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Programmable Logic Controller

Pnet I/F Module

XGT Series

User's Manual

XGL-PMEA

XGL-PMEC

Safety Instructions

- Read this manual carefully before installing, wiring, operating, servicing or inspecting this equipment.
- Keep this manual within easy reach for quick reference.

http://eng.lsis.biz

Safety Instructions

Before using the product …

For your safety and effective operation, please read the safety instructions thoroughly before using the product. Safety Instructions should always be observed in order to prevent accident or risk with the safe and proper use the product.

Instructions are divided into “Warning” and “Caution”, and the meaning of the terms is as follows.

⚠ **Warning**	This symbol indicates the possibility of serious injury or death if some applicable instruction is violated
⚠ **Caution**	This symbol indicates the possibility of severe or slight injury, and property damages if some applicable instruction is violated

Moreover, even classified events under its ⚠ caution category may develop into serious accidents relying on situations. Therefore we strongly advise users to observe all precautions properly just like warnings.

The marks displayed on the product and in the user’s manual have the following meanings.

⚠ Be careful! Danger may be expected.

⚠ Be careful! Electric shock may occur.

The user’s manual even after read shall be kept available and accessible to any user of the product.

Safety Instructions

Safety Instructions for design process

⚠ Warning

1. **Please install a protection circuit on the exterior of PLC so that the whole system may operate safely regardless of failures from external power or PLC.** Any abnormal output or operation from PLC may cause serious problems to safety in whole system.
   (1) Install protection units on the exterior of PLC like an interlock circuit that deals with opposite operations such as emergency stop, protection circuit, and forward/reverse rotation or install an interlock circuit that deals with high/low limit under its position controls.
   (2) If any system error (watch-dog timer error, module installation error, etc.) is detected during CPU operation in PLC, all output signals are designed to be turned off and stopped for safety. However, there are cases when output signals remain active due to device failures in Relay and TR which can't be detected. Thus, you are recommended to install an addition circuit to monitor the output status for those critical outputs which may cause significant problems.
2. **Never overload more than rated current of output module nor allow to have a short circuit**. Over current for a long period time may cause a fire .
3. **Never let the external power of the output circuit to be on earlier than PLC power**, which may cause accidents from abnormal output or operation.
4. **Please install interlock circuits in the sequence program for safe operations in the system when exchange data with PLC or modify operation modes using a computer or other external equipments** Read specific instructions thoroughly when conducting control operations with PLC.

Safety Instructions

Safety Instructions for design process

⚠ Caution

I/O signal or communication line shall be wired at least 100mm away from a high-voltage cable or power line. Fail to follow this instruction may cause malfunctions from noise

Safety Instructions on installation process

⚠ Caution

1. **Use PLC only in the environment specified in PLC manual or general standard of data sheet.** If not, electric shock, fire, abnormal operation of the product may be caused.
2. **Before install or remove the module, be sure PLC power is off.** If not, electric shock or damage on the product may be caused.
3. **Be sure that every module is securely attached after adding a module or an extension connector.** If the product is installed loosely or incorrectly, abnormal operation, error or dropping may be caused. In addition, contact failures under poor cable installation will be causing malfunctions as well.
4. **Be sure that screws get tighten securely under vibrating environments.** Fail to do so will put the product under direct vibrations which will cause electric shock, fire and abnormal operation.
5. **Do not come in contact with conducting parts in each module**, which may cause electric shock, malfunctions or abnormal operation.

Safety Instructions

Safety Instructions for wiring process

⚠ Warning

1. **Prior to wiring works, make sure that every power is turned off.** If not, electric shock or damage on the product may be caused.
2. **After wiring process is done, make sure that terminal covers are installed properly before its use.** Fail to install the cover may cause electric shocks.

⚠ Caution

1. **Check rated voltages and terminal arrangements in each product prior to its wiring process.** Applying incorrect voltages other than rated voltages and misarrangement among terminals may cause fire or malfunctions.
2. **Secure terminal screws tightly applying with specified torque.** If the screws get loose, short circuit, fire or abnormal operation may be caused. Securing screws too tightly will cause damages to the module or malfunctions, short circuit, and dropping.
3. **Be sure to earth to the ground using Class 3 wires for FG terminals which is exclusively used for PLC**. If the terminals not grounded correctly, abnormal operation or electric shock may be caused.
4. **Don't let any foreign materials such as wiring waste inside the module while wiring,** which may cause fire, damage on the product or abnormal operation.
5. **Make sure that pressed terminals get tighten following the specified torque. External connector type shall be pressed or soldered using proper equipments.**

Safety Instructions

Safety Instructions for test-operation and maintenance

⚠ Warning

1. **Don't touch the terminal when powered**. Electric shock or abnormal operation may occur.
2. **Prior to cleaning or tightening the terminal screws, let all the external power off including PLC power.** If not, electric shock or abnormal operation may occur.
3. **Don't let the battery recharged, disassembled, heated, short or soldered**. Heat, explosion or ignition may cause injuries or fire.

⚠ Caution

1. **Do not make modifications or disassemble each module.** Fire, electric shock or abnormal operation may occur.
2. **Prior to installing or disassembling the module, let all the external power off including PLC power.** If not, electric shock or abnormal operation may occur.
3. **Keep any wireless equipment such as walkie-talkie or cell phones at least 30cm away from PLC**. If not, abnormal operation may be caused.
4. **When making a modification on programs or using run to modify functions under PLC operations, read and comprehend all contents in the manual fully.** Mismanagement will cause damages to products and accidents.
5. **Avoid any physical impact to the battery and prevent it from dropping as well.** Damages to battery may cause leakage from its fluid. When battery was dropped or exposed under strong impact, never reuse the battery again. Moreover skilled workers are needed when exchanging batteries.

Safety Instructions

Safety Instructions for waste disposal

⚠ Caution

- **Product or battery waste shall be processed as industrial waste.**
  The waste may discharge toxic materials or explode itself.

Revision History

Version	Date	Remark	Page
V 1.0	’06.02	First Edition	-
V1.1	’07.10	XGI-CPUU added	-
V 2.0	’10.08	XGR CPU added	-
		Ch. 11 Compliance with EMC Specification added	-
		XGL-PMEC added	-
		PROFICON configuration tool added	-
		Automatic Network Scan modified	Ch.9.1.1
		XGL-PSRA added	Ch.1.3.3
V 2.1	’11.05	How to enable link through flag added	Ch.5.2.3
V 2.2	’11.06	Performance specifications added - Max. number of modules per node : 24 Modules	Ch.2.2
V2.3	’14.11	XG5000 V4.0 UI Updated	-

※ The number of User’s manual is indicated right part of the back cover.

Congratulations on purchasing PLC of LSIS Co.,Ltd.
Before use, make sure to carefully read and understand the User's Manual about the functions, performances, installation and programming of the product you purchased in order for correct use and importantly, let the end user and maintenance administrator to be provided with the User's Manual.

The User's Manual describes the product. If necessary, you may refer to the following description and order accordingly. In addition, you may connect our website (http://eng.lsis.biz/) and download the information as a PDF file.

Relevant User's Manuals

Title	Description
XG5000 User's Manual	XG5000 software user manual describing online function such as programming, print, monitoring, debugging by using XGK, XGB CPU
XG5000 User's Manual (for XGI, XGR)	XG5000 software user manual describing online function such as programming, print, monitoring, debugging by using XGI, XGR CPU
XGK/XGB Instructions & Programming User's Manual	User's manual for programming to explain how to use instructions that are used PLC system with XGK, XGB CPU.
XGI/XGR Instructions & Programming User's Manual	User's manual for programming to explain how to use instructions that are used PLC system with XGI, XGR CPU.
XGK CPU User's Manual (XGK-CPUA/CPUE/CPUH/CPUS/CPUU)	XGK-CPUA/CPUE/CPUH/CPUS/CPUU user manual describing about XGK CPU module, power module, base, IO module, specification of extension cable and system configuration, EMC standard
XGI CPU User's Manual (XGI-CPUU)	XGI-CPUU user manual describing about XGK CPU module, power module, base, IO module, specification of extension cable and system configuration, EMC standard
XGR redundant series User's Manual	XGR-CPUU user manual describing about XGR CPU module, power module, extension drive, base, IO module, specification of extension cable and system configuration, EMC standard
PROFICON User's Manual	User's manual for Pnet configuration tool, PROFICON

Current user manual is written based on the following version.

Related OS version list

Model	O/S version
XGK-CPUH, CPUS, CPUA, CPUE	V2.0
XGI-CPUU, CPUH	V2.0
XG5000	V4.0
XGR-CPUH/F, CPUH/T	V1.0

◎ Table of Contents ◎

Chapter 1 Introduction

Chapter 2 Specifications

Chapter 3 Installation and Test Operation

Chapter 4 System Configuration

Chapter 5 Communication Program

Chapter 6 SyCon Setting

Chapter 7 PROFICON Setting

Chapter 8 High-speed Link

Chapter 9 Program Example

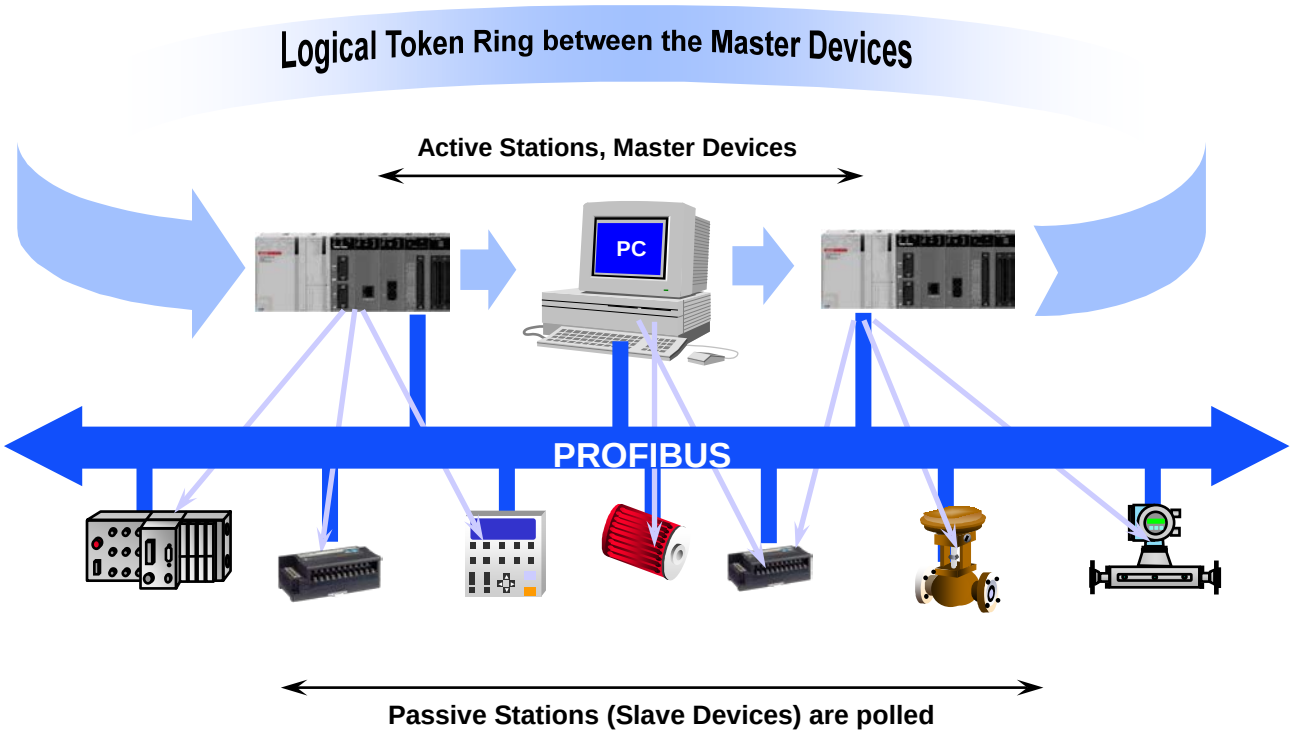
Chapter 10 Troubleshooting

Chapter 11 Compliance with EMC Specifications

Chapter 1 Introduction

1.1 Introduction

This user's manual is to describe Profibus-DP (Decentralized Peripherals) Master I/F module (hereinafter referred to as **Pnet I/F module**) among communication modules of XGT PLC system.
Profibus-DP is specified in IEC Fieldbus Standard IEC 1158.
In this communication, Token Ring is used to control the communication and to configure the network easily. Pnet I/F module is a module to control the field bus with Twisted Shielded Pair Copper Cable applied.



1.2 Characteristics

XGT Pnet I/F module has the characteristics as follows;

- ▶ Conforms to the international standard of EN 50170
- ▶ Supports Auto Baud Rate Detect
- ▶ Supports Sync/Freeze mode
- ▶ Max. input data : 244 Bytes/Slave
- ▶ Max. output data: 244 Bytes/Slave
- ▶ Max. data size : 244 Bytes/Slave, 6 KB/Master
- ▶ Communication speed : 9.6k, 19.2k, 93.7k, 187.5k, 500k, 1.5M, 3M, 6M, 12M

1.3 Product Configuration

1.3.1 Model Name

This describes on the product configuration of the XGT Pnet I/F module.

Model		Contents	Remark
XGK/XGI/XGR	XGL-PMEA	Profibus-DP	Supports DP-V0
	XGL-PMEC	Profibus-DP	

Note

(1) XGT Pnet supports only Profibus-DP. FMS, PA are not supported and protocol conversion is available by the coupler

(2) Support of the DP version
1) DP-V0: Periodical data exchange between the PLC and the slave device
(Node diagnosis, module status, specific channel diagnosis)
2) DP-V1: Asynchronous data exchange between the PC or PLC and the slave device, integration of EDD and FDT, fail-safe communication, alarm
3) DP-V2: supports broadcast, clock synchronization and time stamp, HART, upload/download, redundancy

1.3.2 Available number by CPU

You can mount up to 12 Pnet I/F module. If possible, mount the module in the basic base for best performance of the communication module. The following table indicates the available service type by the CPU. When configuring the system, apply this considering the number of the communication module.

Item	XGK				XGI		XGR
	XGT-CPUH	XGT-CPUA	XGT-CPUS	XGT-CPUE	XGI-CPUU	XGI-CPUH	XGR-CPUH/T XGR-CPUH/F
The number of the module using High Speed Link (Max.)	12				12		12
The number of the module using P2P (Max.)	Not supported				Not supported		Not supported
The number of available expansion base (Max.)	7	3	3	1	7	7	31

1.3.3 Slave Device

The Pnet I/F module can be connected with Smart I/O series and available product list is as follows.

(1) Master module

Item	Connection cable	Model	Product code	contents	Remark
Master module	Twisted pair (Electricity)	XGL-PMEA	47200001	-	Sycon control
		XGL-PMEC	47200103	-	PROFICON control

(2) Slave module

Item	Connection cable	Model	Product code	contents	Remark
Slave module	Twisted pair (electricity)	G7L-PBEA	46270031	Connected at the K120S expansion part	K120S/K80S/GM7/GM7U
		GPL-D22A	47060007	DC input 16 points	Fixed type, 9-pin communication connector
		GPL-D24A	47060009	DC input 32 points	
		GPL-TR2A	47060008	TR output 16 (0.1A, Sink)	
		GPL-TR4A	47060010	TR output 32 (0.1A, Sink)	
		GPL-RY2A	47060011	Relay output 16	
		GPL-DT4A	47060012	DC input 16/ TR output 16	
		GPL-D22C	47060046	DC input 16	Removable type, 9-pin communication connector
		GPL-D24C	47060047	DC input 32	
		GPL-TR2C	47060048	TR output 16 (0.5A, Source)	
		GPL-TR4C	47060049	TR output 32 (0.5A, Source)	
		GPL-RY2C	47060051	Relay output 16	
		GPL-DT4C	47060050	DC input16/ TR output 16	
		GPL-TR2B	47060059	TR output 16 (0.5A, Source)	Fixed type, 9-pin communication connector
		GPL-TR4B	47060058	TR output 32 (0.5A, Source)	
		GPL-DT4B	47060060	DC input16/ TR output 16	
		GPL-TR2A1	47060084	TR output 16 (0.5A, Sink)	
		GPL-TR4A1	47060076	TR output 32(0.5A, Sink)	
		GPL-DT4A1	47060078	DC input 16/ TR output 16	
		GPL-TR2C1	47060085	TR output 16 (0.5A, Sink)	Removable type, 9-pin communication connector
		GPL-TR4C1	47060077	TR output 32 (0.5A, Sink)	
		GPL-DT4C1	47060079	DC input 16/ TR output 16	
		GPL-AV8C	47060123	Analog voltage input, 8 channels	
		GPL-AC8C	47060124	Analog current input 8 channels	
		GPL-DV4C	47060125	Analog voltage output, 8	
		GPL-DC4C	47060126	Analog current output, 8	
		XPL-BSSA	47060130	Expansion type Pnet I/F module	Module for expansion type Pnet I/F module
		XGL-PSRA	47200128	Pnet Remote I/F module	Remote I/F module

[Table1.3.1] Pnet I/F module product list (Smart I/O)

Note

1) Fixed type: The product whose I/O terminal block is fixed at the module
2) Removable type: The product whose I/O terminal block can be removed

1.4 Software

This describes on the software tool for the Pnet I/F module. For programming and application, refer to the followings

1.4.1 Check list for the software

(1) Software list

Item		Programming tool	Communication configuration tool
XGL-PMEA/ XGL-PMEC	Profibus-DP master module	XG5000	

(2) Selecting the CPU (Version) to use the Pnet I/F module

Item	Model	Available version (recommended)	Remark
XGK series	XGK-CPUH	V2.0	
	XGK-CPUS	V2.0	
	XGK-CPUA	V2.0	
	XGK-CPUE	V2.0	
	XGK-CPUU	V1.0	
XGI series	XGI-CPUH	V1.0	
	XGI-CPUU	V1.0	
XGR series	XGR-CPUH/T	V1.0	
	XGR-XPUH/F	V1.0	
Software	XG5000	V4.0	
	SyCon	V2.0	Configuration tool for XGL-PMEA
	PROFICON	V2.0	Configuration tool for XGL-PMEC

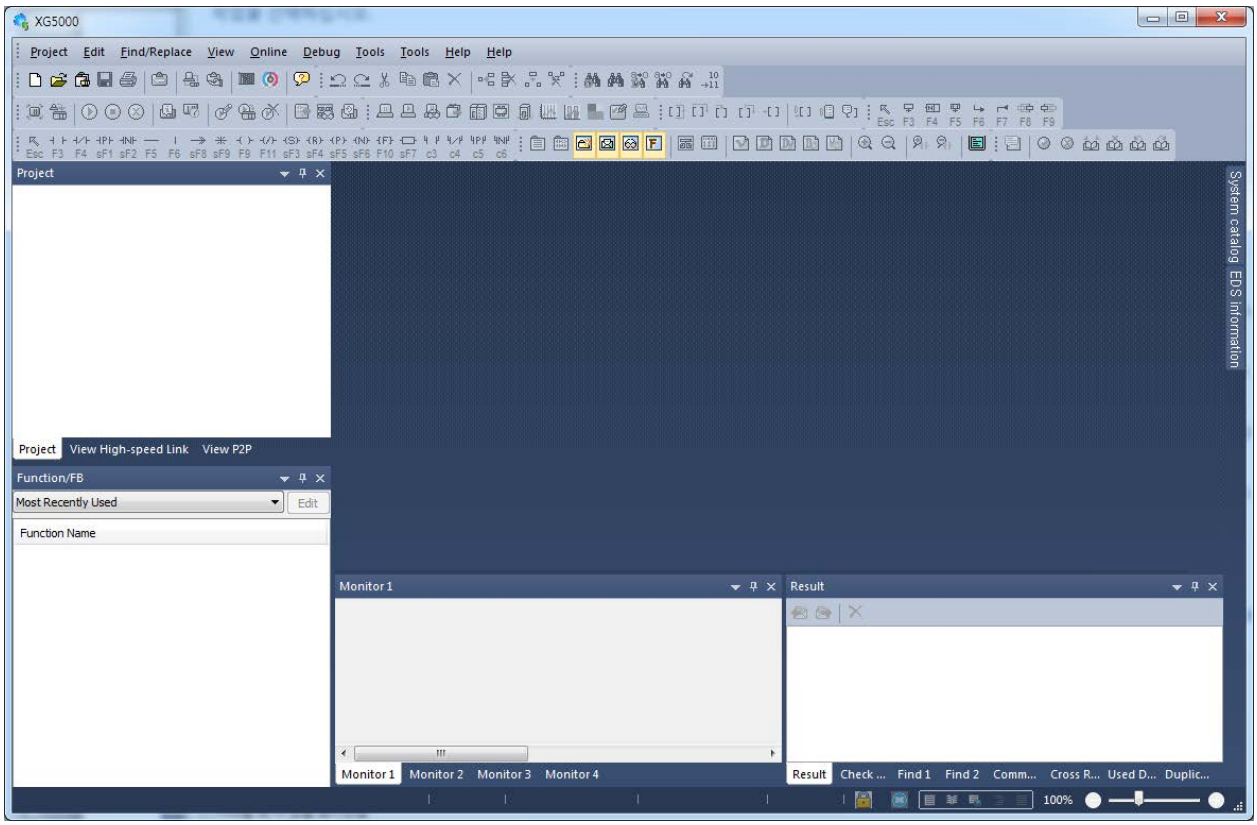
Note

(1) You can download the above software from our web site. In case Internet is available, visit the nearest distributor and get the installation CD.
Web site address: http://eng.lsis.biz/
(2) You can program the XG5000 through the RS-232C port and USB of the CPU module. For the cable, refer to wiring diagram of the CPU module.
(3) You can program SyCon through the “Config” port of the Pnet I/F module. Only 9-pin serial port is available and simultaneous connection with XG5000 is not available.
(4) In case you use the product other than available version, some function may not work properly. If possible, use the recommended version and check the compatibility.

1.4.2 XG5000

XG5000 is software tool dedicated for the communication module including Pnet I/F module. Setting the basic parameter, writing the frame and network diagnosis are available for the communication module. Fore more detail, refer to Ch5. XG5000.

The following figure is an initial screen of the XG5000



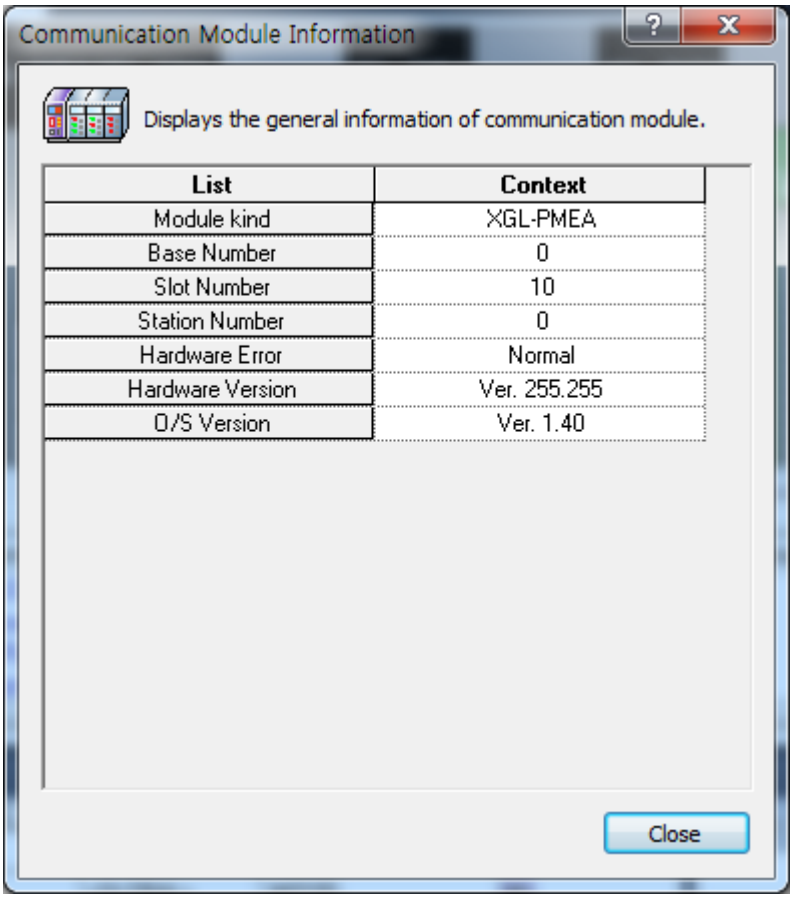
[Figure 1.4.1] XG5000 initial screen

1.4.3 Checking the version

Before using the Pnet I/F module, check the version of the module

(1) Check through the XG5000
This is method reading the communication module information through online connection
If it is under normal interface with the CPU, you can get the information as follows.

a) Execute the XG5000
b) Connect to the CPU through “Connect” on the “Online” menu.
c) After connection, execute [Online]-[Communication module setting]-[System Diagnosis]
d) In the “System Diagnosis” screen, select “Module Information” by double-clicking the communication module and pop-up window
e) Software information appears at the right-bottom.



List	Context
Module kind	XGL-PMEA
Base Number	0
Slot Number	10
Station Number	0
Hardware Error	Normal
Hardware Version	Ver. 255.255
O/S Version	Ver. 1.40

[Figure 1.4.2] Checking the version of the module through the XG5000

(2) Check through the case label of the product

The module information is attached at the external case every communication modules
In case online connection is not available, take a module apart and check the label in the module case.

Chapter 2 Specifications

2.1 General Specifications

General specifications of XGT series are as specified below in Table 2.1.

No.	Items	Specification				Reference
1	Ambient Temp.	0 ~ 55 °C				
2	Storage Temp.	–25 ~ +70 °C				
3	Ambient humidity	5 ~ 95%RH (Non-condensing)				
4	Storage humidity	5 ~ 95%RH (Non-condensing)				
5	Vibration Immunity	Occasional vibration			-	IEC61131-2
		Frequency	Acceleration	Pulse width	Times	
		5≤f< 8.4 Hz	-	3.5mm	10 times each direction (X,Y and Z)	
		8.4≤f≤150 Hz	9.8 ㎧(1G)	-		
		Continuous vibration				
		Frequency	Acceleration	Pulse width		
		5≤f< 8.4 Hz	-	1.75mm		
		8.4≤f≤150 Hz	4.9 ㎧(0.5G)	-		
6	Shocks Immunity	• Peak acceleration : 147 m/s^2(15G) • Duration : 11ms • Pulse wave type : Half-sine (3 times each direction per each axis)				IEC61131-2
7	Noise Immunity	Square wave impulse noise	AC : ±1,500V DC : ±900V			LSIS internal test spec.
		Electrostatic discharge	Voltage: 4kV (Contact discharge)			IEC61131-2 IEC61000-4-2
		Radiated electromagnetic field noise	80 ~ 1000 MHz, 10V/m			IEC61131-2, IEC61000-4-3
		Fast transient /Burst noise	Classification	Power supply	Digital/Analog Input/Output, Communication Interface	IEC61131-2 IEC61000-4-4
			Voltage	2kV	1kV	
8	Operation ambience	Free from corrosive gases and excessive dust				
9	Altitude	Less than 2,000m				
10	Pollution degree	Less than 2				
11	Cooling method	Air-cooling				

Table 2.1 General Specifications

Note

1) IEC (International Electrotechnical Commission):
An international nongovernmental organization which promotes internationally cooperated standardization in electric/electronic field, publishes international standards and manages applicable estimation system related with.

2) Pollution degree:
An index indicating pollution degree of the operating environment which decides insulation performance of the devices. For instance, Pollution degree 2 indicates the state generally that only non-conductive pollution occurs. However, this state contains temporary conduction due to dew produced.

2.2 Performance Specifications

Performance specifications of Pnet I/F module are as described below.

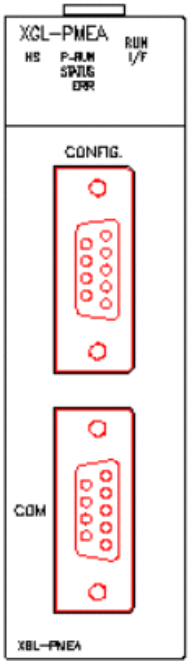
Item	Details	
Module Type	Master	
Network Type	Profibus-DP	
Standard	EN50170/DIN19245	
Interface	RS-485 (Electric)	
Transmission Route	Bus type	
Modulation Type	NRZ	
MAC	Local Token Ring	
Max. Distance & Transmission Speed	Distance (m)	Transmission Speed (bps)
	1,200	9.6k/19.2k/93.7k/187.5k
	400	500k
	200	1.5M
	100	3M/6M/12M
Max. number of stations per network	126	
Max. number of stations per segment	32 (including master & repeater)	
Max. number of modules per node	24 modules	
Cable used	Electric-twist shielded pair cable	
Max. communication size	7 KB	
Max. size per slave	244 bytes	
Max. number of units to be installed	XGK-CPUH/XGI-CPUU	XGK-CPUS/CPUA/CPUE
	12	12
Installation Position	XGK-CPUH/XGI-CPUU	XGK-CPUS/CPUA/CPUE
	Basic base ~ expansion stage 7	Basic base ~ expansion stage 3
Communication Parameters to set	XG5000 , SyCon (XGL-PMEA Dedicated Configuration Tool) PROFICON (XGL-PMEC Dedicated Configuration Tool)	
Internal-consumed current (mA)	550(XGL-PMEA), 450(XGL-PMEC)	
Weight (g)	114(XGL-PMEA), 112(XGL-PMEC)	

[Table 2.2] Performance Specifications

2.3 Structure & Characteristics

2.3.1 Structure of Pnet I/F module

(1) Structure of XGL-PMEA



◀ Designation area

◀ LED display

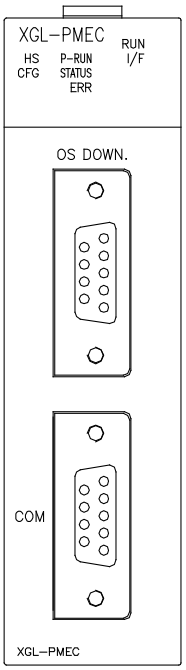
◀ Connection area of Sycon Configuration Tool

◀ Connection area of communication cable

LED		Status	LED description
RUN	On	Normal	Completion of initialization
	Off	Error	Occurrence of error
I/F	Flickering	Normal	Normal status of CPU module and interface
	Off	Error	Error of CPU module and interface
HS	On	Normal	Service is normal status when High-speed link is enabled
	Flickering	Stand by	Communication break status between Pnet I/F module and slave when downloading by Sycon
	Off	Error	High-speed link service error occurred when High-speed link is enabled
P-RUN	Flickering	Stop	Stop status of communication status between Pnet I/F module and slave module
	On	Run	Run status of Communication between Pnet I/F module and slave module
STAT	On	Normal	Normal status of High-speed link communication
	Off	Error	Abnormal status of Master module
ERR	On	Error	It needs to check the slave module
	Off	Normal	Normal status

[Table 2.3.1] LED display of XGL-PMEA

(2) Structure of XGL-PMEC



◀ Designation area

◀ LED display

◀ Firmware Download Port

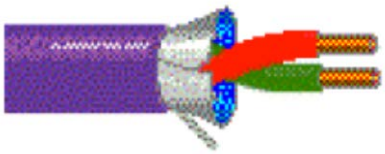
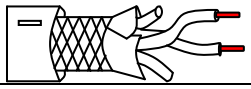
◀ Connection area of communication cable

LED		Status	LED description
RUN	On	Normal	Completion of initialization
	Off	Error	Occurrence of error
I/F	Flickering	Normal	Normal status of CPU module and interface
	Off	Error	Error of CPU module and interface
HS	On	Normal	Service is normal status when High-speed link enabled
	Flickering	Stand by	Communication break status between Pnet I/F module and slave when downloading by PROFICON
	Off	Error	High-speed link service error occurred when High-speed link is enabled
P-RUN	On	Under communication	Normal communication between the Pnet I/F module and slave
	Flickering	Under communication	Clear communication between the Pnet I/F module and slave (I/O data 0)
	On	Communication stop	Communication stop status between the Pnet I/F module and slave
STATUS	On	Error	System error
	Flickering	Auto-scan	System auto-scan mode
	Off	Normal	System normal
ERR	On	Error	Bus error (line short, different communication speed, and etc.)
	Flickering	Error	There is disconnection during communicating with the slave module
	Off	Normal	Normal status
CFG	On	Error	There is no Configuration Setting in the Pnet I/F module
	Flickering	Normal	Downloading or uploading the Configuration Setting
	Off	Normal	A Pnet I/F module is configured normally

[Table 2.3.2] LED Display of XGL-PMEC

2.4 Cable Specifications

2.4.1 Cable Specifications

Classification	Details	
AWG	22	
Type	BC-Bare Copper	
Insulation	PE-Polyethylene	
Insulated strength	0.035 (Inch)	
Shield	Aluminum Foil- Polyester Tape/Braid Shield	
Capacitance	8500 pF/ft	
Characteristic impedance	150Ω	
Number of cores	2	

Remark

1. Cable type
   1) Tomas cable: Profibus-DP UNITRONIC-BUS L2/FIP/BUS
   2) Belden cable: 3079A

Chapter 3 Installation and Test Operation

3.1 Precautions for Installation

3.1.1 Precautions for Installation

For system configuration through Pnet I/F module, carefully make sure of the following items prior to installation.

1) Check the basic factors necessary for system configuration to select an appropriate communication module.
2) Select the exclusive Pnet cable to be used for this communication module.
3) Before the communication module is installed, check for any foreign material on the base connector the module will be installed on and any damage on the connector pin of the module.
4) All the communication modules can be installed on the basic base ~ the expansion base. For the number of available expansion base by CPU, refer to the following table.

Item	XGK				XGI		XGR
	XGK-CPUH	XGK-CPUA	XGK-CPUS	XGK-CPUE	XGI-CPUU	XGI-CPUH	XGR-CPUH/T XGR-CPUH/F
Number of available expansion base (max.) (Available to equip communication module)	7	3	3	1	7	7	15

5) For installation of the module, exactly insert the protuberant part at the bottom of the module with the communication cable disconnected into the base groove and then apply enough strength until its top is locked up with the locking device of the base. If the lock is not applied, it may cause an error on the interface with CPU.

3.1.2 Installation of cable

Shielded Twisted Pair Cable is used as Profibus cable. The maximum transmission distance by specification, speed and type of cable is as shown below [Table 3.1] and [Table 3.2].

Characteristics	Type A	Type B
Impedance	135~160Ω (freq. 3~20MHz)	100~130Ω (freq. > 100kHz)
Capacity	Lower than 30 pF/m	Lower than 60 pF/m
Resistance	Lower than 110 Ω	-
Conductor Area	Larger than 0.34 mm^2 (22 AWG)	Lager than 0.22 mm^2 (24 AWG)

[Table 3.1] Specification of cable

Baud rate (Kbit/s)	9.6	19.2	93.75	187.5	500	1500	3000	6000	12000
Cable Type A	1200	1200	1200	1000	400	200	100	100	100
Cable Type B	1200	1200	1200	600	200	70	-	-	-

[Table 3.2] Trasmission distance by Cable and Speed

Remark

1) It defines two type of bus cable in Profibus standards. But it is usually recommended Type A which place is newly installed. The type name of A and B ask to cable maker.
2) AWG(American Wire Gauge): Number system of size(a diameter) of wire

1) General safety instruction
   (1) It has need to connect the termination resistor.
   (2) If distance between stations, it can be extended through extension of segment (Maximum 9 repeater, 10 segment). It can be connected 32 stations (repeater included) per segment and maximum 126 stations can be connected. (Repeater has no number of station) There are extension segment that has no station.
   (3) Shield of cable is grounded to housing of connector.
   (4) It has to use exclusive connector which is inductor built-in in internal.
   (5) It can not use the Spur Line.
   (6) If the gap between stations is large, a large current is able to flow on a shield. In this case, Install the cable which is set the a potential difference of ground. Special attention is required more than 1.5Mbps.
   (7) It maintains minimum distance more than 1m between station at 12Mbps.

2) Termination
   (1) Each segment has to terminate the end. If segment is many, every segment have to terminate the end.
   (2) Termination is able to On/Off by switch of exclusive connetor.
   (3) Install the Master the end of one part, if it is possible.

3.2 From Setting to Operation

The sequence of the product from installation to operation will be described below. After the product installation is complete, install and configure the system to be operated as specified in the following sequence.

Operation Sequence

↓

Install Pnet I/F module on the base.
→ Check the applicable base/slot position for correct installation.

↓

Configure the system between Pnet I/F module and slaves.
→ Use the exclusive Pnet cable for communication.

↓

With power On, check the LED status of the communication module.
→ Check if the interface of the communication module is normal with CPU.

↓

Specify the configuration through SyCon or PROFICON Configuration Tool.
→ Specify the module to be configured as Pnet I/F master module and download it.

↓

Download High-speed link parameters.
→ Upload SyCon from XG5000, set Send/Receive parameters, download High-speed link parameters and let link enabled. (operation of the product)

↓

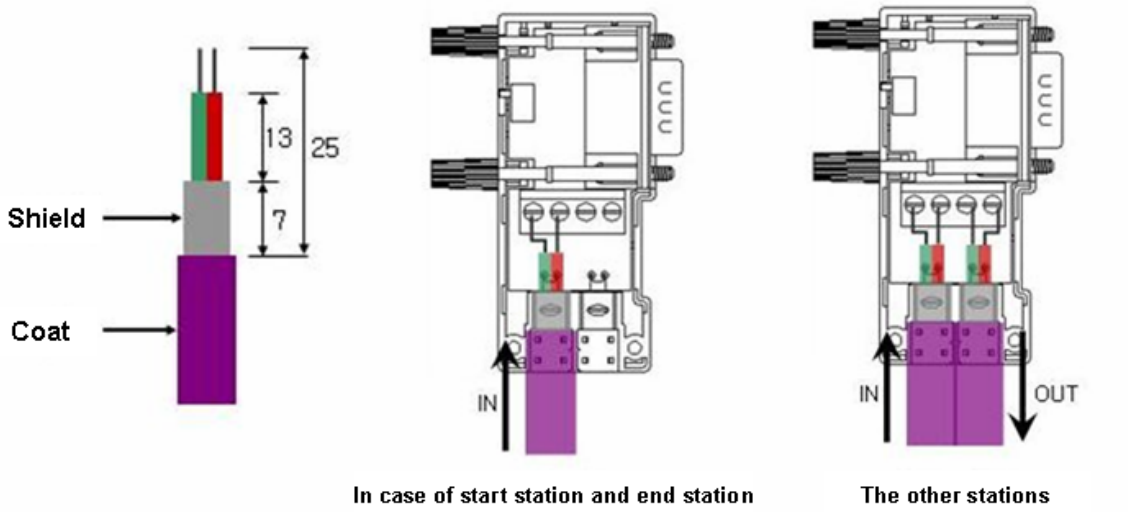
Use system diagnosis function in XG5000 to check the normal operation of the product.

↓

Start Run

3.3 Installation of the product

3.3.1 Installation of XGL-PMEA/PMEC



[Figure 3.1] The method of Pnet cable installation

Remark

1) Installation length of Pnet cable depends on the communication speed. (Refer to [Table] 3.2)

1) How to install Pnet cable
   (1) Use Profibus-DP cable.
   (2) When slipping the coat of the cable, be careful not to let the shielded line escaped from PCB of the connector.
   (3) The number of stations to be installed shall be within 32 including master and repeater for 1 segment.
   (4) The shielded line of the cable shall be in contact with the shielded area of the connector.
   (5) The cable is generally recommended to be installed at the end of the slave, diverged from the master.
   (6) If the cable is used at the object car, use the extended line.
   (7) Communication cable shall be installed at least 10cm away from the power supply cable.
   (8) Check the cable connected with the connector if tightened well with terminal block.
   (9) After the cable connected, measure the line resistance value on the master by means of digital multi-meter. (If terminal resistance at the both ends of the cable is On, it will be generally 110Ω + line resistance value + connector resistance value)

3.4 Test Operation

Terminal resistance switch of Pnet cable shall be On. If the switch is not On, communication errors may occur. Check LED operation status if normal with power on after communication cable is connected. If normal, download the applicable program to PLC via XG5000 so to execute the program.

3.4.1 Precautions for system configuration

1) Station No. of each slave shall be surely different from each other including this module. If connected with the repeated station No., communication error may occur, leading to communication trouble. High-speed link station No. of all stations also shall be different from each other to use High-speed link service.
2) Use the communication cable as specified only. If not, serious error may occur to communication.
3) Check communication cable if disconnected or shorted prior to installation.
4) Tighten up communication cable connector until connected firmly. If cable connection is unstable, serious error may occur to communication.
5) If remote communication cable is connected, keep the cable far away from power line or inductive noise.
6) Since the coaxial cable is not flexible, it is to be diverged min. 30cm away from the connector in communication module. If the cable is bent at a right angle or transformed compulsorily, cable disconnection or connector damage in communication module will be caused.
7) If LED operation is abnormal, refer to Chapter 9 Troubleshooting to check for causes and take actions against. Contact service center if the error is as before.

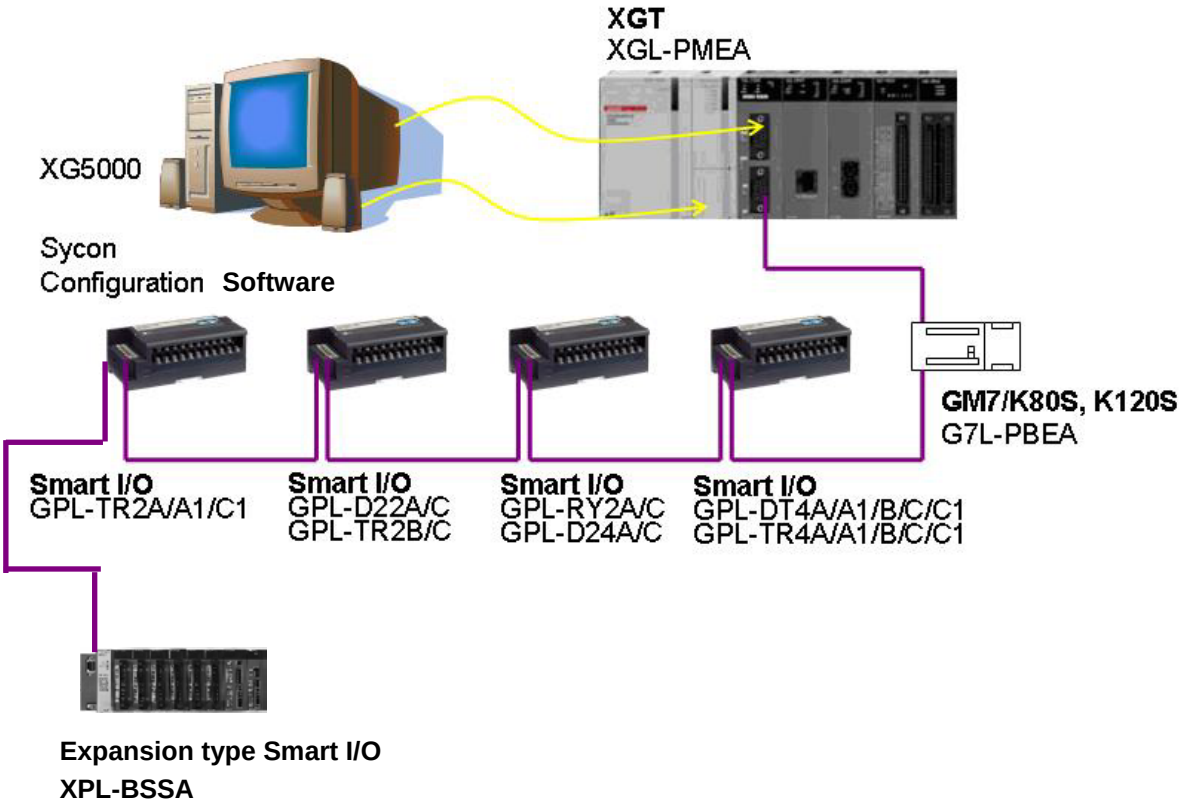
Chapter 4 System Configuration

4.1 System Configuration of Network

4.1.1 XGT Pnet + Smart I/O

Communication system of Pnet I/F modules is as shown below.

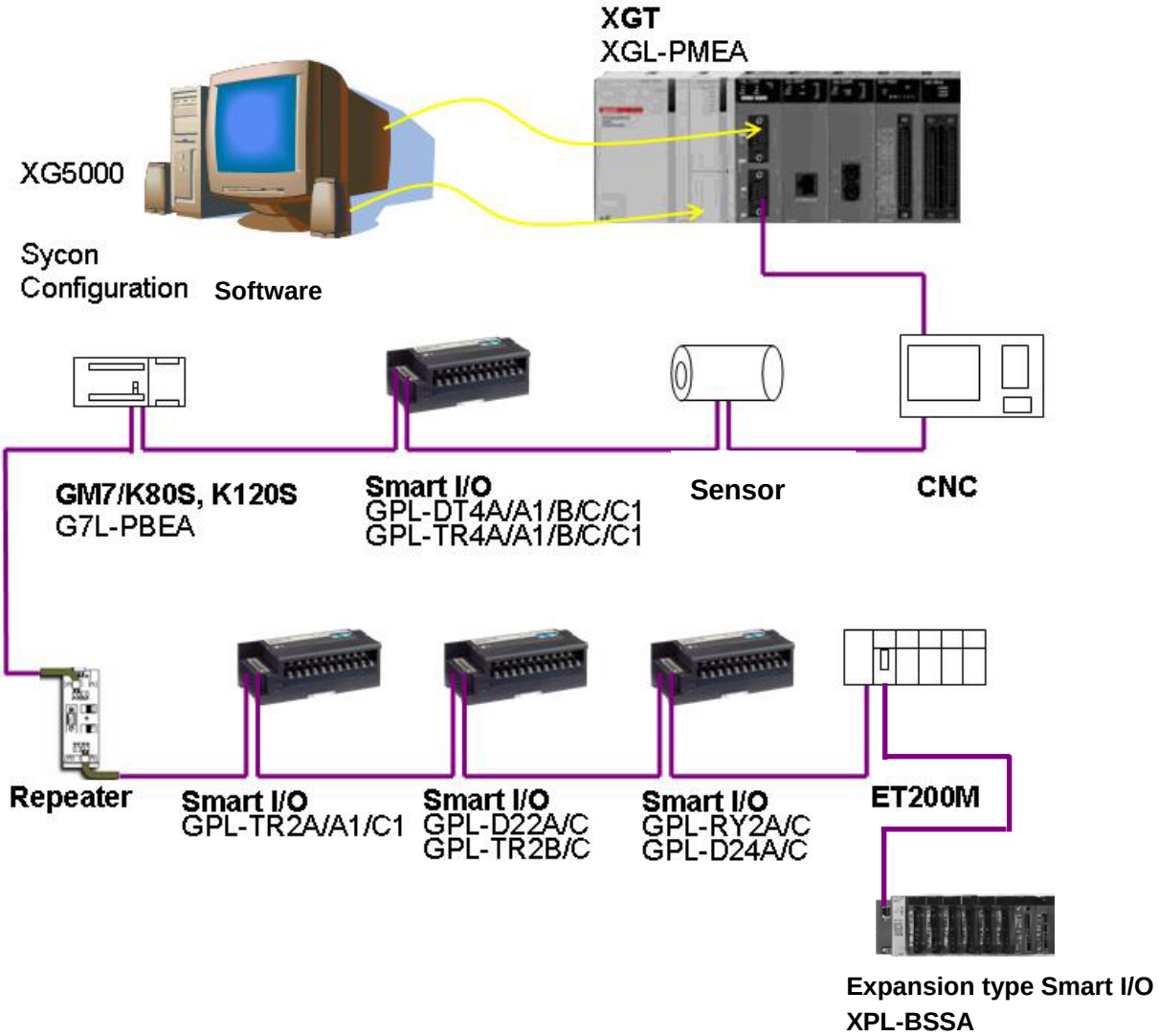
Master have to set XGL-PMEA and the others have to set slave module. To connect LS inverter, Pnet I/F module have to install applicable product then it will be communicate.



[Figure 4.1] XGT Pnet + Smart I/O diagram

4.1.2 XGT Pnet + Composite System

If it is used with another company product, GSD file provided by the maker is needed. After GSD file is copied to GSD folder of Pnet configuration software tool(SYCon,PROFICon) and then if you use Pnet configuration software tool(SYCon,PROFICon), you can configure the slave modules in the network automatically.



[Figure 4.2] XGT Pnet + Composite system Diagram

Chapter 5 Communication Program

There is one communication function available in Pnet I/F module as described below.

5.1 Communication Program

5.1.1 Type of communication program

(1) High-speed link

High-speed link as a communication method between XGT PLC communication module and slave module is used to exchange data or information with destination station periodically for a specific time, through which the changed data of self station or the destination station can be referred to periodically for efficient application to the operation system and execution of communication is available only with simple parameters setting.

How to set parameter is, download the configuration data to the communication module by means of “Pnet configuration tool. And then upload the downloaded file in the XG5000. And then, specify the self station area and destination station area for sending/receiving in the high speed link parameter. Download the specified parameters and let the link enabled to execute High-speed link communication.

Data size is available from the min. 1 byte (16 points) to 244 bytes for the communication, communication period from the min. 20 ms up to 10 sec. based on the communication details. It is easy to use because communication with destination station is available only through simple parameters setting. And it is also useful for periodic process of lots of data at a time thanks to high processing speed of the internal data.

(2) Configuration tool

In order to use a Pnet I/F module, you have to configure the system by ‘SyCon’ and ‘PROFICON’ configuration tool and then download it to the Pnet I/F module

For detail on the setting method, refer to how to set the configuration tool

5.2 XG5000

In order to use Pnet I/F module, set High-speed link parameters (after SyCon/PROFICON Configuration is uploaded) and then download the specified parameters onto CPU for application, which is available through the XG5000.

