Mitsubishi <17> Mitsubishi Electric Corporation
## FX Series + Expansion Board (Link Protocol) Connection

### System Structure

* Connecting via Expansion Board with Link Protocol

Connecting Directly	
	Expansion Board + CPU

GP

Machine	Model	Remark
GP	GP70 Series GP77/77R Series GP2000 Series	Excepting for handy types.
GLC	GLC2000 Series	

CPU	Expansion Board	Communication Method	Connection Cable	GP
FX$_{2N}$	FX2N-232-BD	RS-232C		
	FX2N-485-BD	RS-422	**Connection Method**	
FX$_{2NC}$	FX0N-232ADP	RS-232C		

Procedure to Connect PLC

Select PLC Type on GP-PRO/PB -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/PB   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-FX2 (LINK)

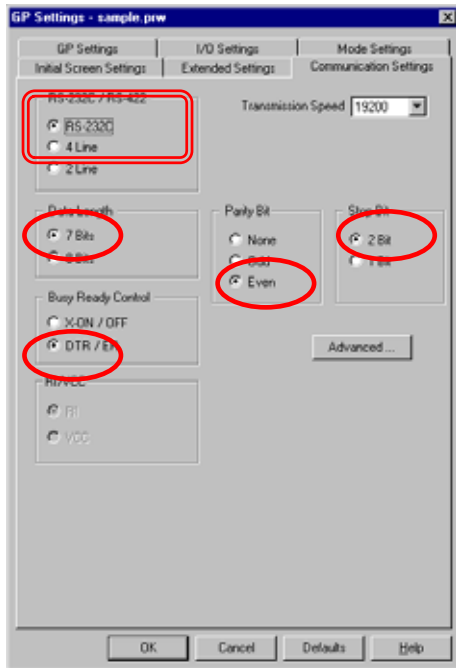## Communication Setting Sample

GP Setup		PLC (Data Register) 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	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

Communication Settings [GP]

[GP-PRO/PB   C-Package Setting]

Select [GP Setup] on Project Manager.

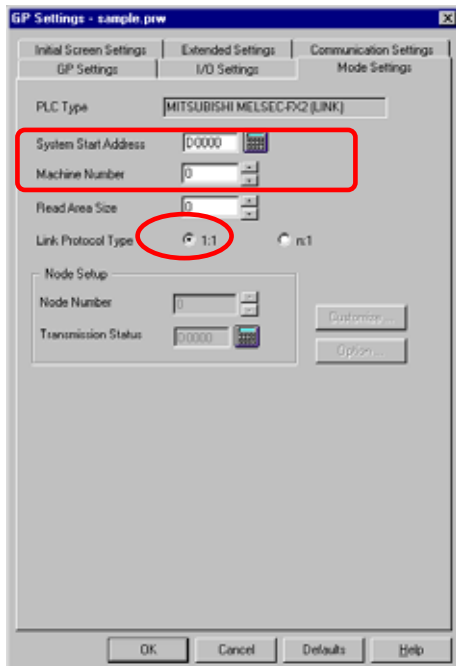| 1) Communication Settings	1) Communication Settings

	Transmission Speed : 19200bps
	Data Length : 7 Bits
	Stop Bit: 2 Bits
	Parity Bit: Even
	Busy Ready Control : DTR / ER
	RS-232C/ RS-422 :
	  RS-232C Connection: RS-232C
	  RS-422 Connection: 4 Line
	
	* Select one in ☐ depending on the communication method.

