User Manual
for Communication

HMI

GP/LP Series
(MITSUBISHI)

Autonics

www.autonics.com

Preface

Thank you for purchasing Autonics product.
Please familiarize yourself with the information contained in the Safety Considerations section before using this product.
This user manual contains information about the product and its proper use, and should be kept in a place where it will be easy to access.
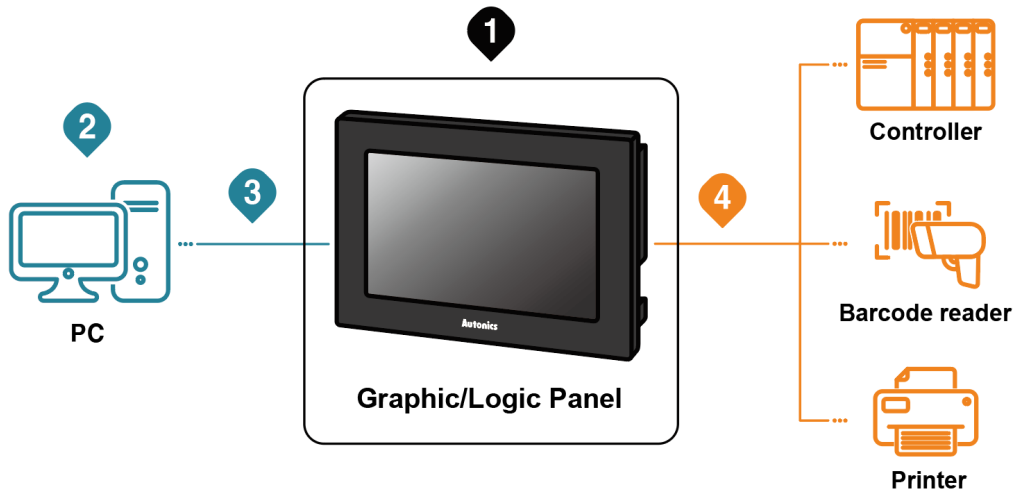
User Manual Guide

- Please familiarize yourself with the information in this manual before using the product.
- This manual provides detailed information on the product's features. It does not offer any guarantee concerning matters beyond the scope of this manual.
- This manual may not be edited or reproduced in either part or whole without permission.
- A user manual is not provided as part of the product package. Please visit our website (www.autonics.com) to download a copy.
- The manual's content may vary depending on changes to the product's software and other unforeseen developments within Autonics, and is subject to change without prior notice. Upgrade notice is provided through our website.
- We contrived to describe this manual more easily and correctly. However, if there are any corrections or questions, please notify us these on our website.
- Inner device of this user manual for communication is based on GP.
  If you use LP, refer to "LP user manual" for inner device of LP.

User Manual Symbols

Symbol	Description
Note	Supplementary information for a particular feature.
Warning	Failure to follow instructions can result in serious injury or death.
Caution	Failure to follow instructions can lead to a minor injury or product damage.
Ex.	An example of the concerned feature's use.
※1	Annotation mark.

Reference Manual for Each Configuration

❶

❷   **❸**   **❹**

Controller

Barcode reader

PC

Graphic/Logic Panel

Printer

❶   **Graphic/Logic panel device specification, installation, maintenance, management, firmware update and system configuration**

Hardware Manual	A Series	GP-A Series User Manual, LP-A Series User Manual
	S Series	GP-S070 User Manual, GP-S044/057 User Manual, LP-S070 User Manual, LP-S044 User Manual

❷   **Project drawing, programming**

Software Manual	Drawing	atDesigner User Manual, GP Editor User Manual
	Programming	atLogic User Manual, atLogic Programming Manual

❸   **Project Upload/Download**

Hardware Manual	A Series	GP-A Series User Manual, LP-A Series User Manual
	S Series	GP-S070 User Manual, GP-S044/057 User Manual, LP-S070 User Manual, LP-S044 User Manual

❹   **Connected device setting, communication setting**

Software Manual	Drawing	atDesigner User Manual, GP Editor User Manual
	Programming	atLogic User Manual, atLogic Programming Manual
Hardware Manual	A Series	GP-A Series User Manual, LP-A Series User Manual
	S Series	GP-S070 User Manual, GP-S044/057 User Manual, LP-S070 User Manual, LP-S044 User Manual

❹   **Check connectable device, connection cable model name and protocol**

Communication Manual	GP/LP Communication Manual

Table of Contents

1 System Organization

GP/LP can be connected with various controller, barcode reader and printer via RS232C, RS422, Ethernet, CAN amd USB HOST port.

Controller
(PLC, etc.)

Barcode reader

Printer

1.1   1:1 Communication

A GP/LP can communicate with a single controller A.

Controller
(PLC, etc.)

(1) Communication configuration by GP/LP model

The communication configuration by GP/LP model is listed below.
For detailed information about the communication configuration, please refer to 'GP/LP User Manual'.

- GP/LP-S Series

Series	Chanel	Connecting port	Description
GP/LP-S044, GP-S057	CH1	RS232C/RS422	Direct communication available
	CH2	RS422/RS485	Link device[1] communication available
GP/LP-S070	CH1	RS232C/RS422	Direct communication available Link device[1] communication available
	CH2	RS422/RS485	Direct communication available Link device[1] communication available

- GP/LP-A Series

Series	Connecting port	Description
GP/LP-A070	RS422 or RS232C-A port, RS232C or RS232C-B port, Ethernet port	Direct communication available Link device[1] communication available
GP/LP-A104	RS422 or RS232C-A port, RS232C or RS232C-B port, Ethernet port, CAN[2] port	Direct communication available Link device[1] communication available

※1: Please refer to 'GP Editor User Manual' for Link device instruction.

※2: Only Autonics' ARD Series can be connected to CAN port.

1.2　1:N Communication of Same Controllers

1:N communication stands for one LP communicating with multiple of controllers.
The GP/LP observes the connected controllers or relays data between controllers.
A GP/LP can communicate with the multiple of controller As.
The controller has to be able to set address of each device, and the address should not be duplicated.

Controller A-1
(PLC, etc.)

Controller A-2
(PLC, etc.)

Controller A-1
(PLC, etc.)

Controller A-2
(PLC, etc.)

Controller A-n
(PLC, etc.)

(1) Communication configuration by GP/LP model

The communication configuration by GP/LP model is listed below.
For detailed information about the communication configuration, please refer to 'GP/LP User Manual'.

- GP/LP-S Series

Series	Chanel	Connecting port	Description
GP/LP-S044, GP-S057	CH1	-	Multiple connection unavailable
	CH2	RS422	Link device[1] communication available
GP/LP-S070	CH1 or CH2	RS422	Direct communication available Link device[1] communication available

- GP/LP-A Series

Series	Connecting port	Description
GP/LP-A070	RS422 or RS232C-A port, RS232C or RS232C-B port, Ethernet port	Direct communication available Link device[1] communication available
GP/LP-A104	RS422 or RS232C-A port, RS232C or RS232C-B port, Ethernet port, CAN[2]port	Direct communication available Link device[1] communication available

※1: Please refer to 'GP Editor User Manual' for Link device instruction.

※2: Only Autonics' ARD Series can be connected to CAN port.

(2) RS422 communication connection diagram

1.3　1:N Communication of Different Controllers

1:N communication stands for one GP/LP communicating with multiple of controllers.
The GP/LP observes the connected controllers or relays data between controllers.
The GP/LP can communicate with the multiple of different controllers.

1.3.1　1:1:1 Communication

A GP/LP can communicate with a signle controller A and a signle controller B.
The GP/LP relays communications between the controller A and B.

Controller A
(PLC, etc.)

Contoller B
(PLC, etc.)

(1) Communication configuration by GP/LP model

The communication configuration by GP/LP model is listed below.
For detailed information about the communication configuration, please refer to 'GP/LP User Manual'.

