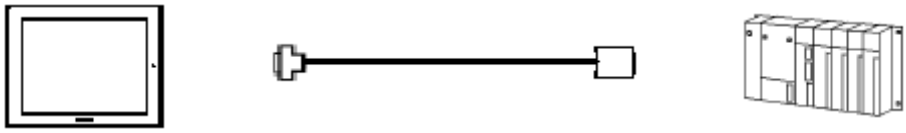
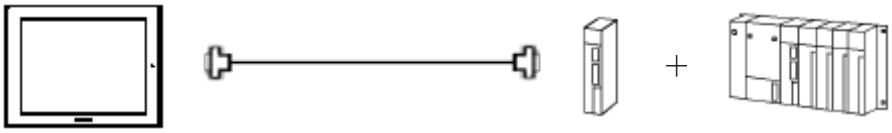
Mitsubishi <14> Mitsubishi Electric Corporation
Q Series (Q01 / Q00 / Q00J) CPU Direct + Link Unit Connection

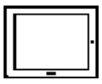
System Structure

Connecting Directly	

2-Port Adapter Ⅱ or the internal 2-Port cannot be used.

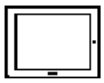
Using Serial Communication Unit	

GP

Machine 	Model	Remark
GP	GP70 Series GP77/77R Series GP2000 Series	Excepting for handy types. The internal 2-Port feature is supported by only GP77/77R Series and GP2000 Series.
GLC	GLC2000 Series	2-Port Adapter Ⅱ and the internal 2-Port feature are not supported.

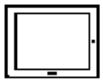
PLC

[Connecting Directly]

CPU 	Communication Method	Connection Cable 	GP 
Q00 Q01	RS-232C	**Connection Method [1]**	

Q00J cannot be connected directly.

[Using Serial Communication Unit]

CPU 	Serial Communication Unit 	Communication Method	Connection Cable 	GP 
Q00 Q01 Q00J	QJ71C24-R2	RS-232C	**Connection Method [2]**	
	QJ71C24	RS-232C		
		RS-422	**Connection Method [3]**	

Procedure to Connect PLC

Select PLC Type on GP-PRO/PBIII C-Package.

Refer to **Selecting PLC Type**

Set the GP and PLC settings as the communication setting sample.

Refer to **Communication Setting Sample**

Set GP communication.
There are 2 ways.

- Setting on GP-PRO/PBIII C-Package and transfer the data
- Setting on the Offline of the GP main unit.

Refer to **Communication Settings [GP]**

Set PLC communication.

Refer to **Communication Settings [PLC]**

Connect PLC to GP.
Please check the connection method according to the connection type, or distance.

Refer to **Connection Method** & **Recommended Products**

Selecting PLC Type

Start up GP-PRO /PBIII.

Select the following PLC Type when creating the project file.

MITSUBISHI MELSEC-QnA(LINK)

Communication Setting Sample

[Connecting Directly]

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)	———

NOTE The range of data transmission speed is from 9,600bps to 15,200bps. However, the maximum speed available with GP70 series units (except for GP series) is 38,400bps.

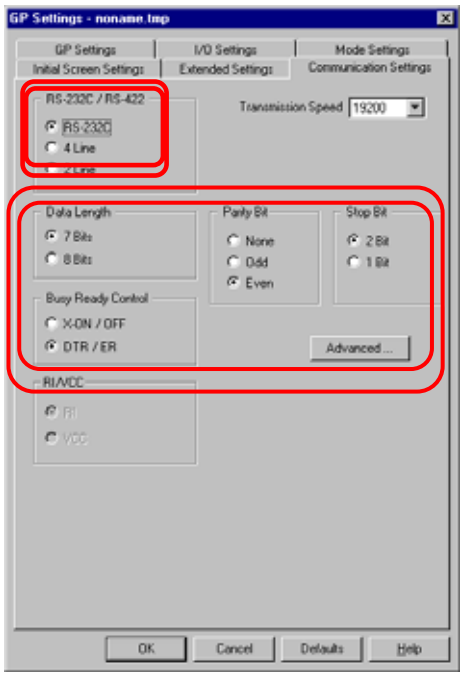
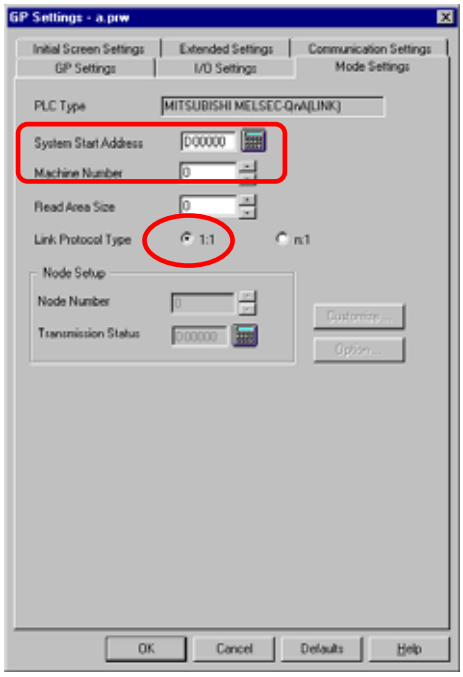
[Using Serial Communication Unit]

