X0000 ~ 2X003F	-
•	3X0000 ~ 3X03FF	3X0000 ~ 3X003F	-
	1Y0000 ~ 1Y03FF	1Y0000 ~ 1Y003F	-
Output	2Y0000 ~ 2Y03FF	2Y0000 ~ 2Y003F	-
o a p a .	3Y0000 ~ 3Y03FF	3Y0000 ~ 3Y003F	-
	1M0000 ~ 1M07FF	1M0000 ~ 007F	-
Internal Relay	2M0000 ~ 2M07FF	2M0000 ~ 007F	-
memarkedy	3M0000 ~ 3M07FF	3M0000 ~ 007F	-
	1K0000 ~ 1K02FF	1K0000 ~ 1K002F	-
Keep Relay	2K0000 ~ 2K02FF	2K0000 ~ 2K002F	-
Reep Relay	3K0000 ~ 3K02FF	3K0000 ~ 3K002F	-
	1L0000 ~ 1L07FF	1L0000 ~ 3R0021	→
Link Dolov	2L0000 ~ 1L07FF	2L0000 ~ 007F	→
Link Relay	3L0000 ~ 3L07FF	3L0000 ~ 007F	→
Consider Delay	1V0000 ~ 1V00FF	1V0000 ~ 000F	→ 1
Special Relay	2V0000 ~ 2V00FF	2V0000 ~ 000F	→ 1
	3V0000 ~ 3V00FF	3V0000 ~ 000F	→
E	1P0000 ~ 1P01FF		→
Edge Detection	2P0000 ~ 2P01FF		→
	3P0000 ~ 3P01FF		→
	1T0000 ~ 1T01FF	1T0000 ~ 1T001F	_
Timer	2T0000 ~ 2T01FF	2T0000 ~ 2T001F	
	3T0000 ~ 3T01FF	3T0000 ~ 3T001F	→
_	1C0000 ~ 1C01FF	1C0000 ~ 1C001F	→
Counter	2C0000 ~ 2C01FF	2C0000 ~ 2C001F	L/F
	3C0000 ~ 3C01FF	3C0000 ~ 3C001F	ᆗ
	1D00000 ~ 1D0FFFF	1D0000 ~ 1D0FFF	_
Data Register	2D00000 ~ 2D0FFFF	2D0000 ~ 2D0FFF	<u> </u>
	3D00000 ~ 3D0FFFF	3D0000 ~ 3D0FFF	<u> </u>
	1R00000 ~ 1R07FFF	1R0000 ~ 1R07FF	→
Link Register	2R00000 ~ 2R07FFF	2R0000 ~ 2R07FF	
	3R00000 ~ 3R07FFF	3R0000 ~ 3R07FF	
	1S00000 ~ 1S03FFF	1S0000 ~ 1S03FF	
Special Register	2S00000 ~ 2S03FFF	2S0000 ~ 2S03FF	
	3S00000 ~ 3S03FFF	3S0000 ~ 3S03FF	
	1N00000 ~ 1N01FFF	1N0000 ~ 1N01FF	
Current Value Register	2N00000 ~ 2N01FFF	2N0000 ~ 2N01FF	
	3N00000 ~ 3N01FFF	3N0000 ~ 3N01FF	
File Register	B00000 ~ B0FFFF	B0000 ~ B0FFF	7
Exp. Input	EX0000 ~ EX07FF	EX0000 ~ EX007F	
Exp. Output	EY0000 ~ EY07FF	EY0000 ~ EY007F	
Exp. Internal Relay	EM0000 ~ EM0FFF	EM0000 ~ EM01FF	
Exp. Keep Relay	EK0000 ~ EK0FFF	EK0000 ~ EK00FF	\neg
Exp. Link Relay	EL0000 ~ EL0FFF	EL0000 ~ EL01FF	-
Exp. Special Relay	EV0000 ~ EV0FFF	EV0000 ~ EV00FF	7
Exp. Edge Relay	EP0000 ~ EP0FFF		7
Exp. Timer	ET0000 ~ ET07FF	ET0000 ~ ET007F	7
Exp. Counter	EC0000 ~ EC07FF	EC0000 ~ EC007F	
Exp. Special Register	ES00000 ~ ES07FFF	ES0000 ~ ES07FF	-
Exp.Current Value Register	EN00000 ~ EN07FFF	EN0000 ~ EN07FF	\dashv \parallel
Exp. Setting Value Register	H00000 ~ H07FFF	H0000 ~ H07FF	
Exp. Data Register	U00000 ~ U0FFFF	U0000 ~ U0FFF	-



- The range of devices supported may differ for 1:1 communication and for 1:n communication. A maximum of 16 PLCs can be connected.
- When setting tags in GP-PRO/PBIII for Windows, the PLC Station number can be specified during address Input. If a station number is not indicated, the previously entered station number is used. (The default value is 0)



2.9.4 Environment Setup

The following lists Digital's recommended PLC and GP communication settings.

■ TOYOPUC-PC2 Series (PC2/L2)

GP Setup		Computer Link Module Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	8 bits	Data Length	8 bits
Stop Bit	1 bit	Stop Bit	1 bit
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER Control		
Communication Format	2-wire type		
	•	Card Classification CMP Link	
		SET5 Watch Dog Timer ON	
Unit No.	0	Station Number Setting	0

■ TOYOPUC-PC2 Series (PC2J)

GP Setup		Computer Link Module Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	8 bits	Data Length	8 bits
Stop Bit	1 bit	Stop Bit	1 bit
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER Control		
Communication Format	2-wire type		
	•	Internal Switch (SW4)	1 is Off 2 is On
Unit No.	1	Station Number Setting	1

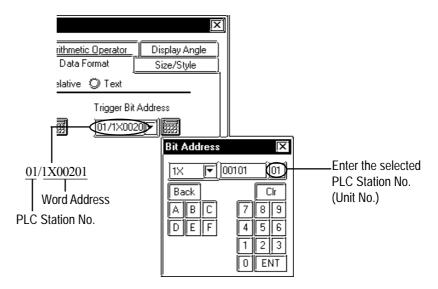
■ TOYOPUC-PC2 Series ((PC2J) (1:n connection)
-------------------------------	-------------------------

GP Setup		Computer Link Module Setup		
Baud Rate	19200 bps	Baud Rate	19200 bps	
Data Length	8 bits	Data Bit	8 bits	
Stop Bit	1 bit	Stop Bit	1 bit	
Parity Bit	Even	Parity Bit	Even	
Data Flow Control	ER Control			
Communication Format	2-wire type		-	
Unit No. *1	Match this number with that of any PC/CMP link.	Station Number Setting ¹¹ All PC/CMP link number must be different from each other.		
		Internal Switch (SW4)	1 is Off 2 is On	

^{*1} The memory used for the system area and the read area is allocated to the PLC which has been given the same number as that of the GP.



When entering tag address data in GP-PRO/PBIII for Windows, the PLC Station number can be specified. If a station number is not indicated, the previously entered station number is used. (The initial default value is 1.)



■ TOYOPUC-PC3J (1:1 connection) <Link I/F on CPU unit>

GP Setup		PLC Setup	
Baud Rate *1	19200 bps	Baud Rate	19200 bps
Data Length	8 bits	Data Length	8 bits
Stop Bit	1 bit	Stop Bit	1 bit
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER		
Communication Format *2	4-wire or 2-wire type	RS-422 communication port	4-wire or 2-wire type
Unit No.	0	Station No.	0

^{*1} The CPU's Link I/F unit maximum baud rate is 57600bps. It does not support 115.2kbps.

■ TOYOPUC-PC3J (1:n connection) <Link I/F on CPU unit>

GP Setup		PLC Setup	
Baud Rate *1	19200 bps	Baud Rate	19200 bps
Data Length	8 bits	Data Length	8 bits
Stop Bit	1 bit	Stop Bit	1 bit
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER		
Communication Format *2	4-wire or 2-wire type	RS-422 communication port	4-wire or 2-wire type
Unit No.	Select any unit number between 0 to 15. *3	Station No.	All link station numbers must be different

^{*1} The CPU's Link I/F unit maximum baud rate is 57600bps. It does not support 115.2kbps.

^{*2} Change the communication format depending on the cables you use.

^{*2} Change the communication format depending on the cable you use.

^{*3} A maximum of 16 PLCs can be connected. The PLC's station number must be in base8, however, GP's unit number must be in decimal.

■ TOYOPUC-PC3J (1:1 connection) <PC/CMP-Link>

GP Setup		PLC Setup	
Baud Rate *1	19200 bps	Baud Rate	19200 bps
Data Length	8 bits	Data Length	8 bits
Stop Bit	1 bit	Stop Bit	1 bit
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER		
Communication Format	2-wire type	RS-422 communication port *2	2-wire type
Unit No.	0	Station No.	0

^{*1} The PC/CMP-Link (THU-2755) unit's maximum baud rate is 57600bps. It does not support 115.2kbps.

■ TOYOPUC-PC3J (1:n connection) <PC/CMP-Link>

GP Setup		PLC Setup	
Baud Rate *1	19200 bps	Baud Rate	19200 bps
Data Length	8 bits	Data Length	8 bits
Stop Bit	1 bit	Stop Bit	1 bit
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER		
Communication Format	2-wire type	RS-422 communication port *2	2-wire ty pe
Unit No. *3	S elect any unit number betw een 0 to 15.	Station No.	All PC/CMP link station numbers must be different
		Internal Switch	SW4-1 OFF
		Internal Switch	SW4-2 ON

^{*1} The PC/CMP-Link (THU-2755) unit's maximum baud rate is 57600bps. It does not support 115.2kbps.

^{*2} With the PC/CMP-Link (THU-2755), only a 2-wire type can be used. When using PC3J commands, the link unit must be version 5.00 or higher.

^{*2} With the PC/CMP-Link (THU-2755), only a 2-wire type can be used. When using PC3J commands, the link unit must be version 5.00 or higher.

^{*3} A maximum of 16 PLCs can be connected. The PLC's station number must be in octal, however, GP's unit number must be in decimal.

2.10 Toshiba

2.10.1 System Structure

The following describes the system structure for connecting the GP to Toshiba PLCs.

Reference The Cable Diagrams mentioned in the following tables are listed in the section titled "2.10.2 Cable Diagrams".

■ PROSEC EX Series (using CPU unit Link I/F)

СРИ	Cable Diagram	GP
EX2000 ^{*1}	RS-422 (Cable Diagram 1)	GP series

^{*1} Connect to the Main Processor module (MPU6620).



Areas noted as using RS-422 can also use RS-485 on the PLC side.

■ PROSEC T Series (using CPU unit Link I/F)

CPU	Link I/F	Cable Diagram	GP
	Link Master Module	+	
T3 *1, T3H,	CPU Link I/Funit	RS-422	
10 / 1011/		(Cable Diagram2)	
T2E	CPU Programming	RS-232C	
	Port	(Cable Diagram4)	
T2N	CPU Link I/Funit	RS-422	GP Series
		(Cable Diagram2)	Gr Selles
		RS-232C	
		(Cable Diagram5)	
T2E	CM231E	RS-422	
		(Cable Diagram1)	

^{*1} Connect to the CPU module's computer link port.



Areas noted as using RS-422 can also use RS-485 on the PLC side.

CPU Link I/F Cable Diagram GP Link Master Module B200CU, B200CUF, B200CURM, B200CURM, B200CUFRM GP Cable Diagram 3) GP Series

■ PROVISOR B Series (using CPU unit Link I/F)



When connecting the GP and B200 Series, setup the Link I/F's Mode Setup/Delimiter to **CR**.

2.10.2 Cable Diagrams

The cable diagrams illustrated below and the cable diagrams recommended by Toshiba may differ; however, using these cables for your PLC operations will not cause any problems.



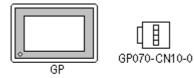
Ground your PLC's FG terminal according to your country's applicable standard. For details, refer to the corresponding PLC manual.

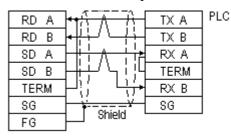


- Connect the FG line of the Shield cable to either the GP or PLC, depending on your environment. When using a connector hood and grounding the FG line, be sure to use an electrical conductor.
- For the RS-232C connection, use a cable length less than 15m.
- If a communications cable is used, it must be connected to the SG (signal ground).
- When using RS422 connection, please check the length of the cable with Toshiba PLC's users manual.

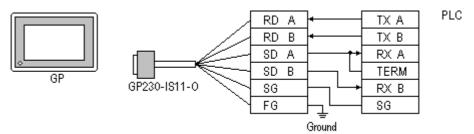
Cable Diagram 1 (RS-422)

• When using Digital's RS-422 connector terminal adapter GP070-CN10-0

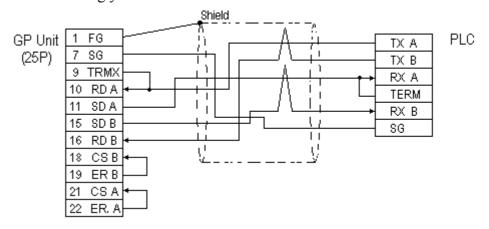




• When using Digital's RS-422 Cable, GP230-IS11-0



• When making your own cable connections

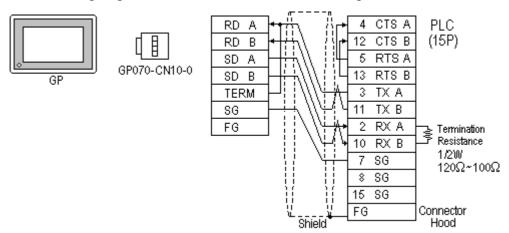


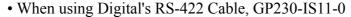


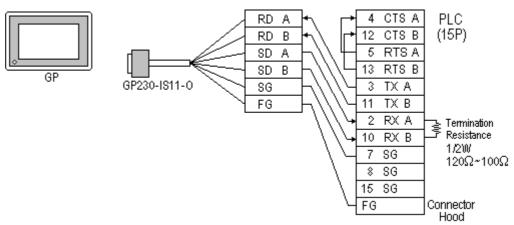
- When making your own connections, we recommend using Hitachi Densen's CO-SPEV-SB(A)3P*0.5 cable.
- When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.

Cable Diagram 2 (RS-422)

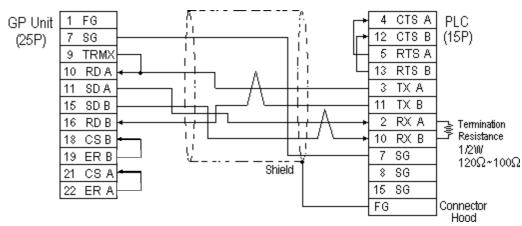
• When using Digital's RS-422 connector terminal adapter GP070-CN10-0







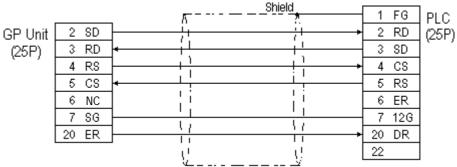
• When making your own cable connections



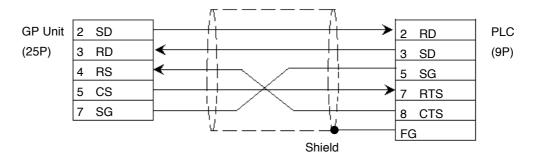


- When making your own connections, we recommend using Hitachi Densen's CO-SPEV-SB(A)3P*0.5 cable.
- When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.
- When using RS422 connection, please check the length of the cable with Toshiba PLC's users manual.

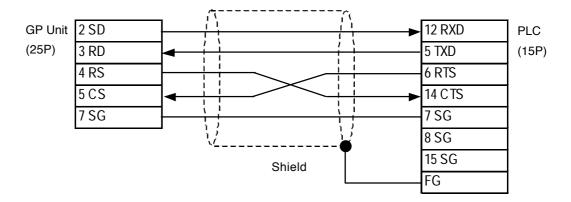
Cable Diagram 3 (RS-232C)



Cable Diagram 4 (RS-232C)



Cable Diagram 5 (RS-232C)



2.10.3 Supported Devices

The following describes the range of devices supported by the GP.

■ PROSEC EX Series

Setup System Area here.

Device	Bit Address	Word Address	Particulars	
External Input	X00000 ~ X0499F	XW0000 ~ XW0499		
External Output	Y00000 ~ Y0499F	YW0000 ~ YW0499		
Auxilary Relay	R00000 ~ R0999F	RW0000 ~ RW0999		
Link Register (relay)	Z00000 ~ Z0999F	ZW0000 ~ ZW1999		H/L
Timer (contact)	T0000 ~ T0499			
Counter (contact)	C0000 ~ C0499			
Timer (current value)		T0000 ~ T0499		
Counter (current value)		C0000 ~ C0499		L/H
Data Register		D00000 ~ D16383	Bit 1 5 1	H/L

■ PROSEC T Series(T3,T3H,T2N,T2E)

Setup System Area here.

Device	Bit Address	Word Address	Particulars	
External Input	X0000 ~ X511F	XW0000 ~ XW511		
External Output	Y0000 ~ Y511F	YW0000 ~ YW511		
Internal Relay	R0000 ~ R999F	RW000 ~ RW999		
Special Relay	S0000 ~ S255F	SW000 ~ SW255		
Link Register Relay	Z0000 ~ Z999F			
Link Relay	L0000 ~ L255F			
Timer (contact)	T000 ~ T999		*1	L/H
Counter (contact)	C000 ~ C511		*1	
Timer (current value)		T000 ~ T999		
Counter (current value)		C000 ~ C511		
Data Register		D0000 ~ D8191	Bit 1 5 1	
Link Register		W0000 ~ W2047	Bit 1 51	
File Register		F0000 ~ F32767	Bit 1 51	

^{* 1} Data cannot be written.



The Device Range may differ depending on the CPU type. For the details, refer to the Yoshiba's PLC manual.

■ PROVISOR B Series

☐ Setup System Area here.

Device	Bit Address	Word Address	Particulars	
Input Relay	X000 ~ XF7F	XW00 ~ XWF7	*1	
Output Relay	Y000 ~ YF7F	YW00 ~ YWF7	*1	
Internal Relay	R000 ~ R77F	RW00 ~ RW77	*1	
Extended Internal Relay-1	G000 ~ GF7F	GW00 ~ GWF7	*1	
Extended Internal Relay-2	H000 ~ HF7F	HW00 ~ HWF7	*1	
Special AUX Relay	A000 ~ A16F	AW00 ~ AW16	*1	
Latch Relay	L000 ~ L07F	LW00 ~ LW07	*1	
Shift Register	S000 ~ S07F	SW00 ~ SW07	*1	
Edge Relay	E000 ~ E77F	EW00 ~ EW77	*1	L/H
Timer (contact)	T000 ~ T77F	TW00 ~ TW77	*1	
Counter (contact)	C000 ~ C77F	CW00 ~ CW77	*1	
Timer/Counter (current value)	P0000 ~ P77FF	P000 ~ P77F		
Timer/Counter (setup value)	V0000 ~ V77FF	V000 ~ V77F		
Generic Register 1	D0000 ~ DF7FF	D000 ~ DF7F		
Generic Register 2	B0000 ~ BF7FF	B000 ~ BF7F		

^{* 1} Be careful as the Word Address fields differ between the GP screen editing software GP-PRO/PBIII for Windows and the corresponding PLC manual.

E.g. Input Relay

PRO-PBIII	PLC Manual
XW00 ~ XWF7	X00W ~ XF7W



When the *Input Relay* address is setup in a ladder program input field, Set/Reset cannot be performed from the GP. The same holds true for an address (all devices) setup in an output field.

2.10.4 Environment Setup

The following lists Digital's recommended PLC and GP communication settings.

■ PROSEC EX Series

GP Setup		Main Processor Module/CPU Module Setup	
Baud Rate	9600 bps	Baud Rate	9600 bps
Data Length	8 bits	Data Bit	8 bits
Stop Bit	1 bit	Stop Bit	1 bit
Parity Bit	Odd	Parity Bit	Odd
Data Flow Control	ER Control		
Communication Format	4-wire type		
Unit No.	1	Station Number	1

■ PROSEC T Series

GP Setup		CPU Module Setup	
Baud Rate	19200 bps *1*2	Baud Rate	19200 bps *1*2
Data Length	8 bits *2	Data Bit	8 bits *2
Stop Bit	2 bits *2	Stop Bit	2 bits *2
Parity Bit	Odd	Parity Bit	Odd
Data Flow Control	ER Control		
Communication Format (RS-232C)	RS-232C		
Communication Format (RS-422)	4-wire type		
Unit No.	1	Station Number	1

^{*1} PLC specifications state that when a PROSEC T3 (Ver. 1.4 or lower) is used, data transmission is possible only at speeds of 9600 bps or less.

■ PROVISOR B Series

GP Setup		Link Master Module Setup	
Baud Rate	9600 bps	Baud Rate	9600 bps
Data Length	8 bits	Data Bit	8 bits
Stop Bit	2 bits	Stop Bit	2 bits
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER Control		
Communication Format	RS-232C		
		Operation Mode Link Mode	
Unit No.	0	Station Number	0

^{*2} The T2E uses a baud rate of 9600bps, a data length of 8bits and the stop bit is 1(fixed).

2.11 Toshiba Machine

2.11.1 System Structure

The following describes the system structure for connecting the GP to Toshiba Machine PLCs.

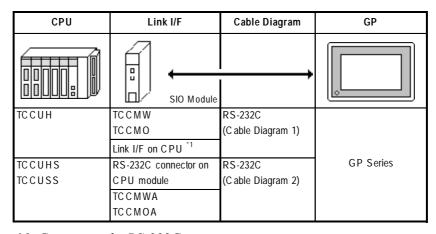
YReference

The Cable Diagrams mentioned in the following tables are listed in the section titled "2.11.2 Cable Diagrams".



Match up the GP Unit No. and each PC Number when multiple PCs are connected using PC Link.

■ PROVISOR TC200 Series (using Link I/F)



^{*1} Connect to the RS-232C connector.

2.11.2 Cable Diagrams

The cable diagrams illustrated below and the cable diagrams recommended by Toshiba Machine may differ, however, using these cables for your PLC operations will not cause any problems.

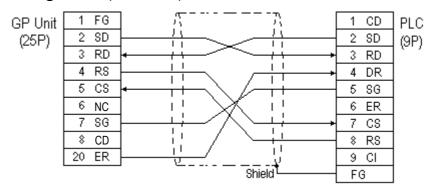


Ground your PLC's FG terminal according to your country's applicable standard. For details, refer to the corresponding PLC manual.

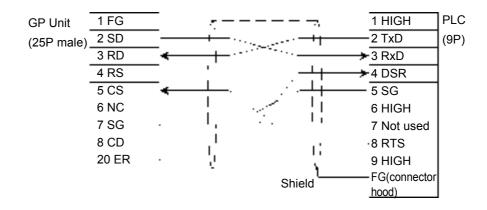


- Connect the FG line of the Shield cable to either the GP or PLC, depending on your environment. When using a connector hood and grounding the FG line, be sure to use an electrical conductor.
- For the RS-232C connection, use a cable length less than 15m.
- If a communications cable is used, it must be connected to the SG (signal ground).

Cable Diagram 1 (RS-232C)



Cable Diagram 2 (RS-232)



2.11.3 Supported Devices

The following describes the range of devices supported by the GP.

■ PROVISOR TC200 Series

Setup System Area here.

Device	Bit Address	Word Address	Particulars	5
Input Relay 1	X000 ~ XF7F	XW00 ~ XWF7	*1 *2	
Input Relay 2	1000 ~ IF7F	IW00 ~ IWF7	*1 *2	
Output Relay 1	Y000 ~ YF7F	YW00 ~ YWF7	*1 *2	
Output Relay 2	O000 ~ OF7F	OW00 ~ OWF7	*1 *2	
Internal Relay	R000 ~ R77F	RW00 ~ RW77	*1 *2	
Extended Internal Relay 1	G000 ~ GF7F	GW00 ~ GWF7	*1 *2	
Extended Internal Relay 2	H000 ~ HF7F	HW00 ~ HWF7	*1 *2	
Extended Internal Relay 3	J000 ~ JF7F	JW00 ~ JWF7	*1 *2	
Extended Internal Relay 4	K000 ~ KF7F	KW00 ~ KWF7	*1 *2	
Special AUX Relay	A000 ~ A16F	AW00 ~ AW16	*1 *2	
Latch Relay	L000 ~ L07F	LW00 ~ LW07	*1 *2	
Shift Register	S000 ~ S07F	SW00 ~ SW07	*1 *2	L/H
Edge Relay	E000 ~ E77F	EW00 ~ EW77	*1 *2	
Timer (contact)	T000 ~ T77F	TW00 ~ TW77	*1 *2 *4	
Counter (contact)	C000 ~ C77F	CW00 ~ CW77	*1 *2 *4	
Timer/Counter (current value)	_	P000 ~ P77F	Bit F *3	
Timer/Counter (setup value)	_	V000 ~ V77F	Bit F 3	
Generic Register 1		D000 ~ DF7F	Bit F 3	
Generic Register 2	_	B000 ~ BF7F	Bit F 3	
Generic Register 3		U000 ~ UF7F	Bit F *3	
Generic Register 4		M000 ~ MF7F	Bit F *3	
Generic Register 5		Q000 ~ QF7F	Bit F *3	

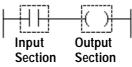
^{* 1} Word Address fields can differ between GP-PRO/PBIII for Windows and the corresponding PLC manual.

E.g. Input Relay

GP-PRO/PBIII	PLC Manual	
XW00~XWF7	X00W~XF7W	

Data cannot be written from the GP/GLC to the input relay (x, 1). The calculation result in a ladder program takes priority for all the ladder program output section devices. Therefore, no data can be written from the GP/GLC.

E.g. Ladder Program



- *2 In GP-PRO/PB III for Windows, the word address' last digit is hexadecimal. You can enter any number between 0 and F as the last digit, however, since the PLC's word address' last digit is octal, you can only enter a number between 0 and 7 as the last digit.
- *3 In GP-PRO/PB III for Windows, the word address' second to last digit is hexadecimal and you can enter any number between 0 and F. However, since the PLC's word address' second to last digit and octal is you can only enter a number between 0 and 7 as the second to last digit.
- *4 The addresses of the timer/counter (contact) range from TW/CW00 to TW/CW77, however the internal memory area is not consecutive. This range is divided into two areas, e.g., TW/CW00 to TW/CW37 and TW/CW40 to TW/CW77.



- The number of consecutive words that can be used for the following GP-PRO/PB III and Pro-Server is limited:
 - 1) Number of monitored words using tag
 - Bit device (X, Y, I, O, R, G, H, J, K, A, L, S, E, T, C): No more than eight words can be specified.
 - Word device (P, V, D, B, U, M, Q): No more than 127 words can be specified.
 - Even if data is within the above word limit, no word can be specified outside of the octal range.

The use of the a-tag allows you to specify words exceeding the limit.

- E.g.) To monitor more than eight words (If the a-tag's) Monitored Word Address is RWO and you wish to monitor more than eight words, on the a-tag, set the Monitored Word Address to RWO and set the Number of Monitored Words to 9 or more.
- 2) Number of addresses specified for copying stored data or initializing memory using D-Script's memory operation function
 - All devices: No more than 40 words can be specified.

If this limit is exceeded, divide the words (into blocks that are within the limit) and then use the memory operation function.

- 3) LS Read area
 - When the entire system area is selected:
 no more than 107 words can be specified.
 - When the entire system area is deselected:
 no more than 127 words can be specified.
 - * The size that can be specified varies depending upon the selected number (20 words maximum) in the system area.

• Even if data is within the above word limit of words, no word can be specified that is outside of the octal range.

Words can only be used within the allowed range.

E.g.) If the entire system area is selected (20 words) and the first address of the system area is set to D060, no more than 12 words can be specified in the loading area.

4) Pro-Server

- All devices: No more than 40 words can be specified.
 If this limit is exceeded, divide the words (into blocks that are within the limit) and then write data.
- When data is batch loaded in batch from the PLC via the Pro-Server device monitor for the Pro-Server, the range can only be from the first device address up to the one just before the octal digit of a device address.
- 5) Writing from SRAM to the PLC using the data filing function
 - All devices: No more than 40 words can be specified.
 - Even if data is within the above word limit, no word can be specified that is outside of the octal range.
 - E.g.) If the stored first address is set to D060, no more than 32 words can be specified as data.

If this limit is exceeded, divide the words (into blocks that are within the limit) and then write data.



• The device type and range that can be used may vary depending upon your CPU. Check with the manual for your CPU before use.

2.11.4 Environment Setup

The following lists Digital's recommended PLC and GP communication settings.

■ PROVISOR TC200 Series (using SIO module)

GP Setup		SIO Module Setup	
Baud Rate	9600 bps	Baud Rate	9600 bps
Data Length	8 bits	Data Bit	8 bits
Stop Bit	2 bits	Stop Bit	2 bits
Parity Bit	None	Parity Bit	None
Data Flow Control	ER Control		
Communication Format	RS-232C		
	•	Select Function Switch 3 is On	
Unit No.	0	PC Number	0

■ PROVISOR TC200 Series (using RS-232C Connector)

GP Setup		RS-232C Connector Setup	
Baud Rate	9600 bps	Baud Rate	9600 bps
Data Length	8 bits	Data Bit	8 bits
Stop Bit	2 bits	Stop Bit	2 bits
Parity Bit	None	Parity Bit	None
Data Flow Control	ER Control		
Communication Format	RS-232C		
Unit No.	64 (fixed)		-

2.12 Koyo Electronics Industries

2.12.1 System Structure

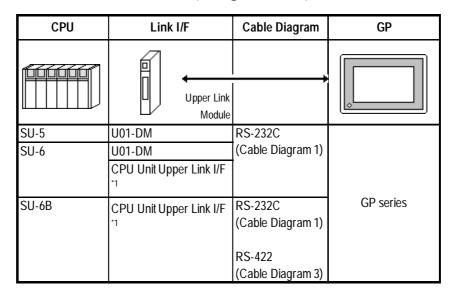
The following describes the system structure for connecting the GP to Koyo Electronics Industries PLCs.

The Cable Diagrams mentioned in the following tables are listed in the section titled "2.12.2 Cable Diagrams".

CPU	Link I/F	Cable Diagram	GP
	Upper Link Module		
SG-8	G01-DM	RS-232C (Cable Diagram 1) RS-422 (Cable Diagram 2)	CD audia
	CPU Unit Upper Link I/F ^{*1}	RS-232C (Cable Diagram 1) RS-422 (Cable Diagram 3)	GP series

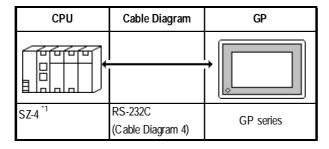
^{*1} Connect to the CPU module's generic communication port.

■ KOSTAC SU Series (using Link I/F)



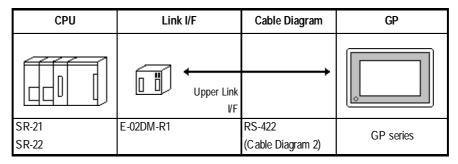
^{*1} Connect to the CPU module's generic communication port.

■ KOSTAC SZ Series (using CPU unit Link I/F)

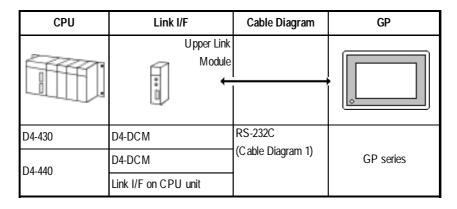


^{* 1} Connect to the CPU module's generic communication port.

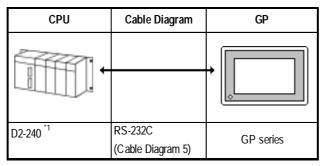
■ KOSTAC SR Series (using Upper Link I/F)



■ DL-405 Series (using Link I/F)



■ DL-205 Series (using Link I/F on CPU unit)



^{* 1} Connect to the CPU module's generic communication port.

■ DL-305 Series (using Link I/F on CPU unit)

СРИ	Link I/F	Cable Diagram	GP
	Upper Link VF	+	
D3-330	D3-DCM	RS-422 (Cable Diagram 2)	GP

2.12.2 Cable Diagrams

The cable diagrams illustrated below and the cable diagrams recommended by Koyo Electronic Industries may differ, however, using these cables for your PLC operations will not cause any problems.

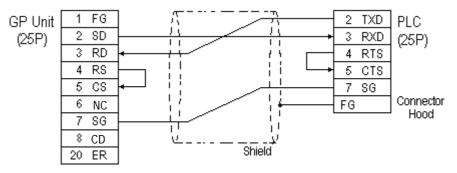


Ground your PLC's FG terminal according to your country's applicable standard. For details, refer to the corresponding PLC manual.



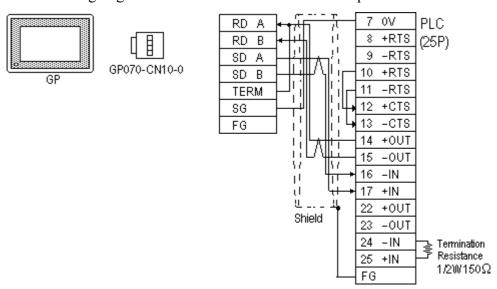
- Connect the FG line of the Shield cable to either the GP or PLC, depending on your environment. When using a connector hood and grounding the FG line, be sure to use an electrical conductor.
- For the RS-232C connection, use a cable length less than 15m.
- If a communications cable is used, it must be connected to the SG (signal ground).
- For the RS-422 connection, use a cable length less than 600m.

Cable Diagram 1 (RS-232C)

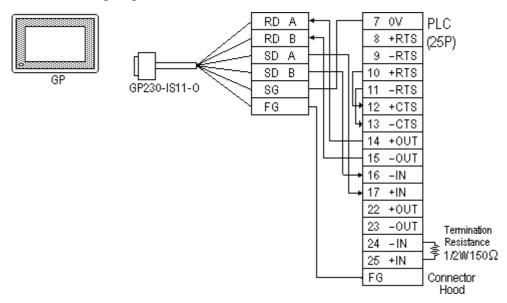


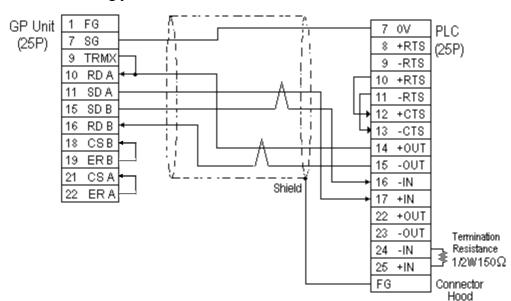
Cable Diagram 2 (RS-422)

• When using Digital's RS-422 connector terminal adapter GP070-CN10-0



• When using Digital's RS-422 Cable, GP230-IS11-0





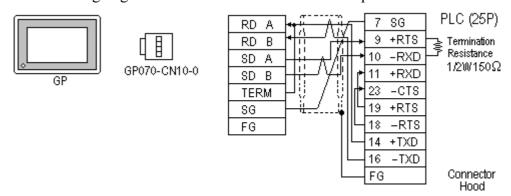
• When making your own cable connections



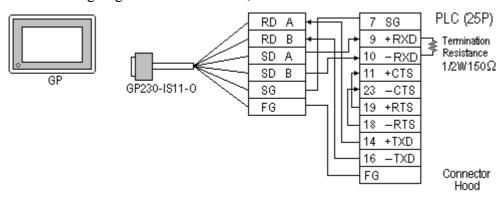
- When making your own connections, we recommend using Hitachi Densen's CO-SPEV-SB(A)3P*0.3SQ cable.
- When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.
- When using RS-422 connection, the cable length must not be any longer than 600 meters.

Cable Diagram 3 (RS-422)

• When using Digital's RS-422 connector terminal adapter GP070-CN10-0



• When using Digital's RS-422 Cable, GP230-IS11-0



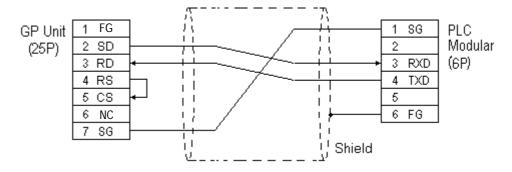
PLC (25P) FG SG GP Unit 7 SG 9 +RTS Termination (25P) Resistance TRMX 10 -RTS $1/2W/150\Omega$ 10 RD A 11 +CTS 11 SDA 23 -CTS 15 SD B 19 +RTS 16 RDB -RTS 18 CSB 14 +TXD 18 1.1 19 ER B -TXD16 Connector 21 CSA FG Shield Hood ER A

• When making your own cable connections



- When making your own connections, we recommend using Hitachi Densen's CO-SPEV-SB(A)3P*0.3SQ cable.
- When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.
- When using RS-422 connection, the cable length must not be any longer than 600 meters.

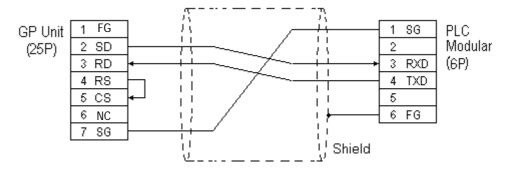
Cable Diagram 4 (RS-232C)





The GP connection uses SZ-4's Port 2 (generic SIO port). Port 1 is the program communication port (Programming Console S-20P).

Cable Diagram 5 (RS-232C)





The GP connection uses D2-240's Port 2 (generic SIO port). Port 1 is the program communication port.

2.12.3 Supported Devices

The following describes the range of devices supported by the GP.

■ KOSTAC SG Series

Device	Bit Address	Word Address	Particulars	
Input Relay	10000 ~ I1777	R40400 ~ R40477	<u>ост8</u>)	
Output Relay	Q0000 ~ Q1777	R40500 ~ R40577	<u>ост8</u>)	
Control Relay	M0000 ~ M3777	R40600 ~ R40777	<u>ост8</u>)	
Stage	S0000 ~ S1777	R41000 ~ R41077	<u>ост8</u>)	
Link Relay (input)	GI0000 ~ GI3777	R40000 ~ R40177	<u>ост8</u>)	
Specified Transfer Relay (output)	GQ0000 ~ GQ3777	R40200 ~ R40377	<u>ост8</u>)	
Timer (contact)	T000 ~ T377	R41100 ~ R41117	<u>ост8</u>)	L/H
Counter (contact)	C000 ~ C377	R41140 ~ R41157	<u>ост8</u>)	
Timer (elapsed time)		R0000 ~ R0377	<u>ост</u> 8)	
Counter (elapsed value)		R1000 ~ R1377	<u>ост8</u>)	
Variable Memory 1		R400 ~ R777	<u>ост8) вн1 5)</u>	
Variable Memory 2		R1400 ~ R7377	ост8) в і ї 15)	
Variable Memory 3		R10000 ~ R37777	<u>ост8) вн</u> 1 5)	

■ KOSTAC SU Series

٦	Setui	o Sv	ystem	Area	here.

Device	Bit Address	Word Address	Particulars	
Input Relay	1000 ~ 1477	R40400 ~ R40423	<u>ост8</u>)	
Output Relay	Q000 ~ Q477	R40500 ~ R40523	<u>ост8</u>)	
Control Relay	M0000 ~ M1777	R40600 ~ R40677	<u>ост8</u>)	
Stage	S0000 ~ S1777	R41000 ~ R41077	<u>ост8</u>)	
Link Relay/Link Input	Gl0000 ~ Gl1777	R40000 ~ R40077	<u>ост8</u>]	
Special Relay	SP000 ~ SP137 SP320 ~ SP717	R41200 ~ R41205 R41215 ~ R41234	ост8)	
Timer (contact)	T000 ~ T377	R41100 ~ R41117	<u>ост8</u>)	L/H
Counter (contact)	C000 ~ C177	R41140 ~ R41157	<u>ост8</u>)	_,
Timer (elapsed time)		R0000 ~ R0377	<u>ост8</u>)	
Counter (elapsed value)		R1000 ~ R1177	<u>ост8</u>)	
Data Register		R1400 ~ R7377	<u>ост8) віі 1 51</u>	
Special Register		R700 ~ R737 R7400 ~ R7777	ост8) <u>віі 1</u> 5)	
Expanded Register		R10000 ~ R17777	ост8) <mark>Віт] 5</mark>]	

^{* 1} Only the SU-6B will check connections (Only the SU-6B can use special registers R700 to R737), however it cannot write data.

■ KOSTAC SZ Series

Device	Bit Address	Word Address	Particulars	
Input Relay	1000 ~ 10477	R40400 ~ R40423	<u>ост8</u>)	
Output Relay	Q0000 ~ Q0477	R40500 ~ R40523	<u>ост8</u>)	
Control Relay	M0000 ~ Q0377	R40600 ~ R40617	<u>ост8</u>)	
Stage		R41000 ~ R41037	<u>ост8</u>)	
Timer (contact)	T000 ~ T177	R41100 ~ R41107	<u>ост8</u>)	L/H
Counter (contact)	C000 ~ C177	R41140 ~ R41147	<u>ост8</u>)	
Timer (elapsed time)		R0000 ~ R0177	<u>ост8</u>)	
Counter (elapsed value)		R1000 ~ R1177	<u>ост8</u>)	
Variable Memory 2		R2000 ~ R3777	<u>ост8) віі 15)</u>	

^{*2} Only the SU-6B can be used.

■ KOSTAC SR Series

Setup System Area here.

Device	Bit Address	Word Address	Particulars	
Input/Output	000 ~ 157 700 ~ 767	R000 ~ R014 R070	<u>ост8</u>)	
Control Relay	160 ~ 377 770 ~ 777	R016 ~ R036 R076	<u>ост8</u>)	
Shift Register	400 ~ 577	R040 ~ R056	<u>ост8</u>)	
Timer/Counter (contact)	600 ~ 677	R060 ~ R066	<u>ост8</u>)	L/H
Timer/Counter (elapsed value)		R600 ~ R677	<u>ост8</u>]	
Data Register		R400 ~ R577	<u>ост8)віі15)</u> ÷2⊃	



Cannot perform only bit write operations. Use byte units to perform bit write operations, where all other bits besides the selected bit, are cleared to 0.

■ DL-405 Series

Device	Bit Address	Word Address	Particulars	
Input Relay	X000 ~ X477	V40400 ~ V40423	<u>ост8</u>]	
Output Relay	Y000 ~ Y477	V40500 ~ V40523	<u>ост8</u>]	
Internal Relay	C0000 ~ C1777	V40600 ~ V40677	<u>ост8</u>]	
Stage	S0000 ~ S1777	V41000 ~ V41077	<u>ост8</u>]	
Link Relay/Link Input	GX0000 ~ GX1777	V40000 ~ V40077	<u>ост8</u>]	
Special Relay	SP000 ~ SP137 SP320 ~ SP717	V41200 ~ V41205 V41215 ~ V41234	<u>ост8</u> 1	L/H
Timer (contact)	T000 ~ T377	V41100 ~ V41117	<u>ост8</u>]	
Counter (contact)	CT000 ~ CT177	V41140 ~ V41147	<u>ост8</u>]	
Timer (elapsed time)		V0000 ~ V0377	<u>ост8</u>]	
Counter (elapsed value)		V1000 ~ V1177	<u>ост8</u>]	
Data Register		V1400 ~ V7377	<u>ост8) віі 1 5</u> 1	
Special Register		V7400 ~ V7777	<u>ост8) вн 1 5 ј</u>	

■ DL-205 Series

Setup System Area here.

Device	Bit Address	Word Address	Particulars	
Input Relay	X0000 ~ X0477	V40400 ~ V40423	<u>ост8</u>)	
Output Relay	Y0000 ~ Y0477	V40500 ~ V40523	<u>ост8</u>)	
Control Relay	C0000 ~ C0377	V40600 ~ V40617	<u>ост8</u>)	
Stage		V41000 ~ V41037	<u>ост8</u>)	
Timer (contact)	T000 ~ 177	V41100 ~ V41107	<u>ост8</u>)	L/H
Counter (contact)	CT000 ~ CT177	V41140 ~ V41147	<u>ост8</u>)	
Timer (elapsed time)		V0000 ~ V0177	<u>ост8</u>)	
Counter (elapsed value)		V1000 ~ V1177	<u>ост8</u>)	
Variable Memory 2		V2000 ~ V3777	<u>ост8) віт і 5</u> 1	

■ DL-305 Series

Device	Bit Address	Word Address	Particulars	
Input/Output	000 ~ 157 700 ~ 767	V000 ~ V014 V070	<u>ост8</u>)	
Control Relay	160 ~ 377 770 ~ 777	V016 ~ V036 V076	<u>ост8</u>)	
Shift Register	400 ~ 577	V040 ~ V056	<u>ост8</u>)	
Timer/Counter (contact)	600 ~ 677	V060 ~ V066	<u>ост8</u>)	L/H
Timer/Counter (elapsed value)		V600 ~ V677	<u>ост8</u>)	
Data Register		V400 ~ V577	<u>ост8јвіі 5)</u> ÷2⊐	

2.12.4 Environment Setup

The following tables list Digital's recommended PLC and GP communication settings.

■ KOSTAC SG Series (using Upper Link I/F)

GP Setup		Upper L	Upper Link Module Setup		
Baud Rate	19200 bps	Baud Rate	19200 bps		
Data Length	8 bits				
Stop Bit	1 bit				
Parity Bit	Odd	Parity Bit	Odd		
Data Flow Control	ER Control				
Communication Format (RS-232C)	RS-232C				
Communication Format (RS-422)	4-wire type				
		Master/Slave Setup	Slave		
	-	Transfer Mode	Нех		
Unit No. 1		Station Number	1		

■ KOSTAC SG Series (using General SIO Port)

GP Setup		Generic SIO Port Setup		
Baud Rate	19200 bps (fix ed)	Baud Rate	19200 bps (fix ed)	
Data Length	8 bits (fixed)	Data Length	8 bits (fix ed)	
Stop Bit	1 bit (fix ed)	Stop Bit	1 bit (fix ed)	
Parity Bit	Odd (fixed)	Parity Bit	Odd (fixed)	
Data Flow Control	ER Control			
Communication Format	RS-232C	Communication Format	Dipswitch 1 (CCM SIO	
(RS-232C)		(RS-232C)	Port) is ON	
Communication Format	4-wire type	Communication Format	Dipswitch 4 (CCM SIO	
(RS-422)		(RS-422)	Port) is Off	
		Transfer Mode *1	Нех	
Unit No. 1		CCM Number*1	1	

^{*1} Turn Dip Switch 2 (CCM Station No.) OFF, and run Transfer mode and CCM Station Number setup with the programmer. Communication will not occur when Dip Switch 2 is ON and the transfer Mode is not designated as Hex.

■ KOSTAC SU Series (using Upper Link I/F)

GP Setup		Generi	Generic Link Module Setup		
Baud Rate	19200 bps	Baud Rate	Baud Rate 19200 bps		
Data Length	8 bits (fixed)				
Stop Bit	1 bit (fix ed)				
Parity Bit	Odd	Parity Bit	Parity Bit Odd		
Data Flow Control	ER Control				
Communication Format	RS-232C				
Unit No.	1	Station Number	Station Number 1		

■ KOSTAC SU Series (using General SIO Port)

GP Setup		Generic SIO Port Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	8 bits (fixed)		-
Stop Bit	1 bit (fix ed)		-
Parity Bit	Odd	Parity Bit Odd	
Data Flow Control	ER Control		
Communication Format (RS-232C)	RS-232C		
Communication Format (RS-422)	4-wire type		
		Data Format ¹ Hex	
Unit No.	1	Station Number 1	

^{*1} Turn Dip Switch 2 (CCM Station No.) OFF, and run Transfer mode and CCM Station Number setup with the programmer. Communication will not occur when Dip Switch 2 is ON and the transfer Mode is not designated as Hex.

■ KOSTAC SZ Series

GP Setup		Generic SIO Port Setup	
Baud Rate	9600 bps	Baud Rate	9600 bps
Data Length	8 bits	Data Length	8 bits
Stop Bit	1 bit	Stop Bit	1 bit
Parity Bit Odd		Parity Bit	Odd
Data Flow Control	ER Control		-
Communication Format	Communication Format RS-232C		-
		Data Format *1	Нех
Unit No. 1		Station Number	1

^{*1} Turn Dip Switch 2 (CCM Station No.) OFF, and run Transfer mode and CCM Station Number setup with the programmer. Communication will not occur when Dip Switch 2 is ON and the transfer Mode is not designated as Hex.

■ KOSTAC SR Series

GP Setup		CPU Module Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	8 bits		
Stop Bit	1 bit		
Parity Bit	None	Parity Bit	None
Data Flow Control	ER Control		
Communication Format	4-line		
		Tum Around Relay	No delay
		Power Up Mode	RUN mode
		Transmission Mode	Нех
Unit No.	1	Station Number 1	

2-12-12

■ DL405 Series (using Upper Link I/F)

GP Se	tup	Upper Link Module Setup		
Baud Rate	19200 bps	Baud Rate 19200 bps		
Data Length	8 bits (fixed)			
Stop Bit	1 bit (fixed)			
Parity Bit	Odd	Parity Bit Odd		
Data Flow Control	ER Control			
Communication Format	RS-232C			
Unit No.	1	Station Number 1		

■ DL-405 Series (using General SIO Port)

GP Setup		Generic SIO Port Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	8 bits (fixed)		-
Stop Bit	1 bit (fixed)		-
Parity Bit	Odd	Parity Bit Odd	
Data Flow Control	ER Control		
Communication Format (RS-232C)	RS-232C		
Communication Format (RS-422)	4-wire type		
		Data Format ^{*1} Hex	
Unit No.	1	Station Number 1	

^{*1} Turn Dip Switch 2 (CCM Station No.) OFF, and run Transfer mode and CCM Station Number setup with the programmer. Communication will not occur when Dip Switch 2 is ON and the transfer Mode is not designated as Hex.

■ DL-205 Series

GP Setup		Generic SIO Port Setup	
Baud Rate	9600 bps	Baud Rate	9600 bps
Data Length	8 bits	Data Length	8 bits
Stop Bit 1 bit		Stop Bit	1 bit
Parity Bit Odd		Parity Bit	Odd
Data Flow Control	ER Control		
Communication Format	RS-232C		
		Data Format	Hex
Unit No. 1		Station Number	1

■ DL-305 Series

GP Setup		CPU Module Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	8 bits		-
Stop Bit	1 bit		-
Parity Bit	None	Parity Bit	None
Data Flow Control	ER Control		
Communication Format	4-wire type		-
		Turn Around Relay	No delay
		Power Up Mode	RUN mode
		Transmission Mode	Hex
Unit No.	1	Station Number 1	

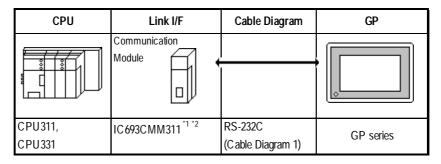
2.13 GE Fanuc Automation

2.13.1 System Structure

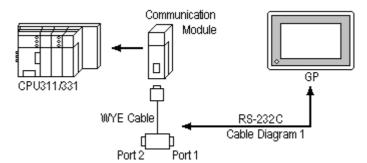
The following describes the system structure for connecting the GP to GE Fanuc PLCs.

Reference The Cable Diagrams mentioned in the following tables are listed in the section titled "2.13.2 Cable Diagrams".

■ Series 90-30 (using SNP-X Protocol/Link I/F)



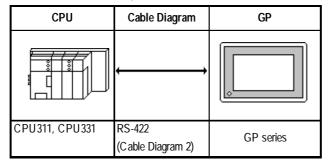
* 1 When using the SIO module (IC693CMM311), the PLC's WYE cable is necessary.



Connect to Port 1 or Port 2. However, when connected to Port 2, switch to RS-232C in the programming console. Both Port 1 and Port 2 can be connected at the same time to two GPs.

* 2 Select SNP-X protocol using the programming console.

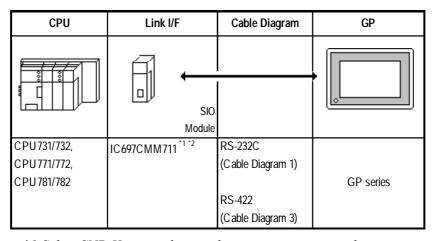
■ Series 90-30 (SNP-X Protocol/CPU Direct Connection)





Communication speed is faster than when using the SIO module, however, you cannot use the programming console and the GP at the same time.

■ Series 90-70 (using SNP-X Protocol/Link I/F)



^{*1} Select SNP-X protocol using the programming console.

^{*2} Connect to the SIO module's Port 1 or Port 2, and change to RS-232C or RS-422/485 with the programming console. Cannot connect GPs to both Port 1 and Port 2.



Places noted as RS-422 can also use RS-485 on the PLC side.

■ Series 90-30 (SNP Protocol, CPU Direct Connection)

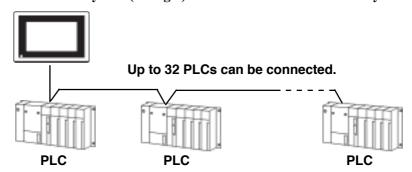
CPU		CPU Cable Diagram		GP
				
CPU311 CPU313 CPU323	CPU350 CPU351 CPU352	CSE311 CSE313 CSE323	RS422 <cable 4="" diagram=""></cable>	GP Series units
CPU331 CPU340 CPU341	CPU360 CPU363 CPU364	CSE331 CSE340	RS422 (1:n connection) <cable 5="" diagram=""></cable>	Gr Seiles utilis

■ Series 90-70 (SNP Protocol, CPU Direct Connection)

CPU			Cable Diagram	GP
		<u> </u>		
		J		
CPU731	CPU789	CSE924		
CPU771	CPM915	CSE925	RS422	
CPU772	CPM925	CPX772	<cable 4="" diagram=""></cable>	
CPU780	CPX935	CPX782		GP Series units
CPU781	CGR935	CPX928	DC 432 (1 in connection)	
CPU782	CPM790	CGR772	RS422 (1:n connection)	
CPU788	CSE784		<cable 5="" diagram=""></cable>	



- Up to 32 PLCs can be connected to one GP.
- Be sure that only one (a single) GP unit is connected to this system.



- If multiple PLCs are used, the GP screen's refresh speed may slow when any of the following conditions occur.
 - When a single GP screen is used to monitor many PLCs.
 - When a single GP screen's Part or Tag address settings are not consecutive.

To keep the GP's screen refresh speed as high as possible, the following points are recommended.

- Do not monitor more than three (3) PLCs on one GP screen.
- Try to keep each screen's Part items and Tag address settings consecutive.

2.13.2

Cable Diagrams

The cable diagrams illustrated below and the cable diagrams recommended by GE Fanuc Automation may differ, however, using these cables for your PLC operations will not cause any problems.

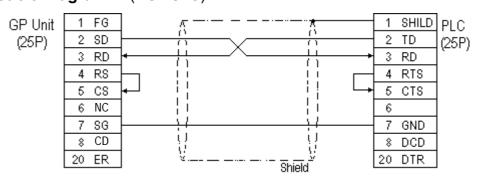


 Ground your PLC's FG terminal according to your country's applicable standard. For details, refer to the corresponding PLC manual.



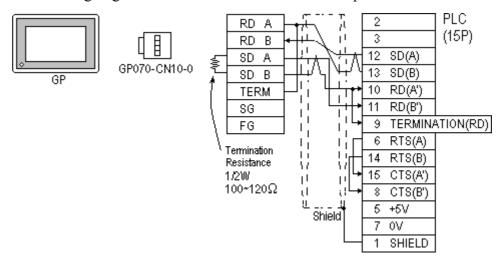
- Connect the FG line of the Shield cable to either the GP or PLC, depending on your environment. When using a connector hood and grounding the FG line, be sure to use an electrical conductor.
- For the RS-232C connection, use a cable length less than 15m.
- Different PLC manuals will write their RS-422 connection drawings (i.e. RD (A), RD (B), SD (A), and SD (B)) differently. Thus, be sure to refer to your specific PLC's manual for this information. The following connection diagrams show examples for connecting a shielded cable to the PLC.
- If a communications cable is used, it must be connected to the SG (signal ground).

Cable Diagram 1 (RS-232C)

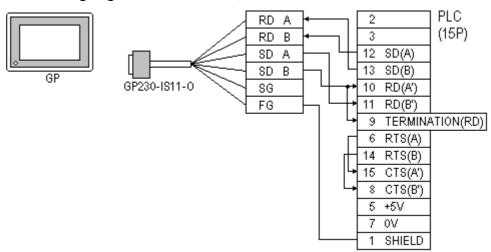


Cable Diagram 2 (RS-422)

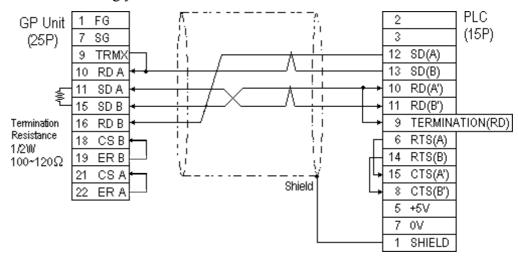
• When using Digital's RS-422 connector terminal adapter GP070-CN10-0



• When using Digital's RS-422 Cable, GP230-IS11-0



• When making your own cable connections

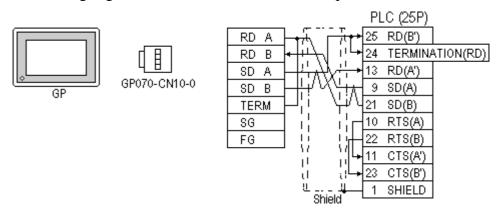




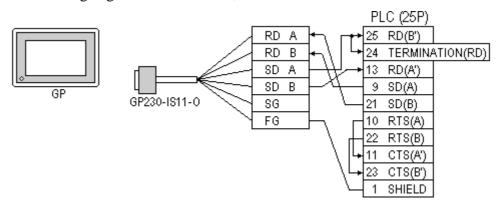
- When making your own connections, we recommend using Hitachi Densen's CO-SPEV-SB(A)3P*0.5 cable.
- When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.
- When using RS-422 connection, please check the cable length with GE Fanuc Automation PLC's users manual.

Cable Diagram 3 (RS-422)

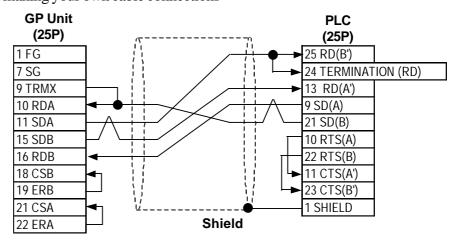
• When using Digital's RS-422 connector terminal adapter GP070-CN10-0



• When using Digital's RS-422 Cable, GP230-IS11-0



• When making your own cable connections

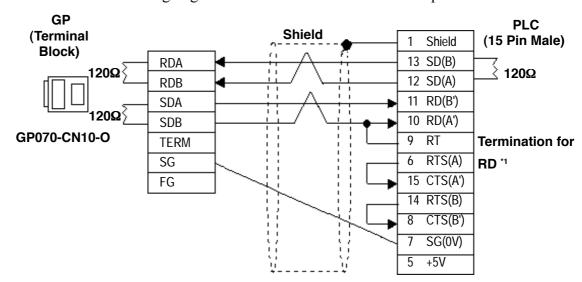




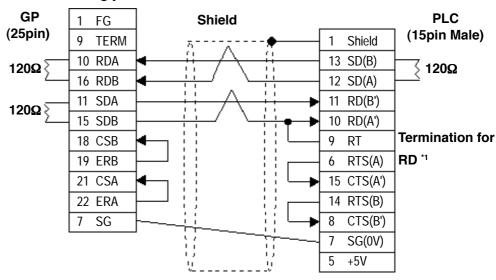
- When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.
- When using RS-422 connection, please check the cable length with GE Fanuc Automation PLC's users manual.

Cable Diagram 4 (1:1) (RS-422)

• When using Digital's RS-422 connector terminal adapter GP070-CN10-0



• When making your own cable

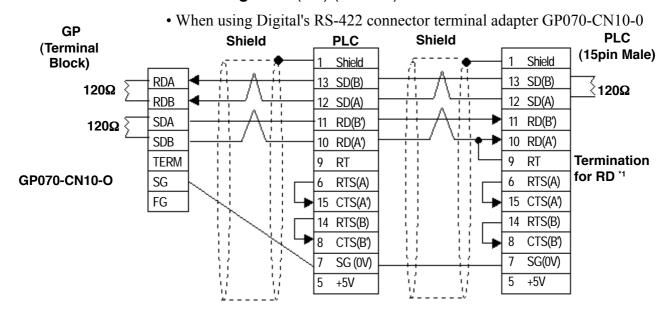


*1 When connecting #9 and #10 pins in the GP Serial I/F, a termination resistance of 120Ω is added between RD-(A') and RD-(B'). When using CPU731 and CPU771, a termination resistance of 120Ω is added between RD-(A') and RD-(B') connecting #9 and #11 pins.

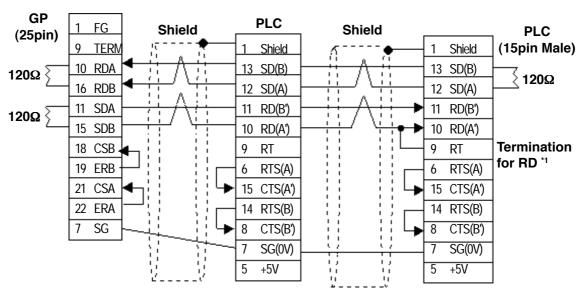


- Ground your Controller's FG terminal according to your country's applicable standard. For details, refer to the corresponding Controller's manual.
- When connecting a cable's Shield line to an FG terminal, consider the needs of your system when deciding which side of the cable (GP or Controller) to connect. (The example below connects to the Controller's FG terminal.)
- Be aware the A and B signals of the GP and PLC are opposite to each other.
- The cable length must be 600 meters or less.

Cable Diagram 5 (1:n) (RS-422)



• When making your own cable



*1 When connecting #9 and #10 pins in the GP Serial I/F, a termination resistance of 120Ω is added between RD-(A') and RD-(B'). When using CPU731 and CPU771, a termination resistance of 120Ω is added between RD-(A') and RD-(B') connecting #9 and #11 pins.



- Ground your Controller's FG terminal according to your country's applicable standard. For details, refer to the corresponding Controller's manual.
- When connecting a cable's Shield line to an FG terminal, consider the needs of your system when deciding which side of the cable (GP or Controller) to connect. (The example below connects to the Controller's FG terminal.)
- Be aware the A and B signals of the GP and PLC are opposite to each other.
- The cable length must be 600 meters or less.

2.13.3 Supported Devices

The following tables describe the range of devices supported by the GP.

■ Series 90-70/90-30 (SNP-X protocol)

Setup System Area here.

Device	Bit Address	Word Address	Particulars	s
Input Relay (I)	10001 ~ I12288	100001 ~ I12273	<u>÷16+</u>])	
Output Relay (Q)	Q00001 ~ Q12288	Q0001 ~ Q12273	<u>÷16∓</u>])	
Internal Relay (M)	M00001 ~ M12288	M0001 ~ M12273	<u>÷16∓</u>])	
Global Relay (G)	G0001 ~ G7680	G0001 ~ G7665	<u>÷16+</u>])	
Momentary Relay (T)	T001 ~ T256	T001 ~ T241	<u>÷16+</u>])	
System Function Relay (SA)	SA001 ~ SA128	SA001 ~ SA113	<u>÷16∓</u>])	L/H
System Function Relay (SB)	SB001 ~ SB128	SB001 ~ SB113	<u>÷16∓</u>])	L/11
System Function Relay (SC)	SC001 ~ SC128	SC001 ~ SC113	÷16∓])	
System Function Relay (S)	S001 ~ S128	S001 ~ S113	÷16+]) *1	
Register (R)		R00001 ~ R32640	Bit] 5]	
Analog Input (AI)		Al0001 ~ Al32640	Bit] 5]	
Analog Output (AQ)		AQ0001 ~ AQ32640	Bit] 5]	

^{*1} Data cannot be written to this relay. If data is written, a host communication error (02:0F:03) will be displayed.



Depending on the CPU used, the devices address ranges may differ.

Chapter 2 - PLC-GP Connection

■ GE Fanuc 90-30/90-70 (SNP protocol)

Setup System Area here.

Device	Bit Address	Word Address	Comments	
Input Relay (I)	100001 ~ I12288	100001 ~ I12273	Same as word address value	
прискему (1)	100001 ~ 112200	100001 ~ 112273	divided by 2, then plus 1	
Output Relay (Q)	Q00001 ~ Q12288	Q00001 ~ Q12273	Same as word address value	
			divided by 2, then plus 1 Same as word address value	
Idnternal Relay (M)	M00001 ~ M12288	M00001 ~ M12273	divided by 2, then plus 1	
			Same as word address value	
Global Relay (G)	G0001 ~ G7680	G0001 ~ G7665	divided by 2, then plus 1	
Tammanan Dalau (T)	T001 T0F/	T001 T041	Same as word address value	
Temporary Relay (T)	T001 ~ T256	T001 ~ T241	divided by 2, then plus 1	
System Status Relay (SA)	SA001 ~ SA128	SA001 ~ SA113	Same as word address value	
of storm outdo ready (or t)	0/1001 0/1120	0,1001 0,1110	divided by 2, then plus 1	
System Status Relay (SB)	SB001 ~ SB128	SB001 ~ SB113	Same as word address value	
			divided by 2, then plus 1 Same as word address value	-
System Status Relay (SC)	SC001 ~ SC128	SC001 ~ SC113	divided by 2, then plus 1	
			Same as word address value	1
System Status Relay (S)	S001 ~ S128	S001 ~ S113	divided by 2, then plus 1*1	
		R00001 ~ R01024		
		R01025 ~ R02048		
		R02049 ~ R03072		
		R03073 ~ R04096		
		R04097 ~ R05120		
		R05121 ~ R06144		
		R06145 ~ R07168		l l
		R07169 ~ R08192		L/H
		R08193 ~ R09216	_	
		R09217 ~ R10240		
		R10241 ~ R11264		
		R11265 ~ R12288		
		R12289 ~ R13312	_	
		R13313 ~ R14336	1	
		R14337 ~ R15360		
Register (R)		R15361 ~ R16384 R16385 ~ R17408		
		R17409 ~ R18432	Bit 1 5)	
		R18433 ~ R19456	<u> </u>	
		R19457 ~ R20480	1	
		R20481 ~ R21504	1	
		R21505 ~ R22528	1	
		R22529 ~ R23552	1	
		R23553 ~ R24576		
		R24577 ~ R25600		
		R25601 ~ R26624]	
		R26625 ~ R27648		
		R27649 ~ R28672		
		R28673 ~ R29696	1	
		R29697 ~ R30720		
		R30721 ~ R31744	_	
	R31745 ~ R32768			

Device	Bit Address	Word Address	Comments	
		Al0001 ~ Al1024		
		Al1025 ~ Al2048		
		Al2049 ~ Al3072		
		Al3073 ~ Al4096		
		Al4097 ~ Al5120		
		Al5121 ~ Al6144		
		Al6145 ~ Al7168		
		Al7169 ~ Al8192		
		Al8193 ~ Al9216		
		Al9217 ~ Al10240		
		Al10241 ~ Al11264		
		Al11265 ~ Al12288		
		Al12289 ~ Al13312		
		Al13313 ~ Al14336		
		Al14337 ~ Al15360	1	
Analog Input (AI)		Al15361 ~ Al16384	Bit 1 5 1	
		Al16385 ~ Al17408		
		Al17409 ~ Al18432		
		Al18433 ~ Al19456		
		Al19457 ~ Al20480		
		Al20481 ~ Al21504		
		Al21505 ~ Al22528		
		Al22529 ~ Al23552		
		Al23553 ~ Al24576		
		Al24577 ~ Al25600		
		Al25601 ~ Al26624		L/H
		Al27649 ~ Al28672		
		Al28673 ~ Al29696		
		Al29697 ~ Al30720		
		Al30721 ~ Al31744		
		Al31745 ~ Al32768		
		AQ0001 ~ AQ1024		İ
		AQ1025 ~ AQ2048		
		AQ2049 ~ AQI3072		
		AQ3073 ~ AQ4096		
		AQ4097 ~ AQ5120		
		AQ5121 ~ AQ6144		
		AQ6145 ~ AQ7168		
		AQ7169 ~ AQ8192		
		AQ8193 ~ AQ9216		
		AQ9217 ~ AQ10240	—1 C-	
Analog Output (AQ)		AQ10241 ~ AQ11264	<u>Bit [5]</u>	
		AQ11265 ~ AQ12288		
		AQ12289 ~ AQ13312		
		AQ13313 ~ AQ14336		
		AQ14337 ~ AQ15360		
		AQ15361 ~ AQ16384		
		AQ16385 ~ AQ17408		
		AQ17409 ~ AQ18432		
		AQ18433 ~ AQ19456		
		AQ19457 ~ AQ20480		1
		11217101 11020400		

Device	Bit Address	Word Address	Comments	
		AQ20481 ~ AQ21504		
		AQ21505 ~ AQ22528		
		AQ22529 ~ AQ23552		
		AQ23553 ~ AQ24576		
Analog Output (AQ)		AQ26625 ~ AQ27648	L/H	
Trialog Galpat (1/2)		AQ27649 ~ AQ28672	Bit 1 5 L/H	
		AQ28673 ~ AQ29696		
		AQ29697 ~ AQ30720		
		AQ30721 ~ AQ31744		
		AQ31745 ~ AQ32768		



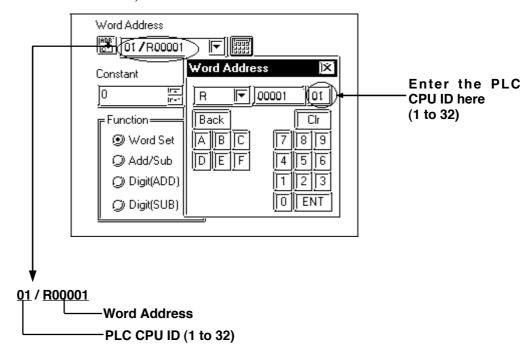
Depending on the CPU used, the devices address ranges may differ.



- If bit write is performed using the bit designation feature in any of these Bit 15 devices, all bits except the designated bit will turn to "O".
- The range of each device's address will vary depending on the CPU type.



 When setting up Tags and Parts in GP-PRO/PBIII for Windows, the PLC CPU ID number can also be designated. If a CPU ID number is not specified, the previously entered CPU ID number is automaticalluy used. (The default value is "01".)



<Driver Usage Restriction>

- When using 1:n connection, the R, AI and AQ devices data areas are each 1024 words on your GP application. You cannot extend over more than one data "block" when performing the following features. Be sure to set these features' settings so they are within one data block.
 - System Area Settings
 - "a-tag " settings
 - Performing Block read/write using the 2-Way feature
 - Ex) You cannot set a 20 word-data block starting from R1020.
- When setting a PLC's CPU ID, be sure to use a number from "1" to "32" as the CPU ID so that the selected number is used as the PLC's unit number.

2.13.4 Environment Setup

The following tables list Digital's recommended PLC and GP communication settings.

■ Series 90-30 (SNP-X protocol, using Link I/F)

GP Setup		SIO Module Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	8 bits (fixed)	Data Bit	8 bits (fix ed)
Stop Bit	1 bit	Stop Bit	1 bit
Parity Bit	Odd	Parity Bit	Odd
Data Flow Control	ER Control		-
Communication Format	RS-232C	Communication Format	RS-232C *1
		MODE	SNP ONLY
Unit No.	0 (fixed)	Station Number	0 (fixed)

■ Series 90-30 (SNP-X protocol, CPU Direct Connection *2)

GP Setup		Communication Module Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	8 bits (fixed)	Data Bit	8 bits (fixed)
Stop Bit	1 bit	Stop Bit	1 bit
Parity Bit	Odd	Parity Bit	Odd
Data Flow Control	ER Control		
Communication Format	4-wire type		
Unit No.	0 (fix ed)	Station Number	0 (fix ed)

^{*1} Only when connecting to Port 2. This setting is not used for Port 1.

^{*2} This must be set through either the ladder logic, or from the programming console unit.

■ Series 90-70 (SNP-X protocol)

GP Setup		Communicat	Communication Module Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps	
Data Length	8 bits (fixed)	Data Bit	8 bits (fixed)	
Stop Bit	1 bit	Stop Bit	1 bit	
Parity Bit	Odd	Parity Bit	Odd	
Data Flow Control	ER Control			
Communication Format (RS-232C)	RS-232C	Communication Format (RS-232C)	RS-232C	
Communication Format (RS-422)	4-wire type	Communication Format (RS-422)	RS-422/485	
		MODE	SNP ONLY	
Unit No.	0 (fix ed)	Station Number	0 (fix ed)	

■ Series 90-30/90-70 (SNP protocol)

GP		PLC		
Transmission speed	19200 bps	Baud Rate	19200 bps	
Data Length	8 bits (fix ed)	Data Length	8 bits (fix ed)	
Stop Bit	1 bit	Stop Bit	1 bit	
Parity Bit	Odd	Parity Bit	Odd	
Data Flow Control	ER)(fixed)			
Communication Format	4-wire type (fixed)			
Unit No.	1	CPU ID *1	1	

^{*1} Setting Method: when setting a PLC's CPU ID, be sure to use a number from "1" to "32" as the CPU ID so that the selected number is used as the PLC's unit number.



2.14 Fanuc Motion Controller

2.14.1 System Structure

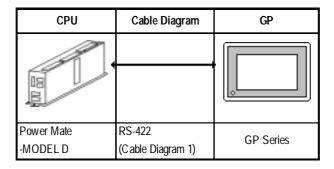
The following describes the system structure for connecting the GP to Fanuc Motion Controller PLCs.

The Cable Diagrams mentioned in the following tables are listed in the section titled "2.14.2 Cable Diagrams".

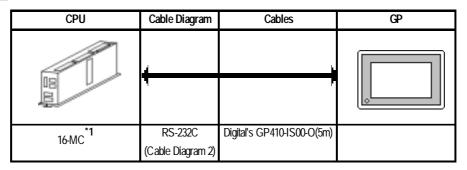


Be sure to inform the Fanuc Corporation clearly that the system will be connected with GP series unit(s).

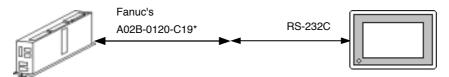
■ FANUC Power Mate Series



FANUC Series



*1 When connecting to 16-MC, Fanuc's converting cable A02B-0120-C19 is needed to connect a D-Sub connector (20pins) and a D-Sub connector (25pins).





The 16-MC unit can be connected only to serial port 2 (JD5B). It cannot be connected to serial port 1 (JD5A).

2.14.2 Cable Diagrams

The cable diagrams illustrated below and the cable diagrams recommended by GE Fanuc Automation may differ, however, using these cables for your PLC operations will not cause any problems.

Cable Diagram 1 (RS-422)



• Connect a Termination Unit to the Motion Controller's JD15. The Termination Unit, with a resistance of 100Ω is connected to the RD B and RD A points.

Motion Controller

JD15

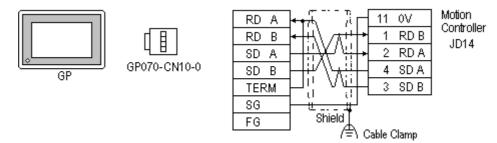
- 1 RDB Termination Resistance
- 2 RD A = 1/2W100Ω
- Ground your Motion Controller Unit's FG terminal. For details, refer to the Motion Controller manual.
- · Ground the Shield to the Cable Clamp.
- If a communications cable is used, it must be connected to the SG (signal ground).



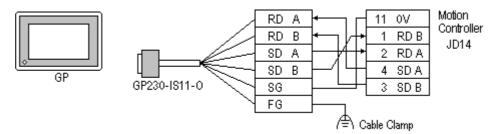
When using RS-422 connection, check the cable length with Fanuc Motion Controller PLC's users manual.



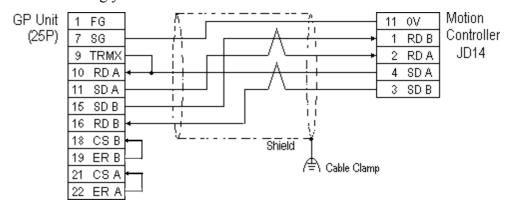
- Recommended Cable: Oki Densen's A66L-0001-0284#10P
- Recommended Connector: Honda Tsushin Kogyo's PCR-E20FS
- Recommended Connector Case: Honda Tsushin Kogyo's PCR-V20LA
- When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.
- When using Digital's RS-422 connector terminal adapter GP070-CN10-0



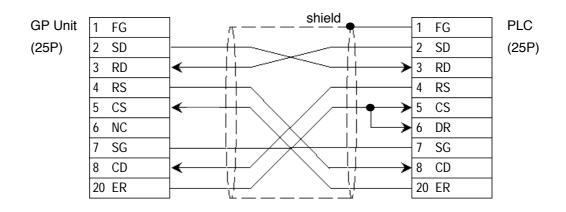
• When using Digital's RS-422 Cable, GP230-IS11-0



• When making your own cable connections



Cable Diagram 2 (RS-232C)

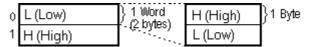


2.14.3 Supported Devices

The following describes the range of devices supported by the GP.

■ FANUC Power Mate Series Setup System Area here. **Particulars** Device Bit Address Word Address X000000 ~ X001277 X00000 ~ X00126 Input Relay (X) X010000 ~ X010637 X01000 ~ X01062 Y000000 ~ Y001277 Y00000 ~ Y00126 Output Relay (Y) Y010000 ~ Y010637 Y01000 ~ Y01062 Internal Relay (R) R000000 ~ R009997 R00000 ~ R00998 L/H Keep Relay (K) K00000 ~ K00197 K0000 ~ K0018 Timer (T) T0000 ~ T0078 Counter (C) C0000 ~ C0078

• The address' High/Low relationship is as follows:



D0000 ~ D01858

• When entering the *Input Relay*, *Output Relay*, *Internal Relay*, and *Data Table*, enter a 0, after each letter (X,Y,R,D). (The values in the table above already have a 0 added.)

E.g. X0 0120; Y0 01000

Data Table (D)

• A PLC Communication Error develops when an address outside the range is entered.

E.g. HOST COMMUNICATION ERROR (02:0F: **)

* *	Meaning	Solution
04	The entered address does	Check the range of available Motion
	not exist.	Controller addresses, and setup all
05	The entered data length is	addresses within this range.
	incorrect.	

Input Bit Address data using Decimal/Octal.



 $\underset{\text{Decimal}}{\text{E.g.}} \frac{\text{K0063}}{\text{J}} \ \overset{7}{\underset{\text{Octal}}{\text{}}}$

2.14.4 Environment Setup

The following lists Digital's recommended Motion Controller and GP communication settings.

■ FANUC Power Mate Series

GP Setup		Motion Controller JD14 Setup
Baud Rate	19200 bps (fixed)	
Data Length	8 bits (fix ed)	
Stop Bit	1 bit (fix ed)	
Parity Bit	Even (fixed)	
Data Flow Control	ER Control (fixed)	
Communication Format	4-wire type (fixed)	
Unit. No.	0 (fixed)	

■ FANUC Series

GP Setup		JD5P Setup
Baud Rate	19200bps(fix ed)	
Data Length	8bits(fixed)	
Stop Bit	1bit(fix ed)	
Parity Bit	Even(fixed)	
Data Flow Control	ER Control (fix ed)	
Communication Format	RS232C	
Unit No.	0 (fixed)	



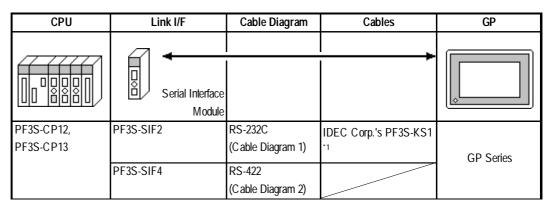
2.15 IDEC

2.15.1 System Structure

The following describes the system structure for connecting the GP to IDEC PLCs.

The Cable Diagrams mentioned in the following tables are listed in the section titled "2.15.2 Cable Diagrams".

■ FA Series (using Link I/F)



^{*1} Due to the size of its connector, this cable cannot be used for GP-270, GP-370, GP-377, GP-377R and GP-2300 series.



• After powering up, it takes about 1 second to enter RUN mode when the *memory pack* capacity of the PF3S-SIF2(4) is 1K *step*, and it takes about 4 seconds when the memory pack capacity is 4K step. As a result, the GP Start Time setup needs to be set for these situations.

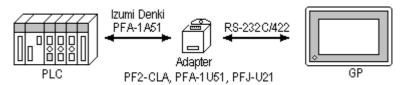
Reference About the GP Start Time setup, refer to each GP Series User Manual, "System Environment Setup"

• Wherever RS-422 appears, RS-485 can be substituted on the PLC.

Adapter *2 CPU^{*1} Cable Diagram Cables GP PF2-CPU1, PF2-CLA RS-232C IDEC Corp.'s PFA-1A52 PF2-CPU5M. PFA-1U51 (Cable Diagram 3) shaped computer cable PF2J-CPU1, **GP** Series PF3S-CP11, PFJ-U21 RS-422 PF3S-CP12, (Cable Diagram 4) PF3S-CP13

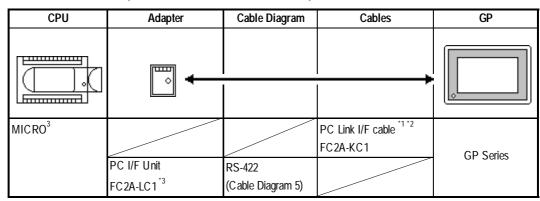
■ FA Series (CPU Direct Connection)

^{*2} It is necessary to connect the programming loader port and the adapter with Izumi PFA link cable PFA-1A51(30cm). Diagram below



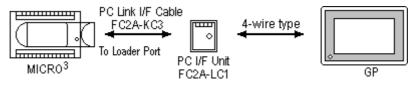
^{*3} Due to the size of its connector size, this cable cannot be used for GP-270, GP-370, GP-377 and GP-377R series.

■ MICRO³ (CPU Direct Connection)



^{*1} Use Izumi exclusive PC interface cable as the communication cable.

^{*3} Izumi PC Link I/F cable—FC2A-KC3—is necessary when connecting the PC I/F Unit—FC2A-LC1—and the PLC. Diagram below





Places noted as RS-422 can also use RS-485 on the PLC side.

^{*1} Connect to the programming loader port.

^{*2} When using the PC I/F cable FC2A-KC1, the GP side becomes RS-232C SIO.

CPU Link I/F Cable Diagram Cables GP/GLC FC4A-C10R2B Port 1 on CPU module IDEC Corporation RS-232C FC4A-C16R2B <Cable Diagram 6> FC2A-KP1C (2.4m) *2 FC4A-PC1 FC4A-C24R2B RS-232C FC4A-KC2C (5m) *3 <Cable Diagram 7> (Mini DIN type)^{*1} GP or FC4A-PC3 RS-422 **GLC Series** <Cable Diagram 8> (Terminal type)*1 FC4A-PC2 RS-422 **IDEC** Corporation <Cable Diagram 9> HG9Z-XC135 (Mini DIN type)*1

■ MICROSmart FC4A Series (All-In-One Type)

■ MICROSmart FC4A Series (Slim Type)

CPU	Link I/F	Cable Diagram	Cables	GP/GLC
	4			
FC4A-D20K3	Port 1 on CPU module	RS-232C	IDEC Corporation	
FC4A-D20S3		<cable 6="" diagram=""></cable>	FC2A-KP1C (2.4m) *2	
FC4A-D20RK1	FC4A-PC1	RS-232C	FC4A-KP2C (5m) *3	
FC4A-D20RS1	(Mini DIN type)*4	<cable 7="" diagram=""></cable>		
FC4A-D40K3	FC4A-PC3	RS-422		
FC4A-D40S3	(Terminal type)*4	<cable 8="" diagram=""></cable>		
	FC4A-PC2	RS-422	IDEC Corporation	0.0
	(Mini DIN type)*4	<cable 9="" diagram=""></cable>	HG9Z-XC135	GP or
	FC4A-HPC1	RS-232C	IDEC Corporation	GLC Series
	(Mini DIN Type) *1	<cable 7="" diagram=""></cable>	FC2A-KP1C (2.4 m) *2	
			FC4A-KP2C (5 m) *3	
	FC4A-HPC2 (Terminal	RS-422		
	Type) *1	<cable 8="" diagram=""></cable>		
	FC4A-HPC3	RS-422	IDEC Corporation	
	(Mini DIN Type) *1	<cable 9="" diagram=""></cable>	HG9Z-XC135	

^{*1.} Connect to Port 2 Connector.

^{*1} Connect to Port 2 Connector.

^{*2} The connector for the GP unit must be created.

^{*3} This cable has the connector for the GP unit.

^{*2.} The connector for the GP unit must be created.

^{*3.} The connector for the GP unit will not need to be created.

^{*4.} The HMI base module (model FC4A-HPH1) is required.

■OpenNet Controller FC3 Series

CPU	Link I/F	Cable Diagram	Cables	GP/GLC
	4		<u> </u>	
FC3A-CP2K FC3A-CP2S	RS-232C Port 1 on CPU module	RS-232C	IDEC Corporation HG9Z-XCM12 (2m)	
	RS-232C Port 2 on CPU module	<cable 7="" diagram=""></cable>	FC2A-KP1C (2.4m) *1 FC4A-KC2C (5m) *2	GP or GLC Series
	RS-485 Port on CPU module	RS-422 <cable 10="" diagram=""></cable>		

^{*1} The connector for the GP unit must be created.

^{*2} This cable has the connector for the GP unit.

2.15.2

Cable Diagrams

The cable diagrams illustrated below and the cable diagrams recommended by IDEC Corp. may differ; however, using these cables for your PLC operations will not cause any problems.



Ground your PLC's FG terminal according to your country's applicable standard. For details, refer to the corresponding PLC manual.

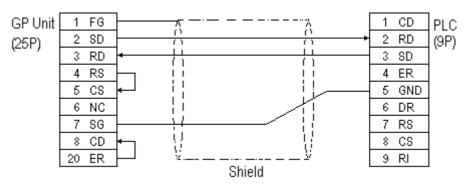


- Connect the FG line of the Shield cable to either the GP or PLC, depending on your environment settings. When using a connector hood and grounding the FG line, be sure to use an electrical conductor.
- If a communications cable is used, it must be connected to the SG (signal ground).

Cable Diagram 1 (RS-232C)

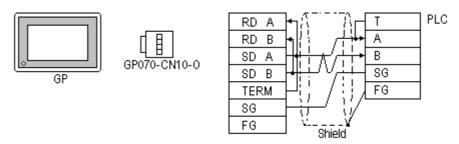


• Be sure the RS-232C cable length is 15m or less.

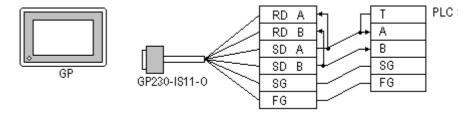


Cable Diagram 2 (RS-422)

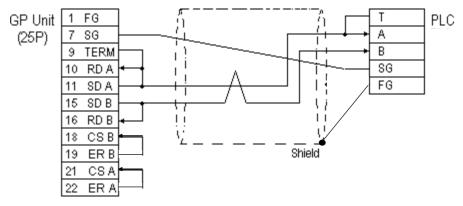
• When using Digital's RS-422 connector terminal adapter, GP070-CN



• When using Digital's RS-422 Cable, GP230-IS11-0



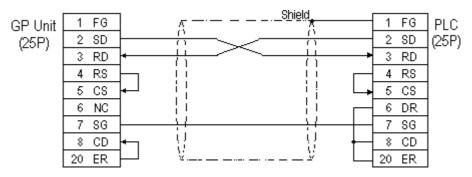
• When making your own cable connections





- When making your own connections, we recommend using Hitachi Densen's CO-SPEV-SB(A)3P*0.5SQ twist pair cable.
- When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.
- For the RS-422 connection, refer to IDEC's PLC manual for the cable length.

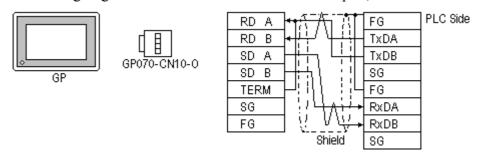
Cable Diagram 3 (RS-232C)



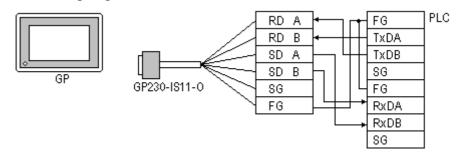
GP-PRO/PBIII for Windows Ver.6.0 PLC Connection Manual

Cable Diagram 4 (RS-422)

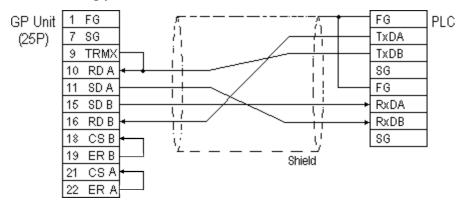
• When using Digital's RS-422 connector terminal adapter, GP070-CN10-0



• When using Digital's RS-422 Cable, GP230-IS11-0



• When making your own cable connections



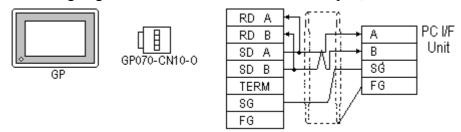


When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.

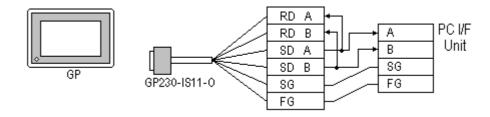
• For the RS-422 connection, refer to IDEC's PLC manual for the cable length.

Cable Diagram 5 (RS-422)

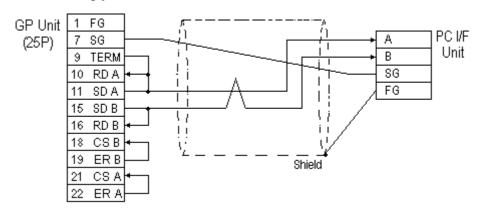
• When using Digital's RS-422 connector terminal adapter, GP070-CN10-0



• When using Digital's RS-422 Cable, GP230-IS11-0



• When making your own cable connections





- When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.
- For the RS-422 connection, refer to IDEC's PLC manual for the cable length.

Cable Diagram 6 (RS-232C)



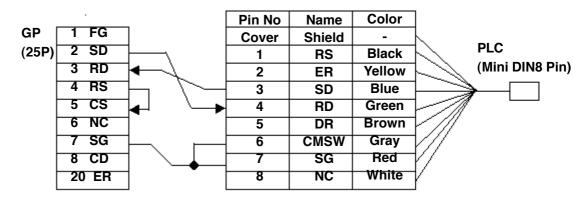
- For RS-232C communication format, use IDEC Corporation Communication Cable.
- When connecting the cable more than 5m, use RS-422 communication format.

Reference A Cable Diagram 8.

• Using IDEC Corporation Communication Cable (model:FC2A-KP1C)> The GP's Dsub 25-pin connector must be created by the user. Be sure to make your own cable as shown below.



Dsub25-pin Connector (male)



Cable Diagram 7 (RS-232C)



- For RS-232C communication format, use IDEC Corporation Communication Cable.
- When connecting the cable more than 5m, use RS-422 communication format.

TReference

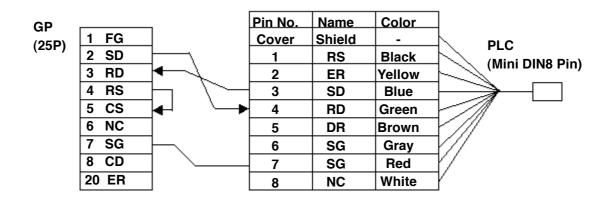
Cable Diagram 8 for MICROSmart FC4A Series, or Cable Diagram 10 for OpenNet Controller FC3 Series.

• Using IDEC Corporation Communication Cable (model:FC2A-KP1C)

The GP's Dsub 25-pin connector must be created by the user. Be sure to make your own cable as shown below.



Dsub25-pin Connector (male)



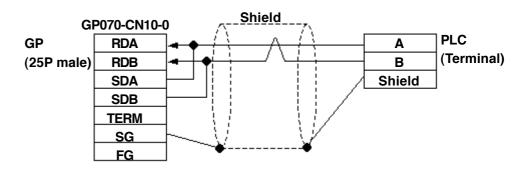
Cable Diagram 8 (RS-422, 2-wire type)



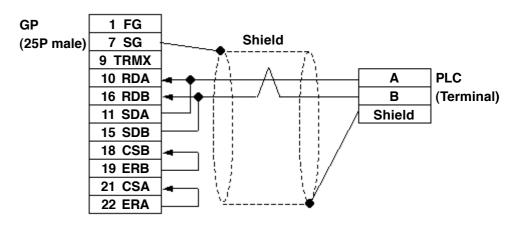
Use the following cable for the MICROSmart RS-485 Communication Board FC4A-PC3 (Terminal type):

Coaxial Twisted pair wire

- All RS-422 cables should be no more than 200 meters long.
- When using RS-422 communication format, be sure not to connect the termination resistance. If you do, the GP will not work properly.
- Using Pro-face RS-422 connector terminal adaptor GP070-CN10-0



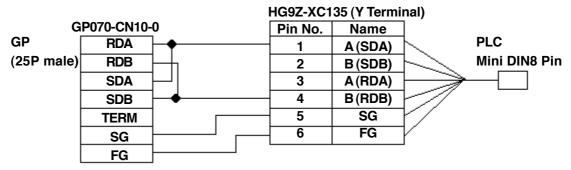
• When making your own cables



Cable Diagram 9 (RS-422, 2-wire type)



- When using RS-422 communication format, be sure not to connect the termination resistance. If you do, the GP will not work properly.
- Using IDEC Corporation cable HG9Z-XC135



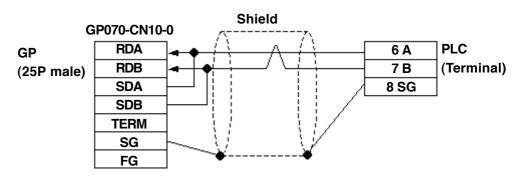


- The PLC side connector's No. 1 and No. 3 pins, and No. 2 and No. 4 pins, respectively, are connected internally.
- Since the HG9Z-XC135 cable's No. 2 and No. 3 terminals cannot be used, be sure to wrap them with insulating tape.

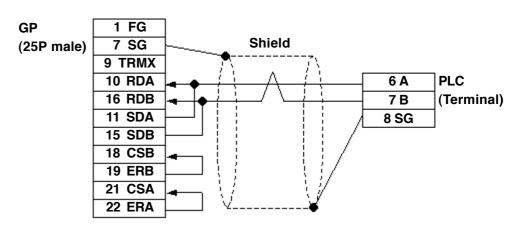
Cable Diagram 10 (RS-422, 2-wire type)



- Recommended cable for OpenNet Controller RS-485 Port:
 Twisted pair wire with f 0.9 Shield
- All RS-422 cables should be no more than 200 meters long.
- When using RS-422 communication format, be sure not to connect the termination resistance. If you do, the GP will not work properly.
- Using Pro-face RS-422 connector terminal adaptor GP070-CN10-0



• When making your own cable



2.15.3 Supported Devices

The following describes the range of devices supported by the GP.

■ FA Series

Setup System Area here.

Device	Bit Address	Word Address	Particulars	
Input Relay	X000 ~ X637	WX00 ~ WX63	<u>÷2</u>	
Output Relay	Y000 ~ Y637	WY000 ~ WY63	:27	
Internal Relay	M000 ~ M2557	WM000 ~ WM255	<u>÷2</u> ¬	
Shift Register	R000 ~ R223	WR000 ~ WR223	<u> </u>	
Timer (contact)	T000 ~ T255		*1	
Timer 10msec (contact)	H000 ~ H079		*1	
Counter (contact)	C000 ~ C255		*1	
Timer (setup value)		TS000 ~ TS255		L/H
Timer (current value)		T000 ~ T255	*1	
Timer 10msec (current value)		H000 ~ H079	*1	
Counter (setup value)		CS000 ~ CS255		
Counter (current value)		C000 ~ C255	*1	
Data Register		D0000 ~ D2989	Bit 1 5 1	
Control Register		D3000 ~ D3071	Bit 1 5 1	

^{*1} Cannot perform data write.



Enter Decimal Octal bit address input for the Input Relay, Output Relay, and the Internal Relay.

■ MICRO³

Setup System Area here.

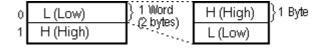
Device	Bit Address	Word Address	Particulars	
Input Relay	x00000 ~ x0037	X0000 ~ X0002	<u> </u>	
Output Relay	y00000 ~ y0037	Y0000 ~ Y0002	<u> </u>	
Internal Relay	m00000 ~ m0277	M0000 ~ M0026	<u>:2</u>	
Shift Register	r0000 ~ r0063	R0000 ~ R0048	<u> </u>	
Timer (contact)	T0000 ~ T0031		*1*2	
Counter (contact)	C0000 ~ C0031		*1*2	L/H
Timer (setup value)		T0000 ~ T0031	*2	
Timer (elapsed time)		t0000 ~ t0031	*2	
Counter (setup value)		C0000 ~ C0031	*2	
Counter (elapsed value)		c0000 ~ c0031	*2	
Data Register		D0000 ~ D0099	Bit 1 51	

^{*1} Cannot perform data write.

^{*2} The combined total of timers and counters can be up to 32.

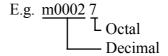


- The Input/Output Relay range depends on the basic unit's Input/Output number.
- The address' High/Low relationship is as follows:





Enter Decimal Octal bit address input for the Input Relay, Output Relay, and the Internal Relay.



■ MICROSmart FC4A Series

	Setup System	Area	here
--	--------------	------	------

Device	Bit Address	Word Address	Other	
Input	X0000 ~ X0307	X000 ~ X030	÷2¬ *1	
Output	Y0000 ~ Y0307	Y000 ~ Y030	÷2¬	
Internal Relay	M0000 ~ M1277	M000 ~ M126	<u>÷2</u>	
Special Internal Relay	M8000 ~ M8157	M800 ~ M814	÷2¬	
Shift Register	R0000 ~ R0127	R0000 ~ R0112	<u>÷16</u>	
Timer (contact value)	T0000 ~ T0099		*1 *2	
Counter (contact value)	C0000 ~ C0099		*1 *2	L/H
Timer (setup value)		T0000 ~ T0099		L/H
Timer (elapsed value)		t0000 ~ t0099		
Counter (setup value)		C0000 ~ C0099		
Counter (elapsed value)		c0000 ~ c0099		
Data Register		D0000 ~ D1299	Bit 1 51	
Special Data Register		D8000 ~ D8199	Bit 1 5 1	
Extended Data Register		D2000 ~ D7999	Bit 1 51 *4	
Enter Timer/Counter setup value		Q0 *3		

^{*1} Data Write is not possible.

^{*2} When writing to this device, the "Host Communication Error (02:FB)" will appear.

^{*3} Q0 is a virtual device. This is the only device used to write Timer/Counter setup values to Non-volatile Memory. When data is written to this address, new Timer/Counter setup values are written to Non-volatile Memory. To prevent accidental deletion of data due to RAM Backup Battery recharge failure, be sure to write your data to Non-volatile Memory. However, when Non-volatile Memory is written to, the Ladder program's scan time is delayed. Be sure not to write to this device every time the Timer/Counter setup value is changed. Also, data cannot be read out from this device.

^{*4} Depending on the CPU used, the devices address ranges may differ.

■ OpenNet Controller FC3 Series

	Setup System	Area	here
--	--------------	------	------

Device	Bit Address	Word Address	Other
Input	X0000 ~ X0597	X000 ~ X058	÷2¬ "
Output	Y0000 ~ Y0597	Y000 ~ Y058	<u>=2</u>
Internal Relay	M0000 ~ M2557	M000 ~ M254	<u>÷2</u> ¬
Special Internal Relay	M8000 ~ M8237	M800 ~ M822	<u>÷2</u> ¬
Shift Register	R0000 ~ R0255	R0000 ~ R0240	<u>:16</u>
Timer (contact value)	T0000 ~ T0255		*1 *2
Counter (contact value)	C0000 ~ C0255		*1 *2
Timer (setup value)		T0000 ~ T0255	Un
Timer(elapsed value)		t0000 ~ t0255	
Counter (setup value)		C0000 ~ C0255	
Counter (elapsed value)		c0000 ~ c0255	
Data Register		D0000 ~ D7999	<u>Bit 1 5 1</u>
Special Data Register		D8000 ~ D8999	Bit 1 51
Link Register		L0100 ~ L1317	Bit 1 5 1 3

^{*1} Data Write is not possible.

*2 Link Register Device Restrictions

In GP-PRO/PBIII for Windows, even though from 0 to 9 (Decimal) can be entered as the last digit of a word address, only 0 to 7 can be entered for a PLC address.

Also, even though addresses L0728 to L0999 can be entered, this range does not exist on the PLC, and therefore cannot be used.

Additionally, when entering tag settings, any of the following conditions may occur.

A) During Data Read

When a non-existing address is designated for a Tag, or when Read Out is performed from an area that includes a non-existing address, a Host Communication Error (02:06) will appear on the GP.

Ex) When an N-tag's word address is designated as L0108.

Or, when an S-tag's word address is designated as L0100, and the number of display characters is set to 20.

^{*2} When writing to this device, the "Host Communication Error (02:FB)" will appear.

B) During Data Write

When a non-existing address is designated for a Tag, or when Block Write is performed for a block that exceeds 40 words, a Host Communication Error (02:06) will appear on the GP.

Ex) When an N-tag's word address is designated as L0108.

Or, when using the D-Script Memory Copy function, if the Word Address starts from L0100 and 41 copies are designated.

C) Using the Tag Multiple Copy Feature

When creating multiple copies of a Tag, after the copying is finished, be sure to check that all the Tag addresses created can actually be used.

Ex) When an L-Tag's initial word address is designated as L0100 and the copy setting is 10, addresses L0100 to L0109 will be used. In this case, L0108 and L0109 will be out of the available (Base 8) range.



For the available range of Link Register Addresses and detailed information, refer to the IDEC Corporation's "OpenNet Controller FC3 Series Instruction Manual".

2.15.4 Environment Setup

The following tables list Digital's recommended PLC and GP communication settings.

■ FA Series (using Serial Interface Module)

GP Setup		Serial In	Serial Interface Module Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps	
Data Length	8 bits	Data Bit	8 bits	
Stop Bit	1 bit	Stop Bit	1 bit	
Parity Bit	Even	Parity Bit	Even	
Data Flow Control	ER Control			
Communication Format (RS-232C)	RS-232C			
Communication Format (RS-422)	2-wire type			
Unit No.	0	Device Number	0	

■ FA Series (CPU Direct Connection)

GP Setup		PLC Setup	
Baud Rate	9600 bps	Baud Rate	9600 bps
Data Length	8 bits	Data Bit	8 bits
Stop Bit	1 bit	Stop Bit	1 bit
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER Control		
Communication Format (RS-232C)	RS-232C		-
Communication Format (RS-2422)	4-wire type		
Unit. No.	0	Device Number	0

■ MICRO³

GP Setup		Loader Port Setup	
Baud Rate	9600 bps	Baud Rate	9600 bps
Data Length	7 bits	Data Bit	7 bits
Stop Bit	1 bit	Stop Bit	1 bit
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER Control	-	
Communication Format (when using PC I/F Unit FC2A-KC1)	RS-232C	-	-
Communication Format (RS-422)	2-wire type	-	
Unit No.	0	Device Number	0



The PLC setup above is the same as the Basic setup mode. When connected to the GP or Loader, communication is available in Basic setup mode (condition when the Mode Change Input Number terminal is OFF). To change the communication setup, use Option setup mode (condition when the Mode Change Input Number terminal is ON).

■ MICROSmart FC4A Series

GP/GLC Settings		PLC Settings		
Baud Rate	9600 bps	Baud Rate	9600 bps	
Data Length	7 bits	Data Length	7 bits	
Stop Bit	1 bit	Stop Bit	1 bit	
Parity Bit	Even	Parity Bit	Even	
Data Flow Control	ER Control		***	
Communication Format (RS-232C)	RS-232C			
Communication Format (RS-485)	2-wire type	***	***	
Unit No.	0	Device No.	0	
***	***	Port Communication Type	Maintenance Communication	
		Communication Switchover Input	No	

■ OpenNet Controller FC3 Series

GP/GLC Settings		PLC Settings	
Baud Rate	9600 bps	Baud Rate	9600 bps
Data Length	7 bits	Data Length	7 bits
Stop Bit	1 bit	Stop Bit	1 bit
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER Control		
Communication Format (RS-232C)	RS-232C		
Communication Format (RS-485)	2-wire type		
Unit No.	0	Device No. DIP-SW4 ~ 8	0
		RS-485 Communication Mode DIP-SW1 RS-232C Port 1Communication Mode DIP-SW2 RS-232C Port 2 Communication Mode DIP-SW3	OFF (Maintenance) OFF (Maintenance) OFF (Maintenance)
***		Communication Switchover Input	No

♦Monitor Register

When using OpenNet Controller FC3 Series, the Monitor Register feature can be set. Using this function, Block reads of discrete addresses (maximum of 40 words) can be made. This function can also be used, when using the Multi Port Communication or connecting your PC. Be sure to set the Monitor Register feature from the SETUP OPERATION SURROUNDINGS MENU in the GP OFFLINE mode or from [GP SETUP] -> [MODE SETTINGS] in the GP Screen Editor (GP-PRO/PBIII for Windows).

TREFERENCE Refer to each GP User Manual, OFFLINE MODE.



• The Monitor Register feature cannot be used on MICROSmart FC4A Series. Be sure to set the Monitor Register setting to "No". If the MONITOR SETTING feature is set to "Yes", a "Host Communication Error (02:03)" will appeare.

Reference Refer to this manual, 2.15.4 Error Codes.

- Default setting is "No".
- Depending on whether you are using a GP or a GLC series unit, the OFFLINE mode's SETUP OPERATION SURROUNDING MENU, the menu that appears may differ. Setup the Monitor Register area as shown below.

<GP-H70/ GP-270/GP-370/GLC-100 Series>

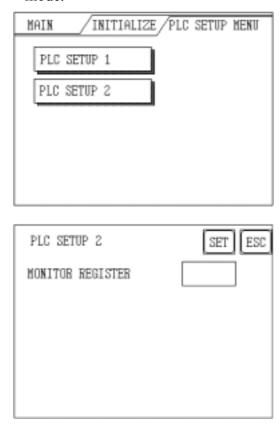
SET UP OPERATION SURROUND	INGS SET ESC
SYSTEM AREA START DEV	
START ADR	
UNIT No.	
SYSTEM AREA READ SIZE	
MONITOR REGISTER	

<GP-470/GP-570/GP-675/GP-870 Series>

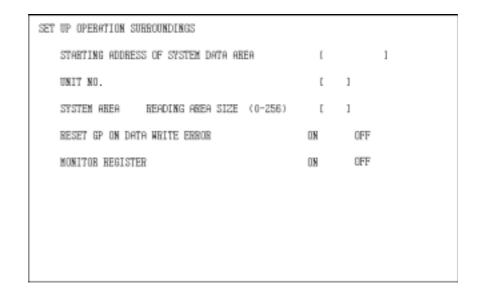
SET UP OPERATION SURBOUNDINGS			
STARTING ADDRESS OF SYSTEM DATA AREA	1	1	
UNIT NO.	1	1	
SYSTEM AREA READING AREA SIZE (0-256)	[1	
MONITOR REGISTER	ON	OFF	

<GP-377/GP-377R/GP-2300/GLC-2300Series>

Set the Monitor Register feature from the SETUP OPERATION SURROUND-INGS MENU [PLC SETUP MENU] -> [PLC SETUP 2] in the GP OFFLINE mode.

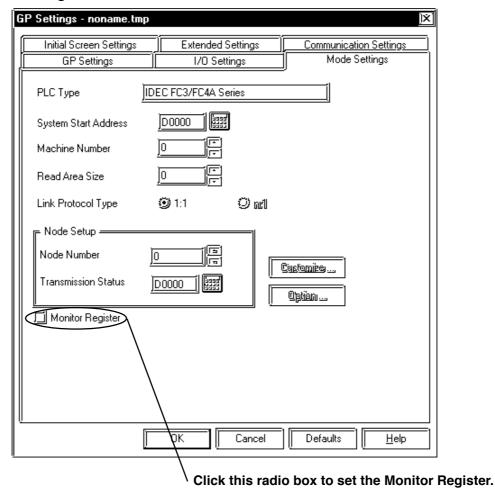


<GP-477R/GP-577R/GP2000/GLC300/GLC2000 Series>



• Setting Monitor Register from the GP Screen Editor (GP-PRO/PBIII for Windows)

Set the Monitor Register feature from [GP SETUP] -> [MODE SETTINGS] in the GP Screen Editor (GP-PRO/PBIII for Windows). This feature's default setting is "not selected".



2.15.5 Error Codes

■PLC Specific Error Codes

♦MICROSmart FC4A Series/OpenNet Controller FC3 Series

IDEC Corporation PLCs have two types of error codes, "Communication Error Code" and "NG Code". A "Communication Error" means the error occurred during transmission. "NG Error" means the error occurred after receiving the message from the PLC. "NG Code" is the error code for standard GP/GLC units. "Communication Error Code" and "NG Error Code" are displayed via the "Host Communication Error (02:**)", and will appear in the left lower corner of the GP/GLC screen (** indicates the PLC's error code).

• Communication Error Code

Error Code	Error Type	Error Contents
00	BCC error	Appended BCC code does not match BCC calculated value of
DCC error		received data.
01	Flame error	Quantity of received bits differs from the preset value (stop bit is
OI Flame en oi		0 for example).
02	Data send/receive error	Parity Error or Overrun error occured.
03	Command error	Unsupported request message is received.
04	Procedure/data quantity	Received request message does not match the expected data
04	error	(including quantity of data).

NG Code

Error Code	Error Name	Meanings
06	Data range error	Invalid data range designated.
07	Timer/Counter preset value	Preset value change attempted to timer or counter with preset
07	change error	value designated by data register.
10	Data error	Invalid data other than 0 (30h) - 9 (39h) or A (41h) - F(46h).
11	Setting error	Incorrect setting for user communication.



For more details about error codes, refer to the IDEC Corporation's "COMPUTER LINK SYSTEM USER'S MANUAL".



2.16 Siemens

2.16.1 System Structure

The following describes the system structure for connecting the GP to Siemens PLCs.

The Cable Diagrams mentioned in the following tables are listed in the section titled "2.16.2 Cable Diagrams".

■ SIMATIC S5 Series (using Link I/F <3964/3964R via RK512 Protocol>)

CPU	Link I/F	Cable Diagram	GP
90U, 95U, 100U	CP521 S1		
115U	CP524 CP525	DC 2220	
115U (CPU944)	CPU unit Link I/F *1	RS-232C (Cable Diagram 1)	GP Series
135U, 155U	CP524 CP525	(Casic Diagram 1)	
135U, 155U (CPU928B)	CPU unit Link I/F *1		

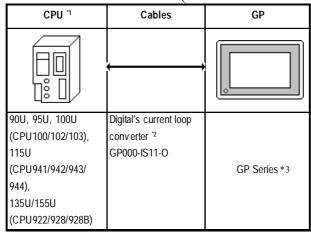
^{*1} Connect to SI2 Port.



Supports both 3964 and 3964R protocols. The GP automatically discriminates between the two.

For better error detection, the 3964R is recommended.

■ SIMATIC S5 Series (CPU Direct Connection)

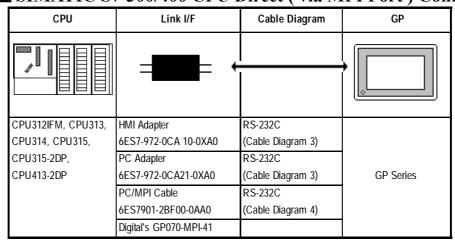


- *1 Connect to the Programming port.
- *2 Due to the size of its connector size, this cable cannot be used for GP-270, GP-370, and GP-377R series.
- *3 Cannot be connected to GP2000 and GLC2000 Series units.

■ SIMATIC S7-200 Series (CPU Direct Connection)

CPU	Cables	GP
••	•	
CPU212, CPU214	RS422 (Cable Diagram 2)	GP Series

■ SIMATIC S7-300/400 CPU Direct (via MPI Port) Connection



CPU Link I/F Cable Diagram GP CPU313, CPU314, CPU315, CPU315-2DP CPU413-2DP CP441-2 RS-232C (Cable Diagram 5) GP Series GP Series

■ SIMATIC S7-300/400 via 3964/RK512 (using Link I/F)



This driver cannot be used with the CPU312IFM.



*1 When using the CP340 Link I/F an "Interpreter program" is required on the PLC. This is contained in the GP-PRO/PBIII for Windows Ver.4.0 CD-ROM 's "CP340" folder. Please see "README" file in this folder in order to install this program.

■ SIMATIC 505 Series

СРИ	Cable Diagram	GP
SIMATIC 545-1101, SIMATIC 545-1102,	RS-232C	
SIMATIC 545-1103, SIMATIC 545-1104,	Port 1 Connection	
SIMATIC 545-1105, SIMATIC 545-1106,	(Cable Diagram 7)	
SIMATIC 555-1101, SIMATIC 555-1102,		
SIMATIC 555-1103, SIMATIC 555-1104,		
SIMATIC 555-1105, SIMATIC 555-1106		
SIMATIC 545-1101, SIMATIC 545-1102,	RS-422(4-wire type)	
SIMATIC 555-1101, SIMATIC 555-1102	Port 2 Connection	
	(Cable Diagram 8)	
SIMATIC 545-1104, SIMATIC 545-1105,	RS-422(4-wire type)	GP Series
SIMATIC 545-1106, SIMATIC 555-1103,	Port 2 Connection	Or Schos
SIMATIC 555-1104, SIMATIC 555-1105,	(Cable Diagram 9)	
SIMATIC 555-1106		
SIMATIC 545-1103, SIMATIC 545-1104,		
SIMATIC 545-1105, SIMATIC 545-1106,		
SIMATIC 555-1103, SIMATIC 555-1104,	(Cable Diagram 10)	
SIMATIC 555-1105, SIMATIC 555-1106		
SIMATIC 545-1101, SIMATIC 545-1102,	RS-232C	
SIMATIC 555-1101, SIMATIC 555-1102	Port 2 Connection	
	(Cable Diagram 11)	

2.16.2 Cable Diagrams

The cable diagrams illustrated below and the cable diagrams recommended by Siemens may differ, however, using these cables for your PLC operations will not cause any problems.

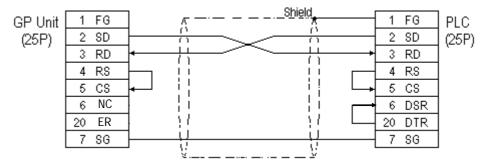


Ground your PLC's FG terminal according to your country's applicable standard. For details, refer to the corresponding PLC manual.

