GP-PRO/PBIII for Windows
Device/PLC CONNECTION MANUAL
ADDITIONAL MANUAL

Yokogawa Electric Corporation
FCN/FCJ Series

Pro-face
Human Machine Interface

Reading the GP-PRO/PBIII Device/PLC Connection Manual

This document is designed as an addition to the latest GP-PRO/PBIII for Windows Device/PLC Connection manual's Yokogawa Electric Corporation data.

When connecting a Factory Gateway unit, please substitute the words "Factory Gateway" for this document's "GP/GLC/ST".

Installation

This CD-ROM includes all the protocol files required by the GP/GLC to communicate with a Yokogawa Electric Corporation FCN/FCJ Series PLC. Also, you will need to have one or more of the following software applications installed. The screen and data transfer files included in the CD-ROM must be installed in each of those applications. For information regarding installing the software, refer to that software's Operation Manual.

■ **Software Applications**

- GP-PRO/PBIII for Windows Ver. 7.0
- Pro-Server with Pro-Studio for Windows Ver. 4.1 *1

1) Be sure to confirm that the required software application is installed in your PC prior to starting installation.
2) Double-click the CD-ROM's "FCNFCJMB.exe" file to start the installation process.
3) Once the installation program starts, follow the instructions given to install the protocol files.

When using Yokogawa Electric Corporation Stardom Series PLCs, be sure to select [Others] - [Yokogawa Electric FCN/FCJ ModbusRTU 1:n] for the "Device/PLC Type".

**1 When using the Factory Gateway unit, GP-Web Ver. 1.0 or later or GP-Viewer Ver. 1.0 or later, be sure to select "Pro-Server with Pro-Studio for Windows" as the "Destination Folder".*

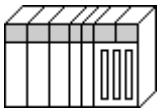
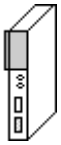
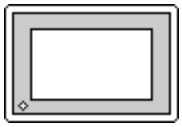
2.8 Yokogawa Electric

2.8.1 System Structure

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

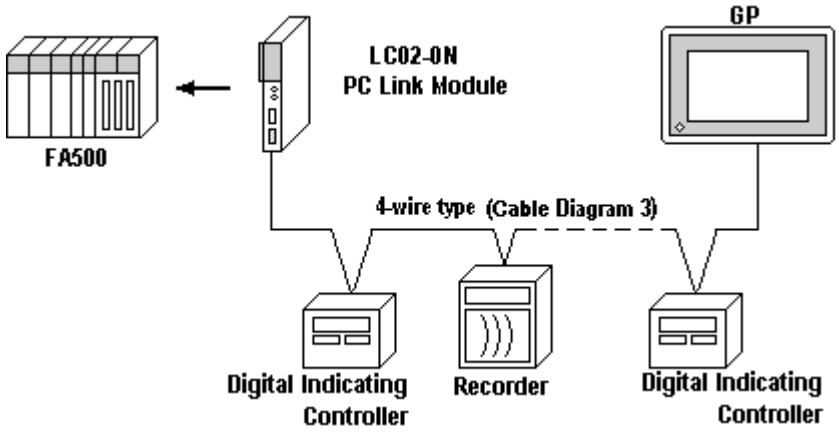
Reference *The Cable Diagrams mentioned in the following tables are listed in the section titled "**2.8.2 Cable Diagrams**".*

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

CPU	Link I/F	Cable Diagram	Cables	GP
	 PC Link Module			
FA500	LC01-ON	RS-232C (Cable Diagram 1)	Digital's GP-410-IS00-O (5m)	GP Series
	LC02-ON	RS-232C (Cable Diagram 1) RS-422 (Cable Diagram 2)	RS-232C Digital's GP410-IS00-O (5m)	
		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.*



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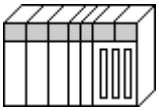
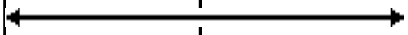
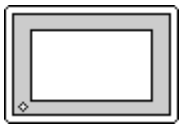
* FA500 and equipment (Digital Indicating Controller, <UT37/38/2000> and Recorder, <μR-Series>...etc) supporting the same protocol are hereafter referred to as *PA Equipment*.

- *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 not required, a PLC is not needed.*
- *Using the method above, Unit No. s 1~16 can be setup; a Unit No. of 17 or higher cannot be used.*

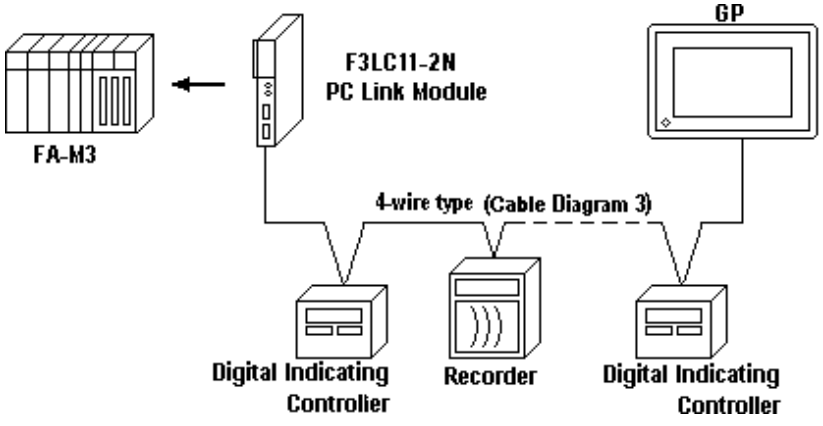
Note: Wherever RS-422 appears in the table, RS-485 can be used on the PLC.

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

CPU	Link I/F	Cable Diagram	Cables	GP
	 PC Link Module			
F3SP10-0N	F3LC01-1N	RS-232C (Cable Diagram 4)		GP Series
F3SP20-0N, F3SP21-0N, F3SP25-2N, F3SP28-3N, F3SP30-0N, F3SP35-5N, F3SP38-6N, F3SP53-4H, F3SP58-6H, F3FP36-3N, F3SP28-3S, F3SP38-6S, F3SP53-4S, F3SP58-6S, F3SP59-7S	F3LC11-1N F3LC11-1F F3LC12-1F	RS-232C (Cable Diagram 4)		
	F3LC11-2N	RS-422 (4-wire type) (Cable Diagram 2)		
		RS-422 (2-wire type) (Cable Diagram 5)		
	F3LC11-2N	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.*



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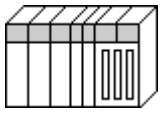
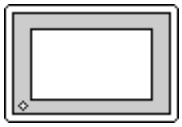
* FA-M3 and equipment (Digital Indicating Controller, <UT37/38/2000> and Recorder, <mR-Series>...etc) supporting the same protocol is referred to as *PA Equipment*, below.

- *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.*
- *Using the method above, Unit No.s 1~16 can be setup, however a Unit No. of 17 or more cannot be used.*

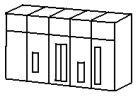
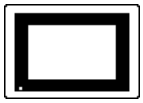
Note: **Wherever RS-422 appears in the table, RS-485 can be used on the PLC.**

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

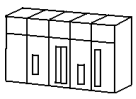
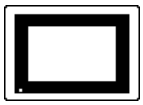
CPU	Cables	GP
		
F3SP21-0N, F3SP25-2N, F3SP28-3N, F3SP35-5N, F3SP38-6N, F3SP53-4H, F3SP58-6H, F3SP28-3S, F3SP38-6S, F3SP53-4S, F3SP58-6S, F3SP59-7S	Yokogawa's cable for programming tool KM11-2N*A	GP Series

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

■ STARDOM Standalone Controller FCN/FCJ Series (When using Yokogawa Electric FCN/FCJ ModbusRTU 1:n Protocol)

CPU	Link I/F	Cable Diagram	Target Unit
			
FCN	COM Port on CPU	RS-232C (Cable Diagram 7)	GP/GLC/ST Series, Factory Gateway
	RS232C Port 1 or 2 on NFLR111 RS232C Communication Module	RS-232C (Cable Diagram 8)	
	Communication Terminal Block on NFLR121 RS422/RS485 Communcation Module	RS-422 (4-wire) (Cable Diagram 9)	
		RS-422 (4-wire) 1:n Communication (Cable Diagram 10)	
		RS-422 (2-wire) (Cable Diagram 11)	
		RS-422 (2-wire) 1:n Communication (Cable Diagram 12)	
FCJ	COM Port 1 or 2 on CPU	RS-232C (Cable Diagram 7)	GP/GLC/ST Series, Factory Gateway

■ STARDOM Standalone Controller FCN/FCJ Series (When using Yokogawa Electric FACTORY ACE 1:1, FACTORY ACE 1:n Protocol)

CPU	Link I/F	Cable Diagram	Target Unit
			
FCN	COM Port on CPU	RS-232C (Cable Diagram 4)	GP/GLC/ST Series, Factory Gateway
FCJ	COM Port 1 or 2 on CPU		

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.

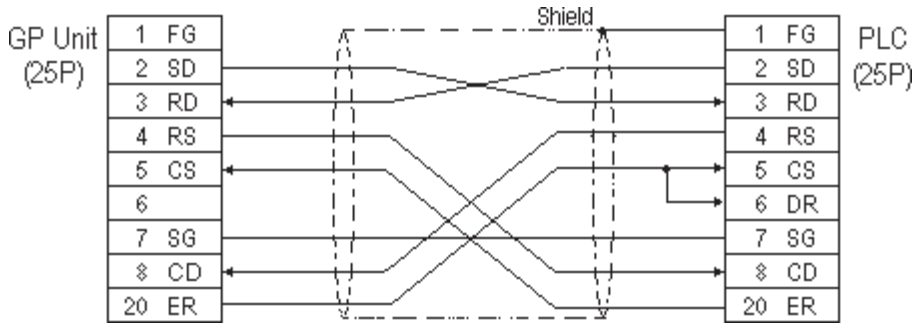
Careful!

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

Important

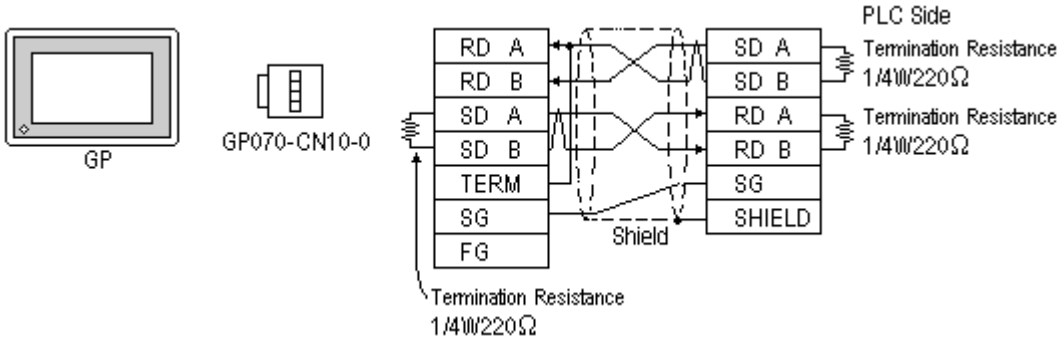
- ***Connect the FG line of the Shield cable to either the GP or PLC, depending on your environment. When using a* connector hood *and grounding the FG line, be sure to use an electrical conductor. The following connection diagrams show examples for connecting a shielded cable to the PLC.***
- ***For 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)

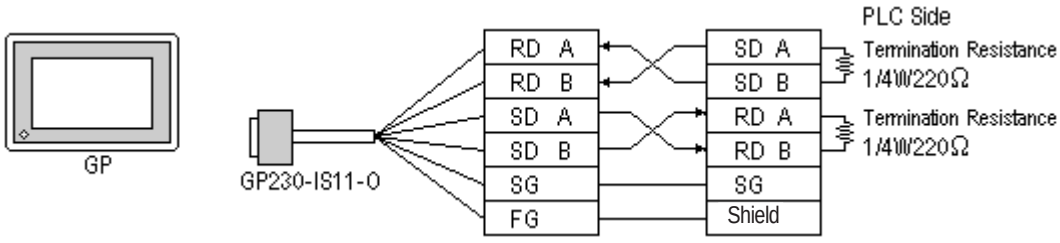


Cable Diagram 2 (RS-422)