- GP/LP-S Series

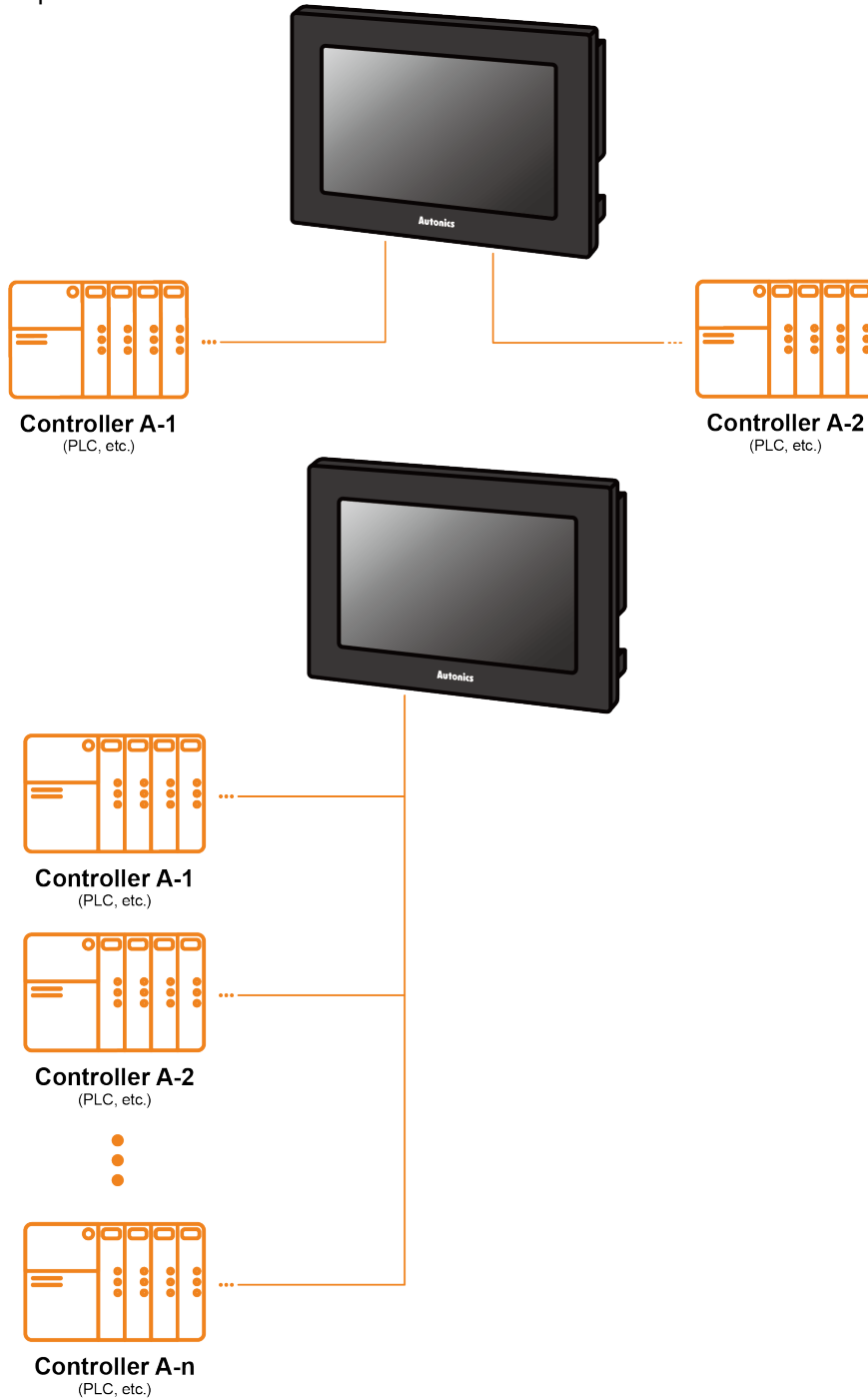| Series	Chanel	Connecting port	Description
GP/LP-S044, GP-S057	CH1	RS232C/RS422	Direct communication available
	CH2	RS422/RS485	Link device※1 communication available
GP/LP-S070	CH1 or CH2	RS422/RS485	Direct communication available Link device※1 communication available

- GP/LP-A Series

Series	Connecting port	Description
GP/LP-A070	RS422 or RS232C-A port, RS232C or RS232C-B port, Ethernet port	Direct communication available Link device※1 communication available
GP/LP-A104	RS422 or RS232C-A port, RS232C or RS232C-B port, Ethernet port, CAN※2 port	Direct communication available Link device※1 communication available

※1: Please refer to 'GP Editor User Manual' for Link device instruction.

※2: Only Autonics' ARD Series can be connected to CAN port.

1.3.2 1:1:N Communication

A GP/LP can communicate with a single controller A and the multiple of controller Bs..
The GP/LP relays communication between the controller A and B.
The controller has to be able to set address of each device, and the address should not be duplicated.

Controller A
(PLC, etc.)

Controller B-1
(PLC, etc.)

Controller B-2
(PLC, etc.)

Controller B-n
(PLC, etc.)

(1) Communication configuration by GP/LP model

The communication configuration by GP/LP model is listed below.
For detailed information about the communication configuration, please refer to 'GP/LP User Manual'.

• GP/LP-S Series

Series	Chanel	Connecting port	Description
GP/LP-S044, GP-S057	CH1	RS232C	Single direct communication available
	CH2	RS422/RS485	Link device[1] multiple communication available
GP/LP-S070	CH1 or CH2	RS232C	Single direct communication available Link device[1] single communication available
		RS422/RS485	Multiple direct communication available Link device[1] multiple communication available

- GP/LP-A Series

Series	Connecting port	Description
GP/LP-A070	RS422 or RS232C-A port, RS232C or RS232C-B port, Ethernet port	Direct communication available Link device※1 communication available
GP/LP-A104	RS422 or RS232C-A port, RS232C or RS232C-B port, Ethernet port, CAN※2 port	Direct communication available Link device※1 communication available

※1: Please refer to 'GP Editor User Manual' for Link device instruction.

※2: Only Autonics' ARD Series can be connected to CAN port.

(2) RS422 communication connection diagram

1.3.3 N:1:N Communication

A GP/LP can communicate with the multiple of controller As and Bs.
The LP relays comnmunication between the controller A and B.
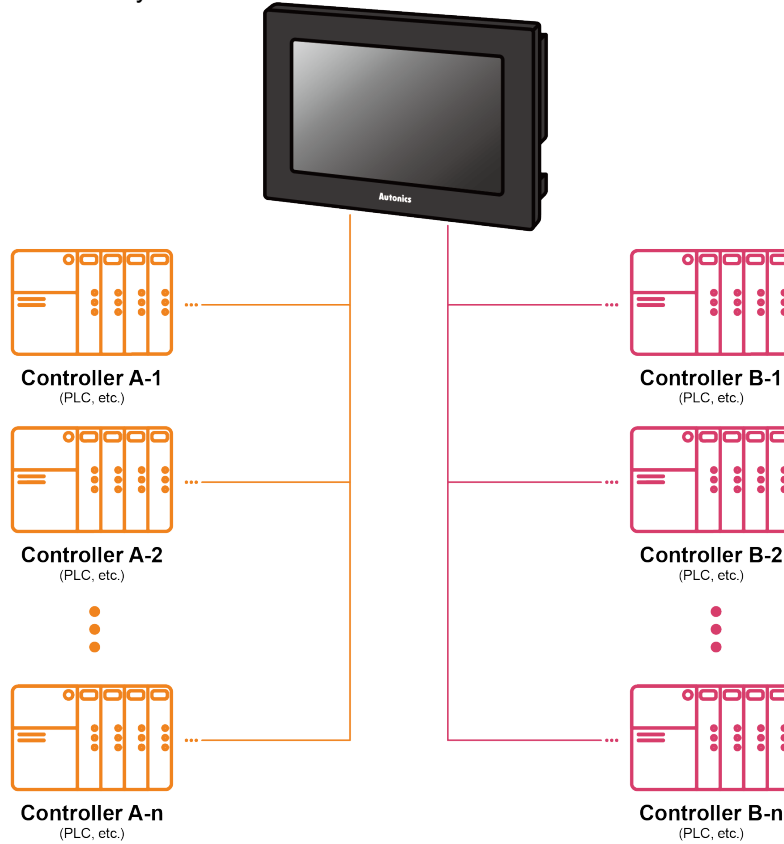
(1) Communication configuration by GP/LP model

The communication configuration by GP/LP model is listed below.
For detailed information about the communication configuration, please refer to 'GP/LP User Manual'.

- GP/LP-S Series

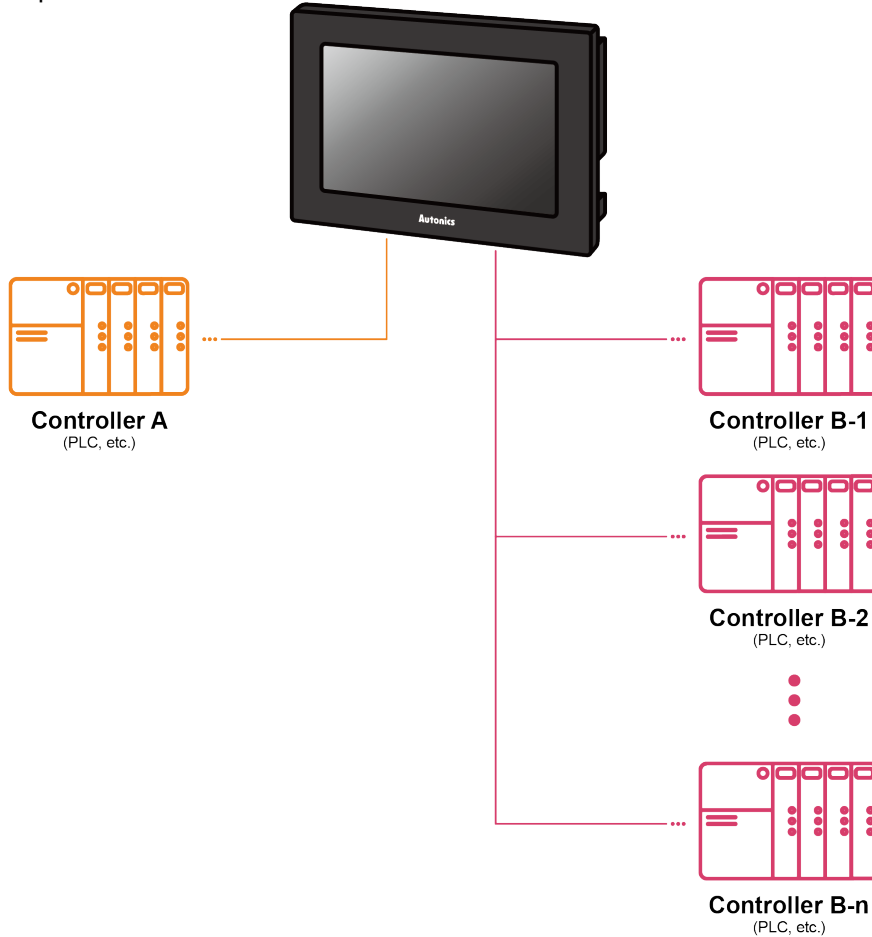| Series	Chanel	Connecting port	Description
GP/LP-S070	CH1 or CH2	RS232C/RS422	Multiple direct communication available Link device[1] multiple communication available

- GP/LP-A Series

Series	Connecting port	Description
GP/LP-A070	RS422 or RS232C-A port, RS232C or RS232C-B port, Ethernet port	Direct communication available Link device[1] communication available
GP/LP-A104	RS422 or RS232C-A port, RS232C or RS232C-B port, Ethernet port, CAN[2] port	Direct communication available Link device[1] communication available

※1: Please refer to 'GP Editor User Manual' for Link device instruction.

