

LS Industrial Systems

GLOFA-GM Series

CPU Direct Driver

Supported version TOP Design Studio V1.0 or higher



CONTENTS

We would like to thank our customers for using M2I's "Touch Operation Panel (M2I TOP) Series". Read this manual and familiarize yourself with the connection method and procedures of the "TOP and external device".

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Describes the devices required for connection, the setting of each device, cables, and configurable systems.
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Select a TOP model and an external device.
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Describes how to set the TOP communication.
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Describes how to set up communication for external devices.
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Refer to this section to check the addresses which can communicate with an external device.

1. System configuration

The system configuration of TOP and "LS Industrial Systems – GLOFA-GM Series CPU Direct" is as follows:

Series	CPU	Link I/F	Communication method	System setting	Cable
GMR	GMR-CPUA GMR-CPUB	CPU Direct *Note 1)	RS-232C	3. TOP communication setting 4. External device setting	5. Cable table
GM1	GM1-CPUA GM1-CPUB				
GM2	GM2-CPUA GM2-CPUB				
GM3	GM3-CPUA				
GM4	GM4-CPUA GM4-CPUB GM4-CPUC				
GM6	GM6-CPUA GM6-CPUB GM6-CPUC				
GM7	G7M-D□10A G7M-D□20A G7M-D□30A G7M-D□40A G7M-D□60A				
GM7U	G7M-D□20U G7M-D□30U G7M-D□40U G7M-D□60U				

***Note 1)** PC connection loader port

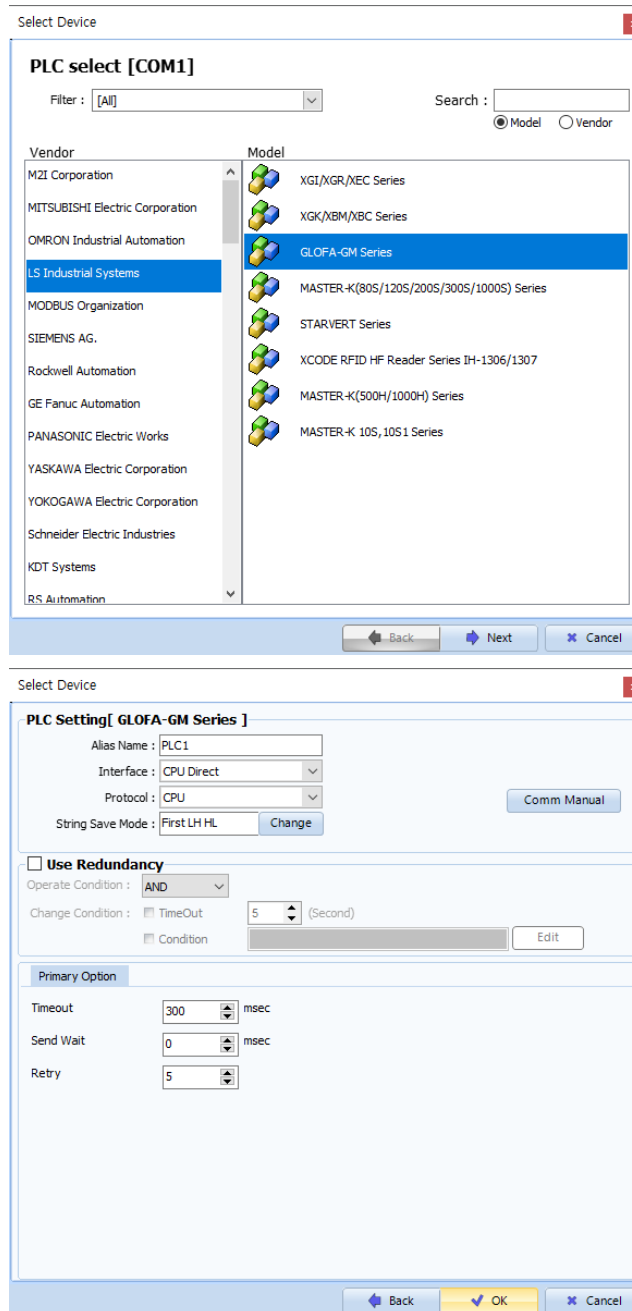
■ Connection configuration

- 1:1 (one TOP and one external device) connection



2. External device selection

- Select a TOP model and a port, and then select an external device.



