



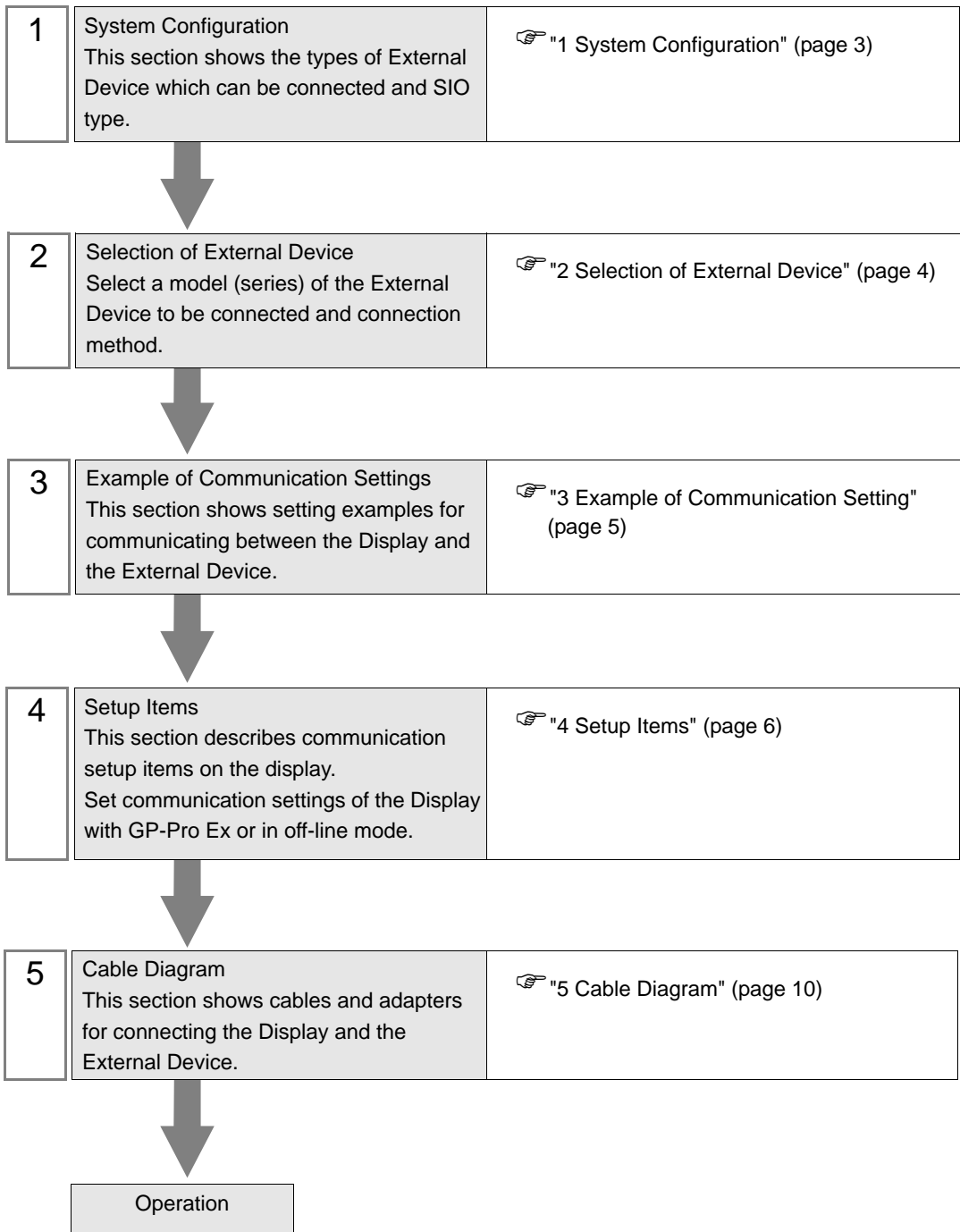
# Q Series CPU Direct Driver

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## Introduction

This manual describes how to connect the Display (GP3000 series) and the External Device (target PLC).