※2: Only Autonics' ARD Series can be connected to CAN port.

1.4   Barcode Reader, Printer Communication

A GP/LP can communicate with the barcode reader and printer.
Connect the barcode reader to utilize the barcode data.
Connect the printer to print the alarm log or the screen.

- GP/LP-S Series: printing alarm log
- GP/LP-A Series: print alarm log and screen

Barcode reader

Printer
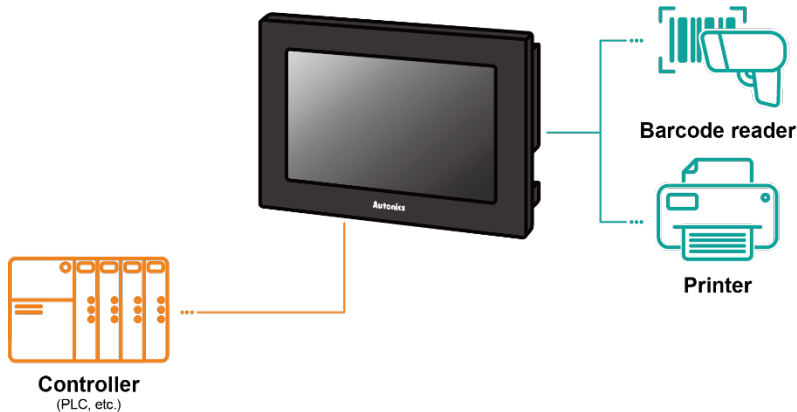
Controller
(PLC, etc.)

1.4.1   Communication Configuration

1.4.1.1   Barcode Reader

(1) Connected communication port

- GP/LP-S Series

Series	Connected device	Communication port		
		RS232C※	RS422※	USB Host
GP/LP-S044, GP-S057	Controller	○	○	-
	Barcode reader	○	○	-
GP/LP-S070	Controller	○	○	-
	Barcode reader	○	○	-

- GP/LP-A Series

Series	Connected device	Communication port		
		RS232C※	RS422※	USB Host
GP/LP-A070 GP/LP-A104	Controller	○	○	-
	Barcode reader	○	○	○

※RS232C/422 converter allows to opposite communication.

(2) Configuration method

1st Set the items related to the use of bar codes in the project in the drawing program, GP Editor/atDesigner.

Series	Description	Drawing program menu
GP/LP-S	Device setting for data storage	Common > Barcode
	System device setting for action control	Common > System Information > System Signal 1
GP/LP-A	Device setting for connection port/data storage	Project > Project Property > Special Device Setting

※For detailed information about system device setting, please refer to 'GP Editor/atDesigner User Manual'.

2nd Download the set project in the drawing program , GP Editor/atDesigner, to GP/LP device.

3rd Make communication settings for each port in the GP/LP system menu.

※For detailed information about communication setting, please refer to 'GP/LP User Manual'.

(3) Communication specification

Item	Specification
Baud rate	300, 600, 1200, 3200, 4800, 9600, 19200, 38400, 57600, 115200bps
Data length	7, 8 bit
Parity	None, Odd, Even
Stop bit	1, 2 bit
Flow control	DSR/DTR, XON/XOFF

1.4.1.2 Printer

(1) Connected communication port

• GP/LP-S Series

Series	Connected device	Communication port		
		RS232C※	RS422※	USB Host
GP/LP-S044, GP-S057	Controller	○	○	-
	Printer	○	○	-
GP/LP-S070	Controller	○	○	-
	Printer	○	○	-

• GP/LP-A Series

Series	Connected device	Communication port		
		RS232C※	RS422※	USB Host
GP/LP-A070, GP/LP-A104	Controller	○	○	-
	Printer	-	-	○

(2) Configuration method

1st Set screen printing/alarm log printing device and touch key/switch in drawing program, GP Editor/atDesigner.

Series	Description	Drawing program menu
GP/LP-S	System device setting for action control	Common > System Information > System Signal
GP/LP-A	Device setting for screen print control	Project window > Right-click menu of the screen to print > Screen Printer Setting
	Device setting for alarm log print	Project window > Alarm History > Use Print

2nd Download the set project in the drawing program , GP Editor/atDesigner, to GP/LP device.

3rd Make communication settings for each port in the GP/LP system menu.

※ For detailed information about communication setting, please refer to 'GP/LP User Manual'.

(3) Communication specification

Item	Specification
Baud rate	300, 600, 1200, 3200, 4800, 9600, 19200, 38400, 57600 bps
Data length	7, 8 bit
Parity	None, Odd, Even
Stop bit	1, 2 bit
Flow control	DSR/DTR, XON/XOFF

2 Communication Configuration by Devices

2.1 MITSUBISHI FX Series PLC Connection

GP/LP is able to communicate with MITSUBISHI FX Series.

2.1.1 Connection Support PLC Model

PLC type		Communication method	Communication type
MITSUBISHI FX	FX1S	RS422	CPU direct Loader
		RS232C	Communication board(FX1N-232-BD)
	FX1N	RS422	CPU direct Loader
		RS232C	Communication board(FX1N-232-BD)
	FX2N	RS422	CPU direct Loader
		RS232C	Communication board(FX2N-232-BD)
	FX2NC	RS422	CPU direct Loader
	FX3U	RS422	CPU direct Loader
	FX3UC	RS422	CPU direct Loader
	FX3G	RS422	CPU direct Loader

2.1.2 Connectable GP/LP Model

Connected devices	Connection method	GP/LP Model								
		GP-2480 (under V2.70)	GP-2480 (over V3.00)	GP-S057	GP/LP-S044	GP/LP-S070	GP-S057 (V2)	GP/LP-S044 (V2)	GP/LP-S070 (V2)	GP/LP-A Series
FX1S	CPU direct Loader	○	○	○	○	○	○	○	○	○
FX1N	CPU direct Loader	○	○	○	○	○	○	○	○	○
FX2N	CPU direct Loader	○	○	○	○	○	○	○	○	○
FX2NC	CPU direct Loader	○	○	○	○	○	○	○	○	○
FX3U	CPU direct Loader	×	○	○	○	○	○	○	○	○
FX3UC	CPU direct Loader	×	○	○	○	○	○	○	○	○
FX3G	CPU direct Loader	×	○	○	○	○	○	○	○	○

2.1.3   System Organization
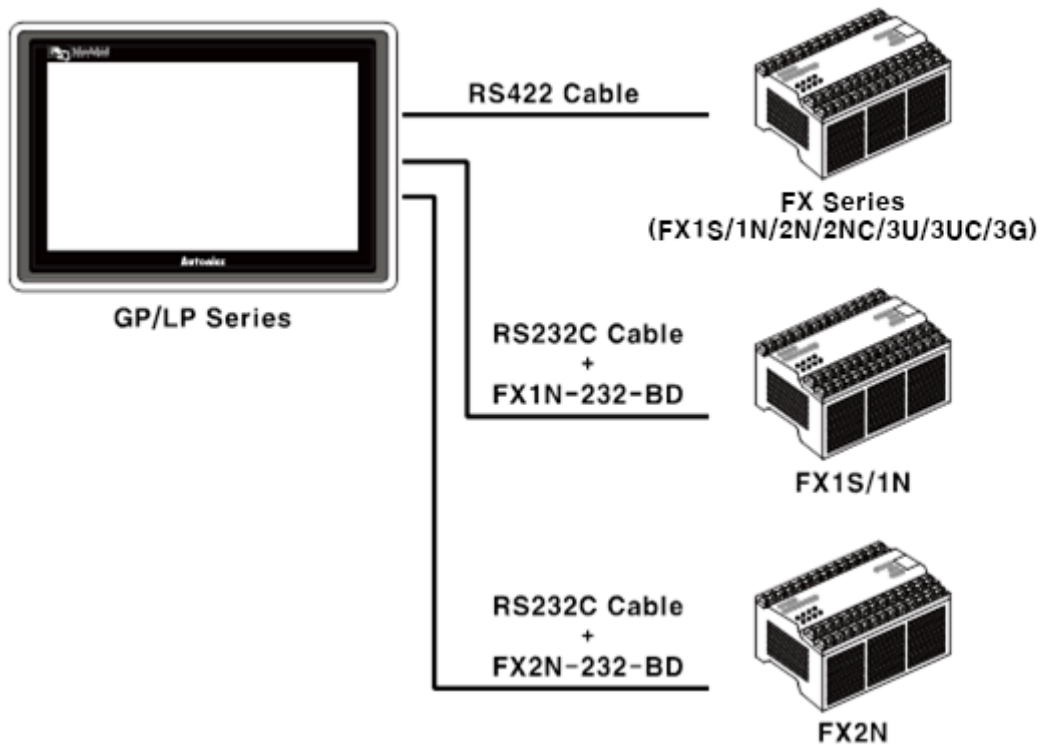
FX Series executes RS422 commnication and it executes also RS232C communication with RS232/422 converter or RS232C communication board (FX1N-232-BD, FX2N-232-BD).

