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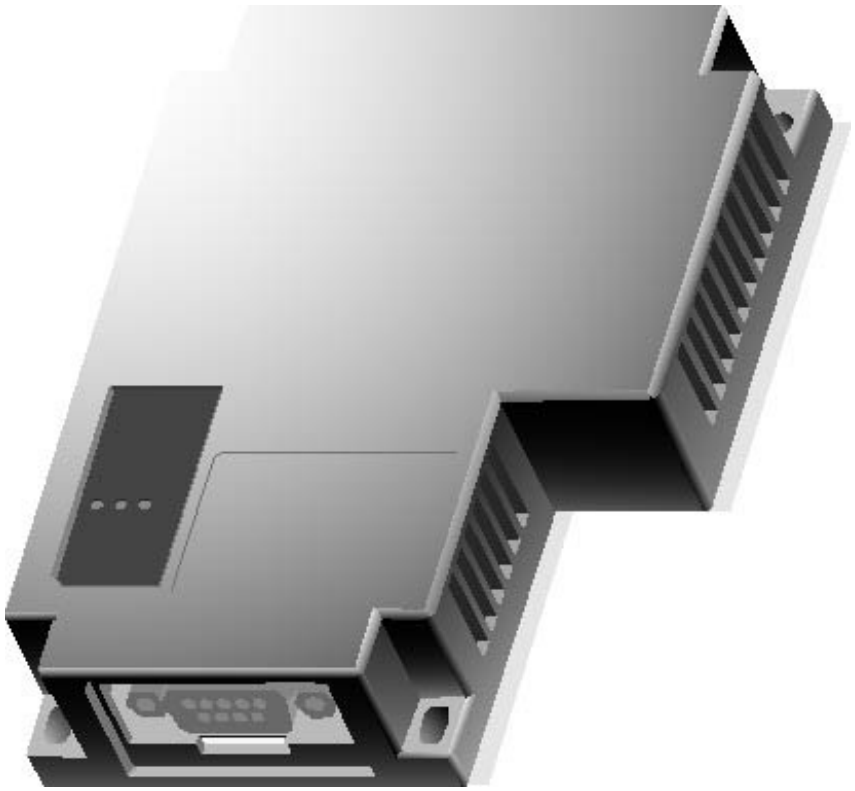
Human Machine Interface

# Profibus-DP Slave

XGT Panel Series

**User's Manual**

**Profibus-DP I/F**



## 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**

## Before using the product…

To use the product safely and effectively, please read this instruction manual thoroughly before use.

- Please keep to the safety precaution, for it is to prevent accidents and potential danger from occurring.

- Safety precaution is classified into 'Warning' and 'Caution' and their meanings are as follows.

| | |
|---|---|
| ⚠ **Warning** | Violating the instruction may result in serious personal injury or death. |
| ⚠ **Caution** | Violating the instruction may result in slight personal injury or product damage. |

- The indicated illustrations on the product and in the manual have the following meanings.

  ⚠ Be cautious, for danger may be present.

  ⚠ Be cautious, for there is a possibility of an electric shock.

- After reading the instruction manual, keep it handy for quick reference.

# Design Precautions

## ⚠ Warning

- **Install a safety circuit external to the HMI to protect the whole control system in case of external power supply trouble.**

  Serious trouble may occur to the entire system due to erroneous output/operation of the HMI.

# Design Precautions

## ⚠ Caution

- **In/output signal or communication cable should be at least 100mm apart from High-voltage/power wires.**

  Otherwise, it may cause erroneous output/operation.

# Installation Precautions

## ⚠ Caution

- **Use the HMI in an environment that meets the general specification contained in this manual or datasheet.**

  Otherwise, it could result in electric shock, fire, erroneous operation or deterioration.

- **In case of much vibration in the installed environment, be sure to insulate the HMI from direct vibration.**

  Otherwise, it could result in electric shock, fire or erroneous operation.

- **Be sure not to let foreign substances such as conductive debris inside the product.**

  Otherwise, it could result in electric shock, fire or erroneous operation.

# Wiring Precautions

## ⚠ Warning

- **Be sure to turn off the HMI and external power before wiring.**

  Otherwise, it may result in an electric shock or damage to the product.

## ⚠ Caution

- **Wire correctly by checking each of the product's rated voltage and terminal layout.**

  Otherwise, it may result in fire, electric shock or erroneous operation.

- **Tighten terminal screws with specified torque when wiring.**

  If terminal screws are loose, it may result in short circuits, fire or erroneous operation.

- **Use the exclusive HMI 3-type grounding for the FG terminal.**

  If not grounded, it may result in erroneous operation.

- **Be sure not to let any foreign substances such as wiring debris inside the module.**

  Such debris may cause fire, damage or erroneous operation.

# Startup and Maintenance Precautions

## ⚠ Warning

- **Do not touch the terminals while power is on.**

  Otherwise, it may cause electric shock or erroneous operation.

- **Turn off the PLC and external power when cleaning or tightening the terminal.**

  Otherwise, it may cause electric shock or erroneous operation.

- **Do not charge, disassemble, heat, short circuit, solder, etc. the battery.**

  Mishandling the battery may cause overheating, crack, fire and may result in injury or fire.

## ⚠ Caution

- **Do not disassemble PCB from the product case or modify the product.**

  Otherwise, it may result in fire, electric shock or erroneous operation.

- **Use cellular phone or walky-talky at least 30cm away from the PLC.**

  Otherwise, it may result in erroneous operation.

# Disposal Precaution

## ⚠ Caution

- **When disposing of this product or battery, treat it as industrial waste.**

  Otherwise, it may cause poisonous pollution or explosion.

# Revision History

| Version | Date | Contents | Revised location |
|---|---|---|---|
| V1.0 | ’11.8 | First Edition | - |

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

Thank you for purchasing the HMI of LS Industrial Systems Co., LTD.

For right use of the product, read carefully the manual to understand the functions, performance, installation and programming of the product you have purchased before use it and make sure that this manual is delivered to the final user and person in charge of maintenance.

The following manual deals with use of the product.

When necessary, read the following manuals and place an order.

Otherwise you can download PDF files by signing in our company's home page http://eng.lsis.biz/.

Related Manuals

| Title | Contents | Serial Number |
|---|---|---|
| XGT Panel Communication User's Manual | This manual describes the line diagrams and communication settings necessary for connecting the XGT Panel products to control devices such as the PLC or inverter. | 10310000857 |
| XP-Builder User's Manual | This is the XGT Panel software manual describing the functions such as the display data, communication and environment setting, logging/recipe data backup, simulator and printing to use the XGT Panel products. | 10310000876 |
| XGT Panel User's Manual | This manual explains the specifications, features and system composition of the XGT Panel series. | 10310000867 |

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# Chapter 1 Introduction

## 1.1 Introduction

This user manual describes Profibus-DP I/F module out of XGT PANEL system network. Profibus-DP I/F, a world-class field bus based on 12M bps high-speed communication, is responsible for communication between XGT PANEL and Profibus Master (e.g. XGT series Profibus Master module) and provides Bus-type topology and total 9 kinds of communication speed to enable it to compose of a flexible filed bus system. Especially, since Profibus-bus is the field bus that has the highest rate of occupancy in the world market, it can configure an automatic system by associating with any other device.
Refer to the following S/W along with this user manual to program:

- XP-Builder (Tool): V1.24 or above
- XGT-Panel SW: V1.24 or above

## 1.2 Special Feature

XP Profibus-DP I/F Module has the following special features:

(1) Comply with PROFIBUS DP-V0 protocol.
(2) Available to send up to 224-byte in/output data
(3) Provide DP-Slave status and diagnosis functions
(4) Available to mount one set to XGT PANEL
(5) Available to connect to 32 stations per segment on bus topology
(6) Provide total 9 types of communication speed

## 1.3 Product Configuration

### 1.3.1 Model Name Marking

This section describes the product configuration of XP Profibus-DP I/F Module.

| Model Name | Description | Remark |
|---|---|---|
| XPO-PSEA | Profibus-DP I/F | |

### 1.3.2 The Number of Mountable System

Only one set is mountable to HMI device on XP Profibus-DP I/F Module

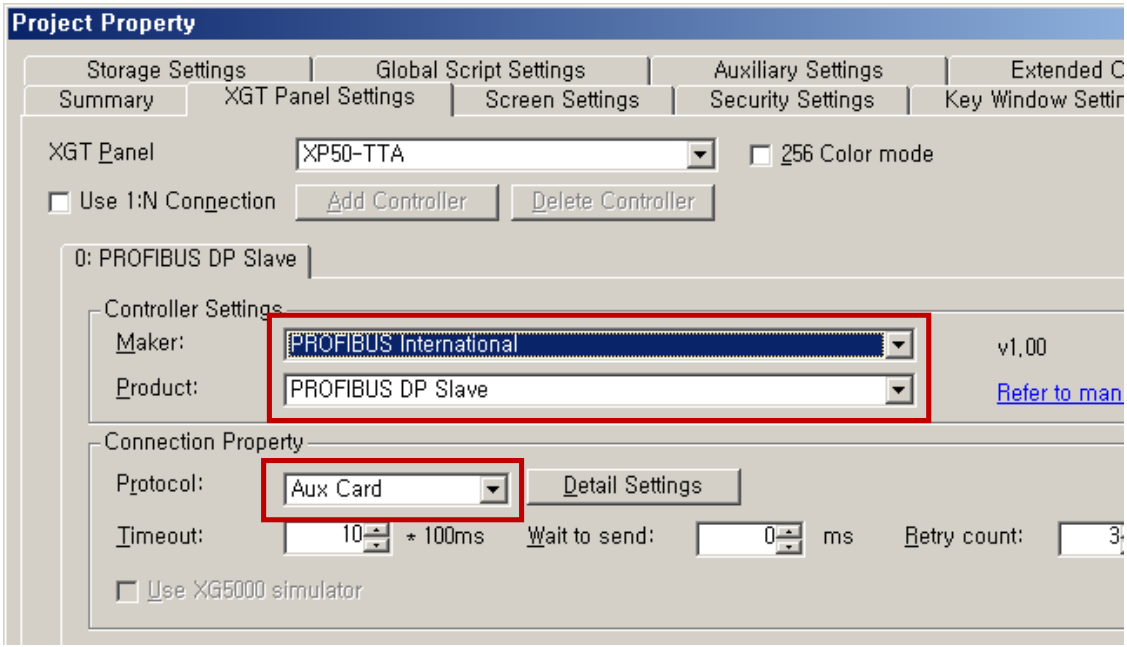
## 1.4 Software for Using the Product

The following section describes main programming tools and other software to use Profibus-DP I/F Module. For more accurate application of program and communication, refer to the following information and apply it to the system.

### 1.4.1 XP-Builder

XP-Builder helps the user to set communication parameters to run Profibus-DP I/F Module and to download to relevant drivers.

Those settings are executed through “Project Property”-> “Device Settings” screen of XP-Builder as done for general serial communication settings.




[Figure 1.4.1] Setting Screen of XP-Builder Profibus-DP

### 1.4.2 Checking the version of Profibus-DP I/F Module

Each communication module has a label showing product information on its external case.
Profibus-DP I/F Module has a label attached to its back with its model name and version written.

# Chapter 2 Product Specification

## 2.1 General

The general specifications of Profibus-DP I/F module (XPO-PSEA) are as follows.