2) Mode Settings	2) Mode Settings
	System Start Address: Arbitrary Address Machine No.: 0 Link Protocol Type: 1:1

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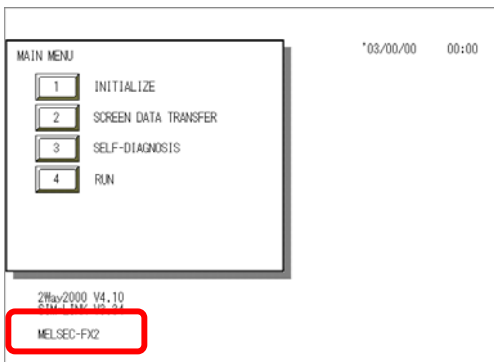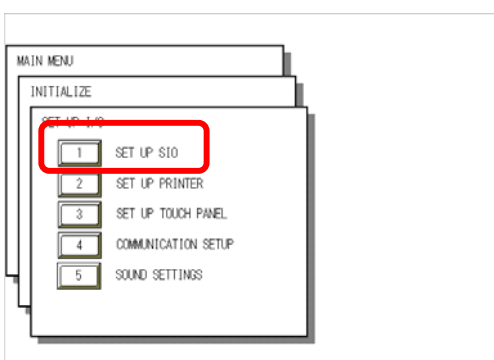
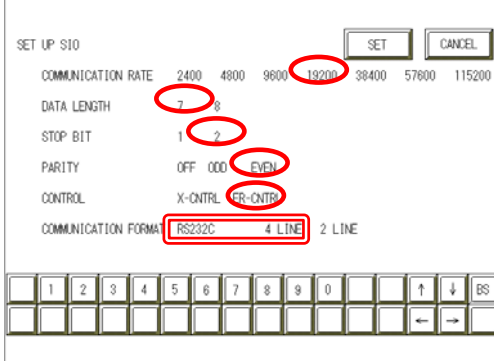3) Transfer Settings

3) Transfer Settings GP System Settings: Checked

Transfer to GP after settings completed.
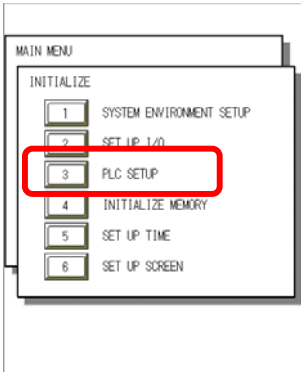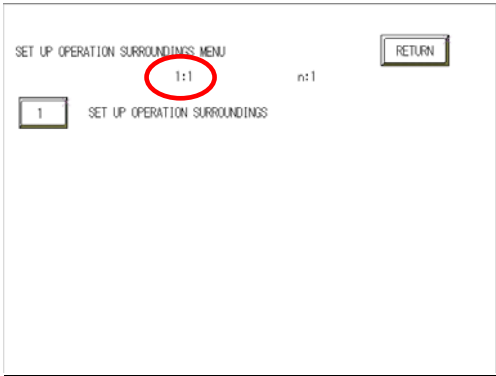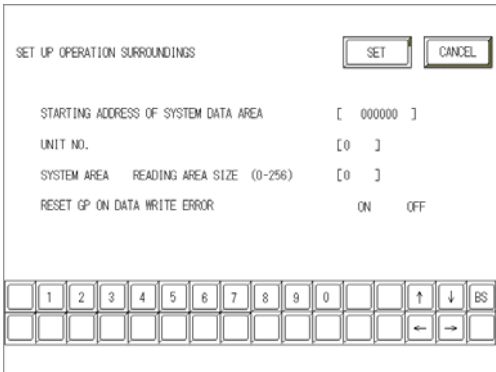
[GP Settings]

-Displaying Setting Screen-

Touch the left top of the screen within 10 second after powering on.

Or touch the right top and the right bottom of the screen at the same time. Keep 2 points touched and touch the left bottom. The menu bar will display on the bottom of the screen. Then touch [Offline].

1) Checking GP Type	1) Checking GP Type
	If you have selected Mitsubishi MELSEC-FX2 (LINK), the following will be shown. "MELSEC-FX2"

2) Communication Settings
 	
	2) Communication Settings
	
	[MAIN MENU]
	    ↓
	[INITIALIZE]
	    ↓
	[SET UP I/O]
	    ↓
	[SET UP SIO]

	Communication Rate: 19200bps
	Data Length : 7 Bits
	Stop Bit: 2 Bits
	Parity: Even
	Control : ER Cntrl
	Communication Format :
	  RS-232C Connection : RS-232C
	  RS-422 Connection: 4 Line
	 * Select one in [ ]
	
	   depending on the communication
	
	   method.