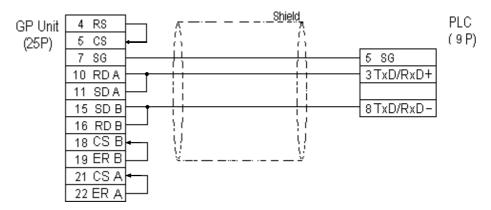


- Connect the FG line of the Shield cable to either the GP or PLC, depending on your environment. When using a connector hood and grounding the FG line, be sure to use an electrical conductor. The following connection diagrams show examples for connecting a shielded cable to the PLC.
- For the RS-232C connection, use a cable length less than 15m.
- For the RS-422 connection, use a cable length less than 500m.
- If a communications cable is used, it must be connected to the SG (signal ground).

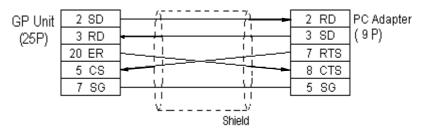
Cable Diagram 1 (RS-232C)



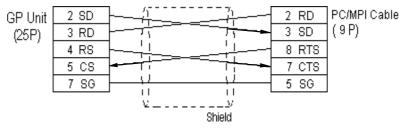
Cable Diagram 2 (RS-422)



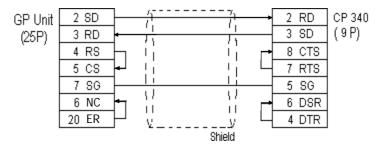
Cable Diagram 3 (RS-232C)



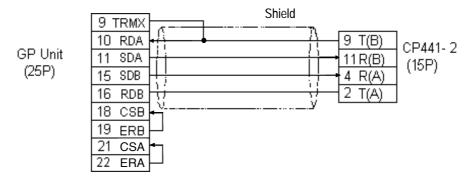
Cable Diagram 4 (RS-232C)



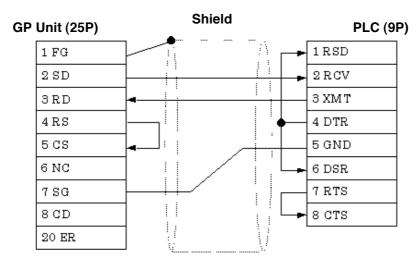
Cable Diagram 5 (RS-232C)



Cable Diagram 6 (RS-422)

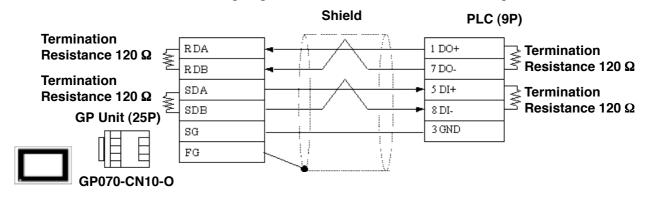


Cable Diagram 7 (RS-232C)

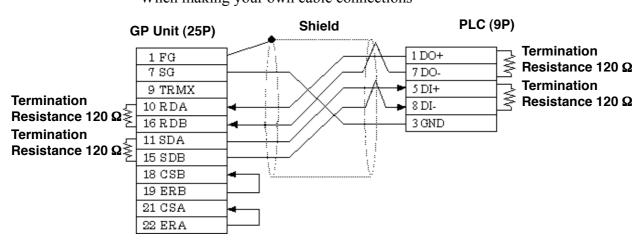


Cable Diagram 8 (RS-422)

• When using Digital's RS-422 connector terminal adapter, GP070-CN10-O

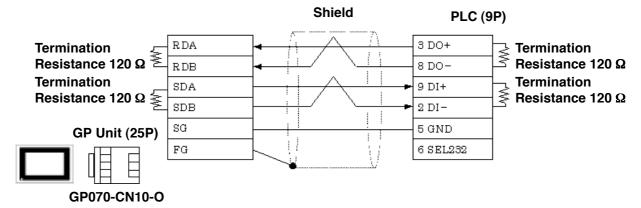


• When making your own cable connections

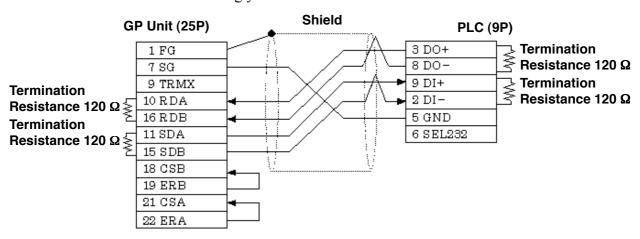


Cable Diagram 9 (RS-422)

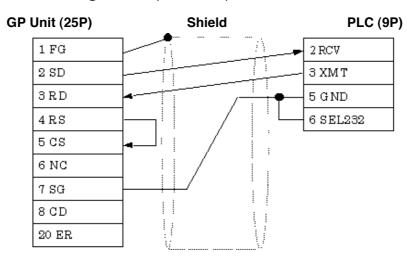
• When using Digital's RS-422 connector terminal adapter, GP070-CN10-O



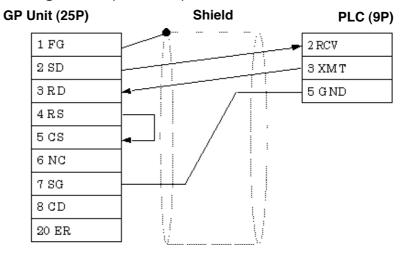
• When making your own cable connections



Cable Diagram 10 (RS-232C)



Cable Diagram 11 (RS-232C)



2.16.3 Supported Devices

The following tables describe the range of devices supported by the GP.

■ SIMATIC S5 Series (using Link I/F)

Setup	System	Area	here.
-------	--------	------	-------

Device	Bit Address	Word Address	Particulars	
Data Register		D003000 ~ D255255	Bit F7 *1*2	
Extended Data		X003000 ~ X255255	Г <u>Віт</u> F ¬ 112	H/L
Register		A003000 ~ A233233	<u> </u>	

■ SIMATIC S5 Series (CPU Direct Connection)

Setup System Area here.

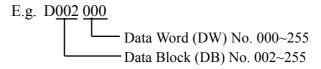
Device	Bit Address	Word Address	Particulars	
Input Relay	10000 ~ I1277	IW000 ~ IW126	÷2¬ ·3	
Output Relay	Q0000 ~ Q1277	QW000 ~ QW126	÷2¬ ·3	H/L
Internal Relay	F0000 ~ F2557	FW000 ~ FW254	÷2¬ ·3	
Timer		T000 ~ T255		L/H
C ounter		C000 ~ C255		шп
Data Register		D002000 ~ D255255	Bit F] *1*4	
Extended Data Register		X002000 ~ X255255	Bit F *1*4*5	H/L

^{* 1} The range for the Data Register and the Extended Data Register must also be set up in the PLC. Communication will not occur with the GP when the System Area range is not setup.

* 3 The bit device illustration for the PLC side is different.

E.g.	GP	PLC
	Q0007	Q0.7

* 4 The Data Register and Extended Data Register is as illustrated below.



* 5 The Extended Data Register is possible only with S5 135U/155U.

^{* 2} The Data Register and Extended Data Register is as illustrated below.



For information about Bit Write process differences, see the end of this section

■ SIMATIC S7-200 Series

Setup System Area here

Device	Bit Address	Word Address	Particulars	
Input	100 ~ 177	IW0 ~ IW6	*1*2	
Output	Q00 ~ Q77	QW0 ~ QW6	*1*2	
Internal Memory	M000 ~ M317	MW00 ~ MW30	*1*2	
Special Memory	SM000 ~ SM857	SMW00 ~ SMW84	*1*2	
Timer Bit	T000 ~ T127			H/L
Counter Bit	C00 ~ C63			
Variable Memory		VW0000 ~ VW4094	*1	
Timer Word		TW000 ~ TW127		
Counter Word		CW000 ~ CW127		



This maximum range may not be supported by some PLC configurations.

■ SIMATIC S7-300/400 Series (CPU Direct Connection via MPI Port)

Setup System Area here.

Device	Bit Address	Word Address	Particulars	
Input	E000000 ~ E001277	EW00000 ~ EW00126	*1*2	
Output	A00000 ~ A001277	AW00000 ~ AW00126	*1*2	
Internal Bit	M00000 ~ M002557	MW00000 ~ MW00254	*1*2	
Data Block	DB01W000000 ~ DB60W655357	DB01W00000 ~ DB60W65534	*1*2*3	H/L
Timer Word		T00000 ~ T00127		
Counter Word		Z00000 ~ Z00063		

^{*1} Word addressing of Byte devices so only every second address can be accessed (e.g. MW0,2,4,....).

^{*3} The addressing format for entering on GP-PRO/PBIII is different from the convention used in the S7-300 - e.g. DB63W00020 is equivalent to DB63.DBW20.



This maximum range may not be supported by some PLC configurations.

^{*2} The bit position is the last digit entered. There is no '.' delimeter - e.g. I3.7 is equivalent to 137 in GP-PRO/PBIII.

■ **SIMATIC S7-300/400** (via 3964/RK512)

Setup System Area here.

Device	Bit Address	Word Address	Particulars
Data Memory	01W0000 ~ D60W2547	D01W000 ~ D60W254	*1*2*3 H/L



It is possible to enable/disable the Block Check Character (BCC) in PLC to GP communications.

This can be performed via the GP's OFFLINE mode, or, via the GP-PRO/PBIII Editor's Mode Area's "Option" Command.

- *1 Some Data Blocks are reserved for the 3964R interpreter program: DB2,DB3,DB5 & DB10.
- *2 Word addressing so only every second address can be accessed (e.g. D10W0,2,4,....).
- *3 The addressing format for entering on GP-PRO/PB III is different from the convention used in the S7-300 e.g. DB63W00020 is equivalent to DB63.DBW20.

■ SIMATIC 505 Series

Setup System Area here.

Device	Bit Address	Word Adress	Particulars	
Variable Memory		V00001 ~ V26624		
Word Input		WX00001 ~ WX08192	*1	L/H
Word Output		WY00001 ~ WY08192		
Discrete Input accessed as bit	X0001 ~ X8192			
Discrete Output accessed as bit	Y0001 ~ Y8192			
Control Relay Accessed as bit	CR00001 ~ CR32768			
Loop Gain		LKC0001 ~ LKC0064	*2	
Loop Reset		LT10001 ~ LT10064	*2	
Loop Rate		LTD0001 ~ LTD0064	*2	
Loop Alarm High Limit		LHA0001 ~ LHA0064	*2	
Loop Low Alarm Limit		LLA0001 ~ LLA0064	*2	
Loop Process Variable		LPV0001 ~ LPV0064	*2	
Loop PV High Limit		LPVH0001 ~ LPVH0064	*2	
Loop PV Low Limit		LPVL0001 ~ LPVL0064	*2	
Loop Orange Deviation Limit		LODA0001 ~ LODA0064	*2	
Loop Yellow Deviation Alarm Limit		LYDA0001 ~ LYDA0064	*2	
Loop Sample Rate		LTS0001 ~ LTS0064	*2	
Loop Setpoint		LSP0001 ~ LSP0064	*2	
Loop Output		LMN0001 ~ LMN0064	*2	
Loop Error		LERR0001 ~ LERR0064	*1 *2	
Loop Bias		LM X0001 ~ LM X0064	*2	
Loop Alarm High-High Limit		LHHA0001 ~ LHHA0064	*2	
Loop Low-Low Alarm Unit		LLLA0001 ~ LLLA0064	*2	
Loop Rate of Change Alarm Limit		LRCA0001 ~ LRCA0064	*2	
Loop Setpoint High Point		LSPH0001 ~ LSPH0064	*2	

(Continued on next page)

■ SIMATIC 505 Series (Continued on next page)

Device	Bit Address	Word Adress	Particulars	
Loop Setpoint Low Limit		LSPL0001 ~ LSPL0064	*2	
Loop Alarm Deadband		LADB0001 ~ LADB0064	*2	
Loop V-flags		LVF0001 ~ LVF0064		
Most Significant Word of Loop C-flags		LCFH0001 ~ LCFH0064		L/H
Least Significant Word of Loop C-flags		LCFL0001 ~ LCFL0064		
Analog Alarm/Alarm Acknowledge Flags		AADB0001 ~ AADB0128	*2	
Most Significant Word of Analog Alarm C-flags		ACFH0001 ~ ACFH0128		L/H
Least Significant Word of Analog Alarm C-flags		ACFL0001 ~ ACFL0128		
Analog Alarm Error		AERR0001 ~ AERR0128	*1*2	
Analog Alarm High Alarm Limit		AHA0001 ~ AHA0128	*2	
Analog Alarm High-High Alarm Limit		AHHA0001 ~ AHHA0128	*2	
Analog Alarm Low Alarm Limit		ALA0001 ~ ALA0128	*2	
Analog Alarm Low-Low Alarm Limit		ALLA0001 ~ ALLA0128	*2	
Analog Alarm Loop Orange Deviation Alarm Limit		AODA0001 ~ AODA0128	*2	
Analog Alarm Process Variable		APV0001 ~ APV0128	*2	
Analog Alarm Rate of Change Alarm Limit		ARC A0001 ~ ARC A0128	*2	
Analog Alarm Setpoint		ASP0001 ~ ASP0128	*2	
Analog Alarm SP High Limit		ASPH0001 ~ ASPH0128	*2	
Analog Alarm SP Low Limit		ASPL0001 ~ ASPL0128	*2	
Analog Alarm Sample Rate		ATS0001 ~ ATS0128	*2	
Analog Alarm Yellow Deviation Alarm Limit		AYDA0001 ~ AYDA0128	*2	
Timer/Counter Preset		TCP0001 ~ TCP1024	*3	
Timer/Counter Current		TC C 0001 ~ TC C 1024	*3	
Drum Counter Preset		DCP0101 ~ DCP6416	*3*4	
Drum Step Preset		DSP0001 ~ DSP0064	*3*5*6	L/H
Drum Step Current		DSC0001 ~ DSC0064	*3*5*6	
Status Word		STW0001 ~ STW0222	*1	
Drum Count Current		DCC0001 ~ DCC0064	*1	

(Continued on next page)

(From previous page)

- *1 The GP cannot write data to this device. Use it only for reading.
- *2 This device uses Float. When this type of device is used, only the E-tag and K-tag's "32 bit Float" setting can be used.
- *3 32 bit reading / writing, or reading / writing a K-tag's text string cannot be performed.
- *4 Address entry method:

```
Enter 1.01 as "101"

Enter 1.02 as "102"

Enter 1.03 as "103"

...

Enter 1.16 as "116"

Enter 2.01 as "201"

Enter 2.02 as "202"

...

Enter 64.15 as "6415"

Enter 64.16 as "6416"
```

*6 +1 is added to all data input from the GP to the PLC. -1 is added to all data output from the PLC to the GP.

```
GP PLC

1 → 2 ("1" entered from the GP is changed to "2" in the PLC.)

5 ← 6 ("6" sent from the PLC to the GP will become "5".)
```

^{*5} Entry range is from 0 to 15 (dec.)

2.16.4 Environment Setup

The following lists Digital's recommended PLC and GP communication setups.

■ SIMATIC S5 Series (using Link I/F)

GP Setup		Link I/F Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	8 bits	Data Bit	8 bits
Stop Bit	1 bit	Stop Bit	1 bit
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER Control	-	-
Communication Format (RS-232C)	RS-232C	-	
Communication Format (RS-422)	4-wire type	-	-
Unit No.	0 (fixed)	-	

■ SIMATIC S5 Series (CPU Direct Connection)

GP Se	tup	PC Link Unit Setup
Baud Rate	9600 bps (fix ed)	
Data Length	8 bits (fix ed)	
Stop Bit	1 bit (fixed)	
Parity Bit	Even (fixed)	
Data Flow Control	ER Control (fix ed)	
Communication Format	RS-232C (fixed)	
Unit No.	0 (fixed)	

System Data Area Setup

- SYSTEM DATA AREA START DB—used to setup the Data Register's Data Block (DB) Number.
- SYSTEM DATA AREA START DW—used to setup the Data Register's Data Word (DW) Number.

Reference Refer to the previous section, "2.16.3 Supported Devices", for the setup range.

If Link I/F is used, the system's number is indicated before the DB (Data Block) on the INITIALIZE area's [SETUP OPERATION SURROUNDINGS] screen. Changing this number, however, is not necessary since this data will be used only for future expansion.



• The method of writing bits will differ depending on the GP series.

<GP-*30 series>

When the bit write operation (other than *Reverse*) is performed, the corresponding word address will set the bits to 0 (except the designated bits).

<Except GP-*30 series>

When the bit wirte operation is performed, the GP reads the PLC's corresponding word address and turns a bit ON, then send back to PLC. Do not write to the word address from the ladder program in the middle of this operation.

• When running a GP-*30 Series ladder program, be aware of the above points.

■ SIMATIC S7-200 Series

GP Setup		PC Link Unit Setup
Baud Rate	9600 bps	
Data Bit	8 bits	
Parity Bit	Even	
Stop Bit	1 bit	
Data Flow Control	ER Control	
C ommunication-format	RS-422 2-wire type	
GP No.	1	
PLC No.	2	2

■ SIMATIC S7-300/400 Series (CPU Direct via MPI Port)

GP Setup		PC Link Unit Setup
Baud Rate	19200 bps	
Data Bit	8 bits	
Parity Bit	ODD	
Stop Bit	1 bit	
Data Flow Control	ER Control	
Communication-format	RS232C	

MPI Configuration	(This configuration can now be performed via the Editor's [Mode] -> [Option] menu)	
Local Node Address (GP	0 to 126	
address)	- 1	
Target Node Address (PLC	0 to 126	
address)	0 10 120	
Highest Node	15/31/63 or 126	



- The GP's node address must not be the same as the PLC's MPI Node address.
- The Highest Node parameter should correspond to the group in which the PLC's node address occurs. E.g. if the PLC's node address is 16 then the Highest Node parameter should be 31. The GP's node address should be less than or equal to the Highest Node.

■ SIMATIC S7-300 (via 3964/RK512)

GP Se	tup	PC Link Unit Setup
Communication-format	RS-232C	
Baud Rate	19200 bps	
Data Bit	8 bits	
Parity Bit	Even	
Stop Bit	1 bit	
Data Flow Control	ER Control	



It is possible to enable/disable the Block Check Character (BCC) in communications between the PLC and the GP. This configuration can be performed via the Editor's [Mode] -> [Option] menu.

■ SIMATIC S7-400 (via 3964/RK512)

GP Setup		PC Link Unit Setup
Communication-format	RS422	
Baud Rate	19200 bps	
Data Bit	8 bits	
Parity	Even	
Stop Bit	1 bit	
Data Flow Control	ER Control	

■ SIMATIC 505

GP Setup		PLC Settings	
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	7 bits	Data Length	7bits (fixed)
Stop Bit	1 bit	Stop Bit	1bit (fixed)
Parity Bit	Odd	Parity Bit	Odd (fixed)
Data Flow Control	ER Control		
Communication Format (RS-232C)	RS-232C	Communication Format (RS-232C)	Turn on the Dip Switch 1 on CPU.
Communication Format (RS-422)	RS-422 (4-wire type)	Communication Format (RS-422)	Turn on the Dip Switch 1 on CPU.

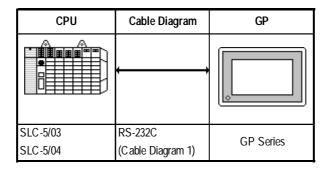
2.17 Rockwell (Allen-Bradley)

2.17.1 System Structure

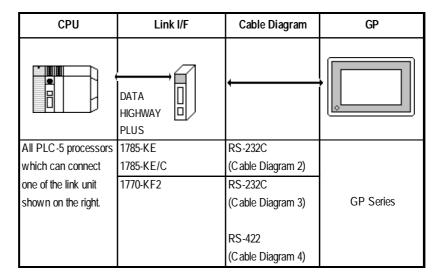
The following describes the system structure for connecting the GP to Rockwell (Allen-Bradley) PLCs.

Reference The Cable Diagrams mentioned in the following tables are listed in the section titled "2.17.2 Cable Diagrams".

■ SLC 500 Series (using CPU unit Link I/F)



■ PLC-5 Series (using Link I/F)



CPU *1 Cables Diagram GP PLC-5/11 RS-232C PLC-5/20 (Cable Diagram 3) PLC-5/30 PLC-5/40 RS-422 PLC-5/40L RS-422 PLC-5/60 PLC-5/60L RS-422

■ PLC-5 Series (CPU Direct Connection)

2.17.2 Cable Diagrams

The cable diagrams illustrated below and the cable diagrams recommended by Rockwell (Allen-Bradley) may differ; however, using these cables for your PLC operations will not cause any problems.

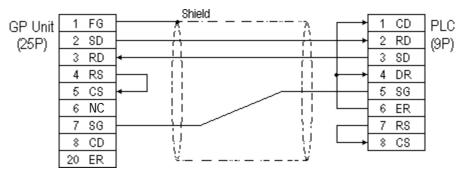


Ground your PLC's FG terminal according to your country's applicable standard. For details, refer to the corresponding PLC manual.



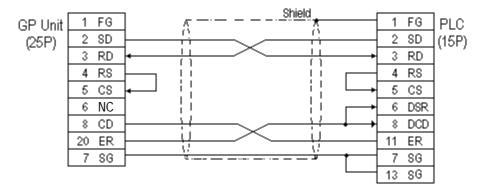
- Connect the FG line of the Shield cable to either the GP or PLC, depending on your environment. When using a connector hood and grounding the FG line, be sure to use an electrical conductor.
- For the RS-232C connection, use a cable length less than 15m.
- If a communications cable is used, it must be connected to the SG (signal ground).
- For the RS-422 connection, refer to Rockwell's PLC manual for the cable length.

Cable Diagram 1 (RS-232C)

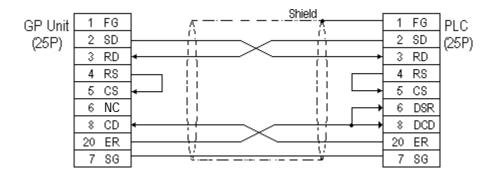


^{*1} Connect to Channel 0 (CH0).

Cable Diagram 2 (RS-232C)

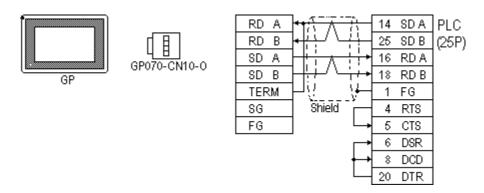


Cable Diagram 3 (RS-232C)

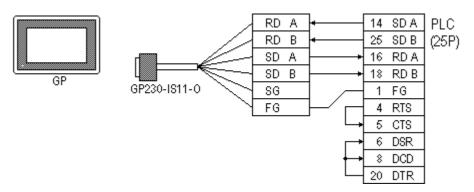


Cable Diagram 4 (RS-422)

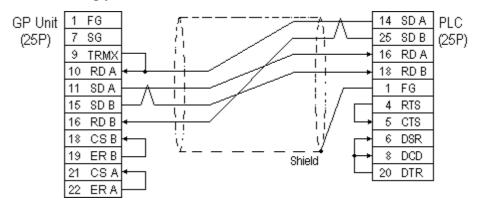
• When using Digital's RS-422 connector terminal adapter, GP070-CN10-0



• When using Digital's RS-422 Cable, GP230-IS11-0



• When making your own cable connections

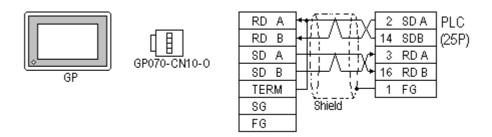




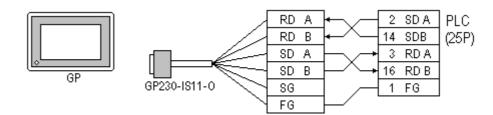
When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.

Cable Diagram 5 (RS-422)

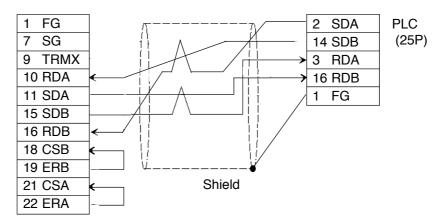
• When using Digital's RS-422 connector terminal adapter, GP070-CN10-0



• When using Digital's RS-422 Cable, GP230-IS11-0



• When making your own cable connections





When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.

2.17.3 Supported Devices

The following describes the range of devices supported by the GP.

■ SLC 500 Series

	Setup	System Area l	here.
--	-------	---------------	-------

Device	Bit Address	Word Address	Particular	s
Bit	B0030000 ~ B003255F	B0030000 ~ B003255		H/L
	B0100000 ~ B255255F	B010000 ~ B255255		H/L
Timer	TT0040000 ~ TT0042550		*1	
(TT: Timing Bit)	TT0100000 ~ TT2552550			
Timer	TN0040000 ~ TN0042550		*1	
(DN: Completion Bit)	TN0100000 ~ TN2552550			
Timer		TP004000 ~ TP004255	*2	
(PRE: Setup Value)		TP010000 ~ TP255255		
Timer		TA004000 ~ TA004255	*2	
(ACC: Current Value)		TA010000 ~ TA255255		
Counter	CU0050000 ~ CU0052550		*1	L/H
(CU: Up Count)	CU0100000 ~ CU2552550			L/II
Counter	CD0050000 ~ CD0052550		*1	
(DC: Down Count)	CD0100000 ~ CD2552550			
Counter	CN0050000 ~ CN0052550		*1	
(CN: Completion Bit)	CN0100000 ~ CN2552550			
Counter		CP005000 ~ CP005255	*2	
(PRE: Setup Value)		CP010000~ CP255255		
Counter		CA005000 ~ CA005255	*2	
(ACC: Current Value)		CA010000 ~ CA255255		
Integer		N007000 ~ N007255	гвіт Еп	11/1
		N010000 ~ N255255	DILI	H/L

^{*1} As in Example 4 in the following Note section, enter a **0** at the end.

^{*2} When reading and writing consecutive addresses that are all two words or longer, reading will take longer than for other devices, and the overall screen refresh speed will be slower.



- File Numbers 0~7 are the User's default files.
- A PLC COM Error (02:10) develops when a device cannot be allotted into the PLC data table map.
- According to the SLC500 specifications, the input and output relays cannot perform direct reads and writes. As a result, perform the following procedures via the PLC:

When reading data; use a ladder program to move the input and output relay data either as bits or as integers, and then read out those bits or integers.

When writing data; write the data as either bits or integers, and then use the ladder program to move the data to the input or output relays.

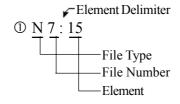
• In Rockwell (Allen-Bradley) PLCs, the structure of each device data is determined from the *Element*; in GP-PRO/PBIII for Windows there is no concept called the *Element*. Use the following examples when entering device data.

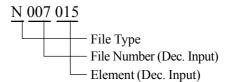
Examples

PLC Data

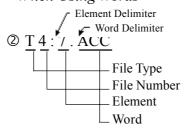
GP-PRO/PBIII Input

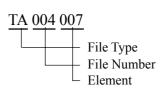
■When Using Elements



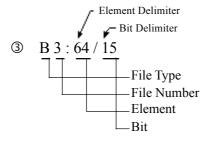


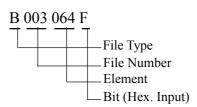
■When Using Words

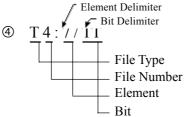


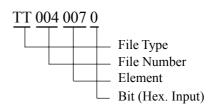


■When Using Bits









■ PLC-5 Series

	Setup	System	Area	here.
--	-------	--------	------	-------

Device	Bit Address	Word Address	Particular	S
Input Relay	100000 ~ 127717	1000 ~ 1277	<u>:8</u>	
Output Relay	O00000 ~ O27717	O000 ~ O277	: 8	H/L
Internal Relay	B300000 ~ B6799915	B3000 ~ B67999		
Timer (TT: Timing Bit)	TT3000 ~ TT67999			
Timer (TD: Complete Bit)	TD3000 ~ TD67999			
Counter (CC: Count)	CC3000 ~ CC67999			
Counter (CD: Complete Bit)	CD3000 ~ CD67999			
Timer (ACC: Current Value)		TA3000 ~ TA67999		L/H
Timer (PRE: Setup Value)		TP3000 ~ TP67999		
Counter (ACC: Current Value)		CA3000 ~ CA67999		
Counter (PRE: Setup Value)		CP3000 ~ CP67999		
Data Register Integer		N3000 ~ N67999	Bit 1 51	
Data Register BCD		D3000 ~ D67999	Bit 1 51	H/L
Data Register ASCII		A3000 ~ A67999	Bit 1 5 1	

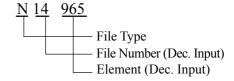


- The range of supported devices may be diffrent depending on your CPU.
- In Rockwell (Allen-Bradley) PLCs, the structure of each device data is determined from the *Element*; in GP-PRO/PBIII for Windows there is no concept called the *Element*. Use the following examples when entering device data.

PLC Data

GP-PRO/PBIII Input

■When Using Elements

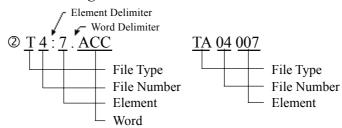


Chapter 2 - PLC-GP Connection

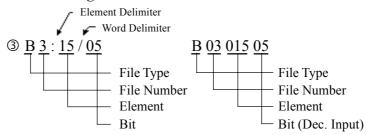
PLC Side

GP-PRO/PBIII Input

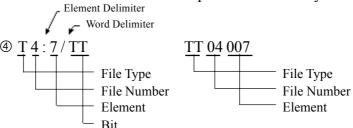
■When Using Words



■When Using Bits



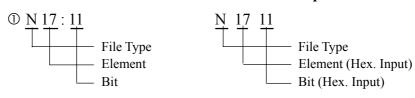
B301505 represents the same data as B3/245 (number 245 bits of file number 3). However, GP-PRO/PBIII for Windows cannot be used to input B3/245 directly.



• There is no File Number for the *Input Relay* and *Output Relay*. Also, the Element and Bit Numbers are Hexadecimal.

PLC Side

GP-PRO/PBIII Input



2.17.4 Environment Setup

The following tables list Digital's recommended PLC and GP communication settings.

■ SLC 500 Series

GP Setup		Special Interfa	Special Interface Module Setup		
Baud Rate	19200 bps	Baud Rate	19200 bps		
Data Length	8 bits (fix ed)				
Stop Bit	1 bit (fix ed)				
Parity Bit	EVEN	Parity Bit EVEN			
Data Flow Control	ER Control				
Communication Format	RS-232C				
		Communication Driver	DF1 HALF-DUPLEX SLAVE *1		
		Duplicate Packet Detection	DISABLE *1		
		Error Detection	BCC *1		
	Control Line No Handshaking		No Handshaking *1		
Unit No. (DH GP) *2	0	Station Address *2	0		

^{* 1} Will not operate with any other settings.

Reference Specifying DH addresses

^{* 2} Setup the Station Address and the GP's Unit No. (DH GP) address to the same value (address set as decimal values). It is unnecessary to setup the DH PLC address.

■ PLC-5 Series

GP Setup		CPU (CH0), 178	5-KE, 1770-KF2
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	8 bits (fixed)	Data Length	8 bits (fixed)
Stop Bit	1 bit (fixed)	Stop Bit	1 bit (fixed)
Parity Bit	EVEN	Parity Bit	EVEN
Data Flow Control	ER Control		
Communication Format (RS-232C)	RS-232C	Communication Format (RS-232C)	RS-232C
Communication Format (RS-422)	4-wire type	Communication Format (RS-422)	RS-422A
		Comm. protocol	Half duplex (DF1 Slave for CH0) *1
		Dupulicate Detect	OFF *1
		Error Check	BCC *1
		Control Line	NO HANDSHAKING *1
		Other CH0 Parameters	50
		DF1 retries	3
		Diag file	0 (unused file)
		RTS send delay	0
		RTS off delay	0
		Network link *2	Data Highway Plus
Unit No. (DH GP) *3	0	Station Address *4 *5 (1785-KE, 1770-KF2 side)	0
Unit No. (DH PLC) *3	1	Station Address *4 (CPU side)	1

^{*1} Will not operate with any other settings.

▼Reference Specifying DH addresses

^{*5} Unavailable for CPU Direct Connection.



When using CH0, setup the CPU to Slave; do not setup as Point to Point.

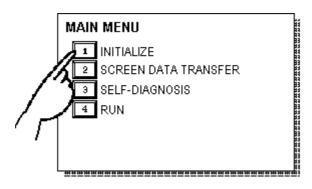
^{*2} This is the KF2 setup

^{*3} Set the DH GP to station address 1785-KE or 1770-KF2, and set the DH PLC's to the CPU's station address. When using the 1785-KE or 1770-KF2, enter different numbers for the DH GP and DH PLC addresses. With a direct CPU connection, enter the same values in the DH GP and DH PLC addresses. With the GP in Offline Mode, use the "Operating Environment Setup" area to enter the DH address (DH, GP, DH, PLC) base 10 (decimal) values.

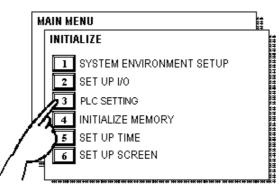
^{*4} When using programming equipment, make sure the Terminal Address (programming equipment address) and the Station Address do not overlap.

■ Specifying DH addresses

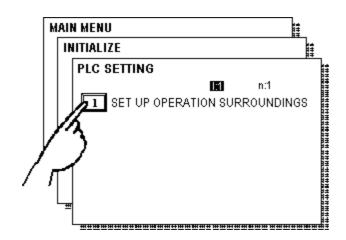
Set up the operating environment at the initial setup when the GP is in the OFFLINE mode.



① Touch item #1, INITIAL-IZE. The INITIALIZE menu will appear.



② Touch item #3, PLC SETTING. The PLC SETTING menu will appear.



③ Touch selection [1:1] and then item #1, SET UP OPERATION SURROUNDINGS. The selected option is then highlighted.

_						
SET UP OPERATION SU	JRROUND I NGS			SET		CANCEL
SYSTEM DATA ARI	EA START FILE		[]	
	START ADDRESS		[]		
DH ADDRESS (DEC	CIMAL) GP		[]		
	PLC		[]		
SYSTEM AREA	READING AREA SIZE	(0-256)	[]		

Specify the DH addresses.



2.18 Keyence

2.18.1 System Structure

The following describes the system structure for connecting the GP to Keyence PLCs.

The Cable Diagrams mentioned in the following tables are listed in the section titled "2.18.2 Cable Diagrams".

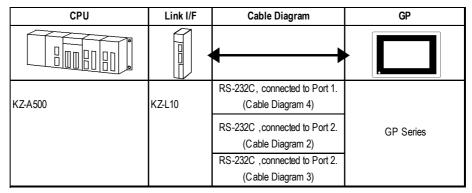
■ KZ-300/KZ-350 Series (using Link I/F)

CPU	Link I/F	Cable Diagram	GP
	PC Link Unit		
KZ-300	KZ-L2	RS-232C	
KZ-350		Port 1 Connection	
		(Cable Diagram 1)	
		RS-232C	
		Port 2 Connection	GP Series
		(Cable Diagram 2)	
		DO 400	
		RS-422	
		Port 2 Connection	
		(Cable Diagram 3)	



Port 1 and Port 2 can be connected at the same time on the GP. When connected at the same time, the Communication Setup for Port 1 and Port 2 must be the same.

■ KZ-A500 Series (using Link I/F)





Port 1 (RS-232C), Port 2 (RS-232C or RS-422) and the modular controller on CPU unit can be used at the same time.

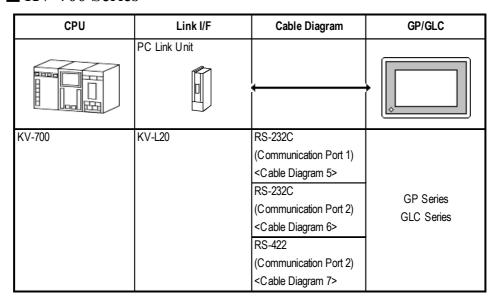
■ **KZ-A500** (CPU Direct Connection)

CPU	Cables	Connector	GP
	Modular Modular B		
KZ-A500	Keyence Corp.'s OP-26487	Keyence Corp.'s OP-26485	GP Series

■ KV Series (CPU Direct Connection)

CPU	Cables	Connector	GP/GLC
	Modular Modular Modular		\$\limits_{\cdot \cdot \c
KV-10	Key ence Corp.'s	Key ence Corp.'s	
KV-16	OP-26487	OP-26485	GP Series
KV-24			GLC Series
KV-40			

■ KV-700 Series



2.18.2 Cal

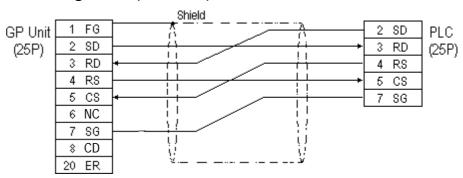
Cable Diagrams

The cable diagrams illustrated below and the cable diagrams recommended by Keyence may differ, however, using these cables for your PLC operations will not cause any problems.

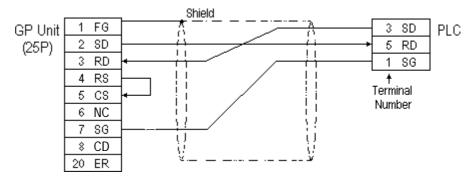


- Connect the FG line of the Shield cable to the GP.
- For the RS-232C connection, use a cable length less than 15m.
- If a communications cable is used, it must be connected to the SG (signal ground).
- For the RS-422 connection, refer to Keyence's PLC manual for the cable length.

Cable Diagram 1 (RS-232C)



Cable Diagram 2 (RS-232C)



Cable Diagram 3 (RS-422)

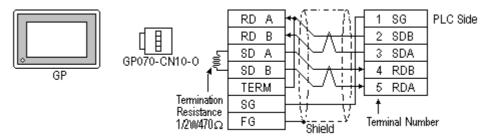


Turn the PLC's Termination Resistor switch ON.

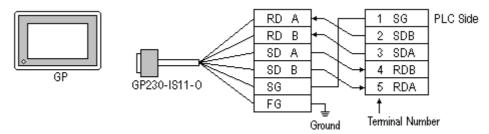


The reading of the A and B signals is reversed on the GP and PLC.

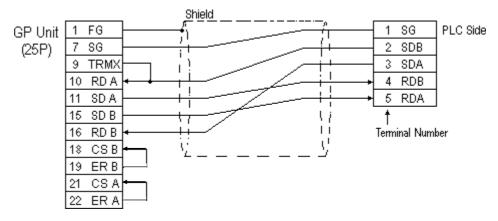
• When using Digital's RS-422 connector terminal adapter, GP070-CN10-0



• When using Digital's RS-422 Cable, GP230-IS11-0



• When making your own cable connections



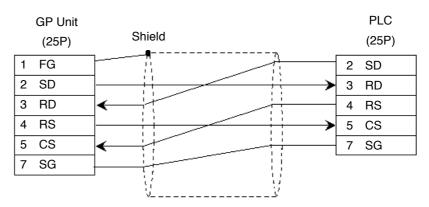


- Hirakawa Densen's H-9293A (C0-HC-ESV-3P*7/0.2) is the recommended cable
- When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.
- When using RS-422 connection, please check the cable length with Keyence PLC users manual.

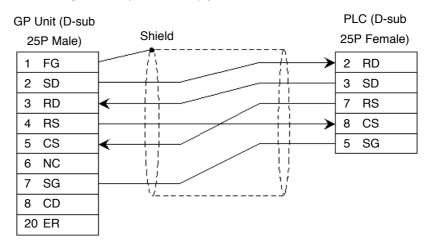
Cable Diagram 4 (RS-232C) port1



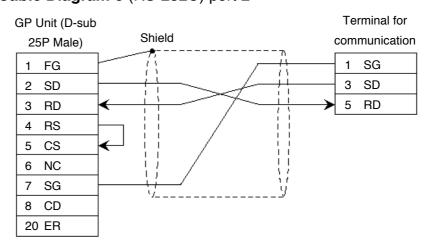
- When using an RS-232C cable, the cable must be no longer than 15meters.
- When using an RS-422 cable, the cable must be no longer than 500meters.



Cable Diagram 5 (RS-232C) port 1



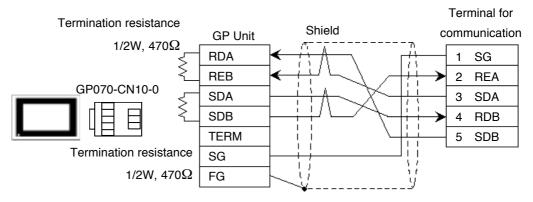
Cable Diagram 6 (RS-232C) port 2



Cable Diagram 7 (RS-422) 4-wire type

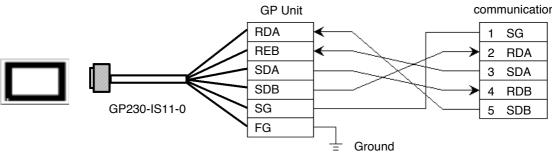


- The termination resistance on the PLC side becomes active when the Terminator Select switch on the unit is turned ON.
- The names of poles A and B are inverted between the GP and the PLC.
- The cable length should be within 500 meters.
- When using Digital's RS-422 connector terminal adapter, GP070-CN10-0

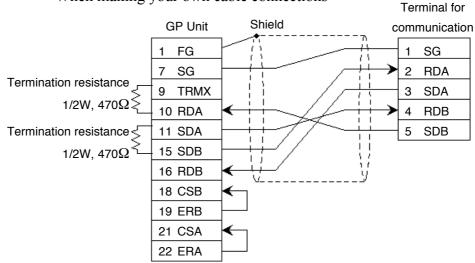


When using Digital's RS-422 Cable, GP230-IS11-0

Terminal for communication SG 2 RDA 3 SDA RDB 4 5 SDB



When making your own cable connections



2.18.3 Supported Devices

The following describes the range of devices supported by the GP.

■ KZ-300/KZ-350 Series

Set up System Area here.

Device	Bit Address	Word Address	Particulars	
Input Relay	00000 ~ 0009	00 ~ 00		
	7000 ~ 17415	70 ~ 174	*1	Ī
Output Relay	0500 ~ 0503	05 ~ 05		
	7500 ~ 17915	75 ~ 179	*2	2
Help Relay	0504 ~ 0915			
Internal Help Relay	1000 ~ 6915	10 ~ 69		
Special Help Relay	2000 ~ 2915	20 ~ 29		L/H
Timer (contact)	T000 ~ T249			
Counter (contact)	C000 ~ C249			
Timer (current value)		T000 ~ T249		
Counter (current value)		C000 ~ C249		
Data Memory		DM0000 ~ DM9999	Bit 1 51	1
Temporary Data Memory		TM00 ~ TM31	Bit 1 51	

* 1 Address numbers *000~*400 are available for the bit device addresses, and *0~*4 are available for the word addresses displayed.

Bit Address
addr 7000
addr 7001 to addr 7400
addr 8000
addr 8100 to addr 8400
addr 17000 to addr 17400

Word Address				
70				
71 to 74				
80				
81 to 84				
170 to 174				

* 2 Address numbers *500~*900 are available for the bit device addresses, and *5~*9 are available for the word addresses displayed.

Bit Address				
addr 7500				
addr 7600 to addr 7900				
addr 8500				
addr 8600 to addr 8900				
addr 17500 to addr 17900				

Word Address				
75				
76 to 79				
85				
86 to 89				
175 to 179				

■ KZ-A500 (CPU Direct Connection)

Set up System Area here.

Device	Bit Address	Word Address	Particulars	
Input Relay	X0000 ~ X07FF	X0000 ~ X07F0	[xxxO]	
Output Relay	Y0000 ~ Y07FF	Y0000 ~ Y07F0	[XXXO]	
Internal Relay	M0000 ~ M8191	M000 ~ M8176	<u>÷16</u>	
Latch Relay	L0000 ~ L8191			
Special Relay	M9000 ~ M9255	M9000 ~ M9240	<u> </u>	
Annunciator	F0000 ~ F2047	F0000 ~ F2032	<u> </u>	
Link Relay	B0000 ~ B0FFF			
Timer (contact)	TS0000 ~ TS2047			
Timer (coil)	TC 0000 ~ TC 2047			L/H
Counter (contact)	CS0000 ~ CS1023			
Counter (coil)	CC0000 ~ CC1023			
Timer (current value)		TN 0000 ~ TN 2047		
Counter (current value)		CN0000 ~ CN1023		
Data Register		D0000 ~ D6143	Bit 1 5 1	
Special Register		D9000 ~ D9255	Bit 1 5 1	
Link Register		W0000 ~ W0FFF	Bit F	
File Register		R0000 ~ R8191	Bit 1 51	

■ **KZ-A500** (using Link I/F)

Set up System Area here.

Device	Bit Address	Word Address	Particular	'S
Input Relay	X0000 ~ X07FF	X0000 ~ X07F0	*** 0	
Output Relay	Y0000 ~ Y07FF	Y0000 ~ Y07F0	* * * 0]	
Internal Relay	M0000 ~ M8191	M0000 ~ M8176	<u>÷16</u> 1	
Latch Relay	L0000 ~ L8191	L0000 ~ L8176	<u>÷16</u>	
Link Relay	B0000 ~ B0FFF			
Annunciator Relay	F0000 ~ F2047	F0000 ~ F2032	<u>÷16</u>)	
Special Relay	M9000 ~ M9255	M9000 ~ M9240	<u>÷16</u>)	
Timer (connect)	TS0000 ~ TS2047			
Timer (coil)	TC 0000 ~ TC 2047			L/H
Counter (connect)	CS0000 ~ CS1023			
Counter (coil)	CC0000 ~ CC1023			
Timer (current value)		TN 0000 ~ TN 2047		
Counter (current value)		CN0000 ~ CN1023		
Data Register		D0000 ~ D6143	В і t15]	
Link Register		W0000 ~ W0FFF	B i t	
File Register		R0000 ~ R8191	B i t 15	
Special Register		D9000 ~ D9255	B i t 15	

■ KV Series (KV-10/16/24/40)

Set up System A	Area	here.
-----------------	------	-------

Device	Bit Address	Word Address	Particular	s
Input/Output Relay	00000 ~ 00915	000 ~ 009		
Imparouput Kciay	07000 ~ 17915	070 ~ 179		
Internal AUX Relay	01000 ~ 01915	010 ~ 019		
Internal AOA Nelay	03000 ~ 06915	030 ~ 069		
Special AUX Relay	02000 ~ 02915	020 ~ 029	*1	
Timer (contact)	T000 ~ T249			
Counter (contact)	C 000 ~ C 249			
High-Speed Counter Comparator (contact)	CTC0 ~ CTC3		*2	
Timer (set value)		TS000 ~ TS249		L/H
Counter (set value)		CS000 ~ CS249		
Timer (current value)		TC 000 ~ TC 249		
Counter (current value)		CC000 ~ CC249		
Data Memory		DM0000 ~ DM1999	Bit 1 5 1	
Temporary Data Memory		TM 00 ~ TM 31	Bit 1 5 1	
Digital Trimmer		AT0 ~ AT1	*2	
High-Speed Counter (current value)		CTH0 ~ CTH1		
High-Speed Counter Comparator (set value)		CTC0 ~ CTC3		

^{*1} Some addresses are not available for writes.

^{*2} Not available for writes

■ KV-700 Series (using the KZ-300 series protocol)

Set up	System	Area	here.
	2		

Device	Bit Address	Word Address	Particulars	S
Input Relay	00000 ~ 00009	000 ~ 000	*1	
Output Relay	00500 ~ 00503	005 ~ 005		
Internal AUX Relay	00504 ~ 00915	005 ~ 009		
Extended Input/Output Relay Internal AUX Relay	01000 ~ 59915	010 ~ 599		
Control Relay	60000 ~ 63915	600 ~ 639	*2	
Timer (contact)	T000 ~ T511		*3	L/H
Counter (contact)	C000 ~ C511		*3	
Timer (current value)		T000 ~ T511	*3	
Counter (current value)		C000 ~ C511	*3	
Data Memory		DM0000 ~ DM9999	Bit 151 *4	
Temporary Data Memory		TM000 ~ TM511	Bit 1 51	
Control Memory		TM0520 ~ TM4519	Bit 1 51 *5	

^{*1} PLC or GP data writing is not possible.

^{*2} GP cannot write data to any address.

^{*3} Only available when the timer command and the counter command exist in the ladder program.

^{*4} The device range for the PLC is between DM0000 and DM19999, but addresses up to DM9999 are only accessible to the GP.

^{*5} Some addresses are not available for writes.

■ KV-700 Series (using the KZ-A500 (link) protocol)

		Set u	p	System	Area	here.
--	--	-------	---	--------	------	-------

Device	Bit Address	Word Address	Particulars
Input Relay	X000 ~ X009	X00 ~ X00	<u>xx</u> 0) *1*2
Output Relay	X050 ~ X053	X05 ~ X05	<u>xx</u> 0) *2
Internal AUX Relay	X054 ~ X09F	X05 ~ X09	<u>xx</u> 0) *2
Control Relay	M0000 ~ M3915	M0000 ~ M3904	<u>÷16</u> *3*4
Timer (contact)	TS000 ~ TS511		*5
Counter (contact)	CS000 ~ CS511		*5
High-Speed Counter Comparator (contact)	CS512 ~ CS515		*5*6 L/H
Timer (current value)		TN 000 ~ TN 511	*5
Counter (current value)		CN000 ~ CN511	*5
High-Speed Counter (current value)		CN512 ~ CN513	*5
Data Memory		D00000 ~ D19999	Bit 1 5) *7*8
Control Memory		D50000 ~ D53999	<u>Bit 1 5 1 *7*3</u>

^{*1} PLC or GP data writing are not available for writes.

^{*2} Addresses must be specified using hexadecimal numbers.

^{*3} Some addresses are not available for writes.

^{*4} For addresses, only multiples of 16 may be specified.

^{*5} Only available when the timer command, the counter command, and the highspeed timer command exist in the ladder program.

^{*6} GP cannot write data to any address.

^{*7} Even if the file registers are registered as R50000 to R539999, similar device addresses can be used, e.g., R51111 = D51111.

2.18.4 Environment Setup

The following lists Digital's recommended PLC and GP communication setups.

■ KZ-300/KZ-350 Series

GP Setup		PC Link Unit Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	7 bits	Data Bit	7 bits
Stop Bit	2 bits	Stop Bit	2 bits
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER Control	-	-
Communication Format (RS-232C)	RS-232C	Port 2 Toggle Switch (RS-232C) *1	RS-232C
Communication Format (RS-422)	4-wire type	Port 2 Toggle Switch (RS-422) *1	RS-422A
		RUN Mode	Link Mode
Unit No.	0	Station Number	0

^{*1} Setup not necessary when using Port1.

■ **KZ-A500** (CPU Direct Connection)

GP Setup		PLC Setup
Baud Rate	9600 bps	
Data Length	8 bits (fix ed)	
Stop Bit	1 bit (fix ed)	
Parity Bit	Odd (fix ed)	
Data Flow Control	ER Control	
Communication Format (RS-232C)	RS-232C	
Unit No.	0 (fixed)	



Effect of PLC program on cycle time

If the KZ-A500 is connected directly to the CPU, the cycle time of the PLC program is delayed by about 8% after communication with the GP begins.

■ KZ-A500 (using Link I/F)

GP Setup		PLC Setup	
Baud Rate	19200bps *1	Baud Rate 19200bps	
Data Length	7	Data Length	7
Stop Bit	1	Stop Bit	1
Parity Bit	None	Parity Bit	None
Data Flow Control	ER		
Communication Format (RS-232C)	RS-232C	RS-232C Communication Port	Port 1 or Port 2 *2
Communication Format (RS-422)	4-Wire Type	RS-422 Communication Port	Port 2 ^{*3}
		Communication Type	Normal
		Changing device data during RUN	Possible
		Checksum	Yes
		Operation Mode	Protocol Mode 4
Unit No.	0	STATION No.	0

^{*1} The maximum band rate is 38400bps.

■ KV Series (KV-10/16/24/40)

GP Setup		PLC Setup	
Baud Rate	19200bps		
Data Length	8 bits (fix ed)		
Stop Bit	1 bit (fix ed)		
Parity Bit	Even (fixed)		
Data Flow Control	ER Control		
Communication Format	RS-232C		
Unit No.	0		



- The baud rate can be from 9600 to 57600 bps.
- The PLC requires no setup due to its automatic recognition of settings.

^{*2} When using an RS-232C cable on port 2, be sure to set the INTERFACE switch to "232C" (right side setting.) Also, set the TERMINATOR switch to OFF, since it will not be used.

^{*3} When using an RS-422 cable, set the INTERFACE switch to "422" (left side setting,) and the TERMINATOR switch to ON.

■ KV-700 Series (using the KZ-300 series protocol)

GP Setup			PLC Setup	
Baud Rate	19200bps *1	Baud Rate	19200bps	
Data Length	7 bits	Data Length	7 bits	
Stop Bit	2 bits	Stop Bit	2 bits	
Parity Bit	Even	Parity Bit	Even	
Data Flow Control	ER Control	RS, CS Flow Control	No	
Communication Format		Communication Port 1	Fix ed to 232C	
(RS-232C)	RS-232C	Communication Port 2 Selector Switch	232C	
Communication Format (RS-422)	4-Wire Type	Communication Port 2 Selector Switch	422A	
_			Link Mode	
Unit No.	0	Station No.	0	

^{*1} The maximum baud rate is 115,200 bps.

■ KV-700 Series (using the KZ-A500 series protocol)

GP Setup			PLC Setup	
Baud Rate	19200bps *1	Baud Rate	19200bps	
Data Length	7 bits	Data Length	7 bits	
Stop Bit	2 bits	Stop Bit	2 bits	
Parity Bit	None	Parity Bit	None	
Data Flow Control	ER Control	_		
Communication Format		Communication Port 1	Fixed to 232C	
(RS-232C)	RS-232C	Communication Port 2 Selector Switch	232C	
Communication Format (RS-422)	4-Wire Type	Communication Port 2 Selector Switch	422A	
_		Operation Mode	Protocol Mode 4	
_		Checksum	Yes	
Unit No.	0	Station No.	0	

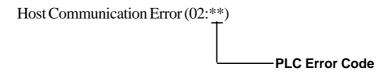
^{*1} The maximum baud rate is 115,200 bps.

2.18.5 Error Codes

■PLC Error Codes

♦KV Series

Controller error codes are represented by the "Host communication error (02:**)", and indicated in the left lower corner of the GP screen. (** stands for an error code.)



Error Code	Description
04	Undefined device is accessed.

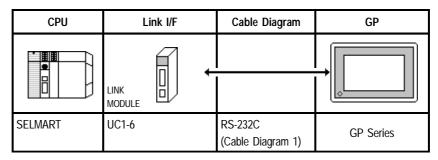
2.19 Shinko Electric

2.19.1 System Structure

The following describes the system structure for connecting the GP to Shinko Electric PLCs.

Reference The Cable Diagrams mentioned in the following tables are listed in the section titled "2.19.2 Cable Diagrams".

■ **SELMART Series** (using Link I/F)



2.19.2 Cable Diagrams

The cable diagrams illustrated below and the cable diagrams recommended by Shinko Electric company may differ, however, using these cables for your PLC operations will not cause any problems.

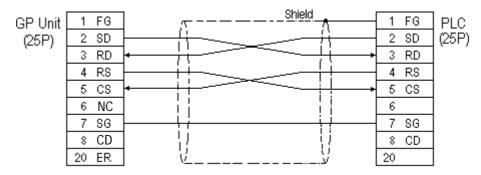


Ground your PLC's FG terminal according to your country's applicable standard. For details, refer to the corresponding PLC manual.



- Connect the FG line of the Shield cable to either the GP or PLC, depending on your environment. When using a connector hood and grounding the FG line, be sure to use an electrical conductor. The following connection diagrams show examples for connecting a shielded cable to the PLC.
- For the RS-232C connection, use a cable length less than 15m.
- If a communications cable is used, it must be connected to the SG (signal ground).

Cable Diagram 1 (RS-232C)



2.19.3 Supported Devices

The following describes the range of devices supported by the GP.

■ SELMART Series

Setup System Area Here

Device	Bit Address	Word Address	Particulars
Data Register		D00000 ~ D09999	<u>Bit 1 5</u> 1

^{* 1} Data register values are allocated using the SELMART's V conversion. (Performed via the SELMART CPU card.)

2.19.4 Environment Setup

The following lists Digital's recommended PLC and GP communication settings.

■ SELMART Series

GP Setup		Link Module Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	7 bits	Data Length	7 bits
Stop Bit	1 bit	Stop Bit	1 bit
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER Control		-
Communication Format	RS-232C		-
Unit No.	0	Unit No.	0



2.20

Matsushita Electric Industrial

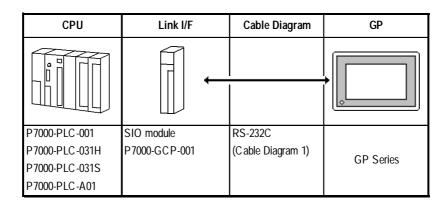
2.20.1

System Structure

The following describes the system structure for connecting the GP to Matsushita Electronics PLCs.

Reference The Cable Diagrams mentioned in the following tables are listed in the section titled "2.20.2 Cable Diagrams".

■ Panadac P7000 Series



2.20.2 Cable Diagrams

The cable diagrams illustrated below and the cable diagrams recommended by Matsushita Electronics may differ, however, using these cables for your PLC operations will not cause any problems.

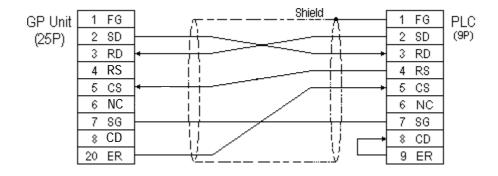


Ground your PLC's FG terminal according to your country's applicable standard. For details, refer to the corresponding PLC manual.



- Connect the FG line of the Shield cable to either the GP or PLC, depending on your environment.
- For the RS-232C connection, use a cable length less than 15m.
- If a communications cable is used, it must be connected to the SG (signal ground).

Cable Diagram 1 (RS-232C)



2.20.3 Supported Devices

The following describes the range of devices supported by the GP.

■ Panadac P7000 Series

Setup System Area here.

	Device	Bit Address	Word Address	Particulars
	Data Resister	IN0000 ~ IN07FF	IN0000 ~ IN007F	
	Input/Output Relay	OT0000 ~ OT07FF	OT0000 ~ OT007F	
	Internal Relay	RL0000 ~ RL07FF	RL0000 ~ RL007F	
B i	Holding Relay	KR0000 ~KR03FF	KR0000 ~ KR003F	
t	Link Relay	LK0000 ~ LK07FF	LK00000 ~ LK007F	
D	Status Relay	ST0000 ~ ST01FF	ST0000 ~ ST001F	
e v	MC Status Relay	MS0000 ~ MS03FF	MS0000 ~ MS003F	
i	Timer State Relay	TS0000 ~ TS01FF	TS0000 ~ TS001F	
c e	Timer-up Relay	TU0000 ~ TU01FF	TU0000 ~ TU001F	
	Count-up Relay	CU0000 ~ CU007F	CU0000 ~ CU0007	
	CPU Input Relay	C10000 ~ C101FF	Cl0000 ~ Cl001F	*1
	CPU Output Relay	C00000 ~ C001FF	C00000 ~ C0001F	
W	Data Memory	M00000 ~ M07FFF	M0000 ~ M07FF	
r	Link Register	LM00000 ~ LM07FFF	LM0000 ~ LM07FF	
	Timer (set value)		TM0000 ~ TM07FF	
D e	Timer (current v alue)		CT0000 ~ CT007F	
v i	Counter Value		TC0000 ~ TC01FF	*2
c e	Position Data		PM0000 ~ PM07FF	*3

^{*1} If a CPU module is not connected, these are handled as internal relays.

^{*3} If a 32-bit device NC module is not connected, this is handled as an internal relay.



If 2-word (32-bit) data are used, the vertical relation of addresses is shown as follows:

1 L (lower) 0 H (upper)

^{*2} This is a 32-bit device.

2.20.4 Environment Setup

The following lists Digital's recommended PLC and GP communication settings.

■ Panadac P7000 Series

GP Setup		Setting	Setting of SIO module	
Baud Rate	19200 bps	Baud Rate	19200 bps	
Data Length	8 bits	Data Length	8 bits	
Stop Bit	1 bit	Stop Bit	1 bit	
Parity Bit	None	Parity Bit ON/OFF Even/Odd	None	
Data Flow Control	ER Control			
Communication Format	RS-232C			
Unit No.	1	Slave address number	0	
		Mode	COMMAND mode	
		Delimiter	CR	



The setting of the machine number is fixed, and cannot be specified on the PLC.



If there is any difference in the PLC and the GP settings, a communications error occurs.



The GP must be set to ER control.

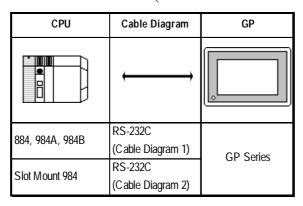
2.21 Modicon

2.21.1 System Structure

The following describes the system structure for connecting the GP to Modicon PLCs.

The Cable Diagrams mentioned in the following tables are listed in the section titled "2.21.2 Cable Diagrams".

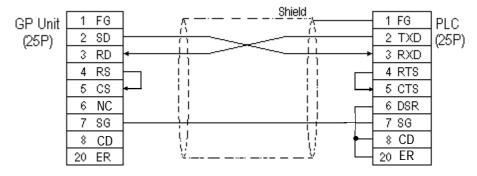
■ Modicon Modbus (CPU Direct Connection)



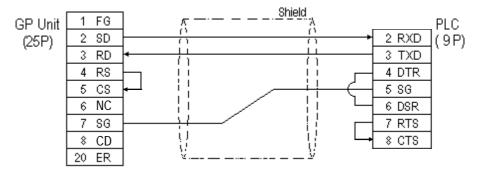
2.21.2 Cable Diagrams

The cable diagrams illustrated below and the cable diagrams recommended by Modicon may differ, however, using these cables for your PLC operations will not cause any problems.

Cable Diagram 1 (RS-232C)



Cable Diagram 2 (RS-232C)



2.21.3 Supported Devices

The following describes the range of devices supported by the GP.

■ Modicon Modbus (GP Master)

Setup System Area here.

Device	Bit Address	Word Address	Particulars	
Output Bit	00001 ~ 08192		*1	
Input Bit	10001 ~ 18192		*1*2	ĽН
Output Register		40001~ 49999		ШП
Input Register		30001 ~ 39999	*2	

^{* 1} Can also specify a word (16-bit data)

^{* 2} Cannot perform data writing.

2.21.4 Environment Setup

The following tables list Digital's recommended PLC and GP communication settings.

■ Modicon Modbus

GP Setup		PLC Setup		
Baud Rate	19200 bps	Baud Rate	19200 bps	
Data Length	8 bit	Mode	RTU (8)	
Stop Bit	1 bit	Stop/Data	1 bit	
Parity Bit	Even	Even Parity Bit		
Data Flow Control	ER Control			
Communication Format (RS-232C)	RS-232C			
Communication Format (RS-422)				
Unit No.	1	Station Address	1	



The top address of the system area cannot be set via the GP's OFFLINE area. Set it with the drawing software (GP-PRO/PBIII for Windows).



- These settings cannot be changed via the GP's OFFLINE mode. You must use the GP-PRO/PBIII software.
- E and K-tags cannot use the "Indirect" Setting.
- After the H-tag starts (is triggered), data cannot be read (out).
- After the S-tag starts (is triggered), data cannot be read (out).
- The Trend graph's group data display's PLC device designation cannot be made.
- D-Script 's Memory Copy and Offset Address features cannot be used.
- The Logging and Filing Data features cannot be used.
- 2-Way Driver cannot be used.



2.22 ORIM VEXTA

2.22.1 System Structure

The following describes the system structure for connecting the GP to ORIM VEXTA PLCs.

Reference The Cable Diagrams mentioned in the following tables are listed in the section titled "2.22.2 Cable Diagrams".

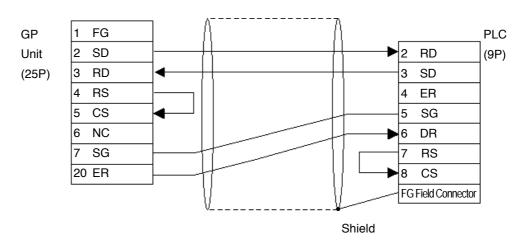
■ E1 Series (Link I/F)

CPU	Link I/F	Cable Diagram	GP
8008080			
CPU11	MM01	RS232C (Cable Diagram 1)	GP Series

2.22.2 Cable Diagrams

The cable diagrams shown below and the cable diagrams recommended by ORIM VEXTA may differ, however, regardless of these differences, using Digital's recommended diagrams will not cause any operation problems.

Cable Diagram 1 (RS-232C)





- You will need to make your own cable.
- When using an RS-232C cable, the cable must be no longer than 15 meters.

2.22.3 Supported Devices

The following describes the range of devices supported by the GP.

■ E1 Series

Setup System Area here.

Device	Bit Address	Word Address	Particulars	
Input Register (I)	1000100 ~ 1000815	10001 ~ 10008		L/H
ON Event Input Register(IU)	IU00100 ~ IU00815	IU001 ~ IU008	*2	
OFF Event Input Register(ID)	ID00100 ~ ID000815	ID001 ~ ID008	*2	
Output Register(O)	O000100 ~ O000815	O0001 ~ O0008		
Analog Input Register(AD)		AD001 ~ AD008	B i t 15 *2	
Analog Output Register(DA)		DA001 ~ DA008	B i t 15	
Position Register (M)	M000100 ~ M010031	M0001 ~ M100	*3	H/L
Speed Register Low(SL)		SL001 ~ SL100	B i t 31) *3	
Speed Register High(SH)		SH001 ~ SH100	B i t 31 *3	
Speed Register Raise(SR)		SR001 ~ SR100	B i t 31) *3	
Speed Register Decrease(SD)		SD001 ~ SD100	B i t 31 *3	
Universal Register(R)	R000100 ~ R100015	R0001 ~ R1000		L/H
Universal Double-Length Register(RD)	RD00100 ~ RD50031	RD001 ~ RD500	*3	
Base Resister (B)	B000000 ~ B000915	B0000 ~ B0009		
Current Motor Position(MP)		MP001~MP008	B i t 31 *3*2	H/L
Current Motor Status(MP)	MS00100 ~ MS00815	MS001 ~ MS008	*2	L/H
SY Register(SY)	SY00100 ~ SY10015	SY001 ~ SY100	*1 *2	

^{*1} For further information about SY register, refer to ORIM VEXTA's Motion Controller E1 Series Operation manual.

^{*2} Data cannot be written to here.

^{*3} This device is 32 bit.

2.22.4 Environment Setup

The following lists Digital's recommended PLC and GP communication settings.

■ E1 Series

GP Setup		PLC Setup		
Baud Rate	9600 bps *1	Baud Rate	9600 bps	
Data Length	8 bits	Mode	8 bits	
Stop Bit	1 bit	Stop/Data	1 bit	
Parity Bit	None	Parity Bit	None	
Data Flow Control	ER Control		ER Control	
Communication Format	RS-232C	Communication Format	RS-232C (fixed)	
(RS-232C)	N3-232C	(RS-232C)	NO-2020 (IINEU)	
Station No.	Station No. 1 (fixed)			
		Checksum	Yes	
			Yes	
		Protection	No	

^{*1} The maximum band rate is 19200 bps.



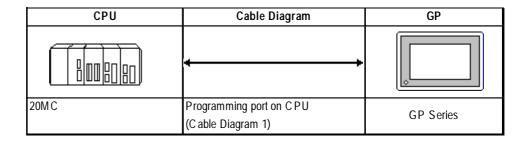
2.23 **FATEK**

2.23.1 System Structure

The following describes the system structure for connecting to Fatek's Facon PLCs.

Reference The Cable Diagrams mentioned in the following tables are listed in the section titled "2.23.2 Cable Diagrams".

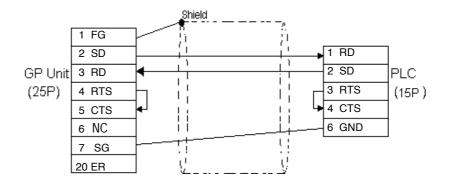
■ Facon FB 20MC (using CPU Direct Connection)



2.23.2 Cable Diagrams

The cable diagrams shown below and the cable diagrams recommended by FATEK may differ, however, regardless of these differences, using Digital's recommended diagrams will not cause any operation problems.

Cable Diagram 1 (RS-232C)





Please do not connect or disconnect the cable while the PLC and the GP are communicating.

2.23.3 Supported Devices

The following describes the range of devices supported by the GP.

■ Facon FB 20MC (using CPU Direct Connection)

Setup System Area here.

Device	Bit Address	Word Address	Particulars	
Input points	X0 ~ X159	WX0 ~ WX144	*1	
Output Relays	Y0 ~ Y159	WY0 ~ WY144		
Internal Relays	M0 ~ M1399	WM0 ~ WM1376		1
Special Relays	SM1912 ~ SM2001	WSM1912 ~ WSM1976		1
Step Relays	S0 ~ S999	WS0 ~ WS984		1
Timer Registers	T0 ~ T255			
Counter Registers	C0 ~ C255			
Timer Registers		TMR0 ~ TMR255		L/H
Counter Registers		CTR0 ~ CTR199		1
Data Register		HR0 ~ HR3839	_{В і t} 15)	
Input Registers		IR3840 ~ IR3847	B i t 15) *2	
Output Registers		OR3904 ~ OR3911	_{В і t} 15]	
HSC Registers		HSC 4096 ~ HSC 4127	_{В і т} 15)	1
Calendar Registers		RTC 4128 ~ RTC 4135	B i t 15)	
Special Register		SR4136 ~ SR4167	B i t 15) *2	7
Read-Only Registers		ROR5000 ~ ROR8071	B i t 15]	

^{*1} Read Only for Word Devices.

^{*2} Read Only.

2.23.4 Environment Setup

The following table lists Digital's recommended PLC and GP communication settings.

■ Facon FB 20MC (using CPU Direct Connection)

	GP Setup	PLC Setup
Baud Rate (bps)	9600 (fixed)	
Data Length	7bits (fixed)	
Stop Bit	1bit (fixed)	
Parity Bit	Even (fixed)	
Data Flow Control	ER Control (fixed)	
Communication Format (RS-232C)	RS-232C (fixed)	
Unit No.	1-255	1-255
		DSW BIT1 -> OFF
		DSW BIT2 -> OFF



- The PLC's settings must only use station numbers that are effective. (i.e. registered)
- The PLC's station number setting can be entered via the programmable controller's "Set Station No." setting area.
- Data Flow control must be set to "ER Control " from the GP's OFFLINE Setting Menu, or via the User's Screen Editor software.



Memory Link Communication

Read this chapter if you are using the GP unit with the memory link communications.

This chapter explains one-to-one communication between the GP unit and equipment such as a personal computer or a one-board microcomputer which do not have their own protocols.

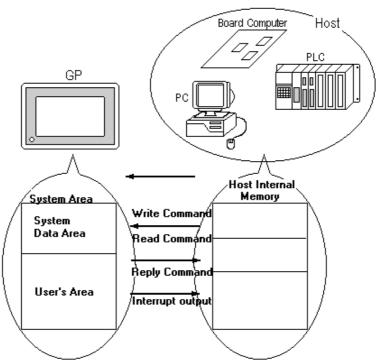
- **Reference** For information about the extended mode, refer to the GP70 Series Memory Link Communication Protocol Manual.
 - For details, refer to the GP70 Series Memory Link Communifation Protocol Manual for GP Ethernet I/F Unit (sold separately).

Setting Up Memory Link Communication

Data transmission between the GP and Host (PLC) are run according to the host's ladder logic program.

Reference Refer to the section titled "3.4 Sample Program".

The GP runs its screen display relying on the host's data write commands, which are based on the screen display's data send restrictions. And, the GP, following the host's Reading command, passes stored data over to the host. Communication occurs between the GP and host in this way, and normally, the initiative is held on the host side. Data transmission between the GP and PLC is aided by the memory area (System Area) prepared internally in the GP.



3.1.1 System Area

The System Area is the medium that allows data transmission between the GP and host. The System area is prepared internally in the GP; the GP runs the screen display based on the System Area data.

The System Area is 4096 words in size, organized as follows.

LS0 : LS19	System Data Area
LS20 :	Reading Area
: :	User's Area
LS2032 : LS2047	Special Relays
LS2048 : LS2095	Reserved
LS2096 : LS4095*1	User's Area

System Data Area

This is the write area for data necessary to operate the GP screen control data and error information. The data write contents of each address is predetermined.

For more information, refer to 3-1-2 "Contents and Range **YReference** of System Data Area"

♦User's Area

This area is used for GP-Host data transmissions. On the host side, determine which GP address the data will be written to, and create a program to perform the data write operation. Plus, to display the written data on the GP side, another setup must be performed: Part or Tag Setup.

For the host to read data written with K-tags (Keypad Input) and T-tags (Touch Panel Input), a program must be made on the host side that reads data from the GP.



When using the Device Monitor feature, the User's Area (LS2096 to LS4095) will be reserved and cannot be used.

♦Special Relay

This area is for setting up GP's various status information.



- Writing to System Address 13, using a T-tag, or similar method, causes an interrupt output to the host. On the host, read this one byte using a command like the BASIC INPUT\$ instruction, to call various subroutines which depend on the value, thus greatly simplifying the program.
- When specifying an address bit, enter the bit position (00-15) after the word device.

E.g. When specifying bit 02 of User's Area address 20:

Word
$$\stackrel{20}{\longrightarrow}$$
 $\stackrel{02}{\longleftarrow}$ Bit Position

Reserved

Please do not use this area. It is only for GP's internal use. If you use this area, the GP will not operate properly.

3-1-2

^{*1} For GP2000 series units, up to LS8191 may be used.

3.1.2 Contents and Range of System Data Area



When you wish to turn the GP's display OFF, use the Screen Display ON/OFF bit. Do not use the Control area's Backlight OFF bit. Be aware that this feature's system Data Area settings and range used during Memory Link Communication will differ from the settings used with Direct Access Communication.

Address	Detail	Function	Bit	Particulars
1	Status *11		0, 1	Reserved
			2	Now Printing *1
			3	Writes a set value *2
			4 ~ 7	Reserved
			8	K-tag entry error *3
			9	Display 0:ON, 1:OFF *4
			10	Backlight burnout detection *5
			11	Touch-Panel Input Error *6
			12 ~ 15	Reserved
3	Error Status		0, 1	Unused
	Each bit changes	according to the GP	2	System ROM/RAM
	error function. Wh	nen an error occurs, the	3	Screen Memory Checksum
	corresponding bit	will turn on.	4	SIO Framing
	* A bit that has tu	rned on remains on until	5	SIO Parity
	the power is turne	ed off and back on, or	6	SIO Overrun
	until RUN mode	is re-entered from	7, 8	Unused
	OFFLINE mode	or details and the	9	Initialization of Internal Memory Checksum Necessary
	handling process	about the Error Status	10	Timer Lock Error
	contents, refer to	the Section 1-1-4.	11 ~ 15	Unused
4	Clock Data	"Year / Month / Day /	0 ~ 7	Stores the last 2 digits of the Calendar year as 2 BCD digits
	(Year)	Hour / Minute" Data is	8 ~ 15	Unused
5	Clock Data	stored in BCD's 2digits.	0 ~ 7	Stores 01 to 12 (Month) as 2 BCD digits
	(Month)	(E.g.)	8 ~ 15	Unused
6	Clock Data	98/02/01 17:15	0 ~ 7	Stores 00 to 31 (Day) as 2 BCD digits
	(Day)		8 ~ 15	Unused
7	Clock Data		0 ~ 7	Stores 00 to 23 (Hour) as 2 BCD digits
	(Hour)		8 ~ 15	Unused
8	Clock Data		0 ~ 7	Stores 00 to 59 (Minute) as 2 BCD digits
	(Minute)		8 ~ 15	Unused
10		•		n 8 bits will be output as an interupput code after touching
	,	OFF.However FFh will	not be outp	
11	Control *12		0	Backlight *7
			1	Buzzer ON
			2	Starts Printing
			3	Reserved
			4	Buzzer *8 0:enabled 1: disabled
			5	AUX Output 0:enabled 1: disabled
			6	Interrupt Output when touching panel to turn the display ON.
				(Interrupt Code:FFh) 0: Disabled 1: Enabled *16
			7	Reserved
			8	VGA display *9 0: Disabled 1: Enabled
			9, 10	Reserved
			11	Hard copy output *15 0: Enabled 1: Disabled
			12 ~ 15	Reserved

Address	Detail	Function	Function Bit Parti				
12	Screen Display *13	FFFFh: Screen clear	FFFFh : Screen clears almost immediately				
	ON/OFF	0h: Screen turns ON					
13	Interrupt Output *14	Using a Touch Tag or	other method	d to write absolute value data from GP causes			
		an output of the interru	ot code using	the contents of the bottom 8 bits (Will not out			
		put FFh)					
15	Screen Display No.	Write the Screen No.	0 ~ 14	Screen change number, 1 to 8999.(1 to 1999			
		in binary to change		when using BCD input)			
		the screen display	15	Forced Screen Change			
16	Window Control *10		0	Display 0: OFF 1: ON			
			1	Changing ghe order of window overlapping			
				0: Possible 1: Not Possible			
		2 ~ 15 Reserved					
17	Window Registration No. *10	Global Window registr	ation number	r selected indirectly (BIN/BCD)			
18	Window Display Position *10	Global Window display position reached indirectly (BIN/BCD)					
	(X-coordinate)						
19	Window Display Position *10						
	(Y-coordinate)						

^{*1} Changing to OFFLINE mode in the middle of printing can cause a disordering of the Print output.

*4 < Display ON/OFF status>

The screen display ON/OFF can be detected from the PLC. This bit will change in the following cases:

- (1) "FFFF" is written to the system data area's screen display ON/OFF bit (LS9 when using link type), to turn the screen display OFF. (Bit 9 = 1)
- (2) After the stand-by time has elapsed, the screen display OFF bit is turned ON automatically. (Bit 9 = 1)
- (3) The screen display OFF status has been changed to the screen display ON status via screen switching, etc. (Bit 9 = 0)
- (4) The screen display ON/OFF status bit will not change via turning ON/OFF the system data area backlight OFF bit (Bit 0).

*5 < Backlight Burnout Detection>

The bit turns ON when backlight burnout is detected. This feature is available only on GP-377R, GP-377, GP2000, and GLC2000 series unit.

*6 < Touch-panel input error>

The touch-panel input error bit is turned ON when input in the same position continues for longer than the specified time.

*7 With the GP series except GP-477R, GP-470, and GP-870 series units, the backlight turns OFF when this bit is ON(LCD display does not change) and turns ON when the bit is OFF.

When the Control area's Backlight OFF bit turns ON, only the backlight will turn OFF, however, the LCD display will remain ON and all touch switches set up on the display can still be used. Use the Screen display ON/OFF bit to actually turn the screen display OFF.

^{*2} Every time a value is written with the K-tag or Keypad Input Display, the bit is reversed.

^{*3} If an (input value range) Error has been set for the K-tag data being entered, and a value outside the allowed range is entered, the bit lights. If, however, a value is entered that is within the Error range, or if the display screen is changed, this bit will turn OFF.

Chapter 3 - Memory Link Communication 3.1 Setting Up memory Link Communication

- *8 Control Bit 1 (Buzzer On) outputs as shown below.
 - Buzzer Sound While Control Bit1 is on, the GP internal buzzer is activated.
 - AUX Output While Control Bit 1 is on, the AUX buzzer output is activated.
- *9 When using GP-570VM and GP-870VM, the entire screen becomes a VGA display when this bit is on. Pressing the screen options position during a VGA display turns this function off.
- *10 **Reference** For more about windows, refer to "2.26 U-tag (Window Display)" GP-PRO/PBIII for Windows Tag Reference Manual.
- *11 Monitor, in bit units, only the necessary bits.

 Since reserved bits may be used for GP system maintenance, etc., their ON/OFF status is not defined.
- *12 Be sure to turn all reserved bits OFF since they may be used for GP system maintenance, etc.
- *13 After the System Data Area's "Screen Display ON/OFF" bit is set to turn the display OFF, simply touching the screen will turn the display ON again.
- *14 Do not write control codes 00 to 1F to word addresses 10 and 13. It may terminate data communication.
- *15 Turning ON bit 11(Hard Copy Output) in the Control Area will cancel the current printing of the display's hard copy.
 - After printing is cancelled, bit 11, however, will not turn OFF automatically. Therefore, after checking the Status Area's Now Printing bit, turn off the Control Area's bit 11.
 - While bit 11 in the Control area is turned ON, hard copy cannot be created. If you cancel printing before it is completed, printing will stop after the last line data on the panel's current display has been output. Data already input in the printer buffer's memory will not be deleted.
- *16 Interrupt output when touching the panel to turn the display OFF to ON.
 - Only when the display is turned ON by touching the panel, interrupt output will be operated.
 - When using GP-H70, interrupt output will not be operated if the display is turned ON by the Operation Switch on the rear side.



- Addresses 0, 2, 9, 14 are reserved areas. Do not write data to this area.
- When addresses 3, 12, 13, 15 are utilized for System Control, displays that depend on tags do not function.
- When addresses 12, 13, 15 are used to control word units, bit write cannot be performed.
- Writing FFFFh to address 12 causes the screen display to erase within moments. When you wish to erase the screen using the STANDBY MODE TIME entered in GP's INITIALIZE setup, write 0000h in address 12.
- Do not write the control code 00~1F in addresses 10 and 13. Data transmission may become impossible.

3.1.3 **Special Relay**

The structure of the Special Relay is as follows:

♦Reserved

The Reserved address value is undefined. Do not use this area.

2032	Common Relay Information
2033	Base Screen Information
2034	Reserved
2035	Reserved
2036	1 Second Binary Counter
2037	Tag Scan Time
2038	Reserved
2039	Tag Scan Counter
:	
:	Reserved
2047	

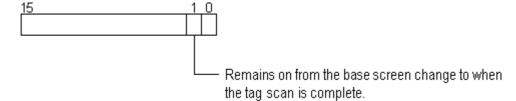
♦Common Relay Information (2032)

15	12	11 10	9	8	7	6	5	0

Bit	Contents
0	Reserved
1	Remains ON from when a screen change (base, window)occurs until the tag scan is complete.
2	ON only in the middle of an SIO error developing.
3	ON when displaying the Initial screen after powering up.
4	Always ON
5	Always OFF
6	Turns ON when backup SRAM data has been delated (Only for GP's equipped with backup SRAM).
7	Turns ON if a BCD error occurs while D script is being used. For more information about D script, refer to the Tag Reference Manual's section 3.1 "D script".
8	Turns ON if a zero division error occurs while D script is being used.
9	Filing data. Turns ON if the data is not transferred to Backup SRAM.
10	Filing data transfer is triggered by the Control Word Address. Turns ON if the data can not be transferred from PLC to SRAM. Also data transfer between PLCs is triggered by the Filing Data Display. Turns ON if the data is not transferred from PLC to SRAM only when the transfer complete bit address is used.
11	Filing data. Via transfer data to and from SRAM to LS area, via Filing Data Display.
12	When using D-script, turns ON if a communication error occurs when the function memcpy () is used, or reading the data from designated Address Offset. Turns OFF when data read is normally completed.
13-15	Reserved

Reference For more information about the D-script, refer to the Tag Reference Manual "3.1 D-Script/Global D-Script".

♦Base Screen Information (2033)



♦1 Second Binary Counter (2035)

Begins counting in one second intervals after the GP's power is turned ON. The data is binary.

◆Tag Scan Time (2036)

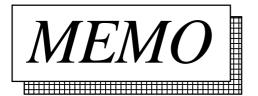
The time it takes to prepare all the tags setup on the display screen. The data is stored as binary, millisecond units. The data renews itself at the point when preparation for all the object tags is complete. The data's default value is 0. It is accurate within + 10ms.

◆Tag Scan Counter (2038)

Counts until the all the tags setup on the display screen have completed their preparations. The data is binary.



The Special Relay is not write protected. Do not turn this Relay's data ON or OFF using tags or other method.



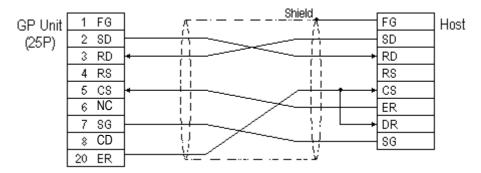
3.2 Cable Diagrams

Explains the connection between the GP and host.

3.2.1 RS-232C Communication

When using an RS-232C cable, there are two types of control formats: DTR (ER) Control and XON/XOFF Control. The GP-Host connection for each type is illustrated below.

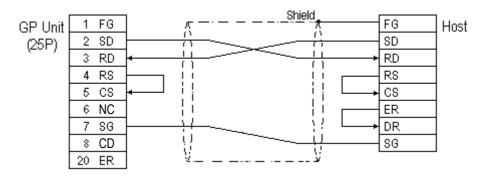
■ DTR (ER) Control





Set the host's control software so that the host will not transmit data to the GP when the GP's ER is turned OFF.

■ XON/XOFF Control





- Depending on the host, the RS-232C connector's shape, pin numbers and corresponding signal names may differ. Be sure to follow the host interface specifications.
- The maximum cable length is 15m.

3.2.2

RS-422 Communication

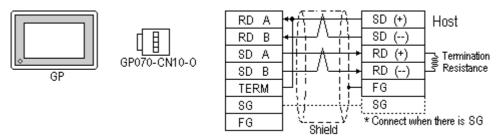
When using an RS-422 cable, there is only the XON/XOFF Control. The various GP-Host connections are illustrated below.



- Insert a termination resistor between RDA-RDB.
- For a 24AWG line, use a twist pair cable with a static electrical capacity of 50pF/m, and a standard characteristic impedance of 100Ω.



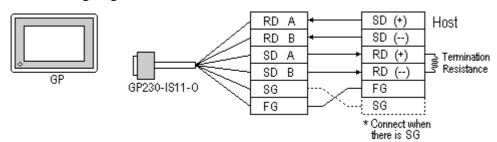
- The maximum length of the cable is 600m.
- Depending on the connected Host, the connection method and termination resistance differs.
- When using Digital's RS-422 connector terminal adapter, GP070-CN10-0





As a result of connecting GP070-CN10-0's RDA and TERM, a 100Ω termination resistance is inserted between RDA—RDB on the GP.

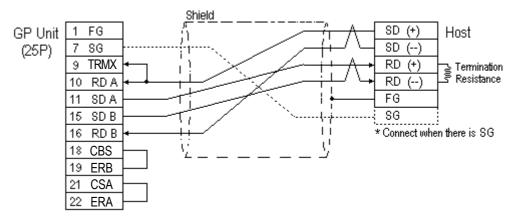
• When using Digital's RS-422 Cable, GP230-IS11-0





When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.

• When making your own cable connections





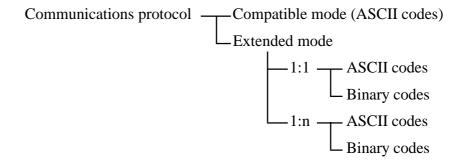
When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.



3.3

Memory Link Command

The communications protocol shows the format of data transferred between the host computer and the GP and the procedure for this data transfer. The communications protocol for the GP is classified into the following modes according to the application and the data processing capability of the host computer.



■ Compatible mode

In this mode, only writing to the system area (Esc W) and reading from the system area (Esc R) commands are performed using communications protocol. The compatible mode is basically a teletype protocol using ASCII codes. Therefore, the load for controlling the communications on the host computer is decreased. In contrast, the reliability of the transmitted and received data is relatively low.

■ Extended mode

This mode is a protocol which supports not only commands for writing to and reading from the system area, but also drawing commands. The extended mode is a communications protocol compatible with the multi-drop connection between the host computer and the GP. To improve the reliability of communications data, you may specify whether sum check codes are used or not and whether ACK and NCK are used or not. The ASCII codes and the binary codes are dependent on the development of the software environment. Select whichever codes are appropriate.



Only the commands in the compatible mode are covered in this manual.



For the extended mode, Refer to The Memory Link Communications Manual for the GP70 Series (sold separately).

GP-Host data transmissions are run as described for each command below.

Read command This command reads data from the setup System Area

address.

Reply command This command responds to the Read command and

passes this data from the GP to the Host.

Write command This command writes the data to the setup System Area

address.

Interrupt output Using a touch tag or other method to write data to Sys-

tem Data Area address 13 causes an interrupt code in the contents of the bottom 8 bits, which is then output

to the Host side.



When using double-words (32-bit data), the upper and lower data are set up as follows:



Send the read command from the Host after receiving the reply command.

<Example> Data communication between the Host computer and the GP

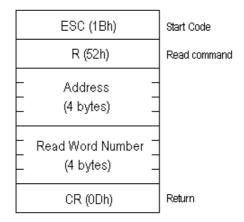


Send the read command (2) after receiving the reply command (1).

When the read command is sent continuously without waiting for the reply command, a system error may be generated two or three hours later.

Read Command

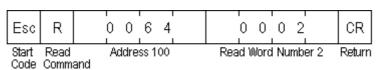
The contents of the Read command are as follows:



E.g. Reads 2 words of hexadecimal data from System Area address 100.





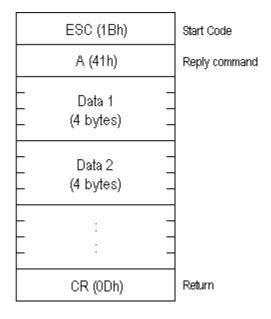




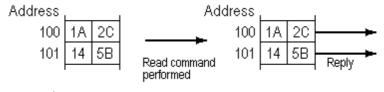
The Address and Read Word Number can be entered in ASCII Code.

3.3.2 Reply Command

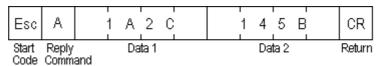
The contents of the Reply command are as follows:



E.g. Read 2 words of hexadecimal data from System Area address 100.



Reply Command

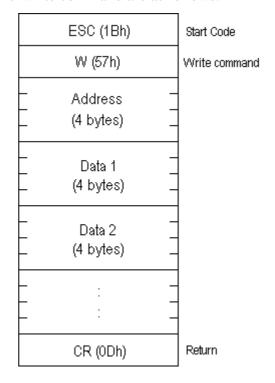




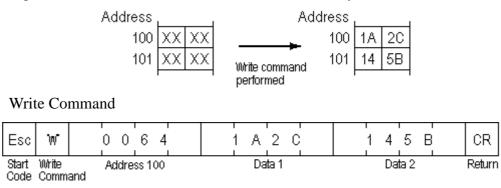
- The response command is output automatically from the GP in answer to the read command received.
- The Address and Data can be entered in ASCII Code.
- Data is read, in order, from the setup address.

3.3.3 Write Command

The contents of the Write command are as follows:



E.g. Writes hexadecimal data 1A2C and 145B from System Area address 100.





- The Address and Data can be entered in ASCII Code.
- Data is written, in order, from the setup (start) address.
- In Compatible mode, the Reply command does not return.
- If you keep send the Write command to GP constantly, be aware that GP might fail to update the screen data.



3.4

Sample System

This section provides examples of the Host program and GP tag setup which are necessary for data transmissions between the GP and Host. Plus, when the tag setup below is run with the sample program, it demonstrates a GP screen change.

Use the following steps to create the screens shown below.

When the [Motor ON], [Motor OFF], [Display], or [Error] switch is pressed, that switch's respective interrupt code is output to the host system, starting the following operations (T-tag).

Switch Explanation

[Motor ON] Starts the motor to supply 50% of the sediment into

the sedimentation tank.

[Motor OFF] Stops the motor.

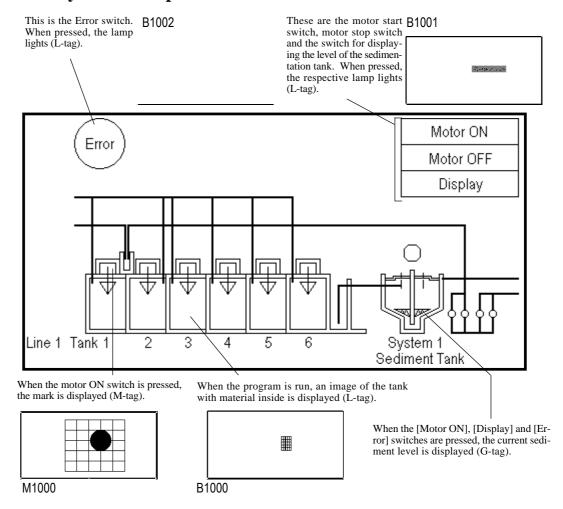
[Display] "50% of the sediment is being supplied to the sedi-

mentation tank."

[Error] "Only 20% of the sediment has been supplied to

the sedimentation tank."

■ System Example

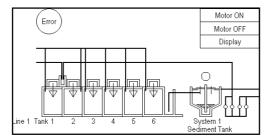


Chapter 3 - Memory Link Communication

■ Screen Creation

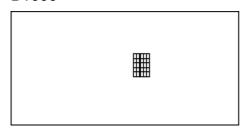
(1) Use the GP-PRO/PBIII for Windows software to create the screens.

B1



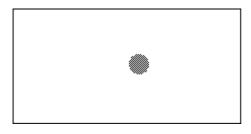
This screen is displayed when the GP is operating.

B1000



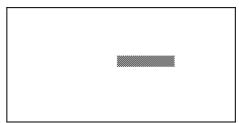
This screen represents the material to be put into the aeration tank.

B1002



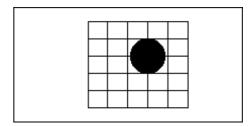
This screen shows the [Error] switch's ON pattern.

B1001



This screen shows the [Motor ON], [Motor OFF] and [Display] lamp's ON pattern

tern. M1000



This screen shows the mark displayed when the motor is started.

(2) Use the GP-PRO/PBIII for Windows software to setup Tags

♦ Tag Setup Example

T-tag List

File No.	Tag Name	Ope. Mode	Word Addr	Word Write	Fixed No.	Reverse Display	Starting point coordinate	Ending point coordinate	Details
B1	T1		13	Word Set 16 bit	0031			Motor ON	
B2	T2	Word			0032	On	Coordinates vary accordi	Motor OFF	
B1	Т3			Word Set 10 bit	0033	Oli	being used.		Display
B1	T4				0034			Error	

L-tag List

File No.	Tag Name	Diplay Mode	Bit Addr	File Access	Direct Access File No.	Delete	Display coordincates	Detailas
B1	L1		002000		B1000	On	Coordinates entered will vary according to screen being used.	Tank 1
B1	L2		002001	Direct Access				Tank 2
B1	L3	0> 1 Erase Operation On	002002					Tank 3
B1	L4		002003					Tank 4
B1	L5		002004					Tank 5
B1	L6		002005					Tank 6
B1	L11		002100		B1001			"Motor ON" Reverse
B1	L12		002101					"Motor OFF" Reverse
B1	L13		002102					"Display" Reverse
B1	L14		002103		B1002			"Error" Reverse



When you wish to display L1~6 (L-tag) at the same time, turn all bits in address 20 ON.

M-tag List

File No.	Tag Name	Bit Addr	Diplay Mode	Color Attr. 0	Color Attr. 1	Magnify	File Access	Direct Access File No.	Display coordinates	Details
B1	M1	002200	Display s On/Off	Bg Clr: Black	Fg Clr:White Bg Clr: Black Blink: Off	1 X 1	Direct Access	M1000	Coordinates entered will vary according to screen being used.	Motor 1
B1	M2	002201								Motor 2
B1	М3	002202								Motor 3
B1	M4	002203								Motor 4
B1	M5	002204								Motor 5
B1	М6	002205								Motor 6



When you wish to display L1~6 (M-tag) at the same time, turn all bits in address 20 ON.

G-tag List

File No.	Tag Name	Word addr	Data Type	Data Format	Code	Bit Length	Input Code	Color Attr.	Graph type	Dir.	Tiling Pttrn.	Alarm	Starting point coordinate	Ending point coordinate	Details
B1	G1	0023	Relative Value	BCD	+	16	None	Fg: White Bg: Black Blink: Off	Trend Graph	Up	2	Off	Coordinates vary accordi being	•	Sediment Tank

♦ Address Map

Tags used in the Sample program are allotted to their corresponding address as follows.

T-tag —> Address 13

Writing data to Address 13 (Interrupt) causes an output of the bottom 1 byte code from the RS-232C port. For this reason, the T-tag uses word write.

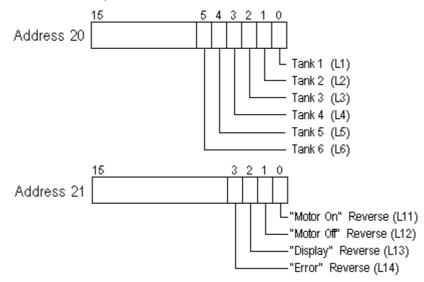
Motor ON (T1)..... word write 0031 to address 13

Motor OFF (T2) word write 0032 to address 13

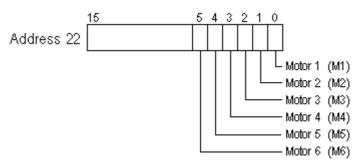
Display (T3) word write 0033 to address 13

Error (T4) word write 0034 to address 13

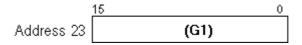
L-tag —> Address 20, Address 21



M-tag —>Address 22



G-tag —> Address 23



(3) The host unit's company creates the program for data transfer between the GP and the host.

♦ Sample Program

E.g. If an IBM PC/AT-compatible machine and the C language are used:

/*************************************		link communications	*/ */								
/*	•	***************************************	*/								
#include <stdio.h> #include<dos.h> #include<string.h> #include<stdlib.h> #include<conio.h></conio.h></stdlib.h></string.h></dos.h></stdio.h>											
#define data_size_str2 #define data_size_wr_data	20 24	/*The data size of str2 is 20 bytes*/ /*The data size of wr_data is 24 bytes*/									
#define serial_port_BIOS #define serial_port_number #define serial_port_INT #define serial_port_parameter	#define serial_port_number 0x00 /*Serial port number used*/ #define serial_port_INT 0xE7 /*The serial port is initialized.*/										
#define get_status #define serial_port_write #define serial_port_read	#define serial_port_write 0x01 /*The serial port is written.*/										
#define status_bit_6000 #define status_bit_0020		/*Port status bits 13 and 14*/ /*Port status bit 5*/									
•	/*************************************										
/*************************************	/*************************************										
/*********	****** ****	***************************************	*/								
void write (char *wr_data);	void write (char *wr_data); /*The data is written to the GP.*/										
/*************************************											
/*************************************											
/***********************************/ /* Global variables /************************************											

```
void main (void)
      int no_data;
      str2 = (char*) malloc (sizeof (char) *data_sezi_str2); /*The memory for str2 is secured.*/
      char *wr_data = (char*) malloc (sizeof (char) *data_size_wr_data);
                                    /*The memory for wr_data is secured.*/
                          /*Communication settings for RS232C*/
      wr_data = "\x1bW000F0001\x0d\0"; /*0x1 is written to address 15: screen number 1 setup*/
      write (wr_data);
      wr_data = "\x1bW0014003F\x0d\0";
           /*0x3F is written to address 20: Materials are put into aeration tanks Nos. 1 to 6.*/
      The data reception from the GP is identified.
  If the Write key is pressed, the execution is completed.
     while (1)
     {
            no_data = read ();
            if (no_data == 1)
                                 /*If there is any key entry, no_data=1.*/
                break;
           }
            else
           {
                wr data = str2;
                write (wr_data);
                             /*The codes for keys are removed from the key buffer.*/
     getch ();
     free (wr_data);
                                /*The memory area for wr_data is freed up.*/
                              /*The memory area for str2 is freed up.*/
     free (str2);
}
/*The transmission buffer register status and the transmission register status are acquired.*/
void write_ready (void)
     int err6000:
     err6000 = 0;
     while (status_bit_6000 != err6000)
          err6000 = err_status () & status_bit_6000;
     }
     return;
}
/*Confirmation of data set status*/
int read_ready (void)
{
     int no_data,err0020;
     err0020 = 0;
     while (status_bit_0020 != err0020)
          err0020 = 344_status () & status bit_0020;
          if (kbhit ())
                         /*Confirms whether there is a key entry or not.*/
                no_data = 1;/*If there is a key entry, no_data=1.*/
                        /*The program is terminated.*/
                break;
          }
```

```
return (no_data);
/*Data is written to the GP.*/
void write (char *wr_data)
    while (*wr_data != '\0')
                         /*The data is written until it becomes NULL.*/
   {
         write_ready ();
         write_data (*wr_data);
                      /*The address pointed to by the pointer is incremented.*/
    return;
 The interrupt data received from the GP is confirmed.
        The data is written to addresses 20, 21, 22, and 23.
void change_screen (int interrupt_data)
    switch (interrupt_data)
/*If interrupt_data is 1, 0x1 is written to address 21, 0x3F to address 22, and 0x50 to address 23.*/
           case 1: str2 = \text{"}x1bW00150001003F0050\x0d\0"};
                break;
/*If interrupt_data is 2, 0x2 is written to address 21, 0x0 to address 22, and 0x0 to address 23.*/
           case 2: str2 = "\x1bW001500020000000\x9d\0";
                break:
/*If interrupt_data is 3, 0x4 is written to address 21, 0x0 to address 22, and 0x50 to address 23.*/
           case 3: str2 = \text{"}x1bW00150000400000050\x0d\0"};
                break:
/*If interrupt_data is 4, 0x8 is written to address 21, 0x0 to address 22, and 0x20 to address 23.*/
           case 4; str2 = \text{"}x1bW0015000800000020\x0d\"};
/*If interrupt_data is other than 1 to 4, NULL is written.*/
          default : str2 = "\0";
                break;
     {
     return;
}
The interrupt data received from the GP is read.
/* Reading is performed until the interrupt_data becomes other than NULL. */
int read (void)
     int no_data;
     do
          no_data = read_ready (); /*Confirmation of data set status*/
          if (no_data == 1) /*If there is a key entry, no_data=1.*/
             break;
          }
          else
          {
```

```
/*The data received from the GP is read out./*
                  change_screen (interrupt_data); /*The data received from the GP is identified.*/
         } while (*str2 == '\0');
         return (no_data);
  /*Communications settings for RS232C*/
void open_SIO (void)
     union REGS regs;
           regs.x.dx = serial_port_number;
           regs.h.ah = serial_port_INT;
           regs.h.al = serial_port_parameter;
           int86 (serial_port_BIOS,&regs,&regs);
     return;
}
/*The port status is acquired.*/
int err_status (void)
     union REGS regs;
           regs.x.dx = serial_port_number;
           regs.h.ah = get_status;
           int86 (serial_port_BIOS,&regs,&regs);
           port_status = regs.x.ax;
     return (port_status);
}
/*The data is written to the registers*/
void write_data (char wr_data)
{
     union REGS regs;
           regs.x.dx = serial_port number;
           regs.h.ah = serial_port_write;
           regs.h.al = wr_data;
           int86 (serial_port_BIOS,&regs,&regs);
     return;
}
/*The data is read from the GP*/
int read_data (void)
      union REGS regs;
           regs.x.dx = serial_port_number;
           regs.h.ah = serial_port_read;
           int86 (serial_port_BIOS,&regs,&regs);
           interrupt_data = regs.h.al;
     return (interrupt_data);
}
```

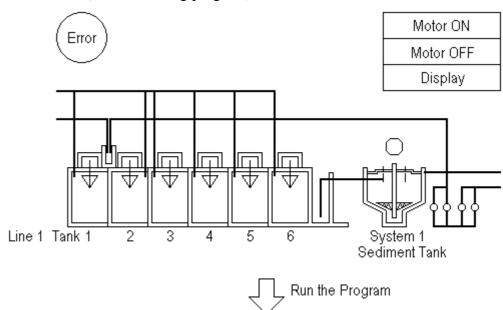


The availability of open_SIO (void), err_status (void), write_data (char wr_data), and read_data (void) will depend on the models used. If the program is written on a personal computer that is not IBM -compatible, it must be modified in order to be used.

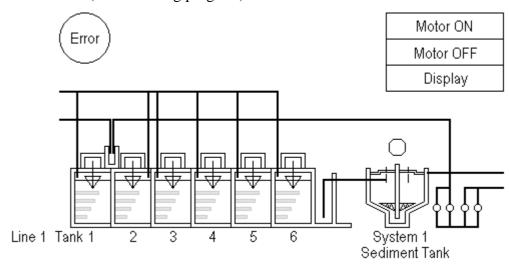
(4) After screen data is transferred to the GP, display (operation) can begin.

♦ GP Run Screen

GP Screen (Before running program)

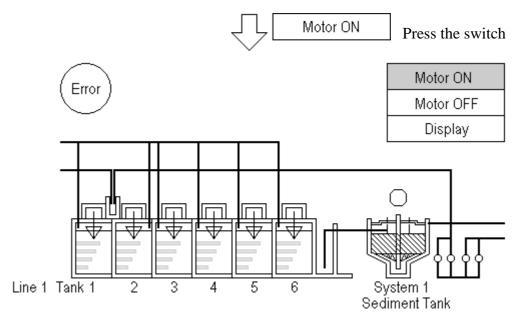


GP Screen (After running program)



Six Libraries appear in the No. 90 screen display.

Chapter 3 - Memory Link Communication

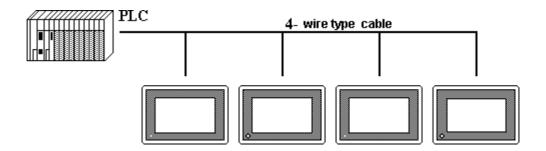


ASCII Code "31" = Data "1" is output to the Host, causing the screen to change.

4 n:1 (Multi-link)

This chapter describes the overview of n:1 (multi-link) communications and the necessary steps for preparing multi-link communications.

4.1 n:1 About Multi-link



The communication software supports Programless **n:1** (multi-link) connections, whereby multiple GPs are connected to a single PLC.

In **n:1** (multi-link) communication, a token, which authorizes PLC communication, is passed successively among the GPs so that communication with the PLC occurs in an orderly fashion.

The maximum total length of the cables is 600m. However, when the maximum extended length for the PLC is less than this, model the setup after the PLC value.

Connection multiple GP units to one PLC

Multiple GPs can be connected to each PLC computer (top unit) Link I/F. Maximum 16 connections are possible; for most practical purposes, use up to 4 connections.

• Programless Communication

A particular program for **n:1** (multi-link) is not necessary, as the selected Promgramless protocol can also be used in the multi-link format.

Multi-link connections possible without exclusive hardware

• from Large to Medium sized GP units

Large and Medium sized GP-*70, GP-77R and GP2000 Series displays can be connected in a *random* order in **n:1** (multi-link) communication.

GP screen data designed for 1:1 connection

The multi-link connection can even use GP screen data designed for a 1:1 connection.

Maintenance possible on connected GP

In the middle of RUN mode for a **n:1** (multi-link) connection, the communication of a *free* GP can be stopped. This function is available so that adding or editing screen data, turning the GP power On/Off, debugging, maintenance, and so on, can be performed without disrupting the system.



- In GP's INITIALIZE/PLC SETUP/STATION SETUP screen, enter the same NETWORK INFORMATION ADDRESS for all connected GP's.
- Because increasing the number of GP connections slows the GP display and operation speed, consider it carefully at the end of your system calculations.
- To utilize display efficiency, set up the tag addresses consecutively; when tag addresses are *not* consecutive, the processing speed decreases.
- The PLC Scan Time (cycle time) affects the base system's response time.
- When the PLC power is turned off during communication, a communication error may appear on the GP.
- When a connector hood is used to ground the FG line at the end of the GP—PLC connection, use an electric conductor.



Entering touch input on multiple GPs at the same time may increase the time it takes for the PLC to respond. This occurs because the first screen must refresh its display before the second display can receive its reply. As a result, do not use both GP units at the same time.



When GP-*30 series and GP-*70 series systems are combined and n:1 (multi-link) connections are used, note that the GP-*30 systems cannot use the following functions.

- PLC exclusive usage that uses the system data area's LS14.
- Function for informing other GPs when a single GP has exclusive use of the PLC.
- Time for release of exclusive use.

<Matrix showing GP recognition of PLC Monopoly>

GP-*30 series	GP-*50 series	GP-*70/GP2000 series
		Not recognized
Not recognized	Exclusive use of either touch panel or LS14	Recognized
Not recognized	Recognized	Exclusive use of the touch panel or of the LS14



For GPs that do not recognize PLC monopoly, their display is not refreshed until monopoly is released, and errors are not displayed.

TReference For information about GP-*30 series panels' exclusive use

of PLCs, refer to GP series PLC connection manual, multi-

link protocol

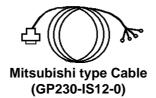
Reference For information about GP-*70 series panels' exclusive use

of PLCs, refer to Chapter 4.5, About PLC monopoly

Also, with the GP70 series, PLCs connectability may vary depending on the models involved.

■ Option Parts

Digital's *Multi-link* type cable or RS-422 connector terminal adapter is recommended for **n:1** (multi-link) connections.



I/F cable (5m) to run communication between various PLCs and GP.

Can use as a secondary cable from the Relay terminal.

RS-422 Connector Terminal Adapter (GP070-CN10-0)



This adapter exchanges the RS-422 terminal output from the GP Series' SIO connector.

Connect with the recommended cable by the corresponding PLC maker.



4.2 Connectable PLCs

The following is a list of the PLCs which support GP multi-link connections.

Co.	Series Name	СРИ	Link I/F	Comments	Screen Editor PLC setup	GP Series GLC2000 Series	GLC100 Series GLC300 Series
	MELSEC-A	A2A A3A A4U A2U A2US A2USH-S1	AJ71C24-S6 AJ71C24-S8 AJ71UC24 AJ71UC24 A1SJ71C24-R4 A1SJ71UC24-R4		Mitsubishi's MELSEC-AnA (LINK)	0	0
M I T		A1N A2N A3N AOJ2 AOJ2H A1SJ A1S,A1SH	AJ71C24 AJ71C24-S3 AJ71C24-S6 AJ71C24-S8 AJ71UC24 AOJ2-C214-S1 A1SJ71UC24-R4 A1SJ71C24-R4		Mitsubishi's MELSEC-AnN (LINK)		
S U B		A2SH A2CCPUC24	Link I/F on CPU Link		Mitsubishi's MELSEC-AnN (LINK)		
S H	MELSEC-FX	FX _{2N}	FX2N-485-BD		Mitsubishi's MELSEC-FX (LINK)		
I E		Q2A Q2A-S1 Q4A	AJ71QC24 AJ71QC24N-R4		Mitsubishi's MELSEC-QnA (LINK)		
L E C			AJ71UC24	U sable device type limited	Mitsubishi's MELSEC-AnA (LINK)	0	Х
T R I		Q2AS	A1JS71QC24		Mitsubishi's MELSEC-QnA (LINK)		
С			A1JS71UC24	U sable device type limited	Mitsubishi's MELSEC-AnA (LINK)		
		Q2AS-S1	A1SJ71QC24N		Mitsubishi's MELSEC-QnA (LINK)		
			A1SJ71UC24-R4	U sable device type limited	Mitsubishi's MELSEC-AnA (LINK)		
		Q4AR	AJ71QC24N		Mitsubishi's MELSEC-QnA (LINK)		

Co.	Series Name	СРИ	Link I/F	Comments	Screen Editor PLC setup	GP Series GLC2000 Series	GLC100 Series GLC300 Series
M E I L T E S C U T B R I I S	MELSEC-Q	Q02CPU-A Q02HCPU-A Q06HCPU-A Q02CPU Q02HCPU Q06HCPU Q12HCPU Q25HCPU	A1SJ71UC24-R4 QJ71C24		Mitsubishi's MELSEC-AnA (LINK) Mitsubishi's MELSEC-QnA (LINK)	0	Х
C H		Q00CPU Q01CPU Q00JCPU					
O M R O N	SYSMAC C	C500 C500F C1000H C1000HF C2000 C2000H C2000H C200HS C120 C120F C200H C500 C500F C1000H C2000 C2000H SRM1-CO2 CPM1-20CDR-A CPM2A C200HX-CPU64 C200HG-CPU43 C200HE-CPU42	C500-LK201-V1 C500-LK203 C200H-LK202 C120-LK202-V1 CPM1-CIF11 C200HW-COM06	C 1000HF can only use C 500-LK203 link unit. CPU64 checks the connection. Only the 4- wire type can be used.	OMRON SYSMAC-C series	0	0
	SYSMAC CV SYSMAC CS1 SYSMAC CJ	CV500 CV1000 CVM1 CS1H-CPU67 CS1H-CPU65 CS1H-CPU64 CS1H-CPU63 CS1G-CPU45 CS1G-CPU44 CS1G-CPU42 CJ1G-CPU44 CJ1G-CPU44	Link I/F on CPU unit CV500-LK201 CSW-SCB41	RS-422 (Port 2)	OMRON SYSMAC-CV OMRON SYSMAC-CS1 series	0	X

Co.	Series Name	СРИ	Link I/F	Comments	Screen Editor PLC setup	GP Series GLC2000 Series	GLC100 Series GLC300 Series
H I T A C H I	HIDIC H	H-2000 H-2002 H-302 H-702 H-4010 MICRO-EH EH-150 (EH-CPU448) H-302 H-702 H-2002 H-4010 MICRO-EH	COMM-H COMM-2H COMM-2H Serial Port2 on CPU unit Serial Port1 on CPU unit COMM-2H Serial Port2 on CPU unit	Standard HIZAC H series. Transmission control procedure 1 Transmission control procedure 2	HITACHI HIZAC-H series HITACHI HIDIC-H2 series	0	X
M A T S U S H I T A	MEWNET	FP10S *1 FP10SH	Link I/F on CPU unit		MATSUSHITA MEWNET-FP series	0	Х
Y O K O G A W A	FACTORY ACE	FA-M3 (n:m Connection)	F3LC11-2N	CPU uses F3SP20-ON and F3SP35-5N to check connection. In addition to the FA-M3, multi-link connections using a digital Indicating Controller (UT37/38/2000) and recorder (mR series) can be made without programming. The CPU uses F3SP20-N and F3SP35-5 to check the	YOKOGAWA *2 FACTORY ACE 1:1 Comm. YOKOGAWA *3 FACTORY ACE 1:n Comm.	0	X

^{* 1} Use Version 1.8 or higher.

^{*2 &}quot;FA-500" in earlier version (GP-PROII, GP-PROIII)

^{*3 &}quot;FA-500M" in earlier version (GP-PROII, GP-PROIII)

Co.	Series Name	СРИ	Link I/F	Comments	Screen Editor PLC setup	GP Series GLC2000 Series	GLC100 Series GLC300 Series
T O S H I B	PROSEC T	ТЗ	Link I/F on CPU unit		TOSHIBA PROSEC-T Series	0	Х
O R L C A L K D E W L N E E L Y L	SLC500	SLC-5/03 SLC-5/04	Link I/F on CPU unit		Allen Bradley SLC 500 Series	0	Х
K E Y E N C E	KZ-300 KZ-350 KV-700	KZ-350 KV-700	KZ-L2		KEYENCE KZ-300 Series	0	х
Y A S U K A W	MEMOCON- SC	GL120 GL130	JAMSC- 120NOM27100		YSUKAWA Memocon-sc Series	0	Х
S H A R P	New Satellite JW	JW-33CUH3	Link I/F on CPU unit JW-21CM *1		Sharp New Satellite JW Series	0	Х

^{*1} Be sure to use a ROM verson that is 30Hn or higher when you use JW-21CM. If the ROM version is 30H, some file registers will not be available. The JW30H cannot be used, because it does not have a ROM version mark.