<table>
<tr><th>No.</th><th>Items</th><th colspan="5">Specifications</th><th>Related standards</th></tr>
<tr><td>1</td><td>Ambient temperature</td><td colspan="5">0 ~ 50 ℃</td><td></td></tr>
<tr><td>2</td><td>Storage temperature</td><td colspan="5">–20 ~ +60 ℃</td><td></td></tr>
<tr><td>3</td><td>Ambient humidity</td><td colspan="5">10 ~ 85%RH (Non-condensing)</td><td></td></tr>
<tr><td>4</td><td>Storage humidity</td><td colspan="5">10 ~ 85%RH (Non-condensing)</td><td></td></tr>
<tr><td rowspan="9">5</td><td rowspan="9">Vibration resistance</td><td colspan="4">Occasional vibration</td><td>-</td><td></td></tr>
<tr><td>Frequency</td><td colspan="2">Acceleration</td><td>Amplitude</td><td>times</td><td rowspan="8">IEC61131-2</td></tr>
<tr><td>5 ≤ f < 9Hz</td><td colspan="2">–</td><td>3.5mm</td><td rowspan="7">10 times each directions (X, Y and Z)</td></tr>
<tr><td>9 ≤ f ≤ 150Hz</td><td colspan="2">9.8m/s$^2$(1G)</td><td>–</td></tr>
<tr><td colspan="4">Continuous vibration</td></tr>
<tr><td>Frequency</td><td colspan="2">Acceleration</td><td>Amplitude</td></tr>
<tr><td>5 ≤ f < 9Hz</td><td colspan="2">–</td><td>1.75mm</td></tr>
<tr><td>9 ≤ f ≤ 150Hz</td><td colspan="2">4.9m/s$^2$</td><td>–</td></tr>
<tr><td>6</td><td>Shock resistance</td><td colspan="5">• Peak acceleration: 147 m/s$^2$(15g)<br>• Duration: 11ms<br>• Half-sine, 3 times each direction per each axis</td><td>IEC61131-2</td></tr>
<tr><td rowspan="5">7</td><td rowspan="5">Noise resistance</td><td>Square wave Impulse noise</td><td colspan="4">AC System: ±1,500V<br>DC System: ±1,000V</td><td>LSIS standard</td></tr>
<tr><td>Electrostatic discharge</td><td colspan="4">6kV (Contact discharge)</td><td>IEC61131-2<br>IEC61000-4-2</td></tr>
<tr><td>Radiated electromagnetic field noise</td><td colspan="4">27 ~ 500 MHz, 10V/m</td><td>IEC61131-2,<br>IEC61000-4-3</td></tr>
<tr><td rowspan="2">Fast transient/bust noise</td><td>Segment</td><td>Power supply module</td><td colspan="2">Digital/analog input/output communication interface</td><td rowspan="2">IEC61131-2<br>IEC61000-4-4</td></tr>
<tr><td>Voltage</td><td>2kV</td><td colspan="2">1kV</td></tr>
<tr><td>8</td><td>Environment</td><td colspan="5">Free from corrosive gasses and excessive dust</td><td></td></tr>
<tr><td>9</td><td>Operating height</td><td colspan="5">Up to 2,000 ms (6.562ft)</td><td></td></tr>
<tr><td>10</td><td>Pollution degree</td><td colspan="5">2 or less</td><td></td></tr>
<tr><td>11</td><td>Cooling</td><td colspan="5">Air-cooling</td><td></td></tr>
</table>

**Note**

1) IEC(International Electro-technical Commission) : This international NGO promotes global cooperation for standardization in the electrical and electric technology field and issues international standards as well as operates relevant compliance assessment regimes as an international electricity standard commission)
2) Pollution Degree: An index showing pollution degree of the service environment, which decides the device's insulation performance. For example, pollution degree 2 refers only to common non-conducting pollution. But, it also refers to the state in which temporal conduction caused by condensation.

## 2.2 Performance Specification

This section describes the system's configuration standard according to the media of Profibus-DP I/F Module.
Refer to the following table to configure the system.

### 2.2.1 Performance Specification

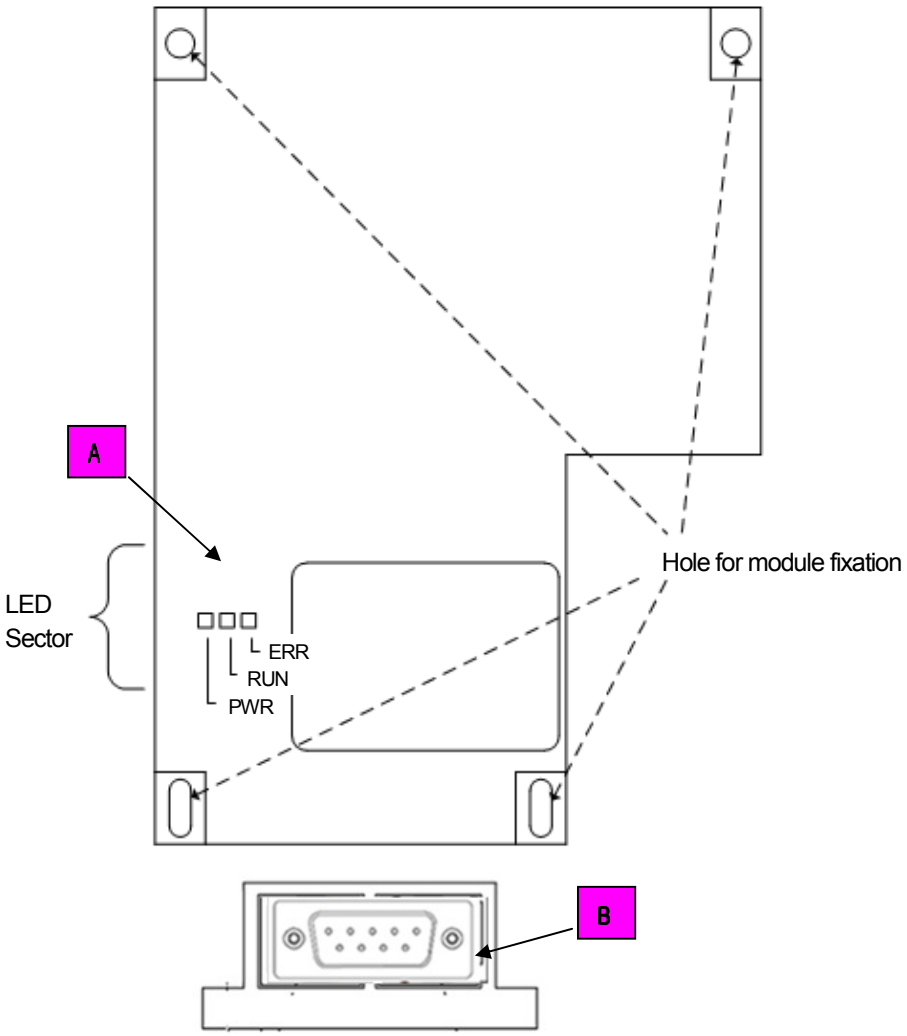
| Item | Standard | |
|---|---|---|
| | PROFIBUS-DP | |
| Module Type | PROFIBUS Option Module for XGT Panel | |
| Network Type | PROFIBUS-DP | |
| Support Slave Protocol | DP-V0 | |
| Standard | EN50170/DIN19245 | |
| Interface | RS-485(electricity) | |
| Topology | Bus Way | |
| Modulation Method | NRZ(Non Return to Zero) | |
| MAC(Media Approaching) | Local Token Ring | |
| Maximum Transmission distance and Baud rate (Embedded Auto Baud rate Function) | Transmission distance(m) | Baud rate(bps) |
| | 1,200 | 9.6k/19.2k/93.7k |
| | 1,000 | 187.5k |
| | 400 | 500k |
| | 200 | 1.5M |
| | 100 | 3M/6M/12M |
| Maximum contact station number per network | 126 stations | |
| Maximum contact station number per segment | 32 stations(Include master), Available to set 0 through up to 125 stations | |
| Service Cable (Same as Smart I/O Pnet Cable) | Twisted Pair Cable (Refer to 2.4 Cable Standard) | |
| Maximum in/output data size per slave | Input 224/ Output 224 byte | |
| Setting Type | 1,2,4,8,16,32,48,64,104,112 Words | |
| Number of mounted I/O module | 1 set | |
| Mounted Location | XP back Aux slot | |

### 2.2.2 Installable XGT Panel

| XGT Panel | Interface |
|---|---|
| XP30- BTE/TTE | X No mountable |
| XP50- TTE | X No mountable |
| XP30- BTA | Mountable |
| XP30 - TTA | Mountable |
| XP50 - TTA | Mountable |
| XP70 – TTA (DC/AC) | Mountable |
| XP80 – TTA (DC/AC) | Mountable |
| XP90 - TTA | Mountable |

## 2.3 Part Name

Each part of Profibus-DP Module has the following name:




A. LED Sector

| Category | Name | Normal | Abnormal | Description |
|---|---|---|---|---|
| 1 | PWR LED | ON | OFF | Module's power status |
| 2 | RUN LED | ON | OFF | When it is in Data Exchange Mode, It turns ON |
| 3 | ERR LED | OFF | ON | - Master parameter error<br>- Master configuration error<br>- Watchdog error<br>- XP Body configuration parameter error |

B. Profibus I/F Connector Sector

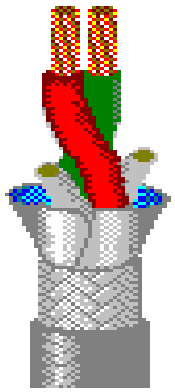
- D-SUB 9 Pin Female

## 2.4 Communication Cable Specification

Cables that comply with Profibus standard for Profibus-DP shall be used and the Company recommends using the cable with the following specification:

### 2.4.1 Profibus-DP Cable Specification

1) Cable Specification

| Category | Specification | |
|---|---|---|
| Cable | Belden Network Cable | |
| | Type: Network Components | |
| | Protocol: FMS-DP | |
| | Certification: No | |
| | Order No.: 3077F, 3079A | |
| AWG | 22 |  |
| Type | BC-Bare Copper | |
| Insulation | PE-Polyethylene | |
| Insulation Strength | 0.035(Inch) | |
| Shield | Aluminum Foil-Polyester Tape/Braid Shield | |
| Capacitance | 8500pF/ft | |
| Impedance | 150Ω | |
| Number of core | 2 Cores | |

2) Connector's structure and connector wire method

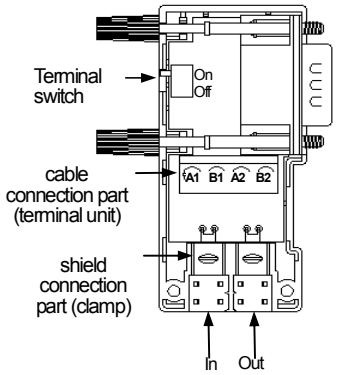
(1) Input wire: green line is connected to A1, red line is connected to B1.

(2) Output wire: green line is connected to A2, red line is connected to B2

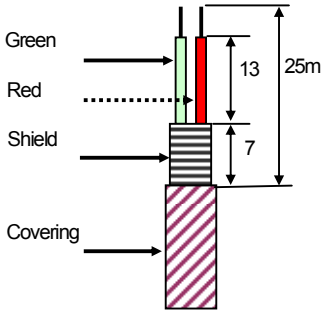
(3) Shield is connected to connector's clamp.

(4) When installing the connector in terminal, install cable at the A1.B1.

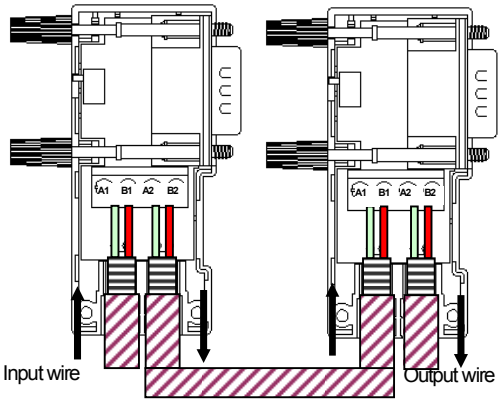
<connector structure>




<cable structure>

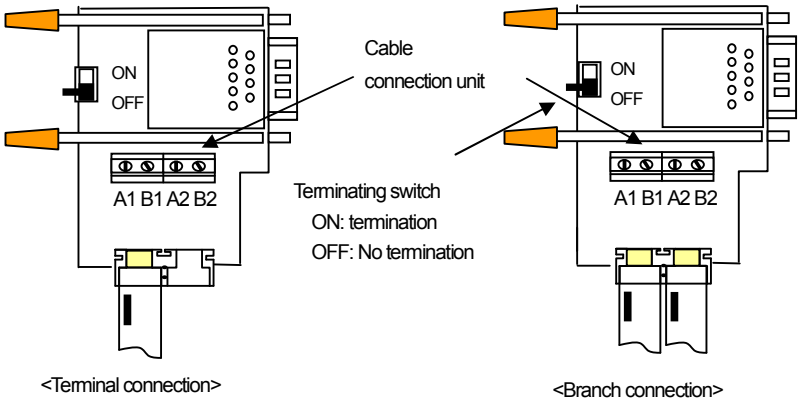



<connector wire method>




3) Profibus-DP Terminating

- Connection Connector




<Terminal connection>

<Branch connection>

# Chapter 3 Installation and Trial Run

## 3.1 Installation Environment

(This section is as described in 10.1.1. Installation Environment of "XGT Panel User Manual.)

This machine has high reliability regardless environment. But for reliability and stability, be careful the followings

### (1) Environment condition

(a) Install at the panel which can protect this machine from water and dust.
XGT Panel is designed by IP65 Standard in front parts and IP20 Standard in rear parts.
(b) Install at the place where impact and vibration is not continuously applied.
XGT Panel is designed to meet IEC standard (IEC 61131-2).
(c) Do not expose this machine to direct light.
(d) Do not install at the place where rapid temperature change can occur.
Moisture by rapid temperature change can cause malfunction and damage.
(e) This machine should be installed within 0 ~ 50°C, otherwise the screen may be changed or cause malfunction
(f) This machine should be installed within 10~85% relative-humidity.
Moisture by rapid temperature change can cause malfunction and damage.
(g) Avoid corrosive gas and burnable gas.

### (2) Installation construction

(a) When doing screw's processing or wiring construction, be careful that the remains do not enter the XGT Panel inside.
(b) Install at the place where you can easily control.
(c) Do not install with high voltage machine within same Panel.
(d) Keep distance of more than 100mm from duct for wiring and peripheral machine.
(e) Ground at the place where few noises develop.

### (3) Anti-heat design of control panel

(a) In case of installing XGT Panel in the airtight panel, consider the heat by other machine as well as own heat. In case that the air circulates through a ventilating opening or a general pan, XGT Panel system can be influenced by in-draft of dust or gas.
(b) We recommend you to install a filter or to use an airtight heat exchanger.