3) Setting up Operation Surroundings	3) Setting up Operation Surroundings
MAIN MENU INITIALIZE 1 SYSTEM ENVIRONMENT SETUP 2 SET UP I/O 3 PLC SETUP 4 INITIALIZE MEMORY 5 SET UP TIME 6 SET UP SCREEN	[MAIN MENU] ↓ [INITIALIZE] ↓ [PLC SETUP] ↓ [PLC SETUP]
SET UP OPERATION SURROUNDINGS MENU RETURN 1:1 n:1 1 SET UP OPERATION SURROUNDINGS	Set Up Operation Surroundings Menu: 1:1
SET UP OPERATION SURROUNDINGS SET CANCEL STARTING ADDRESS OF SYSTEM DATA AREA [000000] UNIT NO. [0] SYSTEM AREA READING AREA SIZE (0-256) [0] RESET GP ON DATA WRITE ERROR ON OFF 1 2 3 4 5 6 7 8 9 0 ↑ ↓ BS ← →	Starting Address of System Data Area: Arbitrary Address Unit No.: 0

Pro-face®

Communication Settings [PLC]

Store the values in each address below and reset PLC.

1. [Connecting to FX-232-BD]

Word Address	Value	Settings
D8120	E89E (HEX)	Baud Rate: 19200bps Data Bit: 7 Bits Stop Bit: 2 Bits Parity Bit: Even Control Format: ER Control Channel Setup: RS-232C
D8121	0	Station Number: 0

2. [Connecting to FX-485-BD]

Word Address	Value	Settings
D8120	E09E (HEX)	Baud Rate: 19200bps Data Bit: 7 Bits Stop Bit: 2 Bits Parity Bit: Even Control Format: ER Control Channel Setup: RS-422
D8121	0	Station Number: 0

3. [Connecting to FX0N-232ADP]

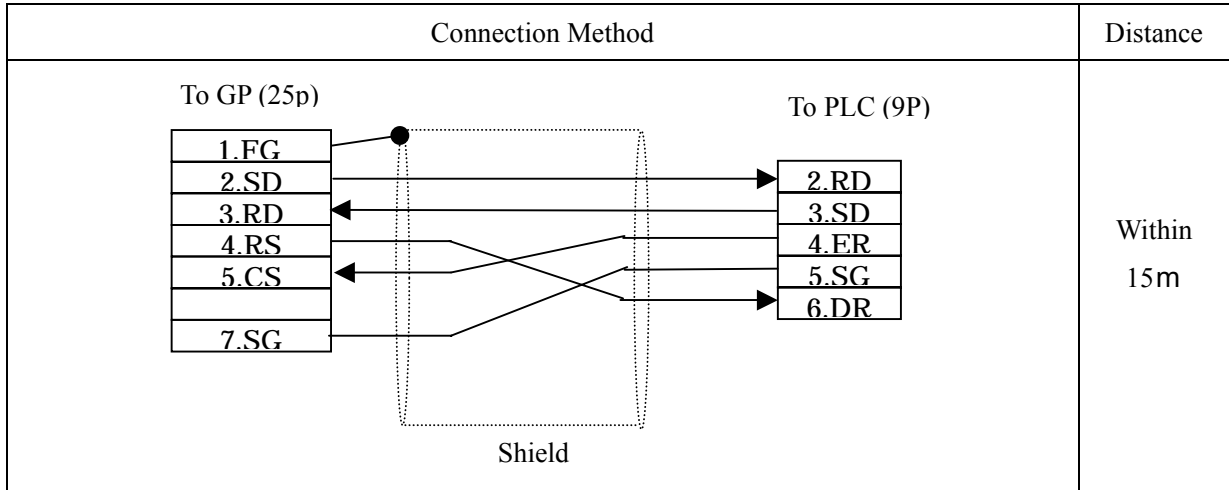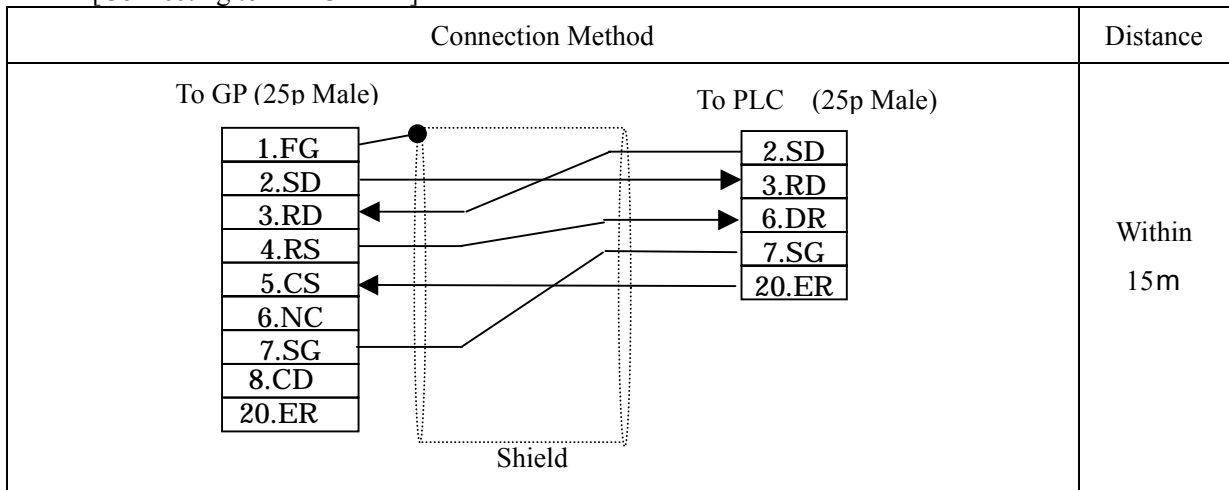| Word Address	Value	Settings
D8120	E89E (HEX)	Baud Rate: 19200bps Data Bit: 7 Bits Stop Bit: 2 Bits Parity Bit: Even Control Format: ER Control Channel Setup: RS-232C
D8121	0	Station Number: 0

