LS Industrial Systems Co., Ltd.
GLOFA-GM Series
FENET Driver

| Support version | OS | V4.0 and over |
| | XDesignerPlus | 4.0.0.0 and over |

TOP **TOP**

CONTENTS

Thank you for using TOP series of M2I corporation.

Please read this manual carefully to know connection methods and procedures of "TOP to External device".

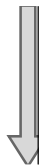### 1. System configuration   Page 2

A section for showing connectable external devices, serial signal types, connection configurations. Refer this section to select the right system configuration.

2. Selection of TOP, External device   Page 3

A section for selecting a Top model and the external device.
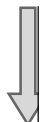
3. Example of system setting   Page 4

A section for explaining examples to connect communications of TOP to External Device.

Select the correct example in your case according to "1. System configuration".

4. Communication setting   Page 10

A section for cable to connect to external device.
Select a suitable cable diagram for your system.

5. Usable address   Page 12

A section for usable address to communicate with external device.

1. System configuration

System configuration of TOP and "LS Industrial System Co., Ltd – GLOFA-GM Series FENET".

| Series	CPU	Link I/F	Comm. Type	System setting	Cable
GMR	GMR-CPUA GMR-CPUB	G3L-EUTB	Ethernet (UDP)	3.1 setting ex 1 (4 Page)	Twist pair cable *1)
			Ethernet (TCP)	3.2 setting ex 2 (7 Page)	
GM1	GM1-CPUA GM1-CPUB	G3L-EUTB	Ethernet (UDP)	3.1 setting ex 1 (4 Page)	
			Ethernet (TCP)	3.2 setting ex 2 (7 Page)	
GM2	GM2-CPUA GM2-CPUB	G3L-EUTB	Ethernet (UDP)	3.1 setting ex 1 (4 Page)	
			Ethernet (TCP)	3.2 setting ex 2 (7 Page)	
GM3	GM3-CPUA	G3L-EUTB	Ethernet (UDP)	3.1 setting ex 1 (4 Page)	
			Ethernet (TCP)	3.2 setting ex 2 (7 Page)	
GM4	GM4-CPUA GM4-CPUB GM4-CPUC	G4L-EUTB	Ethernet (UDP)	3.1 setting ex 1 (4 Page)	
			Ethernet (TCP)	3.2 setting ex 2 (7 Page)	
GM6	GM6-CPUA GM6-CPUB GM6-CPUC	G6L-EUTB	Ethernet (UDP)	3.1 setting ex 1 (4 Page)	
			Ethernet (TCP)	3.2 setting ex 2 (7 Page)	

*1) Twist pair cable

- It means STP(shield   twist pair cable) or UTP(shieldless twist pair cable) category 3, 4, 5.

- It can connect to hub, transceiver etc. according to network composition and use direct cable in this case.

■ Connection configuration

・1 : 1 connection (TOP 1 unit to External device 1 unit)
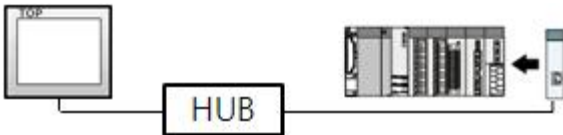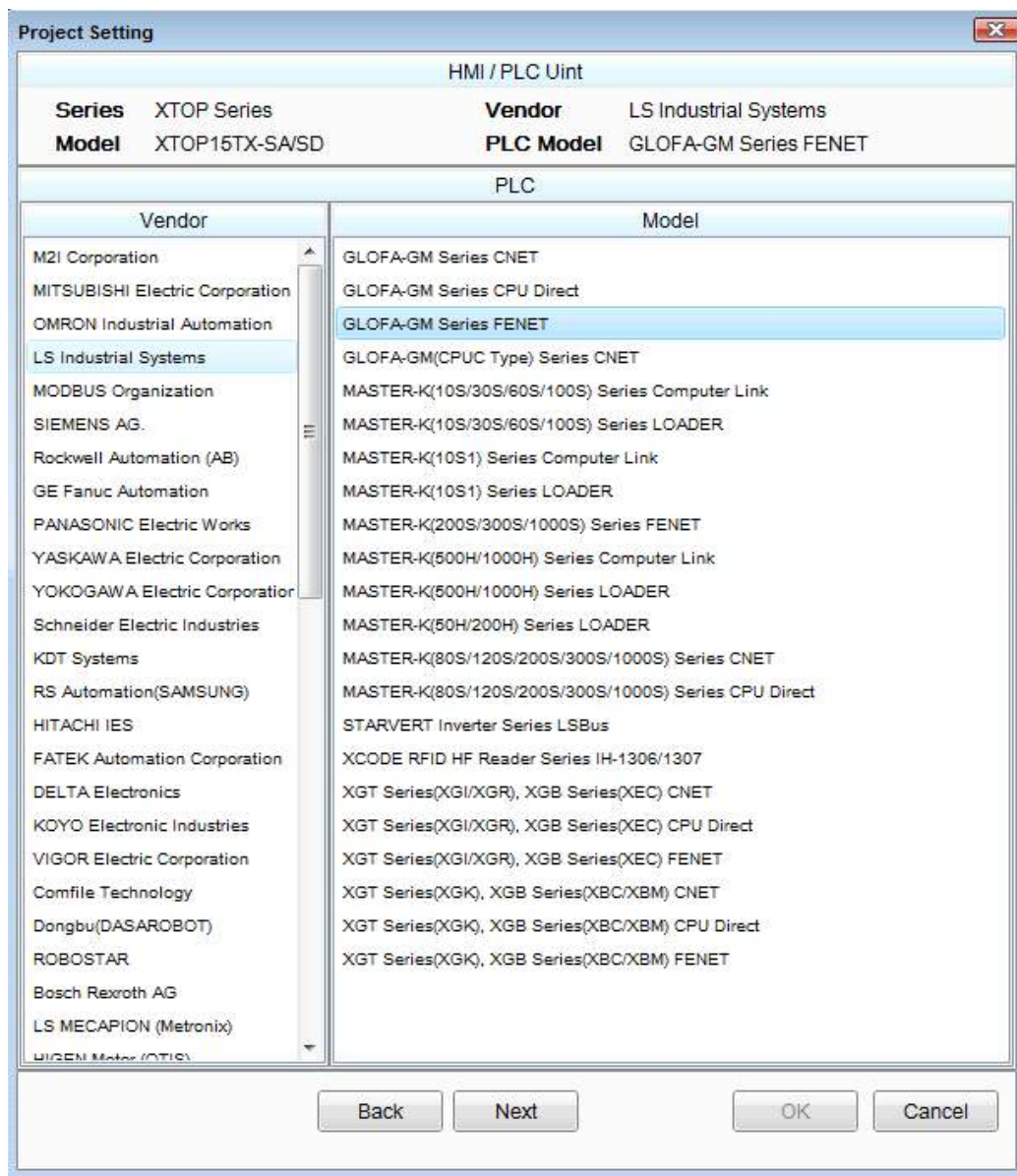