If a PLC maker changes their PLC specifications, or Warning upgrades the PLC version, there is a possibility that communication with the GP may not operate normally.

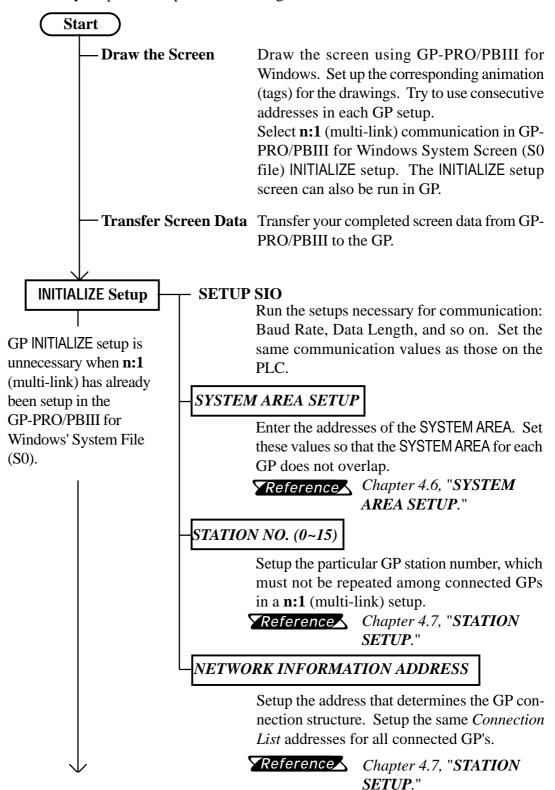


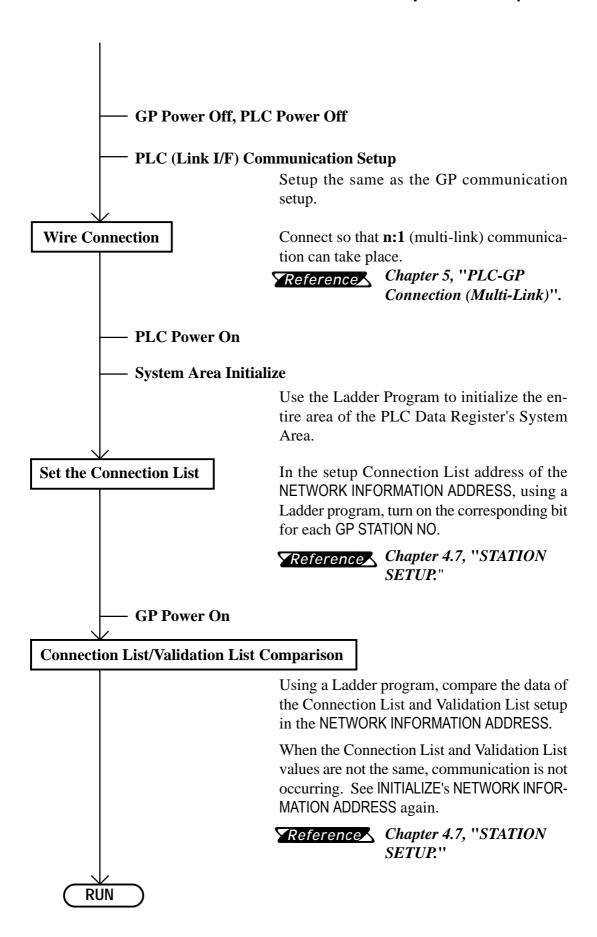
Depending on the CPU or Link I/F being used, communication speed vary. Also, when multilink connections (n:1) are used, speed may be slower. Thus, when designing your system, please check that the communication speeds meet your requirements.



Prior to RUN mode

This section outlines the steps for **n:1** (multi-link) communication. Particularly important steps have a rectangular frame.

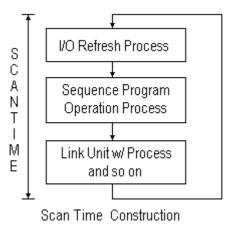




4.4

PLC Scan Time

When using the GP in **n:1** (multi-link), the PLC scan time greatly influences the GP Display/Operation speed. The time it takes to run a process series, common to PLCs, and repeated as shown in the diagram below, is known as the *scan time*. If the scan time gets longer, the Display/Operation speed, because it remains in proportion, slows down.



In the step *Link I/F w/ Process and so on* in the above diagram, the PLC runs the process linked to the command *from* the GP.



After sending a command, the time it takes for a response varies among PLC's.

Wait Time Reference Example

• MELSEC A Series

Read 1 Scan time Write 2 Scan time



For details, refer to the corresponding PLC manual.

To raise (speed up) the response time, wherever possible, create a system with short scan times. (For example, for sequence program allocation and so on.)



4.5

About PLC Monopolize

A PLC monopoly occurs when one of many GPs uses the PLC exclusively. For example, use PLC monopolize when you wish to setup data using the keyboard on the GP screen, or when displaying data Input/Output on a single GP.

■ PLC Monopoly

There are two ways of monopolizing the PLC:

- 1. Turn bit 7 of System Area address LS14 ON,
- 2. Set the GP TOUCH MONOPOLIZE option ON in GP's INITIALIZE off-line menu.

TReference Chapter 4.8, "CUSTOMIZE SETUP."

■ PLC Monopoly Release

Turn OFF the #7 bit of the GP System Area's LS14.

When the PLC is used exclusively using the method stated above in (1), the time period of exclusive use can be set. After that period is over, exclusive use is automatically released.

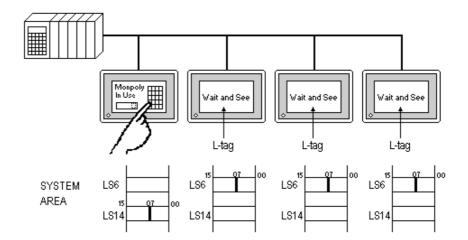
▼Reference Chapter 4.8, "CUSTOMIZE SETUP."

When a GP is monopolizing the PLC, bit 7 of System Area address LS6 (Status) turns ON for the other GPs. These GPs are in a *wait* state.

Operations run in GPs in a wait state are carried out only after communication is resumed. For this reason, there is the possibility errors will occur in accumulated operations. Plus, the PLC cannot check the System Area bit of Wait and See GPs.

We recommend using L-tag and W-tag, U-tag, and so on, to display whether a GP is in Monopoly or Wait and See mode.

E.g. Make the 7th bit of System Area's LS6 (Status) the trigger bit which displays the L-tag message "Waiting".





- When LS14's (Control) bit is turned ON in multiple GPs, the PLC Monopolize function is carried out on the GP whose bit turned ON first.
- While one of the GPs monopolizes the PLC, the other GP displays remain static.

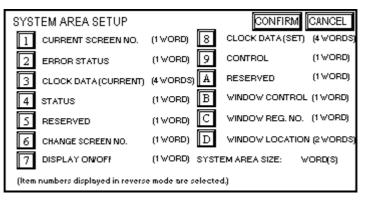
SYSTEM AREA SETUP 4.6

This section's data will help you to set up the System Area*1.

In **n:1** (multi-link) communication, to layout the System Area for the number of connected GPs, data of the entire system will increase. For this reason, the processing speed of each GP may slow down.

Selecting only necessary items for the System Area is recommended.

When setting the system data area while in the GP's off-line mode, be sure to use the [2 SYSTEM AREA SETUP], located inside the [1 INITIALIZE] menus's [2 SETUP OPERATION SURROUNDINGS] selection screen.



(GP-470 Screen)



- Setup the System Area for all the connected GP's. Do not overlap any of the allotted PLC Data Register (D) or Data Memory (DM) addresses.
- When System Area items are not selected, the Reading Area start address becomes the System Area start address.
- There is a process where not selecting the System Area items increases the GP management speed; however, operations where the PLC controls the GP, such as a Screen Change command sent from the PLC or PLC monopolize, cannot be run.
- When you wish to change the screen despite System Area items not being selected, indirectly use W-tag's ADD mode, and write the PLC Data Register contents into GP's internal LS8.

The System Area is the area necessary for the PLC to control the GP. The items selected here are allotted to the PLC's internal memory.



Reference For details about the System Area, refer to Chapter 1.1, Direct Access Communication.

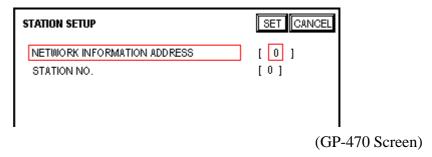


4.7

STATION SETUP

The STATION SETUP, necessary for the **n:1** (multi-link) setup, checks whether correct communications run with the connected GP System configuration.

When setting the system data area while in the GP's OFFLINE mode, be sure to use the [2 STATION SETUP], located inside the [1 INITIALIZE] menu's [2 SET UP OPERATION SURROUNDINGS] selection screen.



NETWORK INFORMATION ADDRESS

In the **n:1** (multi-link) connection, the Network Information uses 2 words in its correspondences. These 2 words are made up of the Connection List and the Validation List (described later in this section). Allocate these respective areas into the PLC's Data Register (D) or Data Memory (DM).

PLC Data Register

+ 0 CONNECTION LIST PLC-->GP + 1 VALIDATION LIST GP-->PLC



In the NETWORK INFORMATION ADDRESS, set up the same address to all the GPs connected to the same Link I/F. Furthermore, when there are 2 ports in the connected Link I/F, do not make them the same address.

• Connection List

The word address for the Connection List sets up the number of GPs connected to the PLC, registered beforehand on the PLC side. When these GPs are connected to the PLC, the corresponding PLC bit numbers for the particular GP Stations (see bottom) turn on.

When the GP is connected to the PLC, and the option of GP only correspondence ends and OFFLINE mode is entered, the GP Station Number turns the



corresponding PLC bit off.

Bit 15Bit 0

	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
l	unit															

For example, when these 4 GP units—bit 0, bit 2, bit 3, bit 5—are connected, 002D (h) is written here.



- Be certain to set up the GP before running the program.
- Turn bits not connected to the GP off.



Avoid keeping the bits in the list of connected stations OFF for long periods of time even though the GP is connected.

Verification List

This area responds to the correspondence from each connected GP. In the Verification List, when the same bit numbers as the Connection List turn On, the corre spondence is accepted. The Station Numbers of the communicating GPs turn their corresponding PLC bit number on.

Bit 15 Bit 0

15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0

If the correspondence between the GP and PLC is correct, the same value as in the Connection List is written to the Verification List.

For example, the value 002D (h) in the Connection List, set up as the 0 bit, 2 bit, 3 bit, and 5 bit, writes to the Verification List.

Verification List 0 0 0 0 0 0 0 0 0 0 1 0 1 0 1 002D (h)



When the Connection List and Verification List do not match, a COMMUNICATION ERROR occurs. Check the setup again.



When changing the type of connection, first turn all the List bits Off.

• STATION NO.

This is the setup for the GP Station Number mentioned in the above section. The setup range is from 0 to 15, and the only other restriction is the GP STATION NO. must be unique in the system. If STATION NO.'s are repeated, a COMMUNICATION ERROR occurs.



The STATION NO. is the number allocated to the particular GP unit. This number is not related to the Link I/F Machine number.

< Station Setting Data Example >

The following shows the example of station settings used to connect two (2) GPs by n:1(multi-link) connection.

	GP1	GP2
Station No. *1	1	1
GP Station No. *2	0	1
Storage Address *3	D100	D100

^{*1} Enter the station numbers of the link unit being connected.

Writing [3] in [D100] enables the system to start communication after you finished all settings shown above.

^{*2} Be sure that you do not create any duplicate GP station numbers (from 0 to 15).

^{*3} All GPs must be set so as to use the same storage address to avoid overlapping System Data Area's settings.

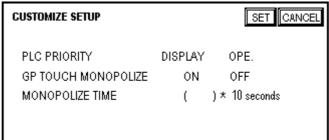


4.8

CUSTOMIZE SETUP

The Customize function alters the **n:1** (multi-link) connection's communication to make it more effective. To run communication efficiently, determine whether to use Operation or Display priority with your GP. As a result, the communication response speed can be upgraded. (However, this changes with the screen information.)

When setting the system data area while in the GP's OFFLINE mode, be sure to use the [CUSTOMIZE SETUP], located inside the [INITIALIZE] menus's [SET UP OPERATION SURROUNDINGS] selection screen.



(GP-470 Screen)

PLC PRIORITY

According to how the GP is used, select either Operation priority (OPE.) or Display priority.

Display

Set up the GP to this option when using the GP mainly as a monitor screen. The GP will command a higher display speed as a result; however, the response time for the touch panel's operations will slow.

Operation

Set up the GP to this option when using the GP mainly as an operation panel. As a result, the GP will command better touch panel numeric input and switch response times.

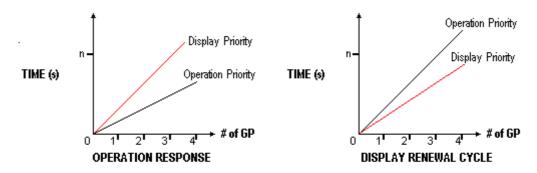
Leaving the GP in this mode does not influence the touch panel operation response time of the rest of the GPs very much; however, the screen display renewal cycle will slow down.



- In a basic setup, run the same setup for all connected GPs.
- To increase the display speed, restrict the address setup to consecutive addresses wherever possible. And make bit addresses consecutive to the word unit.

Speed Difference between Display Priority and Operation Priority

When using the Mitsubishi Electric Corp. A3A PLC, with a scan time of 20ms with consecutive addresses (80 words not included in the System Area), the difference in reading speed is as shown in the following graphs.



GP TOUCH MONOPOLIZE

The monopolizing of touch panel use can be set ON or OFF. When you want to use the PLC exclusively (\(\sum_{Reference} \) Chapter 4.5, About PLC Monopolize.) with a Momentary operation setup on the touch panel, turn GP TOUCH MONOPOLIZE on.

When this setup is on, the touch panel uses the PLC exclusively whenever the momentary operation setup on the panel is pressed. In this way, you can perform inching operation via a momentary switch. When you stop pressing the panel, exclusive use ends.

MONOPOLIZE TIME (0~2550s)

This field controls the length of time for the monopolize process when no other touch panel operations are performed. The Monopolize process begins when the System Data Area's 7th bit of word address LS14 turns on, and ends either when the bit turns off, or when the time set here passes.



- Pressing the touch panel in the middle of the monopolize process interrupts the MONOPOLIZE TIME function, ending exclusive use.
- When MONOPOLIZE TIME is set to 0, the monopolize function does not end automatically.

Reference For more about the contents of System Data Area LS6 (status) and LS14 (control), refer to Chapter 1.1.4, "Contents and Range of System Area."

5

PLC-GP Connection (Multi-link)

This chapter describes the system configuration of PLC made by various manufacturers and the GP, and shows connection diagrams, supported devices, and examples of setting up the operating environment.

5.1

Mitsubishi Electric

5.1.1

System Structure

The following describes the system structure for connecting the GP to Mitsubishi Electric PLCs.

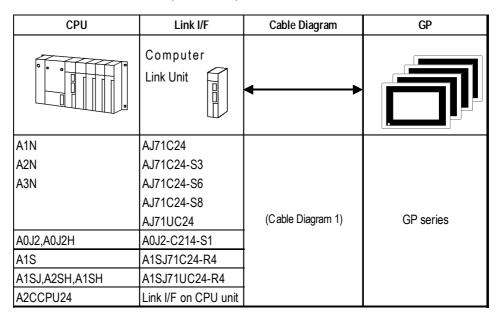
YReference

The Cable Diagrams mentioned in the following tables are listed in the section titled "5.1.2 Cable Diagrams".

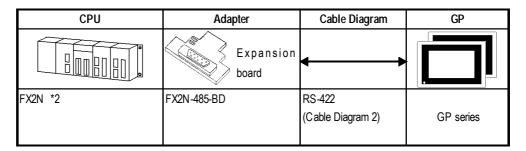
■ MELSEC-A Series (using Link I/F)

СРИ	Link I/F	Cable Diagram	GP
	Computer Link Unit		
A2A	AJ71C24-S6	(Cable Diagram 1)	
A3A	AJ71C24-S8		
A4U	AJ71UC24		GP series
A2US	A1SJ71C24-R4		
A2USH-S1	A1SJ71UC24-R4		

■ MELSEC-N Series (Link I/F)



■ MELSEC-FX Series (Expansion Board with Link I/F protocol)*1



^{*1} Choose Mitsubishi's MELSEC-FX2(Link) as the GP-PRO/PBIII project file's PLC type.

^{*2} The PLC's system version should be at least 1.06 or later. Check the PLC's version by reading out the data from the register (D8001). For detailed information refer to the Mitsubishi's FX 2N Series Micro Sequencer manuals.

Link I/F CPU Cable Diagram GP Serial Communication Unit / Computer Link Unit Q2A,Q2A-S1,Q4A AJ71QC24 (serial RS-422 (Cable Diagram 1) communication unit) *1 AJ71UC24 (computer link unit) AJ71QC24N-R4 RS-422 (Cable Diagram 2) for CN-1 Q2AS A1SJ71QC24N(serial RS-422 (Cable Diagram 1) **GP** series communication unit) *2 A1SJ71UC24(computer link

RS-422

RS-422

(Cable Diagram 1)

(Cable Diagram1)

■ MELSEC-QnA Series (using Link I/F)

*1 ROM: must be higher than 7179B. *2 ROM: must be higher than 7179M.

A1SJ71QC24N

AJ71QC24N

A1SJ71UC24-R4

■ MELSEC-Q Series

Q2AS-S1

Q4AR

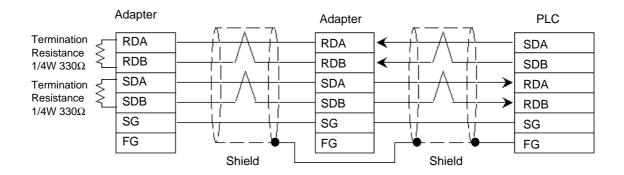
CPU	Link I/F	Cable Diagram	GP
	Serial Communication Unit / Computer Link Unit		
Q02CPU-A	A1SJ71UC24-R4	RS-422	
Q02HCPU-A		(Cable Diagram 1)	
Q06HCPU-A			
Q02CPU	QJ71C24	RS-422	
Q02HCPU		(Cable Diagram 1)	
Q06HCPU			GP series
Q12HCPU			
Q25HCPU			
Q00CPU			
Q01CPU			
C00JCPU			

5.1.2 Cable Diagrams

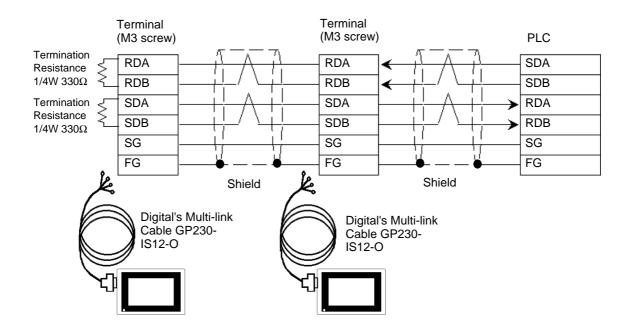
The cable doagrams illustrated below and the cable diagrams recommended by Mitsubishi Electric Corp. may differ, however, using these cables for your PLC operations will not cause any problems.

Cable Diagram 1

• When using Digital's RS-422 connector terminal adapter GP070-CN10-O



• When using Digital's Multi-link Cable, GP230-IS12-O





Ground your PLC's FG terminal according to your country's applicable standard. For details, refer to the corresponding PLC manual.



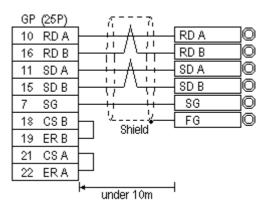
- Pull out the Transfer Cable Shield cover and shape it into a wire and connect it to the PLC's FG terminal.
- GP230-IS12-O Cable FG terminal is not connected to GP's FG.
- Place a Termination Resistor at both ends of the cable. The Termination Resistor is automatically setup when the PLC's Termination Resistor switch is turned ON.
- Fot the RS-422 connection, use a cable length less than 500m.
- As a general rule, connect the PLC at either end of the circuit, not in the middle.





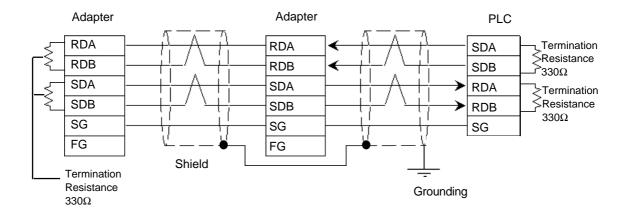
When making your own cable, Mitsubishi's SPEV (SB)-MPC-0.2*3P cable is recommended as the connection cable.

The cable connection lines are as illustrated below and should be less than 10m.

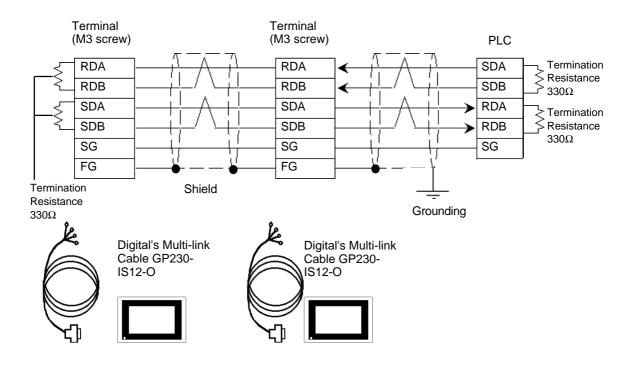


Cable Diagram 2

• When using Digital's RS-422 connector terminal adapter GP070-CN10-O



• When using Digital's GP230-IS12-0 (Multi Link Cable)





Ground your PLC's FG terminal according to your country's applicable standard. For details refer to your PLC's manual.

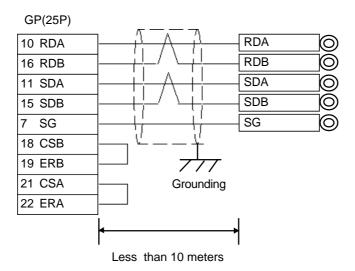


- Pull out a small amount of the Transfer Cable's shield, make a wire out of it and connect it to the PLC's FG terminal.
- The GP230-IS12-0 cable's FG terminal is not connected to the GP's FG line.
- Connect a terminating resistor to both ends of the cable.
- When using FX2N-485-BD, the cable must not be longer than 50m.
- As a general rule, connect the PLC at the end of the circuit's wiring (see below).





- When making your own cable, the Mitsubishi SPEV (SB)-0.2-2P is recommended.
- The cable connection lines are as shown below. The cables used between the GP and the terminals should be less than 10meters long.



5.1.3 Supported Devices

The following describes the range of devices supported by the GP.

■ MELSEC-A Series (AnA/ AnU/ A2US/ A2USH-S1)

Setup System Area or Communication Information's Storing Address here.

Device	Bit Address	Word Address	Particulars	
Input Relay	X0000 ~ X1FFF	X0000 ~ X1FF0	<u>xx</u> 01	
Output Relay	Y0000 ~ Y1FFF	Y0000 ~ Y1FF0	<u> </u>	
Internal Relay	M0000 ~ M8191	M0000 ~ M8176	<u> </u>	
Latch Relay	L0000 ~ L8191	L0000 ~ L8176	<u> </u>	
Special Relay	M9000 ~ M9255	M9000 ~ M9240	<u>÷16</u>	
Annuniciator	F0000 ~ F2047	F0000 ~ F2032	<u>÷16</u> 1	
Link Relay	B0000 ~ B1FFF			
Timer (contact)	TS0000 ~ TS2047			
Timer (coil)	TC 0000 ~ TC 2047			L/H
Counter (contact)	CS0000 ~ CS1023			
Counter (coil)	CC0000 ~ CC1023			
Timer (current value)		TN 0000 ~ TN 2047		
Counter (current value)		CN0000 ~ CN1023		
Data Register		D0000 ~ D8191	Bit 1 5 1	
Special Register		D9000 ~ D9255	Bit 1 5 1	
Link Register		W0000 ~ W1FFF	Bit F	
File Register		R0000 ~ R8191	Bit 5] *1	

^{* 1} When using the File Register and the AnA or AnU, use the User's memory area in the memory cassettes.

When the File Register is setup when the memory cassette is not in use, an error will develop when communicating.

■ MELSEC-N Series (AnN/ A2C/ A1S/ A1SJ/A2SH)

Setup System Area or Communication Information's Storing Address here.

Device	Bit Address	Word Address	Particulars	
Input Relay	X0000 ~ X07FF	X0000 ~ X07F0	[XXXO]	
Output Relay	Y0000 ~ Y07FF	Y0000 ~ Y07F0	[XXXO] *1	
Internal Relay	M0000 ~ M2047	M0000 ~ M2032	<u> </u>	
Latch Relay	L0000 ~ L2047			
Special Relay	M9000 ~ M9255	M9000 ~ M9240	<u>÷161</u> *2	
Annuniciator	F0000 ~ F255	F000 ~ F240	<u>÷16</u>	
Link Relay	B0000 ~ B03FF			
Timer (contact)	TS000 ~ TS255			L/H
Timer (coil)	TC000 ~ TC255			L/11
Counter (contact)	CS000 ~ CS255			
Counter (coil)	CC000 ~ CC255			
Timer (current value)		TN000 ~ TN255		
Counter (current value)		CN000 ~ CN255		
Data Register		D0000 ~ D1023	Bit 1 5 1	ė
Link Register		W0000 ~ W03FF	Bit F	
File Register		R0000 ~ R8191	Bit] 5] *3	

^{* 1} The Output Relays Y01F0-Y01FF (word Y01F0) are used by the PLC, and cannot be set.. (only for A2C)

When the File Register is setup when the memory cassette is not in use, an error will develop when communicating.

^{* 2} A MELSEC-AnN and AJ71C24-S3 (or AJ71C24) cannot be matched and used.

^{* 3} When using the File Register and the AnN, use the User's memory area in the memory cassettes.

Chapter 5 - PLC-GP Connection (Multi-link)

■ MELSEC-FX Series (using Expansion board with Link Protocol)

Setup System Area or Communication Information's Storing Address here.

Device	Bit Address	Word Address	Particulars	
Input Relay	X0000 ~ X0267	X0000 ~ X0240	<u>ост</u> 8] [*** 0]	
Output Relay	Y0000 ~ Y0267	Y0000 ~ Y0240	ост 8] [*** 0]	
Auxiliary Relay	M0000 ~ M3071	M0000 ~ M3056	÷16)	
State	S0000 ~ S0991	S0000 ~ S0976	÷16j	
Special Auxiliary Relay	M8000 ~ M8255	M8000 ~ M8240	÷16) *1	
Timer (contact)	TS000 ~ TS255			L/H
Counter (contact)	CS000 ~ CS255			
Timer (current value)		TN 000 ~ TN 255		
Counter (current value)		CN000 ~ CN255	*2	
Data Register		D0000 ~ D7999	B i t 151	
Special Data Register		D8000 ~ D8255	_{Ві т} 15] *1	

^{*1} The Special Relay and the Special Data Register are divided into three areas. These are the Exclusive Reading Area, the Exclusive Writing Area and the System Area. For details, refer to your PLC's manual.

^{*2} Word addresses CN200 to CN255 are 32 bit counters.

■ MELSEC-QnA Series

Setup System Area or Communication Information's Storing Address here.

Device	Bit Address	Word Address	Particulars	
Input Relay	X0000 ~ X1FFF	X0000 ~ X1FF0	*** 0	
Output Relay	Y0000 ~ Y1FFF	Y0000 ~ Y1FF0	*** 0	
Internal Relay	M00000 ~ M32767	M00000 ~ M32752	<u>÷16</u> 1	
Special Relay	SM0000 ~ SM2047	SM0000 ~ SM2032	÷16)	
Latch Relay	L00000 ~ L32767	L00000 ~ L32752	÷16)	
Annunciator	F00000 ~ F32767	F00000 ~ F32752	÷ 16)	
Edge Relay	V00000 ~ V32767	V00000 ~ V32752	÷16)	
Step Relay	S0000 ~ S8191	S0000 ~ S8176	÷16)	
Link Relay	B0000 ~ B7FFF	B0000 ~ B7FF0	*** 0	
Special Relay	SB000 ~ SB7FF	SB000 ~ SB7F0	*** 0]	
Timer (contact)	TS00000 ~ TS22527			
Timer (coil)	TC00000 ~ TC22527			
Aggregation Timer (contact)	SS00000 ~ SS22527			L/H
Aggregation Timer (coil)	SC00000 ~ SC22527			
Counter (contact)	CS00000 ~ CS22527			
Counter (coil)	CC00000 ~ CC22527			
Timer (current value)		TN00000 ~ TN22527		
Aggregation Timer (current value)		SN00000 ~ SN22527		
Counter (current value)		CN00000 ~ CN22527		
Data Register		D00000 ~ D25599	B i t 15	
Special Register		SD0000 ~ SD2047	Bit F)	
Link Register		W0000 ~ W63FF	Bit F	
Special Link Register		SW000 ~ SW7FF	B i t 15	
File Register (nomal)		R00000 ~ R32767	B i t 15] *1	
File Register (serial)		0R0000 ~ 0R7FFF 1R0000 ~ 1R7FFF	F_] *1	

^{* 1} When using the File Register, a Memory Card is necessary. Depending on the Memory Card being used, the File Register's device range differs.

Chapter 5 - PLC-GP Connection (Multi-link)

■ MELSEC-Q Series (A Mode CPU)

Setup System Area or Communication Information's Storing Address here.

Device	Bit Address	Word Address	Particulars	;
Input Relay	X0000 ~ X1FFF	X0000 ~ X1FF0	*** 0	
Output Relay	Y0000 ~ Y1FFF	Y0000 ~ Y1FF0	<u>***</u> 0]	
Internal Relay	M0000 ~ M8191	M0000 ~ M8176	<u>÷16</u>)	
Latch Relay	L0000 ~ L8191	L0000 ~ L8176	<u>÷16</u>	
Special Relay	M9000 ~ M9255	M9000 ~ M9240	<u>÷16</u>	
Annunciator	F0000 ~ F2047	F0000 ~ F2032	<u>÷16</u>)	
Link Relay	B0000 ~ B1FFF			
Timer (Contact)	TS0000 ~ TS2047			
Timer (Coil)	TC0000 ~ TC2047			L/H
Counter (Contact)	CS0000 ~ CS1023			
Counter (Coil)	CC0000 ~ CC1023			
Tim er (Current Value)		TN0000 ~ TN2047		
Counter (Current Value)		CN0000 ~ CN1023		
Data Register		D0000 ~ D8191	B i t 15	
Spcial Register		D9000 ~ D9255	B i t 15	
Link Register		W0000 ~ W1FFF	<u>ві t</u> F]	
File Register		R0000 ~ R8191	B i t 15 *1	

^{* 1} When using the File Register, a Memory Card is necessary. Depending on the Memory Card being used, the File Register's device range differs.

■ MELSEC-Q Series (Q Mode CPU)

Setup System Area or Communication Information's Storing Address here.

Device	Bit Address	Word Address	Particulars	
Input Relay	X0000 ~ X1FFF	X0000 ~ X1FF0	*** 0	
Output Relay	Y0000 ~ Y1FFF	Y0000 ~ Y1FF0	*** 0	
Internal Relay	M00000 ~ M32767	M00000 ~ M32752	÷ 16)	
Special Relay	SM0000 ~ SM2047	SM0000 ~ SM2032	÷ 16)	
Latch Relay	L00000 ~ L32767	L00000 ~ L32752	<u>÷ 16</u>)	
Annunciator	F00000 ~ F32767	F00000 ~ F32752	<u>÷16</u>)	
Edge Relay	V00000 ~ V32767	V00000 ~ V32752	÷16	
Step Relay	S0000 ~ S8191	S0000 ~ S8176	÷ 16)	
Link Relay	B0000 ~ B7FFF	B0000 ~ B7FF0	*** 0	
Special Relay	SB000 ~ SB7FF	SB000 ~ SB7F0	*** 0	
Timer (contact)	TS00000 ~ TS23087			
Timer (coil)	TC00000 ~ TC23087			
Aggregation Timer (contact)	SS00000 ~ SS23087			L/H
Aggregation Timer (coil)	SC00000 ~ SC23087			
Counter (contact)	CS00000 ~ CS23087			
Counter (coil)	CC00000 ~ CC23087			
Timer (current value)		TN00000 ~ TN23087		
Aggregation Timer (current value)		SN00000 ~ SN23087		
Counter (current value)		CN00000 ~ CN23087		
Data Register		D00000 ~ D25983	<u>ві t</u> 15	
Special Register		SD0000 ~ SD2047	B i t 15	
Link Register		W0000 ~ W657F	B i t F	
Special Link Register		SW000 ~ SW7FF	Bit F	
File Register (nomal)		R00000 ~ R32767	<u>ві t 15</u>] *1	
		0R0000 ~ 0R7FFF	F] *1	
File Register (serial)		1R0000 ~ 1R7FFF	_{Ві t} F 1	
3 (/	:	:	:	
		31R0000 ~ 31R67FF	B i t F 1	

^{* 1} When using the File Register, a Memory Card is necessary. Depending on the Memory Card being used, the File Register's device range differs.



• The device ranges given here are based on the maximum values possible for parameter settings. Depending on your CPU, usable device types and range may differ. Before using, refer to your CPU user manual.

5.1.4 Environment Setup

The following lists Digital's recommended PLC and GP communication settings.

■ MELSEC-A Series (When using Computer Link I/F)

G	P Setup	PLC (Data Register	r) Setup
Baud Rate	19200 bps	Baud Rate	19200
Data Length	7 bit	Data Length	7 bit
Stop Bit	2 bit	Stop Bit	2 bit
Parity Bit	Even	Parity Check Parity setting even/odd	Yes Even
Data Flow Control	ER Control		•
Communication Format	4-wire type	Channel setup	RS-422
		Mode Setup	8 (Format 4 protocol)
		Write during RUN	Yes
		Sumcheck	Yes
		Transmission area terminal resistance	Present
		Receiving area terminal resistance	Present
Unit No.	0	Station No.	0

\blacksquare MELSEC-FX Series (FX_{2N})

GP Setup		PLC (Data Register) Setup	
Baud Rate	19200 bps	Baud Rate	19200
Data Length	7	Data Length	7
Stop Bit	2	Stop Bit	2
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER Control		
Communication Format	4-wire type	Computer Link	RS485(RS422) I/F
Station No.	0	Station No.	0
		Sumcheck	Yes
		Protocol	Yes
		Mode	Format 4 protocol
*********		Header	No
		Terminator	No



• PLC's Station NO. data must be written in data register D8121 and other settings must be written in data register D8120. For details refer to Mitsubishi's "FX Communication Users Manual".

■ MELSEC-QnA Series

GP	Setup	PLC (Data R	egister) Setup
Baud Rate	19200 bps *1	Baud Rate	19200
Data Length	7 bit	Data Length	7 bit
Stop Bit	2 bit	Stop Bit	2 bit
Parity Bit	Even	Parity Check Parity setting even/odd	Yes Even
Data Flow Control	ER Control		
Communication Format	4-wire type	Mode Setup	4 (Format 4 protocol)
		Sumcheck	Yes
		Transmission area terminal resistance	Present
		Receiving area terminal resistance	Present
Unit No.	0	Station No.	0

^{*1} AJ71QC24N-R4, A1SJ71QC24N, AJ71QC24N can use a baud rate of 115.2kbps.



- CH1 and CH2 of a serial communication unit can communicate at the same time, given any of the following conditions.
- Refer to the MELSEC A Series table when using environment with MELSEC QnA and Computer Link I/F AJ71UC24 together.

Condition 1: The sticker on the top of the communication unit indicates the version is AB or later.

Condition 2: The date shown on the side of the communication unit indicates it was produced in September 1996 (9609) or later.

Condition 3: The communication ROM version is 7179M or later.

■ MELSEC-Q Series (using A Mode CPU Computer Link Unit)

GP Setup		Computer Link Unit Settings	
Baud Rate	19200 bps (fix ed)	Baud Rate	19200 bps
Data Length	7 bits (fixed)	Data Length	7 bits
Stop Bit	2 bits (fix ed)	Stop Bit	2 bits
Parity Bit	Even	Parity Check Parity setting even/odd	Yes Even
Data Flow Control	ER Control		
Communicaiton Format (RS-422)	4-wire type	Mode Setup (RS-422)	8 (Format 4 Protocol Mode)
		Write possible in RUN mode	Possible
		Sumcheck	Yes
Unit No.	0 (fix ed)	Station No.	0

■ MELSEC-Q Series (Q Mode CPU Serial Communication Unit)

GP Setup		Serial Communication Unit Settings *1	
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	7 bits	Data Length	7 bits
Stop Bit	2 bits	Stop Bit	2 bits
Parity Bit	Even	Parity Check Parity setting even/odd	Yes Even
Data Flow Control	ER Control		
Communication Format (RS-422)	4-wire type	Mode Setup (RS-422)	4 (Format 4 Protocol Mode)
		Sumcheck	Yes
Unit No.	0	Station No.	0

^{*1} The setting is made by Mitsubishi's GPP function software.

5.2 OMRON

5.2.1 System Structure

The following describes the system structure for connecting the GP to Omron PLCs.

▼Reference ▲

The Cable Diagrams mentioned in the following tables are listed in the section titled "5.2.2 Cable Diagrams".



If the PLC is used in RUN mode, "PLC COM. ERROR (02: 01)" may appear. The GP subsequently forces the PLC to enter MONITOR mode (data can be written to the PLC only while it is in RUN mode); data communications will not be affected.

■ **SYSMAC C Series** (using Link I/F)

CPU	Link I/F	Cable Diagram	GP
	Upper Link Unit	-	
C200H	C200H-LK202 *1	RS-422	
	C120-LK202-V1 *2	(Cable Diagram 1)	
C200HS	C200H-LK202 *1		
C500, C500F,	C120-LK202-V1 *2		
C1000H, C2000,	C 500-LK 201-V1 *1		GP Series
C2000H	C 500-LK 203 *1	RS-422	
C1000HF	C500-LK203 *1	(Cable Diagram 2)	
C120, C120F	C120-LK202-V1 *2	RS-422	
		(Cable Diagram 1)	
SRM1-C02	CPM1-CIF11	RS-422	
CPM1-20CDR-A		(Cable Diagram 5)	
CPM2A			

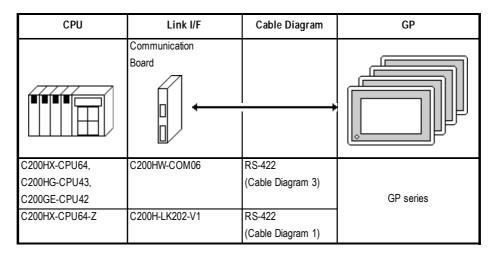
^{* 1} Base installation type.

^{* 2} Connected to the CPU.

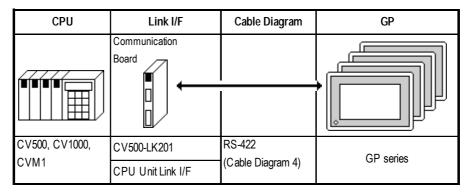


When you wish to run communications at a high speed, use the upper Link I/F (CPU type) C120-LK202-V1.

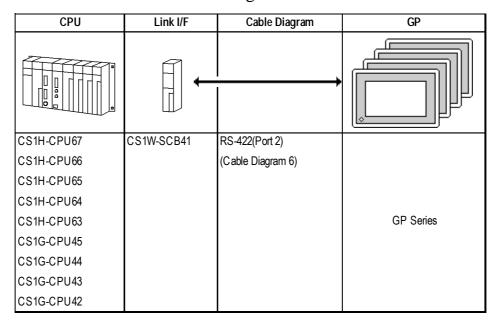
■ **SYSMAC- a Series** (using Link I/F)



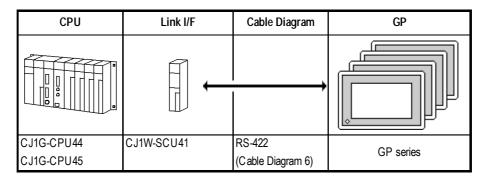
■ SYSMAC CV Series (using Link I/F and CPU Unit Link I/F)



■ SYSMAC CS1 Series < using Link I/F>



■ SYSMAC CJ Series (using Link I/F)

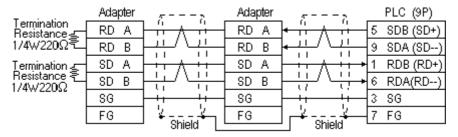


5.2.2 Cable Diagrams

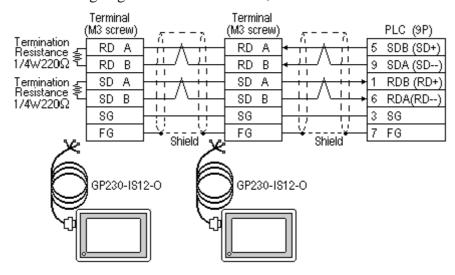
The cable diagrams shown below and the cable diagrams recommended by Omron may differ, however, using these cables for your PLC operations will not cause any problems.

Cable Diagram 1

• When using Digital's RS-422 connector terminal adapter GP070-CN10-O



• When using Digital's Multi-link Cable, GP230-IS12-O





Ground your PLC's FG terminal according to your country's applicable standard. For details, refer to the corresponding PLC manual.



- Pull out a small amount of the Transfer Cable's shield, make a wire out of it and connect it to the PLC's FG terminal.
- The GP230-IS12-O Cable FG terminal is not connected to the GP's FG.
- Be aware the A and B signals of the GP and PLC are opposite to each other.
- Place a Termination Resistor where the GP and PLC are positioned at either end of the cable. The Termination Resister is automatically setup when the PLC's Termination Resistor switch is turned ON.



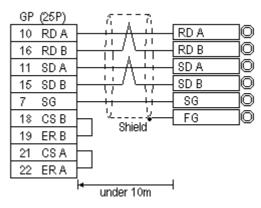
- For the RS-422 connection, use a cable length less than 500m.
- As a general rule, connect the PLC at either end of the circuit.





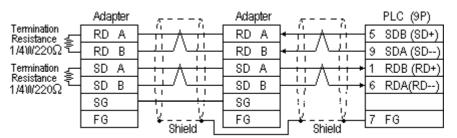
When making your own cable connections, we recommend using Hirakawa Densen's H-9293A (CO-HC-ESV-3P*7/0.2).

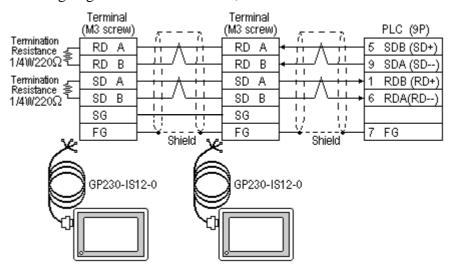
The cable connection lines are as illustrated below. The cables between the GP and the terminals should be less than 10 meters.



Cable Diagram 2

• When using Digital's RS-422 connector terminal adapter GP070-CN10-O







Ground your PLC's FG terminal according to your country's applicable standard. For details, refer to the corresponding PLC manual.



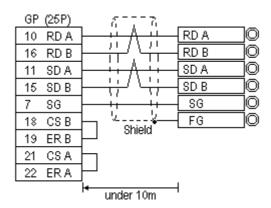
- Pull out a small amount of the Transfer Cable's shield, make a wire out of it and connect it to the PLC's FG terminal.
- The GP230-IS12-O Cable FG terminal is not connected to the GP's FG.
- Be aware the A and B signals of the GP and PLC are opposite to each other.
- Place a Termination Resister at both ends of the cable. The termination Resister is automatically setup when the PLC's Termination Resister switch is turned ON.
- As a general rule, connect the PLC at either end of the circuit.





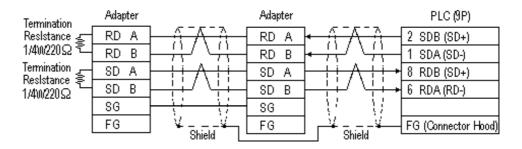
When making your own cable connections, we recommend using Hirakawa Densen's H-9293A (CO-HC-ESV-3P*7/0.2).

The cable connection lines are as illustrated below. The cables between the GP and the terminals should be less than 10 meters.

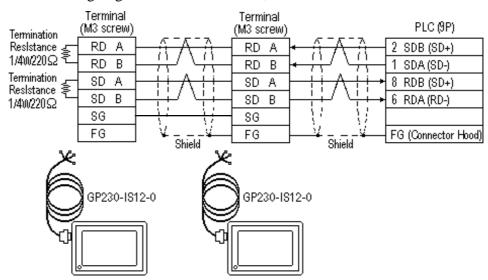


Cable Diagram 3

• When using Digital's RS-422 connector terminal adapter GP070-CN10-O



• When using Digital's Multi-link Cable, GP230-IS12-O





Ground your PLC's FG terminal according to your country's applicable standards. For details, refer to the corresponding PLC manual.



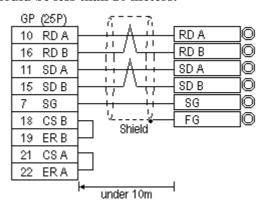
- Pull out a small amount of the Transfer Cable's shield, make a wire out of it and connect it to the PLC's FG terminal.
- The GP230-IS12-O Cable FG terminal is not connected to the GP's FG.
- Be aware the A and B signals of the GP and PLC are opposite to each other.
- Place a Termination Resistor at both ends of the cable. The Termination Resistor is automatically setup when the PLC's Termination Resistor switch is turned ON.
- As a general rule, connect the PLC at one end of the circuit.





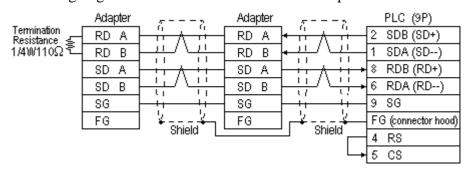
When making your own cable connections, we recommend using Hirakawa Densen's H-9293A (CO-HC-ESV-3P*7/0.2).

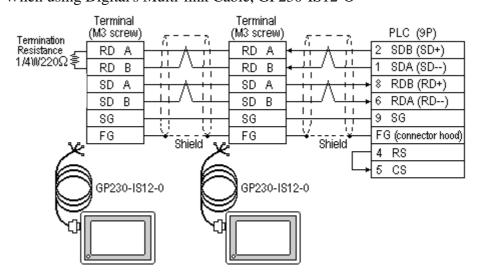
The cable connection lines are shown below. The cables between the GP and the terminals should be less than 10 meters.



Cable Diagram 4

• When using Digital's RS-422 connector terminal adapter GP070-CN10-O







Ground your PLC's FG terminal according to your country's applicable standards. For details, refer to the corresponding PLC manual.



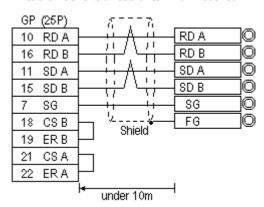
- Pull out a small amount of the Transfer Cable's shield, make a wire out of it and connect it to the PLC's FG terminal.
- Setup the PLC's RS-232C/422 toggle switch as RS-422.
- An Omron connector (XM2A-0901) and connector hood(XM2S-0911) is included with each CV500/CV1000 CPU unit. Other connectors are not compatible.
- The GP230-IS12-O Cable FG terminal is not connected to the GP's FG.
- Be aware the A and B signals of the GP and PLC are opposite to each other.
- Place a Termination Resistor at both ends of the cable. The Termination Resistor is automatically setup when the PLC's Termination Resistor switch is turned ON.
- As a general rule, connect the PLC at one end of the circuit.





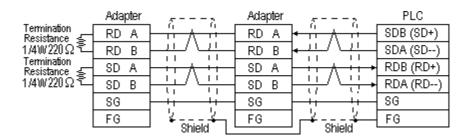
When making your own cable connections, we recommend using Hirakawa Densen's H-9293A (CO-HC-ESV-3P*7/0.2).

The cable connection lines are as illustrated below. The cables between the GP and the terminals should be less than 10 meters.

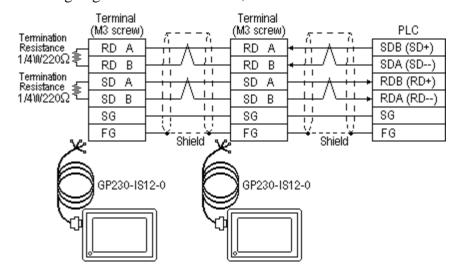


Cable Diagram 5

• When using Digital's RS-422 connector terminal adapter GP070-CN10-O



• When using Digital's Multi-link Cable, GP230-IS12-O

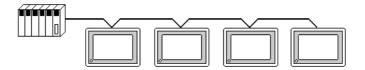




Ground your PLC's FG terminal according to your country's applicable standards. For details, refer to the corresponding PLC manual.



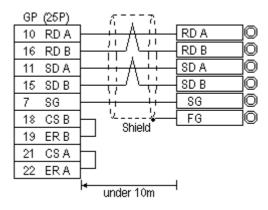
- Pull out a small amount of the Transfer Cable's shield, make a wire out of it and connect it to the PLC's FG terminal.
- Be aware the A and B signals of the GP and PLC are opposite to each other.
- Place a Termination Resistor at both ends of the cable. The Termination Resistor is automatically setup when the PLC's Termination Resistor switch is turned ON.
- As a general rule, connect the PLC at one end of the circuit.





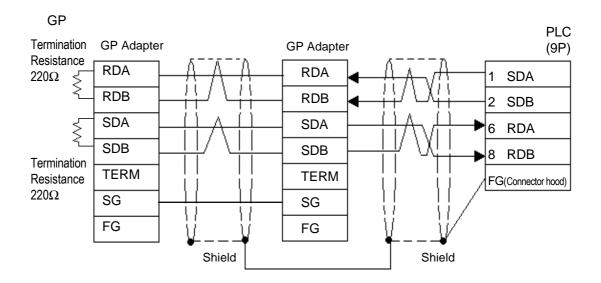
When making your own cable connections, we recommend using Hirakawa Densen's H-9293A (CO-HC-ESV-3P*7/0.2).

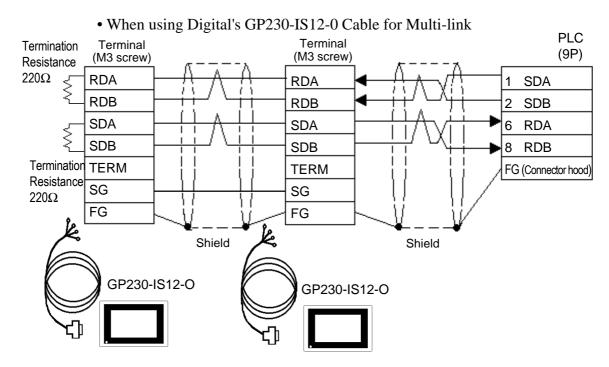
The cable connection lines are shown below. The cables between the GP and the terminals should be less than 10 meters.



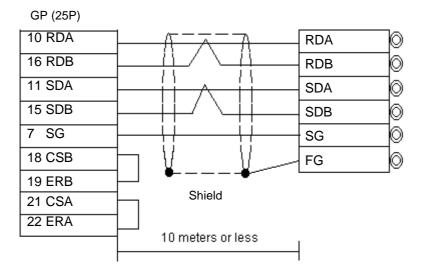
Cable Diagram 6

• When using Digital's RS-422 connector terminal adapter GP070-CN10-0





• When making your own cable instead of using GP230-IS12-0





- Pull out a small amount of the Transfer Cable's shield, make a wire out of it and connect it to the PLC's FG terminal.
- GP230-IS12-0 cable's FG terminal is not connected to GP's FG terminal.
- Be aware the A and B signals of the GP and PLC are opposite to each other.
- Place a Termination Resistor where the GP and PLC are positioned at either end of the cable.
- The PLC's termination resistance will be automatically set when the board's Termination Resistance Switch is turned ON.
- As a general rule, connect the PLC on either end of the circuit.
- RS-422 cables must be 500 meters or less.
- The Hirakawa Hewtech's CO-HC-ESV-3PX7/0.2 cable is recommended for this connection.

5.2.3 Supported Devices

The following describes the range of devices supported by the GP.

■ SYSMAC C Series

Setup System Area or Communication Information's Storing Address here.

Device	Bit Address	Word Address	Particulars	
I/O Relay	00000 ~ 51115	000 ~ 511		
Internal Hold Relay	00000 31113	000 311		
Analog Setup Value Storage Area	22000~ 22315	220 ~ 223		
Data Link Relay	LR0000 ~ LR6315	LR00 ~ LR63		
Special Hold Relay	24400 ~ 25515	244 ~ 255	*1	
Auxilary Memory Relay	AR0000 ~ AR2715	AR00 ~ AR27		L/H
Hold Relay	HR0000 ~ HR9915	HR00 ~ HR99		
Timer (contact)	TIM000 ~ TIM511			
Counter (contact)	CNT000 ~ CNT511			
Timer (current value)		TIM000 ~ TIM511		
Counter (current value)		CNT000 ~ CNT511		
Data Memory		DM0000 ~ DM9999	Bit 1 51	

^{* 1} Use the I/O Relay/Internal Hold Relay for setting up this data.



The procedure for writing bits for T- and W-tags is different for the GP-*30, the GP-*50, and the GP-70 series units:

When performing the bit write operation (other than *Reverse*) using T and W tags on the GP-*30 Series, the corresponding word address, other than the selected bits, is cleared.



The method of writing bits will differ depending on the GP series.

Important <GP-*30 series>

When the bit write operation (other than *Reverse*) is performed, the corresponding word address will set the bits to 0 (except the designated bits).

<Except GP-*30 series>

When the bit write operation is performed, the GP reads the PLC's corresponding word address and turns a bit ON, then send back to PLC. Do not write to the word address from the ladder program in the middle of this operation.

• When running a GP-*30 Series ladder program, be aware of the above points.

■ SYSMAC-\alpha Series

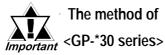
Setup System Area or Communication Information's Storing Address here.

Device	Bit Address	Word Address	Particulars	
I/O Relay I	00000 ~ 02915	000 ~ 029		
I/O Relay II	30000 ~ 30915	300 ~ 309		
Internal Hold Relay I	03000 ~ 23515	030 ~ 235		
Internal Hold Relay II	31000 ~ 51115	310 ~ 511		
Special Hold Relay I	23600 ~ 25507	236 ~ 255		
Special Hold Relay II	25600 ~ 29915	256 ~ 299		
Hold Relay	HR0000 ~ HR9915	HR00 ~ HR99		L/H
Auxilary Memory Relay	AR0000 ~ AR2715	AR00 ~ AR27		L/II
Link Relay	LR0000 ~ LR6315	LR00 ~ LR63		
Timer (contact)	ПМ000 ~ ПМ511			
Counter (contact)	CNT000 ~ CNT511			
Timer (current value)		ПМ000 ∼ ПМ511		
Counter (current value)		CNT000 ~ CNT511		
Data Memory		DM 0000 ~ DM 6655	Bit 1 51	



The procedure for writing bits for T- and W-tags is different for the GP series.

When performing the bit write operation (other than Reverse) using T and W tags on the GP-*30 Series, the corresponding word address, other than the selected bits, is cleared.



The method of writing bits will differ depending on the GP series.

When the bit write operation (other than Reverse) is performed, the corresponding word address will set the bits to 0 (except the designated bits).

<Except GP-*30 series>

When the bit write operation is performed, the GP reads the PLC's corresponding word address and turns a bit ON, then send back to PLC. Do not write to the word address from the ladder program in the middle of this operation.

When running a GP-*30 Series ladder program, be aware of the above points.

■ SYSMAC CV Series

Setup System Area or Communication Information's Storing Address here.

Device	Bit Address	Word Address	Particulars	
I/O Relay	00000 ~ 19915	000 ~ 199		
Internal Hold Relay	00000 ~ 19915	000 ~ 199		
Sysmac BUS/2 Remote I/O Relay	020000 ~ 099915	0200 ~ 0999		
Data Link Relay	100000 ~ 119915	1000 ~ 1199		
Special Hold Relay	A00000 ~ A51115	A000 ~ A511		
Hold Relay	120000 ~ 149915	1200 ~ 1499		
Internal Aux. Relay	190000 ~ 229915	1900 ~ 2299		L/H
SYSBUS Remote I/O Relay	230000 ~ 255515	2300 ~ 2555		
Timer (contact)	T0000 ~ T1023			
Counter (contact)	C0000 ~ C1023			
Timer (current value)		T0000 ~ T1023		
Counter (current value)		C0000 ~ C1023		
Data Memory		D0000 ~ D9999	<u>Bit 1 51</u>	



- · Write operations cannot be performed on the Timer and Counter bit devices.
- · Cannot use the Data Memory extended addresses (E).



- The procedure for writing bits for T- and W-tags is different for the GP series.
- When performing the bit write operation (other than *Reverse*) using T and W tags on the GP-*30 Series, the corresponding word address, other than the selected bits, is cleared.



• The method of writing bits will differ depending on the GP series.

<GP-*30 series>

When the bit write operation (other than *Reverse*) is performed, the corresponding word address will set the bits to 0 (except the designated bits).

<Except GP-*30 series>

When the bit write operation is performed, the GP reads the PLC's corresponding word address and turns a bit ON, then send back to PLC. Do not write to the word address from the ladder program in the middle of this operation.

• When running a GP-*30 Series ladder program, be aware of the above points.

■ SYSMAC CS1/CJ Series

In this list, "Exp." means "Expansion".

Setup System Area or Communication Information's Storing Address here.

Device	Bit Address	Word Address	Particulars	
Channel I/O	000000 ~ 614315	0000 ~ 6143		
Internal Auxiliary Relay	W00000 ~ W51115	W000 ~ W511		
Hold Relay	H00000 ~ H51115	H000 ~ H511		
Special Auxiliary Relay	A00000 ~ A95915	A000 ~ A959	*1	
Timer(Contact)	T0000 ~ T4095		*3	
Counter(Contact)	C0000 ~ C4095		*3	
Timer(Current)		T0000 ~ T4095		
Counter(Current)		C0000 ~ C4095		L/H
Data Memory	D0000000 ~ D3276715	D00000 ~ D32767	*2	
Exp. Data Memory (E0 ~ EC)	E00000000 ~ EC3276715	E000000 ~ EC32767	*4	
Exp. Data Memory (Current Bank)		EM00000 ~ EM32767	B : t15]	
Task Flag		TK0 ~ TK30	÷ 2] B ; t 15] *3	
Index Register		IR0 ~ IR15	B : 131] *3	
Data Register		DR0 ~ DR15	B i t 15 *3	

^{*1} Addresses A000 to A477 cannot be written to.

When using the Communication Board (CS1W-SCB21/41), addresses D32000 to D32767 are used for PLC settings, should not be written to from the GP.

▼ Reference For details about each device, refer to Omron's SYSMAC CS1 /CJ Series Communication Board CS1W-SCB21-/41 Communication CS1W-SCU21/CJ1W-SCU41 and CJ1W-SCU41 Users Manual.

^{*2} When using the Communication Unit (CS1W-SCU21/CJ1W-SCU41), addresses D30000 to D31599, since they are used for PLC system settings, should not be written to from the GP.

^{*3} Cannot be written to.

^{*4} The range of Expansion Data Memory varies depending on the CPU type.

5.2.4 Environment Setup

The following tables contain Digital's recommended PLC and GP communication settings. The recommended settings are for an RS-232C connection.

■ SYSMAC C Series

GP Setup		Upper Link Unit Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	7 bits	Data Bit	7 bits
Stop Bit	2 bits	Stop Bit	2 bits
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER Control		
Communication Format	4-wire type	Communication Format	RS-422
		Command Level	Level 1,2,3 is valid
		Relation	1:N
		DC +5V power supply	No
		CTS Setup	Normally On
Unit. No.	0	Station Number	0

■ SYSMAC-\alpha Series

GP Setup		PLC Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	7 bits	Data Bit	7 bits
Stop Bit	2 bits	Stop Bit	2 bits
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER Control	-	
Communication Format	4-wire ty pe	Change dip SW 1 to indicate either RS-422 or 485 cable (2- wire or 4-wire type)	4
Unit. No.	0	Station Number	0

■ SYSMAC CV Series

GP Setup		PLC Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	7 bits	Data Bit	7 bits
Stop Bit	2 bits	Stop Bit	2 bits
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER Control		
Communication Format	4-wire type	Communication Format	RS-422
Unit. No.	0	Station Number	0

■ SYSMAC CS1/CJ Series

GP Setup		PLC Setup	
Baud Rate	19200	Baud Rate	19200
Data Length	7	Data Length	7
Stop Bit	2	Stop Bit	2
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER	-	-
Communication Format (using RS422)	4-wire type	WIRE (2-wire/4-wire type Switch)	4-wire type
-	-	TERM (Termination Resistance Switch)	Termiantion Resistance ON
Unit.No	0	Upper Link Station No.	0
-	-	Serial Communicaion mode	Upper Link
-	-	Communication Delay Time	0
-	-	CTS Control	None

5.3 Hitachi

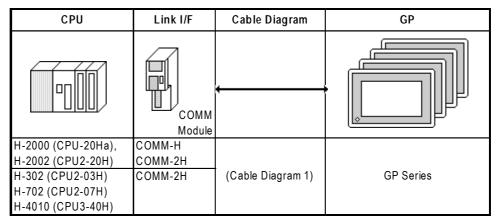
5.3.1 System Structure

The following describes the system structure for connecting the GP to Hitachi PLCs.

Reference The Cable Diagrams mentioned in the following tables are listed in the section titled "5.3.2 Cable Diagrams".

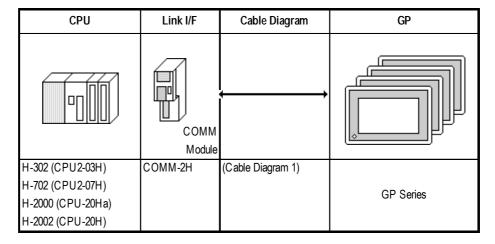
■ **HIDIC H Series** (using Link I/F)

Procedure 1 for transmission control



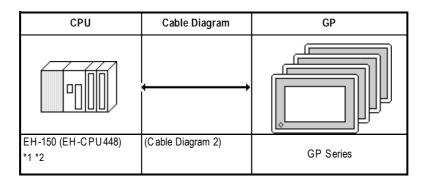
■ HIDIC H Series/COMM-2H (using Link I/F)

Procedure 2 for transmission control



■ **HIDIC H Series** (CPU Direct Connection)

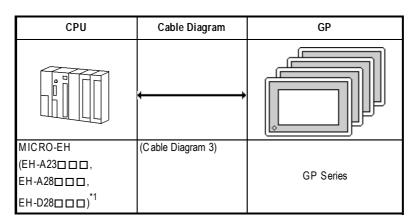
Procedure 1 for transmission control



^{*1} Connect to the CPU module's Serial Port 1.

■ MICRO-EH (Port 2 on CPU)

Procedures 1 and 2 for transmission control



^{*1} \square varies depending upon the functional specification of the CPU.

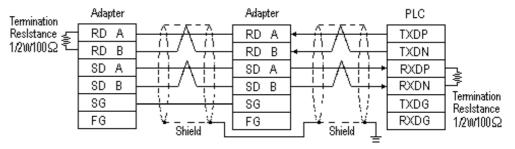
^{*2} When connecting to a GP, a Hitachi EH-RS05, a conversion cable is required between the modular jack (8-pin) and the Dsub connector (5-pin) are required.

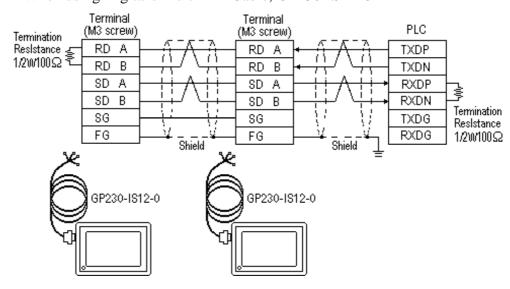
5.3.2 Cable Diagrams

The cable diagrams illustrated below and the cable diagrams recommended by Hitachi Ltd. may differ, however, using these cables for PLC operation will not cause any problems.

Cable Diagram 1

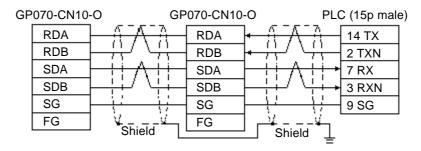
• When using Digital's RS-422 connector terminal adapter GP070-CN10-O

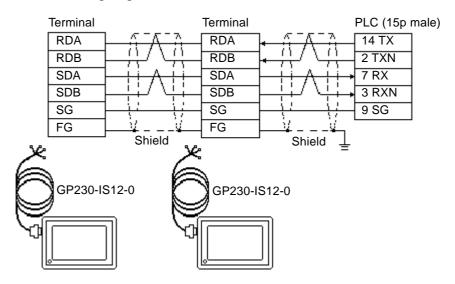




Cable Diagram 2

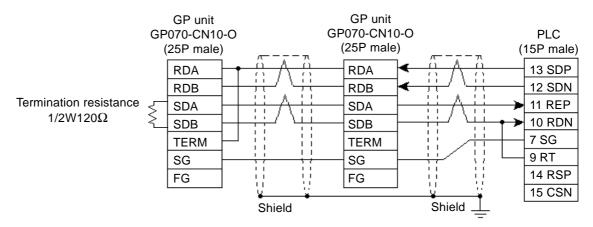
• When using Digital's RS-422 connector terminal adapter GP070-CN10-O

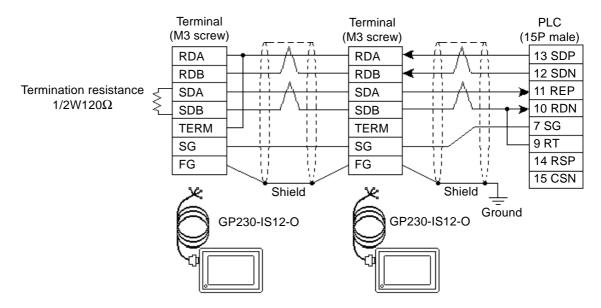




Cable Diagram 3 (RS-422 4-wire type)

• When using Digital's RS-422 connector terminal adapter GP070-CN10-O



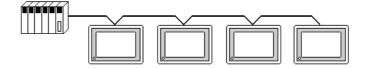




Ground your PLC's FG terminal according to your country's applicable standard. For details, refer to the corresponding PLC manual.



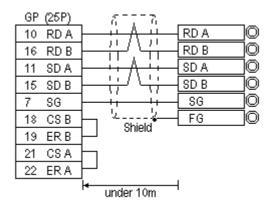
- Pull out a small amount of the Transfer Cable's shield, make a wire out of it and connect it to the PLC's FG terminal.
- The GP230-IS12-O Cable FG terminal is not connected to the GP's FG.
- Place a Termination Resistor at both ends of the cable.
- When using the COMM module, set its mode No. to "2".
- If an error occurs during data transmission, the program will be "retried" (resent), thereby delaying the occurrence/display of a transmission error until the retrying is finished.
- If the GP and the PLC's program consoles are operated simultaneously, the GP may generate a [Host SIO error (02: 37)] and the GPCL may generate a [CPU Exclusive Use Error]. In this case, the GP will automatically restart. The GPCL should be restarted.
- For the RS-422 connection, use a cable length less than 250m.
- As a general rule, connect the PLC at one end of the circuit.





 When making your own cable connections, we recommend using Hitachi Densen's KPEV-SB-3P 0.5 mm².

The cable connection lines are as illustrated below. The cables between the GP and the terminals should be less than 10m.



5.3.3 Supported Devices

The following describes the range of devices supported by the GP.

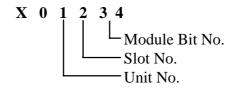
■ HIDIC H (HIZAC H) **Series**

Setup System Area or Communication Information's Storing Address here.

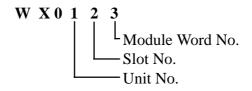
Device	Bit Address	Word Address	Particulars	
External Input	X00000 ~ X05A95	X00000 ~ X05A95 WX0000 ~ WX05A7		
External Output	Y00000 ~ Y05A95	WY0000 ~ WY05A7	*1	
Remote Input Relay	X10000 ~ X49A95	WX1000 ~ WX49A7	*1	
Remote Output Relay	Y10000 ~ Y49A95	WY1000 ~ WY49A7	*1	
Internal Output	R000 ~ R7BF			
CPU Link Area 1	L0000 ~ L3FFF	WL000 ~ WL3FF		
CPU Link Area 2	L10000 ~ L13FFF	WL1000 ~ WL13FF		
Data Area	M0000 ~ M3FFF	WM000 ~ WM3FF		
On Delay Timer	TD000 ~ TD1023			
Single Shot Timer	SS000 ~ SS1023			L/H
Watch Dog Timer	WDT000 ~ WDT1023			
Monostable Timer	MS000 ~ MS1023			
Accumulation Timer	TMR000 ~ TMR1023			
Up Counter	CU000 ~ CU2047			
Ring Counter	RCU000 ~ RCU2047			
Up/Down Counter	CT000 ~ CT2047			
Timer/Counter (Elapsed Time)		TC000 ~ TC2047		
Word Internal Output		WR0000 ~ WRC3FF		
Network Link Area		WN0000~WN7FFF	Bit F	

^{*1} Write the data as follows.

E.g. External Input unit No. 1, Slot No. 2, Module Bit No. 34



E.g. External Input unit No. 1, Slot No. 2, Module Word No. 3.





If the first CPU link (L0000 to L3FFF) and the second CPU link (L10000 to L13FFF) are used with any GP-PRO/PB III for Windows drawing software Ver. 1.0, enter L00000 to L03FFF for the first CPU link; and enter L100000 to L103FFF for the second CPU link by adding a zero to each one.

If you use Ver. 2.0 or later GP-PRO/PB III for Windows screen editor software is used, enter the addresses shown in the previous page's table.

If you upgrade your GP-PRO/PB III for Windows Ver. 1.0 software to Ver. 2.0 or later, your internal data will not be affected. Only the input method will change.

5.3.4 Environment Setup

The following lists Digital's recommended PLC and GP communication settings.

■ **HIDIC H Series** Procedure 1 for transmission control

GP Setup		COMM Module Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	7 bits	Data Bit	7 bits
Stop Bit	1 bit	Stop Bit	1 bit
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER Control		
Communication Format	A wire type	Channel Setup	RS-422
Communication Format	4-wire type	Mode Setup	2
		Sum Check	Yes
Unit No.	1	Station Number Setting	1

■ HIDIC H Series/COMM-2H Procedure 2 for transmission control

GP Setup		COMM Module Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	7 bits	Data Bit	7 bits
Stop Bit	1 bit	Stop Bit	1 bit
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER Control		
Communication Format	4-wire type	Channel Setup Mode Setup	RS-422 9
-		Sum Check	Yes
Unit. No.	1	Station Number Setting	1

■ HIDIC EH150 Series Procedure 1 for transmission control

GP Setup		PLC Setup	
Baud Rate	19200 bps	Baud Rate *1	19200 bps
Data Length	7 bits	Data Bit	7 bits
Stop Bit	1 bit	Stop Bit	1 bit
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER Control		
Communication Format	4-wire type	Mode Setting Switch	SW1: OFF
			(Normal mode)
			SW5: ON
			(Exclusive mode)
			SW7 : OFF
			(Normal Operation mode)
			SW8: OFF
			(Normal Operation mode)
	•	Exclusive Port Setting	Special Internal Output set to
			WRF037 *3
Unit No.	0		

^{*1} Set the Mode Setting Switch. (SW3, 4 : Port 1 setting)

■ MICRO-EH Series

GP Setup		PLC Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	7 bits (fix ed)		
Stop Bit	1 bit (fix ed)		
Parity Bit	Even (fixed)		
Data Flow Control	ER Control		
Communication Format	4-wire type		
Unit No.	0		
		Port 2 Setup	Special Internal Output
			Set to WRF03D *1

^{*1} Transmission control procedure 1 (with station number) (192000 bps): A200H Transmission control procedure 2 (with station number) (192000 bps): E200H

^{*2} Depending on the your Interface and Procedure, varies as shown below. RS-422 Procedure 1 with unit No.: AlxxH (xx indicates GP's Unit No.) RS-422 Procedure 2 with unit No.: ElxxH (xx indicates GP's Unit No.)



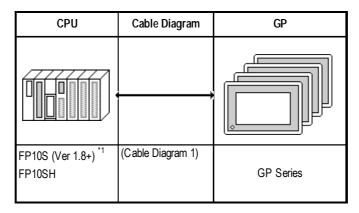
5.4 Matsushita Electric

5.4.1 System Structure

The following describes the system structure for connecting the GP to Matsushita Electric PLCs.

TReference The Cable Diagrams mentioned in the following tables are listed in the section titled "5.4.2 Cable Diagrams".

■ **MEWNET Series** (using CPU unit Link I/F)



* 1 Connect to COM port.

An RS-232C/422 adapter is necessary (see below) for connections. Use the RS-232C/422 adapter's 422 side as the terminal, and power other than from the communication line, obtained externally.



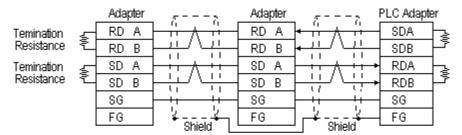
5.4.2

Cable Diagrams

The cable diagrams illustrated below and the cable diagrams recommended by Matsushita Electric may differ, however, using these cables for your PLC operations will not cause any problems.

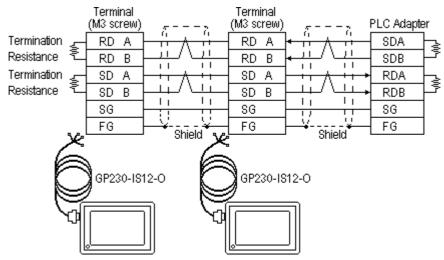
Cable Digram 1

When using Digital's RS-422 connector terminal adapter GP070-CN10-O



* Check the PLC Adapter specifications for the Temination Resistance

When using Digital's Multi-link Cable, GP230-IS12-O



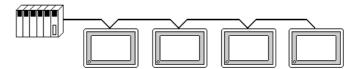
* Check the PLC Adapter specifications for the Termination Resistance



Ground your PLC's FG terminal according to your country's applicable standard. For details, refer to the corresponding PLC manual.



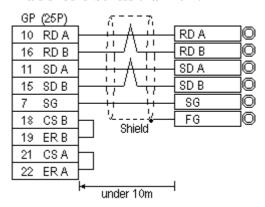
- Pull out a small amount of the Transfer Cable's shield, make a wire out of it and connect it to the PLC's FG terminal.
- The GP230-IS12-O Cable FG terminal is not connected to the GP's FG.
- Be aware the A and B signals of the GP and PLC are opposite to each other.
- Place a Termination Resistor at bothe ends of the cable.
- As a general rule, connect the PLC on one end of the circuit.





When making your own connections, Hitachi Densen's CO-SPEV-SB(A)3P*0.5 cable is recommended.

The cable connection lines are as illustrated below. The cables between the GP and the terminals should be less than 10m.



Supported Devices

The following describes the range of devices supported by the GP.

■ MEWNET Series

Setup System Area here.

Device	Bit Address	Word Address	Particulars	
Input Relay	X0000 ~ X511F	WX000 ~ WX511	*1	
Output Relay	Y0000 ~ Y511F	WY000 ~ WY511		
Internal Relay	R0000 ~ R886F	WR000 ~ WR886		
Link Relay	L000 ~ L639F	WL000 ~ WL639		
Special Relay	R9000 ~ R910F	WR900 ~ WR910	*1	
Timer (contact)	T0000 ~ T3071		*1	
Counter (contact)	C0000 ~ C3071		*1	L/H
Timer/Counter (elapsed time)		EV0000 ~ EV3071	*1	
Timer/Counter (setup value)		SV0000 ~ SV3071	*1	
Data Register		DT0000 ~ DT10239	Bit 1 5 1 *2	
Link Register		Ld0000 ~ Ld8447	Bit 1 5 1	
File Register		FL00000 ~ FL32764	Bit 1 5 1	
Special Data Register		DT90000~DT90511	Bit 1 5 *3	

^{*1} Cannot perform data write.

^{*2} Some CPU types use this device's word address DT09000 and higher as the Special Data Register.

^{*3} Only the FP10SH, FP10S, FP10 and FP2 can use this device.

5.4.4 Environment Setup

The following lists Digital's recommended PLC and GP communication settings.

■ FP10S/FP10SH

GP Setup		COM Port	Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps	
Data Length	8 bits	Data Length	8 bits	
Stop Bit	1 bit	Stop Bit	1 bit	
Parity Bit	Odd	Parity Bit	Odd	
Data Flow Control	ER Countrol			
Communication Format	4-wire type			
		Environ Task Allowable Time Setup	K5000	
Unit No.	1	Unit No.	1	

5.5 Yokogawa Electric

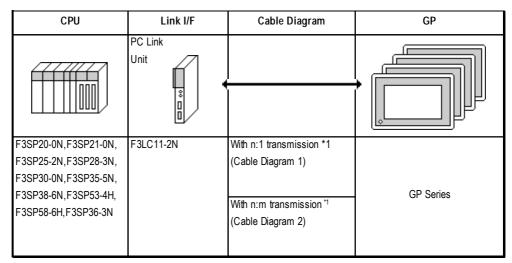
5.5.1 System Structure

The following describes the system structure for connecting the GP to Yokogawa Electric PLCs.

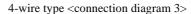
YReference

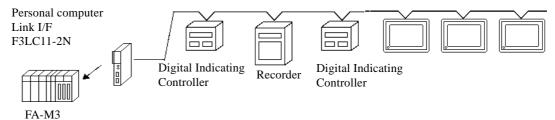
The Cable Diagrams mentioned in the following tables are listed in the section titled "5.5.2 Cable Diagrams".

■ FACTORY ACE Series/FA-M3 (using Link I/F)



* 1 The diagram below shows the system configuration recommended to allow n:m data transmission, using the host link protocol, between the Yokogawa Electric PLC [FA-M3] (or equipment supporting the same protocol - m units), and the GP (n units).







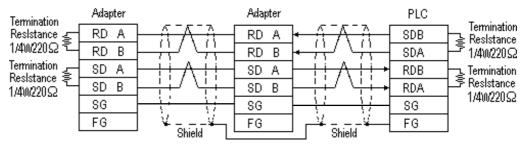
- Hereafter, equipment (i.e. a digital Indicating <UT37/38/2000> or recorder <mR series>) which supports either the FA-M3 or an identical protocol, will be called PA equipment.
- According to this PLC's design specifications, PA equipment can utilize from No. 1 through No.16 device positions, however, Nos. 17 and above cannot be used.

5.5.2 Cable Diagrams

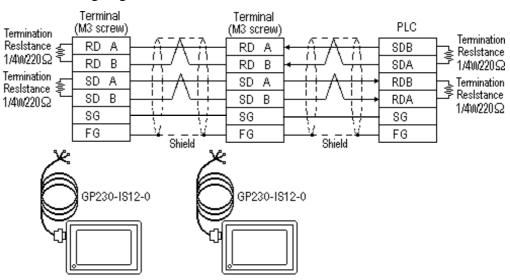
The cable lines illustrated below and the cable lines recommended by Yokogawa Electric may differ, however, using these cables for your PLC operations will not cause any problems.

Cable Diagram 1

• When using Digital's RS-422 connector terminal adapter GP070-CN10-O



• When using Digital's Multi-link Cable, GP230-IS12-O

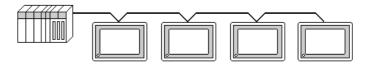




Ground your PLC's FG terminal according to your country's applicable standard. For details, refer to the corresponding PLC manual.



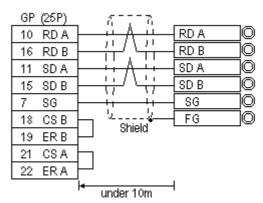
- Pull out a small amount of the Transfer Cable's shield, make a wire out of it and connect it to the PLC's FG terminal.
- The GP230-IS12-O Cable FG terminal is not connected to the GP's FG.
- Connect a Termination Resistor at both ends of the cable.
- As a general rule, connect the PLC on one end of the circuit.





When making your own cable connections, we recommend using Hitachi Densen's CO-SPEV-SB (A) 3P* 0.5SQ.

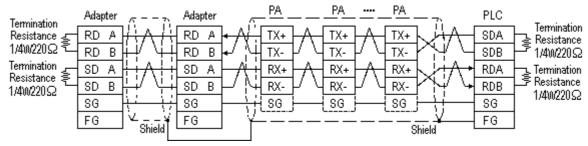
The cable connection lines are as illustrated below. The cables between the GP and the terminals should be less than 10m.



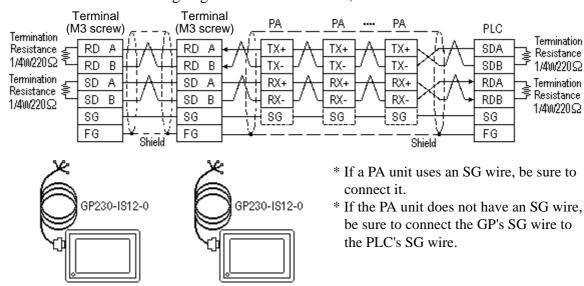
Cable Diagram 2

The following diagram is an example of the connection between the GP and PLC, showing both sides/ends of the wiring. Be sure to install terminating resistors as shown, on both side of the equipment.

• When using Digital's RS-422 connector terminal adapter GP070-CN10-O



- * If a PA unit uses an SG wire, be sure to connect it.
- * If the PA unit does not have an SG wire, be sure to connect the GP's SG wire to the PLC's SG wire.
- When using Digital's Multi-link Cable, GP230-IS12-O



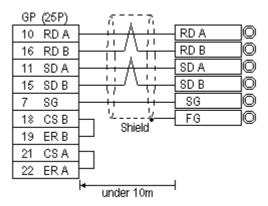


- The naming/labeling of the A and B pins on the GP side is the reverse of the PLC side.
- Set up the personal computer Link I/Fs, using station(s) No. 1 to No.32.
- Set up unique numbers for each piece of PA equipment to be connected to the GP. If the same number is used by 2 or more pieces of PA equipment, errors will occur.
- Be sure that the data transmission settings between each GP (nunits) and its related PA equipment (munits) are identical.
- Ground your PLC's FG terminal according to your country's applicable standard.
- Pull out a small amount of the Transfer Cable's shield, make a wire out of it and connect it to the PLC's FG terminal.
- The GP230-IS12-O Cable FG terminal is not connected to the GP's FG.
- Be aware the A and B signals of the GP and PLC are opposite to each other.
- Place a Termination Resistor at either end of the cable.
- As a general rule, connect the PLC on either end of the circuit.



When making your own cable connections, we recommend using Hitachi Densen's CO-SPEV-SB (A) 3P* 0.5SQ.

The cable connection lines are as illustrated below. The cables between the GP and the terminals should be less than 10m.



5.5.3 Supported Devices

The following describes the range of devices supported by the GP.

■ FA-M3 (n:1 communication)

Setup System Area or Communication Information's Storing Address here.

Device	Bit Address	Word Address	Particulars
Input Relay	X00201 ~ X71661	X00201 ~ X71649	÷16+]) '1'2
Output Relay	Y00201 ~ Y71664	Y00201 ~ Y71649	<u>÷16∓</u>]) "
Internal Relay	100001 ~ 132768	100001 ~ 132753	÷16∓]]
Joint Relay	E0001 ~ E4096	E0001 ~ E4081	<u>÷16∓</u>])
Special Relay	M0001 ~ M9984	M0001 ~ M9969	<u>÷16∓</u>])
Link Relay	L00001 ~ L78192	L00001 ~ L78177	<u>÷16∓</u>]]
Timer (contact)	T0001 ~ T3072		*2
Counter (contact)	C0001 ~ C3072		*2
Timer (current value)		TP0001 ~ TP3072	
Timer (setup value)		TS0001 ~ TS3072	*2
Counter (current value)		CP0001 ~ CP3072	D'
Counter (setup value)		CS0001 ~ CS3072	*2
Data Register		D0001 ~ D32768	Bit] 5]
		B00001 ~ B65536	
File Register		B065537 ~ B131072	Bit 15] *3*4
The register	_	B131073 ~ B196608	BILLOI
		B196609 ~ B262144	
Joint Register		R0001 ~ R4096	Bit] 5]
Special Register		Z001 ~ Z1024	Bit 1 51
Link Register		W00001 ~ W74096	<u>Bit 151</u> *⁵

^{*1} The value of the terminal number (bit), 01~49, of the last two digits for the Input Relay and

Output Relay can only be a multiple of 16 + 1.

E.g. For X00201

$$X 002 01$$
Slot No. Terminal No.

(Continued on next page)

^{*2} Cannot perform data write.

*3 File registers are each 65,535 words on your GP application.

You cannot extend over more than a single data "block" when performing the following features.

Be sure to set these features' settings so they are within a single data block.

- 1) "a-tag" settings
- 2) Performing Block read/write from Pro-Server
- 3) Desginating the "Convert from" and "Conver to" address for the "Address Conversion" features
- *4 When using a PC Link module, only Link Register up to B99999 can be used.
- *5 A total of up to 4,096 link registers can be used.



• Write the CPU Number (1~4) in front of the device name.

E.g. For Internal Relay I0001, CPU #3:

• The range of device that can be used will vary depending on the type of PLC. For detailed information refer to the Yokogawa's Sequnce CPU manual.

■ FA-M3 (n:m communication)

Setup System Area or Communication Information's Storing Address here.

Device	Bit Address	Word Address	Particulars	
Input Relay	X00201 ~ X71364	X00201 ~ X71349	<u>÷16∓</u>]) '''	2
Output Relay	Y00201 ~ Y71364	Y00201 ~ Y71349	<u>÷16∓</u>]) `	1
Internal Relay	10001 ~ 116384	10001 ~ 116369	÷16+1)	
Joint Relay	E0001 ~ E4096	E0001 ~ E4081	<u>÷16∓</u>])	
Special Relay	M0001 ~ M9984	M0001 ~ M9969	<u>÷16∓</u>])	
Link Relay	L00001 ~ L71024	L00001 ~ L71009	<u>÷16∓</u>])	
Timer (contact)	T0001 ~ T2047			2
Counter (contact)	C0001 ~ C2047		*	2
Timer (current v alue)		TP0001 ~ TP2047		L/H
Timer (setup value)		TS0001 ~ TS2047	*	2
Counter (current value)		CP0001 ~ CP2047		
Counter (setup value)		CS0001 ~ CS2047	*	2
Data Register		D0001 ~ D2047	Bit 1 51	
File Register		B0001 ~ B2047	Bit 1 51	
Joint Register		R0001 ~ R2047	Bit 1 5 1	
Special Register		Z001 ~ Z1024	Bit 1 51	
Link Register		W00001 ~ W11023	<u>Bit 151</u> .	3

(Continued on next page)

*1 The value of the terminal number (bit), 01~49, of the last two digits for the Input Relay and Output Relay can only be a multiple of 16 +1.

- *2 Cannot perform data write.
- *3 A total of up to 4,096 link registers can be used.

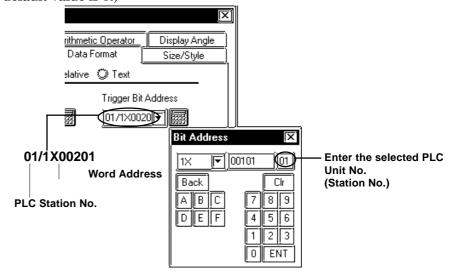


• Write the CPU Number (1~4) in front of the device name.

E.g. For Internal Relay I0001, CPU #3:

The range of device that can be used will vary depending on the type of PLC. For detailed information refer to the Yokogawa's Sequnce CPU manual.

• When setting tags up in GP-PRO/PBIII for Windows, the PLC Station number can be specified during address Input. If a station number is not designated, it automatically uses the previously entered station number. (The initial default value is 1.)



5.5.4 Environment Setup

The following lists Digital's recommended PLC and GP communication settings.

■ FACTORY ACE Series

GP Se	tup	Link I/F Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	8 bits	Data Bit	8 bits
Stop Bit	1 bit	Stop Bit	1 bit
Parity Bit	None	Parity Bit	None
Data Flow Control	ER Control		
Communication Format	4-wire type		
		Check Sum	No
		Specify End Character	Yes
		Protect Function	No
		Data Format Setup Switch	8 OFF
Unit No.	1	Station Number	1
Unit. No. (n:m Comm)	Match so all GP, PC Link Unit station no.s are the same.	Station No. (n:m Comm)	Setup so all PA Equip., PC Link Unit no.'s are different.

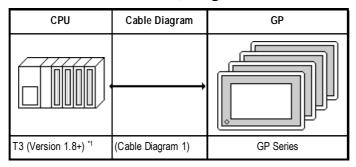
5.6 Toshiba

5.6.1 System Structure

The following describes the system structure for connecting the GP to Toshiba PLCs.

The Cable Diagrams mentioned in the following tables are listed in the section titled "5.6.2 Cable Diagrams".

■ PROSEC T Series (using CPU unit Link I/F)



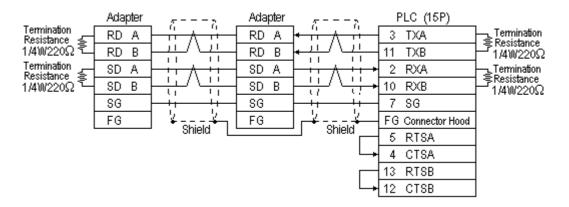
^{*1} Connect to the CPU Module's computer link port.

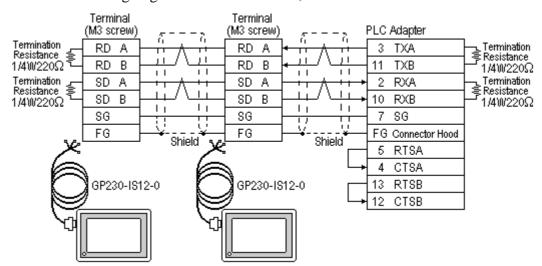
5.6.2 Cable Diagrams

The cable diagrams illustrated below and the cable diagrams recommended by Toshiba may differ, however, using these cables for your PLC operations will not cause any problems.

Cable Diagram 1

• When using Digital's RS-422 connector terminal adapter, GP070-CN10-O





• When using Digital's Multi-link Cable, GP230-IS12-O



Ground your PLC's FG terminal according to your country's applicable standard. For details, refer to the corresponding PLC manual.



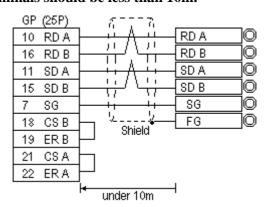
- Pull out a small amount of the Transfer Cable's shield, make a wire out of it and connect it to the PLC's FG terminal.
- The GP230-IS12-O Cable FG terminal is not connected to the GP's FG.
- Attach a Termination Resistor at both ends of the cable.
- For the RS-422 connection, refer to Toshiba's PLC manual for the cabele length.
- As a general rule, connect the PLC at the end of the circuit.





When making your own cable, Hitachi Densen's CO-SPEV-SB-(A) 3P*0.5 cable is recommended as the connection cable.

The cable connection lines are as illustrated below. The cables between the GP and the terminals should be less than 10m.



5.6.3 Supported Devices

The following describes the range of devices supported by the GP.

■ PROSEC T Series

Setup System Area or Communication Information's Storing Address here.

Device	Bit Address	Word Address	Particulars	
External Input	X00000 ~ X255F	XW0000 ~ XW255		
External Output	Y00000 ~ Y255F	YW0000 ~ YW255		
Internal Relay	R00000 ~ R511F	RW0000 ~ RW511		
Special Relay	S0000 ~ S255F	SW000 ~ SW255		
Link Register Relay	Z0000 ~ Z511F			
Link Relay	L0000 ~ L255F			
Timer (contact)	T000 ~ T255			L/H
Counter (contact)	C000 ~ C255			
Timer (current value)		T000 ~ T511		
Counter (current value)		C000 ~ C511		
Data Register		D0000 ~ D8191	Bit 1 5 1	
Link Register		W0000 ~ W1023	Bit 1 51	
File Register		F0000 ~ F8191	Bit 1 51	

5.6.4 Environment Setup

The following lists Digital's recommended PLC and GP communication settings.

■ PROSEC T Series

GP Setup		CPU Module Setup	
Baud Rate	19200 bps *1	Baud Rate 19200 bps *1	
Data Length	8 bits	Data Bit	8 bits
Stop Bit	2 bits	Stop Bit	2 bits
Parity Bit	Odd	Parity Bit	Odd
Data Flow Control	ER Control		
Communication Format	4-wire type		
Unit No.	1	Station Number	1

^{* 1} According to this PLC's specifications, if the PROSEC T3 is Ver. 1.4 or lower, data transmission is possible only at 9600 bps or less.



5.7

Rockwell (Allen-Bradley)

5.7.1

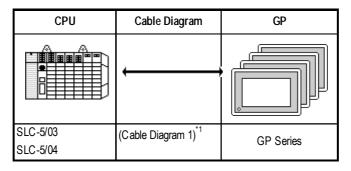
System Structure

The following describes the system structure for connecting the GP to Rockwell (Allen-Bradley) PLCs.

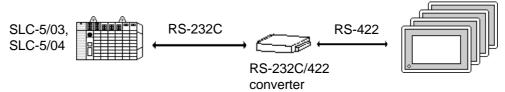
YReference

The Cable Diagrams mentioned in the following tables are listed in the section titled "5.7.2 Cable Diagrams".

■ SLC 500 Series (using CPU unit Link I/F)



* 1 An RS-232C/422 converter is required. (Refer to the diagram below.) Use an RS-232C/422 converter with the terminal block on the RS-422 side, and which uses a power supply other than that used by the communication line.

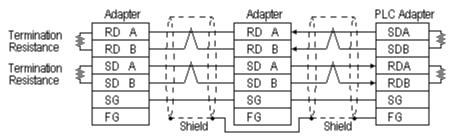


5.7.2 Cable Diagrams

Although some wiring diagrams recommended by Rockwell (Allen-Bradley) may differ from the wiring diagrams illustrated below, please use the diagrams shown in this manual.

Cable Digram 1

• When using Digital's RS-422 connector terminal adapter GP070-CN10-O



* Check the PLC Adapter specifications for the Termination Resistance

Terminal Terminal (M3 screw) (M3 screw) PLC Adapter RD RD SDA **End Terminal** Resistance RD В RD В SDB 1-1 1.1 1.1 **End Terminal** SD Α SD Α RDA Resistance SD RDB В SD В П 11 11 11 SG SG SG FG FG FG Shield Shield GP230-IS12-O GP230-IS12-O

• When using Digital's Multi-link Cable, GP230-IS12-O





Ground your PLC's FG terminal according to your country's applicable standard. For details, refer to the corresponding PLC manual.



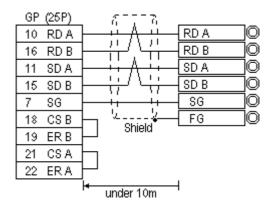
- Pull out a small amount of the Transfer Cable's shield, make a wire out of it and connect it to the PLC's FG terminal.
- The GP230-IS12-O Cable FG terminal is not connected to the GP's FG.
- Attach a Termination Resistor at both ends of the cable.
- For the RS-422 connection, refer to Rockwell's PLC manual for the cable length.
- As a general rule, connect the PLC to one end of the circuit.





When making your own connections, Hitachi Densen's CO-SPEV-SB(A)3P*0.5 cable is recommended.

The cable connection lines are as illustrated below. The cables between the GP and the terminals should be less than 10m.



5.7.3 Supported Devices

The following describes the range of devices supported by the GP.

■ SLC 500 Series

Setup System Area or Communication Information's Storing Address here.

Device	Bit Address	Word Address	Particulars	S
Bit	B0030000 ~ B003255F	B003000 ~ B003255		H/L
	B0100000 ~ B255255F	B010000 ~ B255255		11/L
Timer	TT0040000 ~ TT0042550		*1	
(TT: Timing Bit)	TT0100000 ~ TT2552550			
Timer	TN0040000 ~ TN0042550		*1	
(DN: Completion Bit)	TN0100000 ~ TN2552550			
Timer		TP004000 ~ TP004255	*2	
(PRE: Setup Value)		TP010000 ~ TP255255		
Timer		TA004000 ~ TA004255	*2	
(ACC: Current Value)		TA010000 ~ TA255255		
Counter	CU0050000 ~ CU0052550		*1	L/H
(CU: Up Count)	CU0100000 ~ CU2552550			L/II
Counter	CD0050000 ~ CD0052550		*1	
(DC: Down Count)	CD0100000 ~ CD2552550			
Counter	CN0050000 ~ CN0052550		*1	
(CN: Completion Bit)	CN0100000 ~ CN2552550			
Counter		CP005000 ~ CP005255	*2	
(PRE: Setup Value)		CP010000 ~ CP255255		
Counter		CA005000 ~ CA005255	*2	
(ACC: Current Value)		CA010000 ~ CA255255		
Integral Number		N007000 ~ N007255		11//
		N010000 ~ N255255	Bit F	

^{* 1}As in Example 4 in the following Caution section, enter a 0 at the end. For further information, refer to the manual for your PLC.

^{* 2}When reading and writing consecutive addresses at least two words long, reading will take longer than for other devices, and the screen refresh will be slower.



- File Numbers 0~7 are the User's default files.
- If a device is specified that was not previously allocated in the PLC data table map, a host communication error (02:10), (02:D7), or (02:E1) will be displayed.

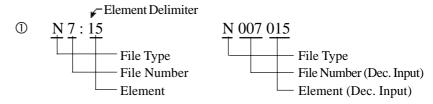


In Rockwell (Allen-Bradley) PLCs, the structure of each device data is determined from the *Element*; in GP-PRO/PBIII for Windows there is no concept called the *Element*. Use the following examples when entering device data.

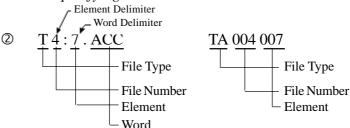
PLC Recommended

Input via screen creation the software.

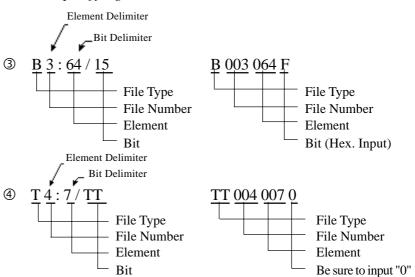
■ When specifying the Element



■ When specifying a Word



■ When specifying a Bit



5.7.4 Environment Setup

The following lists Digital's recommended PLC and GP communication settings.

■ SLC 500 Series

GP Se	tup	PLC Setup	
Baud Rate	19200 bps	Baud Rate 19200 bps	
Data Length	8 bits		-
Stop Bit	1 bit		-
Parity Bit	Even	Parity Bit	EVEN
Data Flow Control	ER Control		
Communication Format	4 wire type		
		Communication Driver DF1 HALF-DUPLEX SLAVE *1	
		Duplicate Packet Detection DISABLE *1	
		Error Detection BCC *1	
		Control Line No Handshaking *1	
Unit No. (DH GP) *2	0	Station Address *2	0

^{*1} Will not operate without these settings.

^{*2} Setup the Station Address and the GP's Unit No. (DH GP) address to the same value (address set as decimal values). It is unnecessary to setup the DH PLC address.



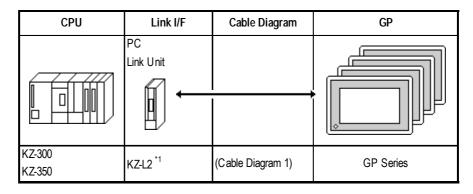
5.8 Keyence

5.8.1 System Structure

The following describes the system structure for connecting the GP to Keyence PLCs.

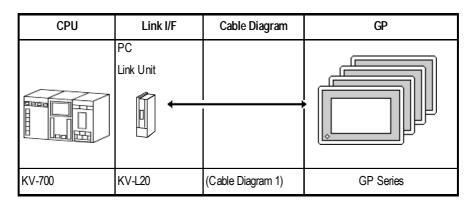
The Cable Diagrams mentioned in the following tables are listed in the section titled "5.8.2 Cable Diagrams".

■ **KZ-300/KZ-350 Series** (using Link I/F)



^{*1} Connect to Port 2.

■ KV-700 Series

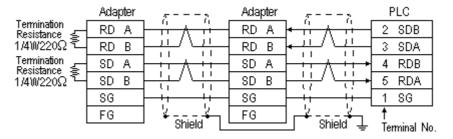


5.8.2 Cable Diagrams

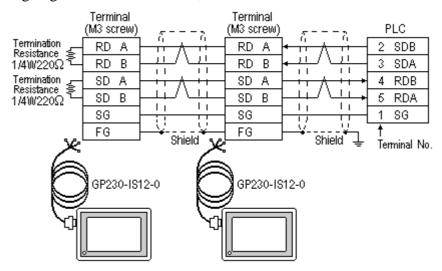
The cable lines illustrated below and the cable lines recommended by Keyence may differ; however, using these cables for your PLC operations will not cause any problems.

Cable Diagram 1

• When using Digital's RS-422 connector terminal adapter, GP070-CN10-O

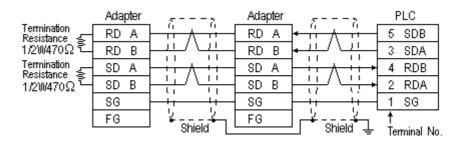


• When using Digital's Multi-link Cable, GP230-IS12-O

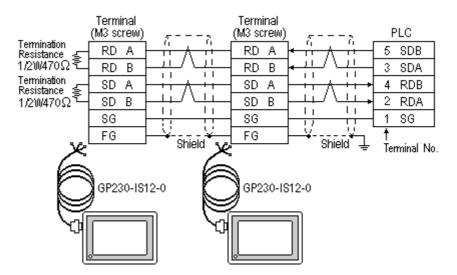


Cable Diagram 2

• When using Digital's RS-422 connector terminal adapter, GP070-CN10-O



• When using Digital's Multi-link Cable, GP230-IS12-O





Ground your PLC's FG terminal according to your country's applicable standard. For details, refer to the corresponding PLC manual.



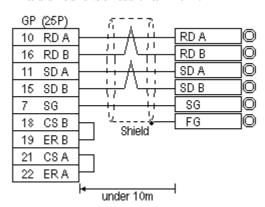
- The GP230-IS12-O Cable FG terminal is not connected to the GP's FG.
- Note that the naming/labeling of the A and B pins on the GP side is the reverse of the PLC side.
- Attach a Termination Resistor to both ends of the cable.
- For the RS-422 connection, refer to Keyence's PLC manual for the cable length.
- As a general rule, connect the PLC to one end of the circuit.





When making your own cable, Hirakawa's H-9293A (CO-HC-ESV-3P*7/0.2) cable is recommended.

The cable connection lines are as illustrated below. The cables between the GP and the terminals should be less than 10m.



5.8.3 Supported Devices

The following describes the range of devices supported by the GP.

■ KZ-300/KZ-350 Series

Setup System Area or Communication Information's Storing Address here.

Device	Bit Address	Word Address	Particulars	
Input Relay	00000 ~ 0009	00 ~ 00		
	7000 ~ 17415	70 ~ 174	*1	
Output Relay	0500 ~ 0503	05 ~ 05		
	7500 ~ 17915	75 ~ 179	*2	
Auxiliary Relay	0504 ~ 0915			
Internal Relay	1000 ~ 6915	10 ~ 69		
Special Relay	2000 ~ 2915	20 ~ 29		L/H
Timer (contact)	T000 ~ T249			
Counter (contact)	C000 ~ C249			
Timer (current value)		T000 ~ T249		
Counter (current value)		C000 ~ C249		
Data Memory		DM0000 ~ DM9999	Bit 1 51	
Temp. Data Memory		TM00 ~ TM31	Bit 1 5 1	

* 1 Address numbers *000~*400 are available for bit device addresses, and *0~*4 are available for word device addresses.

Bit Address		
addr 7000		
addr 7100-7400		
addr 8000		
addr 8100-8400		
addr 17000-17400		

Word Address
70
71-74
80
81-84
170-174

*2 Address numbers *500~*900 are available for bit device addresses and *5~*9 are available for word device addresses.

Bit Address
addr 7500
addr 7600-7900
addr 8500
addr 8600-8900
addr 17500-17900

Word Address
75
76-79
85
86-89
175-179

■ KV-700 Series (using the KZ-300 series protocol)

Device	Bit Address	Word Address	Particulars
Input Relay	000000 ~ 00009	000 ~ 000	*1
Output Relay	00500 ~ 00503	005 ~ 005	
Internal AUX Relay	00504 ~00915	005 ~ 009	
Extended Input/Output Relay Internal AUX Relay	01000 ~ 59915	010 ~ 599	
Control Relay	60000 ~ 63915	600 ~ 639	*2
Timer (contact)	T000 ~ T511		*3
Counter (contact)	C000 ~ C511		*3
Timer (current value)		T000 ~ T511	*3
Counter (current value)		C000 ~ C511	*3
Data Memory		DM 0000 ~ DM 9999	Bit 1 5 1 *4
Temporary Data Memory		TM 000 ~ TM 511	Bit 1 51
Control Memory		TM 0520 ~ TM 4519	<u>Bit</u> 15] *⁵

^{*1} PLC or GP data writing is not possible.

^{*2} GP cannot write data to any address.

^{*3} Only available when the timer command and the counter command exist in the ladder program.

^{*4} The device range of the PLC is between DM0000 and DM19999, but only the addresses up to DM9999 are accessible to the GP.

^{*5} Some addresses are not available for writes.

5.8.4 Environment Setup

The following lists Digital's recommended PLC and GP communication settings.

■ KZ-300/KZ-350 Series

GP Setup		PC Link Unit Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	7 bits	Data Bit	7 bits
Stop Bit	2 bits	Stop Bit	2 bits
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER Control		
Communication Format	4-wire type	Port Toggle Switch	RS-422A
_		RUN Mode	Link Mode
Unit No.	0	Station Number	0

■ KV-700 Series (using the KZ-300 series protocol)

GP Setup		PLC Setup	
Baud Rate	19200 bps *1	Baud Rate	19200 bps
Data Length	7 bits	Data Length	7 bits
Stop Bit	2 bits	Stop	2 bits
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER Control	RS, CS Flow Control	No
Communication Format (RS-232C)	RS-232C	Communication Port 2 Selector Switch	232C
Communication Format (RS-422)	4-wire type	Communication Port 2 Selector Switch	422A
		Operation Mode	Link Mode
Unit No.	0	Station No.	0

^{*1} The maximum baud rate is 115,200 bps.



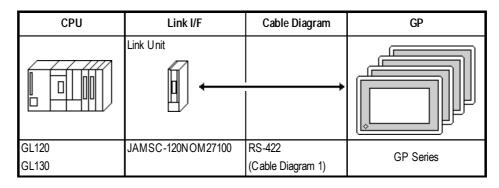
5.9 Yaskawa Electric

5.9.1 System Structure

The following describes the system structure for connecting the GP to Yaskawa Electric PLCs.

The Cable Diagrams mentioned in the following tables are listed in the section titled "5.9.2 Cable Diagrams".

■ Memocon-sc Series/GL 120, 130 (using Link I/F)

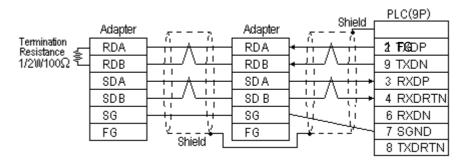


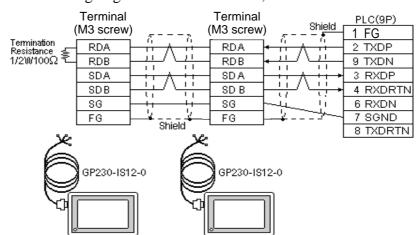
5.9.2 Cable Diagrams

The cable diagrams illustrated below and the cable diagrams recommended by Yaskawa Electric may differ, however, using these cables for your PLC operations will not cause any problems.

Cable Diagram 1

• When using Digital's RS-422 connector terminal adapter, GP070-CN10-O.





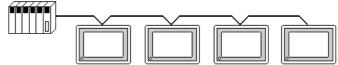
• When using Digital's Multi-link Cable, GP230-IS12-O



Ground your PLC's FG terminal according to your country's applicable standard. For details, refer to the corresponding PLC manual.



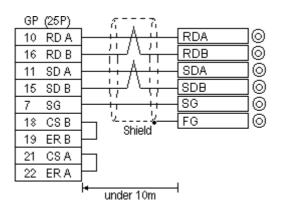
- Pull out a small amount of the Transfer Cable's shield, make a wire out of it and connect it to the PLC's FG terminal.
- The GP230-IS12-O Cable FG terminal is not connected to the GP's FG.
- Attach a Termination Resistor to both ends of the cable.
- For the RS-422 connection, refer to Yaskawa Electric's PLC manual for the cable length.
- As a general rule, connect the PLC to one end of the circuit.





When making your own cable, Hitachi's CO-SPEV-SB (A) 3P*0.5 cable is recommended.

The cable connection lines are as illustrated below. The cables between the GP and the terminals should be less than 10m.



5.9.3 Supported Devices

The following describes the range of devices supported by the GP.

■ Memocon-sc series (GL120 and GL130)

Setup System Area or Communication Information's Storing Address here.

Device	Bit Address	Word Address	Particulars	
Coil (output/internal)	000001 ~ 008192		*1	
Input Relay	100001 ~ 101024		*1*2	
Link Coil 1	D10001 ~ D11024		*1	
Link Coil 2	D20001 ~ D21024		*1	
MC Relay 1	X10001 ~ X10256		*1*2	
MC Relay 2	X20001 ~ X20256		*1*2	
MC Coil 1	Y10001 ~ Y10256		*1	
MC Coil 2	Y20001 ~ Y20256		*1	
MC Code Relay 1	M10001 ~ M10096		*1*2	
MC Code Relay 2	M20001 ~ M20096		*1*2	H/L
MC Control Relay 1	P10001 ~ P10256		*1*2	11/6
MC Control Relay 2	P20001 ~ P20256		*1*2	
MC Control Coil 1	Q10001 ~ Q10256		*1	
MC Control Coil 2	Q20001 ~ Q20256		*1	
Input Register		300001 ~ 300512	Bit 1 51 *2	
Output Register		300001 ~ 300512	Bit 1 51	
Holding Register		400001 ~ 409999	Bit 1 51	
Link Register 1		R10001 ~ R11024	Bit 1 5 1	
Link Register 2		R20001 ~ R21024	Bit 1 51	
Constant Register		700001 ~ 704096	Bit 1 51	

^{* 1 1-}word (16-bit) data day be specified.

^{* 2} Data cannot be written here.

5.9.4 Environment Setup

The following lists Digital's recommended PLC and GP communication settings.

■ Memocon-sc series (GL 120 and GL 130)

GP Setup		PC Link Unit Setup	
Baud Rate	19200 bps	Baud Rate	19200 bps
Data Length	8 bits		
Stop Bit	1 bit	Stop Bit	1 bit
Parity Bit	Even	Parity Bit ON/OFF EVEN/ODD	ON Even
Data Flow Control	ER Control		
Communication Format	4-wire type	Communication Format	RS-422
Unit No.	1	Slave address number	1
		Transmission bit	RTU mode (fixed)

5.10 SHARP

5.10.1 System Structure

The following describes the system structure for connecting the GP to Sharp PLCs.

The Cable Diagrams mentioned in the following tables are listed in the section titled "5.10.2 Cable Diagrams".

■ New Satellite JW

CPU	Link I/F	Cable Diagram	GP
JW-33CUH3	Link I/F on CPU unit	RS-422 (4 wires) (Connected to PG/COM 1 port or PG/COM 2 port) (Cable Diagram 1)	GP Series
	JW-21CM	RS-422 (4 wires) (Cable Diagram 2)	



When using JW-21CM, be aware that some link units have usage restrictions depending on the ROM version.

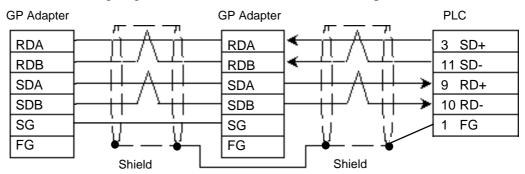
Version Seal	Usage Restrictions
30Hn	Can use without restrictions.
30H	Cannot be read or written from and to File Register from 10 to 2C. Cannot be read or written from and to File Register Address from 100000 to 176777.
No Seal	Cannot use JW30H series.

5.10.2 Cable Diagrams

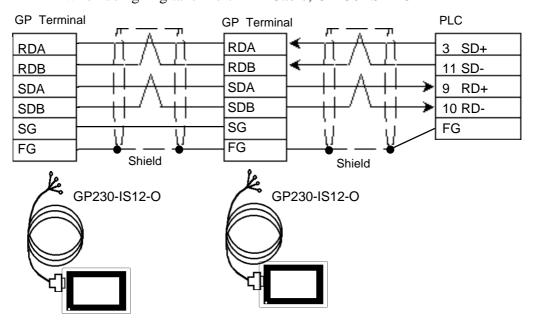
The cable diagrams illustrated below and the cable diagrams recommended by Yaskawa Electric may differ, however, using these cables for your PLC operations will not cause any problems.

Cable Diagram 1

• When using Digital's RS-422 connector terminal adapter, GP070-CN10-O



• When using Digital's Multi-link Cable, GP230-IS12-O





Ground your PLC's FG terminal according to your country's applicable standard. For details, refer to the corresponding PLC manual.

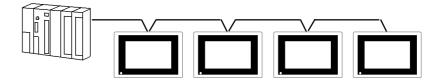


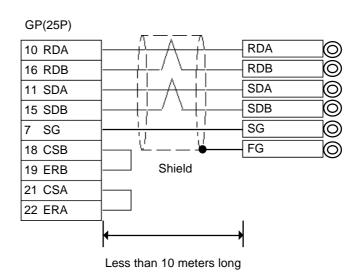
- Pull out a small amount of the Transfer Cable's shield, make a wire out of it and connect it to the PLC's FG terminal.
- The GP230-IS12-O Cable FG terminal is not connected to the GP's FG.
- Attach a Termination Resistor to both ends of the cable.
- As a general rule, connect the PLC to one end of the circuit.



When making your own cable, Hitachi's CO-SPEV -SB(A) $3P0.5mm^2$ cable is recommended as the connection cable.

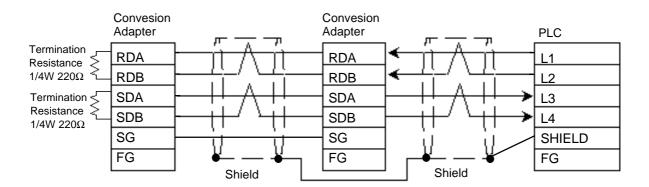
The cable connection lines are as shown below. The cables between the GP and the terminals should be less than 10m.