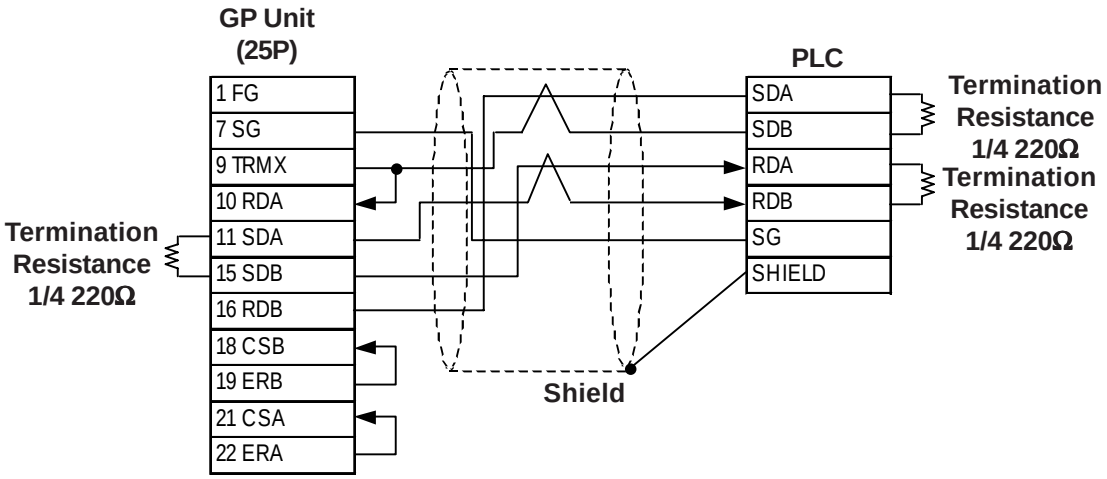
• When using Digital's RS-422 connector terminal adapter GP070-CN10-0



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



• When making your own cable connections



Note:

- **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.**
- **When connecting an RS422 cable, length can be up to 600 meters.**

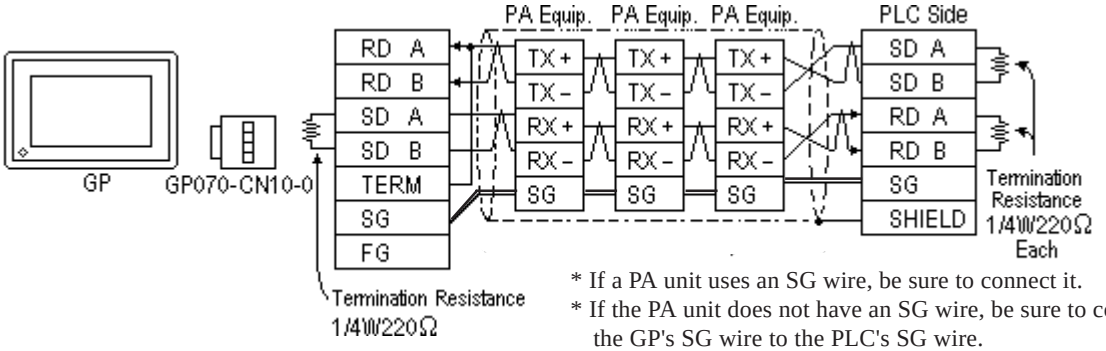
Cable Diagram 3 (RS-422)

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.

Important

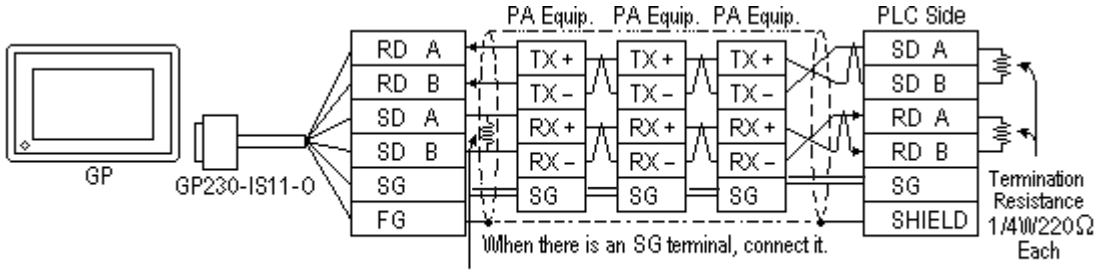
- ***Be careful as the reading of the A signal and B signal is opposite on the GP and the LC02-0N (PLC).***
- ***Make the PC Link I/F Station Number from 2 to 32.***
- ***Setup the PA unit connected to the GP using different Unit Numbers. An error will develop if multiple PA units are setup using the same Unit Number. When an error occurs, the error message "Data Reception 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



* 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.

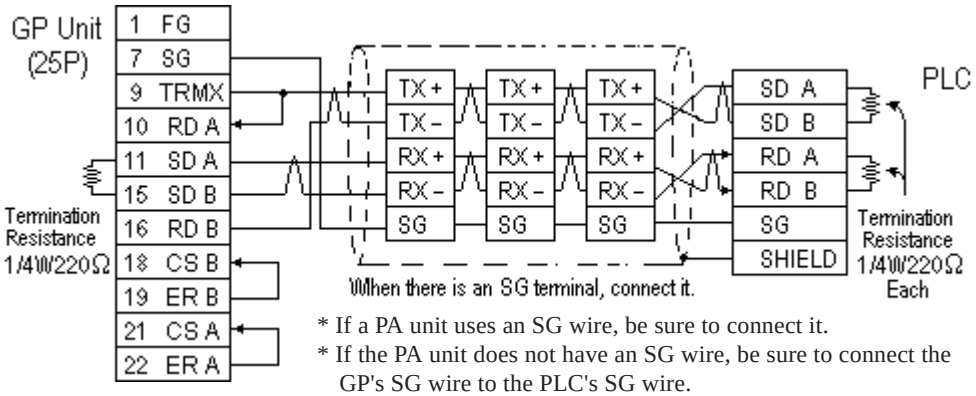
• When using Digital's RS-422 Cable, GP230-IS11-0



* Termination Resistance 1/4W220Ω

* 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

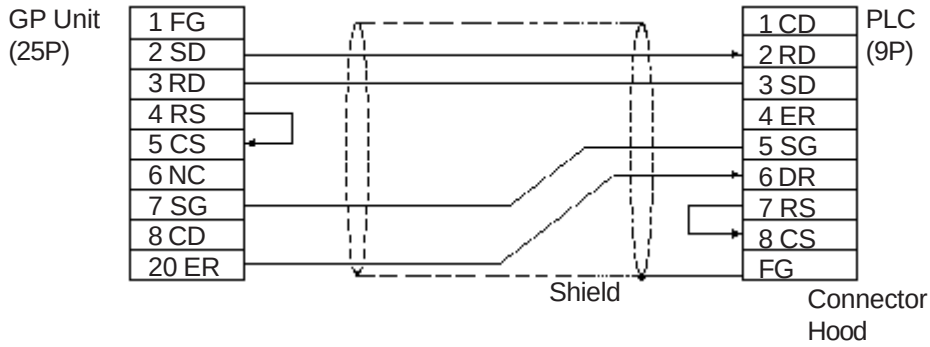


* If a PA unit uses an SG wire, be sure to connect it.
* If the PA unit does not have an SG wire, be sure to connect the GP's SG wire to the PLC's SG wire.

Note:

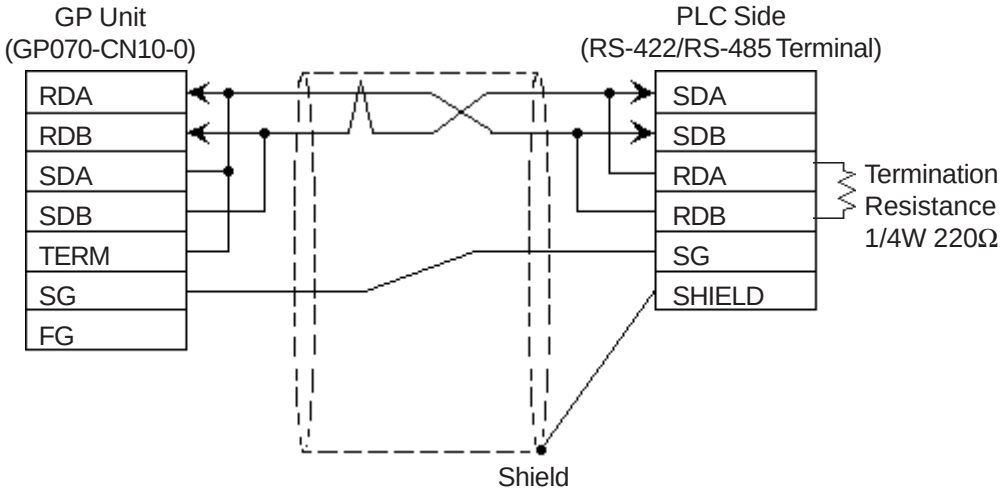
When connecting the #9 and #10 pins in the GP Serial I/F, a termination resistance of 100Ω is added between RDA and RDB.

Cable Diagram 4 (RS-232C)

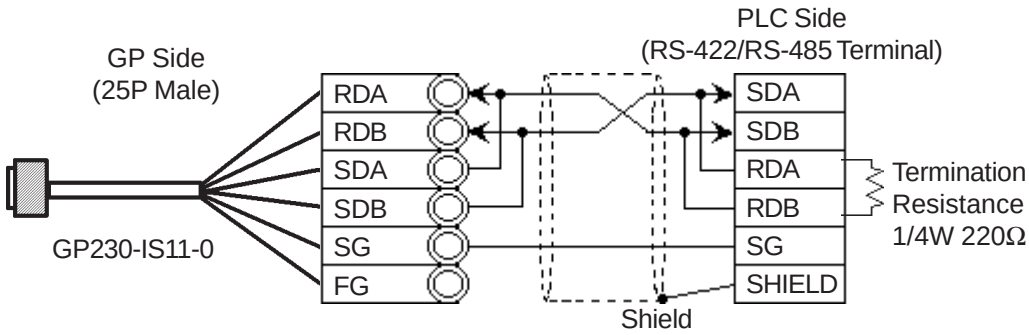


Cable Diagram 5 (RS-422)

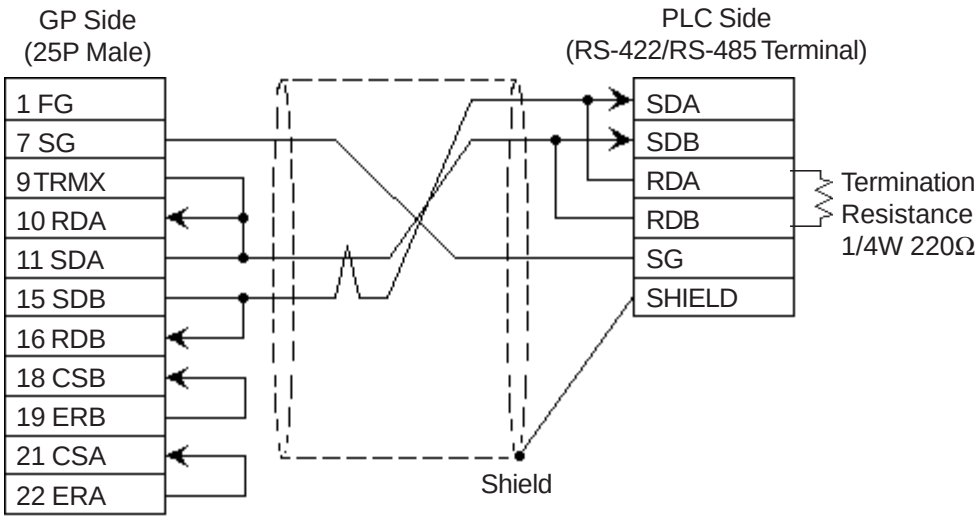
• When using Digital's RS-422 connector terminal adapter GP070-CN10-0