・1 : N connection (TOP 1 unit to External device several units)
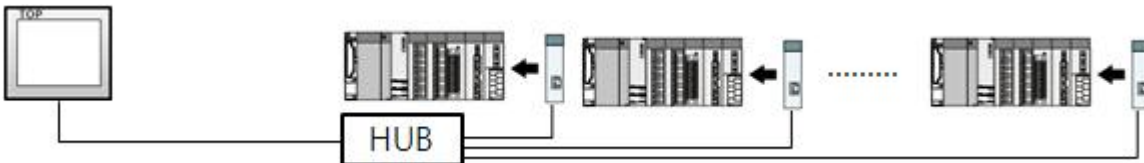
2. Selection of TOP, External device

Select a external device which is communicated to the TOP.

Setting Items		Description
TOP	Series	Select a TOP series which is communicated with external device.
		Install an OS file v3.1 as diagram below before download a project file you have made.
		<table><tr><td>Series</td><td>OS Version</td></tr><tr><td>XTOP / HTOP</td><td>V4.0</td></tr></table>
	Name	Select a TOP model which is communicated with external device.
External Device	Vendor	Select vendor of the external device which is communicated with TOP.
		Select ""LS INDUSTRIAL SYSTEMS CO., LTD"".
	PLC	Select a model name of the external device which is communicated with TOP.
		Select "GLOFA-GM Series FENET".
		Check whether the external device you want to use is connectable or not
		in "1. System configuration".

3. System setting

Set Communication interface of TOP and external device as below.

3.1 Example 1

Set your system as below.

Item	TOP	GLOFA-GM Series	Note
IP Address*1)2)	192.168.0.50	192.168.0.51	User set
Protocol	UDP	Private server*3)	User set
Port	1024	2005	User set

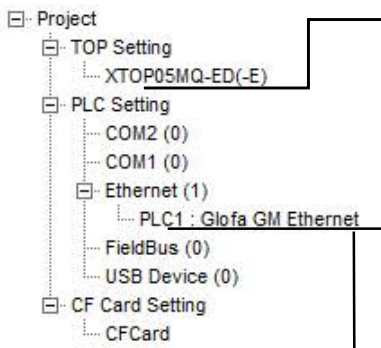*1) Network address TOP and external device must be same. (IP's three place : 192.168.000)

*2) Don't use same address in same network.

*3) Private driver port of FEnet I/F module admits communication to specified port number/protocol to appropriate IP.

