Pro-face

Device/PLC Connection Manuals

About the Device/PLC Connection Manuals

Prior to reading these manuals and setting up your device, be sure to read the "Important: Prior to reading the Device/PLC Connection manual" information. Also, be sure to download the "Preface for Trademark Rights, List of Units Supported, How to Read Manuals and Documentation Conventions" PDF file. Furthermore, be sure to keep all manual-related data in a safe, easy-to-find location.
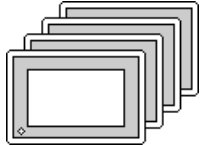
5.7   Rockwell (Allen-Bradley)
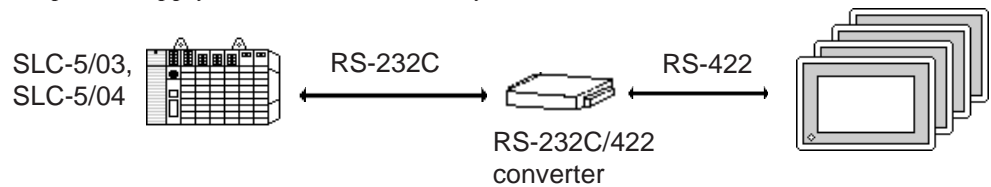
5.7.1   System Structure

The following describes the system structure for connecting the GP to Rockwell (Allen-Bradley) PLCs.

Reference *The Cable Diagrams mentioned in the following tables are listed in the section titled "**5.7.2 Cable Diagrams**".*
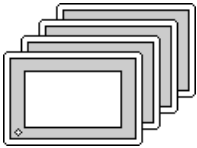
■ SLC 500 Series (using CPU unit Link I/F)

CPU	Cable Diagram	GP
SLC-5/03 SLC-5/04	(Cable Diagram 1)[*1]	GP Series

* 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.

■ **MicroLogix 1000 Series (Using Advanced Interface Converter)**

CPU	Link	Cable Diagram	GP
		←————————→	
1761-L16AWA 1761-L32AWA 1761-L20AWA-5A 1761-L10BWA 1761-L16BWA 1761-L20BWA-5A 1761-L32BWA 1761-L10BWB 1761-L16BWB 1761-L20BWB-5A 1761-L32BWB 1761-L16BBB 1761-L32BBB 1761-L32AAA	Advanced Interface Converter (1761-NET-AIC)	RS-422 <Cable Diagram 1>[1]	GP Series

■ **MicroLogix 1200 Series (Using Advanced Interface Converter)**

CPU	Link	Cable Diagram	GP
		←————————→	
1762-L24AWA 1762-L24BWA 1762-L24BXB 1762-L40AWA 1762-L40BWA 1762-L40BXB	Advanced Interface Converter (1761-NET-AIC)	RS-422 <Cable Diagram 1>[1]	GP Series

■ MicroLogix 1500 Series (Using Advanced Interface Converter)

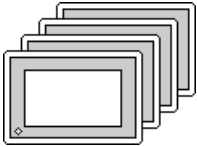| CPU	Link	Cable Diagram	GP
1764-LSP	Advanced Interface Converter (1761-NET-AIC)	RS-422 <Cable Diagram 1> *1	GP Series

*1 An RS-232C/RS-422 converter is required. (Refer to the diagram below.) Use an RS-232C/RS-422 converter with the terminal block on the RS-422 side. Be sure to use a power supply other than that used by the communication line.
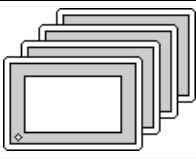