Note

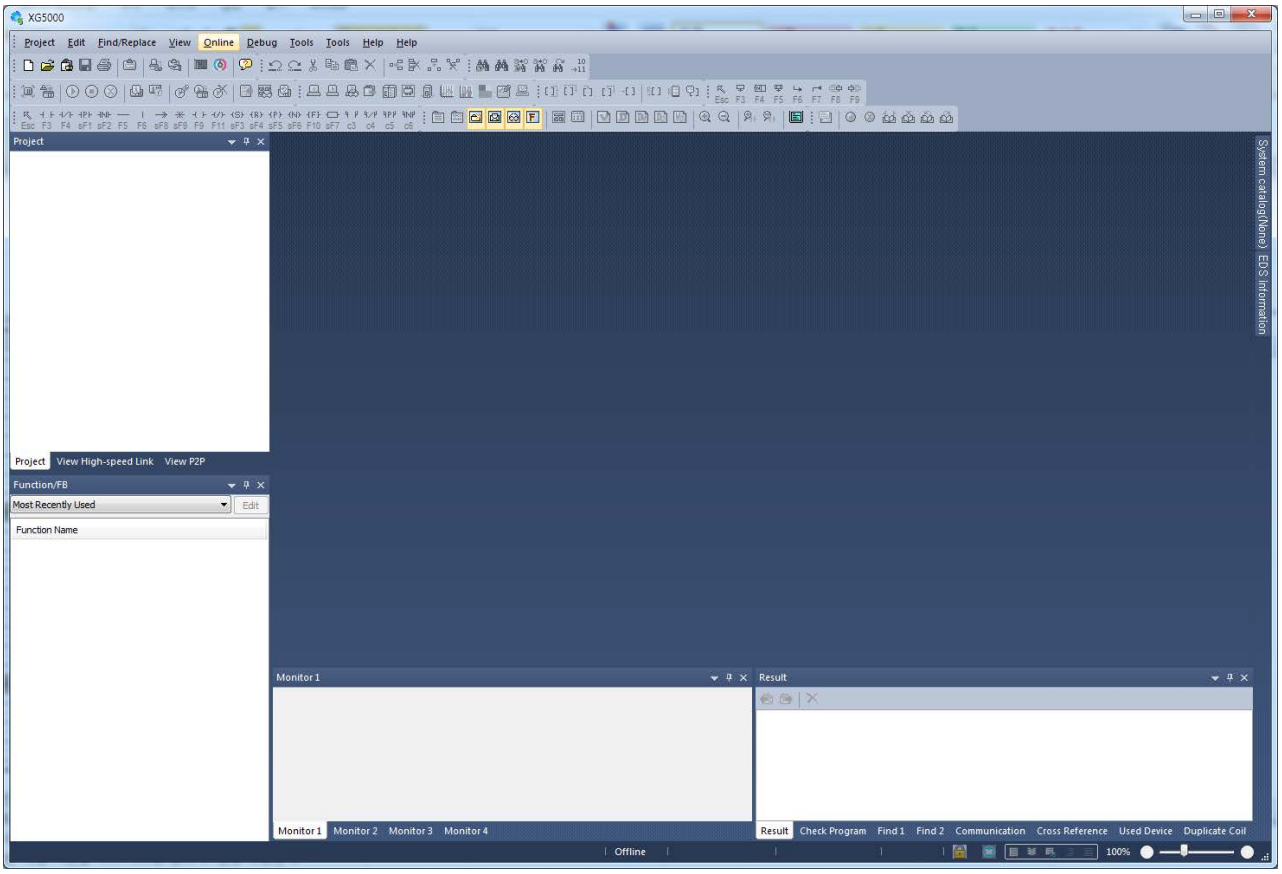
(1) How to set XG5000 is same though CPU type is different.

1) CPU type: XGK, XGI, XGR system common

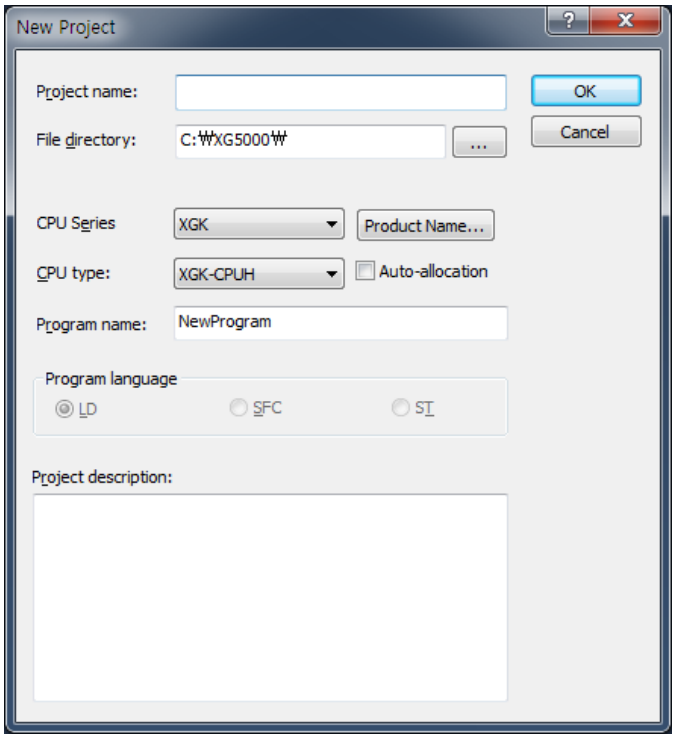
5.2.1 Setting PLC type

To connect the XG5000 to the PLC, you have to set the PLC type. Create the new project by selecting [File] → [New File]. On the new project menu, input the project name, project type and PLC type as shown below

[Fig. 5.2.1] is initial screen of the XG5000



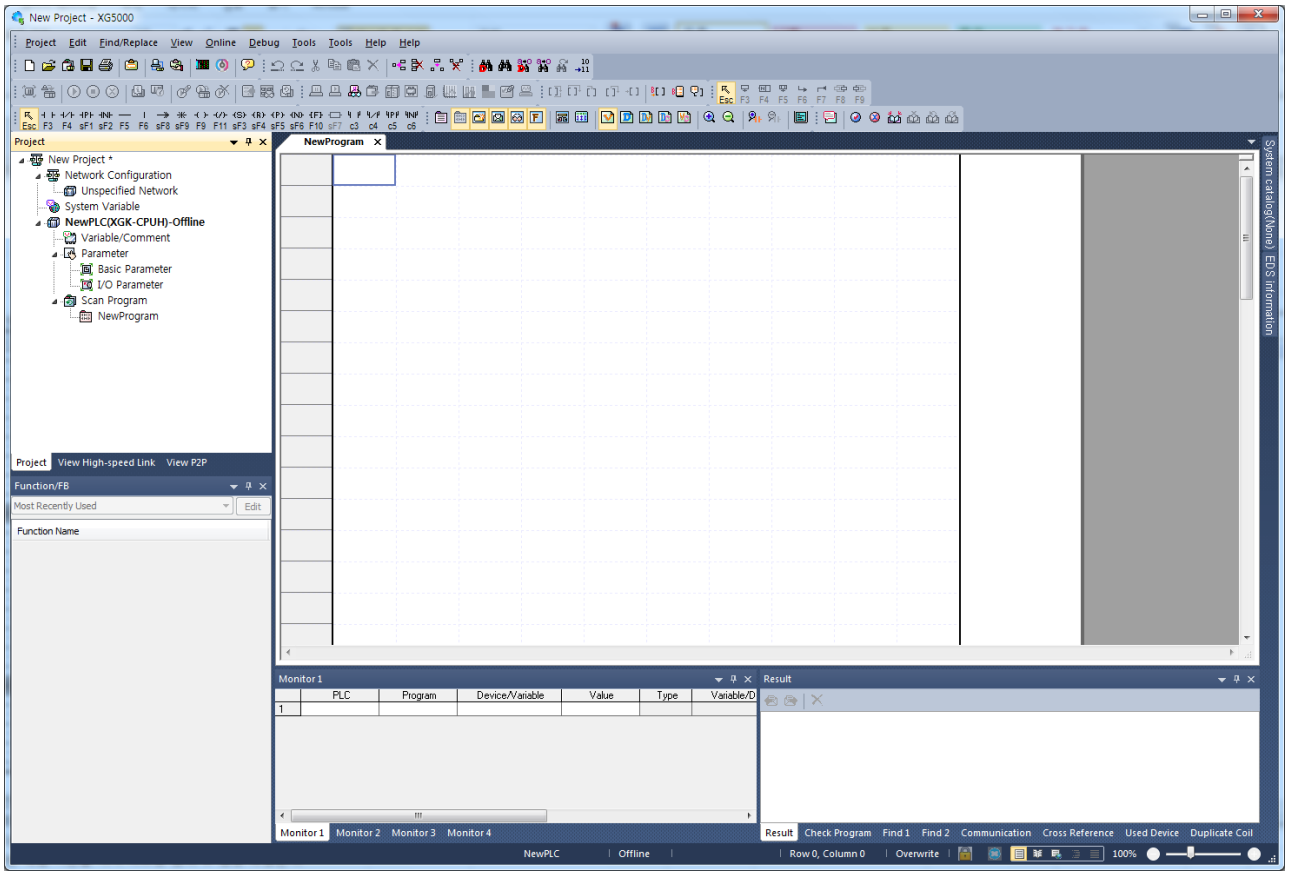
[Figure 5.2.1] initial screen of the XG5000



[Figure 5.2.2] Creation of new project

Items	Contents		Remark
Project name	Writing the project name in the XG5000 software.		
File location	Selecting the directory to save the project.		
PLC Series	Selecting the PLC series (XGK, XGB, XGI, XGR)		
CPU kind	XGK	XGK-CPUA, CPUE, CPUH, CPUS, CPUU	
	XGB	XGB-DR16CS, XBMS, XBCH, XECH, XBCE, XBCS, XBCHL	
	XGI	XGI-CPUU, CPUU/D, CPUH, CPUE, CPUS	
	XGR	XGR-CPUH/T, XGR-CPUH/F	
Project comment	Writing the comment about the project.		

There are 4 types of PLC (XGK, XGB, XGI, and XGR). For detail on the CPU, refer to CPU manual. Here we select XGK for example. After setting, menu of [Figure 5.2.3] appears



[Figure 5.2.3] Initial menu of XG5000

5.2.2 Registration of the communication module

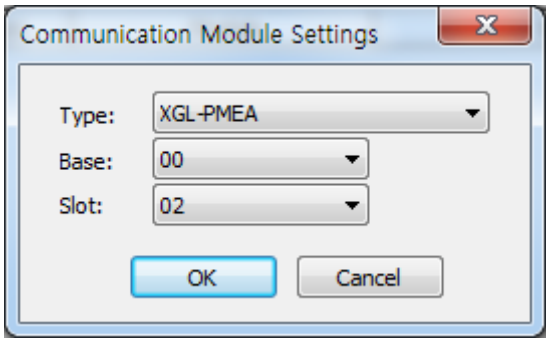
This describes on the basic setting needed for operation of Pnet I/F module

(1) Selection of the communication module

For the basic setting of the communication module in the XG5000, you have to register the communication module at the applicable base, slot position of Standard setting window. You can register the communication in the both ON/OFF status.

1) Registration in the offline status

If you want to register the communication without connection,
select [Project]-[Add Item]-[Communication Module]. And then select “PLC type” and click “Add Module”.
If the following screen appears, select the Pnet in the Type and specify the slot number.

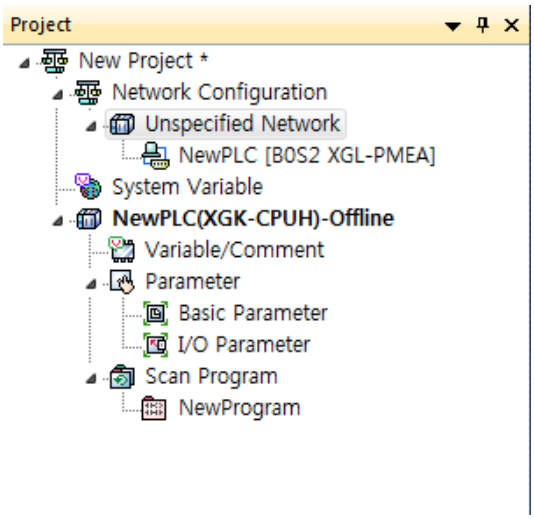


[Figure 5.2.4] basic setting of the XG5000 (Communication module setting)

Item		Description
Communication module setting	Type	Selects Pnet (XGL-PMEA or XGL-PMEC)
	Base	Indicates the base position of the module
	Slot	Specifies the slot position of the module Setting range is different depending on the base type

[Table 5.2.1] Registration of the communication module

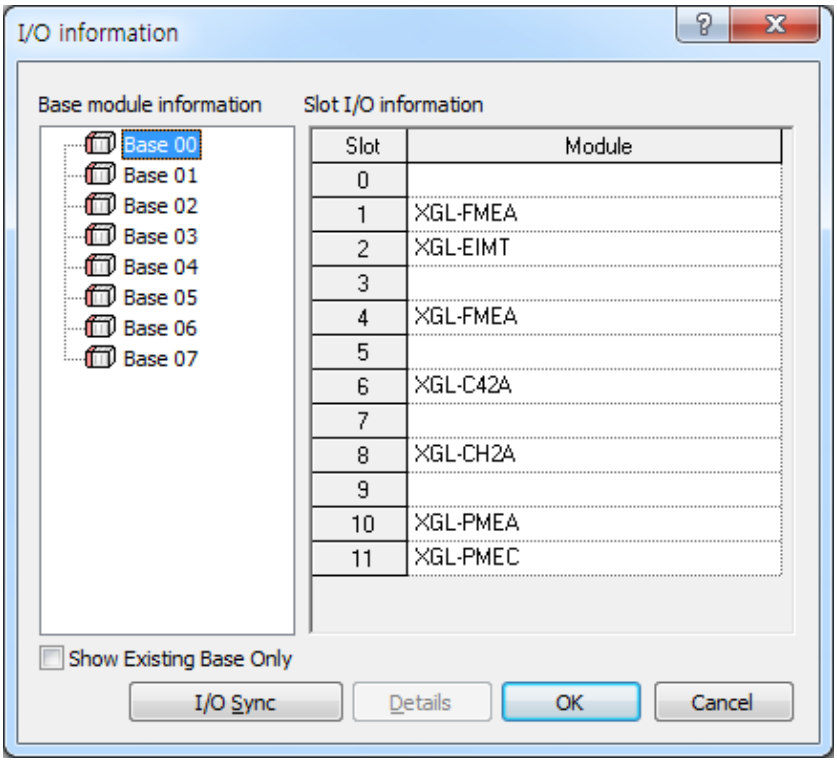
If you register the module at BASE 0, Slot 2, it becomes as follows



[Figure 5.2.5] Standard setting registration screen

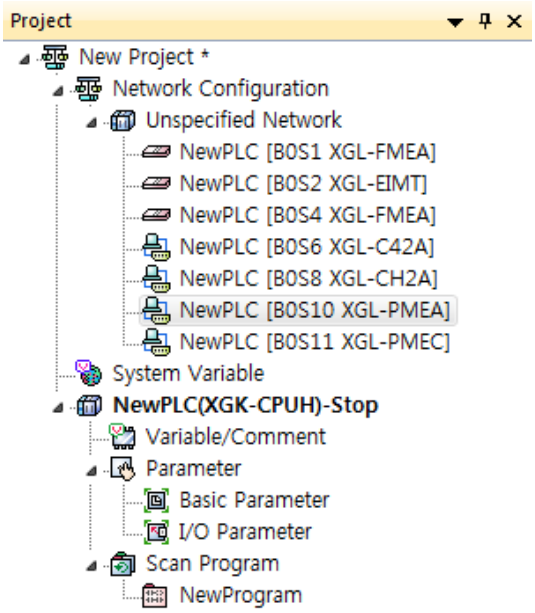
2) Registration in the online status

Connect to the XGT CPU module. After connection, if you select [Online]-[Diagnosis]-[I/O Information…], then click “I/O Sync], it searches all communication module and register them automatically



[Figure 5.2.6] Read IO Information

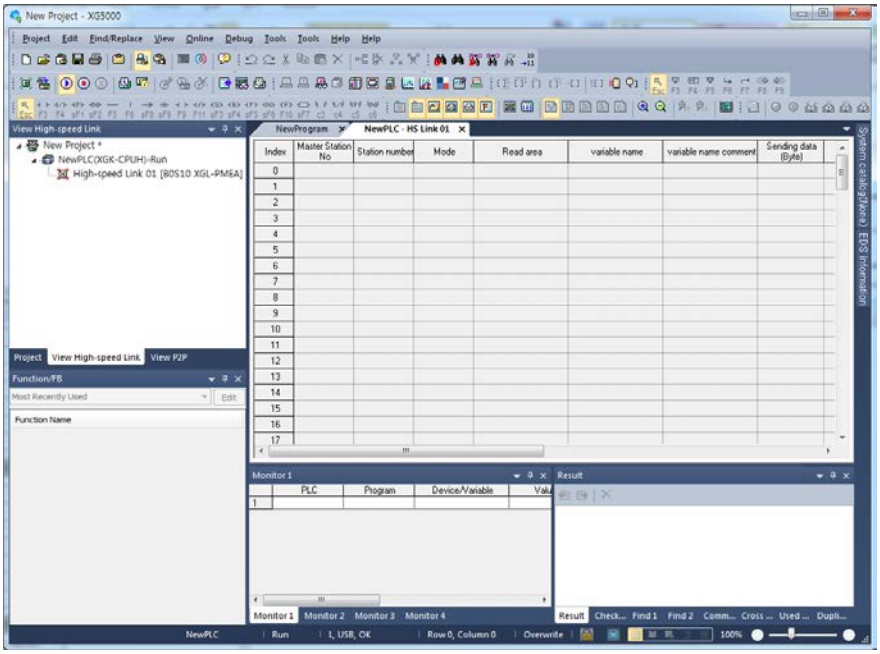
In case Pnet is installed at the base 0, slot 10 and 11, it searches and registers as follows.



[Figure 5.2.7] Standard setting screen

5.2.3 Uploading High Speed Link parameter and setup

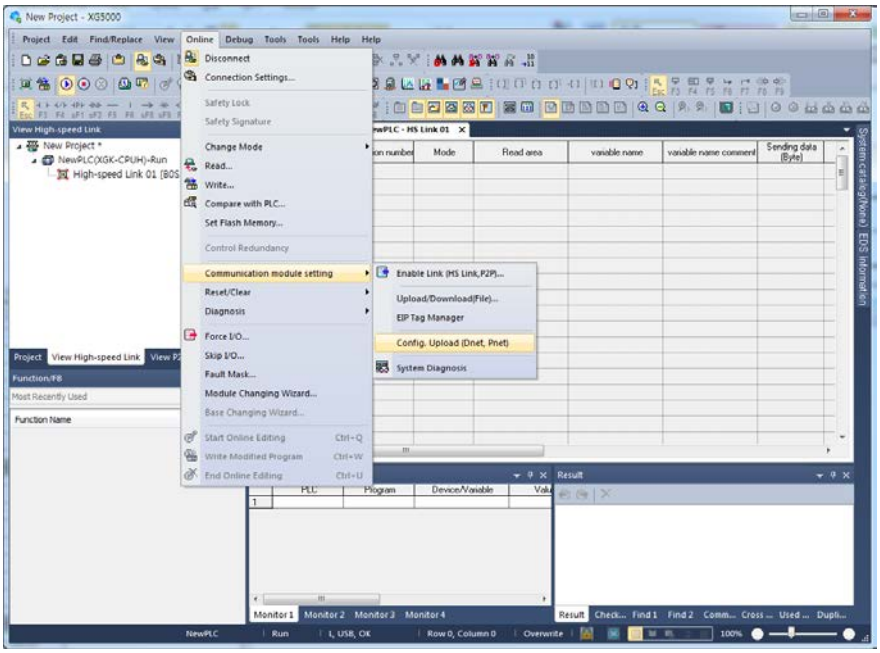
(1) Screen of communication module specified



[Figure 5.2.9] Communication Module Settings

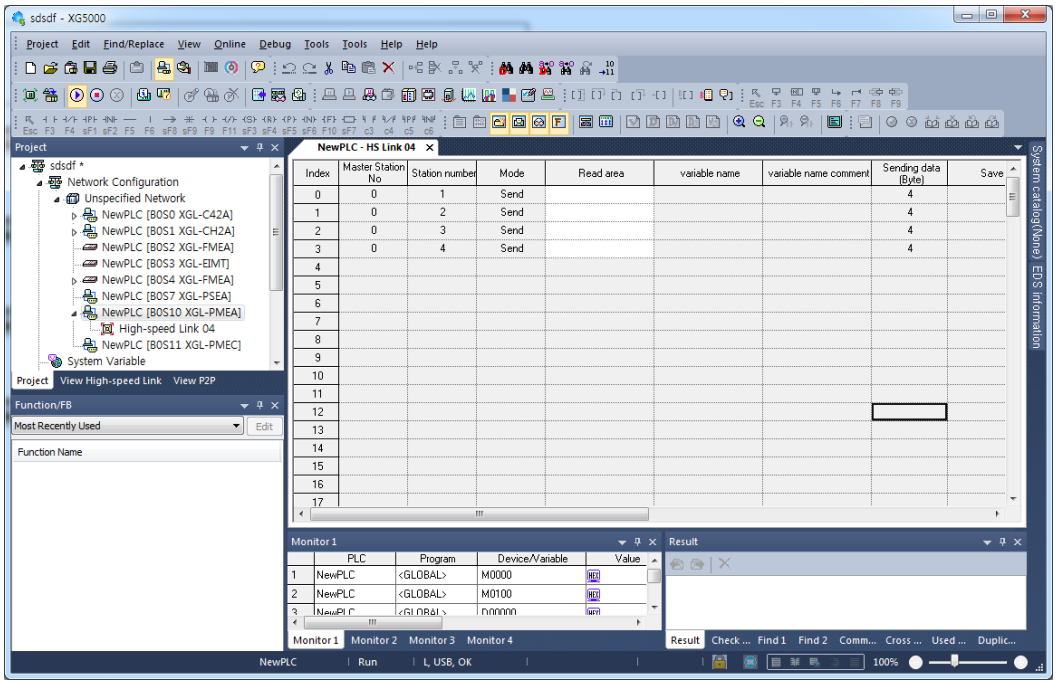
(2) Uploading a configuration tool (SyCon is used for example)

With the mouse cursor positioned on “High-speed link1”, select [Online]-[Communication module setting]-[Config. Upload (Dnet, Pnet)]



[Figure 5.2.10] SyCon Upload

(3) Screen after “SyCon Upload”



[Figures 5.2.11] Screen after SyCon uploaded

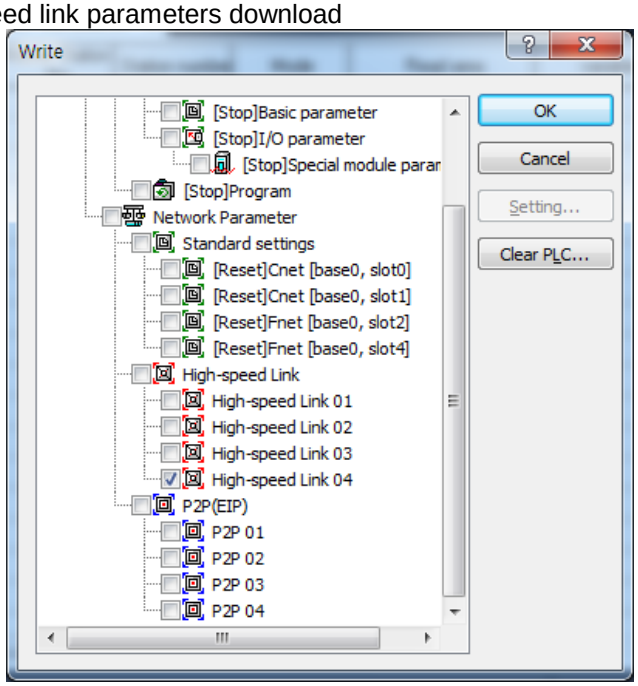
(4) High-speed link parameter settings

Classification	Details	
Master Station No.	Display the Master station no.	
Station No. *1	Setting range for the slave : 0 ~ 126 If identical station No. is set, communication will not be normal.	
Mode *1	Sending : Transmission the data from master module to slave module. Receiving : Transmission the data from slave module to master module.	
Read area (Master module → Slave module)	XGK	Area to set the start address of device used for Sending. Setting device : P, M, K, F, T, C, U, Z, L, N, D, R, ZR
	XGI	Area to set the start address of device used for Sending. Setting device : A, M, I, Q, R, W, F, K, L, N, U
Save area (Slave module → Master module)	XGK	Area to set the start address of device used for Receiving. Setting device : P, M, K, F, T, C, U, Z, L, N, D, R, ZR
	XGI	Area to set the start address of device used for Receiving. Setting device : A, M, I, Q, R, W, F, K, L, N, U
Send data Receive data (Byte)	Display input/output points of slave module by the bytes. - In case of I/O module of 8 bits or less, please set 1 byte.	

*1 : Area is not able to set

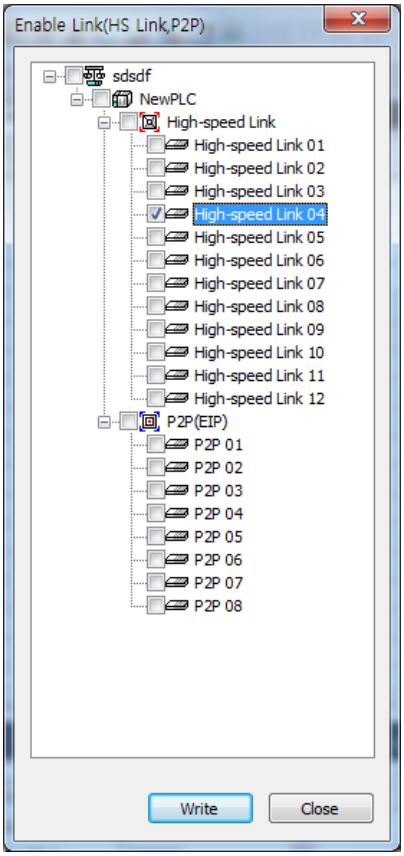
[Table 5.2.2] High-speed link Block Settings

(5) High-speed link parameters download



[Figure 5.2.12] High-speed link parameters download

(6) Enabling the Link



[Figure 5.2.13] Link Enable of High-speed link parameters

* Enable Link through flag
It describes “Enable Link” method through flag. The following XG5000 version, CPU OS version is needed.

Item	Version
XG5000	V3.61 or above
XGR CPU	V1.91 or above
XGI CPU	V3.4 or above
XGK CPU	V3.7 or above

Flag list related with “Enable Link”

-XGR

Flag	Data type	Device	Description
_HS_ENABLE_STATE	ARRAY[0..11] OF BOOL	%FX19040	HS link enable/disable current state
_HS_REQ	ARRAY[0..11] OF BOOL	%FX31520	HS link enable/disable request
_HS_REQ_NUM	ARRAY[0..11] OF BOOL	%FX31536	HS link enable/disable setting
_P2P_ENABLE_STATE	ARRAY[0..7] OF BOOL	%FX19072	P2P enable/disable current state
_P2P_REQ	ARRAY[0..7] OF BOOL	%FX31552	P2P enable/disable request
_P2P_REQ_NUM	ARRAY[0..7] OF BOOL	%FX31568	P2P enable/disable setting

-XGI

Flag	Data type	Device	Description
_HS_ENABLE_STATE	ARRAY[0..11] OF BOOL	%FX15840	HS link enable/disable current state
_HS_REQ	ARRAY[0..11] OF BOOL	%FX16480	HS link enable/disable request
_HS_REQ_NUM	ARRAY[0..11] OF BOOL	%FX16496	HS link enable/disable setting
_P2P_ENABLE_STATE	ARRAY[0..7] OF BOOL	%FX15872	P2P enable/disable current state
_P2P_REQ	ARRAY[0..7] OF BOOL	%FX16512	P2P enable/disable request
_P2P_REQ_NUM	ARRAY[0..7] OF BOOL	%FX16528	P2P enable/disable setting

-XGK

Flag	Data type	Device	Description
_HS1_ENABLE_STATE	BIT	F09600	HS link 1 enable/disable current state
_HS2_ENABLE_STATE	BIT	F09601	HS link 2 enable/disable current state
_HS3_ENABLE_STATE	BIT	F09602	HS link 3 enable/disable current state
_HS4_ENABLE_STATE	BIT	F09603	HS link 4 enable/disable current state
_HS5_ENABLE_STATE	BIT	F09604	HS link 5 enable/disable current state
_HS6_ENABLE_STATE	BIT	F09605	HS link 6 enable/disable current state
_HS7_ENABLE_STATE	BIT	F09606	HS link 7 enable/disable current state
_HS8_ENABLE_STATE	BIT	F09607	HS link 8 enable/disable current state
_HS9_ENABLE_STATE	BIT	F09608	HS link 9 enable/disable current state
_HS10_ENABLE_STATE	BIT	F09609	HS link 10 enable/disable current state
_HS11_ENABLE_STATE	BIT	F0960A	HS link 11 enable/disable current state
_HS12_ENABLE_STATE	BIT	F0960B	HS link 12 enable/disable current state
_HS1_REQ	BIT	F10300	HS link 1 enable/disable request
_HS2_REQ	BIT	F10301	HS link 2 enable/disable request
_HS3_REQ	BIT	F10302	HS link 3 enable/disable request
_HS4_REQ	BIT	F10303	HS link 4 enable/disable request
_HS5_REQ	BIT	F10304	HS link 5 enable/disable request
_HS6_REQ	BIT	F10305	HS link 6 enable/disable request
_HS7_REQ	BIT	F10306	HS link 7 enable/disable request
_HS8_REQ	BIT	F10307	HS link 8 enable/disable request
_HS9_REQ	BIT	F10308	HS link 9 enable/disable request
_HS10_REQ	BIT	F10309	HS link 10 enable/disable request
_HS11_REQ	BIT	F1030A	HS link 11 enable/disable request
_HS12_REQ	BIT	F1030B	HS link 12 enable/disable request
_HS1_REQ_NUM	BIT	F10310	HS link 1 enable/disable setting

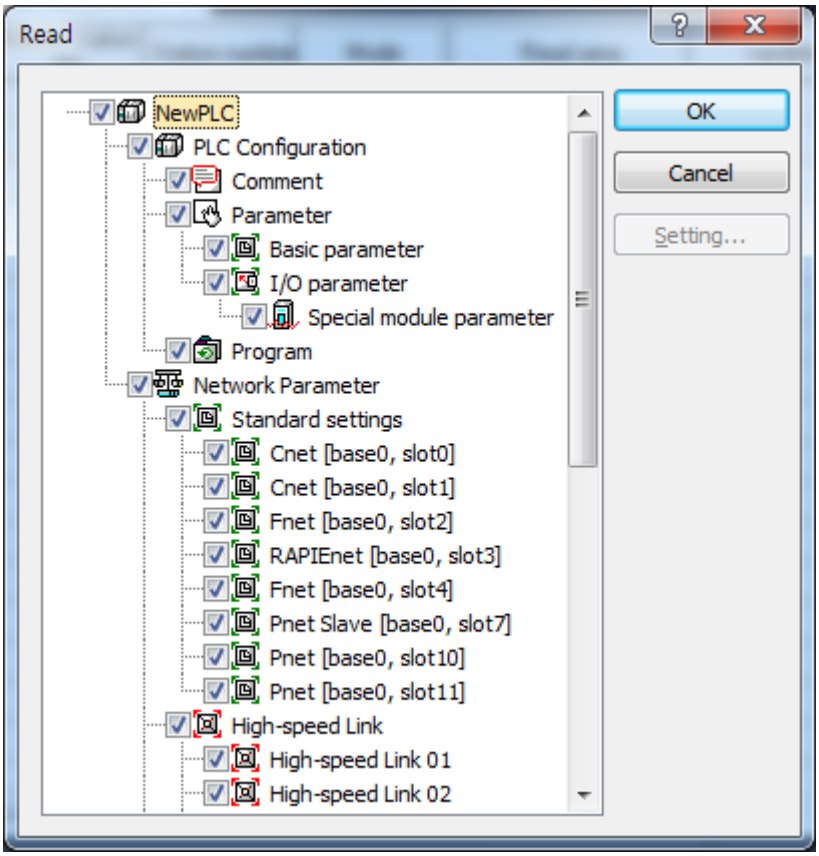
Flag	Data type	Device	Description
_HS2_REQ_NUM	BIT	F10311	HS link 2 enable/disable setting
_HS3_REQ_NUM	BIT	F10312	HS link 3 enable/disable setting
_HS4_REQ_NUM	BIT	F10313	HS link 4 enable/disable setting
_HS5_REQ_NUM	BIT	F10314	HS link 5 enable/disable setting
_HS6_REQ_NUM	BIT	F10315	HS link 6 enable/disable setting
_HS7_REQ_NUM	BIT	F10316	HS link 7 enable/disable setting
_HS8_REQ_NUM	BIT	F10317	HS link 8 enable/disable setting
_HS9_REQ_NUM	BIT	F10318	HS link 9 enable/disable setting
_HS10_REQ_NUM	BIT	F10319	HS link 10 enable/disable setting
_HS11_REQ_NUM	BIT	F1031A	HS link 11 enable/disable setting
_HS12_REQ_NUM	BIT	F1031B	HS link 12 enable/disable setting
_P2P1_ENABLE_STATE	BIT	F09620	P2P1 enable/disable current state
_P2P2_ENABLE_STATE	BIT	F09621	P2P2 enable/disable current state
_P2P3_ENABLE_STATE	BIT	F09622	P2P3 enable/disable current state
_P2P4_ENABLE_STATE	BIT	F09623	P2P4 enable/disable current state
_P2P5_ENABLE_STATE	BIT	F09624	P2P5 enable/disable current state
_P2P6_ENABLE_STATE	BIT	F09625	P2P6 enable/disable current state
_P2P7_ENABLE_STATE	BIT	F09626	P2P7 enable/disable current state
_P2P8_ENABLE_STATE	BIT	F09627	P2P8 enable/disable current state
_P2P1_REQ	BIT	F10320	P2P1 enable/disable request
_P2P2_REQ	BIT	F10321	P2P2 enable/disable request
_P2P3_REQ	BIT	F10322	P2P3 enable/disable request
_P2P4_REQ	BIT	F10323	P2P4 enable/disable request
_P2P5_REQ	BIT	F10324	P2P5 enable/disable request
_P2P6_REQ	BIT	F10325	P2P6 enable/disable request
_P2P7_REQ	BIT	F10326	P2P7 enable/disable request
_P2P8_REQ	BIT	F10327	P2P8 enable/disable request
_P2P1_REQ_NUM	BIT	F10330	P2P1 enable/disable setting
_P2P2_REQ_NUM	BIT	F10331	P2P2 enable/disable setting
_P2P3_REQ_NUM	BIT	F10332	P2P3 enable/disable setting
_P2P4_REQ_NUM	BIT	F10333	P2P4 enable/disable setting
_P2P5_REQ_NUM	BIT	F10334	P2P5 enable/disable setting
_P2P6_REQ_NUM	BIT	F10335	P2P6 enable/disable setting
_P2P7_REQ_NUM	BIT	F10336	P2P7 enable/disable setting
_P2P8_REQ_NUM	BIT	F10337	P2P8 enable/disable setting

▶ How to enable link
  -HS link/P2P enable/disable setting flag ON → HS link/P2P enable/disable request flag ON
▶ How to disable link
  -HS link/P2P enable/disable setting flag OFF → HS link/P2P enable/disable request flag ON
▶ You can monitor the Enable/Disable state of the each link through “enable/disable current states” flag.

(7) Read

(a) Connect to CPU.

(b) After connected, select On-line and Read Parameter to display the screen as shown in [Figure. 5.2.16] and then, check the applicable parameters and click [OK].



[Figure 5.2.14] Read screen

(c) Reads previously specified values for the parameters checked.

Chapter 6 SyCon Setting

6.1 Introduction

6.1.1 Main functions

Function	Section	Details
Configuration	Communication type	Communication type and its details
	Automatic network scan	Network scan
Diagnostic	Diagnostic function	Live List, Debugger, Global State Field
	User data Send	I/O monitor, I/O monitor
Documentation	Print	Print out the Configuration

6.1.2 Characteristics

SyCon is a Global Fieldbus Configurator.

SyCon executes the configuration through a standardized file.

SyCon has a diagnosis function.

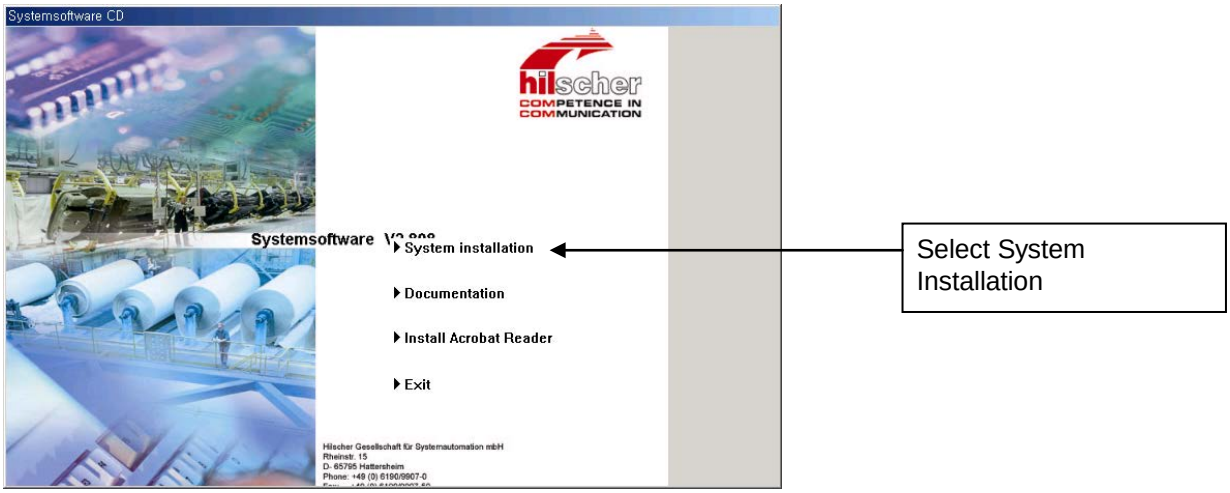
6.2 Installation

6.2.1 System requirements

- PC 486 or higher
- Windows 95/98/ME/NT/2000/XP
- Hard disc with 80MB or more
- CD ROM Drive
- RAM with 16MB or more
- Graphic Resolution: min. 800 x 600 pixel
- Windows 95: Service Pack 1 or higher
- Windows NT: Service Pack 3 or higher

6.2.2 Software installation

1) After the CD is inserted into CD-ROM, Execute ‘Autorun.exe’.



2. Select ‘System installation’ and execute.

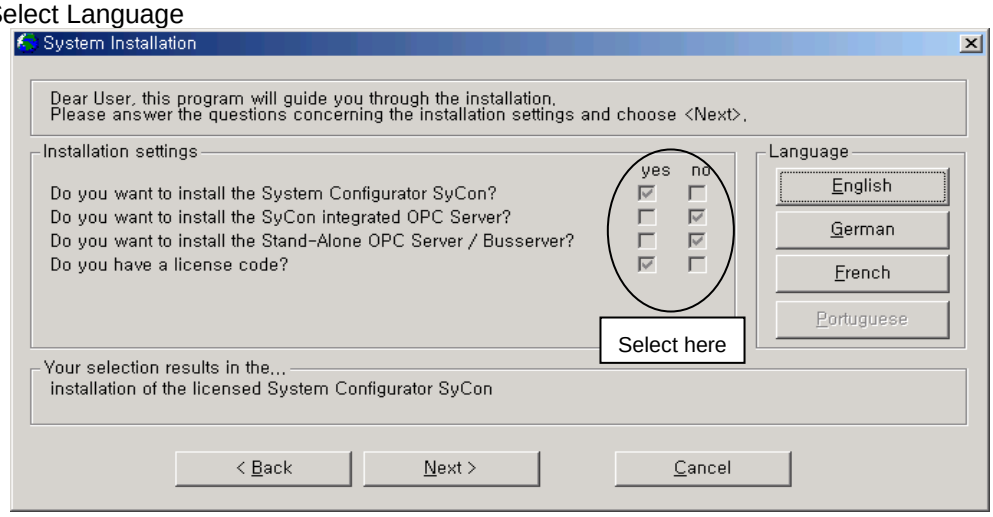
1) Do you want to install the System Configurator SyCon? → Yes

2) Do you want to install the SyCon integrated OPC Server? → No

3) Do you want to the Stand-Alone OPC Server/Busserver? → No

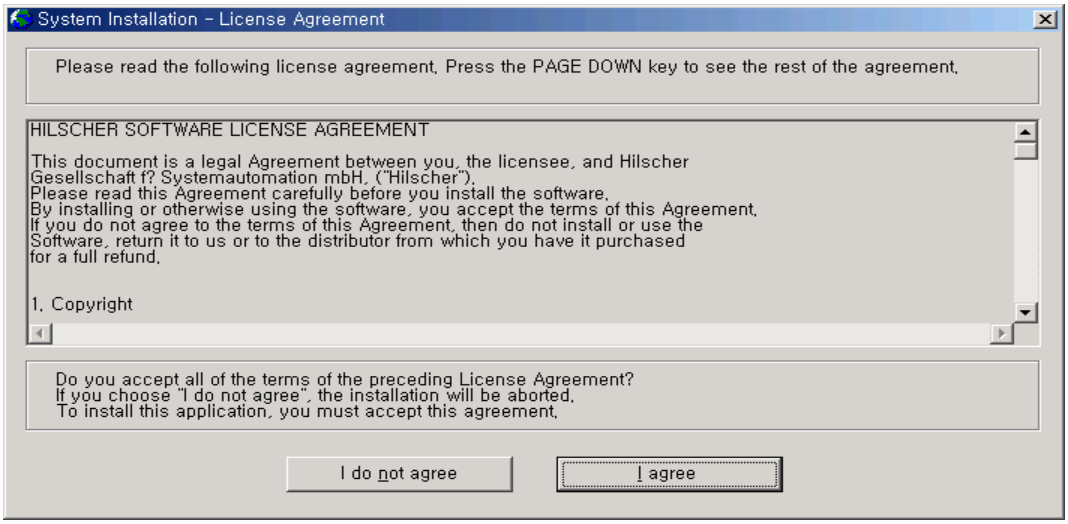
4) Do you have a License code? → Yes

5) Select Language



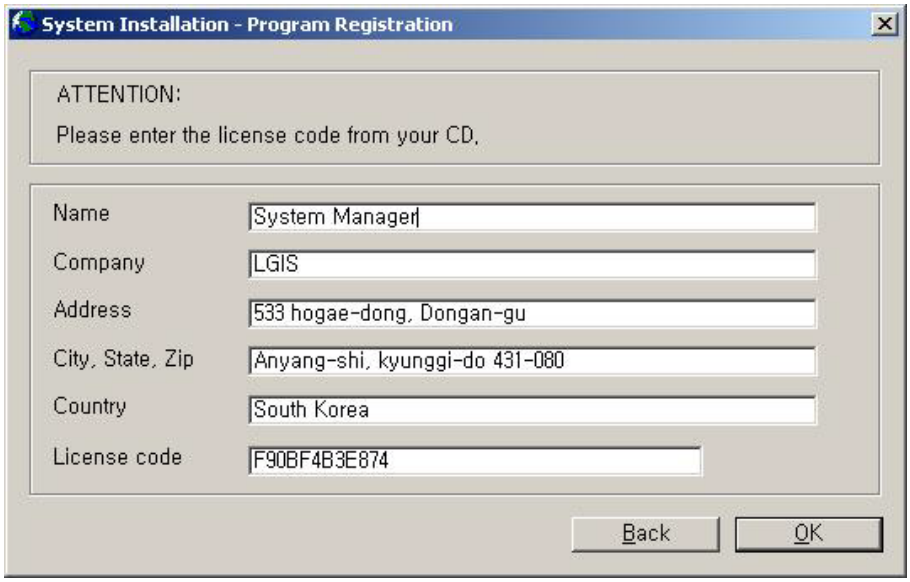
→ Next

3. License Agreement

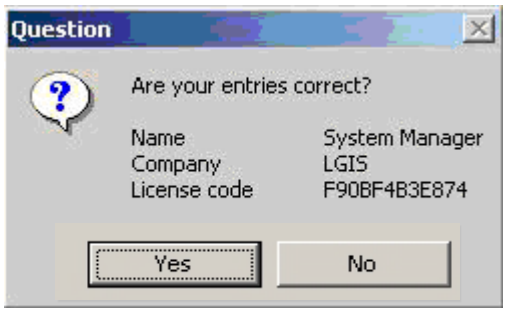


→ Select I agree

4. Program Registration

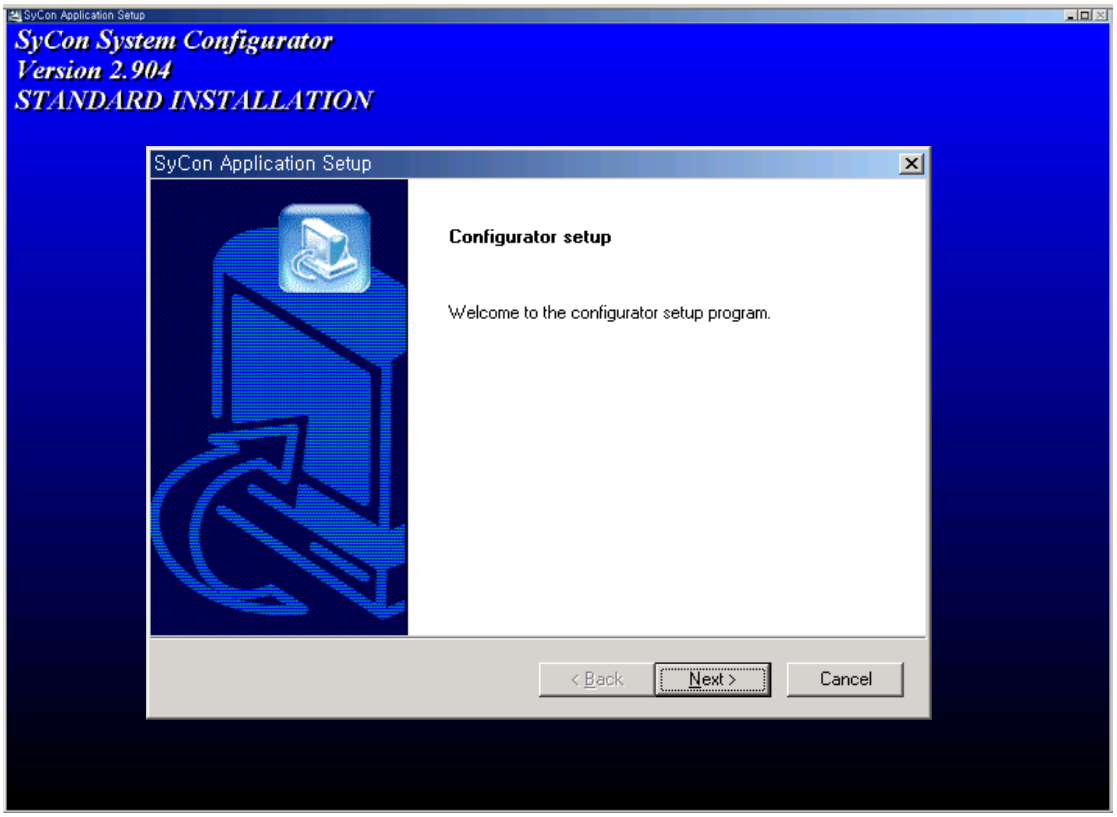


Input License code: F90BF4B3E874
→ Select 'OK'



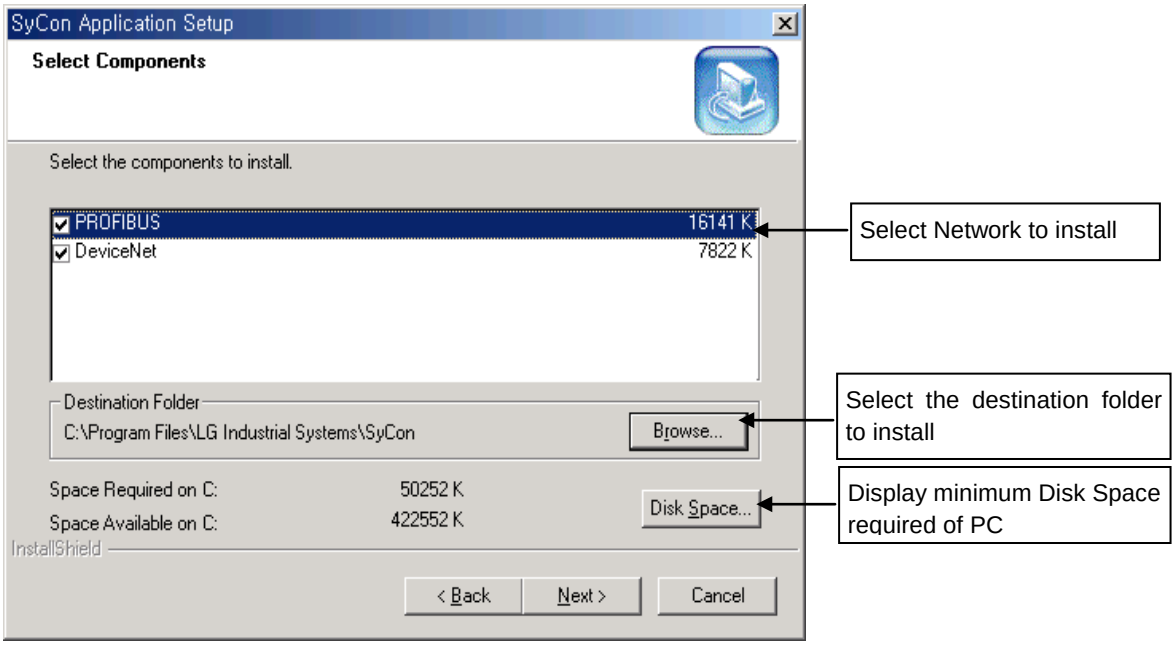
→ Select 'Yes'.