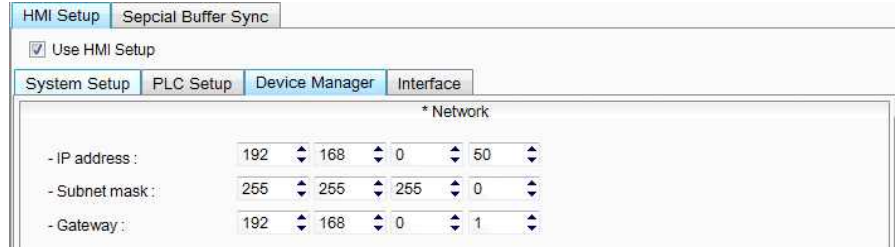| Protocol	TCP/IP	UDP/IP	MODBUS TCP
Port number	2004	2005	502

(1) XDesignerPlus setting

Set [Project >Project property] of XDesignerPlus as below and download it to TOP machine.

■ [Project > Project property > project > TOP Setting > TOP's Name]

Set communication interface of TOP.

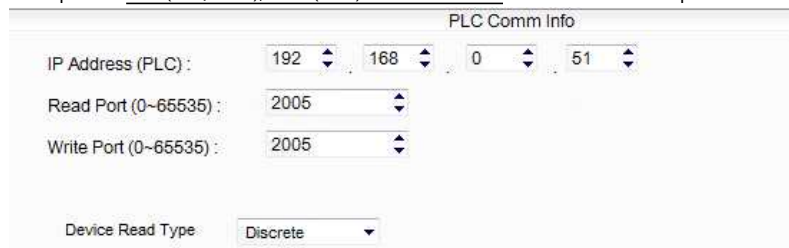- From right window [HMI Setup > check Use HMI Setup > Device Manager]

- From right window [HMI Setup > check Use HMI Setup > PLC Setting]

■ External Device Settings

Set up the "XGT(XGI/XGR), XGB(XEC) Series FENET" communication option

- IP Address (PLC): Type the IP address that the external device was given.

- Reading port / writing port: Choose the port number that will be used for ethernet communication. Please input the port number that [GPPW] issued.

- Block processing method : Select the protocol method

(2) External device setup

Run **"FEnet Frame Editor"** of GLOFA-GM series communication system setting tool for communication setting.
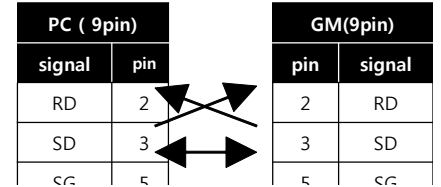
If you want to change communication interface, modify refer to PLC manual.

1. Connect to CPU unit RS-232 port of external device and PC
   with [GLOFA GM loader cable].

2. Run "FEnet Frame Editor".

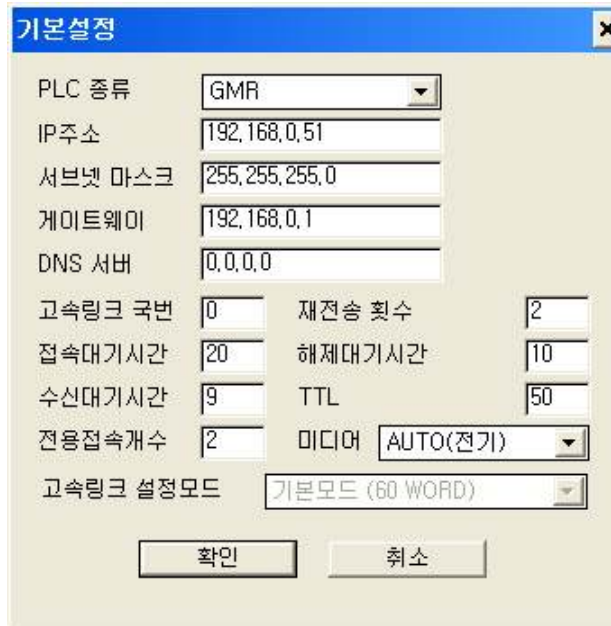   Select [FENET] at Dialog Box of [TYPE setting of Frame editor].
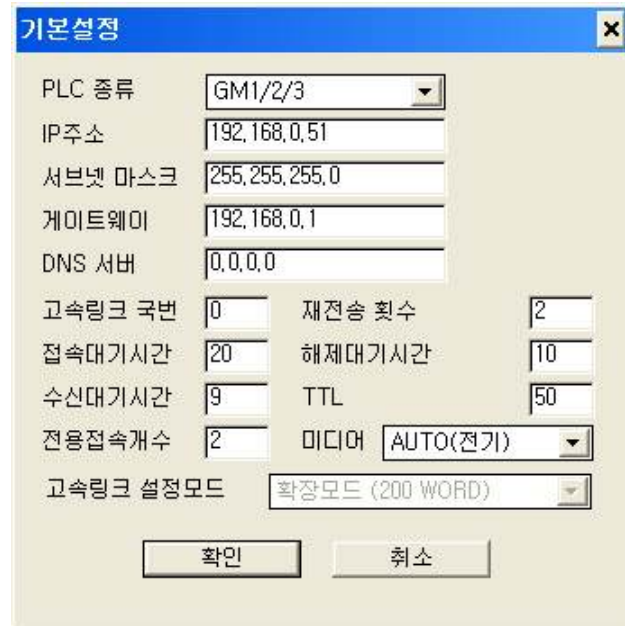
[GLOFA GM loader cable]

PC (9pin)		GM(9pin)	
signal	pin	pin	signal
RD	2	2	RD
SD	3	3	SD
SG	5	5	SG

프레임 편집기 TYPE 설정

FENET

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3. Select [Edit] > [Default setting] and set FEnet information and click [OK].

