GE
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Programmable Control Products

PACSystems RSTi Network Adapter Manual

User Manual, GFK-2746

January 2012

Warnings, Cautions, and Notes

Warning

Warning notices are used in this publication to emphasize that hazardous voltages, currents, temperatures, or other conditions that could cause personal injury exist in this equipment or may be associated with its use. In situations where inattention could cause either personal injury or damage to equipment, a Warning notice is used.

- Installing or removing modules or wiring with power applied to the system or field wiring can cause an electrical arc. This can result in unexpected and potentially dangerous action by field devices. Arcing is an explosion risk in hazardous locations. Be sure that the area is non-hazardous or remove power appropriately before installing or removing modules or wiring.
- Potentially dangerous voltages are present on a module's terminals, even when system power is turned off. Field power must be turned off when installing or removing a terminal block assembly.
- Personnel, who install, operate and maintain automation systems that contain these products must be trained and qualified to perform those functions.
- Overloading power modules or Network adapter can result into electric arc & damage to modules.

Caution

Caution notices are used where equipment might be damaged if care is not taken.

- Check the rated voltage and terminal array before wiring.
- Ensure that specified environmental conditions are not exceeded. Avoid placing the module in direct sunlight.
- Review module specifications carefully, and ensure that input and output connections are made in accordance with the specifications.
- Use specified cables for wiring.
- Field power isolators must be used according to the requirements of the 5VDC/24VDC/48VDC or AC Voltage modules used in the system.
- If system power consumption exceeds the power limits, use system power expansion modules.
- Make sure power supplies for system power and field power must be supplied from separate sources.

Note: Notes merely call attention to information that is especially significant to understanding and operating the equipment.

This document is based on information available at the time of its publication. While efforts have been made to be accurate, the information contained herein does not purport to cover all details or variations in hardware or software, or to provide for every possible contingency in connection with installation, operation, or maintenance. Features may be described herein which are not present in all hardware and software systems. GE Intelligent Platforms assumes no obligation of notice to holders of this document with respect to changes subsequently made.

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If you purchased this product through an Authorized Channel Partner, please contact the seller directly.

General Contact Information

Online technical support and Global Care	http://support.ge-ip.com
Additional information	http://www.ge-ip.com/
Solution Provider	solutionprovider.ip@ge.com

Technical Support

If you have technical problems that cannot be resolved with the information in this manual, please contact us by telephone or email, or on the web at http://support.ge-ip.com

Americas

Online Technical Support	http://support.ge-ip.com
Phone	1-800-433-2682
International Americas Direct Dial	1-780-420-2010 (if toll free 800 option is unavailable)
Technical Support Email	support.ip@ge.com
Customer Care Email	customercare.ip@ge.com
Primary language of support	English

Europe, the Middle East, and Africa

Online Technical Support	http://support.ge-ip.com
Phone	+800-1-433-2682
EMEA Direct Dial	+352-26-722-780 (if toll free 800 option is unavailable or if dialing from a mobile telephone)
Technical Support Email	support.emea.ip@ge.com
Customer Care Email	customercare.emea.ip@ge.com
Primary languages of support	English, French, German, Italian, Czech, Spanish

Asia Pacific

Online Technical Support	http://support.ge-ip.com
Phone	+86-400-820-8208
	+86-21-3217-4826 (India, Indonesia, and Pakistan)
Technical Support Email	support.cn.ip@ge.com (China)
	support.jp.ip@ge.com (Japan)
	support.in.ip@ge.com (remaining Asia customers)
Customer Care Email	customercare.apo.ip@ge.com, customercare.cn.ip@ge.com (China)

Contents

Introduction

The PACSystems RSTi Network Interface and I/O family provides a low cost, modular distributed I/O system. The RSTi network is ideally suited for distributed applications such as water/wastewater, process control, packaging and assembly. You can easily add RSTi modules to the system to build functional remote I/O stations to meet your application requirements.
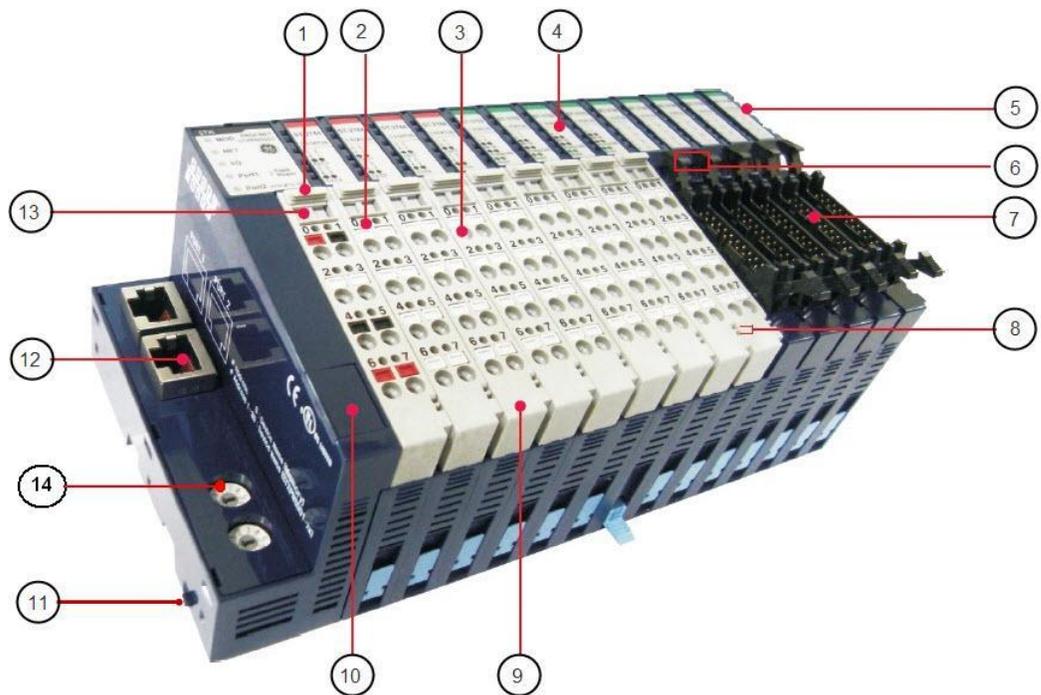
Sr. Number	Label
1	Removable Switch of Terminal Block
2	Tester Pin Hole
3	Screw less Connection System
4	I/O Status Display LED