MicroLogix 1000/1200/1500 Series — RS-232C — **Advanced Interface Converter (1761-NET-AIC)** — RS-232C — **RS-232C/RS-422 converter** — RS-422
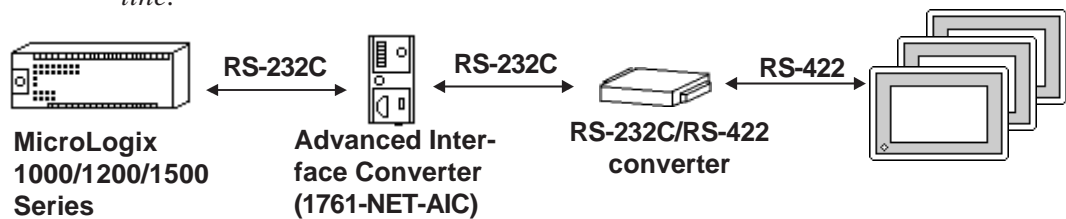
5.7.2 Cable Diagrams

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

	Adapter	Adapter	PLC Adapter
Termination Resistance	RD A	RD A	SDA
	RD B	RD B	SDB
Termination Resistance	SD A	SD A	RDA
	SD B	SD B	RDB
	SG	SG	SG
	F G	F G	F G
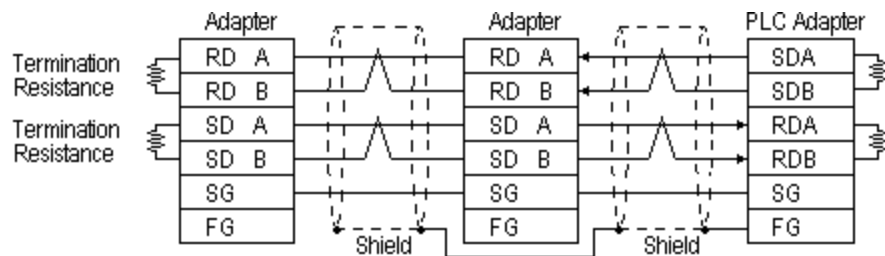
∗ Check the PLC Adapter specifications for the Termination Resistance

• When using Digital's Multi-link Cable, GP230-IS12-O
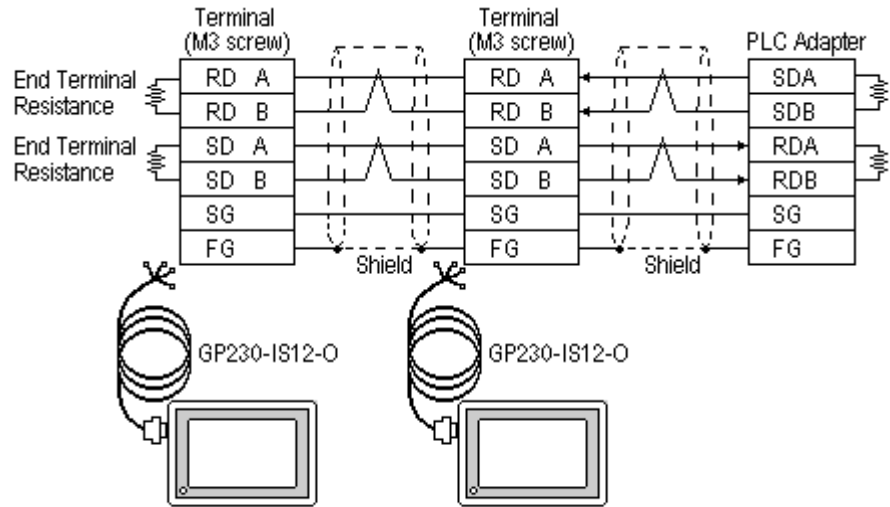
* Check the PLC Adapter specifications for the End Terminal Resistance

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

Important

• **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.**
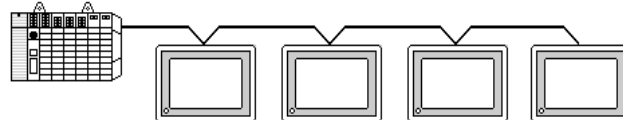
Note: When making your own connections, Hitachi Densen's CO-SPEV-SB(A)3P*0.5 cable is recommended.