5. Configuration Setup



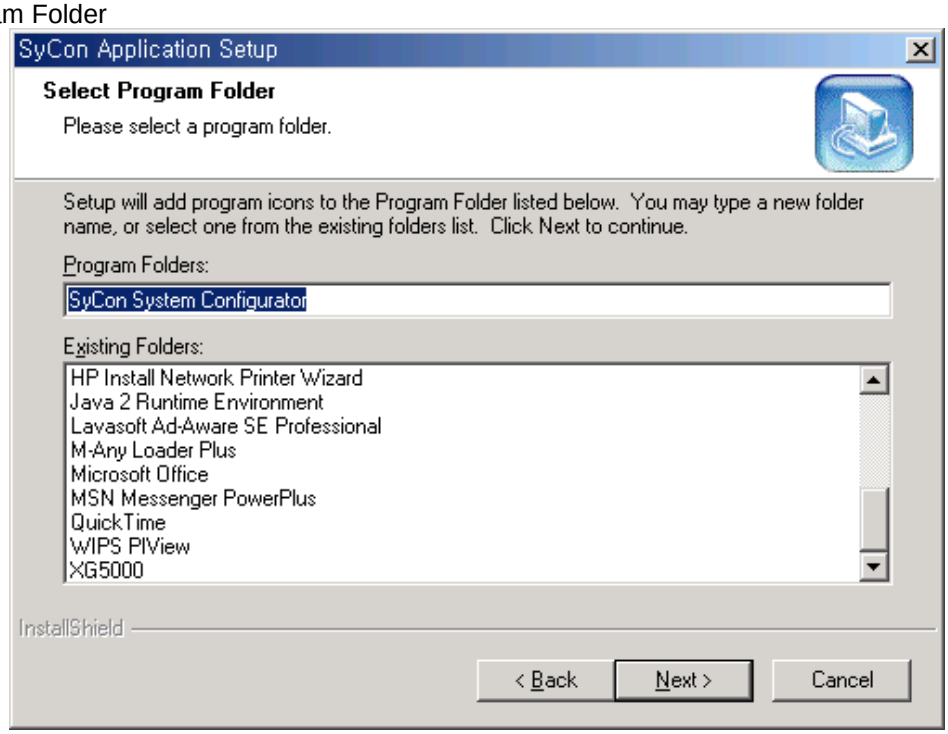
→ Select 'Next'.

1) Components

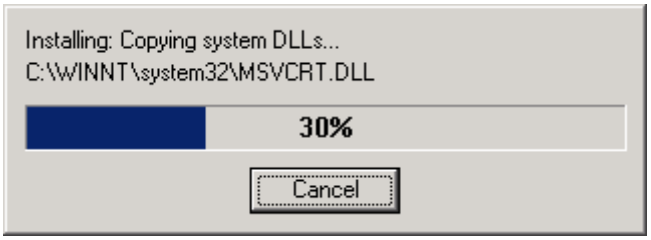


→ Select 'Next'

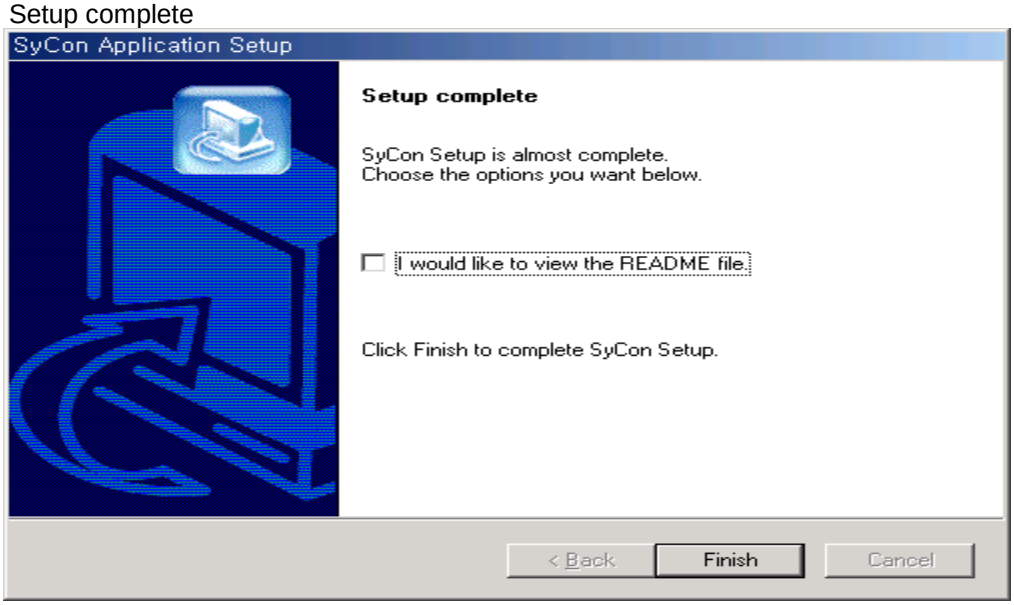
2) Program Folder



→ Select 'Next'

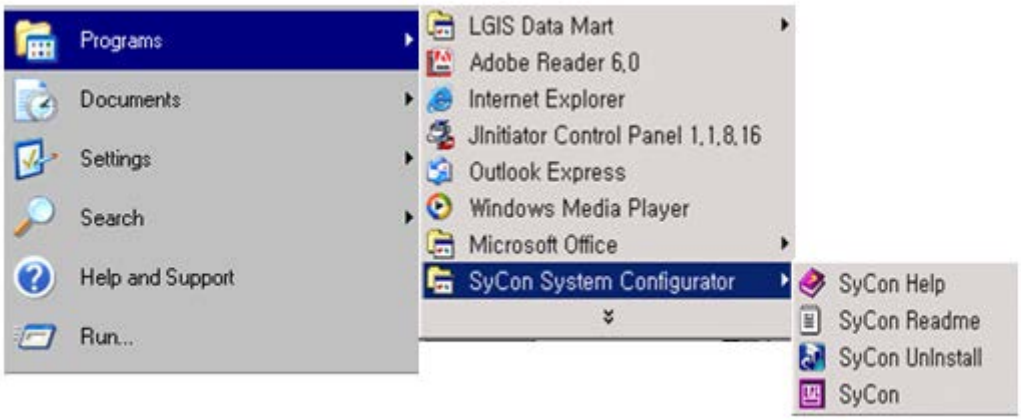


3) Setup complete



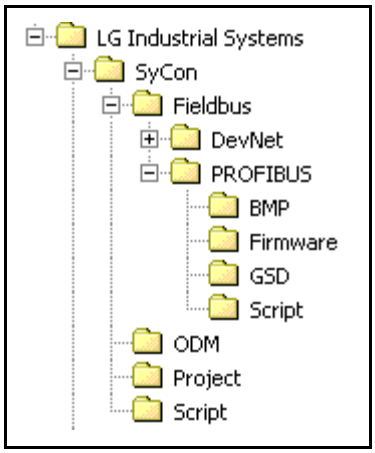
6. Installed contents

1) Installed file



2) Contents of Folder

- Destination: C:\Program Files\LG Industrial Systems\SyCon



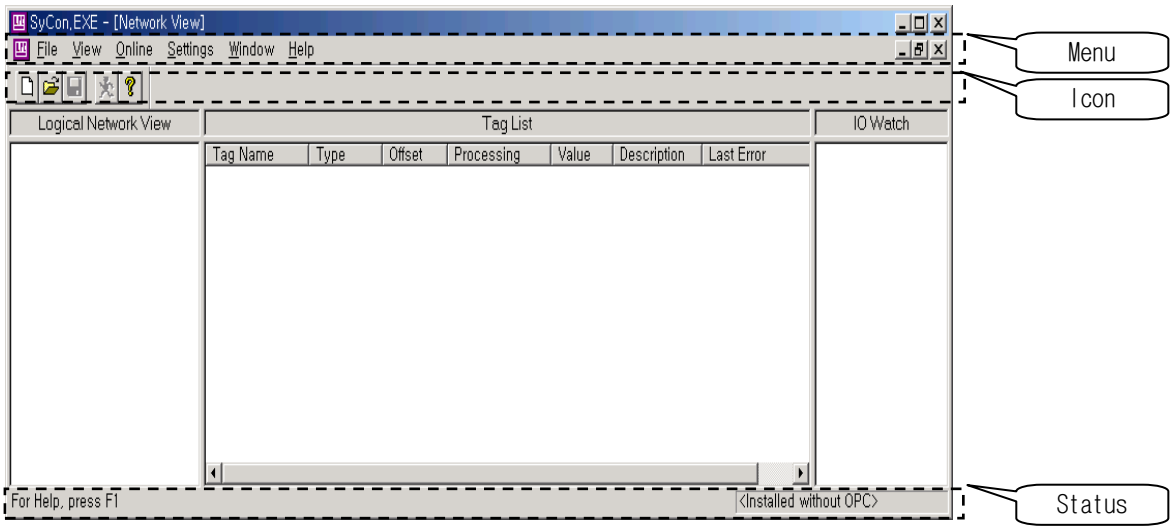
3) GSD files for Profibus

- GSD files are generated as shown below.

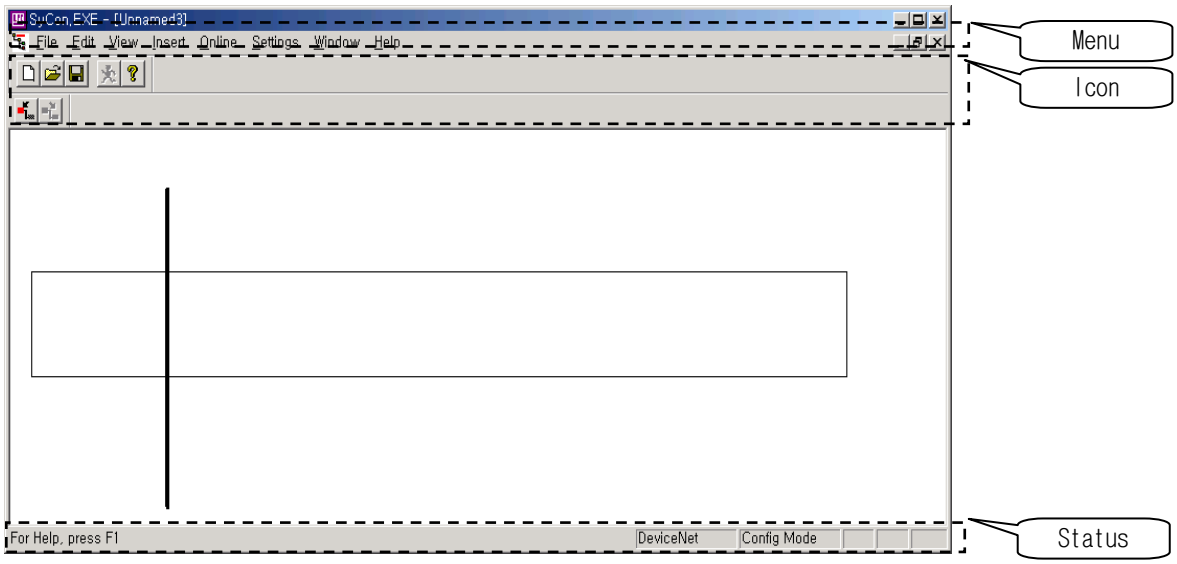
GPL_D22A.GSD	2KB	GSD
GPL_D24A.GSD	2KB	GSD
GPL_DT4A.GSD	2KB	GSD
GPL_RY2A.GSD	2KB	GSD
GPL_TR2A.GSD	2KB	GSD
GPL_TR4A.GSD	2KB	GSD
LGIS0552.gsd	3KB	GSD
LGIS07B1.GSD	2KB	GSD
LGIS07B2.GSD	2KB	GSD
LGIS07B3.GSD	2KB	GSD
LGIS07B4.GSD	2KB	GSD
LGIS07B5.GSD	2KB	GSD
LGIS07B6.GSD	2KB	GSD
LGIS7100.GSD	5KB	GSD

6.3 Communication Settings in SyCon

6.3.1 Initial screen

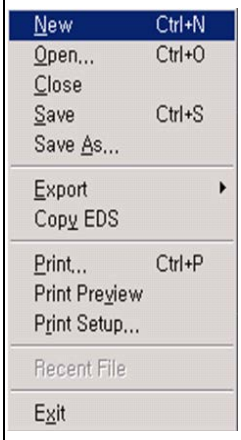
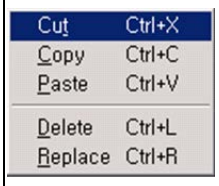
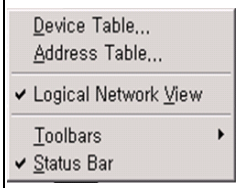


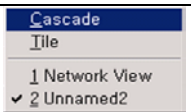
Network



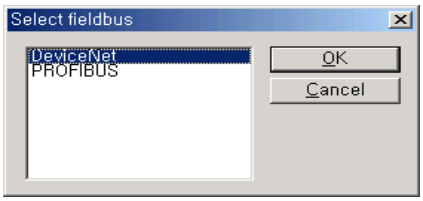
Edit

6.3.2 Composition of menu

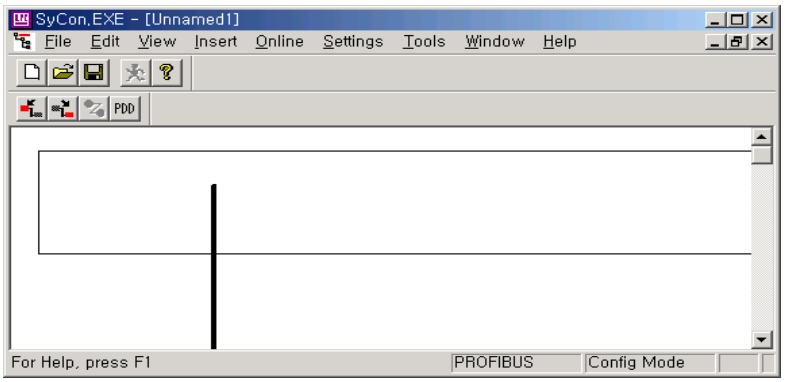
Main	Submenu				Description
File		New			Make new file
		Open			Open existed file
		Close			Close the open file
		Save			Save the open file
		Save As			Saving the file as another name
		Export			Export to Project
		Copy	EDS 	DBM	Import DBM extension file
				PDD	Import PDD extension file
				CSV	Import CSV extension file
			GSD 	DBM	Import DBM extension file
				CSV	Import CSV extension file
		Print…			Print
		Print Preview			Preview of print
		Print Setup…			Setup of print
		Recent File			Display of recent file list
		Exit			Exit SyCon
Editer		Cut			Cutting
		Copy			copying
		Paste			Pasting
		Delete			Deleting
		Replace			Replace
View		Device Table			Display of device name, ID and Type
		Address Table			Display of slave module address and Size of Input/Output
		Logical Network View			-
		Toolbars	Standard		Activate the basic menu
			Fieldbus		Activate the Insert Icon on menu
		Status Bar			Display the Status Bar on SyCon basic window
Insert		Master			Insert Master module
		Device			Insert Slave module

Main	Submenu		Description
Online		Download	Downloading SyCon settings file
		Start Debug Mode	Display current connection status
		Device Diagnostic	Information of diagnosis saved
		Firmware Download	Downloading by Firmware
		Firmware/Reset	Reset the Firmware
		Extended Device Diagnostic	Function of diagnosis extended
		Global State Field	Status of current communication and moue
		Live List	Information and status of module per station number
		I/O Monitor	Display of I/O data
		Message Monitor	Data analyzing between Master and Slave
		Automatic Network Scan	Setting the network automatically
		Get Device Attribute/ Set Device Attribute	-
		Start Communication	Run the communication
		Stop Communication	stop the communication
		Device Info	Display of the day of manufacture and Serial number
		Activate Driver	To register the unregistered device
		Read project Information	Information of project
Settings		Device Assignment	Setup the way of communication with Host
		Bus Parameters	Setting of communication speed and various parameter
		Master Settings	Setting of master
		Device Settings	-
		Device Configuration	-
		Auto Addressing	To allocate the address automatically
		Project Information	Information of project
		Path	The path of GSD setting file and project
		Language	Language selection
Window		Cascade	Window array to cascade
		Tile	Window array to tile
Help		Help Topics	Help view
		About	Information of SyCon program

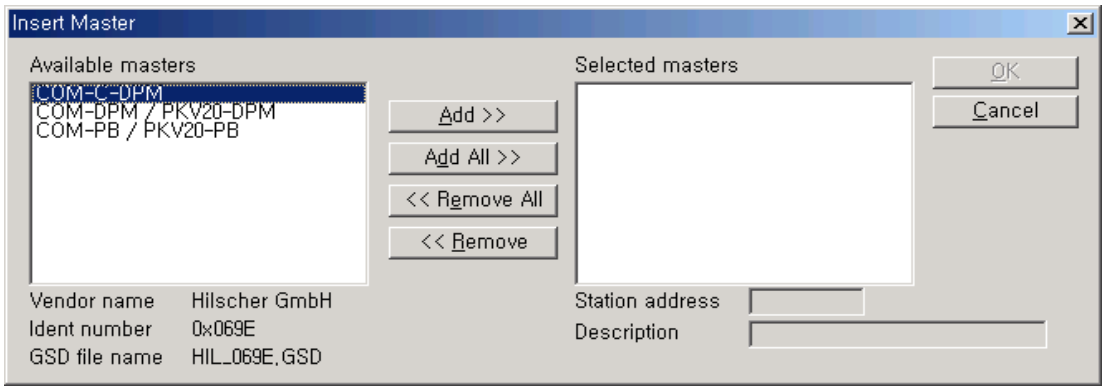
6.3.3 New file



1) Selection of Fieldbus



2) The composition of picture



3) Master selection

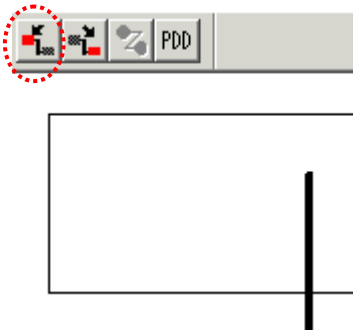
Master type	GSD File Name	Master name	
XGT	XGL-PMEA	HIL_069E	COM-C-DPM
GM/MK	G3L-PUEA G4L-PUEA G6L-PUEA	HIL_7065	COM-DPM/PKV20-DPM
	G3L-PUEB G4L-PUEB G6L-PUEB	HIL_1662	COM-PB/PKV-PB

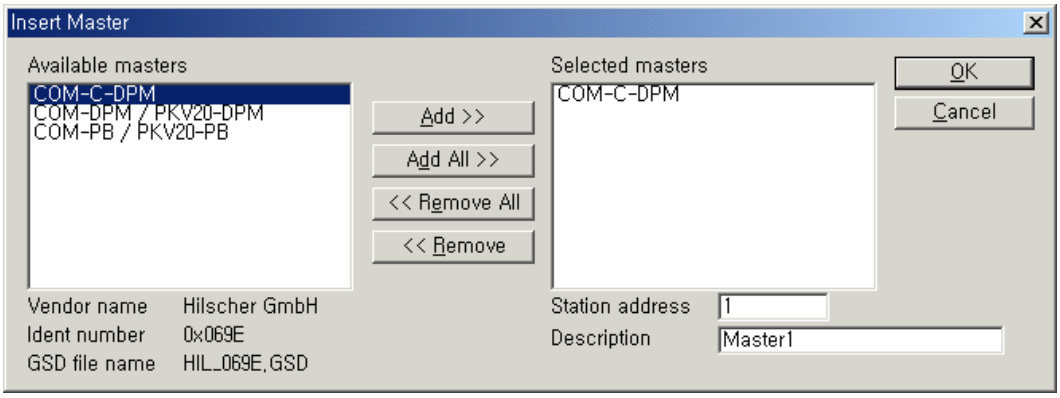
6.3.4 Master selection

1) Selection

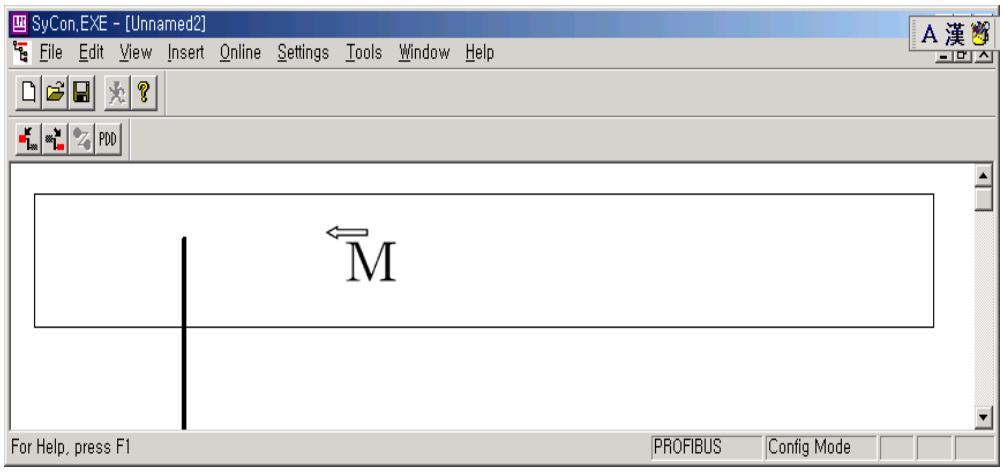
Method	Selection order	Execution Icon
Menu	Insert → Master	⇦M
Icon		

2) Insert

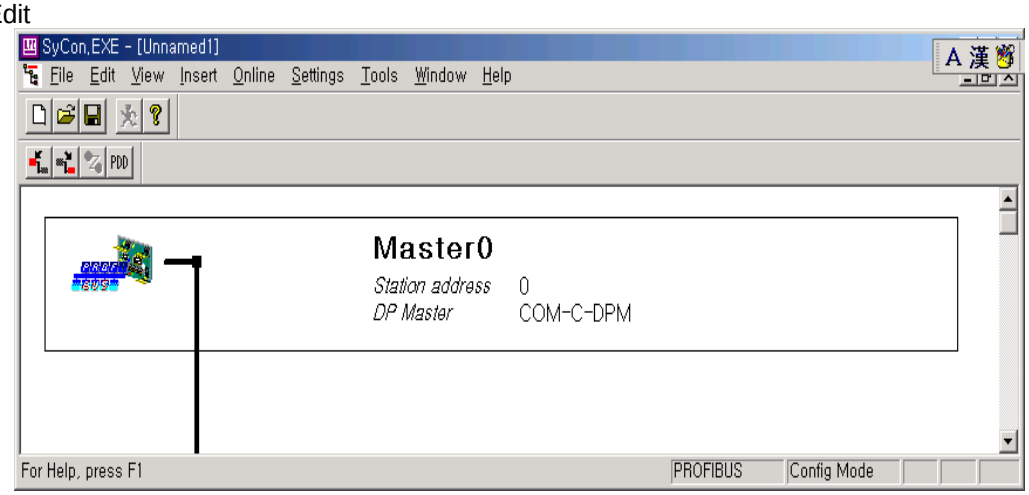




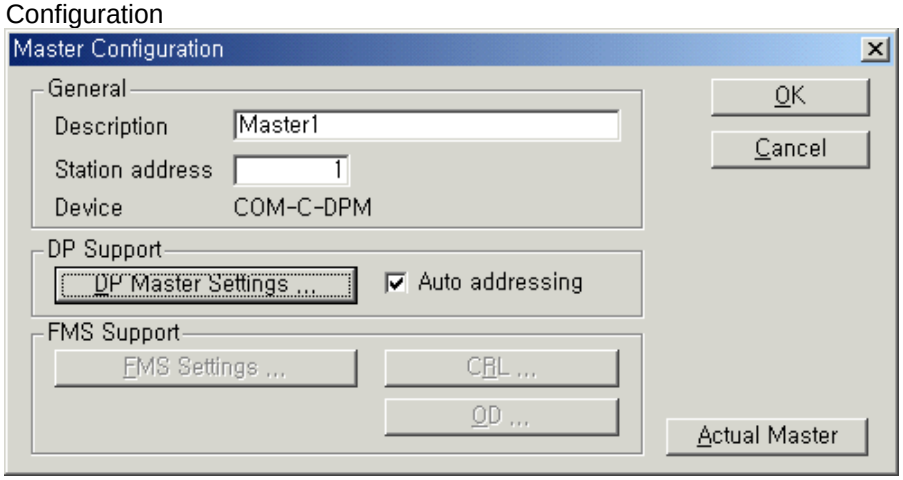
Master type		GSD File Name	Master name
XGT	XGL-PMEA	HIL_069E	COM-C-DPM
GM/MK	G3L-PUEA G4L-PUEA G6L-PUEA	HIL_7065	COM-DPM/PKV20-DPM
	G3L-PUEB G4L-PUEB G6L-PUEB	HIL_1662	COM-PB/PKV-PB



3) Edit

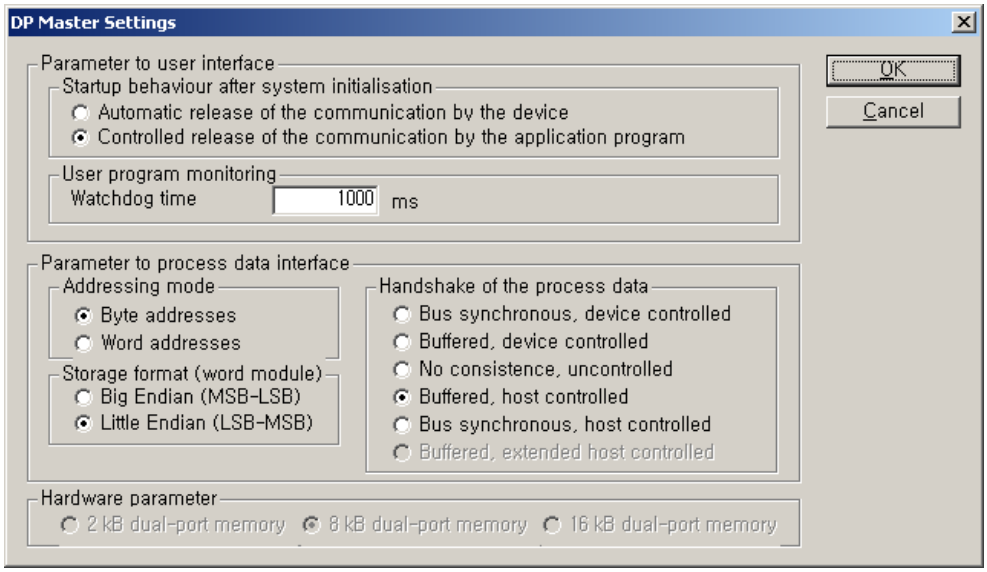


4) Master Configuration



- Select “Settings” → “Master Configuration” on menu.

Item		Description
General	Description	Explain of Master
	Station address	Setting of Master station number
	Device	Display of Master board
DP Support	DP Master Settings	Setting of DP Master
FMS Support		It is set when the device supports the FMS



5) DP Master settings

a) Set the “Controlled release of the communication by the application program” in “Parameter to user interface”

b) Set “1000ms” in “User program monitoring”

c) “Parameter to process data interface”

(a) Set “Byte addresses” in “Addressing mode”

(b) Set “Little Endian” in “Storage format(word module)”

d) Set “Buffered, host controlled” in “Handshake of the process data”

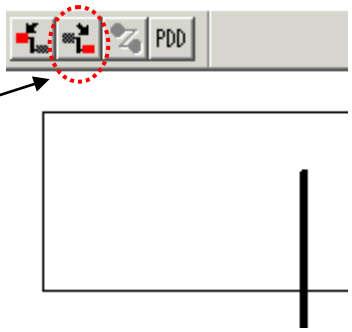
6.3.5 Slave selection

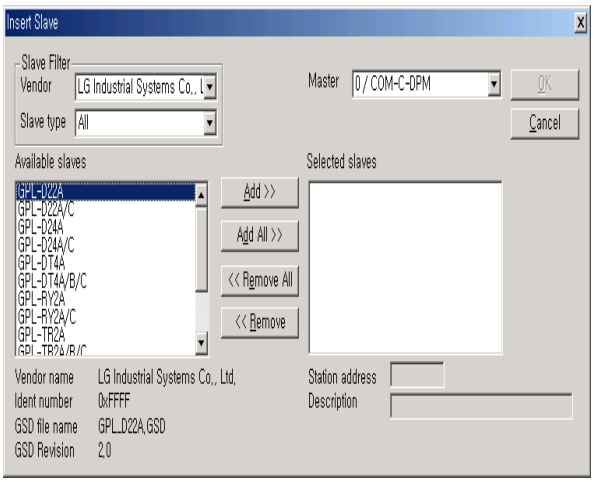
It is executed after master inserted.

1) Select

Method	Selection order	Execution Icon
Menu	Insert → Slave	S
Icon		

Slave selection



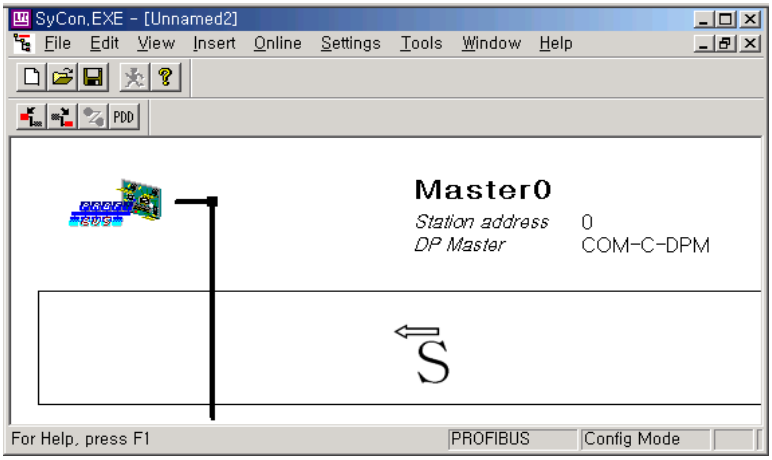


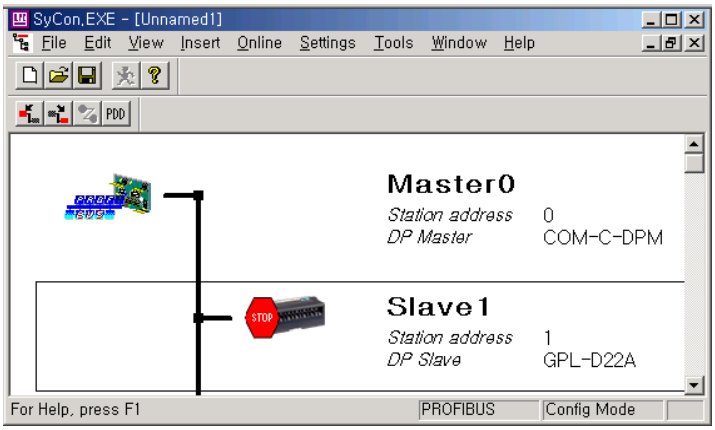
2) Insert

Item		Description
Slave Filter	Vendor	Slave maker (Allen Bradley, Siemens..)
	Slave type	Drive unit, I/O-Slave…
Available slaves		Display of Slave module in GSD folder (GPL-D22A, GPL-TR2A…)
Master		Display of Master device and station number
Selected slaves		Display of slave module designated
Station address		Display of Slave module station number (It must not duplicate)
Description		Explain of Slave module (It must not duplicate)

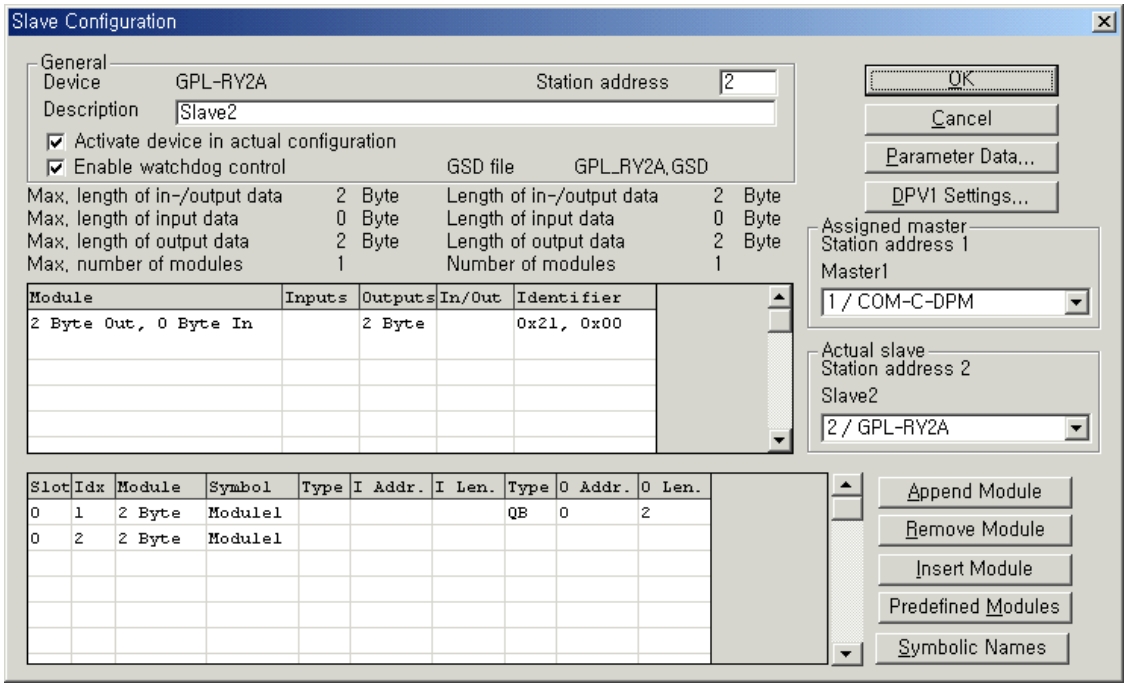
Slave type		GSD File Name	Slave name	Remark
PLC	DC input 16 points	GPL_D22A	GPL-D22A	Fixed Terminal Block
		LGIS07B1	GPL-D22A/C	Fixed/Removable Terminal Block
	DC input 32 points	GPL_D24A	GPL-D24A	Fixed Terminal Block
		LGIS07B2	GPL-D24A/C	Fixed/Removable Terminal Block
	DC input 16 points Tr output 16 points	GPL_DT4A	GPL-DT4A	Fixed Terminal Block
		LGIS07B3	GPL-DT4A/B/C	Fixed/Removable Terminal Block
	Relay output 16 points	GPL_RY2A	GPL-RY2A	Fixed Terminal Block
		LGIS07B6	GPL-RY2A/C	Fixed/Removable Terminal Block
	Tr output 16 points	GPL_TR2A	GPL-TR2A	Fixed Terminal Block
		LGIS07B4	GPL-TR2A/B/C	Fixed/Removable Terminal Block
	Tr output 32 points	GPL_ TR4A	GPL-TR4A	Fixed Terminal Block
		LGIS07B5	GPL-TR4A/B/C	Fixed/Removable Terminal Block
	Analog input	LSIS09F8	GPL-AC8C	8channel, Current Input
		LSIS09FB	GPL-AV8C	8channel, Voltage Input
	Analog output	LSIS09FC	GPL-DV4C	4channel, Voltage Output
		LSIS09FE	GPL-DC4C	4channel, Current Output
	Module type slave	LGIS7100	GLOFA GM7	Slave Adapter for GM7 Pnet I/F
	Expand type Pnet I/F Adapter module	XPLBSSA	XPL-BSSA	Expand type Pnet I/F Adapter module
Inverter		LGIS0552	SV-IS series	Inverter Option module

3) Edit





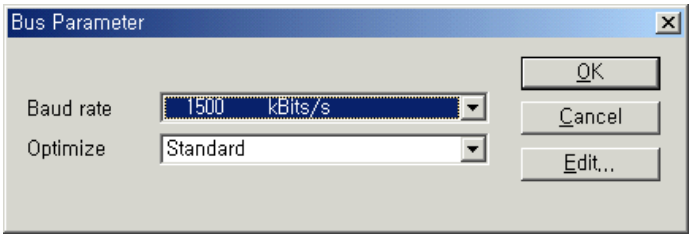
4) Slave Configuration
- It can be display of configuration of slave and editing address.



Item		Description
General	Device	Slave module name
	Station address	Slave station number
	Description	Slave description
	Activate device in actual configuration	Activate device in actual configuration
	Enable watchdog control	Enable watchdog control (Default : 200ms)
Assigned master	Master1	Display master assigned
Actual slave	Slave2	Slave operation display

6.3.6 Bus parameter

"Settings" → "Bus Parameter", it can be set the communication speed.



Baud rate is selected correspond to system operation.

6.4 Online Function

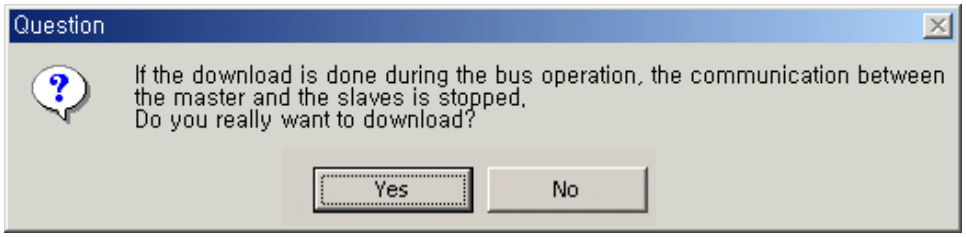
6.4.1 Introduction

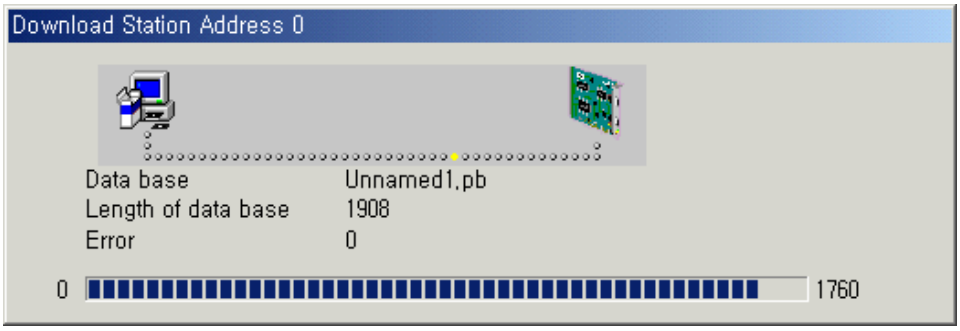
It can download the system configured through SyCon and diagnose the network status.

6.4.2 Online to the CIF

1) Configuration downloads

If Network is configured in SyCon, Configuration file is downloaded in Pnet I/F module. “Online” → “Download” is set and then massage window is opened as shown below. In download, the communication between Master and Slave is stop.

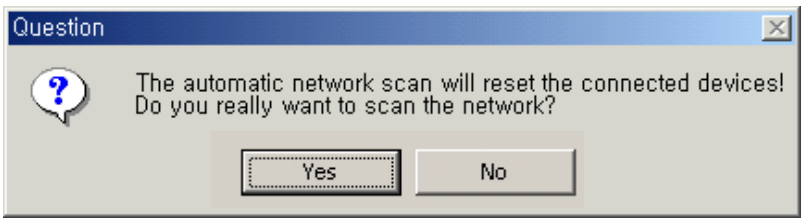




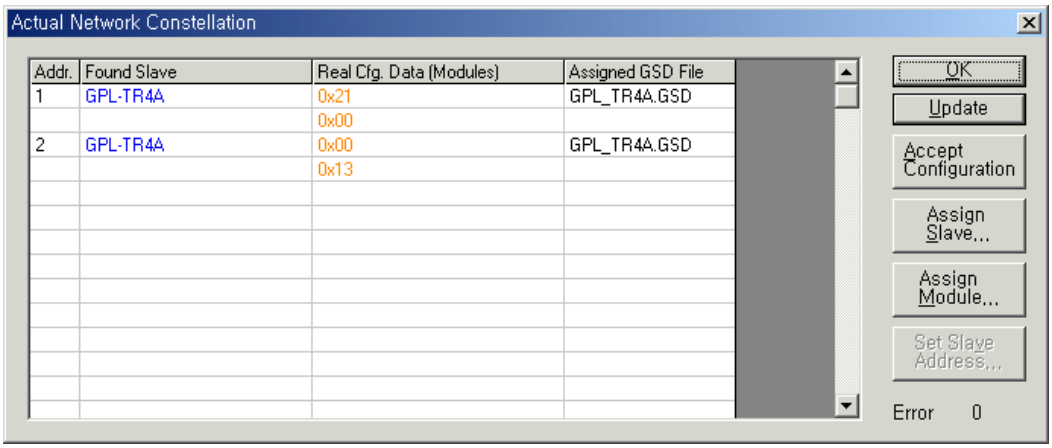
6.4.3 Automatic network scan

This function detects the connected slave module network and read the configuration automatically.

1) New Project: File → New
2) Master setting: Insert → Master
3) Baud rate setting: Settings → Bus parameter
4) Download the setting value in Master: Online → Download
5) Saving: File → Save
6) Network scan: Online → Automatic Network Scan



7) If select the “Yes’, Dialog box is opened as shown below.



8) At upper dialog box, If select the “Accept Configuration”, it is display the connected slave module.

6.4.4 Start/Stop communication

Communication of configured network is start or stop.

6.4.5 Debug mode

It is display the status of communication per current slave module.

1) Online → Start Communication → Start Debug Mode

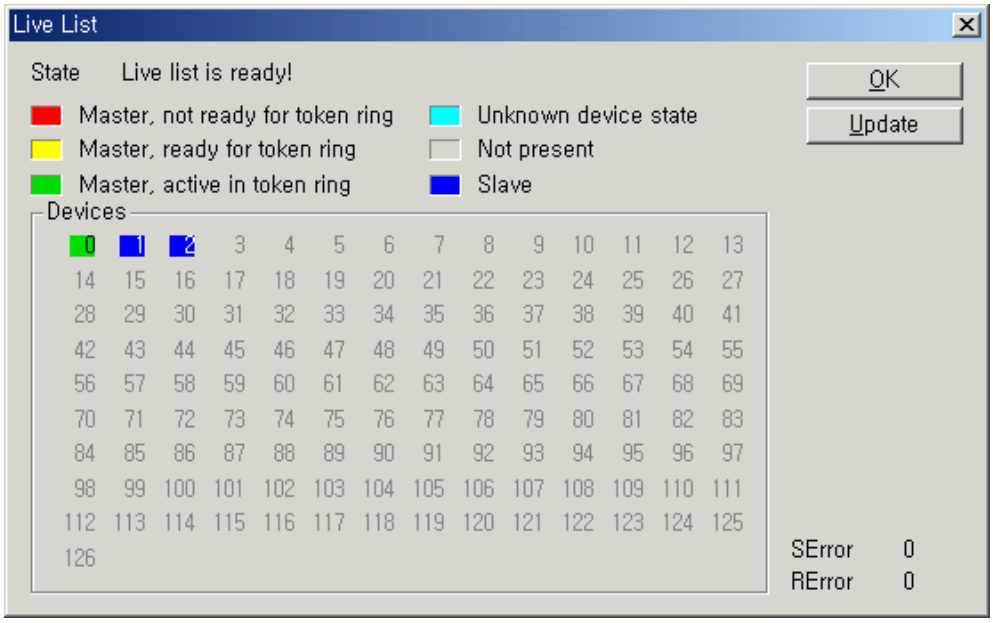
(1) Green Line: Communicating with Master

(2) Red Line : Communication is disable with Master

6.4.6 Diagnostic functions

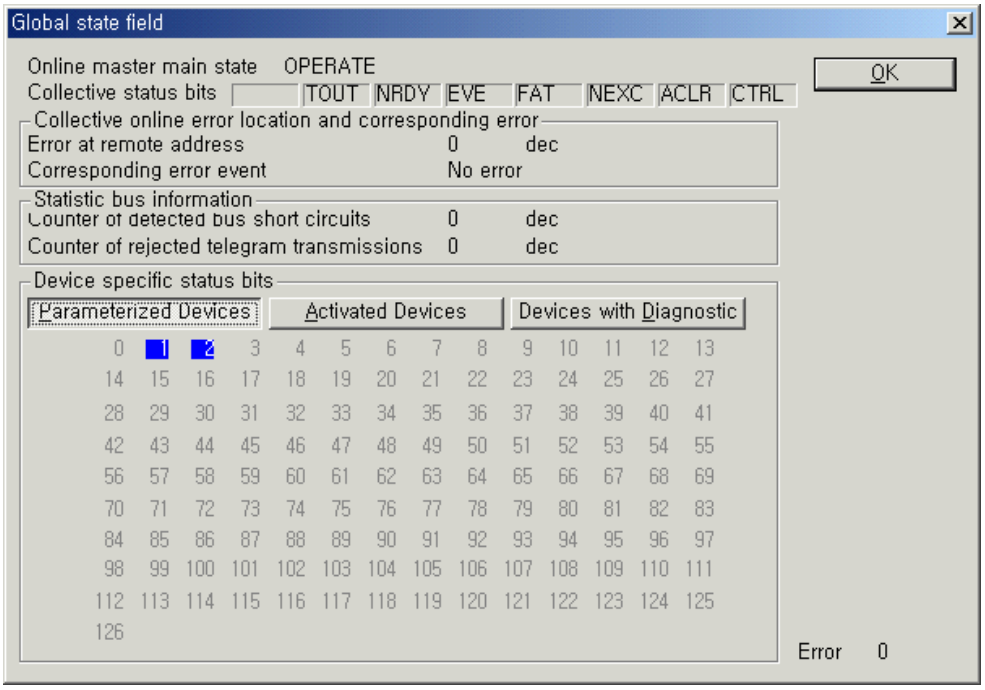
1) Live List

It is display the station number of Master connected the network and station number of Slave.



Color of number	Description
Green Number	Display of connected Master station number
Blue Number	Display of connected Slave station number

2) Global State Field



Items		Description
Online master main state		Display of Master status
Collective online error location and corresponding error		Display of Station number and Error
Statistic bus information		Display of network error
Device specific status bits	Parameterized Devices	Display of Slave parameter
	Activated Devices	Display of Slave operation
	Devices with Diagnostic	Display of Slave diagnosis

Chapter 7 PROFICON Setting

7.1 Overview

7.1.1 Main functions

Functions	Category	Description
Settings	Master property	Master property, group settings
	slave property	slave property, module and parameter settings
	bus parameter	communication bus parameter settings
	Automatic network scan	Network scan
	Settings download	Network Configuration download
	Settings upload	Network Configuration upload
Diagnostic	Diagnosis function	Live List, Disconnected Report, Debug Mode(Device Diagnostics)
	Transmit user data	I/O monitor
Documentation	Report	Output as MS Excel type

7.1.2 Characteristics

- PROFICON is a configuration tool of Pnet I/F module which is global standard PROFIBUS-DP Master.
- PROFICON configures with standardized GSD file.
- PROFICON has diagnostic function.
- PROFICON has a function to upload network settings which was previously downloaded.

7.2 Installation

7.2.1 System requirements

- 486 PC or higher
- More than 16 Mbytes of RAM
- Windows 95/98/ME/NT/2000/XP
- More than 80 Mbytes of hard disk, CD ROM drive
- Resolution: 1280 x 1024 pixel recommended
- Windows 95: Service Pack 1 or higher
- Windows NT: Service Pack 3 or higher

7.2.2 How to install Program

Please see the software manual of PROFICON for more details. We will discuss the composition after the installation of the software.

(1) Directory after installation

After the installation, generally, “C:\Program Files\” directory is composed as follows.

[Figure 7.2.1] The structure of installation directory

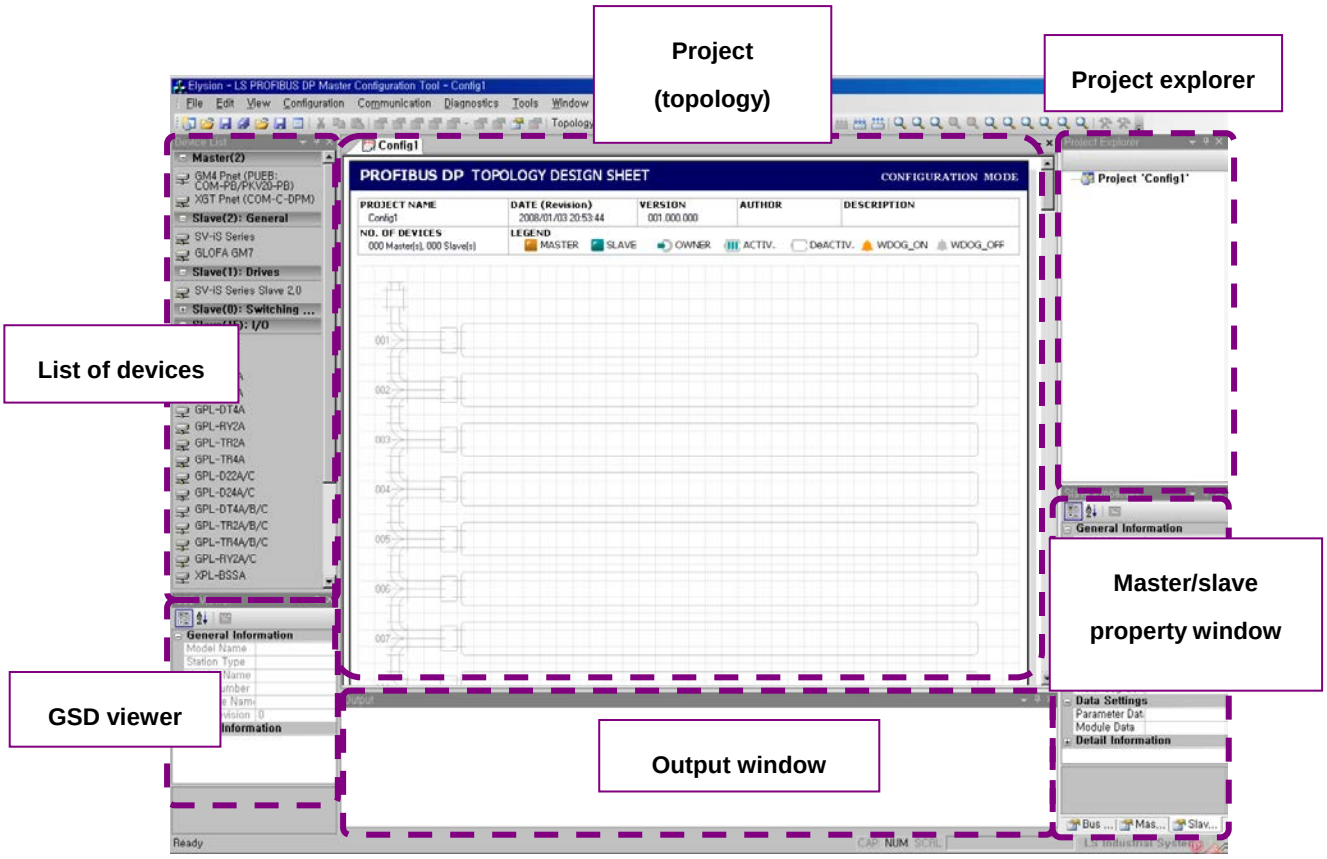
- PROFICON: Root directory of configuration tool for PROFIBUS DP Master
- bmp: Bitmap depository used by the GSD file
- bnr: Network Configuration binary image file depository
- doc:Manual depository
- gsd:GSD file depository provided by the manufacturer of PROFIBUS DP module
- prj: Network Configuration Project depository
- sys: Application setting directory used by the tool

(2) Caution after installation

After the installation is completed, users should be aware of following things. The default GSD files provided are our company’s smart I/O and inverter, so other companies’ products or new products are not updated. Therefore, if there is a new GSD file, then copy it to the GSD directory to use, and copy bitmap image files used by the GSD to the bmp directory. Start again the PROFICONprogram to apply the copied GSD.