GP Setup		Serial Communication Unit Settings	
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)
———		Sum Check	Yes
Unit No.	0	Station Number	0

Communication Settings [GP]

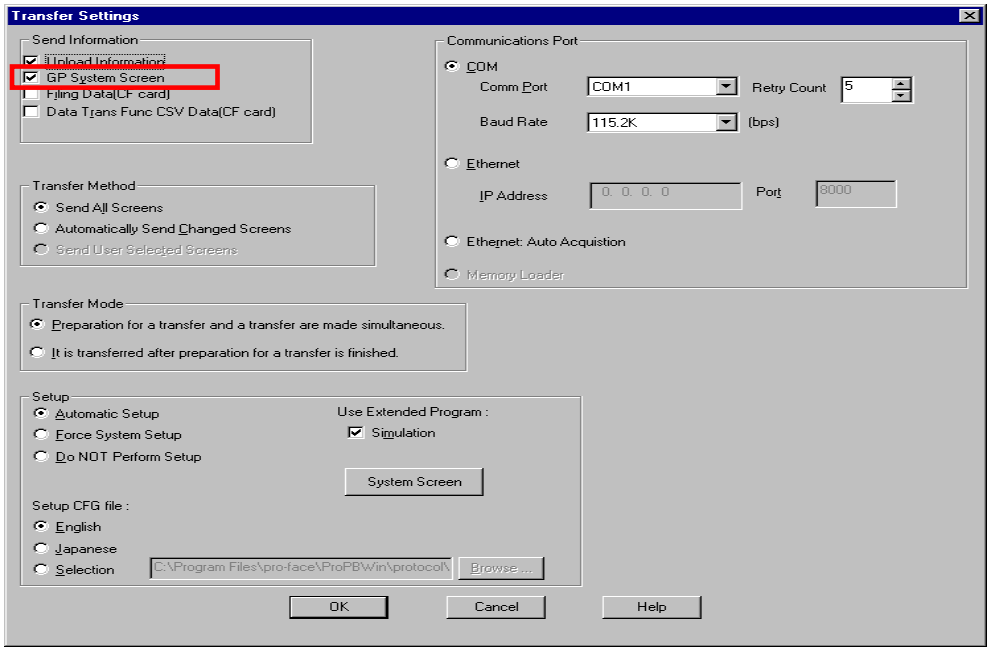
1 [GP-PRO/PBIII C-Package Setting]

Select [GP Setup] on Project Manager.

1) Communication Settings 	1) Communication Settings [Direct] / [Link] Transmission Speed: 19200bps / 19200bps Data Length: 8Bits / 7Bits Stop Bit: 1Bit / 2Bits Parity Bit: Odd / Even Busy Ready Control : DTR / ER / DTR / ER RS-232C/ RS-422: RS-232C / RS-232C or 4 Line * Select one for each in [ ].
2) Mode Settings 	2) Mode Settings System Start Address: Arbitrary Address Machine Number: 0 Link Protocol Type: 1:1 (Only when using Serial Communication Unit)

Select [Transfer] --> [Setup] --> [Transfer Settings].