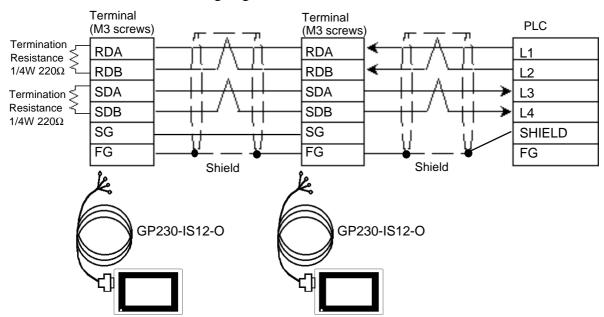




Cable Diagram 2

• When using Digital's RS-422 connector terminal adapter, GP070-CN10-O

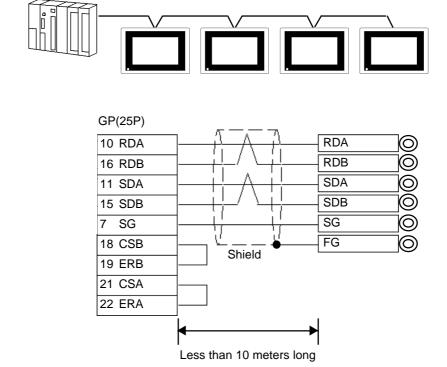




• When using Digital's Multi-link Cable, GP230-IS12-O



- When making your own cable, Hitachi's CO-SPEV -SB(A) 3P0.5mm² cable is recommended as the connection cable.
 - The cable connection lines are as shown below. The cables between the GP and the terminals should be less than 10m.
- Use a cable length less than 600m.



5.10.3 Supported Devices

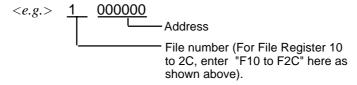
The following lists Digital's recommended PLC and GP communication settings.

■ New Satellite JW (JW-33CUH3)

Setup System Area or Communication Information's Storing Address here.

Device	Bit Address	Word Address	Particulars	
Delev	00000 ~ 15777	A0000 ~ A1576		
Relay	00000 ~ 15777	(⊐0000 ~ ⊐1576)	<u>÷ 2</u>)	
	20000 ~ 75777	A2000 ~ A7576		
	20000 ~ 75777	(⊐2000 ~ ⊐7576)		
Timer (contact)	T0000 ~ T1777			
Counter (contact)	C0000 ~ C1777			
Timer/Counter (current value)		B0000 ~ B3776	2 1 <u></u> 151	
Time/Odditer (current value)		(b0000 ~ b3776)	$\begin{bmatrix} \div 2 \end{bmatrix} \begin{bmatrix} \boxed{15} \end{bmatrix}$	
		09000 ~ 09776	÷ 2] B; t15]	
		19000 ~ 19776	E BITTO	
		29000 ~ 29776		
		39000 ~ 39776		
		49000 ~ 49776		
		59000 ~ 59776		L/H
		69000 ~ 69776		
		79000 ~ 79776		
Register		89000 ~ 89776		
		99000 ~ 99776		
		E0000 ~ E0776		
		E1000 ~ E1776		
		E2000 ~ E2776		
		E3000 ~ E3776		
		E4000 ~ E4776		
		E5000 ~ E5776		
		E6000 ~ E6776	•	
		E7000 ~ E7776	•	
File Register 1		1000000 ~ 1037776	1 <u>1 </u>	
File Register 2		2000000 ~ 2177776	÷ 2] _{B i 1} 15]	
File Register 3		3000000 ~ 3037776	*1	
File Register 10-1F		F10000000 ~ F1F177776		
File Register 20-2C		F20000000 ~ F2C 177776		

^{* 1} File Registers consist of a File number and an Address.





 $\overline{\div}$ **2**) Enter even numbers only for Word Address



You can select a bit. input a bit position after Word Address. The value of a bit position must be between 0 to 15.



Word Address Relay and Timer/Counter current value (B) are shown in brackets on the PLC's Uesrs manual, however, you must enter "A**** ", "B**** " when you are entering the value in the GP-PRO/PB III software.

5.10.4 Environment Setup

The following shows Digital's recommended PLC settings and GP settings.

■ New Satellite JW Series (Using JW-21CM)

GP Setup		Link Unit Setup *3		
Baud Rate	19200 bps	Baud Rate	19200bps	
Data Length	7 bits (fixed)	Data bit	7 bits (fixed)	
Stop Bit	2 bit (fix ed)	Stop Bit	2 bit (fix ed)	
Parity Bit	Even	Parity Bit	Even	
Data Flow Control	ER Control			
Communication Format	4-wire type	Communicaiton Mode	4-wire type	
Function Setting Switch (SO) Compute		Computer Link		
Unit No. *1	1 (1 to 31)	Station Address *2	1(1 to 37)	

■ New Satellite JW Series (Using Link I/F on CPU unit)

GP Setup		Link Un	Link Unit Setup *3	
Baud Rate *4	19200 bps	Baud Rate	19200 bps	
Data Length	7 bits (fixed)	Data bit	7 bits (fix ed)	
Stop Bit	2 bit (fix ed)	Stop Bit	2 bit (fix ed)	
Parity Bit	Even	Parity Bit	Even	
Data Flow Control	ER Control	-		
Communication Format	4-wire type	Communication Mode	4-wire type	
Unit No. *1	1(1 to 31)	Station Address *2	1(1 to 37)	

< PLC Settings >

Please set up the PLC system memory (#***) as shown below. For these settings, only PRO-Control or the Ladder Programming software can be used. The PLC system memory cannot be accessed by GP.

PLC System Memory No.	Details	
#234	Baud Rate, Parity, Stop bit	Communication 1
#235	Station No. 001 ~ 037oct	(PG/COM1 port)settings
#236	Baud Rate, Parity, Stop bit	Communication 2
#237	Station No. 001 ~ 037oct	(PG/COM2 port)settings

^{*1} This value must be in decinal.

^{*2} This value must be in octal.

^{*3} For PLC settings, use the link unit's switch. For details, please refer to Sharp's JW-21CM users manual.

^{* 4} When Using Link I/F on CPU unit, the baud rate 115.2k bps can also be used.

6 Special Connection

6.1 Connectable PLCs

The following table lists the PLCs that can be connected and used with the GP via a special connection.

					Screen
Co.	Series Name	CPU	Link I/F	Comments	Editor
					PLC setup
R	SLC 500	SLC-5/01	DH 485 Port on CPU	It is possible to	AB SLC500
0		SLC-5/02		directly connect the	DH 485
С		SLC-5/03		PLC having DH 485	
K		SLC-5/04		port.	
W E					
L			1747-AIC Link coupler	Connection to the	
L			(Allen-Bradley's)	DH 485 network can	
				be made by using	
Â				the linkcoupler	
L				shown at left.	
L		SLC-5/04	DH Plus port on CPU		AB Data
E N					Highway Plus
	PLC5	PLC 5/20	DH Plus port on CPU		AB Data
B			·		Highway Plus
R		PLC5	REMOTE I/O		AB Remote IO
Α			Channel on CPU		
D					
L					
E Y					
<u> </u>					
М	Modbus				Modicon
O	Master				Modbus
D					(SLAVE)
1					
С	884/984	884, 984A, 984B	Modbus Plus Port		Modicon
0			on CPU		Modbus Plus
N					

The following table lists the GPs that can be connected and used with special connection.

<GP List 1>

Series	s Name	Product Name
GP70 Series	GP-470 Series	GP-470E
	GP-570 Series	GP-570S
		GP-570T
		GP-57JS
		GP-570VM
	GP-571 Series	GP-571T
	GP-675 Series	GP-675S
		GP-675T
	GP-870 Series	GP-870VM
GP77 Series	GP-477R Series	GP-477RE
	GP-577R Series	GP-577RS
		GP-577RT
GP2000 Seires *1	GP-2500 Series	GP-2500L
		GP-2500S
		GP-2500T
	GP-2501 Series	GP-2501S
		GP-2501T
	GP-2600 Series	GP-2600T

^{*1} When using a GP2000 Series units, a bus conversion unit (PSL-CONV00) is required.

<GP List 2>

Series Name		Product Name
GP70 Series	GP-270 Series	GP-270L
		GP-270S
	GP-370 Series	
		GP-370T
GP77R Series	GP-377R Series	GP-377RT

6.2 Rockwell (Allen-Bradley)

6.2.1 System Structure

■ SLC 500 Series (Using DH485)

CPU	Unit	Cable Diagram	GP
	-	*	
SLC-5/01 SLC-5/02 SLC-5/03 SLC-5/04		HMI-CAB-C83 ¹ (TCP's) ² HMI-CAB-C84 ¹ (TCP's) ²	GP Series

^{*1} Use the HMI CAB-C83 cable at 1:1, or HMI CAB-C84 at m:n.

■ SLC 500 Series (Using Data Highway Plus)

СРИ	Cable Diagram	Unit	GP
		→ DH Plus Module	
SLC-5/04	(Cable Diagram 1)	QPI-CAB-C201 (TCP's) *1	Large Size GPs *2
JEO 3/04		QPJ-CAB-C201 (TCP's) ^{*1}	Medium Size GPs ^{*3}

^{*1} Manufactured by Total Control Products, Inc.

^{*2} Manufactured by Total Control Products, Inc.

^{*2} For details, refer to 6.1 Connectable PLCs, <GP List1>.

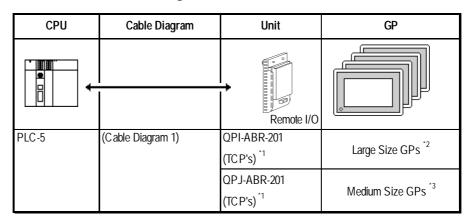
^{*3} For details, refer to 6.1 Connectable PLCs, <GP List2>.

■ PLC-5 Series (Using Data Highway Plus)

CPU	Cable Diagram	Unit	GP
		▶ DH Plus Module	
PLC-5/20	(Cable Diagram 1)	QPI-ABD-201 (TCP's) ^{*1}	Large Size GPs *2
		QPI-ABD-201 (TCP's) *1	Medium Size GPs *3

^{*1} Product manufactured by Total Control Products, Inc.

■ PLC-5 Series (Using Remote I/O)



^{*1} Product manufactured by Total Control Products, Inc.

^{*2} For details, refer to 6.1 Connectable PLCs, <GP List1>.

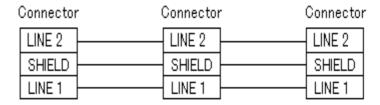
^{*3} For details, refer to 6.1 Connectable PLCs, <GP List2>.

^{*2} For details, refer to 6.1 Connectable PLCs, <GP List1>.

^{*3} For details, refer to 6.1 Connectable PLCs, <GP List2>.

6.2.2 Cable Diagrams

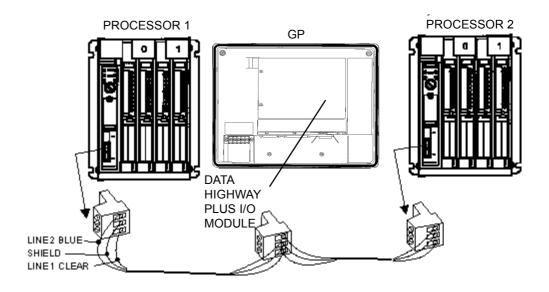
Cable Diagram 1 (Using Data Highway Plus /Remote I/O)



- The connector is supplied as an accessory for the PLC.
- Be sure to ground your PLC's FG terminal. For details, refer to the corresponding PLC manual
- Connect the FG line of the Shield cable to either the GP or PLC, depending on your environment. When using a connector hood and grounding the FG line, be sure to use an electrical conductor.

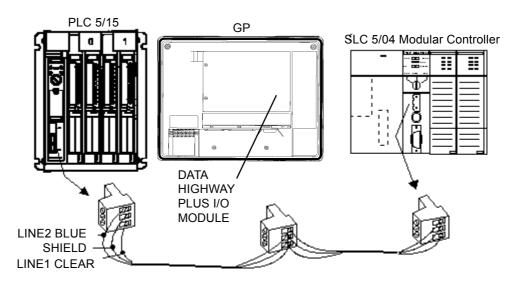
Connection to Data Highway Plus

The following drawing shows a GP connected to two PLC-5 processors on a Data Highway Plus network.



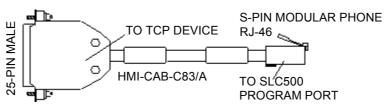
SLC 5/04 DH+ Connection

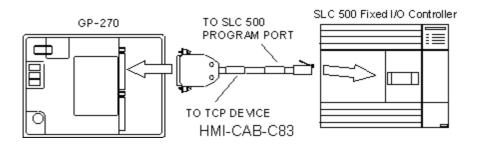
The drawing shows a possible configuration for DH+.



HMI-CAB-C83 Cable

This cable connects a single GP unit directly to the Rockwell (Allen-Bradley) SLC 500 Programming Port.





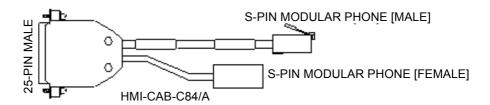
HMI-CAB-C84 Cable

This cable connects the GP's serial port to the Rockwell (Allen-Bradley) SLC 500 Programming Port.

The cable is designed to allow connection to additional devices such as an Rockwell (Allen-Bradley) 1747-PIC Interface Converter.



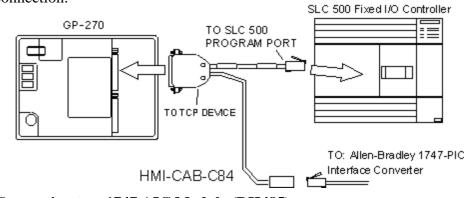
This cable is 6 feet (approximately 2 meters) long. Do not attempt to make it longer.



SLC 500 Network Connection for Programming Equipment (DH485)

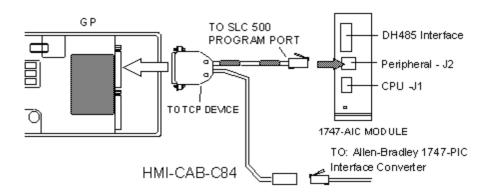
This connection allows two devices to be connected to the PLC. In this case, a programming terminal can be connected to the PLC using a 1747-PIC Interface Converter connected to the HMI-CAB-C84 cable.

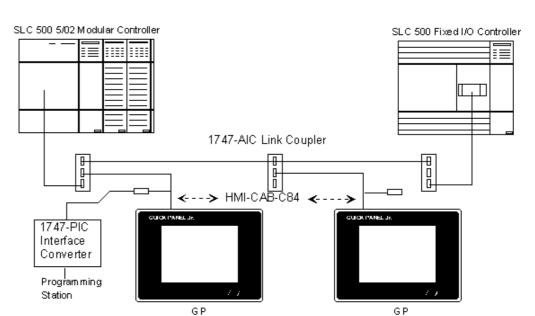
The drawing shows the connections for adding a second device to the network connection.



Connecting to a 1747 AIC Module (DH485)

Connect the HMI-CAB-C84 cable to the 1747 AIC Module as shown below.

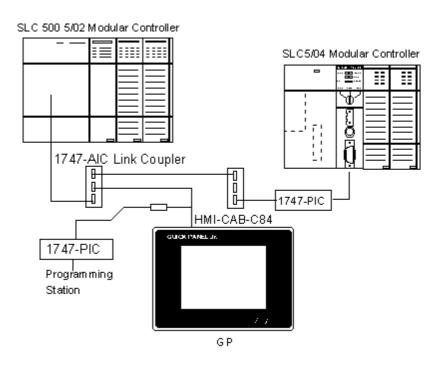




SLC 500 Net work Connection using 1747 AIC Link Couplers (DH485)

SLC 5/03 and SLC 5/04 DH485 Connections

You can connect channel 0 of the SLC 5/03 and SLC 5/04 modules to the 1747-PIC to make a connection to the DH485 network.



6.2.3 Supported Devices

■ SLC 500 Series (Using DH485 or Data Highway Plus)

Setup System Area here

Device	Bit Address	Word Address	Particulars	
	S2:000/0 ~ S2:15/15	S2:000 ~ S2:15	SLC5/01	
Status	S2:000/0 ~ S2:32/15	S2:000 ~ S2:32	SLC5/02	ĺ
	S2:000/0 ~ S2:83/15	S2:000 ~ S2:83	SLC5/03	İ
Bit	B3:000/0 ~ B3:255/15	B3:000 ~ B3:255		İ
Timer	T4:000.TT ~ T4:255./TT			
(TT: Timing Bit)	T10:000.TT ~ S255:255.TT			
Timer	T4:000.DN ~ T4:255./DN			ĺ
(DN: Completion Bit)	T10:000.DN ~ S255:255.DN			ĺ
Timer	T4:000.EN ~ T4:255.EN			ĺ
EN: Enable Bit)	T10:000.EN ~ S255:255.EN			
Timer		T4:000.PRE ~ T4:255.PRE		
(PRE: Current Value)		T10:000.PRE ~ S255:255.PRE		
Timer		T4:000.ACC ~ T4:255.ACC		
(Acc: Setup Value)		T10:000.ACC~ S255:255.ACC		1
Counter	C5:000.CU ~ C5:255.CU			1
(CU: Up Count)	C10:000.CU ~ C255:255.CU			1
Counter	C5:000.CD ~ C5:255.CD			1
(CU: Down Count)	C10:000.CD ~ C255:255.CD			1
Counter	C5:000.DN ~ C5:255.DN			L/H
(DN: Completion Bit)	C10:000.DN ~ C255:255.DN			L/H
Counter	C5:000.OV ~ C5:255.OV			1
(OV: Overflow)	C10:000.OV ~ C255:255.OV			
Counter	C5:000.UN ~ C5:255.UN			
(UN: Underflow)	C10:000.UN ~ C255:255.UN			
Counter (UA: newly current	C5:000.UA ~ C5:255.UA			
value reading)	C10:000.UA ~ C255:255.UA			1
Ct (Ct-)/-		C5:000.ACC ~ C5:255.ACC		1
Counter (Current Value)		C10:000.ACC ~ C255:255.ACC		1
Country (Current Value)		C5:000.PRE ~ C5:255.PRE		1
Counter (Current Value)		C10:000.PRE ~ C255:255.PRE		1
Control (DN)	R6:000.DN ~ R6:255.DN			1
Control (DN)	R10:000.DN ~ R255:255.DN			1
(=1)	R6:000.EN ~ R6:255.EN			1
Control (EN)	R10:000.EN ~ R255:255.EN			1
Control (ED)	R6:000.ER ~ R6:255.ER			1
Control (ER)	R10:000.ER ~ R255:255.ER			
Control (III.)	R6:000.UL ~ R6:255.UL			
Control (UL)	R10:000.UL ~ R255:255.UL			1

■ SLC 500 Series (Using DH485 or Data Highway Plus) (Continued)

Setuj)	System	Area	here.
-------	---	--------	------	-------

Device	Bit Address	Word Address	Particulars	
Control (IN)	R6:000.IN ~ R6:255.IN			
Conto (IIV)	R10:000.IN ~ R255:255.IN			
Control (EN)	R6:000.FD ~ R6:255.FD			Ì
Control (EIV)	R10:000.FD ~ R255:255.FD			
Control (LEN)		R6:000.LEN ~ R6:255.LEN		L/H
CONTO (LEIV)		R10:000.LEN ~ R255:255.LEN		
Control (POS)		R6:000.POS ~ R6:255.POS		Ì
Conto (FO3)		R10:000.POS ~ R255:255.POS		
Integral Number (N)	N7:000/0 ~ N7:255/15	N7:000 ~ N7:255		Ī
mogramiamber (N)	N10:000/0 ~ N255:255/15	N10:000 ~ N255:255		

SLC 500 Tag Variables for DH485 Protocol

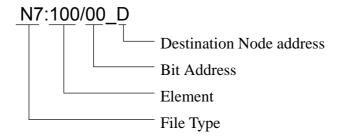
The following chart lists the legal tag variable names that can be used with the SLC 500 series. The target display talks to the SLC 500 using the DH485 protocol. The DH485 protocol requires each device to have a node address. The Source ID is the target display node address and the Destination ID is the node address for the SLC. (See the "Setup for using an AB SLC 500 PLC" section for details about entering the source and destination ID's).

When there is a single point connection between a target display and a SLC 500, the destination ID (node address for SLC) becomes the default address for all variables. That is, if you use the tag variable N7:100, the target display knows that this variable is located at the destination node address.

When the target display is connected to a DH485 network that includes multiple SLC nodes, there is an optional variable naming element that will allow you to read information from any SLC node. The additional element is _D, where the underscore D indicates a node address other than the Destination ID node address.

In this example, the Source ID (target display address) has been set to 0 and the Destination ID (SLC node address) has been set to 1. There is an additional SLC on the DH485 network located at node address 3. To read information from node address 1, the variable would be N7:100.

Remember that the Destination ID is the default node address. To read information from node address 3, the variable would be N7:100_3. The general format for tag variables is shown below.



■ PLC-5 Series (Using Data Highway Plus)

Setup System Area here.

Device	Bit Address	Word Address	Particulars	
Output	0:0/0 ~ 0.37/17			
Input	1:0/0 ~ 1.37/17			
Status	S2:000/0 ~ S2:15/15	S2:000 ~ S2:15		
Bit	B3:000/0 ~ B3:999/15	B3:000 ~ B3:999		
Timer	T4:000.TT ~ T4:999./TT			
(TT: Timing Bit)	T8:000.TT ~ S999:999.TT			
Timer	T4:000.DN ~ T4:999./DN			
(DN: Completion Bit)	T8:000.DN ~ T999:999.DN			
Timer	T4:000.EN ~ T4:999./EN			
EN: Enable Bit)	T8:000.EN ~ T999:999.EN			
Timer		T4:000.PRE ~ T4:999.PRE		
(PRE: Current Value)		T8:000.PRE ~ S999:999.PRE		
Timer		T4:000.ACC ~ T4:999.ACC		
(Acc: Setup Value)		T8:000.ACC~ T999:999.ACC		
Counter	C5:000.CU ~ C5:999.CU			
(CU: Up Count)	C8:000.CU ~ C999:999.CU			
Counter	C5:000.CD ~ C5:999.CD			
(CU: Down Count)	C8:000.CD ~ C999:999.CD			
Counter	C5:000.DN ~ C5:999.DN			
(DN: Completion Bit)	C8:000.DN ~ C999:999.DN			1 /1 1
Counter	C5:000.OV ~ C5:999.OV			L/H
(OV: Overflow)	C8:000.OV ~ C999:999.OV			
Counter	C5:000.UN ~ C5:999.UN			
(UN: Underflow)	C8:000.UN ~ C999:999.UN			
Counter (UA: newly	C5:000.UA ~ C5:999.UA			
current value reading)	C8:000.UA ~ C999:999.UA			
Country (Comment Value)		C5:000.ACC ~ C5:999.ACC		
Counter (Current Value)		C8:000.ACC ~ C999:999.ACC		
Ot (Ot-) (-1)		C5:000.PRE ~ C5:999.PRE		
Counter (Current Value)		C8:000.PRE ~ C999:999.PRE		
Caratral (DM)	R6:000.DN ~ R6:999.DN			
Control (DN)	R8:000.DN ~ R999:999.DN			
O 1 1/EN)	R6:000.EN ~ R6:999.EN			
Control (EN)	R8:000.EN ~ R999:999.EN			
0 1 1/50)	R6:000.ER ~ R6:999.ER			
Control (ER)	R8:000.ER ~ R999:999.ER			
C t (111)	R6:000.UL ~ R6:999.UL			
Control (UL)	R8:000.UL ~ R999:999.UL			
0 1 1/000	R6:000.IN ~ R6:999.IN			
Control (IN)	R8:000.IN ~ R999:999.IN			

■ PLC-5 Series (Using Data Highway Plus) (Continued)

Setup System Area here.

Device	Bit Address	Word Address	Particulars	
Control (FD)	R6:000.IN ~ R6:999.FD			
	R8:000.IN ~ R999:999.FD			
Control (LEN)		R6:000.LEN ~ R6:999.LEN		
CONTO (LEIV)		R10:000.LEN ~ R999:999.LEN		
Control (POS)		R6:000.POS ~ R6:999.POS		L/H
Control (i OS)		R10:000.POS ~ R999:999.POS		
Integral Numberl (N)	N 7:000/0 ~ N 7:999/15	N7:000 ~ N7:999		
megrar variber (v)	N8:000/0 ~ N:999/15	N8:000 ~ N:999:999		
Floating point (F)		F8:000 ~ F999:999		
ASCII (A)		A12:000 ~ A999:999		H/L



- The range of supported devices may differ depending on your CPU.
- These maximum ranges may not be supported by some PLC configurations.

■ PLC-5 Series (Using Remote I/O)

Device	Bit Address	Word Address	Particulars
Input	I:000/00 ~ I:377/17	I:000 ~ I:377	
Output	O:000/00 ~ O:377/17	O:000 ~ O.377	
Block Transfer (Read)	BTR:0000:00/00 ~	BTR:0000:00 ~ BTR:3771:63	*1
Blook Hallsfor (Roda)	BTR:3771:63/15	B114.0000.00 B114.0771.00	
Block Transfer (Write)	BTW:0000:00/00 ~	BTW:0000:00 ~ BTW:3771:63	*1
DIOCK Transfer (Write)	BTW:3771:63/15	B100.0000.00 ~ B100.3771.03	

^{*1} Block Transfer Read & Write (BTR & BTW) must be configured in the Environment Setup (See next section) before being able to use these addresses.



- These maximum ranges may not be supported by some PLC configurations.
- This driver cannot allocate the System Data Area for the PLC's Device Addresses.

6.2.4 Environment Setup



- System Area and Read Area are not supported by Remote I/O.
- When entering the GP OFFLINE mode's Set up Operation Surroundings, be sure to select the [GP-PRO/PBIII for Windows] Edit mode.



- These settings cannot be set using the GP's OFFLINE Communication Settings. Be sure to use GP-PRO/PBIII for this.
- These settings cannot be set using the GP's Environment Settings. Be sure to use GP-PRO/PBIII for this.
- E and K-tags cannot use the "Indirect" Setting.
- 32 bit-length data cannot be written. (DH485)
- K-tag text (columns) data cannot be written. (DH485)
- · After the H-tag starts (is triggered), data cannot be read (out).
- After the S-tag starts (is triggered), data cannot be read (out).
- The Trend graph's group data display's PLC device designation feature cannot be used.
- The System Area and the Read (In) Area cannot be used. (Only with Remote I/O)
- The data backup feature cannot be used (Data Highway Plus, Remote I/O).
- D-Script 's Memory Copy and Offset Address features cannot be used.
- The Logging and Filing Data features cannot be used.
- 2-Way Driver cannot be used.

■ SLC 500 Series (Using DH485)

GP Se	GP Setup		Setup
Baud Rate	19200 bps		-
Data Length	8 bits		
Stop Bit	1 bit		-
Parity Bit	Even		-
Data Flow Control	ER Control		-
Communication Format (RS-232C)	RS-232C *1		-
Communication Format (RS-422)	2-wire type *2		
Unit No.			
Source ID	0		
Destination ID	1	Node Address	1
Max imum ID	31	Maximum Address	31

^{* 1} Set the Communication Format to RS-232C when using the HMI-CAB-C84 cable.

■ SLC 500 Series (Using Data Highway Plus)

GP Setup		PLC Setup	
Baud Rate			
Data Length			
Stop Bit			
Parity Bit			
Data Flow Control			
Communication Format (RS-232C)			
Communication Format (RS-422)			
Unit No.			
Source ID *1	0		
Destination ID *1	1	Node Address	1

^{* 1} These settings can be made by "option" of GP system setting in Drawing Software (PRO/PBIII for Windows). It is not possible to set from the GP's OFFLINE menu.

^{* 2} Set the Communication Format to RS-422 when using the HMI-CAB-C83 cable.

■ PLC 5 Series (Using Data Highway Plus)

GP Setup		PLC Setup	
Baud Rate	57600 bps	Baud Rate	57600 bps
Data Length			
Stop Bit			
Parity Bit			
Data Flow Control			
Communication Format (RS-232C)			
Communication Format (RS-422)			
Unit No.			
Source ID *1	0		
Destination ID *1	1	Node Address	1

^{* 1} These settings can be set via the GP-PRO/PBIII [Option] area. These settings cannot be set using the GP's OFFLINE Mode.

PLC Model

57,600

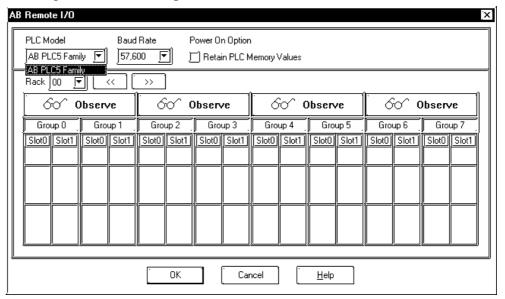
57,600

115,200 ∄230,400

AB PLC5 Family

■ PLC-5 Series (Using Remote I/O)

If you select the PLC type setting as "Remote I/O" for your GP-PRO/PBIII project, you will also need to configure your GP unit's I/O addresses. After the project is setup, the following configuration window can be found by clicking on the Mode Settings area's "Rack Setup" button.



PLC Model

Currently, only the AB PLC 5 Family is supported.

Baud Rate

AB PLC5 Family Select the baud rate used for the Remore I/O network. This selection must match that of the intended network. Baud Rate



Early versions of the QPI-ABR-001 RIO modules are not capable of operating at Important 230K baud.

◆ Retain Memory Values

To retain the memory values of all data input and all Block Transfer Reads (BTR), click on the checkbox titled "Retain PLC Memory Values. If this box is not checked, all data values will be set to 0 when the power is cycled (turned off).

◆ Rack Addresses

A rack corresponds to the I/O rack number of the I/O chassis in which you have placed the target I/O module. For rack emulation, the target I/O module is the emulated rack. The valid ranges for rack numbers are shown below. You cannot do a block transfer to a rack above address 17.

Processor	Maximum No. of Racks	Valid Range (octal)
PLC-5/10, -5/12, -5/15	4	00 - 03
PLC -5/25, -5/30	8	00 - 07
PLC-5/40, -5/40L	16	00 - 17
PLC-5/605/60L	24	00 - 27

1. Observation Mode

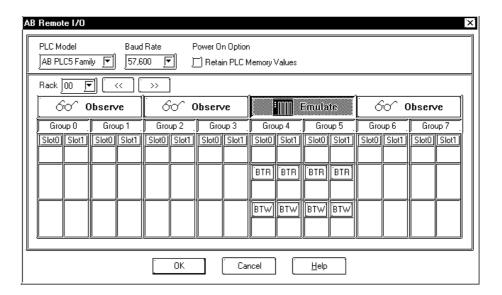
When you first start a project using Remote I/O, all racks are in OBSERVE mode, which allows the target display to listen to all discrete I/O transfers on the Remote I/O link.

An Allen Bradley rack corresponds to 128 input bits and 128 output bits of defined PLC data table memory. In the PLC memory, a "data table" reserves 128 bits for both input and output. This data table then allows the PLC to communicate with all other devices. No matter what I/O scheme (configuration) is being used, 1, 1/2, 1/4 slot addressing, the limit per rack is 128 bits.

When you select two (2) slot addressing, each pair of slots is assigned to the corresponding pair of words in the input and output image tables. You assign one I/O rack number to eight (8) I/O groups. The following drawing shows a rack of I/O that has been set up to use 2-slot addressing.

2. Emulate Mode

You can also have your GP emulate a rack for only discrete I/O, or configure it to work with "Block Transfer" read and write operations.



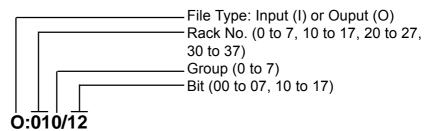
■ Discrete I/O

From the confiuration shown above (this window can be called up using the Project Setup area Mode tab's "Rack Setup" selection), select the areas of the master PLC's I/O table that the GP should emulate.



These areas should not be used by any other device.

In the above example, this GP will emulate RAck 01, Groups 4 & 5. This means that the GP can use addresses O:014/00 to O:014/17 and I:014/00 to I:014/17.



■ Block Transfer

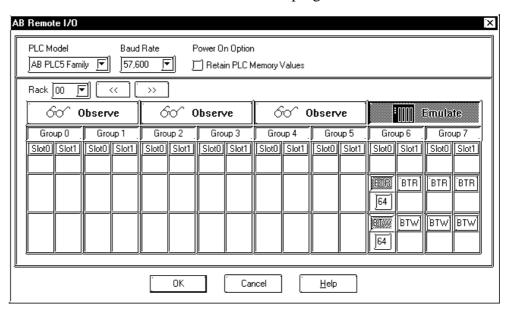
"Block Transfer" commands allow you to send and receive data to and from a PLC.

Use the configuration window shown below (called up by clicking on the Project Setup area Mode tab's [Option]) to select the areas of the master PLC's I/O table that should be used by the GP for Block transfer (Read or Write) and how many words (0 to 64) should be transferred.



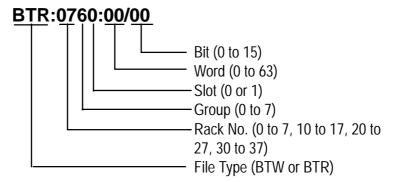
These areas should not be used by any other device.

The block transfer area selected here must be accompanied by an equivalent Block Transfer command in the PLC ladder program.

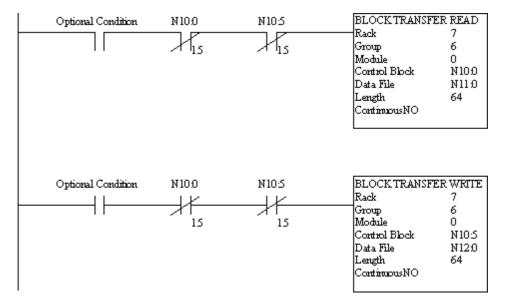


The difference between the BTR and BTW data types is very important. A BTR is s "Block Transfer Read" from the GP to the PLC, which means the GP can write to this area. A BTW is a "Block Transfer Write" from the PLC to the GP, which means the GP can read data from this area.

In the above example, the GP is using Rack 07, Group 6, Slot 0 for Block Transfer. Slot 0 is set with a BTR and BTW of 64. This means that the GP can use addresses BTR:0760:00 to BTR:0760:63, and BTW:0760:00 to BTW:0760:63.



The ladder program below shows how to transfer data from the GP to N10:0 to 63 and data (from the PLC's) N:11:0 to 63 into the GP.





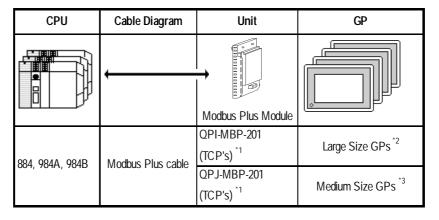
6.3 Modicon

6.3.1 System Structure

■ Modicon Modbus (GP Slave)

Host	Cable Diagram	GP
•		
Modbus Master	RS-232C	
	(Cable Diagram 1)	GP Series
	RS-422	(Slave)
	(Cable Diagram 2)	

■ Modicon Modbus Plus (CPU Direct Connection)



^{*1} Product manufactured by Total Control Products, Inc.

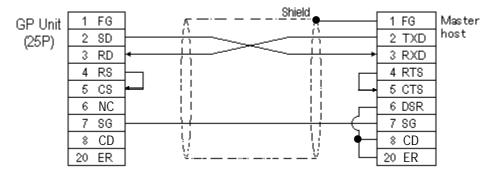
^{*2} For details, refer to 6.1 Connectable PLCs <GP List 1>.

^{*3} For details, refer to 6.1 Connectable PLCs <GP List 2>.

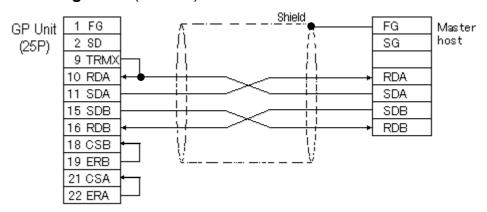
6.3 Modicon

6.3.2 Cable Diagrams

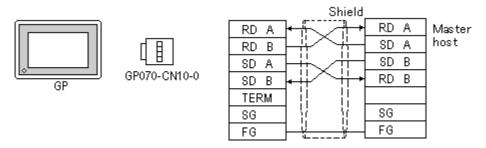
Cable Diagram 1 (RS-232C)



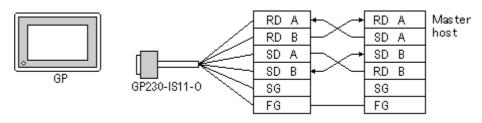
Cable Diagram 2 (RS-422)



• When using Digital's RS-422 connector terminal adapter GP070-CN10-0



• When using Digital's RS-422 Cable, GP230-IS11-0

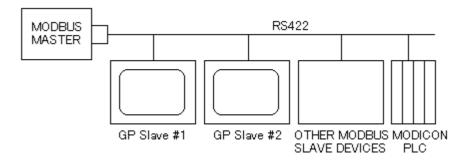




Wiring varies depending on types of master host.

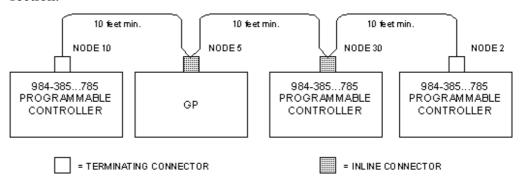
Modbus Slave Diagram

The drawing shows how a GP might be connected as a slave device.



Sample Network (Modbus Plus)

Each node has an LED indicator that flashes patterns to show its status on the network. A simple network consists of two or more nodes connected to a single section.



6.3.3 Supported Devices

■ Modicon Modbus (GP Slave)

Setup System Area here.

Device	Bit Address	Word Address	Particulars
Output Register		40001 ~ 49999	L∕H

■ Modicon Modbus Plus

Setup System Area here.

Device	Bit Address	Word Address	Particulars	
Output Bit	00001 ~ 08192		*1	
Input Bit	10001 ~ 18192		*1*2	L/H
Output Relay		40001 ~ 49999		ШП
Input Register		30001 ~ 39999	*2	

^{* 1} Can also specify a word (16 bit data).

^{* 2} Cannot perform data write.

6.3.4 Environment Setup

■ Modicon Modbus (GP Slave)

GP Setup		COM	COM Port	
Baud Rate	19200 bps	Baud Rate	19200 bps	
Data Length	8 bits	Data Length	RTV (8 bits)	
Stop Bit	1 bit	Stop Bit	1 bit	
Parity Bit	Even	Parity Bit	EVEN	
Data Flow Control	ER	Data Flow Control	ER	
Communication Format (RS-232C)	RS-232C	Communication Format (RS-232C)	RS-232C	
Communication Format (RS-422)	RS422	Communication Format (RS-422)	RS422	
Unit No.	1	Unit No. *1	1	

^{*1} Unit No. shows the number of the GP itself.

■ Modicon Modbus Plus

GP Se	GP Setup		COM Port		
Baud Rate					
Data Length					
Stop Bit					
Parity Bit					
Data Flow Control					
Communication Format (RS-232C)					
Communication Format (RS-422)					
Unit No.					
Station Address *1	1				
Route Selection *2	1	Station Address	2		

^{* 1} Set the station address with the Dip Switch for Modbus Plus module (QPI-MBP-201/QPJ-MBP-201).

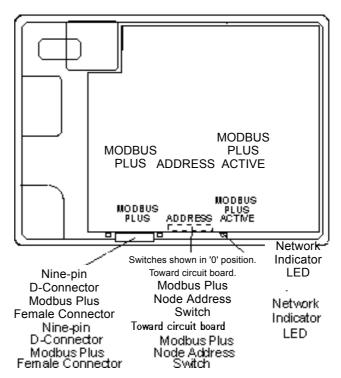
^{* 2} Route Selection can be made via the GP-PRO/PBIII System Settings area's "Option" menu.



- These settings cannot be changed via the GP's OFFLINE mode. You must use the GP-PRO/PBIII software.
- E and K-tags cannot use the "Indirect" Setting.
- After the H-tag starts (is triggered), data cannot be read (out).
- After the S-tag starts (is triggered), data cannot be read (out).
- The Trend graph's group data display's PLC device designation cannot be made.
- The data backup feature cannot be used, (only with Modbus PLUS).
- D-Script 's Memory Copy and Offset Address features cannot be used.
- The Logging and Filing Data features cannot be used.
- 2-Way Driver cannot be used.

Modbus Plus Adapter Module

The following drawing illustrates the Modbus Plus Adapter I/O module on a GP270 display.



Station Address Switches

Station Address		Switch	Positi	ons		
	1	2	3	4	5	6
	(1)	(2)	(4)	(8)	(16)	(32)
1	0	0	0	0	0	0
2	1	0	0	0	0	0
26	1	0	0	1	1	0
32	1	1	1	1	1	0
64	1	1	1	1	1	1



Note: Add one to switch a desired address setting. Switch down=ON=0.

Route Strings

Route strings are added to a variable name to locate the PLC address, which may be at the end of a chain. Each point on the link must be defined in order to arrive at the selected processor. For example, a route might be 60, 20, and 1, which would appear at the end of the variable name as 4100_60.20.1. If you define Route A as 60.20.1, then the variable name can be 4100_A. There are 26 route menus, designated A through Z.

The above setting can be made via the GP-PRO/PBIII System Settings area's "Option" menu.

Ethernet Connections

This chapter describes the system configuration of PLC made by various manufacturers and the GP [Ethernet], and explains the supported devices and examples of setting up the operating environment.



If Ethernet communication is performed using by the memory link method are used,

Reference Refer to the GP70 Series Memory Link Communication Protocol Manual. (GP Ethernet I/F Unit)

Connectable PLCs

The following tables list the PLCs that can be connected and used with the GP.

	Series Names	CPU	Ethernet Unit	Comments	PLC type in PRO/PBIII
	MELSEC-A	A2A A3A A2U-S1 A2N A2US	AJ71E71 A1SJ71E71	When using GP70, GP77R series units and the GP-2501T, an Ethernet-compatible unit is required. <gp 1="" glc="" list=""></gp>	MITSUBISHI MELSEC-A(ETHER)
M I T S U B	MELSEC-Q (Q mode CPU)	Q00C PU Q01C PU Q00JC PU Q02C PU Q02H C PU Q06H C PU Q12H C PU Q25H C PU	QJ71E71 QJ71E71-B2	When using GP77R series units and the GP-2501T, an optional Ethernet unit is required. <gp 2="" glc="" list=""></gp>	MITSUBISHI
S H I	MELSEC-QnA	Q2A Q2A-S1 Q3A Q4A Q4AR Q2AS Q2ASH Q2AS-S1 Q2ASH-S1	AJ71QE71-B5 AJ71QE71-B5 A1SJ71QE71-B2 A1SJ71QE71-B5		MELSEC-Q(ETHER)



When using the MELSEC-Q Series Multi CPU system, only Ethernet Unit's Control CPU that are connected to the GP can be accessed.

	Series Name	CPU	Ethernet Unit	Comments	PLC type in PRO/PBIII
T O S H I B	PROSEC-T	T3H T2N	EN311 PU-235N PU-245N	When using GP70, GP77R series units and the GP-2501T, an Ethernet-compatible unit is required.	TOSHIBA PROSEC-T(ETHER)
Y O K O G A W	FACTORY ACE FA-M3	F3SP20-0N F3SP21-0N F3SP25-2N F3SP30-0N F3SP35-5N F3SP28-3N F3SP38-6N F3SP53-4H F3SP58-6H	F3LE01-5T	When using GP70, GP77R series units and the GP-2501T, an Ethernet-conmpatible unit is required. <gp 1="" glc="" list=""></gp>	YOKOGAWA FA-M3 (ETHER)
O M R O N	SYSMAC CS1 Series SYSMAC CJ Series	CS1H-CPU67 CS1H-CPU66 CS1H-CPU64 CS1H-CPU63 CS1G-CPU45 CS1G-CPU44 CS1G-CPU44 CS1G-CPU42 CJ1G-CPU44	CS1W-ETN01	When using GP77R series units and the GP-2501T, an optional Ethernet unit is required. This units should not be used to connect with Pro-Server. <gp 2="" glc="" list=""></gp>	OMRON SYSMAC-CS1 (ETHER)

Chapter 7 - Ethernet Connections

■ List 1 of Applicable GP/GLC Units

	Series	s Name	Product Name	Expansion Ethernet Unit	Built-in Ethernet Port
GP70 S	eries	GP-470 Series	GP-470E	O	х
		GP-570 Series	GP-570S	0	х
			GP-570T	O	х
			GP-57JS	O	х
			GP-570VM	O	Х
		GP-571 Series	GP-571T	0	х
		GP-675 Series	GP-675S	0	х
			GP-675T	0	Х
		GP-870 Series	GP-870VM	O	Х
GP77R	Series	GP-377R Series	GP-377RT	O	Х
		GP-477R Series	GP-477RE	O	Х
		GP-577R Series	GP-577RS	O	х
			GP-577RT	O	х
GP2000 GP2000H		GP-2301H Series	GP-2301HL	Х	х
Series	Series		GP-2301HS	Х	х
		GP-2401H Series	GP-2401HT	Х	Х
		GP-2300 Series	GP-2300L	х	O
			GP-2300T	х	O
		GP-2400 Series	GP-2400T	Х	O
		GP-2500 Series	GP-2500L	O	O
			GP-2500S	O	O
			GP-2500T	o *1	O
		GP-2501 Series	GP-2501S	o *1	х
			GP-2501T	o *1	х
		GP-2600 Series	GP-2600T	o *1	O
GLC 200	00 Series	GLC-2300 Series	GLC-2300L	Х	O
			GLC-2300T	Х	O
		GLC-2400 Series	GLC-2400T	Х	O
		GLC-2600 Series	GLC-2600T	o *1	O

^{*1} The bus conversion unit (PSL-CONV00) is required.

Chapter 7 - Ethernet Connections

■ List 2 of Applicable GP/GLC Units

Series Name		Product Name	Expansion Ethernet Unit	Built-in Ethernet Port
GP77R Series	GP-377R Series	GP-377RT	O	Х
	GP-477R Series	GP-477RE	O	Х
	GP-577R Series	GP-577RS	O	Х
		GP-577RT	O	Х
GP2000 Series	GP-2300 Series	GP-2300L	Х	0
		GP-2300T	Х	O
	GP-2400 Series	GP-2400T	Х	O
	GP-2500 Series	GP-2500T	o *1	0
	GP-2501 Series	GP-2501S	o *1	Х
		GP2501T	o *1	Х
	GP-2600 Series	GP-2600T	o *1	O
GLC 2000 Series	GLC-2300 Series	GLC-2300L	Х	0
		GLC-2300T	Х	0
	GLC-2400 Series	GLC-2400T	Х	0
	GLC-2600 Series	GLC-2600T	o *1	•

^{*1} The bus conversion unit (PSL-CONV00) is required.

7.2 Mitsubishi Electric

7.2.1 System Structure for Ethernet Connection

This section explains the system structure for the Ethernet connection between a PLC made by Mitsubishi Electric and the GP.

■ MELSEC-A Series/AJ71E71, A1SJ71E71 (using Ethernet Unit)

СРИ	Link I/F	Cable Diagram	Cables	Unit	GP/GLC
	Ethernet Unit				
A2A, A3A, A2N,	AJ71E71		Ethernet cable	Digital's GP Ethernet I/F	
A2U-S1			(conforming to	Unit	
			the IEEE802.3)	(GP070-ET11/GP070	
A2US	A1SJ71E71			ET41)	GP/GLC Series *1
				GP77R Series Multi Unit E	GP/GLC Series
				(GP077-MLTE11)	
				GP-377R Series Multi Unit (GP377-MLTE11)	

^{*1} When using GP/GLC and extended units, refer to

Reference 7.1 Connectable PLCs, ■ List 1 of Applicable GP/GLC Units.



• For cable connections, refer to the user's manual for each optional unit. For the GP2000 and GLC2000 series, however, refer to the user's manual for the main unit.

■ MELSEC-Q Series

CPU	LinkI/F	Cable Diagram	Cables	Unit	GP/GLC
	Ethernet Unit	4			
Q02CPU Q02HCPU Q06HCPU Q12HCPU Q25HCPU	QJ71E71 QJ71E71-B2		Ethernet cable (conforming to the IEEE802.3)	Digital's GP Ethernet I/F Unit GP070-ET11 GP070-ET41 GP377-MLTE11 GP377-MLTE41 GP077-MLTE41	GP/GLC Series *1

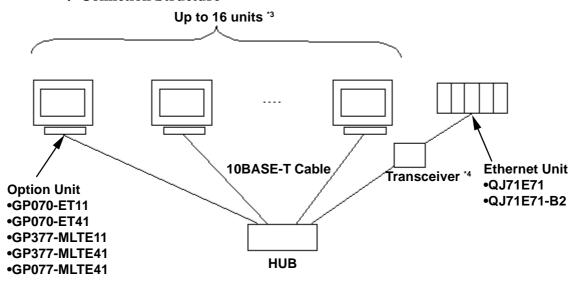
*1 When using GP/GLC and extended units, refer to

Reference 7.1 Connectable PLCs, ■ List 1 of Applicable GP/GLC Units.



For cable connections, refer to the user's manual for each optional unit. For the GP2000 and GLC2000 series, however, refer to the user's manual for the main unit.

♦ Connction Structure



- *3 When transmitting data via the PLC's OPEN Setting feature instead of the Auto OPEN UDP Port feature, up to 16 GP units can be connected. Also, when using the PLC's Auto Open UDP Port feature, there is no limitation for the number of GP units that can be connected.
- *4 When using a 10BASE-5 or a 10BASE-2 cable with the Mitsubishi PLC, use a transceiver to connect this cable with the 10BASE-T cable.

■ MELSEC-QnA Series

CPU	Link I/F	Cable Diagram	Cables	Unit	GP/GLC
	Ethernet Unit		-		
Q2A	AJ71QE71		Ethernet cable	Digital's GP	
Q2A-S1	AJ71QE71-B5		(conforming to	Ethernet I/F Unit	
Q3A			the IEEE802.3)	GP070-ET11	
Q4A				GP070-ET41	
Q4AR				GP377-MLTE11	GP/GLC Series *1
Q2AS	A1SJ71QE71-B2			GP377-MLTE41	
Q2AS-S1	A1SJ71QE71-B5			GP077-MLTE41	
Q2ASH					
Q2ASH-S1					

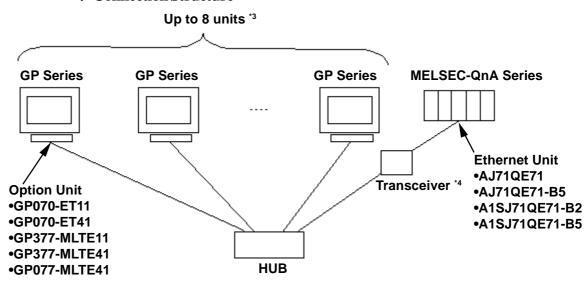
^{*1} When using GP/GLC and extended units, refer to

Reference 7.1 Connectable PLCs, \blacksquare List 1 of Applicable GP/GLC



Note: • For cable connections, refer to the user's manual for each optional unit. For the GP2000 and GLC2000 series, however, refer to the user's manual for the main unit.

Connection Structure



^{*3} When transmitting data via the PLC's OPEN Setting feature instead of the Auto OPEN UDP Port feature, up to 8 GP units can be connected. Also, when using the PLC's Auto Open UDP Port feature, there is no limitation for the number of GP units that can be connected.

^{*4} When using a 10BASE-5 or a 10BASE-2 cable with the Mitsubishi PLC, use a transceiver to connect this cable with the 10BASE-T cable.

7.2.2 Supported Devices

The following describes the range of devices supported by the GP.

■ MELSEC-A Series

Setup System Area here.

Device	Bit Address	Word Address	Particulars	
Input Relay	X0000 ~ X1FFF	X0000 ~ X07F0	<u>xx</u> 01	
Output Relay	Y0000 ~ Y1FFF	Y0000 ~ Y07F0	<u>xx</u> 01	
Internal Relay	M0000 ~ M8191	M0000 ~ M8176	<u> </u>	
Latch Relay	L0000 ~ L8191			
Special Relay	M9000 ~ M9255	M9000 ~ M9240	<u>÷16</u> 1	
Annunciator	F0000 ~ F2047	F0000 ~ F2032	<u>÷16</u> 1	
Link Relay	B0000 ~ B0FFF			
Timer (contact)	TS0000 ~ TS2047			
Timer (coil)	TC0000 ~ TC2047			L/H
Counter (contact)	CS0000 ~ CS1023			
Counter (coil)	CC0000 ~ CC1023			
Timer (current value)		TN0000 ~ TN2047		
Counter (current value)		CN0000 ~ CN1023		
Data Register		D0000 ~ D6143	Bit 1 51	
Special Register		D9000 ~ D9255	Bit 1 51	
Link Register		W0000 ~ W0FFF	Bit F	
File Register		R0000 ~ R8191	Bit 1 51	



The range of supported devices may differ depending on your CPU. For the range of supported devices for each CPU, refer to the User's Manual for Model AJ71E71 Interface Unit by Mitsubishi Electric.

■ MELSEC-Q/MELSEC-QnA Series

Setup System Area here.

Device	Bit Address	Word Address	Particulars	5
Input Relay	X0000 ~ X1FFF	X0000 ~ X1FF0	<u>xx</u> 01	
Output Relay	Y0000 ~ Y1FFF	Y0000 ~ Y1FF0	[xxxO]	
Internal Relay	M0000 ~ M32767	M0000 ~ M32752	<u>÷16</u> 1	
Special Relay	SM0000 ~ SM2047	SM0000 ~ SM2032	<u>÷16</u> 1	
Latch Relay	L0000 ~ L32767	L0000 ~ L32752	<u>÷16</u> 1	
Annunciator	F0000 ~ F32767	F0000 ~ F32767	<u>÷16</u> 1	
Edge Relay	V0000 ~ V32767	V0000 ~ V32752	<u>÷16</u> 1	
Step Relay	S0000 ~ S8191	S0000 ~ S8176	<u>÷16</u> 1	
Link Relay	B0000 ~ B7FFF	B0000 ~ B7FF0	<u> </u>	
Special Link Relay	SB000 ~ SB7FF	SB000 ~ SB7F0	<u> </u>	
Timer (contact)	TS00000 ~ TS23087			
Timer (Coil)	TC00000 ~ TC23087			
Aggregate Timer (contact)	SS00000 ~ SS23087			
Aggregate Timer (coil)	SC00000 ~ SC23087			
Counter (contact)	CS00000 ~ CS23087			L/H
Counter (coil)	CC00000 ~ CC23087			
Timer (current value)		TN00000 ~ TN23087		
Aggregate Timer (current value)		SN00000 ~ SN23087		
Counter (current value)		CN00000 ~ CN23087		
Data Register		D00000 ~ D25983	<u>Bit [5]</u>	
Special Register		SD0000 ~ SD2047	Bit 151	
Link Register		W0000 ~ W657F	Bit F	
Special Link Register		SW000 ~ SW7FF	Bit F	
File Register (Normal)		R0000 ~ R32767	<u>Bit] 5]</u>	
		0R0000 ~ 0R7FFF	Bit F	
		1R0000 ~ 1R7FFF	Bit F	
File Register (Serial)	:	:	:	
		30R0000 ~ 30R7FFF	Bit F	
		31R0000 ~ 31R67FF	Bit F	



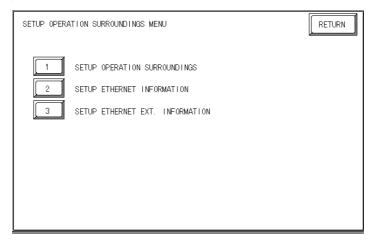
- Note: The device ranges given here show the maximum range available for each parameter setting.
 - When using File Regsters, depending on the type of unit used, a PLC Memory Card may be required. Depending on the size of the Memory Card, the device ranges will change. For details, refer to Mitsubishi Electric Co., Ltd's User's Manual.
 - When using the QnA series unit's File Registers, depending on the QnA unit's CPU version, certain usage restrictions will apply. For details, refer to Mitsubishi Electric Co., Ltd.'s User's Manual for QnA Series.

7.2.3 Environment Setup

■ GP Settings

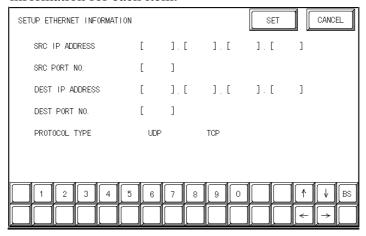
The communications settings for the GP, which are required for communications via the Ethernet, as shown below:

♦ SET UP OPERATION SURROUNDINGS Menu



♦ SET UP ETHERNET INFORMATION

Select "SET UP ETHERNET INFORMATION," and then enter the necessary information for each item.



• SRC IP ADDRESS

Enter the IP address for the GP at your station. To do this, separate the 32 bits of the IP address into four segments of eight bits each, delimit those segments with a dot, and then enter them as decimal numbers.

· SRC PORT NO.

Enter your station port number in the range from 1024 to 65535.

• DEST IP ADDRESS

Enter the IP address of the other station (the MELSEC).

• DEST PORT NO.

Enter the port number of the other station in the range from 1024 to 65535.

PROTOCOL TYPE

You can select either UDP or TCP communication. If the power will be turned ON/OFF synchronously, it is recommended that you use UDP communications.



For the IP addresses, check with the network manager. Do not specify any duplicate IP address.



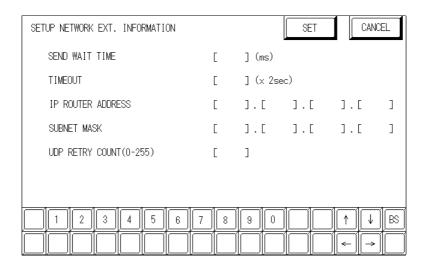
When using the built-in Ethernet port on a GP2000 or GLC2000 series unit, be sure not to set any duplicate "SRC PORT No." values.

Check the 2-way driver's "SRC PORT No." setting via the following menu:

GP OFFLINE mode's Main menu [INITIALIZE] -> [SETUP OPERATION SURROUNDINGS] -> [EXTENDED SETTINGS] -> [SETUP ETHERNET INFORMATION].

The default value is 8000. The 2-way driver uses this port and the following 9 ports (8000 ~ 8009). Be sure not to use Port No.s 5001 and 5002, since they are used by the PLC's Ethernet Unit.

♦ SET UP NETWORK EXT. INFORMATION



• SEND WAIT TIME (0 to 255)

Wait time can be added when a command is transmitted from the GP. Use the wait time if the traffic on the communications line is heavy. If no wait time is required, enter "0."

• TIMEOUT (0 to 65535)

Enter the desired timeout value. If no response is received from the other station within the specified time, a timeout occurs. If "0" is specified, the default time is 15 seconds when it is TCP communication, and is 5 seconds when it is UDP communication.

IP ROUTE ADDRESS

Enter the IP address of the router (only one). If no router is used, enter "0" in all fields.

SUBNET MASK

Enter subnet masks. If no subnet mask is used, enter "0" in all fields.

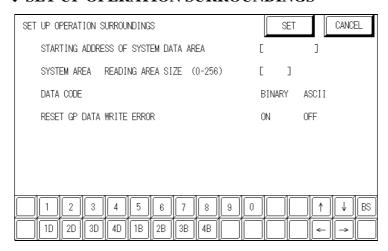
• UDP RETRY COUNT (0 to 255)

Designates the number of times the GP re-sends a command when there is no reply from the other port and a timeout occurs. When no reply is received after the re-try setting number is reached, an error message will appear on the GP screen.



If the memory is initialized in the OFFLINE mode, random values may be included. Be sure to check the displayed values.

♦ SET UP OPERATION SURROUNDINGS



• DATA CODE (Set only when connecting to a MELSEC-Q Series and MELSEC-QnA Series)

This selection controls the type of DATA CODE settings used. Select either BINARY or ASCII, and confirm that the PLC settings are the same.

■ Sample Ladder Program

♦ MELSEC-A Series (Ethernet interface unit: AJ71E71)

PLC's Ladder Program is needed to communicate with the GP.

YReference

For the complete details of settings, refer to the user's manual for Model AJ71E71 Ethernet Interface Unit (Mitsubishi Electric).

The follwing is a sample ladder.

<Sample Ladder>

_		
LD	M9038	
DMOVE	Hxxxxxxxx	D100 (IP address of PLC)*1
MOVP	K0 D102	
MOV	H0100 D116	(Settings for UDP communications)
MOV	K1024 D124	(Port number of PLC)
MOV	K1024 D127	(Port number of GP)
DMOV	Hxxxxxxxx D125	(IP address of GP) *1
DMOV	HFFFFFFF	D128
MOV	HFFFF D130	
LD	M9036	
TOP	H0000 H0000	D100 K50
LD	X0019	
MOV	K5 D113	
TOP	H0000 K13	D113 K1
LD	M9036	
OUT	Y0019	
LD	M9036	
OUT	Y0008	
END		

^{*1} For the IP addresses, check with the network manager. "xxxxxxx" stands for an IP address in the hexadecimal notation. Do not specify any duplicate addresses.



Be sure that any addresses (D...) used in the communications settings for the PLC are not the same as the first address of the system on the GP.

♦ MELSEC-Q Series

Prior to GP starting GP communciation, the MNET/10H Ethernet settings must be set in the PLC's ladder logic software. The setting values are as shown below.

- 1. Network Parameter MNET/10H Ethernet Settings
- 2. Ethernet Operation Settings
- 3. OPEN Settings

1. Network Parameter MNET/10H Ethernet Settings

Items	PLC Settings
Network Classification	Ethernet
First I/O No.	Any number *1
Network No.	Any number *1
Group No.	Any number *1
Machine No.	Any number *1
Mode	Online

^{*1} This setting does not effect PLC/GP communication.

2. Ethernet Operation Settings

Recommended	C . 44
II Kecommended	Semmos

Items	PLC Settings		
Data Code Settings	BINARY Code ASCII Code		
Initial Timing Settings	Not waiting for OPEN Always waiting for OPEN		
IP Address Settings	Any number ^{*1}		
Write Possible in RUN mode	Not allowed Allowed *2		

^{*1} Please contact your computer network supervisor to confirm your setting data.

^{*2} When performing Write from a GP in RUN mode, set the Write Possible in RUN mode to "Allowed".

3. OPEN Settings

Items	PLC Settings		5	Remarks		
Protocol	TC	TCP/IP UDP/IP		IDP/IP	Should be same as GP unit's	
1 1010001	10	1 /11		ODI /II	Communcation Format Settings.	
OPEN Format *1	Active	Fullpass	ive	Unpassive	Either Fullpassive or Unpassive can	
OPEN FOIMAL	ACUVC	i ulipass	IV C	Onpassive	be used.	
SRC Port No.		Any num	hor *2		Should be same as GP unit's DEST	
SKC FULLING.	SRC Port No. Any number *2			Port No.		
DEST IP Address	ess Any number *2 *3		Should be same as GP unit's SRC			
DEST II Address		Arry number			IP Address.	
DEST Port Address		Any number *2*3		3	Should be same as GP unit's SRC	
DEST FULLAULIESS					Port No	
Fixed Buffer	Trans	Transmission Subscription		bscription	Independent of GP.	
Fixed Buffer Method	Υ	es		No	Independent of GP.	
Paring Open	Υ	Yes No		No	Independent of GP.	
Confirming	N	lo		Yes	Both can be used.	

^{*1} Can be used only when Protocol is set to TCP/IP.

When the Auto Open UDP Port feature is used, the Table 3. OPEN Settings are not needed. When these settings are used, however, the PLC's port number is 5000 (default setting).

Reference For details, refer to Mitsubishi Electric's Q and QnA Series Ethernet Interface User Manuals.

♦ MELSEC-QnA Series

PLC's Ethernet Unit Dipswitch Settings and a Ladder Program are needed to communicate with the GP.

Ethernet Unit Settings

Operation Mode Setting Switch

Contents	Settings
Operation Mode Settings	0:Online

^{*2} Please contact your computer network supervisor to confirm your setting data.

^{*3} If OPEN Format is set to "Unpassive", this item does not need to be set

Communication Condition Setting Switch

			Recommended Settings	
Switch	Contents	Set	tings	
SW1		OFF:When TCP/IP Timeout Error occurs, the line is closed.	ON:When TCP/IP Timeout Error occurs, the line is not closed.	
SW2	Data Code Settings	OFF:BINARY Code	ON:ASCII Code	
SW3	Auto Start Settings	OFF:Perform action(s) defined in Y19.	ON:Regardless of Y19, after unit is turned ON again or is Reset, Initialization is performed.	
SW4~SW6		Cannot use (fixed to OFF)		
SW7	CPU Communication Timing Settings *1	OFF:Write in RUN mode is Impossible.	ON:Write in RUN mode is Possible.	
SW8	Initial Timing Settings	OFF:Quick Start (start without time delay)	ON:Normal Start (Start after 20 seconds time delay)	

^{*1} When performing Write From GP in RUN mode, set the CPU Comunication Timing Settings to ON.

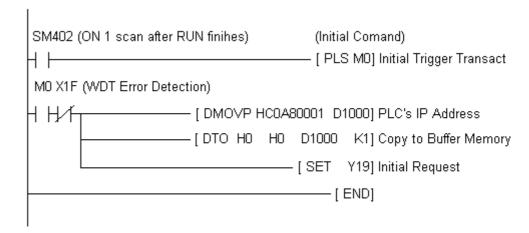
Sample Ladder Program

This Sample Ladder Program is for communication via the Auto Open UDP Port No. (default:5000).

PLC IP Address: 192.168.0.1

PLC Port No.: 5000

When communicating via this function, the GP's IP Address and Port No. do not need to be set.



▼Reference ▲

The sample ladder above is the minimum ladder to communicate with GP via UDP/IP. For details about error processing and TCP/IP communication, refer to Mitsubishi Electric Co., Ltd.'s User's manual for QnA Series Ethernet Interface Unit (Detail manual).

Error Code

Reference About the GP Ethernet Speicific Error Codes, refer to the end of this Chapter, "Protocol Stack Error Codes".

■PLC SPECIFIC ERROR CODES

PLC error codes are displayed by the "Host Communication Error (02:**:**)", and indicated in the left lower corner of the GP screen. (**:**indicates the PLC's specific error codes)

Error Code	Description	Status
0055	Write error in RUN mode	Write in RUN mode is set to OFF.
4031	CPU Device Settings Error	Designated device is outside allowable range.

Reference For more details about error codes, refer to Mitsubishi Electric Co., Ltd.'s User's Manuals for Q Series Ethernet Interface Unit and QnA Series Ethernet Interface Unit.

7.3 **TOSHIBA**

System Structure for Ethernet Connection

This section explains the system structure for the Ethernet connection between a PLC made by Toshiba and the GP.

■ PROSEC T Series (using Ethernet unit)

СРИ	Link I/F	Cable Diagram	Cables	Unit	GP/GLC
	Ethernet Unit	——			
T2N	PU-235N PU-245N		Ethernet cable (conforming to the IEEE802.3)	Digital's GP Ethernet I/F unit (GP070-ET11/GP070-ET41) GP77R Series Multi Unit E (GP077-MLTE11) GP377R Series Multi Unit (GP377-MLTE11)	GP/GLC Series *1

^{*1} When using GP/GLC and extended units, refer to

TReference 7.1 Connectable PLCs, \blacksquare List 1 of Applicable GP/GLC



• For cable connections, refer to the user's manual for each optional unit. For the CP2000 and GLC2000 series, however, refer to the user's manual for the main unit.

7.3.2 Supported Devices

The following describes the range of devices supported by the GP.

■ PROSEC T Series (T3H)

	Setup	System	Area	here.
--	-------	--------	------	-------

Device	Bit Address	Word Address	Particular	
Input Device	X0000 ~ X511F	XW000 ~ XW511		
Output Device	Y0000 ~ Y511F	YW000 ~ YW511		
Auxiliary Relay	R0000 ~ R999F	RW000 ~ RW999		
Special Relay	S0000 ~ S255F	SW000 ~ SW255		
Link Register Relay	Z0000 ~ Z999F	-		
Link Relay	L0000 ~ L255F	LW000 ~ LW255		
Timer (contact)	T000 ~ T999	-	Read only	L/H
Counter (contact)	C000 ~ C511	-	Read only	
Timer (current value)	-	T000 ~ T999		
Counter (current value)	-	C000 ~ C511		
Data Register	-	D0000 ~ D8191	<u>B ; 1</u> 5)	
Link Register	-	W0000 ~ W2047	<u>B : 15</u> 1	
File Register	-	F00000 ~ F32767	<u>□ 15</u> 1	



The range of supported devices may be different depending on your CPU. For details, refer to Toshiba PLC's user's manual.



If you Write in Read Only Timer (contact) device or in Read Only Counter (contact) device, the "PLC COM. ERROR (02:10)" message will appear.

■ PROSEC T Series (T2N)

\square S	etup System	Area here.
-------------	-------------	------------

Device	Bit Address	Word Address	Particular	
Input Device	X0000 ~ X127F	XW000 ~ XW127		
Output Device	Y0000 ~ Y127F	YW000 ~ YW127		
Auxiliary Relay	R0000 ~ R255F	RW000 ~ RW255		
Special Relay	S0000 ~ S255F	SW000 ~ SW255		
Link Register Relay	Z0000 ~ Z999F	-		
Link Relay	L0000 ~ L255F	LW000 ~ LW255		
Timer (contact)	T 000 ~ T 511	-	Read Only	L/H
Counter (contact)	C000 ~ C511	-	Read Only	
Timer (current value)	-	T000 ~ T511		
Counter (current value)	-	C000 ~ C511		
Data Register	-	D0000 ~ D8191	<u>в.</u> 15)	
Link Register	-	W0000 ~ W2047	<u>в.</u> 15)	
File Register	-	F0000 ~ F1023	<u>15</u>)	

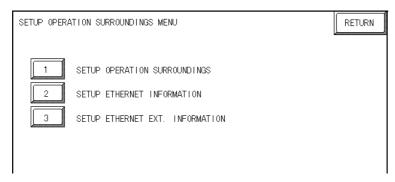


If you Write in Read Only Timer (contact) device or in Read Only Counter (contact) device, the "PLC COM. ERROR (02:10)" message will appear.

7.3.3 Environment Setup

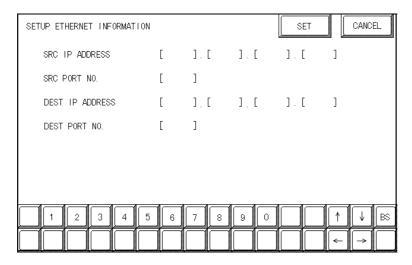
■ GP Unit Setup

The following describes GP settings for using Ethernet communication.





Set the station No. to "0" for [1] SET UP OPERATION SUR-ROUNDINGS.



Select "SETUP ETHERNET INFOR-MATION" and set up the Addresses and Port Numbers.

• SRC IP ADDRESS

Enter GP's SRC IP Address. Input a dot between every 8 bits to divide the IP Address (32 bits all together) into four gorups, and enter decimal numbers in each groups.

• SRC PORT NO.

Set the SRC Port No. between 1024 and 65535.

DEST IP ADDRESS

Set the PROSEC's DST IP Address.

• DEST PORT NO.

Set the DEST Port No. between 1024 and 65535.



The communication method is UDP format.

Important

When using the built-in Ethernet port on a GP2000 or GLC2000 series unit, be sure not to set any duplicate "SRC PORT No." values.

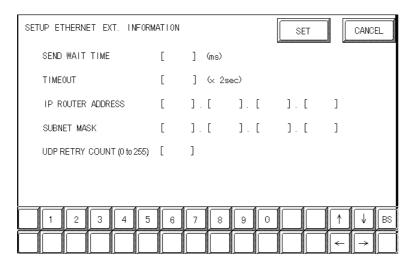
Check the 2-way driver's "SRC PORT No." setting via the following menu:

GP OFFLINE mode's Main menu [INITIALIZE] -> [SETUP OPERATION SURROUNDINGS] -> [EXTENDED SETTINGS] -> [SETUP ETHERNET INFORMATION].

The default value is 8000. The 2-way driver uses this port and the following 9 ports.



Regarding the IP Address and the Port No., please confirm these points with your Network supervisor. You must not duplicate the number you have already used for an IP Address setting.



SEND WAIT TIME

You can display the waiting time while GP's command is actually sent. This function is useful when there is a lot of traffic in your system. If not using, set it to "0".

TIMEOUT

You can set time for waiting for a replay from the destination. If any replay is not made by the destination within time you set to, the communication will be timeout. "O" setting is the default value as 15 second-setting for timeout.

IP ROUTER ADDRESS

Set Router's IP Address. (There is only one setting for Router.) If not using, set all values to "0".

SUBNET MASK

Set the Subnet Mask. If not using, set all values to "0".

UDP RETRY COUNT (0 to 255)

Chapter 7 - Ethernet Connection

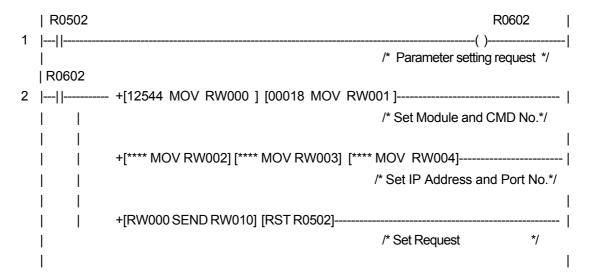


- If you intialize the memory from the OFFLINE mode, some values might be automatically set to the factory settings. Please confirm all values after intialization.
- Refer to the PLC's users manual for PLC settings.
- Set the Ethernet module to the RUN mode after you have set the IP Address and the Port No.

■ Sample Ladder Program

The following is the Sample Program shown in the Toshiba's Ethernet Module Users Manual.

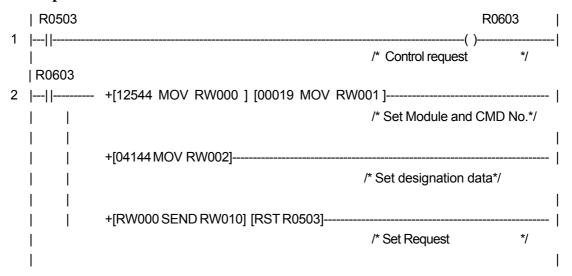
♦IP Address \ Port No. settings





Please contact your computer network supervisor to confirm your IP Address and Port No.

♦Operation Mode control





After setting an IP Address, you need to switch the system to LINE Mode.



7.4 Yokogawa Electric

7.4.1 System Structure for Ethernet Connection

This section explains the system structure for the Ethernet connection between a PLC made by Yokogawa Electric Corp. and the GP.

■ FACTORY ACE Series/FA-M3 (Using Ethernet Unit)

CPU	Link I/F	Cable Diagram	Cable	Unit	GP/GLC
	Ethernet Unit				
F3SP20-0N F3SP21-0N F3SP25-2N F3SP30-0N F3SP35-0N F3SP28-3N F3SP38-6N F3SP53-4H F3SP58-6H	F3LE01-5T		Ethernet Cable IEEE802.3 standard	Digital's GP Ethernet I/F unit (GP070-ET11/GP070-ET41) GP77R Series Multi Unit E (GP077-MLTE11) GP-377R Series Multi Unit (GP377-MLTE11)	GP/GLC Series *1

^{*1} When using GP/GLC and extended units, refer to

TReference

7.1 Connectable PLCs, ■ List 1 of Applicable GP/GLC Units.



• For cable connections, refer to the user's manual for each optional unit. For the GP2000 and GLC2000 series, however, refer to the user's manual for the main unit.

7.4.2 Supported Devices

The following list shows the range of devices supported by the GP.

■ FA-M3 Series

Setup System Area here.

Device	Bit Address	Word Address	Particulars	
Input Relay	X00201 ~ X71664	X00201 ~ X71649	<u>÷16+</u>]) *1*2	
Output Relay	Y00201 ~ Y71664	Y00201 ~ Y71649	<u>÷16+</u>]) *1	
Internal Relay	100001 ~ 132768	100001 ~ I32753	<u>÷16+</u>])	
Joint Relay	E0001 ~ E4096	E0001 ~ E4081	<u>÷16+</u>])	
Special Relay	M0001 ~ M9984	M0001 ~ M9969	<u>÷16+</u>])	
Link Relay	L00001 ~ L78192	L00001 ~ L78177	<u>÷16+</u>])	
Timer (contact)	T0001 ~ T3072			
Counter (contact)	C0001 ~ C3072			
Timer (current value)		TP0001 ~ TP3072		
Timer (setup value)		TS0001 ~ TS3072	*2	L/H
Counter (current value)		CP0001 ~ CP3072		L/11
Counter (setup value)		CS0001 ~ CS3072	*2	
Data Register		D0001 ~ D32768	Bit 1 51	
		B00001 ~ B065536		
Filo Dogistor		B065537 ~ B131072	—1 E 1 *3	
File Register		B131073 ~ B196608	Bit 51 °	
		B196609 ~ B262144	•	
Joint Register		R0001 ~ R4096	Bit 1 51	
Special Register		Z001 ~ Z1024	Bit 1 51	
Link Register		W00001 ~ W74096	Bit 1 5 1 *4	

^{*1} The value of the terminal number (bit), 01~49, of the last two digits for the Input Relay and

Output Relay can only be a multiple of 16 + 1.

$$X \stackrel{OO2}{=} \stackrel{O1}{=}$$
Slot No. $\stackrel{}{=} \stackrel{}{=} Terminal No.$

(Continued on next page)

^{*2} Cannot perform data write.

*3 File registers are each 65,535 words on your GP application.

You cannot extend over more than a single data "block" when performing the following features.

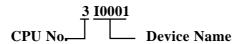
Be sure to set these features' settings so they are within a single data block.

- 1) "a-tag" settings
- 2) Performing Block read/write from Pro-Server
- 3) Desginating the "Convert from" and "Conver to" address for the "Address Conversion" features
- *4 When using a PC Link module, only Link Register up to B99999 can be used.
- *5 A total of up to 4,096 link registers can be used.



• Write the CPU Number (1~4) in front of the device name.

E.g. For Internal Relay I0001, CPU #3:



• The range of device that can be used will vary depending on the type of PLC.

For detailed information refer to the Yokogawa's Sequnce CPU manual.

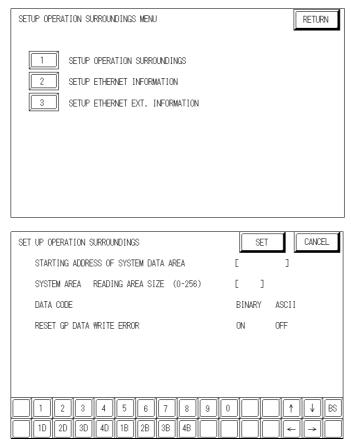
• The Device fields used will differ depending on the type of PLC. Refer to the Yokogawa PLC's manual for the range allowed for the device address area.

7.4.3 Environment Setup

■ GP Settings

The GP's required Ethernet communication settings are shown below.

♦SETUP OPERATION SURROUNDINGS MENU

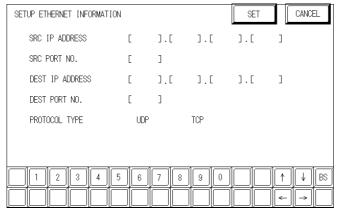


DATA CODE

This selection controls the date code settings. Select either BINARY or ASCII. Be sure this value is the same as the current PLC setting.

♦SETUP ETHERNET INFORMATION

Select "SET UP ETHERNET INFORMATION," from the above screen and enter the necessary information for each item shown below.



SRC IP ADDRESS

Enter the IP address for your GP here. The IP address 32 bits are separated into four segments of eight bits each, delimited with a dot. All are decimal numbers.

SRC PORT NO.

Enter your station's port number here, from 1024 to 65535.

DEST IP ADDRESS

Enter the IP address of the other station (PLC).

DEST PORT NO.

Enter the port number for the other station. In this case, 12289.

PROTOCOL TYPE

You can select either UDP or TCP communication. If the power will be turned ON/OFF asynchronously, it is recommended that you use UDP communications.



Do not specify duplicate IP addresses. Contact the network manager about IP addresses.



When using the built-in Ethernet port on a GP2000 or GLC2000 series unit, be sure not to set any duplicate "SRC PORT No." values.

Check the 2-way driver's "SRC PORT No." setting via the following menu:

GP OFFLINE mode's Main menu [INITIALIZE] -> [SETUP OPERATION SURROUNDINGS] -> [EXTENDED SETTINGS] -> [SETUP ETHERNET INFORMATION].

The default value is 8000. The 2-way driver uses this port and the following 9 ports.

SETUP ETHERNET EXT. INFORMATION SET CANCEL SEND WAIT TIME] (ms) Γ TIMEOUT Ε] (x 2sec) IP ROUTER ADDRESS Ε].[].[].[SUBNET MASK Ε].[].[].[٦ UDP RETRY COUNT (0-255) Ε] 2 3 5 7 0 4 6 8 9

SET UP ETHERNET EXT. INFORMATION

SEND WAIT TIME (0 to 255)

Wait time can be added when a command is transmitted from the GP. Use the wait time if the traffic on the communications line is heavy. If no wait time is required, enter "0."

TIMEOUT (0 to 65535)

Enter the desired timeout value. If no response is received from the other station within the specified time, a timeout occurs. If "0" is specified, the default time is 15 seconds when using TCP, and 5 seconds when using UDP.

IP ROUTER ADDRESS

Enter the IP address of the router (one only). If no router is used, enter a "0" in each of the four fields.

SUBNET MASK

Enter the subnet mask data. If no subnet mask is used, enter a "0" in each of the four fields.

UDP RETRY COUNT (0 to 255)

Designates the number of times the GP re-sends a command when there is no reply from the other port and a timeout occurs. When no reply is received after the re-try setting number is reached, an error message will appear on the GP screen.



If the GP's memory is initialized in OFFLINE mode, random values may appear in these settings. Be sure to check all displayed values after performing initialization.

■ PLC Settings

The PLC's required Ethernet communication settings are shown below. Designate the setting via the Ethernet module's side face switch.

PLC Settings			
Data Code Switch	ON (Binary)/OFF(ASCII)		
Write Protect	OFF (Not Protected)		
TCP Timeout	OFF (Close)		
Run Mode	OFF (RUN)		
IP Address	Set via Rotary Switch		

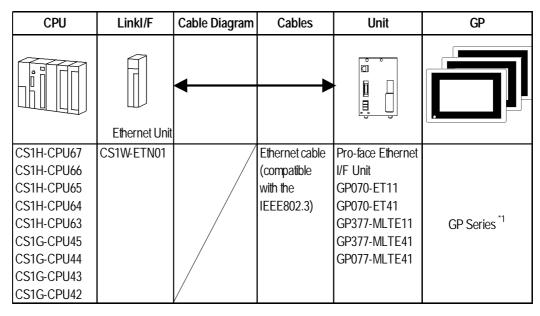


7.5 Omron

7.5.1 System Structure for Ethernet Connection

This section explains the system structures for the Ethernet connection between OMRON PLCs and GP units.

■SYSMAC CS1 Series



^{*1} When using GP/GLC and extended units, refer to

Reference 7.1 Connectable PLCs, ■ List 2 of Applicable GP/GLC Units.



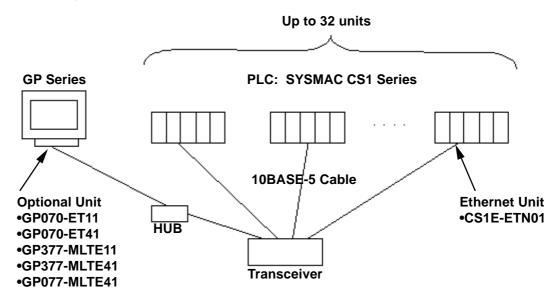
• For cable connections, refer to the user's manual for each optional unit. For the GP2000 and GLC2000 series units, however, refer to the user's manual for the main unit.



Careful! Do not to connect this Ethernet network with Pro-Server.

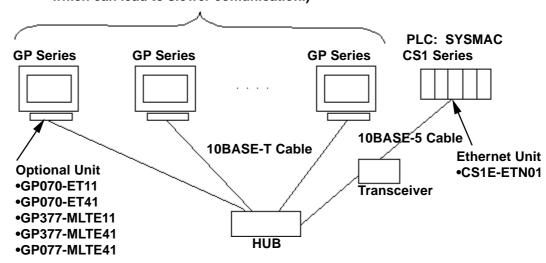
♦System Design

Ex.) 1: n connection

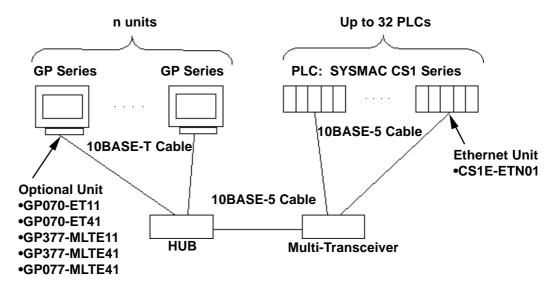


Ex.) n:1 connection

n units (While there is no limitation to the number of units connected, as the number increases, the comunication load will also increase, which can lead to slower comunication.)

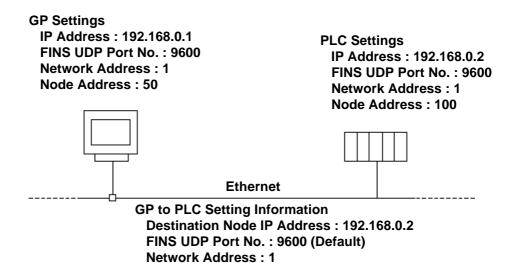


Ex.) n:m connection



♦Network Design

• When the GP and the target PLC use the same network address.



Node Address: 100

• When there is a junction PLC used between the GP and target PLC.

GP Settings

IP Address: 192.168.0.1 FINS UDP Port No.: 9600 Network Address: 1

Node Address: 50

Junction PLC Settings
IP Address: 192.168.0.2
FINS UDP Port No.: 9600

Control Link

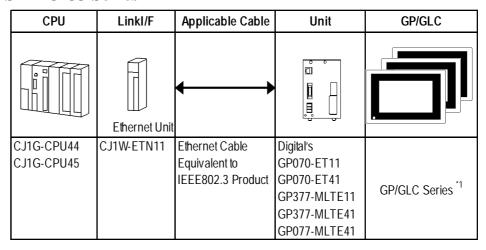
GP to PLC Setting Information

Destination IP Address: 192.168.0.2 (IP Address for Junction PLC) FINS UDP Port No.: 9600 (Default) (Port No. for Junction PLC)

Destination Network Address : 2 Destination Node Address : 1

Ethernet

■SYSMAC CJ Series



*1 When using GP/GLC and extended units, refer to

Reference 7.1 Connectable PLCs, ■ List 2 of Applicable GP/GLC Units.



 For cable connections, refer to the user manual for each optional unit. For GP2000 and GLC2000 series units, however, refer to that unit's user manual.



This series CPU cannot be connected to Pro-Server.

7.5.2 Supported Devices

The following list shows the range of devices supported by the GP.

■SYSMAC CS1/CJ Series

Setup System Area here.

Device	Bit Address	Word Address	Other
Channel I/O	CIO000000 ~ CIO614315	CIO0000 ~ CIO6143	*2
Internal Auxiliary Relay	W00000 ~ W51115	W000 ~ W511	
Hold Relay	H00000 ~ H51115	H000 ~ H511	
Special Auxiliary Relay	A00000 ~ A95915	A000 ~ A959	*1
Timer (Contact)	T0000 ~ T4095		*3
Counter (Contact)	C0000 ~ C4095		*3
Timer (Current)		T0000 ~ T4095	
Counter (Current)		C0000 ~ C4095	
Data Memory	D0000000 ~ D3276715	D00000 ~ D32767	*2 L/H
Expansion Data Memory (E0 ~ EC)	E00000000 ~ EC3276715	E000000 ~ EC32767	*4
Expansion Data Memory (Current Bank)		EM00000 ~ EM32767	<u>Bitl 5</u>] ⁵
Task Flag		TK0 ~ TK30	±2⊃ m151 ³
Index Register		IR0 ~ IR15	Bit 31)
Data Register		DR0 ~ DR15	Bit] 5]

^{*1} A00 through A477 are not available for writes.

For further details, refer to the user's manual for OMRON's SYSMAC CS1 Series Ethernet Unit, CS1W-ETN01J.

^{*2} When the Ethernet unit (CS1W-ETN01) is used, the data memory addresses D30000 through D31599 and the channel I/O addresses C101500 through C101899 are used as the system setup area by the PLC. Therefore, do not write data to these addresses from the GP.

^{*3} Data cannot be written in RUN mode.

^{*4} The range of the extended data memory (E0 to EC) varies depending upon the CPU models.

^{*5} Extended data memory (current bank) is not available with CJ series CPUs.

◆Device Address and Node Number Limitations

Even though the CS1 Ethernet Protocol can access more than one CPU, the following limitations apply.

Limitations

When a device address's size is larger than 1024 (1K) or a different network and node addresses is set, the number of available device addresses will vary. The GP uses internal records are used to set the device addresses. There records are limited to 64. For example, when the D0 device address is set, a single record is used in the GP. For detailed examples, refer to the following chart.

Ex1.) Number of records used when designating tag setting numbers.

Setting No.	NetWork Address		Device Address	Remaining Number of records in GP- PRO/PBIII	Other
1	1	1	D0	63	Uses one record
2	1	1	D1024	62	Uses one record
3	2	1	D0	61	Uses one record
4	2	1	D1024	60	Uses one record
5	2	1	ТО	60	Since the node number and address range already exist as setting No.3, no records will be used.
6	2	1	T1024	60	Since the node number and address range already exist as setting No.4, no records will be used.
7	2	1	D2048	59	Uses one record
8	2	2	D2048	58	Uses one record
9	3	1	D2048	57	Uses one record
10	3	1	D2049	57	Since the node number and address range already exist as setting No.9, no records will be used.

When the total number of Network Addresses, Node Addresses and Device Addresses are exceeds 1024, GP internal records are used. However, if the Network Address, Node Address and Device Address are the same type, no record will be used, even if the device types are different.

Ex2.) When setting tags from D00000 to D16384 in Data Memory, since one record is used for every 1024 addresses, a total of 16 records will be used.

16384/1024=16

Therefore, when setting the same number of tags for each node, settings for only a total of only four nodes can be set.

64/16=4



When the number of records is over 65, the following error message will appear on the GP Screen Editor software (GP-PRO/PBIII for Windows).

"Address entry limit reached. No more can be entried"

GP-PRO/PBIII for Windows Ver.6.0 PLC Connection Manual

♦ When setting parts or tags from GP Screen Editor (GP-PRO/PBIII for Windows)

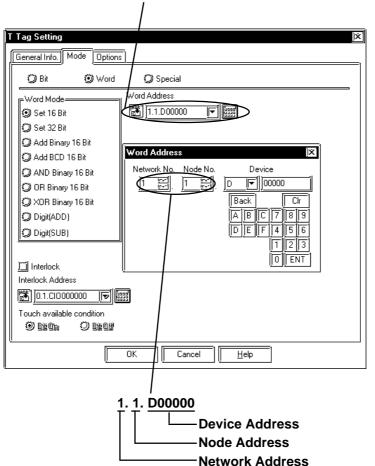
Before setting parts or tags, Network Information settings must be entered. Network Information Setting can be set from the [GP SYSTEM SETTING]->[MODE SETTIN]->[Network Information] screen.

Reference this manual, 7.5.3 Environment Setup

Specifying the PLC's Network Address and Node Address when setting parts or tags, allows the specified PLC's Device to be read out.

Setting Example

When the Destination Network Address is 1 and Node Address is 1, "1" for the Network Address and "1" for the Node Address.





In case of setting parts or tags from GP Screen Editor (GP-PRO/PBIII for Windows), PLC's Network Address and Node Address can be set when inputting the address. When the Network Address or Node Address are not specified, the previously entered numbers are kept. When entering new setup values, the default values are:

Network Address: 0

Node Address: 1

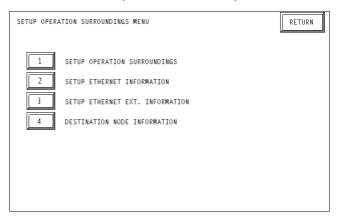
7.5.3 Environment Setup

■GP Settings

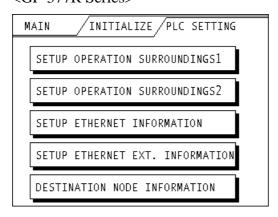
The following screens show the GP's communication settings, which are required for communications via the Ethernet connection:

♦SET UP OPERATION SURROUNDINGS MENU

<GP-477R Series, GP-577R Series, GP2000 Series>

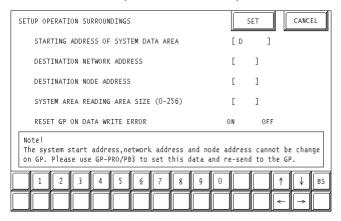


<GP-377R Series>



• SET UP OPERATION SURROUNDINGS

<GP-477R Series, GP-577R Series, GP2000 Series>



<GP-377R Series>

SETUP OPERATION SURROUNDINGS1 SET ESC
SYSTEM AREA START ADR D
DEST NETWORK ADR
DEST NODE ADR
Please use GP-PRO/PB3 to modify the address for system, network and node.
SETUP OPERATION SURROUNDINGS2 SET ESC
SYSTEM AREA READ SIZE
RESET GP ON WRITE ERROR
RESET GP ON WRITE ERROR
RESET GP ON WRITE ERROR



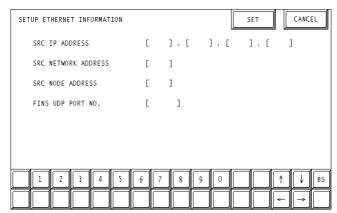
Be sure the Destination Network Address and Destination Node Address entered are the same as the PLC's settings. However, the Destination Network Address and Destination Node Address settings cannot be changed from the GP's OFFLINE mode. Be sure to make these settings from the GP Screen Editor's [GP SYSTEM SETUP] -> [MODE SETUP] setting area..

This manual, 7.5.3 Environment Setup ■GP Screen Editor software (GP-PRO/PBIII for Windows) Settings

SETUP ETHERNET INFORMATION

Enter each item in the SET UP ETHERNET INFORMATION screen.

<GP-477R Series, GP-577R Series, GP2000 Series>



<GP-377R Series>

SETUP NETWORK INFORMAT:	ION SET ESC
SRC IP ADD. [].[].[].[]
SRC NETWORK ADDRESS	
SRC NODE ADDRESS	
FINS UDP PORT NO.	

SRC IP ADDRESS

Enter the IP address for the GP at your satation. To do this, separate the 32 bits of the IP address into four segments of eight bits each, delimit those segments with a dot, and then enter them as decimal numbers.

SRC NETWORK ADDRESS (0 to 127)

Enter your GP's Network address.

SRC NODE ADDRESS (0 to 126)

Enter your GP's Node address.

• FINS UDP PORT NO. (1024 to 65535)

Enter the FINS UDP port number, between 1024 and 65535. Set the port number so that it is the same as the PLC's FINS UDP port number. The PLC's default value is 9600. When connecting one PLC with more than one GP unit, all GP FINS UDP port numbers need to be set as the same values.



Do not specify duplicate IP addresses. Contact your network manager about assigning IP addresses.



• When using the built-in Ethernet port on a GP2000 Series unit, be sure not to enter duplicate "SRC PORT No." values.

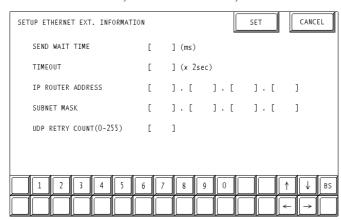
Check the 2-way driver's "SRC PORT No." Setting via the following menu:

GP OFFLINE mode's Main menu [INITIALIZE] -> [SETUP OPERATION SURROUNDINGS] -> [EXTENDED SETTINGS] -> [SETUP ETHERNET INFORMATION] screen.

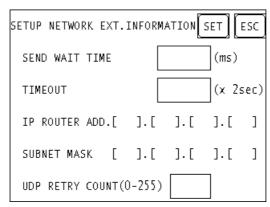
The default value is 8000. The 2-way driver uses this port and the following nine ports for a total of 10 (8000 ~ 8009).

♦SET UP NETWORK EXT. INFORMATION

<GP-477R Series, GP-577R Series, GP2000 Series>



<GP-377R Series>



• SEND WAIT TIME (0 to 255)

Wait time can be added when a command is transmitted from the GP. Use the wait time if the traffic on the communications line is heavy. If no wait time is required, enter "0."

• TIMEOUT (0 to 65535)

Enter the desired timeout value. If no response is received from the other station within the specified time, a timeout occurs. If "0" is specified, the default time is 5 seconds with UDP/IP communication.

• IP ROUTER ADDRESS

Enter the IP address of the router (only one). If no router is used, enter "0" in all fields.

SUBNET MASK

Enter the subnet mask settings. If no subnet mask is used, enter "0" in all fields.

• UDP RETRY COUNT (0 to 255)

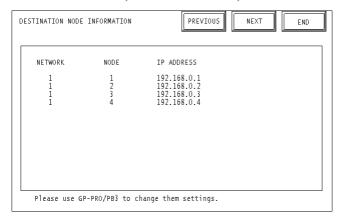
Designates the number of times the GP re-sends a command when there is no reply from the other port and a timeout occurs. When no reply is received after the retry setting number is reached, an error message will appear on the GP screen.



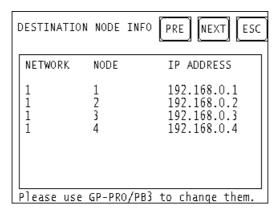
If GP memory is initialized in OFFLINE mode, random values may be included. Download the GP System Setting from GP-PRO/PBIII for Windows.

• DESTINATION NODE INFORMATION

<GP-477R Series, GP-577R Series, GP2000 Series>



<GP-377R Series>



DESTINATION NODE INFORMATION

The Destination (PLC) Network Address, Destination Node Address and IP Address are displayed here. Press [NEXT] button to see the next page.



The DESTINATION NODE INFORMATION cannot be set or changed from the OFFLINE mode. Set or change these values from the GP Screen Editor software (GP-PRO/PBIII for Windows) [GP SYSTEM SETTINGS]-> [MODE SETTINGS] -> [NETWORK INFOMATION SETTINGS].

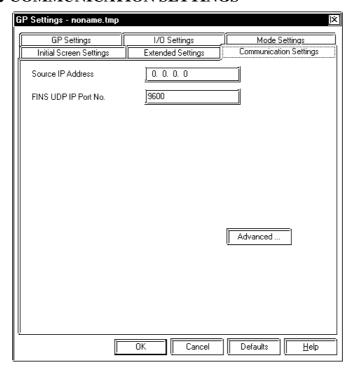
TReference This manual, **7.5.3 Environment Setup** ■GP Screen Editor software (GP-PRO/PBIII for Windows) Settings

■ GP Screen Editor software (GP-PRO/PBIII for Windows) settings

The following items can be entered from the GP Screen Editor software (GP-PRO/PBIII for Windows) [GP SYSTEM SETTINGS] -> [MODE SETTING] area.

Menu	Sub Menu	Item
Communication Settings		SRC IP ADDRESS
		FINS UDP PORT NO.
	Addvanced Communication	SEND WAIT TIME
	Settings	TIME OUT
		IP ROUTER ADDRESS
		SUBNET MASK
Mode Settings		SYSTEM START ADDRESS
		READ AREA SIZE
	Network Information Settings	NETWORK ADDRESS
		NODE ADDRESS
		DESTINATION NETWORK ADDRESS
		DESTINATION NODE ADDRESS
		DESTINATION IP ADDRESS

◆COMMUNICATION SETTINGS



SRC IP ADDRESS

Enter the IP address for the GP at your satation. To do this, separate the 32 bits of the IP address into four segments of eight bits each, delimit those segments with a dot, and then enter them as decimal numbers.

• FINS UDP PORT NO. (1024 ~ 65535)

Enter the FINS UDP port number, between 1024 and 65535. Set the port number so that it is the same as the PLC's FINS UDP port number. The PLC's default value is 9600. When connecting one PLC with more than one GP unit, all GP FINS UDP port numbers need to be set as the same values.

Advanced Communication Setup X Send Wait Time 0 □ msec OK Time Out 0 □ x2 sec Cancel IP Router Address 0. 0. 0. 0 Help Subnet Mask 0. 0. 0. 0 0

•ADDVANCED COMMUNICATION SETTINGS

2

SEND WAIT TIME (0 to 255)

Wait time can be added when a command is transmitted from the GP. Use the wait time if the traffic on the communications line is heavy. If no wait time is required, enter "0."

• TIMEOUT (0 to 65535)

UDP Retry Count

Enter the desired timeout value. If no response is received from the other station within the specified time, a timeout occurs. If "0" is specified, the default time is 5 seconds with UDP/IP communication.

• IP ROUTER ADDRESS

Enter the IP address of the router (only one). If no router is used, enter "0" in all fields.

SUBNET MASK

Enter the subnet mask settings. If no subnet mask is used, enter "0" in all fields.

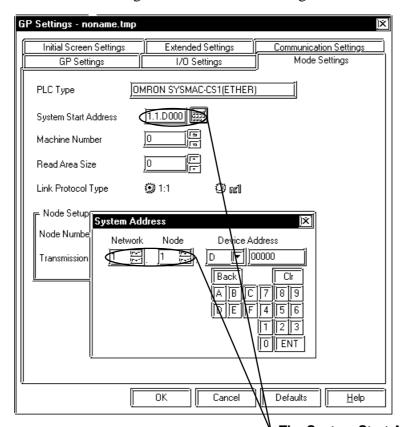
• UDP RETRY COUNT (0 to 255)

Designates the number of times the GP re-sends a command when there is no reply from the other port and a timeout occurs. When no reply is received after the retry setting number is reached, an error message will appear on the GP screen.

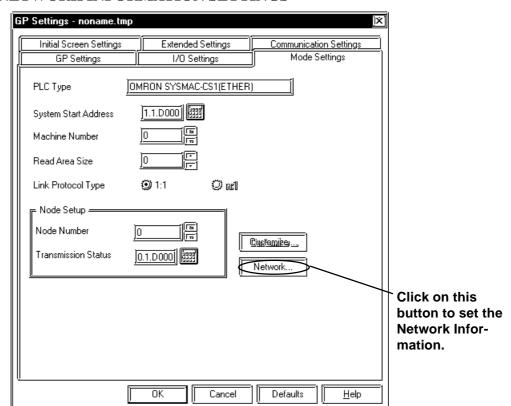
◆MODE SETTINGS

•SYSTEM START ADDRESS SETTINGS

System Start Address Settings are as shown below. The System Area and Read Area are assigned to the PLC node designated here.

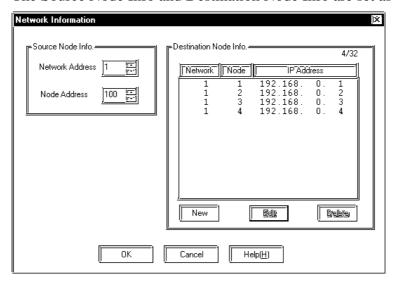


The System Start Address is allocated to the PLC node entered here. Set the Network Address and Node Address to the same address values as set in the Destination Node Infomation. (Set in the [MODE SETTINGS] -> [NETWORK SETTINGS].).



•NETWORK INFORMATION SETTINGS

The Source Node Info and Destination Node Info are set as shown below.

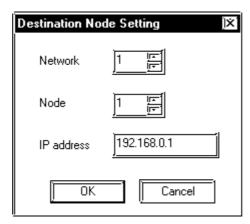


The Source Node Info can be entered by clicking on that item directly.

SOURCE NODE INFO.

Enter your GP's Network Address and Node Address.

When entering Destination Node Information Settings, click on New or Edit button and the dialog box shown below appears.



DESTINATION NODE SETTING

Enter the destination PLC Node number. The Maximum number of Nodes is 32. The Destination PLC Node IP Address needs to be set to the same address as the target PLC or the junction PLC's IP address. The Destination Network Address and Destination Node Address need to be set to the target PLC's addresses.

■PLC SETTINGS

♦SYSMAC CS1 Series

Item	GP Settings		PLC S	ettings
SRC IP Address	SRC IP Address	GP's Address *1	IP Address Setting Switch	PLC's Address
SRC Node Address	SRC Node Address	GP's Address	Node No. Switch	PLC's No.
SRC Network Address	SRC Network Address	GP's Address	Network Address	PLC's Address
Destination IP Address	Destination IP Address	Target or transit PLC's IP Address	IP Address Table	GP's IP Address
Destination Node Address	Destination Node Address	Target or transit PLC's Node Address	IP Address Table	GP's Node Address
Destination Network Address	Destination Network Address	Target or transit PLC's Network Address		
Port No. *2	FINS UDP Port No.	9600	FINS UDP Port No.	9600

^{*1} Contact your network administrator about setting values.

When using the following function on a GP2000 Series unit, be sure not to use duplicate port number values. Check the 2-way driver's port number setting via the following menu:

GP OFFLINE mode's Main menu [INITIALIZE] -> [SETUP OPERATION SUR-ROUNDINGS] -> [EXTENDED SETTINGS] -> [SETUP ETHERNET INFORMATION].

The default value is 8000. The 2-way driver uses this port and the following nine ports for a total of $10 (8000 \sim 8009)$.

Port number's offset	Function
+1	For MtoMLan (GP-PRO/PBIII for Windows Screen Transmit)
+2	For ProNet (Pro-Server with Pro-Studio for Windows)
+3	Reserved
+4	For GP-Web
+5	Reserved
+6	For Pro-Control Editor
+7	Reserved
+8	For GP-PRO/PBIII for Windows Simulation
+9	Reserved



Be sure not to set a duplicate Node Address in the same Network Address group.

^{*2} PLC's default Port number is 9600. Be sure to set the same number as the GP setting.

Error Code

Reference About the GP Ethernet Specific Error Codes, refer to the end of this Chapter, "Protocol Stack Error Codes".

■PLC SPECIFIC ERROR CODES

The PLC error codes are displayed by the "Host Communication Error (02:**:**:##:##)", and are indicated in the left lower corner of the GP screen. (**:**indicates the PLC error codes and ###:### indicates the Network Address and Node Address.) PLC error codes are shown using 2-byte, Main Response Codes and Sub Response Code.

Host Communication Error (02:**:**:######) **Node Address (Dec) Network Address (Dec) Sub Response Code (HEX)** Main Response Code (HEX)

Reference For more details about error codes, refer to Omron Communications Reference Manual for SYSMAC CS1 Series (Chapter 5 FINS Commands, End Codes).

7.6 Protocol Stack Error Codes

7.6.1 Protocol Stack Error Codes

The error codes related to the protocol stack are displayed on the GP screen as follows:

PLC COM. ERROR (02:FE:**)

"**" represents any of the error codes 00 to F0 shown in the above table.

Error code	Description	Other
00	There is a setup error related to the IP address of your station at initialization.	
05	Initialization has failed.	
06	Abortion of communications has failed.	
07	An attempt was made to establish a connection before initialization was successfully completed.	
08	The port number of your station is abnormal.	
09	The port number of the destination station is abnormal.	
0A	The IP address of the other station is abnormal.	
0B	The same port number is already being used by the UDP for establishing the connection.	
0C	The same port number is already being used by the TCP for establishing the connection.	
0D	The protocol stack has refused connection establishment.	
0E	The protocol stack has returned the unsuccessful establishment of a connection.	
0F	The connection has been shut down.	
10	All the connections are busy. No connection is available.	
13	Your station is aborted by the other station	
30	There is no reply from the protocol stack	
32	There is no reply from the other station	*1
40	The designated Node Addresses do not exist in Network Information.	*1
41	I/O Memory Type for Randam Read Out response data is wrong.	*1
42	Network Information does not exist.	
F0	Undefined error.	

^{*1} When using an Omron CS1 Series unit, the error code display is as shown below. The Network Addresses and Node Addresses also are displayed.

Host Communication Error (02:FE:	<u>*</u> : <u>##</u> #:# <u>##</u>)"
	Node Address (Dec) Network Address (Dec) Ethernet Error Code (HEX)



8 Profibus-DP

8.1 Connectable PLCs

The following tables list the PLCs that can be connected and used with the GP.

PLC Maker	Series Name	CPU Type (ex.)	Notes	PLC Setting
Siemens	S7 300	S7 315-2-DP	Profibus unit is	PROFIBUS
	S7 400	S7 413-2-DP	required	

The following table lists the GPs that can be connected and used with the Profibus-DP.

<GP List>

Series Name		Product Name	Unit
GP70 Series	GP-470 Series	GP-470E	
	GP-570 Series	GP-570L	
		GP-570S	
		GP-570T	
	GP-675 Series	GP-675S	
		GP-675T	
GP77R Series	GP-477R Series	GP-477RE	Profibus-DP Module
	GP-577R Series	GP-577RS	(GP070-PF11) *1
		GP-577RT	(GF0/0-F111)
GP2000 Series	GP-2500 Series	GP-2500L	
		GP-2500S	
		GP-2500T	
	GP-2501 Series	GP-2501S	
		GP-2501T	
	GP-2600 Series	GP-2600T	

^{*1} For GP2000 Series units, a bus conversion unit (PSL-CONV00) is required.

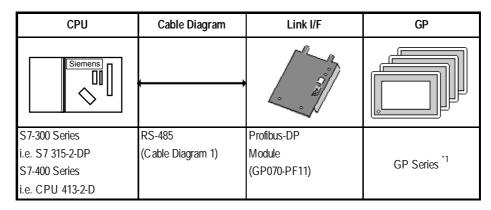


8.2 Profibus-DP

8.2.1 System Structure for Profibus-DP Connection

The following table shows the types of PLCs that can be used with Digital's GP panel.

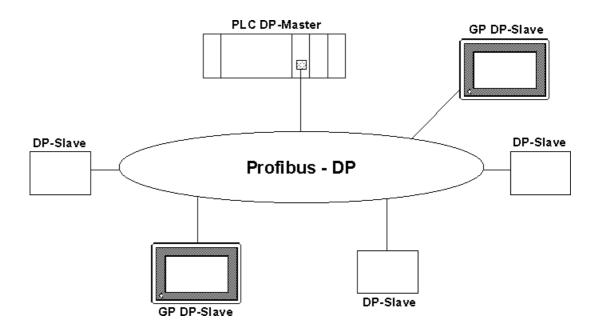
■ SIMATIC S7-300/400 Series



^{*1} When using GP units, refer to 8.1 Connectable PLCs < GP List>.

■ Typical Profibus-DP System Layout

The following diagram shows the standard design of a typical Profibus-DP system.





Be sure to earth the PLC's FG according to your country's earthing standards.

(For details, please refer to the PLC maker's manual) Pull out a small amount of the Transfer Cable's shield, make a wire out of it and connect it to the PLC's FG terminal.



Cable Data (for S7315-2-DP model)

Parameters: Line A Line B, according to Profibus-DP DIN

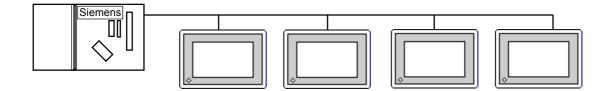
19245 part1/4.91, section 3.1.2.3

Wire Gauge: >0.64mm >0.53mm Conductor Area: >0.34mm² >0.22mm²

■ Profibus Network Layout

The maximum number of GPs that can be connected at any one time will depend on the size of the User PLC's I/O memory. For example, given the User is using a Seimens S7315-2-DP, the following connections would be possible.

Maximum No. for Packet Transfer - 4
of Connections for Direct I/O - 64



8.2.2 Data Transfer with GP via Profibus-DP

■ Data Transfer Settings

There are two modes of operation for data transfer: Direct I/O and Packet Transfer. These can be selected from the "OFFLINE mode" on the GP. Typical settings for this OFFLINE screen are shown below.

From the initial OFFLINE menu screen:

- 1) Select [INITIALIZE] to call up the initial settings screen.
- 2) Select the [SET UP OPERATION SURROUNDINGS] menu item (screen below appears).
- 3) Configure the environment settings to suit your particular requirements. (Ex. Direct I/O, Input/Output Area Size, etc.)



Use PRO-PBIII to set the System Area's start address. This cannot be set with the GP's OFFLINE mode.

```
SET UP OPERATION SURROUNDINGS
        SYSTEM DATA AREA START DATA BLOCK [
                                                0010
                                                       ]
                      START DATA WORD [
                                          000
        SYSTEM AREA READING AREA SIZE (0 - 256)[ 0 ]
        COMMUNICATION DATA TYPE
                                            DIRECT I/O PACKET
        DIRECT I/O START ADDRESS
                                               LS0020
                 INPUT AREA SIZE
                                       [
                                           16
                                               1
                 OUTPUT AREA SIZE
                                            16
                                                ]
```

Direct I/O

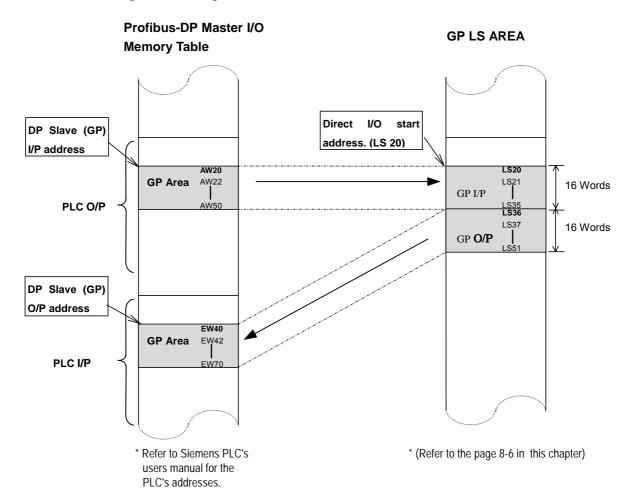
The GP can communicate with a master PLC in a very simple manner using the "Direct I/O" configuration. With this method, an area of memory is mapped from the GP's LS area into the PLC's input area and an area of the PLC's output is mapped into the GP's LS area. Set the start address of the direct I/O where you would like the GP's internal memory to be mapped from, e.g. LS20. Set the Input and Output area sizes (in words) as required (max. 64 words). These are the sizes of the areas which will be mapped to and from the PLC and are shown below as shaded areas.



Input and output sizes must match those set up in the designated hardware configuration.

Reference this section's □ "Configuring the GP as a Profibus-DP Slave"

This concept is illustrated below. The GP Slave Input and Output start addresses, EW40 and AW20, have been configured using the PLC programming device (for other PLC types, see relevant documentation on how to configure Input anda Output addresses).



Packet Transfer

This option gives the user greater flexibility than the Direct I/O option, allowing him to read a wider range of devices. This flexibility is the result of using an interpreter program, run on the PLC, in addition to the User's own PLC program(s). For information about these items, refer to the "README. TXT" file in the "FIELDBUS" folder on the GP-PRO/PB III for Windows Ver.5.0 CD-ROM.