Sr. Number	*Label*
5	System-Data Pin (6 Pins)
6	Module Number Marking (Header Type)
7	Header Type Module (16 points)
8	Field Power Pin (2 pins)
9	RTB (Removable Terminal Block)
10	Reserved communication Port (Useful to only manufacturer)
11	PUSH Lock for DIN rail
12	Fieldbus Connector
13	Module Number Marking (on the Removable terminal Block
14	Node ID or station address setting

A set of interconnected RSTi modules can be chosen to suit the application and connected as a slave on a PROFIBUS or a PROFINET network. An RSTi PROFIBUS or PROFINET Network Adapter provides the interface between the network and the RSTi modules. The Network Adapter and I/O modules selected for an application constitute an I/O station.

I/O Station Capacity

■ Up to 32 IO devices can be connected to a Network Adapter (STXPBS001, STXPNS001) whereas. PROFIBUS network adapters with integrated IO support only up to 8 IO modules. The power consumption of all the modules in the node should be calculated and ensured that it does not exceed the capacity of Network Adapter and power modules.

■ The sum of all input and output data can be up to:

 – 504 bytes per station for a PROFINET network

 – 256 bytes per station for a PROFIBUS network

■ The maximum number of I/O stations per RX3i Profinet controller is 128 and for Rx3i profibus Controller is 125

Network Topology

For PROFIBUS networks, I/O stations can be connected via linear bus architecture with active bus termination at both ends. Devices in a PROFIBUS network connect directly to the bus cable or indirectly via stub lines.

For PROFINET networks, I/O stations can be connected using either linear or star architecture.

Installation

The Network Adapter must be connected to the left of the other RSTi modules in the I/O station.

Within the RSTi station the bus connection, power supply, and power distribution are completed by connecting modules together on the DIN rail. Sensors and actuators are wired to the RSTi modules using spring clamp terminals on the module's removable terminal strips. These terminal strips can be keyed so that they cannot be accidentally swapped. If a module must be replaced, the wiring does not need to be removed; just remove the terminal strip from the module.

An All-in-One PROFIBUS Network Adapter that includes built-in digital I/O is available. It combines the advantages of slice-type and block-type construction and offers reduced system design and maintenance costs. You can add up to eight IO modules to the All-in-One adapter.

Features

■ Modules can be easily installed and connected without tools.

■ Flexible and modular structure allows I/O stations to be easily expanded.

■ A comprehensive selection of I/O modules supports a wide range of applications.

■ Small removable terminal blocks conserve panel space and save time making system connections.

■ By using Pin Slide way for stable system configuration, the contact between modules can be maximized after module connection.

■ Module-based diagnostic functions

■ The amount of costly parallel wiring is reduced. Within a station, voltage and data routing can be carried out without additional wiring, reducing the cabinet space needed.

■ Different parts of the system can be operated independent of one another. This means that pretests can be carried out when the system is set up and that the whole system can be adapted and expanded.

List of RSTi Network adapters

RSTi:

PROFIBUS Network Adapters:

- ■ STXPBS001   PROFIBUS DP/V1 network adapter
- ■ STXPBS032   32 point Positive Logic Input
- ■ STXPBS132   32 point Negative Logic Input
- ■ STXPBS232   32 point Negative Logic Output
- ■ STXPBS332   32 point Positive Logic Output
- ■ STXPBS016   16 relay output
- ■ STXPBS116   16 relay output isolated
- ■ STXPBS432   16 Positive Logic in/16 Negative Logic out
- ■ STXPBS532   16 Negative Logic in/16 Negative Logic out
- ■ STXPBS824   16 Positive Logic in/16 relay out
- ■ STXPBS924   16 Negative Logic in/16 relay out
- ■ STXPBS825   16 Positive Logic in/16 relay out isolated
- ■ STXPBS925   16 Negative Logic in/16 relay out isolated

PROFINET Network Adapter

- ■ STXPNS001   PROFINET network adapter

PACSystem Documentation

- ■ PACSystem RSTi I/O Manual – GFK 2745

Installation

Module Mounting

How to mount on Din-Rail

1. Press down the module lightly on the Din-Rail until it clicks.
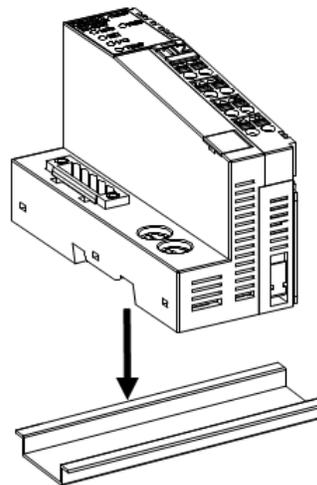
2. Press down till you can hear "click" for complicated mount. You can use the PUSH lock for DIN rail up as a second locking mechanism.