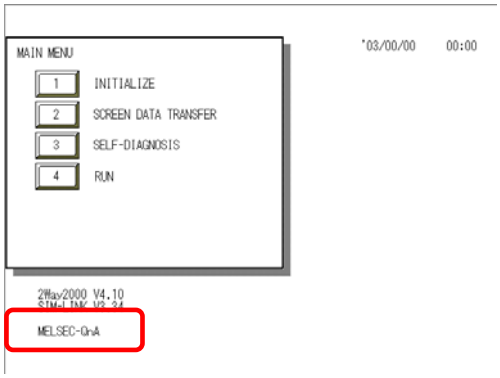
3) Transfer Settings



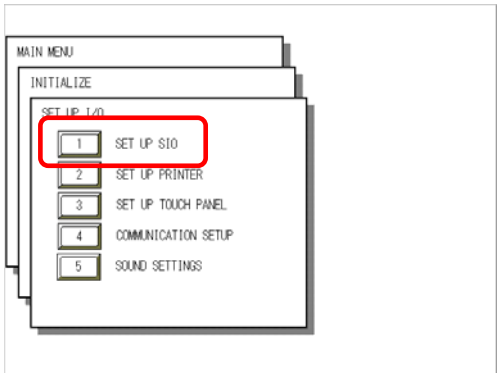
3) Transfer Settings GP System Settings: Checked

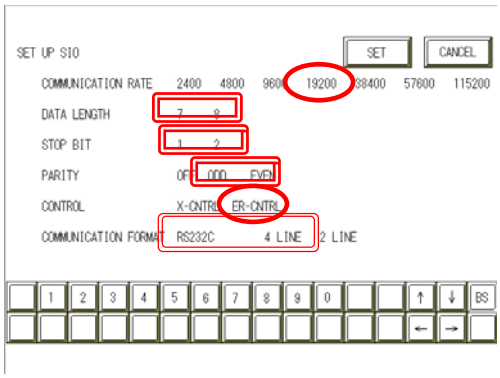
Transfer to GP after settings completed.

2 [GP Settings]

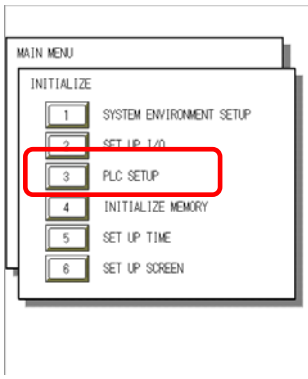
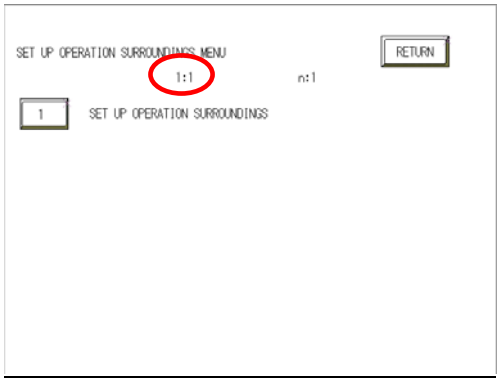
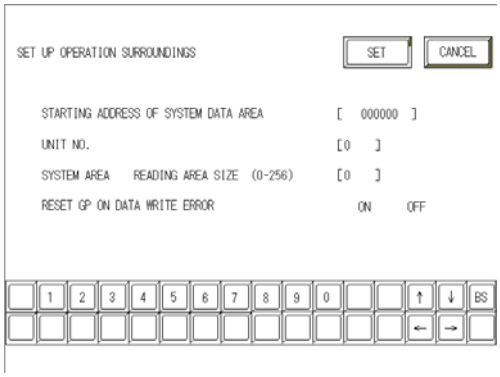
<table>
<tr>
<td>1) Checking GP Type
 
</td>
<td>1) Checking GP Type

If you have selected Mitsubishi MELSEC-QnA (LINK), the following will be shown.

”MELSEC-QnA”</td>
</tr>
<tr>
<td>2) Communication Settings
 
</td>
<td>2) Communication Settings

[MAIN MENU]
↓
[INITIALIZE]
↓
[SET UP I/O]
↓
[SET UP SIO]</td>
</tr>
<tr>
<td> 
</td>
<td>[Direct] / [Link]
Communication Rate: 19200bps / 19200bps
Data Length: 8Bits / 7Bits
Stop Bit: 1Bit / 2Bits
Parity: Odd / Even
Control: ER Cntrl/ER Cntrl
Communication Format: RS-232C/RS-232C
or 4 Line

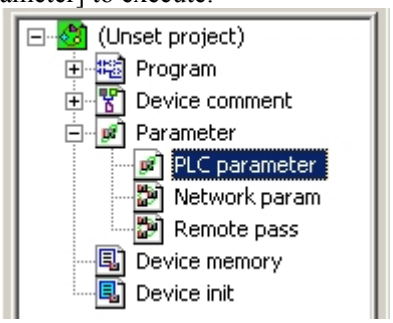
* Select one in ▭ .</td>
</tr>
</table>

3) Setting up Operation Surroundings 	3) Setting up Operation Surroundings [MAIN MENU] ↓ [INITIALIZE] ↓ [PLC SETUP] ↓ [PLC SETUP]
	SET UP OPERATION SURROUNDINGS MENU: 1:1 (Only when using Serial Communication Unit)
	Starting Address of System Data Area: Arbitrary Address Unit No.: 0