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

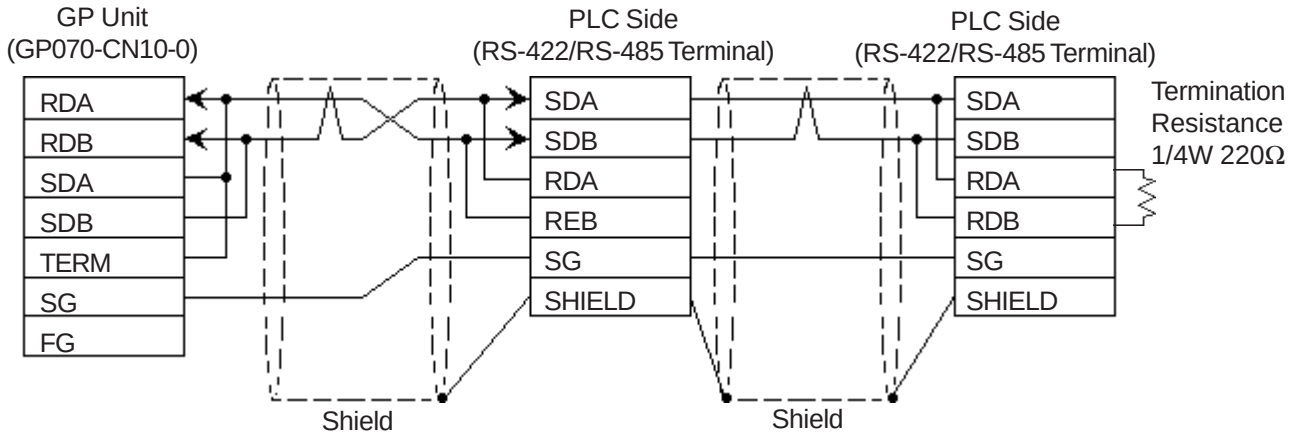


• When making your own cable connections

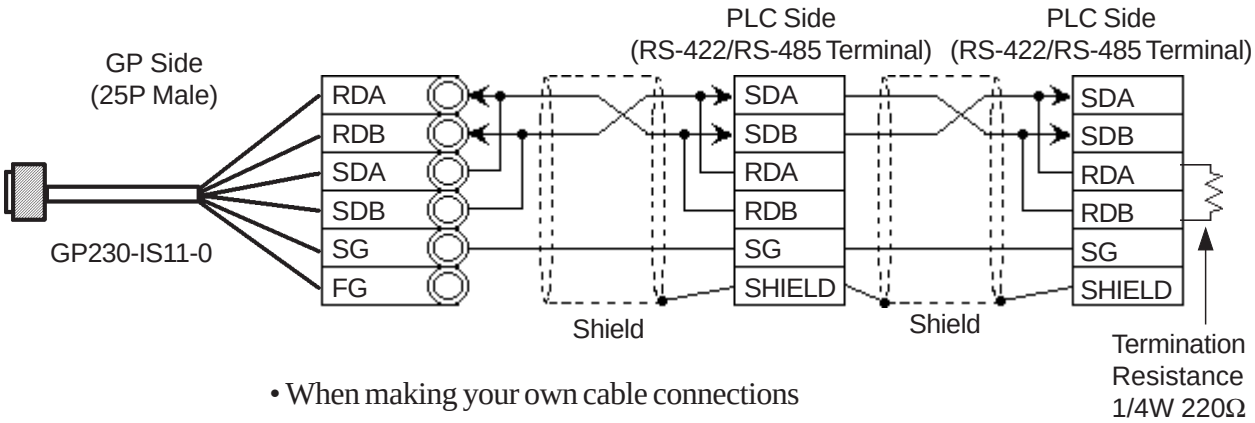


Cable Diagram 6 (RS-422)

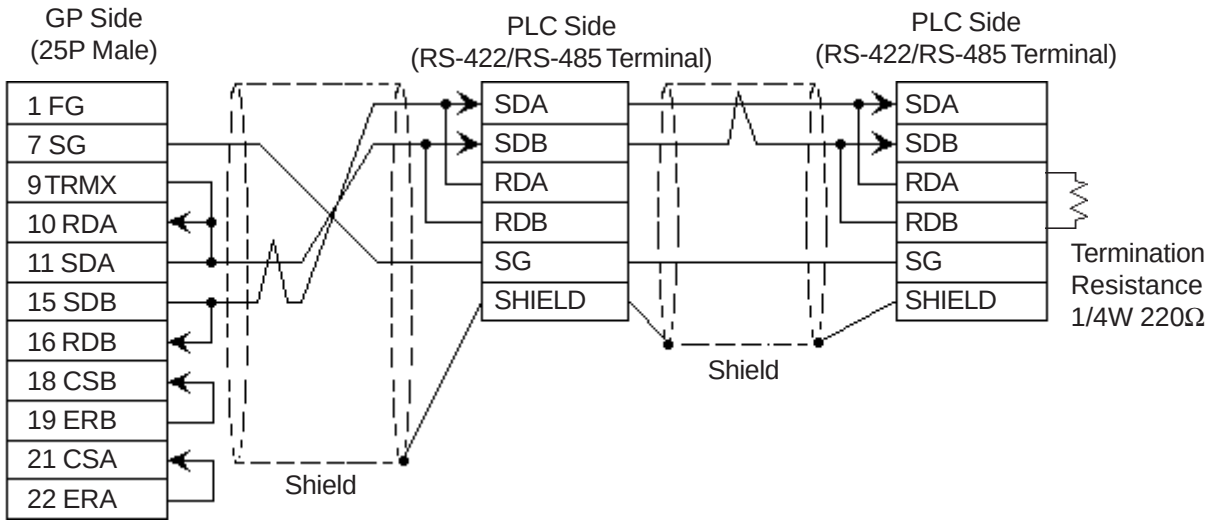
• When using Digital's RS-422 connector terminal adapter GP070-CN10-0



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



• When making your own cable connections

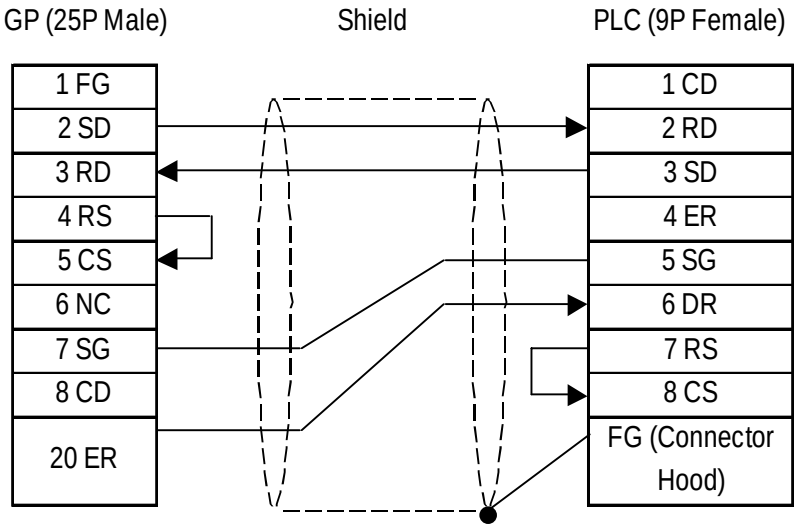


Note:

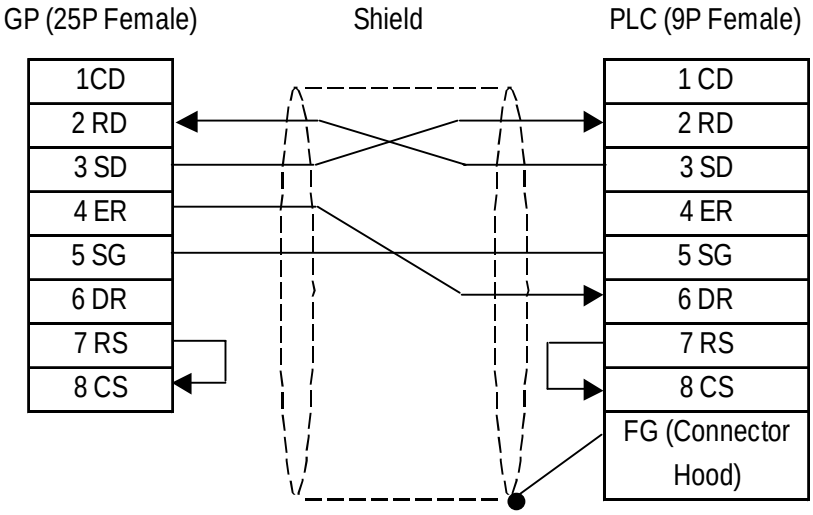
- **If the connection is terminated while 2-wire type communication is being carried out, use the 2-wire termination resistance switch on the PC link module (F3LC11-2N).**
- **The names of the poles A and B are reversed between the GP and the PLC.**

Cable Diagram 7 (RS-232C)

• When connecting to a GP.

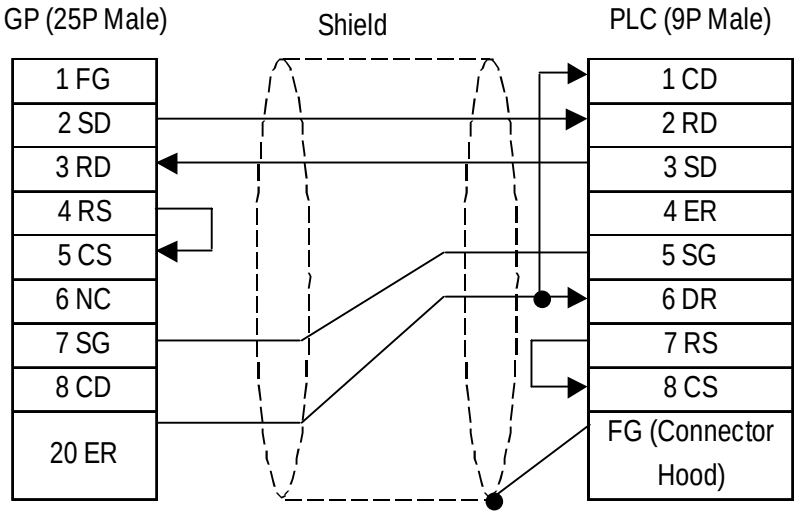


• When using ST401 unit.

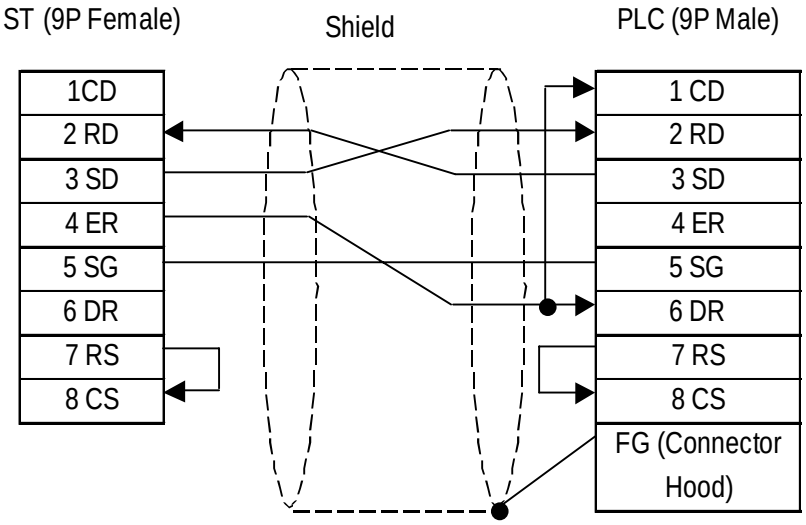


Cable Diagram 8 (RS-232C)

• When connecting to a GP.