2.1.4   Communication Cable

(1) RS-422

- Applied cable: C3M5P08-D9M0-M8M0
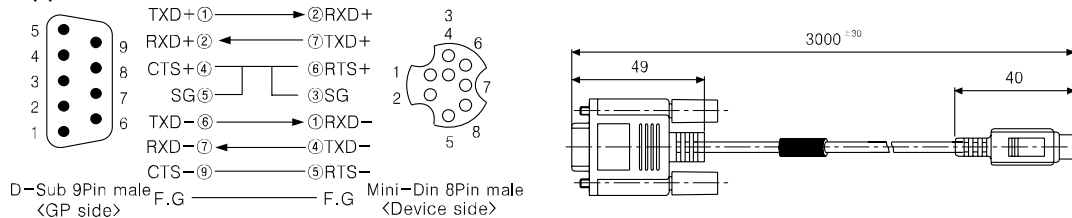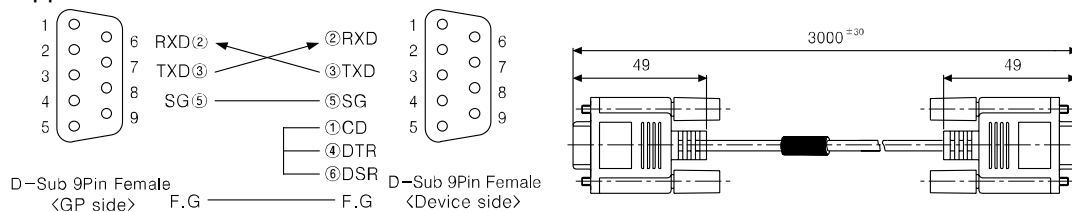

(2) RS-232C (Using Communication board(FX1N/FX2N-232-BD))

- Applied cable: C3M5P09-D9F0-D9F0

2.1.5 Available Device

The device range differs depending on the PLC model and the number of I/O contacts.
Bit device; X, Y, M, S are not used as general word at PLC. However, it is able to use as word in GP/LP. M, S device are able to switch into word UW device binding 16 unit, X, Y device are able to switch into word UW device binding 8 unit.
The available PLC model in GP/LP are as follows.
For detailed information about each device, please refer to the manuals provided by each manufacturer and

For detailed information about GP/LP internal device, please refer to ′atLogic Programing Manual′.

2.1.5.1 Device Structure

X	00	0

① Device name   ② Word address   ③ Bit address

Type	①	②	③	Note
Bit	X	Bit address (Octonal)		
	Y	Bit address (Octonal)		
	M	Bit address (Decimal)		
	S	Bit address (Decimal)		
	T	Bit address (Decimal)		
	C	Bit address (Decimal)		
Word	X	Word address (Octonal)	None	multiple 8 of bit
	Y	Word address (Octonal)	None	multiple 8 of bit
	M	Word address		multiple 16 of bit
	S	Word address		multiple 16 of bit
	T	Word address		
	C	Word address		
	D	Word address		

※ The address of word M, S is multiple of 16, it is same with M0,M16,M32,⋯

Ex.

Example of Bit/Word usage
- Word X1 = bit X10 to X17 , Word M0 = bit M00 to M15 , UW10 = UB100 to UB10F

2.1.5.2   Device Range

(1) FX1S

Type	Device	Mark	Range	
			Start	**End**
Bit	Input relay	X	X0	X17
	Output relay	Y	Y0	Y15
	Internal auxiliary relay	M	M0	M383
	Memory protection relay	M	M384	M511
	Special relay	M	M8000	M8255
	Status relay	S	S0	S127
	Timer contact [1ms]	T	T63	-
	Timer contact [10ms]	T	T32	T62
	Timer contact [100ms]	T	T0	T31
	Counter contact [16 bit]	C	C0	C31
	Counter contact [32b 1 phase 1 count]	C	C235	C245
	Counter contact [32b 1 phase 2 count]	C	C246	C250
	Counter contact [32b 2 phase 2 count]	C	C251	C255
Word	Input relay	X	X0	X1
	Output relay	Y	Y0	Y1
	Internal auxiliary relay	M	M0	M368
	Memory protection relay	M	M384	M496
	Special relay	M	M8000	M8240
	Status relay	S	S0	S112
	Timer current value [1ms]	T	T63	-
	Timer current value [10ms]	T	T32	T62
	Timer current value [100ms]	T	T0	T31
	Counter current value [16 bit]	C	C0	C31
	Counter current value [32b 1 phase 1 count]	C	C235	C245
	Counter current value [32b 1 phase 2 count]	C	C246	C250
	Counter current value [32b 2 phase 2 count]	C	C251	C255
	Data register	D	D0	D255
	File register	D	D1000	D2499
	Special register	D	D8000	D8255

(2) FX1N

Type	Device	Mark	Range	
			Start	**End**
Bit	Input relay	X	X0	X177
	Output relay	Y	Y0	Y177
	Internal auxiliary relay	M	M0	M383
	Memory protection relay	M	M384	M1535
	Special relay	M	M8000	M8255
	Status relay (Memory protection)	S	S0	S999
	Timer contact [1ms]	T	T246	T249
	Timer contact [10ms]	T	T200	T245
	Timer contact [100ms]	T	T0	T199
	Timer contact [100ms] (Memory protection)	T	T250	T255
	Counter contact [16 bit]	C	C0	C199
	Counter contact [32 bit]	C	C200	C234
	Counter contact [32b 1 phase 1 count]	C	C235	C245
	Counter contact [32b 1 phase 2 count]	C	C246	C250
	Counter contact [32b 2 phase 2 count]	C	C251	C255
Word	Input relay	X	X0	X17
	Output relay	Y	Y0	Y17
	Internal auxiliary relay	M	M0	M368
	Memory protection relay	M	M384	M1520
	Special relay	M	M8000	M8240
	Status relay	S	S0	S976
	Timer current value [1ms]	T	T246	T249
	Timer current value [10ms]	T	T200	T245
	Timer current value [100ms]	T	T0	T199
	Timer current value [100ms] (Memory protection)	T	T250	T255
	Counter current value [16 bit]	C	C0	C199
	Counter current value [32 bit]	C	C200	C234
	Counter current value [32b 1 phase 1 count]	C	C235	C245
	Counter current value [32b 1 phase 2 count]	C	C246	C250
	Counter current value [32b 2 phase 2 count]	C	C251	C255
	Data register	D	D0	D7999
	File register	D	D1000	D7999
	Special register	D	D8000	D8255

(3) FX2N

Type	Device	Mark	Range	
			Start	**End**
Bit	Input relay	X	X0	X267
	Output relay	Y	Y0	Y267
	Internal auxiliary relay	M	M0	M3071
	Special relay	M	M8000	M8255
	Status relay	S	S0	S899
	Annunciator	S	S900	S999
	Timer contact [1ms]	T	T246	T249
	Timer contact [10ms]	T	T200	T245
	Timer contact [100ms]	T	T0	T199
	Timer contact [100ms] (Memory protection)	T	T250	T255
	Counter contact [16 bit]	C	C0	C199
	Counter contact [32 bit]	C	C200	C234
	Counter contact [32b 1 phase 1 count]	C	C235	C245
	Counter contact [32b 1 phase 2 count]	C	C246	C250
	Counter contact [32b 2 phase 2 count]	C	C251	C255
Word	Input relay	X	X0	X26
	Output relay	Y	Y0	Y26
	Internal auxiliary relay	M	M0	M3056
	Special relay	M	M8000	M8240
	Status relay	S	S0	S976
	Timer current value [1ms]	T	T246	T249
	Timer current value [10ms]	T	T200	T245
	Timer current value [100ms]	T	T0	T199
	Timer current value [100ms] (Memory protection)	T	T250	T255
	Counter current value [16 bit]	C	C0	C199
	Counter current value [32 bit]	C	C200	C234
	Counter current value [32b 1 phase 1 count]	C	C235	C245
	Counter current value [32b 1 phase 2 count]	C	C246	C250
	Counter current value [32b 2 phase 2 count]	C	C251	C255
	Data register	D	D0	D7999
	File register	D	D1000	D7999
	Special register	D	D8000	D8255

(4) FX2NC

Type	Device	Mark	Range	
			Start	End
Bit	Input relay	X	X0	X267
	Output relay	Y	Y0	Y267
	Internal auxiliary relay	M	M0	M3071
	Special relay	M	M8000	M8255
	Status relay	S	S0	S899
	Annunciator	S	S900	S999
	Timer contact [1ms]	T	T246	T249
	Timer contact [10ms]	T	T200	T245
	Timer contact [100ms]	T	T0	T199
	Timer contact [100ms] (Memory protection)	T	T250	T255
	Counter contact [16 bit]	C	C0	C199
	Counter contact [32 bit]	C	C200	C234
	Counter contact [32b 1 phase 1 count]	C	C235	C245
	Counter contact [32b 1 phase 2 count]	C	C246	C250
	Counter contact [32b 2 phase 2 count]	C	C251	C255
Word	Input relay	X	X0	X26
	Output relay	Y	Y0	Y26
	Internal auxiliary relay	M	M0	M3056
	Special relay	M	M8000	M8240
	Status relay	S	S0	S976
	Timer current value [1ms]	T	T246	T249
	Timer current value [10ms]	T	T200	T245
	Timer current value [100ms]	T	T0	T199
	Timer current value [100ms] (Memory protection)	T	T250	T255
	Counter current value [16 bit]	C	C0	C199
	Counter current value [32 bit]	C	C200	C234
	Counter current value [32b 1 phase 1 count]	C	C235	C245
	Counter current value [32b 1 phase 2 count]	C	C246	C250
	Counter current value [32b 2 phase 2 count]	C	C251	C255
	Data register	D	D0	D7999
	File register	D	D1000	D7999
	Special register	D	D8000	D8255

(5) FX3U/FX3UC/3G

Type	Device	Mark	Range	
			Start	**End**
Bit	Input relay	X	X0	X367
	Output relay	Y	Y0	Y367
	Internal auxiliary relay	M	M0	M7679
	Special relay	M	M8000	M8511
	Status relay	S	S0	S899
	Annunciator	S	S900	S999
	Timer contact [1ms]	T	T256	T511
	Timer contact [1ms] integration type	T	T246	T249
	Timer contact [10ms]	T	T200	T245
	Timer contact [100ms]	T	T0	T199
	Timer contact [100ms] integration type	T	T250	T255
	Counter contact [16 bit]	C	C0	C199
	Counter contact [32 bit]	C	C200	C234
	Counter contact [32b 1 phase 1 count]	C	C235	C245
	Counter contact [32b 1 phase 2 count]	C	C246	C250
	Counter contact [32b 2 phase 2 count]	C	C251	C255
Word	Input relay	X	X0	X36
	Output relay	Y	Y0	Y36
	Internal auxiliary relay	M	M0	M7648
	Special relay	M	M8000	M8496
	Status relay	S	S0	S976
	Timer current value [1ms]	T	T256	T511
	Timer current value [10ms]	T	T200	T245
	Timer current value [100ms]	T	T0	T199
	Timer current value [100ms] (Memory protection)	T	T250	T255
	Counter current value [16 bit]	C	C0	C199
	Counter current value [32 bit]	C	C200	C234
	Counter current value [32b 1 phase 1 count]	C	C235	C245
	Counter current value [32b 1 phase 2 count]	C	C246	C250
	Counter current value [32b 2 phase 2 count]	C	C251	C255
	Data register	D	D0	D7999
	File register	D	D1000	D7999
	Special register	D	D8000	D8511

2.1.6 Monitorable Device in GP/LP

GP/LP is able to monitor PLC device and change the status.