Chapter
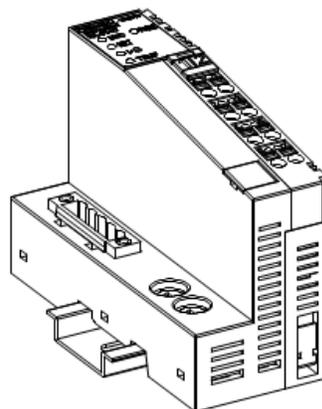
How to dismount from Din-Rail

1. Ensure that the PUSH lock for DIN rail is pulled below. Pull down the locking mechanism by using small flat screw driver as the following pictures;
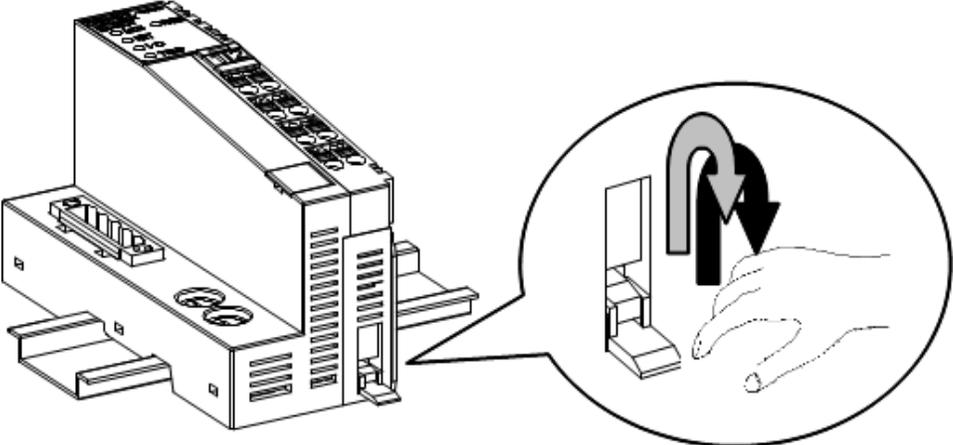
2. Pull up the module to remove from the din rail.

| Chapter |
| 3 |

PROFIBUS Network Adapters
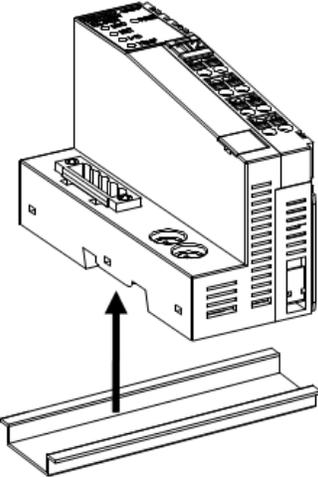
PROFIBUS Network Adapters include STXPBS001 and STXPBS* modules.

■ STXPBS001

The following are the features of STXPBS001:

- STXPBS001 is connected with the PROFIBUS-DP by means of 9 Pin D-sub Connector.
- It works as a slave in the Master/Slave environment.
- The node size is able to extend up to 32 IO modules units.
- Each STXPBS001 can control maximum 1024 digital input/1024 digital output, or 64 analog input/64 analog output channels.
- LED indicators for diagnostic functions (the status of Module, network expansion units, and field power)
- It has got the PNO conformance certificate. This means it has interoperability with other PROFIBUS products.
- It supports the communication speed from 9.6Kbps to 12Mbps and the auto baud rate detection.
- The station number is assigned by rotary switch.

■ STXPBS*

The following are the features of STXPBS*:

- STXPBS* supports PROFIBUS communication protocol and is connected with PROFIBUS by means of 9 Pin open Connector.
- These modules work as a slave under Master/Slave circumstances.
- They allow I/O Data communications with Master by means of polling process.
- They support the transmission rate from 9.6Kbps to 12Mbps and Auto Baudrate Detection.
- They also define the Node Address and communication speed by using Dip Switch.

* indicates STXPBS032/132/232/332/016/116/432/532/824/924/825/925.

STXPBS001

Interface and Data

The following screenshot shows the interface diagram for STXPBS001.