Settings		Contents					
TOP	Model	Check the TOP display and process to select the touch model.					
External device	Vendor	Select the vendor of the external device to be connected to TOP. Select "LS Industrial Systems".					
	PLC	Select an external device to connect to TOP. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: black; color: white;">Model</th> <th style="background-color: black; color: white;">Interface</th> <th style="background-color: black; color: white;">Protocol</th> </tr> </thead> <tbody> <tr> <td>GLOFA-GM Series</td> <td>CPU Direct</td> <td>CPU</td> </tr> </tbody> </table> <p>Please check the system configuration in Chapter 1 to see if the external device you want to connect is a model whose system can be configured.</p>	Model	Interface	Protocol	GLOFA-GM Series	CPU Direct
Model	Interface	Protocol					
GLOFA-GM Series	CPU Direct	CPU					

3. TOP communication setting

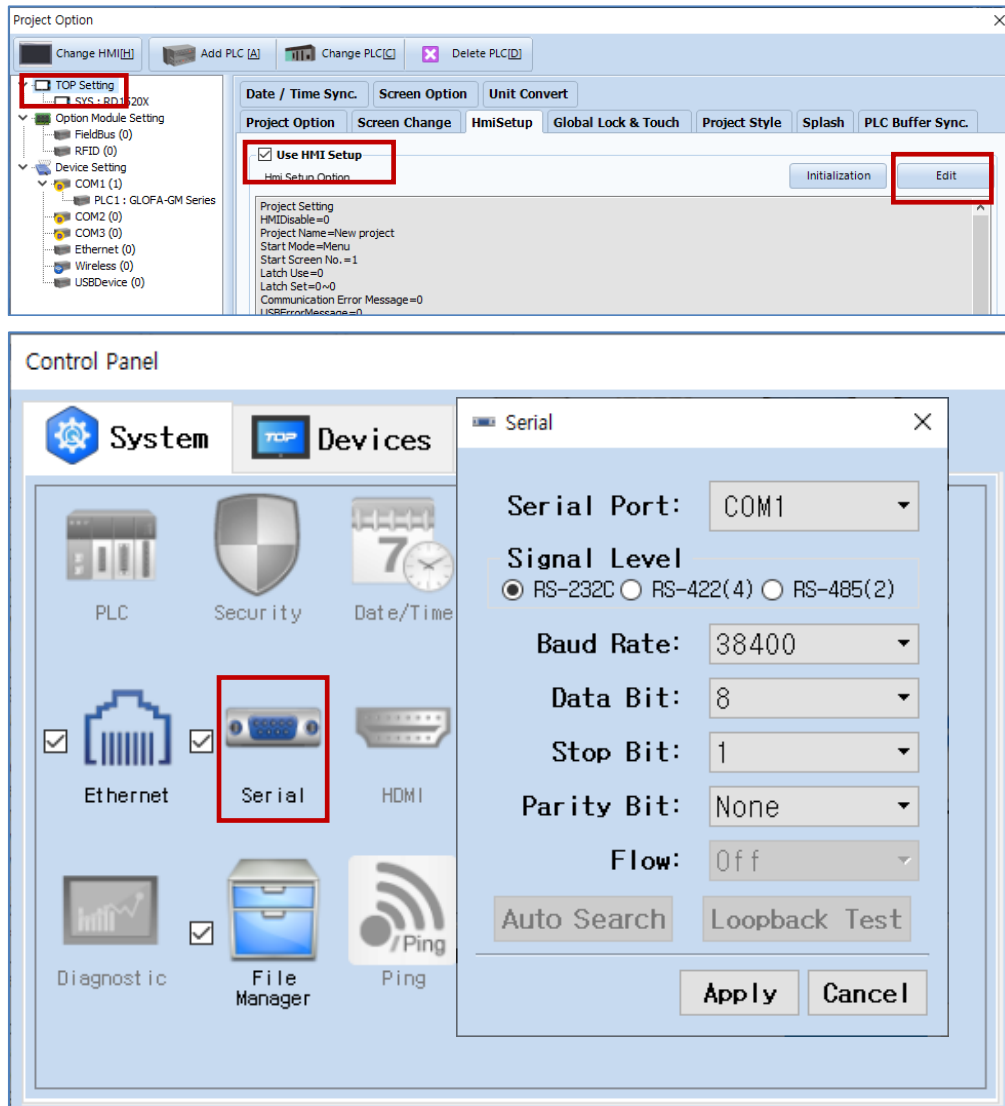
The communication can be set in TOP Design Studio or TOP main menu. The communication should be set in the same way as that of the external device.