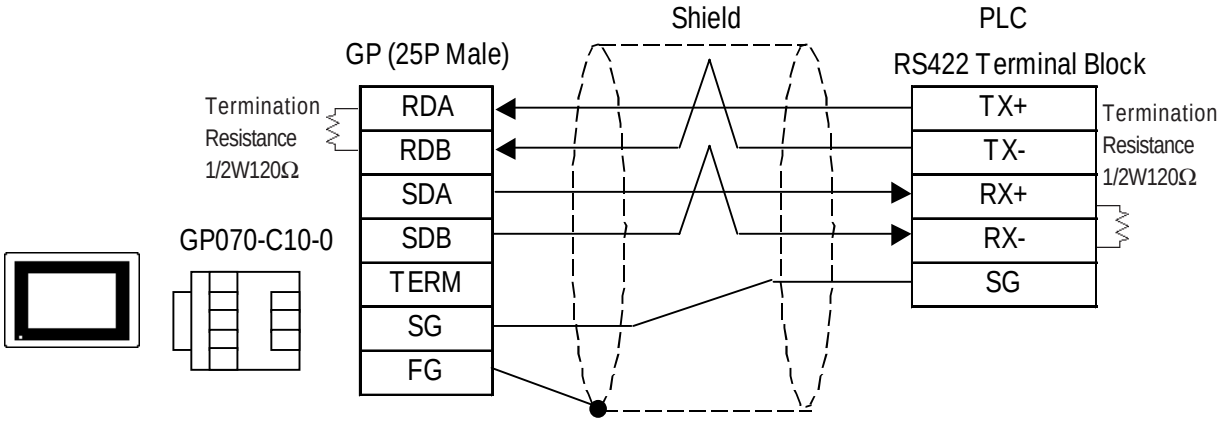


• When using ST401 unit.

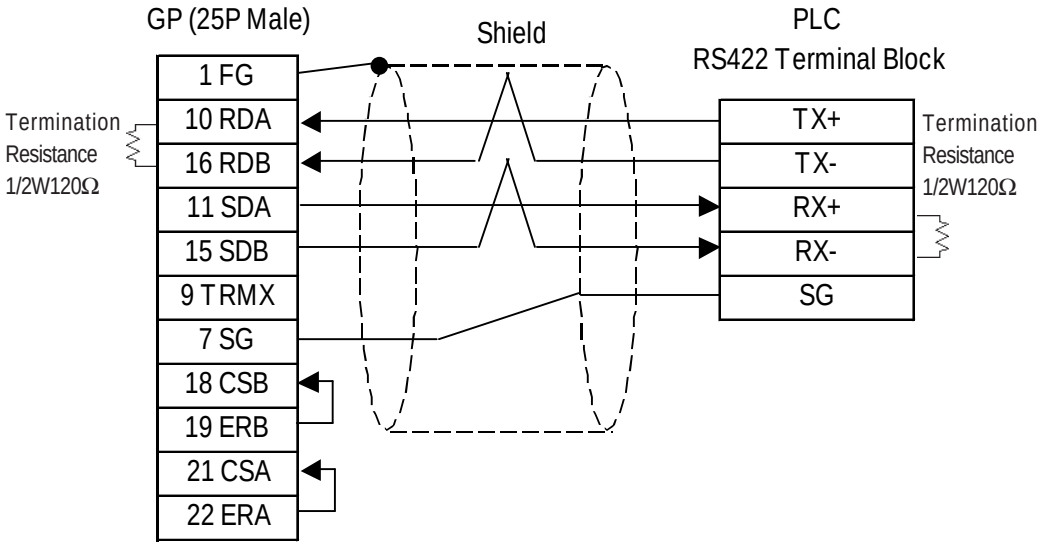


Cable Diagram 9 (RS-422)

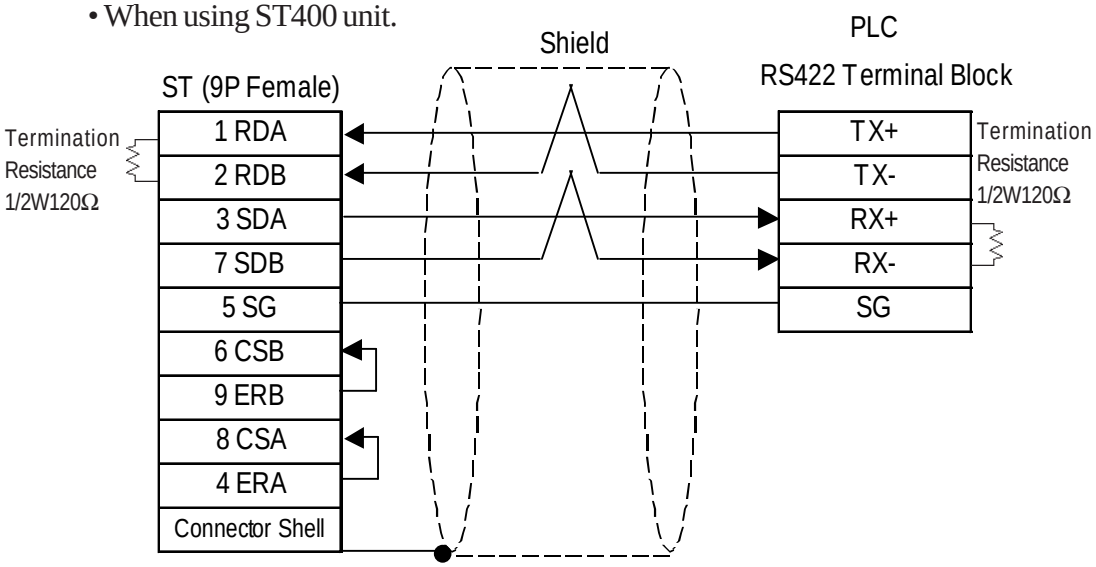
• When using Digital's RS-422 connector terminal adapter GP070-CN10-0



• When making your own cable connections

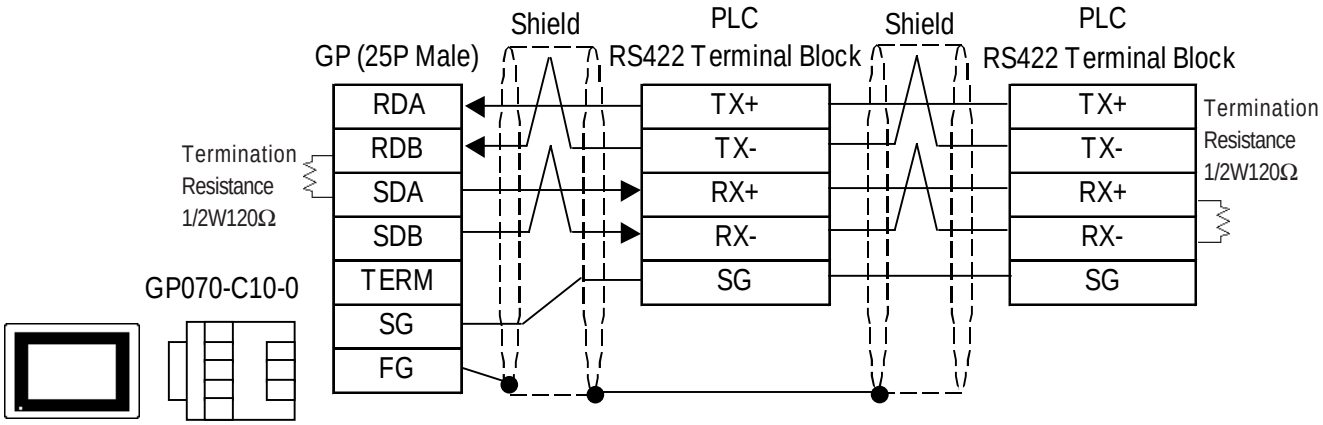


• When using ST400 unit.

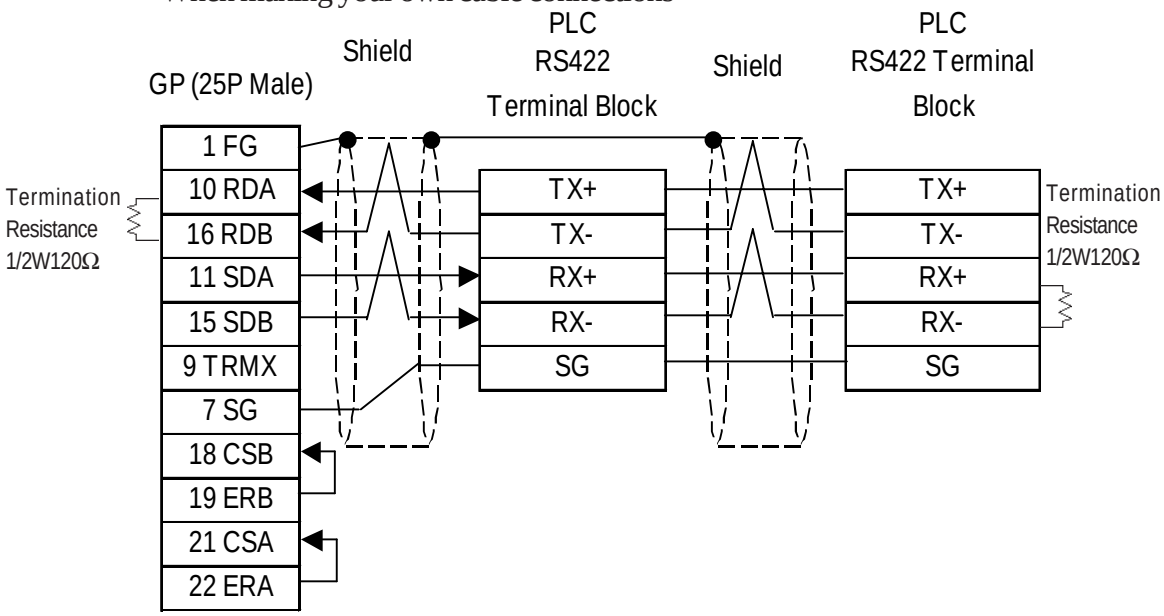


Cable Diagram 10 (RS-422)

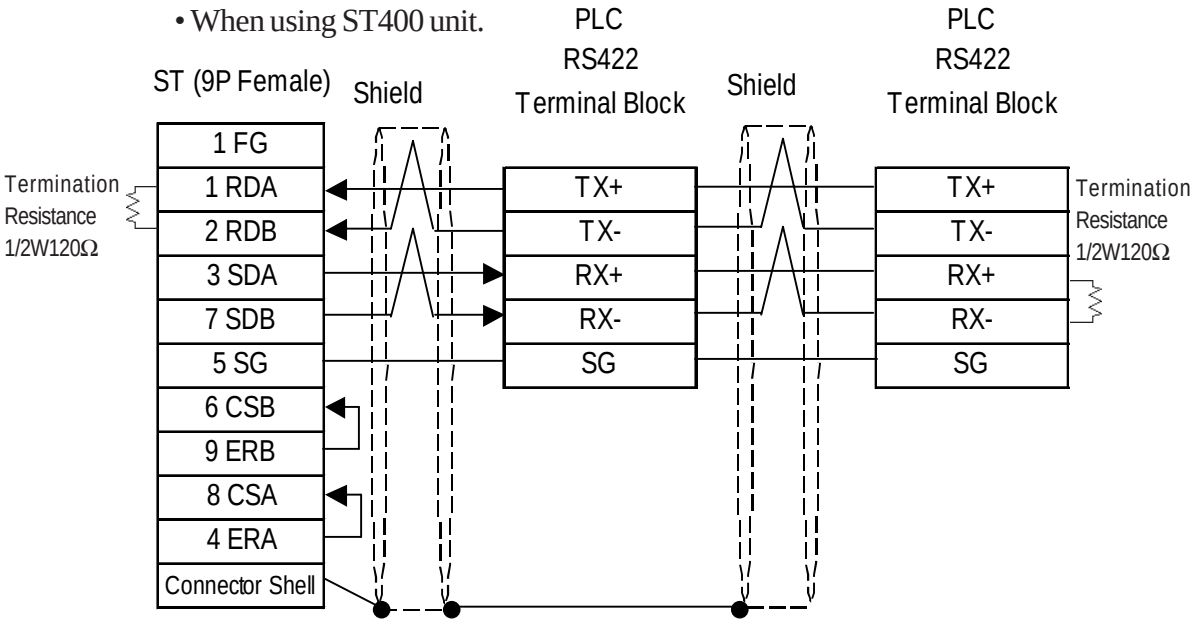
• When using Digital's RS-422 connector terminal adapter GP070-CN10-0