**Remark**

Anti-water and anti-vibration standard
► IP standard is IEC 529 standard (international anti-water grade regulation) and it can be divided into protection grade against invasion of solid matter and protection grade against invasion of water.
► In the IP65 certification, it can be divided into protection against dust (6) and water jets from all sides (5).
►IP20 is about protection against solid matter (2) whose diameter is more than 12mm and IP2 doesn't have protection about water (0)

## 3.2 Cautionary Notes

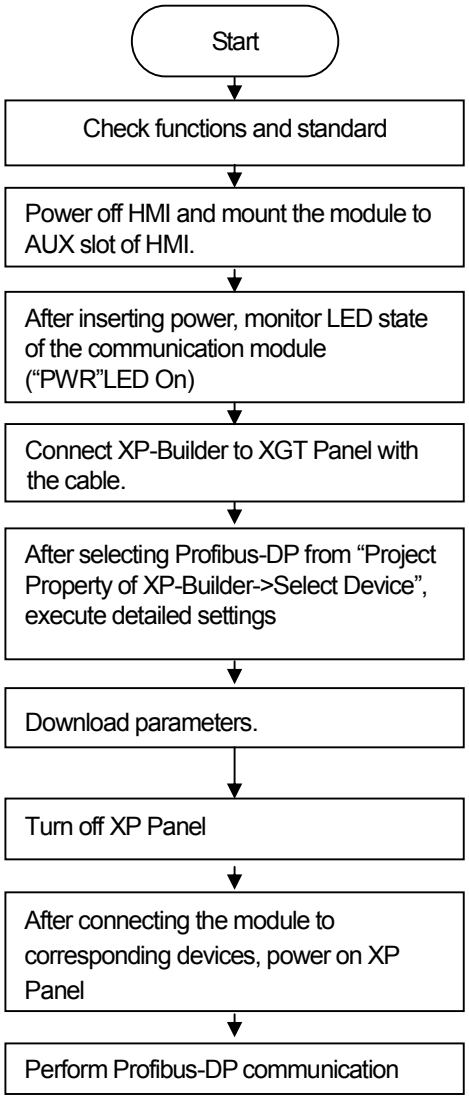
(This section is as described in 10.1.2 Cautionary Notes of “XGT Panel User Manual”.)

It describes the notice from opening to installation.

- Do not drop or cause heavy impact.
- Do not disassemble voluntarily. When doing this, we are not responsible for the product.
- When wiring, be careful that the remains do not enter into XGT Panel.

## 3.3 Setting Sequence

This section describes the sequence from setting the product to driving. Install and set parameters to run the system in the following sequence:




: Newly set address and in/output size will be applied to Profibus-DP I/F Module.

: If the chosen address has been already used by other module on the network, collision between addresses may take place.

**Note**

1) Profibus-DP I/F Module's address shall be set via relevant software.
2) After setting address and parameters, make sure to turn off the power and then turn it off.

## 3.4 Parameter Setting in XP-Builder

The following parameters can be set up in XP-Builder:

| Item | Range and Content | Remark |
|---|---|---|
| Address | 0 ~ 125 | - |
| Input Size | 1 Word ~ 112 Words | 10 types |
| Output Size | 1 Word ~ 112 Words | 10 types |

## 3.5 Connection of Product

### 3.5.1 Profibus-DP I/F Module Connection

I/F connector for Profibus-DP is DSUB 9Pin and it has the following pin signals:

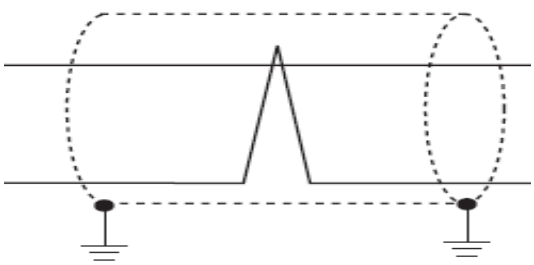
| No | Pin Name |
|---|---|
| 1 | - |
| 2 | - |
| 3 | TX/RX+ |
| 4 | RTS |
| 5 | GND |
| 6 | - |
| 7 | - |
| 8 | TX/RX- |
| 9 | - |

### 3.5.2 Example of connecting between stations

To directly connecting to the Mater Station, connect to No. 3 and 8 Pin only as seen in the figure below:

**Master Station**

| Pin | Signal |
|---|---|
| 3 | TX/RX+ |
| 5 | GND |
| 6 | 5V |
| 8 | TX/RX- |



**Slave Station**

| Pin | Signal |
|---|---|
| 3 | TX/RX+ |
| 5 | GND |
| 6 | 5V |
| 8 | TX/RX- |

## 3.6 Trial Run

### 3.6.1 Caution in Configuring the System

1) Use the communication cable that has specified dimensions. Using any other cable other than specified ones may cause some serious communication error.

2) Before installing the communication cable, check if the cable is disconnected or has a short circuit.

3) Fasten the communication cable connector to securely fix the cable. Imperfect connecting may lead to some serious communication error

4) If the communication cable is connected for a long range, arrange the cable away from the power line or the source of inducible noise as far as possible.

5) Since Profibus-DP cable is less flexible, excessive bending or deformation may cause a short circuit of the cable or damage to the connector of the communication module.

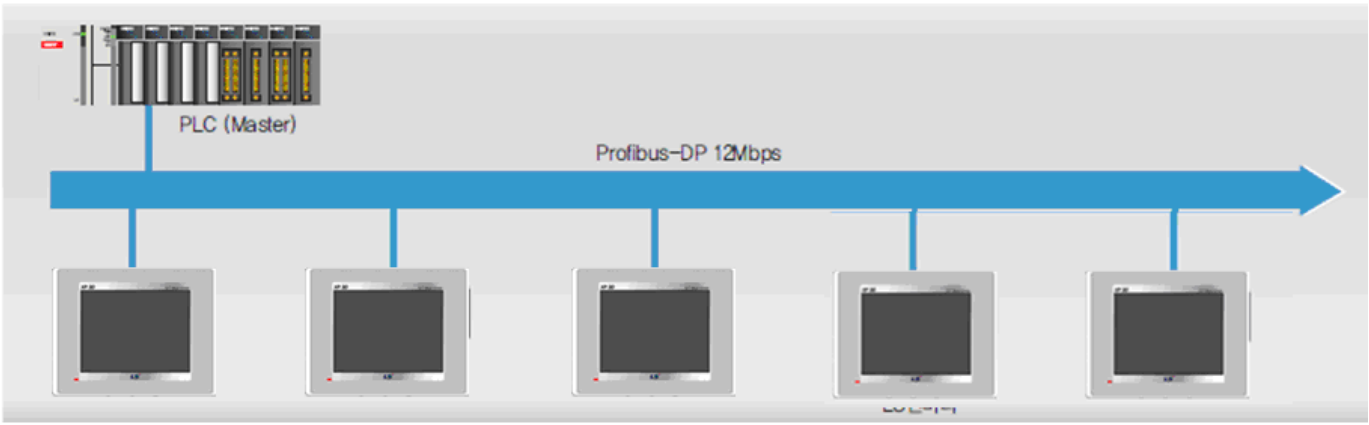
6) If LED shows any abnormal operation, check its cause by referring to Chapter 10 Troubleshooting in this User Manual and contact the A/S Center if the problem keeps taking place after that.

# Chapter 4 System Configuration

Profibus-DP I/F Module consists of one master and a number of slaves in principal and XP Profibus-DP I/F Module is operated with one slave.

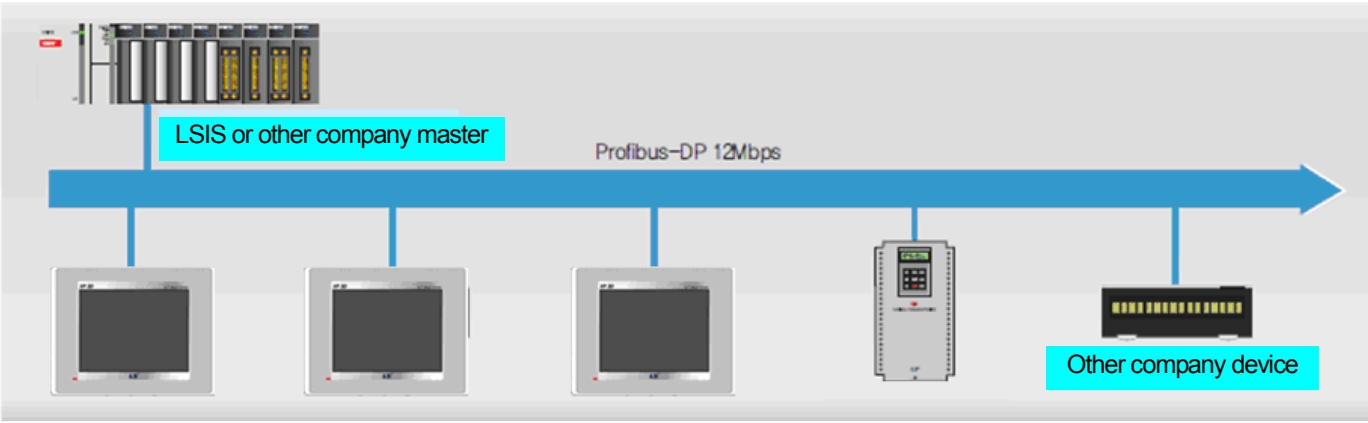
## 4.1 Various Ways of System Configuration

### 4.1.1 System that consists of One Master and Several XPs




[Figure 4.1.1] Connection between One Master and N XPs

### 4.1.2 System that consists of One Master, Several XPs and other various Slaves



# Chapter 5 Profibus-DP Communication

## 5.1 Introduction

Profibus-DP Communication between Profibus Master and HMI is a data transmission service that allows the user to send/receive data by setting communication parameters and to easily exchange data by setting parameters related to address and sending/receiving data size with XP-Builder. This Profibus-DP Communication is performed with simple Input/Output data communication as in other general field buses.

Profibus-DP Communication functions are as following:

(1) Setting Address :

Set Profibus-DP slave address of relevant XP. The setting range is from 0 to125. Do not set the same address used in the master and other slave stations.

(2) Setting Input/Output Size:

The client may select size of the Input/Output range among 10 types.

[Table 5.1.1] shows Profibus-DP setting standard.

| Category | Setting Range | Description |
|---|---|---|
| Address | 0 ~ 125 | Assign Profibus-DP address to XP Panel |
| Input | 1 Word | The number of data received from the Master<br><br>Select one among 10 types |
| | 2 Words | |
| | 4 Words | |
| | 8 Words | |
| | 16 Words | |
| | 32 Words | |
| | 48 Words | |
| | 64 Words | |
| | 104 Words | |
| | 112 Words | |
| Output | 1 Word | The number of data sent to the Master<br><br>Select one among 10 types |
| | 2 Words | |
| | 4 Words | |
| | 8 Words | |
| | 16 Words | |
| | 32 Words | |
| | 48 Words | |
| | 64 Words | |
| | 104 Words | |
| | 112 Words | |

[Table 5.1.1] Profibus-DP Setting Standard

## 5.2 Sending/Receiving Processing of Profibus-DP Communication

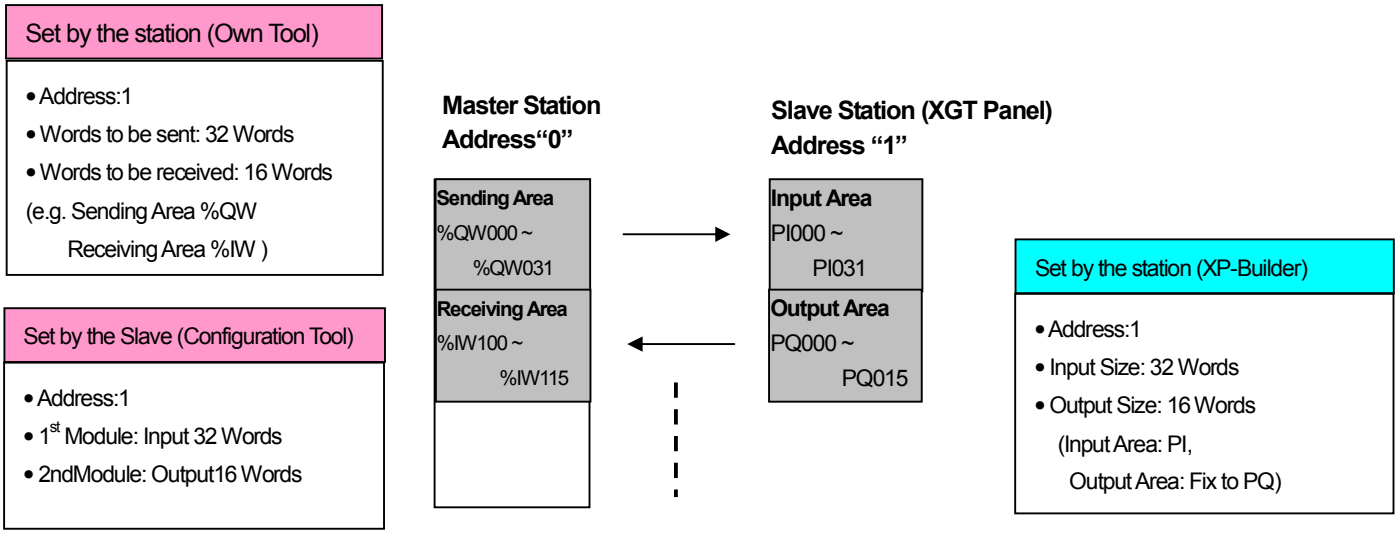
This section describes how to use Profibus-DP communication through a setting example to send/receive data between the master station and Profibus-DP I/F module (XGT Panel) of "1" Station's.