The cable connection lines are as illustrated below. The cables between the GP and the terminals should be less than 10m.
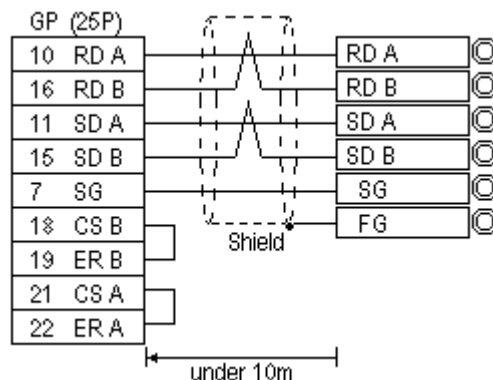
5.7.3   Supported Devices

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

■ SLC 500/MicroLogix 1000•1200•1500 Series

▢ Setup System Area or Communication Information's Storing Address here.

Device	Bit Address	Word Address	Particulars	
Output	O:0.000/00 ~ O:63.255/15	O:0.000 ~ O:63.255	*2*3	L/H
Input	I:0.000/00 ~ I:63.255/15	I:0.000 ~ I:63.255	*2*3	
Bit	B3:000/00 ~ B3:255/15	B3:000 ~ B3:255		H/L
	B9:000/00 ~ B255:255/15	B9:000 ~ B255:255		
Timer (TT: Timing Bit)	T4:000/TT ~ T4:255/TT	---		L/H
	T9:000/TT ~ T255:255/TT			
Timer (DN: Completion Bit)	T4:000/DN ~ T4:255/DN	---		
	T9:000/DN ~ T255:255/DN			
Timer (PRE: Setup Value)	---	T4:000.PRE ~ T4:255.PRE	*1	
		T9:000.PRE ~ T255:255.PRE		
Timer (ACC: Current Value)	---	T4:000.ACC ~ T4:255.ACC	*1	
		T9:000.ACC ~ T255:255.ACC		
Counter (CU: Up Count)	C5:000/CU ~ C5:255/CU	---		
	C9:000/CU ~ C255:255/CU			
Counter (CD: Down Count)	C5:000/CD ~ C5:255/CD	---		
	C9:000/CD ~ C255:255/CD			
Counter (DN: Completion Bit)	C5:000/DN ~ C5:255/DN	---		
	C9:000/DN ~ C255:255/DN			
Counter (PRE: Setup Value)	---	C5:000.PRE~ C5:255.PRE	*1	
		C9:000.PRE ~ C255:255.PRE		
Counter (ACC: Current Value)	---	C5:000.ACC ~ C5:255.ACC	*1	
		C9:000.ACC ~ C255:255.ACC		

*1 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.

*2 Not available for writes.

*3 Within the GP70 series units, this applies only to the GP377 series.

Device	Bit Address	Word Address	Particulars	
Control (EN: Enable)	R6:000/EN ~ R6:255/EN R9:000/EN ~ R255:255/EN	---	*3	
Control (EU: Enable Unload)	R6:000/EU ~ R6:255/EU R9:000/EU ~ R255:255/EU	---	*3	
Control (DN: Complete Bit)	R6:000/DN ~ R6:255/DN R9:000/DN ~ R255:255/DN	---	*3	
Control (EM: Empty)	R6:000/EM ~ R6:255/EM R9:000/EM ~ R255:255/EM	---	*3	
Control (ER: Error)	R6:000/ER ~ R6:255/ER R9:000/ER ~ R255:255/ER	---	*3	
Control (UL: Unload)	R6:000/UL ~ R6:255/UL R9:000/UL ~ R255:255/UL	---	*3	
Control (IN: Inhibit Comp.)	R6:000/IN ~ R6:255/IN R9:000/IN ~ R255:255/IN	---	*3	
Control (FD: Found)	R6:000/FD ~ R6:255/FD R9:000/FD ~ R255:255/FD	---	*3	
Status	S2:000/00 ~ S2:163/15	S2:000 ~ S2:163	*2*3	
Integer	---	N7:000 ~ N7:255 N9:000 ~ N255:255	Bit 15	H/L
Floating point	---	F8:000 ~ F8:255 F9:000 ~ F255:255		
String	---	ST9:000 ~ ST255:255	*3	L/H
Long word	---	L9:000 ~ L255:255	Bit 31 *3	
ASCII	---	A9:000 ~ A255:255	*3	