3.1 Communication setting in TOP Design Studio

(1) Communication interface setting

■ [Project > Project Property > TOP Setting] → [Project Option > "Use HMI Setup" Check > Edit > Serial]

– Set the TOP communication interface in TOP Design Studio.



Items	TOP	External device	Remarks
Signal Level (port)	RS-232C	RS-232C (CPU port)	Fixed
Baud Rate	38400		Fixed
Data Bit	8		Fixed
Stop Bit	1		Fixed
Parity Bit	None.		Fixed

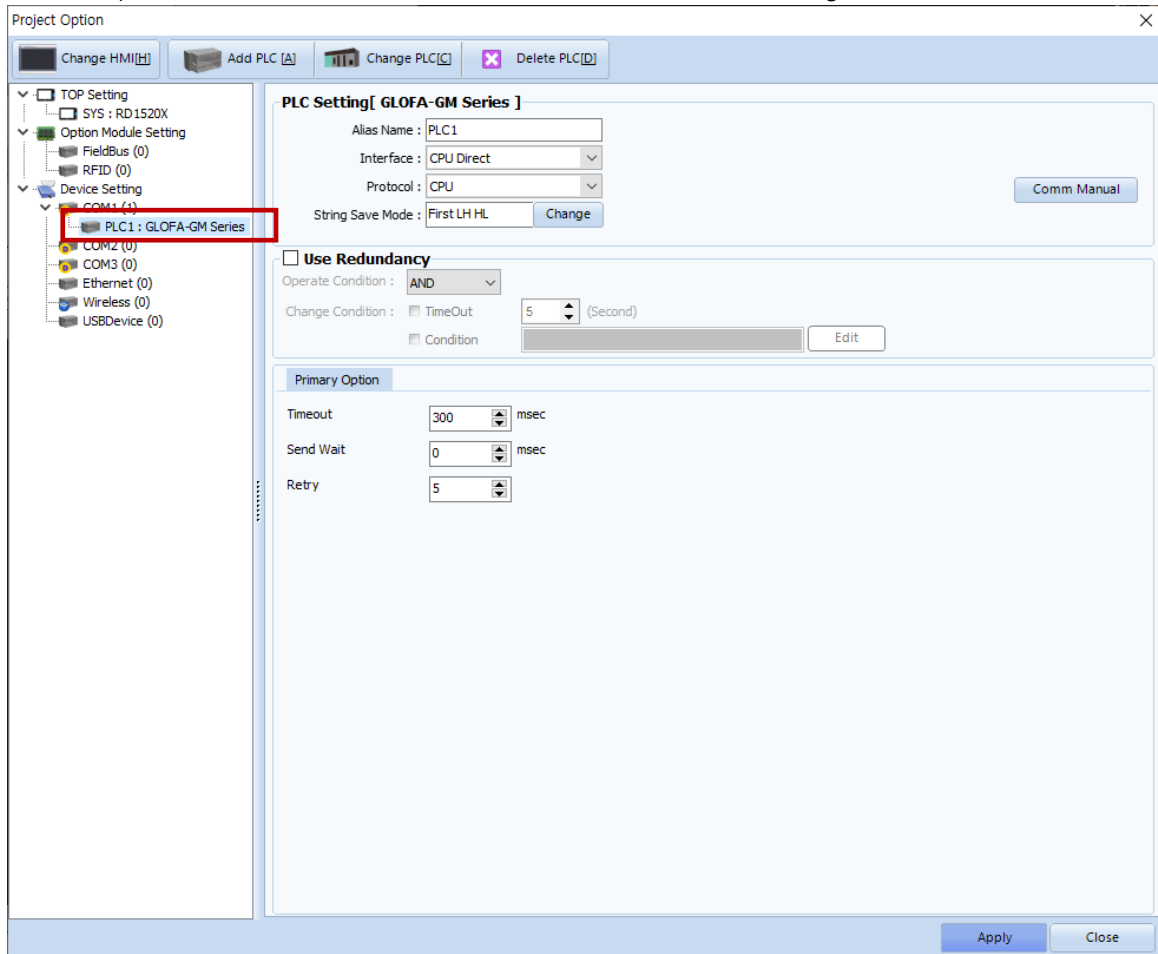
* The above settings are examples recommended by the company.