7.3 Start PROFICON

7.3.1 Screen composition

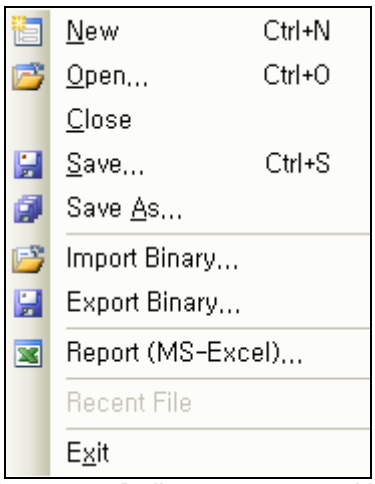


[Figure 7.3.1] PROFICON screen composition

- Device list:	Lists the devices interpreted by GSD file to drag & drop them to topology of project window
- Project:	Topology to compose PROFIBUS Network
- Project explorer:	Stratify the configured topology on the project window in the order of Project-Master-Relevant Slave
- GSD viewer:	Detailed information of GSD of the device selected from the list
- Output window:	Action result of the Configuration Tool
- Master property window:	Set up property of master device composed on the project window
- Slave property window:	Set up property of slave device composed on the project window
- Bus parameter window:	Set up communication property of PROFIBUS Network composed on the project window

7.3.2 Menu composition

(1) File menu

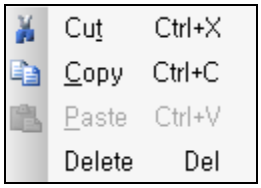


[Figure 7.3.2] File menu composition

This is the menu to create and save project which is the basis of tool.

Sub-menu	Description
New	Create new project
Open	Open a saved project file
Close	Add the activated project
Save	Save the activated project as a file
Save As…	Save the activated project as another file name
Import Binary…	Read network configuration file saved by binary
Export Binary…	Save network configuration of the activated project as binary file
Report (MS-Excel)	Output as a MS Excel file type
Exit	Close the program

(2) Edit menu

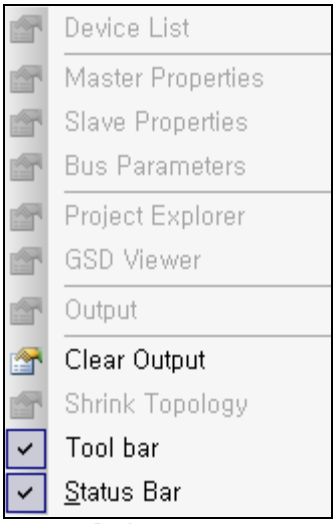


[Figure 7.3.3] Edit menu composition

This is the menu to edit network devices composed on the topology of the project window.

Sub-menu	Description
Cut	Cut the selected device from the topology
Copy	Copy the selected device from the topology
Paste	Paste the cut or copied device on the topology
Delete	Delete the selected device from the topology

(3) View menu

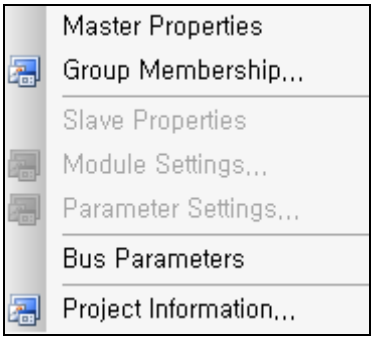


[Figure 7.3.4] View menu composition

This is the menu to manage the windows composed on the program.

Sub-menu	Description
Device List	Show device list
Master Properties	Master property tab
Slave Properties	slave property tab
Bus Parameters	bus parameter tab
Project Explorer	Project explorer
GSD Viewer	GSD viewer
Output	Output window
Clear Output	Delete contents of output window
Shrink Topology	Match the space between devices on the topology with based on the master
Tool Bar	Show or remove tool bar of program
Status Bar	Show or remove status bar of program

(4) Configuration menu



[Figure 7.3.5] Settings menu composition

This is the menu to configure property and network bus parameter of master and slave.

Sub-menu	Description
Master Properties	Change master property
Group Membership…	Properties of slave group set up at master
Slave Properties	Change properties of slaves
Module Settings…	Configure slave module
Parameter Settings…	Set up users' parameter of slave
Bus Parameters	Set up bus parameter of network
Project Information…	Edit information of activated project

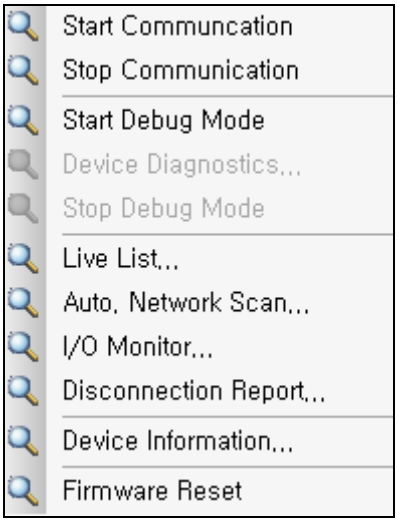
(5) Communication menu

[Figure 7.3.6] Communication menu composition

This is the menu to download and upload network configuration. It includes the menu to set the configuration connection.

Sub-menu	Description
Settings…	Set up connection configuration connection port
Download Image	Download network configuration composed on the topology
Download Image From File…	Download the saved network configuration file
Upload Image	Upload network configuration information saved in the master module

(6) Diagnostics menu

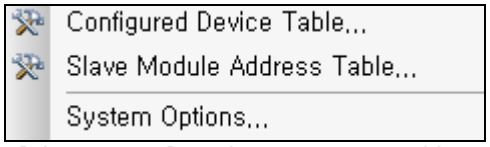


[Figure 7.3.7] Diagnostics menu composition

This is PROFIBUS DP application menu to provide diagnosis and monitoring functions.

Sub-menu	Description
Start Communication	Start communication by setting up master as OPERATE mode
Stop Communication	Stop communication by setting up master as STOP mode
Start Debug Mode	Convert to debug mode and monitor slave
Device Diagnostics…	Diagnostic information of the selected slave
Stop Debug Mode	Terminate the debug mode
Live List…	Display slaves under communication among the slaves set up at master
Auto. Network Scan…	Scan all slaves connected to master through network cable
I/O Monitor…	Monitor I/O of slave
Disconnection Report…	Display the number of disconnection among slaves set up at master
Device Information…	Hardware and software information of master
Firmware Reset	Reboot the master

(7) Tools menu

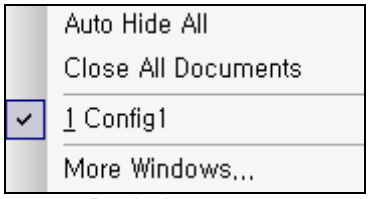


[Figure 7.3.8] Tools menu composition

This is the menu to arrange the composition on the project topology.

Sub-menu	Description
Configured Device Table…	Display devices composed on current topology as a table
Slave Module Address Table…	I/O module information of slaves composed currently
System Options…	Set up program options

(8) Window menu



[Figure 7.3.9] Window menu composition

This is a menu to manage project window.

Sub-menu	Description
Auto Hide All	Hide all windows except project window
Close All Documents	Close all projects windows
More Windows…	Arrange project window

(9) Help menu

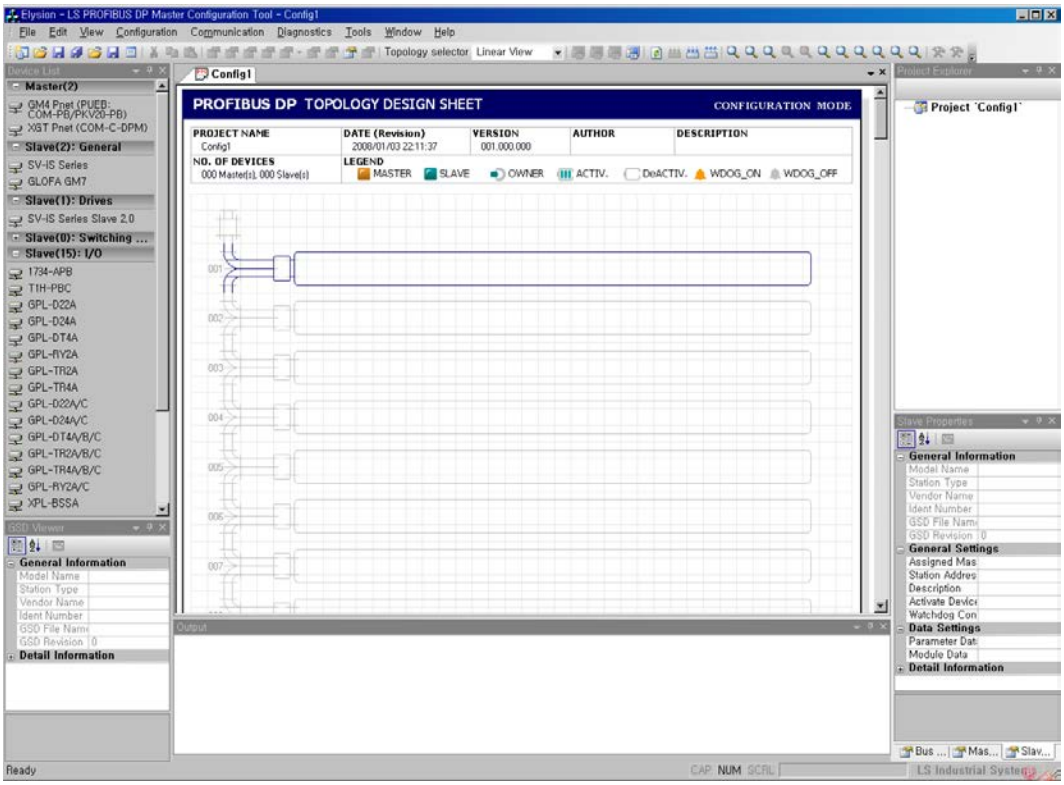
[Figure 7.3.10] Help menu composition

This is a manual and help menu.

Sub-menu	Description
About Configuration Tool…	Introduction of program

7.3.3 New Project(New File)

The project window is the first window you will see when you run the program. It is the window to compose the network configuration. If you want to create a new project, then you can select “New” from “File” menu.



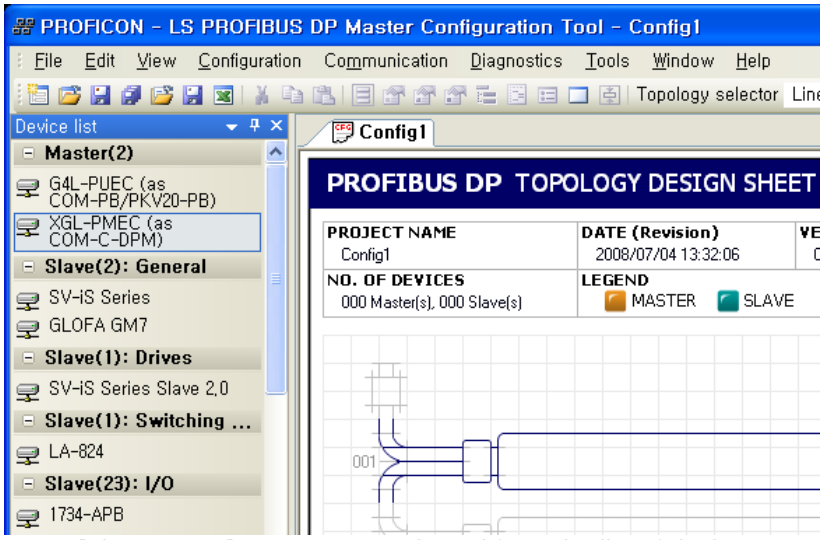
[Figure 7.3.11] New project window when you start the program

One of advantages of this configuration tool is to compose network for PROFIBUS DP Devices easily. If you just drag & drop the master module or slave module on the topology, then it is composed. Each device module property is also easily configured by using the configuration tab.
Moreover, the project explorer help to find out slave modules you want to edit from so many slave modules.

7.4 Network composition through PROFICON

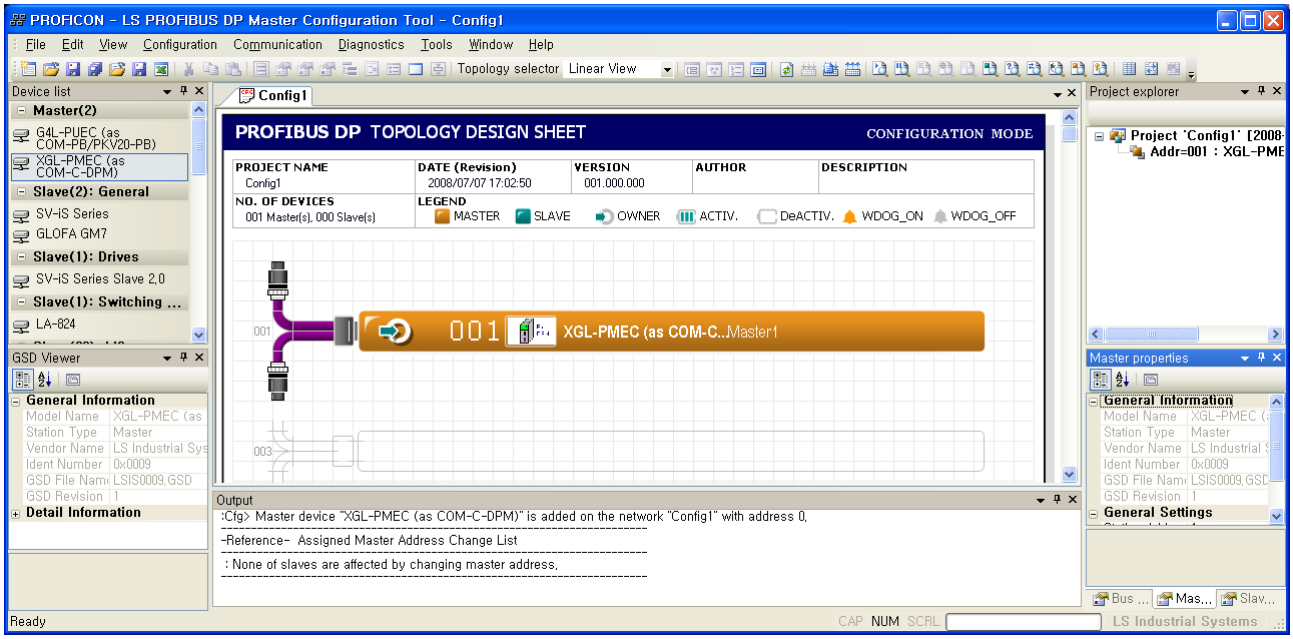
7.4.1 Master composition

Master device is displayed on the top of the device list, then select XGL-PMEC as shown in the figure below.



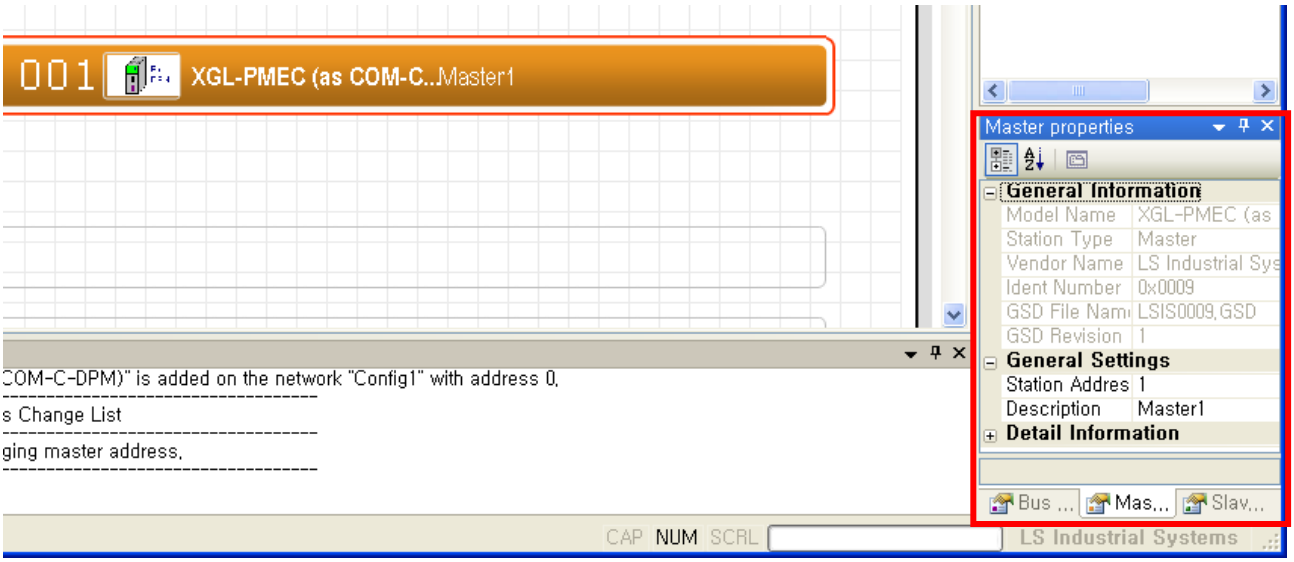
[Figure 7.4.1] XGL-PMEC selected from the list of device

If you drag & drop the selected XGL-PMEC on the topology sheet of the project window, then the master is simply composed as shown below. At this time, the composed master information is also displayed on the project explorer.



[Figure 7.4.2] Compose XGL-PMEC Master by drag & drop

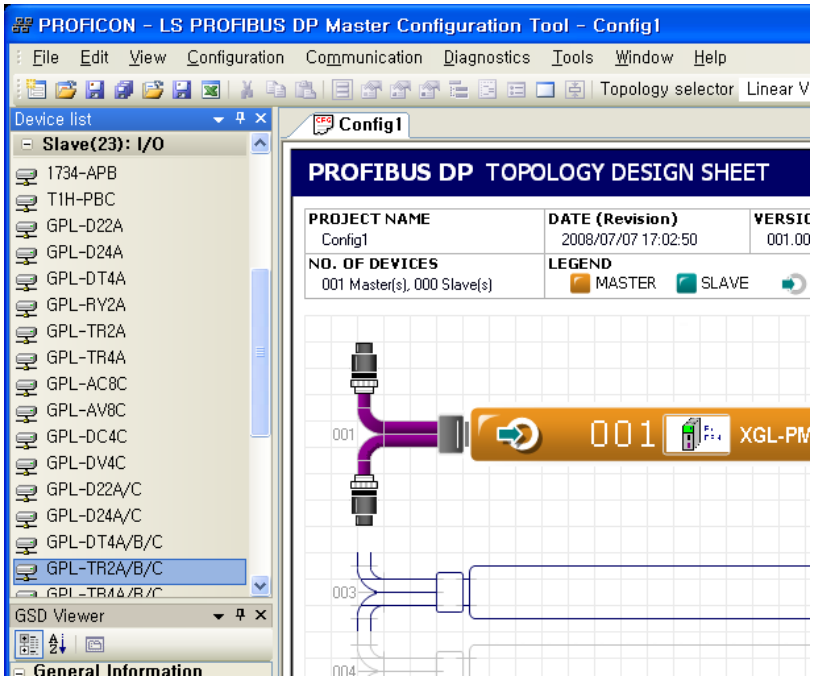
If you change properties like station address of the master or description, click "Master Properties" of the "Configuration" menu to activate the master property change tab as below



[Figure 7.4.3] Master property tab

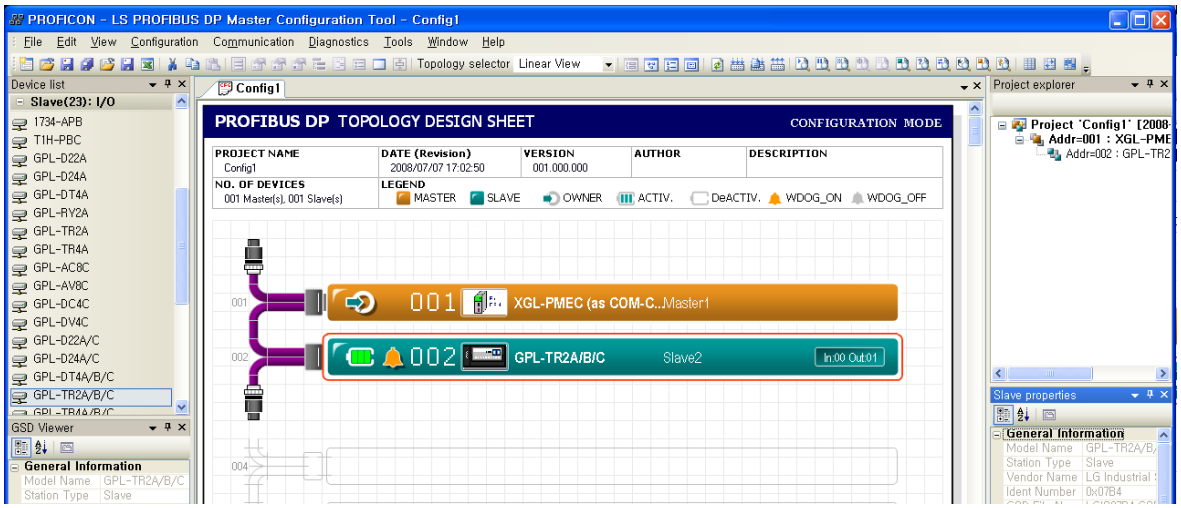
7.4.2 Slave composition

The composition of slave can be done after the master is composed.
The method of composition for slave is same as the master. Select the slave from the device list as shown in the figure below.



[Figure 7.4.4] Select slave from the device list

Simply drag & drop the selected slave on the topology to complete the composition of slave. (See Figure 7.4.5, at this time, it is confirmed that the slave is subordinated to the relevant master through the project explorer.)

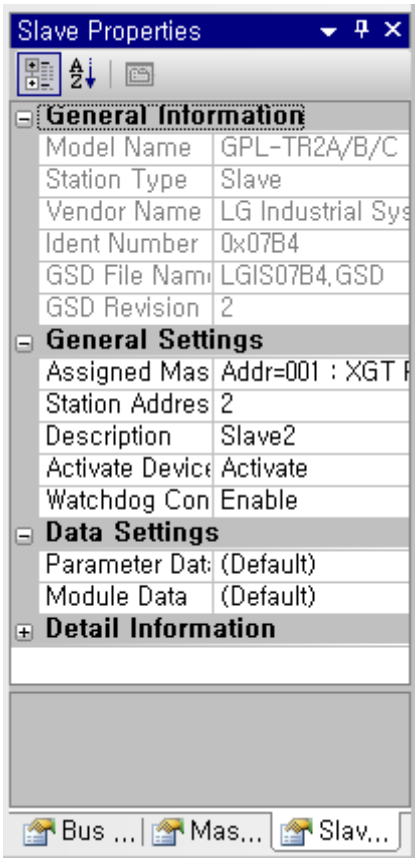


[Figure 7.4.5] Compose slave to master

Basically the tool allocates the station address in sequence when composing each device to the topology. Therefore, if you want to change the station address and property of the slave, then use “Slave Properties” of “Configuration” menu to change it. Followings are the items to be available for setting by using slave property tab(See Figure 7.4.6).

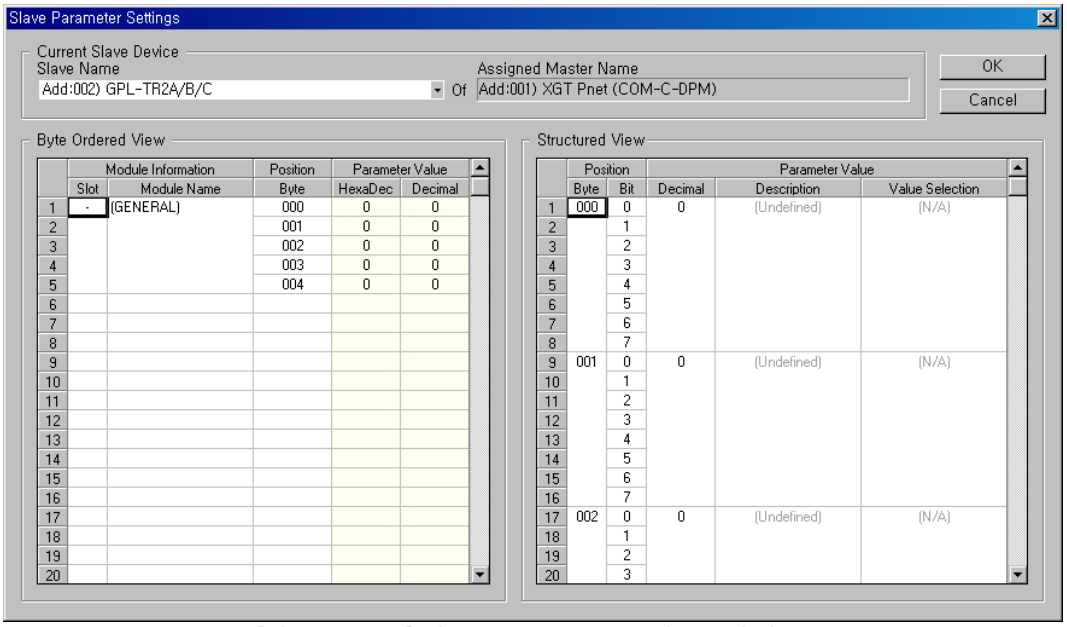
- Station Address
- Description texts
- Activate Device
- Communication watchdog
- User’s parameter settings
- Module settings

User’s parameter and module are configured by using separate window.



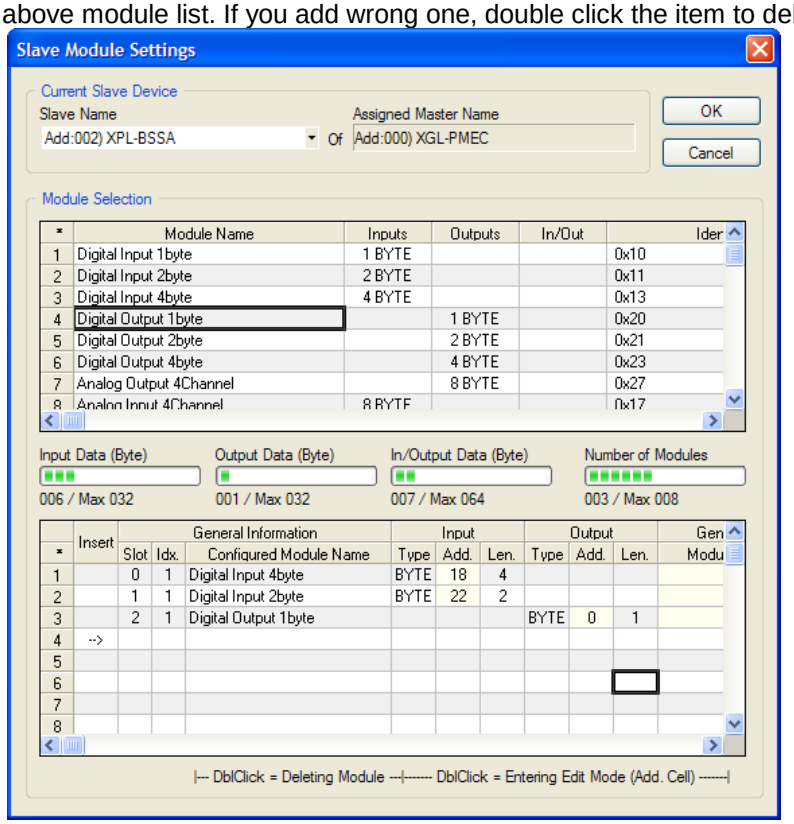
[Figure 7.4.6] slave property tab

First of all, the parameter is configured by using slave parameter settings window as shown below.



[Figure 7.4.7] Slave parameter settings window

Slave module settings window is as shown below. If a slave module is an expansion adapter such as XPL-BSSA, you can add the module to the expansion adapter by double clicking the module at the above module list. If you add wrong one, double click the item to delete it.

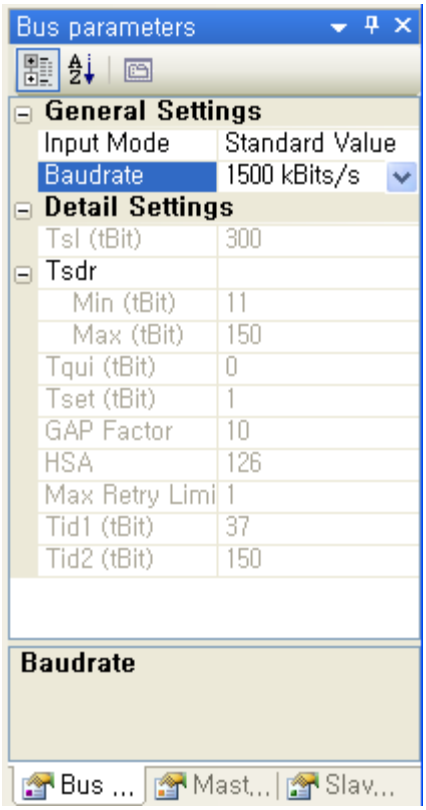


[Figure 7.4.8] Slave module settings window

7.4.3 Bus parameter

In this chapter, we will find out how to configure the network bus parameter of these. Network bus parameter can simply change the communication speed, or adjust the timing for communication parameter precisely.
Generally, default value is used without change in the communication parameter timing. Therefore, this manual describes how to change the communication speed, and more details can be found from PROFIBUS DP specification or software manual with careful consideration.

Since master only has the authority to configure the network bus parameter, you should choose master from topology to activate the “Bus Parameters” item from the “Configuration” menu. Select the activated “Bus Parameters” item to activate the bus parameter settings tab as shown below.



[Figure 7.4.9] bus parameter settings tab

If you simply select PROFIBUS DP communication speed (Baudrate) here, then the selected bus parameter values will be applied.

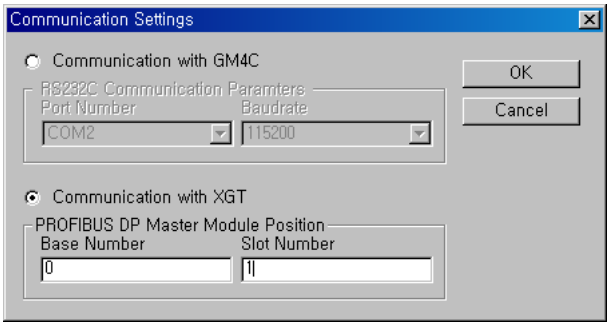
7.5 Download and upload Network Configuration

PROFIBUS DP Master is communicated through Network Configuration. To do so, there is a downloading function to apply the composed Network Configuration to the Master. In addition, the uploading function, which is core technology of our company, can read and restore the Network Configuration downloaded to the existing Master.

7.5.1 Download Network Settings

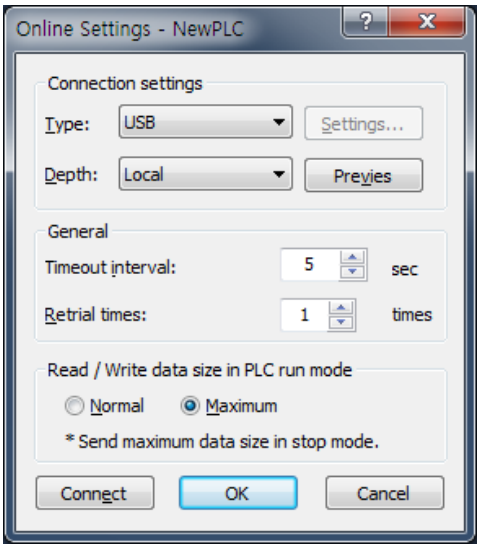
(1) Communication connection settings

In order to download the Network Configuration composed on the topology window to the XGT Pnet Master module, first of all, you should set up connection to XGT CPU.
If you select "Settings…" item from the "Communication" menu, the window will be popped up as seen below. Here you should select "Communication with XGT" and enter the information with current XGL-PMEC module, and click "OK" button.



[Figure 7.5.1] Communication Settings window: Information of XGL-PMEC settings

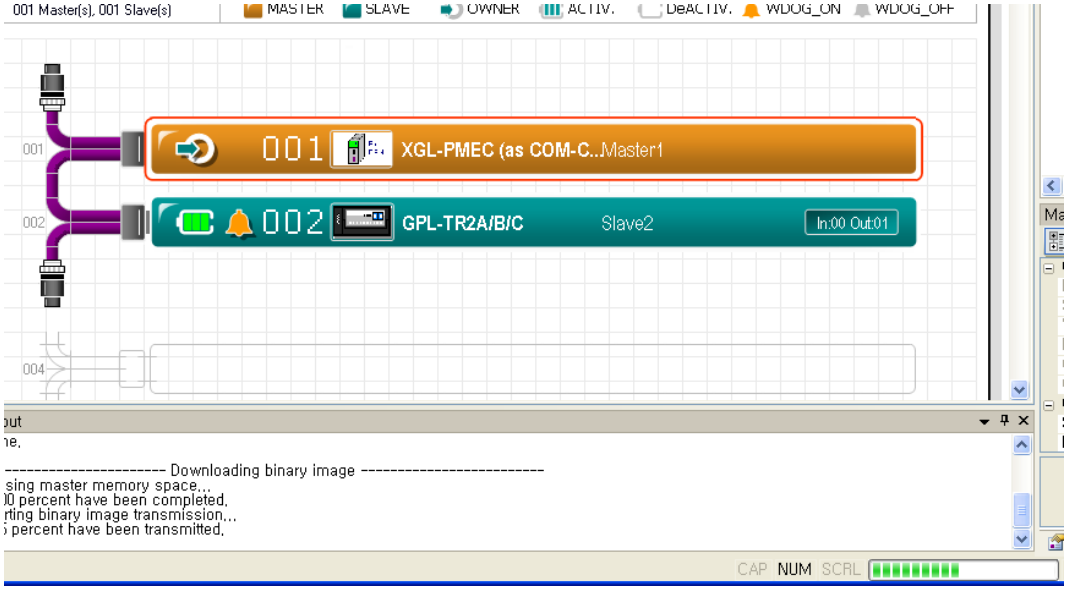
Then, XGT CPU connection settings window will pop up as shown below. If a user clicks "Confirm" button by selecting the settings connected by the user, then the connection settings will be finished.



[Figure 7.5.2] XGT CPU connection settings

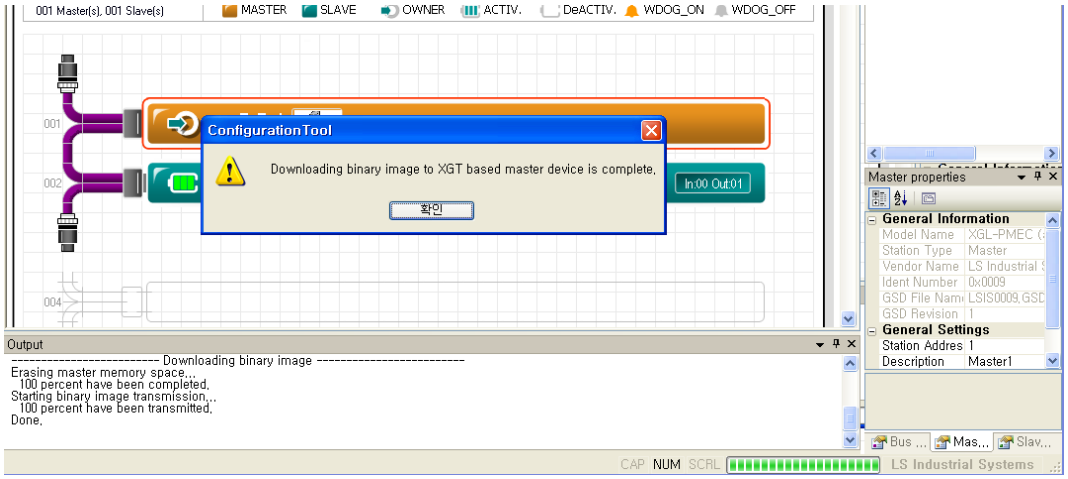
(2) Network Configuration download

If you already composed network in the topology, select “Download Image” item from the “Communication” menu to begin downloading. The figure below shows downloading status. The status bar runs progress bar, and the output window shows the progress rate.



[Figure 7.5.3] Download status

If downloading is completed, the progress bar is full, and “Done” message will be displayed on the output window.



[Figure 7.5.4] Downloading completed

7.5.2 Upload Network Settings

(1) Communication connection settings

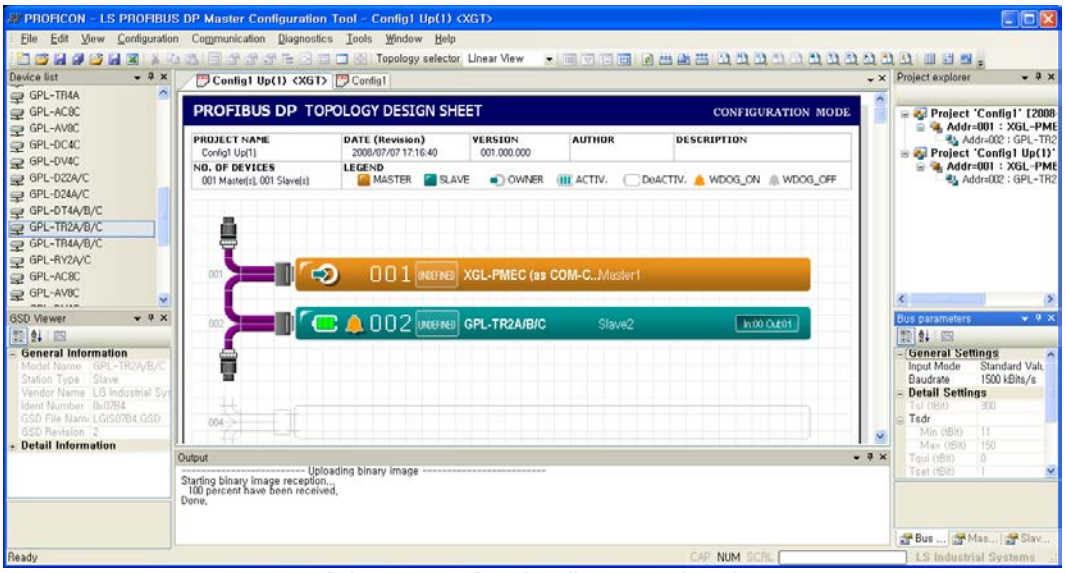
The method of connection settings can be referred from 7.5.1 Network Settings downloading

(2) Network Settings uploading

Conduct uploading by selecting “Upload image” from “Communication” menu. At this time, new project will be automatically generated, and uploading is proceeded.

[Figure 7.5.5] Upload status

If uploading is completed, “Done” message will be displayed on the output window. Project topology will show the Network Configuration composition uploaded from current master.



[Figure 7.5.6] Uploading completed

7.6 Diagnosis function

Applied functions of PROFIBUS DP include network diagnosis function and monitoring function.
Please see software manual for details.

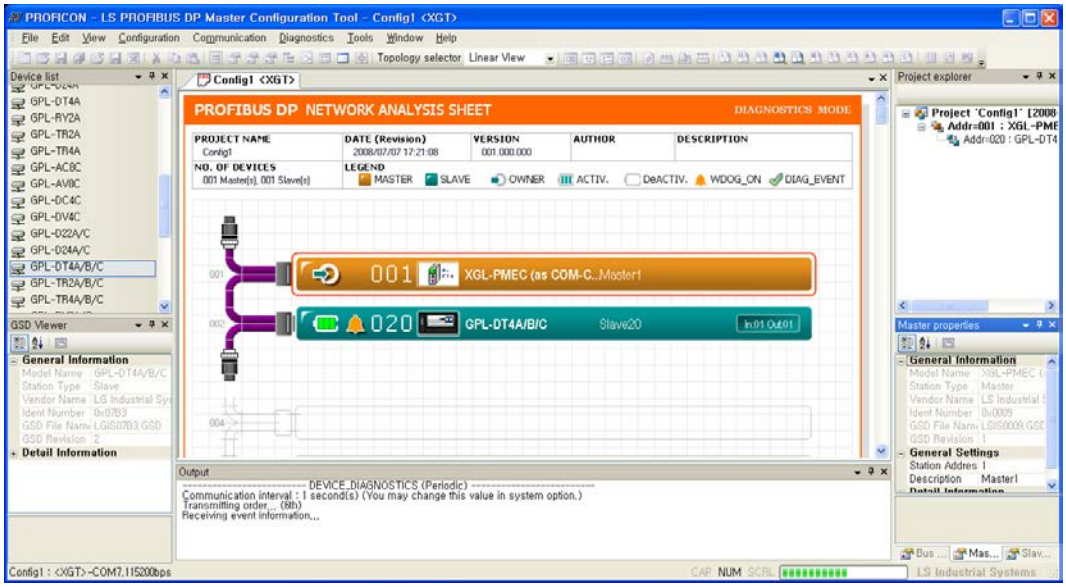
7.6.1 Start / Stop Communication

"Start Communication" and "Stop Communication" item of "Diagnostics" starts or finishes the PROFIBUS DP communication by setting up master mode as 'OPERATE or STOP mode.

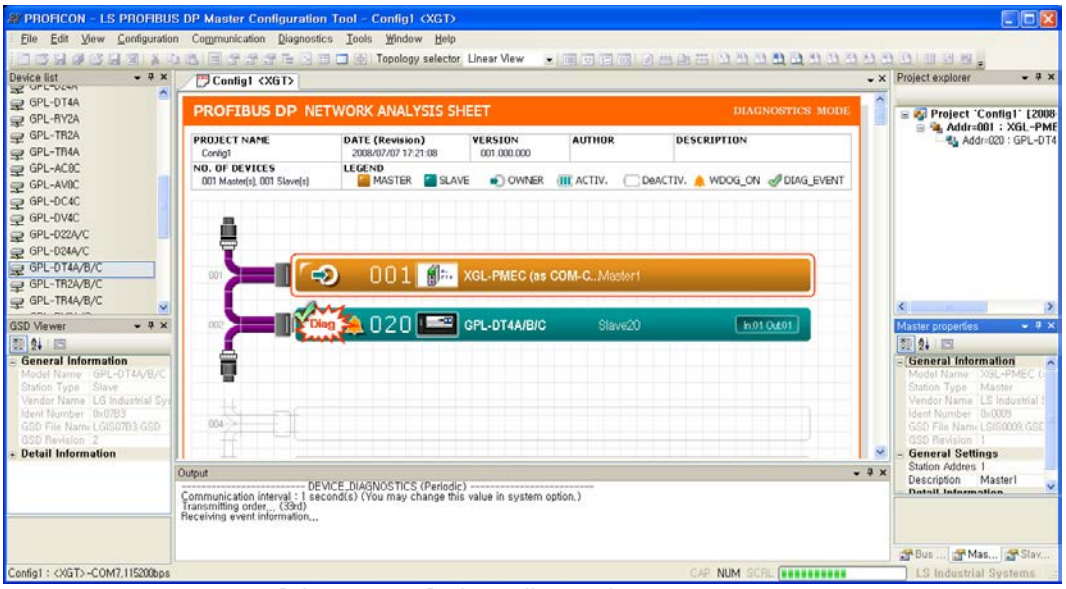
7.6.2 Debug mode (Start/Stop Debug Mode, Device Diagnostics)

(1) Start Debug Mode

The "Start Debug Mode" of "Diagnostics" menu continuously monitors the status of slave in debug mode. At this time, the topology is activated, and regularly checks out the status information of slaves from master.

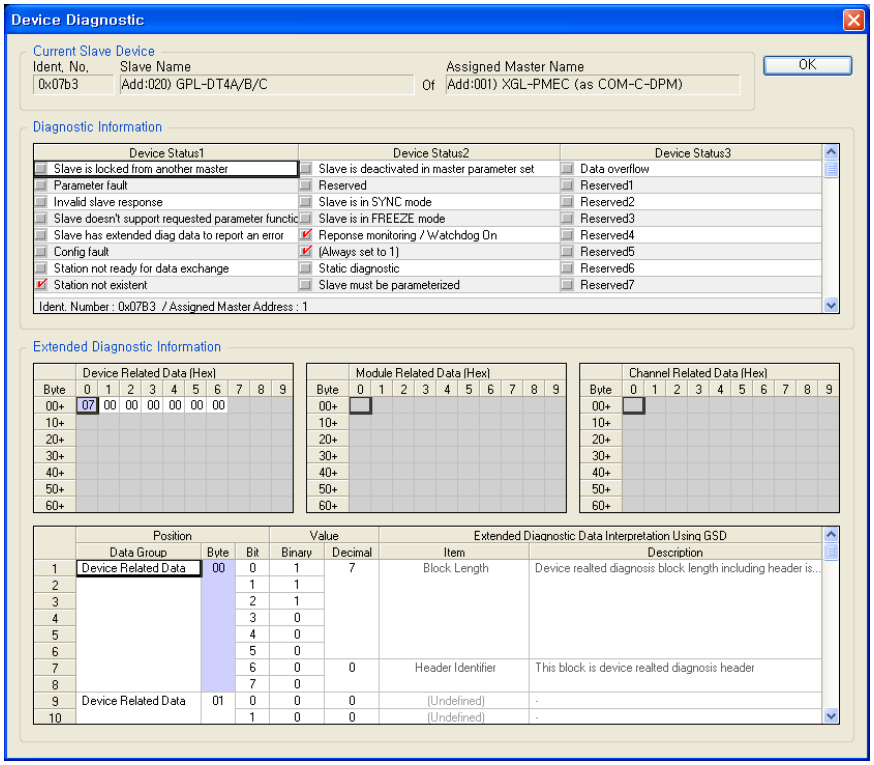


[Figure 7.6.1] Master debug mode



[Figure 7.6.2] Slave diagnosis event occurs

If any slave generates diagnostic information for cable cut-off, incorrect parameter or configuration, then “Diag” event is displayed at the slave on the topology as shown in the Figure 7.6.2 to inform the user.



[Figure 7.6.3] Slave diagnostic Information

(2) Device Diagnostics...

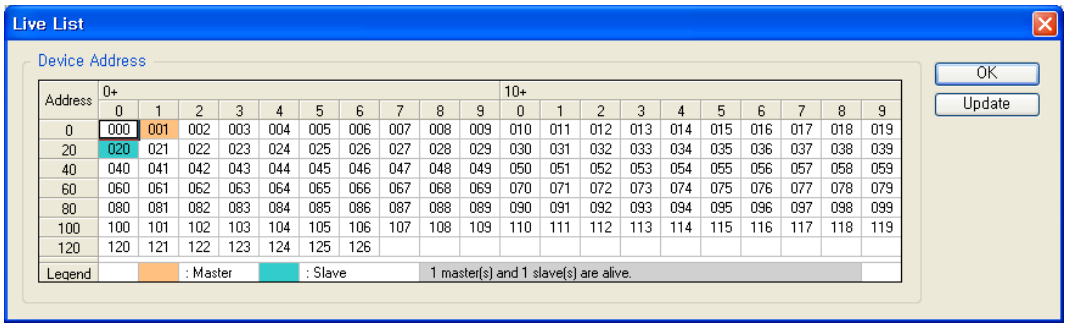
In order to verify the diagnostic information of slave, users should select the slave on the topology, and select “Device Diagnostics…” from “Diagnostics” menu to verify the diagnostic information like the Figure 7.6.3. Also, if the slave is double clicked on the topology, then the diagnostic information can be verified identically.

(3) Stop Debug Mode

Finally, if you want to terminate the debug mode, select “Stop Debug Mode” from the “Diagnostics” menu.

7.6.3 Live List

This is the function to display the information of the network which is under normal data communication. If “Live List…” is selected from “Diagnostics,” then the live list window appears as shown below.



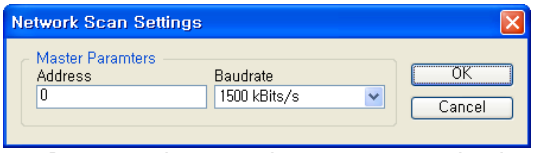
Address	0+										10+									
	0	1	2	3	4	5	6	7	8	9	0	1	2	3	4	5	6	7	8	9
0	000	001	002	003	004	005	006	007	008	009	010	011	012	013	014	015	016	017	018	019
20	020	021	022	023	024	025	026	027	028	029	030	031	032	033	034	035	036	037	038	039
40	040	041	042	043	044	045	046	047	048	049	050	051	052	053	054	055	056	057	058	059
60	060	061	062	063	064	065	066	067	068	069	070	071	072	073	074	075	076	077	078	079
80	080	081	082	083	084	085	086	087	088	089	090	091	092	093	094	095	096	097	098	099
100	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119
120	120	121	122	123	124	125	126													

[Figure 7.6.4] Live list

If “Update” button on the right side is clicked, then the contents of the live list will be updated.

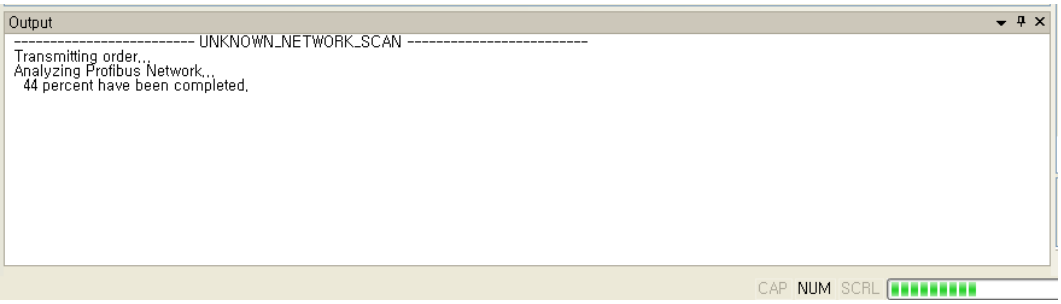
7.6.4 Automatic Network Scan

This is the function to automatically scan all slaves physically connected to master through cable. This helps to figure out the Network Configuration easily. If you select “Auto. Network Scan…” item from “Diagnostics,” then the dialogue window where the master address and communication speed are configured appears as shown below.