In this manual, the connection procedure will be described by following the below sections:



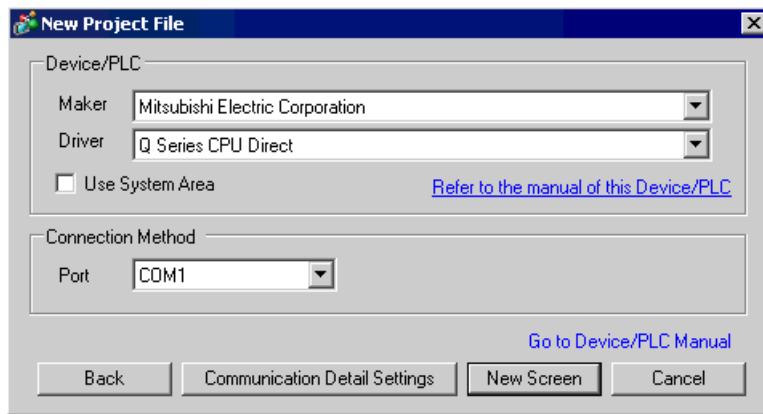
# 1 System Configuration

The system configuration in the case when the External Device of Mitsubishi Electric Corp. and the Display are connected is shown.

Series	CPU	Link I/F	SIO Type	Setting Example	Cable Diagram
MELSEC Q Series	Q02CPU Q02HCPU Q06HCPU Q12HCPU Q25HCPU	CPU Direct	RS232C	Setting Example 1 (page 5)	Cable Diagram 1 (page 10)

## 2 Selection of External Device

Select the External Device to be connected to the Display.



Setup Items	Setup Description
Maker	Select the maker of the External Device to be connected. Select "Mitsubishi Electric Corporation".
Driver	Select a model (series) of the External Device to be connected and connection method. Select "Q Series CPU Direct". Check the External Device which can be connected in "Q Series CPU Direct" in system configuration. ☞ "1 System Configuration" (page 3)
Use System Area	Check this option when you synchronize the system data area of Display and the device (memory) of External Device. When synchronized, you can use the ladder program of External Device to switch the display or display the window on the display. Cf. GP-Pro EX Reference Manual "Appendix 1.4 LS Area (only for direct access method)" This can be also set with GP-Pro EX or in off-line mode of Display. Cf. GP-Pro EX Reference Manual " 6.13.6 Setting Guide of [System Setting Window]■[Main Unit Settings] Settings Guide◆System Area Setting" Cf. GP3000 Series User Manual "4.3.6 System Area Setting"
Port	Select the Display port to be connected to the External Device.

## 3 Example of Communication Setting

Examples of communication settings of the Display and the External Device, recommended by Pro-face, are shown.

### 3.1 Setting Example 1

#### ■ Settings of GP-Pro EX

##### ◆ Communication Settings

To display the setting screen, select [Device/PLC Settings] from [System setting window] in workspace.

Device/PLC 1

Summary [Change Device/PLC](#)

Maker  Series  Port

Text Data Mode  [Change](#)

Communication Settings

RS232C     RS422/485(2wire)     RS422/485(4wire)

Speed

Data Length  7     8

Parity  NONE     EVEN     ODD

Stop Bit  1     2

Flow Control  NONE     ER(DTR/CTS)     XON/XOFF

Timeout  (sec)

Retry

Wait To Send  (ms)

RI / VCC     VCC

In the case of RS232C, you can select the 9th pin to RI (Input) or VCC (5V Power Supply). If you use the Digital's RS232C Isolation Unit, please select it to VCC.

[Default](#)

Device-Specific Settings

Allowable No. of Device/PLCs 1 Unit(s)

No.	Device Name	Settings
1	PLC1	

#### ■ Settings of External Device

There is no setting on the External Device. The speed automatically switches according to the Display setting.

## 4 Setup Items

Set communication settings of the Display with GP-Pro EX or in off-line mode of the Display.

The setting of each parameter must be identical to that of External Device.