■ GP Packet Transfer Environment Settings

The following settings are needed to allow the GP to function in the packet transfer mode:

1) Use the OFFLINE screen's SETUP OPERATION SURROUNDINGS area to choose the "PACKET" communication option.

Reference ''8.2.2 Data Transfer with GP via Profibus-DP''

2) Set this area's INPUT AREA SIZE and OUTPUT AREA SIZE settings to "0".



If the INPUT and OUTPUT AREA values are not set to "0", packet transfer cannot be performed.

■ PLC (Master) Packet Transfer Environment Settings

The Profibus interface unit must be configured as an input and output device, and both the input and output areas need to be allocated 16 bytes of PLC memory.

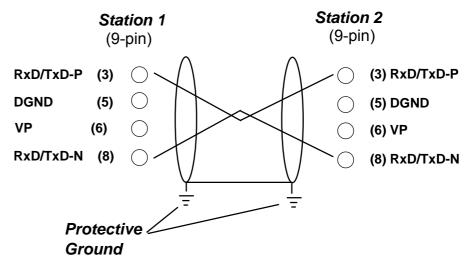
■ "Configuring the GP as a Profibus-DP Slave" and "Installation of Interpreter Project"

For information about these items, refer to the "README. TXT" file in the "FIELDBUS" folder on the GP-PRO/PB III for Windows Ver.5.0 CD-ROM.

8.2.3 Cable Diagram

The following cable diagram should be used when making a cable for the Profibus-DP cable's connector.

Cable Diagram 1 RS-485



8.2.4 Supported Devices

■ Profibus-DP (for Direct I/O)

The range of devices supported by the GP is shown below.

Device	Bit Addresses	Word Addresses	Note
LS	LS00200 - LS1999F	LS0020 - LS1999	



- The User must confirm that sufficient memory is available for the Input and Output areas. For example, if the User chooses 32 words I/P and 32 words O/P, the maximum value for the Direct I/O start address is LS1935.
- The System Area function is NOT available in DIO mode.

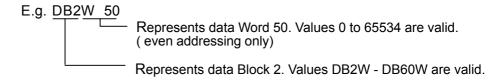
■ SIMATIC S7-300/400 Series (for Packet Transfer)

Setup System Area here.

Device	Bit Address	Word Address	Note
Data register		DB2W0000 - DB60W65534	*1, *2
Input relay	1000000- 1655357	IW00000- IW65534	*3, *4
Output relay	O000000 - O655357	OW00000 - OW65534	*3
Internal memory	M00000 - M655357	MW00000 - MW65534	*3

^{*1} The data range used for the Data Register must be set up in the PLC by the User. Please confirm that all data addresses referenced actually exist (are valid).

^{*2} The S7 Data Register uses the following Byte Addressing method:



^{*3} The Bit Device illustration is as follows:

E.g,	GP Inscription	PLC Inscription
	10007	10.7

^{*4} The Input relay device cannot be written from the GP.



- Failure to configure the Profibus unit correctly can result in inconsistent GP operation on the Profibus network.
- This protocol is intended to be used as a generic protocol for all Profibus PLC's. As a result, the ranges and devices stated here are not intended for any single PLC maker. The user should be sure to check that all values used are those required for their specific PLC.

Environment Setup Cautions

- The user must be sure to use the normal Profibus configuration software to configure the GP unit for use on the Profibus network. Also, the User must ensure that all devices and addresses designated actually exist, otherwise the User's PLC may stop.
- When using the Siemens S7 family of PLCs, the system area start address must be set via the editor software.
- The user must be sure that the System Area's start address is set so that sufficient memory is available for all the System Area used. For example, if 10 words of system area are used, the maximum start area address would be 65524.



Use PRO-PBIII to set the System Area's start address. This cannot be set with the GP's OFFLINE mode.

8.2.5 Environment Setup

■ GP Data Transfer Settings

	GP Settings		
Data Transfer Speed	9.6K to 12Mbps *1		
Data Transfer Method	RS-485		
System Area Start Address		DB2W0	DB60W65514
Station No. *2		0	127

: Default Settings

■ Data Transfer Setup Checklist

The following items should be confirmed prior to transferring data on the Profibus network.

- 1) Be sure that all the installation procedures have been followed.
- 2) Be sure the Profibus unit's two rotary switches are set correctly and, if required, a terminating resistor is used.
- 3) If necessary, be sure the default hardware configuration provided on the Installation disk has been modified correctly.
- 4) Be sure to use the GP's OFFLINE Mode screens to designate the correct options for either a Packet Transfer or Direct I/O configuration. (Use the steps shown below to call up this screen)

From the initial OFFLINE menu screen:

- 1) Select [INITIALIZE] to call up the initial settings screen.
- 2) Select the [SET UP OPERATION SURROUNDINGS] menu item (next screen appears).
- 3) Configure the environment settings to suit your particular requirements. (Ex. Direct I/O, Input/Output Area Size, etc.)

■ "Configuring the GP as a Profibus-DP Slave" and "Installation of Interpreter Project"

For information about these items, refer to the "README. TXT" file in the "FIELDBUS" folder on the GP-PRO/PB III for Windows Ver5.0 CD-ROM.

^{*1} The data transfer speed is automatically changed, according to the ladder software's specifications. Thus, setting this speed via the GP is not necessary.

^{*2} Station No.s are set via the Profibus Rotary Switches.

8.2.6 Profibus Specific Error Codes

If the error code "PLC COM. ERROR (02:F6)" appears on the screen after data has been downloaded from the User's PC to the GP unit, one of the following problems may have occurred.

- 1) The User has configured the GP to operate in Direct I/O mode, and is now trying to reference devices other than those designated in LS memory.
- 2) The User is running the GP in Direct I/O mode, and the system memory area has not been cleared. (Set to "0")

Error Code	How to Correct
PLC COM Error 02:F6 *1	Be sure that your screen data uses only the designated LS area(s).
	2) Reset the System Area (to all zeroes).

^{*1} For information about other types of error messages, refer to the Operation manual's error message appendix.



If the data transmission cable is accidentally cut or disconnected for a long period of time, a system error will occur, which will cause the system to hangup. (Error Codes: 005:02D:010 or 008:02D:010)



9 CC-Link

In this chapter, the GP panel CC-Link unit's range of compatible PLCs, their system design and the range of applicable devices are explained.

9.1 Connectable PLCs

The chart below shows the range of PLCs that can be connected to the CC-Link.

■ Remote Device Station

	Series Name	СРИ	Link I/F Unit or CPU Direct Connection	Special Conditions	GP-Pro/PBIII [PLC Type] selection
Mitsubishi	A Series	A2A A3A A3N A2U-S1	CC-Link Unit A Series AJ61BT11	CC-Link Compatible unit is required <list 1=""></list>	CC Link Turns
IVIITSUDISIII		A2US A2USH-S1	A Series A1SJ61BT11		CC-Link Type
	QnA Series	Q3A Q4A	QnA Series AJ61QBT11		

■ Intelligent Device Station

	Series Name	CPU	CC-Link Unit	Special Conditions	GP-Pro/PBIII [PLC Type] selection
Mitsubishi Electric Corp.	MELSEC-A	A1S A1SH A1SJ A1SJH A1SCPUC24-R2 A2S A2SH A2US A2US-S1 A2USH-S1 A0J2H A1N A2N A2N-S1 A3N A3H A2A A2A-S1 A3A A2U A2U-S1 A3U A4U	A1SJ61BT11 AJ61BT11	(PLC) CC-Link unit's software version J or higher <list 2=""></list>	CC-Link intelligent device

■ Intelligent Device Station

	Series Name	CPU	CC-Link	Special Conditions	GP-Pro/PBIII [PLC
	Scries Marie	CIO	Unit	Special Conditions	Type] selection
	MELSEC-QnA	Q2AS	A1SJ61QBT11	(PLC)	
		Q2ASH		CC-Link unit's	
		Q2A	AJ61QBT11	software version J or	
		Q2A-S1		higher	
		Q3A		<list 2=""></list>	
		Q4A			
		Q4AR			
	MELSEC-Q	Q00CPU	QJ61BT11		
Mitsubishi		Q01CPU			CC-Link intelligent
Electric Corp.		Q00JCPU			device
		Q02CPU			
		Q02HCPU			
		Q06HCPU			
		Q12HCPU			
		Q25HCPU			
		Q02CPU-A	A1SJ61BT11	A Mode CPU	
		Q02HCPU-A		<list 2=""></list>	
		Q06HCPU-A			

■ List 1 of Applicable GP/GLC Units

Ser	ies Name	Product Name	Unit
GP70 Series	GP-470 Series	GP-470E	
	GP-570 Series	GP-570S	
		GP-570T	7
		GP-57JS	7
		GP-570VM	
	GP-571 Series	GP-571T	
	GP-675 Series	GP-675S	7
		GP-675T	7
	GP-870 Series	GP-870VM	Units Applicable to
GP77R Series	GP-477R Series	GP-477RE	CC-Link *1
	GP-577R Series	GP-577RS	CC-LIIK
		GP-577RT	
GP2000 Series	GP-2500 Series	GP-2500L	
		GP-2500S	
		GP-2500T	
	GP-2501 Series	GP-2501S	
		GP-2501T	
	GP-2600 Series	GP-2600T]
GLC 2000 Series	GLC-2600 Series	GLC-2600T	<u> </u>

^{*1} When using GP2000/GLC2000 series units, a bus conversion unit (PSL-CONV00) is required.

■ List 2 of Applicable GP/GLC Units

Series Name		Product Name	Unit
GP70 Series	GP-377 Series	GP-377L	
		GP-377S	
GP77R Series	GP-377R Series	GP377RT	Units Applicable to
	GP-477R Series	GP-477RE	CC-Link *1
	GP-577R Series	GP-577RS	
		GP-577RT	

^{*1} When using GP-477R/GP-577R series units, the GLC bus conversion unit (GLC300-BCB11) is required.



Remote Device Station

System Structure

■ A series/QnA series (Link I/F)

СРИ	Link	Wiring Drawing	Cable(s)	Unit	GP
		+	——	© one on the one of th	*1
A2A		RS485	Kuramo Electronics'		
A3A	AJ61BT11		Model:	CC-Link Unit	GP Series *2
A3N		(refer to next page)	FANC-SB0.5mm ² x3	Model: GP070-CL11	Of School 2
A2U-S1					
A2US	A1SJ61BT11		Twisted Pair Shielded		
A2USH-S1			Cable		
Q3A	AJ61QBT11		Gubic		
Q4A					

^{*1} All GP Units connected to the Master station have the following conditions:

$\{(1\times a)+(2\times b)+(3\times c)+(4\times d)\} \le 64$

a: No. of units occupying 1 node

b: No. of units occupying 2 nodes

c: No. of units occupying 3 nodes

d: No. of units occupying 4 nodes

$\{(16\times A)+(54\times B)+(88\times C)\} \le 2304$

A: No.of Remote I/O nodes used ≤ 64

B: No. of Remote Device nodes ≤ 42

C: No. of Local nodes ≤ 26

Maximum No. of Connectable GPs

The GP will become a Remote Device node and the minimum number of occupyable nodes becomes two (2). As a result, the number of GPs that can be connected to a single Master node is 32.

Reference For detailed information about the Master node's system design, please refer to Mitsubishi Electric [AJ61BT11/ A1SJ61BT11] Unit CC-Link System Master and Local Unit User's Manual, or the [AJ61QBT11/A1SJ61QBT11 Unit CC-Link System Master and Local Unit User] Manual's [System Design] section.

▼Reference 9.1 Connectable PLCs List 1 of Applicable GP/GLC Units.

^{*2} For a list of GP/GLC series that can use the CC-Link remote device station, refer to

9.2.2 Cable Diagram

When connecting the GP (Remote Unit) to the PLC (Master Unit), use twisted pair cable and wire the connectors as follows:

PLC GP (Remote Device Unit) (Master Unit) (Remote Device Unit) DA DA DA DB DB DB Termination DG DG DG Resistance SLD SLD SLD 110Ω 1/2W Shielded Twisted FG FG Shielded Twisted FG Pair Cable Pair Cable Termination Resistance Ground Ground Ground 110Ω1/2W



- Be sure to attach termination resistors to each end of a linked system, between DA-DB. A Terminating Resistor is already attached to the PLC's CC-Link unit.
- The GP becomes the remote device node.
- The node order and the actual unit connection order are not related.
- T-type and Star-type connections are not possible.

9.2.3 Environment Settings

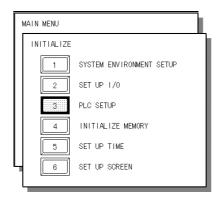
The following are Digital's recommended data transmission settings for the PLC and GP.

■ Mitsubishi Electric A and Q Series Units

GP Settings		PLC CC-Link Unit Settings		
Transfer Speed	10M, 5M, 2.5M, 625K, 156K	Transfer Speed	Set via Rotary Switch	
Occupied Nodes	2 to 4	Occupied Nodes	Ladder program is used to set no. of occupied nodes in the Node Information area. *1	
No. of Nodes	1 to 63	No. of Nodes	Ladder program is used to set Node No. in the Node Information area. *1 *2	
Node Type	Remote Device Station (fixed)	Node Type	Ladder program is used to set the Node Type in the Node Information area. *1	
Monitoring Method	Ordinary Monitor, Command Monitor	Monitoring Method	Can be entered via Ladder program *3	
Environment Settings	Use GP screen to enter settings (See Foot Note *4)			

^{*1} For detailed information about the Master station's system design, please refer to Mitsubishi Electric [AJ61BT11/A1SJ61BT11] Unit CC-Link System Master and Local Unit User's Manual, or the [AJ61QBT11/A1SJ61QBT11 Unit CC-Link System Master and Local Unit User] Manual's [System Design] section.

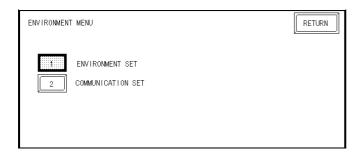
*4 (HOW TO SET UP THE GP SCREEN)



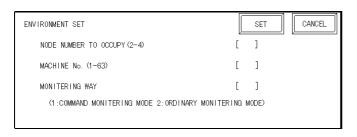
1. Touch the [PLC SETUP] selection.

^{*2} The Master Node's node number must always be set to "0". (Use the Master Unit's rotary switch)

^{*3} Only the settings on the GP can be changed. If, however, a ladder program has been used to enter settings (using Initial Setting commands), those settings are the highest priority.



2.Touch the [ENVIRONMENT SET] selection.



In the [ENVIRONMENT SET] menu: Enter the desired settings for Node

Number to Occupy, Machine No. and Monitoring Way.

NODE NUMBER TO OCCUPY enter 2, 3 or 4.

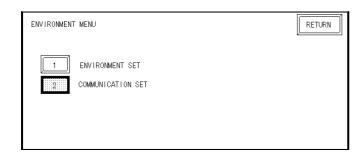
MACHINE NO. enter from 1 to 63 for the machine number. If "3"

occupied nodes are used, the limit is 62; if "4"

occupied nodes are used, the limit is 61.

MONITORING WAY

either Command or Ordinary Monitoring can be used.



3. Touch the [COMMUNICATION SET] selection.

COMMUNICATION SET		SET	CANCEL
STARTING ADDRESS OF LS AREA	[LS]	
BAUD RATE	[]	
(156Kbps:0 625Kbps:1 2.5Mbps:2 5Mbps:3	10Mbps:4)		

In the [COMMUNICATION SET] menu:

Enter the [STARTING ADDRESS OF LS AREA] and [BAUD RATE] settings.

STARTING ADDRESS OF LS AREA

This start address is used for the allocation of the Remote Input/Output and Remote Device Areas in the GP's System Area (20 to 1980).

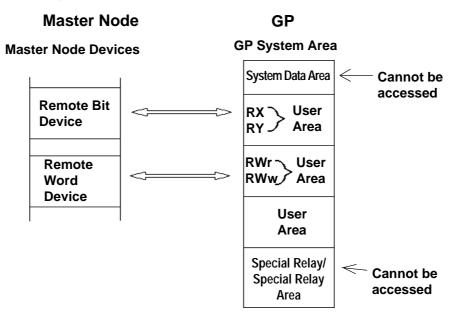
Monitoring Specifications

9.2.4.1 **Overview**

When using the CC-Link, the GP must be registered as a Remote Device node and use a direct connection with a CC-Link compatible PLC. Here, either the Ordinary or Command Monitoring method can be used.

♦Ordinary Monitoring

The Master Node's devices are occupied (via Link Areas) in the GP's System Area, as shown below.



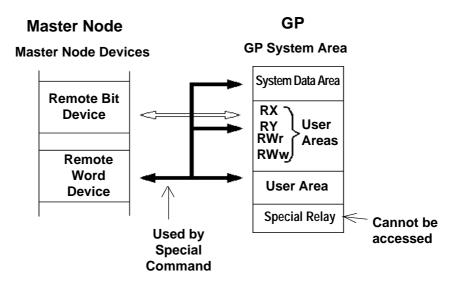


When using the Ordinary Monitoring method, the System Device Important Area and the Special Relay Area cannot be accessed.

Command Monitoring

The Remote Bit Device, like the Ordinary Monitor, can directly access the User Area's Bit Device.

The Remote Word Device, depending on the commands entered to the device, can directly access the GP's User and System areas.



Using Indirect Access

The CC-Link Special Command (write/read commands) can be used to store/access data in the GP System Area's Remote Word Device.

▼Reference ✓ 9.2.3 **Command Monitoring**



- The contents of the System Data Area will convert to Memory Link type.
- When using Command Monitoring, data cannot be written to the RX, RY, RWw, or RWr user areas.
- The GP's Special Relay area cannot be accessed.

■GP I/O Designations

From GP to Master Station

Link Output	Signal Name
RX m0	User Area
RX m1	
RX m2	The following number of nodes can be
RX m3	occupied:
RX m4	1
RX m5	2 nodes: 48 points
RX m6	3 nodes: 80 points
RX m7	4 nodes: 112 points
RX m8	
RX m9	
RX mA	
RX mB	
RX mC	
RX mD	
RX mE	
RX mF	
::	
RX (m+n) 0	Display Completed Flag
RX (m+n) 1	Reserved for System Area
RX (m+n) 2	
RX (m+n) 3	
RX (m+n) 4	Reserved
RX (m+n) 5	Touch ON Completed Flag
RX (m+n) 6	Reserved
RX (m+n) 7	Tag Code Output Request Flag
RX (m+n) 8	Reserved
RX (m+n) 9	Initial Data Setting Completed Flag
RX (m+n) A	Error Condition Flag
RX (m+n) B	Remote Ready
RX (m+n) C	Reserved
RX (m+n) D	Reserved
RX (m+n) E	Reserved
RX (m+n) F	Reserved

From Master Station to GP

Link Output	Signal Name
RY m0	User Area
RY m1	
RY m2	The following number of nodes can be
RY m3	occupied:
RY m4	
RY m5	2 nodes: 48 points
RY m6	3 nodes: 80 points
RY m7	4 nodes: 112 points
RY m8	
RY m9	
RY mA	
RY mB	
RY mC	
RY mD	
RY mE	
RY mF	
::	
RY (m+n) 0	Display Request Flag
RY (m+n) 1	Display Monitor Request Flag
RY (m+n) 2	Display Periodic Write Request Flag
RY (m+n) 3	Reserved for System Area
RY (m+n) 4	
RY (m+n) 5	
RY (m+n) 6	
RY (m+n) 7	
D)/ () 0	
RY (m+n) 8	Reserved
RY (m+n) 9	Initial Data Setting Request Flag
RY (m+n) A	Error Reset Request Flag
RY (m+n) B	Reserved
RY (m+n) C	Reserved
RY (m+n) D	Reserved
RY (m+n) E	Reserved
RY (m+n) F	Reserved



m: (Node No. - 1) x 2H

n: As stated below

No. of Occupied Nodes	2 Nodes	3 Nodes	4 Nodes
n	3	5	7

• GP I/O Definition Details

From GP to Master Station

Link Input	Signal Name	Explanation
RX (m+n) 0	Display Completed Flag *1	When the Display Completed Flag (RY (m+n)0) turns ON, the GP's Processing Completed will turn ON. Also, when the GP turns the Display Request Flag OFF, the Display Completed Flag also turns OFF.
RX (m+n) 5	Touch ON Completed Flag	When data is written to the GP's System Data Area 13, Rx(m+n)5 will turn ON. The PLC then uses the Continuous Read Command, and, after reading the contents of the GP's System Data Area 13, it turns OFF.
RX (m+n) 7	Tag Code Output Request Flag	Same as RX(m+n)5.
DV (m + n) 0		When the Initial Data Setting Reauest (RY(m+n)9) turns ON, the Initial Data Setting Completed will also turn ON.
KX (III+II) 9		Also, when the Initial Data Setting is completed, the Initial Data Setting Request Flag and the Initial Data Setting Completed Flag will both turn OFF.
RX (m+n) A	Error Condition Flag	When a command error occurs while the GP's System Area is being used, this flag turns ON.
RX (m+n) B	Remote Ready	When the GP has been changed to ONLINE mode and data linking has been completed successfully, this turns ON. Also, when the GP is in either OFFLINE mode or having its Initial Data entered, this turns OFF.

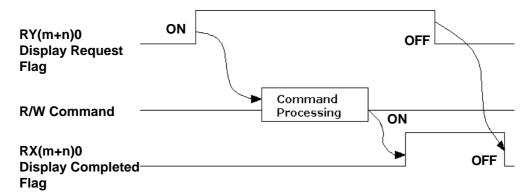
From Master Station to GP

Link Input	Signal Name	Explanation
RY (m+n) 0	Display Request Flag *1	When a read or write are being performed to the GP's System Area, this flag turns ON.
RY (m+n) 1	Display Monitor Request Flag *1	When the System Area is being read of a GP that has had Monitor Registration performed for its RWrn area, this flag turns ON.
RY (m+n) 2	Display Periodic Write Request Flag *1	When the System Area is being written to on a GP that has been registered for the periodic writing of data previously written to the RWwm area, this flag turns ON.
RY (m+n) 9	Initial Data Setting Request Flag *1	Initial processing is performed when this flag is ON.
RY (m+n) A	Error Reset Request Flag	When the Error Reset Request Flag turns ON, the Error Condition Flag RX(m+n)A turns OFF.

^{*1} Only needed during Special Command Monitor. Normally not used.

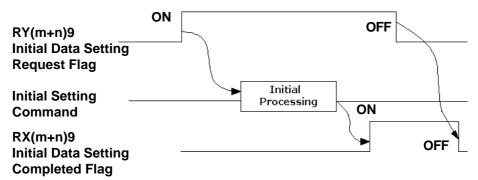
Display Completed Flag, Display Request Flag

When the Display Request Flag turns ON, the completion of command processing causes the Display Completed Flag to turn ON. When the Display Request Flag turns OFF, the Display Completed Flag will also turn OFF. Be sure to use the ladder program to turn OFF the Display Request Flag after checking the Display Completed Flag has been turned ON.



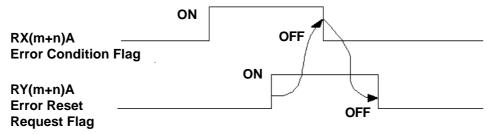
Initial Data Setting Completed Flag, Initial Data Setting Request Flag

When the Initial Data Setting Completed Flag turns ON, the completion of the initial processing causes the Initial Data Setting Completed Flag to turn ON. When the Initial Data Setting Request Flag turns OFF, the Initial Data Setting Completed Flag turns OFF.



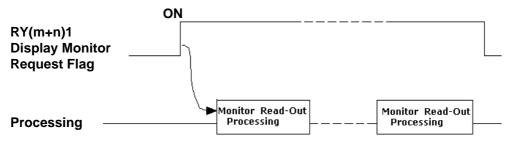
Error Condition Flag, Error Reset Request Flag

When the Command Monitor feature is being used and an error occurs, the Error Condition Flag and the Error Reset Request Flags both turn ON, causing the Error Condition Flag to turn OFF..



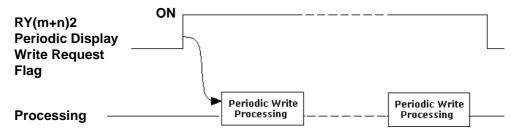
• Display Monitor Request Flag

When the Display Monitor Request Flag turns ON, data from the system area of the GP registered for monitoring will be read out.



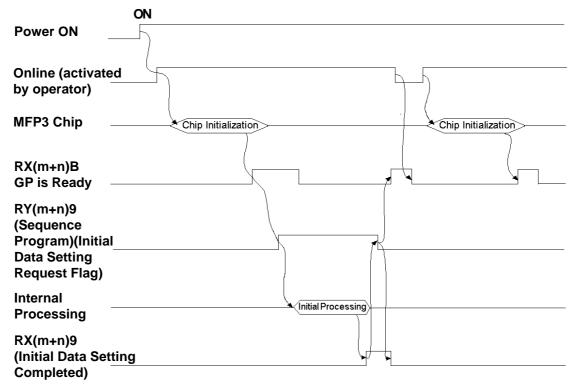
• Periodic Display Write Request Flag

While the Periodic Display Write Request is ON, data is periodically written to a registered GP's system area.



Remote Ready

When the GP's OS is started and online, the Remote Ready:RX(m+n)B bit is ON.

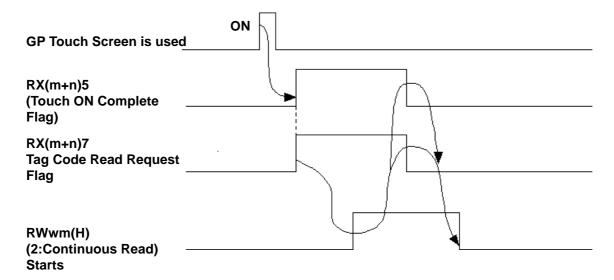


■Sending Tag Codes to the Master Node

This feature is for sending Tag Code data from the GP's System Area to the Master Node, via the GP's touch panel. When a GP touch or other type of tag is used to perform an absolute write to the GP's System Data Area 13 (decimal), the RX(m+n)5 (Touch ON Complete Flag) turns ON. When this bit turns ON, the RX(m+n)7(Tag Code Read Request Flag) also turns ON.

When the Master Node is performing continuous read requests on the GP's System Data Area 13, prior to a Read being completed, the GP will turn RX(m+n)5 OFF. This, in turn, will cause the RX(m+n)7 bit to turn OFF. This method is used to send numeric data from the GP's touch panel (using the 8 bit interrupt codes shown below) tothe Master Node.

• Input/Output Signal Timing



9.2.4.2 **Ordinary Monitoring**

• **GP Register Descriptions**

From Master Station to GP

Address	Contents
RW wm	When 2 Nodes are
RW wm+1	occupied: 8 points
RW wm+2	
RW wm+3	
RW wm+4	
RW wm+5	
RW wm+6	
RW wm+7	
RW wm+8	When 3 Nodes are
RW wm+9	occupied: 12 points
RW wm+A	
RW wm+B	
RW wm+C	When 4 Nodes are
RW wm+D	occupied: 16 points
RW wm+E	
RW wm+F	

From GP to Master Station

Address	Contents
RW rn	When 2 Nodes are
RW rn+1	occupied: 8 points
RW rn+2	
RW rn+3	
RW rn+4	
RW rn+5	
RW rn+6	
RW rn+7	
RW rn+8	When 3 Nodes are
RW rn+9	occupied: 12 points
RW rn+A	
RW rn+B	
RW rn+C	When 4 Nodes are
RW rn+D	occupied: 16 points
RW rn+E	
RW rn+F	



Concerning the characters m and n:

The chart here shows how the Remote Register's 4h units are calculated.

Machine No.	m	n
1	0	100
2	4	104
3	8	108
~	~	~



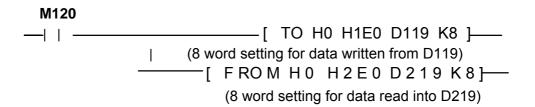
With Ordinary Monitoring, the value written into the Master Node's RWw area is reflected in the User Area's Link Area RWw(+36 to +51). Also, the value in the User Area's Link Area RWr(+20 to +35) is reflected in the Master Node's RWr.

▼Reference 9.2.3 ■ Occupied Nodes.

Ordinary Monitoring Sequence Drawing

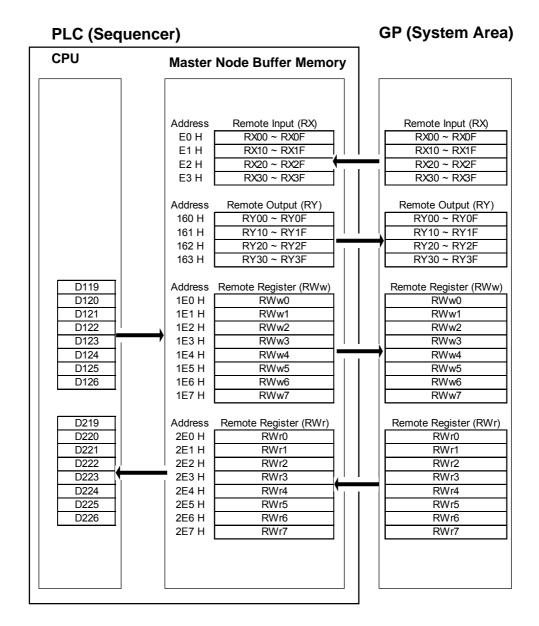
(Sequence Program)

X6 (Depending on buffer memory parameters, Data Link Start OK Completed) —II -



■ PLC (Sequencer) Progam for Displaying Ordinary Monitor Data

The following drawing shows the PLC's CPU and Master Node Buffer Memory, in addition to the GP's System Data Area.



The above chart shows examples of when the CPU's D119 to D126 data is sent to RWw0 to RWw7, and when RWr0 to RWr7's data is sent to D219 to D226.

Command Monitoring 9.2.4.3

■GP Register Descriptions

◆Master Node to GP

Address	Contents
RW wm	Command
RW wm+1	
RW wm+2	When each
RW wm+3	command (refer to
RW wm+4	the each command
RW wm+5	details) occupies 2
RW wm+6	Nodes: 8 points.
RW wm+7	
RW wm+8	
RW wm+9	When 3 Nodes are
RW wm+A	occupied: 12 points
RW wm+B	
RW wm+C	
RW wm+D	When 4 Nodes are
RW wm+E	occupied: 16 points
RW wm+F	

♦GP to Master Node

Address	Contents
RW rn	Response *1
RW rn+1	
RW rn+2	When each
RW rn+3	command (refer to
RW rn+4	the each command
RW rn+5	details) occupies 2
RW rn+6	Nodes: 8 points.
RW rn+7	
RW rn+8	
RW rn+9	When 3 Nodes are
RW rn+A	occupied: 12 points
RW rn+B	
RW rn+C	
RW rn+D	When 4 Nodes are
RW rn+E	occupied: 16 points
RW rn+F	



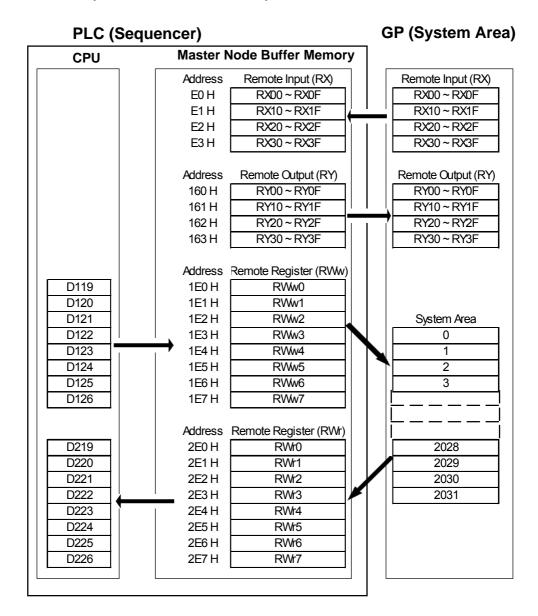
Concerning the characters m and n:
The chart here shows how the Remote Register's 4h units are calculated.

Machine No.	m	n
1	0	100
2	4	104
3	8	108
~	~	~

^{*1} Error code will be set only when errors occur.

■Signal Details

The following drawing shows the PLC's CPU and Master Node Buffer Memory, in addition to the GP's System Data Area.



The figures show the PLC CPU's D119 used as the start address for the storage of commands, with D129 being used as the start address for the storage of read out data.

♦ Command List

Command No.	Name	Contents
1	Initial Setting Command	Changes the current Mode.
2	Continous Read Command	Reads out each piece of word data from the GP System Area's designated address.
3	Random Read Command	Reads out data from multiple GP System Area addresses.
4	Continuous Write Command	Writes each piece of word data to the designated GP System Area address.
5	Random Write Command	Writes data to multiple GP System Area addresses.
6	Register Monitor Command	Registers multiple GP System Area addresses for monitoring.
8	Register Periodic Write Command	Registers multiple GP System Area addresses for writing.

■ Initial Setting Command

Address	Contents
RWwm (H)	1: Initial Settings
RWwm (L)	1: Use Command Monitor Mode
	2: Use Ordinary Monitor Mode
RWwm +1 to RWwm +F	Cannot be used
RWrn to RWrn +F	Cannot be used



The Initial Setting command (either Ordinary or Command Monitor) can also be designated via the GP's OFFLINE mode. However, if this command is designated via a ladder program, the ladder program has priority. If no ladder program settings are present, the OFFLINE mode settings are enabled.

< Sequence Program Example >	(Uses Initial Setting command to operate the Command Monitoring Mode.)
[<> k 1 D 1 0 0 0] (Initial Setting Comm	and (H) and Command Monitor Mode (L) settings)
• `	—[TO H0 H1E0 D119 K1]— ngs to the designated buffer address) —[TO H0 H163 H200 K1]—
(Initial Data Setting Request Flag ON) M 9036(Normally ON)	
— — [FR	OM H0 HE3 D1000 K1 }
(Save Initial Data Settin	g Completed Flag to D1000)
	—[SFR D1000 K9] —
(Shift	all data 9 bits to the right)
-[= k 1 D 1 0 0 0] $-$ Ladder program for	performing another command

■ Continuous Read Command

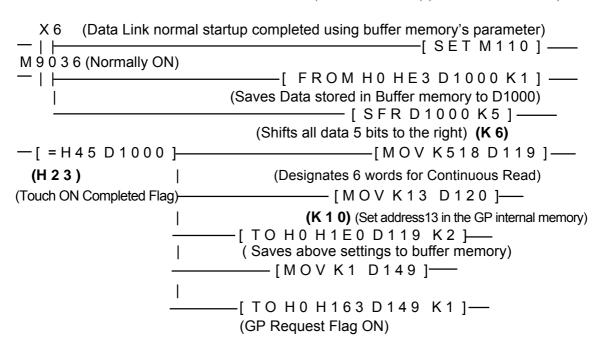
Address	Contents
RWwm (H)	2: Continuous Read
RWwm (L)	1-14: No. of Words (W/4 occupied nodes: max. 14
	points, w/3 occupied nodes: max. 10 points, w/2
	occupied nodes: max. 6 points)
RWwm +1	0 to 2031: GP System Area's designated address
RWwm +2 to RWwm +F	Cannot be used
RWrn to RWrn +D	Reads out each piece of word data from the GP System
	Area's designated address.
RWrn +E to RWrn +F	Cannot be used

(Continuous Read of 6 words from address 0 < Sequence Program Example > in GP memory) X6 (Data Link normal startup completed using buffer memory's parameter) -1 1-____[SET M110]— M110 _____[MOV K518 D119]— —I I-(Sets 2 : Continuous Read(H), and 6 : no. of points(L)) -[MOV K0 D120]---- (Designates Address 0 in GP Memory) -[TOH0H1E0D119K2] (Saves above settings to the buffer memory) - MOV K1 D149 —— -[TO H0 H163 D149 K1] (GP Request Flag ON) -{ FROM H0 H2E0 D229 K6 }-(Saves Continuous Read values in device D229)

In order to send T-tag data to a PLC, and also enable the master station to read the touched value using the Continuous Read command.

< Sequence Program Example (Using LS13) >

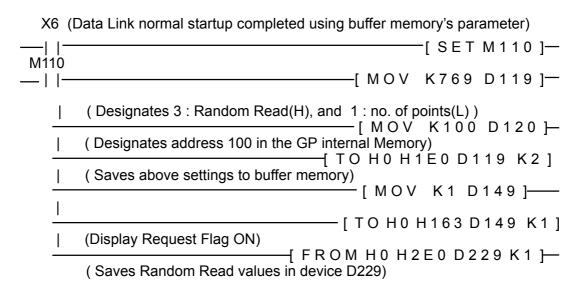
(Values in brackets() are when LS10 is used)



■ Random Read Command

Address	Contents
RWwm (H)	3: Random Read
RWwm (L)	1-14: No. of Words (W/4 occupied nodes: max. 14
	points, w/3 occupied nodes: max. 10 points, w/2
	occupied nodes: max. 6 points)
RWwm +1 to RWrn +F	0 to 2031: GP System Area's designated address
RWrn to RWrn +D	Reads out each piece of word data from the GP System
	Area's designated address.
RWrn +E to RWrn +F	Cannot be used

< Sequence Program Example > (For random read GP memory address 100)



■ Continuous Write Command

Address	Contents
RWwm (H)	4: Continuous Write
RWwm (L)	1-14: No. of Words (W/4 occupied nodes: max. 14
	points, w/3 occupied nodes: max. 10 points, w/2
	occupied nodes: max. 6 points)
RWwm +1	0 to 2031: GP System Area's designated address
RWwm +2 to RWwm +F	Write data
RWrn to RWrn +F	Cannot be used



Data cannot be written to the Link area.

< Sequence Program Example > (Writes 6 words units continuously from GP memory address 2026. This example uses Write data 1,2,3,4,5 and 6.)

X6 (Data Link normal startup completed using buffer memory's parameter) ·| |--[SET M110]—— M110 -[MOV K1030 D119]-----| |-(Designates 4 : Continuous Write(H), and 6 : no. of points(L)) -[MOV K2026 D120 |---(Designates addresses in GP memory) [MOV K1D121]—— (Write 1 to address 2026 in GP memory) [MOV K2D122]— (Write 2 to address 2027 in GP memory) [MOV K3D123]—— (Write 3 to address 2028 in GP memory) ·[MOV K4D124]—— I (Write 4 to address 2029 in GP memory) [MOV K5D125]— (Write 5 to address 2030 in GP memory) [MOV K6D126]— (Write 6 to address 2031 in GP memory) -[MOV K1D149]—— - [TO H0 H1E0 D119 K8] (Saves the above settings to buffer memory) -[TO HO H163 D149 K1 |- (Display Request Flag ON)

■ Random Write Command

Address	Contents
RWwm (H)	5: Random Write
RWwm (L)	1-7: No. of Words (W/4 occupied nodes: max. 7 points,
	w/3 occupied nodes: max. 5 points, w/2 occupied
	nodes: max. 3 points)
RWwm +1	0 to 2031: GP System Area's designated address
RWwm +2	Write data
-	
RWwm +D	0 to 2031: GP System Area's designated address
RWwm +E	Write data
RWwm +F	Cannot be used
RWrn to RWrn +3	Cannot be used



Data cannot be written to the Link area.

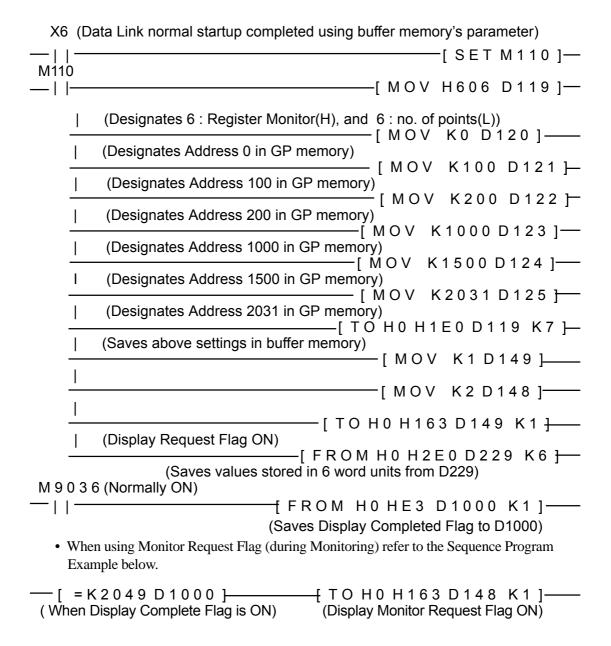
< Sequence Program Example > (For random writing to address 0, 1100 and 1979 in GP memory. This example uses Write data 1,2, and 3.)

X6 (Data Link normal startup completed using buffer memory's parameter) ____[SET M110] M110 ——[MOV K1283 D119]— — I I-(Designates 5: Random Write(H), and 3: no. of points(L)) -[MOV K0 D120]----(Designates address 0 in GP memory) - [M O V K 1 D 1 2 1 }── (Write 1 to address 0 in GP memory) -[MOV K1100 D122 |---(Designates address 1100 in GP memory) [MOV K2 D123]----(Write 2 to address 1100 in GP memory) [MOV K1979 D124] (Designates address 1979 in GP memory) -[MOV K3D125]—— (Write 3 to address 1979 in GP memory) -[TO HO H1EO D119 K7 ├ (Saves above settings to buffer memory) -[MOV K1D149 **}---**--[TO H0 H163 D149 K1]---(Display Request Flag ON)

■ Register Monitor Command

Address	Contents
RWwm (H)	6: Register Monitor
RWwm (L)	1-14: No. of Words (W/4 occupied nodes: max. 14
	points, w/3 occupied nodes: max. 10 points, w/2
	occupied nodes: max. 6 points)
RWwm +1 to RWwm +F	0 to 2031: GP System Area's designated address
RWrn to RWrn +F	Cannot be used

< Sequence Program Example > (When setting GP memory addresses 0, 100, 200, 1000, 1500 and 2031 for Register Monitor)



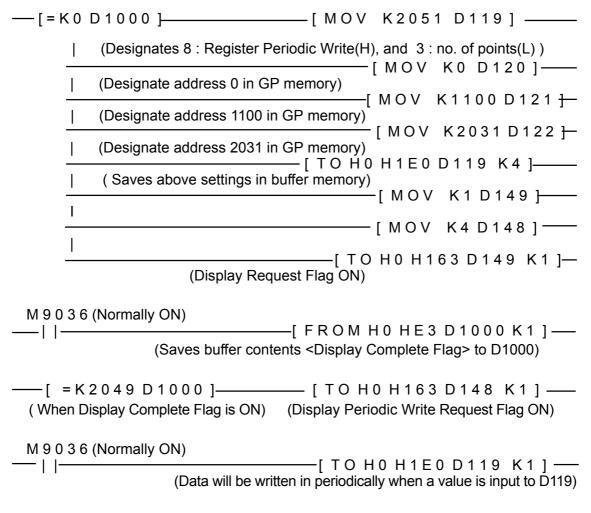
■ Register Periodic Write Command

Address	Contents
RWwm (H)	8: Register Periodic Write
RWwm (L)	1-7: No. of Words (W/4 occupied nodes: max. 7 points,
	w/3 occupied nodes: max. 5 points, w/2 occupied
	nodes: max. 3 points)
RWwm +1 to RWwm +F	0 to 2031: GP System Area's designated address
RWrn to RWrn +F	Cannot be used



Data cannot be written to the Link area.

< Sequence Program Example > (When setting addresses 0, 1100 and 2031 in GP memory as Register Periodic Write)

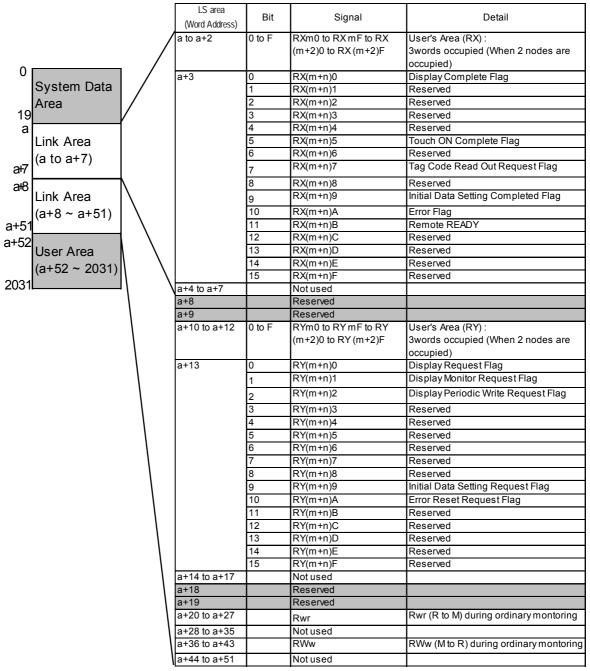




For further information about the ladder program and settings, please refer to Mitsubishi's "AJ61BT11/A1SJ61BT11 type CC-Link System Master Local Unit Users Manual (Details)" or "AJ61QBT11/A1SJ61QBT11 type CC-Link System Master Local Unit Users Manual (Details)"

9.2.5 Occupied Node

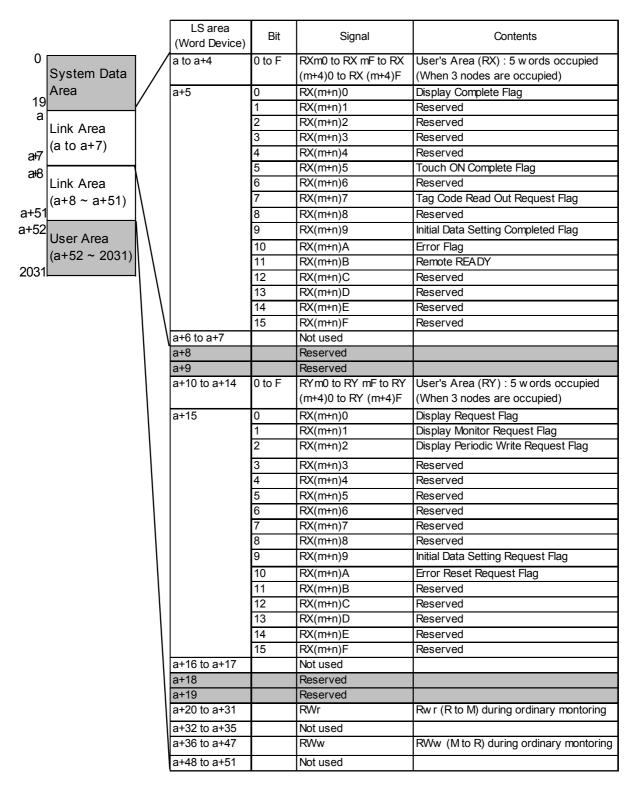
■ 2 Nodes Occupied





- Shaded areas are used when 2 to 4 nodes are used on common.
- "a" means a Start Address.(a3 20)
- "System area" is used for writing GP display switching data/error data. The type of data written is defined in each address. The contents of this area are the same as the Memory Link Type. **Reference** Refer to 3.1.2 Contents and Range of System Data Area.

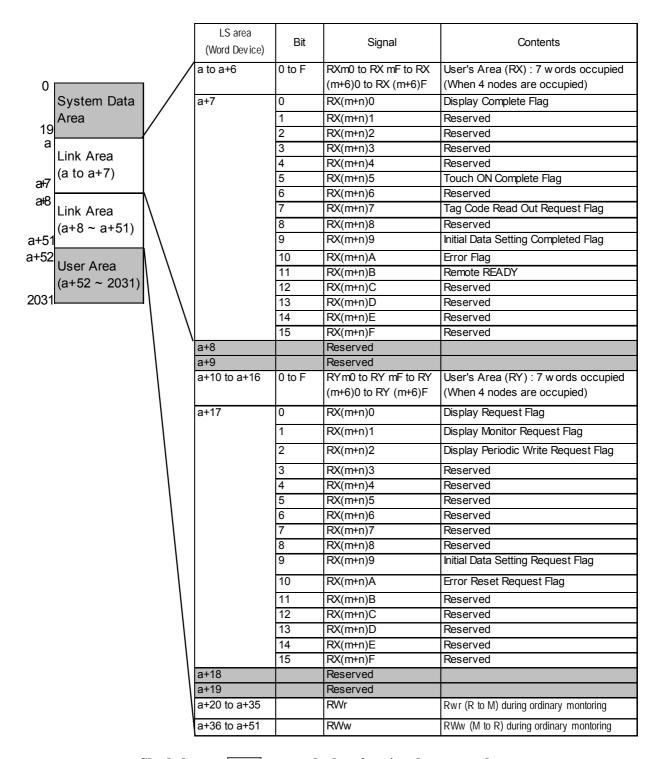
■ 3 Nodes Occupied





- Shaded areas are used when 2 to 4 nodes are used on common.
- "a" means a Start Address.(a³ 20)
- "System area" is used for writing GP display switching data/error data. The type of data written is defined in each address. The contents of this area are the same as the Memory Link Type. **Reference** Refer to 3.1.2 Contents and Range of System Data Area.

■4 Nodes Occupied





- Shaded areas are used when 2 to 4 nodes are used on common.
- "a" means a Start Address.(a³ 20)
- "System area" is used for writing GP display switching data/error data. The type of data written is defined in each address. The contents of this area are the same as the Memory Link Type. **Reference** Refer to 3.1.2 Contents and Range of System Data Area.

9.2.6 Error Code

The following list shows the error codes used with CC-Link. These error codes will appear on the screen as, for example, "PLC COM. ERROR, (02: **)", where ** stands for an error code listed below.

Error Code (**)	Error Details
01	Designated device point is not within the limited range
02	Designated address is not within the limited range
03	Command is not defined
04	Incorrect initial command is designated. (Do not use the Request Flag for initial
05	Undefined mode is designated for initial command
06	Not registered in Monitor Command
07	Not registered in Periodic Write Command
08	Data attempted to be written in the write prohibited system area
09	In the OFFLINE mode now
14	No Reply from Hardware
15	Problem in Hardware
16	Node Number switch setting error
17	Baud Rate Switch setting error
18	Set up Node Number switch change error
19	Set up Baud Rate switch change error
1A	CRC error
1B	Time over error
1C	0 channel carrier detection error
1D	1 channel carrier detection error
1E	Communication Transfer error
1F	Y data or RWw data, numerical error
20	Y data, numerical error
21	RWw data, numerical error



If a command error occurrs while exclusive command monitor is used, the GP will automatically set the error codes above in RWr, then turn ON the Error Status Flag "RX(m+n)A" and the Display Complete Flag "RX(m+n)0".

◆Troubleshooting

GP Error Display (bottom left corner)	Status
PLC COM.ERROR (02:14)	PLC's power supply turned off during normal communication
PLC COM.ERROR (02:14)	Cable between PLC and GP is not properly connected
PLC COM.ERROR (02:15)	GP's rear unit is not attached
PLC COM.ERROR (02:15)	GP's rear unit is not properly attached
PLC COM.ERROR (02:14)	GP is not registered in the current parameters.
PLC COM.ERROR (02:14)	Baud Rate is not applicable
PLC COM.ERROR (02:14)	Node number is duplicated.
PLC COM.ERROR (02:1A) Blinking	Terminating resister is not connected

9.3 Intelligent Device Station

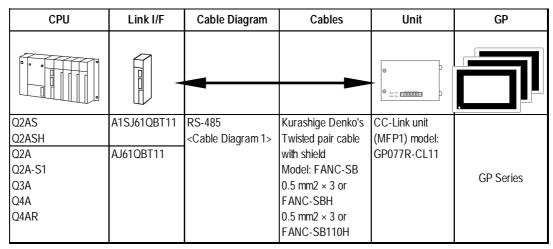
9.3.1 System Configuration

This section shows system configurations used when connecting Mitsubishi Electric PLCs and GP.

■ MELSEC-A Series

CPU	Link I/F	Cable Diagram	Cables	Unit	GP
			-	© 00 00 00 00 00 00 00 00 00 00 00 00 00	
A1S, A1SH, A1SJ, A1SJH, A1SCPUC24-R2, A2S, A2SH, A2US, A2US-S1, A2USH-S1 A0J2H, A1N, A2N, A2N-S1, A3N, A3M, A3H, A2A, A2A-S1, A3A, A2U, A2U-S1, A3U, A4U	AJ61BT11	RS-485 <cable 1="" diagram=""></cable>	Kurashige Denko's Twisted pair cable with shield Model: FANC-SB 0.5 mm2 × 3 or FANC-SBH 0.5 mm2 × 3 or FANC-SB110H	CC-Link unit (MFP1) model: GP077R-CL11	GP Series

■ MELSEC-QnA Series





• For a list of GP series units that can use the CC-Link Intelligent Device Station, refer to

Reference

9.1 Connectable PLCs

List 2 of Applicable GP/GLC Units in this manual.

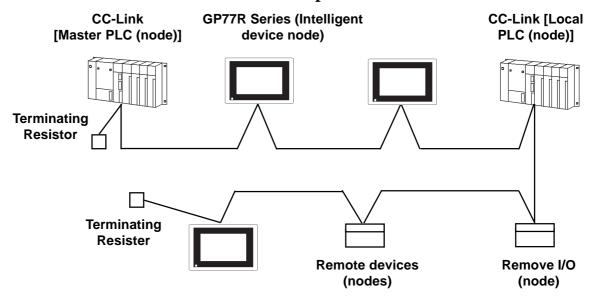
■ MELSEC-A Series

CPU	Link I/F	Cable Diagram	Cables	Unit	GP
			-	©	
Q02CPU Q02HCPU Q06HCPU Q12HCPU Q25HCPU Q02CPU-A	QJ61BT11 A1SJ61BT11	RS-485 <cable 1="" diagram=""></cable>	Kurashige Denko's Twisted pair cable with shield Model: FANC-SB 0.5 mm ² × 3 or FANC-SBH	CC-Link unit (MFP1) model: GP077R-CL11	GP Series
Q02HCPU-A Q06HCPUA-A			0.5 mm ² × 3 or FANC-SB110H		



• For a list of GP series units that can use the CC-Link Intelligent Device Station, refer to **Reference** 9.1 Connectable PLCs List 2 of Applicable GP/GLC Units in this manual.

■ Network Connection Example



♦Number of Connectable Units

All GP units connected to the master PLC (node) have the following operation conditions:

- 1. $\{(1 \times a) + (2 \times b) + (3 \times c) + (4 \times d)\} \le 64$
 - a: Number of units occupying 1 node
 - b: Number of units occupying 2 nodes
 - c: Number of units occupying 3 nodes
 - d: Number of units occupying 4 nodes
- 2. $\{(16 \text{ X A})+(54 \text{ X B})+(88 \text{ X C})\} \le 2304$
 - A: Number of remote I/O nodes ≤ 64
 - B: Number of remote device nodes ≤ 42
 - C: Number of local and intelligent device nodes ≤ 26

◆Maximum number of connectable GPs

The GP will become an intelligent device node. Also, the minimum number of occupying nodes is 1. As a result, the number of GPs that can be connected to a single master node is 26.



For more detailed information about master node system design, refer to the following manuals' system design chapter:

Mitsubishi Electric:

- AJ61BT11/A1SJ61BT11 Unit CC-Link System Master and Local Unit User's Manual (Details)
- AJ61QBT11/A1SJ61QBT11 Unit CC-Link System Master and Local Unit User's Manual (Details)
- QJ61BT11 Unit CC-Link System Master and Local Unit User's Manual (Details)

9.3.2 Cable Diagram

Although the cable diagram shown below and those recommended by the Mitsubishi Electric Corp. may differ, using these cables for connection will not cause any problems.

■ Recommended Cables

The recommended cables are as follows:

CC-Link cable: Kurashige Denko FANC-SB 0.5 mm² X 3

CC-Link High cable: Kurashige Denko FANC-SBH 0.5 mm² X 3

CC-Link cable (New Type): Kurashige Denko FANC-SB110H

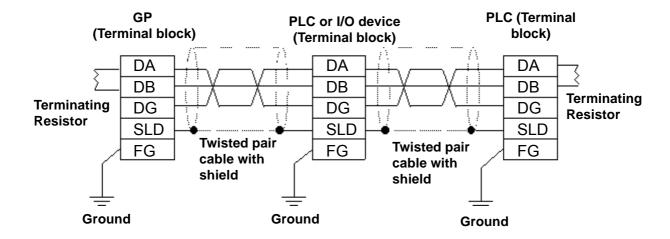


- Be sure to use only CC-Link cables.
- CC-Link cables and CC-Link high performance cable, cannot be used simultaneously.
- For details about T-junction connections, refer to Mitsubishi Electric CC-Link Master Unit Manual.*1

*1 Mitsubishi Electric manuals:

- AJ61BT11/A1SJ61BT11 Unit CC-Link System Master and Local Unit User's Manual (Details)
- AJ61QBT11/A1SJ61QBT11 Unit CC-Link System Master and Local Unit User's Manual (Details)
- QJ61BT11 Unit CC-Link System Master and Local Unit User's Manual (*Details*)

Cable Diagram 1 (RS-485)





- Connect the shield wires to each unit's SLD terminal. The SLD terminal is connected internally be connected to the FG terminal. Use a grounding method applicable to your area's regulations and laws.
- Insert the Master Unit's terminating resistor at both ends of the data link (between DA and DB). Be aware that terminating resistance value of the CC-Link cable will differ from that of the CC-Link high performance cable.
- For more detailed information about terminating resistance values and cable lengths, refer to Mitsubishi Electric CC-Link Master Unit Manual.*1

Supported Devices 9.3.3

The following lists show the range of devices supported by the GP.



Note: Each device's address range may differ depending on your CPU model. For each CPU device range, refer to Mitsubishi Electric PLC manuals.

■ MELSEC-A/QnA/Q Series (Common for All Series Units) (Cyclic Transmission)

Device	Bit Address	Word Address	Particulars
Remote input	RX000 ~ RX7FF	RX000 ~ RX7F0	*** 0] *1
Remote output	RY000 ~ RY7FF	RY000 ~ RY7F0	<u>***</u> 0]
Remote resistor	RWw000 ~ RWwFFF	RWw00 ~ RWwFF	Lill
Remote resistor	RWr000 ~ RWrFFF	RWr00 ~ RWrFF	*1

^{*1} Data cannot be written from the GP. Only data read can be performed. "RX", "RY", "RWx", and "RWw" are the names used on the GP. On the master node, these assigned names will become opposite.

	Assigned Name			
GP	RX	RY	RWw	RWr
PLC	RY	RX	RWr	RWw

■ MELSEC-A Series (Transient transmission)

Setup System Area or Communication Information's Storing Address here.

Device	Bit Address	Word Address	Particulars
Input relay	X0000 ~ X1FFF	X0000 ~ X1FF0	* * * 0]
Output relay	Y0000 ~ Y1FFF	Y0000 ~ Y1FF0	*** 0]
Internal relay	M0000 ~ M8191	M0000 ~ M8191	<u>÷ 16</u>)
Special relay	M9_000 ~ M9_255	M9_000 ~ M9_240	<u>÷16</u>) *1
Retain relay	L0000 ~ L8191	L0000 ~ L8176	<u>÷ 16</u>)
Link relay	B0000 ~ B1FFF	B0000 ~ B1FF0	*** 0]
Timer (contact)	TS0000 ~ TS2047	TS0000 ~ TS2032	<u>÷16</u> j
Timer (coil)	TC0000 ~ TC2047	TC0000 ~ TC2032	÷16)
Counter (contact)	CS0000 ~ CS1023	CS0000 ~ CS1008	<u>÷16</u> j
Counter (coil)	CC0000 ~ CC1023	CC0000 ~ CC1008	<u>÷16</u> j
Timer (current value)		TN00000 ~ TN2047	B i t 15
Counter (current value)		CN0000 ~ CN1023	B i t 15
Data register		D0000 ~ D8191	B i t 15
Special register		D9_000 ~ D9_255	B i t 15 *2
Link register		W0000 ~ W1FFF	Bit F
File register		R0000 ~ R8191	B i t 15)

^{*1} When designating special relay devices, select "M9_" in the screen editor.

^{*2} When designating special register devices, select "D9_" in the screen editor.



Annunciator devices are inaccessible.

E-tag or K-tag indirect addresses cannot be designated.

■ MELSEC-QnA/Q Series (Transient transmission)

Setup System Area or Communication Information's Storing Address here.

Device	Bit Address	Word Address	Particulars	
Inputrelay	X0000 ~ X1FFF	X0000 ~ X1FF0	*** 0]	
Output relay	Y0000 ~ Y1FFF	Y0000 ~ Y1FF0	***0	
Internal relay	M0000 ~ M32767	M0000 ~ M32752	<u>÷16</u>)	
Special relay	SM0000 ~ SM2047	SM0000 ~ SM2032	<u>÷16</u> j	
Latch relay	L0000 ~ L32767	L0000 ~ L32752	<u>÷16</u>)	
Link relay	B0000 ~ B7FFF	B0000 ~ B7FF0	*** 0	
Special link relay	SB000 ~ SB7FF	SB000 ~ SB7F0	*** 0	
Timer (contact)	TS00000 ~ TS23087	TS00000 ~ TS23072	<u>÷16</u>)	
Timer (coil)	TC00000 ~ TC23087	TC00000 ~ TC23072	<u>÷16</u>)	
Totaling timer (contact)	SS00000 ~ SS23087	SS00000 ~ SS23072	<u>÷16</u>)	
Totaling timer (coil)	SC00000 ~ SC23087	SC00000 ~ SC23072	<u>÷16</u>)	L/H
Counter (contact)	CS00000 ~ CS23087	CS00000 ~ CS23072	<u>÷16</u>)	
Counter (coil)	CC00000 ~ CC23087	CC00000 ~ CC23072	<u>÷16</u>)	
Timer (current value)		TN00000 ~ TN23087	B i t 15]	
Totaling timer (current value)		SN00000 ~ SN23087	<u>в і т</u> 15)	
Counter (current value)		CN00000 ~ CN23087	B i t 15]	
Data register		D00000 ~ D25983	в і t 15)	
Special register		SD0000 ~ SD2047	B i t 15	
Link register		W0000 ~ W657F	Bit F	
Special link register		SW000 ~ SW7FF	B i t F	
File register		R0000 ~ R32767	B i t 15	



Annunciator, Edge relay, and Step relay devices are not accessible.

E-tag or K-tag indirect addresses cannot be designated.

■ Device Addresses and Nodes Connection Limitations

When a CC-Link intelligent node accesses PLC devices in the master or local node memory, due to the GP's internal restrictions, the following limitations apply.

◆ Limitations

When a block's size limit (1024: 1K) is exceeded, or a different node's device address is used, GP unit internal records are used to set device addresses. These records are limited to 64.

For example, when the D0 device address is set, a single record is used in the GP. For detailed examples, refer to the following chart.

E.x. 1) Number of records used when performing the following tag settings:

Setting No.	Setting Node No.	Device Address	Remaining Number of Records in GP- PRO/PB III	Remarks
1	1	D0	63	Uses one record
2	1	D1024	62	Uses one record
3	2	D0	61	Uses one record
4	2	D1024	60	Uses one record
5	2	R0	60	Since the node number and address range already exist as setting No. 3, no records will be used.
6	2	R1024	60	Since the node number and address range already exist as setting No. 4, no records will be used.
7	2	D2048	59	Uses one record
8	3	D2048	58	Uses one record
9	3	D2049	58	Since the node number and address range already exist as setting No. 8, no records will be used.

Also, if a different node number is used, or the size of an address exceeds the block limit of 1024 (1KB), a GP internal record is used. However, if only the device name is changed, or if the new address range used is the same size as the previously set range, a record will not need to be used.

Ex. 2)

When setting data resister up to D16384 as well as setting addresses in a block (1024: 1K) via tag settings, 16 internal records will be used.

$$16384 \div 1024 = 16$$

Therefore, when performing the same amount of tag settings for each node, settings can be performed for only a total of 4 nodes.

* When the number of internal records exceeds 64, the following error message will appear on the GP screen editor software:

"The number of device addresses has exceeded the upper limit. Cannot perform any more settings.

<Cyclic Transmission>

All remote input/output and remote register data that has been allocated to the master node via the CC-Link parameter settings, can be read.

From this data, only RX and RWr allocated to the GP via the master node can be written from the GP. (These names will become RY and RWw on the GP.)

■ Number of Bits Allocable to the GP

Device	Number of No	Remark		
Device	1 Node	4 Nodes	Remark	
Remote input (RX)	32 bits	128 bits	No. of bits	
Remote output (RY)	32 bits	128 bits	No. of bits	
Remote register (RWr)	4 words	16 words	No. of word	
Remote register (RWw)	4 words	16 words	No. of word	

■ Remote Input/Output Signals (Individual to Master Nodes)

The following data explains the GP's individual node input/output signal allocation. There are two signal allocation, methods: using or not using remote READY flag or not using it. Also, the input/output signal will vary depending on the set number of occupying nodes (1 node/4 nodes).

♦ When remote READY flag (default) is not used:

The "n" character used in the following table reflects the address number used for each node by the master node.

Signal Direction: GP -> Master Node		Signal Direction: Master Node -> GP			
Device No.			Device No.		
Number of Occupying Nodes		Signal Name Number of Occupying		cupying Nodes	Signal Name
1 Node	4 Nodes		1 Node	4 Nodes]
RYn0 ~ RYnF	RYn0 ~	- User area	RXn0 ~ RXnF	RXn0 ~	
KTIIU ~ KTIIF	RY(n+6)F		KAIIO ~ KAIII	RX(n+6)F	User area
RY(n+1)0 ~	RY(n+7)0 ~		RX(n+1)0 ~	RX(n+7)0 ~	Usei alea
RY(n+1)C	RY(n+7)C		RX(n+1)C	RX(n+7)C	
RY(n+1)E ~	RY(n+7)E ~	Prohibited to use *1	RX(n+1)E ~	RX(n+7)E ~	Prohibited to use *1
RY(n+1)F	RY(n+7)F		RX(n+1)F	RX(n+7)F	i ronibiled to use i

^{*1} The last 2 bits cannot be used for any node settings.

♦ When using remote READY flag (default):

The "n" character used in the following table reflects the address number used for each node by the master node.

Signal Direction: GP -> Master Node		Signal Direction: Master Node -> GP			
Device No.			Device No.		
Number of Occupying Nodes		Signal Name	Number of Occupying Nodes		Signal Name
1 Node	4 Nodes		1 Node	4 Nodes	
RYn0 ~ RYnF	RYn0 ~	User area	RXn0 ~ RXnF	RXn0 ~	User area
KTIIO ~ KTIII	RY(n+6)F		KAIIU ~ KAIIF	RX(n+6)F	USEI alea
RY(n+1)0 ~	RY(n+7)0 ~	Prohibited to use	RX(n+1)0 ~	RX(n+7)0 ~	
RY(n+1)A	RY(n+7)A	Frombled to use	RX(n+1)A	RX(n+7)A	
RY(n+1)B	RY(n+7)B	Remote READY flag *1	RX(n+1)B	RX(n+7)B	Prohibited to use
RY(n+1)C ~	RY(n+7)C ~	Prohibited to use	RX(n+1)C ~	RX(n+7)C ~	
RY(n+1)F	RY(n+7)F		RX(n+1)F	RX(n+7)F	

^{*1} The remote READY flag will turn ON during GP start-up. When turning the GP's power ON, when resetting the hardware, and when the GP is ready for operation, the remote READY flag will turn ON. Even while the GP's power is ON, the remote READY flag will turn OFF during offline operation and while performing initial processing. Use this feature for the interlock circuit used when reading and writing data from the CC-Link master node.

■ Relationship between Master and Individual Nodes

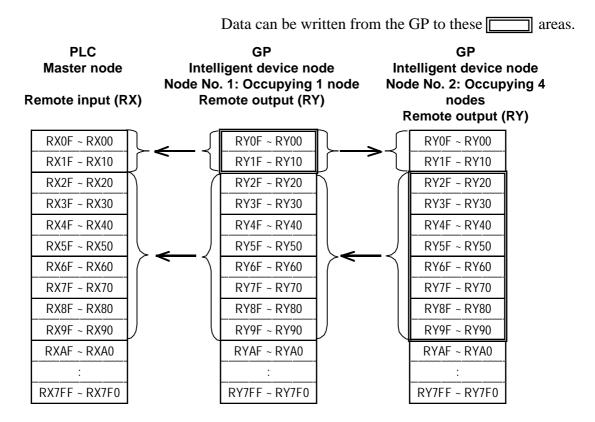
The following data explains the GP's remote register allocation.

The remote register will vary depending on the number of occupying nodes (1 node/4 nodes) set.

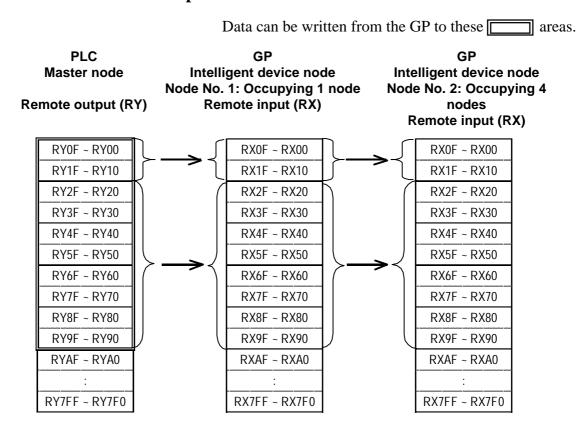
The "m" and "n" characters used in the following table reflect the address numbers used for each node by the master node.

	Add			
Data Direction	Number of Occupying Nodes		Area	
	1 Node	4 Nodes		
GP -> Master node	RWwm ~ RWwm+3	RWwm ~ RWwm+F	Data write area	
Master node -> GP	RWrn ~ RWrn+3	RWrn ~ RWrn+F	Data read area	

■ Remote Enput Allocation via Master Node



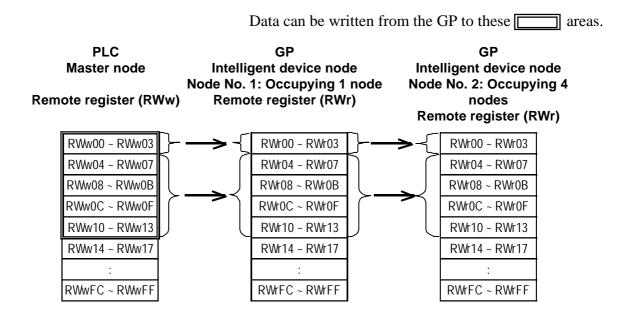
■ Remote Output Allocation via Master Node



■ Remote Register (data read area) Allocation via Master Node

Data can be written from the GP to these **PLC** GP Intelligent device node Master node Intelligent device node Node No. 1: Occupying 1 node Node No. 2: Occupying 4 Remote resister (RWr) Remote register (RWw) nodes Remote register (RWw) RWr00 ~ RWr03 RWw00 ~ RWw03 RWw00 ~ RWw03 RWr04 ~ RWr07 RWw04 ~ RWw07 RWw04 ~ RWw07 RWr08 ~ RWr0B RWw08 ~ RWw0B RWw08 ~ RWw0B RWr0C ~ RWr0F RWw0C ~ RWw0F RWw0C ~ RWw0F RWr10 ~ RWr13 RWw10 ~ RWw13 RWw10 ~ RWw13 RWr14 ~ RWr17 RWw14 ~ RWw17 RWw14 ~ RWw17 RWrFC ~ RWrFF RWWFC ~ RWWFF RWWFC ~ RWWFF

■ Remote Register (data write area) allocation via Master Node



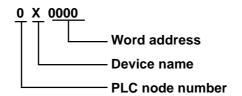


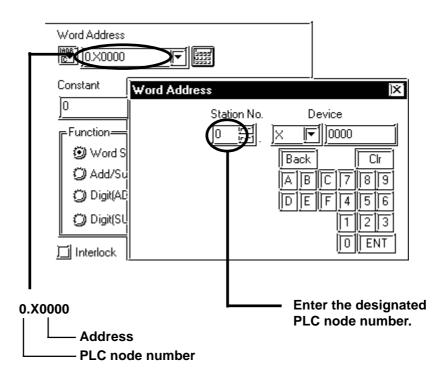
When performing Part and tag settings via GP-PRO/PB III for Windows, designate the PLC node number at the same time as entering addresses. (The default value used when the software starts is "0".)

When using cyclic transmission, node number settings are unnecessary.

Reference: For the devices on which cyclic transmission can be performed, refer to 9.3.3 Supported Devices, MELSEC-A/QnA/Q Series (Common for All Series Units) (Cyclic Transmission).

<e.g.> When a device address is "X0000": Enter "X" for the device name, and "0000" for the address.





9.3.4 Environment Setup

The following table shows Digital's recommended PLC and GP communication settings.

■ MELSEC-A/QnA/Q Series

GP Settings		PLC (Master Node CC-Link Unit) Settings		
Baud Rate	156kbps	Baud Rate Setting Switch 0 (156kbps		
No. of Occupyable Nodes	1	Node Information Settings	*1	
Node No.	1	Node Information Settings	*1	
Data Input Status	Clear			
Remote READY flag	Notused			
		Node No. Setting Switch	0 (master)	
		Mode Setting Switch	0 (online)	
		Condition Setting Switch	All OFF	

^{*1} The A Series requires a ladder program to enter the CC-Link settings.

Reference Refer to 9.3.4 Environment Setup, Sample Ladder

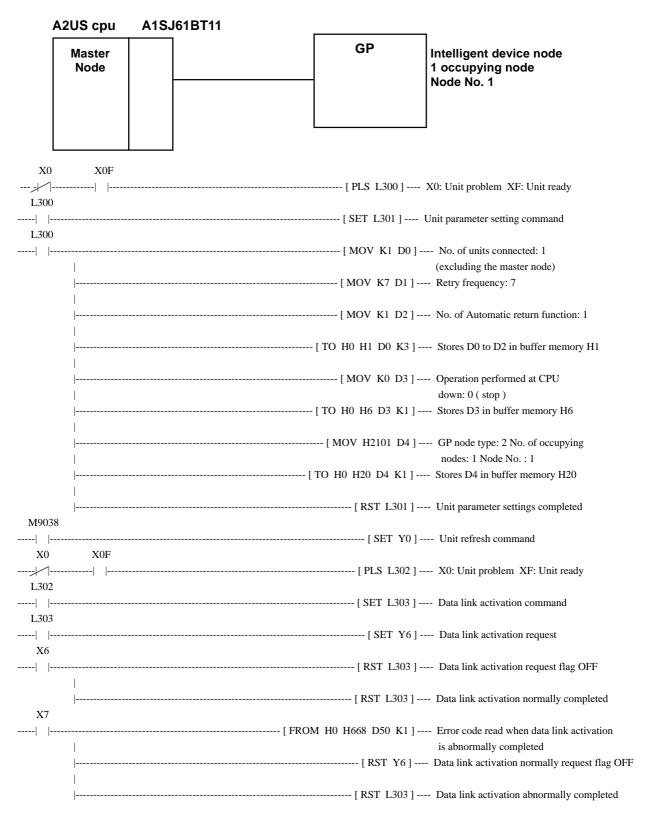
- The QnA/Q Series' CC-Link settings are entered via entering the network parameter settings on the ladder program.
- For more detailed information about ladder program settings, refer to Mitsubishi Electric [AJ61BT11/A1SJ61BT11] Unit CC-Link System Master and Local Unit User's Manual (Details), [AJ61QBT11/A1SJ61QBT11] Unit CC-Link System Master and Local Unit User's Manual (Details), or [QJ61BT11] Unit CC-Link System Master and Local Unit User's Manual (Details)'s [Parameter Settings] section.



- Be sure to set the master node number to "0". (Use the rotary switch to set the master node unit's node number setting switch.)
- To assign other nodes, the Mitsubishi ladder logic program's the network parameter settings feature is required (CC-Link).

■ Sample Ladder Program

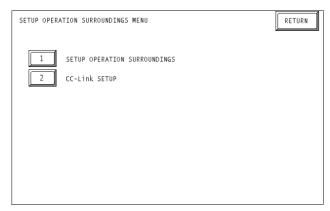
The following is a sample ladder used when performing communication via the structure shown below:



■ GP Settings

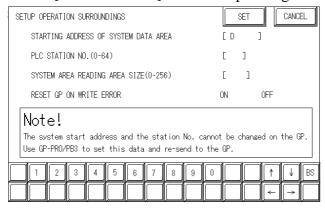
Enter the GP settings used for CC-Link communication, via the following screens. Use either GP screen editor software or GP offline menu to enter the number of occupying nodes, GP's node number, and baud rate.

◆ Operating Environment Menu



♦ Operating Environment Settings

Select [1 PLC SETUP] from the operating environment menu and enter each



STARTING ADDRESS OF SYSTEM DATA AREA *1

the first address from which the system area begins to be allocated.

PLC Node No. (1 to 64) *1

the PLC node number to which the system area is allocatedd.

SYSTEM AREA READING AREA SIZE (0-256)

Enter the sysytem area's reading area size.

RESET GP ON DATA WRITE ERROR

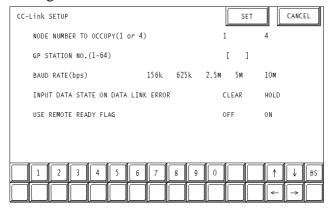
Select the data write operation status when a data write error occurs. (Applicable only for GP77R Seried)

When changing the setting, perfom with [GP System Setting] of GP-Pro/PB III.

^{*1} This setting cannot be changed with GP's OFFLINE mode.

◆ CC-Link Settings

Select [2 CC-Link SETUP] from the operating environment menu and enter each setting.



No. of Occupying Nodes (1 or 4)

Select the number of nodes that the GP occupies.

GP Node No. (1 to 64)

Enter the GP's node number.

Baud Rate (156 kbps to 10 Mbps)

Enter the communication baud rate.

Input Data Status Used for Abnormal data Link (Clear or Retained)

Enter the input data status used when a problem occurs on data link.

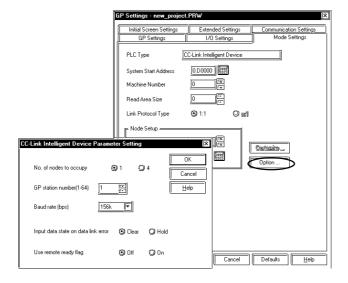
Remote READY Flag

Select if the remote READY flag is used.

For more detailed information about the remote READY flag. **Reference** sfer to 9.3.3 supported Device; Remote Input/Out put Signal from Individual to Master Nodes.

♦ GP Screen Editor Software Settings

Enter the necessary data via [GP System Settings][Mode Settings][Options].



9.3.5 Error Codes

■ PLC Error Codes

The error codes specific to the PLC will appear on the GP screen's left bottom, as follows:

Host Communication Error (02::**:##)".**

The "**" characters indicate an error code specific to the PLC (via the 16 system), and the "##" characters indicate the PLC number, on which an error occurred.

<e.g.> When "0xB802" is returned from node No. 1, the error code will appear as follows:

Host Communication Error (02:B8:02:01)



For more detailed information about error codes, refer to the following Mitsubishi Electric's manuals:

AJ61BT11/A1SJ61BT11 Unit CC-Link System Master and Local Unit User's Manual (Details)

AJ61QBT11/A1SJ61QBT11 Unit CC-Link System Master and Local Unit User's Manual (Details)

QJ61BT11 Unit CC-Link System Master and Local Unit User's Manual (Details)

◆ Error Codes Specific to GP CC-Link Intelligent Device

The error codes specific to the GP's internal CC-Link intelligent device nodes are as follows. Each error code will appear on the GP screen's left bottom, in a format of "Host Communication Error (02:**)".

The "**" characters reflect one of the following error codes.

Error Code	Error
01	The check sum did not match during initialization.
02	The check sum reverse did not match during initialization.
03	Data link normal activation was not completed after initialization.
04	Shared memory read request was failed.
05	Shared memory write request was failed.
06	There was no response from the firmware during initialization.
11	An incorrect device code was designated during device read.
12	The transient command procedure was not normally completed during device read.
21	An incorrect device code was designated during device write.
22	The transient command procedure was not normally completed during device write.
23	Out of the internal memory buffer area
30	Undefined error (This type of error usually never occurs and can occur due to program bugs, memory destruction, etc.)

10 Device Net

10.1 Connectable PLCs

The following tables list the PLCs that can be connected and used with the GP.

Co.	Series Name	СРИ	Link Unit	Comments	PLC name in PRO/PBIII
Rockwell	SLC500	SLC-5/04	1747-SDN	Device Net Unit	Device Net
(Allen-Bradley)				(GP070-DN41)is	Slave I/O
(Alleri-Diadley)	PLC-5	PLC-5/20	1771-SDN	required.	
	SYSMAC CS1	CS1H-CPU67	C200HW-		
		CS1H-CPU66	DRM21-V1		
		CS1H-CPU65			
		CS1H-CPU64			
Omron		CS1H-CPU63			
		CS1G-CPU45			
		CS1G-CPU44			
		CS1G-CPU43			
		CS1G-CPU42			
	S10mini	LQP000	LQE070		
Hitachi		LQP010			
		LQP011			
	FA-3	F3SP20-0N	F3LD01-0N		
		F3SP21-0N			
		F3SP25-2N			
		F3SP28-3N			
Yokogawa		F3SP30-0N			
Electric		F3SP35-5N			
		F3SP38-6N			
		F3SP53-4H			
		F3SP58-6H			
		F3SP36-3N			

The following table lists the GPs units that can be connected and used with DeviceNet.

■ List of Applicable GP/GLC Units

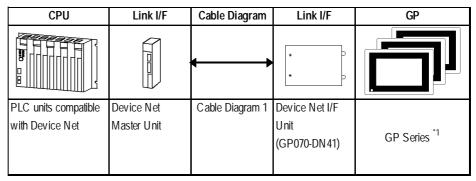
Seri	es Name	Product Name	Unit
GP70 Series	GP-470 Series	GP-470E	
	GP-570 Series	GP-570S	
		GP-570T	
		GP-57JS	
		GP-570VM	
	GP-571 Series	GP-571T	
	GP-675 Series	GP-675S	
		GP-675T	
	GP-870 Series	GP-870VM	DeviceNet Unit
GP77R Series	GP-477R Series	GP-477RE	(GP070-DN 41) *1
	GP-577R Series	GP-577RS	(01 070-01141)
		GP-577RT	
GP2000 Series	GP-2500 Series	GP-2500L	
		GP-2500S	
		GP-2500T	
	GP-2501 Series	GP-2501S	
		GP-2501T	
	GP-2600 Series	GP-2600T	
GLC 2000 Series	GLC-2600 Series	GLC-2600T	

^{*1} When using GP2000/GLC2000 series units, a bus conversion unit (PSL-CONV00) is required.

10.2 Slave I/O

10.2.1 System Structure for Device Net Connection

The following table shows the system structure for connecting the GP to PLCs supporting Device Net.



*1 For a list of GP/GLC units units that can use the DeviceNet, refer to

Reference 10.1 Connectable PLCs List of Applicable GP/GLC Units in this manual.



• For the cable used, refer to <10.2.2 Cable Diagram> ◆List of Cables Dedicated to DeviceNet.

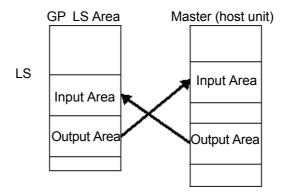
■ Slave I/O

Slave I/O is the feature that converts I/O data automatically between the PLC installed with the master unit and GP unit.

Slave I/O uses a special link method that does not allow a user to access a PLC directly.

When using Device Net Connection the GP series unit performs like an I/O terminal (Remote terminal). The GP's LS area will be used as a device which inputs/outputs data with the host (PLC).

The master (host PLC) unit Output area is allocated to GP's Input area, and the master's Input area is allocated to GP's Output area. The LS area's Input area is followed in sequence by the Output area. (See below)





Only the LS Area's User Area (from LS20 to LS1999) is used for this communication.

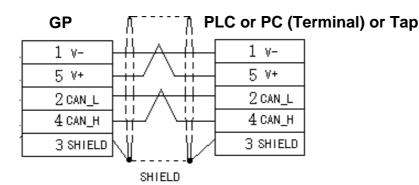
The System Area (from LS0 to LS19) and Reading Area settings cannot be used for PLC communication.

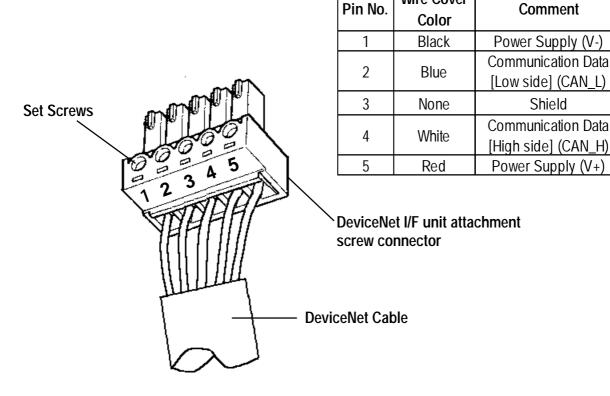
GP will be used as a slave unit.

Explicit Message Communication is not supported.

Cable Diagram

<Cable Diagram 1>







After all connector wires are attached to the connector, connect the connector to the Device Net I/F Unit (5-wire type).

Be sure to connect Terminating Resistors ($121\Omega 1/4W$) to both sides of the cable.

Wire Cover

Comment

Shield

■ List Device Net Cables

There are two types of cable, thick and thin, for the Device Net unit.

Be sure to use only cables that meet the Device Net specifications. The following two cables are recommended.

- Rockwell (Allen Bradley) Thick type 1485C-PI-A***
- Rockwell (Allen Bradley) Thin type 1485C-PI-C***

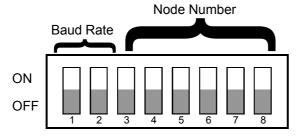
10.2.3 Environment Setup

The following lists Digital's recommended GP settings.

Baud Rate and Node Number Settings

♦ GP Unit

For setting the baud rate and the node number, use the Dip Swith (8 positions) on the rear side of the Device Net expansion unit (Model: GP070-DN41). The normal SIO communication setting cannot be used. Node number is available from 0 to 63 on the GP.



Baud Rate	DIPSW1	DIPSW2
125K	0	0
250K	0	1
500K	1	0
Reserved	1	1

Node No.	D3	D4	D5	D6	D7	D8
0	0	0	0	0	0	0
1	0	0	0	0	0	1
2	0	0	0	0	1	0
:				:	• •	
61	1	1	1	1	0	1
62	1	1	1	1	1	0
63	1	1	1	1	1	1

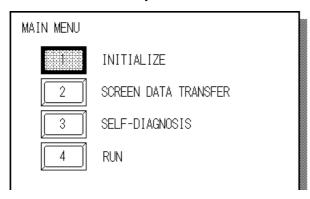
♦PLC Unit

For PLC settings, refer to each company's Device Net communication unit's manual.

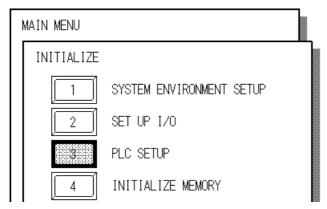
Input / Output area Settings

Enter the GP's communication settings via the SET UP OPERATION SUR-ROUNDINGS menu.

< GP Example screen >



① Touch the INITIALIZE selection. The INITIALIZE menu will appear.



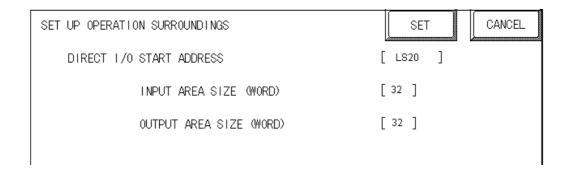
② Touch the PLC SETUP selection. The SET UP OPERATION SURROUNDINGS menu will appear.



The Initialize screen's SET UP I/O area's settings disabled.

◆ Enter the following settings to begin I/O communication.

- In the DIO Start Address, enter a value from LS20-LS1999.
- In the Input Area Size, enter a value from 0-127 words.
 Set the word area size that is equal to the output area size of the DeviceNet master unit.



• In the Output Area Size, enter a value from 0-127 words.

Set a word area size equal to the input area size of the DeviceNet master unit.



The GP's SYSTEM DATA AREA(LS0 to LS19) cannot be allocated.

< PLC Settings >

For PLC settings, refer to each company's Device Net communication unit's manual.

10.2.4 Supported Devices

	Word Address	Particulars	
Input Area Size (word)	0 to 127	*1	
Output Area Size (word)	0 to 127	*1	L/H
DIO Start Address	LS20 to LS1999	*2	

^{*1} Though the Input /Outpuut area size can be set from 0 to 127, the maximum I/O size used per slave will differ depending on each company's master unit specifications.

The I/O size that each company supports is shown as below.

PLC Series	Input Area Size (word)	Output Area Size (word)	
Rockwell	0 to 64	0 to 64	
SLC500	0 10 04	0 10 04	
Rockwell	0 to 64	0 to 64	
PLC-5	0 10 04	0 10 04	
Omron	0 to 32	o to32	
SYSMAC CS1	0 10 32	0 1032	
HITACHI	0 to 127	0 to 127	
S10mini	0 10 127	0 10 127	
YOKOGAWA	0 to 127	0 to 127	
FA-M3	0 10 127	0 10 127	

^{*2} Designate the DIO Start Address within the range shown below.
20 ≤ DIO Start Address ≤ 2000 - Input Area Size - Output Area Size

e.g: When Input Area Size =4, and Output Area Size =16, the setting range of the DIO Start Address should be: 20 ≤ DIO Start Address ≤ 1980

10.2.5 Error Codes

The following list shows the error codes for the Device Net connection. These error codes will appear as "PLC COM.ERROR (02:**)" on the bottom left on the GP screen. (** stands for an error code.)

Error Code	Details	Status
14	No reply from the hardware	Unit is not properly installed
17		Unit Error
	A communication error occurred	Communication Setting Error
16		Communication Line Error
		Node No. is duplicated

11 Interbus

11.1 Connectable PLCs

The following tables list the PLCs that can be connected and used with the GP.

■ Direct I/O Mode

Maker	Series Name	CPU	Link Unit	Comments	PLC name in PRO/PBIII
Siemens	S7-400	CPU413-2DP	Phoenix Contact IBSS7-400 DSC/I-T		INTERBUS
All others	Various PCs	_	Phoenix Contact IBS PC ISA SC/I-T		SLAVE

■ Packet Transfer Mode

Maker	Series Name	CPU	Link Unit	Comments	PLC name in PRO/PBIII
Siemens	S7-400	CPU413-2DP	Phoenix Contact IBSS7-400 DSC/I-T		INTERBUS SLAVE

The following tables list the GPs that can be connected and used with Interbus.

Series Name		Product Name	Unit
GP70 Series	GP-470 Series	GP-470E	
	GP-570 Series	GP-570S	1
		GP-570T	
		GP-57JS	
		GP-570VM	
	GP-571 Series	GP-571T	
	GP-675 Series	GP-675S	
		GP-675T	Interbus Slave Module
GP77R Series	GP-477R Series	GP-477RE	(GP070-IB41) *1
	GP-577R Series	GP-577RS	
		GP-577RT	
GP2000 Series	GP-2500 Series	GP-2500L	
		GP-2500S	
		GP-2500T	
	GP-2600 Series	GP-2600S	
		GP-2600T	

^{*1} When using GP2000 Series units, a bus conversion unit (PSL-CONV00) is required.

11.2 Slave I/O

11.2.1 System Structure

The following table shows the system structure for connecting the GP to Siemens PLCs and PCs.

			Recommended		
CPU	Link I/F	Cable Diagram	Cables	Link I/F	GP
		•	-	•	
CPU413-2DP	Phoenix Contact IBS S7-400 DSC/I-T	(Cable Diagram 1)	Phoenix Contact IBS RBC 2M ¹¹ -	Interbus Slave Module	GP Series *2
Various PCs	Phoenix Contact IBS PC ISA SC/I-T	(Cable Diagram 1)	KONFEX-T	(GP070-IB41)	GP Series

^{*1 2}M indicates the length of the cable as 2 meters. 5M indicates a length of 5 meters etc.

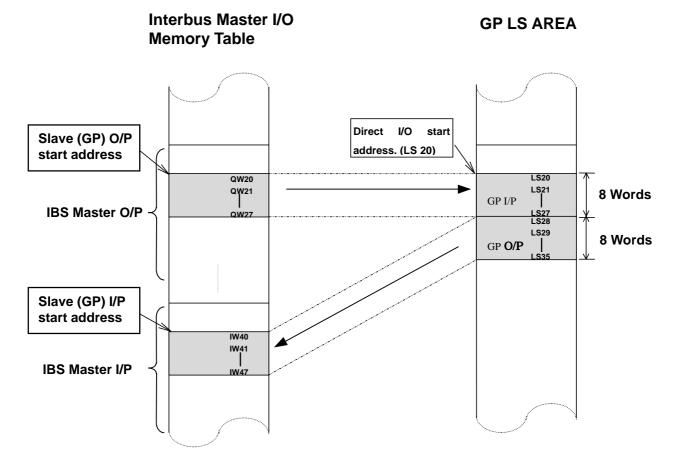
*2 For details, \(\subseteq \text{Reference} \subseteq refer to 11.1 Connectable PLCs. \)



• The GP is used is a slave unit.

■ Direct I/O Mode

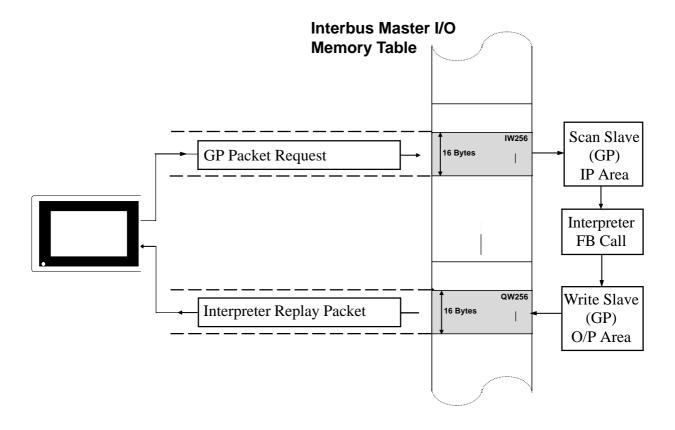
When communicating via Interbus in "Direct I/O" mode, the GP communicates with an Interbus master in a very simple manner. An area of memory is mapped from the GP's LS area into the Interbus master's input area and an area of the Interbus master's output is mapped into the GP's LS area. This is demonstrated in the following diagram example (Input & Output size 8 Words).



The GP Slave Input and Output start addresses and sizes (IW40 and QW20 in the above example) have to be configured using the Interbus Master's configuration software. Please refer to the Interbus Master's documentation for instructions on how to make these settings.

■ Packet Transfer Mode

When communicating via Interbus in "Packet Transfer" mode, the GP acts as a "Logical Master", i.e. it can request to read and write any data areas in the PLC as if it was a master. In this mode an "Interpreter Function Block" is required in the PLC. In this mode the GP uses a fixed input and output area size (16 bytes or 8 words) of the PLCs I/O memory Table. The GP transmits commands (read or write requests) based on its outputs. The PLC's interpreter function block scans this input area and performs the requested action, then places the result on the output area. See the diagram below for an explanation.



The GP Slave Input and Output start addresses and sizes (IW256 and QW 256 in the previous example) have to be configured using the Interbus Master's configuration software. Please refer to the Interbus Master's documentation for instructions on how to create these settings.

Currently a function block exists only for the S7-400 PLC. This should be called from OB1 of the Step 7 Program. Please refer to the following example for how to call this. Note: In this example the GP uses input address IW256 and output address QW256. It is also necessary to use 3 bytes of PLC internal memory. In this example, Marker bytes (MB) 100,101 & 102 are used.

```
OB1: MAIN BLOCK
???
Network 1 : GP-PROFIBUS/INTERBUS INTERPRETER CALL
IP/OP_ADDR: First I/O byte addresses of GP panel like configured in S7 HW CONFIG
           in decimal format
ERR_BYTE: Interpreter error due to bad data format
           Byte 0: Bad device type (DB,M,I,O)
            Byte 1: Bad Data Block Address (word address over range)
            Byte 2: Attempt to write to a input
            Byte 3: Unknow Data block operations
            Byte 4: Interpreter general error
TEMP_OUT
           Output byte 0 previous scan value
            Byte 6:
            Byte 7:
  CALL FC
            :=256
    IP_ADDR
                               // GP First input byte address
    OP_ADDR
             :=256
                               // GP First input byte address
    ERR BYTE :=MB100
                               // Interpreter error byte (see comment)
    TEMP OUT :=MB101
                               // First output byte buffer for extended addressing
    GP_STATUS :=MB102
                                // Profibus new data request checking (see comment)
```

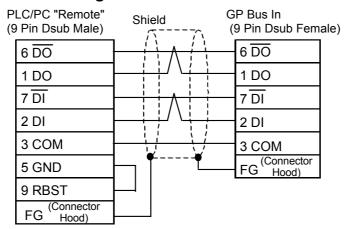


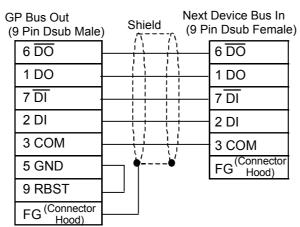
The Interpreter Function Block can be found in the example S7-400 PLC project is contained on the GP-PRO/PBIII for Windows CD-ROM which (folder name is "FIELDBUS"). This was created with version 3.2 of the Step 7 Software. Please follow the instration instructions in the README.TXT file on how to install this.

11.2.2 Cable Diagrams

The cable diagrams shown below and the cable diagrams recommended by Phoenix Contact may differ. Using these cables for your PLC, however, will not cause any problems.

Cable Diagram 1





Reference For details, refer to Digital's **GP70 Series Interbus I/F Unit** Users Manual.

11.2.3 Supported Devices

■ Direct I/O Mode

	Word Address	Particulars	Default
Input Area size (Word)	0~10	Read Only	0
Output Area size (Word)	0~10		0
Direct I/O Start Address	LS0020~LS1999		LS20

The System Area (LS0 to LS19) and Reading Area settings cannot be used for PLC communications. Only LS Area's User's Area (LS20 to LS1999) can be used for communication. The maximum Input & Output Size is 10 Words (20 bytes) each.



- Only the LS Area's User Area (from LS20 to LS1999) is used for this communication.
- The System Area (from LS0 to LS19) and Reading Area settings cannot be used for the PLC communication.

■ Packet Transfer Mode

Setup System Area here.

	Bit Address	Word Address	Note
Data Block	_	DB2W00000-DB60W65535	*1*2
Input Relay	1000000-1655357	IW00000-IW65534	*3*4
Output Repay	O000000-O655357	OW00000-OW65534	*3
Internal Memory	M000000-M655357	MW00000-MW65534	*3

^{*1} The Data Block Memory to be used in the GP-PRO/PBIII for Windows must be configured in the PLC first. Please confirm that all addresses to be accessed already exist in the PLC.

^{*4} Input relays cannot be written to by the GP.



The Interpreter Function Block can be found in an example S7-400 PLC project that is contained on the GP-PRO/PBIII for Windows CD-ROM in the folder "FIELDBUS". This was created with version 3.2 of the Step 7 Software. Please follow the instructions in the README.TXT file on how to install this.

^{*2} The address format for Data Block Memory is according to Siemens S7 conventions. This is word (16 bit) addressing of Byte addresses so only even addresses e.g. DB2W0050 represents Data Block 2, Word 50.

^{*3} The address format for these devices is according to Siemens S7 conventions. For bit addressing the last digit represents the bit position, e.g. I0164 represents byte 16, bit number 4. For word addressing only even byte addresses can be used.

11.2.4 Environment Setup

There are no communication parameters to be set up on the GP side of the Interbus Connection. The Master PLC/PC automatically assigns node addresses to each slave on the network and the baud rate is fixed at 500 Kbps.

	GP	PLC/Interbus Master
Transmission speed	500 Kbps (fixed)	500 Kbps (fixed)
Node No.	Automatically Configured	Automatically Configured

The GP's OFFLINE screen used to enter these communication settings is shown below. The settings on this screen govern the manner in which the GP communicates via Interbus, i.e. the communication data type (Direct I/O or Packet Transfer) and for Direct I/O; the addresses in the GP's internal memory where data will be read and written from, and the sizes of these blocks of data. These settings can be also made from the GP setup menu in GP-PRO/PBIII for Windows software. For Packet Transfer please set the Input and Output Area Size via this menu.

♦ From the initial OFFLINE menu screen:

- 1) Select [INITIALIZE] to call up the initial settings screen.
- 2) Select the [SET UP OPERATION SURROUNDINGS] menu item (screen below appears).
- 3) Configure the environment settings to suit your particular requirements. (Ex. Direct I/O, Input/Output Area Size, etc.)

```
SET UP OPERATION SURROUNDINGS
        SYSTEM DATA AREA START DATA BLOCK [
                                                0010
                                                        ]
                      START DATA WORD [
                                           000
        SYSTEM AREA READING AREA SIZE (0 - 256)[ 0 ]
        COMMUNICATION DATA TYPE
                                            DIRECT I/O
                                                        PACKET
        DIRECT I/O START ADDRESS
                                               LS0020
                 INPUT AREA SIZE
                                        [
                                               ]
                 OUTPUT AREA SIZE
                                               1
                                        [
```

The input and output area sizes used here must match those set up in the Interbus Master's configuration for the GP slave. Please refer to the Interbus Master's documentation. For Packet Transfer Mode, the input and output size are fixed at 16 bytes.

11.2.5 Interbus Specific Error Code

The following list shows the error codes for the Device Net connection. These error codes will appear as "PLC COM.ERROR (02:**)" on the bottom left on the GP screen. (** stands for an error code.)

Error Code	Details	Status
14	No reply from Interbus H/W module	Unit is not properly installed, or unit failure
16	Interbus Not online	Configuration error

12 Indicating Controllers

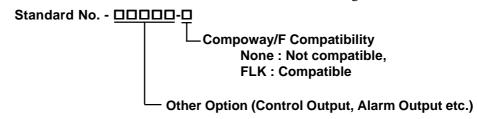
12.1 Connectable Controllers

Company	Series	Controller *1	Note	PLC name in Pro/PB III
	UT2000	UT2400-□		YOKOGAWA
		UT2800-□		FACTORY ACE 1:1
Yokogawa M&C		UT320-□1		Comm.
Corp.	CDEEN SEDIES	UT350-□1		OL OL
	GREEN SERIES	UT450-□1		YOKOGAWA
		UT450-□1		FACTORY ACE 1:n Comm.
		SDC20, SDC21		COMMI.
		SDC30, SDC31		
Yamatake Corp.	SDC	SDC40A, SDC40B		YAMATAKE SDC SERIES
		SDC40G		
	DMC	DMC10		1
		CB100 Z-1021		
RKC		CB400 Z-1021		
INSTRUMENT	СВ	CB500 Z-1021		RKC CB/SR-Mini Series
INC.		CB700 Z-1021		KKC CD/SK-WIIII Series
IIVC.		CB900 Z-1021		
	SR-Mini	H-PCP-A Z-1021		
	THERMAC	E5EN-DDDD-FLK *2		
	NEO Electronic	E5CN-□□□□□-FLK		
	Temperature	E5GN-□□□□□-FLK		
Omron Corporation		E5AN-		OMRON THERMAC NEO
	In-Panel NEO	*2		
	Temperature	E5ZN-□□□□□-FLK *2		
	Controller		Ontional unit is	
	С	CDT 20A	Optional unit is	
	C	CPT-20A	required when using	
			muliple channels. *3	
		FCD-13A□□,C FCD-13A□□,C5		
		FCD-15A□□,C5 FCD-15A□□,C		
		FCD-15A□□,C5	When using the	
Sinko Technos	FC	FCR-13A□□,C	Controller for the first	SHINKO TECHNOS
Corp.		FCR-13A□□,C5	time, select the serial	INDICATING
		FCR-15A□□,C	communication option.	
		FCR-15A□□,C5	(,C:RS-232C)	
	F.C	FIR-201-M□□,C	(,C5:RS-485) *4	
	FIR	FIR-201-M□□,C5	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	
	GC	GCS-300□□,C5	1	
	FCL	FCL-13A□□,C5		

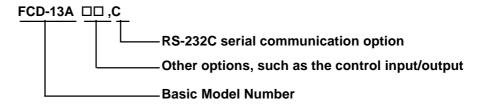
Company	Series	Controller *1	Note	PLC name in PRO/PBIII
Sinko Technos Corp.	PC-900	PC-935□□,C PC-935□□,C5 PC-955□□,C PC-955□□,C5	When using the Controller for the first time, select the serial communication option. (,C:RS-232C) (,C5:RS-485)	SHINKO TECHNOS INDICATING
Fuji Electric Corporation	Micro- Controller X (PXR)	PXR4□□□□-□□M00 *5 PXR4□□□□-□□V00		FUJI TEMPERATUR E PXR
TOHO ELECTRONICS INC. *6	TTM-004 TTM-X04 TTM-V00B TTM-10L TTM-100B TTM-110 Series TTM-110 Series TTM-300 Series TTM-300B	TTM-004-		TOHO ELECTRONICS TTM SERIES

^{*1} The Controller's model number "□" will vary depending on each controller's functionality specifications.

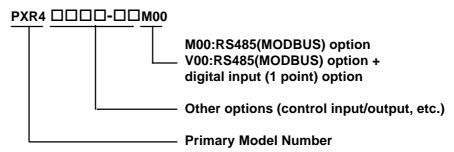
^{*2} Omron Controller's model number consists of the following items.



- *3 When using multiple channels with a C Series unit, the 2 ch temperature control unit (CCT-235-2-□□) is required. For model number details "□□", refer to the C Series catalog.
- *4 Items with the serial communication option have a ",C" or ",C5" after the basic model number.
- Ex.) When specifying the RS-232C serial communication option for the FC Series.



*5 When connecting the Controller to a GP, the RS485(MODBUS) option "M00" or "V00" is required.



*6 About TOHO Controller's Model Number

The Controller model number is used to designate if a Controlleris equipped with comunication features or not. To check whether your Controller has comunication features, refer to your Controller's User Manual or Catalog.

For example, the Controller model number of the TTM-004 Controller is shown below. Only Controllers with the character "M" in their model number's Option section (the three right-most characters) are equipped with communication feature.

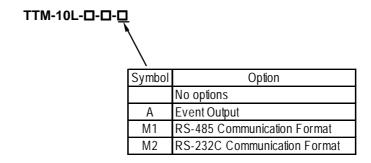
TTM-004-<u></u>D-A

Symbol	Output1
R	Relay Contact
Р	SSR Drive Voltage
	Ů

Symbol	Option
	No options
Α	EV1 Contact Output Relay
В	EV2 or Output 2 Contact Output Relay
С	Voltage Output for SSR Drive (Output 2)
D	CT Input
Е	DI Input
М	RS-485 Communication Format

*7 TTM-10L Unit Communication Format

Depending on the unit's model number, the TTM-10L can use, either the RS-485 or the RS-232C format. Select the Communication Format as shown below (Communication Format can be selected either RS-485 or RS-232C.).



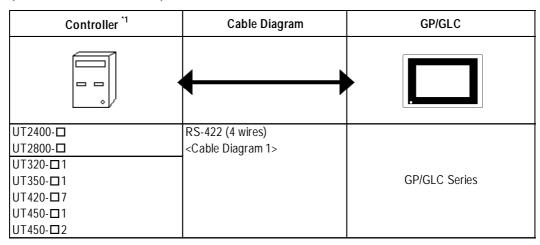
12.2 Yokogawa M&C Controllers

12.2.1 System Structure

This chapter describes the system configuration used when connecting this Controller to the GP/GLC.

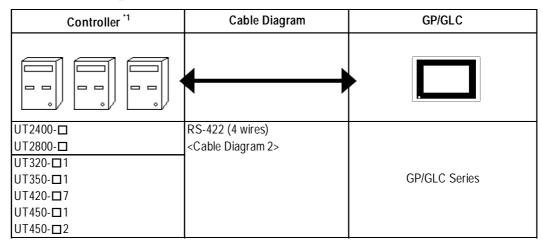
■ UT2000 Series/GREEN SERIES

(1:1 communication)



^{*1} The Controller's model number "\subseteq" will vary depending on each controller's functionality specifications.

(1:n (multi-drop) Communication)



^{*1} The Controller's model number "\(\sigma\)" will vary depending on each controller functionality specifications.

12.2.2 Cable Diagrams

The cable diagrams shown below and those recommended by Yokogawa or Yokogawa M&C may differ, however, using these cable connections for your Controller's operations will not cause any problems.



Ground the Controller's FG terminal according to your country's applicable standard.



- When connecting the FG wire to the cable connector's hood, be sure that the hood material is conductive.
- The maximum RS-422 cable length is 500 meters. When connecting this cable, be sure to connect the SG terminal.

■ Terminal Numbers Used When Using an RS-422 Cable



 The terminal numbers used when using an RS-422 cable for connection will vary depending on each Controller model.

On the cable diagram, however, these terminal numbers are not shown, and please refer to the numbers shown below for cable connection.

♦ UT2000 Series

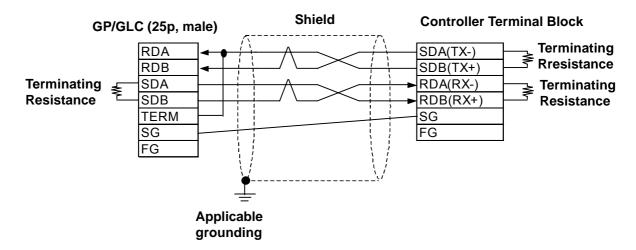
Signal Name	Terminal No.
TX+	4
TX-	6
RX+	3
RX-	5
SG	2
FG	1

♦ GREEN Series

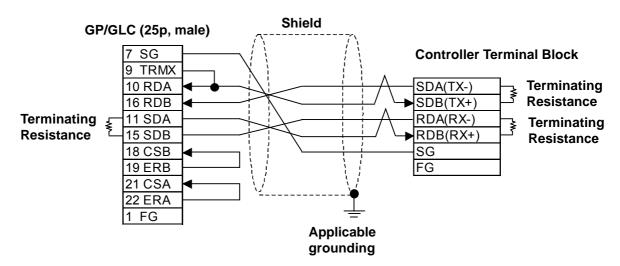
Signal Name	Terminal No.
SDA(-)	24
SDB(+)	23
RDA(-)	26
RDB(+)	25
SG	27

Cable Diagram 1 (1:1) (RS-422 4 Wires)

<When using Digital's RS-422 connector terminal adapter GP070-CN10-0>



<When preparing a cable on your own specifications>





Hitachi Densen's CO-SPEV-SB(A)3P*0.5SQ cable is recommended.

Depending on the Controller model, the FG terminal may not be equipped.

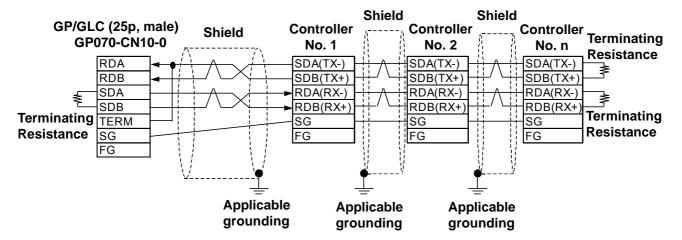
The GREEN SERIES' terminating resistance is 220Ω (1/4W) and the UT2000 Series' terminating resistance is $100\Omega(1/2W)$ or more.

Connecting the GP/GLC serial interface's Nos. 9 and 10 pins will insert 100Ω terminating resistance between RDA and RDB.

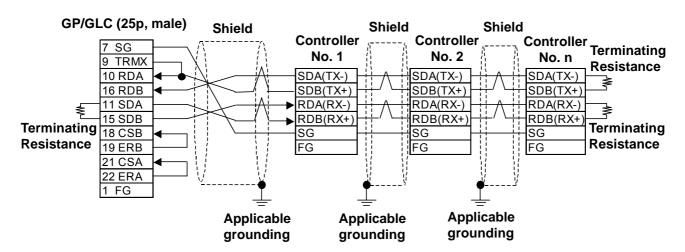
When using an RS-422 cable, be sure to keep its length within 500 meters.

Cable Diagram 2 (1:n) (RS-422 4 Wires)

<When using Digital's RS-422 connector terminal adapter GP070-CN10-0>



<When preparing a cable on your own specifications>





The maximum RS-422 (4 wires) cable length is 500 meters.

Up to 31 Controllers (up to 16 for UT2000 Series) can be connected.

Depending on the Controller model, the FG terminal may not be equipped.

The GREEN SERIES' terminating resistance is $220\Omega(1/4W)$ and the UT2000 Series' terminating resistance is $100\Omega(1/2W)$ or more.

Supported Devices

The following lists show the ranges of devices supported by the GP/GLC.

■ UT2000 Series

Depending on the Controller model, prohibit areas are specified even within the following ranges.

Reference Refer to Yokogawa's "UT2000 Detailed operation manual"

Device	Bit Address	Word Address	Remarks	
I	10001 ~ 11024	10001 ~ 11009	<u>÷16∓</u>])	L/H
D		D0001 ~ D1024	Bit 1 51	ЦП

■ GREEN SERIES

Depending on the Controller model, prohibit areas are specified even within the following ranges.

Reference Refer to Yokogawa M&C's "UT350/UT320 Digital Indicated Controllers Operation Manual" and "GREEN SERIES further User's Manual".

Device	Bit Address	Word Address	Remarks
I	10001 ~ 12048	10001 ~ 12033	<u>÷16∓])</u>
D		D0001 ~ D1274	Bit 1 51

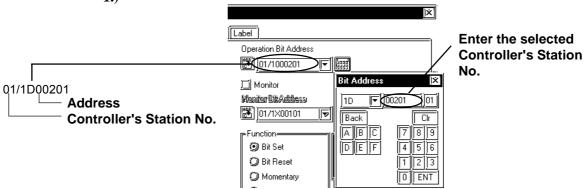


- The system area (20 words) cannot be allocated to the Controller's own data area. Even though you can enter the system area settings via the GP screen editor software, or via the OFFLINE screen, it is impossible to actually allocate the system area to the Controller's data area.
- Be careful as the Device fields differ depending on the type of Controller. Refer to the Controller's manual for the range allowed for the device address area.

After screen data is converted from a different type of Controller, be sure to check if the device addresses used are correct. Be sure to check the supported device addresses before using Trend graphs or tags in your screens that use multiple words over continuous addresses.



When using tags in the screen editor software, the PLC Station number can be designated during address input. When a station number is not designated, the previously entered station number is automatically used. (The default value is 1.)



12.2.4 Environment Setup

The following list shows the recommended Controller and GP/GLC communication settings.

■ UT2000 Series/GREEN SERIES

GP/GLC Settings		Controller Settings			
Baud Rate	9	600 bps	Baud Rate	Baud Rate	
Data Length		8 bit	Data Length		8 bit
Stop Bit		1 bit	Stop Bit		1 bit
Parity Bit		Even	Parity Bit		Even
Data Flow Control		ER			
Communication Format (When using RS-422)	4-\	vire Type			
			For Dip Switch Communication Mode Selection	UT2000 Series	ON
			Protocol Selection (PSL)	GREEN SERIES	Personal computer link communication
Lipit No	UT2000 Series	1 ~ 16	Station No.	UT2000 Series	1 ~ 16
Unit No.	GREEN SERIES	1 ~ 31	(communication address)	GREEN SERIES	1 ~ 31

♦ Controller Communication Settings

<UT2000 Series>

Use the unit's rear face rotary switches:

- (1) Use the communication condition setting rotary switch to enter the communication condition.
- (2) Use the station number selection rotary switch to enter the unit number.
- (3) Turn the communication mode selection dip switch ON.