Setting is carried out as following:

(a) The master station receives 32 words from the sending area (e.g. %QW000).
(b) The data received from "1"Station(XGT Panel) is saved in PI000 through PI031.
(c) "1" Station(XGT Panel) reads PQ000~PQ015 (16Words) to send to the master station.
(d) The master station saves the data from the received area (e.g. %IW100) in 16 words.

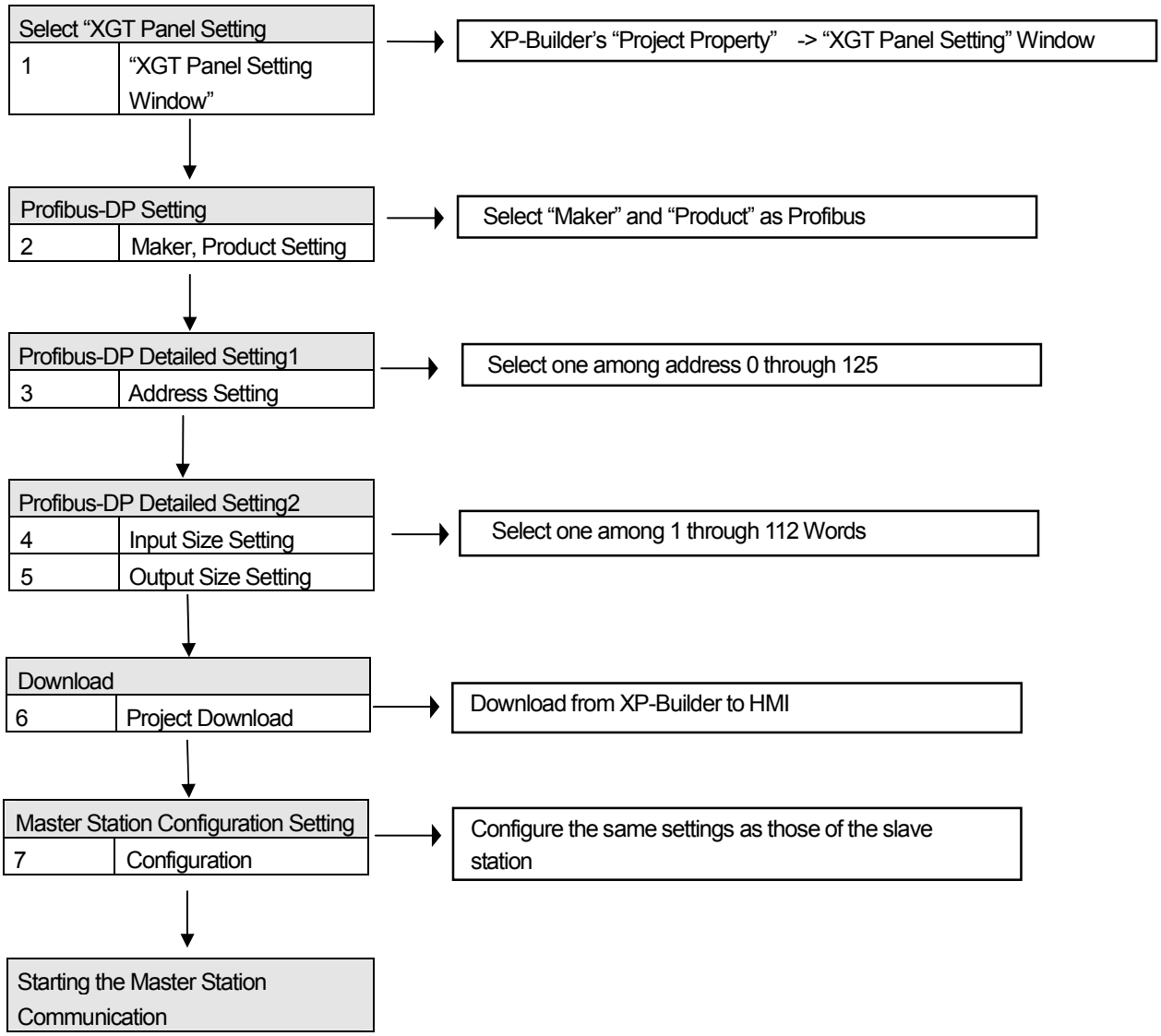
Configuration setting of the master station is executed with configuration tool provided by the master manufacturer.
For the slave station (XGT Panel), its parameters will be set with the Company's XP-Builder.

**At this time, the user needs to make sure the master's configuration settings are accurately matched to those of the slave station to get normal communication. Here, settings mean Input/Output size settings.**




[Table 5.2.1] Block Diagram of Profibus-DP Processing

## 5.3 Sequence to Operate Profibus-DP Communication



## 5.4 Profibus-DP Communication Setting

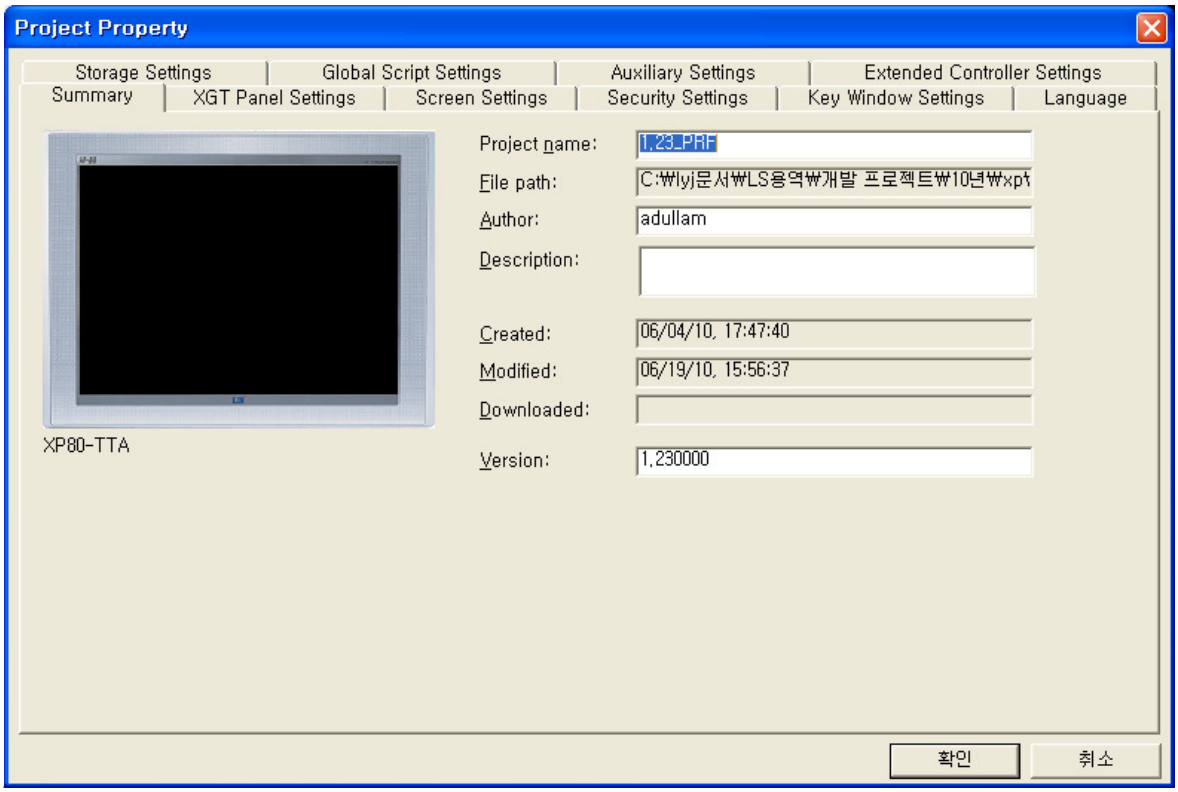
For high-speed link parameters, select high-speed link parameters from XG-PD's high-speed link screen and set relevant items, which have the following functions, as following setting sequences.

.

### 5.4.1 Setting Profibus-DP on XP-Builder

(1) Executing XP-Builder

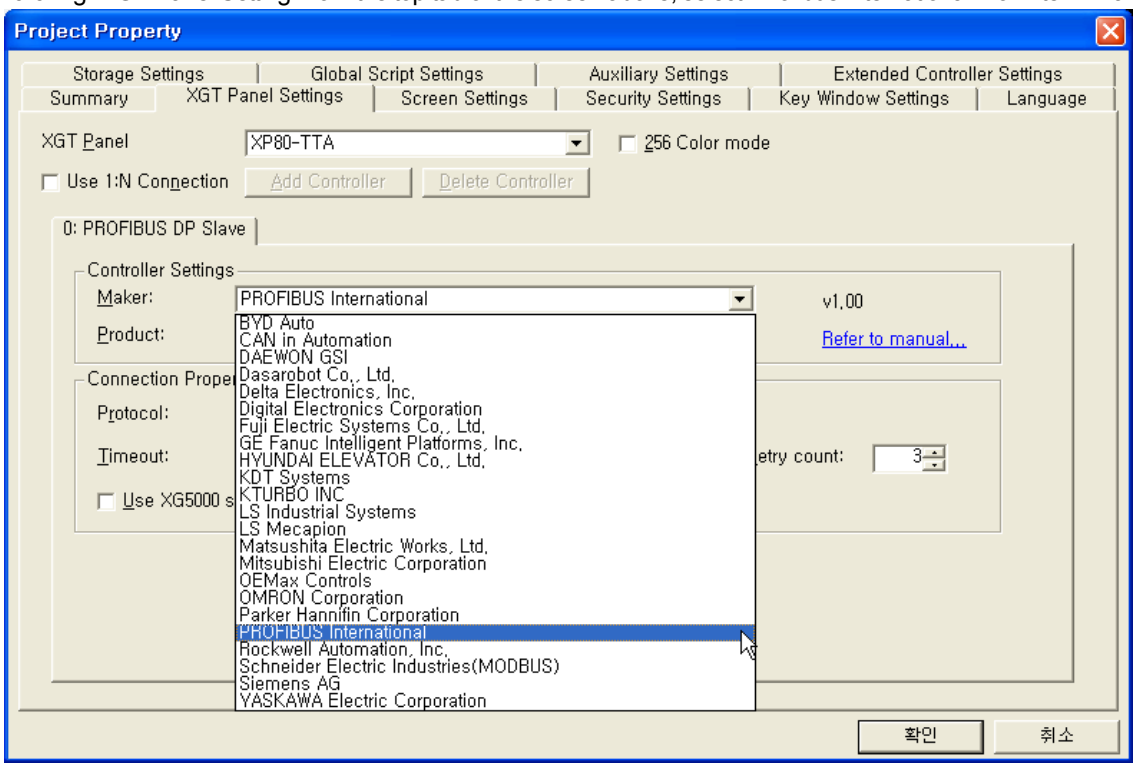
If the first XP-Builder is executed and "Project Property" is clicked on the left "Project Window", the following screen will appear.