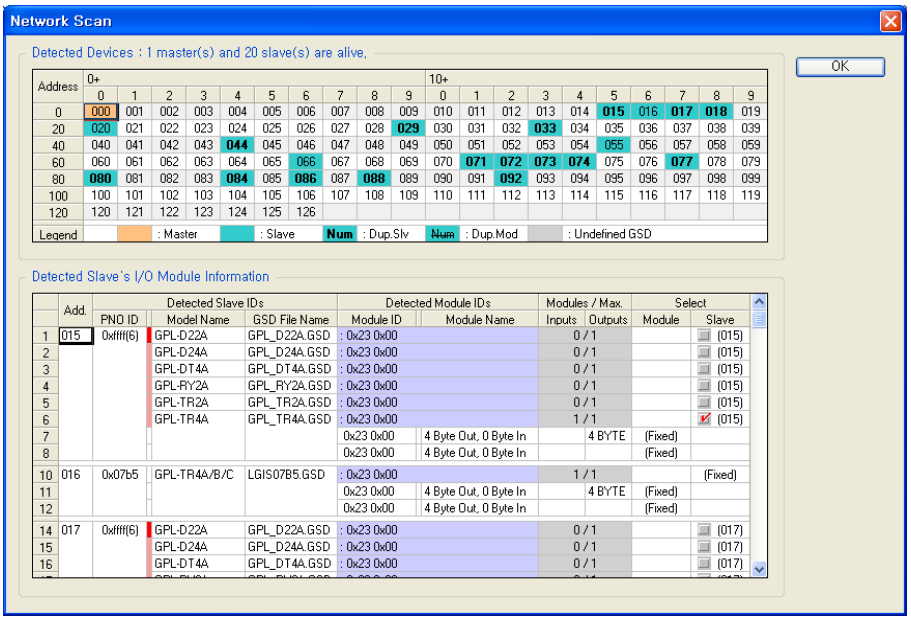
[Figure 7.6.5] Automatic network scan communication settings

After setting up master address and communication speed, click OK button to operate the auto scan as below.



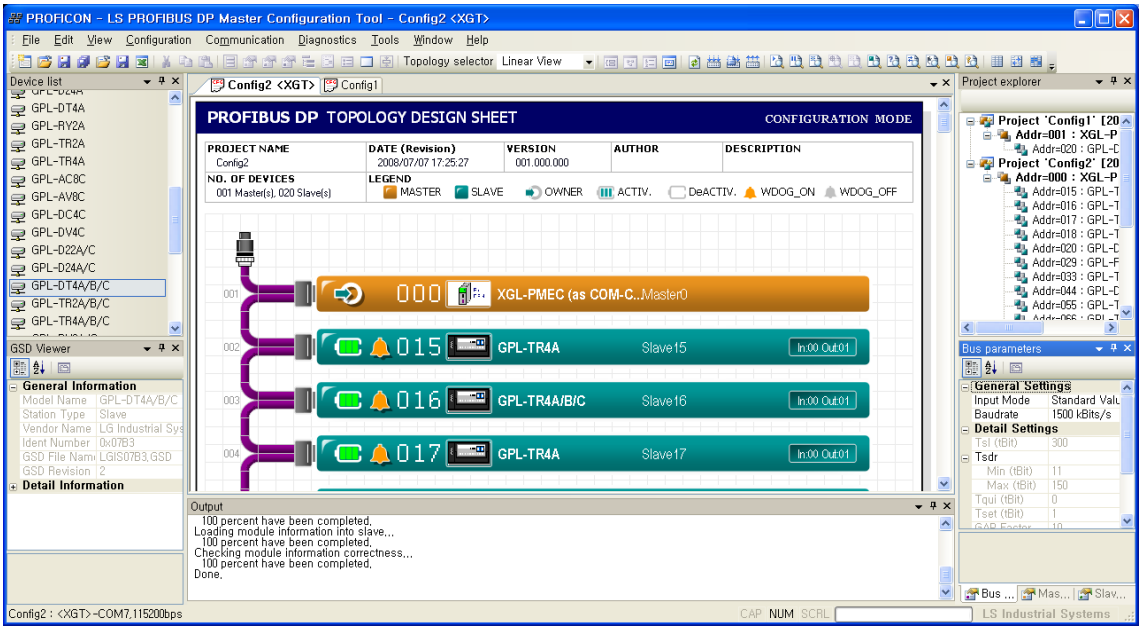
[Figure 7.6.6] Display automatic network scan operation status

After the automatic network scan is completed, the slave list collected by master and I/O information and GSD file information are displayed on the network scan window as below.



[Figure 7.6.7] Network scan window

This window displays information of slaves. Users check out whether this information is matched to actual slave information. If GSD file and I/O information is not matched, or there is no GSD file, then obtain formal GSD file provided by the manufacturer of the slave and compose the Network by yourself.
If the scanned contents are correct, then click OK button to check out the collected Network composition as shown below.

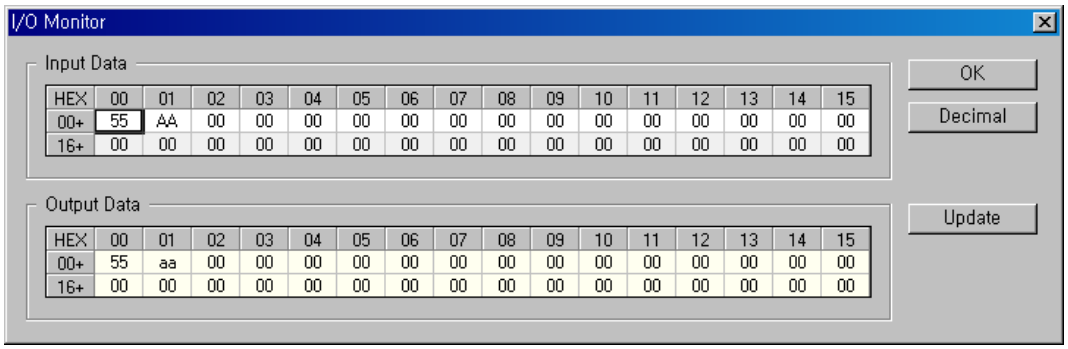


[Figure 7.6.8] Network topology collected and composed

The composition of slaves physically connected to master can be easily verified in this way.

7.6.5 I/O Data Monitoring

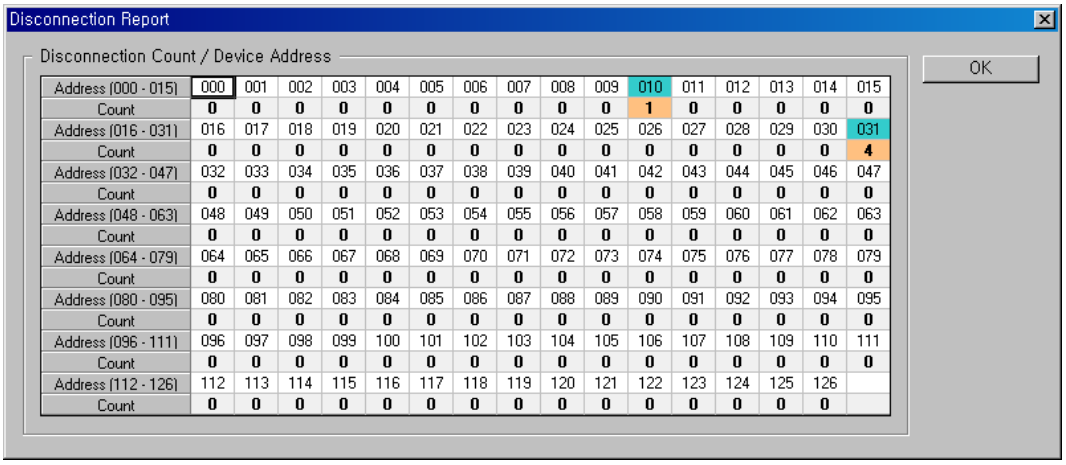
This is the function to monitor I/O data of slaves. This can confirm whether the I/O of a certain slave is correct. If “I/O Monitor…” item is selected from “Diagnostics,” then existing data communication is stopped, and the monitor window pops up as below. If users enter the output into the output data and click update button, then the value will be displayed through slave. And then the values entered through current slave will be monitored through the input data area. (Here the number of data available for I/O is 32 bytes respectively.)



[Figure 7.6.9] I/O monitor

7.6.6 Disconnection Report

This function shows the number of frequency of connection errors for slaves under data communication. If you select “Disconnection Report…”item from “Diagnostics,” then the number of errors occurred are displayed in real time as shown below.

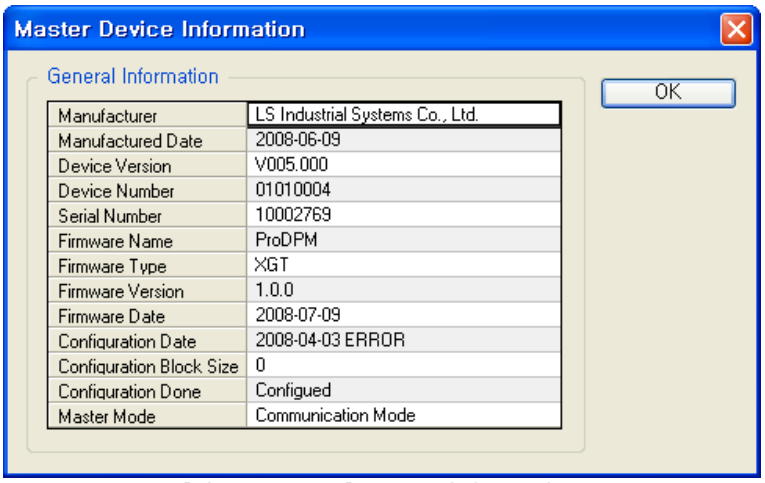


Address (000 - 015)	000	001	002	003	004	005	006	007	008	009	010	011	012	013	014	015
Count	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
Address (016 - 031)	016	017	018	019	020	021	022	023	024	025	026	027	028	029	030	031
Count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4
Address (032 - 047)	032	033	034	035	036	037	038	039	040	041	042	043	044	045	046	047
Count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Address (048 - 063)	048	049	050	051	052	053	054	055	056	057	058	059	060	061	062	063
Count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Address (064 - 079)	064	065	066	067	068	069	070	071	072	073	074	075	076	077	078	079
Count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Address (080 - 095)	080	081	082	083	084	085	086	087	088	089	090	091	092	093	094	095
Count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Address (096 - 111)	096	097	098	099	100	101	102	103	104	105	106	107	108	109	110	111
Count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Address (112 - 126)	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	
Count	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

[Figure 7.6.10] Communication disconnection report

7.6.7 Master information (Device Information)

For the information of current master, select “Device Information...” item from “Diagnostics,” then the contents below are displayed as shown in the figure below.



Manufacturer	LS Industrial Systems Co., Ltd.
Manufactured Date	2008-06-09
Device Version	V005.000
Device Number	01010004
Serial Number	10002769
Firmware Name	ProDPM
Firmware Type	XGT
Firmware Version	1.0.0
Firmware Date	2008-07-09
Configuration Date	2008-04-03 ERROR
Configuration Block Size	0
Configuration Done	Configued
Master Mode	Communication Mode

[Figure 7.6.11] Master information

7.6.8 Master reset (Firmware Reset)

Reset current master by software.

Chapter 8 High-speed Link

8.1 Introduction

The way of Pnet I/F module communication is High-speed service. You can use High-speed link by setting the Send/Receive device area and Data size through XG5000
High-speed link function is as shown below.

1) High-speed link block setting:
   (1) If the TRX areas are many, the block can be set up to maximum 126.
   (2) Maximum 244 byte per block.
   (3) Maximum link point is up to 3,584 byte for sending and 3,584 byte for receiving.

2) Setting of sending cycle:
   User can set the cycle of sending per block.

3) Setting of Send and Receive area
   It can set the area of send and receive per data block depending on I/O address.

4) Information of High-speed link
   It supplies the information by High-speed link flag whether communication status is normal. It can available to construct the reliable communication system.

Remark

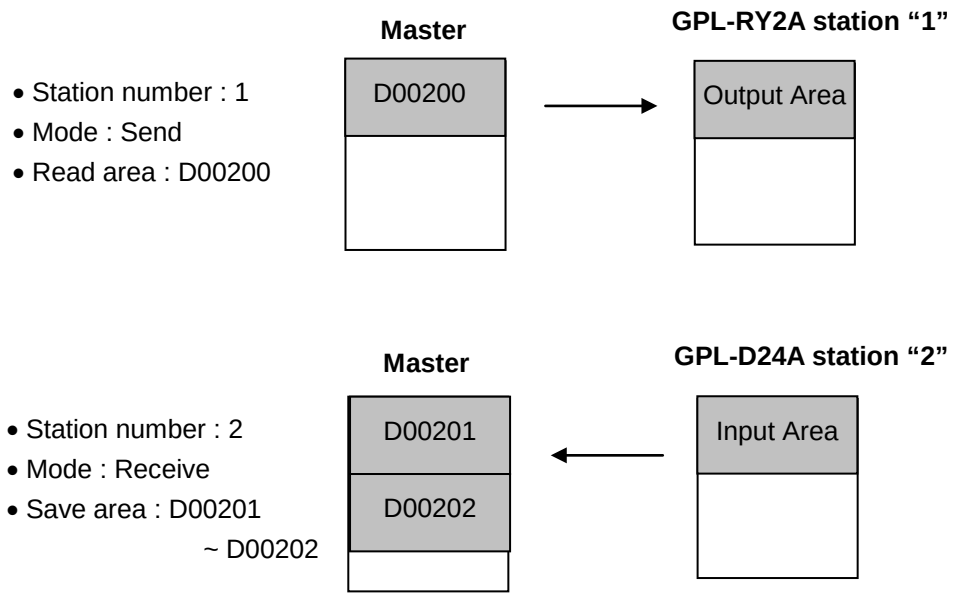
1) In case of communicating with the slave module whose station number is “y” through High-Speed link “x”, _HSx_TRXy flag will be ON.
2) For example, In case of communicating with the slave module whose station number is “1” through High- Speed link “1”, _HS1_TRX001flag will be ON.

8.2 Process of High-speed Link Send/Receive Data

For the application example of High-speed link, the master station “0” and slave stations “1” and “2” (GPL-RY2A, GPL-D24A) are to share data with each other.

Setting is as follows;

1) The master station “0” transmits 2 bytes of D00200 data to the slave station “1”.
2) 4 bytes of the data received from the station “2” are saved on D00201, D00202.



[Figure 8.2.1] Block diagram of High-speed link process

8.3 Operation Sequence of High-speed Link

Operation sequence of High-speed link

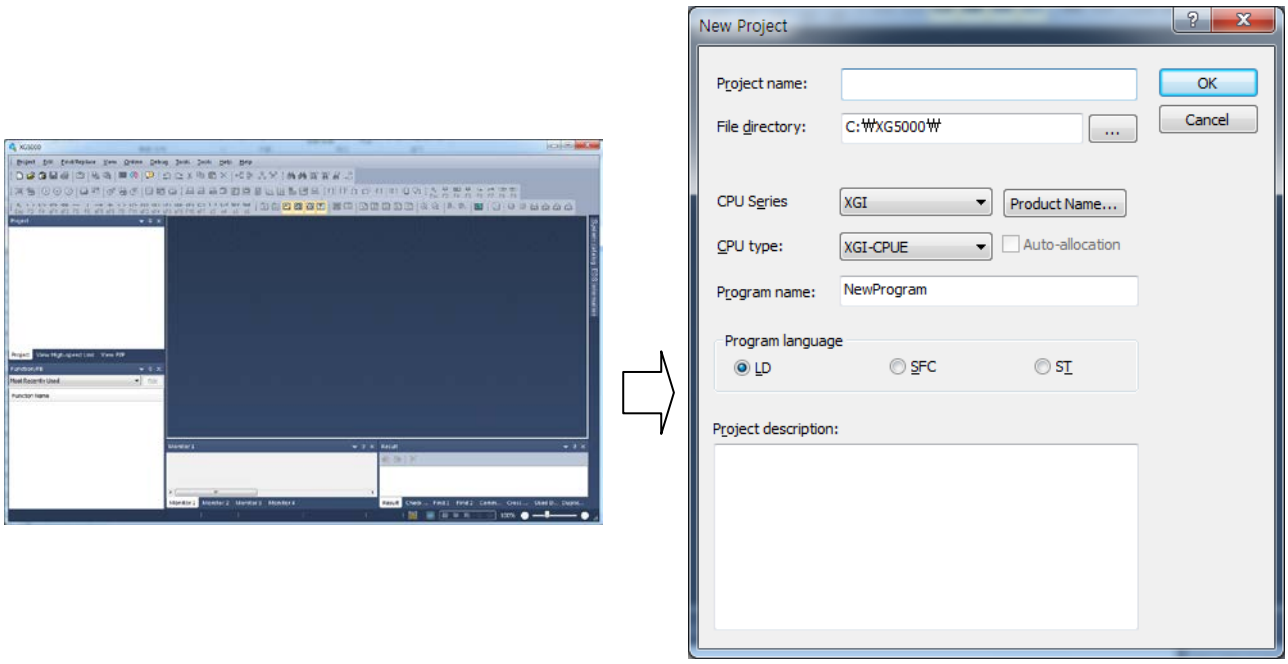
No.	S/W applied	Operation	Details
1	SyCon or PROFICON	Execute Configuration tool	Execute SyCon for XGL-PMEA, PROFICON for XGL-PMEC
2		Set Network Configuration	Refer to Chapter 6 SyCon Setting (XGL-PMEA) or Chapter 7 PROFICON Setting (XGL-PMEC)
3		Connect to communication port	Refer to Chapter 6 SyCon Setting (XGL-PMEA) or Chapter 7 PROFICON Setting (XGL-PMEC)
4		Download Network Configuration	Refer to Chapter 6 SyCon Setting (XGL-PMEA) or Chapter 7 PROFICON Setting (XGL-PMEC)
5	XG5000	XG5000 execution	Execute installed XG5000
6		Make new file	Project → New project Setting project name and type
7		Set XG5000 connection	Select applicable connection driver through XG5000 → Online → Connection settings
8		Connect to XG5000	XG5000 → Online → Connect
9		IO Information Read	XG5000 → Online → Diagnosis → I/O Information → Click “I/O Sync”
10		Define High-speed link project	Specify “High-speed Link” on the XG5000 screen
11		Set communication module and communication period	Select one among “High-speed link 1” ~ ”High-speed link 12” and double-click it to specify module type, base No., slot No. and period type
12		Upload SyCon	Double-click the created “Block” and click Online → Communication module setting → Config. Upload while cursor is on the “High speed link” window
13		High-speed Link Block Setting	Double-click the cell on the “High-speed Link” screen 1) For Send : specify Read area (CPU area) 2) For Receive : specify Save area (CPU area)
14		High-speed Link Parameters Write	Online → Write: check applicable High-speed link and write
15		High-speed Link Enable	Online → Communication module setting → Enable Link: enable applicable High-speed link

[Table 8.3.1] Operation sequence of High-speed link

8.4 High Speed Link Parameter Setting

High-speed link parameter setting is set in High-speed link screen in XG5000. Refer to Chapter 8.3 about setting order.

1) Execution of XG5000
   If XG5000 is executed firstly, the menu is as shown below.

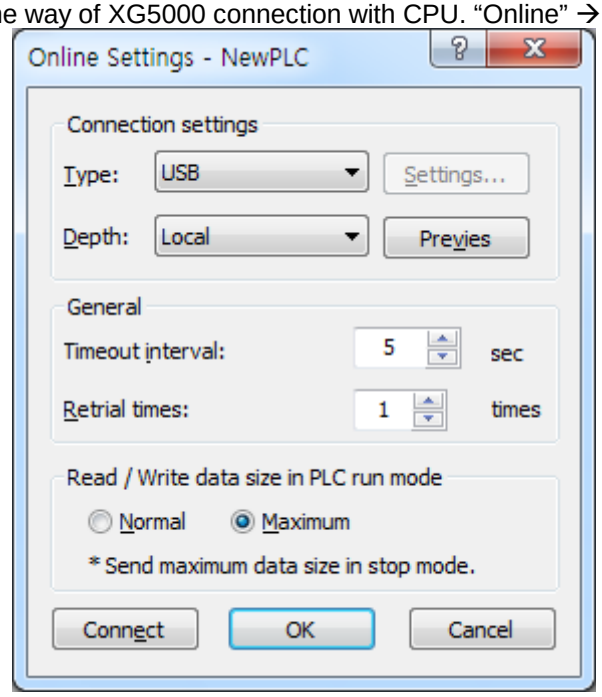


[Figure 8.4.1] Basic screen of XG5000

Items	Contents		Remark
Project name	Writing the project name in the XG5000 software.		-
File location	Selecting the directory to save the project.		-
PLC Series	Selecting the PLC series (XGK, XGB, XGI, XGR)		-
CPU type	XGK	XGK-CPUA, CPUE, XCPUH, CPUS, CPUU	-
	XGB	XGB-DR16CS, XBMS, XBCH, XECH, XBCE, XBCS, XBCHL	
	XGI	XGI-CPUE, CPUH, CPUS, CPUU/D, CPUUN	
Project description	Writing the comment about the project.		-

2) Setting of XG5000 connection

It designates the way of XG5000 connection with CPU. “Online” → “Connection Settings”



[Figure 8.4.2] Connection settings

Items		Description
Connection option settings	Connection type	RS-232C, USB
	Connection depth	Local/Remote connection setting Local: Connection of from PC to CPU directly Remote: Connection from PC to CPU via communication module
Common	Timeout interval when communication failure	1~9 seconds
	Retrial times when communication failure	1~9 times

[Table 8.2] Setting of connection option

3) XG5000 connection

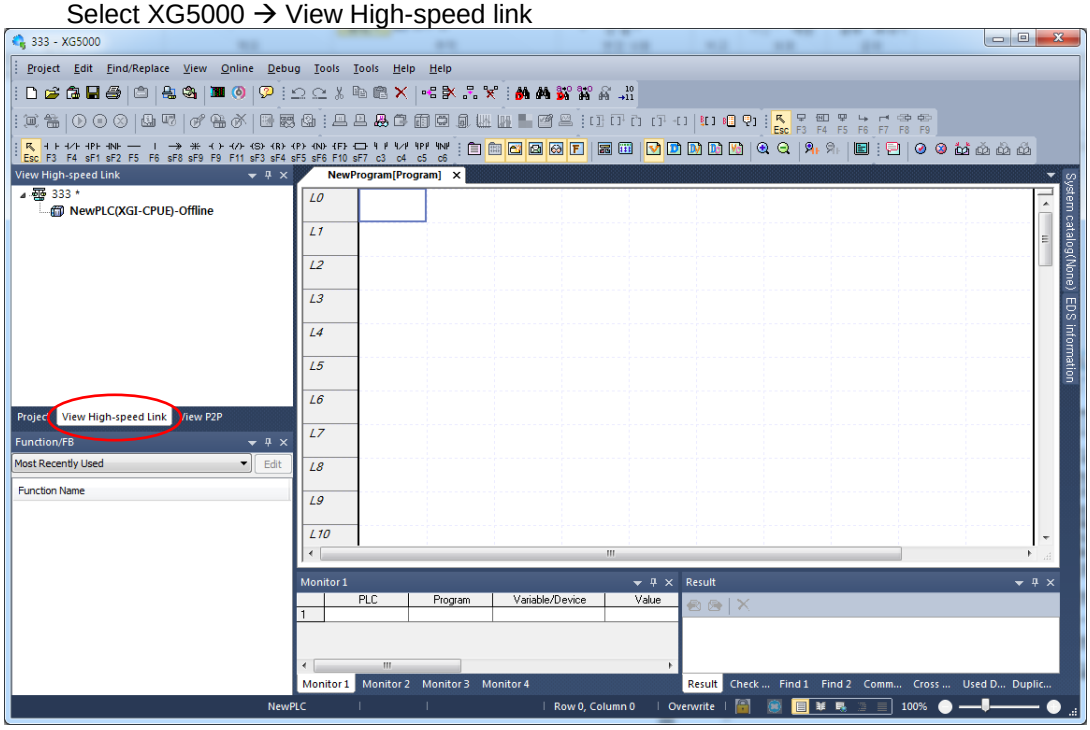
XG5000 is connected to CPU by “Online” → “Connect”.

4) Read I/O information

Select “Online” → “Diagnosis” → “I/O Information” and click “I/O Sync” to read modules installed on the base. Surely execute “I/O Sync” for High-speed link setting.

5) High-speed link project

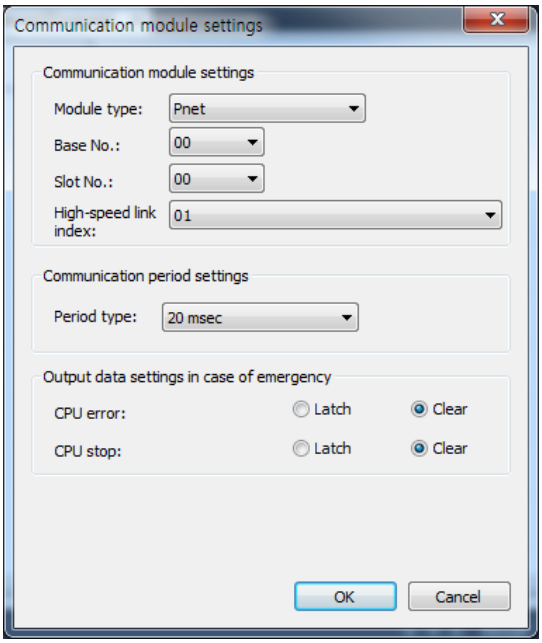
Select XG5000 → View High-speed link



[Figure 8.4.3] Initial screen of High-speed Link Setting

6) Communication module and Communication period setting

If right-click the High-speed link → "Add Item" → "High-speed Link Communication", screen of Communication module settings and Communication period settings is opened. In this screen, communication module, communication period and output data in case of emergency can be specified.



[Figure 8.4.4] Communication module setting

Items			Description
Communication module settings		Module type	Select Pnet I/f module
		Base No.	Setting of base position installed Range of Setting: 0 ~ 7 (varying depending on the CPU module)
		Slot No.	Setting of slot position installed Range of Setting: 0 ~ 11
		High-speed link index	Setting of High-speed link index number Range of Setting: 1~12
Communication period settings		Period type	- Range of setting: 20 ㎳, 50 ㎳, 100 ㎳, 200 ㎳, 500 ㎳, 1s, 5s, 10s (default is 20 ㎳) - This applied to Send data - But Receive data will be processed in every scan end regardless of communication period.
Output data setup in case of emergency settings	CPU error	Latch	Keeps its output status (But, P device data is cleared)
		Clear	Clears all outputs
	CPU stop	Latch	Keeps its output status (But, P device data is cleared)
		Clear	Clears all outputs

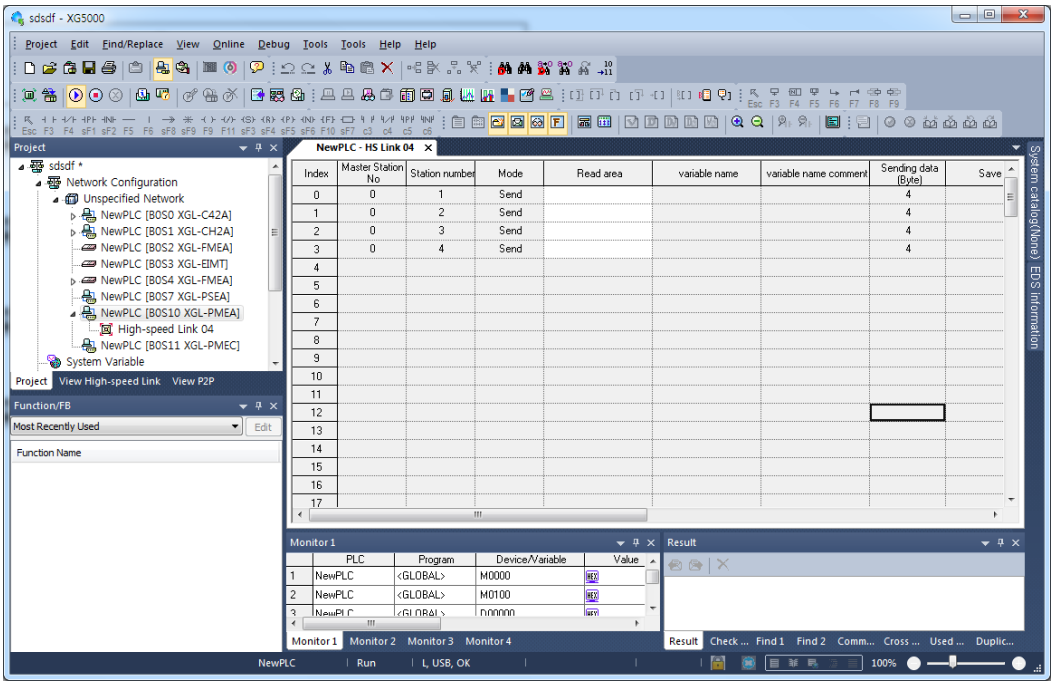
[Table 8.4.2] Setting of communication module

7) Config. Upload

After “Setting of communication module and communication period” is complete, while putting the mouse cursor on High-speed link window (right screen of XG5000), and select “Online” → “Communication module setting” → “Config. Upload (Dnet, Pnet)” to upload a configuration file.

8) Setting of High-speed link block

Double-click the applicable index number of Configuration file uploaded and designates the 'Read area' and 'Save area'.



[Figure 8.4.5] Setting of High-speed link block

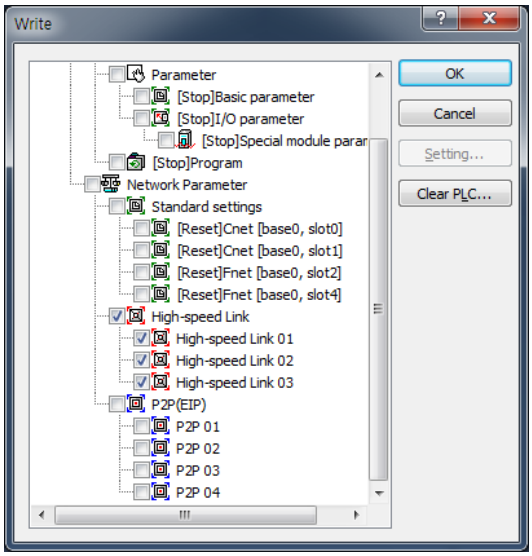
Classification	Details	
Master Station No.	Display the Master station no.	
Station No. *1	Setting range for the slave : 0 ~ 126 If identical station No. is set, communication will not be normal.	
Mode *1	Send: Transmission the data from master module to slave module. Receive : Transmission the data from slave module to master module.	
Read area (Master module → Slave module)	XGK	Area to set the start address of device used for Sending. Setting device : P, M, K, F, T, C, U, Z, L, N, D, R, ZR
	XGI	Area to set the start address of device used for Sending. Setting device : A, M, I, Q, R, W, F, K, L, N, U
Save area (Slave module → Master module)	XGK	Area to set the start address of device used for Receiving. Setting device : P, M, K, F, T, C, U, Z, L, N, D, R, ZR
	XGI	Area to set the start address of device used for Receiving. Setting device : A, M, I, Q, R, W, F, K, L, N, U
Sending data Receiving data (Byte)	Display input/output points of slave module by the bytes. - In case of I/O module of 8 bits or less, please set 1 byte.	

*1 : Area is not able to set

[Table 8.4,3] Setting of High-speed link block

9) Write the High-speed link parameter

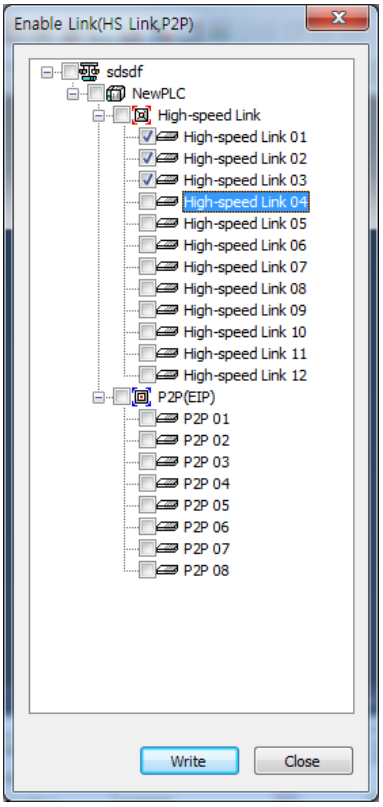
Click “Online” → “Write” in XG5000, check the applicable High-speed link and then click [OK].



[Figure 8.4.6] Screen of Write the parameter

10) Enable of High-speed link

Click “Online” → “Communication module setting” → “Enable Link” in XG5000, check the applicable High-speed link and then click [Write]. If High-speed link is enabled, on the module’s LED display High-speed LED will be on, when High-speed link starts.



[Figure 8.8] Screen of Link Enable

8.5 High-speed Link Information

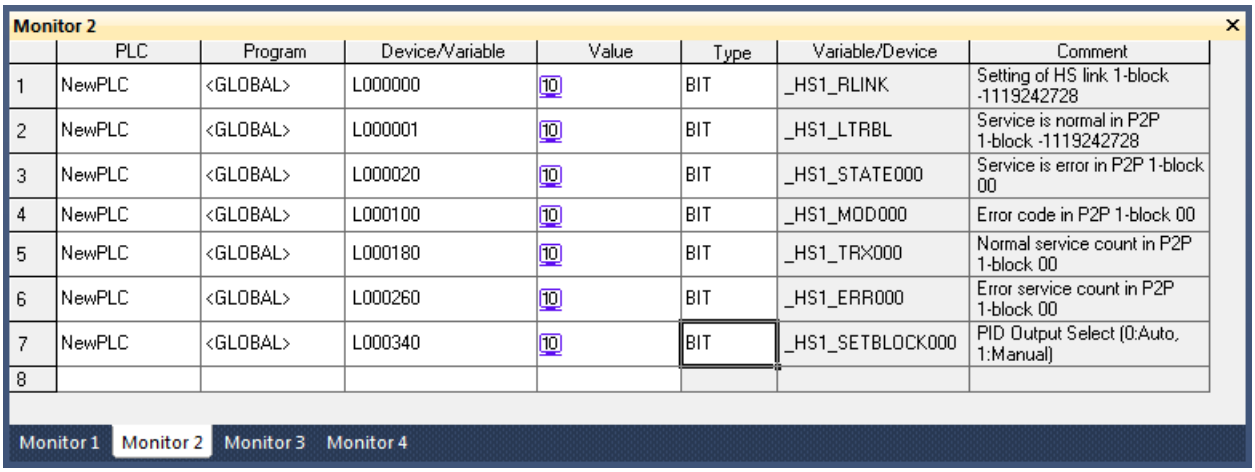
With High-speed link service used to exchange data between communication modules of two or more stations, it provides a checking method of High-speed link service status for the user through High-speed link information so to confirm reliability of the data read from the destination station via the High-speed link.

In other words, the communication module synthesizes the data received up to that time at intervals of a specific time and lets the user know if High-speed link operates as in parameters specified by the user through High-speed link information where the whole information of Run-link(_HSxRLINK) and Link-trouble(_HSxLTRBL) to provide the whole information of the communication network, and the individual information of _HSxSTATE, _HSxTRX, _HSxMOD and _HSxERR to provide communication status for 128 register items in the parameters are contained.

The user can use the information in keyword format when programming, and also monitor the High-speed link status using the monitor function of the High-speed link information. Prior to its application, the user is requested to check the reliability of the Send/Receive data through High-speed link information of Run-link and Link-trouble when operating several PLCs with High-speed link used.
[Table 8.5.1] below shows functions and definition of the High-speed link information.

Classification	Run-link	Link-trouble	Send/Receive status	Operation Mode	Error	High-speed link status
Information type	Whole information	Whole information	Individual information	Individual information	Individual information	Individual information
Keyword name (x=High-speed link No. n= High-speed link station No.)	_HSxRLINK	_HSxLTRBL	_HSxTRX[n] (n=0.127)	_HSxMOD[n] (n=0.127)	_HSxERR[n] (n=0.127)	_HSxSTATE[n](n=0.127)
Data type	Bit	Bit	Bit-Array	Bit-Array	Bit-Array	Bit-Array
Monitor	Available	Available	Available	Available	Available	Available
Program	Available	Available	Available	Available	Available	Available

[Table 8.5.1] High-speed link information function



	PLC	Program	Device/Variable	Value	Type	Variable/Device	Comment
1	NewPLC	<GLOBAL>	L000000	10	BIT	_HS1_RLINK	Setting of HS link 1-block -1119242728
2	NewPLC	<GLOBAL>	L000001	10	BIT	_HS1_LTRBL	Service is normal in P2P 1-block -1119242728
3	NewPLC	<GLOBAL>	L000020	10	BIT	_HS1_STATE000	Service is error in P2P 1-block 00
4	NewPLC	<GLOBAL>	L000100	10	BIT	_HS1_MOD000	Error code in P2P 1-block 00
5	NewPLC	<GLOBAL>	L000180	10	BIT	_HS1_TRX000	Normal service count in P2P 1-block 00
6	NewPLC	<GLOBAL>	L000260	10	BIT	_HS1_ERR000	Error service count in P2P 1-block 00
7	NewPLC	<GLOBAL>	L000340	10	BIT	_HS1_SETBLOCK000	PID Output Select (0:Auto, 1:Manual)
8							

[Figure 8.5.1] Monitor window of variables

1) Run-link (_HSxRLINK)

As the whole information it shows whether High-speed link is normally executed through the user defined parameters, whose contact will be kept 'On' if once 'On' until Link Enable is 'Off', and also will be 'On' under the conditions specified below.

① If Link Enable is 'On'.

② If all the register list settings of parameters are specified normally.

③ If all the data applicable to the parameters register list is transmitted and received as specified in the period.

④ If the status of all the destination stations specified in the parameters is Run and with no error at the same time.

2) Link-trouble (_HSxLTRBL x=HS link No.(1~12))

As the whole information it shows whether High-speed link is normally executed through the user defined parameters, which will be 'On' if Run-link 'On' condition is violated when Run-link is On, and will be off if the condition is recovered.

3) Send/Receive (Tx/Rx) status (_HSxTRX[0..127] x=HS link No.(1~12))

As individual information it shows the operation status of High-speed link parameters on the register list up to 128 registered items'Send/Receive information. If the Send/Receive operation of the registered items is agreeable to the Send/Receive period, the applicable bit will be On, and if not, it will be Off.

4) Operation mode (_HSxMODE[0..127] x=HS link No.(1~12))

As individual information it shows the operation status of High-speed link parameters on the register list up to 128 registered items' operation mode information just like the max. register number. If the station specified in the register item is in Run mode, the applicable bit will be On, and if in Stop/Pause/Debug mode, it will be Off.

5) Error (_HSxERR[0..127] x=HS link No.(1~12))

As individual information it shows the operation status of High-speed link parameters on the register list up to 128 registered items' error information just like the max. register number. The error displays the general status of the PLC which fails to execute the user program. If the destination station PLC is normal, it will be Off, and if abnormal, it will be On.

6) High-speed link status (_HSxSTATE[0..127] x=HS link No.(1~12))

As individual information it shows the operation status of High-speed link parameters on the register list up to 128 registered items' High-speed link status just like the max. register number, which synthesizes the information of the individual items to display the general information of the registered items. In other words, if the applicable list's Send/Receive status is normal with the operation mode of Run and with no error, it will be On, and if the conditions above are violated, it will be Off.

8.5.1 Monitor of High-speed link information

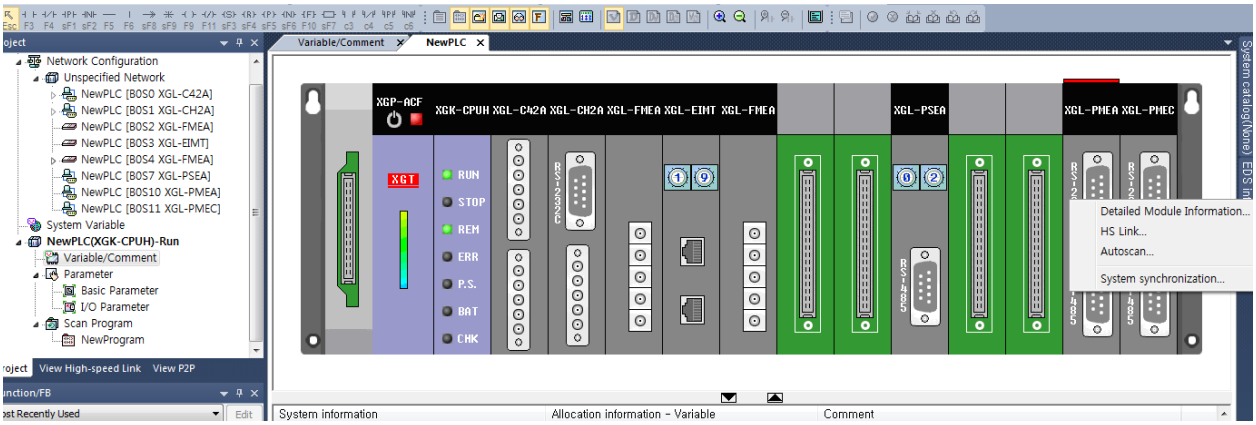
High-speed link information can be checked through the variable monitor on the monitor menu after XG5000 is Online connected, or through the XG5000 diagnosis service.

1) Variable monitor

Variable monitor is a function used to select an item only necessary to monitor by means of XG5000's flag monitor function. Select [View] [Variable Monitor Window] to display the variable register screen as shown on [Fig. 7.9] , and there select [Flag] directly to select and register High-speed link information flag one by one on the screen of the variable flags list. At this time, since _HSxSTATE[n], _HSxERR[n], _HSxMOD[n] and _HSxTRX[n] are the flags of array type, the user needs directly to select the array numbers which stand for the register numbers inside the parameters.

2) High-speed link monitor from the XG5000 diagnosis services

(1) Select XG5000's "Online" → "Communication module setting" → "System Diagnosis." → Click the right mouse button with the cursor positioned on the applicable module

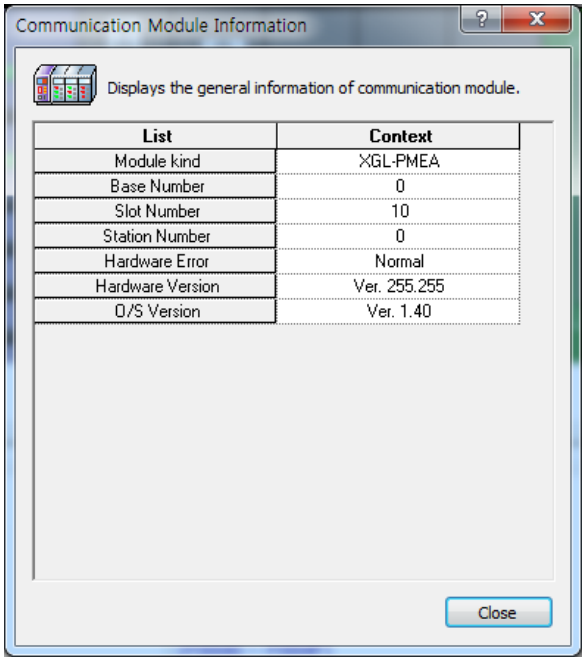


[Figure 8.5.2] System Diagnosis

Item	Details
Communication module information	Displays the information of communication module
High Speed Link	Displays the information of high speed link
Auto scan	Displays the information of the slave configuration

[Table 8.5.2] System diagnosis

(2) Module Information : “System Diagnosis.” → Click the right mouse button with the cursor positioned on the applicable module → Detailed Module Information

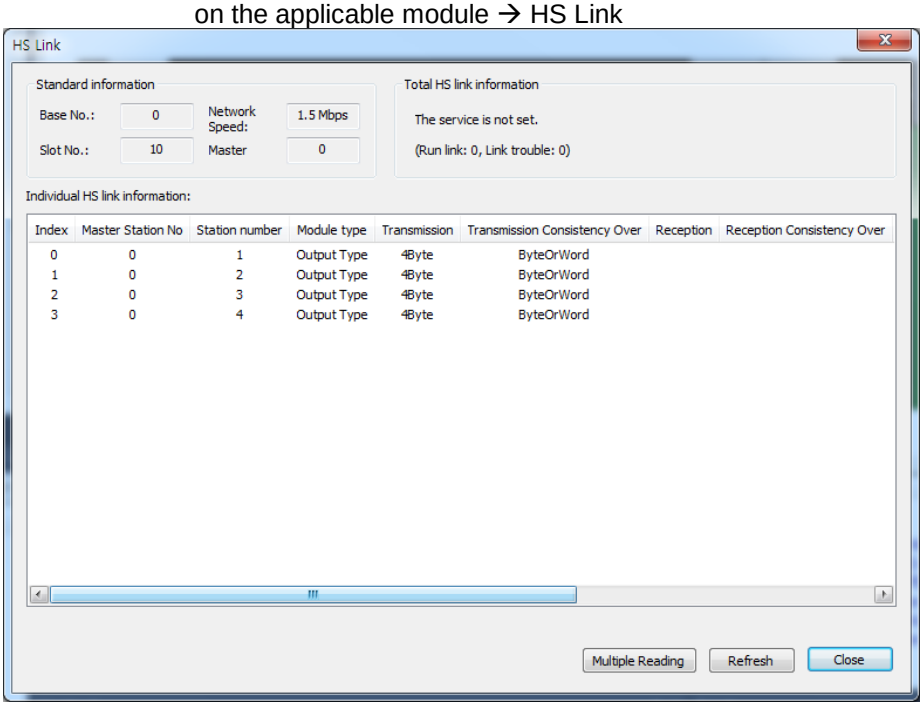


[Figure 8.5.3] Communication module information

Item	Details
Module kind	Displays communication module type
Base Number	Displays the base no.(0~7)
Slot Number	Displays the slot no.(0~11)
Station Number	Displays the relevant station number
Hardware Error	Displays the hardware status.
Hardware Version	Displays the hardware version.
O/S Version	Displays the software version

[Table 8.5.4] Communication module information

(3) High Speed Link : “System Diagnosis.” → Click the right mouse button with the cursor positioned on the applicable module → HS Link

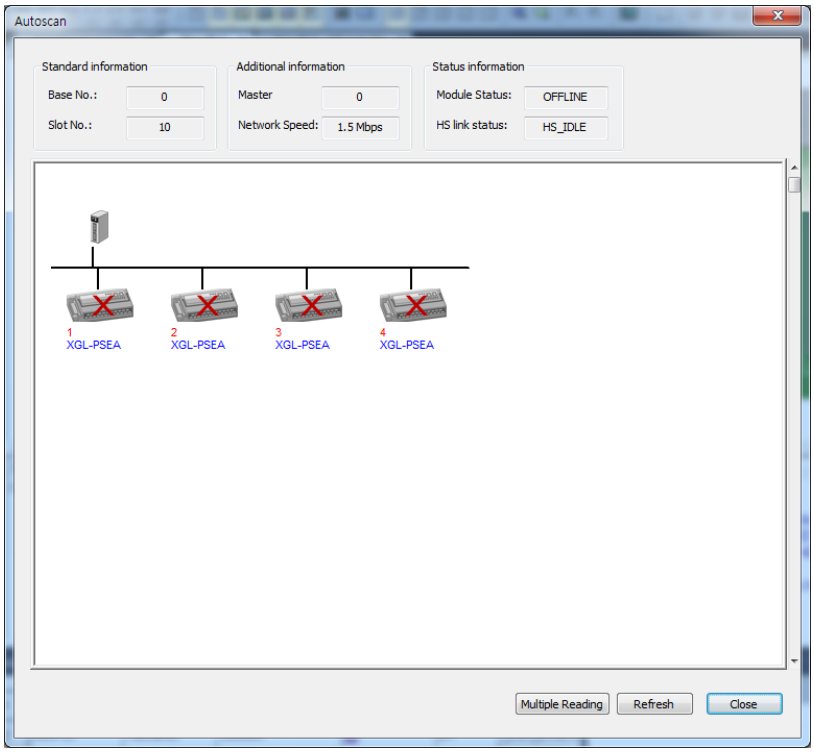


[Figure 8.5.4] High Speed Link

Item		Details
Standard information	Index	Displays the High-speed link block number
	Base no.	Displays the base no.(0~7)
	Slot no.	Displays the slot no.(0~11)
	Network speed	Displays the communication speed by bps unit (9,600 bps ~ 12Mbps)
	Master	Displays the master station no.(0~126)
Total HS link information	Run Link	Displays the flag of Run Link
	Link trouble	Displays the flag of Link Trouble
Individual HS link information	Master station no.	Displays the master station no.(0~126)
	Station number	Displays the slave station no.(0~126)
	Module type	Displays the Transmission or Reception type
	Transmission	Master module → Slave module
	Transmission Consistency Over	Displays the size of Transmission byte
	Reception	Slave module → Master module
	Reception Consistency Over	Displays the size of Reception byte
	Total size	Displays the size of Transmission/Reception byte
	Mode	Displays the mode of CPU
	Transmission/Reception status	Displays the information of Transmission/Reception between master and slave
	High-speed link status	Displays the information of high speed link between master and slave
	Error	Displays the error information between master and slave

[Table 8.5.4] High Speed Link

(4) Autoscan: "System Diagnosis." → Click the right mouse button with the cursor positioned on the applicable module → Autoscan



[Figure 8.5.5] Autoscan

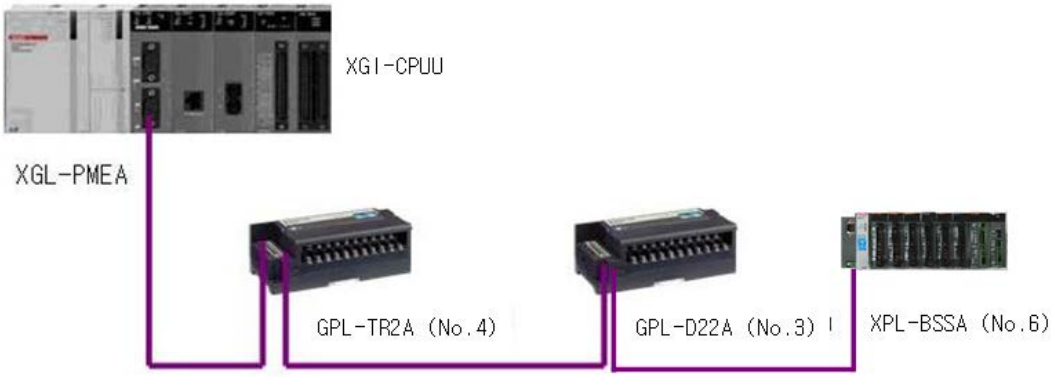
Item		Details
Standard information	Base no.	Displays the base no.(0~7)
	Slot no.	Displays the slot no.(0~11)
Additional information	Master	Displays the master station no.(0~126)
	Network speed	Displays the communication speed by bps unit (9,600 bps ~ 12Mbps)
Status information	Module Status	Displays the status of communication module
	HS link status	Displays the status of high speed link

[Table 8.5.5] Autoscan

Chapter 9 Program Example

9.1 Example of Communication with PMEA

Pnet I/F module is installed No.0 slot of No.0 base and data is Send/Receive to SMART-I/O module (Station number 4, Station number 3) and extendable SMART-I/O (Station number 6) respectively.