Connection Method

1 [RS-232C Connection]

1-1 [Connecting to FX-232-BD]

Connection Method	Distance
To GP (25p) To PLC (9P) 1.FG 2.SD → 2.RD 3.RD ← 3.SD 4.RS 4.ER 5.CS ← 5.SG 6.DR 7.SG Shield	Within 15

1-2 [Connecting to FX-232ADP]

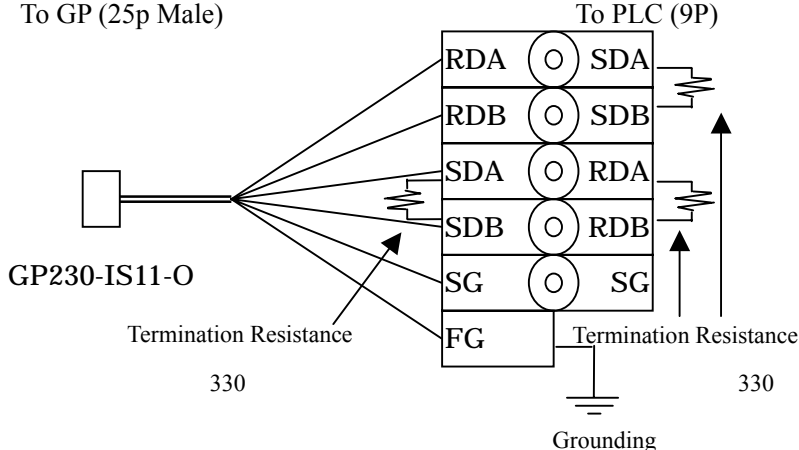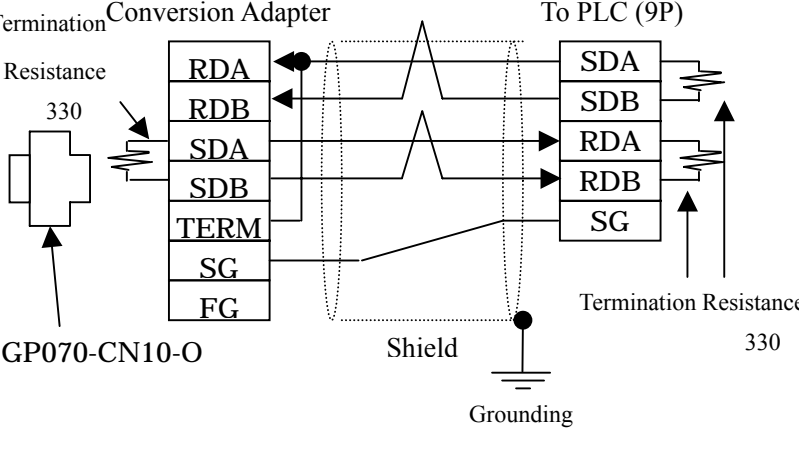| Connection Method	Distance
To GP (25p Male) To PLC (25p Male) 1.FG 2.SD → 2.SD 3.RD → 3.RD 4.RS 6.DR 5.CS ← 7.SG 6.NC 20.ER 7.SG 8.CD 20.ER Shield	Within 15