■ GMR

기본설정

PLC 종류	GMR
IP주소	192.168.0.51
서브넷 마스크	255.255.255.0
게이트웨이	192.168.0.1
DNS 서버	0.0.0.0

고속링크 국번	0	재전송 횟수	2
접속대기시간	20	해제대기시간	10
수신대기시간	9	TTL	50
전용접속개수	2	미디어	AUTO(전기)
고속링크 설정모드		기본모드 (60 WORD)	

확인　　　취소

■ GM 1/2/3

기본설정

PLC 종류	GM1/2/3
IP주소	192.168.0.51
서브넷 마스크	255.255.255.0
게이트웨이	192.168.0.1
DNS 서버	0.0.0.0

고속링크 국번	0	재전송 횟수	2
접속대기시간	20	해제대기시간	10
수신대기시간	9	TTL	50
전용접속개수	2	미디어	AUTO(전기)
고속링크 설정모드		확장모드 (200 WORD)	

확인　　　취소

■ GM 4/6

4. Run [Online] > [Connect] and connect external device and PC.
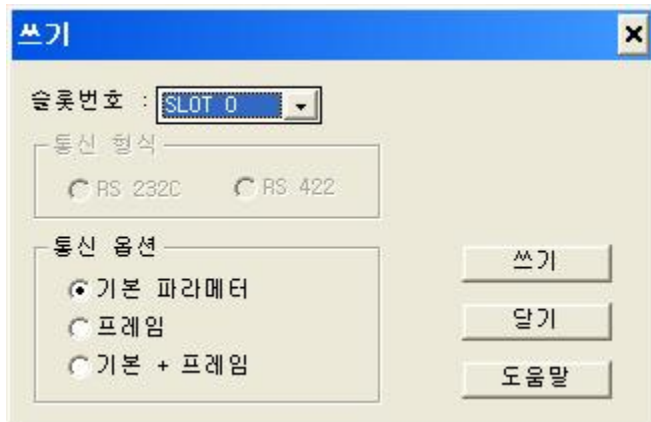

5. Run [Online] > [Write] and select slot number with ethernet communication card and "default parameter" and click [write] button.

6. After transmission complete, reset power of PLC.

3.2 Example 2

Set your system as below.

Item	TOP	GLOFA GM Series	Note
IP Address*1)2)	192.168.0.50	192.168.0.51	User set
Protocol	TCP	Private server *주3)	User set
Port	1024	2004	User set

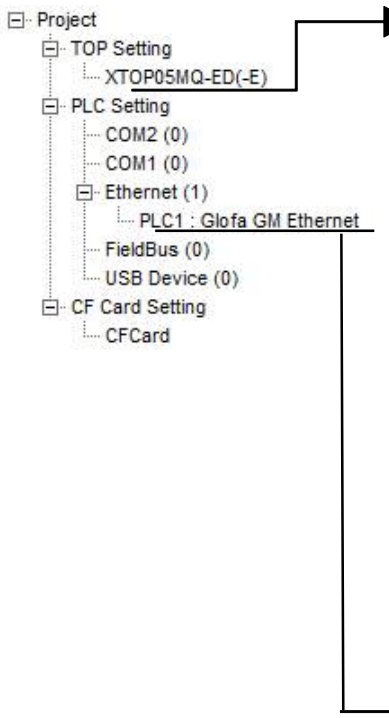*1) Network address TOP and external device must be same. (IP's three place : 192.168.000)

*2) Don't use same address in same network.

*3) Private driver port of FEnet I/F module admits communication to specified port number/protocol to appropriate IP.

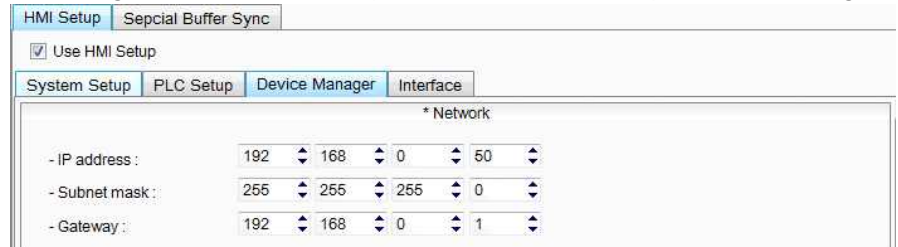| Protocol	TCP/IP	UDP/IP	MODBUS TCP
Port number	2004	2005	502