The following is avilable device list of this menu, please refer to ʹAvailable deviceʹ for available device range.

Type	Mark	Device	Note
Bit	X	Input relay	
	Y	Output relay	
	M	Internal auxiliary relay, Special relay	
	S	Status relay	
	T	Timer contact	
	C	Counter contact	
Word	X	Input relay	
	Y	Output relay	
	M	Internal auxiliary relay, Special relay	Multiple of 16 (M0, M16, M32, …)
	S	Status relay	Multiple of 16 (S0, S16, S32, …)
	T	Timer current value	
	C	Counter current value	
	D16	Data/File/Special register	16 bit
	D32	Data/File/Special register	32 bit type combining designated number of device and next number of device

2.2 MITSUBISHI Position Control Module FX2N-10/20GM Series Direct Connection

GP/LP is able to direct communicate with MITSUBISHI Position control module FX2N10/20GM Series.

2.2.1 Connection Support PLC Model

PLC type		Connection method	Communication method	Connection module
FX Position control module	FX2N-10GM	CPU direct Loader	RS422	CPU
	FX2N-20GM	CPU direct Loader	RS422	CPU

2.2.2 Connectable GP/LP Model

Connected devices	Connection method	GP/LP Model								
		GP-2480 (under V2.70)	GP-2480 (over V3.00)	GP-S057	GP/LP-S044	GP/LP-S070	GP-S057 (V2)	GP/LP-S044 (V2)	GP/LP-S070 (V2)	GP/LP-A Series
FX2N-10GM	CPU direct Loader	×	×	○	○	○	○	○	○	○
FX2N-20GM	CPU direct Loader	×	×	○	○	○	○	○	○	○

2.2.3 System Organization
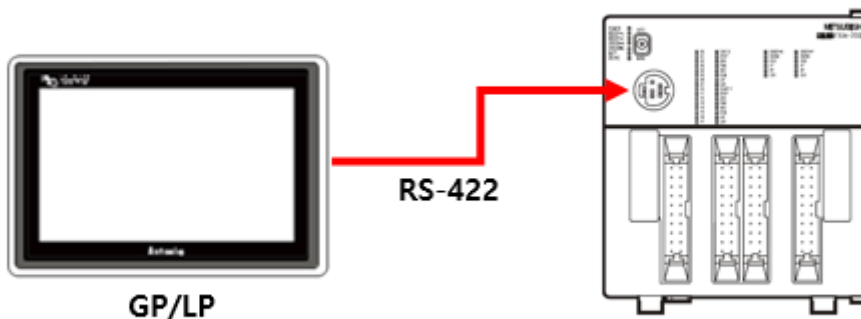
RS-422

GP/LP

The Tool Port (mini-din 8 pin) of FX2N-10/20GM is connecting RS422port of GP/LP.

2.2.4 Communication Cable

Please prduce the cable as below.

TXD+① ──────► ①RXD+
RXD+② ◄────── ⑦TXD+
SG⑤ ────── ⑤SG
TXD−⑥ ──────► ②RXD−
RXD−⑦ ◄────── ④TXD−
F.G. ────── F.G.

D−Sub 9Pin Female
〈GP side〉

Mini−Din 8Pin male
〈Device side〉
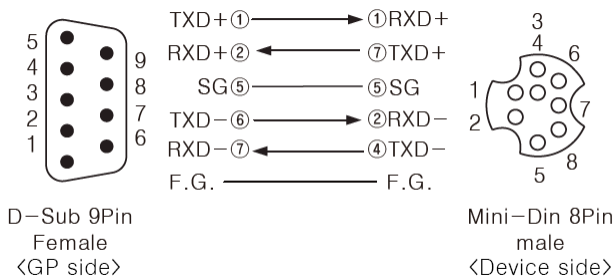
2.2.5 Available Device

The device range differs depending on the PLC model and the number of I/O contacts.
The available PLC model in GP/LP are as follows.
For detailed information about each device, please refer to the manuals provided by each manufacturer and

For detailed information about GP/LP internal device, please refer to 'atLogic Programing Manual'.

2.2.5.1 Device Structure

X	00	0

① Device name   ② Word address   ③ Bit address

Type	①	②	③
Bit	X	Bit address (Octonal)	
	Y	Bit address (Octonal)	
	M	Bit address (Decimal)	
	SM	Bit address (Decimal)	
Word	D	Word address (Decimal)	
	FD	Word address (Decimal)	
	SD	Word address (Decimal)	

2.2.5.2 Device Range

Type	Device	Mark	Range	
			Start	**End**
Bit	Input relay(R)	X	X0 X375	X3 X377
	Output relay(R/W)	Y	Y0	Y5
	Auxiliary relay(R/W)	M	D0	D511
	(special) Auxiliary relay(R/W)	SM	SM9000	SM9175
Word	Data register	D	D0	D1999
	(file) Data register	FD	FD4000	FD6999
	(special) Data register	SD	SD9000	SD9313

2.2.6 Monitorable Device in GP/LP

GP/LP is able to monitor PLC device and change the status.
The following is avilable device list of this menu, and available range is same as 'Available

device'.

2.3 MITSUBISHI Q Series PLC Connection (LINK)

GP/LP is able to communicate with MITSUBISHI Q Series.

2.3.1 Connection Support PLC Model

PLC type			Program capacity	The number of I/O point
MITSUBISHI Q	Basic model	Q00J	8K	245 points
		Q00	8K	1024 points
		Q01	14K	1024 points
	High performance model	Q02	28K	4096 points
		Q02H	28K	4096 points
		Q06H	60K	4096 points
		Q12H	124K	4096 points
		Q25H	252K	4096 points
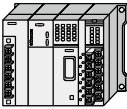
Serial communication module type	Communication channel
QJ71C24N	RS-232 1CH, RS-422/485 1CH
QJ71C24N-R2	RS-232 2CH
QJ71C24N-R4	RS-422/485 2CH

2.3.2 Connectable GP/LP Model

Connected devices	Connection method	GP/LP Model								
		GP-2480 (under V2.70)	GP-2480 (over V3.00)	GP-S057	GP/LP-S044	GP/LP-S070	GP-S057 (V2)	GP/LP-S044 (V2)	GP/LP-S070 (V2)	GP/LP-A Series
Q00J	Cnet	×	○	○	○	○	○	○	○	○
Q00	Cnet	×	○	○	○	○	○	○	○	○
Q01	Cnet	×	○	○	○	○	○	○	○	○
Q02	Cnet	×	○	○	○	○	○	○	○	○
Q02H	Cnet	×	○	○	○	○	○	○	○	○
Q06H	Cnet	×	○	○	○	○	○	○	○	○
Q12H	Cnet	×	○	○	○	○	○	○	○	○
Q25H	Cnet	×	○	○	○	○	○	○	○	○

2.3.3 System Organization

The following table is for system organization of this protocol.

PLC	Communication module	Cable	GP/LP
		↔	
Q00J/Q00/Q01/Q02/Q02H/ Q06H/Q12H/Q25H	QJ71C24N/QJ71C24N-R2 QJ71C24N-R4	RS-232C RS-422/485	GP/LP Series

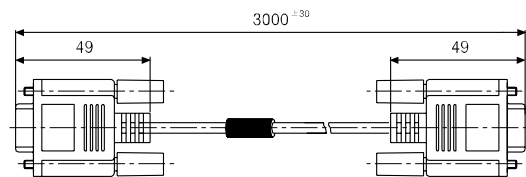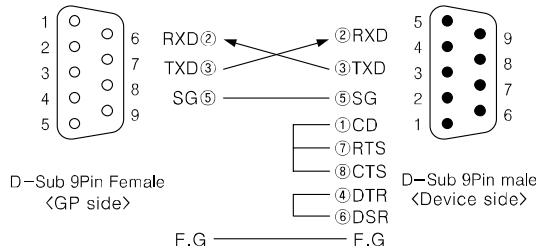## 2.3.4 Communication Cable

(1) RS-422

■ Applied cable: C3M5P04-D9M0-W6*0
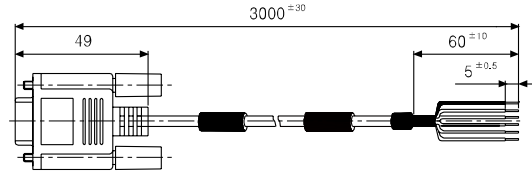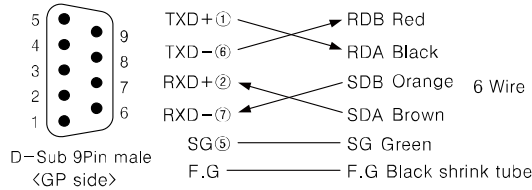
(2) RS-232C

■ Applied cable: C3M5P05-D9F0-D9M0

2.3.5 Available Device

The device range differs depending on the PLC model and the number of I/O contacts.
The available PLC model in GP/LP are as follows.
For detailed information about each device, please refer to the manuals provided by each manufacturer and

For detailed information about GP/LP internal device, please refer to 'atLogic Programing Manual'.