[Figure 9.1.1] I/O configuration and Send/Receive data

Send and Receive structure				Area to read	Area to save	Size (Byte)
XGL-PMEA (Master)	GPL-TR2A		Send	%MW0(2byte)	-	2
	GPL-D22A		Receive	-	%MW200(2 byte)	2
	XPL-BSSA	XBE-TN32A	Send	%MW3000(4 byte)	-	Send(22 byte)/ Receive(20 byte)
		XBE-DC32A	Receive	-	%MW3011(4 byte)	
		XBF-AD04A	Receive	-	%MW3013(8 byte)	
		XBF-DV04A	Send	%MW3002(8 byte)	-	
		XBF-DC04A	Send	%MW3006(8 byte)	-	
		XBF-RD04A	Receive	-	%MW3017(8 byte)	
		XBE-RY16A	Send	%MW3010(2 byte)	-	

[Table 9.1.1] Send/Receive map of High-speed link

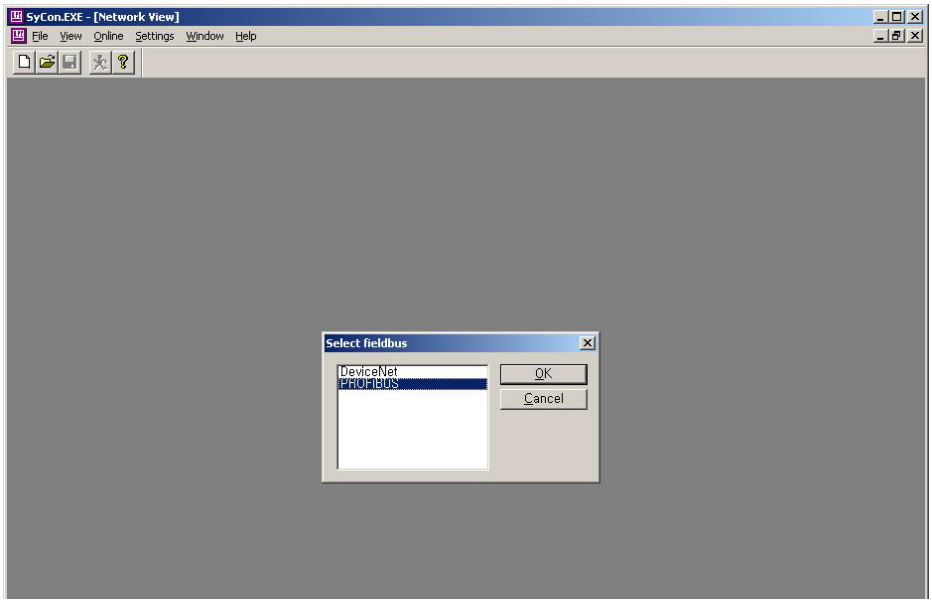
In the example above, XGI CPU transmits 2 byte of data in %MW0 area to GPL-TR2A and 22 byte of data in %MW3000~3010 area to XPL-BSSA.

XGI CPU saves 2 byte of 16-point input data in GPL-D22A onto %MW200 area and 20 byte of input data in XPL-BSSA onto %MW3011~3020 of XGK CPU.

9.1.1 SyCon settings

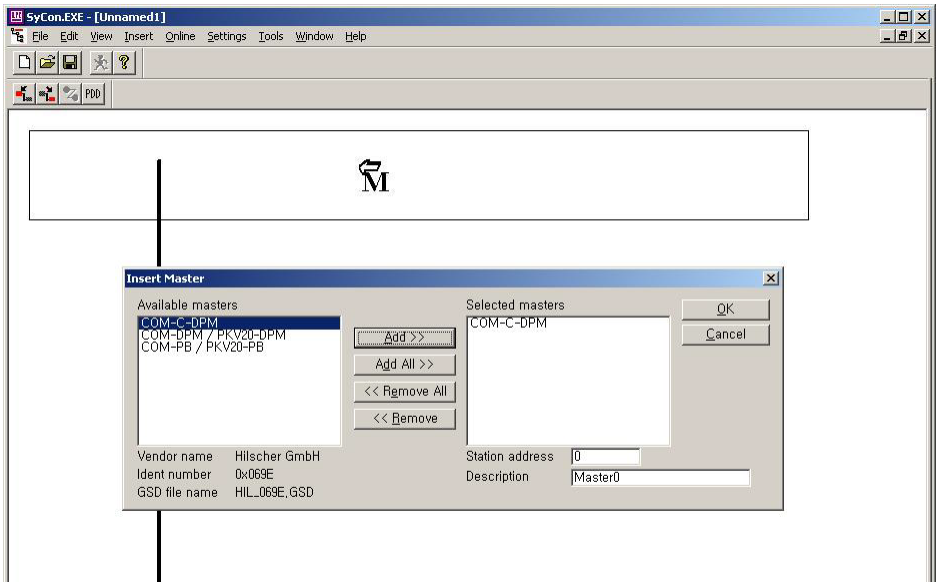
It is convenient for the user to prepare data Send/Receive map as in [Table 9.1.1] in order to exchange data in the system as shown on [Fig.9.1.1]. After SyCon Configuration is set for data Send/Receive as in [Table 9.1.1], High-speed link parameters shall be specified and downloaded to PLC.

Firstly open the 'New' file in the SyCon and Screen is exchanged for setting screen after PROFIBUS chosen in 'Select Fieldbus' window.



[Figure 9.1.2] The first communication types (PROFIBUS)

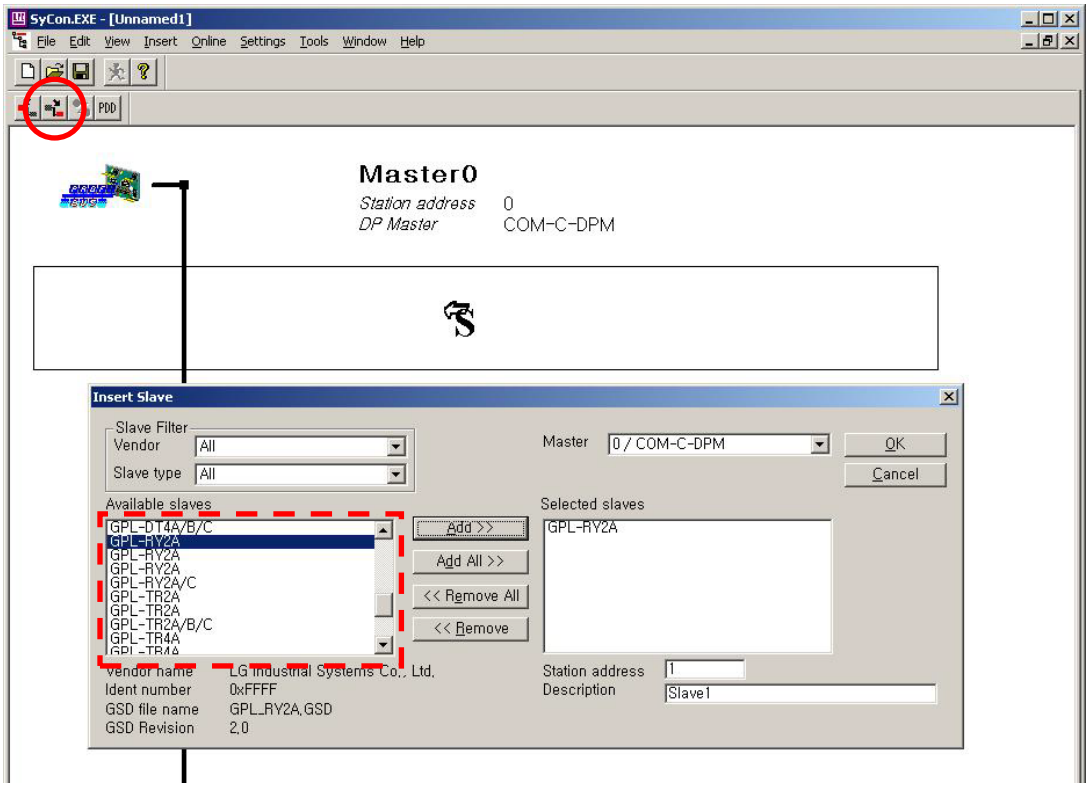
After communication types chose, Select Master type as COM-C-DPM, XGL-PMEA master board. Add COM-C-DPM and then set station address of master module.



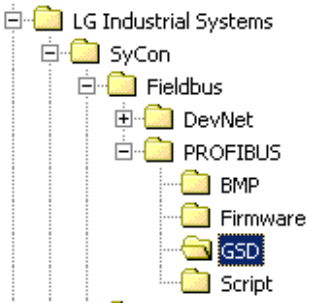
[Figure 9.1.3] master module type settings

There are 2 ways to set the slave module. It is Manual setting and Automatic setting.

First of all, Manual setting is as shown below.
Click the Slave setting icon (It is indicated red circle), the screen is changed as shown below [Figure9.1.4]. If there is not a slave module to register in dotted line as shown below, GSD file should be copied in file directory as shown below [Figure 9.1.5]

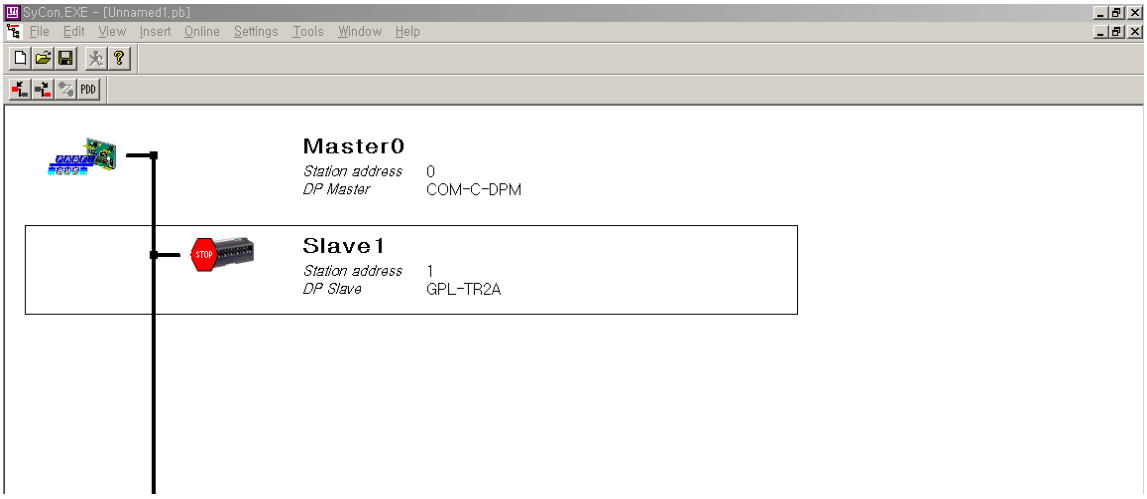


[Figure 9.1.4 Slave module setting (Manual setting)

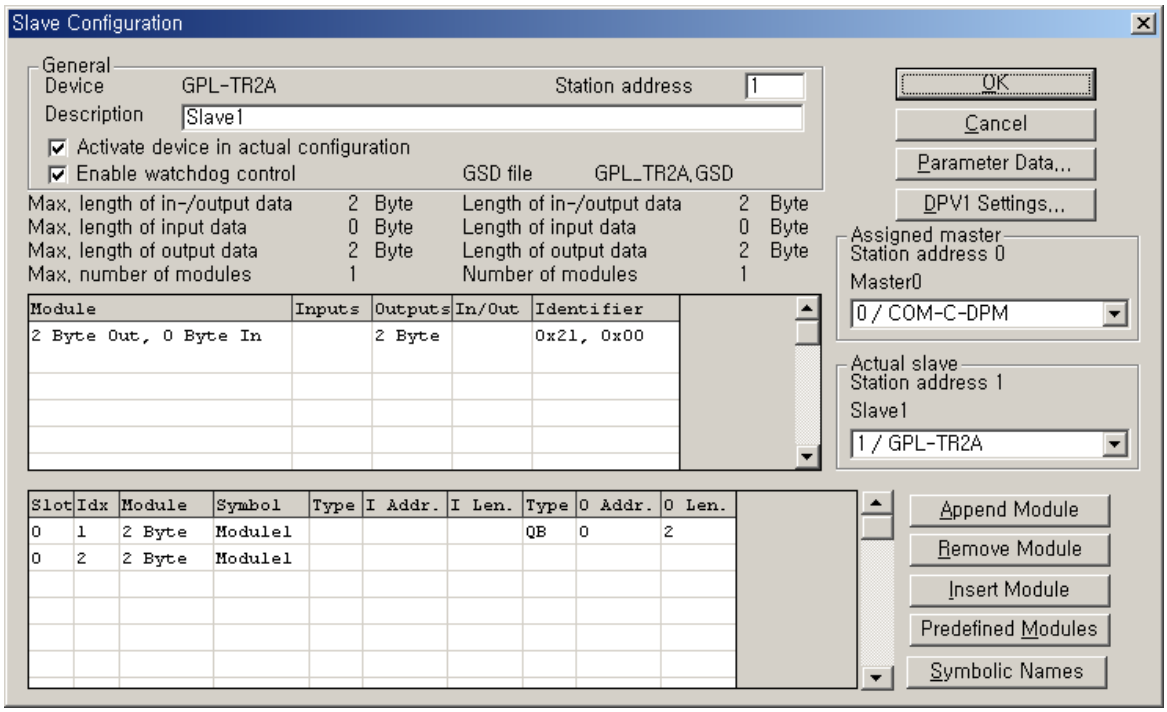


[Figure 9.1.5] GSD file directory

Station address 1 of slave module is selected as shown above [Figure 9.1.4]. After station address set to 1 as shown below, click 'OK'. Slave module setting is as shown below. Double-click the applicable module, Slave configuration is displayed. In the slave configuration, it displays the status of slave module GSD file applied and status of Input/Output appended currently.



[Figure 9.1.6] Slave module setting in SyCon

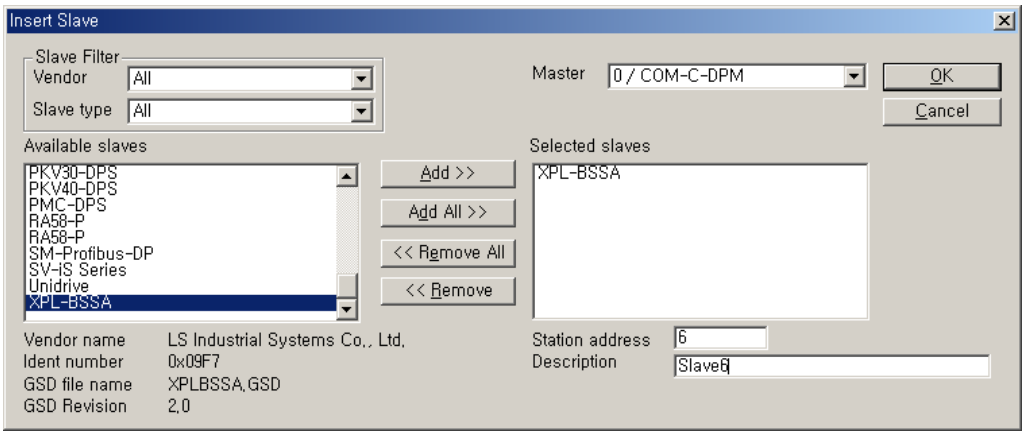


[Figure 9.1.7] Slave Configuration

GPL-D22A setting is a same process as shown above.

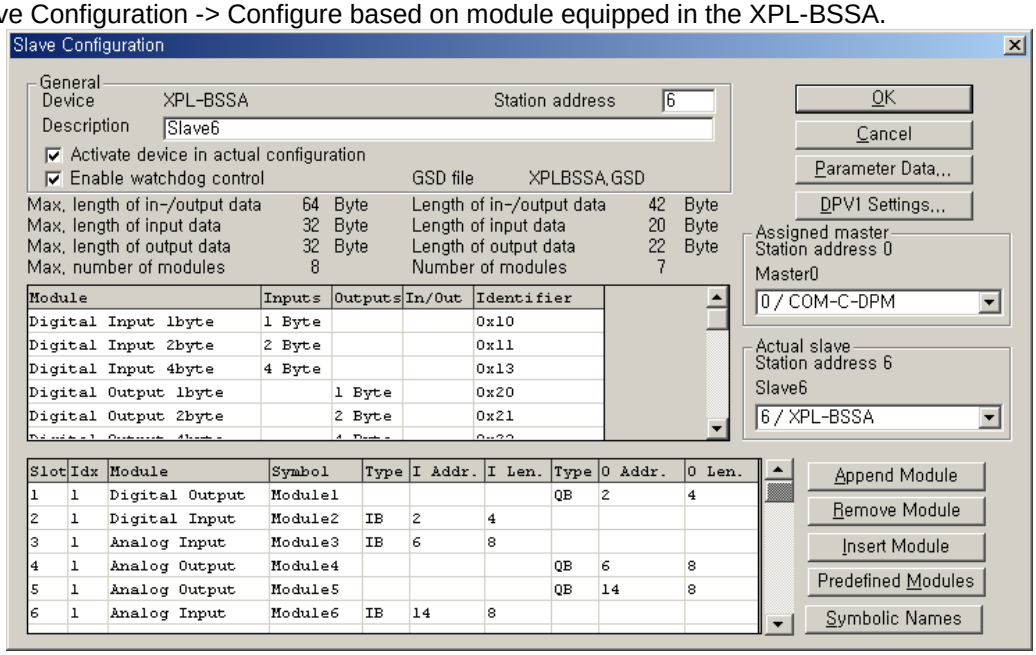
The following is setting method about XPL-BSSA.

1) Insert Slave -> select XPL -> click “Add” ->set “Station address” as 6



[Figure 9.1.8] Insert Slave

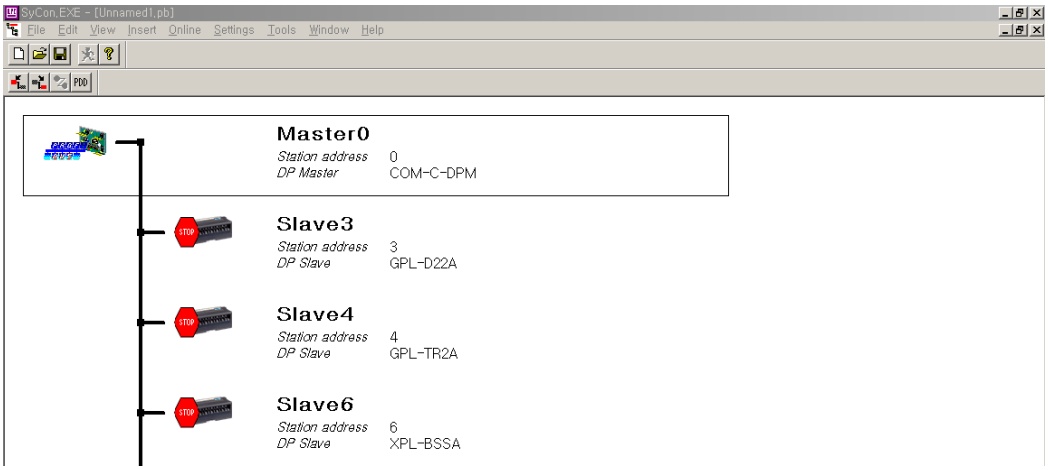
2) Slave Configuration -> Configure based on module equipped in the XPL-BSSA.



[Figure 9.1.9] Slave Configuration

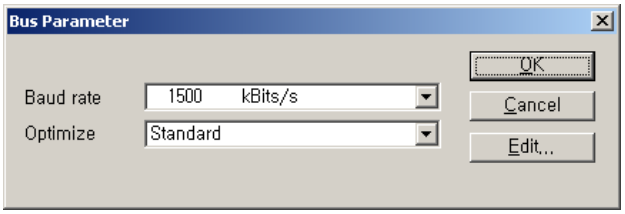
Slot	Module	Type	I Len.	O Len.	Contents
1	Digital Output	QB	-	4	Digital Output 4 byte (XBE-TN32A)
2	Digital Input	IB	4	-	Digital Input 4 byte (XBE-DC32A)
3	Analog Input	IB	8	-	Analog Input 8 byte (XBF-AD04A)
4	Analog Output	QB	-	8	Analog Output 8 byte (XBF-DV04A)
5	Analog Output	QB	-	8	Analog Output 8 byte (XBF-DC04A)
6	Analog Input	IB	8	-	Analog Input 8 byte (XBF-RD04A)
7	Digital Output	QB	-	2	Digital Output 2 byte (XBE-RY16A)

Network setting is completed as shown below.



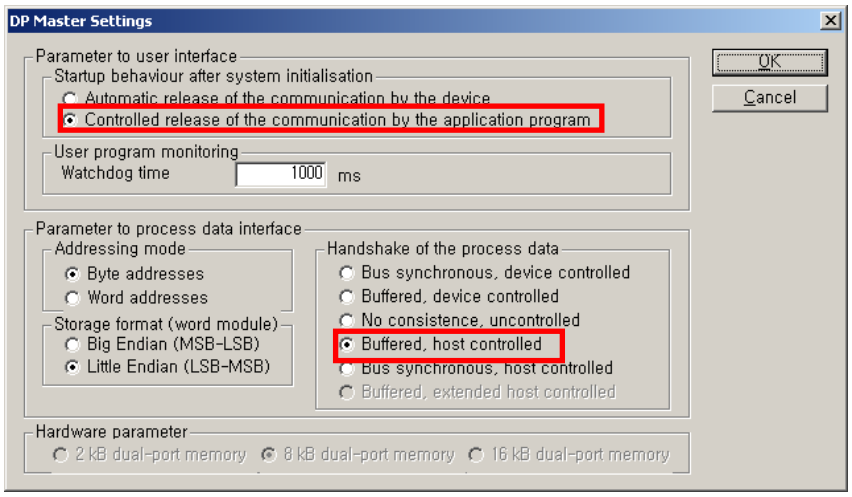
[Figure 9.1.10] Network setting completed

Communication speed setting is as shown below. [Setting] - [Bus parameter], Baud rate setting of master module is set here. Our product SMART-I/O series has a function of speed setting automatically. (For other product slave module, refer to the other product slave module's manual.)



[Figure 9.1.11] Selection of communication speed of master module

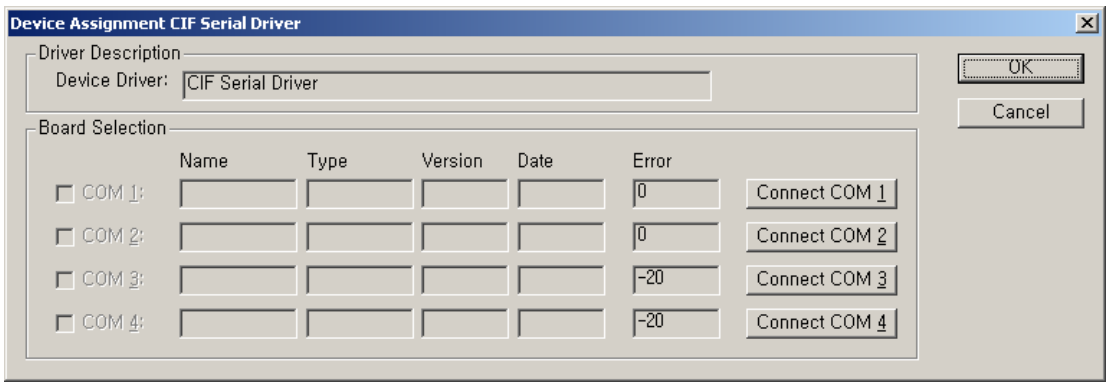
Communication speed is accorded to Master (Pnet I/F) module. After [Setting] – [Master setting] is as shown below.



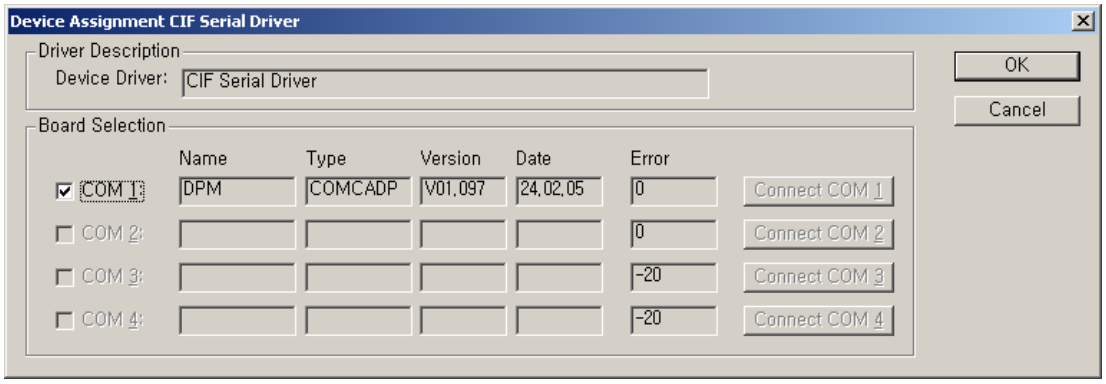
[Figure 9.1.12] DP Master Settings

If the above process is completed, all setting is finished.

In order to download the configured information in COM-C module, connection setting is as shown below. Select [Setting] – [Device assignment], 'Device Assignment CIF Serial Driver' screen is displayed. Select the COM port connected with Pnet I/F module and Click 'Connect COM x' and check the applicable Check box. Finally, Click the 'OK', Communication is available to download connection information.

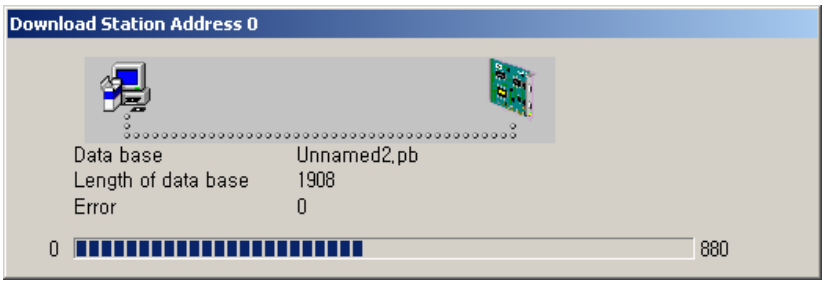


[Figure 9.1.13] Device Assignment CIF Serial Driver (1)



[Figure 9.1.14] Device Assignment CIF Serial Driver (2)

After connected, select [Online] – [Download] to download.

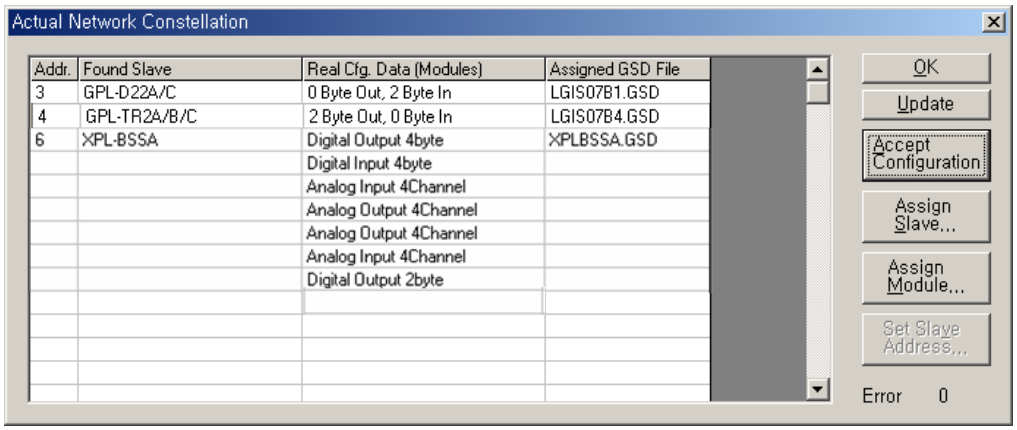


[Figure 9.1.15] Download

If setting and download is completed, All setting of SyCon is finished. Before close the SyCon, It is very useful to save the network file in order to recover the damaged network.

This part explains the automatic setting.

After finish the setting of master module as [Figure 9.1.3], select [Online] – [Download]. After save the setting file and then select [Online] – [Automatic Network Scan] – [OK]. Then the screen is as shown below.



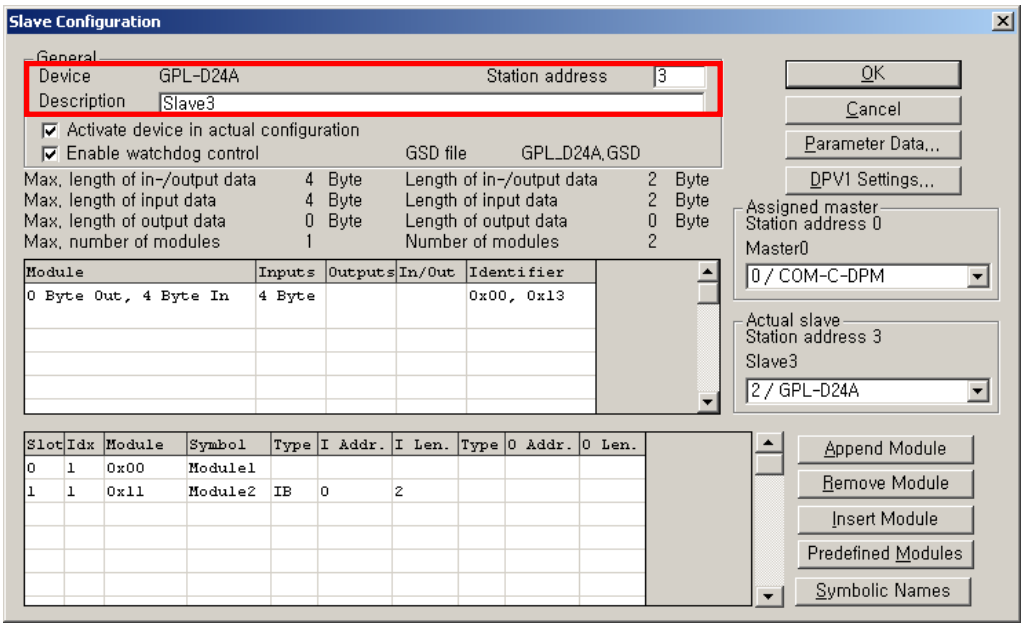
[Figure 9.1.16] Automatic Network Scan

The process till here, SyCon is automatically set the address of Send/Receive data of data size and module of applicable module by referred to GSD file of current slave module.

In [Figure 9.1.16], select [Accept Configuration] and the setting is automatically completed as shown below.

[Figure 9.1.17] The screen after Automatic Network Scan

At this time, double click the applicable module and open the Slave Configuration window. In the slave configuration window, it is available to set the Station address and Description.

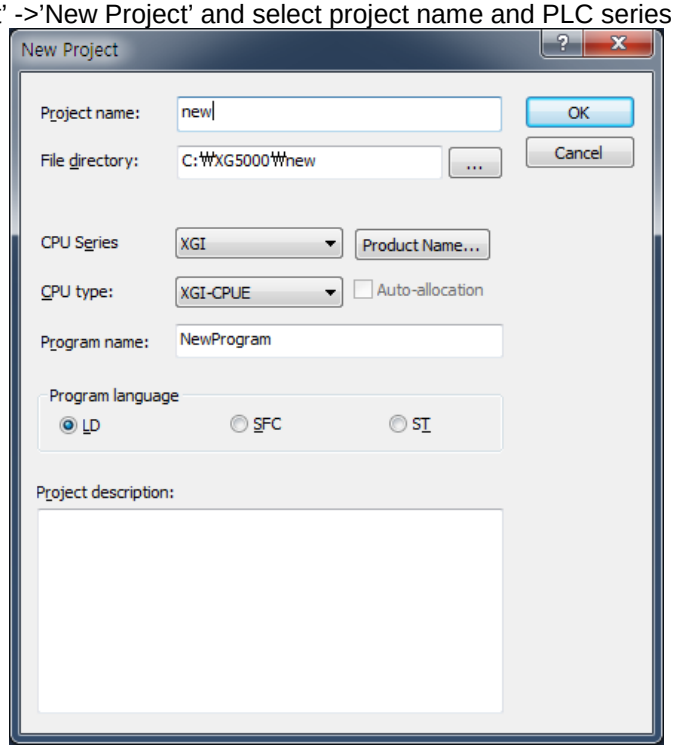


[Figure 9.1.18] Slave Configuration

9.1.2 XG5000 setting

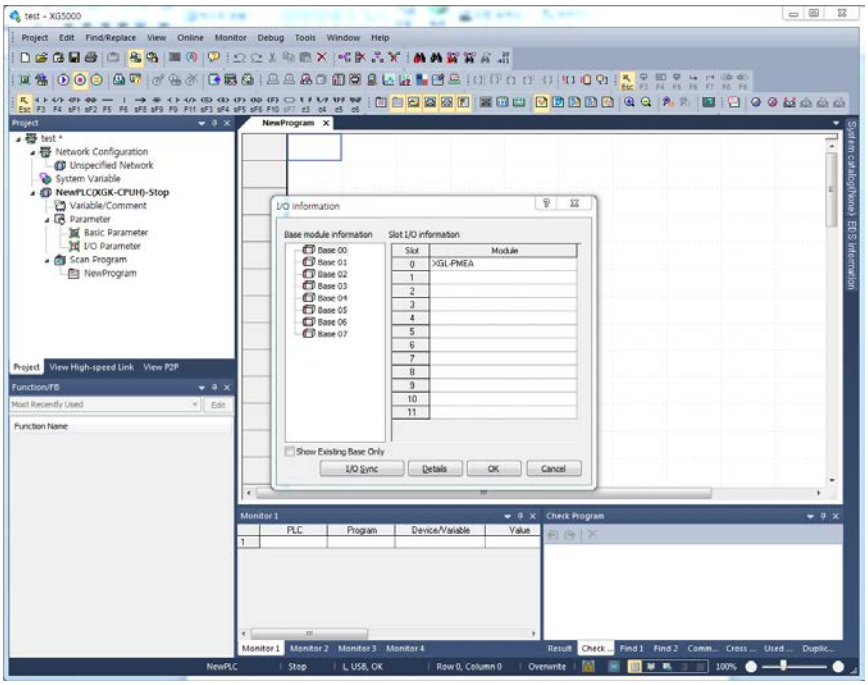
This part describes how to assign the internal memory by XG5000.

Click ‘Project’ ->’New Project’ and select project name and PLC series in the New Project window.



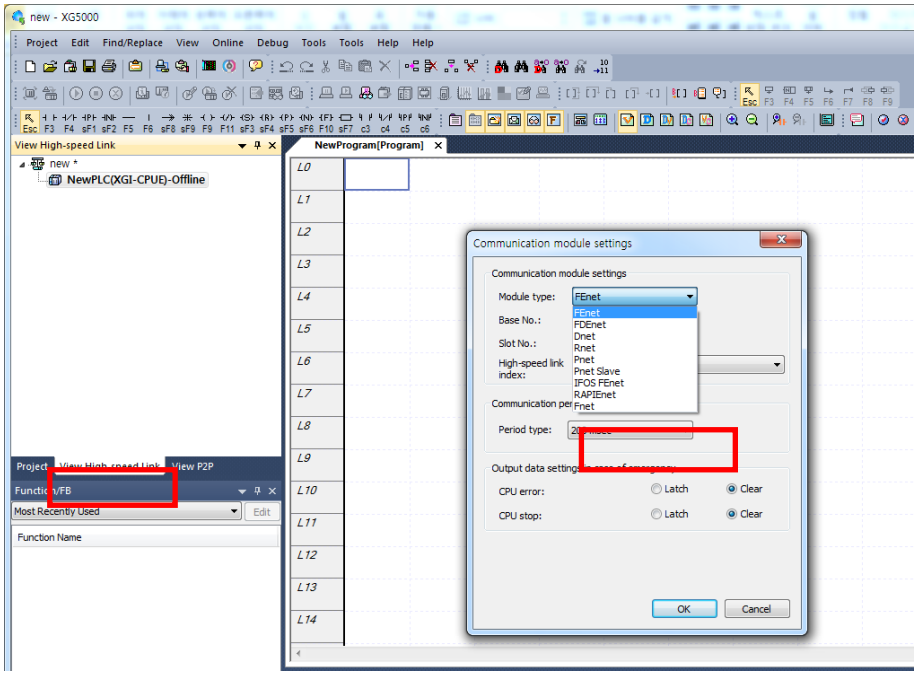
[Figure 9.1.19] New project

Select the ‘Online’ to connect with CPU and [Online]-[Diagnosis]-[I/O information]-[Click I/O Sync] is brought I/O information of each slot installed.



[Figure 9.1.20] XG5000 connection screen

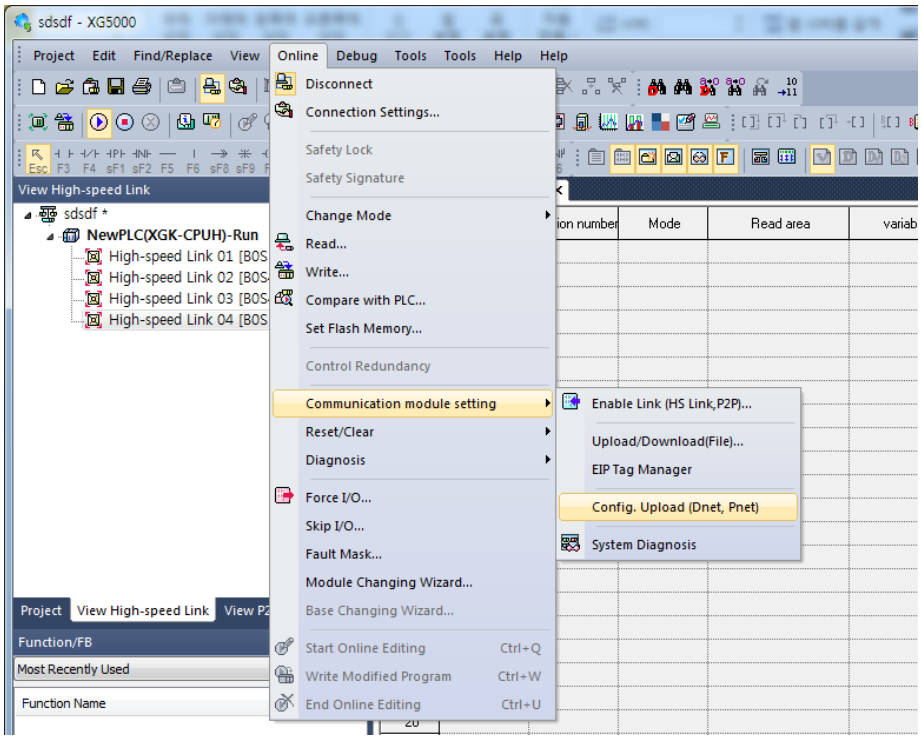
Select High-speed link tab in lower end tab of left frame, Right click PLC → Add Item → High-speed Link Communication. It can available to set the module type, base (no.) number, slot (no.) number and communication cycle.



[Figure 9.1.21] Screen of communication module setting

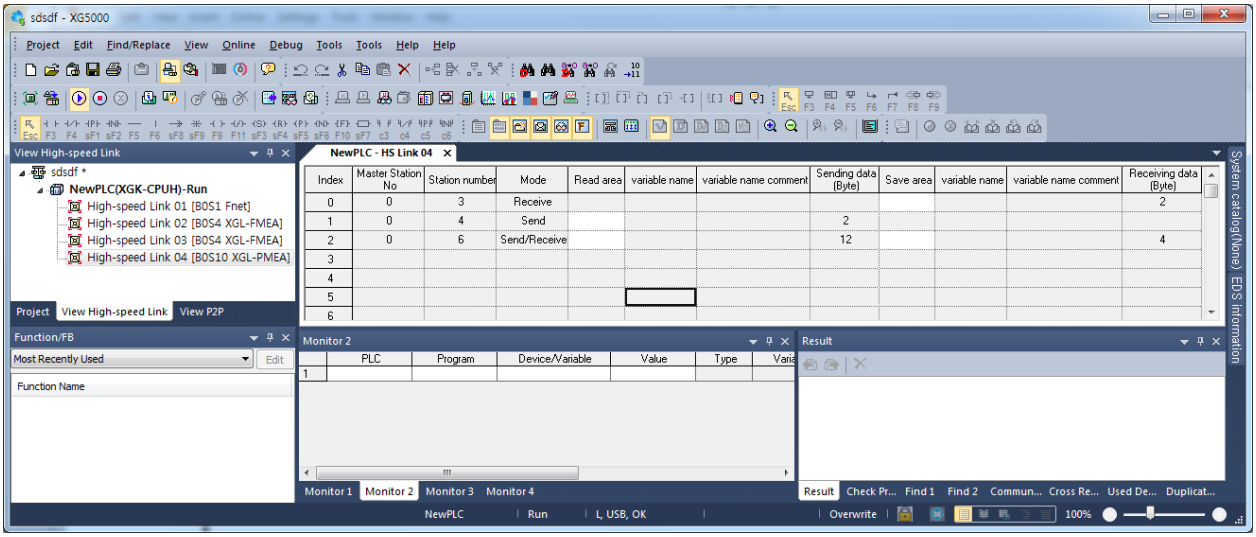
Select the Pnet for module type, position of current master communication module is set the base number and slot number. Communication cycle is set free from 20ms to 10s (Basic 20ms), It will be a data transmission cycle between CPU module of PLC and Master communication module. In emergency, output setting is set suitable to user's environment. Click 'OK' and then 'Block' is created below 'High-speed link 1', Double click it.

After block is created, click the index of block information frame (right frame). Click [Online]-[Communication module setting]-[Config. Upload (Dnet, Pnet)] and it brought the setting information in SyCon.

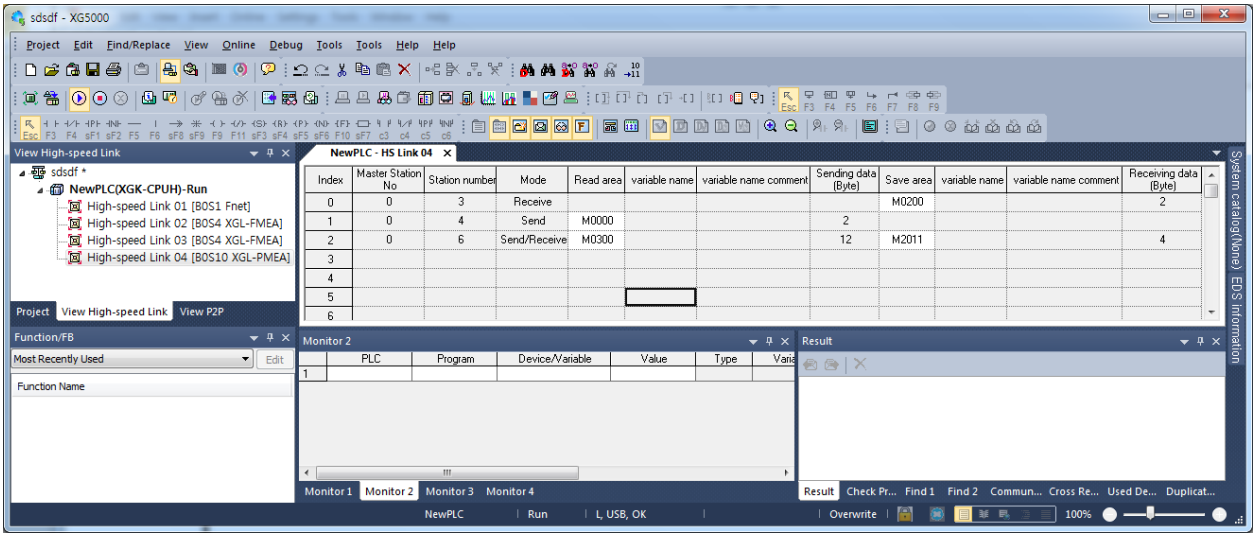


[Figure 9.1.22] Config. Upload (Dnet, Pnet)

After SyCon setting file is uploaded, setting information is displayed in block window as shown below. Double click the applicable index to set the address. Set %MW200 for station3, %MW0 for station 4 and %MW3000 for area to read, %MW3011 for area to save of station 6.

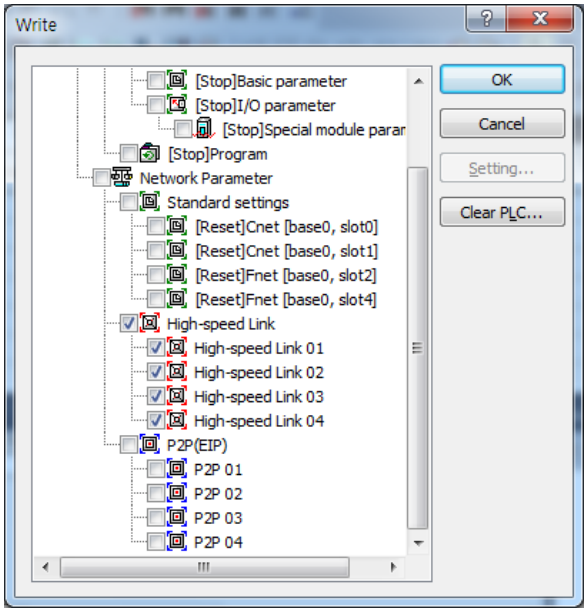


[Table 9.1.23] High-speed link block setting



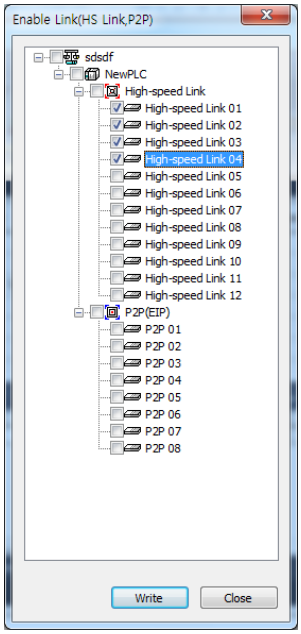
[Figure 9.1.24] Finished screen

After finish the setting, setting information is downloaded in PLC. Select [Online] – [Write] (standard settings, High-speed link, P2P). Here, Check High-speed link to download and click ‘OK’.



[Table 9.1.25] Write (Standard settings, High-speed link, P2P)

After Write is finished, the operation is by applicable high-speed link enabled. Select the [Online]-[Communication module setting]-[Enable Link] (High-speed, P2P). And Link Enable window is displayed as shown below. Select the applicable High-speed link number and then select 'Write' to set.

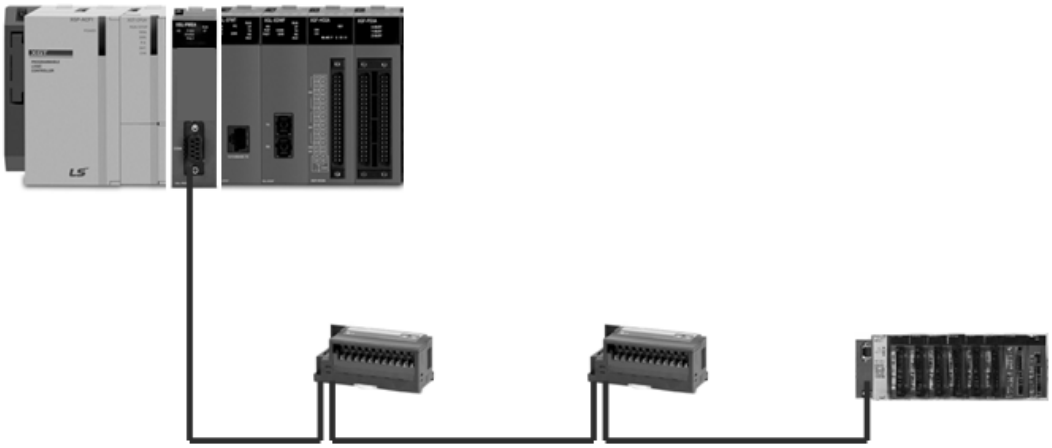


[Figure 9.1.26] Link Enable (High-speed link, P2P)

If you use others products to slave module, Setting of using that product's GSD file is same as above in order.

9.2 Example of communication with XGL-PMEC

This example shows a program that is installed on No. 0 slot of XGT No. 0 base, sending and receiving data to Smart I/O module(Station Number 3 and 4) and Extended Smart I/O Pnet(Station 6).