Items	Description
Signal Level	Select the serial communication method between the TOP and an external device.
Baud Rate	Select the serial communication speed between the TOP and an external device.
Data Bit	Select the serial communication data bit between the TOP and an external device.
Stop Bit	Select the serial communication stop bit between the TOP and an external device.
Parity Bit	Select the serial communication parity bit check method between the TOP and an external device.

(2) Communication option setting

■ [Project > Project Property > Device Setting > COM > "PLC1: GLOFA-GM Series"]

– Set the option of GLOFA-GM Series CPU Direct communication driver in TOP Design Studio.

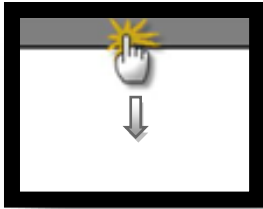


Items	Settings	Remarks
Interface	Select "CPU Direct".	Refer to "2. External device selection".
Protocol	Select "CPU".	
TimeOut (ms)	Set the time for the TOP to wait for a response from an external device.	
SendWait (ms)	Set the waiting time between TOP's receiving a response from an external device and sending the next command request.	

3.2. Communication setting in TOP

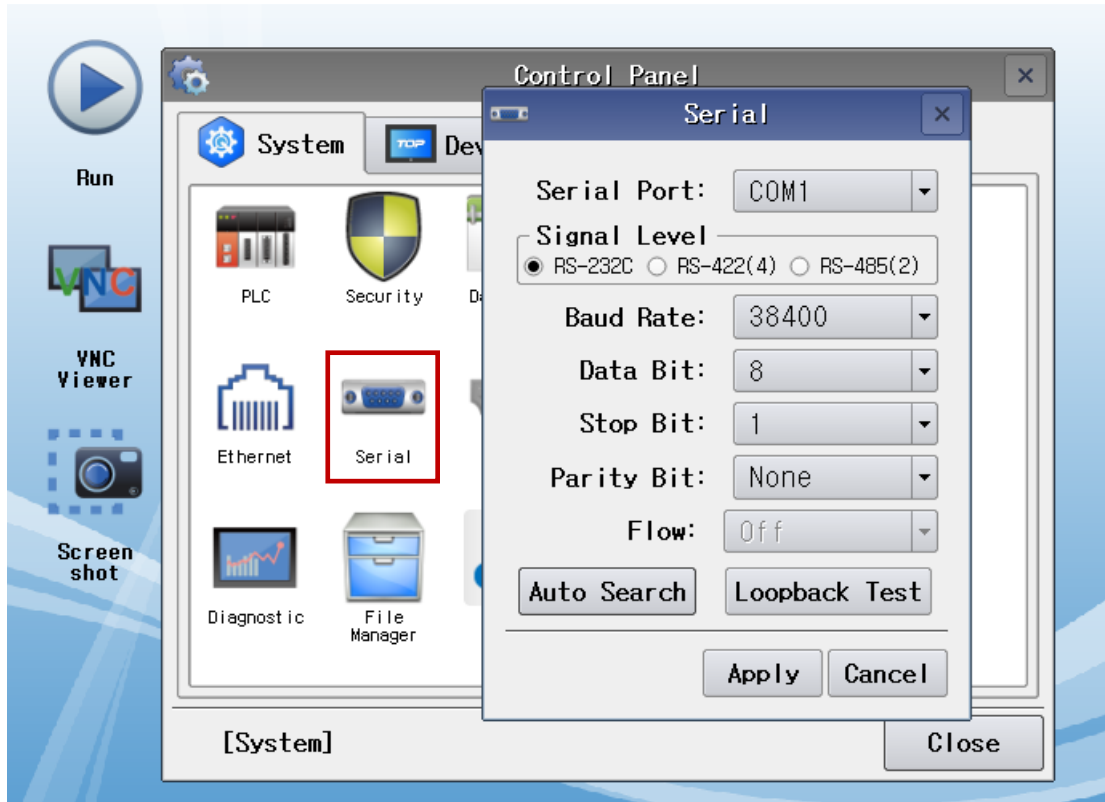
* This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.

- Touch the top of the TOP screen and drag it down. Touch "EXIT" in the pop-up window to go to the main screen.



(1) Communication interface setting

- [Main Screen > Control Panel > Serial]



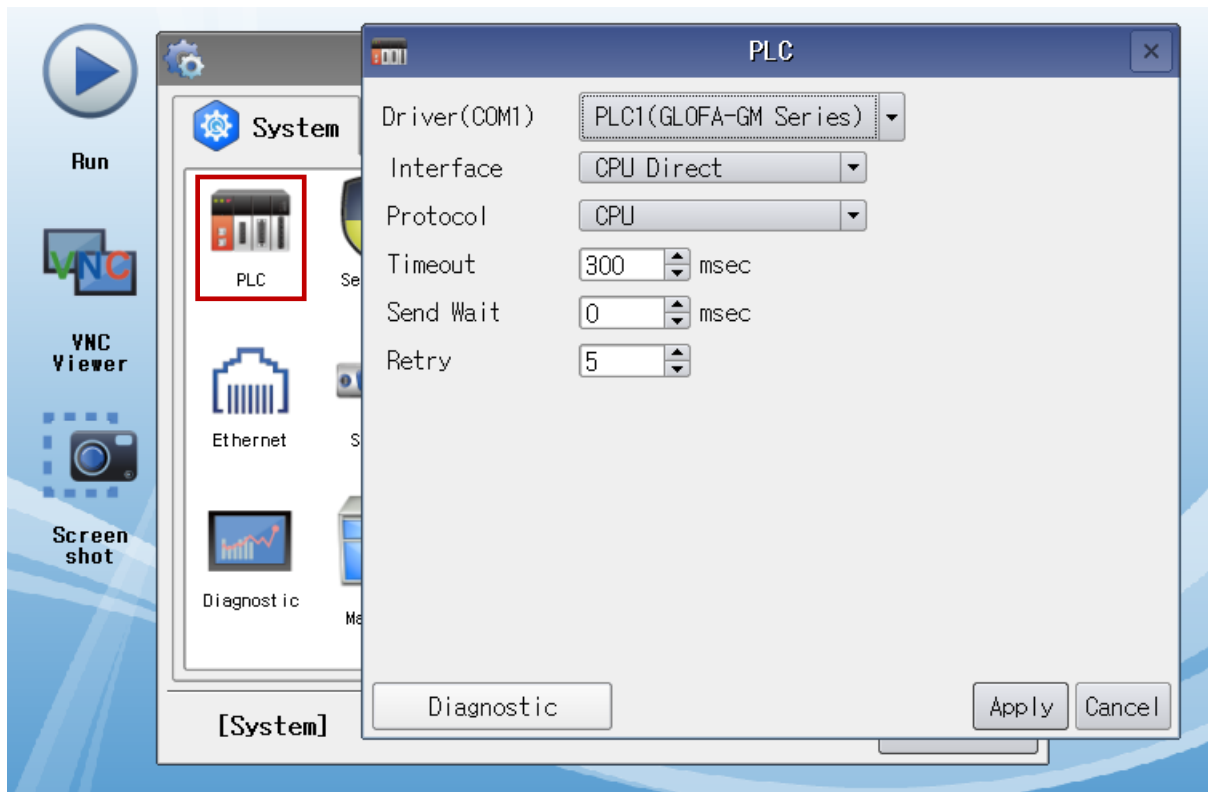
Items	TOP	External device	Remarks
Signal Level (port)	RS-232C	RS-232C (CPU port)	Fixed
Baud Rate		38400	Fixed
Data Bit		8	Fixed
Stop Bit		1	Fixed
Parity Bit		None.	Fixed