2.3.5.1 Device Structure

X	00	0

① Device name   ② Word address   ③ Bit address

Type	①	②	③
Bit	X	Bit address (Hexadecimal)	
	Y	Bit address (Hexadecimal)	
	M	Bit address (Decimal)	
	L	Bit address (Decimal)	
	SM	Bit address (Decimal)	
	B	Bit address (Hexadecimal)	
	F	Bit address (Decimal)	
	TS	Bit address (Decimal)	
	CS	Bit address (Decimal)	
Word	W	Word address	
	TN	Word address	
	CN	Word address	
	D	Word address	
	SD	Word address	

2.3.5.2 Device Range

(1) Q00J / Q00 / Q01

Type	Device	Mark	Range	
			Start	End
Bit	Input relay	X	X0	X7FF
	Output relay	Y	Y0	Y7FF
	Auxiliary relay	M	M0	M8191
	Special relay	SM	SM0	SM1023
	Latch relay	L	L0	L2047
	Facility error detecting relay	F	F0	F1023
	Link relay	B	B0	B07FF
	Timer contact	TS	TS0	TS511
	Counter contact	CS	CS0	CS511
Word	Data register	D	D0	D11135
	Special register	SD	SD0	SD1023
	Link register	W	W0	W7FF
	Timer current value	TN	TN0	TN511
	Counter current value	CN	CN0	CN511

(2) Q02 / Q02H / Q06H / Q12H / Q25H

Type	Device	Mark	Range	
			Start	End
Bit	Input relay	X	X0	X1FFF
	Output relay	Y	Y0	Y1FFF
	Auxiliary relay	M	M0	M8191
	Special relay	SM	SM0	SM2047
	Latch relay	L	L0	L8191
	Facility error detecting relay	F	F0	F2047
	Link relay	B	B0	B01FFF
	Timer contact	TS	TS0	TS2047
	Counter contact	CS	CS0	CS2047
Word	Data register	D	D0	D12287
	Special register	SD	SD0	SD2047
	Link register	W	W0	W1FFF
	Timer current value	TN	TN0	TN2047
	Counter current value	CN	CN0	CN2047

📖 **Ex.**

UW10 = UB100 to UB10F

2.3.6   Monitorable Device in GP/LP

GP/LP is able to monitor PLC device and change the status.

The following is avilable device list of this menu, please refer to ʻAvailable deviceʼ for available device range.

Type	Mark	Device
Bit	X	Input relay
	Y	Output relay
	M	Auxiliary relay
	SM	Special relay
	L	Latch relay
	F	Facility error detecting relay
	B	Link relay
	TS	Timer contact
	CS	Counter contact
Word	D	Data register
	SD	Special register
	W	Link register
	TN	Timer current value
	CN	Counter current value

2.3.7   MELSEC Q Series PLC Configuration

2.3.7.1   DX-Developer Parameter Configuration

(1) I/O Assignment(I/O assignment)

I/O assignment of parameter configuration is to set the type of various modules mounted on base module, I/O signal range, and Q Series switch.

Item		Description
I/O assignment	Type	Set as 'Intelli'
	Model Name	Set the mounted module name (QJ71C24N/QJ71C24N-R2…)
	Points	Set as 32 points
	Start XY	Set the lead I/O signal of target module
	Switch Setting	Set baud rate, transmission specification, communication protocol
	Detailed setting	In case of multi CPU system, set the management CPU of Q Series C24
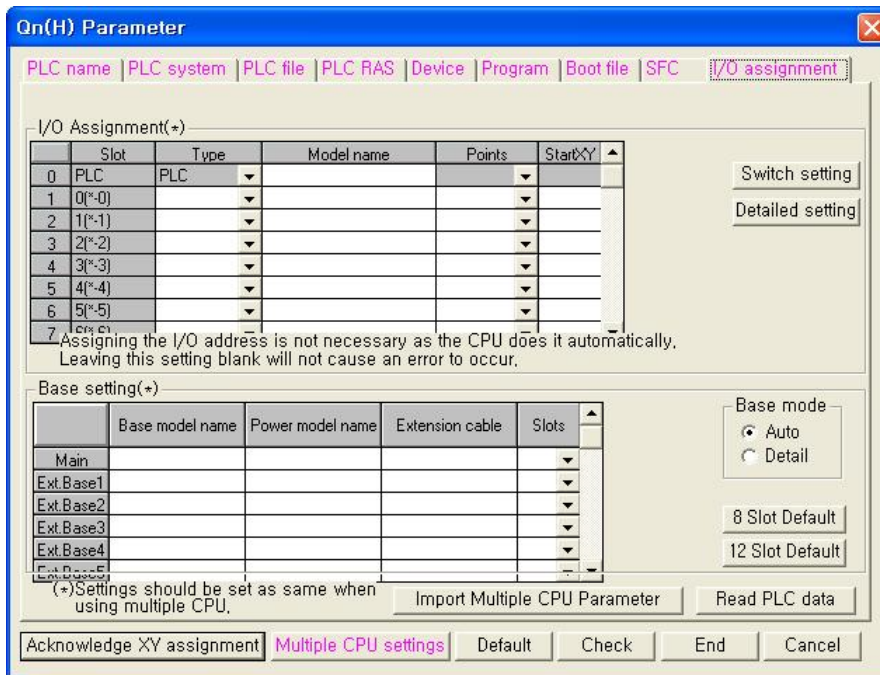
(2) **Switch Setting**
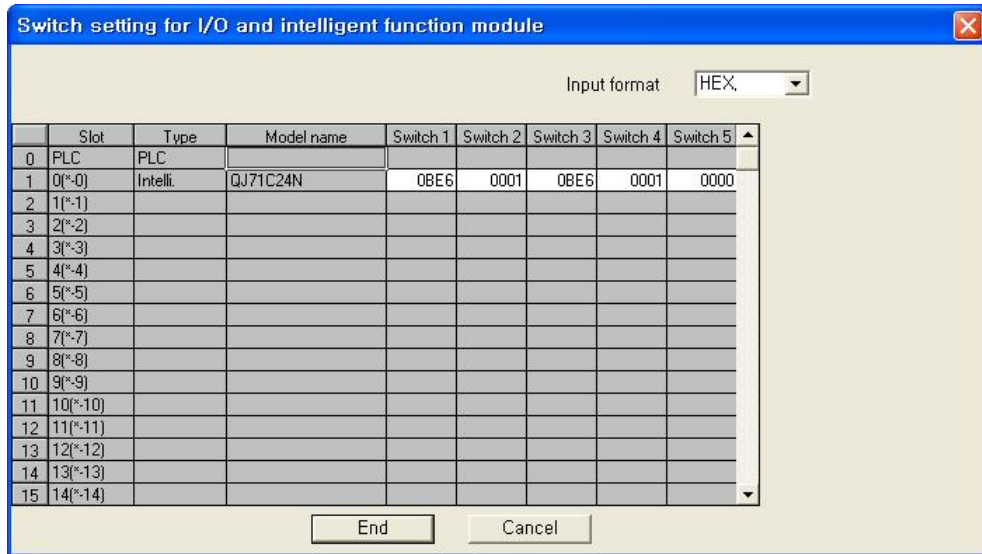
- Switch setting description

Switch No.	Description		Note
Switch 1	B15 to b8	B7 to b0	
	CH1 baud rate setting	CH1 transmission setting	
Switch 2	CH1 communication protocol type setting		Should be set as 1
Switch 3	B15 to b8	B7 to b0	
	CH2 baud rate setting	CH2 transmission setting	
Switch 4	CH2 communication protocol type setting		Should be set as 1
Switch 5	Address setting		

- Transmission setting - CH1(Switch 1), CH2(Switch 3)

Bit	Description	OFF(0)	ON(1)	Note
B0	Operation setting	Separate	Link	CH1 should be set as OFF
B1	Data bit	7	8	Set as 8
B2	Parity bit	No	Yes	Set as yes
B3	Odd/Even parity	Odd	Even	Set as odd
B4	Stop bit	1	2	Set as 1
B5	Checksum code	No	Yes	Set as yes
B6	RUN write	Restriction	Allowance	Set as allowance
B7	Setting change	Restriction	Allowance	Set as allowance

■ Transmission speed setting

Baud rate (bps)	Bit unit B15 to B8	Baud rate (bps)	Bit unit B15 to B8
50	0Fh	14400	06h
300	00h	19200	07h
600	01h	28800	08h
1200	02h	38400	09h
2400	03h	57600	0Ah
4800	04h	115200	0Bh
9600	05h	230400	0Ch

If two interfaces connect to correspondence device respectively, the sum of communication speed for both interfaces should be set 115,200bps or less (For QJ71C24N (-R2/R4), 230,400bps or less).
If only one interface connects to correspondence device, the communication speed for this interface can be set the maximum 115,200bps. (For QJ71C24N (-R2/R4), available to set maximum 230400bps).
In this case, please set the communication speed for the other interface to 300bps.

2.3.8 GP/PLC Type Configuration in atDesigner, GP Editor

(1) Using Basic Model CPU

For using Q00J / Q00 / Q01 CPU, select [MITSUBISHI Q SERIES]–[QBasic_EXT_MC].

(2) Using High Performance Model CPU

For using Q02 / Q02H / Q06H / Q12H / Q25H CPU, select [MITSUBISHI Q SERIES]–[QHighP_EXT_MC].