Communication Settings [PLC]

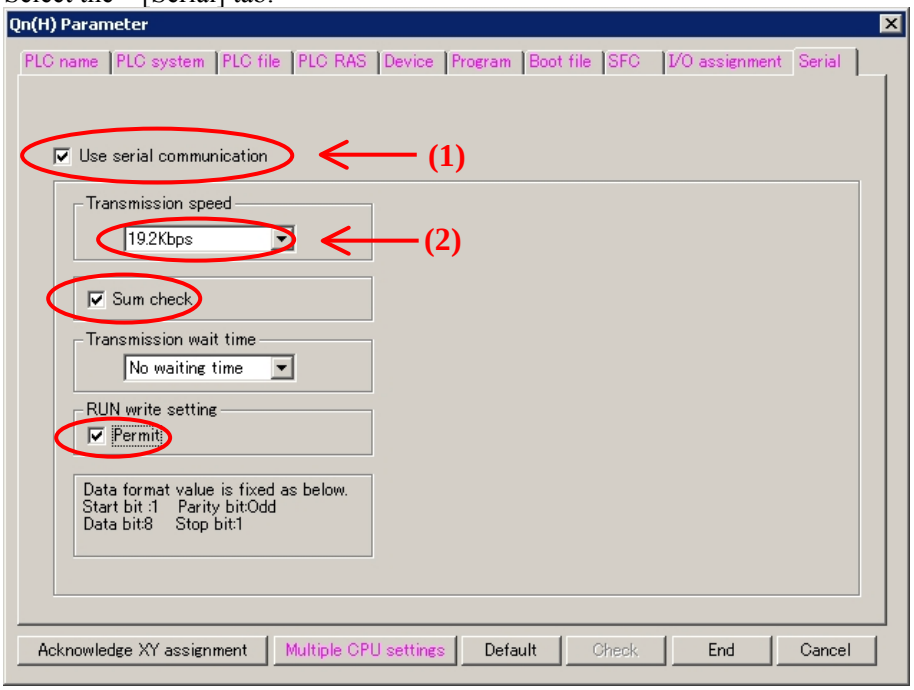
[Connecting Directly]

1. Start up the ladder tool "GX Developer". Double-click [PC Parameter] under [Parameter] to execute.



A dialog box below opens.

2. Select the [Serial] tab.



1) Check [Use serial communication].

2) Set [Transmission speed] and click [End].

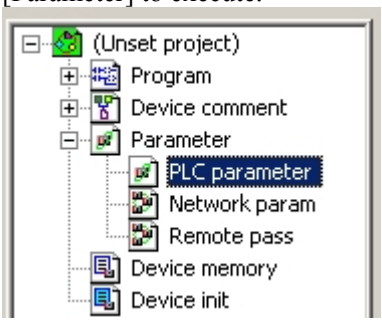
Keep [Sum check] checked. If you check it off, an error of receiving data will be occurred when communicating with the GP.

3. Select [Offline]--> [Write to PLC] to open the [Write to PLC] dialog box.
   Check [PC/Network] under [Parameter]. Click [Execute] to start downloading the parameter file to the PLC.

   After downloading completed, power off and on the PLC to restart up.