<GREEN SERIES>

Use the unit's front keys:

- (1) Hold down the Controller's [SET/ENT] key for 3 seconds or more to change the screen from [operation] to [operation parameter] .
- (2) When "OP.PA" appears on the measurement value (PV) display, use either \triangle or ∇ key to display "STUP".
- (3) For UT350/UT320, every time you press the [SET/ENT] key, the screen will change one by one, in the order of [Protocol Selection] --> [Baud Rate] --> [Parity] --> [Stop Bit] --> [Data Length] --> [Communication Address].

For UT450/UT420, press the [SET/ENT] key once, and the [Setup Parameter Settings] screen will appear. Use either△ or V key to select "r485", and then, press the [SET/ENT] key again. After this, use the same procedure used for UT350/UT320.



12.3 Yamatake Controllers

12.3.1 System Structure

This chapter describes the system configuration used when connecting this Controller to the GP.



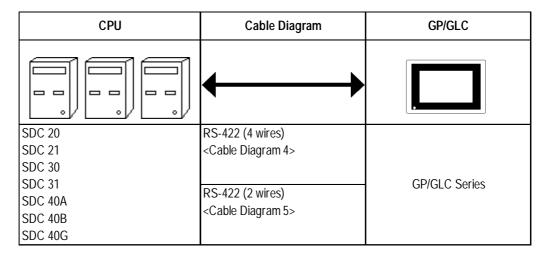
GP/GLC's System Area (LS0 to LS19) Settings

The GP/GLC's system area (20 words) cannot be allocated to the Controller's own data area. Even though you can enter the system area settings via the GP's screen editor software or via the GP/GLC's OFFLINE screen, it is impossible to actually allocate the system area to the Controller's data area.

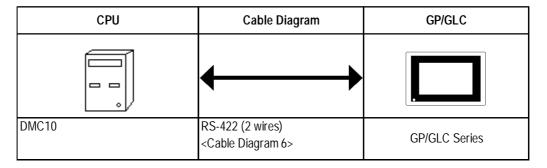
■ **SDC Series** (1:1 communication)

Controller	Cable Diagram	GP/GLC
		
SDC 20 SDC 21 SDC 40A SDC 40B SDC 40G	RS-232C <cable 1="" diagram=""></cable>	GP Series
SDC 20 SDC 21 SDC 30	RS-422 (4 wires) <cable 2="" diagram=""></cable>	or GLCSeries
SDC 31 SDC 40A SDC 40B SDC 40G	RS-422 (2 wires) <cable 3="" diagram=""></cable>	

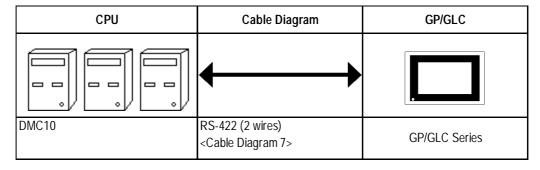
■ **SDC Series** (1:n (multi-drop) communication)



■ DMC10 (1:1 communication)



■ **DMC10** (1:n (multi-drop) communication)



12.3.2 Cable Diagrams

The cable diagrams shown below and those recommended by Yamatake may differ, however, using these cables for Controller's operations will not cause any problems.



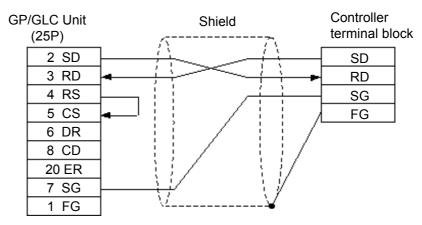
- When connecting the FG terminal to the connector cover, be sure that the connector cover material is conductive.
- Ground the Controller's FG terminal according to your country's applicable standard. For details, refer to your Controller's manual.
- When connecting a cable's shield line to an FG terminal, consider the needs of your system when deciding which side of the cable (GP/GLC or Controller) to connect. (The example below connects to the Controller's FG terminal.)
- The maximum RS-232C cable length is 15 meters. If a communication cable is used, be sure to connect its SG (signal ground) terminal.
- The maximum RS-422 cable length is 500 meters.
- The recommended RS-422 cables are as follows:

Recommended Cables

Company		Туре
Fujikura Densen	2 wires	IPEV-S-0.9mm ² ×1P
	3 wires	ITEV-S-0.9mm ² ×1T
Hitachi Densen	2 wires	KPEV-S-0.9mm ² ×1P
	3 wires	KTEV-S-0.9mm ² ×1T

• Since the Controller's terminal numbers will differ depending on the type of additional functions, check these numbers with the Controller's appropriate manual.

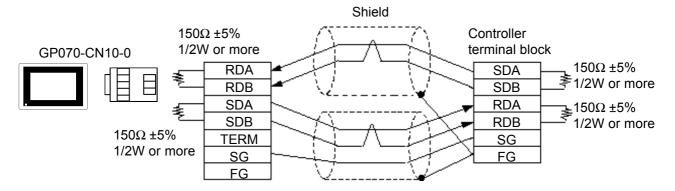
Cable Diagram 1 (1:1) (RS-232C)



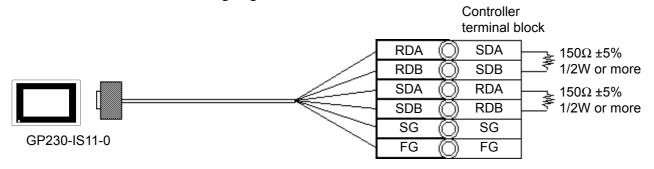
Chapter 12 - Indicating Controllers

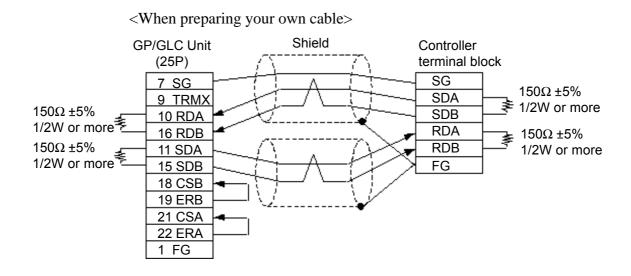
Cable Diagram 2 (1:1) RS-422 4 Wires, RS-422 5 Wires

<When using Digital's RS-422 connector terminal adapter GP070-CN10-0>



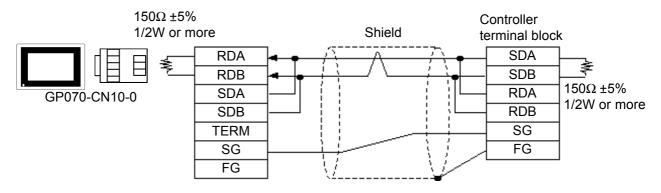
<When using Digital's RS-422 cable GP0230-IS11-0>



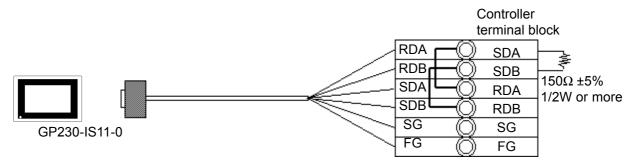


Cable Diagram 3 (1:1) RS-422 2 Wires, RS-422 3 Wires

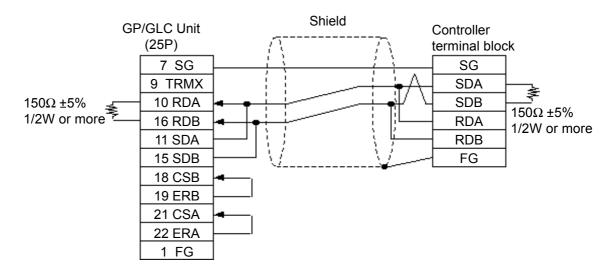
<When using Digital's RS-422 connector terminal adapter GP070-CN10-0>



<When using Digital's RS-422 cable GP230-IS11-0>

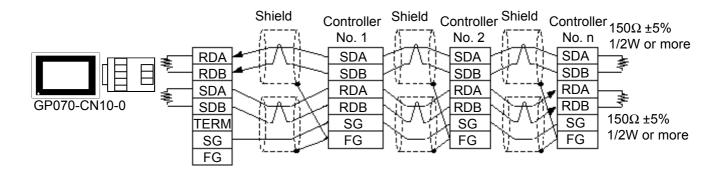


<When preparing your own cable>

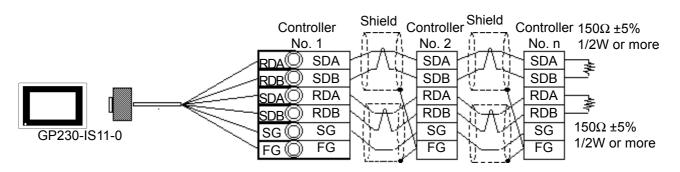


Cable Diagram 4 (1:n) RS-422 4 Wires, RS-422 5 Wires

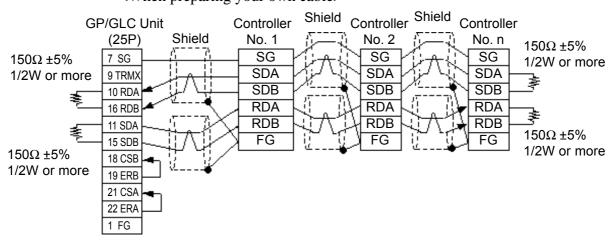
<When using Digital's RS-422 connector terminal adapter GP070-CN10-0>



<When using Digital's RS-422 cable GP230-IS11-0>

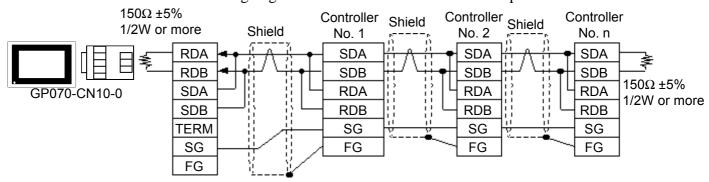


<When preparing your own cable>

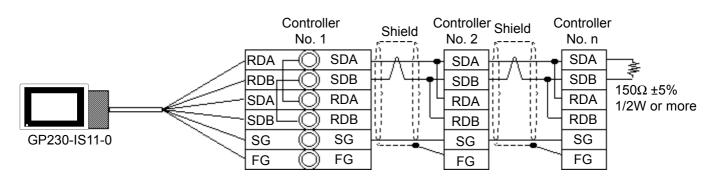


Cable Diagram 5 (1:n) RS-422 2 Wires, RS-422 3 Wires

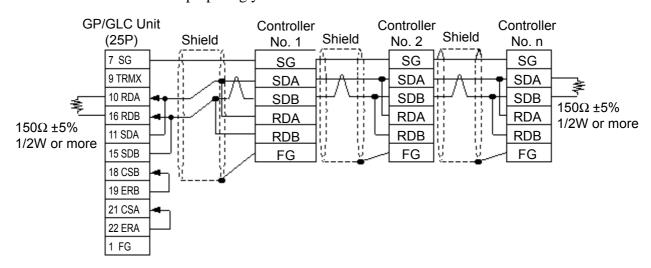
<When using Digital's RS-422 connector terminal adapter GP070-CN10-0>



<When using Digital's RS-422 cable GP230-IS11-0>

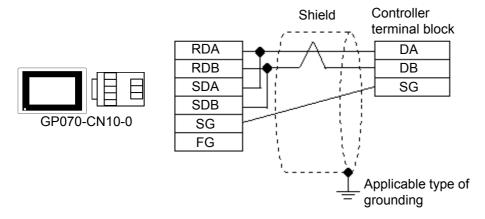


<When preparing your own cable>

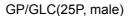


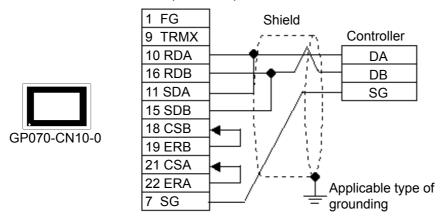
Cable Diagram 6 (1:1) RS-422 2 Wires, RS-422 3 Wires

<When using Digital's RS-422 connector terminal adapter GP070-CN10-0>



<When preparing your own cable>



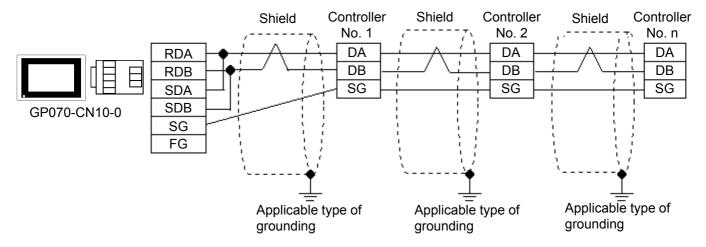




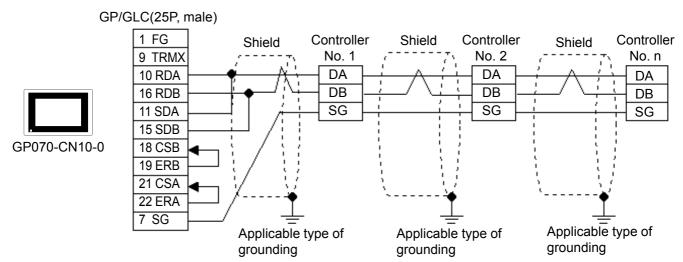
 Since terminating resistance is provided inside the Controller, DO NOT connect additional terminating resistance.

Cable Diagram 7 (1:n) RS-422 2 Wires, RS-422 3 Wires

<When using Digital's RS-422 connector terminal adapter GP070-CN10-0>



<When preparing your own cable>





Since terminating resistance is provided inside the Controller,
 DO NOT connect additional terminating resistance.

12.3.3 Supported Devices

The following lists show the ranges of devices supported by the GP/GLC.

■ SDC Series

Device	Bit Address	Word Address	Remarks	5
Data	00000 ~ 8999F	0000 ~ 8999		H/L

■ DMC10*1

Device	Bit Address	Word Address	Remarks	3
Data	10010 ~ 7804F	1001 ~ 7804		H/L

^{*1.} Data cannot be written or read to some Addresses. For more detailed information, refer to the Yamatake's appropriate Operation manual.



GP/GLC's System Data Area (LS0 to LS19) Settings

The GP/GLC's system area (20 words) cannot be allocated to the Controller's own data area. Even though you can enter the system area settings via the GP screen editor software or via the GP/GLC's OFFLINE screen, it is impossible to actually allocate the system area to the Controller's data area.

 Be careful that the Device fields differ depending on the type of Controller. Refer to the Controller's manual for the range allowed for the device address area.

After screen data is converted form a different type of Controller, be sure to check if the device addresses used are correct.

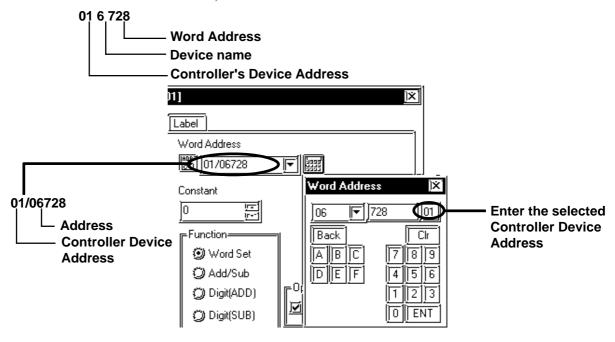
Be sure to check the supported device addresses before using Trend graphs or tags in your screens that use multiple words over continuous addresses.



- When entering device addresses via the GP screen editor software, the top address (left-most digit) is used for the device name and remaining three digits (0 to 999) are used for the Controller data addresses.
- When settings tags in the screen editor software, the device address can be designated during address input. When a device number is not designated, the previously entered device number is automatically used. (The default value is 1.)

<e.g.> When entering Device Address "6728":

Enter the device name "6", and then the Word Address "728".



12.3.4 Environment Setup

The following tables show Digital's recommended Controller and GP/PLC communication settings.

■ SDC Series

GP Settings		Controller Settings	
Baud Rate	9600bps	Baud Rate	9600bps
Data Length	8bit	Data Length	8bit
Stop Bit	1bit	Stop Bit	1bit
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER		
Communication Format (when using RS-232C *1)	RS-232C		
Communication Format (when using RS-422)	4 wires		
Communication Format (when using RS-422)	2 wires		
Unit No.	Select a desired unit number from 1 to 32.	Device Address	Enter all different Controller device addresses.

^{*1} RS-232C communication can be performed with SDC20, SDC21, SDC40A, SDC40B, and SDC40G.



- Although the Controller's device address input range is from 0 to 127, be sure to use only from 1 to 32 on the GP/GLC to match the Controller's device address to the GP's.
- When using 1:n communication, up to 31 Controllers can be connected.
- When the device address is designated as 0 (default value), communication is not be performed.

■ DMC10

GP Settings		Controller Settings	
Baud Rate	19200bps	Baud Rate	19200bps
Data Length	8bit	Data Length	8bit
Stop Bit	1bit	Stop Bit	1bit
Parity Bit	Even	Parity Bit	Even
Data Flow Control	ER		
Communication Format (when using RS-422	2 wires		
Unit No. *2	Select a desired unit number from 1 to 15.	Device Address	Enter all different Controller device addresses (1 to F).

^{*2} Unit numbers entered on the GLC are decimal numbers.

RKC INSTRUMENT INC. Controllers

System Structure

The following describes the system configuration used when connecting the GP/GLC to RKC Controller.



GP/GLC's System Area (LS0 to LS19) Settings

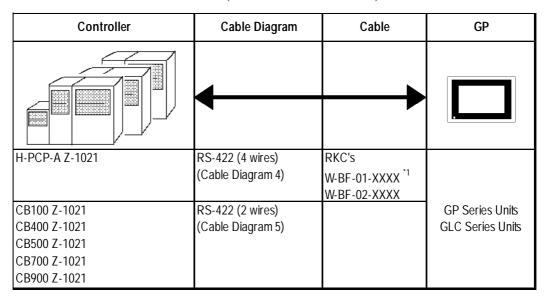
The GP/GLC's system area (20 words) cannot be allocated to the Controller's own data area. Even though you can enter the system area settings via the GP's screen creation software or via the GP/GLC's OFFLINE screen, be careful that you do not use the Controller's own data area.

■ CB Series/SR-Mini Series (1:1 communication)

Controller	Cable Diagram	Cables	GP
	•	-	
H-PCP-A Z-1021	RS-232C (Cable Diagram 1) RS-422 (4 wires) (Cable Diagram 2)	RKC's W-BF-01- XXXX	GP Series Units
CB100 Z-1021 CB400 Z-1021 CB500 Z-1021 CB700 Z-1021 CB900 Z-1021	RS-422 (2 wires) (Cable Diagram 3)		GLC Series Units

^{*1} XXXX indicates the cable length (mm).

■ CB Series/SR-Mini Series (1:n communication)



^{*1} XXXX indicates the cable length (mm).

12.4.2 Cable Diagrams

The cable diagrams shown below and the cable diagrams recommended by the RKC INSTRUMENT INC. may differ, however, using these cables for your Controller's operations will not cause any problems.



- When connecting the FG terminal to the connector cover, be sure that the connector cover conducts current.
- Ground your Controller's FG terminal according to your country's applicable standard. For details, refer to your Controller's manual.
- When connecting a cable's Shield line to an FG terminal, consider the needs of your system when deciding which side of the cable (GP/GLC or Controller) to connect. (The example below connects to the Controller's FG terminal.)

■ CB Series



- Up to 31 CB Series units can be connected to a single GP/GLC.
- If a communications cable is used, be sure to connect its SG (signal ground) terminal.
- RS-422 (2 wires) cables, must be less than 500 meters long.
- The following RS-422 cable is recommended.

Company	Item No.	Туре
Hirakawa Densen	2207-510-008	CO-HC-ESV-3P X 7/0.2



The Controller terminal number will differ depending on the type of CPU used. The following examples reflect all the CB series units supported by the Digital Electronics Corporation.

<CB100,CB400,CB500,CB900>

Terminal No.	Signal Name
13	SG
14	T/R(A)
15	T/R(B)

<CB700>

Terminal No.	Signal Name
7	SG
8	T/R(A)
9	T/R(B)

■ SR-Mini Series

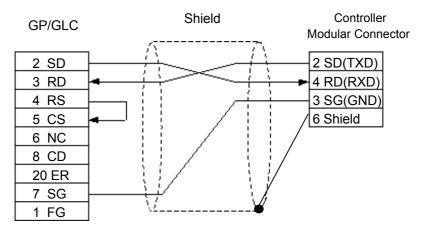


- Up to 16 SR-Mini Series modules can be connected to a single GP/GLC.
- If a communications cable is used, be sure to connect its SG (signal ground) terminal.
- RS-232C cables should be less than 15 meters long.
- RS-422 (2 wire) cables should be less than 500 meters long.
- The following RS-422 cables are recommended for SR-Mini Series units.

Company	Туре	Comments
RKC INSTRUMENT INC.	\M_RF_N1_	Used when connecting a SR-Mini to a GP/GLC
RKC INSTRUMENT INC.	W-RF-02- XXXX ¹	Used when connecting a SR-Min to SR-Mini

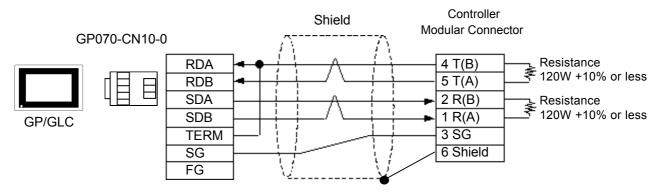
^{*1} XXXX indicates the cable length (mm).

Cable Diagram 1 (1:1) RS-232C

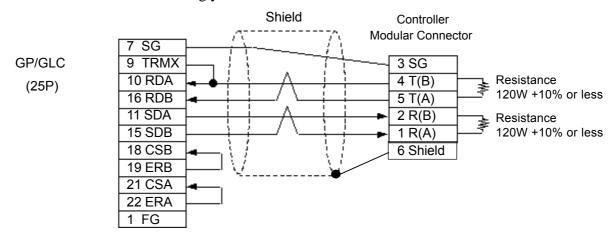


Cable Diagram 2 (1:1) RS-422 4 Wires

<When using Digital's RS-422 connector terminal adapter GP070-CN10-0>

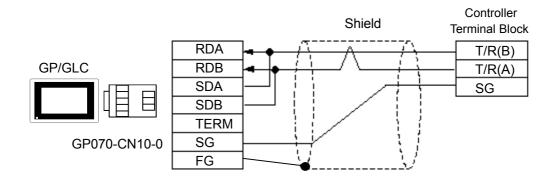


<When making your own cable>

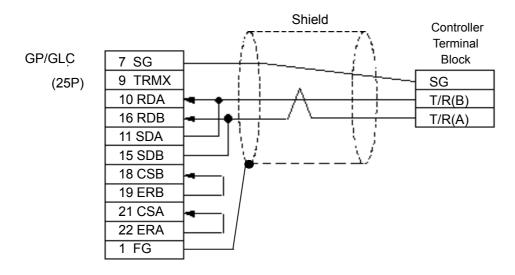


Cable Diagram 3 (1:1) RS-422 2 Wires

<When using Digital's RS-422 connector terminal adapter GP070-CN10-0>

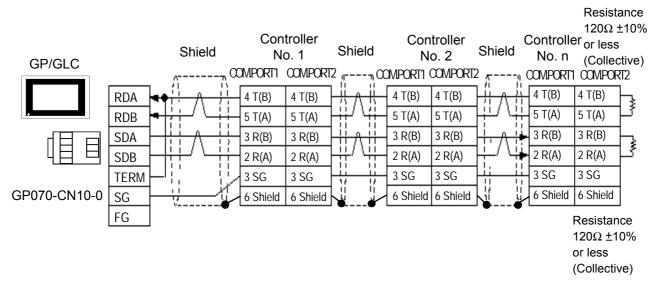


<When making your own cable>

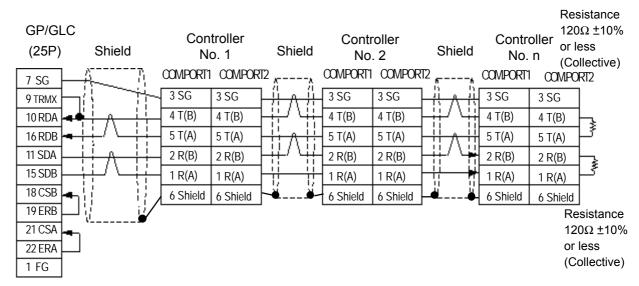


Cable Diagram 4 (1:n) RS-422 4 Wires

<When using Digital's RS-422 connector terminal adapter GP070-CN10-0>

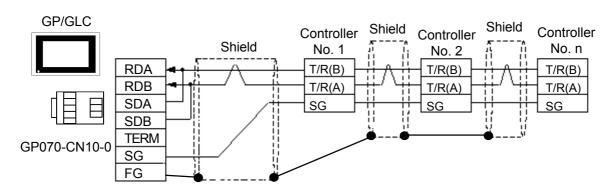


<When making your own cable>

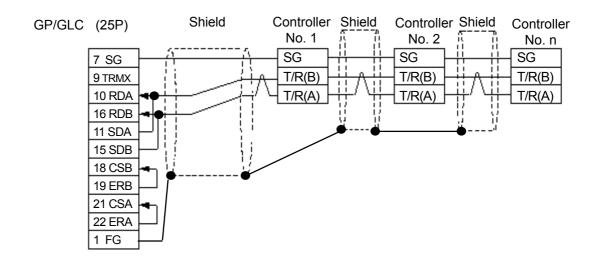


Cable Diagram 5 (1:n) RS-422 2 Wires

<When using Digital's RS-422 connector terminal adapter GP070-CN10-0>



<When making your own cable>



12.4.3 Supported Devices

The following list shows the range of devices supported by the GP/GLC.

■ CB Series

Device	Bit Address	Word Address	Commer	nts
Data	00000 ~ 02EEF	0000 ~ 02EE		H/L



GP/GLC's System Area (LS0 to LS19) Settings

The GP/GLC's system area (20 words) cannot be allocated to the Controller's own data area. Even though you can enter the system area settings via the GP's screen creation software or via the GP/GLC's OFFLINE screen, be careful that you do not use the Controller's own data area.

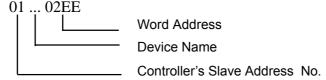
• The data communication feature will not operate when the slave address No. is set to "0". (The default value is 0.)

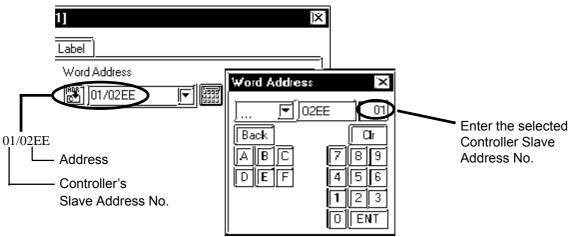


When using tags in the screen editor software, the PLC Station number can be specified during address Input. If a station number is not indicated, the previously entered station number is automatically used. (The default value is 1.)

E.g. When entering Device Address 02EE

Enter the Device Name "...", and the Word Address "02EE".





12.4.4 Environment Setup

The following table lists Digital's recommended RKC INSTRUMENT INC. Controller and GP communication settings.

GP Settings		Controller Settings		
Baud Rate	9600 bps	Baud Rate	9600 bps	
Data Length	8 bits	Data Length	8 bits	
Stop Bit	1 bit	Stop Bit	1 bit	
Parity Bit	None	Parity Bit	None	
Data Flow control	ER			
Communication Format	DC 222C			
using RS-232C *1	RS-232C			
Communication Format	A wire two			
using RS-422 (4-wire) *2	4-wire type			
Communication Format	2-wire type			
using RS-422 (2-wire)	2-wire type			
Unit No.	Select any unit		Select any unit	
number from 1 to 32		Slave Address No.	number from 1 to 32.	

^{*1} RS-232C can be used when the H-PCP-A (Z-1021) is used.

^{*2} Only the H-PCP-A (Z-1021) can use a 4 wire cable, and only CB series units can use a 2 wire cable.



- The Controller's slave address number range is from 0 to 99 for the CB series units (the data communication feature does not operate when it is set to "0".) and from 1 to 16 for the SR-Mini series units. Use only from 1 to 32 on the GP/GLC.
- With a 1:n connection, up to 31 CB series units, and up to 16 SR-Mini series units can be connected to a single GP.



12.5 Omron Corporation Controllers

12.5.1 System Structure

The following describes the system configuration used when connecting the GP/GLC to this Controller.



• GP/GLC's System Area (LS0 to LS19) Settings

The GP/GLC's system area (20 words) cannot be allocated to the Controller area. Even though you can enter the system area settings via the GP/GLC's screen creation software or via the GP's OFFLINE screen, be careful that you do not actually use the Controller area.

■ THERMAC NEO Electronic Temperature Controller

(1:1 communication)

Electronic *1 Temperature Controller	Cable Diagram	GP/GLC
		
E5EN-□□□□□-FLK E5AN-□□□□□-FLK	RS-232C <cable 1="" diagram=""></cable>	
E5EN-□□□□□-FLK E5CN-□□□□□-FLK E5GN-□□□□□-FLK E5AN-□□□□□-FLK	RS-422 (2-wire type) <cable 2="" diagram=""></cable>	(GP or GLC series)

^{*1} The Controller's model number "\sum " will vary depending on each controller functionality specifications.

■ THERMAC NEO Electronic Temperature Controller

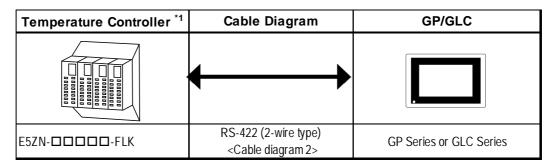
(1:n communication)

Electronic *1 Temperature Controller	Cable Diagram	GP/GLC
		
E5EN-□□□□□-FLK E5CN-□□□□□-FLK E5GN-□□□□□-FLK E5AN-□□□□□-FLK	RS-422 (2-wire type) <cable 3="" diagram=""></cable>	(GP or GLC series)

^{*1} The Controller's model number "\subseteq" will vary depending on each controller functionality specifications.

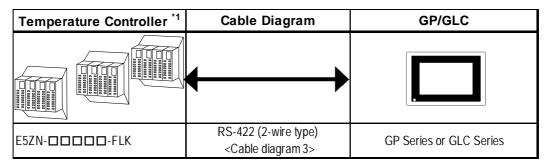
■ In-Panel NEO Temperature Controller

♦1:1 Connection



^{*1} The Controller's model number "□" will vary depending on each controller functionality specifications.

♦1:n Connection



^{*1} The Controller's model number "\subseteq" will vary depending on each controller functionality specifications.

12.5.2 Cable Diagrams

The cable diagrams shown below and the cable diagrams recommended by Omron Corporation may differ, however, using these cables for your Controller's operations will not cause any problems.



- For an RS-232C cable, use a cable length of less than 15 meters. Also, be sure to connect its SG (signal ground) terminal.
- For an RS-422 cable, use a cable length less than 500 meters.
- Digital recommends the following RS-422 cables.

■ Recommended RS-422 Cable

No.	Model *1	Standard
1 1	E5EN- E5AN- E5	AWG28 or above
2	E5GN-	AWG14 to AWG24

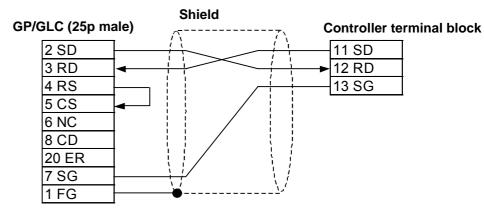
^{*1} The Controller's model number "\subseteq" will vary depending on each controller functionality specifications.

■ Recommended RS-232C Cable

No.	Model *1	Standard
1	E5EN-	T wisted pair wire with shield, AWG28 or above
	E5AN-□□□□□-FLK	i wisted pair wife with shield, Awd20 or above

^{*1} The Controller's model number "\sum " will vary depending on each controller functionality specifications.

Cable Diagram 1 (1:1) RS-232C



Cable Diagram 2 (1:1) RS-422



The Pin Nos. used with a RS-422 connection will vary depending on the type of controller used. The controller pin assignment diagrams are shown below. Terminal numbers are not shown in the following RS-422 cable diagrams. Refer to the following tables and diagrams when making all wiring connections.

■ Pin No.

Abbreviation	E5EN/E5CN/E5AN	E5GN	E5ZN
A(-)	12	6	24
B (+)	11	5	23

Shield

<When using Digital's RS-422 connector terminal adapter GP070-CN10-0>

GP/GLC (25p male) Controller terminal block GP070-CN10-0 RDA RDB SDA SDB TERM SG FG

<When using Digital's RS-422 cable, GP230-IS11-0>

Controller terminal block RDA B (+) RDB A (-) SDA SDB SG GP 230-IS11-0

| Shield | Controller terminal block | Fig. | Shield | Controller terminal block | Shield | Controller terminal block | Shield | Controller terminal block | Shield | Controller terminal block | Shield | Controller terminal block | Shield | Controller terminal block | Shield | Controller terminal block | Shield | Controller terminal block | Shield | Controller terminal block | Shield | Controller terminal block | Shield | Shield | Controller terminal block | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield | Shield

<When making your own cable>

Cable Diagram 3 (1:n) RS-422 2 Wires



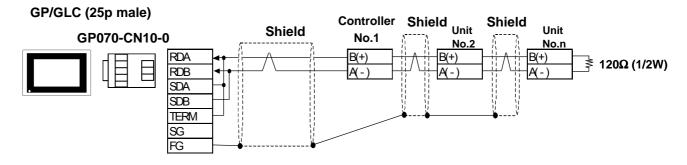
1 FG

• For the shield wire grounding, be sure to use dispersion grounding, parallel grounding or series grounding (shown below), depending on your electrical equipment conditions.

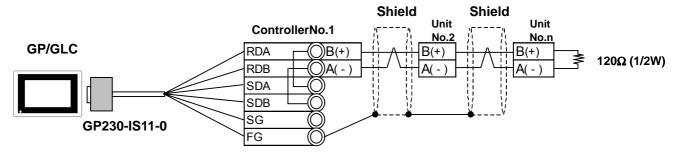
■ Pin No.

Abbreviation	E5EN/E5CN/E5AN	E5GN	E5ZN
A(-)	12	6	24
B (+)	11	5	23

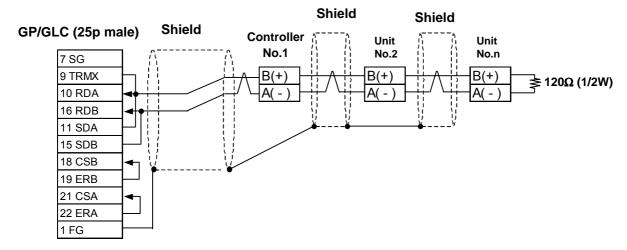
<When using Digital's RS-422 connector terminal adapter GP070-CN10-0> (An example of series grounding)



<When using Digital's RS-422 cable, GP230-IS11-0> (An example of series grounding)



<When making your own cable>
(An example of series grounding)



12.5.3 Supported Devices

The following list shows the range of devices supported by the GP/GLC.

■ THERMAC NEO Electronic Temperature Controller

Device	Bit Addresses	Word Addresses	Remarks	
	C0000000 to C0000531		Double word device	
Variable Areas	C0000000 to C000033 t	C00000 to C00003	(write disabled) *1	
	C1000000 to C1001C31	C10000 to C1001C	Double word device	H/L
	C3000000 to C3003531	C30000 to C30035	Double word device	
Operation	A000000 to A000815	A0000 to A0008	Word device	
Commands	, 1000000 10 1000010	, 10000 10 7 10000	dovido	

^{*1} Data write is not possible.

■ In-Panel NEO Temperature Controller

Device	Bit Addresses	Word Addresses	Remarks	
	C0000000 to C0000631	C00000 to C00006	Double word device *1	
	C0010000 to C0010631	C00100 to C00106	Double word device	
Variable Areas	C1000000 to C1001931	C10000 to C10019	De ble colde le	
	C1010000 to C1011931	C10100 to C10119	Double word device	H/L
	C3000000 to C3002E31	C30000 to C3002E		
	C3010000 to C3012E31	C30100 to C3012E	Double word device *2	
Operation	A000000 to A000B15	A0000 to A000B	Word device *3*4	
Commands			Word device	

^{*1} No data can be written.

▼ Reference ✓ 11.5.5. "Error Codes."

Reference Omron Corporation "User's Manual for Model E5ZN Temperature Controller - Communication"

E.g.) When the command code is "00"

Command code	Description	Related information		GP Setup
"00"	Communication write	"00" or "10": OFF (write protected)		0x 00 or 0x 10
00		"01" or "11": ON (write unprotected)		0x 01 or 0x 11

^{*2} Switch over to the setup area 1 when writing data. If not, the upper communication error (02:22:03:**) message will appear on the GP screen.

^{*3} No data can be read out.

^{*4} To execute the operation command (write), specify the command code at the device address. For the value to be written, specify related information. To specify related information, use a hexadecimal number, e.g., 0x00, 0x01, 0x10, or 0x11.



GP-PRO/PBIII for Windows' Simulation feature is not available with this protocol. To avoid a possible GP/GLC malfunction, do not use this feature.



- The system area (20 words) of GP/GLC cannot be used. Although
 it is possible to set addresses for this area with the GP screen
 editor software, or via the GP/GLC's OFFLINE mode, it is impossible to actually allocate the system area to the controller's data
 area.
- Be careful as the Device fields differ depending on the type of Controller. Refer to the Controller's manual for the range allowed for the device address area.



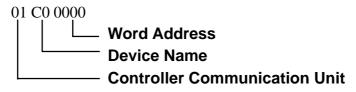
- After screen data is converted from a different type of Controller, be sure to check if the device addresses used are correct.
- Be sure to check that the device addresses are supported before using. Trend graphs or tags in your screens which use multiple words over continuous addresses.
- When using the GLC, Pro-Control Editor Ver. 2.0 or higher is required.
- When using Pro-Server Ver. 2.0, be careful about the following points.
 - 1) The Status Monitor feature cannot be used to monitor Tag scan time, communication cycle time, token circulation speed maximum/minimum values, and communication error codes.
 - 2) LS devices cannot be monitored or written to.

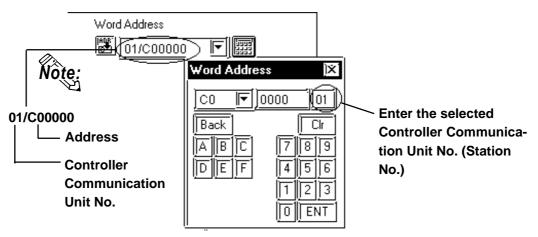


- This protocol's LS area uses a 32-bit device.
- When setting Tags in the screen editor software, the Controller communication unit No. can be specified during address input. If a communication unit No. is not indicated, the previously entered communication unit No. is automatically used. (The default value is 1.)

E.g. When entering Device Address C00000

Enter the Device Name "C0", and the Word Address "0000".







 After the Controller's power is turned ON, it may take a few seconds until the Controller starts. Therefore, if the GP/GLC and the Controller are turned ON at the same time, there may be a delay of several seconds until communication starts.

■ Operation Commands

Command codes 00 to 08 are used for operation command service (command) to provide a total of 9 write commands.

Certain command operations are identical, and the result (arbitrary value) is written to a variable area.

Device code	Word address	Command code	Meaning
	0000	00	Data Transfer Write
	0001	01	RUN/STOP
	0002	02	Multi-SP
A	0003	03	AT RUN/STOP
	0004	04	Write mode
	0005	05	Store RAM data
	0006	06	Software reset
	0007	07	Setting area shift 1
	0008	08	Protection level shift



When a write command is performed, the device code used in the screen creation software is 'A', and that command code is entered instead of the device address.

Related data (2 bytes) is designated by each write tag's setting value. Since this device is a write-only device, readout is disabled. If used for readout, i.e. an N-tag, a host communication error (02:F0:**) (** is set tag unit No.) will appear in the lower left corner of the GP/GLC screen.

• Device "C0, C1, C3" C0, C1 and C3 devices are not used as device symbols. Instead they identify a variable area's data type.

▼ Reference ✓ User Manual (SGTD-706) for OMRON's E5AN/E5EN/ E5CN/E5GN Electronic Temperature Controller

12.5.4 Environment Setup

The following table lists the recommended Controller and GP/GLC communication settings.

■ THERMAC NEO Controller

GP/GLC Settings		Controller Settings	
Baud Rate	9600 bps	Baud Rate	9600 bps
Data Length	7 bits	Data Length	7 bits
Stop Bit	2 bits	Stop Bit	2 bits
Parity Bit	Even	Parity Bit	Even
Data Flow control	ER		
Communication Format (using RS-232C) *1	RS-232C		
Communication Format (using RS-422 - 4-line)	4 wire type		
Communication Format (using RS-422 - 2-line)	2 wire type		
Unit No. *2	1 to 32	Unit No.	1 to 32

^{*1} The E5EN and the E5AN use an RS-232C connection.

With a 1:n connection, up to 31 controllers can be connected to a single GP.

■ In-Panel NEO Temperature Controller

GP or GLC Setup		Temperature Controller Setup	
Baud Rate	9600 bps	Baud Rate	9600 bps
Data Length	7 bits	Data Length	7 bits
Stop Bit	2 bits	Stop Bit	2 bits
Parity Bit	Even	Parity Bit	Even
Data Flow control	ER Control		
Communication Format	RS-422 (2-Wire Type)		
Unit No. *1	1 to 15	Communication Unit No.	1 to 15

^{*1} Even though the communication unit number may be specified in a range between 0 and F on the temperature controller, only a range between 1 and F can be used on the GP/GLC unit. To load data to the GP unit, match the GP unit number with the converted decimal number of the controller address where the data to be loaded is stored.

In case of 1:n, a maximum of 15 temperature controllers may be connected.

^{*2} It is possible to set a Controller communication unit No.from 0 to 99, however, the GP/GLC can only be set from 1 to 32.

12.5.5 Error Codes

■ GP/GLC Error Codes

Error codes are indicated in the left lower corner of the GP/GLC screen.

Error codes consist of three types. When an error occurs, the corresponding error code and GP station number (where the error occurred) are saved either in LS2039 or LS2070. Since the method used will vary depending on the error type, refer to the following list for details. (Data saved in LS2039 or LS2070 is shown using hexa-decimal characters.)

1. Error Code (02:12) – 2 units

Error Code 0x12

Data saved in LS2039 0x12 (error code) Data saved in LS2070 0 (fixed as "0")

2. Error Code (02:12:34) – 3 units

Error Code 0x12. The GP station number where the error

occurred is 34(0x22)

Data saved in LS2039 0x1222 (The two digits shown here by "12"

represent the error code, and the last two digits "22" represent the station no. Note that "0x" is

not shown on the display.)

Data saved in LS2070 0 (fixed as "0")

3. Error Code (02:12:34:56) – 4 units

Error Code 0x1234. TheGP unit number where the error oc-

curred is 56(0x38)

Data saved in LS2039 0x1234 (error code)
Data saved in LS2070 0x38 (station no.)

<Temperature Controller Error Codes>

Any error code specific to the temperature controller is displayed at the lower left part of the GP screen, e.g. "Host Communication Error $(02: \bigcirc \bigcirc : \triangle \triangle : \square \square)$."

 \bigcirc : \triangle stands for the error code specific to the temperature controller, and \square indicates the temperature controller number.

Error Code	Error Name	Cause
11:03	Starting Address Error	An address outside the range was specified at drawing
11:04	Ending Address Error	The range of writing consecutive addresses with the K-tag or the like exceeds the setting range of the controller.
11:00	Parameter Error	The data written from the GP exceeds the setting range of the controller.
30:03	Read Only	An attempt was made to write data to "C0 Device" in the write protected range.
22:03	Operation Error	An attempt was made to write data when writes were disabled on the controller.The temperature controller malfunctions.

Shinko Technos Corporation Controllers

System Structure

The following describes the system configuration used when connecting the GP/GLC to this Controller.



- Do not use the system area because the GP/GLC's system area (LS0 to LS19) cannot be allocated to the Controller area. (Deselect all system area selection items.)
- The Controller's read area can be used as normal.

■ C Series

CPU	Control Unit ^{*1}	Cable Diagram	Cables	GP	
CPT-20A	CCT-235-2-□□	RS-422	CPM Shinko Technos		
		<cable 4="" diagram=""></cable>	Corporation	GP series GLC series	
		RS-422	CPM and CPP Shinko		
		(1:n)	Technos Corporation		
		<cable 5="" diagram=""></cable>	r ecilios corporation		

^{*1} The Controller's model number " $\Box\Box$ " changes, according to the options selected . For details about model numbers, refer to the C Series catalog.

■ FC Series

Controller *1	Link I/F	Cable Diagram	GP
FCD-13A□□,C	Serial		
FCD-15A□□,C	Communication	RS-232C	
FCR-13A□□,C		<cable 1="" diagram=""></cable>	
FCR-15A□□,C	Option:C		GP Series
FCD-13A□□,C5		RS-422	GLC Series
FCD-15A□□,C5	Serial	<cable 2="" diagram=""></cable>	GLC Selles
	Communication	RS-422	
FCR-13A□□,C5 FCR-15A□□,C5	Option:C5	(1:n)	
FCK-10A[][,C0		<cable 3="" diagram=""></cable>	

^{*1} The Controller's model number " $\square\square$ " changes, according to the options selected.

Items with the serial communication option have a ",C" or ",C5" after the basic model number.

For details about model numbers, refer to each series catalog.

■ FIR Series

Controller *1	Link I/F	Cable Diagram	GP
FIR-201-M□□,C FIR-201-M□□,C	Serial Communication Option:C	RS-232C <cable 1="" diagram=""></cable>	
		RS-422	GP Series
FIR-201-M□□,C5	Serial	<cable 2="" diagram=""></cable>	GLC Series
FIR-201-M□□,C5	Communication	RS-422	
FIK-201-WI□□,C5	Option:C5	(1:n)	
		<cable 3="" diagram=""></cable>	

■ GC Series

Controller *1	Link I/F	Cable Diagram	GP
GCS-300□□,C5		RS-422	
	Serial	<cable 2="" diagram=""></cable>	GP Series
	Communication	RS-422	GLC Series
	Option:C5	(1:n Communication)	GLC Selles
		<cable 3="" diagram=""></cable>	

■ FCL Series

Controller *1	Link I/F	Cable Diagram	GP
		RS-422	
	Serial Communication	<cable 2="" diagram=""></cable>	GP Series GLC Series
FCL-13A□□,C5		RS-422	
	Option:C5	(1:n Communication)	GLC Selles
		<cable 3="" diagram=""></cable>	

■ PC-900 Series

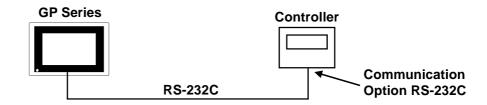
Controller *1	Link I/F	Cable Diagram	GP
PC-935□□,C PC-955□□,C	Serial Communication Option:C	RS-232C <cable 1="" diagram=""></cable>	
PC-935□□,C5 PC-955□□,C5	Serial Communication Option:C5	RS-422 <cable 2="" diagram=""> RS-422 (1:n Communication) <cable 3="" diagram=""></cable></cable>	GP Series GLC Series

^{*1} The Controller's model number " $\Box\Box$ " changes, according to the options selected .

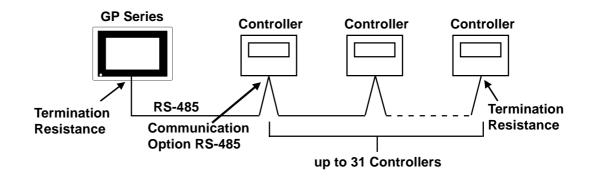
Items with the serial communication option have a ",C" or ",C5" after the basic model number.

For details about model numbers, refer to each series catalog.

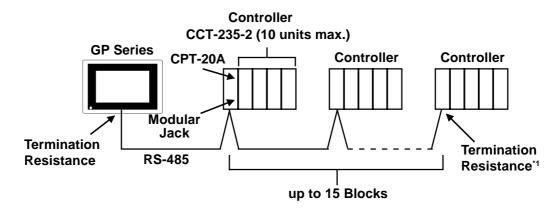
♦When connecting an RS-232C cable (for RS232C compatible Controllers)



♦RS-485 cable (except the C Series Controller)



♦RS-485 cable (connecting with the C Series Controller)



*1 Turn Controller's termination resistance switch ON.

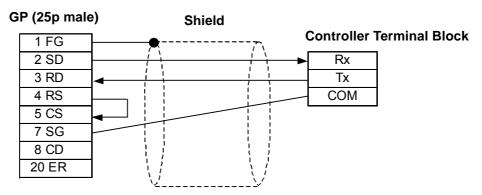
12.6.2 Cable Diagrams

The cable diagrams shown below and the cable diagrams recommended by Shinko Technos Corporation may differ, however, using these cables for your Controller's operations will not cause any problems.



- Ground your PLC's FG terminal according to your country's applicable standard.
- Since some Controllers do not have a GND signal (FG), be careful when selecting the side (GP or Indicating Controller) used for connecting the FG wire to the shield.
- When connecting the FG wire to the cable connector's cover, be sure it is made from a conductive material.
- For an RS-232C cable, use a cable length of 15 meters or less.
- For an RS-422 cable, use a cable length of 600 meters or less.
- Digital recommends the OTSC-2PVB-7/0.32TA cable, made by O-NAMBA Corporation.

Cable Diagram 1



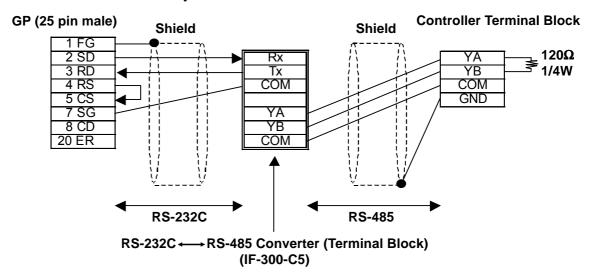
Cable Diagram 2

There are two ways of connecting the GP and the Controller. One is using the Shinko Technos' RS-232C ← RS-485 Converter (IF-300-C5). The other is using an RS-485 cable.

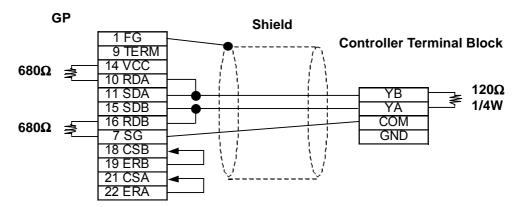
<When using Shinko Technos's RS-232C→ RS-485 Converter (IF-300-CS)>

When using this converter, be sure the GP's communication setting is "RS-232C".

Do not use any other manufacturer's converter.



<When connecting the GP and the Controller with RS-485 cable>



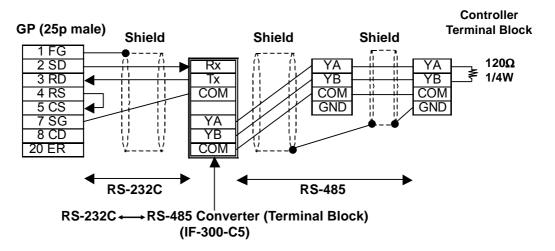
Cable Diagram 3

There are two ways of connecting the GP and the Controller. One is using the Shinko Technos' RS-232C ← RS-485 Converter (IF-300-C5). The other is using an RS-485 cable.

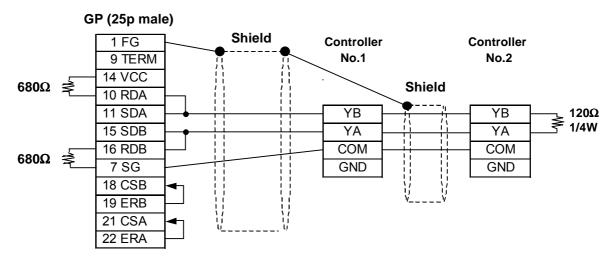
<When using Shinko Technos's RS-232C→ RS-485 Converter (IF-300-C5)>

When using this converter, be sure the GP's communication setting is "RS-232C".

Do not use any other manufacturer's converter.

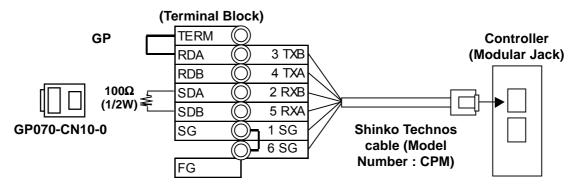


< When connecting the GP and the Controller via RS-485 cable>



Cable Diagram 4 (RS-422)

<When using Digital's RS-422 connector terminal adapter GP070-CN10-0>

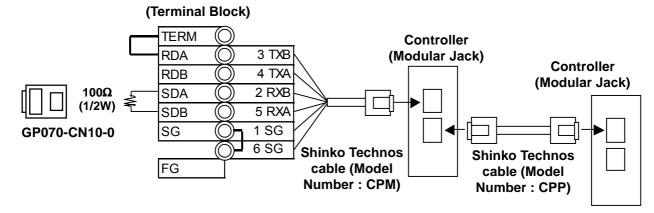




Be sure to use only the Shinko Technos Corporation "CPM" cable.

Cable Diagram 5 (RS-422)

<When using Digital's RS-422 connector terminal adapter GP070-CN10-0>





Be sure to use only the Shinko Technos Corporation "CPM" and "CPP" cables. Be aware the A and B signals of the GP and PLC are reversed.

To enable the Controller's termination resistance, turn dip switch No.2 ON.

12.6.3 Supported Devices

The following list shows the range of devices supported by the GP/GLC.

■ C Series

Device	Bit Addresses*1	Word Addresses ^{*1}	
Channel 1	1CH010 ~ 1CH84F	1CH01 ~ 1CH84	
Channel 2	2CH010 ~ 2CH84F	2CH01 ~ 2CH84	
Channel 3	3CH010 ~ 3CH84F	3CH01 ~ 3CH84	
Channel 4	4CH010 ~ 4CH84F	4CH01 ~ 4CH84	
Channel 5	5CH010 ~ 5CH84F	5CH01 ~ 5CH84	
Channel 6	6CH010 ~ 6CH84F	6CH01 ~ 6CH84	
Channel 7	7CH010 ~ 7CH84F	7CH01 ~ 7CH84	
Channel 8	8CH010 ~ 8CH84F	8CH01 ~ 8CH84	
Channel 9	9CH010 ~ 9CH84F	9CH01 ~ 9CH84	
Channel 10	10CH010 ~ 10CH84F	10CH01 ~ 10CH84	H/L
Channel 11	11CH010 ~ 11CH84F	11CH01 ~ 11CH84	II/L
Channel 12	12CH010 ~ 12CH84F	12CH01 ~ 12CH84	
Channel 13	13CH010 ~ 13CH84F	13CH01 ~ 13CH84	
Channel 14	14CH010 ~ 14CH84F	14CH01 ~ 14CH84	
Channel 15	15CH010 ~ 15CH84F	15CH01 ~ 15CH84	
Channel 16	16CH010 ~ 16CH84F	16CH01 ~ 16CH84	
Channel 17	17CH010 ~ 17CH84F	17CH01 ~ 17CH84	
Channel 18	18CH010 ~ 18CH84F	18CH01 ~ 18CH84	
Channel 19	19CH010 ~ 19CH84F	19CH01 ~ 19CH84	
Channel 20	20CH010 ~ 20CH84F	20CH01 ~ 20CH84	

^{*1} Input all addresses in hexadecimal characters.



The GP processes all Controller data items in the same way.

Designating an address means that the data item number specifies the address.

For information about data item types and numbers, refer to the Multi Point Temperature Control Unit C Series Guide "Communication Command List", made by Shinko Technos Corporation.

The following data item list is mentioned in the C Series communication guide for each channel. The C Series supports up to 20 channels.

Command Type	Data Item	Data
20H/50H	0001H Main setting value (SV) setting	Setting Value
20H/50H	0002H : Main proportional band setting	Setting Value
20H/50H	0003H : Integral time setting	Setting Value
20H/50H	0004H Derivative time setting	Setting Value
	:	:
	The item Nos. here are the GP addresses. 20H:Read command can be performed. 50H:Write command can be performed.	

• When the channel 1 data item is "the setting of main setting value (SV)", the item No. is "0001H", and the GP's address is the following:



- The channel 1 data item "the integrated time setting", has an item number of "0003H", and the GP address is "1CH0003".
- The channel 2 data item "the integrated time setting" has an item number of "0003H", and the GP address is "2CH0003".
- When the command type is 20H, data read can be performed. When it is 50H, data write can be performed.

(20H/50H are used to perform read and write.)

■ FC Series

Device	Bit Addresses*1	Word Addresses*1	
Data Item	00010 ~ 0086F	0001 ~ 0086	
Setting Value Memory 1	1S010 ~ 1S86F	1S01 ~ 1S86	
Setting Value Memory 2	2S010 ~ 2S86F	2S01 ~ 2S86	
Setting Value Memory 3	3S010 ~ 3S86F	3S01 ~ 3S86] H/L
Setting Value Memory 4	4S010 ~ 4S86F	4S01 ~ 4S86	11/
Setting Value Memory 5	5S010 ~ 5S86F	5S01 ~ 5S86	
Setting Value Memory 6	6S010 ~ 6S86F	6S01 ~ 6S86	
Setting Value Memory 7	7S010 ~ 7S86F	7S01 ~ 7S86	

^{*1} Input all addresses in hexadecimal characters.



- The GP processes all Controller data items in the same way.
- Designating an address means that the data item number specifies the address.
- For information about data item types and numbers, refer to the FC Series Communication (Option: C,C5) Guide "Communication Command List", made by Shinko Technos Corporation.

The following data item list is mentioned in the FC Series communication guide for each channel. When the command type is 20H, data read can be performed. When it is 50H, data write can be performed.

(20H/50H are used to perform read and write.)

Contents	Sub Addresses	Command Classification	Data Items
Main setting value	1 to 7	20H/50H	0001H
or step temperature setting value	107	2011/3011	/ 000111
Setting value memory number	0	20H/50H	0002H
or step number selection	· ·	2011/3011	000211
PID auto-tuning	0	20H/50H	0003H
Performance / Cancellation	\	200/300	\ 0003F /
Proportional band setting	1 to 7	20H/50H	0004H
:	7	:	
Cub Addresses (Setting Money	(No.)		
Sub Addresses (Setting Memory	/ NO.)		
	The item	No. here is the GP addres	ses —

When using the FC Series, the sub addresses must be selected. Here, "sub addresses" mean "the setting value memory No.". For example, "sub address 1" means "setting value memory No.1". The data items, that the sub addresses are needed to be set, therefore, are needed to be specified the device of "setting value memory *".

Data items with the sub addresses that do not need to be set (when the sub address is 0), can specify only the number of data items.

E.g. Data items with the sub addresses that do not need to be set.

When setting value memory No.1, GP address data items (the main setting value, "step temperature setting value") are as follows:



E.g. Data items with the sub addresses that do not need to be set. GP address data items (the setting value memory number selection, "step numbers") are as follows:



■ FIR/GC/FCL Series

Device	Bit Addresses ^{*1}	Word Addresses*1	
Data Item	00010 ~ 00A3F	0001 ~ 00A3	H/L

^{*1} Input all addresses in hexadecimal characters.



- The GP processes all Controller data items in the same way.
- Designating an address means that the data item number specifies the address.
- For information about data item types and numbers, refer to the FIR-201-M Communication Guide "Communication Command List", GCS-300 Communication Guide "Communication Command List", and "FCL-13A Communication Guide "Communication Command List", made by Shinko Technos Corporation.

The following data item list is mentioned in the FIR Series communication guide for each channel. When the command type is 20H, data read can be performed. When it is 50H, data write can be performed.

(20H/50H allow read and write to be performed.)

Command Type	Data Item	Data
20H/50 H	0001H Alarm 1 (A1) Setting	Setting Value
20H/50H	0002H: Narm 2 (A2) Setting	Setting Value
20H/50H	0003H : Narm 3 (A3) Setting	Setting Value
20H/50H	0004H Setting Value Lock Designation	Setting Value
	:	:
	The item Nos. here are th 20H:Read command car 50H:Write command car	n be performed.

• For the data item "Alarm 1 (A1) Setting", the item number is 0001H. As a result, the GP address is as follows:



• For the data item "Alarm 2 (A2) Setting", the item number is 0002H. As a result, the GP address is "0002".

■ PC-900 Series

Device	Bit Addresses	Word Addresses	Remarks	
	00010 ~ 0400F	0001 ~ 0400		
	04010 ~ 0800F	0401 ~ 0800]	
	08010 ~ 0C00F	0801 ~ 0C00		
	0C010 ~ 1000F	0C01 ~ 1000		
	10010 ~ 1400F	1001 ~ 1400		
	14010 ~ 1800F	1401 ~ 1800		
	18010 ~ 1C00F	1801 ~ 1C00		
	1C010 ~ 2000C	1C01 ~ 2000		
	20010 ~ 2400F	2001 ~ 2400		
	24010 ~ 2800F	2401 ~ 2800		
	28010 ~ 2C00F	2801 ~ 2C00]	
	2C010 ~ 3000F	2C01 ~ 3000]	
	30010 ~ 3400F	3001 ~ 3400		
	34010 ~ 3800F	3401 ~ 3800		H/L
	38010 ~ 3C00F	3801 ~ 3C00		
Data Items	3C010 ~ 4000F	3C01 ~ 4000	*2	
Data items	40010 ~ 4400F	4001 ~ 4400]	11/∟
	44010 ~ 4800F	4401 ~ 4800]	
	48010 ~ 4C00F	4801 ~ 4C00]	
	4C010 ~ 5000F	4C01 ~ 5000		
	50010 ~ 5400F	5001 ~ 5400		
	54010 ~ 5800F	5401 ~ 5800		
	58010 ~ 5C00F	5801 ~ 5C00		
	5C010 ~ 6000C	5C01 ~ 6000		
	60010 ~ 6400F	6001 ~ 6400		
	64010 ~ 6800F	6401 ~ 6800		
	68010 ~ 6C00F	6801 ~ 6C00		
	6C010 ~ 7000C	6C01 ~ 7000]	
	70010 ~ 7400F	7001 ~ 7400]	
	74010 ~ 7800F	7401 ~ 7800]	
	78010 ~ 7C00F	7801 ~ 7C00]	
	7C010 ~ 7991F	7C01 ~ 7991		

^{*1} Input all addresses in hexadecimal characters.

^{*2} The data items are internally processed, with each "block" being divided into 1024 words (0x400). Therefore, be aware of that the following functions cannot be used with settings that cross a block (1024 words). Be sure to set the data items within one block when using this series unit.

^{1) &}quot;a" tag setting (alarms will not displayed)

²⁾ Block Read - using the 2-way function (Only the maximam number of addresses in the selected block will be displayed.)



- The GP processes all Controller data items in the same way.
- · Designating an address means that the data item number specifies the address.
- For information about data item types and numbers, refer to the PC-935, PC-955 communication (option: C, C5, SVTC) guide "Communication Command List", made by Shinko Technos Corporation.

The following data item list is mentioned in the PC-900 Series communication guide for each channel. When the command type is 20H, data read can be performed. When it is 50H, data write can be performed.

(20H/50H are used to perform read and write.)

Command Classification	Data Item	Data
20H/50H	0001H Fixed value control / Main setting value setting	Setting Value
20H/50H	0002H : Fixed value control / Control output (OUT 1) proportional band setting	Setting Value
20H/50H	0003H: Fixed value control / Integral time setting	Setting Value
20H/50H	0004H Fixed value control / Derivative time setting	Setting Value
	:	:
	The item Nos. here are the GP addresses. 20H:Read command can be performed. 50H:Write command can be performed.	

For data item "The setting of the main setting value (SV) for the stationary position control", the item number is 0001H. As a result, the GP address is as follows.



For data item "The setting of the integrated time for the stationary position control", the item number is 0003H. As a result, the GP address is "0003".

For data item details, refer to the following Shinko Technos Corporation communication guides.

Series	Models	Guides	
С	CPT-20A	Multi-Point Temperature Control Unit C Series Guide	
FC	FCD-130		
	FCD-150		
	FCR-130	FC Series Communication (Option:C,C5) Guide	
	FCR-150		
	FCS-200		
FIR	FIR-200	FIR Communication Guide	
GC	GCS-300	GCS Communication Guide	
FCL	FCL-100	FCL Communication Guide	
PC-900	PC-935	PC-935, PC-955 Communication (Option:C,C5,SVTC) Guide	
	PC-955		

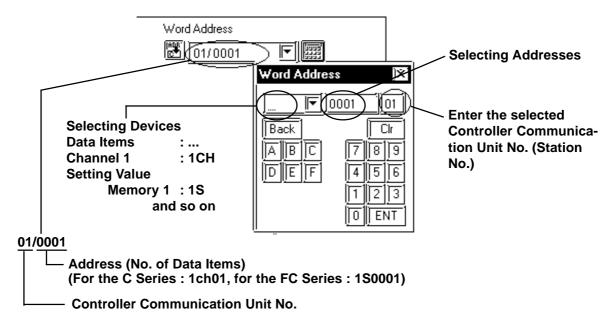


- When the data item's setting value uses a decimal point items, the GP displays a value 10 times larger than the setting value. Also, when writing, be sure to write a value 10 times larger than the setting value.
- E.g. In case of the PC-900 Series' control output (OUT1) proportional zoneIndication of Controllers / Setting Value : 2.5%Indication of the GP : 25

Also, refer to each model's communication guide for details (with/without a decimal point) about data item setting value ranges.



• When setting Tags in the screen editor software, the Controller communication unit No. can be specified during address input. If a communication unit No. is not indicated, the previously entered communication unit No. is automatically used. (The default value is 1.)





GP/GLC's System Area (LS0 to LS19) Settings

The GP/GLC's system area (20 words) cannot be allocated to the Controller's own data area. Even though you can enter the system area settings via the GP's screen editor software or via the GP/GLC's OFFLINE screen, it is impossible to actually allocate the system area to the Controller's data area.

12.6.4 Environment Setup

The following table lists the recommended Controller and GP/GLC communication settings.

■ C Series

GP/GLC Settings		Controller Settings	
Baud Rate	9600 bps	Baud Rate	9600 bps
Data Length	7 bits		
Stop Bit	1 bit		
Parity Bit	Even		
Data Flow control	ER		
Communication Format	4 Wires		
Unit No.	1	Unit No.*1	1

^{*1} It is possible to set a Controller communication unit No.from 0 to 15, however, the GP/GLC can only be set from 1 to 15.

■ FC/FIR/GC/FCL/PC-900 Series

GP/GLC Settings		Controller Settings	
Baud Rate	9600 bps	Baud Rate	9600 bps
Data Length	7 bits		
Stop Bit	1 bit		
Parity Bit	Even		
Data Flow control	ER		
Communication Format (using RS-232C)	RS-232C	Communication Format *1	Serial Communication
Communication Format (using RS-422)	2 wire type	Communication Format *1	Serial Communication
Unit No.	1	Unit No. *2	1

^{*1} PC-900 series only

^{*2} It is possible to set a Controller communication unit No.from 0 to 95, however, the GP/GLC can only be set from 1 to 32.

Error Code

Controller error codes are represented by the "Host communication error (02:**:##)", and indicated in the left lower corner of the GP screen.

Error Codes	Meaning
01	Command does not exist
03	Exceeds setting value range
04	Unable to set (during AT execution)
05	Key operation has activated Setting Mode

For more details about the error codes, see

Reference "The Controller Manual: Communication Guide for each series made by Shinko Technos Corporation"

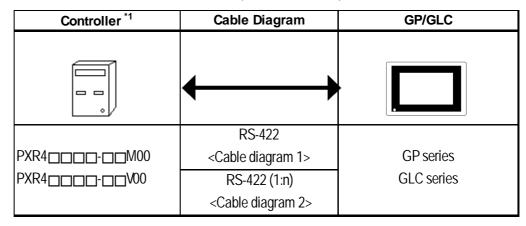


Fuji Electronic Corporation Controllers

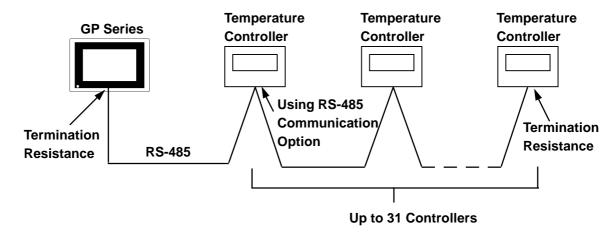
System Structure

The following describes the system configuration used when connecting the GP/GLC to this Controller.

■ Micro-Controller X Series (Model:PXR)



^{*1} The Controller's model number "" will change, according to the options selected. For model number details, refer to the PXR4 Series catalog. When connecting the Controller to a GP, the RS-485 (MODBUS) option "M00" or "V00" is required.



12.7.2 Cable Diagrams

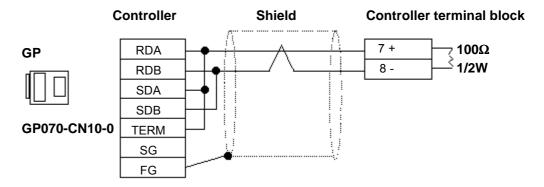
The cable diagrams shown below and the cable diagrams recommended by Fuji Electric Co., Ltd. differ, however, using these cables for your Controller's operations will not cause any problems.



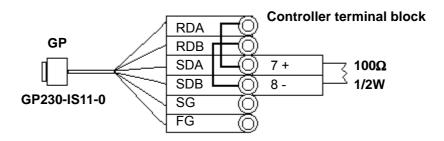
- Ground your PLC's FG terminal according to your country's applicable standard.
- All RS-422 cables should be no more than 500 meters long.

■ Cable Diagram 1 (1:1) RS-422(2-wire type)

• Using Digital's RS-422 connector terminal adapter GP070-CN10-0



• Using Digital's RS-422 Cable GP230-IS11-0

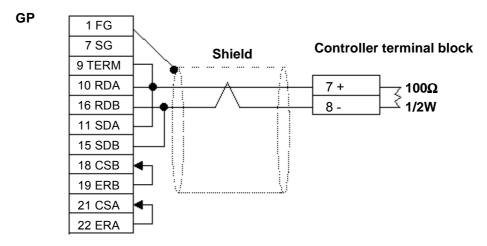




 Be sure that RDA - SDA and RDB - SDB are both connected to the Controller terminal block.

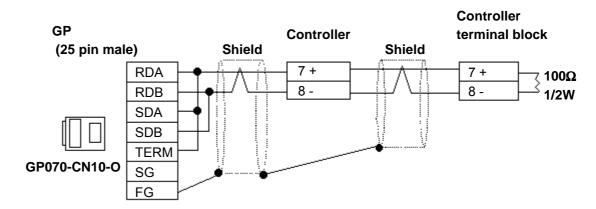


• Since the SG and FG lines cannot be connected to the controller terminal block, be sure to cover them with insulating tape. • When making your own cables

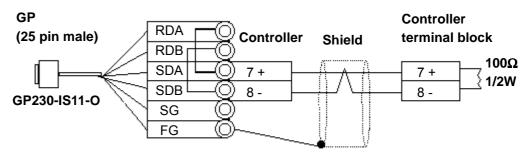


■ Cable Diagram 2 (1:n) RS-422 (2-wire type)

• Using Digital's RS-422 connector terminal adapter GP070-CN10-0



• Using Digital's RS-422 cable, GP230-IS11-0

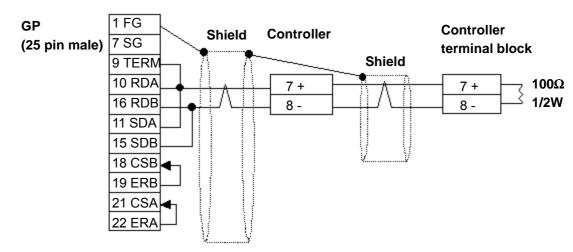




• Be sure that RDA - SDA and RDB - SDB are both connected to the Controller terminal block.



- Since the SG line cannot be connected to the controller terminal block, be sure to cover them with insulating tape.
- When making your own cable connections



Supported Devices

The following list shows the range of devices supported by the GP/GLC.

■ Micro-Controller X Series (Model:PXR)

Device	Bit Address	Word Address	Comments	
	00001		*1	
	10001 ~ 10016	10001	*2	
Parameter	3000100 ~ 3001515	30001 ~ 30015	Internal Calculation Value *2	H/L
T didilicter	4000100 ~ 4011315	40001 ~ 40113	Internal Calculation Value *1	'''
	3100100 ~ 3101515	31001 ~ 31015	Engineering Unit *2	
	4100100 ~ 4111315	41001 ~ 41113	Engineering Unit *1	

^{*1} Addresses 00001, 40001 and 41001 are used to store write commands (FIX Processing) in non-volatile memory. The non-volatile memory's write is performed via the writing of "Write Value 1". FIX processing lasts approximately 5 seconds. The Display Communication cannot be performed for 5 seconds if there are any Read-out Tags on the same screen.

Reference Instruction Manual for Fuji Electric Corporation's MICRO CONTROLLER X COMMUNICATION FUNCTION (RS-485 MODBUS), "FIX Processing"



- During the writing of data to non-volatile memory, do not turn off the Controller's power. If the Controller's power is cut, the data in non-volatile memory will be destroyed, thereby disabling the Controller.
- *2 Data write is not possible.



- In the GP, the Controller's parameters are set via the Coil No. and Register No. For each Coil No. (00001~, 10001~) the last digit is recognized as the device. For Register No.s (30001~, 40001~, 31001~, 41001~) the last two digits are recognized as the device.
- For information about data item types and numbers, refer to the Instruction Manual for Fuji Electric Co., Ltd.'s MICRO CONTROLLER X COMMU-NICATION FUNCTION (RS-485 MODBUS), "CHAPTER 7 ADDRESS MAP AND DATA FORMAT"
- The GP supports two types of Address Maps, the "Engineering Unit Address Map" and the "Internal Calculation Value Address Map".

The following data shows the memory maps for each paprameter.

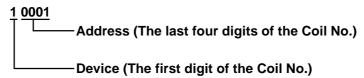
• When using Bit Data

Bit Data (Read Only): Function [02H]

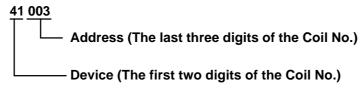
	\sim			
Relative Address	Coil No.	Туре	Memory Contents	Read-out Data
0000H	10001	Bit	Alarm 1 ON/OFF	0:Alarm1 OFF, 1:Alarm1 ON
0001H	10002		(Reserved)	
0002H	10003		(Reserved)	
0003H	10004		(Reserved)	
0004H	10005	Bit	Alarm2 ON/OFF	0:Alarm2 OFF, 1:Alarm2 ON
0005H	10006/		(Reserved)	
:		:	:	:

The item Nos. here are the GP addresses.

Ex. For the parameter "Alarm1 ON/OFF" of Coil No. 10001, the GP's designated address is as follows. Use the first digit of the Coil No. (00001~, 10001~) to designate the device.



Ex. For the parameter "front surface control SV data" of Register No. 41003, the GP's designated address is as follows. Use the first two digits of the Register No.s 30001~, 40001~, 31001~ and 41001~ to designate the device.





- The Controller's parameter data, when data transfer is performed, will have no decimal places. Thus, in the GP, processing must be performed to correct the data. For example, if a numeric display (N-tag) is used that in includes decimal places, the "Data Type" and "No. of Decimals" settings must be used. Also, when writing data to a Controller, it is necessary to write decimal values as integers.
- Ex. Register No. 41025's "Output 1 Lower Limit"

Controller Display/Setting Value: 3.00%

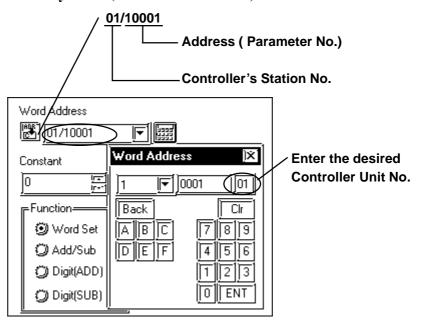
GP value/setting: 300

▼ Reference **▲**

Also, refer to "Instruction Manual for Fuji Electric Co., Ltd.'s MICRO CONTROLLER X COMMUNICATION FUNCTIONS (RS-485 MODBUS)" for details (with/without a decimal point) about data item setting value ranges.



When setting Parts or Tags in the screen editor software, the Controller communication unit No. can be specified during address input. If a communication unit No. is not indicated, the previously entered communication unit No. is automatically used. (The default value is 1)





GP/GLC's System Area (LS0 to LS19) Settings

The GP/GLC's system area (20 words) cannot be allocated to the Controller's own data area. Even though you can enter the system area settings via the GP's screen editor software or via the GP/GLC's OFFLINE screen, it is impossible to actually allocate the system area to the Controller's data area.

12.7.4 Environment Setup

The following table lists the recommended Controller and GP/GLC communication settings.

■ Micro-Controller X Series (Model:PXR)

GP/GLC Set	tings	Controller Setti	ngs
Baud Rate 9600 bps (Fixed)			
Data Length8 bits (Fixed)			
Stop Bit	1 bit (Fixed)		
Parity Bit	Odd	Parity Settings (CoM)	0 : Odd
Data Flow control	ER		
Communication Format (using RS-422)	2-wire type		
Unit No. *1	1	Unit Station No. (Stno)	1

^{*1} It is possible to set a Controller communication unit No.from 0 to 255, however, the GP/GLC can only be set from 1 to 32. Zero cannot be used because it means "Communication function stop". The Read-in area can be used in the Controller that has set the Unit No. here.

12.7.5 Error Code

Controller error codes are displayed by the "Host Communication Error (02:**:##)", and indicated in the left lower corner of the GP screen ** indicates the Controller's error code, and ## indicates the number of the Controller unit. However, when the PLC is not correctly connected (02:FF), the unit number will not be shown.

Erro Code	Meaning
01	Illegal function
02	Illegal data address
03	Illegal data value

For more details about error codes, see



Instruction Manual for Fuji Electric Co,. Ltd.'s MICRO CONTROLLER X COMMUNICATION FUNCTION (RS485 MODBUS)



12.8 Toho Electronics Inc. Controllers

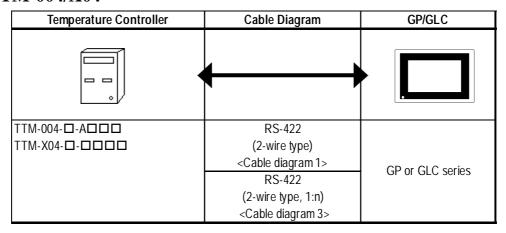
12.8.1 System Structure

The following describes the system configuration used when connecting the GP/GLC to this Controller.

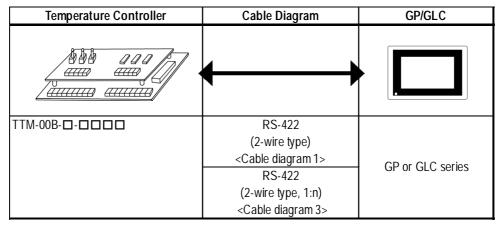


- After the Controller's power is turned ON, no communication is performed for about four seconds. As a result, note that it may take several seconds to start communication when the GP/GLC and the Controller are turned ON at the same time.
- When a save request command is sent to the Controller (STR write command), it can take up to six seconds for the controller to respond. At this time, note that the communication speed may slow significantly, which is indicated by the slowing of the update frequency of the GP/GLC display, as the GP or GLC enters the standby state.

■TTM-004/X04



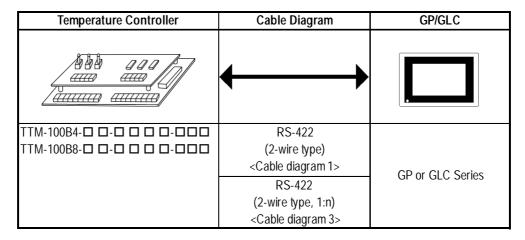
■TTM-00B



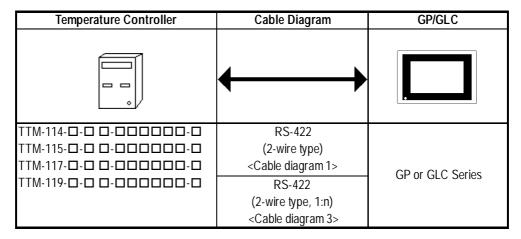
■TTM-10L

Temperature Controller	Cable Diagram	GP/GLC
	←	
TTM-10L-□-□-□	RS-422 (2-wire type) <cable 1="" diagram=""></cable>	
	RS-232C <cable 2="" diagram=""></cable>	GP or GLC Series
	RS-422 (2-wire type, 1:n) <cable 3="" diagram=""></cable>	

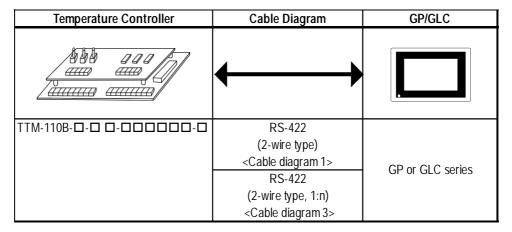
■TTM-100B



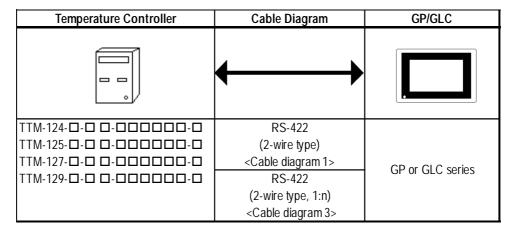
■TTM-110 Series



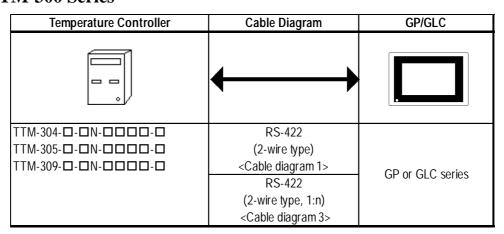
■ TTM-110B Series



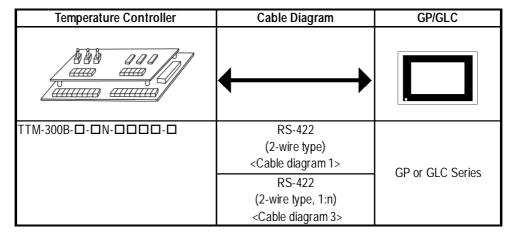
■ TTM-120 Series



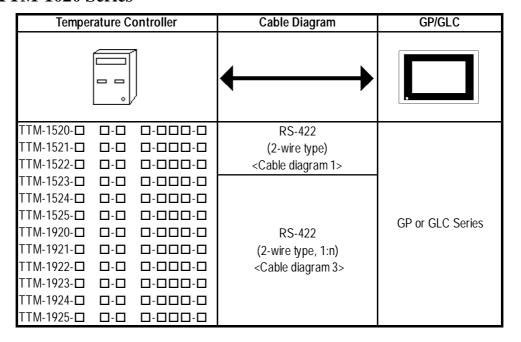
■TTM-300 Series



■ TTM-300B



■ TTM-1020 Series



12.8.2 Cable Diagrams

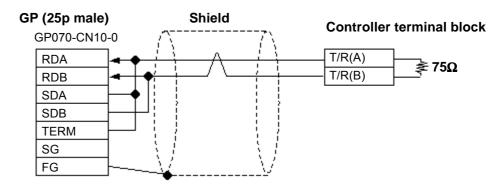
The cable diagrams shown below and the cable diagrams recommended by Toho Electronics Inc. may differ, however, using these cables for your Controller's operations will not cause any problems.



- RS-422 connector terminal numbers will differ depending on the controller model. Prior to performing wiring, refer to your controller's User Manual.
- When using RS-232C format, all cables should be no more than 15 meters long and also using RS-422 format, all cables should be no more than 50 meters long.

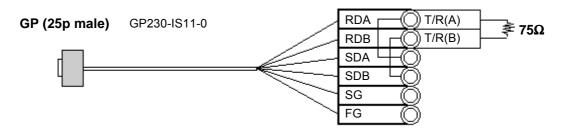
■Cable Diagram 1 (1:1) RS-422 (2-wire type)

• Using Digital's RS-422 connector terminal adapter GP070-CN10-0



• Using Digital's RS-422 Cable GP230-IS11-0

Controller terminal block



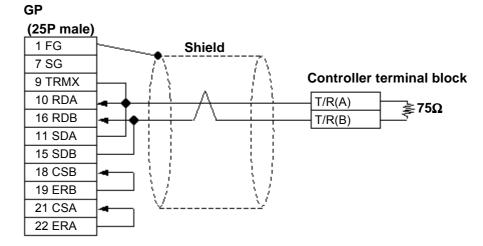


Be sure that RDA $\,$ - SDA and RDB - SDB are both connected to the Controller terminal block.



Since the SG and FG lines cannot be connected to the controller terminal block, be sure to cover them with insulating tape.

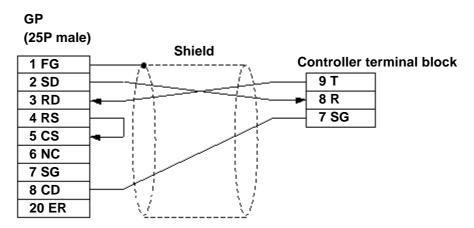
• When making your own cables





When connecting the No.9 pin and No.10 pin in the GP Serial I/F, a termination resistance of 100W is added between RDA and RDB.

■ Cable Diagram 2 RS-232C

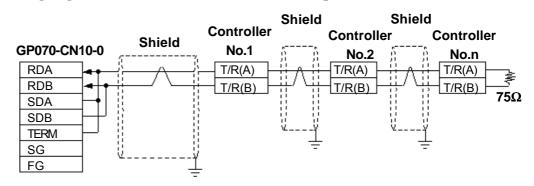


■ Cable Diagram 3 (1:n) RS-422

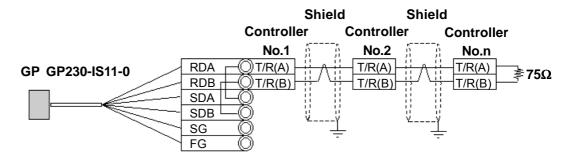


Ground a shielded cable in accordance with the electrical requirements of your system, using one of the following three methods.

- (1) Distributed grounding (as shown below)
- (2) Parallel grounding, or
- (3) Serial grounding.
- Using Digital's RS-422 connector terminal adapter GP070-CN10-0



• Using Digital's RS-422 cable, GP230-IS11-0



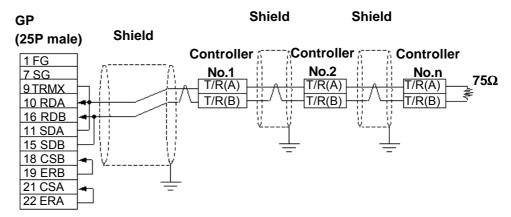


• Be sure that RDA - SDA and RDB - SDB are both connected to the Controller terminal block.



Since the SG and FG lines cannot be connected to the controller terminal block, be sure to cover them with insulating tape.

• When making your own cable connections





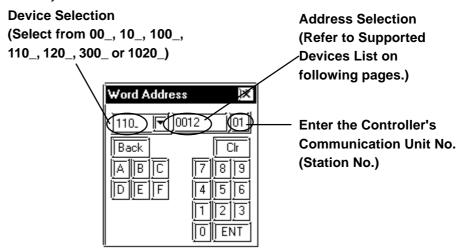
• When connecting the No.9 pin and No.10 pin in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.

12.8.3 Supported Devices

The following list shows the range of devices supported by the GP/GLC.



The Controller identifiers "1" and "2" (refer to your Controller's User Manual) are assigned to predefined addresses and devices. As a result, when you enter devices on the GP screen editor software, do so as shown below.



- Each identifier has read and write limitations detailed information, refer to your Controller's Instruction Manual. For details about precautions when using identifier "2" with GP-PRO/PBIII, refer to TTM-300 Series Supported Device's *1 or *2.
- GP/GLC's System Area (LS0 to LS19) Settings
 The GP/GLC's system area (20 words) cannot be allocated to the Controller's own data area. Even though you can enter the system area settings via the GP's screen editor software or via the GP/GLC's OFFLINE screen, it is impossible to actually allocate
- When you save data to your Controller's EEPROM (send a Save request), write it in the device address corresponding to symbol STR or identifier STR. For the TTM-300 series, this procedure is not needed since it saves data directly to the EEPROM.

the system area to the Controller's data area.

• When saving data to the EEPROM, write the data to the device address that corresponds to your Controller's STR identifier.



- In the Read Area, only the devices "00_","10_","100_", "110_",
 "120_,"300_" and "1020_" can be set. All other devices, "SSV"
 ,"END", "STI", "SOK", "SWZ", "SWT", "SON", "SOF", "SRN" and
 "SEO" cannot be used.
- Depending on the Controller's setting conditions, the GP and GLC's pre-set setting values may be used. Refer to the table as shown below.

Model	Address	Identifier	Controller Condition	Decimal marked values using onGP/GLC (Hex)	
	0	PV1	Over Scale	32767(0x7FFF)	
	U	PVI	Under Scale	-32768(0x8000)	
			When an arbitrary identifier has been assigned to the priority screen. (When the display of PR1 to PR9 on the temperature controller is not OFF.)	0011 ~ 0077 ^{*1}	
			In the case where no setting has been assigned to the priority screen. (When the display of PR1 to PR9 on the temperature controller is OFF.)	-32768(0x8000)	
TTM- 004/X04/00B			In the case where the identifier COM has been assigned to the priority screen.	32767(0x7FFF) ^{*2}	
(00_)	2~10	PR1 ~ PR9	In the case where the identifier BPS has been assigned to the priority screen.	32766(0x7FFE) *2	
			In the case where the identifier ADR has been assigned to the priority screen.	32765(0x7FFD) *2	
			In the case where the identifier AWT has been assigned to the priority screen.	32764(0x7FFC) *2	
			In the case where the identifier MOD has been assigned to the priority screen.	32763(0x7FFB) ⁻²	
	0	PV1	Over Scale	32767(0x7FFF)	
	U	PVI	Under Scale	-32768(0x8000)	
TTM-10L	22	-	Over Scale	32767(0x7FFF)	
(10_)	23	□CJ	Under Scale	-32768(0x8000)	
	24	PV2	Over Scale	32767(0x7FFF)	
	24	PVZ	Under Scale	-32768(0x8000)	
TTM-100B	0	PV1	Over Scale	32767(0x7FFF)	
(100_)	U	1 7 1	Under Scale	-32768(0x8000)	
TTM-110/110B	0	PV1	Over Scale	32767(0x7FFF)	
(110_)		1 7 1	Under Scale	-32768(0x8000)	
TTM-120	0	PV1	Over Scale	32767(0x7FFF)	
(120_)		FVI	Under Scale	-32768(0x8000)	
TTM-300/300B	0	PV1	Over Scale	32767(0x7FFF)	
	U	PVI	Under Scale	-32768(0x8000)	
(300_)	4	□TI	When the Operation has finished	-32768(0x8000)	

^{*1} Addresses allocated to each identifier

▼Reference 12.8.3 Supported Devices ■TTM-004/X04/00B

• You cannot use this device as a 32-bit device, since each identifier's addresses are not consecutive.

^{*2} This identifier cannot be registered as the priority screen function setting (PR1 to PR9) via a GP/GLC Write command. To register this function, use the front panel of the temperature controller.

■ TTM-004/X04/00B

Device	Bit Address	Word Address	Controller Setting item	Identifiers	Others
	000000 ~ 000015	0000	Process value PV	PV1	
	000100 ~ 000115	0001	Setting value SV	SV1	
	000200 ~ 000215	0002	Priority display set 1	PR1	
	000300 ~ 000315	0003	Priority display set 2	PR2	
	000400 ~ 000415	0004	Priority display set 3	PR3	
	000500 ~ 000515	0005	Priority display set 4	PR4	
	000600 ~ 000615	0006	Priority display set 5	PR5	
	000700 ~ 000715	0007	Priority display set 6	PR6	
	000800 ~ 000815	8000	Priority display set 7	PR7	
	000900 ~ 000915	0009	Priority display set 8	PR8	
	001000 ~ 001015	0010	Priority display set 9	PR9	
	001100 ~ 001115	0011	Set/select of input	INP	
	001200 ~ 001215	0012	Gain for PV correction	PVG	
	001300 ~ 001315	0013	Zero point for PV correction	PVS	
	001400 ~ 001415	0014	Filter input	PDF	
	001500 ~ 001515	0015	Decimal position	□DP	
	001600 ~ 001615	0016	Function by FUNC Key	□FU	
	001700 ~ 001715	0017	Lock	LOC	
	001800 ~ 001815	0018	SV H limit	SLH	
	001900 ~ 001915	0019	SV L limit	SLL	
	002000 ~ 002015	0020	Control mode	□MD	
	002100 ~ 002115	0021	Control type	CNT	
	002200 ~ 002215	0022	Set/select of normal or reverse	DIR	
	002300 ~ 002315	0023	Output1, manipulated value	MV1	
	002400 ~ 002415	0024	Tuning type	TUN	
	002500 ~ 002515	0025	AT coefficient	ATG	
	002600 ~ 002615	0026	AT sensitivity	ATC	
00_	002700 ~ 002715	0027	Output 1, proportional band	P1	
	002800 ~ 002815	0028	Integral time		
	002900 ~ 002915	0029	Derivative time	□D1	
	003000 ~ 003015	0030	Output 1, proportional cycle	T1	
	003100 ~ 003115	0031	Anti reset wind-up	ARW	
	003200 ~ 003215	0032	Setting of H limit for Output 2 MV limitter	MH1	
	003300 ~ 003315	0033	Setting of L limit for Output 2 MV	ML1	
	003400 ~ 003415	0034	Output 1, control sensitivity	□C1	
	003500 ~ 003515	0035	Output 1, OFF position	CP1	
	003600 ~ 003615	0036	Output 2, manipulated value	MV2	
	003700 ~ 003715	0030	Output 2, manipulated value Output 2, proportional band	□P2	
	003800 ~ 003815	0037	Output 2, proportional cycle	□T2	
	003900 ~ 003915	0039	Setting of H limit for Output 2 MV limitter	MH2	
	004000 ~ 004015	0040	Setting of L limit for Output 2 MV limitter	ML2	
	004100 004115	0041		DDD	
	004100 ~ 004115	0041	Manual reset	PBB	
	004200 ~ 004215	0042	Output 2, control sensitivity	□C2	
	004300 ~ 004315	0043	Output 2, OFF position	CP2	
	004400 ~ 004415	0044	Dead band	□DB	
	004500 ~ 004515	0045	EV 1, function	E1F	
	004600 ~ 004615	0046	EV 1, H limit	E1H	
	004700 ~ 004715	0047	EV 1, L limit	E1L	
	004800 ~ 004815	0048	EV 1, sensitivity	E1C	
	004900 ~ 004915	0049	EV 1, delay timer	E1T	

Chapter 12 - Indicating Controllers

Device	Bit Address	Word Address	Controller Setting item	Identifier	other
	005000 ~ 005015	0050	Abnormal SV/heater function	E1B	
	005100 ~ 005115	0051	EV 1, polarity	E1P	
	005200 ~ 005215	0052	CT input	CM1	
	005300 ~ 005315	0053	EV 1, abnormal current of heater	CT1	
	005400 ~ 005415	0054	EV 2, function	E2F	
	005500 ~ 005515	0055	EV 2, H limit	E2H	
	005600 ~ 005615	0056	EV 2, L limit	E2L	
	005700 ~ 005715	0057	EV 2, sensitivity	E2C	
	005800 ~ 005815	0058	EV 2, delay timer	E2T	
	005900 ~ 005915	0059	EV 2, abnormal SV/ heater function	E2B	
	006000 ~ 006015	0060	EV 2, polarity	E2P	
	006100 ~ 006115	0061	CT input	CM2	
00_	006200 ~ 006215	0062	EV 2, abnormal current of heater	CT2	
	006300 ~ 006315	0063	DI input	DIF	
	006400 ~ 006415	0064	Polarity of DI	DIP	
	006500 ~ 006515	0065	Control setting 2	SV2	
	006600 ~ 006615	0066	Timer output	TMO	
	006700 ~ 006715	0067	Timer function	TMF	
	006800 ~ 006815	0068	Timer unit switch	H/M	
	006900 ~ 006915	0069	Allowable width for timer SV start	TSV	
	007000 ~ 007015	0070	Time setting	TIM	
	007100 ~ 007115	0071	Monitor of remaining time	TIA	
		0072	Timer start/stop	TST	<u>Bit 1 5)</u>
	007300 ~ 007315	0073	Output monitor	OM1	
	007400 ~ 007415	0074	AT start/stop	□AT	
		0075	Data store	STR	Bit 1 5 1

■ TTM-10L

Device	Bit Address	Word Address	Controll Setting Item	Identifier	Other
	000000 ~ 000015	0000	Process Variable (PV)	PV1	
	000100 ~ 000115	0001	Control Setting Value (SV)	□SV	
	000200 ~ 000215	0002	EV L. Limit Set	1L1	
	000300 ~ 000315	0003	EV H. Limit Set	1H1	
	000400 ~ 000415	0004	Auto-Tuning Start/Release	□AT	
	000500 ~ 000515	0005	Proportional Band	□ P1	
	000600 ~ 000615	0006	Integral Time	□ I1	
	000700 ~ 000715	0007	Derivative Time	□ D1	
	000800 ~ 000815	8000	P-cycle Time	□T1	
	000900 ~ 000915	0009	Control Sensitivity	□C1	
	001000 ~ 001015	0010	Set/Select of Input/Output	□ 10	
	001100 ~ 001115	0011	L. Limit of SV Limiter	SLL	
	001200 ~ 001215	0012	H. Limit of SV Limiter	SLH	
10_	001300 ~ 001315	0013	Control Type	CNT	
10_	001400 ~ 001415	0014	PV Correction	PVS	
	001500 ~ 001515	0015	Manual Reset	PBB	
	001600 ~ 001615	0016	OFF Position	□CP	
	001700 ~ 001715	0017	EV Function	A1F	
	001800 ~ 001815	0018	EV Sensitivity	ALC	
	001900 ~ 001915	0019	Decimal Point Position	□DP	
	002000 ~ 002015	0020	Selection of C/F	□CF	
	002100 ~ 002115	0021	Setting of Lock Function	LOC	
	002200 ~ 002215	0022	Temperature of cooling	□CJ	
	002200 ~ 002213	0022	contact compensation	L C1	
	002300 ~ 002315	0023	Process Variable (PV) with	PV2	
	002300 ~ 002313	0023	decimal point	PVZ	
	002400 ~ 002415	0024	Output state monitor	OM1	
		0025	Data store	STR	<u>Bit 1 51</u>

■ TTM-110Series (TTM-114, 115, 117, 119)/110B

Device	Bit Address	Word Address	Controll Setting Item	PV	Oth	ner
	000000 ~ 000015	0000	Process value (PV)	PV1		
	000100 ~ 000115	0001	Control set value (SV)	□SV		
	000200 ~ 000215	0002	Main control MV (OUT1)	MV1		
	000300 ~ 000315	0003	Main control MV (OUT2)	MV2		
	000400 ~ 000415	0004	Auto-tuning start/release	□AT		
	000500 ~ 000515	0005	Alarm 1 L limit set	1L1		
	000600 ~ 000615	0006	Alarm 1 H limit set	1H1		
	000700 ~ 000715	0007	Main control P-band	□P1		
	000800 ~ 000815	8000	Integral time	□ I1		
	000900 ~ 000915	0009	Derivative time	□ D1		
	001000 ~ 001015	0010	Output 1 P-cycle time	□T1		
	001100 ~ 001115	0011	Output 1 sensitivity	□C1		
	001200 ~ 001215	0012	Output 2 P-band	PC1		
	001300 ~ 001315	0013	Output 2 P-cycle time	TC1		
	001400 ~ 001415	0014	Output 2 sensitivity	CC1		
	001500 ~ 001515	0015	Dead Band	DB1		
	001600 ~ 001615	0016	Cooling Point of Contact	□CJ		
10_			Compensation	1 (1)		
	001700 ~ 001715	0017	Set/Select of Input/Output			
	001800 ~ 001815	0018	Setting of L limit for OUT1 MV Limiter	MLL		
	001900 ~ 001915	0019	Setting of H limit for OUT1 MV Limiter	MLH		
	002000 ~ 002015	0020	Setting of L limit of SV Limiter	SLL		
	002100 ~ 002115	0021	Setting of H limit of SV Limiter	SLH		
	002200 ~ 002215	0022	Control action select	CNT		
	002300 ~ 002315	0023	Setting of sensor value correction	PVS		
	002400 ~ 002415	0024	Manual reset value	PBB		
	002500 ~ 002515	0025	Alarm 1 function	A1F		
	002600 ~ 002615	0026	AL output sensitivity	ALC		
Ī	002700 ~ 002715	0027	Heater abnormal current	□CT		
	002800 ~ 002815	0028	Selection of data transmission	TR1		
	002000 ~ 002013	0026	function	IKI		
	002900 ~ 002915	0029	Selection of C/F	□CF		
	003000 ~ 003015	0030	Output state monitor	OM1		
	003100 ~ 003115	0031	Response Delay Speed	AWT		
		0032	Data store	STR	Bit 1 51	

■TTM-110Series(TTM-114, 115, 117, 119)/110B

Device	Bit Address	Word Address	Controller Setting Item	Identifier	Other
	000000 ~ 000015	0000	Process Value (PV)	PV1	
	000100 ~ 000115	0001	Controll Set Value (SV)	□SV	
	000200 ~ 000215	0002	Main Control MV (OUT 1)	MV1	
	000300 ~ 000315	0003	Sub-Control MV (OUT 2)	MV2	
	000400 ~ 000415	0004	Timer Remainder Time	TIA	
	000500 ~ 000515	0005	Auto-Tuning Start/Release	□AT	
	000600 ~ 000615	0006	Time Setting On Timer	TIM	
	000700 ~ 000715	0007	Alarm 1 L. Limit Set	1L1	
	000800 ~ 000815	0008	Alarm 1 H. Limit Set	1H1	
	000900 ~ 000915	0009	Alarm 2 L. Limit Set	2L1	
	001000 ~ 001015	0010	Alarm 2 H. Limit Set	2H1	
	001100 ~ 001115	0011	Main Control P-band	□ P1	
	001200 ~ 001215	0012	Integral Time	□ I1	
	001300 ~ 001315	0013	Derivative Time	□ D1	
	001400 ~ 001415	0014	Output 1 P-cycle Time	□T1	
	001500 ~ 001515	0015	Output 1 Sensitivity	□C1	
	001600 ~ 001615	0016	Output 2 P-band	PC1	
	001700 ~ 001715	0017	Output 2 P-cycle Time	TC1	
	001800 ~ 001815	0018	Output 2 Sensitivity	CC1	
	001900 ~ 001915	0019	Dead Band	DB1	
	002000 ~ 002015	0020	Set/Select of Input/Output Type	□ 10	
	002100 ~ 002115	0021	Setting of L. Limit For Out 1 MV Limiter	MLL	
110_	002200 ~ 002215	0022	Setting of H. Limit For Out 1 MV Limiter	MLH	
	002300 ~ 002315	0023	Setting of H. Limit of SV Limiter	SLL	
	002400 ~ 002415	0024	Setting of L. Limit of SV Limiter	SLH	
	002500 ~ 002515	0025	Control Action Select	CNT	
	002600 ~ 002615	0026	Setting of Sensor Value Correction	PVS	
	002700 ~ 002715	0027	Manual Reset Value	PBB	
	002800 ~ 002815	0027	Timer Operation Mode	TMM	+ +
	002900 ~ 002915	0029	Alarm 1 Function	A1F	
	003000 ~ 003015	0030	Alarm 2 Function	A2F	+ -
	003100 ~ 003115	0031	AL Output Sensitivity	ALC	+
	003200 ~ 003215	0031	Heater Abnormal Current	□CT	
	003300 ~ 003315	0033	Selection of Data Transmission Function	TR1	
	003400 ~ 003415	0034	Decimal Point Position	□DP	
	003500 ~ 003515	0034	Selection of C/F	□CF	+
	003600 ~ 003615	0036	Buzzer Sound Setting	□BU	+
	003700 ~ 003715	0037	Setting of Lock Function	LOC	+
	003700 ~ 003715		Output State Monitor	OM1	
	UU30UU ~ UU3815	0038	Timer Reset		Bit 1 5 1
	004000 004015	0039		TMS	(OILT OI
	004000 ~ 004015	0040	Run/Ready Status	RUN	Bit 1 51
		0041	Data Store	STR	RITIO

■TTM-120 Series (TTM-124, 125, 127, 129)

Device	Bit Address	Word Address	Controller Setting Item	Identifier	Other
	000000 ~ 000015	0000	Process Value (PV)	PV1	
	000100 ~ 000115	0001	Control Set Value (SV)	□AV	
	000200 ~ 000215	0002	Control Mode	MD1	
	000300 ~ 000315	0003	Main Control MV (OUT1)	MV1	
	000400 ~ 000415	0004	Sub-Control MV (OUT2)	MV2	
	000500 ~ 000515	0005	Auto-Tuning Start/Release	□AT	
	000600 ~ 000615	0006	Alarm 1L Limit Set	1L1	
	000700 ~ 000715	0007	Alarm 1H Limit Set	1H1	
	000800 ~ 000815	0008	Alarm 2L Limit Set	2L1	
	000900 ~ 000915	0009	Alarm 2H Limit Set	2H1	
	001000 ~ 001015	0010	Output 1 P-band	□ P1	
	001100 ~ 001115	0011	Integral Time	□ I1	
	001200 ~ 001215	0012	Derivative Time	□D1	
	001300 ~ 001315	0013	Output 1 P-cycle Time	□T1	
	001400 ~ 001415	0014	Output 1 Senstivity	□C1	
	001500 ~ 001515	0015	Main Control OFF Position	□СР	
	001600 ~ 001615	0016	Output 2 P-band	PC1	
	001700 ~ 001715	0017	Output 2 P-cycle Time	TC1	
	001800 ~ 001815	0018	Output 2 Sensitivity	CC1	
	001900 ~ 001915	0019	Output 2 OFF Position	CCP	
	002000 ~ 002015	0020	Dead Band	DB1	
	002100 ~ 002115	0021	Set/Select of Input/Output Type	□I0	
	002200 ~ 002215	0022	Setting of L. Limit for Out1 MV Limiter	MLL	
120_	002300 ~ 002315	0023	Setting of H. Limit for Out1 MV Limiter	MLH	
	002400 ~ 002415	0024	Setting of L. Limit of SV Limiter	SLL	
	002500 ~ 002515	0025	Setting of H. Limit of SV Limiter	SLH	
	002600 ~ 002615	0026	Control Action Select	CNT	
	002700 ~ 002715	0027	Rump Time of SV1	RP1	
	002800 ~ 002815	0028	Setting of Sensor Value correction	PVS	
	002900 ~ 002915	0029	Digital PV Filter	PDF	
	003000 ~ 003015	0030	Manual Reset Value	PBB	
	003100 ~ 003115	0031	Swiching for Balanceless Bumpless	□ВВ	
	003200 ~ 003215	0032	Alarm 1 Function	A1F	
	003300 ~ 003315	0033	Alarm 2 Function	A2F	
	003400 ~ 003415	0034	AL Output Sensitivity	ALC	
	003500 ~ 003515	0035	Heater Abnormal Current	□CT	
	003600 ~ 003615	0036	Selection of Data Transmission Function	TR1	
	003700 ~ 003715	0037	DI Function	□DI	
	003700 ~ 003713	0037	Decimal Point Position		
	003900 ~ 003915	0039	Selection of C/F	□CF	
	003900 ~ 003915	0039	Buzzer Sound Setting	□BU	
	004000 ~ 004015	0040	Setting of Lock	LOC	
	004100 ~ 004115	0041	Output State Monitor	OM1	\vdash
	004200 ~ 004213	0042	Data Store	STR	Bit 1 5 1

■TTM-300 Series (TTM-304, 305, 309)/300B

Device	Bit Address	Word Address	Controller Setting Item	Identifier	Other
	000000 ~ 000015	0000	Process Value (PV)	PV1	
	000100 ~ 000115	0001	Mode change	□MD	
	000200 ~ 000215	0002	Control Setting Value (SV)	□SV	
	000300 ~ 000315	0003	Run Step Setting Value (SV)	OSV	
300_	000400 ~ 000415	0004	The time elapsed	ΠŢΙ	
300_	000500 ~ 000515	0005	Run step setting time	OTI	
	000600 ~ 000615	0006	Count numbers of time executed	SRR	
		0007	Step forward function execution	ADV	<u>Bit 1 5 1</u>
	000800 ~ 000815	8000	Pattern number	□PT	
	000900 ~ 000915	0009	Step number	□ST	
SSV	000000 ~ 204715	0000 ~ 2047 ^{*1}	Step temperature setting	SSV	
END	000000 ~ 204715	0000 ~ 2047 ^{*1}	Final step setting	END	
STI	000000 ~ 204715	0000 ~ 2047 *1.	Step time setting	STI	
SOK	000000 ~ 204715	0000 ~ 2047 ^{*1}	Final step finish condition setting	SOK	
SWZ	000000 ~ 204715	0000 ~ 2047 ^{*1}	Step wait zone	SWZ	
SWT	000000 ~ 204715	0000 ~ 2047 *1	Step wait time	SWT	
SON	000000 ~ 204715	0000 ~ 2047 *1	Time signal ON time	SON	
SOF	000000 ~ 204715	0000 ~ 2047 *1	Time signal OFF time	SOF	
SRN	000000 ~ 200015	0000 ~ 2000 *2	Execution time	SRN	
SEO	000000 ~ 200015	0000 ~ 2000 *2	End signal ON time SE		
	001000 ~ 001015	0010	Pattern numbers	PAT	
	001100 ~ 001115	0011	Step numbers	STP	
	001200 ~ 001215	0012	PV correction	PVS	
	001300 ~ 001315	0013	Change C/ F	□CF	
	001400 ~ 001415	0014	Type of Control	CNT	
	001500 ~ 001515	0015	Type of Input/Output	□ 10	
	001600 ~ 001615	0016	Select decimal position	□DP	
	001700 ~ 001715	0017	Mainipulated value limiter Low	MLL	
	001800 ~ 001815	0018	Manipulated value limiter High	MLH	
	001900 ~ 001915	0019	Setting of L. limit of SV limiter	SLL	
	002000 ~ 002015	0020	Setting of H. limit of SV limiter	SLH	
	002100 ~ 002115	0021	Select PV start or SV start	PSV	
	002200 ~ 002215	0022	SV start setting value	SVS	
300_	002300 ~ 002315	0023	Select Start at Power ON	PON	
	002400 ~ 002415	0024	Event Output 1 function	DO1	
	002500 ~ 002515	0025	PV Event Output 1 function	A1F	
	002600 ~ 002615	0026	Event Output 1 Low limit	A1L	
	002700 ~ 002715	0027	Event Output 1 High limit	A1H	
	002800 ~ 002815	0028	Event Output 1 sensitivity	A1C	
	002900 ~ 002915	0029	Time signal 1 Output mode	TF1	
ļ	003000 ~ 003015	0030	Time signal 1 ON time	ON1	
ļ	003100 ~ 003115	0031	Time signal 1 OFF time	OF1	
	003200 ~ 003215	0032	Event output 1 unusual looping time	LT1	
	003300 ~ 003315	0033	Event Output 2 function	DO2	
	003400 ~ 003415	0034	PV Event Output 2 function	A2F	
	003500 ~ 003515	0035	Event Output 2 Low limit	A2L	

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Device	Bit Address	Word Address	š –		Other
	003600 ~ 003615	0036	Event Output 2 High limit	A2H	
	003700 ~ 003715	0037	Event Output 2 sensitivity	A2C	
	003800 ~ 003815	0038	Time signal 2 Output mode	TF2	
	003900 ~ 003915	0039	Time signal 2 ON time	ON2	
	004000 ~ 004015	0040	Time signal 2 OFF time	OF2	
			Event output 2 unusual looping time	LT2	
	004200 ~ 004215	0042	Key lock function	LOC	
	004300 ~ 004315	0043	Output condition monitor	OM1	
	004400 ~ 004415	0044	[Low temperature] Proportional	□P1	
	004500 ~ 004515	0045	[Low temperature] Integrated time	□I1	
	004600 ~ 004615	0046	[Low temperature] Differential time	□D1	
	004700 ~ 004715	0047	Middle point 1 setting	PM1	
	004800 ~ 004815	0048	[Middle temperature] Proportional	□P2	
	004900 ~ 004915	0049	[Middle temperature] Integrated	□I2	
	005000 ~ 005015	0050	[Middle temperature] Differential	□D2	
	005100 ~ 005115	0051	Middle point 2 setting	PM2	
	005200 ~ 005215	0052	[High temperature] Proportional	□P3	
i	005300 ~ 005315	0053	[High temperature] Integrated time		
	005400 ~ 005415	0054	[High temperature] Differential time	□D3	
	005500 ~ 005515	0055	Proportional Cycle		
300-	005600 ~ 005615	0056	Fuzzy constant	FUZ	
			Control sensitivity to [Low		
	005700 ~ 005715	0057	temperature]	□C1	
			Control sensitivity to [Middle		
	005800 ~ 005815	0058	temperature]	□C2	
	005900 ~ 005915	0059	Control sensitivity to [High temperature]	□ С3	
	006000 ~ 006015	0060	Auto-tuning setting value of [High temperature]	AT1	
	006100 ~ 006115	0061	Auto-tuning setting value of [Middle temperature]	AT2	
	006200 ~ 006215	0062	Auto-tuning setting value of [High temperature]	AT3	
		0063	Auto-tuning execution of [Low temperature]	AP1	Bit 1 5 1
		0064	Auto-tuning execution of [Middle temperature]	AP2	Bit 1 5 1
		0065	Auto-tuning execution of [High temperature]	AP3	Bit 51
		0066	Auto-tuning execution of [Low]->[Middle]->[High] temperature	AP4	<u>Bit [5]</u>
	006700 ~ 006715	0067	Auto-tuning under execution	ATR	

*1 When using identifiers from SSV to SOF with a TTM-300 series unit, use the Device Name as the identifier, and the Step No. and Pattern No. as the address. The maximum values available for the pattern number and the step number that can be set on a GP/GLC are 20 and 47, respectively. Specify them as shown below.

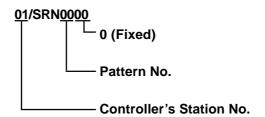
Ex.)

Device	Bit Address	Word Address	Control Setting Item	Identifier		
SSV	000000 ~ 204715	0000 ~ 2047	Step Temperature Setting	SSV		
01/SSV	01/SSV0000 Step No.					
	Pattern No.					
	Controller's Station No.					