(1) XDesignerPlus setting

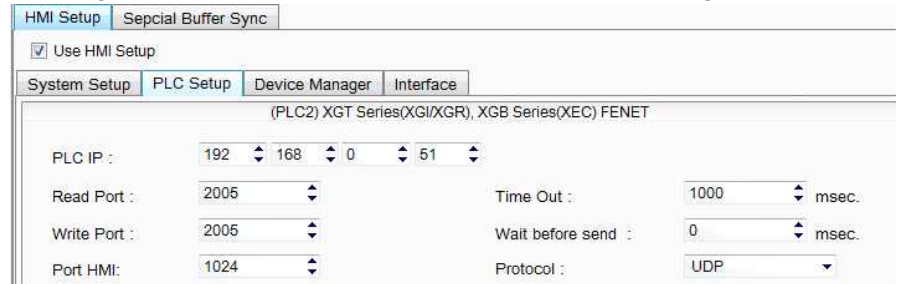Set [Project >Project property] of XDesignerPlus as below and download it to TOP machine.

■ [Project > Project property > project > TOP Setting > TOP's Name]

Set communication interface of TOP.

- From right window [HMI Setup > check Use HMI Setup > Device Manager]

- From right window [HMI Setup > check Use HMI Setup > PLC Setting]

■ External Device Settings

Set up the "XGT(XGI/XGR), XGB(XEC) Series FENET" communication option

- IP Address (PLC): Type the IP address that the external device was given.

- Reading port / writing port: Choose the port number that will be used for ethernet communication. Please input the port number that [GPPW] issued.

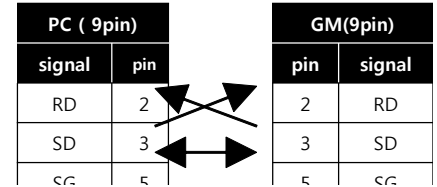- Block processing method : Select the protocol method

(2) External device setup

Run **"FEnet Frame Editor"** of GLOFA-GM series communication system setting tool for communication setting.

If you want to change communication interface, modify refer to PLC manual.

1. Connect to CPU unit RS-232 port of external device and PC
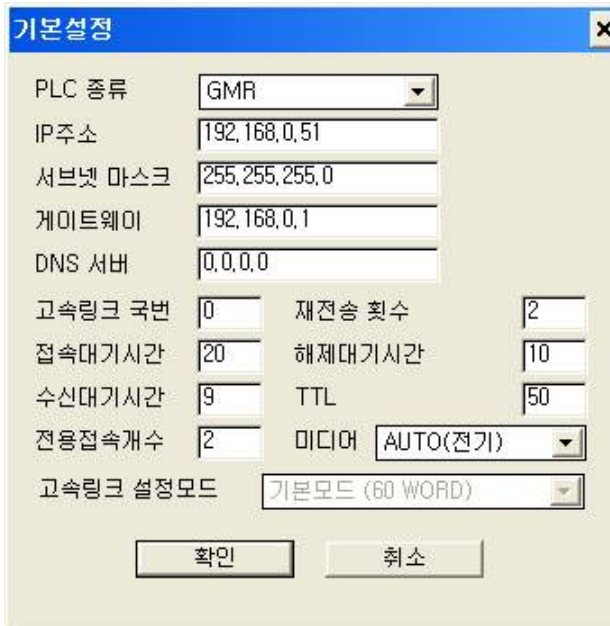   with [GLOFA GM loader cable].

2. Run "FEnet Frame Editor".
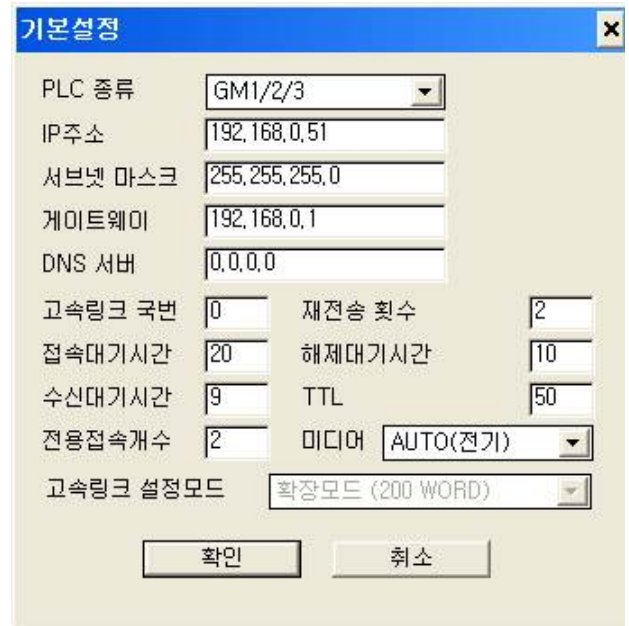   Select [FENET] at Dialog Box of [TYPE setting of Frame editor].