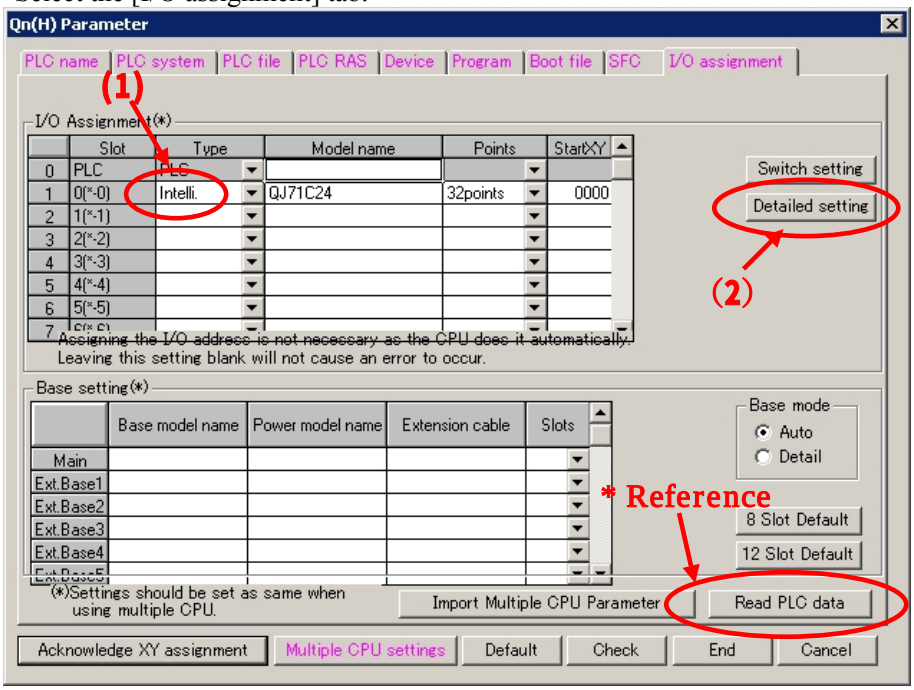
[Using Link Unit]

1. Start up the ladder tool "GX Developer". Double-click [PC Parameter] under [Parameter] to execute.



A dialog box below opens.

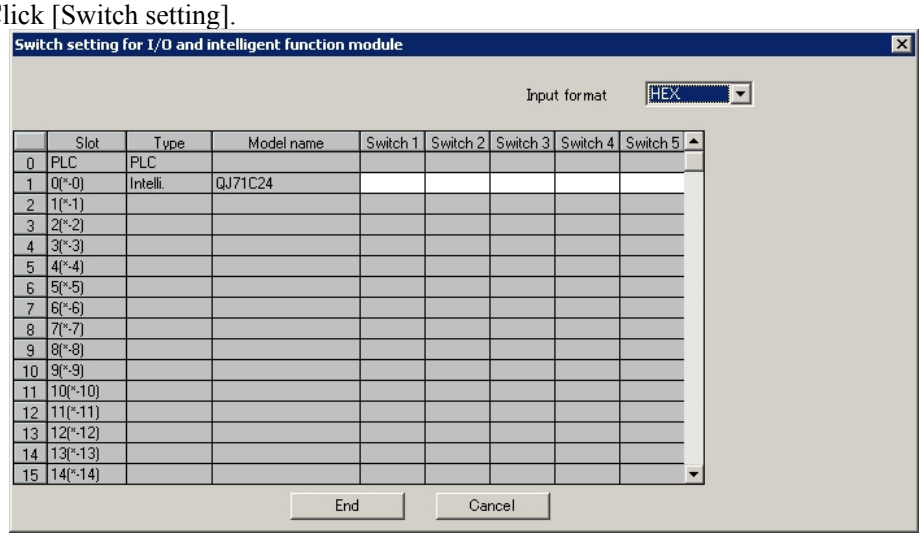
2. Select the [I/O assignment] tab.



1) Click [Type] to select [Intelli.]

* By clicking the [Read PLC data] button, the type(s) and points of the unit(s) inserted currently into the base unit can be read automatically.
(The PC needs to be connected to the CPU via ladder cable.)

2) Click [Switch setting].



A dialog box above opens.
Set [Switch setting] as below.

Settings Switch1 and Switch2 are for the RS-232C interface on CH1.
Settings Switch3 and Switch4 are for the RS-422/485interface on CH2.
Settings Switch5 are for the machine number on both CH1 and CH2.

In this sample here, a sample setting only for CH1 is introduced, but set CH2 in a same way as CH1.

	Slot	Type	Model name	Switch 1	Switch 2	Switch 3	Switch 4	Switch 5
0	PLC	PLC						
1	0(*-0)	Intelli.	QJ71C24	07FC	0004			0000
2	1(*-1)							

Please see the setting description as below.