• When making your own cable connections

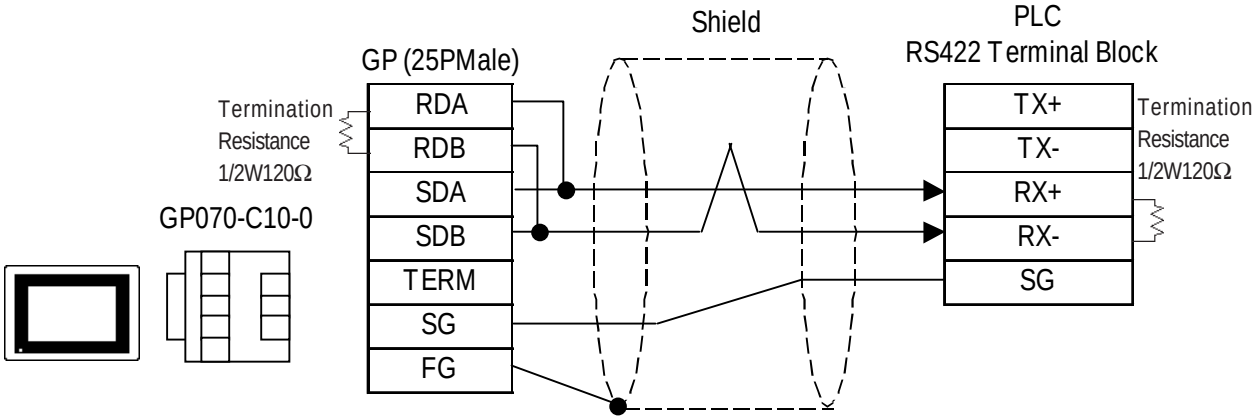


• When using ST400 unit.

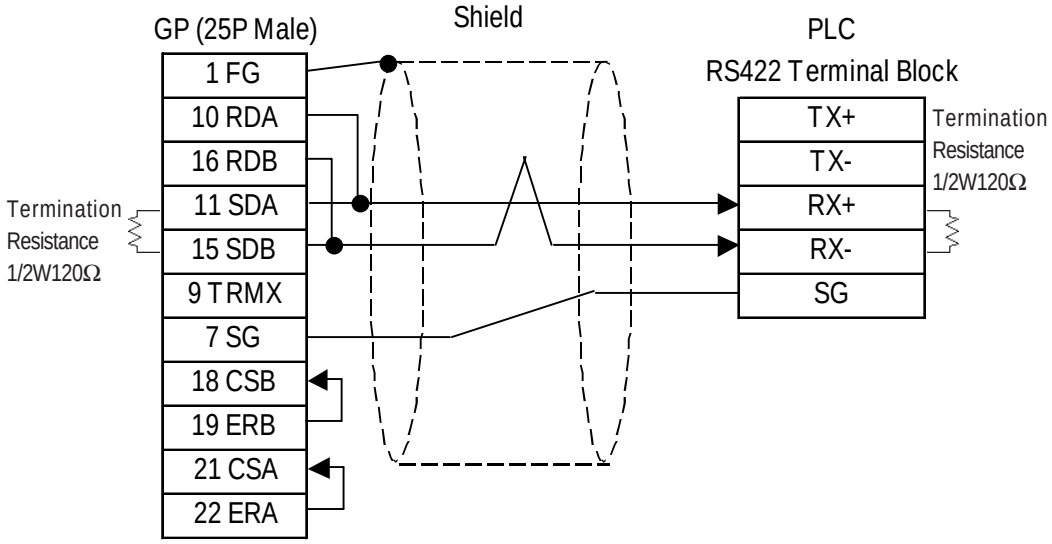


Cable Diagram 11 (RS-422)

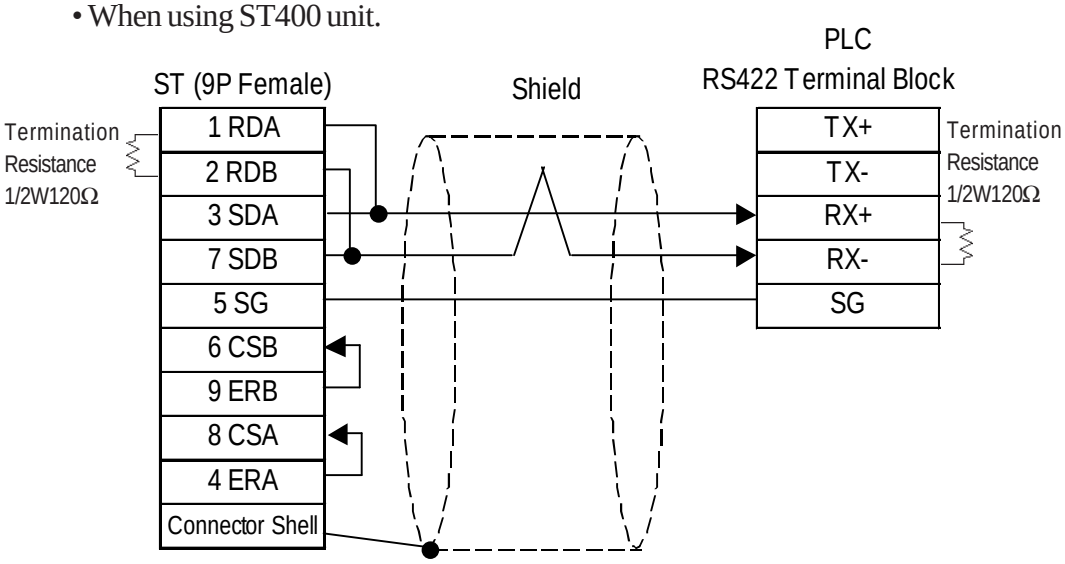
• When using Digital's RS-422 connector terminal adapter GP070-CN10-0



• When making your own cable connections

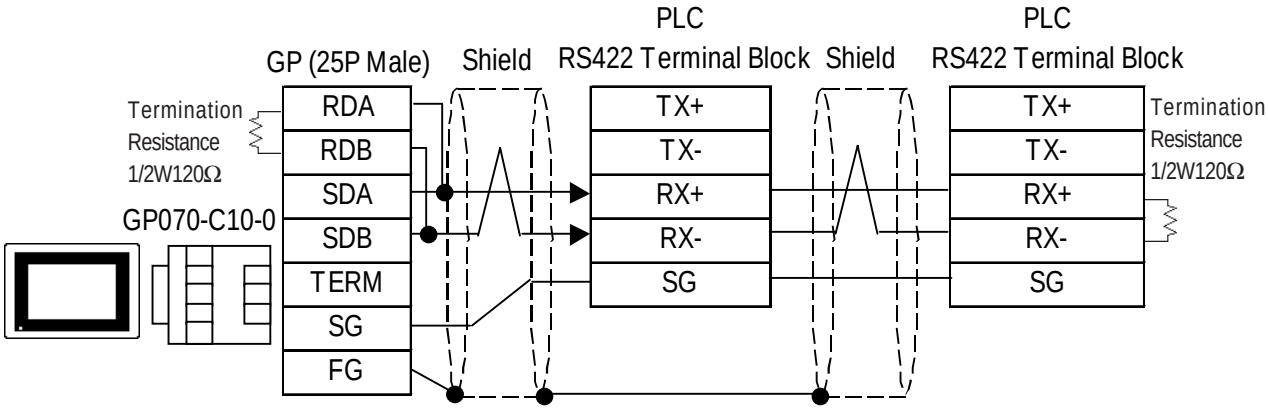


• When using ST400 unit.

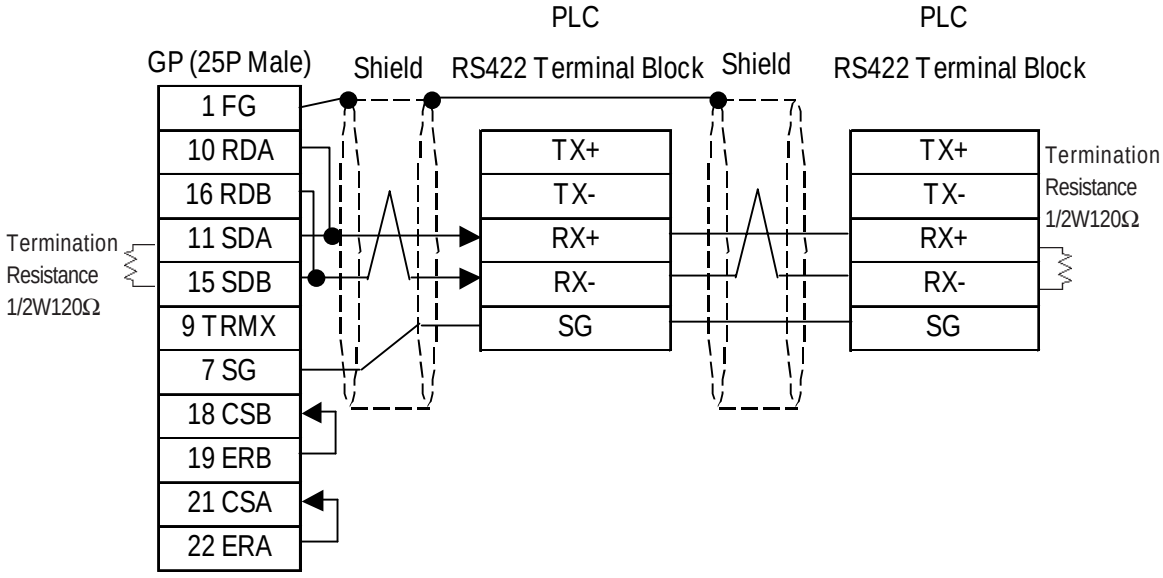


Cable Diagram 12 (RS-422)

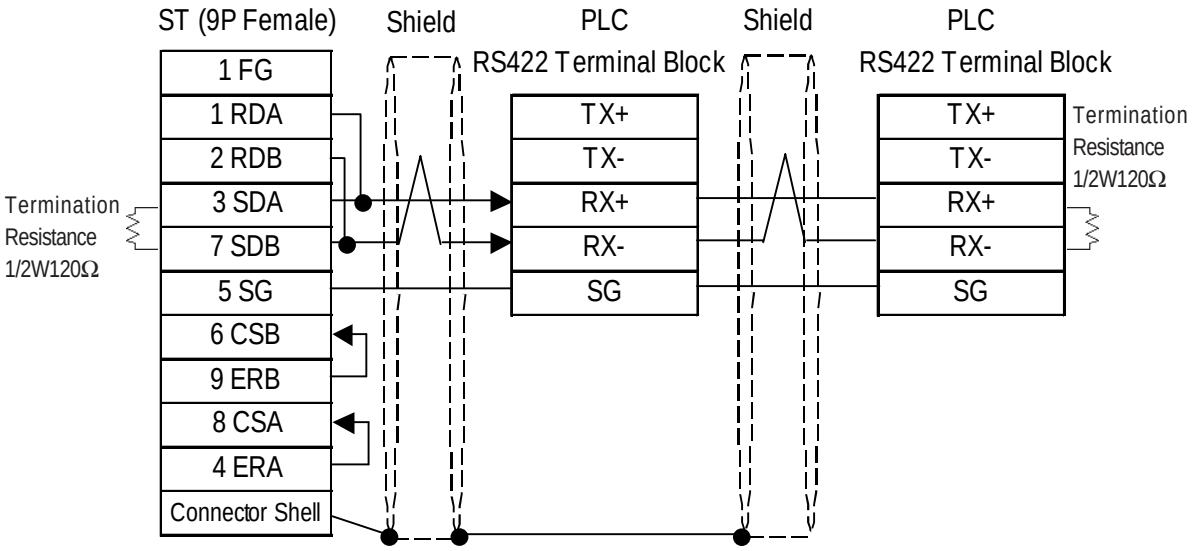
• When using Digital's RS-422 connector terminal adapter GP070-CN10-0



• When making your own cable connections



• When using ST400 unit.