PROFIBUS Connector

Pin No.	Description
3	RxD / TxD−P
4	CNTR−P
5	DGND
6	VP
8	RxD / TxD−N
9	CNTR−N
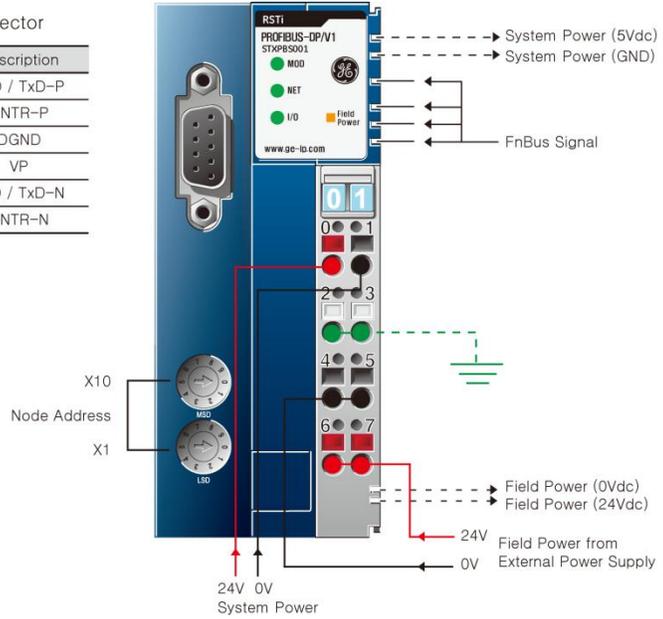
Figure 1: PROFIBUS Network Adaptor Module: STXPBS001

The following table lists the pin numbers and their description for STXPBS001.

Table 1: STXPBS001: Pin Description

Pin Number	Description	Pin Number	Description
0	System power 24v	1	System power 0 v
2	Ground	3	Ground
4	Field power 0v	5	Field power 0v
6	Field power 24v	7	Field power 24v

Specification

The following table describes the Specifications of STXPBS001.

Table 2: STXPBS001: Interface and General Specifications

Items	*Specification*
Interface Specification	
Redundancy	Not supported
Repeater Control Signal	RS-485 Signal
Freeze mode	Support
Sync mode	Support
Auto baud rate	Support
Fail safe mode	Support
Station type	Slave
FMS support	Not supported
Number of Station	100 Station/Max (Rotary switch #0~99)
Number of Expansion I/O slots	Maximum 32 slots
I/O Data Size	Total: Input 128bytes/Output 128bytes − Maximum Discrete I/O: Input 1024points/Output 1024points − Maximum Analog I/O: Input 64channels/Output 64channels
Indicators	1 green/red Module Status Indicator 1 green Network Status Indicator 1 green/red IO Module Status indicator 1 green Field Power Status indicator
Baud Rate	9.6K~12M (1.2Km~100m) (Auto baud rate Selection)
Module Location	Starter module - First side of RSTi system
Field Power detection	Detect Field Power @ minimum 11Vdc
General Specification	
Surrounding Air Temperature/ Ambient Temperature	-20℃—50℃ for UL applications. -20℃ to 60℃ for non UL applications. Storage -40℃—85℃
Relative Humidity	5% ~ 90%, without condensation
Durable-vib./impact	IEC68-2-6(2G)/10G at non-driving
EMC/ESD	EN50082/EN50081
Mount Position	First module of RSTi system
Atmosphere	No excessive dust , No corrosive gases
Field Supply Voltage	Class 2, 24VDC 24VDC (11VDC ~ 28.8VDC)
Field Supply Current	Maximum 10A
Mount	DIN-Rail
System Power	Supply voltage: 24Vdc nominal Supply voltage range: 11~28.8Vdc Protection: Output current limit (Minimum 1.5A) Reverse polarity protection
Power Dissipation	60mA typical @24Vdc
Current for I/O Module	1.5A @5Vdc

Isolation	System power to internal logic: Non-isolation
	System power to I/O driver: Isolation
Field Power	Supply voltage: 24Vdc nominal
	Supply voltage range: 11~28.8Vdc
Maximum Current Field Power Contact	DC 10A Maximum
Weight	155g
Module Size	42mm x 99mm x 70mm
Certification	UL/cUL/CE/PROFIBUS (PNO)
Environment Condition	See "Environmental Specifications" in Appendix A.
Technical Specification	
Network Type	PROFIBUS-DP
Network Cable	PROFIBUS-DP Special Cable
Cable Length	1.2Km ~ 100m
Communication Speed	9.6kBaud ~ 12MBaud
Maximum Station No.	99 Station (Include Master Scanner)
Station Type	PROFIBUS-DP Slave
Expansion No.	Maximum 32 Module
Maximum Digital I/O	Input: 1024point / Output: 1024point
Maximum Analog I/O	Input: 64Ch/Output: 64Ch
I/O Data Size	Input: 128Bytes / Output: 128Bytes
Baud rate Setting	Support Auto-baud rate
Station No. Setting	Rotary S/W #1, #2 (x10, x1)
Power Dissipation	60mA