[Figure 9.2.1] I/O Structure and Sending/Receiving Data

Sending/Receiving Structure				Read Area	Save Area	Size (byte)
XGL-PMEC (Master)	GPL-TR2A		Sending	%MW0(2byte)	-	2
	GPL-D22A		Receiving	-	%MW200(2byte)	2
	XPL-BSSA	XBE-TN32A	Sending	%MW3000(4byte)	-	Sending(22byte)/ Receiving(20byte)
		XBE-DC32A	Receiving	-	%MW3011(4byte)	
		XBF-AD04A	Receiving	-	%MW3013(8byte)	
		XBF-DV04A	Sending	%MW3002(8byte)	-	
		XBF-DC04A	Sending	%MW3006(8byte)	-	
		XBF-RD04A	Receiving	-	%MW3017(8byte)	
		XBE-RY16A	Sending	%MW3010(2byte)	-	

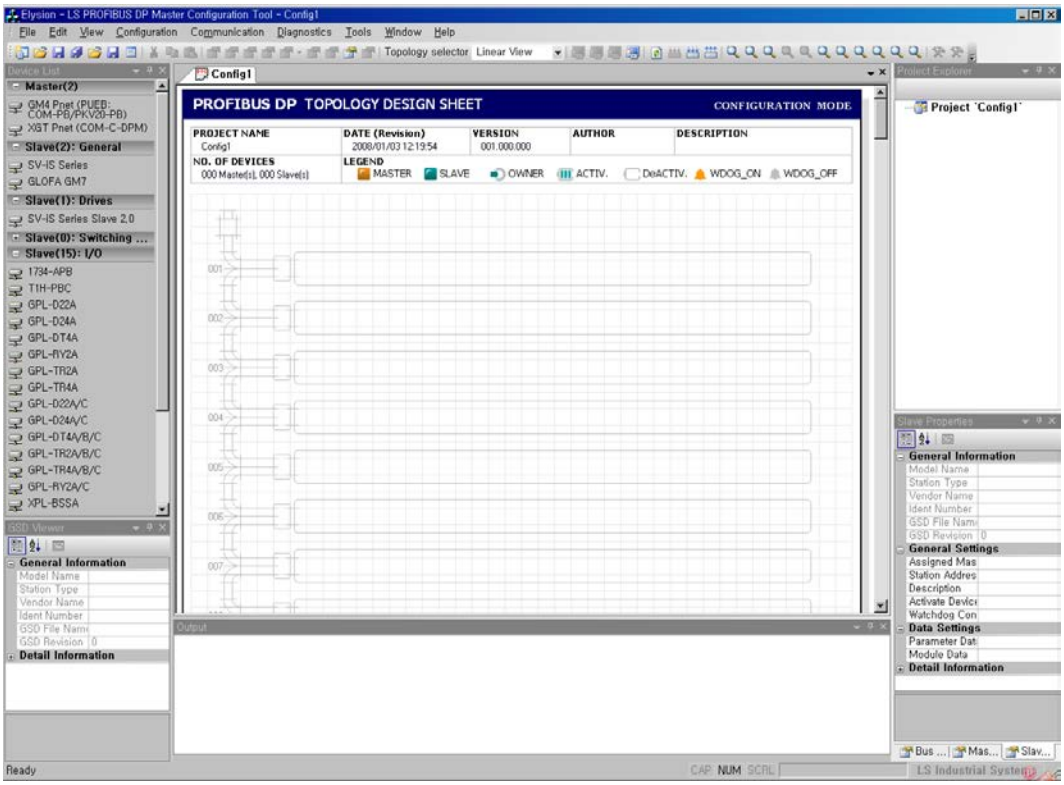
[Table 9.2.1] High-Speed Link Sending/Receiving Map

In the table above, XGT CPU sends 2 byte data in %MW0 area to GPL-TR2A and 22 byte data in %MW3000~3010 area to XPL-BSSA and saves 2 byte (16 points) input data of GPL-D22A in %MW200 area of XGT CPU and 20 byte input data of XPL-BSSA in %MW3011~3020 area of XGT CPU.

9.2.1 PROFICON settings

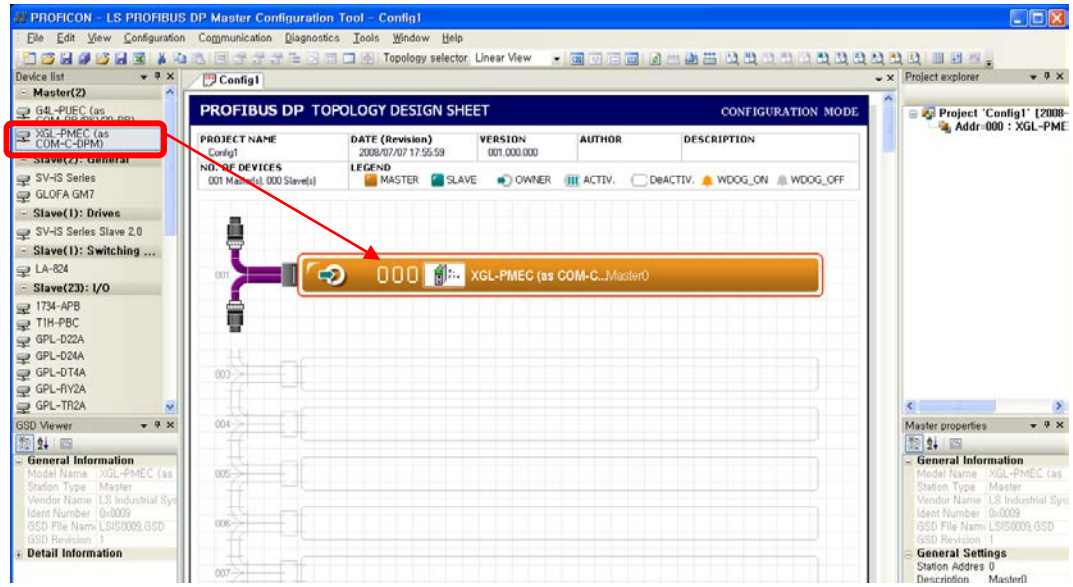
To exchange data between the systems as in [Figure 9.2.1], it is convenient for the user to write high-speed link sending/receiving map. In addition, it is necessary to write high-speed link parameters after setting Network Configuration through PROFICON and download to PLC in order to send/receive data as in [Table 9.2.1].

Once PROFICON is executed, a new project window becomes active as follows:



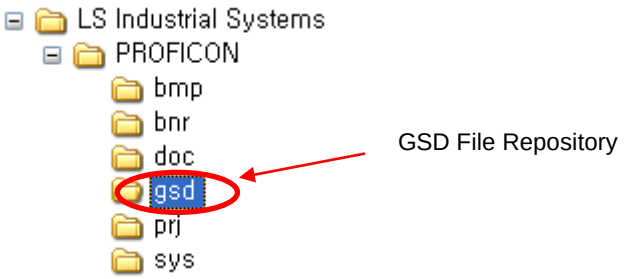
[Figure 9.2.2] Initial Execution Screen: New Project Window

For network configuration, the master module (XGL-PMEC) should be composed first. Select XGL-PMEC from the device list window on the left and drag and drop on the topology in the project window as seen in the figure below.



[Figure 9.2.3] Insert Master module

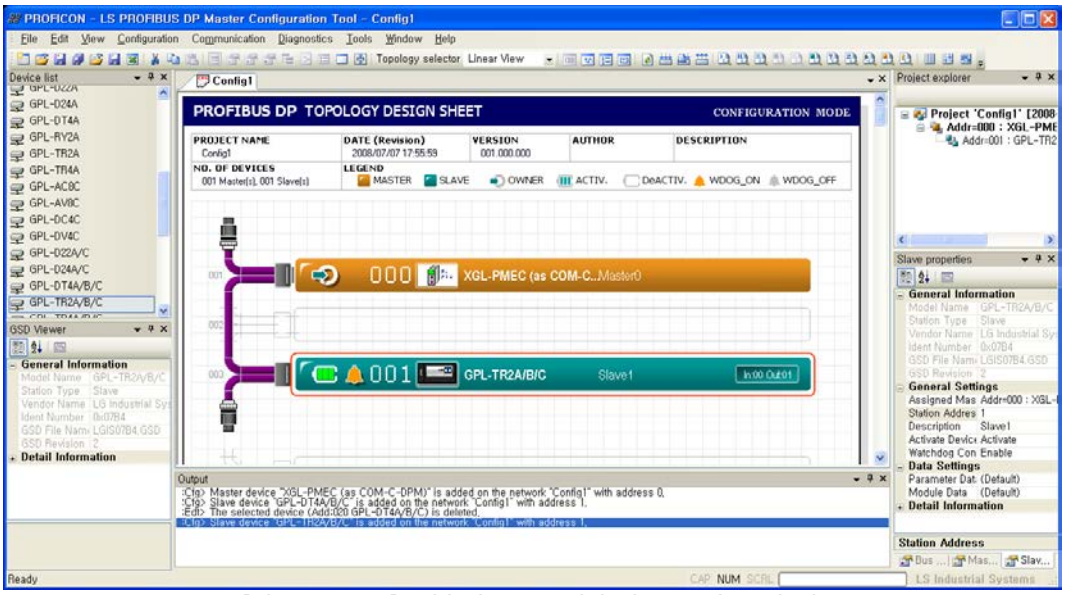
Now the user should compose slave module. It can be either to set it up manually, or search slave module existing in current network automatically and set it up.
However, at this time, the GSD file of slave module to be composed should be in the GSD directory (See [Figure 9.2.4]) of PROFICON installation directory. The GSD file is provided by the company manufacturing such slave module.



[Figure 9.2.4] Directory of PROFICON Installation

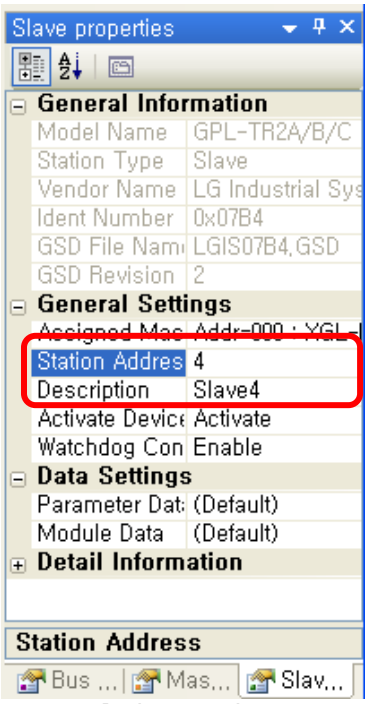
(1) How to set manually

As in setting the Master module, drag a selected slave from the device list on the left and drop it on the topology as seen in [Figure 8.2.5].



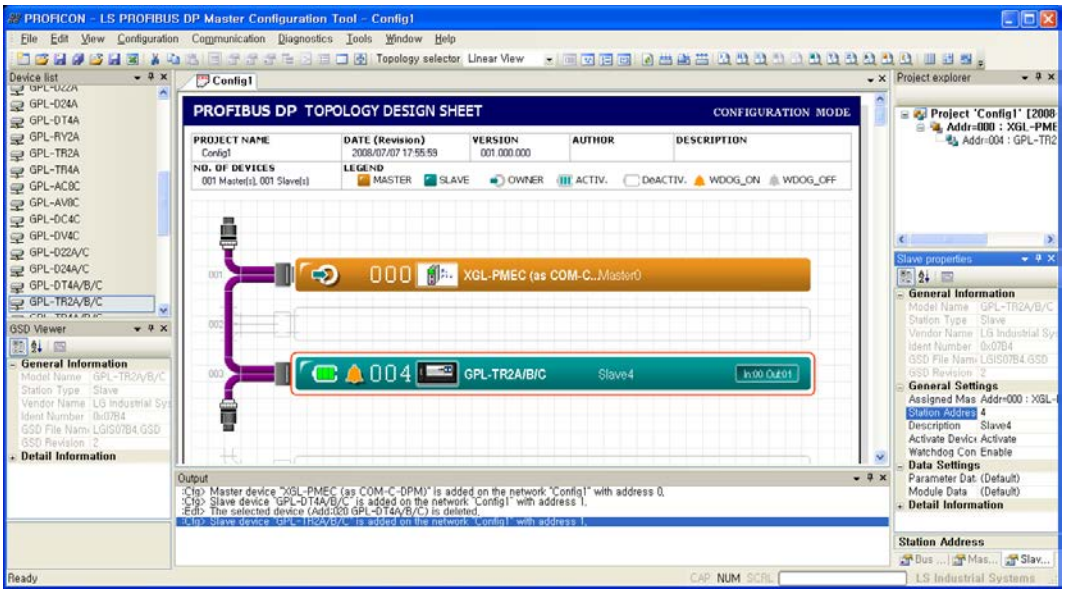
[Figure 9.2.5] Add Slave Module (Manual Setting)

Change the station number of the slave module in the Slave Properties window on the left bottom as seen in [Figure 9.2.6]. To activate this window, select a Slave from the topology.



[Figure 9.2.6] Change Slave Properties

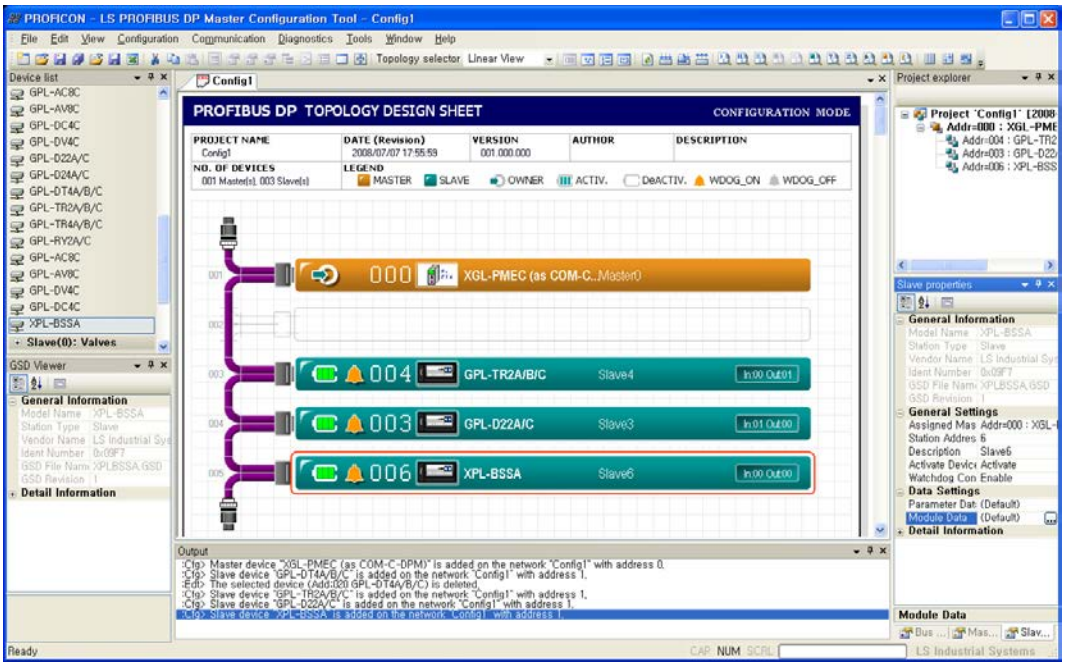
If station number and description properties are changed, the changed number and properties are immediately reflected on the project window as seen in the figure below.



[Figure 9.2.7] Topology after properties are changed

Set remaining GPL-D22A through the process described above.

However, for XPL-BSSA as extended slaves, it is necessary to add module data. Set XPL-BSSA on the topology first through the process above as in the following figure

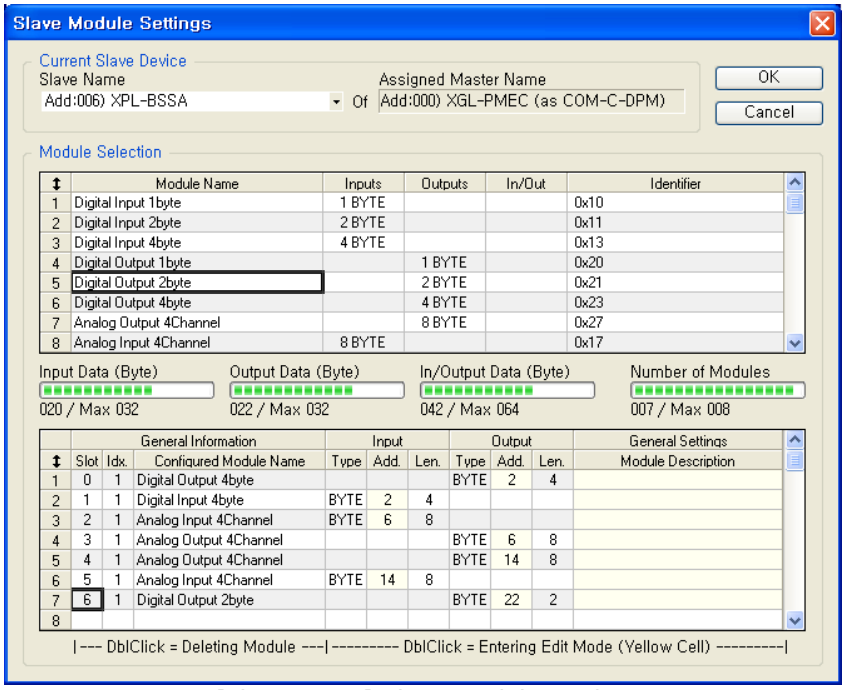


[Figure 9.2.8] Add Extended XPL-BSSA

Press module data in the Slave Properties window to make the slave module setting window appear. Set modules in sequence through this setting window (See [Figure 9.2.9])

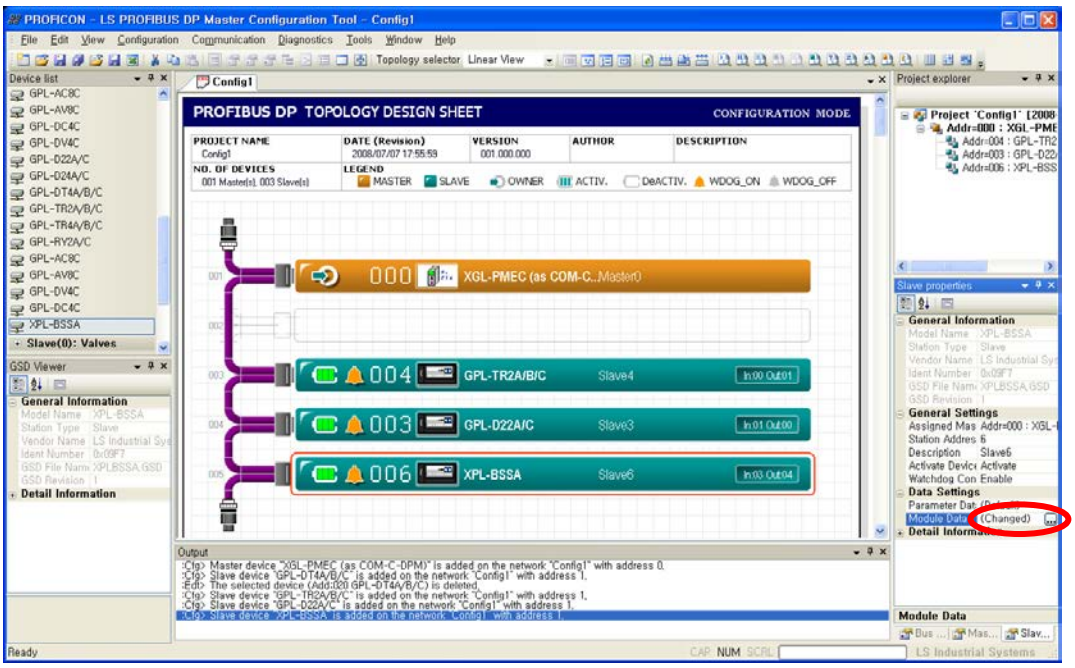
Slot	Module	Type	I Len.	O Len.	Content
1	Digital Output	QB	-	4	Digital output 4byte(XBE-TN32A)
2	Digital Input	IB	4	-	Digital input 4byte(XBE-DC32A)
3	Analog Input	IB	8	-	Analogue input 8byte(XBF-AD04A)
4	Analog Output	QB	-	8	Analogue output 8byte(XBF-DV04A)
5	Analog Output	QB	-	8	Analogue output 8byte(XBF-DC04A)
6	Analog Input	IB	8	-	Analogue input 8byte(XBF-RD04A)
7	Digital Output	QB	-	2	Digital output 2byte(XBE-RY16A)

Double click a module from Module Selection to insert it to the setting table below. Repeat this process until all of the wanted modules are inserted to the table. To delete a module from the table, double click the module to be deleted.



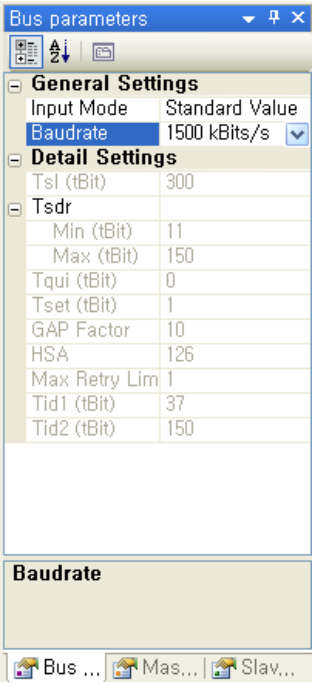
[Figure 9.2.9] Slave Module Setting

Setting a network is completed (See [Figure 9.2.10]). Now, a bus parameter needs to be set.



[Figure 9.2.10] Screen of Network Setting Completion

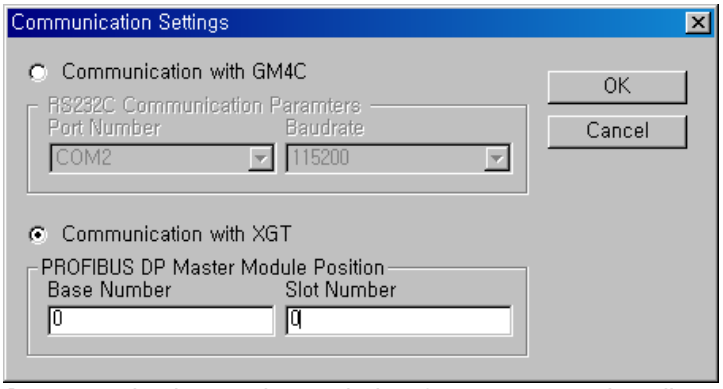
Bus parameters are to communicate with the Master and represent communication speed and communication timing parameters. To set, select the Master from the topology and then, select “Bus Parameters” item from the “Configuration” menu to activate the “Bus Parameter” tap on the left bottom(See [Figure 9.3.7])
At this time, it is possible to set communication speed (Baudrate) of the Master module. Our Slave module Smart I/O series have a function to adjust the speed of slave to be equal with that of the Master module automatically (For other companies’ Slave modules, refer to their user’s manuals).



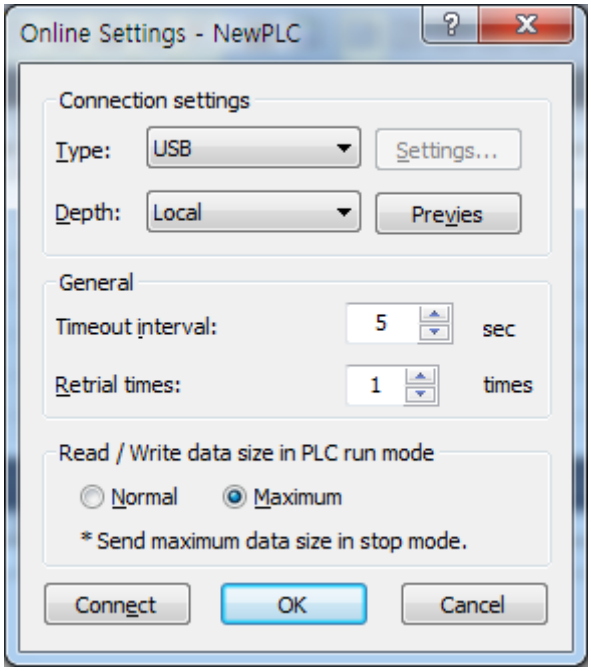
[Figure 9.2.11] Select a communication speed of the Master module

If the process above is completed, it can be declared that setting all of the networks is completed.

To download the Network Configuration to Pnet I/F module, select “Settings…” from the “Communication” menu and set access. After assigning a number to the slot in which the current Pnet I/F module is installed, set access as in [Figure 9.2.13].

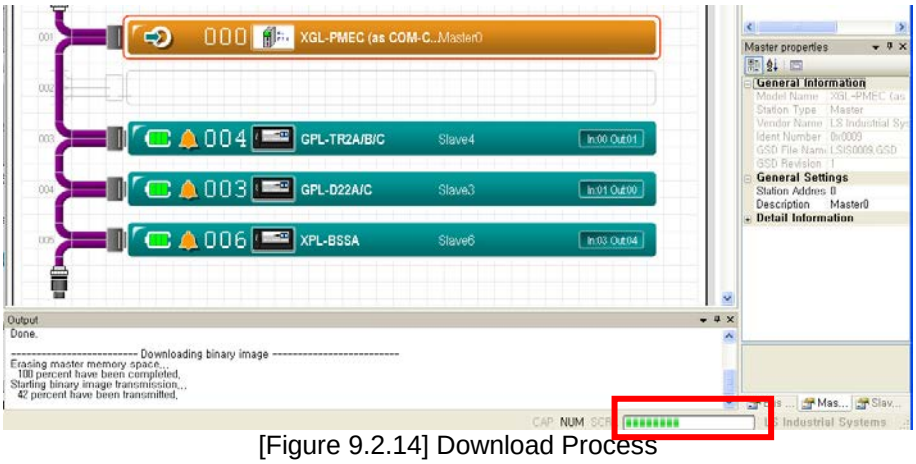


[Figure9.2.12] Communication Settings Window for XGT: Set to install Pnet I/F module



[Figure9.2.13] Setting Window to access to XGT CPU module

Once communication is connected, select 'Download Image' from the 'Communication' menu to download.

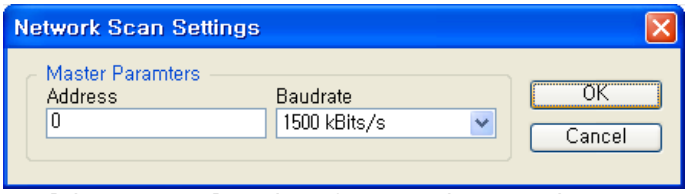


[Figure 9.2.14] Download Process

As seen in [Figure 9.2.14], the Progress Bar shows download progress and setting Pnet I/F module network are completed once download ends. Before closing this tool, save the current network project to recover the project later.

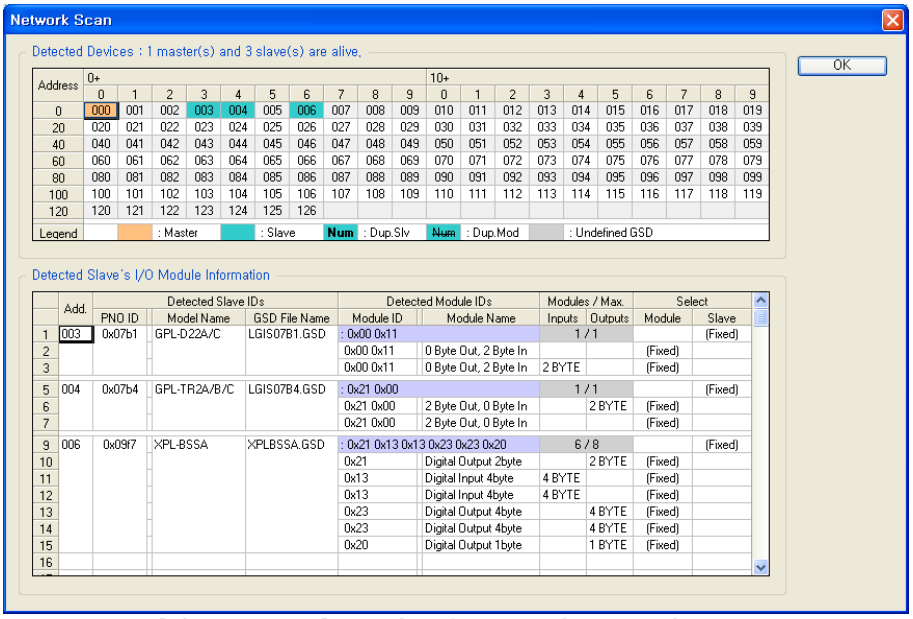
(2) How to set up automatically

After setting and saving the Master module as seen in [Figure 9.2.3], set access according to the methods illustrated in [Figure 9.2.12] and [Figure 9.2.13]. After that, execute “Auto. Network Scan…” in the “Diagnostics” menu to make the following screen appeared. Input the Master’s address and its communication speed and press the ‘OK’ button. Then, the module begins to scan networks.



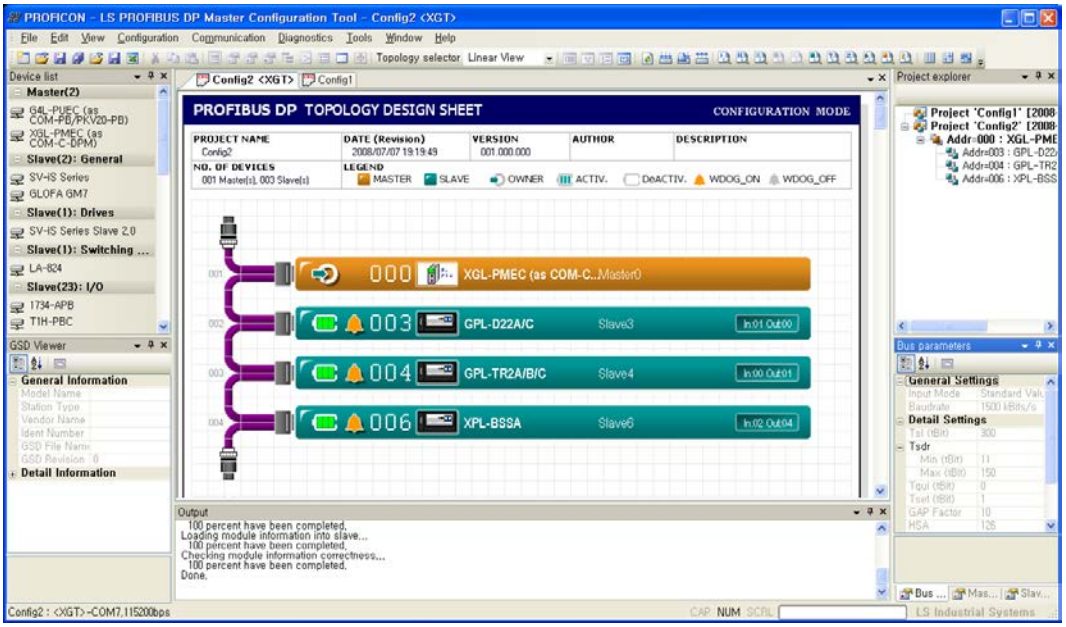
[Figure 9.2.15] Setting of Automatic Network Scan

Through the process above, PROFICON refers to GSD file of the Slave module on the current network and the data size of the relevant module and the address of the sending/receiving data supported by the module are automatically set. Then, the scanned results are shown as in [Figure 9.2.16].



[Figure 9.2.16] Results of Automatic Network Scan

At this time, pressing the “OK’ button will prompt setting network topology automatically as seen in [Figure 9.2.17].



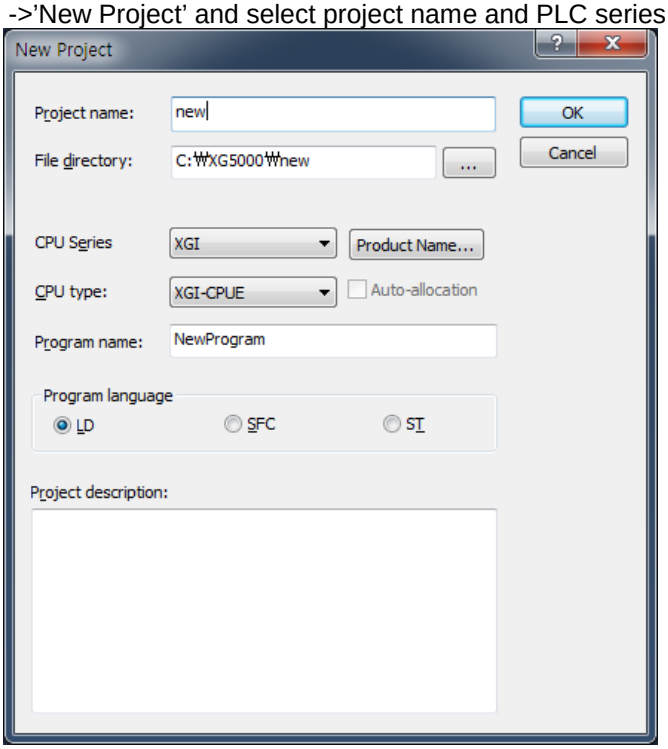
[Figure 9.2.17] Screen that has been set through Automatic Network Scan

To change Slave Properties, click a module from the topology and change them through the Slave Properties Window on the left bottom.

9.2.2 XG5000 settings

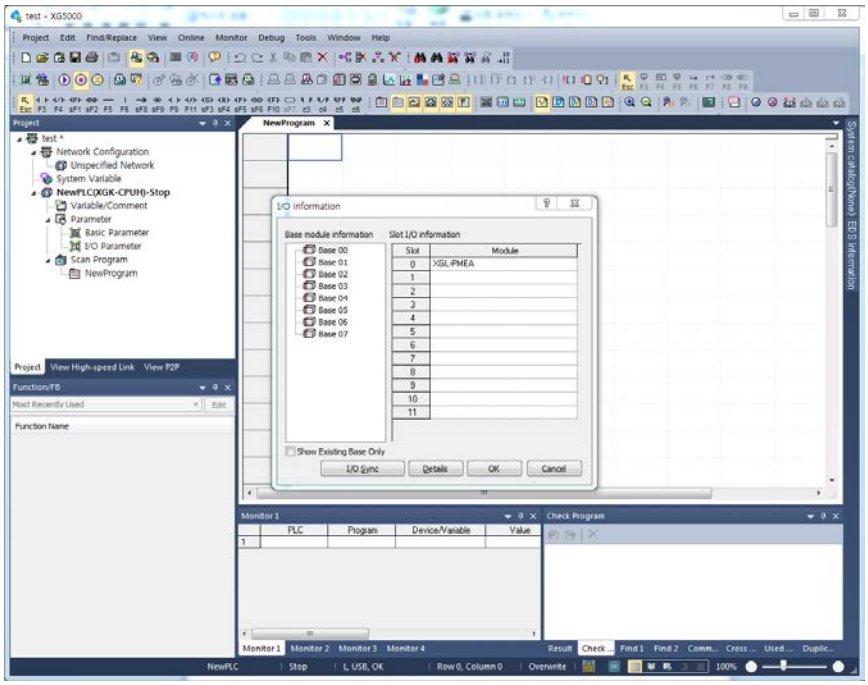
This part describes how to assign the internal memory by XG5000..

Click ‘Project’ ->’New Project’ and select project name and PLC series in the New Project window.



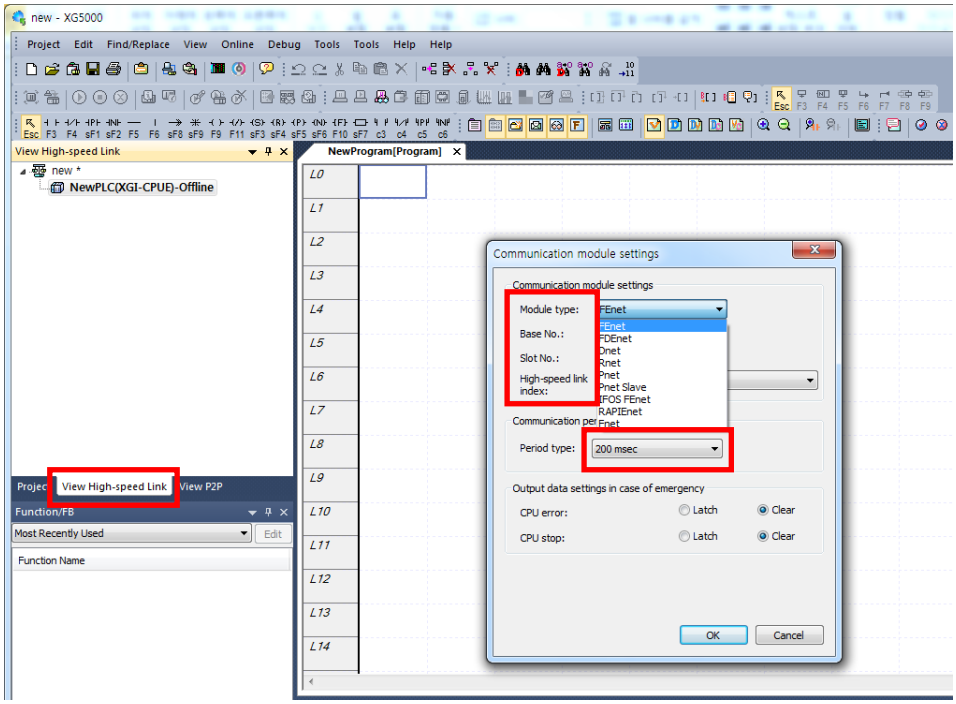
[Figure 9.2.18] New project

Select the ‘Online’ to connect with CPU and [Online]-[Diagnosis]-[I/O information]-[Click I/O Sync] is brought I/O information of each slot installed.



[Figure 9.2.19] XG5000 connection screen

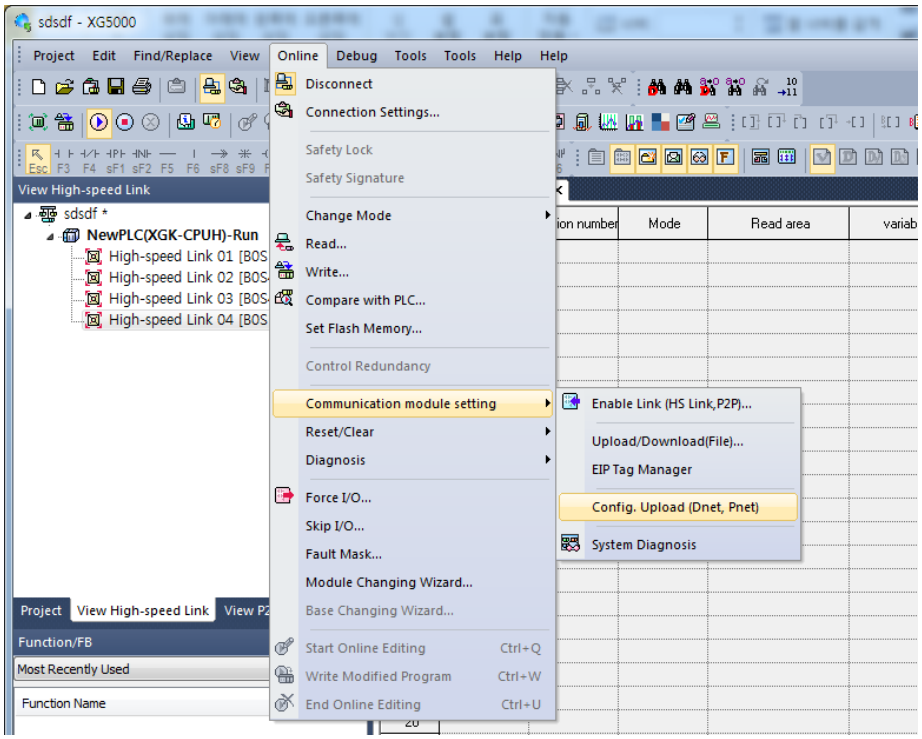
Select High-speed link tab in lower end tab of left frame, Double click High-speed link 1. It can available to set the module type, base (no.) number, slot (no.) number and communication cycle.



[Figure 9.2.20] Screen of communication module setting

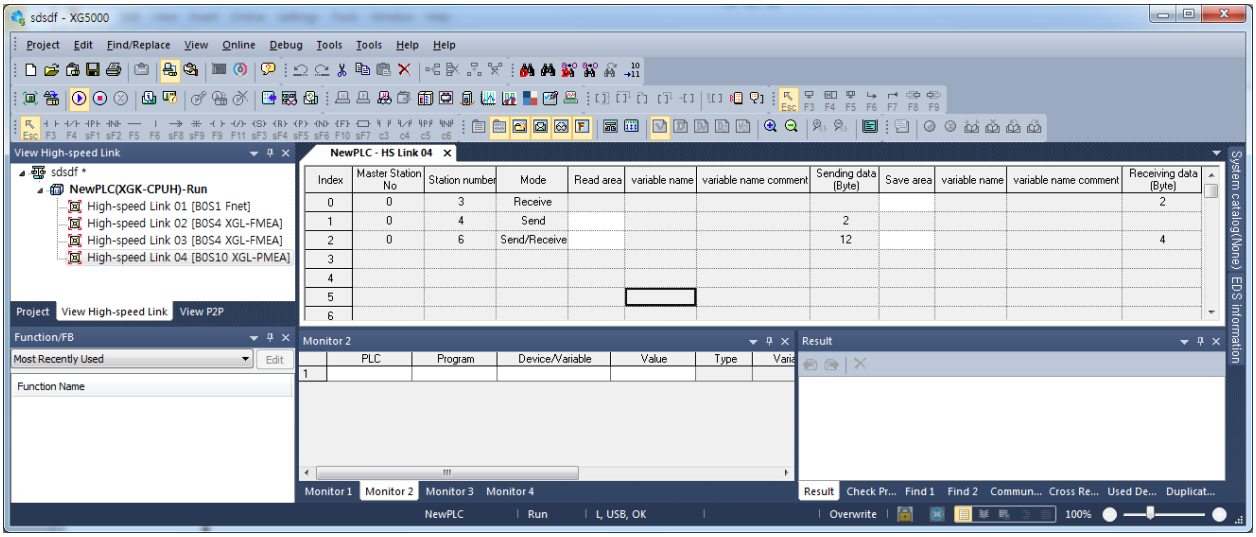
Select the Pnet for module type, position of current master communication module is set the base number and slot number. Communication cycle is set free from 20ms to 10s (Basic 20ms), It will be a data transmission cycle between CPU module of PLC and Master communication module. In emergency, output setting is set suitable to user's environment. Click 'OK' and then 'Block' is created below 'High-speed link 1', Double click it.

After block is created, click the index of block information frame (right frame). Click [Online]-[Communication module setting]-[Config. Upload (Dnet, Pnet) and it brought the setting information in PROFICON.

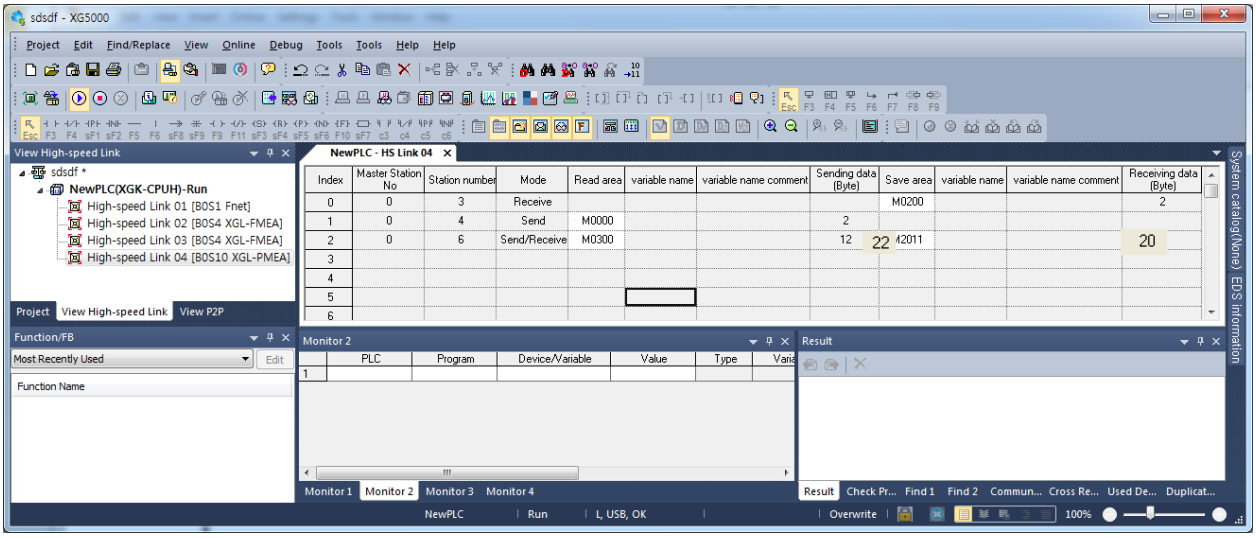


[Figure 9.2.21] Config. Upload (Dnet, Pnet) memu

After PROFICON setting file is uploaded, setting information is displayed in block window as shown below. Double click the applicable index to set the address. Set %MW200 for station3, %MW0 for station 4 and %MW3000 for area to read, %MW3011 for area to save of station 6.

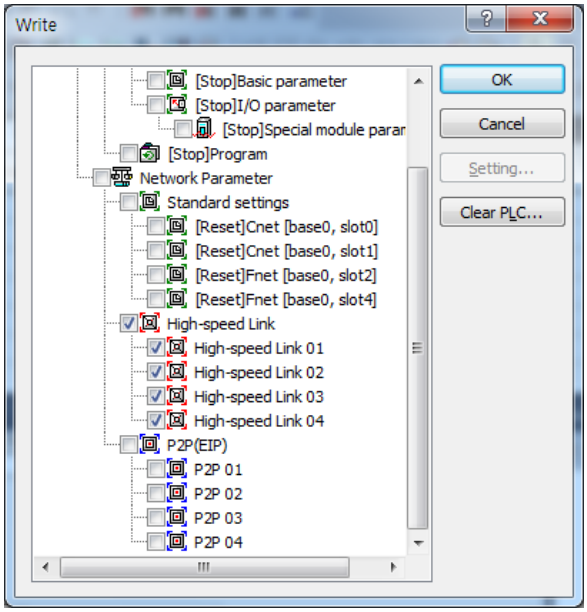


[Table 9.1.23] High-speed link block setting



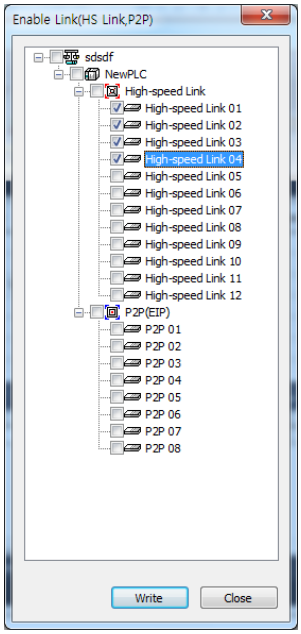
[Figure 9.2.23] Finished screen

After finish the setting, setting information is downloaded in PLC. Select [Online] – [Write] (standard settings, High-speed link, P2P). Here, Check High-speed link to download and click ‘OK’.



[Table 9.2.24] Write (Standard settings, High-speed link, P2P)

After Write is finished, the operation is by applicable high-speed link enabled. Select the [Online]-[Communication module setting]-[Enable Link] (High-speed, P2P). And Link Enable window is displayed as shown below. Select the applicable High-speed link number and then select 'Write' to set.



[Figure 9.2.25] Link Enable (High-speed link, P2P)

If you use others products to slave module, Setting of using that product's GSD file is same as above in order.

Chapter 10 Troubleshooting

This chapter is to describe various errors that may occur in system operation, their causes and actions to take against. If any error occurs on Pnet I/F module, its related details can be checked through the procedures below. Surely follow the troubleshooting procedures in the sequence as specified to check for abnormal module state. And any discretionary repair or disassembly is not allowed.

10.1 Symptoms and Management by LED Status

It can know the simple symptoms by LED status and it can manage.
(When High-speed link is enabled).

(1) XGL-PMEA/B

RUN	I/F	HS	P-RUN	STAT	ERR	Symptoms	Management
On	Flicker	Off	Flicker	On	Off	High-speed link disabled	-
On	Flicker	On	On	On	On	Abnormal connection status of a slave	Check the connection of slave Check the setting of slave
On	Flicker	Flicker	Flicker	On	Off	Change setting of SyCon when High-speed link enabled	-
On	Flicker	Flicker	Flicker	Off	On	Abnormal connection of all slave	Check the connection of slave Check the setting of slave
Off	Off	Off	-	-	-	Serious fault occurred	Ask to Customer service center

[Table 10.1.1] Symptoms related communication module (When High-speed link is enabled)

(2) XGL-PMEC

RUN	I/F	HS	P-RUN	STAT	ERR	CFG	Symptoms	Management
On	Flicker	Off	On	Off	Off	Off	High-speed link disabled	-
On	Flicker	On	On	Off	Flicker	Off	Abnormal connection status of a slave	Check the connection of slave Check the setting of slave
On	Flicker	On	On	Off	On	Off	Bus error	Check the cable short Check the module with different speed
On	Flicker	Flicker	-	-	Off	Flicke r	SyCon (PROFICON) setting changes during High Speed Link operation	Check the connection of slave Check the setting of slave
-	-	-	-	On	-	-	Error in OS	Request A/S
Off	Off	Off	-	-	-		Error	Request A/S

[Table10.1.2] Symptoms related communication module (When High-speed link is enabled)

10.2 System Diagnosis of XG5000

Diagnosis items for respective modules provided by XG5000 are as follows;

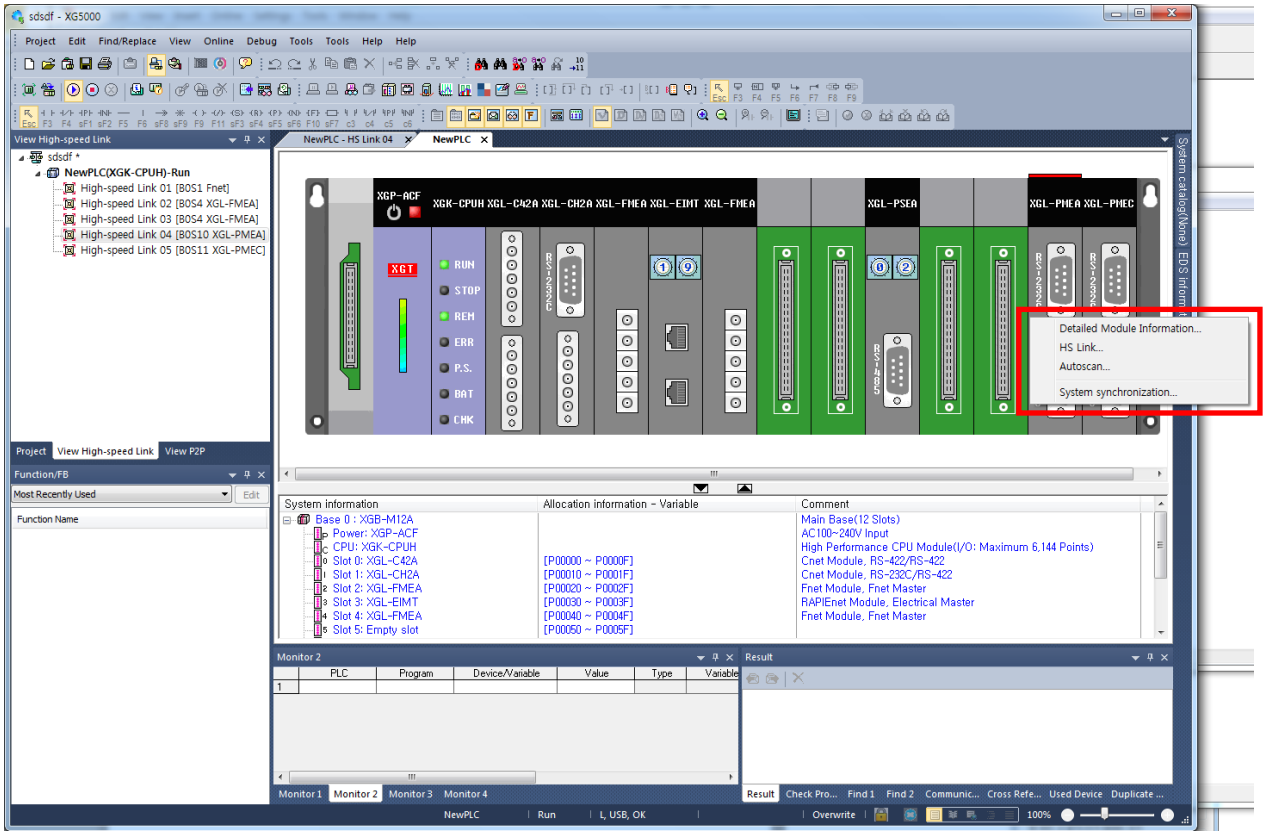
Diagnosis Items	Details
Communication module information	Basic information of communication module displayed.
HS link	Flag information of HS link displayed.
Auto-scan	Slaves connected with the network of Pnet master displayed.