<table>
<tr><td>Switch No.</td><td>Set Value</td><td colspan="3">Setting Description</td></tr>
<tr><td rowspan="10">Switch 1</td><td rowspan="10">07FC</td><td colspan="3">07 --> Transmission Speed 19,200bps</td></tr>
<tr><td>Bit</td><td>Settings</td><td>Item / Content</td></tr>
<tr><td>Bit0</td><td>OFF</td><td>Operation Setting / Independent</td></tr>
<tr><td>Bit1</td><td>OFF</td><td>Data Bit / 7 bits</td></tr>
<tr><td>Bit2</td><td>ON</td><td>Parity Bit / Yes</td></tr>
<tr><td>Bit3</td><td>ON</td><td>Even/Odd Parity / Even</td></tr>
<tr><td>Bit4</td><td>ON</td><td>Stop Bit / 2 bits</td></tr>
<tr><td>Bit5</td><td>ON</td><td>Sum Check Code / Yes</td></tr>
<tr><td>Bit6</td><td>ON</td><td>Write during RUN / Enabled</td></tr>
<tr><td>Bit7</td><td>ON</td><td>Change Setting / Enabled</td></tr>
<tr><td>Switch 2</td><td>0004</td><td colspan="3">Communication Protocol Setting -->
MC Protocol Type 4</td></tr>
<tr><td>Switch 3</td><td></td><td colspan="3">Same as Switch 1</td></tr>
<tr><td>Switch 4</td><td></td><td colspan="3">Same as Switch 2</td></tr>
<tr><td>Switch 5</td><td>0000</td><td colspan="3">Machine Number : 0</td></tr>
<tr><td colspan="5">Note: When communicating CH1 and CH2 at the same time, set 115200 bps for the total of the transmission speed of both interfaces.</td></tr>
</table>

After completing the above settings, click [End].

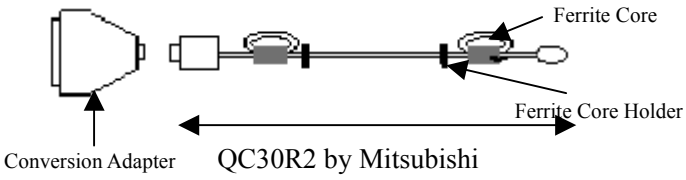
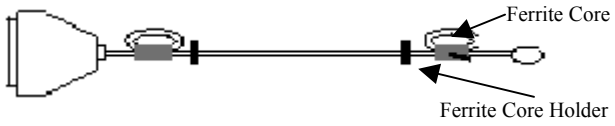
The [Switch Setting] dialog box returns to the [Parameter Setting] dialog box. Click [End] again.

3) Select [Offline]--> [Write to PLC] to open the [Write to PLC] dialog box.
Check [PC/Network] under [Parameter]. Click [Execute] to start downloading the parameter file to the PLC.

After downloading completed, power off and on the PLC to restart up.

Connection Method

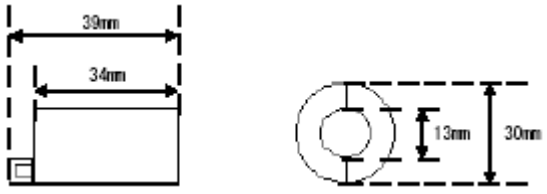
[1] Connecting Directly

Type	Connection Method	Distance
Using QC30R2 by Mitsubishi Electric Corporation *9-25pin Conversion Adapter is required.	GP Unit 25 pin Male — PLC Mini DIN 9 pin  	3m
Using DQCABR2 by Diatrend	GP Unit 25 pin Male — PLC Mini DIN 9 pin  	Range between 1.5 and 15m

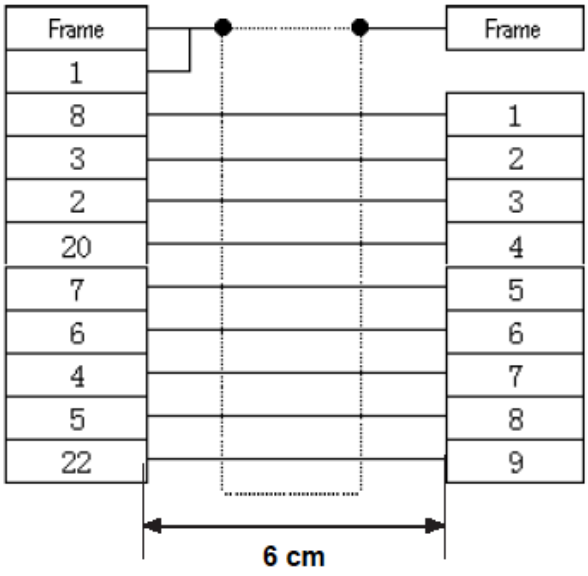
NOTE

- Attaching a Ferrite Core will reduce the amount of noise in your cable.
- Attach two 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. 10 ft.) or longer, please use a cable made by Diatrend Corporation.