STXPBS*

Interface and Data

STXPBS032 – Profibus Network Adapter with 32 point Positive Logic Input

The following screenshot shows the interface diagram for STXPBS032.
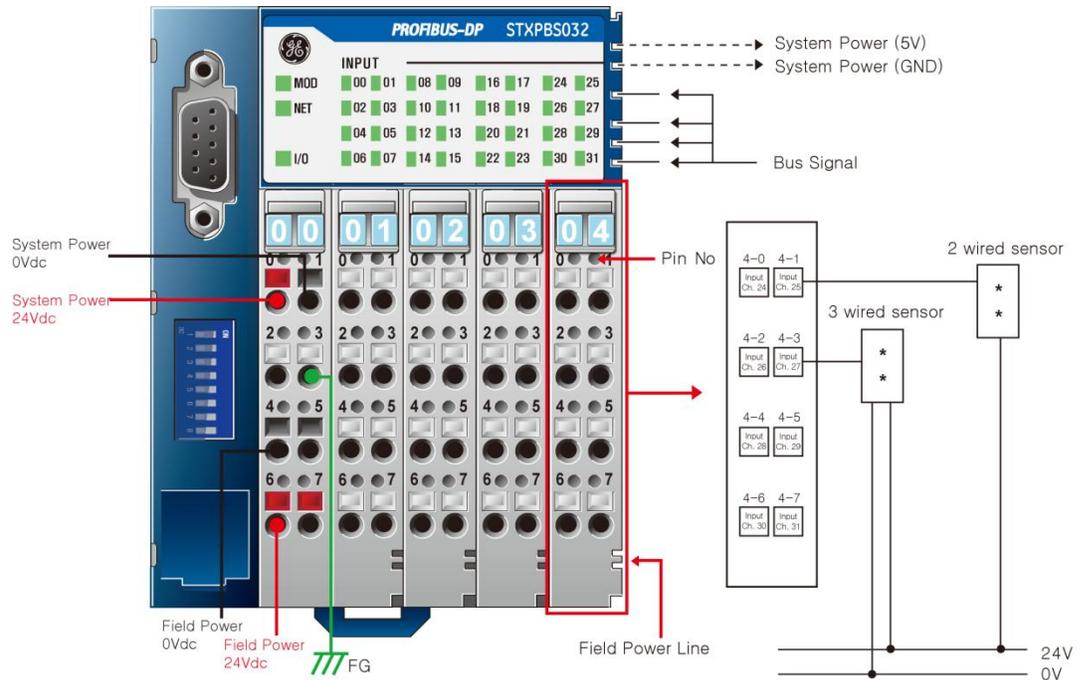
Figure 2: PROFIBUS Network Adaptor Module: STXPBS032

The following table lists the pin numbers and their description for STXPBS032.

Table 3: STXPBS032: Pin Description

Pin Number	Description	Pin Number	Description
01-0	Input Channel 0	03- 0	Input Channel 16
01-1	Input Channel 1	03-1	Input Channel 17
01-2	Input Channel 2	03-2	Input Channel 18
01-3	Input Channel 3	03-3	Input Channel 19
01-4	Input Channel 4	03-4	Input Channel 20
01-5	Input Channel 5	03-5	Input Channel 21
01-6	Input Channel 6	03-6	Input Channel 22
01-7	Input Channel 7	03-7	Input Channel 23
02-0	Input Channel 8	04-0	Input Channel 24
02-1	Input Channel 9	04-1	Input Channel 25
02-2	Input Channel 10	04-2	Input Channel 26
02-3	Input Channel 11	04-3	Input Channel 27
02-4	Input Channel 12	04-4	Input Channel 28

02-5	Input Channel 13	04-5	Input Channel 29
02-6	Input Channel 14	04-6	Input Channel 30
02-7	Input Channel 15	04-7	Input Channel 31

STXPBS132- Profibus Network Adapter with 32 point Negative Logic Input

The following screenshot shows the interface diagram for STXPBS132.
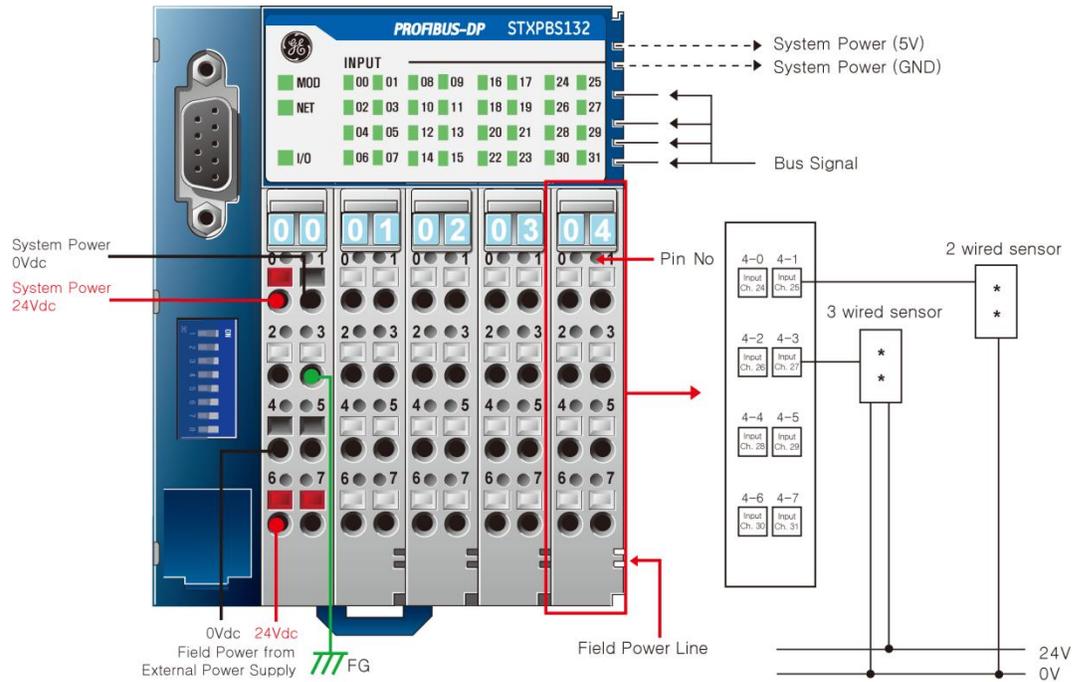
Figure 3: PROFIBUS Network Adaptor Module: STXPBS132

The following table lists the pin numbers and their description for STXPBS132.