2.4 MITSUBISHI Q Series CPU Direct Connection

GP/LP is able to communicate with MITSUBISHI Q Series high performance model and universal model.

2.4.1 Connection Support PLC Model

PLC type			Communication method	Communication type	Baud rate (bps)
MELSEC-Q	High Performance Model	Q02CPU	RS232C	CPU direct Loader	19,200
		Q02HCPU			
		Q06HCPU			
		Q12HCPU			
		Q25HCPU			
	Universal Model	Q00UJCPU			
		Q00UCPU			
		Q01UCPU			
		Q02UCPU			
		Q03UDCPU			
		Q04UDHCPU			
		Q06UDHCPU			
		Q10UDHCPU			
		Q13UDHCPU			
		Q20UDHCPU			
		Q26UDHCPU			

2.4.2 Connectable GP/LP Model

Connected devices	Connection method	GP/LP Model								
		GP-2480 (under V2.70)	GP-2480 (over V3.00)	GP-S057	GP/LP-S044	GP/LP-S070	GP-S057 (V2)	GP/LP-S044 (V2)	GP/LP-S070 (V2)	GP/LP-A Series
Q02	CPU direct Loader	×	×	○	○	○	○	○	○	○
Q06	CPU direct Loader	×	×	○	○	○	○	○	○	○
Q02H	CPU direct Loader	×	×	○	○	○	○	○	○	○
Q12H	CPU direct Loader	×	×	○	○	○	○	○	○	○
Q25H	CPU direct Loader	×	×	○	○	○	○	○	○	○
Q00UJ	CPU direct Loader	×	×	○	○	○	○	○	○	○
Q00U	CPU direct Loader	×	×	○	○	○	○	○	○	○
Q01U	CPU direct Loader	×	×	○	○	○	○	○	○	○
Q02U	CPU direct Loader	×	×	○	○	○	○	○	○	○
Q03UD	CPU direct	×	×	○	○	○	○	○	○	○

Connected devices	Connection method	GP/LP Model									
		GP-2480 (under V2.70)	GP-2480 (over V3.00)	GP-S057	GP/LP-S044	GP/LP-S070	GP-S057 (V2)	GP/LP-S044 (V2)	GP/LP-S070 (V2)	GP/LP-A Series
	Loader									
Q04UDH	CPU direct Loader	×	×	○	○	○	○	○	○	○
Q06UDH	CPU direct Loader	×	×	○	○	○	○	○	○	○
Q10UDH	CPU direct Loader	×	×	○	○	○	○	○	○	○
Q13UDH	CPU direct Loader	×	×	○	○	○	○	○	○	○
Q20UDH	CPU direct Loader	×	×	○	○	○	○	○	○	○
Q26UDH	CPU direct Loader	×	×	○	○	○	○	○	○	○

2.4.3 System Organization

RS232C
Cable
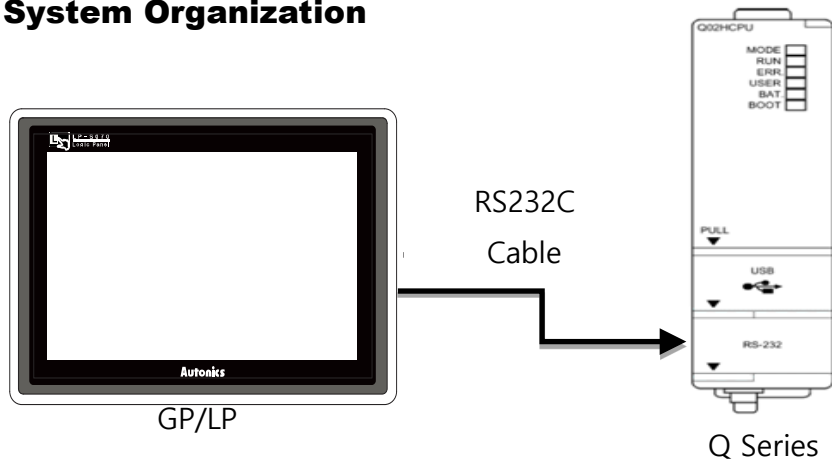
GP/LP

Q Series

MITSUBISHI Q Series executes RS232C communication. MITSUBISHI Q Series CPU direct connection is connecting RS232C port of GP/LP and tool port (RS232C) of the PLC.

2.4.4 Communication Cable

C30R2 cable sold by MITSUBISHI is available to connect.

2.4.5 Available Device

The device range differs depending on the PLC model and the number of I/O contacts.
Although factory default of the available device range is different by model, user can control the device range for MITSUBISHI Q Series High Performance, Universal models.
The available PLC model in GP/LP are as follows.
For detailed information about each device, please refer to the manuals provided by each manufacturer and

For detailed information about GP/LP internal device, please refer to ʹatLogic Programing Manualʹ.

Type	Device	Mark	Range	
			Start	**End**
Bit	Input relay	X	X0	X1FFF
	Output relay	Y	Y0	Y1FFF
	Internal relay	M	M0	M32767
	Latch relay	L	L0	L32767
	Announciator	F	F0	F32767
	Link relay	B	B0	B7FFF
	Integration timer	ST	ST0	ST32767
	Timer contact	T	T0	T32767
	Counter contact	C	C0	C32767
	Special relay	SM	SM0	SM2047
	Special link relay	SB	SB0	SB7FF
	Edge relay	V	V0	V32767
	Step relay	S	S0	S32767
Word	Input register	X	X0	X1FF0
	Output register	Y	Y0	Y1FF0
	Internal register	M	M0	M32752
	Latch register	L	L0	L32752
	Announciator	F	F0	F32752
	Special register	SD	SD0	SD2047
	Data register	D	D0	D32767
	Integration timer current value	SN	SN0	SN32767
	Link register	W	W0	W7FFF
	Timer current value	TN	TN0	TN32767
	Counter current value	CN	CN0	CN32767
	Special link register	SW	SW0	SW7FF
	Step relay	S	S0	S32752

2.4.6   Monitorable Device in GP/LP

GP/LP is able to monitor PLC device and change the status.

The following is avilable device list of this menu, please refer to 'Available device' for available device range.

Type	Mark	Device	Note
Bit	X	Input relay	
	Y	Output relay	
	M	Internal relay	
	B	Link relay	
	T	Timer contact	
	C	Counter contact	
	SM	Special relay	
	S	Step relay	
Word	SD	Special register	
	D	Data register	
	SN	Integration timer current value	
	W	Link register	
	TN	Timer current value	
	CN	Counter current value	
	SW	Special link register	
	S	Step relay	Multiple of 16 (S0, S16, S32, …)

2.5 MITSUBISHI QnUCPU Series Ethernet Connection

GP/LP is able to direct communicate with MITSUBISHI QnUCPU Series integrated Ethernet Port and able to connect with Ethernet Communication modul.

2.5.1 Connection Support PLC Model

PLC type		Connection method	Communication method	Connection module
QnUCPU Series	Q03UDVCPU	CPU direct Loader	Ethernet	CPU
	Q04UDVCPU			
	Q06UDVCPU			
	Q10UDVCPU			
	Q13UDVCPU			
	Q20UDVCPU			
	Q26UDVCPU			
Ethernet Communication module	QJ71E71-100	Extended	Ethernet	Ethernet Communication module
	QJ71E71-B5			
	QJ71E71-B2			

2.5.2 Connectable GP/LP Model

Connected devices	Connection method	GP/LP Model								
		GP-2480 (under V2.70)	GP-2480 (over V3.00)	GP-S057	GP/LP-S044	GP/LP-S070	GP-S057 (V2)	GP/LP-S044 (V2)	GP/LP-S070 (V2)	GP/LP-A Series
Q03UDVCPU	CPU direct Loader	×	×	×	×	×	×	×	×	○
Q04UDVCPU	CPU direct Loader	×	×	×	×	×	×	×	×	○
Q06UDVCPU	CPU direct Loader	×	×	×	×	×	×	×	×	○
Q10UDVCPU	CPU direct Loader	×	×	×	×	×	×	×	×	○
Q13UDVCPU	CPU direct Loader	×	×	×	×	×	×	×	×	○
Q20UDVCPU	CPU direct Loader	×	×	×	×	×	×	×	×	○
Q26UDVCP	CPU direct Loader	×	×	×	×	×	×	×	×	○
QJ71E71-100	Ethernet Communication module	×	×	×	×	×	×	×	×	○
QJ71E71-B5	Ethernet Communication module	×	×	×	×	×	×	×	×	○
QJ71E71-B2	Ethernet Communication module	×	×	×	×	×	×	×	×	○

2.5.3   System Organization

[Connecting through CPU integrated port]   [Connecting through communication module]
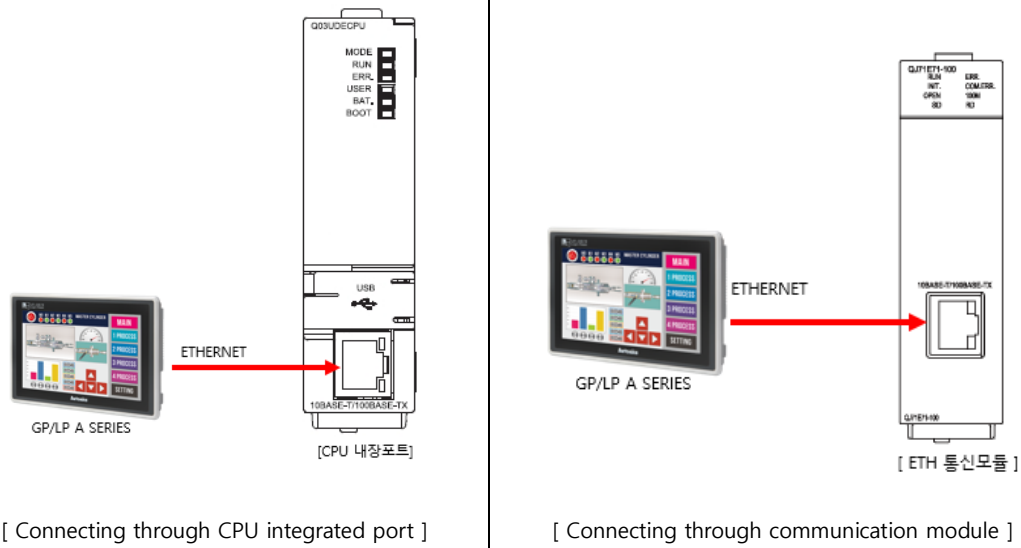
Use direct connection between GP/LP Ethernet Port and MITSUBISHI QnUCPU Series Ethertnet Port or connect with Ethernet Communication module.