[Table 10.2.1] System diagnosis in XG5000

10.2.1 Information on communication module

If you click the “System Diagnosis” on the [online]-[Communication module setting] menu, the following screen shows.

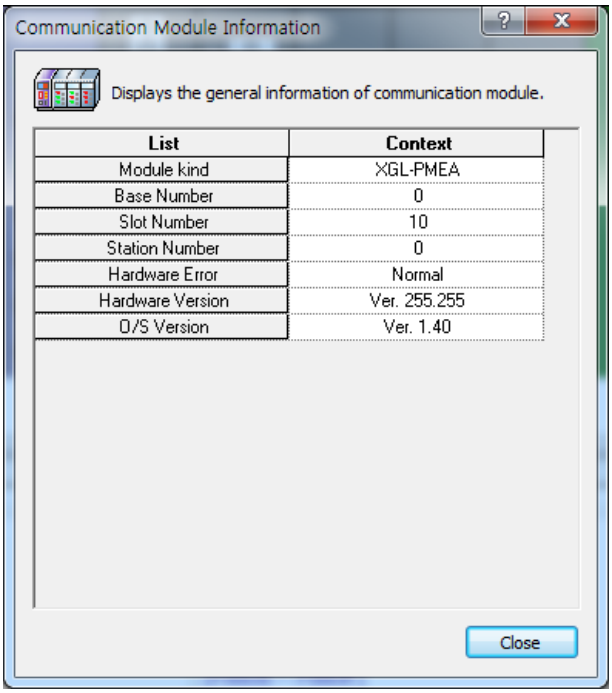
If you click the right button on the individual module, the diagnosis items are displayed.



[Fig. 10.2.1] System diagnosis

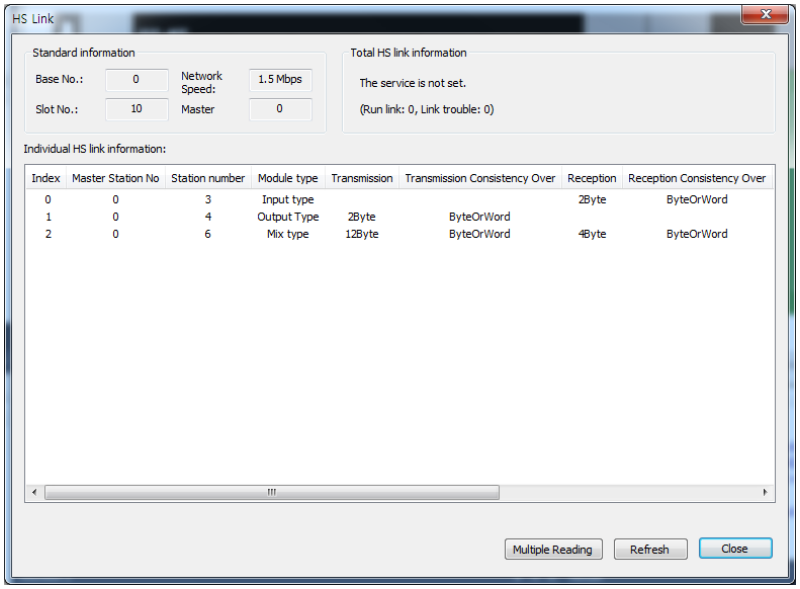
10.2.2 Information on communication module

It displays the number of base, number of slot, information of version about Pnet I/P module installed currently)



[Fig. 10.2.2] Communication Module Information

10.2.3 High-speed link



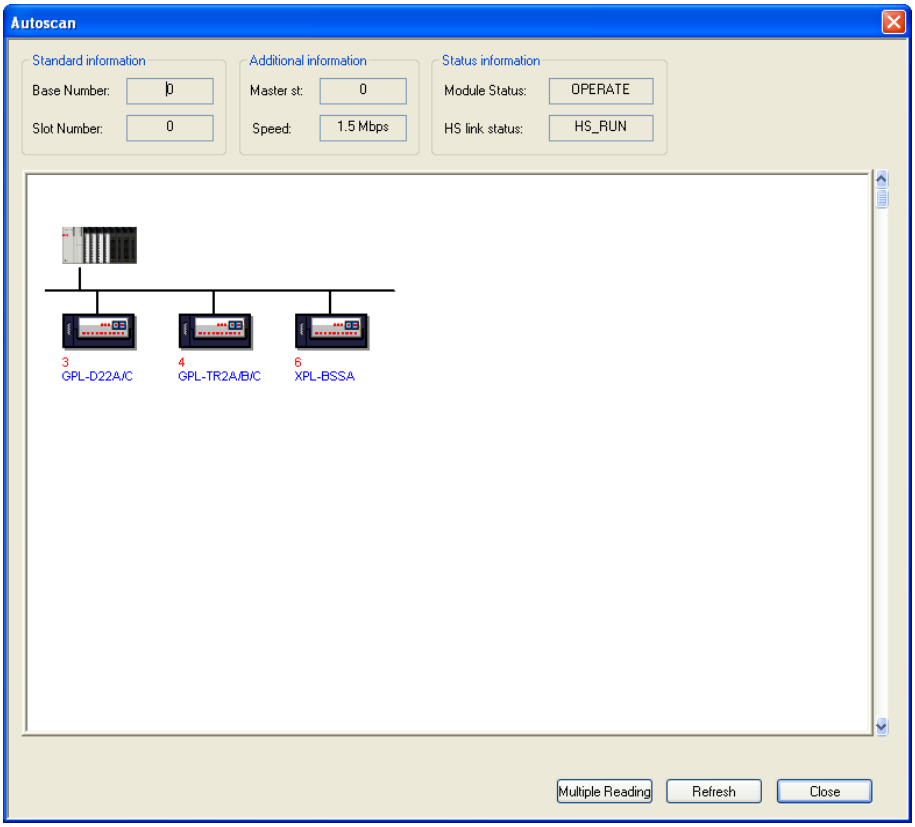
[Figure. 10.2.3] High-speed Link

High-speed link diagnosis		
Classification		description
Standard information	Base number	Base number module is installed on : 0~7
	Slot number	Slot number module is installed on : 0~11
	Network speed	Specified network communication speed
	Master	Specified master station number displayed
Total HS link information	Run link	Normal: communication is normal with all stations Error: if only 1 station is abnormal, communication is not permitted.
	Link trouble	Display of communication line status
Individual HS link information	Index	Index of High-speed link parameters (It is a block number in XG5000)
	Master station number	Master station number
	Station number	Slave station number
	Transmission	Size of Send data
	Reception	Size of Receive data
	Mode	Present operation status
	Transmission/Reception status	Send/Receive status displayed
	High-speed link status	High-speed link status displayed
	Error	Error status displayed

[Table 10.2.2] High-speed link diagnosis

10.2.4 Autoscan

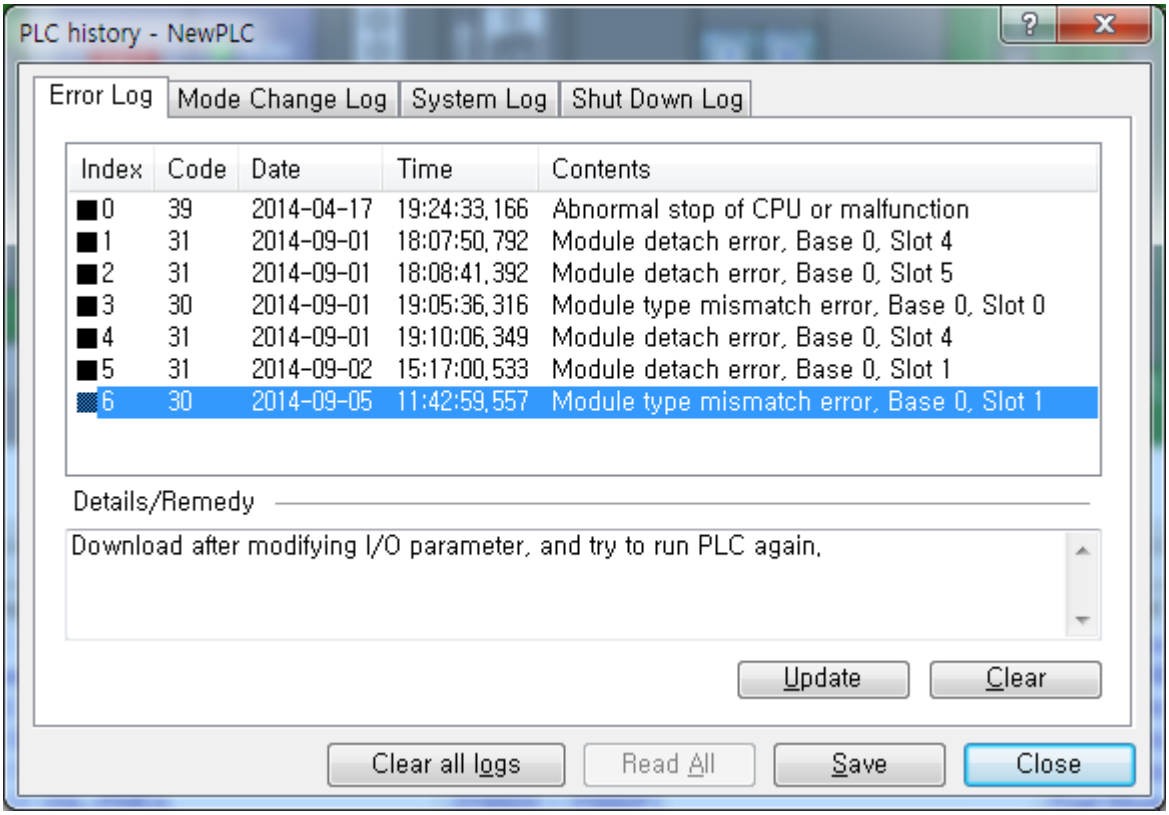
Slave modules connected with Pnet I/F module are displayed.



[Figure 10.2.4] Auto-scan

10.3 Diagnosis of Communication Module through XG5000

XG5000 connection program can be used to monitor the communication module simply. Connect with CPU port and then select [Online] -> [Diagnosis] -> [PLC History] in XG5000.



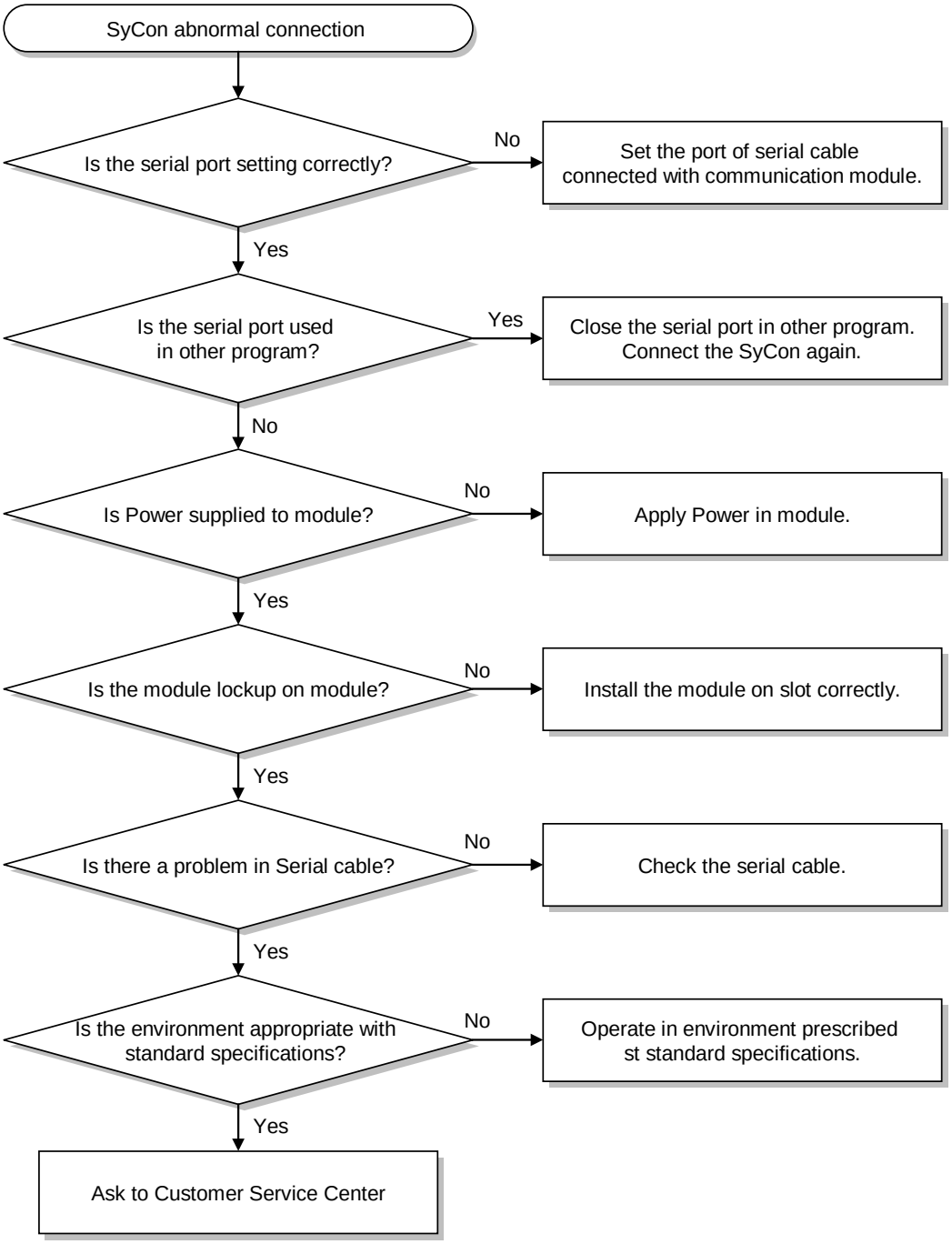
[Fig 10.3.1] PLC history details monitor

If a hardware error or a CPU interface error occurs on the module, LED of the communication module itself operates abnormally in general, whose status can be monitored simply through its dedicated program.

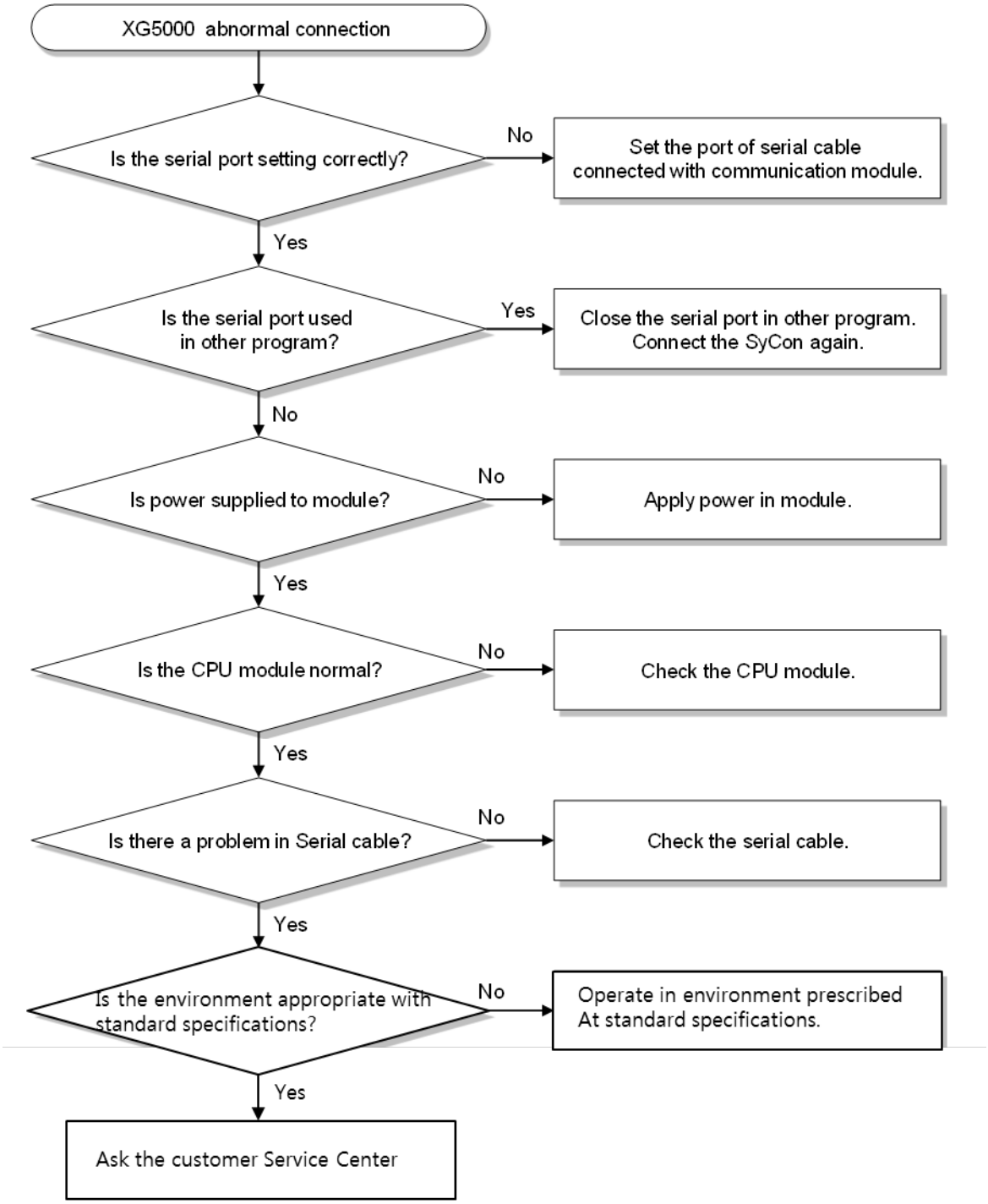
[Fig. 103.1] shows Error/Warning information through PLC History on the XG5000 [Diagnosis] menu.

10.4 Troubleshooting

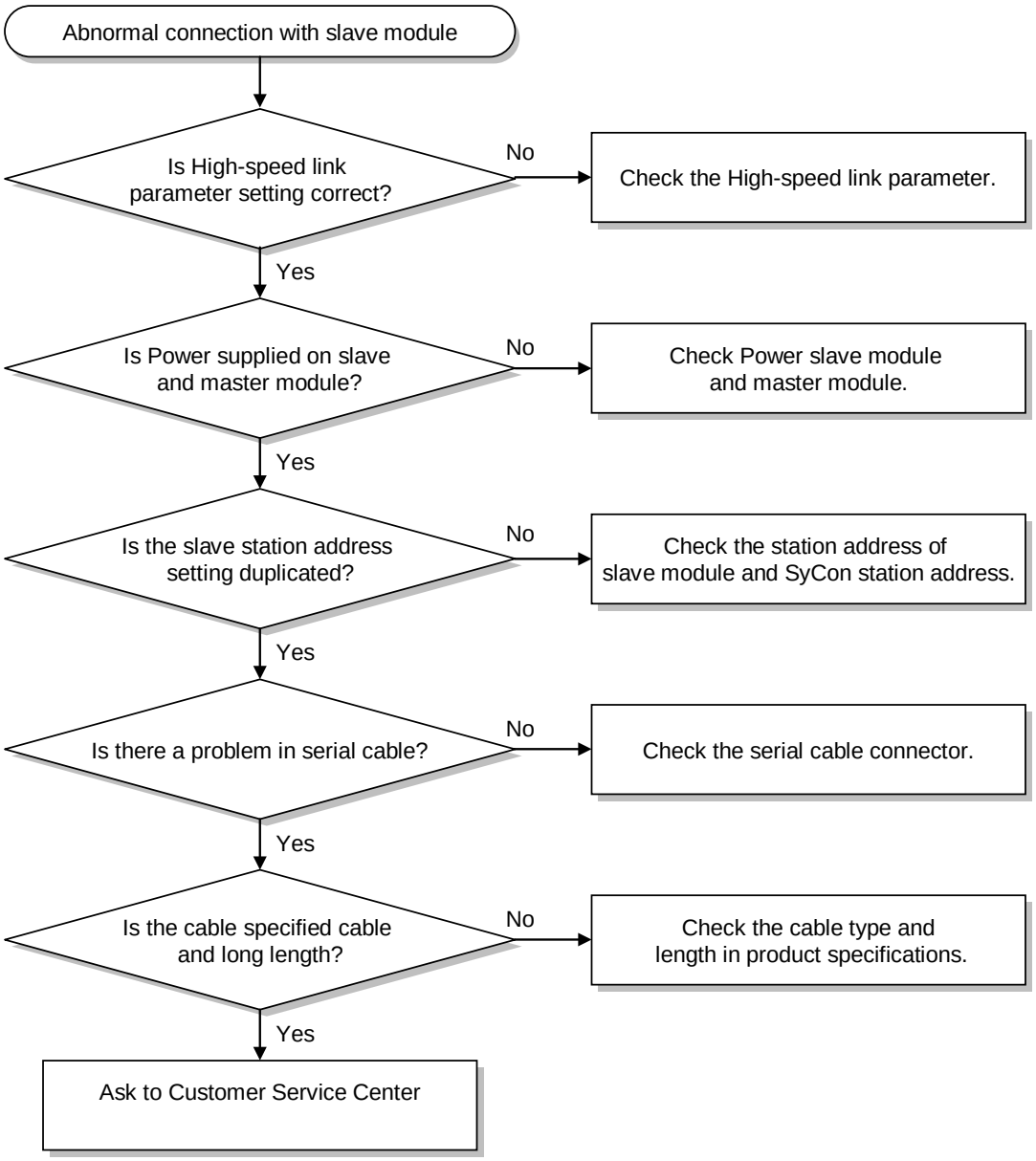
10.4.1 SyCon abnormal connection



10.4.2 XG5000 abnormal connection



10.4.3 Abnormal connection with slave module



Chapter 11 Compliance with EMC Specifications

11.1 Requirements Complying with EMC Specifications

EMC Directions describe “Do not emit strong electromagnetic wave to the outside: Emission” and “Do not have an influence of electromagnetic wave from the outside: Immunity”, and the applicable products are requested to meet the directions. The chapter summarizes how to structure a system using XGT PLC to comply with the EMC directions. The description is the data summarized for the requirements and specifications of EMC regulation acquired by the company but it does not mean that every system manufactured according to the description meets the following specifications. The method and determination to comply with the EMC directions should be finally determined by the system manufacturer self.

11.1.1 EMC specifications

The EMC specifications affecting the PLC are as follows.

Specification	Test items	Test details	Standard value
EN50081-2	EN55011 Radiated noise ＊2	Measure the wave emitted from a product.	30~230 ㎒ QP : 50 dBμV/m ＊1 230~1000 ㎒ QP : 57 dBμV/m
	EN55011 conducted noise	Measure the noise that a product emits to the power line.	150~500 ㎑ QP : 79 dB Mean : 66 dB 500~230 ㎒ QP : 73 dB Mean : 60 dB
EN61131-2	EN61000-4-Electrostatic immunity	Immunity test allowing static electricity to the case of a device.	15 ㎸ Air discharge 8 ㎸ Contact discharge
	EN61000-4-4 Fast transient burst noise	Immunity test allowing a fast noise to power cable and signal cable.	Power line : 2 ㎸ Digital I/O : 1 ㎸ Analogue I/O, signal lines : 1 ㎸
	EN61000-4-3 Radiated field AM modulation	Immunity test injecting electric field to a product.	10Vm, 26~1000 ㎒ 80% AM modulation@ 1 ㎑
	EN61000-4-12 Damped oscillatory wave immunity	Immunity test allowing attenuation vibration wave to power cable.	Power line : 1 ㎸ Digital I/O(24V and higher) : 1 ㎸

[Table 11.1.1] EMC specification list

＊1 : QP: Quasi Peak, Mean : average value

＊2 : PLC is a type of open device(installed on another device) and to be installed in a panel.
For any applicable tests, the system is tested with the system installed in a panel.

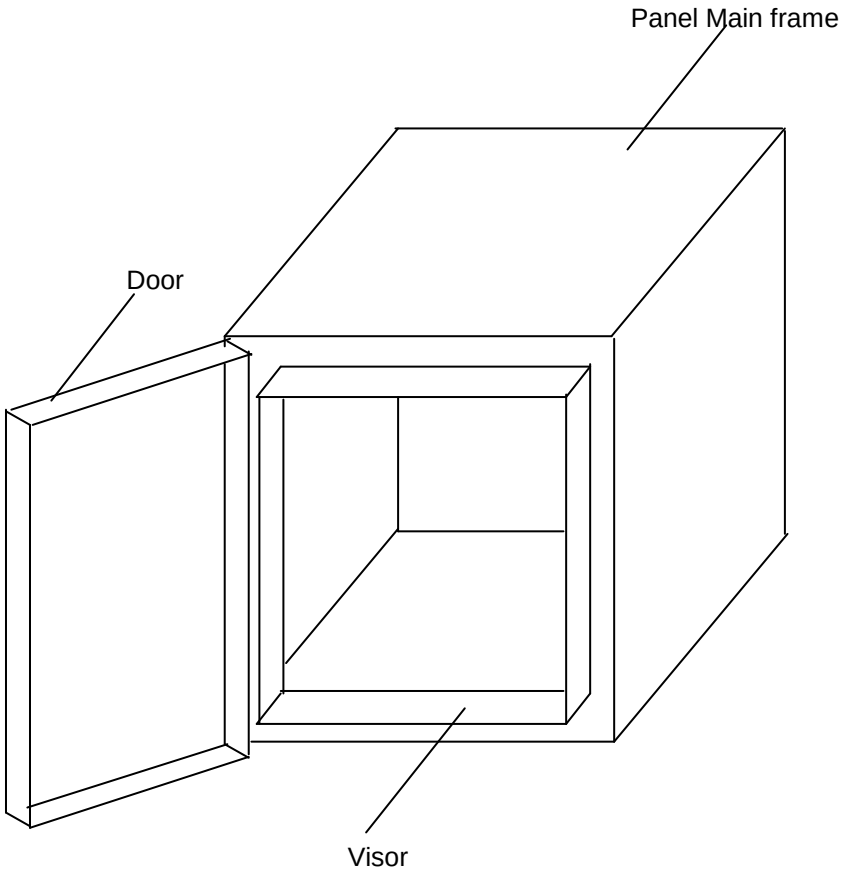
11.1.2 Panel

The PLC is a kind of open device(installed on another device) and it should be installed in a panel. It is because the installation may prevent a person from suffering from an accident due to electric shock as the person contacts with the product(XGT PLC) and the panel can attenuates the noise generating from the PLC.
In case of XGT PLC, to restrict EMI emitted from a product, it should be installed in a metallic panel. The specifications of the metallic panel are as follows.

1) Panel

The panel for PLC should be installed and manufactured as follows.

(1) The panel should be made of SPCC(Cold Rolled Mild Steel)
(2) The plate should be 1.6mm and thicker
(3) The power supplied to the panel should be protected against surge by using insulated transformer.
(4) The panel should be structured so that electric wave is not leaked outside. For instance, make the door as a box as presented below. The main frame should be also designed to be covered the door in order to restrict any radiating noise generated from the PLC.



(5) The inside plate of panel should have proper conductivity with a wide surface as possible by eliminating the plating of the bolt used to be mounted on the main frame in order to secure the electric contact with the frame.

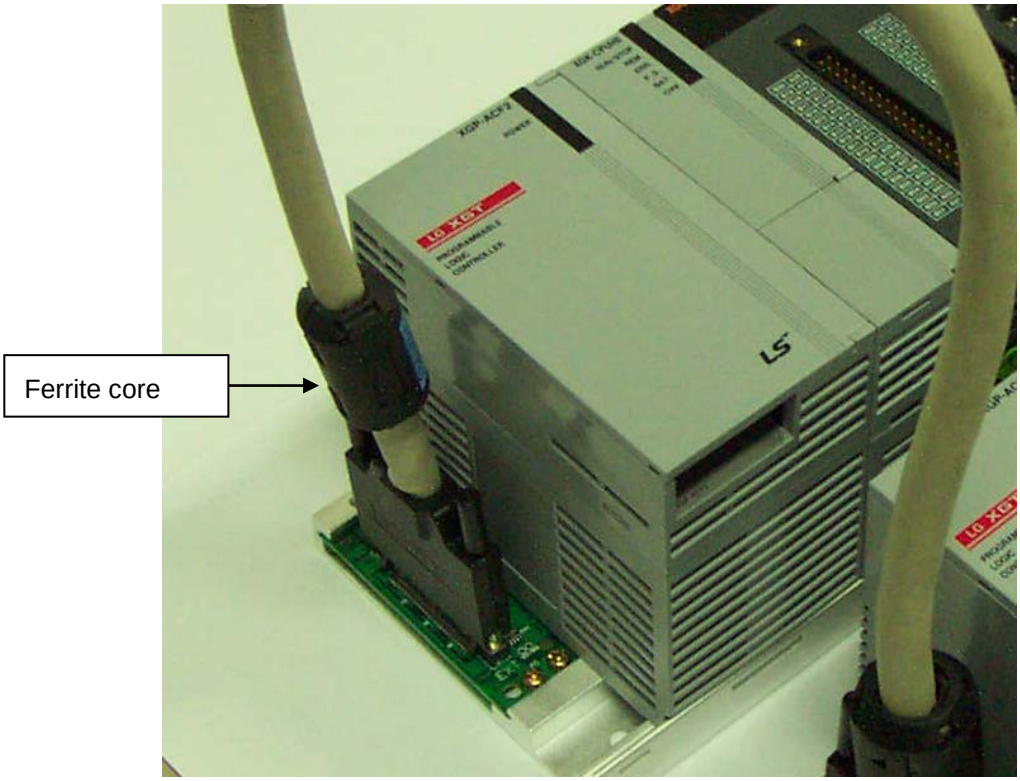
2) Power cable and grounding cable

The grounding/power cable of PLC should be treated as follows.

(1) The panel should be grounded with a thick wire(2 mm^2 or above) to secure a lower impedance even in high frequency.
(2) LG(Line Ground) terminal and FG(Frame Ground) terminal functionally let the noise inside the PLC flow into the ground, so a wire of which impedance is low should be used.
(3) Since the grounding cable itself may generate noise, thick and short wiring may prevent it serving as an antenna.

11.1.3 Cable

1) Extension cable treatment
The extension cable of XGT series is with fast electric signal. Therefore, high frequency noise wave is emitted from the extension cable. To comply with the CE specifications, please attach the ferrite core on the extension cable as presented in the figure.



Mode	Manufacturer	Remarks
CU1330D	E Tech Electronics	-
ZCAT3035-1330	TDK	-

2) Fixing a cable in the panel
If the extension cable of XGT series is to be installed on the metallic panel, the cable should be 1cm and more away from the panel, preventing the direct contact.
The metallic plate of panel may shield noise from electromagnetic wave while it a cable as a noise source is close to the place, it can serve as an antenna. Every fast signal cable as well as the extension cable needs proper spacing from the panel.

11.2 Requirements Complying with Low Voltage Direction

The low voltage direction requires a device that operates with AC50~1000V, DC 75 ~ 1500V to have proper safety. The followings summarize the cautions for installing and wiring PLC of the XGT series to comply with the low voltage directions. The description is the data based on the applicable requirements and specifications as far as we know but it does not mean that every system manufactured according to the description meets the following specifications. The method and determination to comply with the EMC directions should be finally determined by the system manufacturer self.

11.2.1 Specifications applicable to XGT series

XGT series follow the EN6100-1(safety of the device used in measurement/control lab).
XGT series is developed in accordance with the above specifications, even for a module operating at the rated voltage higher than AC50V/DC75V.

11.2.2 Selection of XGT series PLC

(1) Power module
The power module of which rated input voltage is AC110/220V may have dangerous voltage(higher than 42.4V peak) inside it, so any CE mark compliance product is insulated between the primary and the secondary.

(2) I/O module
The I/O module of which rated voltage is AC110/220V may have dangerous voltage(higher than 42.4V peak) inside it, so any CE mark compliance product is insulated between the primary and the secondary. The I/O module lower than DC24V is not applicable to the low voltage directions.

(3) CPU Module, Base unit
The modules use DC5V, 3.3V circuits, so they are not applicable to the low voltage directions.

(4) Special module, Communication module
The modules use the rated voltage less than DC 24V, so they are not applicable to the low voltage directions.

Appendix

A.1 Terminology

1) Profibus-FMS (Fieldbus Message Specification)
Solution generally used to provide communication functions in the cell level, with services available to transmit the program file to operate the field device and its related data file, to operate the program by remote control through the network and to manage various events which may occur during operation of the controlled and automatized system.

2) Profibus-DP (Decentralized Peripherals)
Used to send real-time data fast between field devices. It is an example of the communication system applied as of HS digital communication type substituted for existing 24V and 4~20Ma of analog sign like the communication between field devices such as various sensors and actuators installed on PLC and the field.

3) Profibus-PA (Process Automation)
Specially made for process automation with safety device built-in, which can connect sensor and actuator with a single bus line common-used. And it provides power and data communication function on the bus by means of 2-wire technology in compliance with the international standard of IEC 1158-2.

4) SyCon
Application program of Profibus Network Configuration Tool used to specify the configuration though SyCon and download the information onto the applicable module if LSIS master module (XGL-PMEA) is applied.

5) PROFICON
Application program of Profibus Network Configuration Tool used to specify the configuration though PROFICON and download the information onto the applicable module if LSIS master module (XGL-PMEC, XBL-PMEC) is applied.

6) GSD file
As the data sheet of electronic devices, it contains such information as maker, device name, status of released hardware and software, Send rate available, master related standards (max. slaves which can be connected with, upload/download option, etc.) and slave related standards (number and type of I/O channels, diagnosis test specification and available module information modular equipment is provided for).

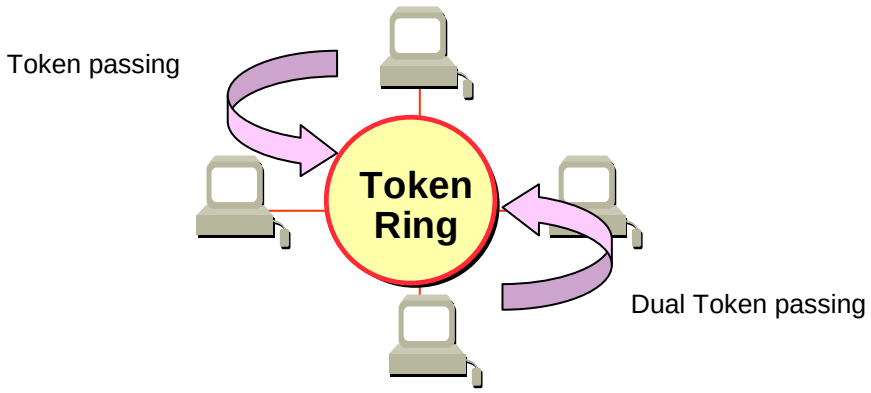
7) Broadcast communication
Used to send the message whose operation station is not recognized to all the stations (Master, Slaves).

8) Multicast communication

Used to send the message whose operation station is not recognized to the station group whose operation station is previously specified.

9) Token Ring

As one of the node connection methods on the network, it is a local communication network using a token to access to communication network with physical ring structure. If the transmission node obtains a token and its control, it transfers the message packet. Actually realized examples are IEEE 802.5, ProNet-1080 and FDDI. The term of Token Ring is occasionally used in substitute for IEEE 802.5.



10) Reset

It is used to initialize the communication module when Error is occurred. In XG5000, Select [Online]-[Reset/Clear]-[Reset PLC] , Reset is operated. And PLC is restarted.

A.2 List of Flags

A.2.1 High-speed link flags

No.	Keyword	Type	Detail	Description
L000000	_HS1_RLINK	Bit	HS link parameter No.1's all stations normally operated	Displays all stations normally operated as specified in HS link parameter, which will be On if 1.there is no error with all stations specified in parameter in RUN mode 2.All data block is in normal communication as specified in parameter. 3.The parameter specified in each station itself is in normal communication. Run_link will be kept On if once On until stopped by link disenable.
L000001	_HS1_LTRBL	Bit	After _HS1RLINK is ON, abnormal status displayed	This flag will be On if the station specified in parameter and the data block's communication status are as described below with _HSmRLINK flag On,. 1. When the station specified in parameter is not in RUN mode, 2. When the station specified in parameter is in error, 3. When data block's communication status specified in parameter is unstable, The link trouble will be On if one of those conditions 1,2 and 3 above occurs. And if such a condition is back to normal, it will be Off.
L000020 ~ L00009F	_HS1_STATE [k] (k=000~127)	Bit Array	HS link parameter No.1, Block No.k's general status displayed	Displays the general status of the communication information for the specified parameter's respective data blocks. HS1STATE[k]=HS1MOD[k]&_HS1TRX[k]&(~_HSmERR[k])
L000100 ~ L00017F	_HS1_MOD[k] (k=000~127)	Bit Array	HS link parameter No.1, Block No.k station's Run operation mode	Displays the operation mode of the station specified in parameter's data block k.
L000180 ~ L00025F	_HS1_TRX[k] (k=000~127)	Bit Array	Normal communication displayed with HS link parameter No.1, Block No.k station	Displays the communication status of parameter's data block k to check if normal as specified.
L000260 ~ L00033F	_HS1_ERR[k] (k=000~127)	Bit Array	HS link parameter No.1, Block No.k station's Run error mode	Displays the communication status of parameter's data block k to check for any error.
L000340 ~ L00041F	_HS1_SETBLOCK[k]	Bit Array	HS link parameter No.1, Block No.k setting displayed	Displays the setting status of parameter's data block k.

[Table 1] List of communication flags based on HS link number (HS link No. 1 ~ 12)

Notes

HS link No.	L area address	Remarks
2	L000500~L00099F	Compared with HS link of 1 in [Table 1], other HS link station number's flag address will be simply calculated as follows; ∗ Calculation formula: L area address = L000000 + 500 x (HS link No. – 1) In order to use HS link flag for program and monitoring, use the flag map registered in XG5000 for convenient application..
3	L001000~L00149F	
4	L001500~L00199F	
5	L002000~L00249F	
6	L002500~L00299F	
7	L003000~L00349F	
8	L003500~L00399F	
9	L004000~L00449F	
10	L004500~L00499F	
11	L005000~L00549F	

Ex.) K as a block number is displayed through 8 words by 16 for 1 word for the information of 128 blocks from 000 to 127.
For example, block information of 16~31, 32~47, 48~63, 64~79, 80~95, 96~111, 112~127 will be displayed in L00011, L00012, L00013, L00014, L00015, L00016, L00017 from block 0 to block 15 for mode information (_HS1MOD). Thus, the mode information of the block No. 55 will be displayed in L000137.

No.	Keyword	Type	Detail	Description
L006250	_P2P1_NDR00	Bit	P2P parameter No.1, block No.00 service complete normally	P2P parameter No.1, block No.0 service complete normally
L006251	_P2P1_ERR00	Bit	P2P parameter No.1, block No.00 service complete abnormally	P2P parameter No.1, block No.0 service complete abnormally
L00626	_P2P1_STATUS00	Word	Error code if P2P parameter No.1, block No.00 service complete abnormally	Error code displayed if P2P parameter No.1, block No.0 service complete abnormally
L00627	_P2P1_SVCCNT00	DWord	P2P parameter No.1, block No.00 service normal execution times	P2P parameter No.1, block No.0 service normal execution times displayed
L00629	_P2P1_ERRCNT00	DWord	P2P parameter No.1, block No.00 service abnormal execution times	P2P parameter No.1, block No.0 service abnormal execution times displayed
L006310	_P2P1_NDR01	Bit	P2P parameter No.1, block No.01 service complete normally	P2P parameter No.1, block No.1 service complete normally
L006311	_P2P1_ERR01	Bit	P2P parameter No.1, block No.01 service complete abnormally	P2P parameter No.1, block No.1 service complete abnormally
L00632	_P2P1_STATUS01	Word	Error code if P2P parameter No.1, block No.01 service complete abnormally	Error code displayed if P2P parameter No.1, block No.1 service complete abnormally
L00633	_P2P1_SVCCNT01	DWord	P2P parameter No.1, block No.01 service normal execution times	P2P parameter No.1, block No.1 service normal execution times displayed
L00635	_P2P1_ERRCNT01	DWord	P2P parameter No.1, block No.01 service abnormal execution times	P2P parameter No.1, block No.1 service abnormal execution times displayed

[Table 2] List of communication flags based on P2P service setting (P2P parameter: 1~8, P2P block: 0~63)

A.2.2 Link devices (N)

No.	Keyword	Type	Detail	Description
N00000	_P1B00SN	Word	P2P parameter No.1, block No.00's correspondent station No.	P2P parameter No.1, block No.00's correspondent station No. saved Use P2PSN command to modify during Run if correspondent station number is used in XG5000.
N00001 ~ N00004	_P1B00RD1	Device structure	P2P parameter No.1, block No.00 area device 1 to read	P2P parameter No.1, block No.00 area device 1 to read saved
N00005	_P1B00RS1	Word	P2P parameter No.1, block No.00 area size 1 to read	P2P parameter No.1, block No.00 area size 1 to read saved
N00006 ~ N00009	_P1B00RD2	Device structure	P2P parameter No.1, block No.00 area device 2 to read	P2P parameter No.1, block No.00 area device 2 to read saved
N00010	_P1B00RS2	Word	P2P parameter No.1, block No.00 area size 2 to read	P2P parameter No.1, block No.00 area size 2 to read saved
N00011 ~ N00014	_P1B00RD3	Device structure	P2P parameter No.1, block No.00 area device 3 to read	P2P parameter No.1, block No.00 area device 3 to read saved
N00015	_P1B00RS3	Word	P2P parameter No.1, block No.00 area size 3 to read	P2P parameter No.1, block No.00 area size 3 to read saved
N00016 ~ N00019	_P1B00RD4	Device structure	P2P parameter No.1, block No.00 area device 4 to read	P2P parameter No.1, block No.00 area device 4 to read saved
N00020	_P1B00RS4	Word	P2P parameter No.1, block No.00 area size 4 to read	P2P parameter No.1, block No.00 area size 4 to read saved
N00021 ~ N00024	_P1B00WD1	Device structure	P2P parameter No.1, block No.00 saved area device 1	P2P parameter No.1, block No.00 saved area device 1 saved
N00025	_P1B00WS1	Word	P2P parameter No.1, block No.00 saved area size 1	P2P parameter No.1, block No.00 saved area size 1 saved
N00026 ~ N00029	_P1B00WD2	Device structure	P2P parameter No.1, block No.00 saved area device 2	P2P parameter No.1, block No.00 saved area device 2 saved
N00030	_P1B00WS2	Word	P2P parameter No.1, block No.00 saved area size 2	P2P parameter No.1, block No.00 saved area size 2 saved
N00031 ~ N00034	_P1B00WD3	Device structure	P2P parameter No.1, block No.00 saved area device 3	P2P parameter No.1, block No.00 saved area device 3 saved
N00035	_P1B00WS3	Word	P2P parameter No.1, block No.00 saved area size 3	P2P parameter No.1, block No.00 saved area size 3 saved
N00036 ~ N00039	_P1B00WD4	Device structure	P2P parameter No.1, block No.00 saved area device 4	P2P parameter No.1, block No.00 saved area device 4 saved
N00040	_P1B00WS4	Word	P2P parameter No.1, block No.00 saved area size 4	P2P parameter No.1, block No.00 saved area size 4 saved

[Table 3] List of communication devices based on P2P number (P2P No. : 1~8, P2P block : 0~63)

No.	Keyword	Type	Detail	Description
N00041	_P1B01SN	Word	P2P parameter No.1, block No.01 correspondent station No.	P2P parameter No.1, block No.01's correspondent station No. saved Use P2PSN command to modify during Run if correspondent station number is used in XG5000.
N00042 ~ N00045	_P1B01RD1	Device structure	P2P parameter No.1, block No.01 area device 1 to read	P2P parameter No.1, block No.01 device area 1 to read saved
N00046	_P1B01RS1	Word	P2P parameter No.1, block No.01 area size 1 to read	P2P parameter No.1, block No.01 area size 1 to read saved
N00047 ~ N00050	_P1B01RD2	Device structure	P2P parameter No.1, block No.01 area device 2 to read	P2P parameter No.1, block No.01 area device 1 to read saved
N00051	_P1B01RS2	Word	P2P parameter No.1, block No.01 area size 2 to read	P2P parameter No.1, block No.01 area size 2 to read saved
N00052 ~ N00055	_P1B01RD3	Device structure	P2P parameter No.1, block No.01 area device 3 to read	P2P parameter No.1, block No.01 area device 3 to read saved
N00056	_P1B01RS3	Word	P2P parameter No.1, block No.01 area size 3 to read	P2P parameter No.1, block No.01 area size 3 to read saved
N00057 ~ N00060	_P1B01RD4	Device structure	P2P parameter No.1, block No.01 area device 4 to read	P2P parameter No.1, block No.01 area device 4 to read saved
N00061	_P1B01RS4	Word	P2P parameter No.1, block No.01 area size 4 to read	P2P parameter No.1, block No.01 area size 4 to read saved
N00062 ~ N00065	_P1B01WD1	Device structure	P2P parameter No.1, block No.01 saved area device 1	P2P parameter No.1, block No.01 saved area device 1 saved
N00066	_P1B01WS1	Word	P2P parameter No.1, block No.01 saved area size 1	P2P parameter No.1, block No.01 saved area size 1 saved
N00067 ~ N00070	_P1B01WD2	Device structure	P2P parameter No.1, block No.01 saved area device 2	P2P parameter No.1, block No.01 saved area device 2 saved
N00071	_P1B01WS2	Word	P2P parameter No.1, block No.01 saved area size 2	P2P parameter No.1, block No.01 saved area size 2 saved
N00072 ~ N00075	_P1B01WD3	Device structure	P2P parameter No.1, block No.01 saved area device 3	P2P parameter No.1, block No.01 saved area device 3 saved
N00076	_P1B01WS3	Word	P2P parameter No.1, block No.01 saved area size 3	P2P parameter No.1, block No.01 saved area size 3 saved
N00077 ~ N00080	_P1B01WD4	Device structure	P2P parameter No.1, block No.01 saved area device 4	P2P parameter No.1, block No.01 saved area device 4 saved
N00081	_P1B01WS4	Word	P2P parameter No.1, block No.01 saved area size4	P2P parameter No.1, block No.01 saved area size 4 saved

[Table 3] List of communication devices based on P2P number (P2P No. : 1~8, P2P block : 0~63)

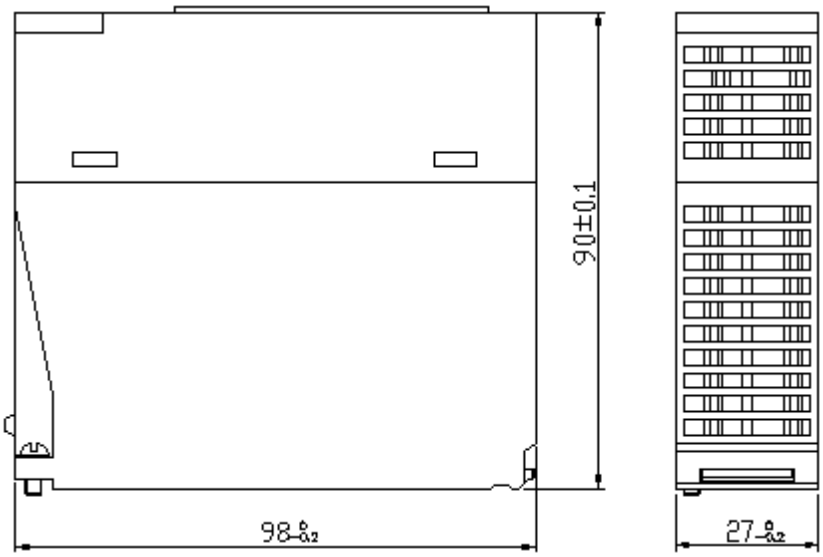
Remark

1) If P2P parameters are to be specified with XG5000 used for N area, the setting will be performed automatically. And its modification during Run is also available by P2P dedicated command.
2) Since the addresses of N area available are classified according to P2P parameter setting No. and block index No., the area not used for P2P service can be used as an internal device.

A.3 Dimensions

XGL-PMEA and XGL-PMEC have same dimensions.

Unit : mm



Warranty

1. Terms of warranty
   LSIS provides an 18-month warranty starting from the date of production.

2. Range of warranty
   For problems within the terms of the warranty, LSIS will replace the entire PLC or repair the defective parts free of charge except for the following cases.

   (1) Problems caused by improper conditions, environment or treatment.
   (2) Problems caused by external devices.
   (3) Problems caused by the user remodeling or repairing the PLC.
   (4) Problems caused by improper use of the product.
   (5) Problems caused by circumstances where the expectations exceed that of the science and technology level when LSIS produced the product.
   (6) Problems caused by natural disaster.

3. This warranty is limited to the PLC itself only. It is not valid for the system which the PLC is attached to.

Environmental Policy

LSIS Co., Ltd supports and observes the environmental policy as below.

Environmental Management

LSIS considers the environmental preservation as the preferential management subject and every staff of LSIS use the reasonable endeavors for the pleasurably environmental preservation of the earth.

About Disposal

LSIS' PLC unit is designed to protect the environment. For the disposal, separate aluminum, iron and synthetic resin (cover) from the product as they are reusable.

LSIS values every single customers.

Quality and service come first at LSIS.

Always at your service, standing for our customers.

http://eng.lsis.biz

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※ LSIS constantly endeavors to improve its product so that information in this manual is subject to change without notice.

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