☞ "3 Example of Communication Setting" (page 5)

### 4.1 Setup Items in GP-Pro EX

#### ■ Communication Settings

To display the setting screen, select [Device/PLC Settings] from [System setting window] in workspace.

Device/PLC 1

Summary [Change Device/PLC](#)

Maker  Series  Port

Text Data Mode  [Change](#)

Communication Settings

SIO Type  RS232C  RS422/485(2wire)  RS422/485(4wire)

Speed

Data Length  7  8

Parity  NONE  EVEN  ODD

Stop Bit  1  2

Flow Control  NONE  ER(DTR/CTS)  XON/XOFF

Timeout  (sec)

Retry

Wait To Send  (ms)

RI / VCC  RI  VCC

In the case of RS232C, you can select the 9th pin to RI (Input) or VCC (5V Power Supply). If you use the Digital's RS232C Isolation Unit, please select it to VCC.

Device-Specific Settings

Allowable No. of Device/PLCs 1 Unit(s)

No.	Device Name	Settings
1	PLC1	<input type="button" value="Settings"/>

Setup Items	Setup Description
SIO Type	Select the SIO type to communicate with the External Device.
Speed	Select speed between the External Device and the Display.
Data Length	Select data length.
Parity	Select how to check parity.
Stop Bit	Select stop bit length.
Flow Control	Select the communication control method to prevent overflow of transmission and reception data.
Timeout	Use an integer from 1 to 127 to enter the time (s) for which the Display waits for the response from the External Device.

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Setup Items	Setup Description
Retry	In case of no response from the External Device, use an integer from 0 to 255 to enter how many times the Display retransmits the command.
Wait To Send	Use an integer from 0 to 255 to enter standby time (ms) for the Display from receiving packets to transmitting next commands.
RI/VCC	Switches RI/VCC of the 9th pin.

## 4.2 Setup Items in Off-Line Mode

**NOTE**

- Please refer to GP3000 Series User Manual for more information on how to enter off-line mode or about operation.

Cf. GP3000 Series User Manual "Chapter 4 Setting"

### ■ Communication Settings

To display the setting screen, touch [Device/PLC Settings] from [Peripheral Settings] in off-line mode. Touch the External Device you want to set from the displayed list.

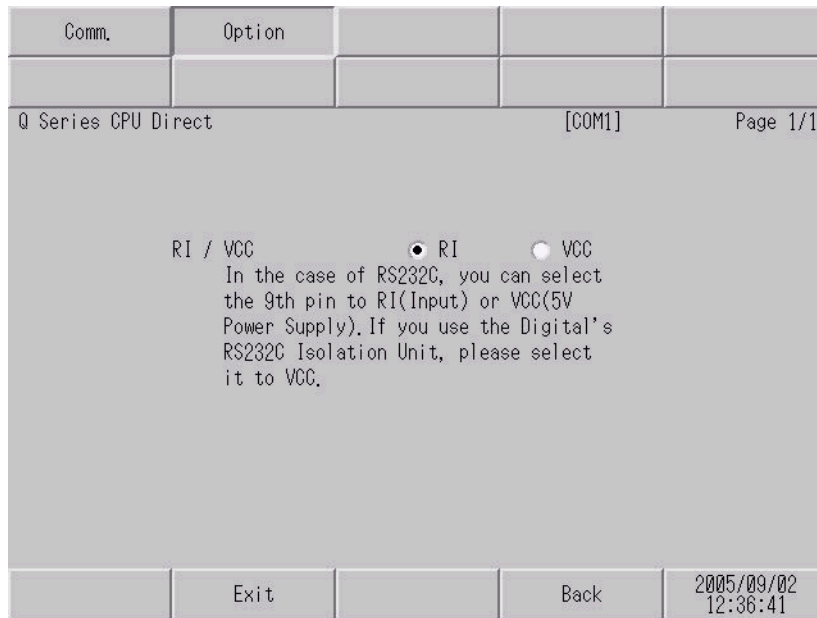
Comm.	Option			
Q Series CPU Direct		[COM1]	Page 1/1	
SIO Type	RS232C			
Speed	19200			
Data Length	8			
Parity	ODD			
Stop Bit	1			
Flow Control	ER(DTR/CTS)			
Timeout(s)		3	▼	▲
Retry		2	▼	▲
Wait To Send(ms)		0	▼	▲
Exit		Back		2005/09/02 12:36:39