2.5.4   Communication Cable

Use the regular Ethernet LAN Cable on the market.

2.5.5   Communication Configuration

Communication configuration when using MITSUBISHI QnUCPU Series,
In GX Developer, GX Works2 (PLC Program), configure MITSUBISHI QnUCPU Series.
(Fore more information, please refer to the manual from MITSUBISHI.)
Communication Configuration is set as below.

▪ Using CPU integrated port

1st Click 'Parameter > PLC Parameter'.

2nd When 'Q Parameter Parameter Setting' window displays, In 'Built-in Ethernet Port Setting' tab, configure as below.

No.	Item	Description
1	IP Address	Set the IP address of PLC CPU module. Configure 'IP Address' as same as the first 3 digits of IP address (XXX.XXX.XXX.to) of the GP/LP to be connected. (must be connected on the same network.)
2	Communication Data Code	Set the type of communication data code. Set as Binary Code.
3	Enable online change (FTP, MC Protocol)	This item must be checked to edit PLC device value in GP/LP with communication.
4	Open Setting	Set the Protocol and Listen port. When clicking 'Open Setting', 'Built-in Ethernet Port Open Setting' displays. Set as below. <table><tr><td>Item</td><td>Description</td></tr><tr><td>Protocol</td><td>Set as 'TCP'.</td></tr><tr><td>Open System</td><td>Set as 'MC Protocol'.</td></tr><tr><td>Host Station Port No.</td><td>Configure the settings as same as the port number of GP/LP communication setting. Setting range: 1 to 65535</td></tr></table>

- Use Ethernet Communication module

1st Click 'Parameter > PLC Parameter'.

2nd When 'Q Parameter Parameter Setting' windows displays, In 'I/O Assignment' tab, configure as below.
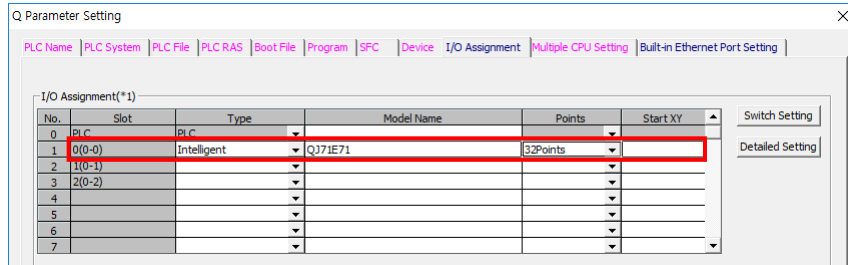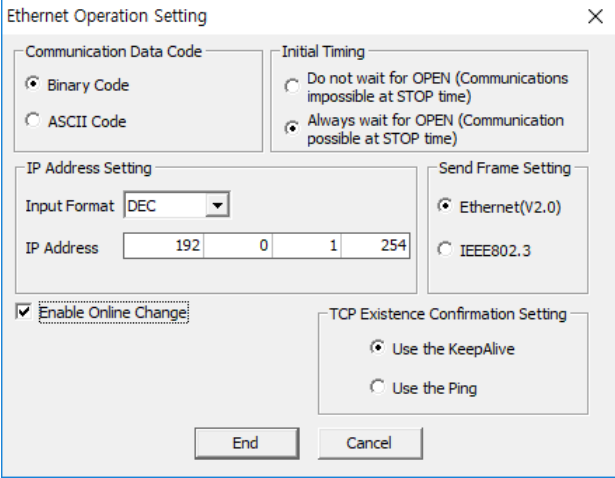
Item	Description
Type	Set as 'Intelligent'.
Module Name	Enter the mounted model name.
Points	Set as '32Points'.
Start XY	Enter the lead I/O address for the mounted module. For more information, please refer to the manual from MITSUBISHI.

3rd Select 'Network Parameter > Ethernet / CC IE / MELSECNET'.

4th When 'Network Parameter – MELSECNET/CC IE/Ethernet Module Configuation' window displays, set as below.
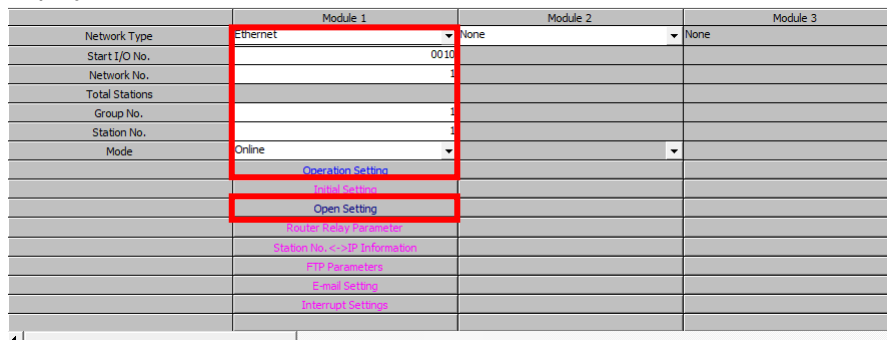
Item	Description
Network Type	Set as 'Ethernet'.
Start I/O No.	Enter the lead I/O address for the mounted module. For more information, please refer to the manual from MITSUBISHI.
Network No.	Does not affect communication. Set as any value.
Total Stations	Does not affect communication. Set as any value.
Group No.	Does not affect communication. Set as any value.
Station No.	Does not affect communication. Set as any value.
Mode	Set as 'Online'.

Item	Description
Operation Setting	When clicking 'Operation Setting', Ethernet Operation Setting' window displays. Set as below. See the table below for each item.

Item	Description
Communication Data Code	Set as 'Binary Code'.
Initial Timing	Set as 'Always wait for OPEN'.
IP Address	Set up according to user's network environment. Configure 'IP Address' as same as the first 3 digits of IP address (XXX.XXX.XXX.to) of the GP/LP to be connected. (must be connected on the same network.)
Send Frame Setting	Set as 'Ethernet(V2.0)'.
Enable Online Change	This item must be checked to edit PLC device value in GP/LP with communication.
TCP Existence Confirmation Setting	Set as 'Use the KeepAlive'.

Item	Description
Open Setting	When clicking 'Open Setting', 'Network Parameter Ethernet Open Setting' window displays. Set as below.

	Protocol	Open System	Fixed Buffer	Fixed Buffer Communication Procedure	Pairing Open	Existence Confirmation	Host Station Port No.
1	TCP	Unpassive	Receive	Procedure Exist	Disable	Confirm	6000
2							
3							

Item	Description
Protocol	Set as 'TCP'.
Open System	Set as 'Unpassive'.
Fixed Buffer	Set as 'Receive'.
Fixed Buffer Communication Procedure	Set as 'Procedure Exist'.
Pairing Open	Set as 'Disable'.
Existence Confirmation	Both 'Confirm' and 'No Confirm' are available.
Host Station	Configure the settings as same as the port number

Item	Description	
	Port No.	of GP/LP communication setting. (System menu of GP/LP>Environment>Communication > CH setting>Ethernet setting>Target Port No) Setting range: 1025 to 65535

2.5.6   Available Device

The device range differs depending on the PLC model and the number of I/O contacts.
The available PLC model in GP/LP are as follows.
For detailed information about each device, please refer to the manuals provided by each manufacturer and

For detailed information about GP/LP internal device, please refer to ′atLogic Programing Manual′.

2.5.6.1   Device Structure

X	00	0

① Device name   ② Word address   ③ Bit address

Type	①	②	③
Bit	SM	Bit address (Decimal)	
	X	Bit address (Hexadecimal)	
	Y	Bit address (Hexadecimal)	
	M	Bit address (Decimal)	
	L	Bit address (Decimal)	
	F	Bit address (Decimal)	
	V	Bit address (Decimal)	
	B	Bit address (Hexadecimal)	
	TS	Bit address (Decimal)	
	CS	Bit address (Decimal)	
Word	SD	Word address (Decimal)	
	D	Word address (Decimal)	
	W	Word address (Hexadecimal)	
	TN	Word address (Decimal)	
	CN	Word address (Decimal)	
	Z	Word address (Decimal)	

2.5.6.2　Device Range

Type	Device	Mark	Range	
			Start	**End**
Bit	Special relay	SM	SM0	SM2047
	Input relay	X	X0	X1FFF
	Output relay	Y	Y0	Y1FFF
	Internal relay	M	M0	M8191
	Latch relay	L	L0	L8191
	Announciator	F	F0	F2047
	Edge relay	V	V0	V2047
	Link relay	B	B0	B1FFF
	Timer contact	TS	TS0	TS2047
	Counter contact	CS	CS0	CS1023
Word	Special register	SD	SD0	SD2047
	Data register	D	D0	D12287
	Link register	W	W0	W1FFF
	Timer current value	TN	TN0	TN2047
	Current counter value	CN	CN0	CN1023
	Index	Z	Z0	Z19

2.5.7　Monitorable Device in GP/LP

GP/LP is able to monitor PLC device and change the status.
The following is available device list of this menu, and available range is same as 'Available device'.

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