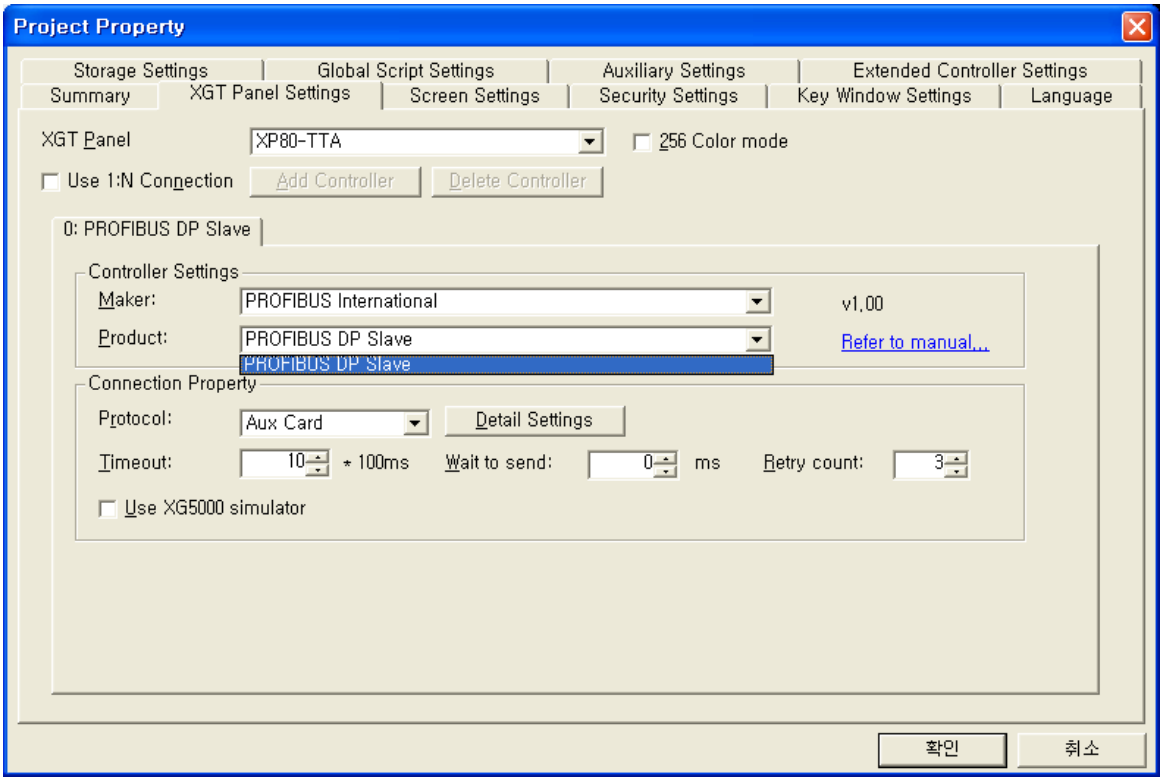

[Figure] "Project Property" Screen of XP-Builder

(2) Selecting Profibus-DP

After clicking “XGT Panel Setting” from the top tab of the screen above, select “Profibus International” from Item “Maker”.

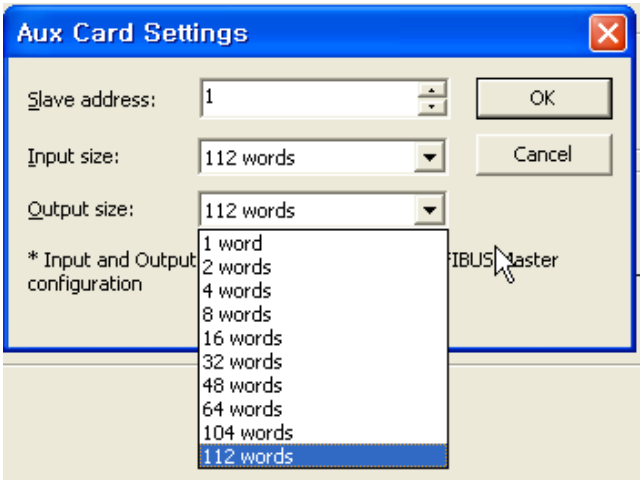



Then, select “Profibus DP Slave” from Item “Product”.



(3) Profibus-DP Detailed Setting

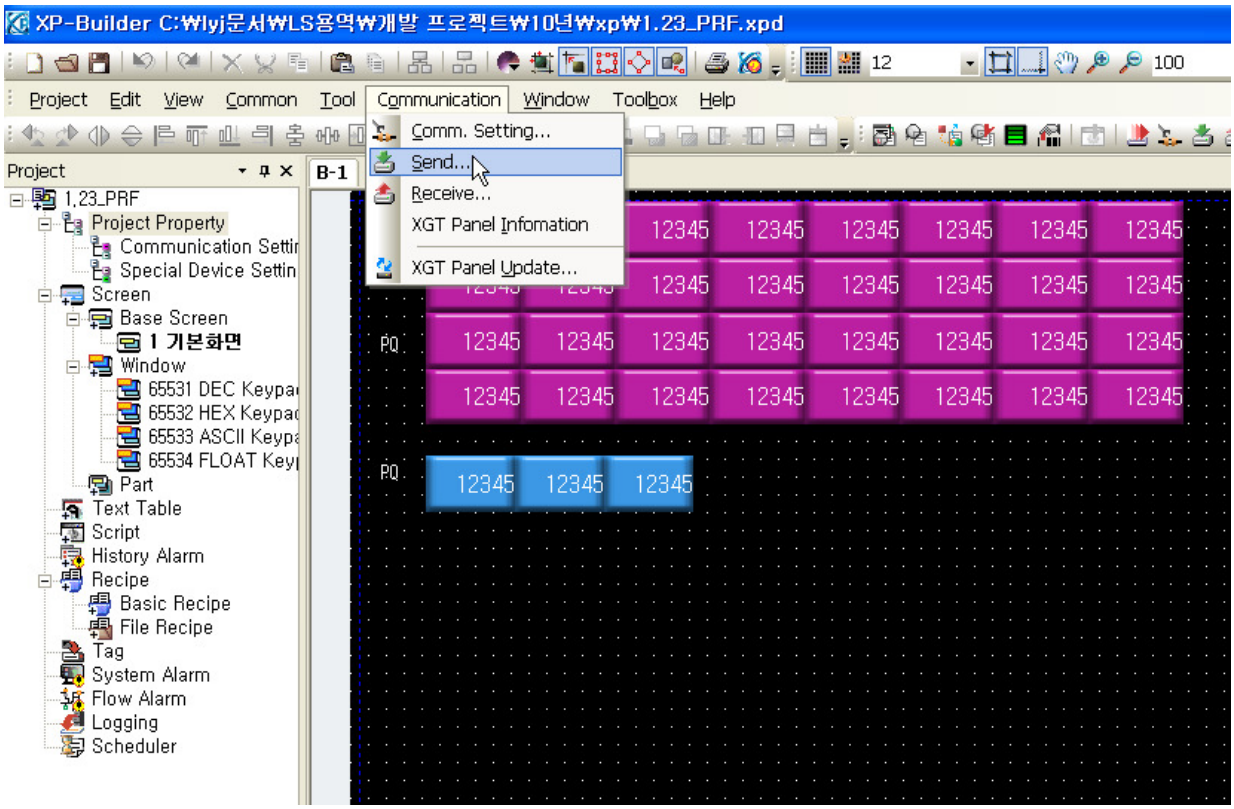
If “Detail Setting” is clicked from Item “Protocol” on the same screen, “Aux Card Setting” window will appear and at this time, set “address”, “ Input Size” and “Output Size” (Input/Out Size is designed to be selected among 10 types).




[Figure] Profibus-DP Detailed Setting Window

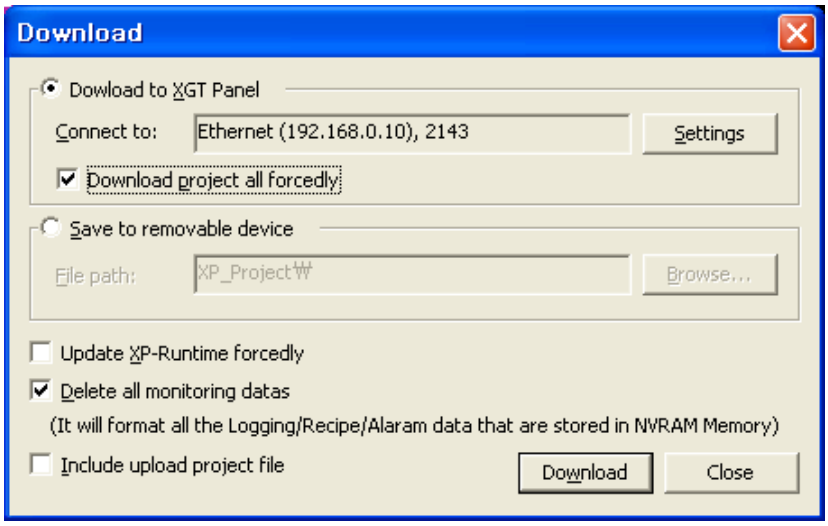
(4) Download

After returning to the main screen of the first project by pressing ‘Confirm’ button, click Item “Communication” -> “Send” of the main menu.




[Figure] Project Main Screen

If the Download screen below appears, set connections appropriately and execute “Download”.

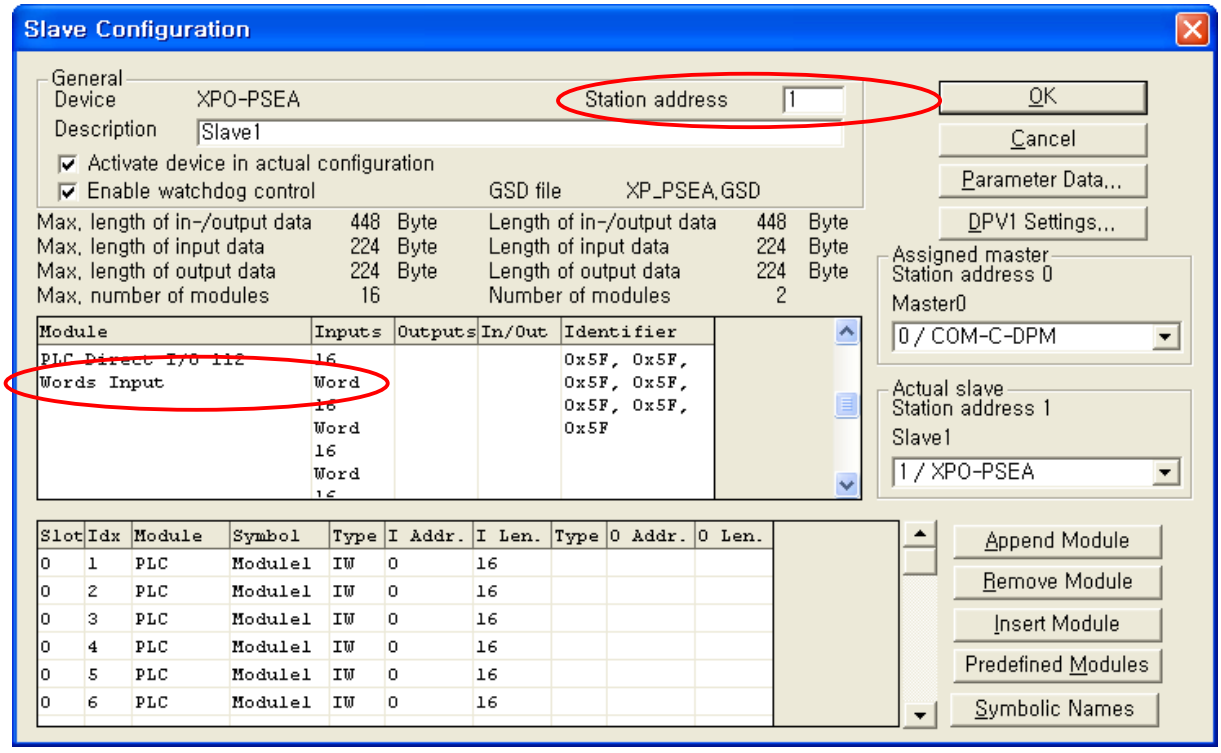



[Figure] Download Window

(5) Example of Configuration Setting on the Master

The master’s configuration is set with the configuration tools provided by the master manufacturer.
At this time, carefully configure in the same way as in XP-Builder to get normal communication.

The next is about an example showing the screen to set configuration with “Sycon”, the configuration tool presented by the Company.
The following figure shows an example on how to set address No. 1, Input 112 Words and Output 112 Words.