Setup Items	Setup Description
SIO Type	SIO type to communicate with the External Device is displayed.
Speed	Select speed between the External Device and the Display.
Data Length	Data length is displayed.
Parity	The parity check method is displayed.
Stop Bit	Stop bit length is displayed.
Flow Control	The communication control method to prevent overflow of transmission and reception data is displayed.
Timeout	Use an integer from 1 to 127 to enter the time (s) for which the Display waits for the response from the External Device.
Retry	In case of no response from the External Device, use an integer from 0 to 255 to enter how many times the Display retransmits the command.
Wait To Send	Use an integer from 0 to 255 to enter standby time (ms) for the Display from receiving packets to transmitting next commands.



## ■ Option

To display the setting screen, touch [Device/PLC Settings] from [Peripheral Settings]. Touch the External Device you want to set from the displayed list, and touch [Option].



Setup Items	Setup Description
RI/VCC	Switches RI/VCC of the 9th pin.

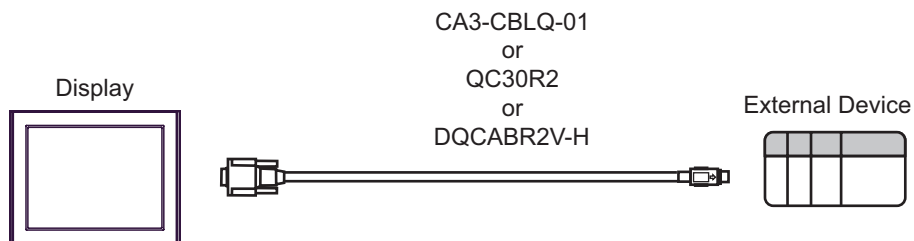
## 5 Cable Diagram

The cable diagram shown below may be different from the cable diagram recommended by Mitsubishi Electric Corp. Please be assured there is no operational problem in applying the cable diagram shown in this manual.

- The FG pin of the main body of the External Device must be D-class grounded. Please refer to the manual of the External Device for more details.
- SG and FG are connected inside the Display. When connecting SG to the External Device, design the system not to form short-circuit loop.


Cable Diagram 1

















Display (Connection Port)	Cable	Notes
GP (COM1)	Mitsubishi Q connection cable by Pro-face CA3-CBLQ-01(5m) or RS-232C cable by Mitsubishi Electric Corp. QC30R2 (3m) or RS-232C cable for MELSEC-Q CPU connection by Diatrend Corp. DQCABR2V-H	Available to order the length of DQCABR2V-H by Diatrend Corp. up to 15m.










## 6 Supported Device

Range of supported device address is shown in the table below. Please note that the actually supported range of the devices varies depending on the External Device to be used. Please check the actual range in the manual of your External Device.

 This address can be specified as system data area.


Device	Bit Address	Word Address	32 bits	Notes
Input Relay	X0000 - X1FFF	X0000 - X1FF0	L / H	
Output Relay	Y0000 - Y1FFF	Y0000 - Y1FF0		
Internal Relay	M00000 - M32767	M00000 - M32752		
Special Relay	SM0000 - SM2047	SM0000 - SM2032		
Latch Relay	L00000 - L32767	L000000 - L32752		
Annunciator	F00000 - F32767	F00000 - F32752		
Edge Relay	V00000 - V32767	V00000 - V32752		
Step Relay	S0000 - S8191	S0000 - S8176		
Link Relay	B0000 - B7FFF	B0000 - B7FF0		
Special Link Relay	SB000 - SB7FF	SB000 - SB7F0		
Timer (Contact)	TS00000 - TS23087	-----		
Timer (Coil)	TC00000 - TC23087	-----		
Retentive Timer (Contact)	SS00000 - SS23087	-----		
Retentive Timer (Coil)	SC00000 - SC23087	-----		
Counter (Contact)	CS00000 - CS23087	-----		
Counter (Coil)	CC00000 - CC23087	-----		
Timer (Current Value)	-----	TN00000 - TN23087		
Retentive Timer (Current Value)	-----	SN00000 - SN23087		
Counter (Current Value)	-----	CN00000 - CN23087		
Data Register	-----	 D00000 - D25983		
Special Register	-----	SD0000 - SD2047		
Link Register	-----	W0000 - W657F		
Special Link Register	-----	SW000 - SW7FF		
File Register (Normal)	-----	R00000 - R32767		