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	÷16+1 *1 *2	L/H
Output Relay	Y00201 ~ Y61164	Y00201 ~ Y61149	÷16+1 *1 *2	
Internal Relay	I0001 ~ I2048	I0001 ~ I2033	÷16+1 *2	
Joint Relay	E0001 ~ E2048	E0001 ~ E2033	÷16+1	
Special Relay	M001 ~ M512	M001 ~ M497	÷16+1 *2 *3	
Link Relay	L0001 ~ L1024	L0001 ~ L1009	÷16+1 *2 *3	
Timer (contact)	T001 ~ T256	---	*2	
Counter (contact)	C001 ~ C256	---	*2	
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 ~ D2048	Bit 5 *2	
Common Register	---	B0001 ~ B2048	Bit 5 *2	
Special Register	---	Z001 ~ Z128	Bit 5 *2*3	
Link Register	---	W0001 ~ W1024	Bit 5 *2*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.*

E.g. For X00201

X 002 01

Slot No. — Terminal No.

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

E.g. For Internal Relay I0001, CPU #3:

3 I0001

CPU No. — Device Name

** 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	÷16+1 *1*2	L/H
Output Relay	Y00201 ~ Y61164	Y00201 ~ Y61149	÷16+1 *1*2	
Internal Relay	I0001 ~ I2048	I0001 ~ I2033	÷16+1 *2	
Joint Relay	E0001 ~ E2048	E0001 ~ E2033	÷16+1	
Special Relay	M001 ~ M512	M001 ~ M497	÷16+1 *2*3	
Link Relay	L0001 ~ L1024	L0001 ~ L1009	÷16+1 *2*3	
Timer (contact)	T001 ~ T256	---	*2	
Counter (contact)	C001 ~ C256	---	*2	
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 15 *2	
Common Register	---	B0001 ~ B2047	Bit 15 *2	
Special Register	---	Z001 ~ Z128	Bit 15 *2*3	
Link Register	---	W0001 ~ W1024	Bit 15 *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.*

E.g. For X00201

X 002 01
Slot No. — Terminal No.

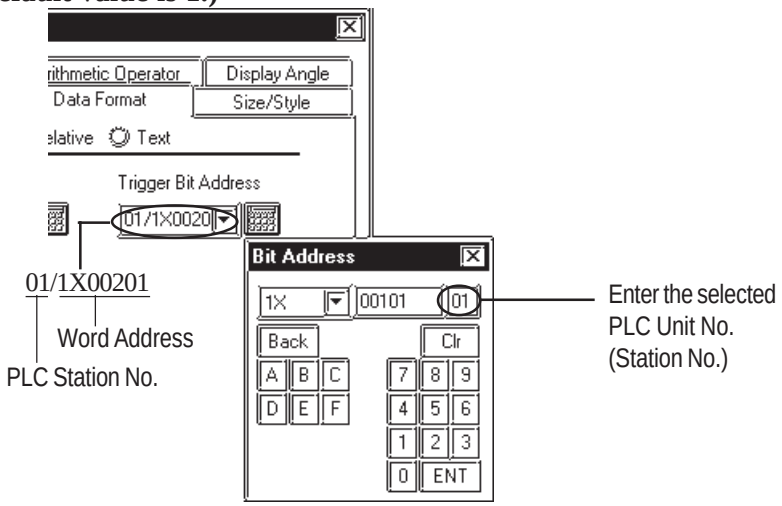
** 2 Write the CPU Number (1~4) in front of the device name.*

E.g. For Internal Relay I0001, CPU #3:

3 I0001
CPU No. — Device Name

** 3 Cannot perform data write.*

Note: **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)

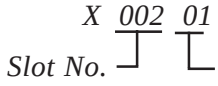
Setup System Area here.

Device	Bit Address	Word Address	Particulars	
Input Relay	X00201 ~ X71664	X00201 ~ X71649	÷16+] *1 *2	L/H
Output Relay	Y00201 ~ Y71664	Y00201 ~ Y71649	÷16+] *1	
Internal Relay	I00001 ~ I65535	I00001 ~ I65521	÷16+]	
Joint Relay	E0001 ~ E4096	E0001 ~ E4081	÷16+]	
Special Relay	M0001 ~ M9984	M0001 ~ M9969	÷16+]	
Link Relay	L00001 ~ L78192	L00001 ~ L78177	÷16+] *6	
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		
Counter (setup value)	---	CS0001 ~ CS3072	*2	
Data Register	---	D00001 ~ D65535	Bit 5]	
File Register	---	B00001 ~ B065536	Bit 5] *3 *4	
		B065537 ~ B131072		
		B131073 ~ B196608		
		B196609 ~ B262144		
Joint Register	---	R0001 ~ R4096	Bit 5]	
Special Register	---	Z001 ~ Z1024	Bit 5]	
Link Register	---	W00001 ~ W74096	Bit 5] *5*6	

(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



**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

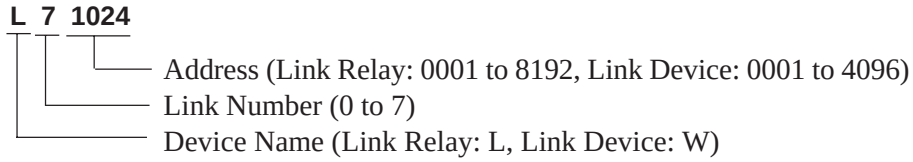
3) Designating the "Convert from" and "Convert to" address for the "Address Conversion" features

**4 When using a PC Link module, only Link Register up to B99999 can be used.*

**5 Up to 4,096 link registers can be used.*

**6 Enter Link Relay (L) and Link Register (W) data as follows:*

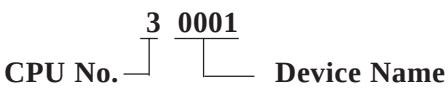
(Ex.) When entering Link Relay "L71024" data.



The address data's left-most digit is the Link Number, and the next four digits are the address.

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

E.g. For Internal Relay I0001, CPU #3:



• The types of devices that can be used will vary depending on the type of PLC.

For detailed information refer to Yokogawa's Sequencer CPU manual.

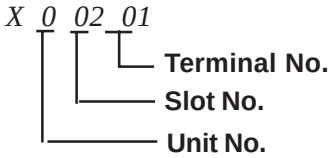
■ FA-M3 (1:n Communication)

Setup System Area here.

Device	Bit Address	Word Address	Particulars	
Input Relay	X00201 ~ X71364	X00201 ~ X71349	÷16+1 *1 *2	
Output Relay	Y00201 ~ Y71364	Y00201 ~ Y71349	÷16+1 *1	
Internal Relay	I0001 ~ I32768	I0001 ~ I32753	÷16+1	
Joint Relay	E0001 ~ E4096	E0001 ~ E4081	÷16+1	
Special Relay	M0001 ~ M9984	M0001 ~ M9969	÷16+1	
Link Relay	L00001 ~ L72048	L00001 ~ L72033	÷16+1	
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 15	
File Register	---	B0001 ~ B2047	Bit 15	
Joint Register	---	R0001 ~ R2047	Bit 15	
Special Register	---	Z001 ~ Z1024	Bit 15	
Link Register	---	W0001 ~ W11024	Bit 15 *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.*

E.g. For X00201



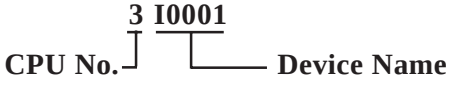
Note:

**2 Cannot perform data write.*

**3 A total of up to 4,096 link registers can be used.*

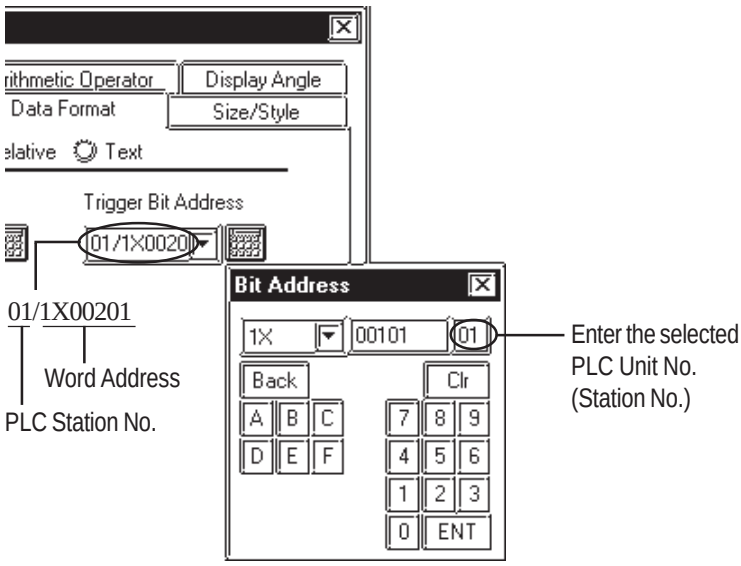
• Write the CPU Number (1~4) in front of the device name.

E.g. For Internal Relay I0001, CPU #3:



The range of devices that can be used will vary depending on the type of PLC. For detailed information refer to the Yokogawa's Sequencer CPU manual.

Note: • **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 Controller (When using Yokogawa Electric FACTORY ACE 1:1, FACTORY ACE 1:1 Protocol)

Register Image	Bit Address	Word Address	Particulars
Internal Relay	I0001 ~ I32767	I0001 ~ 32753	÷16+1
Data Register	---	D00001 ~ D32767	Bit 15
File Register	---	B000001 ~ B032767	Bit 15

Note: • **Set each device using a CPU number of 1.**

■ STARDOM Standalone Controller (When using Yokogawa Electric FCN/FCJ ModbusRTU 1:n Protocol)

Setup System Area here.

Device	Bit Address	Word Address	Note	
Coil	1:00001 to 31:09984	1:00001 to 31:09969	÷16+1	L/H
Input Relay	1:10001 to 31:19984	1:10001 to 31:19969	÷16+1 *1	
Retain Register	1:4000100 to 16:4999915	1:40001 to 16:49999		
	————	17:40001 to 31:49999	Bit15 *2	
Input Register	————	1:30001 to 31:39999	Bit15 *1	

**1 Read only. Write is not possible. If write is attempted, a Host Communication error (02:FB) will occur.*

**2 Node address 17 to 31's Bit Address designation becomes* Bit15 *operation.*

Note:

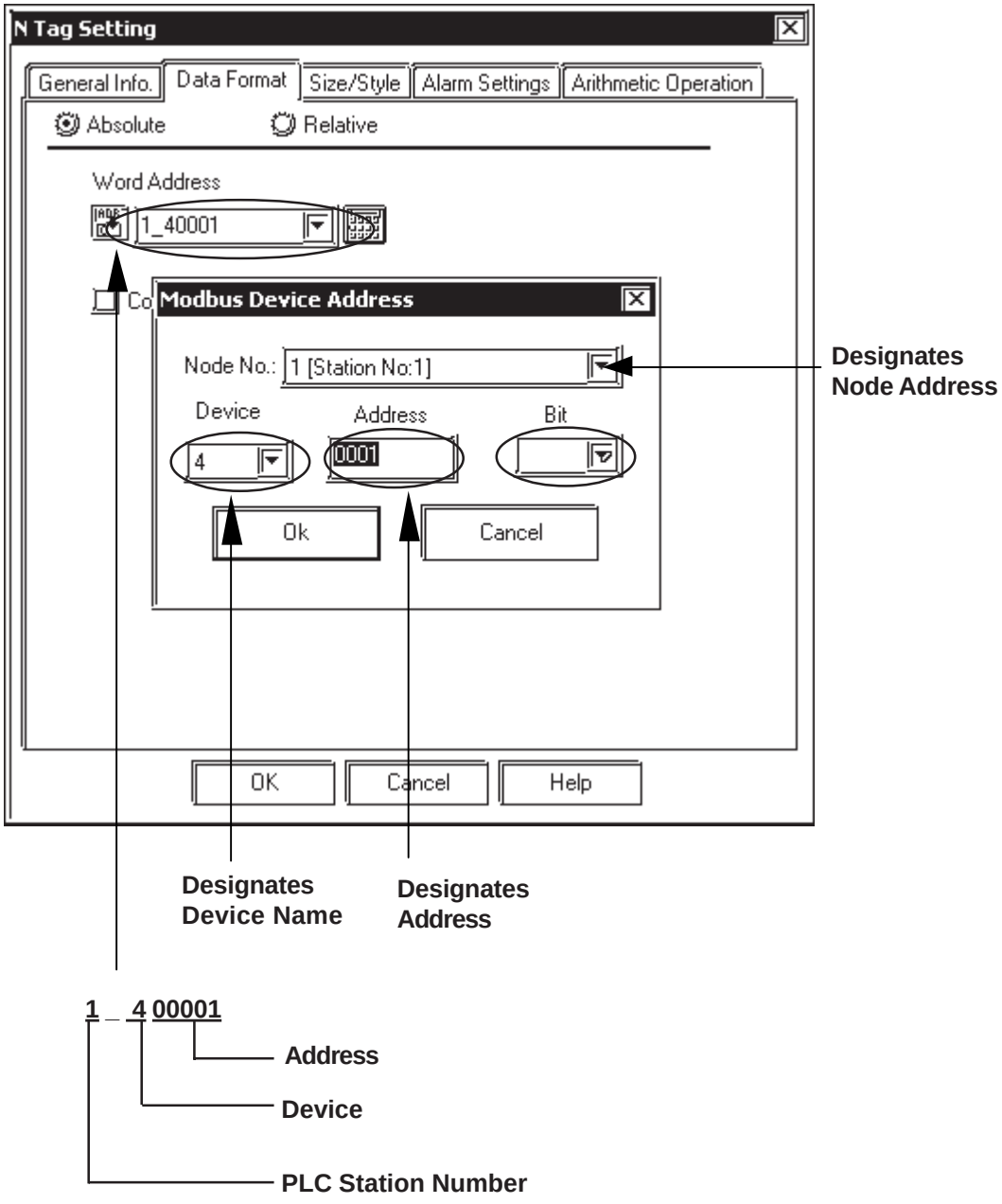
- **Address ranges depend on the type of PLC used. For details please refer to your PLC unit's manual.**

When using Pro-Server:

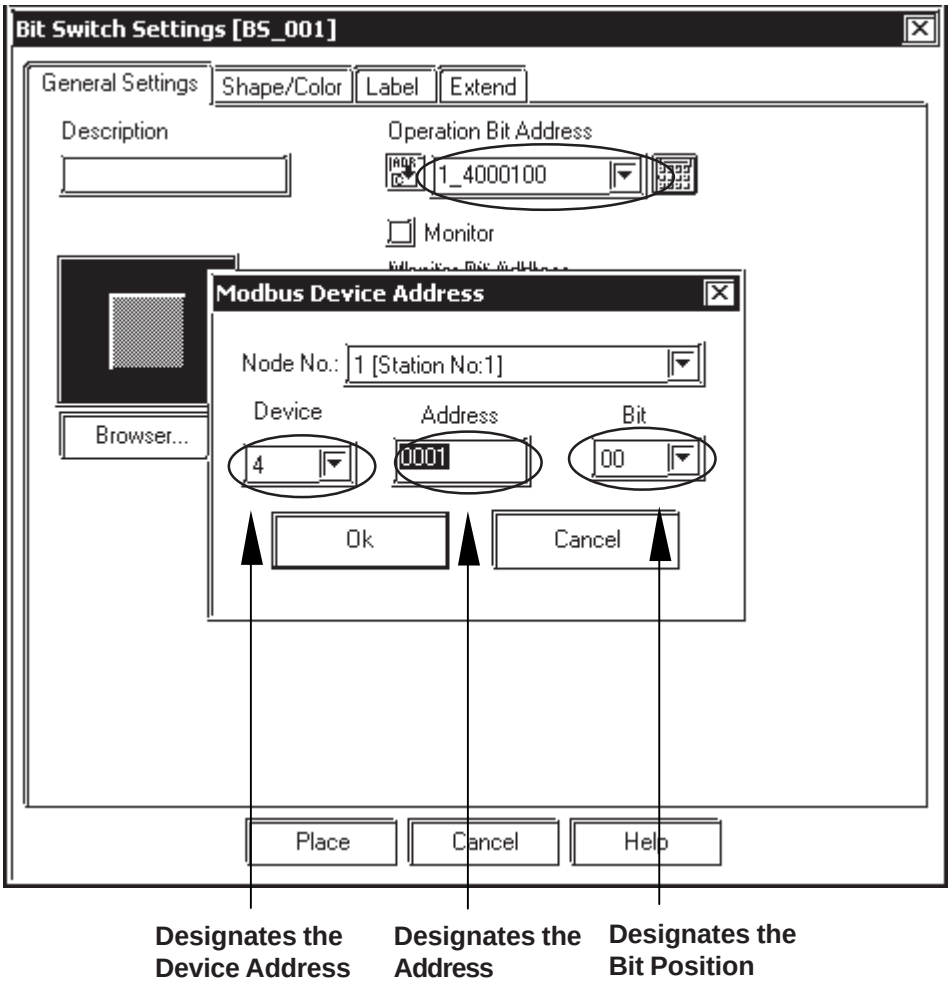
Important

When accessing via Pro-Server, be sure to define in advance Device Addresses to be accessed, and after creating project screens, Pro-Server must be used to import the symbols. For details, refer to your Pro-Server Operation Manual.

■ When using Word Addresses



■ When using Bit Addresses



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.*

**2 The PC Link I/F F3LC01-1N does not have this setting.*

■ 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 type	---	
---		Checksum	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

■ 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, F3SP58-6H, F3SP28-3S, F3SP38-6S, F3SP53-4S, F3SP58-6S and F3SP59-7S, a baud rate of 115200 bps is also available.*

■ STARDOM Standalone Controller (When using Yokogawa Electric FACTORY ACE 1:1, FACTORY ACE 1:n Protocol)

GP Setup		CPU Communication Port Setup	
Baud Rate	19200 bps *3	Baud Rate	19200 bps *1*3
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.*

**2 Pass the settings to the task startup FB parameters.*

**3 Communication at 115.2 kbps is possible.*

Set the COM port as follows:

Com1SioDriver=DUONUS_S10

Com2SioDriver=DUONUS_S10

ConsoleComPort=(blank)

■ STARDOM Standalone Controller FCN/FCJ (When using Yokogawa Electric FCN/FCJ ModbusRTU 1:n Protocol via CPU unit's COM Port connection)

GP Setup		CPU Communication Port Setup	
Baud Rate	9600 bps	Baud Rate	9600 bps *1*3
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	---	
Station No.	1	Station No.	1 *2
---		Communication Mode	RTU Mode
---		Communication Type	Slave

**1 Set these parameters in the COM port setup using the Web browser.*

**2 Pass the settings to the task startup FB parameters.*

**3 Communication at 115.2 kbps is possible.*

Set the COM port as follows:

Com1SioDriver=DUONUS_S10

Com2SioDriver=DUONUS_S10

ConsoleComPort=(blank)

■ STARDOM Standalone Controller FCN (When using Yokogawa Electric FCN/FCJ ModbusRTU 1:n Protocol via NFLR111 RS232C Communication Module connection)

GP Setup		NFLR111 Port Setup	
Baud Rate	9600 bps	Baud Rate	9600 bps *1*3
Data Length	8 bit	Data Length	8 bit *1
Stop Bit	1 bit	Stop Bit	1 bit *1
Parity Bit	None	Parity Bit	None *1
Data Flow Control	ER Control	Other Settings	Use default values *1
Communication Format	RS-232C	---	
Station No.	1	Station No.	1 *2
---		Communication Mode	RTU Mode
---		Communication Type	Slave

**1 Set these parameters in the Resource Configurator.*

**2 Pass the settings to the task startup FB parameters.*

**3 Communication at 115.2 kbps is possible.*

■ STARDOM Standalone Controller FCN (When using Yokogawa Electric FCN/FCJ ModbusRTU 1:n Protocol via NFLR121 RS422/RS485 Communication Module connection)

GP Setup		NFLR121 Port Setup	
Baud Rate	9600 bps *4	Baud Rate	9600 bps *1*3
Data Length	8 bit	Data Length	8 bit *1
Stop Bit	1 bit	Stop Bit	1 bit *1
Parity Bit	None	Parity Bit	None *1
Data Flow Control	ER Control	Other Settings	Use default values*1
Communication Format (using 4-wire)	4-wire	Wiring Format	4-wire *1
Communication Format (using 2-wire)	2-wire		2-wire *1
Station No.	1	Station No.	1 *2
---		Communication Mode	RTU Mode
---		Communication Type	Slave

**1 Set these parameters in the COM port setup using the Web browser.*

**2 Pass the settings to the task startup FB parameters.*

**3 Communication at 115.2 kbps is possible.*

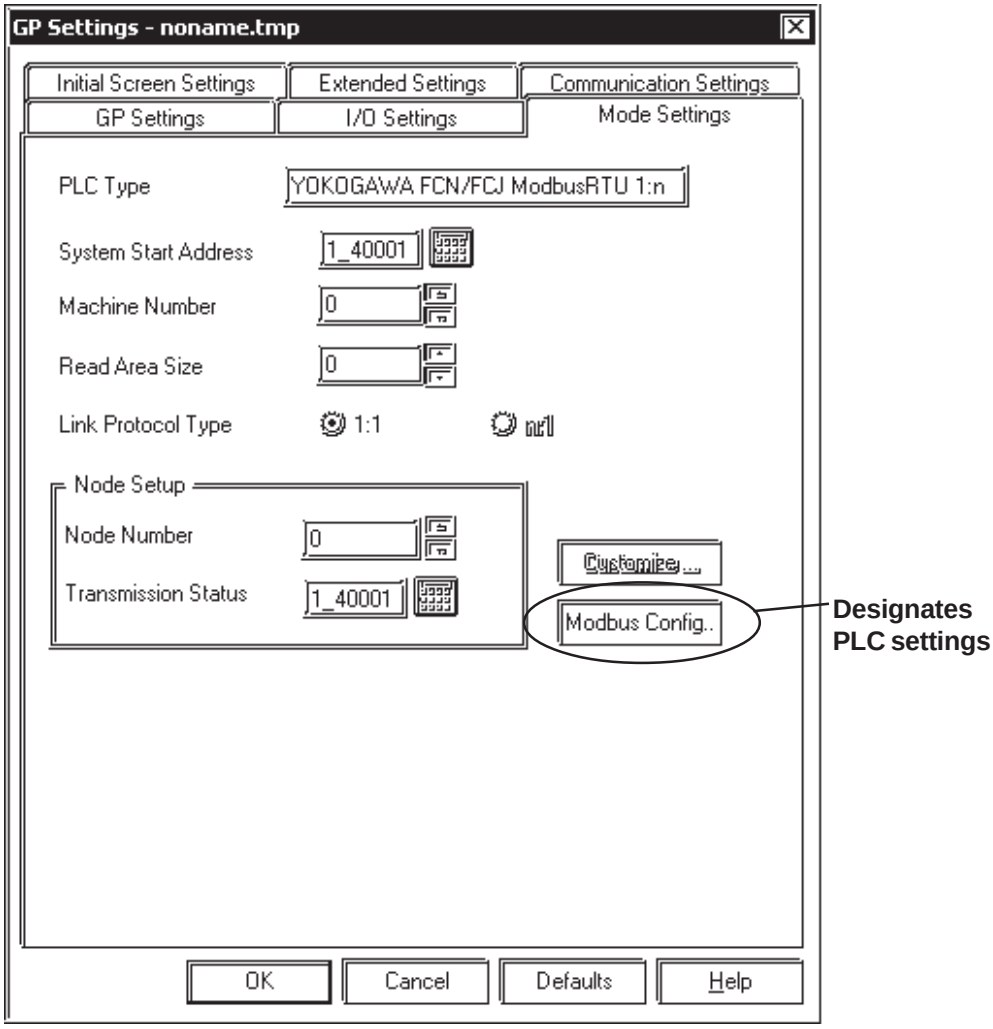
When communicating using a 2-wire 1:n connection with 2 or more PLC units, be sure to set the GP unit's Send Wait time of 20ms or more.