2 Not available for writes.

3 Within the GP70 series units, this applies only to the GP377 series.

Note:

• **The range of available devices depends on the type of CPU used. For available device range information, refer to your PLC's manual.**

• **In the above tables, the address descriptions and input methods used in GP-PRO/PBIII for Windows V6.0* or earlier software may vary, however the internal data can be converted. Even if GP-PRO/PBIII for Windows V6.0* or later software is used, the internal data will not be damaged.**

• **When using Version 6.0 or earlier address displays and input methods with Versions 6.1 or later software, be sure to use the following steps.**

   1) **Locate and open the folder named [SLC500] in your GP/PRO/PBIII for Windows Version 6.1 or later CD-ROM.**

   2) **Copy the file named [SLC500.TBL] to the folder [PLCTBL] on your PC's hard disk drive. (This folder was created when Version 6.1 was installed.)**

   3) **Delete the [SLC500.PTO] from the folder [PTO] was creaated when GP-PRO/PBIII was installed.**

   4) **Start up GP/PRO/PBIII for Windows. You will now be able to use Version 6.0 or earlier address displays and input methods. When running screen editor software version 6.0 or earlier, D-Script creation or screen data modification while using [SLC500.PTO] is not possible.**

• **File Numbers 0 to 8 are the User's default files.**

• **A PLC COM Error (02:10) will occur when a device cannot be allocated into the PLC data table map.**

• **According to the PLC 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's data is determined from the Element; in GP-PRO/PBIII for Windows there is no Element. Therefore, use the following example when entering device dta.**

• For word devices N, B, and F

Display after input: N7:0

• For word devices T and C

Display after input: T4:0.PRE

• For bit devices T and C
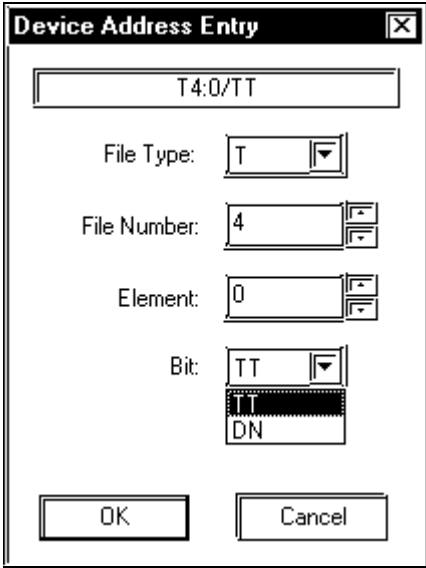
Display after input: T4:0/TT

> ### 5.7.4   Environment Setup

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

■ SLC 500 Series

GP Setup		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
Unit No. (DH PLC) [2]	0	---	---

1   Will not operate without these settings.

2   Be sure that the Station Address and the GP's Unit No. (DH GP) address are the same value (address set as decimal values). It is unnecessary to setup the DH PLC address.

■ MicroLogix 1000/1200/1500 Series

GP Setup		PLC Setup	
Baud Rate	19200 bps	Baud Rate	Auto
Data Length	8 bits	---	---
Stop Bit	1 bit	---	---
Parity Bit	Even	---	---
Data Flow Control	ER Control	---	---
Communication Format	RS-232C	---	---
	RS-422 (4-wire type)	---	---
DH Address GP DH Address PLC [1]	0	---	---

1 Specify the same address for DH Address GP and DH Address PLC.