⚠ **Important**

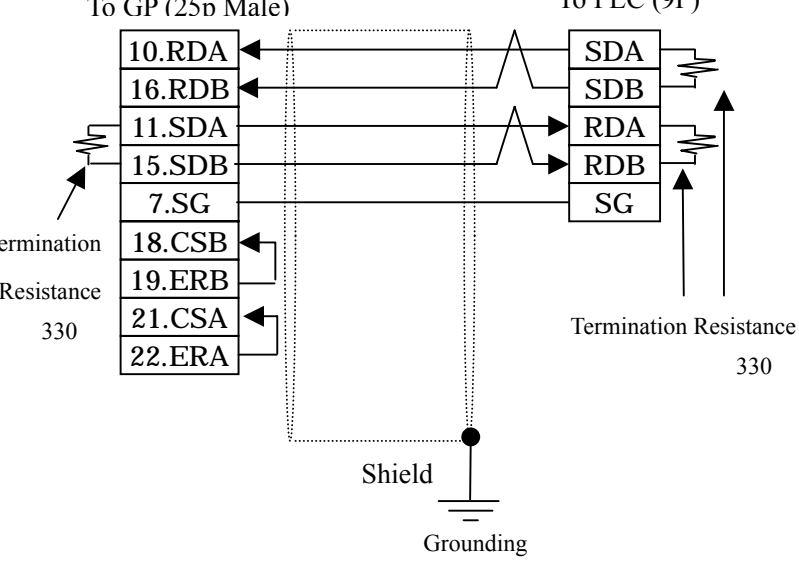*** If a communication cable is used, it must be connected to the SG.**

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	

2 [RS-422 Connection]

Type	Connection Method	Distance
Using GP230-IS11-O	To GP (25p Male) / To PLC (9P) — RDA–SDA, RDB–SDB, SDA–RDA, SDB–RDB, SG–SG, FG. GP230-IS11-O. Termination Resistance 330. Termination Resistance 330. Grounding	Range between 3 and 50
Using GP070-CN10-O	Termination Resistance 330. Conversion Adapter / To PLC (9P) — RDA, RDB, SDA, SDB, TERM, SG, FG — SDA, SDB, RDA, RDB, SG. GP070-CN10-O. Shield. Grounding. Termination Resistance 330	Within 50
Creating Cable	To GP (25p Male) / To PLC (9P) — 10.RDA, 16.RDB, 11.SDA, 15.SDB, 7.SG, 18.CSB, 19.ERB, 21.CSA, 22.ERA — SDA, SDB, RDA, RDB, SG. Termination Resistance 330. Termination Resistance 330. Shield. Grounding	Within 50

! 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 :   330

                (with wattage that specified on PLC)

    GP Unit /   as required (Refer to Cable Diagrams) :   330

                (with wattage that 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	<Hitachi Cable Ltd.>
Setscrew	Metric Coarse Screw Tread :	M2.6 × 0.45