Table 4: STXPBS132: Pin Description

Pin Number	Description	Pin Number	Description
01-0	Input Channel 0	03- 0	Input Channel 16
01-1	Input Channel 1	03-1	Input Channel 17
01-2	Input Channel 2	03-2	Input Channel 18
01-3	Input Channel 3	03-3	Input Channel 19
01-4	Input Channel 4	03-4	Input Channel 20
01-5	Input Channel 5	03-5	Input Channel 21
01-6	Input Channel 6	03-6	Input Channel 22
01-7	Input Channel 7	03-7	Input Channel 23
02-0	Input Channel 8	04-0	Input Channel 24
02-1	Input Channel 9	04-1	Input Channel 25
02-2	Input Channel 10	04-2	Input Channel 26
02-3	Input Channel 11	04-3	Input Channel 27
02-4	Input Channel 12	04-4	Input Channel 28
02-5	Input Channel 13	04-5	Input Channel 29
02-6	Input Channel 14	04-6	Input Channel 30

| 02-7 | Input Channel 15 | 04-7 | Input Channel 31 |

STXPBS232- Profibus Network Adapter with 32 point Negative Logic Output

The following screenshot shows the interface diagram for STXPBS232.
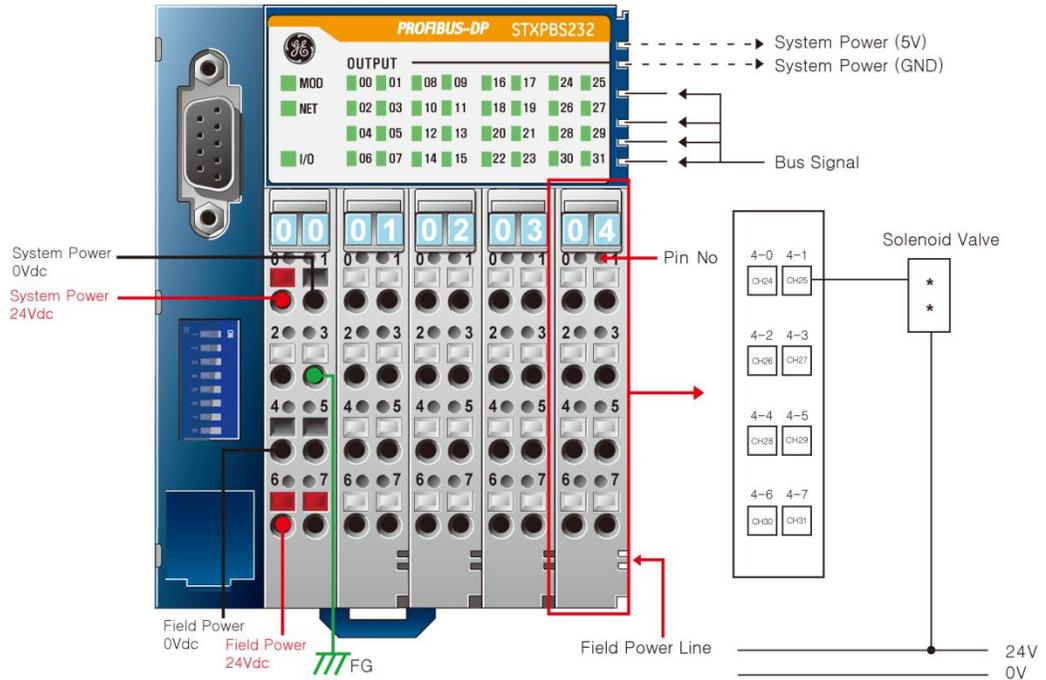
Figure 4: PROFIBUS Network Adaptor Module: STXPBS232

The following table lists the pin numbers and their description for STXPBS232.

Table 5: STXPBS232: Pin Description

Pin Number	Description	Pin Number	Description
01-0	Output Channel 0	03- 0	Output Channel 16
01-1	Output Channel 1	03-1	Output Channel 17
01-2	Output Channel 2	03-2	Output Channel 18
01-3	Output Channel 3	03-3	Output Channel 19
01-4	Output Channel 4	03-4	Output Channel 20
01-5	Output Channel 5	03-5	Output Channel 21
01-6	Output Channel 6	03-6	Output Channel 22
01-7	Output Channel 7	03-7	Output Channel 23
02-0	Output Channel 8	04-0	Output Channel 24
02-1	Output Channel 9	04-1	Output Channel 25
02-2	Output Channel 10	04-2	Output Channel 26
02-3	Output Channel 11	04-3	Output Channel 27
02-4	Output Channel 12	04-4	Output Channel 28
02-5	Output Channel 13	04-5	Output Channel 29
02-6	Output Channel 14	04-6	Output Channel 30