* The above settings are setting examples recommended by the company.

Items	Description
Signal Level	Select the serial communication method between the TOP and an external device.
Baud Rate	Select the serial communication speed between the TOP and an external device.
Data Bit	Select the serial communication data bit between the TOP and an external device.
Stop Bit	Select the serial communication stop bit between the TOP and an external device.
Parity Bit	Select the serial communication parity bit check method between the TOP and an external device.

(2) Communication option setting

■ [Main Screen > Control Panel > PLC]



Items	Settings	Remarks
Interface	Select "CPU Direct".	Refer to "2. External device selection".
Protocol	Select "CPU".	
TimeOut (ms)	Set the time for the TOP to wait for a response from an external device.	
SendWait (ms)	Set the waiting time between TOP's receiving a response from an external device and sending the next command request.	

3.3 Communication diagnostics

- Check the interface setting status between the TOP and external device.
 - Touch the top of the TOP screen and drag it down. Touch "EXIT" in the pop-up window to go to the main screen.
 - Check if the COM port settings you want to use in [Control Panel > Serial] are the same as those of the external device.

- Diagnosis of whether the port communication is normal or not
 - Touch "Communication diagnostics" in [Control Panel > PLC].
 - The Diagnostics dialog box pops up on the screen and determines the diagnostic status.

OK	Communication setting normal
Time Out Error	Communication setting abnormal - Check the cable, TOP, and external device setting status. (Reference: Communication diagnostics sheet)

- Communication diagnostics sheet
 - If there is a problem with the communication connection with an external terminal, please check the settings in the sheet below.

Items	Contents	Check		Remarks	
System configuration	How to connect the system	OK	NG	1. System configuration	
	Connection cable name	OK	NG		
TOP	Version information	OK	NG	2. External device selection 3. Communication setting	
	Port in use	OK	NG		
	Driver name	OK	NG		
	Other detailed settings	OK	NG		
	Relative prefix	Project setting	OK		NG
		Communication diagnostics	OK		NG
	Serial Parameter	Transmission Speed	OK		NG
Data Bit		OK	NG		
Stop Bit		OK	NG		
Parity Bit		OK	NG		
External device	CPU name	OK	NG	4. External device setting	
	Communication port name (module name)	OK	NG		
	Protocol (mode)	OK	NG		
	Setup Prefix	OK	NG		
	Other detailed settings	OK	NG		
	Serial Parameter	Transmission Speed	OK		NG
		Data Bit	OK		NG
		Stop Bit	OK		NG
Parity Bit		OK	NG		
Check address range	OK	NG	6. Supported addresses (For details, please refer to the PLC vendor's manual.)		