[GLOFA GM loader cable]

PC (9pin)		GM(9pin)	
signal	pin	pin	signal
RD	2	2	RD
SD	3	3	SD
SG	5	5	SG

프레임 편집기 TYPE 설정 ✖

FENET ▼

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3. Select [Edit] > [Default setting] and set FEnet information and click [OK].

■ GMR

기본설정 ✖

PLC 종류	GMR ▼
IP주소	192,168,0,51
서브넷 마스크	255,255,255,0
게이트웨이	192,168,0,1
DNS 서버	0,0,0,0

고속링크 국번	0	재전송 횟수	2
접속대기시간	20	해제대기시간	10
수신대기시간	9	TTL	50
전용접속개수	2	미디어	AUTO(전기) ▼
고속링크 설정모드	기본모드 (60 WORD) ▼		

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■ GM 1/2/3

기본설정 ✖

PLC 종류	GM1/2/3 ▼
IP주소	192,168,0,51
서브넷 마스크	255,255,255,0
게이트웨이	192,168,0,1
DNS 서버	0,0,0,0

고속링크 국번	0	재전송 횟수	2
접속대기시간	20	해제대기시간	10
수신대기시간	9	TTL	50
전용접속개수	2	미디어	AUTO(전기) ▼
고속링크 설정모드	확장모드 (200 WORD) ▼		

확인   취소

■ GM 4/6

기본설정 ✖

PLC 종류	GM4/6 ▼
IP주소	192,168,0,51
서브넷 마스크	255,255,255,0
게이트웨이	192,168,0,1
DNS 서버	0,0,0,0

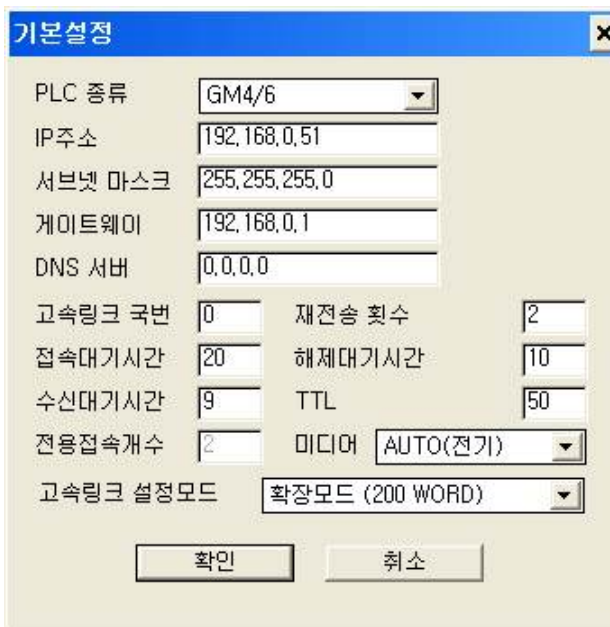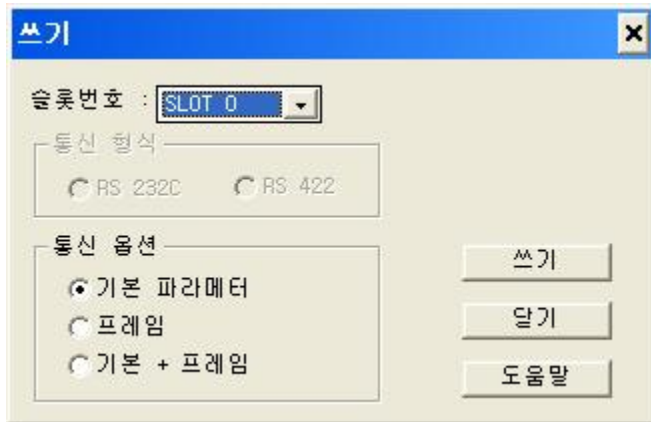| 고속링크 국번 | 0 | 재전송 횟수 | 2 |
접속대기시간	20	해제대기시간	10
수신대기시간	9	TTL	50
전용접속개수	2	미디어	AUTO(전기) ▼
고속링크 설정모드	확장모드 (200 WORD) ▼		

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4. Run [Online] > [Connect] and connect external device and PC.

5. Run [Online] > [Write] and select slot number with ethernet communication card and "default parameter" and click [write] button.


6. After transmission complete, reset power of PLC.

item	Description
Serial Signal Level	Setup signal level(RS-232C/422/485) of PLC connected with COM2/1 port. (COM1 only RS-232C)
Serial Baud Rate	Setup [communications Baud rate] of PLC connected with COM2/1 port.
Serial Data Bit	Setup [Data Bit] of PLC connected with COM2/1 port.
Serial Stop Bit	Setup [Stop Bit] of PLC connected with COM2/1 port.
Serial Parity Bit	Setup [Parity Bit] of PLC connected with COM2/1 port.
Time Out [x100 mSec]	Setup [Time Out] of PLC connected with COM2/1 port. (Timeout:: waiting time for answer of PLC)
Send Wait [x10 mSec]	Setup [Send Wait] of PLC connected with COM2/1 port. (Send Wait: communicate after waiting setting time when touch screen requires communications.)
Station Num. in Diag.[0~31]	Setup [Station Num.(0~31)] using "4.3 Communication Diagnosis"