*2 When using identifier SRN or SEO with the TTM-300 series unit, use the Device Name as the identifier, and the Step No. and Pattern No. as the address. The maximum values available for the pattern number and the step number that can be set on a GP/GLC is 20, respectively. Specify them as shown below.

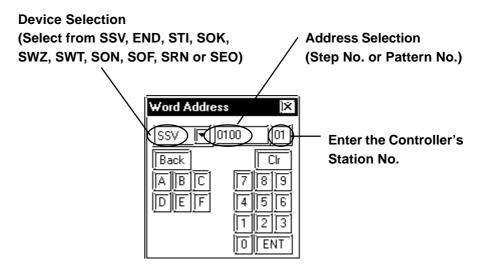
Ex.)

Device	Bit Address	Word Address	Controller Setting Item	Identifier
SRN	000000 ~ 200015	0000 ~ 2000	Excution Time	SRN





When entering addresses for identifiers SSV to SEO with a TTM-300 series unit, be sure to refer *1 or *2 above.



■ TTM-1020 Series(TTM-1520, 1521, 1522, 1523, 1524, 1525, 1920, 1921, 1922, 1923, 1924, 1925)

Device	Bit Address	Word Address	Controller Setting Item	Identifier	Other
	000000 ~ 000015	0000	Process Value (PV)	PV1	
	000100 ~ 000115	0001	CH No.	□CH	
	000200 ~ 000215	0002	Control Setting Value (SV)	□SV	
	000300 ~ 000315	0003	SV1	SV1	
	000400 ~ 000415	0004	Set/Select of Auto/Manual	MD1	
	000500 ~ 000515	0005	Set/Select of Remote/Local	REM	
	000600 ~ 000615	0006	Main Control MV (Out 1)	MV1	
	000700 ~ 000715	0007	Main Control MV (Out 2)	MV2	
	000800 ~ 000815	0008	Auto-Tuning Start/Release	□AT	
	000900 ~ 000915	0009	SV2	SV2	
	001000 ~ 001015	0010	SV3	SV3	
	001100 ~ 001115	0011	SV4	SV4	
	001200 ~ 001215	0012	SV5	SV5	
	001300 ~ 001315	0013	SV6	SV6	
	001400 ~ 001415	0014	SV7	SV7	
	001500 ~ 001515	0015	SV8	SV8	
	001600 ~ 001615	0016	Set/Select of Input/Output Type	□ I0	
	001700 ~ 001715	0017	Setting of Sensor Value	PVS	
	001700 ~ 001713	0017	Correction	PVS	
	001800 ~ 001815	0018	Decimal Point Position	□DP	
	001900 ~ 001915	0019	Selection of C/F	□CF	
1020_	002000 ~ 002015	0020	Setting of L. Limit of SV Limiter	SLL	
	002100 ~ 002115	0021	Setting of H.Limit of SV Limiter	SLH	
	002200 ~ 002215	0022	Setting of Lock Function	LOC	
	002300 ~ 002315	0023	Control Action Select	CNT	
	002400 ~ 002415	0024	Proportional band	□ P1	
	002500 ~ 002515	0025	Integrated time	□ I1	
	002600 ~ 002615	0026	Differential time	□ D1	
	002700 ~ 002715	0027	Output 1 P-cycle Time	□ T1	
	002800 ~ 002815	0028	Control sensitivity	□ C1	
	002900 ~ 002915	0029	Manual Reset Value	PBB	
	003000 ~ 003015	0030	Setting of L. Limit for Out 1 MV Limiter	MLL	
	003100 ~ 003115	0031	Setting of H. Limit for Out 1 MV Limiter	MLH	
F	003200 ~ 003215	0032	Setting for unusual	FAL	
F	003300 ~ 003315	0033	Cooling P-band	PC1	
F	003400 ~ 003415	0034	Cooling P-cycle time	TC1	
-	003500 ~ 003515	0035	Cooling Sensitivity	CC1	
-	003600 ~ 003615	0036	Dead Band	DB1	
F	003700 ~ 003715	0037	Setting of L limit of cooling output	MCL	
-	003800 ~ 003815	0038	Setting of H limit of cooling output	MCH	
	003900 ~ 003915	0039	L limit of cascade scaling	CSL	

Device	Bit Address	Word Address	Controll Setting Item	Identifier	Other
	004000 ~ 004015	0040	H limit of cascade scalling	CSH	
	004100 ~ 004115	0041	Event 1 Function	EV1	
	004200 ~ 004215	0042	PV Event 1 Function	P1F	
	004300 ~ 004315	0043	PV Event 1 Low Limit	P1L	
	004400 ~ 004415	0044	PV Event 1 High Limit	P1H	
	004500 ~ 004500	0045	DI 1 Function	D1F	
	004600 ~ 004615	0046	Event 2 Function	EV2	
	004700 ~ 004715	0047	PV Event 2 Function	P2F	
	004800 ~ 004815	0048	PV Event 2 Low Limit	P2L	
	004900 ~ 004915	0049	PV Event 2 High Limit	P2H	
	005000 ~ 005015	0050	DI2 Function	D2F	
	005100 ~ 005115	0051	Event 3 Function	EV3	
	005200 ~ 005215	0052	PV Event 3 function	P3F	
	005300 ~ 005315	0053	PV Event 3 Low Limit	P3L	
	005400 ~ 005415	0054	PV Event 3 Hight Limit	P3H	
	005500 ~ 005515	0055	DI3 Function	D3F	
	005600 ~ 005615	0056	Event 4 Function	EV4	
	005700 ~ 005715	0057	PV Event 4 Function	P4F	
	005800 ~ 005815	0058	PV Event 4 Low Limit	P4L	
	005900 ~ 005915	0059	PV Event 4 High Limit	P4H	
	006000 ~ 006015	0060	DI4 Function	D4F	
	006100 ~ 006115	0061	Evet 5 Function	EV5	
1020_	006200 ~ 006215	0062	PV Event 5 Function	P5F	
1020_	006300 ~ 006315	0063	PV Event 5 Low Limit	P5L	
	006400 ~ 006415	0064	PV Event 5 High Limit	P5H	
	006500 ~ 006515	0065	DI5 Function	D5F	
	006600 ~ 006615	0066	Selection of Data Transmission 1 Function	TR1	
	006700 ~ 006715	0067	L limit of transmission 1 scalling	T1L	
	006800 ~ 006815	0068	H limit of transmission 2 scalling	T1H	
	006900 ~ 006915	0069	Selection of Data Transmission 2 Function	TR2	
	007000 ~ 007015	0070	L limit of transmission 2 scalling	T2L	
	007100 ~ 007115	0071	H limit of transmission 2 scalling	T2H	
	007200 ~ 007215	0072	Close feedback resistance control	CLS	
	007300 ~ 007315	0073	Open feedback resistance controll OPN		
	007400 ~ 007415	0074	quota of function	FNC	
	007500 ~ 007515	0075	Output State Monitor	OM1	
	007600 ~ 007615	0076	Event condition monitor	EM1	
		0077	Data Store	STR	Bit 1 5]

12.8.4 Environment Setup

The following table lists the recommended Controller and GP/GLC communication settings.

GP/GLC Settings		Controller Settings		
Baud Rate	9600 bps	Baud Rate	9600 bps	
Data Length	8 bit	Data Length	8 bit	
Stop Bit	2 bit	Stop Bit	2 bit	
Parity Bit	None	Parity Bit	None	
Data Flow Control	ER			
Communication Format (using RS-422) *1	RS-422 (2-line)			
Communication Format (using RS-232C) *1	RS-232C			
Unit No. *2	1 to 32	Communication Unit No.	1 to 32	
		Mode Setting *3	Communication Mode	
		Mode Setting *4	Read/Write	

^{*1} Controller cannot switch the Communication Format. When purchasing the Controller, select either an RS-422 or RS-232C.

^{*2} Although the settable range for a machine number on the temperature controllers is 1 to 99, the range for GP/GLC is 1 to 32.

^{*3} This setting is required for models other than the TTM-004/X04 series. When you perform communication between the Controller and GP/GLC, be sure to set your Controller to Data Transfer mode.

^{*4} This setting is required only for the TTM-004/X04 series. When the Controller is set to read-only, rewritable devices will become read-only.

Error Code

Controller error codes are displayed by the "Host Communication Error (02:**:##)", and indicated in the left lower corner of the GP/GLC screen ** indicates the Controller's error code, and ## indicates the number of the Controller unit.

Error Code	Error Message	Meaning
00	Flat of the instrument (Memory error or A/D conversion error)	
01	Numeric data out of "the setting range respectively specified in each of setting items".	Data written to an arbitrary device is out of the range for writing.
02	Change of an item prohibited, or no item to be read out.	No device exists in the address specified for the temperature controller connected to GLC or GP. Or, data was written to the specified device, even though that device is write protected.
03	An ASCII code other than the numeric data is specified in the place. Or, an ASCII code other than "0" or "-" is specified in the place for the sign.	
04	Format error	The format of the command from the GP/GLC is incorrect due to noise, etc.
05	BCC error	The format of commands sent from GP/GLC is erroneous due to noise or the like.
06	Overrun error	
07	Framing error	Machine Numbers for temperature controllers are overlapping. Or, the format of commands sent from GP/GLC is erroneous due to noise or the like.
08	Parity error	The current Data Transfer Parity setting is incorrect. Or, the format of commands sent from GP/GLC is erroneous due to noise or the like.
09	Trouble has happened on PV in process of AT. Or, AT does not be finalized in 3 hours.	



Depending on the specification of the Controller, if two errors occur at the same time, the larger error number will be displayed.



Reference For more details about error codes, refer to the TOHO ELEC-TRONICS INC.'s COMMUNICATIONS FUNCTION Instructon Manual.



13 Inverters

This chapter shows examples of system configuration, supported devices and environment setup used when connecting the inverters to the GP.



If communication is halted due to signal cable breakage, GP/GLC fault etc., the inverter does not detect such a fault.

13.1 List of Connectable Inverters

The following inverters can be connected to the GP.

Company	Series	Inverter *1	Link I/F or CPU direct connection	PLC Name in Pro/PB III
	FREQROL-A500	FR-A520-□K		
		FR-A540-□K		
	FREQROL-A500L	FR-A520L-□K		
		FR-A540L-□K		
	FREQROL-E500	FR-E520- □ K		
		FR-E540- □ K		
		FR-E520S-□K		
Mitsubishi Electric		FR-E510W-□K		MITSUBISHI
Corp.	FREQROL-F500	FR-F520-□K		FREQROL SERIES
		FR-F540-□K		
	FREQROL-F500L	FR-F520L-□K		
	EDEODOL 0500	FR-F540L-□K		
	FREQROL-S500	FR-S510W-□K-R		
		FR-S520-□K-R		
	EDEODOL D DO	FR-S520S-□K-R		
	FREQROL-B,B3	FR-B-□K		
	EDENICCEOOCC11C	FR-B3-		
	FRENICS5000G11S	FRN□□G11S-2		
		FRN□□G11S-4		
	FRENICS5000P11S	FRN□□P11S-2		
Full Flootrio		FRN□□P11S-4		
Fuji Electric Co., Ltd.	FVR-E11S	FVR□□□E11S-2		FUJI INVERTER
00., Etc.		FVR□□□E11S-7		
	FVR-C11S	FVR□□□C11S-2	Option	
		FVR□□□C11S-6	OPC-C11S-RS□ *2	
		FVR□□□C11S-7		

^{*1} The "\[\sum \subset \subset \] characters in the inverter model codes reflect applicable standard generator capacities.

The model codes' last numbers 2, 4, 6, and 7 indicate 3 phase 200V, 3 phase 400V, single phase 100V, and single phase 200V, respectively.

^{*2} The " \square " character in the option card model code reflects the classification of the card type (either A, B, or C) according to this series inverter capacities.



13.2 Mitsubishi Electric Inverters

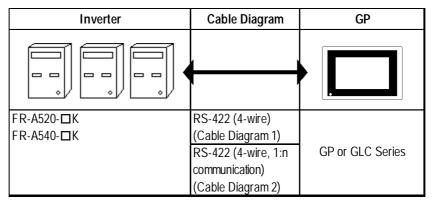
13.2.1 System Structure

The following table describes the system structure for connecting the Mitsubishi Electric inverters to the GP.



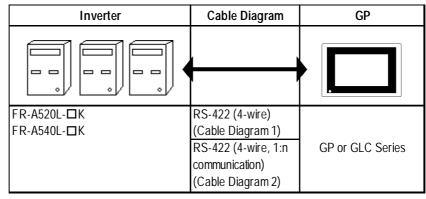
If communication is halted due to signal cable breakage, GP/GLC fault etc., the inverter does not detet such a fault. Use its Communication retry or Communication check to diagnose the problem and prevent an accident.

■ FREQROL-A500 Series



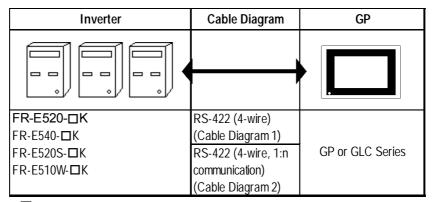
[&]quot; \square " indicates the capacity of each inverter.

■ FREQROL-A500L Series



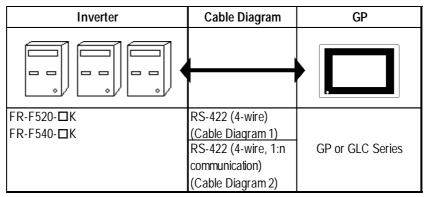
[&]quot; \square " indicates the capacity of each inverter.

■ FREQROL-E500 Series



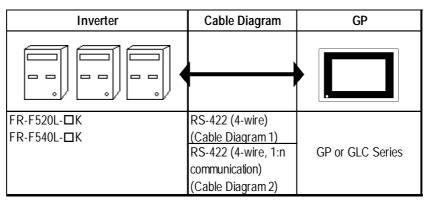
[&]quot; \square " indicates the capacity of each inverter.

■ FREQROL-F500 Series



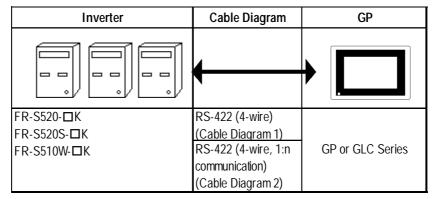
[&]quot; \square " indicates the capacity of each inverter.

■ FREQROL-F500L Series



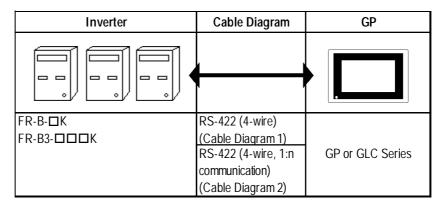
[&]quot; \square " indicates the capacity of each inverter.

■ FREQROL-S500 Series



[&]quot; \square " indicates the capacity of each inverter.

■ FREQROL-B/B3 Series



[&]quot; \square " indicates the capacity of each inverter.

13.2.2 Cable Diagrams

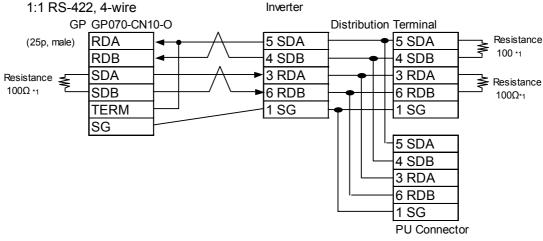
Recommended Cables

For connection of the GLC/GP and Mitsubishi Electric inverters, the following cables and cable manufcturers are recommended:

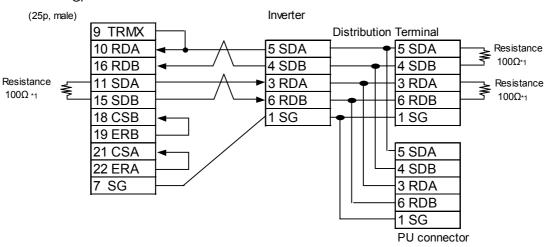
No.	Item	Model Code	Model Code Company	
1	Cable	FR-CB201 (1m)	Mitsubishi Electric Corporation	Used for 1:n connection
2	(available on the market)	FR-CB203 (3m)	Mitsubishi Electric Corporation	Used for 1:n connection
3	(available on the market)	FR-CB205 (5m)	Mitsubishi Electric Corporation	Used for 1:n connection
4	Wires	SGLPEV 0.5mm×4P	Mitsubishi Electric Corporation	10BASE-T wires
5	RJ45 connector	5-554720-3	Tyco Electronics AMP K.K.	
6	6 RS-485 distributor (commercial type)	MBJ-8	Hakko Electric Machine Works Co., Ltd.	Used for 1:n connection End Terminal Resistance OFF
U		MBJ-8P	i ianno Liedi ici iviaci ilite violino Cu., Liu.	Used for 1:n connection End Terminal Resistance ON

Cable Diagram 1

<When using Digital's RS-422 connector terminal adapter GP070-CN10-0>



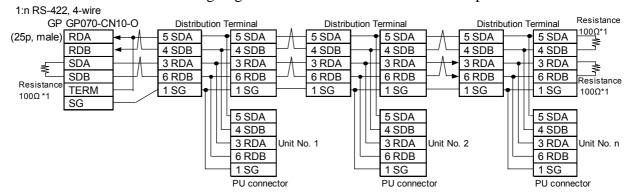
<When making your own cable>



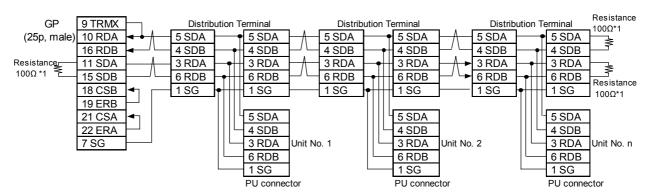
^{*1} Since a modular connector has been used, be sure to use a distributor when using a terminating resistor.

Cable Diagram 2

<When using Digital's RS-422 connector terminal adapter GP070-CN10-0>



<When making your own cable>



^{*1} Since a modular connector has been used, be sure to use a distributor when using a terminating resistor.

13.2.3 Supported Devices

Device	Bit Addresses	Word Addresses	Remarks	
Parameter (except for Pr. 37 of FREQROL- S500 and FREQROL-E500)	000000 ~ 99315	0000 ~ 0993	*1	*3
Parameter (Pr.37 of FREQROL-S500 and FREQROL-E500)	P003700 ~ P003731	P0037	*2 *4	
Operation mode	OPE000 ~ OPE015	OPE0		*3
Output frequency (rpm)	OUTF000 ~ OUTF015	OUTF0	*5	H/L
Output current	OUTC000 ~ OUTC015	OUTC0	*5	
Output voltage	OUTV000 ~ OUTV015	OUTV0	*5	
Special monitor	SPM000 ~ SPM015	SPM0	*5	
Special monitor selection no.	SSEL000 ~ SSEL015	SSEL0		
Output frequency	SOF000 ~ SOF015	SOF0	*5	
Output current	SOC000 ~ SOC015	SOC0	*5	
Output voltage	SOV000 ~ SOV015	SOV0	*5	
Set frequency value	FSET000 ~ FSET015	FSET0	*5	
Run speed	RUNS000 ~ RUNS015	RUNS0	*5	
Motor torque	MOT000 ~ MOT015	MOT0	*5	
Regenerative brake	RBRK000 ~ RBRK015	RBRK0	*5	
Electronic thermal load factor	ELOF000 ~ ELOF015	ELOF0	*5	
Output current peak value	OCPV000 ~ OCPV015	OCPV0	*5	
Converter output voltage peak value	COPK000 ~ COPK015	COPK0	*5	
Input power	IPOW000 ~ IPOW015	IPOW0	*5	
Output power	OPOW000 ~ OPOW015	OPOW0	*5	
Alarm (latest Nos. 1 & 2)	A12D000 ~ A12D015	A12D0	*5	H/L
Alarm (latest Nos. 3 & 4)	A34D000 ~ A34D015	A34D0	*5	
Alarm (latest Nos. 5 & 6)	A56D000 ~ A56D015	A56D0	*5	
Alarm (latest Nos. 7 & 8)	A78D000 ~ A78D015	A78D0	*5	
Run command	RUNC000 ~ RUNC015	RUNC0		
Inverter status monitor	INVS000 ~ INVS015	INVS0		
Run frequency write (E ² PROM)	RWRT000 ~ RWRT015	RWRT0	*6	
Set frequency write (RAM and E ² PROM)	SFWE000 ~ SFWE015	SFWE0	*6	
Set frequency write (only RAM)	SFWR000 ~ SFWR015	SFWR0	*6	
Set frequency read (E ² PROM)	SFRE000 ~ SFRE015	SFRE0	*5	
Set frequency read (RAM)	SFRR000 ~ SFRR015	SFRR0	*5	
Error all clear	ERCL000 ~ ERCL015	ERCL0	*6*7	Ì
Inverter reset	RSET000 ~ RSET015	RSET0	*6*7	Ì
Parameter all clear	ALLC000 ~ ALLC015	ALLC0	*6*7	İ
User clear	ALLC000 ~ ALLC015	ALLC0	*6*7	İ
Extended Setup of Link Parameters	LNKP000 ~ LNKP015	LNKP0		1
Second Parameter Selection	SECP000 ~ SECP015	SECP0		İ

^{*1} For the detailed information about the parameters, refer to Mitsubishi Electric's multi-purpose inverter manuals.

^{*2} For the parameter 37 of FREQROL-S500 and E500, specify "P0037" has the device.

^{*7} For the data to be written, refer to the instruction manuals for various models of Mitsubishi general-purpose inverters (e.g., User Clear H9669).



• The following tables show the relations between data codes and settings as given in the instruction manuals for the above applicable devices and inverters.

[Parameter read/write]

Address

	Parameter		Data Code		
Function Number		Name	Read	Write	Extended Set Value for Link Parameter (Data Code: 7F/FF)
	(0)	Torque boost	00	80	0
Basic	1	Upper Frequency Limit	01	81	0
Functions	2	Lower Frequency Limit	02	82	0
	3	Base Frequency	03	83	0

:

[Devices Other Than Parameters]

- Select an applicable device from the supported device list.

No.		Item	Command Code	Details of Data	Number of Data Digits
	/	/		H0000: Communication Option Operation	
	l /	Read	H7B	H0001: External Operation	
1	Run Mode			H0002: Communication Operation (PU Connector)	4 digits
'	Kull Mode	1		H0000: Communication Option Operation	4 digits
		Write	HFB	H0001: External Operation	
				H0002: Communication Operation (PU Connector)	
2	Monitor Out	out Frequency [rpm]	Ш4Г	H0000 to HFFFF: Output Frequency (Hexadecimal)	4 digits
	IVIOTIILOI OUL	out Frequency [rpm]	ПОГ	Unit: 0.01 Hz	4 ulylis

.

^{*3} This device cannot be used as 32-bit data.

^{*4} This is a 32-bit device.

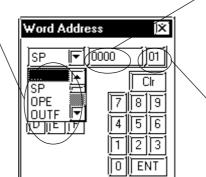
^{*5} No data can be written.

^{*6} No data can be read out.

Device Input Method

The device address input method on the GP screen creation software is described below:

Device To read/write parameters, select "...." or "SP".



Address

For a parameter, enter the parameter number. For a Pdevice, the address is fixed to 0037. In other cases, the address is fixed to 0.

Inverter unit No.



As shown in the following table, you may need to enter "9999" (meaning an invalid parameter setting or the like) depending upon the parameter types. In this case, the data written and read from the GLC/GP is as follows:

No.	Inverter Model	Inverter Setting	Written Data	Read Data
1	Other than FR-S500	9999	-1 (0xFFFF)	-1 (0xFFFF)
2	Other than FK-3500	8888	-16 (0xFFF0)	-16 (0xFFF0)
3	FR-S500		-1 (0xFFFF)	-1 (0xFFFF)
4	1 K-3000	888	-16 (0xFFF0)	-16 (0xFFF0)

 The system area (20 words) on the GP/GLC unit cannot be used. When the GP/GLC unit is offline, the system area select screen on the screen creation software looks and operates exactly like the case with the protocol that allows for using the system area. However, even if the system area is selected, it will remain deselected.

13.2.4 Environment Setup

The following tables show Digital's recommended Mitsubishi Electric inverter communication settings and their corresponding settings on the GP.

GP/GLC Sett	ngs	Inverter Settings		
Baud Rate	19200bps	Baud Rate	19200bps	
Data Length	8bit	Data Length	8bit	
Stop Bit	2bit	Stop Bit	2bit	
Parity Bit	Even	Parity Bit	Even	
Data Flow Control	ER			
Communication Format When using RS-422	RS-422 (4-wire)			
Unit No.*1	0 ~ 31	Unit No.	0 ~ 31	

■ Setting Method

Use the inverter's front keys to enter communication settings.

Use parameters 117 to 124 for the inverter communication settings, as follows:

No.	Parameter No.	Name	Inverter Setting Range
1	117	Station number	0 ~ 31
2	118	Communication Speed	484800bps 969600bps 1921920bps
3	119	Stop bit length/Data length	08/1 18/2 107/1 117/2
4	120	Parity check Presence/Absence	0: OFF 1: Even 2: Odd
5	121	Number of communication retries	0 ~ 10,9999 or *1
6	122	Communication check time internal	except 0 *2
7	123	Waiting time settings	0 ~ 150,9999 or
8	124	CR, LF Presence/Absence selection	0: CR/LF OFF 1: CR ON 2: CR/LF ON

^{*1} Depending on the environment, change the setting range.

^{*2} Depending on the environment, set any number except 0.

13.2.5 Error Codes

<Error Codes Specific to Inverters>

The following error numbers are supported by the inverters. Each error number (format = 02:OO: $\Delta\Delta$) will be displayed on the left bottom of the GLC/GP screens. (The "OO" characters reflect an error number displayed on the GLC/GP (shown in the table below) and the " $\Delta\Delta$ " characters reflect an inverter unit number where the error occurs.)

▼ Reference ★ Mitsubishi Electric Corporation; Each inverter series' Operation Manual

Error No.	Error Name	Causes
00	Computer NAK error	
01	Parity error	The GLC/GP parity settings are incorrect.
02	Sum check error	An error occurred on communication data due to noise, etc.
03	Protocol error	
04	Flaming error	An error occurred on communication data due to noise, etc., or the stop bit settings are incorrect.
05	Overrun error	
06		
07	Character error	
08		
09		
0A	Mode error	Parameter write was attempted when the mode is not the computer link operation mode or while the inverter is operating.
0B	Instruction code error	A non-existent address has been designated during screen creation.
0C	Data range error	When parameter or operation frequency data was written, the designated data was exceeded the correct setting range.
0D		
0E		
0F		

Depending on the inverter specifications, when multiple errors occurred simultaneously, the larger error number will be displayed.

13.3 Fuji Electric Inverters

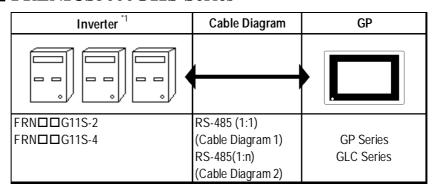
13.3.1 System Structure

The following describes the system configuration used when connecting the Fuji Electric inverters to the GP.

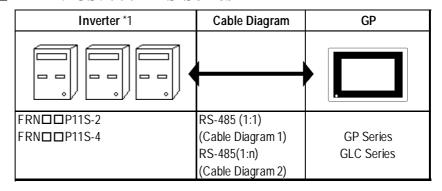


- If a communication error occurs while the unit is operating via RS-485, a stop command may not be recognized via RS-485. To prevent any accidents, be sure to use the inverter external signal terminal's forced stop function so that emergency stop will always be effective.
- If an alarm is reset with a run command sent via RS-485, the unit will suddenly restart. To prevent accidents, be sure to confirm that the run command is no longer being sent anymore.

■ FRENICS5000G11S Series



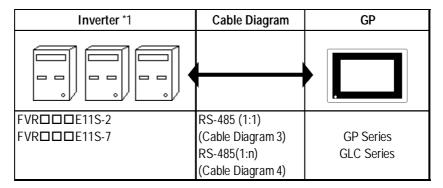
■ FRENICS5000P11S Series



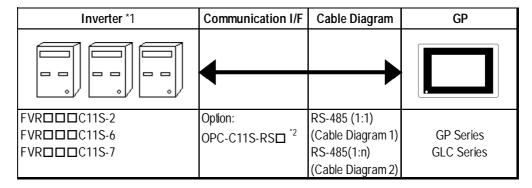
^{*1} The "\pi \pi \pi \pi" characters in the inverter model codes reflect applicable standard generator capacities.

^{*2} The "□" character in the option card model code reflects the classification of the card type (either A, B, or C) according to this series inverter capacities.

■ FVR-E11S Series



■ FVR-C11S Series (Optional for Communication)



^{*1} The "\pi \pi \pi \pi \pi aracters in the inverter model codes reflect applicable standard generator capacities.

^{*2} The "□" character in the option card model code reflects the classification of the card type (either A, B, or C) according to this series inverter capacities.

13.3.2 Cable Diagrams



The following cables are recommended:

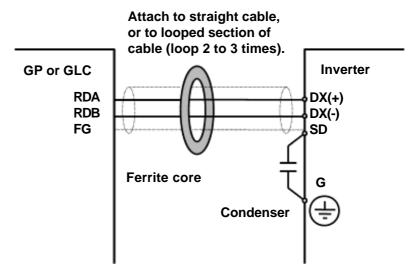
<For G11S, P11S, C11S>

Furukawa Electric UL AWM2789 1/0.65 mm² long distance braided shield cable

< For E11S>

Cable conforming to EIA568 standard (for 10BASE-T), as well as RJ45 connector

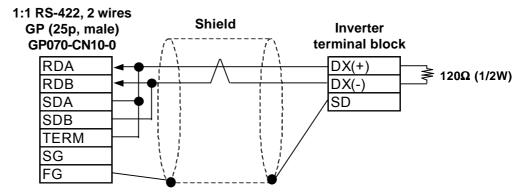
- The maximum length of a cable (transmission distance) is 500m.
- Depending on the usage environment, a unit may malfunction due to the noise generated from the inverter. In such a case, connect a ferrite core or condenser to the cable.



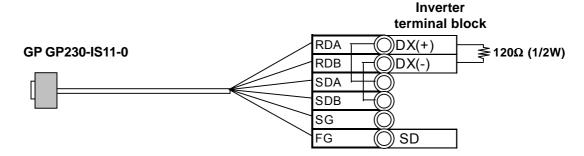
• A terminating resistor (100 Ω) has been embedded in the E11S. When connecting the inverter to the end of the cable, turn ON SW2 located below the connector.

Cable Diagram 1 (1:1)

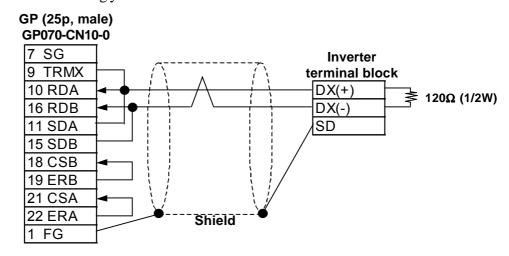
<When using Digital's RS-422 connector terminal adapter GP070-CN10-0>



<When using Digital's RS-422 connector terminal adapter GP070-CN10-0>

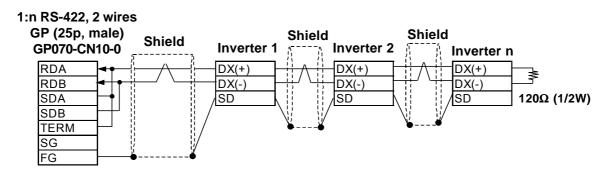


<When making your own cable>

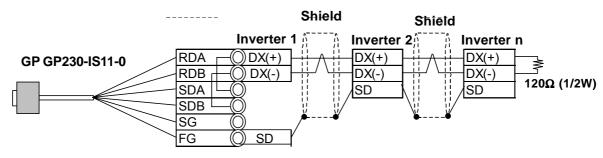


Cable Diagram 2 (1:n)

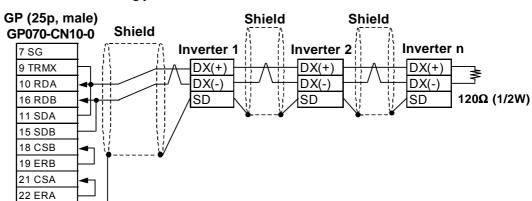
<When using Digital's RS-422 connector terminal adapter GP070-CN10-0>



<When making your own cable>



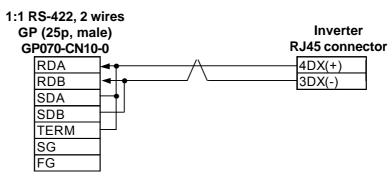
1 FG



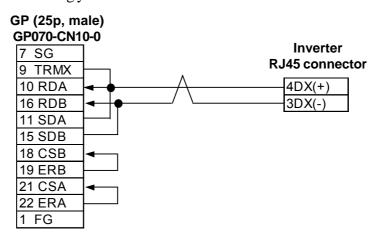
<When making your own cable>

Cable Diagram 3 (1:1)

<When using Digital's RS-422 connector terminal adapter GP070-CN10-0>



<When making your own cable>



Cable Diagram 4 (1:n)

<When using Digital's RS-422 connector terminal adapter GP070-CN10-0>

1:n RS-422, 2 wires **GP (25p, male)** GP070-CN10-0 **Inverter 1 Inverter 2** Inverter n RDA 4DX(+) 4DX(+) 4DX(+) RDB 3DX(-) 3DX(-) 3DX(-) SDA SDB **TERM** SG FG

<When making your own cable>

GP (25p, male) GP070-CN10-0 **Inverter 1** Inverter 2 Inverter n 7 SG 9 TRMX 4DX(+) 4DX(+) 4DX(+ 10 RDA 3DX(-) 3DX(-) 3DX(-) 16 RDB 11 SDA 15 SDB 18 CSB 19 ERB 21 CSA 22 ERA 1 FG

13.3.3 Supported Devices

■ FRENICS5000G11S/FRENICS5000P11S Series

Device	Bit Addresses	Word Addresses	Remarks	1
Basic function	F0000 ~ F4215	F00 ~ F42		
Terminal function	E0100 ~ E4715	E01 ~ E47		
Controlling function	C0100 ~ C3315	C01 ~ C33		
Motor 1	P0100 ~ P0915	P01 ~ P09		
High level function	H0300 ~ H3915	H03 ~ H39		L/H
Motor 2	A0100 ~ A1815	A01 ~ A18		
Option	00000 ~ 02915	000 ~ 029		
Command data	S0100 ~ S1115	S01 ~ S11		
Monitor data	M0100 ~ M4815	M01 ~ M48	*1	
Alarmreset		m00	*2	

^{*1} Data write cannot be performed.

Writing any data to "m00" will reset the alarm. However, data read cannot be performed.

■ FRENICS5000E11S Series

Device	Bit Addresses	Word Addresses	Remarks	3
Basic function	F0000 ~ F4215	F00 ~ F42		
Terminal function	E0100 ~ E4215	E01 ~ E42		
Controlling function	C0100 ~ C3315	C01 ~ C33		
Motor 1	P0100 ~ P1015	P01 ~ P10		L/H
High level function	H0100 ~ H4615	H01 ~ H46		L/11
Motor 2	A0100 ~ A1915	A01 ~ A19		
Command data	S0100 ~ S1115	S01 ~ S11		
Monitor data	M0100 ~ M4815	M01 ~ M48	*1	
Alarm reset		m00	*2	

^{*1} Data write cannot be performed.

Writing any data to "m00" will reset the alarm. However, data read cannot be performed.

^{*2 &}quot;m00" is a virtual device and is used to reset the history of alarms occurred on the inverter.

^{*2 &}quot;m00" is a virtual device and is used to reset the history of alarms occurred on the inverter.

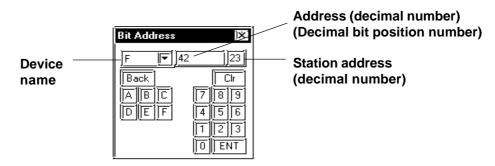
Device	Bit Addresses	Word Addresses	Remarks	5
Basic function	F0000 ~ F3615	F00 ~ F36		
Terminal function	E0100 ~ E0315	E01 ~ E03		
Controlling function	C0100 ~ C0715	C01 ~ C07		
Motor 1	P0000 ~ P0015	P00		L/H
High level function	H0100 ~ H2515	H01 ~ H25		L/11
Option	O0000 ~ O1115	000 ~ 011	*1	
Command data	S05 ~ S06	S05 ~ S06		
Monitor data	M0100 ~ M4815	M01 ~ M48	*1	
Alarm reset		m00	*2	

■ FRENICS5000G11S/FRENICS5000P11S Series

Writing any data to "m00" will reset the alarm. However, data read cannot be performed.



- The system area (20 words) cannot be used. Also, on the GP/GLC offline screens and the screen editor software's system area selection screen, the protocol display and operation will be the same as that which appears when the system area can be used. Even if the system area is selected on these screens, however, it will automatically be designated as not selected.
- Depending on the inverter series, supported functions and ranges will vary. For more detailed information, refer to each inverter series' operation manual.
- On GP-PRO/PB III, enter the device address and station address as follows:



^{*1} Data write cannot be performed.

^{*2 &}quot;m00" is a virtual device and is used to reset the history of alarms occurred on the inverter.

13.3.4 Environment Setup

■ FRENICS5000G11S/FRENICS5000P11S Series

GP/GLC Settings		Inverter Settings		Setting Function
Baud Rate	9600bps	Baud rate	9600bps	H34
Data Length	8bit	Data Length	8bit	H35
Stop Bit	2bit	Stop Bit	2bit	H37
Parity Bit	None	Parity Bit	None	H36
Data Flow Control	ER			
Communication Format	2-wire type			
Station Address	1 ~ 31	Station Address	1 ~ 31	H31

■ FVR-E11S Series

GP/GLC Settings		Inverter Settings		Setting Function
Baud Rate	9600bps	Baud rate	9600bps	H34
Data Length	8bit	Data Length	8bit	H35
Stop Bit	1bit	Stop Bit	1bit	H37
Parity Bit	None	Parity Bit	None	H36
Data Flow Control	ER			
Communication Format	2-wire type			
Unit No.	1 ~ 31	Station Address	1 ~ 31	H31

■ FVR-C11S Series

GP/GLC Settings		Inverter Sett	Inverter Settings	
Baud Rate	9600bps	Baud rate	9600bps	004
Data Length	8bit	Data Length	8bit	005
Stop Bit	2bit	Stop Bit	2bit	007
Parity Bit	None	Parity Bit	None	006
Data Flow Control	ER			
Communication Format	2-wire type			
Unit No.	1 ~ 31	Station Address	1 ~ 31	o01
		Optional selection	1	000



• The FVR-C11S Series requires a communication card (Model: OPC-C11S-RS*). Be sure to set "o00" to 1 to enable the RS-485 communication option.

13.3.5 Error Codes

<Error Codes Specific to Inverters>

The error codes specific to the inverters will appear on the GP screen's left bottom, as "Host Communication Error (02:**:##)". (The "**" characters indicate an error code specific to the inverter, and the "##" characters indicate the station address of the inverter on which an error occurred.)

■ Error Codes

Error Code	Error Name	Description
4AH	Format error	 Data transmission request statement characters are incorrect. The last character of the request statement is not in the correct position.
4BH	Command error	, A non-existent command has been sent.
4CH	Link priority error	, It was attempted to write command or operation command data, with the link option installed. (When the link option has been installed, the command and operation command data cannot be written via RS-485.)
4DH	No write authorization error	. It was attempted to write new function data during data write from the link option.
4EH	Function code error	. A non-existent function code has been requested.
4FH	Write inhibit error	. It was attempted to write an operation inhibit function or write inhibit during run function while the unit was operating.
50H	Data error	. Data that has been written was exceeded an effective range.
51H	Write error	. It was attempted to write new function data during writing another function.



- The latest communication error code has been stored in M26.
- Alarms occurred on the inverter will have either code numbers M16, M17, M18, or M19.

M16: Latest alarm

M17: Previous alarm

M18: Alarm before the previous alarm

M19: Alarm before the two old alarms

For more detailed information, refer to your inverter's operation manual.

14 Servos

This chapter describes system configurations using the GP/GLC and each manufacturer's servo, as well as applicable devices for those configurations. It also gives examples of environment setup.

14.1 Applicable Servos

The following table lists the servos that can be connected to the GP:

Company	Series	CPU *1	PLC Type on PRO/PB III
Matsushita Electric	MINAS-A	M□DA□□□□□	Matsushita Electric Industrial Co.'s
Industrial Co.	MINAS-S	MUDS	MINAS-A/S Series

^{*1} $\square\square\square\square\square\square\square$ varies depending upon the servo types.



14.2.1 System Structure

This subsection describes system configurations where the GP unit is connected to Matsushita Electric Industrial Co.'s servo.

■ MINAS-A Series

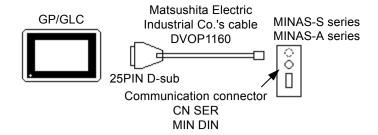
Servo	Cable Diagram	Applicable Cable	GP/GLC
	4		
	,		
M D D A D D D D *1	RS-232C (1:1)	DV0P1160 made by	
		Matsushita Electric	
		Industrial Co.	GP/GLC series
	RS-232C (1:n)	DV0P1160 made by	GF/GLC Sches
		Matsushita Electric	
		Industrial Co.	

^{*1 \(\}sum \sum \sum \sum \sum \text{ land} \sum \sum \text{ varies depending upon the servo types. For detailed information, refer to the manual or catalog of the servo used.

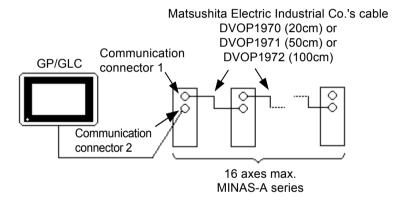
■ MINAS-S Series

Servo	Cable Diagram	Applicable Cable	GP/GLC
	•		
MUDS III III III III III III III III III I	RS-232C (1:1)	DV0P1160 made by Matsushita Electric Industrial Co.	GP/GLC series

^{*1 \(\}sum \sum \sum \sum \sum \text{ land} \sum \sum \text{ varies depending upon the servo types. For detailed information, refer to the manual or catalog of the servo used.



- Connect a MINAS-S series servo to the communication connector CN SER.
- Connect a MINAS-A series servo to the communication connector 2 CN SER.
- 1:n connection (MINAS-A series only)



Note:

• In the case of 1:n connection, if the tag setup specifies that the parameter information on multiple servos is read or written on the same screen, it may take several seconds for display updating or other operations. If the parameter information from more than one servo is read out on the same screen, it will take, normally, approximately 0.5 seconds before the parameter information on each servo has been read out. It is recommended that the parameters for multiple servos be set on their respective screens. This will allow more efficient data checking and be useful for other purposes.

The following table shows the range of devices that are supported by the GP:

■ MINAS-S/A Series

may be specified at the first address of the system area.

Device	Bit Addresses	Word Addresses	Remarks
Driver model readout		05_00 ~ 05_05	*1
Status readout (control mode)		20_00	Bit] 5] *1*4
Status readout (status)		20_21	Bit] 5] *1*4
Command pulse counter readout		21_00	Bit 31) *1*3 L/H
FB pulse counter readout		22_00	Bit 31) *1*3 L/H
Current speed readout		24_00	Bit 1 5 1 *1
Current torque output readout		25_00	Bit] 5] *1
Current deviation counter readout		26_00	Bit 31) *1*3 L/H
Input signal readout		27_00	Bit 31) *1*3 L/H
Output signal readout (data)		28_00	Bit 31) *1*3 L/H
Output signal readout (warning data)		28_01	Bit 1 5 1
Current speed readout		29_00	Bit 1 5 1 *1
Current torque readout		29_01	Bit 1 5 1
Current deviation counter readout		29_02	Bit 31) *1 *3 L/H
Status, input signal, and output signal readout (control mode)		2A_00	Bit 1 5 1 *4
Status, input signal, and output signal readout (status)		2A01	Bit 1 5] *1 *4
Status, input signal, and output signal readout (input signal)		2A_02	<u>Bit 31</u> *1 *3 L/H
Status, input signal, and output signal readout (output signal)		2A_03	<u>Bit 31</u> *1 *3 L/H
Status, input signal, and output signal readout (warning data)		2A_04	<u>Bit 1 5 </u> *1
Absolute encoder readout (encoder ID)		2D_00	Bit] 5] *1 *6
Absolute encoder readout (status)		2D_01	Bit] 5] *1*6
Absolute encoder readout (1-rotation data)		2D_02	Bit 31) *1 *5 *6 L/H
Absolute encoder readout (multi-rotation data)		2D_03	Bit] 5] *1 *6
Individual readout/write of parameter		80_00 ~ 80_7F	Bit F *1
Write of parameter to EEPROM		84_00	*2 *7
Current alarm data readout		90_00	Bit 1 5 *1 *4
Individual readout of user alarm history			_

(district KON)		
Clearing of alarm	 94_00	*2 *7
Clearing of absolute encoder	 9B_00	*2 *6 *7
Individual readout of user parameter (parameter value)	 B0_00 ~ B0_07F	Bit F7 *1
Individual readout of user parameter (MIN value)	 B0_100 ~ B0_17F	Bit F7 *1
Individual readout of user parameter (MAX value)	 B0_200 ~ B0_27F	Bit F7 *1
Individual readout of user parameter (attribute)	 B0_300 ~ B0_37F	Bit F7 *1
Individual readout of user parameter page (parameter value)	 B1_000 ~ B1_07F	Bit F7 *1
User parameter page readout (MIN value)	 B1_010 ~ B1_17F	Bit F 1
User parameter page readout (MAX value)	 B1_020 ~ B1_27F	Bit F 1
User parameter page readout (attribute)	 B1_030 ~ B1_37F	Bit F 1
User parameter page write	 B2_000 ~ B2_07F	Bit F] *2

^{*1} Exclusively for readout

^{*2} Exclusively for write

^{*3 32-}bit device

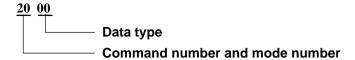
^{*4} Handled as byte data by the AC servo, but as word data by the GP.

^{*5} Used as 24-bit data by the AC servo, but as a double-word device by the GP.

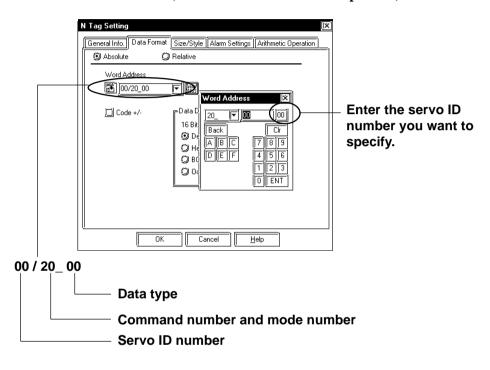
^{*6} Only the MINAS-A series is supported.

^{*7} Writing arbitrary data executes the command.

mode numbers."



• When creating part or tag on the screen creation software, specify the controller unit number when entering an address. If not, the last entered unit number is assumed. (The default value at startup is 00.)



AC Servo Mo	otor Driver	GP/GLC	Description	ll one	D/W	Doublesslave
Command	Mode	Device	Description	Item	R/W	Particulars
0	5	05_00 ~ 05_05	Driver model readout		R	*1
	0	20_00	Ctatus readout	Control mode	R	*2 *5
	0	20_21	-Status readout	Status	R	*2 *5
	1	21_00	Command pulse counter readout		R	*3
	2	22_00	FB pulse counter readout		R	*3
	4	24_00	Current speed readout		R	*1
	5	25_00	Current torque output readout		R	*1
	6	26_00	Current deviation counter readout		R	*3
	7	27_00	Input signal readout		R	*3
	8	28_00	Output signal readout	Data	R	*3 *5
	0	28_01	Oulput signar readout	Warning data	R	*1 *5
2	9	29_00		Data (speed)	R	*1 *5
		29_01	Current speed/torque/deviation counter readout	Data (torque)	R	*1 *5
		29_02	counter readout	Data (deviation)	R	*3 *5
		2A_00		Control mode	R	*2 *5
		2A01		Status	R	*2 *5
	А	2A_02	Status/input signal/output signal readout	Input signal	R	*3 *5
		2A_03	readout	Output signal	R	*3 *5
		2A_04		Warning data	R	*1 *5
		2D_00		Encoder ID	R	*1 *5
	D	2D_01	A book to a mandar vandant	Status	R	*1 *5
	D	2D_02	Absolute encoder readout	1-rotation data	R	*4 *5
		2D_03		Multi-rotation data	R	*1 *5
8	0 and 1	80_00 ~ 80_7F	Individual readout/write of parameter		R/W	*1 *8
	4	84_00	Write of parameter to EEPRPM		W	*1
	0	90_00	Current alarm data readout		R	*2
	1	91_00 ~ 91_0F	Individual readout of user alarm	History No.	R	*2 *5
	1	91_11 ~ 91_1F	history	Alarm No.	R	*2 *5
9	2	92_01 ~ 92_14	Batch readout of user alarm history		R	*2
	3	93_00	Clearing of user alarm history		W	*1
	4	94_00	Clearing of alarm		W	*1
	В	9B_00	Clearing of absolute encoder		W	*1 *11

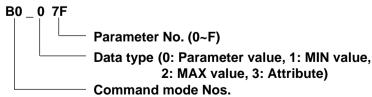
		B0_00 ~ B0_0/F		Parameter value	R	^1 ^/ *9
0	0	B0_100 ~ B0_17F	Individual readout of user parameter	MIN value	R	*1 *7 *9
	0	B0_200 ~ B0_27F		MAX value	R	*1 *7 *9
	B0_300 ~ B0_37F		Attribute	R	*1 *7 *9	
В		B1_000 ~ B1_07F		Parameter value	R	*1 *7 *10
	1	B1_010 ~ B1_17F	Hear parameter page readout	MIN value	R	*1 *7 *10
	'	B1_020 ~ B1_27F	User parameter page readout	MAX value	R	*1 *7 *10
		B1_030 ~ B1_37F		Attribute	R	*1 *7 *10
	2	B2_000 ~ B2_07F	User parameter page write		W	*1 *8

^{*1} Word device

- *2 Used as byte data by the AC servo motor driver, but as a double-word device by the GP.
- *3 Double-word device
- *4 Used as 24-bit data by the AC servo motor driver, but as a double-word device by the GP.
- *5 The device names are same, but the device codes are different for each address.
- *6 Use the same command when reading out the driver model. Therefore, the data that can be read out from this device is the same as the driver model readout.
- *7 For the parameter numbers and other detailed information, refer to the organization and list of parameters in the instruction manual for the AC servo driver.
- *8 Specify a device as follows:



*9 Specify a device as follows:



*10 Specify a device as follows:



The following tables show the communication settings for the servo and the corresponding settings for the GP, which are recommended by Digital:

■ MINAS-A Series

GP Setup		PLC Setup		
Baud Rate	19200bps	Baud Rate	9600bps	
Data Length	8 bits (fixed)			
Stop Bit	1 bit (fixed)			
Parity Bit	None (fixed)			
Data Flow Control	ER Control			
Communication Format (RS-232C)	RS-232C			
Unit No.	0	ID Rotary Switch *1	0	

^{*1.} Set the ID No. to 0.

■ MINAS-S Series

GP Setup		PLC Setup		
Baud Rate	19200bps	Baud Rate	9600bps	
Data Length	8 bits (fixed)			
Stop Bit	1 bit (fixed)			
Parity Bit	None (fixed)			
Data Flow Control	ER Control			
Communication Format (RS-232C)	RS-232C			
Unit No.	0			

■ Servo Error Codes

An error code specific to the servo is displayed as "Host communication error (02:**:##)" in the lower left part of the GP screen. "**" stands for the error code specific to the servo, and "##" stands for the servo unit number where the error has occurred.

Error No.	Description	Causes
0x90	RS485 error	The unit that has been specified in the 1:n connection
0.770	NO400 error	cannot be found.
0xA0	Command error	A command that is not supported has been transmitted.
0xC0	Data error	The written data exceeds the specified range.

The following describes the System Design and Cable Diagram used when conecting a PLC and a Handy Type GP.

15.1 Connecting a GP-H70 Series Unit

15.1.1 Connecting a GP-H70 Series Unit

■ GP-H70 Optional Items

The following optional cables and cable conversion adapters can be used to connect a PLC to a GP-H70.

ITEM	DESCRIPTION
GP-H70 Option Cable	Included in this cable are the power line to the GP-H70; the
[RS-232C type]	communications lines(RS-232C) used with various Host (PLC)s; the GP-
GPH70-C232-0 (3m)	H70's DOUT signal line, as well as other lines. This cable has no PLC
GPH70-C232-MS (10m)	connector attached so the user can set up the cable's PLC side wires to
	suit any type or PLC connector.
GP-H70 Option Cable	Included in this cable are the power line to the GP-H70; the
[RS-422 type]	communications lines(RS-422) used with various Host (PLC)s; the GP-
GPH70-C422-0 (3m)	H70's DOUT signal line, as well as other lines. This cable has no PLC
GPH70-C422-MS (10m)	connector attached so the user can set up the cable's PLC side wires to
	suit any type or PLC connector.
GP-H70 Option Cable	Included in this cable are the power line to the GP-H70; the commications
[RS-232C type]	lines (RS-232C) used with various Host (PLC)s; the GP-H70's DOUT
GPH70-D232 (3m)	signal line, as well as other lines. This cable's PLC side connector is a
GPH70-D232-MS (10m)	standard Dsub25 pin type.
GP-H70 Option Cable	Included in this cable are the power line to the GP-H70; the commications
[RS-422 type]	lines (RS-422) used with various Host (PLC)s; the GP-H70's DOUT signal
GPH70-D422 (3m)	line, as well as other lines. This cable's PLC side connector is a standard
GPH70-D422-MS (10m)	Dsub25 pin type.
GP-H70 Conversion Adapter	This adapter is used to convert the wiring from the GP-H70 to either a
[RS-232C type]	Dsub25 or a standard terminal block connector. Digital's 232C cable
GPH70-AP232-0	(GP410-IS00-O) can be connected to the D-sub25 connector, and Digital's
	GPH70-D232 and GPH70-D232-MS cable can be used to connect the
	adapter to the GP-H70 unit.
GP-H70 Conversion Adapter	This adapter is used to convert the wiring from the GP-H70 to a standard
[RS-422 type]	terminal block connector. Digital's GPH70-D422 and GPH70-D422-MS
GPH70-AP422-0	cable can be used to connect the adapter to the GP-H70 unit.

the GP" includes connection diagram(s) of the wiring connections used between the GP and PLC. However, the pin number assigned to each connector pin on the Handy Type GP's interface will differ from that of other GP series unit. Therefore, be sure to use Connector Pin Comparison Tables 1 and 2 below when creating a cable used between the GP-H70 and the PLC. An additional cable will be required to supply electric power

Comparison Tables 1 and 2 correspond to option cables <GPH70-C232-0/MS> and <GPH70-C422-0/MS>, respectively.

Comparison Table 1 GPH70-C232-0/MS (RS-232C)

to the GP-H70.

GPH70 Pin No.	Signal name	Wire Color	Mark Band Color/Q'ty	Non-GPH70 Pin No.
1	RS	Purple	White (1band)	Pin 4
2	CS	Orange	White (2bands)	Pin 5
3	CD	Brown	White (2 bands)	Pin 8
19	SD	White	Blue (1band)	Pin 2
20	RD	Blue	Red (2bands)	Pin 3
21	ER	Green	white (2 bands)	Pin 20
22	SG	Black		Pin 7
case	FG	Outer Shield		Pin 1

Comparison Table 2 GPH70-C422-0/MS (RS-422)

GPH70 Pin No.	Signal name	Wire Color	Mark Band Color/Q'ty	Non-GPH70 Pin No.
5	TRMX	Pink		Pin 9
6	RDA	White		Pin 10
7	SDA	Orange	White (1bands)	Pin 11
8	CSA	Brown	White (1bands)	Pin 21
9	ERA	Red	White (1bands)	Pin 22
24	RDB	Blue	Red (1 bands)	Pin 16
25	SDB	Green	White (1bands)	Pin 15
26	CSB	Gray	White (1bands)	Pin 18
27	ERB	Black	White (1bands)	Pin 19
22	SG	Black		Pin 7
Case	FG	Outer Shield		Pin1



- Be sure to connect this unit's SG/GND (Signal Ground) terminal to the other unit's Signal Ground terminal.
- When making a cable, please be aware of the following:

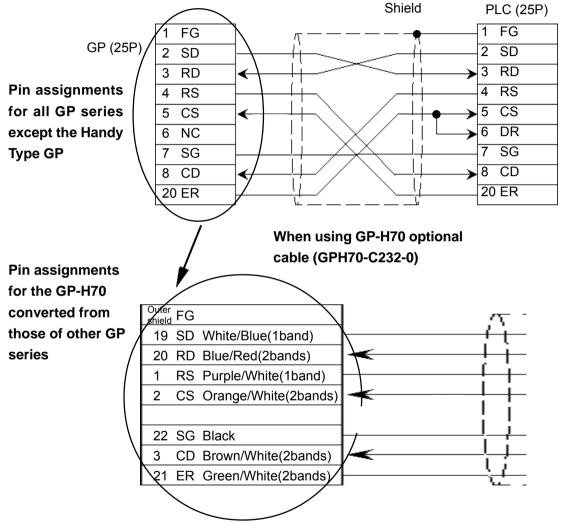
<For RS-422 Connection>

• The following pairs of pin #'s must be connected to each other

1 Ro-232C Connection/

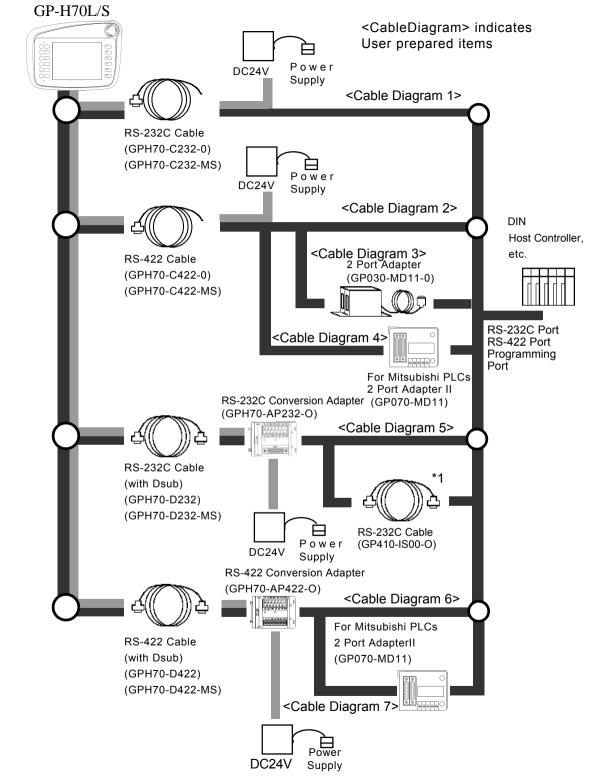
• Do not connect #5 (TRMX), #6 (RDA), #7 (SDA), #25 (SDB), #24 (RDB), #26 (CBS), #27 (ERB), #8 (CSA), #9 (ERA).

The following describes an example of converting the pin assignments for other GP series to those on the Handy Type GP. The following example connects a GP-H70 with a Mitsubishi PLC (p.2-1-10 <Cable Diagram 1>).





- If any wires in the above table's "Wire Color" column are not used, be sure those wires do not touch other signal wires or the connector case.
- Be sure to connect the cable's outer shield to the FG wire (field ground).



described in "15.1.2 GP-H70 System Design" is shown below. This connection diagram only shows those sections used for connecting to the PLC.



- Be sure to connect this cable while the GP-H70's power is turned OFF, otherwise an electrical shock may occur.
- When live lines are either connected or disconnected, if a difference in potential is created between the GP-H70 and the connected device(s), the driver IC may be damaged. Therefore, be sure to connect this cable while the GP-H70's power is turned OFF.
- Since the GP-H70 interface signal wires and the GP power supply wires are contained inside a single cable, power supply noise may occur. Therefore, be sure to take appropriate precautions to prevent the connected device(s) from being interrupted by noise. (i.e. install a noise filter, etc.)

M2 (1011)

GP-H70



GP Series other than Handy Type GP Pin No.

GPH70	Signal Name	Wire Color	Mark Band Color/Q'ty	DSUB25P		
case	FG	Outer Shield	-	1	*1	
19	SD	White	Blue(1band)	2		
20	RD	Blue	Red(2bands)	3		
1	RS	Purple	White(1band)	4		
2	CS	Orange	White(2bands)	5		
	NC			6		
22	SG	Black	-	 7	*2	
		Inner Shield	-			
3	CD	Brown	White(2bands)	8		
	NC			9		
	NC			10		
	NC			11		
16	24V	Blue	-	12	*3	
17		Green	-		4	*5
18		Gray	-		+	
34	0V	Orange	-	13	*4	PLC
35		Brown	-			
36		Red	-			
	NC			14		
10	DOUT1C	Pink	-	15		
28	DOUT1GND	Purple	i	16		
14	EMG A	Red	White(1band)	17		
11	DOUT 0 C	White	-	18		
29	DOUT 0 GND	Blue	Red(1band)	19		
21	ER	Green	White(2bands)	20		
12	OP.C	Orange	White(1band)	21		
30	OP.GND	Green	White(1band)	22		
31	BUZ GND	Gray	White(1band)	23		
32	EMG B	Black	White(1band)	24		
13	BUZ OUT	Brown	White(1band)	25		

^{*1} Connect the cable's outer shield to Pin 1.

^{*5} Refer to the cable diagrams in Chapter 2 PLC-GP Connection.



- The wiring arrangement shown above cannot be used with the RS-232C cable's Conversion Adapter.
- To connect the Conversion Adapter, the wiring diagram in the GP-H70's RS-232 Conversion Adapter's Operation Instructions manual must be used.

^{*2} Connect the cable's inner shield and all black wires to Pin 7.

^{*3} Connect all the blue, green, and gray wires to Pin 12.

^{*4} Connect all the orange, brown, and red wires to Pin 13.

GP-H70

GP Series other than Handy Type GP Pin No.

GPH70 Signal Name Wire Color Mark Band Color/Q'ty DSUB25P case FG Shield - 1 1 *1 10 DOUT 1C Yellow Black(1band) 2 *1 *1 28 DOUT 1 GND Pink Black(1band) 3 3 *1 DOUT 0 GND White (1band) 4 *5 *2 *3 *3 *6 *2 *3 *8 *5 *3 *3 *3 *4 *2 *4 *4 *4 *3 *4 <th></th>	
10	
28 DOUT 1 GND Pink Black(1band) 11 DOUT 0 C Purple White(1band) 29 DOUT 0 GND White Blue(1band) 12 OP. C Blue Red(2bands) 6 RSOR Black - 30 OP. GND Orange White(2bands) 5 TRMX Pink - 6 RDA White - 7 SDA Orange White(1band) 16 24V Pink Black(2bands) 17 White Black(1band) 18 Orange Black(1band) 34 OV Purple White(2bands)	
11 DOUT 0 C Purple White(1band) 4 29 DOUT 0 GND White Blue(1band) 5 12 OP. C Blue Red(2bands) 6 22 SG Black - 7 30 OP. GND Orange White(2bands) 8 5 TRMX Pink - 9 6 RDA White - 10 7 SDA Orange White(1band) 11 16 24V Pink Black(2bands) 12 17 White Black(1band) 13 *2 18 OV Purple White(2bands) 13 *3	
29 DOUT 0 GND White Blue(1band) 5 12 OP. C Blue Red(2bands) 6 22 SG Black - 7 30 OP. GND Orange White(2bands) 8 5 TRMX Pink - 9 6 RDA White - 10 7 SDA Orange White(1band) 11 16 24V Pink Black(2bands) 12 17 White Blue(2bands) 12 18 Orange Black(1band) 13 *3	
12 OP. C Blue Red(2bands) 6 22 SG Black - 7 30 OP. GND Orange White(2bands) 8 5 TRMX Pink - 9 6 RDA White - 10 7 SDA Orange White(1band) 11 16 24V Pink Black(2bands) 12 17 White Blue(2bands) 12 18 Orange Black(1band) 13 *3	
22 SG Black - 7 30 OP. GND Orange White(2bands) 8 5 TRMX Pink - 9 6 RDA White - 10 7 SDA Orange White(1band) 11 16 24V Pink Black(2bands) 12 17 White Blue(2bands) 12 18 Orange Black(1band) 13 *3	
30	
5 TRMX Pink - 9 6 RDA White - 10 7 SDA Orange White(1band) 11 16 24V Pink Black(2bands) 12 17 White Blue(2bands) 12 18 Orange Black(1band) 13 *3	
6 RDA White - 10 7 SDA Orange White(1band) 11 16 24V Pink Black(2bands) 12 17 White Blue(2bands) 0range Black(1band) 13 *3	
7 SDA Orange White(1band) 11 16 24V Pink Black(2bands) 12 17 White Blue(2bands) 0range Black(1band) 34 0V Purple White(2bands) 13 *3	
16 24V Pink Black(2bands) 17 White Blue(2bands) 18 Orange Black(1band) 34 0V Purple White(2bands) 13 *3	
17 White Blue(2bands) 18 Orange Black(1band) 34 OV Purple White(2bands) 13 *3	
18 Orange Black(1band) 34 OV Purple White(2bands) 13 *3	
34 0V Purple White(2bands) 13 *3	
34 0V Purple White(2bands) 13 *3	C
Dlug Block/(hand)	.0
35	\blacksquare
36 Green Black(1band)	ΠП
NC - 14	
25 SDB Green White(1band) 15	
24 RDB Blue Red(1band) 16	
14 EMG A Gray White(2bands) 17	
26 CSB Gray White(1band) 18	
27 ERB Black White(1band) 19	
NC 20	
8 CSA Brown White(1band) 21	
9 ERA Red White(1band) 22	
31 BUZ GND Brown White(2bands) 23	
32 EMG B Red White(2bands) 24	
13 BUZ OUT Green White(2bands) 25	

^{*1} Connect the cable's outer shield to Pin 1.

^{*4} Refer to the cable diagrams in Chapter 2 PLC-GP Connection.

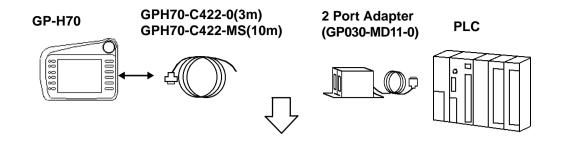


- The wiring arrangement shown above cannot be used with the RS-232C cable's Conversion Adapter.
- To connect the Conversion Adapter, the wiring diagram in the GP-H70's RS-232 Conversion Adapter's Operation Instructions manual must be used.
- The customer will need to perform this cable's PLC connector wiring. The

^{*2} Connect all the pink(black/1band), white(blue/2band) and orange(black/1band) wires to Pin 12.

^{*3} Connect all the purple(white/2bands), blue(black/1band) and green(black/1band) wires to Pin 13.

GPH70-C422-O (3m) or GPH70-C422-MS (10m)



Signal Nane	Wire Color	Mark Band Color/Q'ty	Pin No.		Shield		Port Adapt P030-MD11	
Shield	Outer Shield						Pin No.	
SG	Black		22	<u> </u>	<u> </u>	•	7	
TRMX	Pink		5	├ ─┐ []	\wedge	¦	8	
RDA	White		6		$\overline{}$		3	
RDB	Blue	Red(1band)	24	 	$\vdash / \land \searrow$	 	16	
SDA	Orange	White(1band)	7	 			2	
SDB	Green	White(1band)	25		<u> </u>	 	15	
CSA	Brown	White(1band)	8		\wedge	 •	5	
_]		¦	4	
CSB	Gray	White(1band)	26	 	_/ \	•	18	
				. Y	لالا		17	

[GP-H70 series]

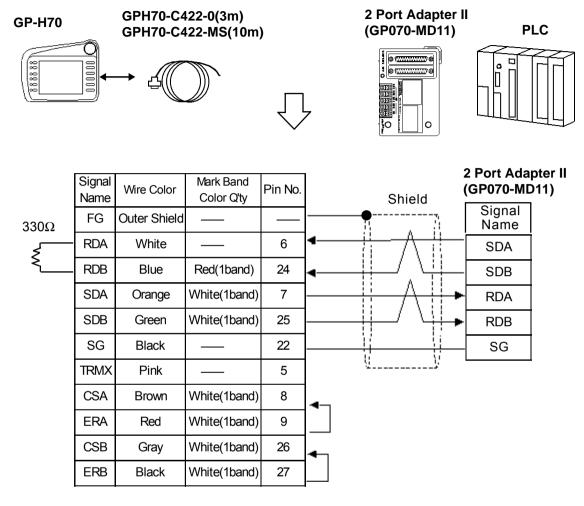
Pin numbers shown here represent the GP-H70 unit's connection pins.

[2 Port Adapter]

Pin numbers shown here represent the Digital's 2 Port Adapter's (GP030-MD11-0) connection pins.



Be sure the wires do not touch other signal wires or connector case when they are not used.



[GP-H70 series]

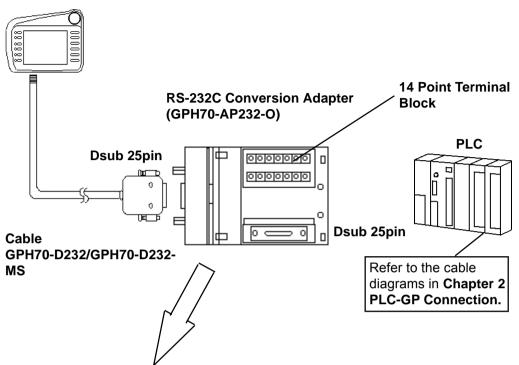
Pin numbers shown here represent the GP-H70 unit's connection pins.



- Instead of the TRMX pin, connect the 2 Port Adapter II's 330 W termination resistor to the RDB and RDA pins.
- GP-PRO/PBIII for Windows Ver.3.0 or highr required. (Protocol version should be V3.20 or higher.)
- Select "2PORT+GPH" via "Adapter Mode/ CPU Direct Mode" on GP's offline screen.
- Be sure the wires do not touch other signal wires or connector case when they are not used.

(GI 1170-AI 252-0) with GI 1170-D252 (Sill) of GI 1170-D252-MS (1011)

GP-H70



Dsub Connector

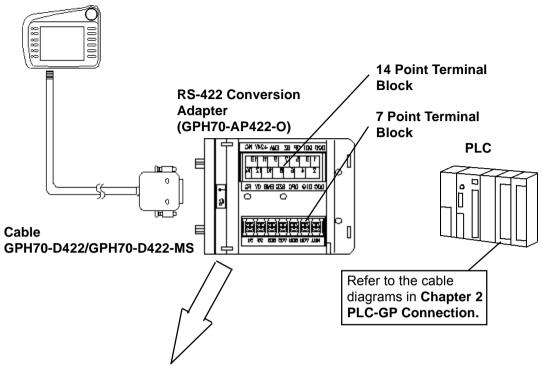
Pin No.	Signal Name
1	FG
2	SD
3	RD
4	RS
5	CS
7	SG
8	CD
14	+5V(out)
20	ER

14 Point Terminal Block

14 Point Terminal Block			
Pin No.	Signal Name(Drawing Name)		
1	DOUT0.C	(DO0)	
2	DOUT0.GND	(D0G)	
3	DOUT1.C	(D01)	
4	DOUT1.GND	(D1G)	
5	OP.C	(OP)	
6	OP.GND	(OPG)	
7	BUZZ OUT	(BZ)	
8	BUZZ GND	(BZG)	
9	EMG A	(EMA)	
10	EMG B	(EMB)	
11	+24V(in)	(+24V)	
12	0V	(0V)	
13	NC	(NC)	
14	FG	(FG)	

) with 31 11, 6 2 122 (811) of 31 11, 6 2 122 1418 (1011)

GP-H70



7 Point Terminal Block

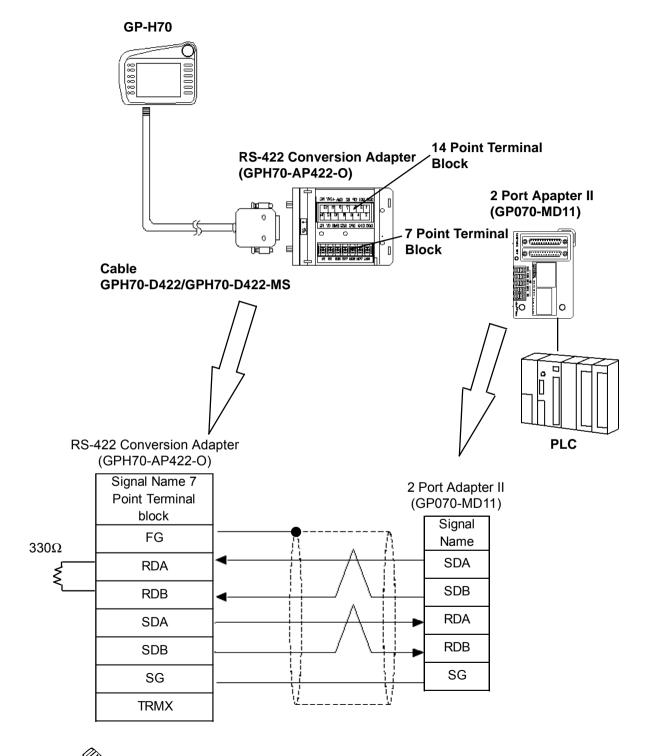
Pin No.	Signal Name
1	FG
2	SG
3	SDB
4	SDA
5	RDB
6	RDA
7	TRMX(TRM)*1

*1 Connecting (shorting) the TRMX and RDA pins provides 100Ω of terminating between pins RDA and RDB.

14 Point Terminal Block

Pin No. Signal Name(Drawing Name) 1 DOUTO.C (DO0) 2 DOUTO.GND (DOG) 3 DOUT1.C (D01) 4 DOUT1.GND (D1G) 5 OP.C (OP) 6 OP.GND (OPG)	17 I OIIIL ICITIIIIAI DIOCK			
2 DOUTO.GND (D0G) 3 DOUT1.C (D01) 4 DOUT1.GND (D1G) 5 OP.C (OP)	Signal Name(Drawing Name)			
3 DOUT1.C (D01) 4 DOUT1.GND (D1G) 5 OP.C (OP)				
4 DOUT1.GND (D1G) 5 OP.C (OP)				
5 OP.C (OP)				
6 OP.GND (OPG)				
7 BUZZ OUT (BZ)				
8 BUZZ GND (BZG)				
9 EMG A (EMA)				
10 EMG B (EMB)				
11 +24V(in) (+24V)				
12 0V (0V)				
13 NC (NC)				
14 FG (FG)				

0) and 2 fort Adapter II with Of 11/0-D422 (311) of Of 11/0-D422-WS (1011)



Instead of the TRMX pin, connect the 2 Port Adapter II's 330Ω termination

15.2

Connecting a GP2000H Series Unit

15.2.1

Connecting a GP2000H Series Unit

■ GP2000H Optional Items

The following optional cables and cable conversion adapters below can be used to connect a PLC to a GP2000H.

ITEM	DESCRIPTION
GP2000H Series Special Purpose	Included in this cable are the power line to the GP2000H; the
RS-232C Cable	communications lines(RS-232C) used with various Host (PLC)s; the
GP2000H-C232-3M (3m)	GP2000H's DOUT signal line, as well as other lines. This cable has no
GP2000H-C232-10M (10m)	PLC connector attached so the user can set up the cable's PLC side wires
	to suit any type or PLC connector.
GP2000H Series Special Purpose	Included in this cable are the power line to the GP2000H; the
RS-422 Cable	communications lines(RS-422) used with various Host (PLC)s; the
GP2000H-C422-3M (3m)	GP2000H's DOUT signal line, as well as other lines. This cable has no
GP2000H-C422-10M (10m)	PLC connector attached so the user can set up the cable's PLC side wires
	to suit any type or PLC connector.
GP2000H Series Special Purpose	Included in this cable are the power line to the GP2000H; the
RS-232C Dsub Cable	commnications lines (RS-232C) used with various Host (PLC)s; the
GP2000H-D232-3M (3m)	GP2000H's DOUT signal line, as well as other lines. This cable's PLC side
GP2000H-D232-10M (10m)	connector is a standard Dsub37 pin type.
GP2000H Series Special Purpose	Included in this cable are the power line to the GP2000H; the
RS-422 Dsub Cable	commnications lines (RS-422) used with various Host (PLC)s; the
GP2000H-D422-3M (3m)	GP2000H's DOUT signal line, as well as other lines. This cable's PLC side
GP2000H-D422-10M (10m)	connector is a standard Dsub37 pin type.
GP2000H Series RS-232C	This adapter is used to convert the wiring from the GP2000H to either a
Conversion Adapter	Dsub37 or standard a terminal block connector. Digital's 232C cable
GP2000H-AP232	(GP410-IS00-O) can be connected to the Dsub25 connector, and Digital's
	GP2000H-D232-3M/10M cable can be used to connect the adapter to the
	GP2000H unit.
GP2000H Series RS-422	This adapter is used to convert the wiring from the GP2000H to either a
Conversion Adapter	Dsub25 or standard a terminal block connector. Digital's GP2000H-D422-
GP2000H-AP422	3M/10M cable can be used to connect the adapter to the GP2000H unit.
GP2000H Series Special Purpose	This cable is connected to the GP2000H and GP-H70 unit's conversion
RS-232C Cable for GP-70H	adapter (GPH70-AP232-0).
Conversion Adapter	
GP2000H-AP70CB-D232-3M *1	
GP2000H Series Special Purpose	This cable is connected to the GP2000H and GP-H70 unit's conversion
RS-422 Cable for GP-70H	adapter (GPH70-AP422-0).
Conversion Adapter	
GP2000H-AP70CB-D422-3M *1	

^{*1} When using this cable, some of the GP2000H unit's external output features are not available.

■ Connection Methods

The optional cable (GP2000H-C232-3M/10M, GP2000H-C422-3M/10M) will require some preparation before it can be used. Digital's Connection Manual "Chapter 2. Connecting Each PLC with the GP" includes connection diagram(s) of the wiring connections used between the GP and PLC. However, the pin number assigned to each connector pin on the Handy Type GP's interface will differ from that of other GP series unit. Therefore, be sure to use Connector Pin Comparison Tables 1 and 2 below when creating a cable used between the GP2000H and the PLC. An additional cable will be required to supply electric power to the GP2000H.

Comparison Tables 1 and 2 correspond to option cables <GP2000H-C232-3M/10M> and <GP2000H-C422-3M/10M>, respectively.

Comparison Table 1 GP2000H-C232-3M/10M (RS-232C)

_				
I/F	GP2000H Pin No.	Signal Name	Wire Color	Non-GP2000H Series Pin No.
DC24V I/F	3	FG	Shield	1
	1	RS	Red	4
	2	SD	Blue	2
Coriol	3	CS	Brown	5
Serial I/F	4	RD	Orange	3
	5	CD	Purple	8
	6	ER	Gray	20
	8	SG	White	7

Comparison Table 2 GP2000H-C422-3M/10M (RS-422)

I/F	GP2000H Pin No.	Signal Name	Wire Color	Non-GP2000H Series Pin No.
DC24V I/F	3	FG	Shield	1
	8	SG	Gray	7
	13	RDA	White	10
	14	REB	Black	16
Serial	15	SDA	Yellow	11
J/F	16	SDB	Green	15
	17	CSA	Red	21
	18	CSB	Blue	18
	19	ERA	Brown	22
	20	ERB	Orange	19



- Be sure to connect this unit's SG/GND (Signal Ground) terminal to the other unit's Signal Ground terminal.
- When making a cable, please be aware of the following:

<For RS-422 Connection>

• The following pairs of pin #'s must be connected to each other ...#17 (CSA) <->#19 (ERA) ...#18 (CSB) <-> #20 (ERB)

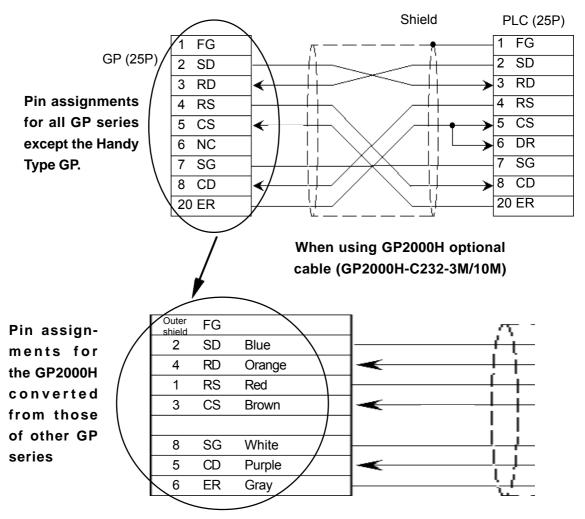
• When turning ON the switch inside the GP2000H rear-face's cable cover, a termination resistance of 100Ω is added between #13 (RDA) and #14 (RDB).

Chapter 15 - Connecting to the Handy Type GP 15.2 Connecting a GP2000H Series Unit



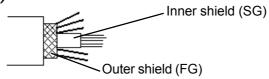
• When the GP is set as a Memory Link type and the cable type is RS-422, a 4-wire system must be used.

The following describes an example of converting the pin assignments for other GP series to those on the Handy Type GP. The following example connects a GP2000H with a Mitsubishi PLC (p.2-1-11 < Cable Diagram 1>).





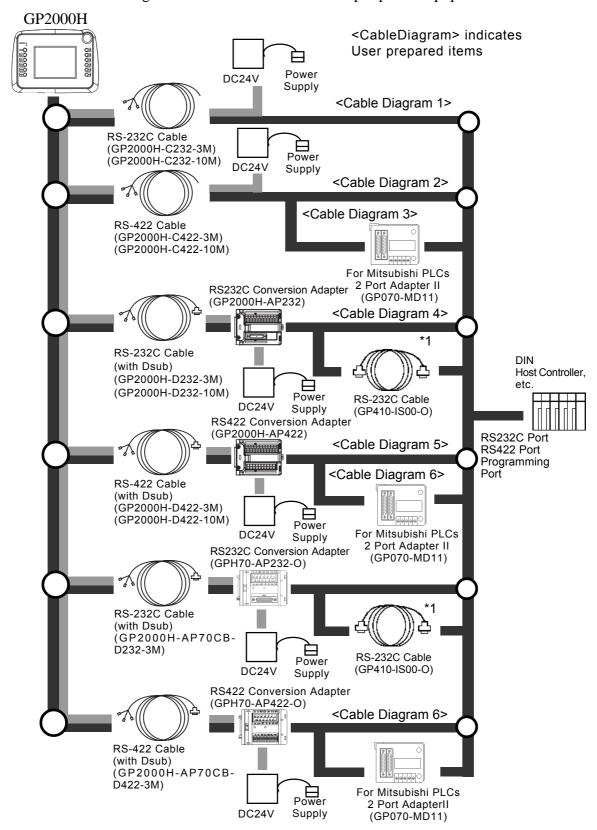
- If any wires in the above table's "Wire Color" column are not used, be sure those wires do not touch other signal wires or the connector case.
- Be sure to connect the cable's outer shield to the FG wire (field ground).



• Be sure to connect the inner shield to the external device's signal ground, in the same way as the Pin 8's SG connection.

15.2.2 GP2000H System Design

The diagram below shows the GP unit's peripheral equipment.



^{*1} This cable may not be able to be connected to some PLCs. Be sure to check compatibility before connecting.

Chapter 15 - Connecting to the Handy Type GP 15.2 Connecting a GP2000H Series Unit



In the above system design diagram, the line indicates power supply routes. Be sure to supply electricity through conversion adapters or cables.

15.2.3 Cable Diagrams

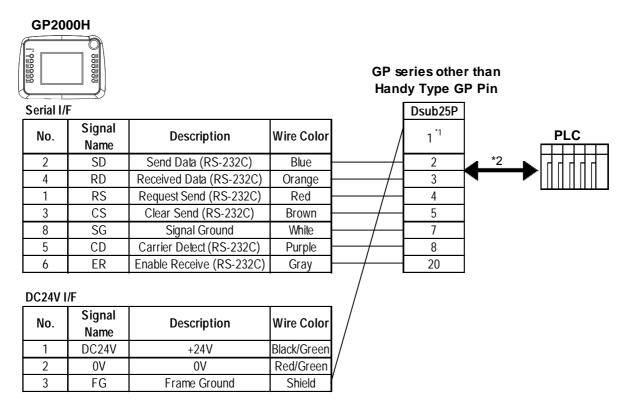
The connection diagram of wiring connections used between the equipment described in "15.2.2 GP2000H System Design" is shown below. This connection diagram only shows those sections used for connecting to the PLC.



- Be sure to connect this cable while the GP2000H's power is turned OFF, otherwise an electrical shock may occur.
- When live lines are either connected or disconnected, if a difference in potential is created between the GP2000H and the connected device(s), the driver IC may be damaged. Therefore, be sure to connect this cable while the GP2000H's power is turned OFF.
- Since the GP2000H interface signal wires and the GP power supply wires are contained inside a single cable, power supply noise may occur. Therefore, be sure to take appropriate precautions to prevent the connected device(s) from being interrupted by noise. (i.e. install a noise filter, etc.)
- When connecting the RS-232C cable, the maximum cable length is 15m.
- When connecting the RS-422 cable, the maximum cable length is 500m.
- When connecting the communication cable, be sure to connect the SG.
- The AWG22 is used for DC24V and external output wires.

<Cable Diagram 1>

When connecting GP2000H to PLC with GP2000H-C232-3M (3m) or GP2000H-C232-10M (10m)



^{*1} Connect the cable's outer shield to Pin 1.

^{*2} Refer to the cable diagrams in Chapter 2 PLC-GP Connection.



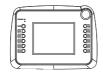
- The wiring arrangement shown above cannot be used with the RS-232C cable's Conversion Adapter.
- To connect the Conversion Adapter, the wiring diagram in the GP2000H's RS-232 Conversion Adapter's Operation Instructions manual must be used.
- The customer will need to perform this cable's PLC connector wiring. The wires used this cable are AWG 28 (dia.=0.3mm/area-0.08mm²). Using a solder cap tape connector is recommended.
- Be sure the wires do not touch other signal wires or connector case when they are not used.

Chapter 15 - Connecting to the Handy Type GP 15.2 Connecting a GP2000H Series Unit

<Cable Diagram 2>

 When connecting GP2000H to PLC with GP2000H-C422-3M (3m) or GP2000H-C422-10M (10m)

GP2000H



GP series other than Handy Type GP Pin No.

PLC

Dsub25P 1*1

No.	Signal Name	Description	Wire Color
8	SG	Signal Ground	Gray
13	RDA	Received Data A (RS-422)	White
15	SDA	Send Data A (RS-422)	Yellow
16	SDB	Send Data B (RS-422)	Green
14	RDB	Received Data A (RS-422)	Black
18	CSB	Clear Send B (RS-422)	Blue
20	ERB	Enable Receive B (RS-422)	Orange
17	CSA	Clear Send A (RS-422)	Red
19	ERA	Enable Receive A (RS-422)	Red

ח	C24	1V	1/	F
v	UZ.	T V	1/	

Serial I/F

No.	Signal Name	Description	Wire Color
1	DC24V	+24V	Black/Green
2	0V	0V	Red/Green
3	FG	Frame Ground	Shield

*1 Connect the cable's outer shield to Pin 1.

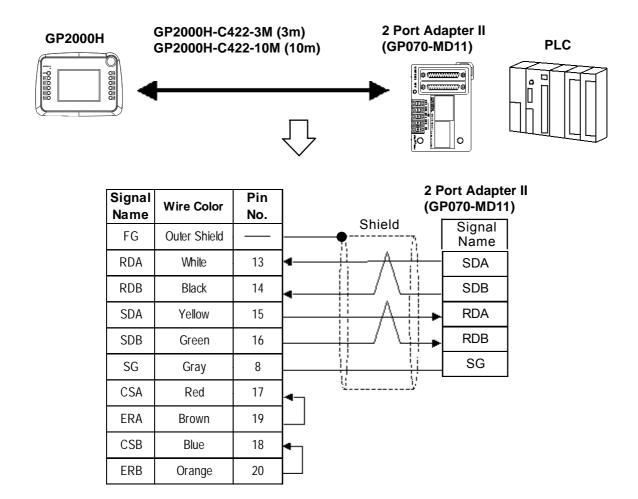
^{*2} Refer to the cable diagrams in Chapter 2 PLC-GP Connection.



- The wiring arrangement shown above cannot be used with the RS-232C cable's Conversion Adapter.
- •To connect the Conversion Adapter, the wiring diagram in the GP2000H's RS-232 Conversion Adapter's Operation Instructions manual must be used.
- •The customer will need to perform this cable's PLC connector wiring. The wires used for this cable are AWG 28 (dia.=0.3mm/area-0.08mm²). Using a solder cap tape connector is recommended.
- •Be sure these wires do not touch other signal wires or the connector case when they are not used.

<Cable Diagram 3>

 When connecting GP2000H to 2 Port Adapter II (GP070-MD11) with GP2000H-C422-3M (3m) or GP2000H-C422-10M (10m)



[GP2000H series]

Pin numbers shown here represent the GP2000H unit's connection pins.

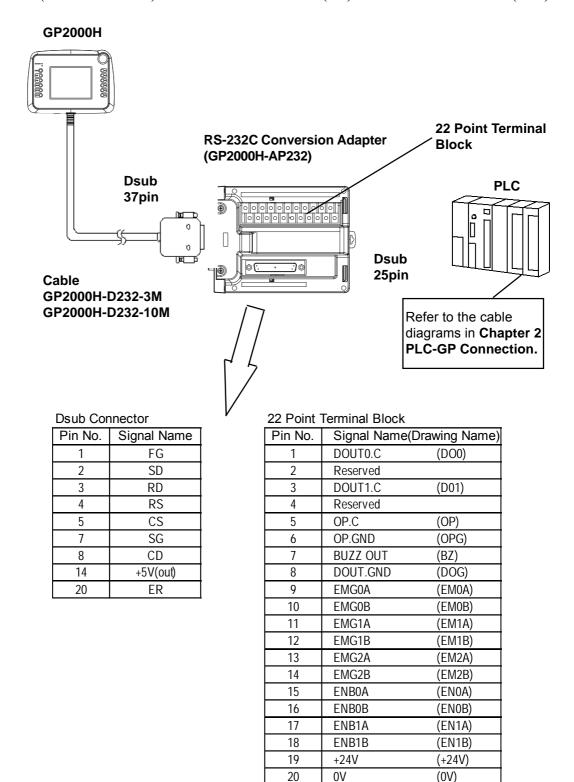


- Select "Adapter+GPH" via "Adapter Mode/ CPU Direct Mode" on GP's offline screen.
- Be sure the wires do not touch other signal wires or connector case when they are not used.
- This cable diagram cannot be used for connection with the MELSEC-FX Series unit. When connecting the MELSEC-FX Series unit via the 2 Port Adapter II, refer to <Cable Diagram 6>.

Chapter 15 - Connecting to the Handy Type GP 15.2 Connecting a GP2000H Series Unit

<Cable Diagram 4>

 When connecting GP2000H to PLC with RS-232C Conversion Adapter (GP2000H-AP232) with GP2000H-D232-3M (3m) or GP2000H-D232-10M (10m)



21

22

NC

FG

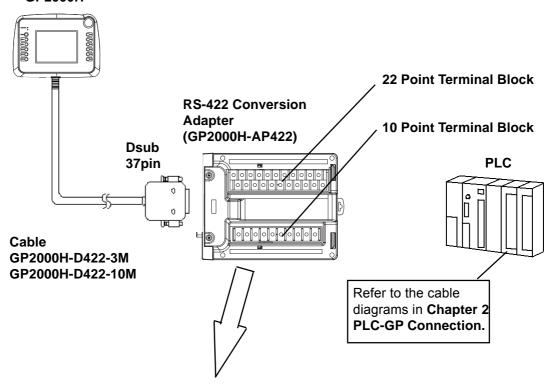
(NC)

(FG)

<Cable Diagram 5>

When connecting GP2000H to PLC via RS-422 Conversion Adapter (GP2000H-AP422) with GP2000H-D422-3M (3m) or GP2000H-D422-10M (10m)

GP2000H



10 Point Terminal Block

	Pin No.	Signal Name		
	1	FG		
	2	SG		
	3	SDB		
	4	SDA		
	5	RDB		
	6	RDA		
	7	CSA		
	8	ERA		
	9	CSB		
Ш	10	ERB		

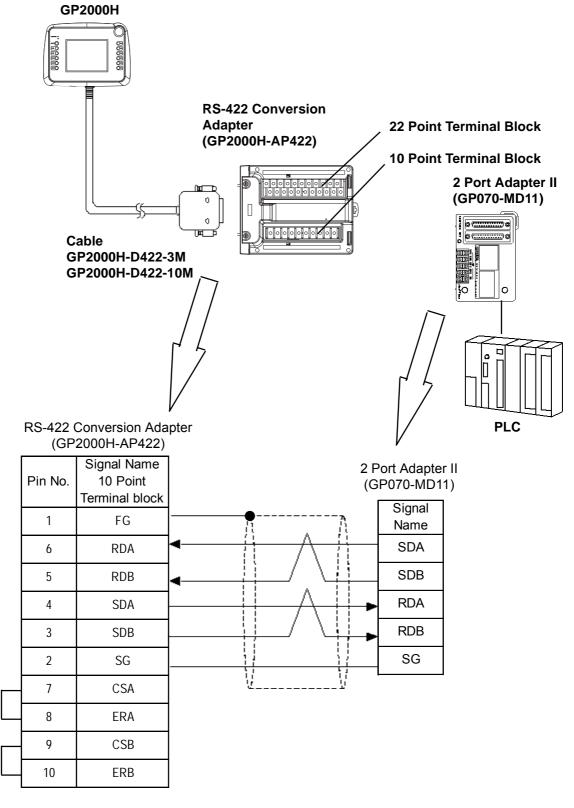
* Pin Nos. 7 and 8; Nos. 9 and 10 are respectively shorted with connecting board. When it is not necessary to short on your PLC, remove the connecting board.

22 Point Terminal Block

Pin No.	Signal Name(Drawing Name)		
1	DOUT0.C	(DO0)	
2	Reserved		
3	DOUT1.C	(D01)	
4	Reserved		
5	OP.C	(OP)	
6	OP.GND	(OPG)	
7	BUZZ OUT	(BZ)	
8	DOUT.GND	(DOG)	
9	EMG0A	(EM0A)	
10	EMG0B	(EM0B)	
11	EMG1A	(EM1A)	
12	EMG1B	(EM1B)	
13	EMG2A	(EM2A)	
14	EMG2B	(EM2B)	
15	ENB0A	(ENOA)	
16	ENB0B	(ENOB)	
17	ENB1A	(EN1A)	
18	ENB1B	(EN1B)	
19	+24V	(+24V)	
20	0V	(0V)	
21	NC	(NC)	
22	FG	(FG)	

<Cable Diagram 6>

When connecting GP2000H to PLC via RS-422 Conversion Adapter (GP2000H-AP422) and 2 Port Adapter II with GP2000H-D422-3M (3m) or GP2000H-D422-10M (10m)



^{*} Pins CSA and ERA; CSB and ERB are respectively shorted with connecting board



A1

Maximum Number of Consecutive PLC Addresses

The following lists the maximum number of consecutive addresses that can be read by each PLC. Refer to these tables to utilize *Block Transfer*.



When the device is setup using the methods below, the Data Communication Speed declines by the number of times the device is read.

- When consecutive addresses exceed the maximum data number range
- When an address is designated for division
- When device types are different

To speed up data communication, plan the tag layout in screen units, as consecutive devices. (Includes the Alarm and Trend screens.)

A1.1

Maximum number of Consecutive PLC Addresses (by Maker)

■ Mitsubishi Electric Corporation

MELSEC-A Series

Device	Max. No. of Consecutive Address	Device	Max. No. of Consecutive Address
Input Relay X		Data Register D	
Output Relay Y		Link Register W	
Internal Relay M		File Register R	
Latch Relay L	32 Words	Extended File Register R	64 Words
Latch Relay B		Timer (current value) TN	
Timer (contact) TS		Counter (current value) CN	
Timer (coil) TC			
Counter (contact) CS			
Counter (coil) CC			

MELSEC-FX Series

Device	Max. No. of Consecutive Address	
Input Relay X		
Output Relay Y		
Internal Relay M		
State S		
Timer (contact) TS	1	
Counter (contact) CC	32 Words	
Data Register D		
Timer (current	1	
value) TN		
Counter (current value)		
CN		

MELSEC-F₂ Series

Device	Max. No. of Consecutive Address			
Input Relay				
Output Relay				
Timer (contact)				
Counter (contact)				
Auxiliary Relay				
Keep Relay				
State	8 Words			
Data Register W	- o words			
Timer (current				
v alue) TC				
Timer (setup value)				
TS				
Counter (current value)	1			
CC				
Counter (setup value)				
CS				

MELSEC-FX Series (using Link I/F)

Device	Max. No. of Consecutive Address
Input Relay	
Output Relay	
Auxiliary Relay	32 Words
State	
Special Auxiliary Relay	
Timer (contact)	
Counter (contact)	
Timer (current value)	
Counter (current value)	64 Words
Data Register	
Special Data Register	

MELSEC-QnA Series

Device	Max. No. of Consecutive	Device	Max. No. of Consecutive
Device	Address	Device	Address
Input Relay X		Aggregate Timer	
mpat Kelay X		(contact) SS	
Output Relay Y		Aggregate Timer	
- Cuput Rolay 1		(coil) SC]
Internal Relay M		Counter (contact)	
momar ready w		CS	
Special Relay SM		Counter (coil) CC	
Latch Relay L		Timer (current	
Laich Reidy L		value) TN	
Annunciator F		Monostable Timer	
7 (Tillariciator 1	280 Words	(current value) SW	280 Words
Edge Relay V		Counter (current	
Luge Relay V		value) CN	
Step Relay S		Data Regsiter D	
Link Relay B		Special Register	1
Link Relay b		SD	
Special Link Relay		Link Register W	
SB			
Timer (contact) TS		Special Link	
s. (soriday 10		Register SW]
Timer (contact) TC		File Register R	

^{*} For direct CPU connections, use 480 words for all devices.

MELSEC-Q Series (CPU Direct Connection)

Device	Max. No. of Consecutive Address	Device	Max. No. of Consecutive Address
Input Relay		Special Link Relay	
Output Relay		Timer (current value)	
Internal Relay		Aggregate Timer (current value)	
Special Relay		Counter (current value)	
Latch Relay	Total of 960 Words	Data Register	Total of 040 Words
Annunciator		Special Data Register	Total of 960 Words
Edge Relay		Link Data Register	
Step Relay		Special Link Register	
Link Relay		File Register (normal)	
		File Register (serial) 0R-31R	

■ Omron

SYSMAC C Series (includes α Series) SYSMAC CV Series

Device	Max. No. of Consecutive Address	
Input/Output Relay	19 Words	
Internal Hold Relay	17 Words	
Data Link Relay LR	10 Words	
Latch Relay HR	io vvolus	
Auxilary Memory Relay AR	28 Words	
Timer (contact) TIM		
Counter (contact) CNT	48 Words	
Data Memory DM	64 Words	
Timer (current v alue) TIM	48 Words	
Counter (current value) CNT		

	ı
Device	Max. No. of Consecutive
Devide	Address
Input/Output Relay	
Internal Hold Relay	
SYSMAC BUS/2	
Remote I/O Relay	19 Words
Data Link Relay	17 Words
Latch Relay	
SYSMAC Remote I/O	
Relay	
Special Auxilary Relay	28 Words
А	20 Words
Timer (contact) T	48 Words
Counter (contact) C	TO Words
Data Memory D	64 Words
Timer (current v alue) T	
Counter (current value)	48 Words
С	

SYSMAC CS1/CJ Series

Device	Max. No. of Consecutive Addresses
Channel I/O	
Internal Auxiliary Relay	
Hold Relay	
Special Auxiliary Relay	
Timer(Contact)	
Counter(Contact)	
Timer(Current)	255 Words
Counter(Current)	
Data Memory	
Exp. Data Memory (E0 to EX)	
Exp. Data Memory (Current Bank)	
Task Flag	16 Words
Index Register	32 Words
Data Register	16 Words

■ Fuji Electric

MICREX-F Series

Device	Max. No. of Consecutive Address	Device	Max. No. of Consecutive Address
Input/Output Relay B		Timer 0.1 (current	
		value) W9	
Auxilary Relay M		Counter (current	
Maxilary Rolay W	40.14	value) CR	04114
Keep Relay K	48 Words	Coutner (setup	24 Words
Troop Troidy Tr		value) CS	
Differential Relay D		Data Memory BD	
Link Relay L		Data Memory DI	
Timer (0.01 sec) T		Data Memory SI	
Timer (0.1 sec) T	1 Word	File Memory (W30)	48 Words
Counter C		File Memory (W31)	40 Wolus
Direct Input/Output W	48 Words	File Memory (W32)	
Timer 0.01 (current		File Memory (W33)	
value) TR	24 Words	The Methory (WSS)	24 Words
Timer 0.01 (setup	21 770103	File Memory (W34)	21 Words
value) TS		The Memory (WS+)	

FLEX-PC N Series

Device	Max. No. of Consecutive	Device	Max. No. of Consecutive
	Address		Address
Input Relay X		Data Register D	
Output Relay Y		Special Register D	
Internal Relay M		Link Register W	
Extended Internal Relay M		File Register R	
Latch Relay L	105 Words	Timer (current value) T	105 Words
Extended Latch Relay L		Timer (setup value) TS	
Special Relay M		Counter (current value) C	
Timer T		Coutner (setup value) CS	
Counter C			

■ Yaskawa Electric

Memocon-SC Series (includes Micro)

Device	Max. No. of Consecutive Address
C oil (Output/Internal)	250 Words
Input Relay	230 Words
Link Coil D	128 Words
Input Register	
Output/Latch Register	
Link Register R	125 Words
Constant Register	
Extended Register	

PROGIC-8 Series

Device	Max. No. of Consecutive Address
Output Coil O	
Input Relay I	250 Words
Internal Coil N	
Link Coil D	128 Words
Data Register W	
Input Register D	125 Words
Link Register R	

MP900/ CP-9200SH Series

Device	Max. No. of Consecutive Address
Output Coil	
Input Relay	125 Words
Special Latch Register	
Input Register	

Control Pack Series

Device	Max. No. of consecutive Address
Input Coil O	
Output Register	250 Words
System Register	
System Register	
Data Register	
Common Register	125 Words
Input Register	
Output Register	

GL130 Series

Device	Max. No. of Consecutive Address	Device	Max. No. of Consecutive Address
Coil		Link Register 1. 2	125 Words
Input Relay		MC Relay	
Link Coil 1. 2		MC Coil	
Input Register	125 Words	CM Code Relay 1. 2	16 Words
Output Register		MC Control Relay 1. 2	
Special Register		MC Control Coil 1. 2	

■ Hitachi

HIDIC-S10α Series

Device	Max. No. of Consecutive Address	Device	Max. No. of Consecutive Address
Input Relay X		E Word EW	
Output Relay Y	1	On delay Timer	
Output Relay 1		(setup value) TS	
Internal Relay R		On delay Timer	
michiai Nelay N		(calculated value) TC	
Global Link G		One shot Timer	
Global Lilik G		(setup value) US	
Custom Dogistor C		One shot Timer	
System Register S	256 Words	(calculated value) UC	256 Words
Event E		Up/Down Counter	
LVEIIL		(setup value) CS	
Keep Relay K	1	Up/Down Counter	
кеер кегау к		(calculated value) CC	
On delay Timer T		Word Register FW	
One-shot Timer U		Data Register DW	
Up/Down Counter C		Extended Register MS	

HIDIC H (HIZAC H) Series

Device	Max. No. of Consecutive Address	Device	Max. No. of Consecutive Address
External Input		Watch Dog Timer	
Х		WD	
External Output		Monostable Timer	
Υ		MS	
Remote Input Relay		Accumulation Timer	
X		TMR	
Remote Output Relay		Up Counter	
Υ		CU	
Internal Output		Ring Counter	60 Words
R	60 Words	RCU	00 Words
Level 1 CPU Link	00 Words	Up/Down Counter	
L		СТ	
Level 2 CPU Link		Word Internal Counter	
L		WR	
Data Area		Timer/C ounter	
M		elapsed value TC	
On delay Timer		Network Link Area	
TD		WN	
Single Shot Timer			
SS			

HIZAC EC Series

Device		Max. No. of Consecutive Address	
		Address	Vertical Address
	External Input X		
Bit	External Output Y		1 Word
Device	Internal Output M	16 Words	
	Timer, or Counter TC 000 ~ TC 095		
	External Input WX		
	External Output WY		1 Word
Word Device	Internal Output WM	8 Words	
	Timer, or Counter TC 100 ~TC 195 TC 200 ~ TC 295		

■ Sharp

New Satellite JW Series

Device	Max. No. of consecutive Address	
Relay		
Timer (contact) T		
Counter (contact) C		
Timer/C ounter	•	
(current value) T	100 Words	
Timer/C ounter		
(current value) B		
Register		
File Register (File 1~3)		
(File 10~2C)		

■ Matsushita Electric Works

MEWNET Series

Device	Max. No. of consecutive	Device	Max. No. of Consecutive
	Address		Address
Input Relay X		Link Register Ld	
Output Relay Y		Data Register /Special Data Register DT	27 Words
Internal Relay R	27 Words	File Register FL	
Link Relay L		Timer/C ounter	
Ellik Holdy E		(setup value) SV	24 Words
Special Relay R		Timer/C ounter	21 770143
Special Relay R		(elapsed value) SV	
Timer (contact) T	8 Words		
Counter (contact) C			

■ Yokogawa Electric

FACTORY ACE Series

Device	Max. No. of Consecutive Address	Device	Max. No. of Consecutive Address
Input Relay X	1 Words	Timer (current value) TP	
Output Relay Y		Timer (setup value) TS	
Internal Relay I	63 Words	Counter (current value) CP	
Joint Relay E		C ounter (setup v alue) C S	63 Words
Timer (contact) T	16 Words	Data Register D	
Counter (contact) C		Common Register B *1	
Special Relay M	63 Words	File Register B *1	
Link Relay L		Special Register Z	
		Link Register W	

^{*1} Device B becomes the Common Register when the CPU is FA500, and becomes the File Register when the CPU is FA-M3.

■ Toyota Machine Works

TOYOPUC-PC2 Series

Device	Max. No. of Consecutive Address	Device	Max. No. of Consecutive Address
Input Relay X		Timer (contact) T	
Output Relay Y		Counter (contact) C	1
Internal Relay I	128 Words	Data Register D]
Keep Relay K		Link Register R	128 Words
Link Relay L		File Register B	120 Words
Edge Detect P		Current Value Register N	

TOYOPUC-PC3J Series

Device	Max. No. of Consecutive Addresses
Input(X)	
Output(Y)	
Internal Relay (M)	1
Keep Relay(K)	1
Link Relay(L)	1
Special Relay(V)	1
Edge Detection(P)	1
Timer(T)	1
C ounter(C)	1
Data Register(D)	1
Link Register(R)	1
Special Register(S)	1
Current Value Register(N)	1
File Register(B)	128 Word
Exp. Input(EX)	1
Exp. Output(EY)	1
Exp. Internal Relay(EM)	1
Exp. Keep Relay(EK)	1
Exp. Link Relay(EL)	1
Exp. Special Relay(EV)	1
Exp. Edge Relay(EP)	1
Exp. Timer(ET)	1
Exp. Counter(EC)]
Exp. Special Register (ES)	
Exp. Current Value Register(EN)]
Exp. Setting Value Register(H)]
Exp. Data Register(U)	

■ Toshiba

PROSEC EX Series

Device	Max. No. of Consecutive Address
External Input X	
External Output Y	
Auxiliary Relay R	
Link Register Relay Z	
Timer (contact) T	32 Words
Counter (contact) C	
Data Register D	
Timer	
(current value) T	
C ounter	
(current value) C	

PROSEC T Series

Device	Max. No. of Consecutive Address
External Input 1 X	
External Output 1 Y	
External Input 2 I	
External Output 2 O	
Internal Relay R	
Special Relay S	
Link Register Relay Z	
Link Relay L	32 Words
Timer (contact) T	
Counter (contact) C	
Data Register D	
Link Register W	
File Register F	
Timer (current value) T	
Counter (current value) C	

■ Toshiba Machine

PROVISOR B Series, PROVISOR TC200 Series (TCCUH)

Device	Max. No. of Consecutive Address	Device	Max. No. of Consecutive Address
	Audiess		Audiess
Input Relay X		Edge Relay E	
Output Relay Y		Timer (contact) T	
Internal Relay M		Counter (contact) C	
Extended Internal Relay 1 G	16 Words	Generic Register 1	16 Words
Extended Internal Relay 2 H		Generic Register 2	10 Wolds
Special Auxiliary		Timer/Counter	
Relay A		(current value)	
Latah Dalay I		Timer/C ounter	
Latch Relay L		(current value)	
Shift Register S			

PROVISOR TC200 Series (TCCUHS/TCCUSS)

Device	Max. No. of Consecutive Address	Device	Max. No. of Consecutive Address
Input Relay 1 X		Shift Register S	
Input Relay 2		Edge Relay E	
Output Relay 1 Y		Timer (current value)	
OutPut Relay 2 O		Timer/C ounter (current value)	
Internal Relay R		Time/C ounter (setting value)	
Extended Internal Relay 1 G	64 Words	Generic Register 1 D	64 Words
Extended Internal Relay 2 J		Generic Register 2 B	
Extended Internal Relay 3 H		Generic Register 3 U	
Extended Internal Relay 4 K		Generic Register 4 M	
Special Auxiliary Relay A		Generic Register 5 Q	
Latch Relay L			

■ Koyo Electronics Industries KOSTAC SG Series

	r
Device	Max. No. of Consecutive
Device	Address
Input Relay I	
Output Relay Q	
Internal Relay M	
Stage S	
Link Relay	
(input) GI	
Specified Transfer	
Relay (output) GQ	128 Words
Timer (contact) T	
Counter (contact) C	
Data Memory R	
Timer	
(elapsed value) R	
C ounter	
(elapsed value) R	

KOSTAC SU Series

Device	Max. No. of Consecutive Address
Input Relay I	
Output Relay Q	
Internal Relay M	
Stage S	
Link Relay (input) GI	
Timer (contact) T	128 Words
Counter (contact) C	
Data Memory R	
Timer	
(elapsed value) R	
Counter	
(elapsed value) R	

KOSTAC SZ Series

Device	Max. No. of Consecutive
	Address
Input Relay I	
Output Relay Q	
Internal Relay M	
Timer (contact) T	
Counter (contact) C	128 Words
Data Memory R	120 Words
Stage S	
Timer	
(elapsed value) R	
C ounter	
(elapsed value) R	

KOSTAC SR Series

Device	Max. No. of Consecutive Address
Input/Output	
Internal Relay	
Timer/Counter	
(contact) R	128 Words
Timer/C ounter	
(elapsed value) R	
Variable Register R	

DL-405 Series

Device	Max. No. of Consecutive Address
Input Relay (X)	
Output Relay (Y)	
Internal Relay (C)	128 Words
Stage (S)	
Link Relay (GX)	
Timer (contact) (T)	
Counter (contact) (CT)	
Data Memory (V)	
Timer (elapsed value) (V)	
Counter (elapsed value) (V)	

DL-205 Series

Device	Max. No. of Consecutive Address
Input Relay (X)	
Output Relay (Y)	
Internal Relay (C)	128 Words
Timer (current) (T)	
Counter (current) (CT)	
Data Memory (V)	
Stage (S)	
Timer (elapsed value) (V)	
Counter (elapsed value) (V)	

DL-305 Series

Device	Max. No. of Consecutive Address
Input / Output	
Internal relay	
Timer / Counter (contact) (V)	128 Words
Timer / Counter (elapsed value) (V)	
Data Register (V)	

■ GE Fanuc Automation SNP-X Protocol

Device	Max. No. of Consecutive Address
Input Relay I	
Output Relay Q	
Internal Relay M	
Global Relay G	
Momentary Relay T	
System Function	
Relay SA	128 Words
System Function	
Relay SB	
System Function	
Relay SC	
Register R	
Analog Input AI	
Analog Output AQ	

GE FANUC 90-30/90-70 SNP

Device	Max. No. of Consecutive Address
Input Relay I	
Output Relay Q	
Internal Relay M	
Global Relay G	
Temporary Relay T	
System Status Relay	
SA	
System Status Relay	250 Words
SB	
System Status Relay	
SC	
System Status Relay S	
Register R	
Analog Input AI	
Analog Input AQ	

■ Fanuc Motion Controller

FANUC Power Mate Series

Device	Max. No. of Consecutive Address
Input Relay X	
Output Relay Y	
Internal Relay	
Keep Relay K	128 Words
Data Table D	
Timer T	
Counter C	

■ IDEC Izumi

FA Series

Device	Max. No. of Consecutive
201100	Address
Input Relay XW	
Output Relay YW	
Internal Relay MW	
Shift Register RW	
Data Register D	
Control Register D	
Timer	
(setup value) TS	100 Words
Timer	
(current value) T	
Timer 10msec	
(current value) H	
C ounter	•
(setup value) CS	
C ounter	
(current value) C	

MICRO³

Device	Max. No. of Consecutive
	Address
Input Relay X	2 Words
Output Relay Y	2 Words
Internal Relay M	13 Words
Shift Register R	4 Words
Timer (setup value)	
T	
Timer	
(calculated value) t	32 Words
C ounter	32 Words
(setup value) C	
C ounter	
(calculated value) c	
Data Register D	100 Words

MICROSmart FC4A Series/OpenNet Controller FC3 Series

Device	Max. No. of Consecutive Addresses
Input X	
Output Y	
Internal Relay M	120 words
Special Internal Relay	120 Words
M8	
Shift Register R	
Timer T	
Timer t	20 words
Counter C	20 Words
Counter c	
Data Register D	
Special Data Register	120 words
D8	
Link Register L	1 word

■ Siemens

SIMATIC S5 Series

Device	Max. No. of Consecutive Address
Input I	
Output Q	
Internal Relay F	
Timer T	64 Words
Counter C	
Data Word D	
Ext. Data Word X	

SIMATIC S7 300/400 (via MPI)

	•
Device	Max. No. of Cosecutive
	Address
Input	64 Words
Output	
Internal	
Data Block	

SIMATIC S7 200 (via PPI)

Device	Max. No. of Cosecutive Address
Input	
Output	
Internal Memory	25 Words
Special Memory	
Variable Memory	
Timer Word	- 10 words
Counter Word	

SIMATIC S7 300/400 (via 3964/ RK512)

Device	Max. No. of Cosecutive Address
Data Block	64 Words

SIMATIC 505 Series

Device	Max. No. of Consecutive Addresses
Variable Memory	*1
V	15 Words *1
Word Input	
WX	15 Words
Word Output	
WY	15 Words
Loop Gain	
LKC	7 Words
Loop Reset	
LTI	7 Words
Loop Rate	
LTD	7 Words
Loop Alarm High Limit	7.11
LHA	7 Words
Loop Low Alarm Limit	714/ 1
LLA	7 Words
Loop Process Variable	7.W
LPV	7 Words
Loop PV High Limit	7 Warda
LPVH	7 Words
Loop PV Low Limit	7 Words
LPVL	7 Words
Loop Orange Deviation	7 Words
Limit LODA	7 Words
Loop Yellow Deviation	7 Words
Alarm Limit LYDA	/ words
Loop Sample Rate	7 Words
LTS	/ words
Loop Setpoint	7 Words
LSP	/ words
Loop Output	7 Words
LMN	/ WUIUS
Loop Error	7 Words
LERR	7 770143
Loop Bias	7 Words
LMX	/ WUIUS
Loop Alarm High-High	7 Words
Limit LHHA	/ vvoius
Loop Low-Low Alarm	7 Words
Unit LLLA	, vvolus
Loop Rate of Change	7 Words
Alarm Limit LRCA	, ***(103
Loop Setpoint High Point	7 Words
LSPH	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Loop Setpoint Low Limit	7 Words
LSPL	, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,

	Max. No. of Consecutive
Device	Addresses
Loop Alarm Deadband LADB	7 Words
Loop V-flags LVF	7 Words
Most Significant Word of	
Loop C-flags LCFH	7 Words
Least Significant Word of	
Loop C-flags LCFL	7 Words
Analog Alarm/Alarm	
Acknowledge Flags AADB	7 Words
Most Significant Word of	
Analog Alarm C-flags ACFH	7 Words
Least Significant Word of	
Analog Alarm C-flags ACFL	7 Words
Analog Alarm Error AERR	7 Words
Analog Alarm High Alarm	711.
Limit AHA	7 Words
Analog Alarm High-High	7111
Alarm Limit AHHA	7 Words
Analog Alarm Low Alarm	714
Limit ALA	7 Words
Analog Alarm Low-Low	7.1Mordo
Alarm Limit ALLA	7 Words
Analog Alarm Loop Orange	7.1Mordo
Deviation Alarm Limit AODA	7 Words
Analog Alarm Process	7 Words
Variable APV	/ vvoius
Analog Alarm Rate of	7 Words
Change Alarm Limit ARCA	/ vvoius
Analog Alarm Setpoint ASP	7 Words
Analog Alarm SP High Limit	7 Words
ASPH	/ vvoius
Analog Alarm SP Low Limit	7 Words
ASPL	, words
Analog Alarm Sample Rate	7 Words
ATS	, words
Analog Alarm Yellow	7 Words
Deviation Alarm Limit AYDA	, words
Timer/Counter Preset TCP	7 Words
Timer/Counter Current TCC	7 Words
Drum Counter Preset DCP	7 Words
Drum Step Preset DSP	10 Words
Drum Step Current DSC	10 Words
Status Word STW	7 Words
Drum Count Current DCC	10 Words

^{*1} For device address V1024 or higher, use 7 words.