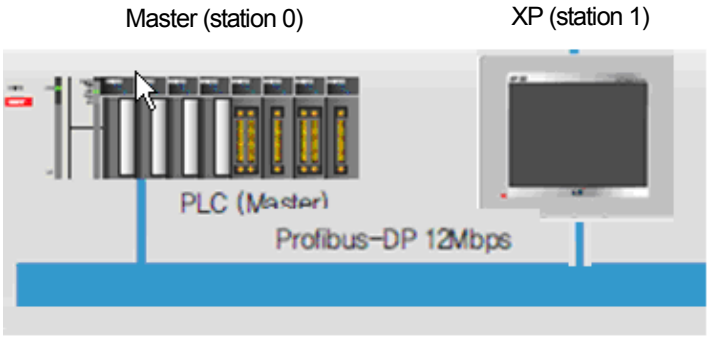

[Figure] Example of Setting Window on Sycon

# Chapter 6 Setting Example

## 6.1 Profibus-DP Communication

### 6.1.1 Example System

This chapter describes on how to set Profibus-DP when the user wants to communicate on the following system as seen in [Figure 6.1.1] in the way as specified in [Table 6.1.1]:



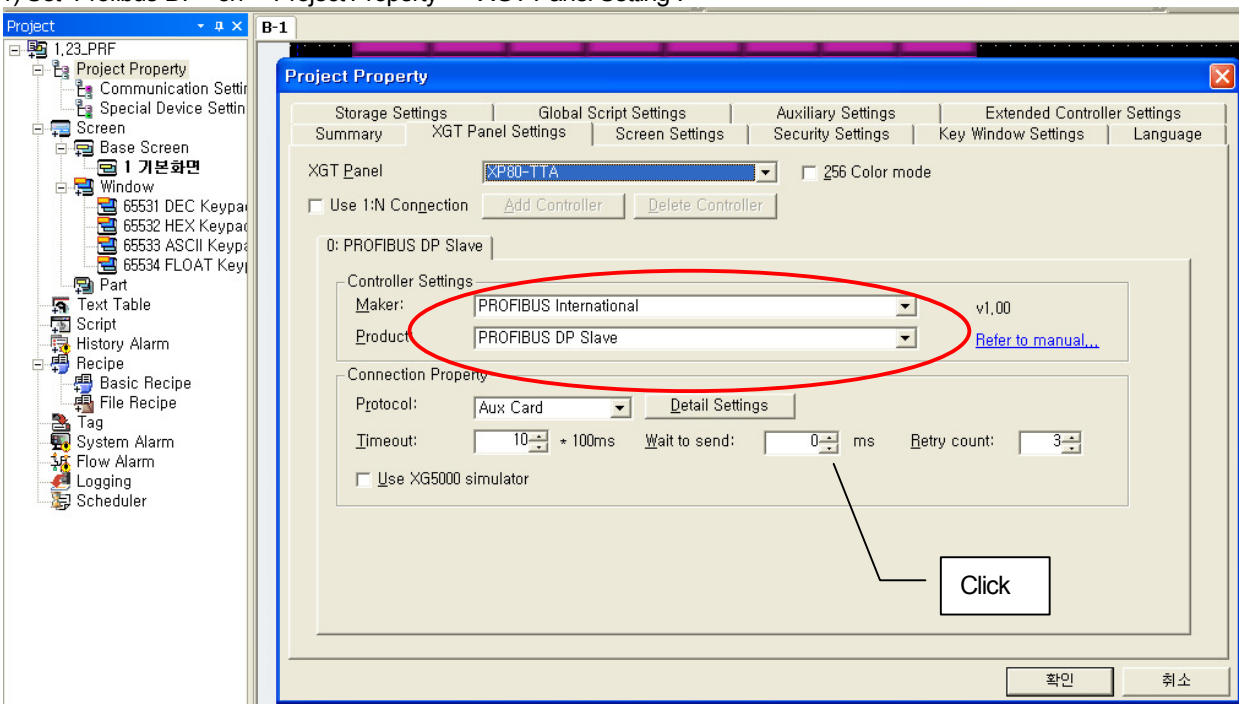

[Figure 6.1.1] System Configuration

| Master | | | | XP | | |
|---|---|---|---|---|---|---|
| Sending | %QW000 | 8 Words | -> | %PI000 | 8 Words | Receiving |
| Receiving | %IW100 | 4 Words | <- | %PQ000 | 4 Words | Sending |

[Table 6.1.1] Communication Structure

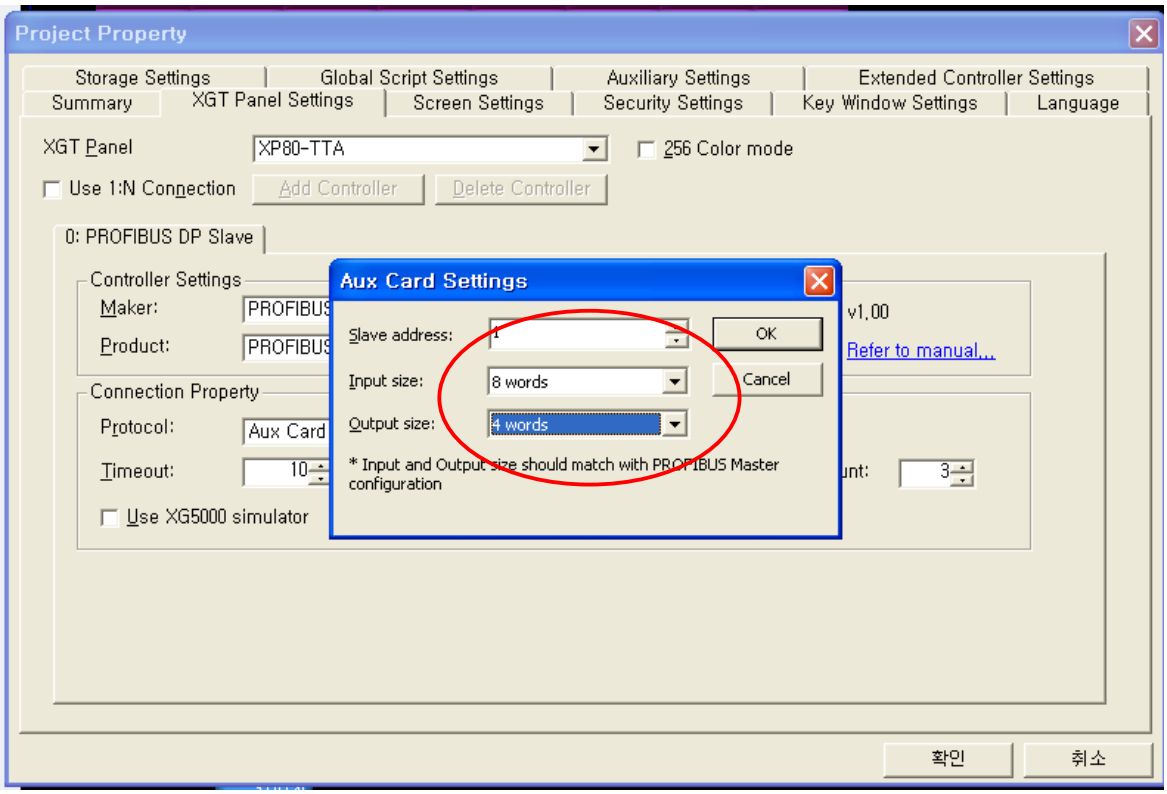
### 6.1.2 Setting Slave (XP) Parameter

1) Set “Profibus-DP ” on “Project Property”-> “XGT Panel Setting”.




2) Click on detailed settings on the same screen to set address and Input/Output size as specified in [Table 7.1.1].

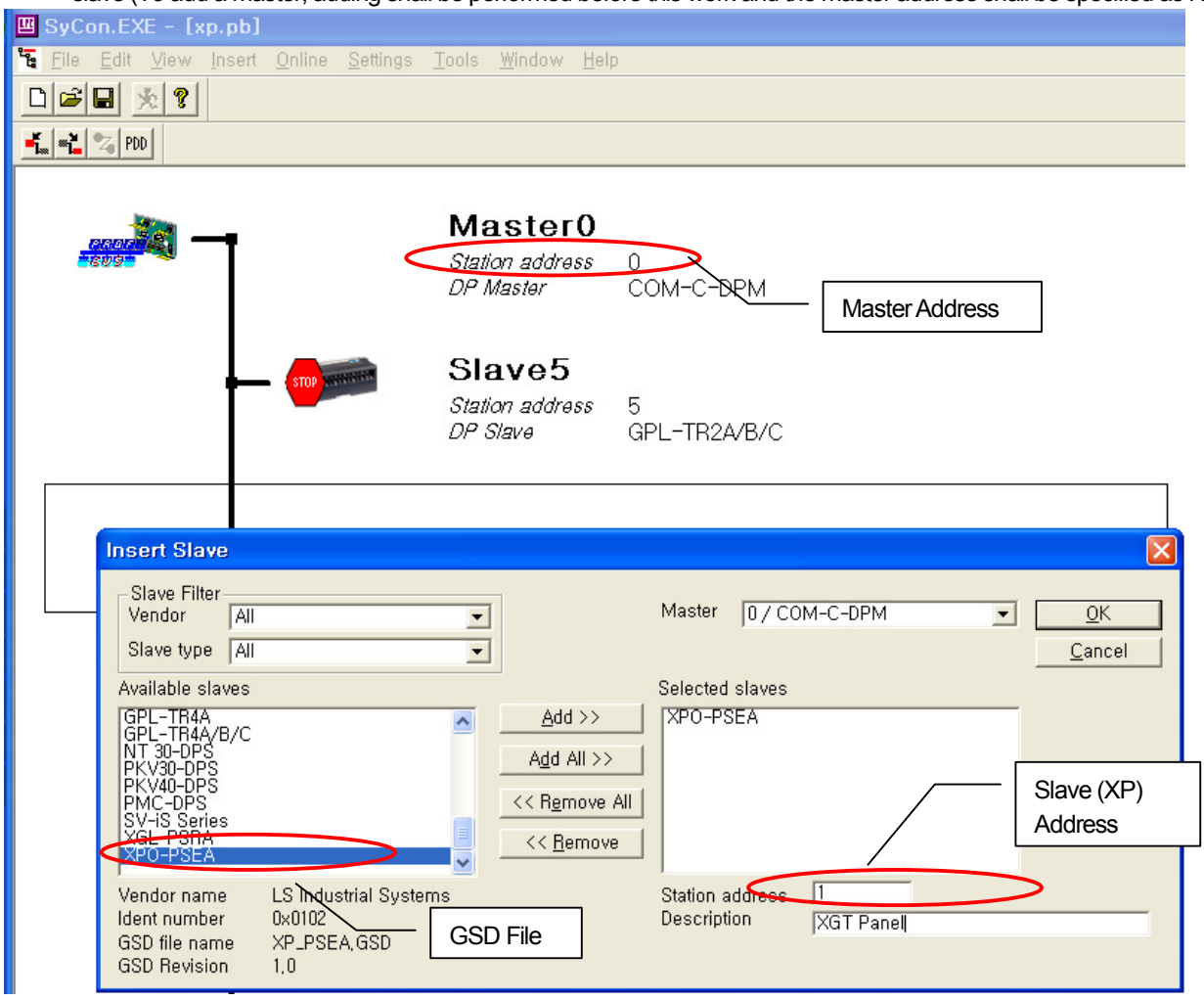
At this time, Input/Output’s starting address is set in PI000/ PQ000 automatically.



### 6.1.3 Setting Master Configuration (In case of Sycon)

Master Configuration for relevant slave(XP) is set with the configuration tool provided by the master manufacturer. At this time, an example is presented to show how to configure by using Sycon (Refer to other manuals for information on other configuration tools).

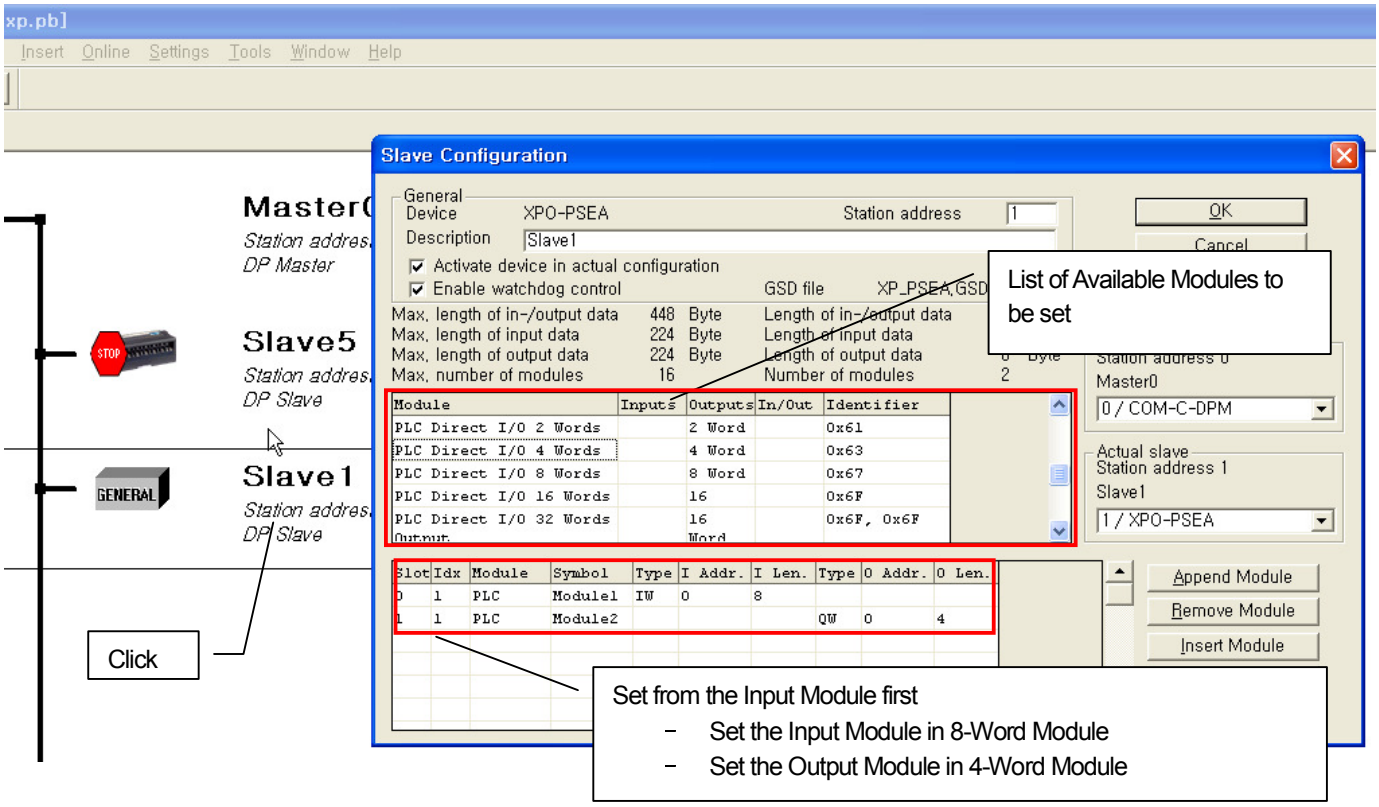
1) While adding the relevant slave (XP), specify its address and GSD file provided by the Company to the property of the slave (To add a master, adding shall be performed before this work and the master address shall be specified as No.0.)