4. Communication setting

Communication setup can be set on XDesignerPlus or TOP Main Menu. The setting should be the same with the external device.
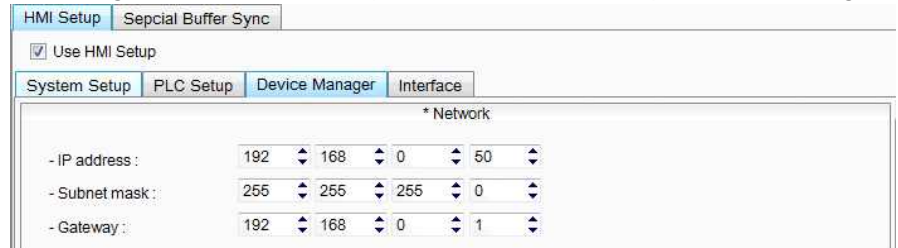
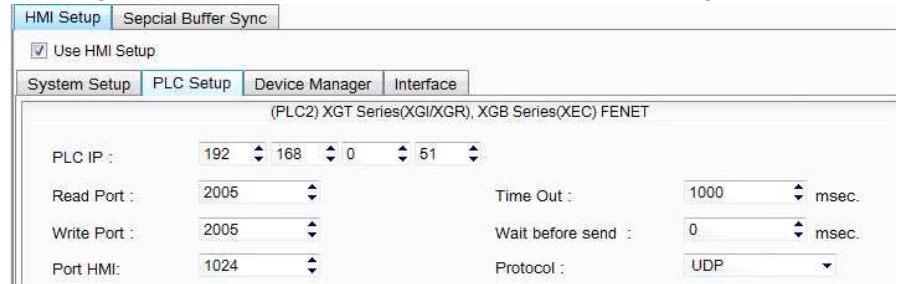## (1) XDesignerPlus setup – register information of external device
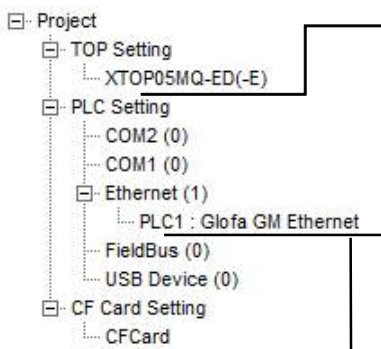
■ [Project > Project property > project > TOP Setting > TOP's Name]

Set communication interface of TOP.

- From right window [HMI Setup > check Use HMI Setup > Device Manager]

- From right window [HMI Setup > check Use HMI Setup > PLC Setting]

■ External Device Settings

Set up the "XGT(XGI/XGR), XGB(XEC) Series FENET" communication option
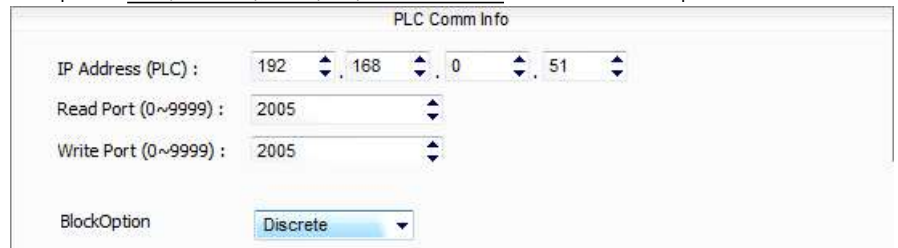
   - IP Address (PLC): Type the IP address that the external device was given.

   - Reading port / writing port: Choose the port number that will be used for ethernet communication. Please input the port number that [GPPW] issued.

   - Block processing method : Select the protocol method

■ Setting communication Interface

4.2 TOP main menu setup item

- When a buzzer is on during the power reset, touch 1 spot at the upper LCD to move to "TOP Management Main" display.
- Set up driver interface at TOP according to below **Step1 → Step2**.
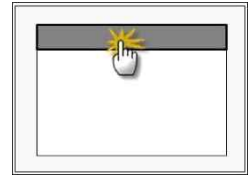 (Press "TOP ethernet setup" in **Step 1** to change setup at **Step 2**.)

Step 1. [PLC setup] .Setup driver interface.

PLC setup	
PLC IP : 192 . 168 . 0 . 51 Protocol : UDP PLC Read Port : 2005 PLC Write Port : 2005 TOP Port : 1024 PLC Address : 00 Timeout : 1000 [mSec] Delay time of transmission : 0 [mSec] TOP IP : 192 . 168 . 0 . 50 　TOP Ethernet setting communication diagnosis	Communication Interface Settings

Step 1–Reference.