■ Rockwell (Allen-Bradley) SLC 500 Series

Device	Max. No. of Consecutive Address
Bit B	
Timer TP/TA	
Counter CP/CA	118 Words
Timer TT/TN	Tio words
Counter CU/CD/CN	
Integral Number N	

PLC-5 Series

Device	Max. No. of Consecutive Address
Input Relay I	
Output Relay O	64 Words
Internal Relay B	of words
Data Register N/D/A	
Timer TP/TA	40 Words
Counter CP/CA	
Timer TT/TN	
Counter CU/CD	

SLC 500 DH485

Device	Max. No. of Consecutive Address
Status	
Bit	
Timer	40 Words
C ounter	40 Words
C ontrol	
Integer	

DH Plus

Device	Max. No. of Consecutive Address
Output	7 10 0.0
Input	
Status	
Bit	
Timer	50 Words
C ounter	30 Words
Control	
Integer	
Float	
Ascii	

■ Keyence

KZ-300/KZ-350 Series

Device	Max. No. of Consecutive Address	
Input Relay		
Output Relay		
Auxiliary Relay	19 Words	
Internal Hold Relay		
Special Auxilary		
Relay		
Timer T	48 Words	
Counter C	40 Words	
Data Memory DM	64 Words	
Temporary Data	10 Words	
Memory TM		

KV Series

Device	Max. No. of Consecutive Addresses
Input/Output Relay	
Internal AUX Relay	16 Words
Special AUX Relay	
Timer (contact)	
C ounter (contact)	1 Bit
High-speed counter comparator (contact)	
Timer (set value)	
Timer (current value)	
Counter (set value)	16 Words
Counter (current value)	10 Words
Data Memory	
Temporary Data Memory	
Digital Trimmer	2 Words
High-Speed Counter	
(current value)	1 word
High-Speed Counter	I Word
Comparator (set value)	

KZ-A500 Series

Device	Max. No. of Consecutive Addresses
Input Relay (X)	
Output Relay (Y)	
Internal Relay (M)	32 Words
Latch Relay (L)	
Link Relay (B)	
Annunciator Relay (F)	
Special Relay (M9)	
Timer (contact) TS	
Timer (coil) TC	16 Words
Counter (contact) CS	
Counter (coil) CC	
Timer(current value) TN	
Counter (current value) CN	
Data Register (D)	64 Words
Link Register (W)	
File Register (R)	
Special Register (D9)	

■ Shinko Electric

SELMART Series

Device	Max. No. of Consecutive
	Address
Data Register	64 Words

■ Modicon

Modicon Modbus Master

Device	Max. No. of Consecutive	
Device	Address	
Output Bit		
Input Bit	80 Words	
Output Register	oo words	
Input Register		

Modicon Modbus Plus

Device	Max. No. of Consecutive Address	
Output Bit		
Input Bit	80 Words	
Output Register	ou words	
Input Register		

Modicon Modbus Slave

Device	Max. No. of Consecutive Address
Output Register	125 Words

■ Matsushita Electric Industrial

Panadac P7000 series

Device	Max. No. of Consecutive Address	Device	Max. No. of Consecutive Address
Input Relay		Link Register	
Internal Relay]	Timer (setup value)	58 Words
Link Relay	- 58 Words	Counter (current value)	
Status Relay		Counter Value	29 Words
MC Status Relay		Position Data	29 Wolus
Timer State Relay		CPU Input Relay	58 Words
Timer-up Relay		CPU Output Relay	56 Words
Data Memory	1		

■ ORIM VEXTA

E1 Series

Device	Max. No. of Consecutive Addresses
I	
IU	
ID	
0	
М	
R	
RD	
В	64 Words
M S	
SY	
A D	
DA	
SL	
SH	
SR	
SD	
M P	

FATEK

Facon FB 20MC (using CPU Direct Connection)

Device	Max. No. of Consecutive Addresses
X (Input points)	
Y (Output Relays)	
M (Internal Relays)	
SM (Special Relays)	1 Words
S (Step Relays)	
T (Timer Registers)	1
C (Counter Registers)	1
WX (Input points)	
WY(Output Relays)]
WM (Internal Relays)]
WSM (Special Relays)]
WS (Step Relays)	
TMR (Timer Registers)]
CTR (Counter Registers)	32 Words
HR (Data Register)	1
IR (Input Registers)	1
OR (Output Registers)	1
HSC (HSC Registers)	1
RTC (Calendar Registers)	1
SR (Special Register)	
ROR (Read-Only Registers)]

Using Ethernet Connection

■ Mitsubishi Electric

MELSEC-A Series

Device	Max. No. of Consecutive Address	
Input Relay		
Output Relay		
Latch Relay		
Special Relay		
Annunciator	128 Words	
Link Relay	120 Words	
Timer (contact)		
Timer (coil)		
Counter (contact)		
Counter (coil)		
Timer (current value)		
Counter (current value)		
Data Register	258 Words	
Special Register	230 WUIUS	
Link Register		
File Register		

MELSEC-Q/QnA Series

Device	Max. No. of Consecutive Address
Input Relay	
Output Relay	
Internal Relay	
Special Relay	
Latch Relay	
Annunciator	
Edge Relay	
Step Relay	
Link Realy	
Special Link Relay	480 Words
Timer (Current Value)	
Aggregate Timer (Current Value)	
Counter (Current Value)	
Data Register	
Special Register	
Link Register	
Special Link Register	
File Register (Normal)	
File Register (Serial) 0R ~ 31R	

■ Toshiba

PROSEC-T Series

Device	Max. No. of Consecutive Addresses
External Input Device	
External Output Device	
Auxiliary Relay	
Special Relay	248 bits
Link Register Relay	
Link Relay	
Timer (Contact)	
C ounter (C ontact)	
Timer (Currrent Value)	
Counter (Current Value)	
Data Register	248 words
Link Register	
File Register	

■ Yokogawa Electric

FACTORY ACE Series/FA-M3

Device	Max.No.of Consecutive Addresses
Input Relay	1 Word
Output Relay	i word
Internal Relay	
Common Relay	64 words
Special Relay	
Link Relay	
Timer (contact)	16 words
C ounter (contact)	
Timer (current value)	
Counter (current value)	
Timer (setup value)	
Counter (setup value)	
Data Register	64w ords
File Register	
Common Register	
Special Register	
Link Register	

■ OMRON

SYSMAC CS1 Series

Device	Max.No.of
	Consecutive Addresses
Channal I/O	
Internal Auxilary Relay	
Latch Relay	
Special Auxilary Relay	
Timer (Contact)	
Counter (Contact)	400 words
Timer (Current Value)	
Counter (Current Value)	
Data Memory	
Extended Data Memory	
(E0 ~ EC)	
Extended Data Memory	
(Current Bank)	
Task Flag	16 words
Index Register	32 words
Data Register	16 words
	

Interbus-S connection

■ Siemens

Packet Transfer Mode

Device	Max. No. of Consecutive Address
Data Block DBxW	
Input IW	6 Words
Output OW	o words
Internal Memory MW	

Using CC-Link Intelligent Device Station

■ Mitsubishi Electric

MELSEC-A/QnA/Q Series

Device	Max. No. of
Device	Consecutive Address
Iput Relay	
Output Relay	
Internal Relay	
Special Relay	
Latch Relay	
Special Link Relay	
Timer (contact)	
Timer (coil)	
Aggregate Timer (contact)	
Aggregate Timer (coil)	400 144
Counter (contact)	480 Words
Counter (coil)	
Timer (current value)	
Aggregate Timer (current value)	
Counter (current value)	
Data Register	
Special Register	
Link Register	
Special Link Register	
File Register	

Using Electronic Temperature Controller

■ Yokogawa/Yokogawa M&C Controllers

Device	Max. No. of Consecutive Addresses
D	63 Words
I	63 Words

■ Yamatake Controllers

Device	Max. No. of Consecutive Addresses
Data	5 Words

■ RKC INSTRUMENT INC. Controllers

Device	Max. No. of Consecutive Addresses
	125 Words

■ Omron Corporation Controllers

Device	Max. No. of Consecutive Addresses
C0	
C1	2 Double Words
C3	
А	1 Word

■ RKC INSTRUMENT INC.

CB Series/SR-MiniSeries

Device	Max.No.of Consecutive Addresses
DataItems	1 Word

■ Shinko Technos Corporation Controllers C/FC/FIR/GC/FCL/PC-900 Series

Device	Max.No.of Consecutive Addresses
DataItems	1 Word
Setting Value Memory	1 Word
1 to 7	i vvoiu
Channel 1 to 20	1 Word *1

^{*1} Although only a single word can be read at a time from a single controller, up to 20 channels can be read simulataneously.

■ Fuji Electric Corporation Controller Micro-Controller X Series (Model:PXR)

Device Address	Max. No. of Consecutive Address
00001 ~	1 bit
10001 ~	8 bit
30001 ~	15 words
40001 ~	60 words
31001 ~	15 words
41001 ~	60 words

■ TOHO ELECTORICS INC.

TTM Series

Device	Max. No. of Consecutive Addresses
00_	
10_	
100_	
110_	
120_	
300_	
1020_	
Step Temperature Setting	
SSV	
Final Step Setting	
END	
Step time Setting	
STI	
Final Step Finish Condition Setting	1 word
SOK	
Step Wait Zone	
SWZ	
Step Wait Time	
SWT	
Time Signal ON Time	
SON	
Time Signal OFF Time	
SOF	
Execution Time	
SRN	
End Signal ON Time	
SEO SEO	

Using Inverter

■ Mitsubishi Electric

	Max. No. of
Device	Consecutive
	Address
	1 Words
Р	1 Double Words
OPE	1 Words
OUTF	1 Double Words
OUTC	ļ
OUTV	
SPM	
SSEL	
SOF	_
SOC	<u> </u>
SOV	
FSET	
RUNS	
MOT	
RBRK	
ELOF	
OCPV	
COPK	
IPOW	
OPOW	1 Words
A12D	1 Words
A34D	
A56D	
A78D	
RUNC	
INVS	
RWRT	
SFWE	
SFWR	
SFRE	
SFRR	
ERCL	
RSET	1
ALLC	†
LNKP	†
SECP	

■ Fuji Electric

Device	Max. No. of consecutive Address
Basic Function	
Terminal Function	
Control Function	
Motor 1	
High Level Function	1 Word
Motor 2	
Option	
Order Data	
Monitor Data	

Using Servo

■ Matsushita Electric's Servo

05_ 20_ 21_	Max. No. of consecutive Address 6 Words 1 Word 2 Words
22_ 24_ 25_	2 Words - 1 Word
26_	2 Words
27_	2 Words
28_	3 Words
29_	4 Words
2A_	6 Words
2D_	5 Words
80_ 90_ 91_	1 Word
92_	14 Words
B0_	4 Words
B1_	64 Words

A 2 Device Codes and Address Codes

Device codes and address codes are used to specify indirect addresses for the E-tags or K-tags.

The word addresses of data to be displayed are coded and stored in the word address specified by the E-tags and K-tags. (Code storage is done either by the PLC, or with T-tag and K-tags)

Example: MELSEC-A Series (Mitsubishi Electric Corp.)

When the GP-PRO/PBIII for Windows software has been used to set on E-tag's "Word Address" to "D0000", to display the M0016 interval relay's data on the GP, store the following code data:

D0000 9000 <- Device code D0001 0001 <- Address code

The device code for the M0016 internal relay is "9000" and the address code is "0001" (0016/16).

A 2.1 PLC Devices and Address Codes (by Maker)

The codes used for each type of PLC are shown below. [LS Area] is the device inside the GP.

Codes marked with an X cannot be used to specify E-tag and K-tag indirect

■ Mitsubishi

MELSEC-A Series (AnA/AnU/A2US/A2USH-S1)

	Device	Word Address	Device code (HEX)	Address code
	Input Relay	X0000~	8000	Save as word address value, with the tenths position "0" removed.
	Output Relay	Y0000~	8800	Save as word address value, with the tenths position "0" removed.
Bit Device	Internal Relay	M0000~	9000	Save as word address value divided by 16.
	Special Relay	M9000~	B000	Save as word address value minus 9000 divided by 16.
	Annuniciator	F0000~	B800	Save as word address value divided by 16.
	Timer (current value)	TN 0000~	6000	Word Address
	Counter (current value)	CN0000~	7000	Word Address
M/ 1	Data Register	D0000~	0000	Word Address
Word Device	Special Register	D9000~	0000	Word Address
	Link Register	W0000~	4800	Word Address
	File Register	R0000~	5800	Word Address
	LS area	LS0000~	4000	Word Address

MELSEC-A Series (AnN/A2C/A1S/A3H/A0J2/A1SJ/A2SH/A1SH/A2CJ-S3)

	Device	Word Address	Device code (HEX)	Address code
	Input Relay	X0000~	8000	Save as word address value, with the tenths position "0" removed.
	Output Relay	Y0000~	8800	Save as word address value, with the tenths position "0" removed.
Bit Device	Internal Relay	M0000~	9000	Save as word address value divided by 16.
	Special Relay	M9000~	B000	Save as word address value minus 9000 divided by 16.
	Annuniciator	F000~	B800	Save as word address value divided by 16.
	Timer (current value)	TN 000~	6000	Word Address
	Counter (current value)	CN000~	7000	Word Address
Word	Data Register	D0000~	0000	Word Address
Device	Link Register	W0000~	4800	Word Address
	File Register	R0000~	5800	Word Address
	LS area	LS0000~	4000	Word Address

$\mathbf{MELSEC}\text{-}\mathbf{F_{_{2}}}\mathbf{Series}$

	Device	Word Address	Device code (HEX)	Address code
		TC 050~		
	Timer (current value)	TC 450~	Х	X
	Timer (current value)	TC 550~	^	^
		TC 650~		
		TS050~		
	Timer (set value)	TS450~	Х	Х
	Timer (Set value)	TS550~	^	^
		TS650~		
Word	Country (ourset walks)	CC060~	Х	
Device		CC460~		Х
	Counter (current value)	CC560~		^
		CC660~		
		CS060~	Х	
	Countar (astualus)	CS460~		X
	Counter (set value)	CS560~		^
		CS660~		
	Data Register	DW700 ~	0000	Save as word address value minus 700.
	LS area	LS0000 ~	4000	Word Address

MELSEC-FX Series (FX₀)

	Device	Word Address	Device code (HEX)	Address code
	Input Relay	X000~	8000	Word Address
Bit Device	Output Relay	Y000~	8800	Word Address
Dit Device	Internal Relay	M000~	9000	Save as word address value divided by 16.
	State	S000~	9800	Save as word address value divided by 16.
	Timer (current value)	TN 000~	6000	Word Address
Word	Counter (current value)	C N 000~	7000	Word Address
Device	Data Register	D000~	0000	Word Address
	LS area	LS0000~	4000	Word Address

MELSEC-FX Series $(FX_1/FX_2/FX_{2N}/FX_{0N})$

	Device	Word Address	Device code (HEX)	Address code
	Input Relay	X000~	8000	Save as word address value, with the tenths position "0" removed.
Bit Device	Output Relay	Y000~	8800	Save as word address value, with the tenths position "0" removed.
	Internal Relay	M0000~	9000	Save as word address value divided by 16.
	State	S000~	9800	Save as word address value divided by 16.
	Timer (current value)	TN 000~	6000	Word Address
Word	Counter (current value)	CN000~	7000	Word Address
Device	Data Register	D000~	0000	Word Address
	LS area	LS0000~	4000	Word Address

MELSEC-QnA Series

	Device	Word Address	Device code (HEX)	Address code
	Input Relay	X0000~	8000	Save as word address value, with the tenths position "0" removed.
	Output Relay	Y0000~	8800	Save as word address value, with the tenths position "0" removed.
	Internal Relay	M00000~	9000	Save as word address value divided by 16.
	Special Relay	SM0000~	B000	Save as word address value divided by 16.
Bit Device	Latch Relay	L00000~	C 000	Save as word address value divided by 16.
Bit Device	Annuniciator	F00000~	B800	Save as word address value divided by 16.
	Edge Relay	V0000~	9800	Save as word address value divided by 16.
	Step Relay	S0000~	A800	Save as word address value divided by 16.
	Link Relay	B0000~	C 800	Save as word address value, with the tenths position "0" removed.
	Special Link Relay	SB000~	A000	Save as word address value, with the tenths position "0" removed.
	Timer (current value)	TN 00000~	6000	Word Address
	Aggregate Timer (current value)	SN00000~	5000	Word Address
	Counter (current value)	CN00000~	7000	Word Address
	Data Register	D0000~	0000	Word Address
Word	Special Register	SD0000~	6800	Word Address
Device	Link Register	W0000~	4800	Word Address
	Special Link Register	SW000~	7800	Word Address
	File Register (normal)	R00000~	5800	Word Address
	File Register (serial)	0R0000~	0600	Word Address
	I iic ivedisici (seiidi)	1R0000~	0800	Word Address
	LS area	LS0000~	4000	Word Address

MELSEC-Q Series

	Device	Word Address	Device code (HEX)	Address code
	Input Relay	X0000 ~	8000	Save as word address value, with the tenths position "0" removed.
	Output Relay	Y0000 ~	8800	Save as word address value, with the tenths position "0" removed.
	Internal Relay	M0000 ~	9000	Save as word address value divided by 16.
	Special Relay	SM0000 ~	B000	Save as word address value divided by 16.
Bit Device	Latch Relay	L0000 ~	C 000	Save as word address value divided by 16.
DIL DEVICE	Annunciator	F0000 ~	B800	Save as word address value divided by 16.
	Edge Relay	V0000 ~	9800	Save as word address value divided by 16.
	Step Relay	S0000 ~	A800	Save as word address value divided by 16.
	Link Relay	B0000 ~	C 800	Save as word address value, with the tenths position "0" removed.
	Special Link Relay	SB000 ~	A000	Save as word address value, with the tenths position "0" removed.
	Timer (current value)	TN 00000 ~	6000	Word Address
	Aggregate Timer (Currer	SN00000 ~	5000	Word Address
	Counter (current value)	CN00000 ~	7000	Word Address
	Data Register	D00000 ~	0000	Word Address
	Special Data Register	SD0000 ~	6800	Word Address
	Link Data Register	W0000 ~	4800	Word Address
	Special Link Register	SW000 ~	7800	Word Address
	File Register (normal)	R0000 ~	5800	Word Address
Word Device		0R0000 ~	0600	Word Address
		1R0000 ~	0800	Word Address
		2R0000 ~	0A00	Word Address
		3R0000 ~	0C 00	Word Address
	File Register (serial)	4R0000 ~	0E00	Word Address
		:	:	:
		29R0000 ~	4200	Word Address
		30R0000 ~	4400	Word Address
		31R0000 ~	4600	Word Address

■ Omron

SYSMAC C Series

	Device	Word Address	Device code (HEX)	Address code
	Input Relay	000~	9100	Word Address
	Internal Auxilary Relay	000 -	7100	Word Addices
	Analog Setup Value Storage Area	220~	9100	Word Address
Bit Device	Data Link Relay	LR00~	C 900	Word Address
	Special Auxilary Relay	244~	9100	Word Address
	Auxilary Memory Relay	AR00~	B000	Word Address
	Latch Relay	HR00~	C 100	Word Address
	Timer (current value)	TIM0000~	6000	Word Address
Word	Counter (current value)	CNT0000~	7000	Word Address
Device	Data Register	DM 0000~	0000	Word Address
	LS area	LS0000~	4000	Word Address

SYSMAC α Series

	Device	Word Address	Device code (HEX)	Address code
	I/O Relay I	000~	9100	Word Address
	I/O Relay II	300~	9100	Word Address
	Internal Auxilary Relay I	030~	9100	Word Address
	Internal Auxilary Relay II	310~	9100	Word Address
Bit Device	Special Auxilary Relay I	236~	9100	Word Address
	Special Auxilary Relay II	256~	9100	Word Address
	Latch Relay	HR00~	C 100	Word Address
	Auxilary Memory Relay	AR00~	B000	Word Address
	Link Relay	LR00~	C 900	Word Address
	Timer (current value)	ПМ000~	6000	Word Address
Word Device	Counter (current value)	CNT000~	7000	Word Address
	Data Memory	DM 0000~	0000	Word Address
	LS area	LS0000~	4000	Word Address

SYSMAC CV Series

	Device	Word Address	Device code (HEX)	Address code
	Input Relay	000~	9100	Word Address
	Internal Auxilary Relay			Word Address
	SYSMAC BUS/2 Remote I/O Relay	0200~	9100	Word Address
Bit Device	Data Link Relay	1000~	9100	Word Address
Dit Device	Special Auxilary Relay	A000~	B000	Word Address
	Latch Relay	1200~	9100	Word Address
	Internal Auxilary Relay	1900~	9100	Word Address
	SYSMAC BUS/2 Remote I/O Relay	2300~	9100	Word Address
	Timer (current value)	T0000~	6000	Word Address
Word	Counter (current value)	C 0000~	7000	Word Address
Device	Data Memory	D0000~	0000	Word Address
	LS area	LS0000~	4000	Word Address

SYSMAC CS1/CJ Series

Device	Word Address	Device Address	Particulars
Channel I/O	CIO000000 -	CIO9000	Word Address
Internal Auxiliary Relay	W00000 -	8200	Word Address
Hold Relay	H00000 -	C000	Word Address
Special Auxiliary Relay	A00000 -	B000	Word Address
Timer(Current)	T0000 -	6000	Word Address
Counter(Current)	C0000 -	7000	Word Address
Data Memory	D0000 -	0000	Word Address
Exp. Data Memory (E0 to EC)	E000000 -	9200	Word Address
, ,	E100000 -	9400	Word Address
	E200000 -	9600	Word Address
	E300000 -	9800	Word Address
	E400000 -	9A00	Word Address
	E500000 -	9C00	Word Address
	E600000 -	9E00	Word Address
	E700000 -	A000	Word Address
	E800000 -	A200	Word Address
	E900000 -	A400	Word Address
	EA00000 -	A600	Word Address
	EB00000 -	A800	Word Address
	EC00000 -	AA00	Word Address
Exp. Data Memory (Current Bank)	EM00000 -	1000	Word Address
Task Flag	TK0 -	5000	Save as word address value divided by 2.
Index Register	IR0 -	2000	Word Address
Data Register	DR0 -	3000	Word Address
LS area	LS0000 -	4000	Word Address

CS1/CJ Series (Ethernet Communication)

E-tag or K-tag indirect addresses cannot be designated by a SYSMAC CS1/CJ Series unit on an Ethernet network.

■ Fuji Electric

MICREX-F Series

	Device	Word Address	Device code (HEX)	Address code
	Input Relay	WB0000~	8040	Word Address
	Direct I/O	W24.0000~	4840	Word Address
	Auxilary Relay	WM0000~	9040	Word Address
Bit Device	Keep Relay	WK000~	C 040	Word Address
Dit Device	Differential Relay	WD000~	D040	Word Address
	Link Relay	WL000~	C 840	Word Address
	Special Relay	WF0000~	B040	Word Address
	Announce Relay	WA0000~	B840	Word Address
	Timer 0.01 sec (current value)	TR0000~	6080	Word Address
	Timer 0.01 sec (set value)	TS0000~	6880	Word Address
	Timer 0.1 sec (current value)	W9.000~	6480	Word Address
	Counter (curent value)	CR0000~	7080	Word Address
	Counter (set value)	CS0000~	7880	Word Address
Word	Data Memory	BD0000~	0800	Word Address
Device		DI0000~	0880	Word Address
		S10000~	0440	Word Address
	File Memory	W30.0000~	2040	Word Address
		W31.0000~	2240	Word Address
		W32.0000~	2440	Word Address
		W33.0000~	2680	Word Address
		W34.0000~	2880	Word Address
	LS area	LS0000~	4040	Word Address

FLEX-PC Series

	Device	Word Address	Device code (HEX)	Address code
	Input Relay	WX000~	8040	Word Address
	Output Relay	WY000~	8840	Word Address
	Internal Relay	WM000~	9040	Word Address
Bit Device	Extended Internal Relay	WM 040~	9840	Word Address
	Latch Relay	WL000~	C 040	Word Address
	Extended Latch Relay	WL040~	C840	Word Address
	Special Relay	WM 800~	Х	Х
	Timer (current value)	T0000~	6000	Word Address
	Timer (set value)	TS0000~	6800	Word Address
	Counter (current value)	C 0000~	7000	Word Address
	Counter (set value)	CS0000~	7800	Word Address
Word Device	Data Register	D0000~	0040	Word Address
507.00	Special Register	D8000~	Х	X
	Link Register	W0000~	0440	Word Address
	File Register	R0000~	4840	Word Address
	LS area	LS0000~	4040	Word Address

■ Yaskawa Electric

Memocon-SC Series (U84/84J/U84S/GL40S/GL60H/GL70H/GL60S)

	Device	Word Address	Device code (HEX)	Address code
	Input Register	30001~	1240	Save as word address value minus 30001.
	Output/Keep Register	40001~	0040	Save as word address value minus 40001.
Word Device	Link Register	R0001~	4840	Save as word address value minus 1.
26.00	Constant Register	31001~	1440	Save as word address value minus 31001.
	Extended Register	A0000~	1040	Word Address
	LS area	LS0000~	4040	Word Address

Memocon-SC Series (GL120/GL130)

	Device	Word Address	Device code (HEX)	Address code
Word Device	Input Register	300001~	1240	Save as word address value minus 30001.
	Output Register	400001~	0040	Save as word address value minus 40001.
	Keep Register	400513~	0040	Save as word address value minus 40001.
	Constant Register	700001~	Х	Х
	LS area	LS0000~	4040	Word Address

PROGIC-8 Series

	Device	Word Address	Device code (HEX)	Address code
	Data Register	W1~	0040	Save as word address value minus 1.
Word	Input Register	Z1~	1240	Save as word address value minus 1.
Device	Link Register	R1~	4840	Save as word address value minus 1.
	LS area	LS0000~	4040	Word Address

Control Pack Series/MP900 Series

	Device	Word Address	Device code (HEX)	Address code
	Input Register	49744~	0040	Save as word address value minus 40001.
	Output Register	49872~	0040	Save as word address value minus 40001.
	System Register	30001~	1240	Save as word address value minus 30001.
Word Device	Data Register	31001~ (CP-9200H only)	1440	Save as word address value minus 3101.
		40001~	0040	Save as word address value minus 40001.
	Common Register	42049~	0040	Save as word address value minus 40001.
	LS area	LS0000~	4040	Word Address

Memocon Micro

	Device	Word Address	Device code (HEX)	Address code
Mord	Input Register	30001~	1240	Save as word address value minus 30001.
Word Device	Output/Keep Register	40001~	0040	Save as word address value minus 40001.
	LS area	LS0000~	4040	Word Address

■ Hitachi

HIDIC S10 α Series

	Device	Word Address	Device code (HEX)	Address code
	Input Relay	XW000~	8040	Save as word address value, with the tenths position "0" removed.
	Output Relay	YW000~	8840	Save as word address value, with the tenths position "0" removed.
	Internal Relay	RW000~	9040	Save as word address value, with the tenths position "0" removed.
	Global Link	GW000~	C 840	Save as word address value, with the tenths position "0" removed.
	System Register	SW000~	B040	Save as word address value, with the tenths position "0" removed.
Bit Device	E Word	EW400~	Х	Х
	Event	EW000~	A040	Save as word address value, with the tenths position "0" removed.
	Keep Relay	K0000~	C 040	Save as word address value, with the tenths position "0" removed.
	On-Delay Timer	TW000~	E040	Save as word address value, with the tenths position "0" removed.
	One Shot Timer	UW000~	E240	Save as word address value, with the tenths position "0" removed.
	Up/Down Counter	C W000~	F040	Save as word address value, with the tenths position "0" removed.
	On-Delay Timer (Calculated value)	TC 000~	6000	Word Address
	On-Delay Timer (setup value)	TS000~	6800	Word Address
	One Shot Timer (Calculated value)	UC000~	6200	Word Address
Wand	One Shot Timer (setup value)	US000~	6A00	Word Address
Word Device	Up/Down Counter (Calculated value)	CC000~	7000	Word Address
	U p/Down C ounter (setup v alue)	CS000~	7800	Word Address
	Data Register	DW000~	0040	Word Address
	Word Register	FW000~	0840	Word Address
	Extended Register	MS000~	3040	Word Address
	LS area	LS0000~	4040	Word Address

HIDIC H (HIZAC H) Series

	Device	Word Address	Device code (HEX)	Address code
	External Input	WX0000~	Х	Х
	External Output	WY0000~	Х	X
	Remote Input Relay	WX1000~	Х	Х
Bit Device	Remote Output Relay	WY1000~	Х	Х
	CPU Link Area 1	WL000~	C 800	Word Address
	CPU Link Area 2	WL1000~	C 800	Word Address
	Data Area	WM000~	9000	Word Address
	Timer/C ounter (elapsed value)	TC 000~	6000	Word Address
Word Device	Word Internal Output	WR0000~	0000	Word Address
	Network Link Area	WN 0000~	5000	Word Address
	LS area	LS0000~	4000	Word Address

HIZAC EC Series

	Device	Word Address	Device code (HEX)	Address code
		WX000~		
		WX020~		
		WX040~		
		WX060~		
	External Input	WX080~	8240	Word Address
	External Input	WX100~	0240	Word Address
		WX120~		
		WX140~		
		WX160~		
		WX180~		
		WY200~		
	External Output	WY220~		
Bit Device		WY240~	8A40	
		WY260~		
		WY280~		Save as word address value minus 200.
		WY300~		Save as word address value minus 200.
		WY320~		
		WY340~		
		WY360~		
		WY380~		
		WM 400~	9240	Save as word address value minus 400 divided by 2.
	Internal Output	WM 700~	9240	Save as word address value minus 400 divided by 2.
		WM 960~	9240	Save as word address value minus 400 divided by 2.
Mord	Timer/C ounter (elapsed value)	TC 100~	6000	Save as word address value minus 100.
Word Device	Timer/C ounter (set value)	TC 200~	6400	Save as word address value minus 200.
	LS area	LS0000~	4040	Word Address

■ Sharp

New Satellite JW Series

	Device	Word Address	Device code (HEX)	Address code
Bit Device	Relay	A0000~ (0000~)	9000	Save as word address value divided by 2.
	Timer/Counter	T0000~	6000	Word Address
	(current value)	B0000~ (b0000~)	7000	Save as word address value divided by 2.
	Register	09000~	0000	Save as word address value divided by 2.
		19000~	0200	Save as word address value divided by 2.
		29000~	0400	Save as word address value divided by 2.
Word		39000~	0600	Save as word address value divided by 2.
Device		49000~	0800	Save as word address value divided by 2.
Device	regisici	59000~	0A00	Save as word address value divided by 2.
		69000~	0C 00	Save as word address value divided by 2.
		79000~	0E00	Save as word address value divided by 2.
		89000~	1000	Save as word address value divided by 2.
		99000~	1200	Save as word address value divided by 2.
	File Register	1000000~	Х	X
	LS area	LS0000~	4000	Word Address

■ Matsushita Electric Works

MEWNET Series

	Device	Word Address	Device code (HEX)	Address code
	Input Relay	WX000~	8000	Word Address
	Output Relay	WY000~	8800	Word Address
Bit Device	Internal Relay	WR000~	9000	Word Address
	Link Relay	WL000~	C 800	Word Address
	Special Relay	WR900~	9000	Word Address
	Timer/C ounter (elapsed v alue)	EV0000~	6000	Word Address
	Timer/C ounter (elapsed v alue)	SV0000~	6800	Word Address
Word	Data Register/ Special Data Register	DT000~	0000	Word Address
Device	Link Register	Ld0000~	4800	Word Address
	File Register	FL00000~	5800	Word Address
	Special Data Register	DT90000~	7000	Word Address
	LS area	LS0000~	4000	Word Address

■ Yokogawa Electric

FA500 (1:1 communication)*

	Device	Word Address	Device code (HEX)	Address code
	Input Relay	X00201~	Х	X
	Output Relay	Y00201~	Х	X
	Internal Relay	10001~	9000	Save as word address value minus 1 divided by 16.
Bit Device	Joint Relay	E0001~	B800	Save as word address value minus 1 divided by 16.
	Special Relay	M001~	B000	Save as word address value minus 1 divided by 16.
	Link Relay	L0001~	C 000	Save as word address value minus 1 divided by 16.
	Timer (current value)	TP001~	6000	Save as word address value minus 1.
	Timer (set velue)	TS001~	6800	Save as word address value minus 1.
	Coutner (current value)	CP001~	7000	Save as word address value minus 1.
Word	Counter (set value)	CS001~	7800	Save as word address value minus 1.
Device	Data Register	D0001~	0000	Save as word address value minus 1.
	Common Register	B0001~	2000	Save as word address value minus 1.
	Special Register	Z001~	5000	Save as word address value minus 1.
	Link Register	W0001~	5800	Save as word address value minus 1.
	LS area	LS0000~	4000	Word Address

^{*} Only CPU No. 1 is available.

FA500 (1:n communication)*

	Device	Word Address	Device code (HEX)	Address code
	Input Relay	X00201~	Х	X
	Output Relay	Y00201~	Х	X
	Internal Relay	10001~	9000	Save as word address value minus 1 divided by 16.
Bit Device	Joint Relay	E0001~	B800	Save as word address value minus 1 divided by 16.
	Special Relay	M001~	B000	Save as word address value minus 1 divided by 16.
	Link Relay	L0001~	C 000	Save as word address value minus 1 divided by 16.
	Timer (current value)	TP001~	6000	Save as word address value minus 1.
	Timer (set velue)	TS001~	6800	Save as word address value minus 1.
	Coutner (current value)	CP001~	7000	Save as word address value minus 1.
Word	Counter (set value)	CS001~	7800	Save as word address value minus 1.
Device	Data Register	D0001~	0000	Save as word address value minus 1.
	Common Register	B0001~	2000	Save as word address value minus 1.
	Special Register	Z001~	5000	Save as word address value minus 1.
	Link Register	W0001~	5800	Save as word address value minus 1.
	LS area	LS0000~	4000	Word Address

^{*} Only CPU No. 1 in station No.1 is available.

FA-M3 (1:1 communication)*

	Device	Word Address	Device code (HEX)	Address code
	Input Relay	X00201~	Х	Х
	Output Relay	Y00201~	Х	Х
	Internal Relay	10001~	9000	Save as word address value minus 1 divided by 16.
Bit Device	Joint Relay	E0001~	B800	Save as word address value minus 1 divided by 16.
	Special Relay	M0001~	B000	Save as word address value minus 1 divided by 16.
	Link Relay	L00001~	C 000	Save as word address value minus 1 divided by 16.
	Timer (current value)	TP0001~	6000	Save as word address value minus 1.
	Timer (set velue)	TS0001~	6800	Save as word address value minus 1.
	Coutner (current value)	CP0001~	7000	Save as word address value minus 1.
	Counter (set value)	CS0001~	7800	Save as word address value minus 1.
	Data Register	D0001~	0000	Save as word address value minus 1.
Word	File Register	B00001~	2000	Save as word address value minus 1.
Device		B65537~	2800	Save as word address value minus 65537.
		B131073~	1000	Save as word address value minus 131073.
		B196609~	1800	Save as word address value minus 196609.
	Joint Register	R0001~	0800	Save as word address value minus 1.
	Special Register	Z001~	5000	Save as word address value minus 1.
	Link Register	W00001~	5800	Save as word address value minus 1.
	LS area	LS0000~	4000	Word Address

^{*} Only CPU No. 1 is available.

FA-M3 (1:n communication)*

	Device	Word Address	Device code (HEX)	Address code
	Input Relay	X00201~	Х	Х
	Output Relay	Y00201~	Х	Х
	Internal Relay	100001~	9000	Save as word address value minus 1 divided by 16.
Bit Device	Joint Relay	E0001~	B800	Save as word address value minus 1 divided by 16.
	Special Relay	M0001~	B000	Save as word address value minus 1 divided by 16.
	Link Relay	L00001~	C 000	Save as word address value minus 1 divided by 16.
	Timer (current value)	TP0001~	6000	Save as word address value minus 1.
	Timer (set velue)	TS0001~	6800	Save as word address value minus 1.
	Coutner (current value)	CP0001~	7000	Save as word address value minus 1.
	Counter (set value)	CS0001~	7800	Save as word address value minus 1.
Word	Data Register	D0001~	0000	Save as word address value minus 1.
Device	File Register	B0001~	2000	Save as word address value minus 1.
	Joint Register	R0001~	0800	Save as word address value minus 1.
	Special Register	Z001~	5000	Save as word address value minus 1.
	Link Register	W0001~	5800	Save as word address value minus 1.
	LS area	LS0000~	4000	Word Address

^{*} Only CPU No. 1 in station No. 1 is available.

FA-M3 (Ethenet communication)*

	Device	Word Address	Device code (HEX)	Address code
	Input Relay	X00201~	Х	X
	Output Relay	Y00201~	Х	Х
	Internal Relay	100001~	9000	Save as word address value minus 1 divided by 16.
Bit Device	Joint Relay	E0001~	B800	Save as word address value minus 1 divided by 16.
	Special Relay	M0001~	B000	Save as word address value minus 1 divided by 16.
	Link Relay	L00001~	C 000	Save as word address value minus 1 divided by 16.
	Timer (current value)	TP0001~	6000	Save as word address value minus 1.
	Timer (set velue)	TS0001~	6800	Save as word address value minus 1.
	Coutner (current value)	CP0001~	7000	Save as word address value minus 1.
	Counter (set value)	CS0001~	7800	Save as word address value minus 1.
	Data Register	D0001~	0000	Save as word address value minus 1.
Word		B0001~	2000	Save as word address value minus 1.
Device	File Degister	B65537~	2800	Save as word address value minus 65537.
	File Register	B131073~	1000	Save as word address value minus 131073.
		B196609~	1800	Save as word address value minus 196609.
	Joint Register	R0001~	0800	Save as word address value minus 1.
	Special Register	Z001~	5000	Save as word address value minus 1.
	Link Register	W0001~	5800	Save as word address value minus 1.
	LS area	LS0000~	4000	Word Address

^{*} Only CPU No. 1 is available

<STARDOM standalone type controller>

	Image Register	Word Address	Device code	Address code
Bit Device	Internal Relay	100001~	9000	Value of "(Word Address - 1) ÷ 16"
Word	Data Register	D0001~	0000	Value of "Word Address - 1"
Device	File Register	B00001~	2000	Value of "Word Address - 1"

■ Toyota Machine Works

TOYOPUC-PC2 Series

	Device	Word Address	Device code (HEX)	Address code
	Input Relay	X0000~	8000	Word Address
	Output Relay	Y0000~	8800	Word Address
Bit Device	Internal Relay	M0000~	9000	Word Address
	Keep Relay	K0000~	C 000	Word Address
	Link Relay	L0000~	C 800	Word Address
	Register (current value)	N 0000~	6000	Word Address
	Data Register	D0000~	0000	Word Address
Word	Link Register	R0000~	4800	Word Address
Device	File Register	B0000~	7800	Word Address
	Special Register	S0000~	5000	Word Address
	LS area	LS0000~	4000	Word Address

TOYOPUC-PC3J Series

Bit Device	Input Output Internal Relay Keep Relay Link Relay Special Relay	1X0000 ~ 2X0000 ~ 3X0000 ~ 1Y0000 ~ 1Y0000 ~ 1Y0000 ~ 1M0000 ~ 3M0000 ~ 1K0000 ~ 1K0000 ~ 1L0000 ~ 2L0000 ~ 3L0000 ~	8000 8200 8400 8800 8A00 9000 9200 9400 C000 C200 C400 C800	Word Address Word Address Word Address Word Address Word Address Word Address Word Address Word Address Word Address Word Address Word Address Word Address Word Address
Bit Device	Output Internal Relay Keep Relay Link Relay	3X0000 ~ 1Y0000 ~ 1Y0000 ~ 1Y0000 ~ 1M0000 ~ 2M0000 ~ 3M0000 ~ 1K0000 ~ 1K0000 ~ 1L0000 ~ 2L0000 ~	8400 8800 8A00 8C00 9000 9200 9400 C000 C200 C400	Word Address Word Address Word Address Word Address Word Address Word Address Word Address Word Address Word Address Word Address Word Address
Bit Device	Internal Relay Keep Relay Link Relay	1Y0000 ~ 1Y0000 ~ 1Y0000 ~ 1M0000 ~ 2M0000 ~ 3M0000 ~ 1K0000 ~ 1K0000 ~ 1K0000 ~ 2L0000 ~	8800 8A00 8C00 9000 9200 9400 C000 C200 C400	Word Address Word Address Word Address Word Address Word Address Word Address Word Address Word Address Word Address Word Address
Bit Device	Internal Relay Keep Relay Link Relay	1Y0000 ~ 1Y0000 ~ 1M0000 ~ 2M0000 ~ 3M0000 ~ 1K0000 ~ 1K0000 ~ 1K0000 ~ 1L0000 ~	8A00 8C00 9000 9200 9400 C000 C200 C400	Word Address Word Address Word Address Word Address Word Address Word Address Word Address Word Address
Bit Device	Internal Relay Keep Relay Link Relay	1Y0000 ~ 1M0000 ~ 2M0000 ~ 3M0000 ~ 1K0000 ~ 1K0000 ~ 1K0000 ~ 1L0000 ~ 2L0000 ~	8C00 9000 9200 9400 C000 C200 C400	Word Address Word Address Word Address Word Address Word Address Word Address Word Address
Bit Device	Keep Relay Link Relay	1M0000 ~ 2M0000 ~ 3M0000 ~ 1K0000 ~ 1K0000 ~ 1K0000 ~ 1L0000 ~ 2L0000 ~	9000 9200 9400 C000 C200 C400	Word Address Word Address Word Address Word Address Word Address
Bit Device	Keep Relay Link Relay	2M0000 ~ 3M0000 ~ 1K0000 ~ 1K0000 ~ 1K0000 ~ 1L0000 ~ 2L0000 ~	9200 9400 C000 C200 C400	Word Address Word Address Word Address Word Address
Bit Device	Keep Relay Link Relay	3M0000 ~ 1K0000 ~ 1K0000 ~ 1K0000 ~ 1L0000 ~ 2L0000 ~	9400 C000 C200 C400	Word Address Word Address Word Address
Bit Device	Keep Relay Link Relay	1K0000 ~ 1K0000 ~ 1K0000 ~ 1L0000 ~ 2L0000 ~	C000 C200 C400	Word Address Word Address
Bit Device	Link Relay	1K0000 ~ 1K0000 ~ 1L0000 ~ 2L0000 ~	C200 C400	Word Address
Bit Device	Link Relay	1K0000 ~ 1L0000 ~ 2L0000 ~	C400	
Bit Device	Link Relay	1L0000 ~ 2L0000 ~		14/ 16/1
Bit Device	-	2L0000 ~	CRUU	Word Address
Bit Device	-		0000	Word Address
Bit Device	-	31 0000 ~	CA00	Word Address
Bit Device	Special Relay	02000	CC00	Word Address
Bit Device	Special Relay	1V0000 ~	B000	Word Address
	•	2V0000 ~	B200	Word Address
		3V0000 ~	B400	Word Address
		1T0000 ~	E000	Word Address
	Timer	2T0000 ~	E200	Word Address
		3T0000 ~	E400	Word Address
		1C0000 ~	F000	Word Address
	Counter	2C0000 ~	F200	Word Address
		3C0000 ~	F400	Word Address
	Exp. Input	EX0000 ~	8600	Word Address
	Exp. Output	EY0000 ~	8E00	Word Address
	Exp. Internal Relay	EM0000 ~	9600	Word Address
	Exp. Keep Relay	EK0000 ~	C600	Word Address
	Exp. Link Relay	EL0000 ~	CE00	Word Address
	Exp. Special Relay	EV0000 ~	B600	Word Address
	Exp. Timer	ET0000 ~	E600	Word Address
	Exp. Counter	EC0000 ~	F600	Word Address
	'	1D0000 ~	0000	Word Address
	Data Register	2D0000 ~	0200	Word Address
	J	3D0000 ~	0400	Word Address
		1R0000 ~	4800	Word Address
	Link Register	2R0000 ~	4A00	Word Address
	J	3R0000 ~	4C00	Word Address
		1S0000 ~	5000	Word Address
	Special Register	2S0000 ~	5200	Word Address
Word Device	, J	3S0000 ~	5400	Word Address
		1N0000 ~	6000	Word Address
	Current Value Register	2N0000 ~	6200	Word Address
	- 3	3N0000 ~	6400	Word Address
	File Degister	B0000 ~	7800	Word Address
	r iie keyisiei	ES0000 ~	5600	Word Address
	File Register Exp. Special Register	EN0000 ~	6600	Word Address
	Exp. Special Register		7600	Word Address
	Exp. Special Register . Current Value Register	H0000 ~		NVOLU MUULUSS
	Exp. Special Register	H0000 ~ U0000 ~	0600	Word Address

■ Toshiba

PROSEC EX Series

	Device	Word Address	Device code (HEX)	Address code
	External Input	XW0000~	8040	Word Address
Bit Device	External Output	YW0000~	8840	Word Address
Dit Device	Auxiary Relay	RW0000~	9040	Word Address
	Link Register (relay)	ZW0000~	C 840	Word Address
	Timer (current value)	T0000~	6000	Word Address
Word	Counter (current value)	C 0000~	7000	Word Address
Device	Data Register	D00000~	0040	Word Address
	LS area	LS0000~	4040	Word Address

PROSEC T Series

	Device	Word Address	Device code (HEX)	Address code
	External Input	XW000~	8000	Word Address
Bit Device	External Output	YW000~	8800	Word Address
Dit Device	Internal Output	RW000~	9000	Word Address
	Special Relay	SW000~	B000	Word Address
	Timer (current value)	T000~	6000	Word Address
	Counter (current value)	C 000~	7000	Word Address
Word	Data Register	D0000~	0000	Word Address
Device	Link Register	W0000~	4800	Word Address
	File Register	F0000~	5800	Word Address
	LS area	LS0000~	4000	Word Address

PROVISOR B Series

	Device	Word Address	Device code (HEX)	Address code
	Input Relay	XW00~	8000	Word Address
	Output Relay	YW00~	8800	Word Address
	Internal Relay	RW00~	9000	Word Address
	Extended Internal Relay-1	GW00~	9200	Word Address
Bit Device	Extended Internal Relay-2	HW00~	9400	Word Address
Dit Device	Special Auxilary Relay	AW00~	B000	Word Address
	Latch Relay	LW00~	C 000	Word Address
	Shift Register	SW00~	C 200	Word Address
	Edge Relay	EW00~	C 400	Word Address
	Timer (contact)	TW00~	E000	Word Address
	Counter (contact)	CW00~	F000	Word Address
	Timer/Counter (current value)	P000~	6000	Word Address
Word	Timer/Counter (set value)	V000~	7000	Word Address
Device	Generic Register 1	D000~	0000	Word Address
	Generic Register 2	B000~	2000	Word Address
	LS area	LS0000~	4000	Word Address

■ Toshiba Machine PROVISOR TC200 Series

	Device	Word Address	Device code (HEX)	Address code
	Input Relay	XW00~	8000	Word Address
	Output Relay	YW00~	8800	Word Address
	Internal Relay	RW00~	9000	Word Address
	Extended Internal Relay-1	GW00~	9200	Word Address
Bit Device	Extended Internal Relay-2	HW00~	9400	Word Address
Dit Device	Special Auxilary Relay	AW00~	B000	Word Address
	Latch Relay	LW00~	C 000	Word Address
	Shift Register	SW00~	C 200	Word Address
	Edge Relay	EW00~	C 400	Word Address
	Timer (contact)	TW00~	E000	Word Address
	Counter (contact)	CW00~	F000	Word Address
	Timer/Counter (current value)	P000~	6000	Word Address
Word	Timer/Counter (set value)	V000~	7000	Word Address
Device	Generic Register 1	D000~	0000	Word Address
	Generic Register 2	B000~	2000	Word Address
	LS area	LS0000~	4000	Word Address

■ Koyo Electronics Industries

KOSTAC SG Series

	Device	Word Address	Device code (HEX)	Address code
	Input Relay	R40400~	8100	Save as word address value minus 40400.
	Output Relay	R40500~	8900	Save as word address value minus 40500.
	Internal Relay	R40600~	9100	Save as word address value minus 40600.
	Stage	R41000~	A100	Save as word address value minus 41000.
Bit Device	Link Relay (input)	R40000~	C 900	Save as word address value minus 40000.
	Specified Transfer Relay (output)	R40200~	C D00	Save as word address value minus 40200.
	Timer (contact)	R41100~	E100	Save as word address value minus 41100.
	Counter (contact)	R41140~	F100	Save as word address value minus 41140.
	Timer (elapsed value)	R0000~	6000	Word Address
	Counter (elapsed value)	R1000~	7000	Save as word address value minus 1000.
Word	Data Memory 1	R400~	0800	Save as word address value minus 400.
Device	Data Memory 2	R1400~	0000	Save as word address value minus 1400.
	Data Memory 3	R10000~	5800	Save as word address value minus 10000.
	LS area	LS0000~	4000	Word Address

KOSTAC SU Series

	Device	Word Address	Device code (HEX)	Address code
	Input Relay	R40400~	8100	Save as word address value minus 40400.
	Output Relay	R40500~	8900	Save as word address value minus 40500.
	Internal Relay	R40600~	9100	Save as word address value minus 40600.
	Stage	R41000~	A100	Save as word address value minus 41000.
Bit Device	Link Relay/Link Input	R40000~	C 900	Save as word address value minus 40000.
	Special Relay	R41200~ R41215~	B100	Save as word address value minus 41200.
	Timer (contact)	R41100~	E100	Save as word address value minus 41100.
	Counter (contact)	R41140~	F100	Save as word address value minus 41140.
	Timer (elapsed value)	R0000~	6000	Word Address
	Counter (elapsed value)	R1000~	7000	Save as word address value minus 1000.
Word	Data Register	R1400~	0000	Save as word address value minus 1400.
Device	Special Register	R700~ R7400~	Х	Х
	Extended Register	R10000~	5800	Save as word address value minus 10000.
	LS area	LS0000~	4000	Word Address

KOSTAC SZ Series

	Device	Word Address	Device code (HEX)	Address code
	Input Relay	R40400~	8100	Save as word address value minus 40400.
	Output Relay	R40500~	8900	Save as word address value minus 40500.
Bit Device	Internal Relay	R40600~	9100	Save as word address value minus 40600.
Dit Device	Stage	R41000~	A100	Save as word address value minus 41000.
	Timer (contact)	R41100~	E100	Save as word address value minus 41100.
	Counter (contact)	R41140~	F100	Save as word address value minus 41140.
	Timer (elapsed value)	R0000~	6000	Word Address
Word	Counter (elapsed value)	R1000~	7000	Save as word address value minus 1000.
Device	Data Memory 2	R2000~	0000	Save as word address value minus 1400.
	LS area	LS0000~	4000	Word Address

KOSTAC SR Series

	Device	Word Address	Device code (HEX)	Address code
	Input/Output	R000~	9000	Save as word address value divided 2.
	Πραν Θαιραί	R070~	9000	Save as word address value divided 2.
	Internal Relay	R016~	9000	Save as word address value divided 2.
Bit Device	memai Kelay	R076~	9000	Save as word address value divided 2.
	Shift Register	R040~	9000	Save as word address value divided 2.
	Timer/C ounter (contact)	R060~	9000	Save as word address value divided 2.
Mond	Timer/C ounter (elapsed value)	R600~	6000	Save as word address value minus 600.
Word Device	Data Register	R400~	0000	Save as word address value minus 400 divided by 2.
	LS area	LS0000~	4000	Word Address

DL-405 Series

	Device	Word Address	Device code (HEX)	Address code
	Input Relay	V40400~	8100	Save as word address value minus 40400.
	Output Relay	V40500~	8900	Save as word address value minus 40500.
	Internal Relay	V40600~	9100	Save as word address value minus 40600.
Bit Device	Stage	V41000~	A100	Save as word address value minus 41000.
Dit Device	Link Relay/Link Input	V40000~	C900	Save as word address value minus 40000.
	Special Relay	V41200~ V41215~	B100	Save as word address value minus 41200.
	Timer (contact)	V41100~	E100	Save as word address value minus 41100.
	Counter (contact)	V41140~	F100	Save as word address value minus 41140.
	Timer (elapsed value)	V0000~	6000	Word Address
	Counter (elapsed value)	V1000~	7000	Save as word address value minus 1000.
Word Device	Data Register	V1400~	0000	Save as word address value minus 1400.
	Special Register	V700~ V7400~	Х	X
	Extended Register	V10000~	5800	Save as word address value minus 10000.
	LS area	LS0000~	4000	Word Address

DL-205 Series

	Device	Word Address	Device code (HEX)	Address code
	Input Relay	V40400~	8100	Save as word address value minus 40400.
	Output Relay	V40500~	8900	Save as word address value minus 40500.
Bit Device	Internal Relay	V40600~	9100	Save as word address value minus 40600.
Dit Device	Stage	V41000~	A100	Save as word address value minus 41000.
	Timer (contact)	V41100~	E100	Save as word address value minus 41100.
	Counter (contact)	V41140~	F100	Save as word address value minus 41140.
	Timer (elapsed value)	V0000~	6000	Word Address
Word	Counter (elapsed value)	V1000~	7000	Save as word address value minus 1000.
Device	Data Memory 2	V2000~	0000	Save as word address value minus 1400.
	LS area	LS0000~	4000	Word Address

DL-305 Series

	Device	Word Address	Device code (HEX)	Address code
	Input/Output	V000~	9000	Save as word address value divided 2.
	Impay Gaipai	V070~	9000	Save as word address value divided 2.
	Internal Relay	V016~	9000	Save as word address value divided 2.
Bit Device	internal Kelay	V076~	9000	Save as word address value divided 2.
	Shift Register	V040~	9000	Save as word address value divided 2.
	Timer/C ounter (contact)	V060~	9000	Save as word address value divided 2.
\\/	Timer/C ounter (elapsed value)	V600~	6000	Save as word address value minus 600.
Word Device	Data Register	V400~	0000	Save as word address value minus 400 divided by 2.
	LS area	LS0000~	4000	Word Address

■ GE Fanuc Automation

Series 90-70/90-30 (SNP-X protocol)

	Device	Word Address	Device code (HEX)	Address code
	Input Relay (I)	100001~	8000	Save as word address value minus 1 divided by 16.
	Output Relay (Q)	Q00001~	8800	Save as word address value minus 1 divided by 16.
	Internal Relay (M)	M00001~	9000	Save as word address value minus 1 divided by 16.
	Global Relay (G)	G0001~	C 200	Save as word address value minus 1 divided by 16.
Bit Device	Momentary Relay (T)	T001~	9400	Save as word address value minus 1 divided by 16.
	System Function Relay (SA)	SA001~	A200	Save as word address value minus 1 divided by 16.
	System Function Relay (SB)	SB001~	A400	Save as word address value minus 1 divided by 16.
	System Function Relay (SC)	SC001~	A800	Save as word address value minus 1 divided by 16.
	System Function Relay (S)	S001~	AA00	Save as word address value minus 1 divided by 16.
	Register (R)	R00001~	0000	Save as word address value minus 1.
Word	Analog Input (AI)	AI0001~	0A00	Save as word address value minus 1.
Device	Analog Output (AQ)	AQ0001~	0C 00	Save as word address value minus 1.
	LS area	LS0000~	4000	Word Address

Series 90-70/90-30 (SNP protocol)

	Device	Word Address	Device Code	Address Code
	Input Relay (I)	100001~	8000	Save as: word address value minus 1, then
		100001	0000	divided by 16
	Output Relay (Q)	Q00001~	8800	Save as: word address value minus 1, then
		200001	0000	divided by 16
	Internal Relay (M)	M00001~	9000	Save as: word address value minus 1, then
		100001	7000	divided by 16
	Global Relay (G)	G0001~	C 200	Save as: word address value minus 1, then
		30001	0200	divided by 16
Bit Device	Temporary Relay (T)	T001~	9400	Save as: word address value minus 1, then
D.K. D. 07.100		1001	7100	divided by 16
	System Status Relay	SA001~	A200	Save as: word address value minus 1, then
	(SA)	371001		divided by 16
	System Status Relay	SB001~	A400	Save as: word address value minus 1, then
	(SB)	35001		divided by 16
	System Status Relay	/ SC001~	A800	Save as: word address value minus 1, then
	(SC)	0001	71000	divided by 16
	System Status Relay	S001~	AA00	Save as: word address value minus 1, then
	(S)	0001	717100	divided by 16

	Device	Word Address	Device Code	Address Code
		R00001~	0000	Save as word address value minus 1
		R01025~	1000	Save as word address value minus 1025
		R02049~	1200	Save as word address value minus 2049
		R03073~	1400	Save as word address value minus 3073
		R04097~	1600	Save as word address value minus 4097
		R05121~	1800	Save as word address value minus 5121
		R06145~	1A00	Save as word address value minus 6145
	Register (R)	R07169~	1C00	Save as word address value minus 7169
	Register (R)	R08193~	1E00	Save as word address value minus 8193
		R09217~	2000	Save as word address value minus 9217
		R10241~	2200	Save as word address value minus 10241
		R11265~	2400	Save as word address value minus 11265
		R12289~	2600	Save as word address value minus 12289
		R13313~	2800	Save as word address value minus 13313
		R14337~	2A00	Save as word address value minus 14337
Word		R15361~	2C 00	Save as word address value minus 15361
Device		AI0001~	0A00	Save as word address value minus 1
Device		AI1025~	3000	Save as word address value minus 1025
		AI2049~	3200	Save as word address value minus 2049
	Analog Input (AI)	AI3073~	3400	Save as word address value minus 3073
	Analog Input (Al)	AI4097~	3600	Save as word address value minus 4097
		AI5121~	3800	Save as word address value minus 5121
		AI6145~	3A00	Save as word address value minus 6145
		AI7169~	3C 00	Save as word address value minus 7169
		AQ0001~	0C 00	Save as word address value minus 1
		AQ1025~	5000	Save as word address value minus 1025
		AQ2049~	5200	Save as word address value minus 2049
	Analog Output (AQ)	AQ3073~	5400	Save as word address value minus 3073
	maiog Output (AQ)	AQ4097~	5600	Save as word address value minus 4097
		AQ5121~	5800	Save as word address value minus 5121
		AQ6145~	5A00	Save as word address value minus 6145
		AQ7169~	5C 00	Save as word address value minus 7169
	LS Area	LS0000~	4000	Save as word address value

■ Fanuc Motion Controller

FANUC Power Mate Series

	Device	Word Address	Device code (HEX)	Address code
	Input Relay (X)	X00000~ X01000~	8000	Save as word address value minus 1 divided by 2.
Bit Device	Output Relay (Y)	Y00000~ Y01000~	9000	Save as word address value minus 1 divided by 2.
Dit Device	Internal Relay (R)	R00000~	C 000	Save as word address value minus 1 divided by 2.
	Keep Relay (K)	K0000~	D000	Save as word address value minus 1 divided by 2.
	Timer (T)	T0000~	6800	Save as word address value minus 1 divided by 2.
Word	Counter (C)	C 0000~	7800	Save as word address value minus 1 divided by 2.
Device	Data Table (D)	D00000~	0000	Save as word address value minus 1 divided by 2.
	LS area	LS0000~	4000	Word Address

■ IDEC Izumi

FA Series

	Device	Word Address	Device code (HEX)	Address code
	Input Relay	WX00~	8000	Save as word address value divided by 2.
Bit Device	Output Relay	WY000~	8800	Save as word address value divided by 2.
Dit Device	Internal Relay	WM000~	9000	Save as word address value divided by 2.
	Shift Register	WR000~	C 000	Save as word address value divided by 16.
	Timer (set value)	TS000~	6800	Word Address
	Timer (current value)	T000~	6000	Word Address
	Timer 10msec (current value)	H000~	6400	Word Address
Word	Counter (set value)	CS000~	7800	Word Address
Device	Counter (current value)	C 000~	7000	Word Address
	Data Register	D0000~	0000	Word Address
	Control Register	D3000~	0000	Word Address
	LS area	LS0000~	4000	Word Address

MICRO³ (Micro Cube)

	Device	Word Address	Device code (HEX)	Address code
	Input Relay	X0000~	8000	Save as word address value divided by 2.
Bit Device	Output Relay	Y0000~	8800	Save as word address value divided by 2.
Dit Device	Internal Relay	M0000~	9000	Save as word address value divided by 2.
	Shift Register	R0000~	C 000	Save as word address value divided by 16.
	Timer (set value)	T0000~	6800	Word Address
	Timer (current value)	t0000~	6000	Word Address
Word	Counter (set value)	C 0000~	7800	Word Address
Device	Counter (current value)	c0000~	7000	Word Address
	Data Register	D0000~	0000	Word Address
	LS area	LS0000~	4000	Word Address

MICROSmart FC4A Series/OpenNet Controller FC3 Series

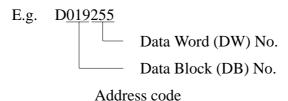
	Device	Word Address	Device code (HEX)	Address code
	Input	X000 ~	8000	Save as word address value divided by 2
	Output	Y000 ~	8800	Save as word address value divided by 2
Bit Device	Internal Relay	M000 ~	9000	Save as word address value divided by 2
	Special Internal Relay	M800 ~	9800	Save as word address value divided by 2
	Shift Register	R0000 ~	C 000	Save as word address value divided by 16
	Timer (setup value)	T0000 ~	6800	Word Address
	Timer (setup value)	t0000 ~	6000	Word Address
	Counter (elapsed value)	C 0000 ~	7800	Word Address
Word	C ounter (elapsed value)	c0000 ~	7000	Word Address
Device	Data Register	D0000 ~	0000	Word Address
	Special Data Register	D8000 ~	5000	Word Address
	Link Register	L0100 ~	2000	Word Address
	Enter Timer/Counter Setting Value	Q0	3000	Word Address
	LS Area	LS0000 ~	4000	Word Address

■ Siemens

SIMATIC S5 Series (using Link I/F)*

	Device	Word Address	Device code (HEX)	Address code
Ward	Data Register	D003000~	0040	Upper two digits: Value of "DB number minus 3" is indicated in HEX. Lower two digits: Value that DB number is indicated in HEX.
Word Device	Extended Data Register	X0030000~	5840	Upper two digits: Value of "DB number minus 3" is indicated in HEX. Lower two digits: Value that DB number is indicated in HEX.
	LS area	LS0000~	4040	Word Address

^{*} The address codes for Data Register and Extended Data Register are as follows:



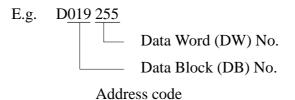
Upper two digits: 019-3=16 (DEC) ->10 (HEX)

Lower two digits: 255 (DEC) -> FF (HEX)

Address code is 10FF.

	Device	Word Address	Device code (HEX)	Address code
	Input Relay	IW000~	8140	Save as address value divided by 2.
Bit Device	Output Relay	QW000~	8940	Save as address value divided by 2.
	Internal Relay	FW000~	9140	Save as address value divided by 2.
	Timer	T000~	6000	Word Address
	Counter	C000~	7000	Word Address
Word Device	Data Register	D002000~	0040	Upper two digits: Value of "DB number minus 2" is indicated in HEX. Lower two digits: Value that DB number is indicated in HEX.
25000	Extended Data Register	X002000~	5840	Upper two digits: Value of "DB number minus 2" is indicated in HEX. Lower two digits: Value that DB number is indicated in HEX.
	LS area	LS0000~	4040	Word Address

^{*} The address codes for Data Register and Extended Data Register are as follows:



Upper two digits: 019-2=17 (DEC) ->11 (HEX)

Lower two digits: 255 (DEC) ->FF (HEX)

Address code is 11FF.

SIMATIC S7 300/400 (via MPI)

	Device	Word Address	Device code (HEX)	Address Code
	Input Bit	EW00000 ~	8000	Save as word address value divided by 2.
Bit Device	Output Bit	AW00000 ~	8800	Save as word address value divided by 2.
	Internal Bit	MW00000 ~	9000	Save as word address value divided by 2.
Word Device	Data Block	DB00W00000 ~	7C 00	Save as word address value divided by 2.
	Timer Word	T00000 ~	6000	Word Address
	Counter Word	C00000 ~	7000	Word Address

SIMATIC S7 300/400 (via 3964/RK512)

	Device	Word Address	Device code (HEX)	Address Code
Word Device	Data Block	DB00W00000 ~	7C 00	Save as word address value divided by 2.

SIMATIC S7 200 (via PPI)

	Device	Word Address	Device code (HEX)	Address Code
	Input Bit	IWO ~	9000	Save as word address value divided by 2.
	Output Bit	QW0 ~	8800	Save as word address value divided by 2.
Bit Device	Internal Bit	MW00 ~	C 800	Save as word address value divided by 2.
	Specioal Memory	SMW00 ~	B800	Save as word address value divided by 2.
	Variable Memory	VW0000 ~	D000	Save as word address value divided by 2.
Word Device	Timer Word	T000 ~	0400	Save as word address value divided by 2.
Word Device	Counter Word	C 000 ~	0800	Save as word address value divided by 2.

SIMATIC 505

	Device	Word Address	Device Code (HEX)	Address Code
	Variable Memory	V00001 ~	0000	Word Address minus 1
	Word Input	WX00001 ~	0C 00	Word Address minus 1
	Word Output	WY00001 ~	0E00	Word Address minus 1
	Loop Gain	LKC0001 ~	1C00	Word Address minus 1
	Loop Reset	LTI0001 ~	1E00	Word Address minus 1
	Loop Rate	LTD0001 ~	2000	Word Address minus 1
	Loop Alarm High Limit	LHA0001 ~	2400	Word Address minus 1
	Loop Low Alarm Limit	LLA0001 ~	2800	Word Address minus 1
	Loop Process Variable	LPV0001 ~	2C 00	Word Address minus 1
	Loop PV High Limit	LPVH0001 ~	2E00	Word Address minus 1
	Loop PV Low Limit	LPVL0001 ~	3000	Word Address minus 1
	Loop Orange Deviation Limit	LODA0001 ~	3400	Word Address minus 1
Mand Davis	Loop Yellow Deviation Alarm Limit	LYDA0001 ~	3800	Word Address minus 1
Word Device	Loop Sample Rate	LTS0001 ~	3A00	Word Address minus 1
	Loop Setpoint	LSP0001 ~	3E00	Word Address minus 1
	Loop Output	LM N 0001 ~	4400	Word Address minus 1
	Loop Error	LERR0001 ~	4800	Word Address minus 1
	Loop Bias	LM X0001 ~	4E00	Word Address minus 1
	Loop Alarm High-High Limit	LHHA0001 ~	5000	Word Address minus 1
	Loop Low-Low Alarm Unit	LLLA0001 ~	5400	Word Address minus 1
	Loop Rate of Change Alarm Limit	LRC A0001 ~	5600	Word Address minus 1
	Loop Setpoint High Limit	LSPH0001 ~	5A00	Word Address minus 1
	Loop Setpoint Low Limit	LSPL0001 ~	6000	Word Address minus 1
	Loop Alarm Deadband	LADB0001 ~	6200	Word Address minus 1
	LS Area	LS0000 ~	4000	Word Address

SIMATIC 505 (From previous page)

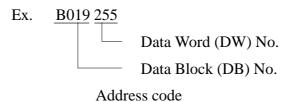
	Device	Word Address	Device Code (HEX)	Address Code
	Loop V-flags	LVF0001 ~	6400	Word Address
	Most Significant Word of Loop C-flags	LCFH0001 ~	6600	Word Address
	Least Significant Word of Loop C-flags	LCFL0001 ~	6800	Word Address
	Analog Alarm/Alarm Acknowledge Flags	AADB0001 ~	6C 00	Word Address
	Most Significant Word of Analog Alarm C-flags	ACFH0001 ~	6E00	Word Address
	Least Significant Word of Analog Alarm C-flags	ACFL0001 ~	7000	Word Address
	Analog Alarm Error	AERR0001 ~	7400	Word Address
	Analog Alarm High Alarm Limit	AHA0001 ~	7800	Word Address
	Analog Alarm High-High Alarm Limit	AHHA0001 ~	7C 00	Word Address
	Analog Alarm Low Alarm Limit	ALA0001 ~	7E00	Word Address
	Analog Alarm Low-Low Alarm Limit	ALLA0001 ~	7A00	Word Address
Word Device	Analog Alarm Loop Orange Deviation Alarm Limit	AODA0001 ~	7600	Word Address
	Analog Alarm Process Variable	APV0001 ~	7200	Word Address
	Analog Alarm Rate of Change Alarm Limit	ARC A0001 ~	6A00	Word Address
	Analog Alarm Setpoint	ASP0001 ~	5E00	Word Address
	Analog Alarm SP High Limit	ASPH0001 ~	5800	Word Address
	Analog Alarm SP Low Limit	ASPL0001 ~	5200	Word Address
	Analog Alarm Sample Rate	ATS0001 ~	4C 00	Word Address
	Analog Alarm Yellow Deviation Alarm Limit	AYDA0001 ~	4A00	Word Address
	Timer/Counter Preset	TC P0001 ~	2600	Word Address
	Timer/Counter Current	TC C 0001 ~	2A00	Word Address
	Drum Counter Preset	DCP0101 ~	3200	Word Address
	Drum Step Preset	DSP0001 ~	3600	Word Address
	Drum Step Current	DSC 0001 ~	3C 00	Word Address
	Status Word	STW0001 ~	4600	Word Address
	Drum Count Current	DCC0001 ~	4200	Word Address
	LS Area	LS0000 ~	4000	Word Address

■ Rockwell (Allen-Bradley) *

SLC500 Series

	Device	Word Address	Device code (HEX)	Address code
Bit Device	Bit	B003000~ B010000~	9040	Upper two digits: Value of "DB number minus 3" is indicated in HEX. Lower two digits: Value that DB number is indicated in HEX.
	Timer (PRE: set value)	TP004000~ TP010000~	6800	Upper two digits: Value of "DB number minus 4" is indicated in HEX. Lower two digits: Value that DB number is indicated in HEX.
	Timer (ACC: current value)	TA004000~ TA010000~	6000	Upper two digits: Value of "DB number minus 4" is indicated in HEX. Lower two digits: Value that DB number is indicated in HEX.
Word Device	Counter (PRE: set value)	CP005000~ CP010000~	7800	Upper two digits: Value of "DB number minus 5" is indicated in HEX. Lower two digits: Value that DB number is indicated in HEX.
	Counter (ACC: current value)	CA005000~ CA010000~	7000	Upper two digits: Value of "DB number minus 5" is indicated in HEX. Lower two digits: Value that DB number is indicated in HEX.
	Integral Number	N007000~ N010000~	0040	Upper two digits: Value of "DB number minus 7" is indicated in HEX. Lower two digits: Value that DB number is indicated in HEX.
	LS area	LS0000~	4040	Word Address

^{*} The address codes for Data Register and Extended Data Register are as follows:



Upper two digits: 019-3=16 (DEC) -> 10 (HEX)

Lower two digits: 255 (DEC) -> FF (HEX)

Address code is 10FF.

PLC-5 Series

	Device	Word Address	Device code (HEX)	Address code
	Input Relay	1000~	8040	Word Address
Bit Device	Output Relay	0000~	8840	Word Address
	Internal Relay	B3000~	9040	Save as word address value minus 3000.
	Timer (ACC: current value)	TA3000~	6000	Save as word address value minus 3000.
	Timer (PRE: set value)	TP3000~	6800	Save as word address value minus 3000.
	Counter (ACC: current value)	CA3000~	7000	Save as word address value minus 3000.
Word Device	Counter (PRE: set value)	CP3000~	7800	Save as word address value minus 3000.
	Data Register Integer	N 3000~	0040	Save as word address value minus 3000.
	Data Register BCD	D3000~	0240	Save as word address value minus 3000.
	Data Register ASCII	A3000~	0440	Save as word address value minus 3000.
	LS area	LS0000~	4040	Word Address

■ Keyence

KZ-300/KZ-350 Series

	Device	Word Address	Device code (HEX)	Address code
	Input Relay	00~	9100	Word Address
	Imput Neiay	70~	9100	Word Address
Bit Device	Output Relay	05~	9100	Word Address
Dit Device	Ошри келау	75~	9100	Word Address
	Internal Auxilary Relay	10~	9100	Word Address
	Special Auxilary Relay	20~	9100	Word Address
	Timer (current value)	T000~	6000	Word Address
	Counter (current value)	C 000~	7000	Word Address
Word Device	Data Memory	DM0000~	0000	Word Address
	Temporary Data Memory	TM 00~	C100	Word Address
	LS area	LS0000~	4000	Word Address

KZ-500 Series

	Device	Word Address	Device code (HEX)	Address code
	Input Relay	X0000 ~	8000	Word Address'last digit, exept "0"
	Output Relay	Y0000 ~	8800	Word Address'last digit, exept "0"
	Internal Relay	M0000 ~	9000	Save as Word Address value divided by 16
Bit Device	Special Relay	M9000 ~	B000	Save as (Word Address value minus 9000) divided by 16
	Latch Relay	L0000 ~	C000	Save as Word Address value divided by 16
	Annunciator Relay	F0000 ~	B800	Save as Word Address value divided by 16
	Timer (current value)	TN0000 ~	6000	Word Address
	Counter (current value)	CN0000 ~	7000	Word Address
	Data Register	D0000 ~	0000	Word Address
Word Device	Special Register	D9000 ~	0000	Word Address
	Link Register	W0000 ~	4800	Word Address
	File Register	R0000 ~	5800	Word Address
	LS area	LS0000 ~	4000	Word Address

KV Series

	Device	Word Address	Device code (HEX)	Address code	
	Input Relay				
	Internal Auxilary Relay	0000 ~	9000	Word Address	
Bit Device	Special Auxilary Relay	1			
	Timer (setting value)	TC 000 ~	6000	Word Address	
	Counter (setting value)	CC 000 ~	7000	Word Address	
	Timer (current value)	TS 000 ~	6800	Word Address	
	Counter (current value)	CS 000 ~	7800	Word Address	
	Data Memory	DM 0000 ~	0000	Word Address	
	Temporary Data Memory	TM 00 ~	4800	Word Address	
Word Device	Digital Trimer	AT0~	5800	Word Address	
	High Speed Counter	CTH 0 ~	1000	Word Address	
	(current value)	CIITO~	1000	Wat Autess	
	High Speed Counter				
	Conparator	CTC 0 ~	2000	Word Address	
	(setting value)				
	LS area	LS0000 ~	4000	Word Address	

■ Shinko Electric

SELMART Series

	Device	Word Address	Device code (HEX)	Address code
Word	Data Register	D00000~	0000	Word Address
Device	LS area	LS0000~	4000	Word Address

■ Matsushita Electric Industrial

Panadac P7000 Series

	Device	Word Address	Device code (HEX)	Address code
	Input Relay	IN0000~	8000	Word Address
	Output Relay	OT0000~	8800	Word Address
	Internal Relay	RL0000~	9000	Word Address
	Hold Relay	KR0000~	C000	Word Address
	Link Relay	LK0000~	C800	Word Address
Bit Device	Status Relaly	ST0000~	9800	Word Address
DII Device	MC Status Relay	MS0000~	9A00	Word Address
	Timer State Relay	TS0000~	E200	Word Address
	Timer Up Relay	TU0000~	E000	Word Address
	Count Up Relay	CU0000~	F000	Word Address
	CPU Input Relay	C10000~	8200	Word Address
	CPU Output Relay	CO0000~	8A00	Word Address
	Data Memory	M0000~	0000	Word Address
	Link Register	LM0000~	4800	Word Address
	Timer (setting value)	TM0000~	6800	Word Address
Word Device	Timer (current value)	CT0000~	6000	Word Address
	Counter value	TC0000~	7000	Word Address
	Position Data	PM0000~	0800	Word Address
	LS Area	LS0000~	4000	Word Address

■ ORIM VEXTA

	Device	Word Address	Device code (HEX)	Address code
	Input Register	10001 ~	8000	Word Address minus 1.
	ON Event Input Register	IU 001 ~	8800	Word Address minus 1.
	OFF Event Input Register	ID001 ~	9000	Word Address minus 1.
Bit Device	Output Register	O0001 ~	B000	Word Address minus 1.
	Position Register	M0001 ~	C 800	Word Address minus 1.
	U niv ersal Register Double-Length	RD001 ~	E000	Word Address minus 1.
	Base Register	B000 ~	F000	Word Address
	Current Motor Status	MS001 ~	A800	Word Address minus 1.
	SY Register	SY001 ~	D000	Word Address minus 1.
	Analog Input Register	AD001 ~	5800	Word Address minus 1.
	Analog Output Register	DA001 ~	4800	Word Address minus 1.
	Speed Register Low	SL001 ~	6800	Word Address minus 1.
	Speed Register High	SH001 ~	7000	Word Address minus 1.
Word Device	Speed Register Raise	SR001 ~	7800	Word Address minus 1.
	Speed Register Decrease	SD001 ~	1000	Word Address minus 1.
	Current Motor Position	MP001	3800	Word Address minus 1.
	Universal Register	R0001 ~	0000	Word Address minus 1.
	LS area	LS0000 ~	4000	Word Address

■ FATEK

Facon FB 20MC

	Device	Word Address	Device code (HEX)	Address code
Bit	Input points	WX000 ~	0400	Save as word address value divided by 16.
	Output Relays	WY000 ~	0800	Save as word address value divided by 16.
Device	Internal Relays	WM 0000 ~	1000	Save as word address value divided by 16.
Device	Special Relays	WSM1912 ~	2000	Save as word address value divided by 16.
	Step Relays	WS000 ~	4200	Save as word address value divided by 16.
	Timer Registers	TM R000 ~	4400	Word Address
	Counter Registers	CTR000 ~	4800	Word Address
	Data Register	HR0000 ~	0000	Word Address
	Input Registers	IR3840 ~	5000	Word Address
Word	Output Registers	OR3904 ~	6000	Word Address
Device	HSC Register	HSC 4096 ~	0600	Word Address
	Calendar Register	RTC 4128 ~	0C 00	Word Address
	Special Register	SR4136 ~	1800	Word Address
	Read-Only Registers	ROR5000 ~	3000	Word Address
	LS Area	LS0000 ~	4000	Word Address

■ Yokogawa M&C Controllers

	Device	Word Address	Device Code (HEX)	Address Code
Word Device	D	0001 ~	0000	Word Address -1
Bit Device		0001 ~	9000	(Word Address-1)÷16

■ Yamatake Controllers

	Device	Word Address	Device Code (HEX)	Address Code
W		0000 ~	8000	Word Address
0		1000 ~	8200	Word Address-1000
r	Data	2000 ~	8400	Word Address-2000
d		3000 ~	8600	Word Address-3000
D		4000 ~	8800	Word Address-4000
e		5000 ~	9000	Word Address-5000
V		6000 ~	9200	Word Address-6000
i		7000 ~	9400	Word Address-7000
С		8000 ~	9600	Word Address-8000
е	LS Area	LS0000 ~	4000	Word Address

^{*}Unit No. 1 is only available.

■ RKC INSTRUMENT INC. Controllers

	Device	Word Address	Device Code (HEX)	Address Code
Word Device		0000 ~ 02EE	8000	Word Address
Word Device	LS Area	LS0000 ~	4000	Word Address

■ Omron Corporation Controllers

	Device	Word Address	Device Code (HEX)	Address Code
	Variable Areas	C00000 ~	80E0	Word Address
		C10000 ~	82E0	Word Address
Word Device		C30000 ~	84E0	Word Address
Word Device	Operation Commands	A0000 ~	8660	Word Address
	LS Area	LS0000 ~	40E0	Word Address

■ Shinko Technos Corporation Controllers C/FC/FIR/GC/FCL/PC-900 Series

	Device	Word Address	Device Code (HEX)	Address Code
		0001 ~	8000	Word Address -1
		0401 ~	8200	Word Address -0x401
		0801 ~	8400	Word Address -0x801
		0C01 ~	8600	Word Address -0xC01
		1001 ~	8800	Word Address -0x1001
		1401 ~	8A00	Word Address -0x1401
		1801 ~	8C00	Word Address -0x1801
		1C01 ~	8E00	Word Address -0x1C01
		2001 ~	9000	Word Address -0x2001
		2401 ~	9200	Word Address -0x2401
		2801 ~	9400	Word Address -0x2801
		2C01 ~	9600	Word Address -0x2C01
		3001 ~	9800	Word Address -0x3001
		3401 ~	9A00	Word Address -0x3401
		3801 ~	9C00	Word Address -0x3801
	D 1 11	3C01 ~	9E00	Word Address -0x3C01
	Data Items	4001 ~	A000	Word Address -0x4001
		4401 ~	A200	Word Address -0x4401
		4801 ~	A400	Word Address -0x4801
		4C01 ~	A600	Word Address -0x4C01
		5001 ~	A800	Word Address -0x5001
		5401 ~	AA00	Word Address -0x5401
		5801 ~	AC00	Word Address -0x5801
		5C01 ~	AE00	Word Address -0x5C01
		6001 ~	B000	Word Address -0x6001
		6401 ~	B200	Word Address -0x6401
		6801 ~	B400	Word Address -0x6801
		6C01 ~	B600	Word Address -0x6C01
		7001 ~	B800	Word Address -0x7001
Word		7401 ~	BA00	Word Address -0x7401
Device		7801 ~	BC00	Word Address -0x7801
Device		7001 ~	BE00	Word Address -0x7C01
F	Setting Value Memory 1	1S0001 ~	C000	Word Address -1
F	Setting Value Memory 2	2S0001 ~	C200	Word Address -1
F		3S0001 ~	C400	Word Address -1
-	Setting Value Memory 3	4S0001 ~	C600	Word Address -1
F	Setting Value Memory 4	5S0001 ~	C800	Word Address -1
-	Setting Value Memory 5	6S0001 ~	CA00	Word Address -1
F	Setting ValueMemory 6	7S0001 ~	CC00	
-	Setting Value Memory 7	1CH01 ~	D000	
F	Channel 1			Word Address -1
-	Channel 2	2CH01 ~	D200	Word Address -1
-	Channel 3	3CH01 ~	D400	Word Address -1
-	Channel 4	4CH01 ~	D600	Word Address -1
-	Channel 5	5CH01 ~	D800	Word Address -1
-	Channel 6	6CH01 ~	DA00	Word Address -1
F	Channel 7	7CH01 ~	DC00	Word Address -1
-	Channel 8	8CH01 ~	DE00	Word Address -1
ļ	Channel 9	9CH01 ~	E000	Word Address -1
].	Channel 10	10CH01 ~	E200	Word Address -1
ļ	Channel 11	11CH01 ~	E400	Word Address -1
Ļ	Channel 12	12CH01 ~	E600	Word Address -1
]_	Channel 13	13CH01 ~	E800	Word Address -1
L	Channel 14	14CH01 ~	EA00	Word Address -1
Ĺ	Channel 15	15CH01 ~	EC00	Word Address -1
	Channel 16	16CH01 ~	EE00	Word Address -1
	Channel 17	17CH01 ~	F000	Word Address -1
	Channel 18	18CH01 ~	F200	Word Address -1
ſ	Channel 19	19CH01 ~	F400	Word Address -1
ſ	Channel 20	20CH01 ~	F600	Word Address -1
	LS Area	LS0000 ~	4000	Word Address

■ Fuji Electric Corporation Controller Micro-Controller X Series (Model:PXR)

	Device	Word Address	Device Code (HEX)	Address Code
Bit Device		00001 ~	8000	Cannot be set
Dit Device		10001 ~	8200	Word Address minus 1
	Parameter	30001 ~	8400	Word Address minus 1
Word	. aramoto	40001 ~	8600	Word Address minus 1
Device		31001 ~	8800	Word Address minus 1
Device		41001 ~	8A00	Word Address minus 1
	LS Area	LS0000 ~	4000	Word Address

■ TOHO ELECTORICS INC.

TTM Series

	Device	Word Address	Device Code (HEX)	Address Code
	00_	00_0000 ~ 0075	8000	Word Address
	10_	10_0000 ~ 0025	B000	Word Address
	100_	100_0000 ~ 0032	B200	Word Address
	110_	110_0000 ~ 0041	8200	Word Address
	120_	120_0000 ~ 0043	8400	Word Address
	300_	300_0000 ~ 0067	8600	Word Address
	1020_	1020_0000 ~ 0077	8800	Word Address
	Step Temperature Setting	SSV0000 ~ 2047	9000	Word Address
Word Device	Final Step Setting	END0000 ~ 2047	9200	Word Address
Word Device	Step time Setting	STI0000 ~ 2047	9400	Word Address
	Final Step Finish Condition Setting	SOK0000 ~ 2047	9600	Word Address
	Step Wait Zone	SWZ0000 ~ 2047	9800	Word Address
	Step Wait Time	SWT0000 ~ 2047	A000	Word Address
	Time Signal ON Time	SON0000 ~ 2047	A200	Word Address
	Time Signal OFF Time	SOF0000 ~ 2047	A400	Word Address
	Execution Time	SRN0000 ~ 2000	A600	Word Address
	End Signal ON Time	SEO0000 ~ 2000	A800	Word Address
	LS area	LS0000 ~	4000	Word Address

■ Memory Link Method

	Word Address	Device code (HEX)	Address code
Word Device	0~	4040	Word Address

■ Device Net

	Device	Word Address	Device code (HEX)	Address code
Word Device	LS area	LS0000 ~	4000	Word Address

■ CC-Link

	Device	Word Address	Device code (HEX)	Address code
Word Device	LS area	LS0000 ~	4000	Word Address

■ CC-Link intelligent Device Station

E-tag or K-tag indirect addresses cannot be designated by CC-Link Intelligent Device Station.

■ Mitsubishi Electronic Corporation Inverter

	Device	Word Address	Device code (HEX)	Address code
	Parameter (except for Pr.37 of FREQROL-			
	S500 and FREQROL-E500)	0000 ~	8000	Word Address
	Parameter (Pr.37 of FREQROL-S500 or FREQROL-E500)	P0037	8200	Word Address
	Operation mode	OPE0	8400	Word Address
	Output frequency (rpm)	OUTF0	8600	Word Address
	Output current	OUTCO	8800	Word Address
	Output voltage	OUTV0	9000	Word Address
	Special monitor	SPM0	9200	Word Address
	Output frequency	SOF0	9400	Word Address
	Output current	SOC0	9600	Word Address
		SOV0		Word Address
	Output voltage Set frequency value	FRS0	9800	
	, ,		A000	Word Address Word Address
	Run speed	RUNSO	A200	1
	Motor torque	MOT0	A400	Word Address
	Regenerative brake	RBRK0	A600	Word Address
	Electronic thermal load factor	ELOF0	A800	Word Address
	Output current peak value	OCPV0	B000	Word Address
	Converter output voltage peak value	COPK0	B200	Word Address
Word Device	Input power	IPOW0	B400	Word Address
	Output power	OPOW0	B600	Word Address
	Alarm (latest Nos. 1 & 2)	A12D0	B800	Word Address
	Alarm (latest Nos. 3 & 4)	A34D0	C000	Word Address
	Alarm (latest Nos. 5 & 6)	A56D0	C200	Word Address
	Alarm (latest Nos. 7 & 8)	A78D0	C400	Word Address
	Run command	RUNC0	C600	Word Address
	Inverter status monitor	INVS0	C800	Word Address
	Run frequency write (E2PROM)	RWRT0	D000	Word Address
	Set frequency write (RAM and E2PROM)	SFWE0	D200	Word Address
	Set frequency write (only RAM)	SFWR0	D400	Word Address
	Set frequency read (E2PROM)	SFRE0	D600	Word Address
	Set frequency read (RAM)	SFRR0	D800	Word Address
	Error all clear	ERCL0	E000	Word Address
	Inverter reset	RSET0	E200	Word Address
	Parameter all clear	ALLCO	E400	Word Address
	User clear	ALLC0	E400	Word Address
	Link parameter extended settings	LNKP0	E600	Word Address
	No. 2 parameter change	SECP0	E800	Word Address
	LS area	LS0000 ~	4000	Word Address

■ Fuji Electronic Corporation Inverter

Device codes and address codes are used to specify indirect addresses for E-tags and K-tags.

	Device	Word Address	Device code (HEX)	Address code
	Basic function	F00 ~	0000	Word Address
	Terminal function	E01 ~	1000	Word Address minus 1.
	Controlling function	C01 ~	2000	Word Address minus 1.
	Motor 1	P00 ~	3000	Word Address
	High level function	H01 ~	5000	Word Address minus 1.
Word Device	Motor 2	A01 ~	6000	Word Address minus 1.
	Option	000 ~	7000	Word Address
	Command data	S01 ~	1200	Word Address minus 1.
	Monitor data	M01 ~	1400	Word Address minus 1.
	Alarm reset	m00	1600	Word Address
	LS Area	LS0000 ~	4000	Word Address

■ Interbus-S

Direct I/O Mode

	Device	Word Address	Device code (HEX)	Address code
Word Device	LS area	LS0000 ~	4000	Word Address

Packet Transfer Mode

	Device	Word Address	Device code (HEX)	Address code
Word Device	Data Block	DB02W00000~	7C 00	Same as word address value divided by 2
	Input Relay	IW00000~	8000	Same as word address value divided by 2
Bit Device	Output Relay	OW00000~	8800	Same as word address value divided by 2
	Internal Memory	Mw00000~	9000	Same as word address value divided by 2

Using Servo

■ Matsushita Electric's Servo

	Device	Word Address	Device code (HEX)	Address code
	05_	00	8600	Word Address
	20_	00	8E00	Word Address
	20_	01	9000	Word Address
	21_	00	9200	Double-Word Address
	22_	00	9400	Double-Word Address
	24_	00	9600	Word Address
	25_	00	9800	Word Address
	26_	00	9A00	Double-Word Address
	27_	00	9C 00	Double-Word Address
	28_	00	9E00	Double-Word Address
	28_	00	A000	Word Address
	29_	00	A200	Word Address
	29_	01	A400	Word Address
	29_	02	A600	Double-Word Address
	2A_	00	A800	Word Address
	2A_	01	AA00	Word Address
	 2A_	02	AC00	Double-Word Address
	 2A_	03	AE00	Double-Word Address
	 2A_	04	B000	Word Address
	 2D	00	B200	Word Address
	 2D	01	B400	Word Address
	 2D	02	B600	Double-Word Address
	 2D	03	B800	Word Address
	80_	000 ~ 0FF	BA00	Word Address
	81_	000 ~ 0FF	BC00	Word Address
	84	00	BE00	Word Address
	90_	00	C 000	Word Address
	91_	000 ~ 0FF	C 200	Word Address
	91_	100 ~ 1FF	C 400	Word Address
	92_	001 ~ 014	C 600	Word Address
	93_	00	C 800	Word Address
	94_	00	CA00	Word Address
-	9B_	00	CC00	Word Address
-	,b_	000 ~ 07F	CE00	Word Addices
		100 ~ 17F	DA00	
	B0_	200 ~ 27F	DC 00	Word Address
		300 ~ 37F	DE00	
<u> </u>		000 ~ 07F	D000	
		100 ~ 07F	D400	
	B1_	200 ~ 27F		Word Address
			D600	
<u> </u>	D2	300 ~ 37F	D800	\Movd A - -
<u> </u>	B2_ LS area	0000 ~	D200 4000	Word Address Word Address

A 3 Device Monitor

Using the GP's device monitor function allows the PLC's arbitrary device memory to be monitored or changed. A device can be monitored or changed from the GP window regardless of the GP screen being displayed.

- All applicable devices used with the GP can be monitored or changed by the GP.
- I/O relays, data memory and other items can be displayed on the Device Monitor function's special window in random or block format.
- The bit device's ON/OFF status, and the word device's current numeric values (selectable as binary, octal, decimal or hexadecimal) can be displayed.

Applicable GPs:

GP-2300, GP-2400, GP-2500, GP-2600, GP-477R, GP-577R, GP-377R, GP-470, GP-570, GP-571, GP-675, GP-370, GP-377, GP-H70 (System version 1.20 and later)

Applicable PLCs:

MELSEC-A series (CPU: A2A or A3A) direct CPU connection, by Mitsubishi Electric Co.

MELSEC-AnA series using Link I/F (applicable CPUs are listed in Section 1-3 "Connectable PLCs") link, by Mitsubishi Electric Co.

MELSEC-AnN series CPU Direct Connection (applicable CPUs are listed in Section 1-3 "Connectable PLCs") direct CPU connection, by Mitsubishi Electric Co.

MELSEC-AnN series using Link I/F (applicable CPUs are listed in Section 1-3 "Connectable PLCs") link, by Mitsubishi Electric Co.

MELSEC-QnA series CPU Direct Connection (applicable CPUs are listed in Section 1-3 "Connectable PLCs") direct CPU connected, by Mitsubishi Electric Co.

MELSEC-QnA series using Link I/F (applicable CPUs are listed in Section 1-3 "Connectable PLCs") link, by Mitsubishi Electric Co.

MELSEC-FX series (applicable CPUs are listed in Section 1-3 "Connectable PLCs"), by Mitsubishi Electric Co.

MELSEC-Q series CPU Direct Connection (applicable CPUs are listed in Section 1-3 "Connectable PLCs") direct CPU connected, by Mitsubishi Electric Co.

SYSMAC C Series (applicable CPUs are listed in Section 1-3 "Connectable PLCs")

SYSMAC a Series (applicable CPUs are listed in Section 1-3 "Connectable PLCs")

SYSMAC CS1/CJ Series (applicable CPUs are listed in Section 1-3 "Connectable PLCs")

Appendix 3 Device Monitor

Reference To use the device monitor function, it must first be registered, using the GP-PRO/PBIII for Windows 95 software's Utility menu. (See Operation Manual's chapter 4.2.5 "Device Monitor".)

This chapter explains the use of this function with a MELSEC-A series PLC, manufactured by Mitsubishi Electric Co.



- The device monitor function uses approximately 90 reserved tags. Therefore, when the device monitor's special screen is displayed on the GP monitor, the total number of tags displayed may exceed the maximum number allowed. In this case, the device monitor may not operate correctly. (The message "Number of tags exceeded" will be displayed) at the bottom of the screen. If using the device monitor exceeds the maximum number of tags, do not use the device monitor with that screen.
- It is possible in the interest of future expansion, to set a device address range which is outside the PLC's present device address range. However, when an attempt is made to display a non-existing range, the message "Host communication error" will be displayed. In this case, either adjust the device address range so it is inside the actual range, or delete it. Also, if a device address was written to outside the actual range, the message "Host communication error" will continue to be displayed. To erase this message, turn the GP's power OFF, and then ON again, or reset the GP while it is offline. Never try to write to device address that are outside of the PLC's actual range.
- The device monitor can only monitor devices that are shown in "Supported Devices" section in each PLC.
- User's Area from LS2096 to LS4095 will be reserved and cannot be used when using device monitor.

■ Global Window Setup

The device monitor function uses the GP's global window function. This means that when the device monitor function is used, other global windows cannot be displayed.

With the GP in OFFLINE mode, select [1. INITIALIZE], then [1. SYSTEM ENVIRONMENT SETTINGS], and then [3. GLOBAL WINDOW SETUP]. In this window, input the following:

- Global window: Use

- Global window designation: Indirect

- Data format: BIN

Appendix 3 Functions

A 3.1 Functions

(1) The Random Monitor can

- Monitor devices at eight arbitrary points.
- Designate bit and word devices monitored in single-bit units.
- Display the ON/OFF status for bit devices; display data in binary, octal, decimal, or hexadecimal notation for word devices.
- Write data to devices being monitored.

(2) The Block Monitor can

- Monitor devices at eight consecutive points.
- Specify the word device.
- Display data in binary, octal, decimal, or hexadecimal notation.
- Monitor devices in 8 point "pages", (8 devices equal one page). Uses [NEXT] and [Previous] commands to move to next "page".
- Specify the first device to be monitored.
- Write data to devices being monitored.

(3) To Write Data

- Write out the data for arbitrary devices regardless of the monitoring screen being used.
- Specify the bit device and word device.
- Change the ON/OFF status for bit devices, or input hexadecimal numeric values for the word device.



If any device monitor compatible with the MELSEC-FX made by Mitsubishi Electric Corp. is used, only the lower two bytes (16 bits) are displayed for any binary or octal number when a 32-bit device (CN200 to CN255) is monitored. For any hexadecimal or decimal number, all 32 bits are displayed.

A 3.2 Screen Operation

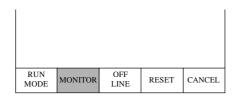
A 3.2.1 Starting Device Monitor



1) Touch the points shown by numbers ① and ②, then touch ③.

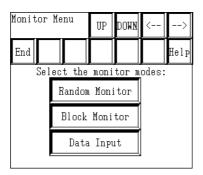
Reference For details refer to "**I/O** setup" in each unit's User's Manual.

Panel's Menu Bar will appear.



2) Select MONITOR from the menu bar.

The MONITOR MENU screen is then displayed. *1





If MONITOR is not displayed in the menu bar, check that the global window setting save correct.

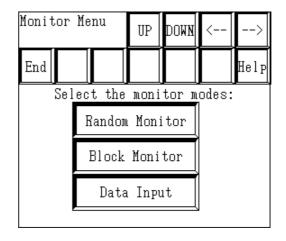
Reference See "Global Window Settings".

^{*1} If the device monitor function is not supported by the protocol, touching the MONITOR selection has no effect.

A3.2.2 Monitor Menu

This menu can be used to monitor each PLC device.

In this window, please select the device monitor mode.



Random Monitor

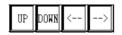
Monitors devices at eight arbitrary points.

Block Monitor

Monitors devices at eight consecutive points.



Writes data to an arbitrary device.



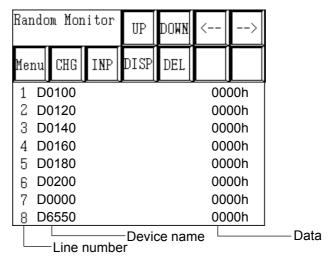
Changes the position of the device monitor's display window.



Ends Device Monitoring.

■ Random Monitor

Monitors devices at eight arbitrary points.



UP DOMN <-- ->

Moves the position of the display window.

Menu Re

Returns to the MONITOR MENU.

CHG

Displays the title "Change Line Selection" and then changes to device and address change mode.

INP

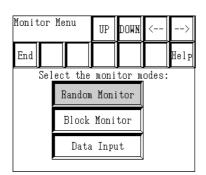
Displays the title "Write Line Selection" and then changes to data write mode.

DSP

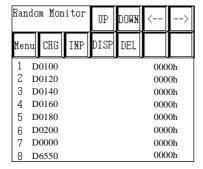
Displays the title "Display Line Selection" and then changes to data display mode.

DEL

Displays the title "Delete Line Selection" and then deletes the Device data displayed at the selected line number.



1) Select RANDOM MONITOR from the MONITOR MENU.



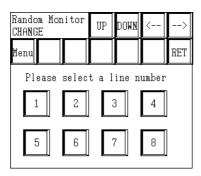
2) The RANDOM MONITOR screen will appear.

O Change

Both the device to be monitored and its address can be changed.

Random Monitor			UP	DOWN	<	>	
Men	ıu	CHG	INP	DISP	DEL		
1	D	0100				000	0h
2	D	0120				000	0h
3	D	0140				000	0h
4	D	0160				000	0h
5	D	0180				000	0h
6	D	0200				000	0h
7	D	0000				000	0h
8	D	6550				000	0h

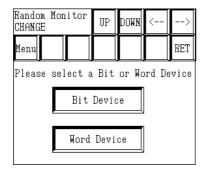
1) Select [CHG] on the RANDOM MONITOR screen, and the RANDOM MONITOR CHANGE LINE SELECTION screen will appear.



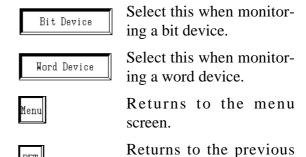
2) Select the line number of the line to be changed, and the RANDOM MONITOR CHANGE screen will appear.



You can also make the selection directly on the RANDOM MONITOR screen by touching the device or address to be changed with your fingertip.

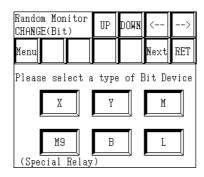


3) Select the device to be changed.



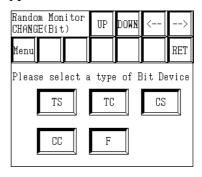
screen.

When [BIT DEVICE] is selected:

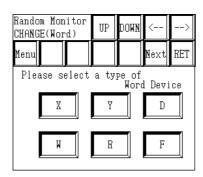


4) Select the type of device to be monitored on the RANDOM MONITOR CHANGE screen.

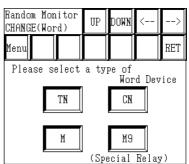
Touch [NEXT] to display the remaining device types.



When [WORD DEVICE] is selected:



Touch [NEXT] to display the remaining device types.



Random Monitor CHANGE(Bit)			UP	DOWN	<	>	
Menu						RET	
Type of Bit Device							
Please enter an address							
1	2	3	4	5	6	7	
- 8	9	0	Ĥ	В	C	D	
Е	F	CL		ENT			

5) Input the address of the device to be monitored, and touch [ENT].

The address of the device being monitored is then changed.



- The types of devices displayed will vary depending on the PLC being used.
- In anticipation of future expansion, the device address input can exceed the actual device address range of the PLC being used.

However, if an attempt is made to monitor an address outside the device address range, the message "PLC COM. ERROR" will be displayed at the bottom of the screen.

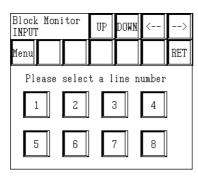
In such a case, adjust the device address range being monitored so that it is within the actual device address range of the PLC being used.

2 Writing

Data can be written either to the device to be monitored or to its address.

Random Monitor			UP	DOWN	<	>
Meni	CHG	INP	DISP	DEL		
1 D0100 0000h				0h		
2 D0120				0000h		
3 D0140				0000h		
4 D0160				0000h		
5	D0180				000	0h
6	D0200				000	0h
7	D0000				000	0h
8	D6550				000	0h

 Select [WRITE] on the RANDOM MONITOR TOR screen, and the RANDOM MONITOR WRITE LINE SELECTION screen will appear.

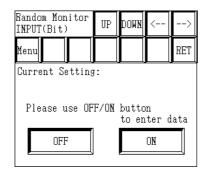


2) Select the line number of the device to be written to, and the RANDOM MONITOR WRITE screen will appear.

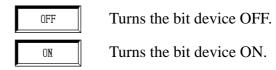


You can also make the selection directly on the RANDOM MONITOR screen by touching the device to be written to with your fingertip.

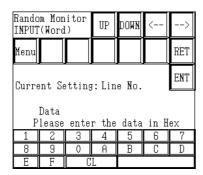
When the selected line's device is a bit device:



1) Select the data.



When the selected line's device is a word device:



1) Input the data in hexadecimal, and touch [ENT].

The data will be written to the selected line's device.



The position of the [ENT] key is different from that on the RANDOM MONITOR CHANGE screen. (This is to prevent the accidental writing of data.)

If input wrong, the message "Input error" will blink in the upper-left corner of the screen.

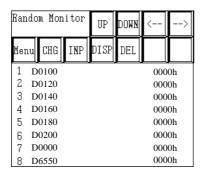
TReference For information about input ranges, refer to devices listed in "Supported Devices" section in each PLC.



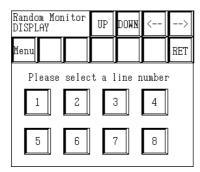
Do not attempt to write address data to a device that is outside the actual device address range of the PLC being used.

3 Display format

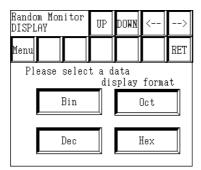
Here, the data's display format can be selected. While a bit device is actually being monitored, however, the display format cannot be changed.



 Select [DISP] on the RANDOM MONITOR screen, and the RANDOM MONITOR DIS-PLAY LINE SELECTION screen will appear.



 Select the line number of the line whose display format you wish to change, and the RANDOM MONITOR DISPLAY screen will appear.



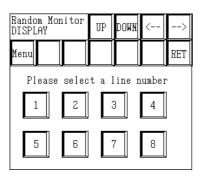
3) Select the data's display format.

4 Deleting

Here, a line of device data used for monitoring can be deleted.

Random Monitor			UP	DOWN	<	>
Menu	CHG	INP	DISP	DEL		
1 D	1 D0100 0000h					
2 D0120				0000h		
3 D0140				0000h		
4 D0160				0000h		
5 D0180				0000h		
6 D0200				0000h		
7 D	0000				0000)h
8 D	6550				0000)h

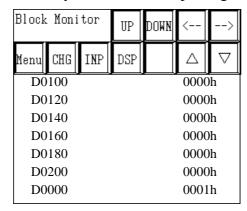
 Select [DEL] on the RANDOM MONITOR screen, and the RANDOM MONITOR DE-LETE LINE SELECTION screen will appear.



2) Select the line number of the line you with to delete, and the monitor of the selected line number will be deleted.

■ BLOCK MONITOR

Here, you can monitor up to eight consecutive word devices.



IP DOWN <-- -- Moves the window's display position.

Menu

INP

Returns to the MONITOR MENU screen.

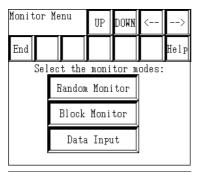
Displays the CHANGE LINE SELECTION and then switches to the Device and Address Change mode.

Displays the WRITE LINE SELECTION screen, and then switches to the Data Write mode.

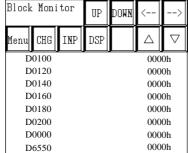
Displays the DISPLAY LINE SELECTION screen, and then switches to the Data Display mode.

Displays ("Pages" backwards to show) the previous 8 addresses.

Displays ("Pages" forwards to show) the next 8 addresses.



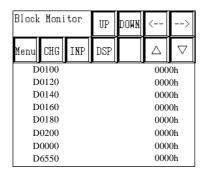
1) Select [BLOCK MONITOR] from the MONITOR MENU screen and then [BLOCK MONITOR] screen will be displayed.



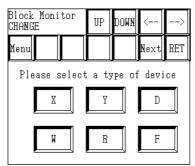
2) Use the [CHG] key to select the device to be monitored.

O Change

Both the device to be monitored and its address can be changed. First, change the device and address where you will start monitoring.



1) Select [CHG] from the BLOCK MONITOR screen's menu, and the BLOCK MONITOR CHANGE screen will appear.

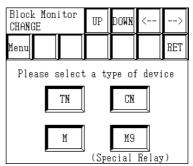


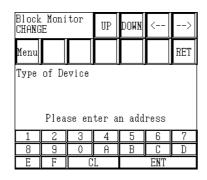
2) Select the type of device to be changed.

Menu Returns to the menu screen.

RET Returns to the previous screen.

Displays the remaining device types.





3) Input the address to be monitored and touch the [ENT] key.



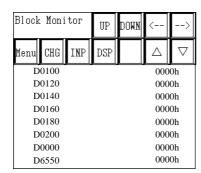
In anticipation of future expansion, the device address input can exceed the actual device address range of the PLC being used.

However, if an attempt is made to monitor an address outside the device address range, the message "Host Communication Error" will be displayed at the bottom of the screen.

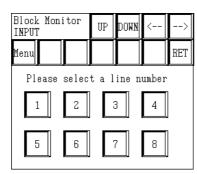
In such a case, adjust the device address range being monitored so that it is within the actual device address range of the PLC being used.

② Writing

Data can be written to either the device being monitored or to its address.



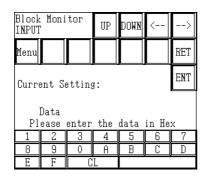
1) Select [INP] on the BLOCK MONITOR screen, and the BLOCK MONITOR INPUT LINE SELECTION screen will appear.



2) Select the line number of the device to be written to, and the BLOCK MONITOR IN-PUT screen will appear.



You can also make the selection directly on the BLOCK MONITOR screen by touching the device to be written to with your fingertip.



3) Input the data in hexadecimal, and touch [ENT].

The data will be written to the selected line's device.



The position of the [ENT] key is different from that on the BLOCK MONITOR CHANGE screen. (This is to prevent the accidental writing of data.)

If input wrong, the message "Input error" will blink in the upper-left part of the screen.

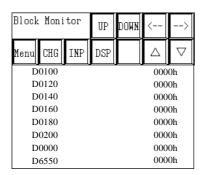
Reference For information about input ranges, refer to devices listed in "Supported Devices" section in each PLC.



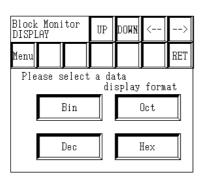
Do not attempt to write address data to a device that is outside the actual device address range of the PLC being used.

3 Display format

Here, the data's display format can be selected.



1) Select [DISP] on the BLOCK MONITOR screen and the BLOCK MONITOR DIS-PLAY screen will appear.



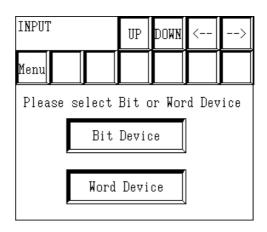
2) Select the data's display format.

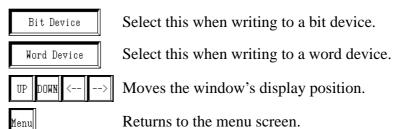
A 3.2.3 Writing Data

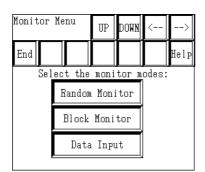
Here, data can be written to the PLC's arbitrary (designated) device.



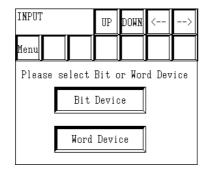
Do not attempt to write address data to a device that is outside the actual device address range of the PLC being used.







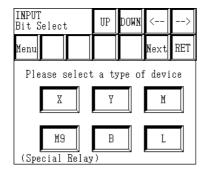
1) Select [Data Input] on the MONITOR MENU screen, and the WRITE screen will appear.



2) Select the (bit or word) device to be changed.

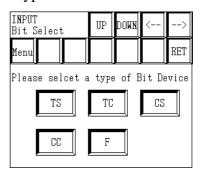
The following section explains the procedures used when either a bit or word device is selected.

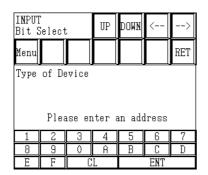
When [BIT DEVICE]is selected:



3) Select the type of the device to be written to.

Touching [NEXT] displays the remaining device types.





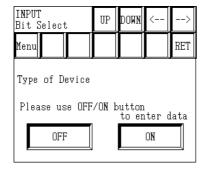
4) Input the address of the device to be written to, and touch [ENT].



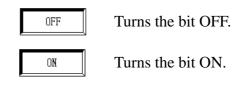
In anticipation of future expansion, the device address input can exceed the actual device address range of the PLC being used.

However, if an attempt is made to monitor an address outside the device address range, the message "Host Communication Error" will be displayed at the bottom of the screen.

In such a case, adjust the device address range being monitored so that it is within the actual device address range of the PLC being used.



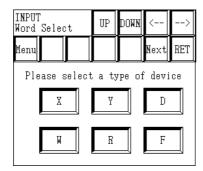
5) Input the data to be written to the PLC bit address.



If input wrong, the message "Input error" will blink in the upper-left corner of the screen.

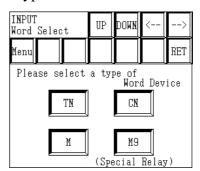
TReference For information about input ranges, refer to devices listed in "**Supported Devices**" section in each PLC.

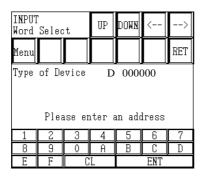
When [WORD DEVICE] is selected:



3) Select the type of the device to be written to.

Touching [NEXT] displays the remaining device types.

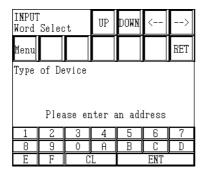




4) Input the address of the device to be written to, and touch [ENT].

If input wrong, the message "Input error" will blink in the upper-left corner of the screen.

TReference For information about input ranges, refer to devices listed in "Supported Devices" section in each PLC.



5) Input the data to be written to the PLC word address and touch [ENT].



The position of the [ENT] key is different from that on the RANDOM MONITOR CHANGE screen. (This is to prevent the accidental writing of data.)