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Device	Bit Address	Word Address	32 bits	Notes
File Register (Block switching is not necessary)	-----	ZR00000000 - ZR1042431		
File Register (0R-31R) <sup>*1</sup>	-----	0R0000 - 0R32767		
	-----	1R0000 - 1R32767		
	-----	2R0000 - 2R32767		
	:	:		:
	-----	30R0000 - 30R32767		
	-----	31R0000 - 31R26623		

\*1 Set the block No. on the head of device name. This is the device name for conversion with GP-Pro/PB III for Windows. When you newly specify the device, we recommend that you should use the file register (Block switching is not necessary).

**NOTE**

- Please refer to the GP-Pro EX Reference Manual for system data area.  
Cf. GP-Pro EX Reference Manual "Appendix 1.4 LS Area (only for direct access method)"
- Please refer to the precautions on manual notation for icons in the table.  
 "Manual Symbols and Terminology"

## 7 Device Code and Address Code

Use device code and address code when you select "Device Type & Address" for the address type in data displays.

Device	Device Name	Device Code (HEX)	Address Code
Input Relay	X	0080	Value of word address divided by 0x10
Output Relay	Y	0081	Value of word address divided by 0x10
Internal Relay	M	0082	Value of word address divided by 16
Special Relay	SM	0083	Value of word address divided by 16
Latch Relay	L	0084	Value of word address divided by 16
Annunciator	F	0085	Value of word address divided by 16
Edge Relay	V	0086	Value of word address divided by 16
Step Relay	S	0087	Value of word address divided by 16
Link Relay	B	0088	Value of word address divided by 0x10
Special Link Relay	SB	0089	Value of word address divided by 0x10
Timer (Current Value)	TN	0060	Word Address
Retentive Timer (Current Value)	SN	0062	Word Address
Counter (Current Value)	CN	0061	Word Address
Data Register	D	0000	Word Address
Special Register	SD	0001	Word Address
Link Register	W	0002	Word Address
Special Link Register	SW	0003	Word Address
File Register (Normal)	R	000F	Word Address
File Register (Block switching is not necessary)	ZR	000E	Word Address

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Device	Device Name	Device Code (HEX)	Address Code
File Register (0R-31R)	0R	0010	Word Address
	1R	0011	Word Address
	2R	0012	Word Address
	:	:	:
	30R	002E	Word Address
	31R	002F	Word Address

## 8 Error Messages

Error messages are displayed on the screen of Display as follows: "No.: Device Name: Error Message (Error Occurrence Area)". Each description is shown below.

Item	Description
No.	Error No.
Device Name	Name of External Device where error occurs. Device name is a title of External Device set with GP-Pro EX.(Initial value [PLC1])
Error Message	Displays messages related to the error which occurs.
Error Occurrence Area	Displays IP address or device address of External Device where error occurs, or error codes received from External Device. <b>NOTE</b> <ul style="list-style-type: none"> <li>• Received error codes are displayed such as "Decimal [Hex]".</li> <li>• IP address is displayed such as "IP address (Decimal): MAC address (Hex)".</li> </ul>

Display Examples of Error Messages

"RHAA035: PLC1: Error has been responded for device write command (Error Code: 2 [02])"

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**NOTE** • Please refer to the manual of External Device for more detail of received error codes.

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# *Memo*