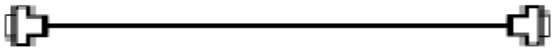
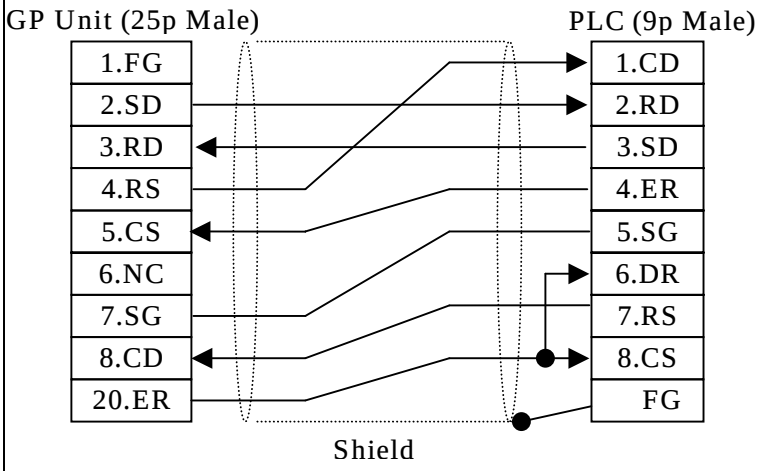
Recommended Products

Ferrite Core	E04SR301334 <Seiwa Electronics Corporation> 
9-25 Conversion Adapter	ZA-403 <Roas Co.>

[Creating a 9-25 pin Conversion Adapter]

Connecter/Cover for GP	D-sub 25 pin Plug	XM2A-2501 <OMRON Co.>
	Cover for D-sub 25 pin	XM2S-2511 <OMRON Co.>
	Jack Screw	XM2Z-0071 <OMRON Co.>
Setscrew	Metric Coarse Screw Tread : M2.6 × 0.45	
Diagram	D-sub 25 pin Male Lock-screw (mm)  	D-sub 9 pin Male Lock nut (inch)

[2] RS-232C Connection

Type	Connection Method	Distance
Using GP000-IS02-MS		3m
Creating Cable		Within 15 m

Important

*** If a communication cable is used, it must be connected to the SG.**

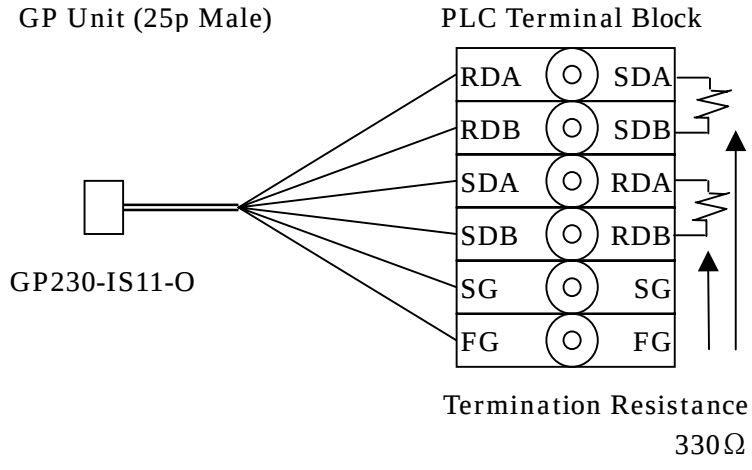
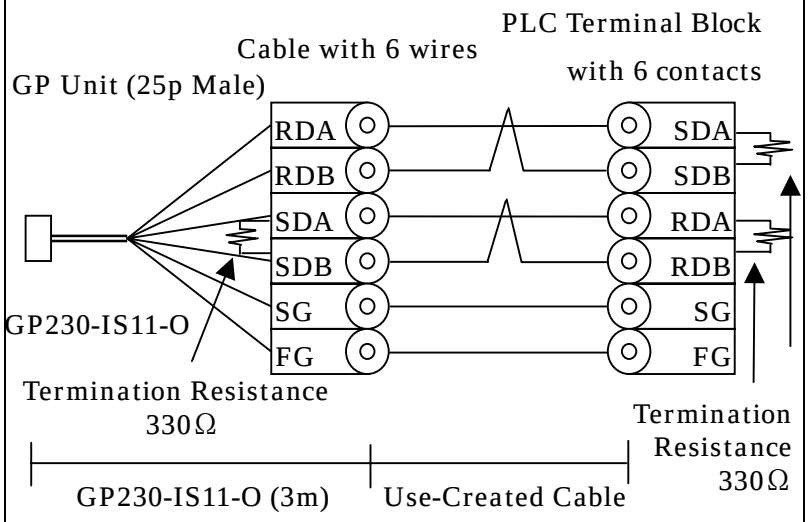
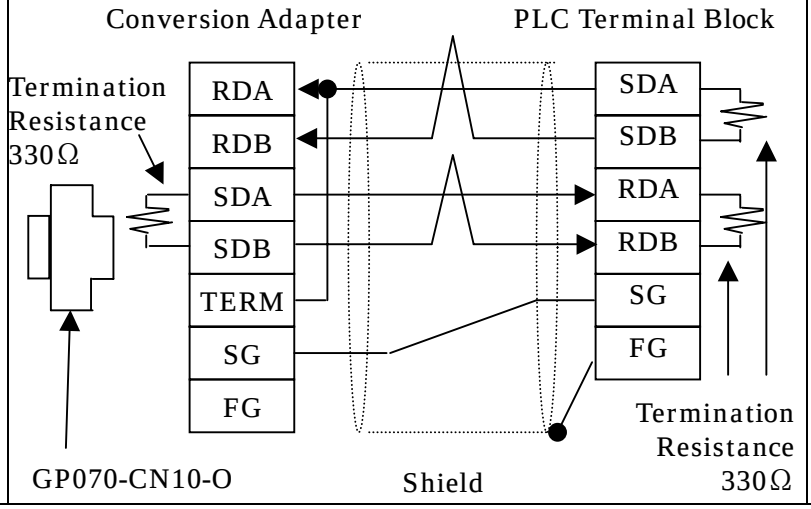
NOTE