| 02-7 | Output Channel 15 | 04-7 | Output Channel 31 |

STXPBS332- Profibus Network Adapter with32 point Positive Logic Output

The following screenshot shows the interface diagram for STXPBS332.
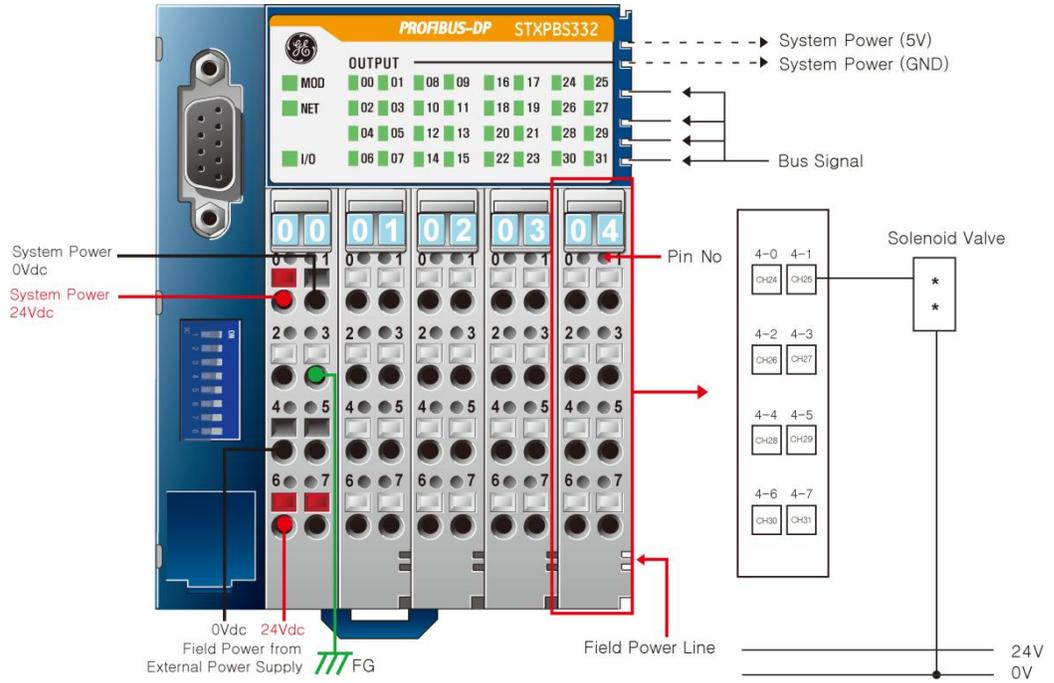
Figure 5: PROFIBUS Network Adaptor Module: STXPBS332

The following table lists the pin numbers and their description for STXPBS332.

Table 6: STXPBS332: Pin Description

Pin Number	Description	Pin Number	Description
01-0	Output Channel 0	03- 0	Output Channel 16
01-1	Output Channel 1	03-1	Output Channel 17
01-2	Output Channel 2	03-2	Output Channel 18
01-3	Output Channel 3	03-3	Output Channel 19
01-4	Output Channel 4	03-4	Output Channel 20
01-5	Output Channel 5	03-5	Output Channel 21
01-6	Output Channel 6	03-6	Output Channel 22
01-7	Output Channel 7	03-7	Output Channel 23
02-0	Output Channel 8	04-0	Output Channel 24
02-1	Output Channel 9	04-1	Output Channel 25
02-2	Output Channel 10	04-2	Output Channel 26
02-3	Output Channel 11	04-3	Output Channel 27
02-4	Output Channel 12	04-4	Output Channel 28

02-5	Output Channel 13	04-5	Output Channel 29
02-6	Output Channel 14	04-6	Output Channel 30
02-7	Output Channel 15	04-7	Output Channel 31

STXPBS016- Profibus Network Adapter with 16 relay output

The following screenshot shows the interface diagram for STXPBS016.
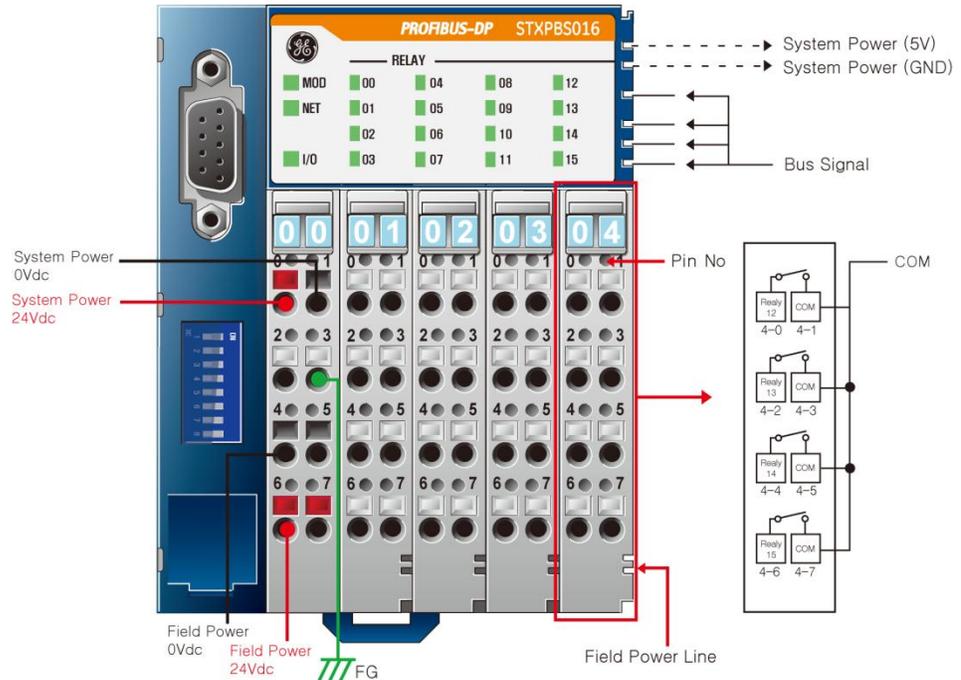
Figure 6: PROFIBUS Network Adaptor Module: STXPBS016