2) If the user clicks a slave, the configuration setting window will appear.

- Click one from Available Slaves list to select.

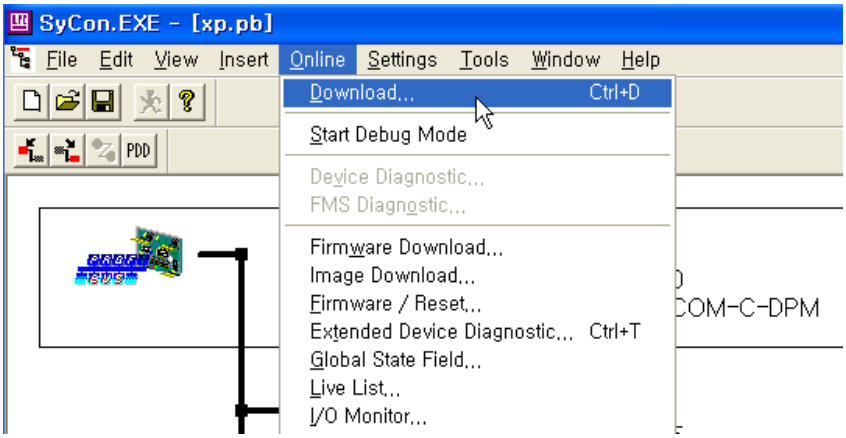
**- At this time, the important thing is that only one Input Module and one Output Module shall be selected for configuration and also make sure to start setting one Input Module first. Other setting ways other than this way may cause configuration error.**




**- If this configuration is different from the Input/Output size set on XP-Builder, configuration error may take place and normal communication cannot be commenced.**

- After accurately setting, click “OK” to complete configuring.

3) After accurately setting and clicking “OK” to complete configuring, download it to the master module.

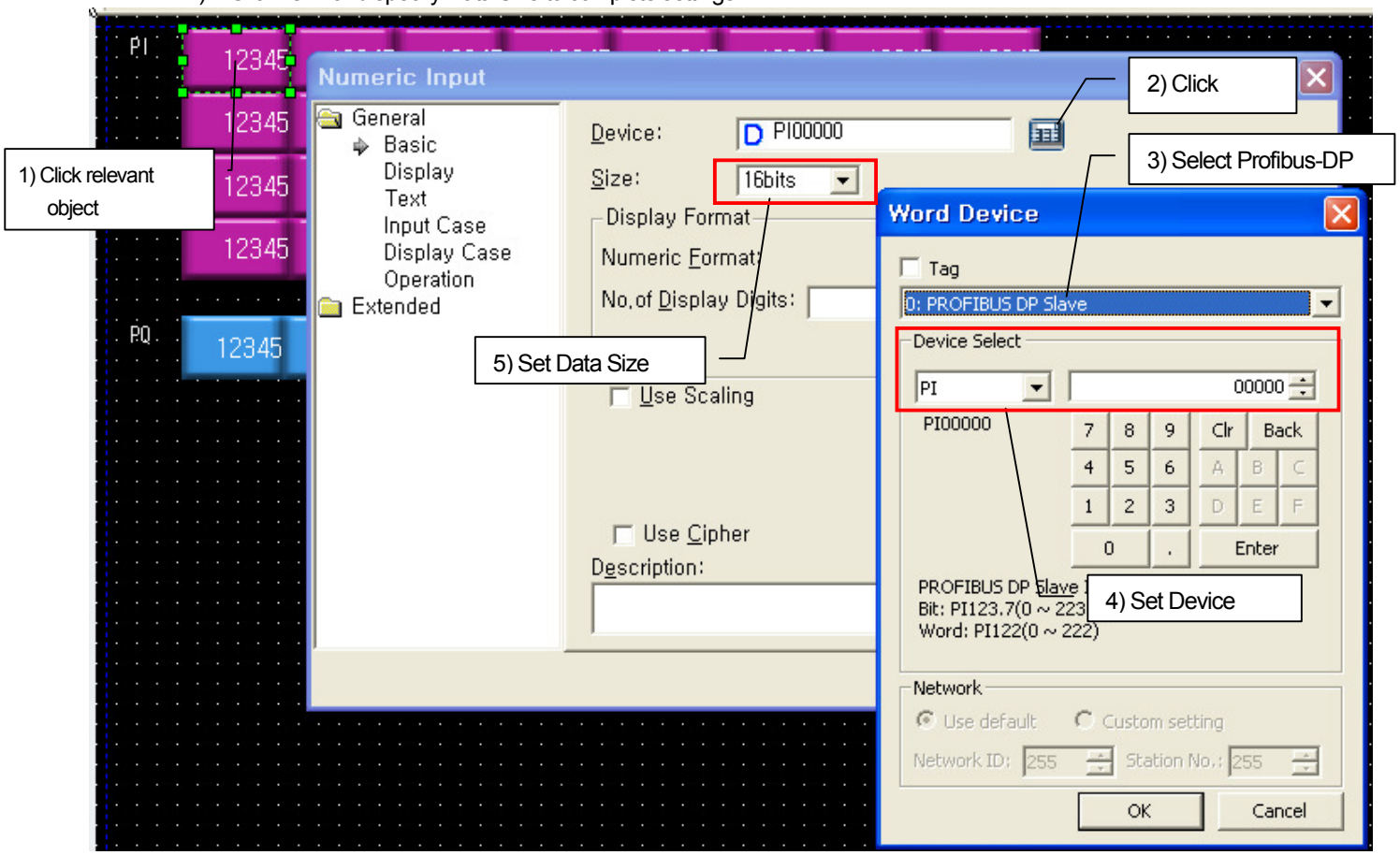


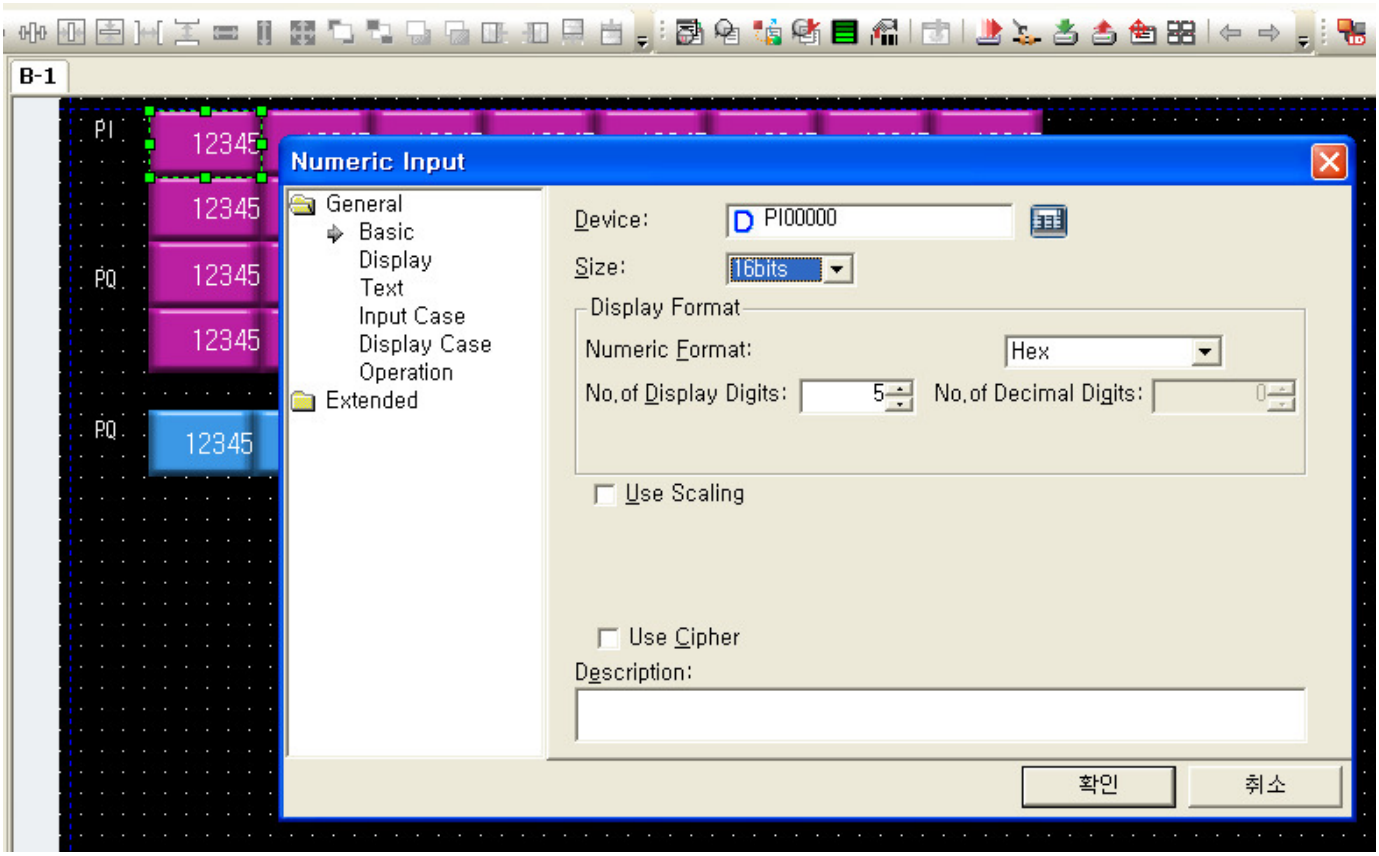
## 6.2 XP-Builder Device Settings

### 6.2.1 Editing Object

To connect Profibus-DP Communication data to the relevant object when editing XP screen,

1) Click on the relevant object to open the object window.
2) Click on Device to specify “Profibus-DP Slave”,
3) Specify Data Location from Item “Device Select”. (Available to specify PI000~PI111 or PQ000~PQ111)
4) Click “OK” and specify Data Size to complete settings.




B-1
PI
12345
12345
PQ
12345
12345
PQ
12345
Numeric Input
General
Basic
Display
Text
Input Case
Display Case
Operation
Extended
Device:
PI00000
Size:
16bits
Display Format
Numeric Format:
Hex
No.of Display Digits:
5
No.of Decimal Digits:
0
Use Scaling
Use Cipher
Description:
확인
취소

# Chapter 7 Diagnosis Function

This chapter describes how to check the status of the system, module and network.
It is possible to check the system configuration and Profibus-DP Slave option module's status through the procedure below.

## 7.1 Diagnosis Information

### 7.1.1 Profibus-DP Diagnosis Information Area

XP Profibus-DP I/F Module provides information on the current status of Profibus-DP I/F Module and diagnosis information via DG Area as well as PI and PQ Area-Input/Output Data Area.
DG Area shows relevant information on each register as seen in the figure below and the user can make a diagnosis judgment on data integrity and communication status with this information (DG Register is effective only for low byte).

| Address | Register Name | Property | Description | Content |
|---|---|---|---|---|
| DG000 | Status | Read Only | Profibus-DP I/F Module's running status | 0: Initial (It is initializing ) |
| | | | | 1: Stop (It stops running) |
| | | | | 2: Run (It is running) |
| | | | | 3: Error (Error occurs while downloading data) |
| DG001 | Diag. | Read Only | Profibus-DP I/F Module's communication status | b0 = 1: Master Waiting (It is waiting for the communication setup from the Master)<br>b1 = 1: Prm_Fault (Some fault is discovered from the parameter received from the Master )<br>b2 = 1: Config_Fault (Some fault is discovered from the configuration information received from the Master )<br>b3 = 1: WatchDog Error (Communication with the master is blocked)<br>b4 = 1: Data_Exchange (Normal communication) |
| DG002 | User_PRM | Read Only | Master's additional parameter | 0~0xFF<br>Additional parameter sent by the Master (1Byte). The client may decide its meaning and whether to use it at his/her discretion (No effect on communication) |