The optional cable, GP000-IS02-MS is 3m long. If you need a longer cable or shorter, please use a User-Created cable to connect.

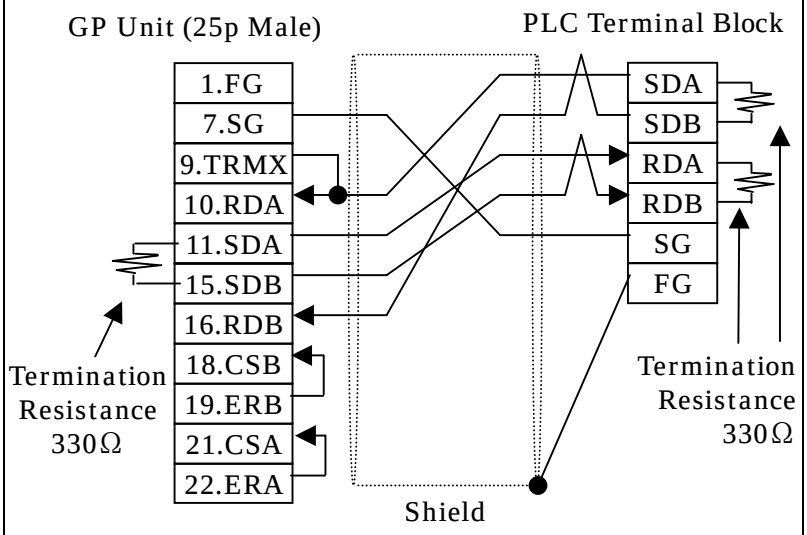
Recommended Products

Connecter/Cover for GP	D-sub 25 pin Plug	XM2A-2501 <OMRON Co.>
	Cover for D-sub 25 pin	XM2S-2511 <OMRON Co.>
	Jack Screw	XM2Z-0071 <OMRON Co.>
Cable	CO-MA-VV-SB5P × 28AWG <Hitachi Cable Ltd.>	
Setscrew	Metric Coarse Screw Tread : M2.6 × 0.45	

[3] RS-422 Connection

Type	Connection Method	Distance
Using GP230-IS11-O		5m
Extending GP230-IS11-O		5 - 500m
Using GP070-CN10-O		Within 500m

Creating Cable



Important

*** If a communication cable is used, it must be connected to the SG.**

*** Termination Resistance**

PLC / between SDA and SDB, between RDA and RDB : 330Ω
(with wattage specified on PLC)

GP Unit / as required (Refer to Cable Diagrams) : 330Ω
(with wattage specified on PLC)

Recommended Products

Connecter/Cover for GP	D-sub 25 pin Plug	XM2A-2501 <OMRON Co.>
	Cover for D-sub 25 pin	XM2S-2511 <OMRON Co.>
	Jack Screw	XM2Z-0071 <OMRON Co.>
Cable	SPEV (SB) -MPC-0.2*3P <Mitsubishi Cable Ind.>	
Setscrew	Metric Coarse Screw Tread : M2.6 × 0.45	