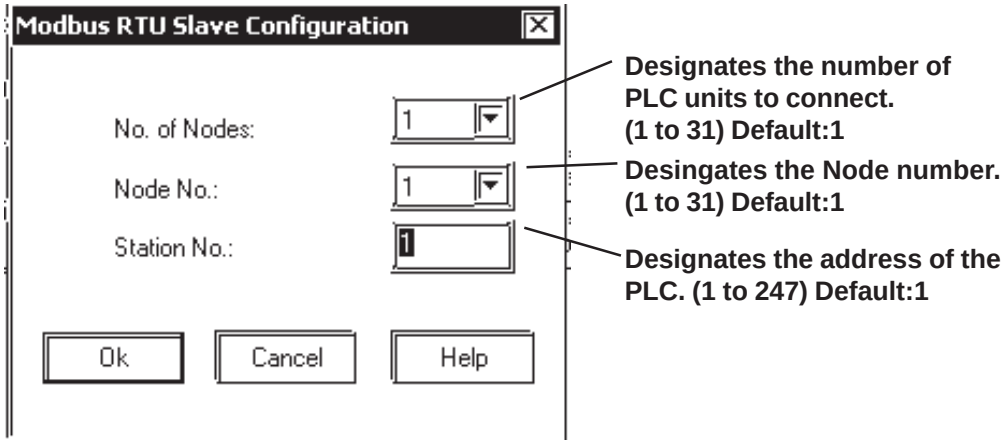
If communication is performed using the default value of 0ms, an Host Communication error (02:FE:) will occur from the PLC.**

■ Special Settings

Screen Creation Software Settings

The screen creation software settings are located in the [GP System] - [Mode Settings] area. The screens and items used for entering settings are as follows.





A Yokogawa Electric

A.1 Maximum Number of Consecutive Device Address

The following lists the maximum number of consecutive addresses that can be read by each PLC. Refer to these tables to utilize *Block Transfer*.

Note:

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.)

■ PLC Units

<FACTORY ACE Series>

Device	Max. No. of Consecutive Address	Device	Max. No. of Consecutive Address
Input Relay X	1 Words	Timer (current value) TP	63 Words
Output Relay Y		Timer (setup value) TS	
Internal Relay I	63 Words	Counter (current value) CP	
Joint Relay E		Counter (setup value) CS	
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.*

<STARDOM Standalone Controller FCN/FCJ Series> (When using Yokogawa Electric FCN/FCJ ModbusRTU 1:n Protocol)

Device	Max. No. of Consecutive Addresses
Coil (0)	125 Words
Input Relay (1)	
Retain Register (4)	
Input Register (3)	

◆Ethernet Communication

<FACTORY ACE Series/FA-M3>

Device	Max.No.of Consecutive Addresses
Input Relay	1 Word
Output Relay	
Internal Relay	64 words
Common Relay	
Special Relay	
Link Relay	
Timer (contact)	16 words
Counter (contact)	
Timer (current value)	64words
Counter (current value)	
Timer (setup value)	
Counter (setup value)	
Data Register	
File Register	
Common Register	
Special Register	
Link Register	

■ Controller

<UT2000/UT3000/Green Series>

Device	Max. No. of Consecutive Address
D	63 Words
I	63 Words

<UT100>

Device	Max. No. of Consecutive Address
D Register	32 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)

■ PLCs

<FA500 (1:1 communication)*>

	Device	Word Address	Device code (HEX)	Address code
Bit Device	Input Relay	X00201~	X	X
	Output Relay	Y00201~	X	X
	Internal Relay	I0001~	9000	Save as word address value minus 1 divided by 16.
	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~	C000	Save as word address value minus 1 divided by 16.
Word Device	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.
	Counter (set value)	CS001~	7800	Save as word address value minus 1.
	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
Bit Device	Input Relay	X00201~	X	X
	Output Relay	Y00201~	X	X
	Internal Relay	I0001~	9000	Save as word address value minus 1 divided by 16.
	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~	C000	Save as word address value minus 1 divided by 16.
Word Device	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.
	Counter (set value)	CS001~	7800	Save as word address value minus 1.
	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.*

<STARDOM Standalone Controller FCN/FCJ Series> (When using Yokogawa Electric FCN/FCJ ModbusRTU 1:n Protocol)

Device	Device Address	Device code	Address Code
1_0	1_000001 -	0xB000	(Word Address)/16
2_0	2_000001 -	0xB200	
3_0	3_000001 -	0xB400	
4_0	4_000001 -	0xB600	
5_0	5_000001 -	0xB800	
6_0	6_000001 -	0xBA00	
7_0	7_000001 -	0xBC00	
8_0	8_000001 -	0xBE00	
9_0	9_000001 -	0xC000	
10_0	10_000001 -	0xC200	
11_0	11_000001 -	0xC400	
12_0	12_000001 -	0xC600	
13_0	13_000001 -	0xC800	
14_0	14_000001 -	0xCA00	
15_0	15_000001 -	0xCC00	
16_0	16_000001 -	0xCE00	
17_0	17_000001 -	0x8000	
18_0	18_000001 -	0x8200	
19_0	19_000001 -	0x8400	
20_0	20_000001 -	0x8600	
21_0	21_000001 -	0x8800	
22_0	22_000001 -	0x8A00	
23_0	23_000001 -	0x8C00	
24_0	24_000001 -	0x8E00	
25_0	25_000001 -	0xD000	
26_0	26_000001 -	0xF200	
27_0	27_000001 -	0xF400	
28_0	28_000001 -	0xF600	
29_0	29_000001 -	0xF800	
30_0	30_000001 -	0xFA00	
31_0	31_000001 -	0xFC00	
1_1	1_100001 -	0x9000	(Word Address)/16
2_1	2_100001 -	0x9200	
3_1	3_100001 -	0x9400	
4_1	4_100001 -	0x9600	
5_1	5_100001 -	0x9800	
6_1	6_100001 -	0x9A00	
7_1	7_100001 -	0x9C00	
8_1	8_100001 -	0x9E00	
9_1	9_100001 -	0xA000	
10_1	10_100001 -	0xA200	

11_1	11_100001 -	0xA400	
12_1	12_100001 -	0xA600	
13_1	13_100001 -	0xA800	
14_1	14_100001 -	0xAA00	
15_1	15_100001 -	0xAC00	
16_1	16_100001 -	0xAE00	
17_1	17_100001 -	0x6000	
18_1	18_100001 -	0x6200	
19_1	19_100001 -	0x6400	
20_1	20_100001 -	0x6600	
21_1	21_100001 -	0x6800	
22_1	22_100001 -	0x6A00	
23_1	23_100001 -	0x6C00	
24_1	24_100001 -	0x6E00	
25_1	25_100001 -	0x7000	
26_1	26_100001 -	0x7200	
27_1	27_100001 -	0x7400	
28_1	28_100001 -	0x7600	
29_1	29_100001 -	0x7800	
30_1	30_100001 -	0x7A00	
31_1	31_100001 -	0x7C00	
1_4	1_400001 -	0xD200	Word Address - 1
2_4	2_400001 -	0xD400	
3_4	3_400001 -	0xD600	
4_4	4_400001 -	0xD800	
5_4	5_400001 -	0xDA00	
6_4	6_400001 -	0xDC00	
7_4	7_400001 -	0xDE00	
8_4	8_400001 -	0xE000	
9_4	9_400001 -	0xE200	
10_4	10_400001 -	0xE400	
11_4	11_400001 -	0xE600	
12_4	12_400001 -	0xE800	
13_4	13_400001 -	0xEA00	
14_4	14_400001 -	0xEC00	
15_4	15_400001 -	0xEE00	
16_4	16_400001 -	0xF000	
17_4	17_400001 -	0x4200	
18_4	18_400001 -	0x4400	
19_4	19_400001 -	0x4600	
20_4	20_400001 -	0x4800	
21_4	21_400001 -	0x4A00	
22_4	22_400001 -	0x4C00	

23_4	23_400001 -	0x4E00	
24_4	24_400001 -	0x5000	
25_4	25_400001 -	0x5200	
26_4	26_400001 -	0x5400	
27_4	27_400001 -	0x5600	
28_4	28_400001 -	0x5800	
29_4	29_400001 -	0x5A00	
30_4	30_400001 -	0x5C00	
31_4	31_400001 -	0x5E00	
1_3	1_300001 -	0x2000	Word Address - 1
2_3	2_300001 -	0x2200	
3_3	3_300001 -	0x2400	
4_3	4_300001 -	0x2600	
5_3	5_300001 -	0x2800	
6_3	6_300001 -	0x2A00	
7_3	7_300001 -	0x2C00	
8_3	8_300001 -	0x2E00	
9_3	9_300001 -	0x3000	
10_3	10_300001 -	0x3200	
11_3	11_300001 -	0x3400	
12_3	12_300001 -	0x3600	
13_3	13_300001 -	0x3800	
14_3	14_300001 -	0x3A00	
15_3	15_300001 -	0x3C00	
16_3	16_300001 -	0x3E00	
17_3	17_300001 -	0x0200	
18_3	18_300001 -	0x0400	
19_3	19_300001 -	0x0600	
20_3	20_300001 -	0x0800	
21_3	21_300001 -	0x0A00	
22_3	22_300001 -	0x0C00	
23_3	23_300001 -	0x0E00	
24_3	24_300001 -	0x1000	
25_3	25_300001 -	0x1200	
26_3	26_300001 -	0x1400	
27_3	27_300001 -	0x1600	
28_3	28_300001 -	0x1800	
29_3	29_300001 -	0x1A00	
30_3	30_300001 -	0x1C00	
31_3	31_300001 -	0x1E00	
LS Area	LS0000 -	0x4000	Word Address

<FA-M3 (1:1 communication)*>

	Device	Word Address	Device code (HEX)	Address code
Bit Device	Input Relay	X00201~	X	X
	Output Relay	Y00201~	X	X
	Internal Relay	I0001~	9000	Save as word address value minus 1 divided by 16.
	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~	C000	Save as word address value minus 1 divided by 16.
Word Device	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.
	File Register	B00001~	2000	Save as word address value minus 1.
		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
Bit Device	Input Relay	X00201~	X	X
	Output Relay	Y00201~	X	X
	Internal Relay	I00001~	9000	Save as word address value minus 1 divided by 16.
	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~	C000	Save as word address value minus 1 divided by 16.
Word Device	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.
	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
Bit Device	Input Relay	X00201~	X	X
	Output Relay	Y00201~	X	X
	Internal Relay	I00001~	9000	Save as word address value minus 1 divided by 16.
	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~	C000	Save as word address value minus 1 divided by 16.
Word Device	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.
	File Register	B0001~	2000	Save as word address value minus 1.
		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	W0001~	5800	Save as word address value minus 1.
	LS area	LS0000~	4000	Word Address

** Only CPU No. 1 is available*

◆ DeviceNet Communication

	Device	Word Address	Device code (HEX)	Address code
Word Device	LS area	LS0000 ~	4000	Word Address

■ Controllers

<UT2000/UT3000/Green Series>

	Device	Word Address	Device Code (HEX)	Address Code
Word Device	D	0001 ~	0000	Word Address -1
Bit Device	I	0001 ~	9000	Save as word address -1 value divided by 16
Word Device	LS Area	LS6000 ~	4000	Woord Address

<UT100>

	Device	Word Address	Device Code (HEX)	Address Code
Word Device	D Register	d0001 ~	3000	Word Address -1
	LS Area	LS0000 ~	4000	Word Address

A.3 Address Conversion Table

The address conversion table is shown below.

		Before Conversion				
		0	1	3	4	LS
After Conversion	0	❍	❍	❍	❍	❍
	1	❍	❍	❍	❍	❍
	3	❍	❍	❍	❍	❍
	4	❍	❍	❍	❍	❍
	LS	❍	❍	❍	❍	❍

❍ *: When the conversion mode is set to "Word", both word and bit devices will be converted. If the conversion mode is set to "Bit", only bit devices will be converted.*