[Table] Profibus-DP's Information Area

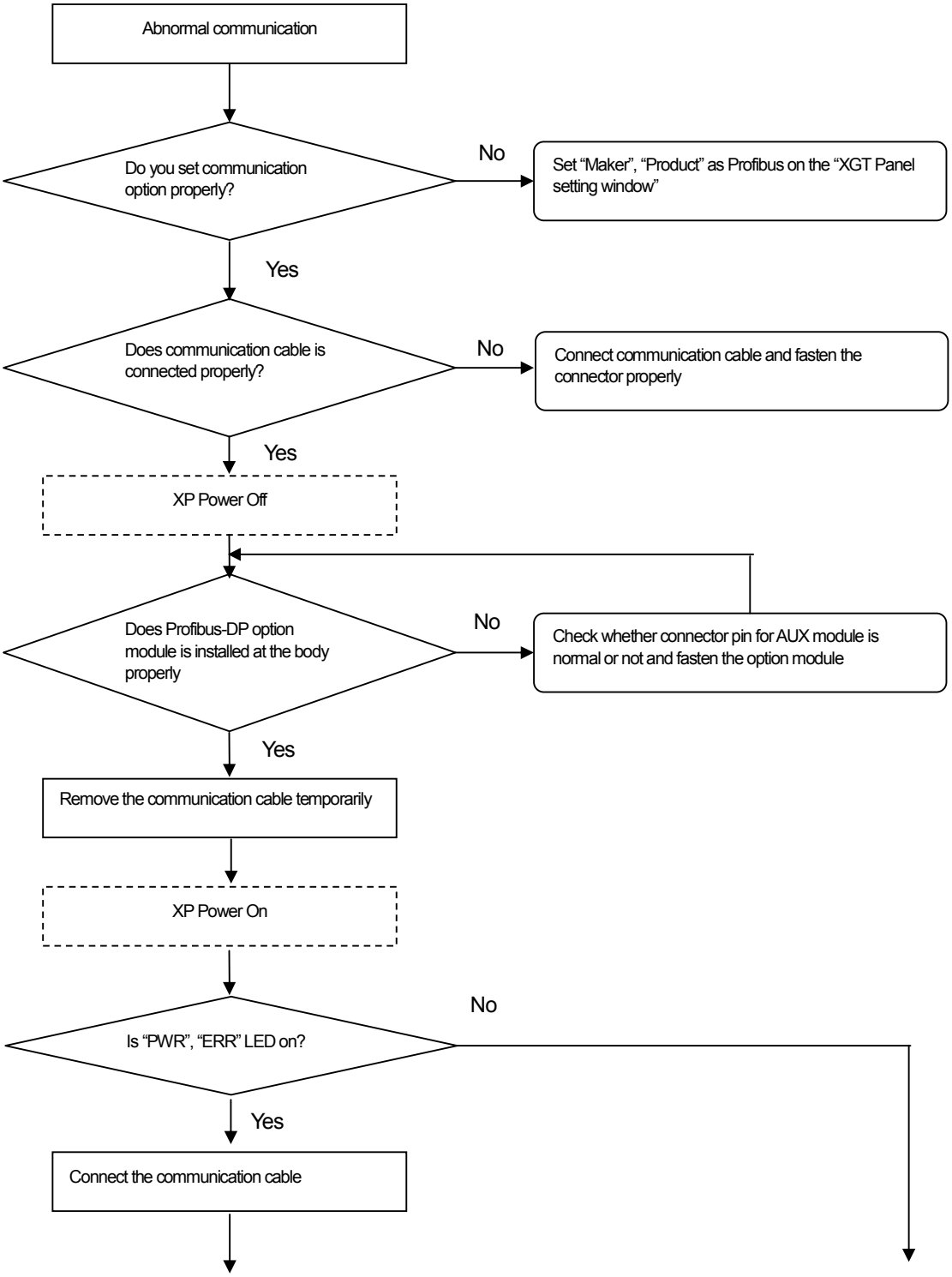
### 7.1.2 LED Information

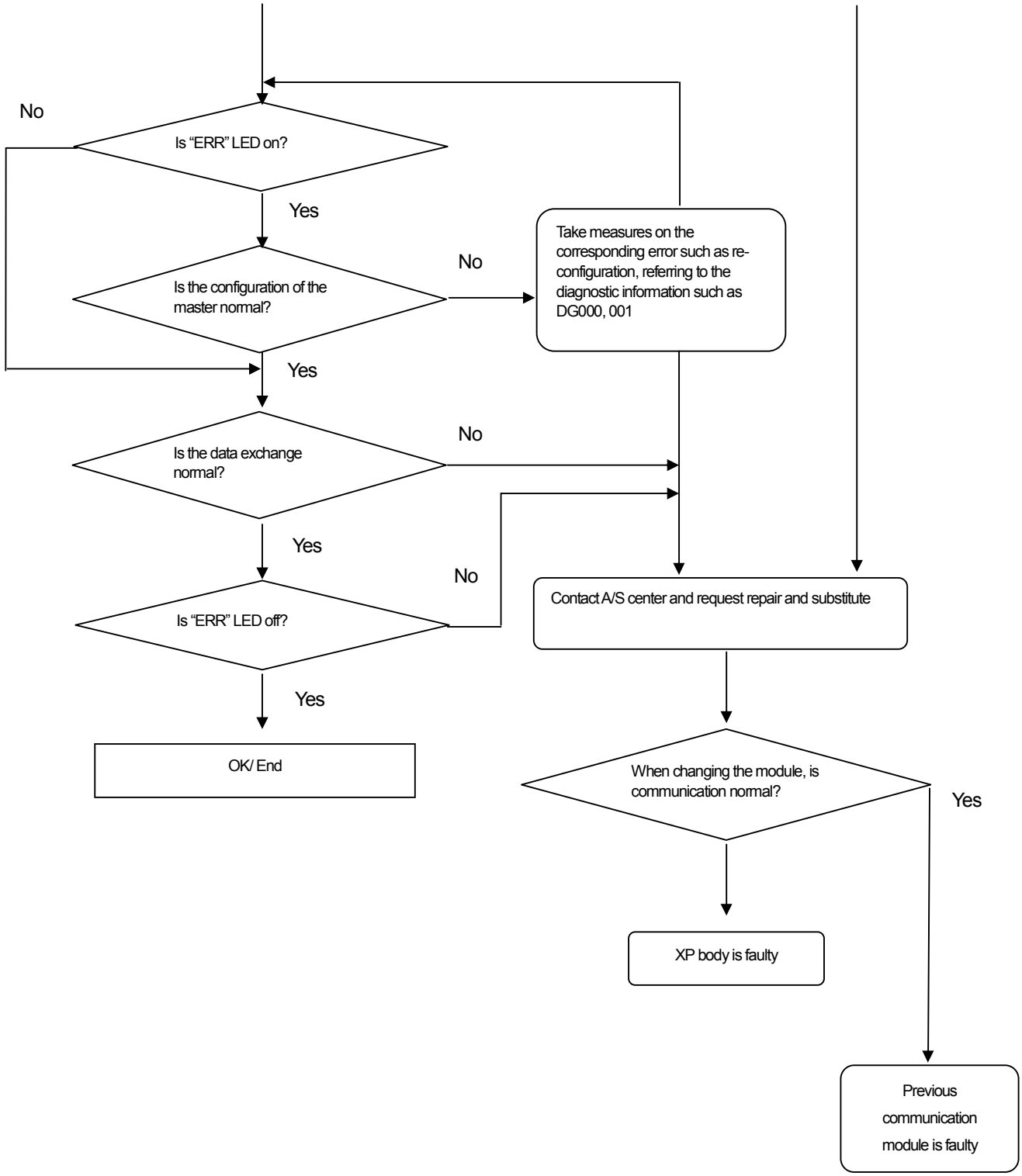
Since LED status is related to diagnosis information area as following, it is possible to check the system status with LED status at a glance and for further information, it is helpful to monitor DG Register and verify its status.

| DG001 | DG002 | Run LED | Err LED | Description |
|---|---|---|---|---|
| xxx0 0001 | - | Off | Off | Standby for the Master's communication setup |
| xxx0 0011 | - | Off | On | Standby for the communication setup after occurrence of error in the parameter sent/received from the Master. |
| xxx0 0101 | - | Off | On | Standby for the communication setup after occurrence of error in the configuration sent/received from the Master. |
| xxx0 1001 | - | Off | On | Standby for the communication setup after contact with the Master is lost. |
| xxx1 0000 | - | On | On | Exchanging Input/Output Data with the Master is normally executed. |
| - | 03 | Off | Flicker | Communication of parameter error downloaded to XP body is stopped. |

[Table] Information on LED Status

## 7.2 Troubleshooting




No
Is “ERR” LED on?
Yes
Is the configuration of the master normal?
No
Take measures on the corresponding error such as re-configuration, referring to the diagnostic information such as DG000, 001
Yes
Is the data exchange normal?
No
Yes
Is “ERR” LED off?
No
Contact A/S center and request repair and substitute
Yes
OK/ End
When changing the module, is communication normal?
Yes
XP body is faulty
Previous communication module is faulty

# 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) 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

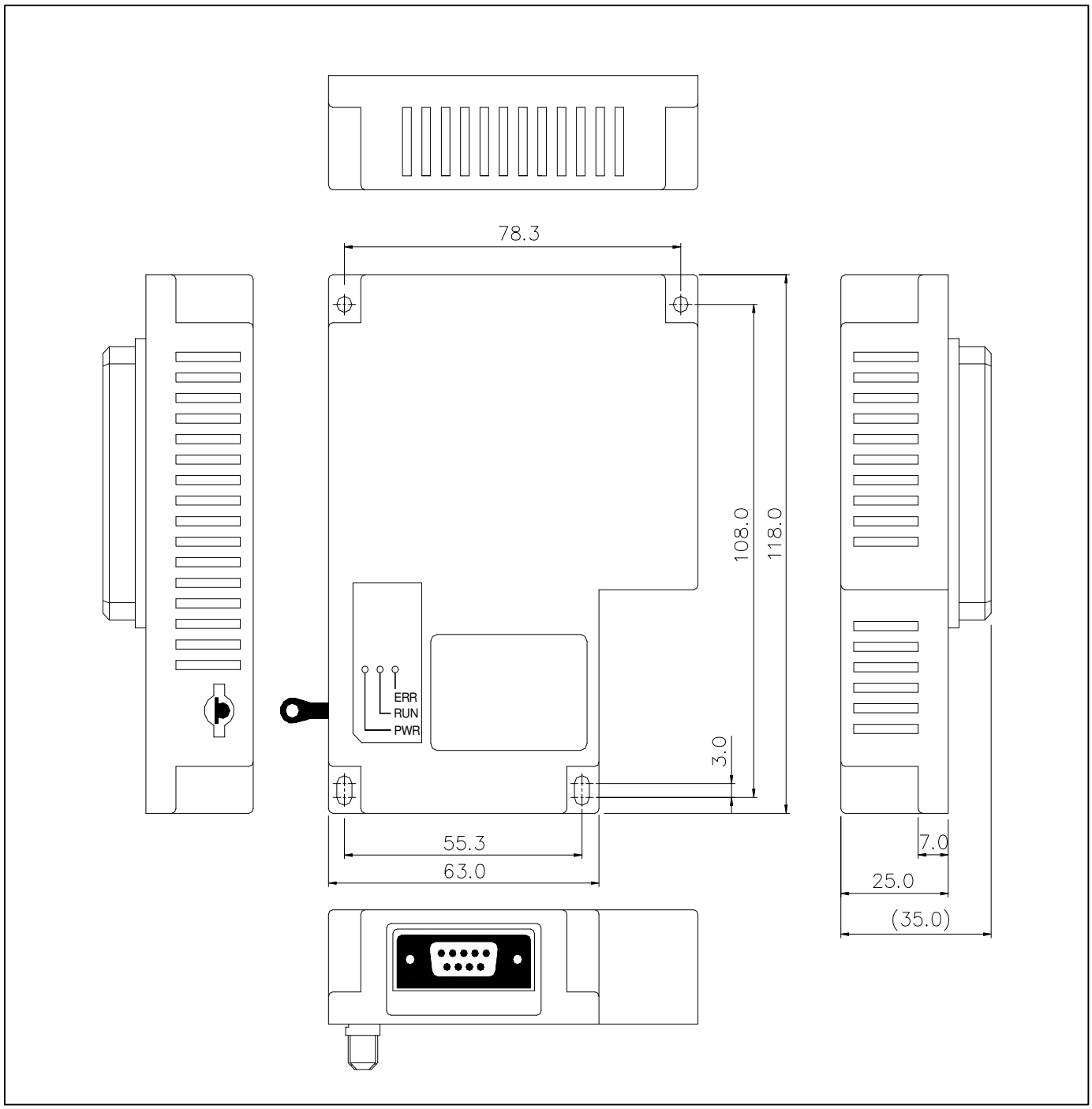
Used to send the message whose operation station is not recognized to all the stations (Master, Slaves).

8) Multicast communication

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

## A.2 Dimension

unit: mm



## Warranty

1. Warranty Period
The product you purchased will be guaranteed for 18 months from the date of manufacturing.

2. Scope of Warranty
Any trouble or defect occurring for the above-mentioned period will be partially replaced or repaired. However, please note the following cases will be excluded from the scope of warranty.

Any trouble attributable to unreasonable condition, environment or handling otherwise specified in the manual,
Any trouble attributable to others' products,
If the product is modified or repaired in any other place not designated by the company,
Due to unintended purposes
Owing to the reasons unexpected at the level of the contemporary science and technology when delivered.
Not attributable to the company; for instance, natural disasters or fire

3. Since the above warranty is limited to HMI unit only, make sure to use the product considering the safety for system configuration or applications.

## Environmental Policy

LS Industrial Systems Co., Ltd supports and observes the environmental policy as below.

### Environmental Management

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

### About Disposal

LS Industrial Systems' 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.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