Details	Contents
PLC IP	It is an IP address that external device was given.
Protocol	Select the protocol method either UDP or TCP.
PLC Read Port	It is the port address that will be used for ethernet of external device.
PLC Write Port	It is the port address that will be used for ethernet of external device.
TOP port	Setting the TOP port number to connect with external device.
PLC address [0~65535]	Address of other device. Select between [0 - 65535].
Timeout [x1 mSec]	Set up TOP's waiting time from external device at [0 - 5000] x 1mSec.
Delay Time before transmitting [x1 mSec]	Set up TOP's waiting time between response receiving – next command request transmission from external device at [0 – 5000] x 1 mSec.
TOP IP	Setup the IP address that TOP receives in the network.

Step 2. [PLC Setup] > [TOP Ethernet Setup] - Setup the serial parameter of correspond port.

Port Settings	
* Ethernet Communication 　+ Network setting 　　- MAC : 00 - 15 - ID - 00 - 30 - 52　(each device has different address) 　　- IP Address : 192. 168 . 0 . 50 　　- Subnet mask : 255 255 . 255 . 0 　　- Gateway : 192 168 . 0 . 1	Ethernet Port Communication Interface Settings

Step 1–Reference.

Details	Contents
MAC	Physical official address in the network.
IP Address	Setup the IP address that TOP receives in the network.
Subnet mask	An address that divides the network ID and host ID regarding of IP address.
Gateway	An address that connects a network to another network.

4.3 Communication diagnosis

■ TOP - Confirming interface setting condition between external devices

- Move to Menu by clicking the top side of LCD screen as resetting the power of TOP.

- [Main Menu >Communication setting] Confirm if detail in number 20~24 is identical to the setup information of "■Setup exercise 1".

- PLC Setup > Click the button in "Communication diagnosis" of TOP Ethernet.

- Diagnosis dialog box will pop up on the screen, you can judge by following informations that are shown on box no. 3 section.

OK!	Communication setting succeeded
Time Out Error!	Communication setting error - Error in the setting situation of Cable and TOP / External device **(reference : Communication Diagnosis sheet)**

■ Communication Diagnosis Sheet

- Please refer to the information below if you have a problem between external devices and communication connection.

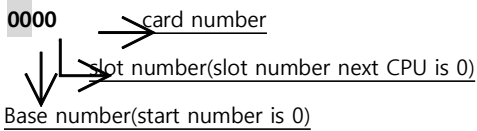| Details			Contents			Confirm	
TOP	Version Information		xDesignerPlus :	O.S :			
	Name of Driver					OK	NG
	External device information (xDesignerPlus Project setting)	IP Address				OK	NG
		Subnet mask				OK	NG
		Gateway				OK	NG
	TOP Information (Main Device Menu Setting)	Protocol	UDP/IP	TCP/IP		OK	NG
		IP Address				OK	NG
		Subnet mask				OK	NG
		Gateway				OK	NG
	Other specified setting info					OK	NG
System configuration	System Connection Method		1:1	1:N	N:1	OK	NG
	Name of cable (Hub usage)		Direct (Use Hub)	Cross (No Hub)		OK	NG
External device	Name of CPU					OK	NG
	Name of communication device					OK	NG
	Protocol(mode)					OK	NG
	Other specified setting info					OK	NG
	IP Address		(Local)	(Destination)		OK	NG
	Port number		(Local)	(Destination)		OK	NG
	Subnet mask					OK	NG
	Gateway					OK	NG
	Address range confirm (other docs)					OK	NG

5. Available address

The available address of device are as below.

Device(address) range might be different according to series/type of CPU. TOP Series are capable of supporting maximum address range which is available in external Device.

Be careful get out of address range.

model	WORD	Address range
GM1	%I(input)	%IW00.0.0 ~ %IW63.7.3
	%Q(output)	%QW00.0.0 ~ %QW63.7.3
	%M(inner memory)	%MW00000 ~ %MW65535
GM2	%I(input)	%IW00.0.0 ~ %IW31.7.3
	%Q(output)	%QW00.0.0 ~ %QW31.7.3
	%M(inner memory)	%MW00000 ~ %MW65535
GM3, GM4	%I(input)	%IW00.0.0 ~ %IW07.7.3
	%Q(output)	%QW00.0.0 ~ %QW07.7.3
	%M(inner memory)	%MW00000 ~ %MW32767
GM6, GM7	%I(input)	%IW00.0.0 ~ %IW07.7.3
	%Q(output)	%QW00.0.0 ~ %QW07.7.3
	%M(inner memory)	%MW00000 ~ %MW16383

* Setting method of Input and Output(IW / QW) address

0000 — card number
— slot number(slot number next CPU is 0)
Base number(start number is 0)

※ card number explanation - Card number of 16 point card is 0. If it is 32 point card, card number of 0~15 bit is 0, card number of 16~31 bit is 1. If it is 64 point card, card number of 0~15 bit is 0, card number of 16~31 bit is 1, card number of 32~47 bit is 2, card number of 48~63 bit is 3.