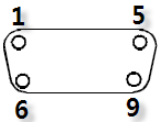

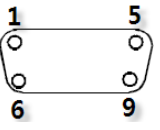
4. External device setting

• CPU Direct port communication interface of the "GLOFA-GM Series" is fixed as the target configuration value of the following example.

5. Cable table

This chapter introduces a cable diagram for normal communication between the TOP and the corresponding device.
 (The cable diagram described in this section may differ from the recommendations of "LS Industrial Systems Co., Ltd.")

■ RS-232C (1:1 connection)

COM1 / COM2			Cable connection	External device			
Pin arrangement* Note 1)	Signal name	Pin number		Pin number	Signal name	Pin arrangement* Note 1)	
 <p>Based on communication cable connector front, D-SUB 9 Pin male (male, convex)</p>	CD	1		1	CD	 <p>Based on communication cable connector front, D-SUB 9 Pin male (male, convex)</p>	
	RD	2		2	RD		
	SD	3		3	3		SD
	DTR	4		4	4		DTR
	SG	5	5	5	SG		
	DSR	6	6	6	DSR		
	RTS	7	7	7	RTS		
	CTS	8	8	8	CTS		
		9	9	9			

***Note 1)** The pin arrangement is as seen from the connecting side of the cable connection connector.

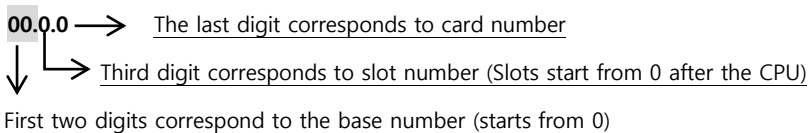
6. Supported addresses

The devices available in TOP are as follows:

The device range (address) may differ depending on the CPU module series/type. The TOP series supports the maximum address range used by the external device series. Please refer to each CPU module user manual and be take caution to not deviate from the address range supported by the device you want to use.

Type	Device	Address Area	
		Bit	Word
GM1	I (Input)	IX00.0.0 – IX63.7.63	IW00.0.0 – IW63.7.3
	Q (Output)	QX00.0.0 – QX63.7.63	QW00.0.0 – QW63.7.3
	M (Internal memory)	MX00000 – MX95983	MW00000 – MW59999
GM2	I (Input)	IX00.0.0 – IX31.7.63	IW00.0.0 – IW31.7.3
	Q (Output)	QX00.0.0 – QX31.7.63	QW00.0.0 – QW31.7.3
	M (Internal memory)	MX00000 – MX95983	MW00000 – MW59999
GM3, GM4	I (Input)	IX00.0.0 – IX07.7.63	IW00.0.0 – IW07.7.3
	Q (Output)	QX00.0.0 – QX07.7.63	QW00.0.0 – QW07.7.3
	M (Internal memory)	MX00000 – MX47991	MW00000 – MW32767
GM6, GM7	I (Input)	IX00.0.0 – IX07.7.63	IW00.0.0 – IW07.7.3
	Q (Output)	QX00.0.0 – QX07.7.63	QW00.0.0 – QW07.7.3
	M (Internal memory)	MX00000 – MX23995	MW00000 – MW16383

* Additional description of input/output (IW/QW) address



* Card number description: cards with 16 points are labeled 0; cards with 32 points are labeled 0 for 0–15 bit, or 1 for 16–31 bit; cards with 64 points are labeled 0 for 0–15 bit, 1 for 16–31 bit, 2 for 32–47 bit, and 3 for 48–63 bit.