The following table lists the pin numbers and their description for STXPBS016.

Table 7: STXPBS016: Pin Description

Pin Number	Description	Pin Number	Description
01-0	Relay Output 0	03- 0	Relay Output 8
01-1	COM 0	03-1	COM 2
01-2	Relay Output 1	03-2	Relay Output 9
01-3	COM 0	03-3	COM 2
01-4	Relay Output 2	03-4	Relay Output 10
01-5	COM 0	03-5	COM 2
01-6	Relay Output 3	03-6	Relay Output 11
01-7	COM 0	03-7	COM 2
02-0	Relay Output 4	04-0	Relay Output 12
02-1	COM 1	04-1	COM 3
02-2	Relay Output 5	04-2	Relay Output 13
02-3	COM 1	04-3	COM 3
02-4	Relay Output 6	04-4	Relay Output 14
02-5	COM 1	04-5	COM 3
02-6	Relay Output 7	04-6	Relay Output 15

| 2-7 | COM 1 | 4-7 | COM 3 |

STXPBS116- Profibus Network Adapter with 16 relay output isolated

The following screenshot shows the interface diagram for STXPBS116.
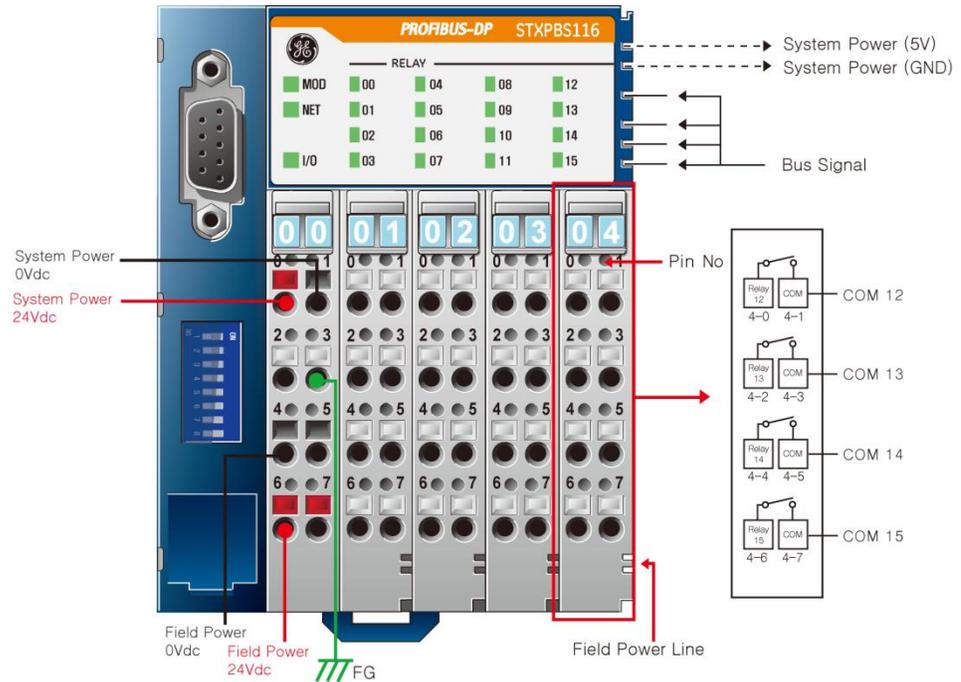
Figure 7: PROFIBUS Network Adaptor Module: STXPBS116

The following table lists the pin numbers and their description for STXPBS116.

Table 8: STXPBS116: Pin Description

Pin Number	Description	Pin Number	Description
01-0	Relay Output 0	03- 0	Relay Output 8
01-1	COM 0	03-1	COM 8
01-2	Relay Output 1	03-2	Relay Output 9
01-3	COM 1	03-3	COM 9
01-4	Relay Output 2	03-4	Relay Output 10
01-5	COM 2	03-5	COM 10
01-6	Relay Output 3	03-6	Relay Output 11
01-7	COM 3	03-7	COM 11
02-0	Relay Output 4	04-0	Relay Output 12
02-1	COM 4	04-1	COM 12
02-2	Relay Output 5	04-2	Relay Output 13
02-3	COM 5	04-3	COM 13
02-4	Relay Output 6	04-4	Relay Output 14

02-5	COM 6	04-5	COM 14
02-6	Relay Output 7	04-6	Relay Output 15
02-7	COM 7	04-7	COM 15

STXPBS432- Profibus Network Adapter with 16 Positive Logic in/16 Negative Logic out

The following screenshot shows the interface diagram for STXPBS432.
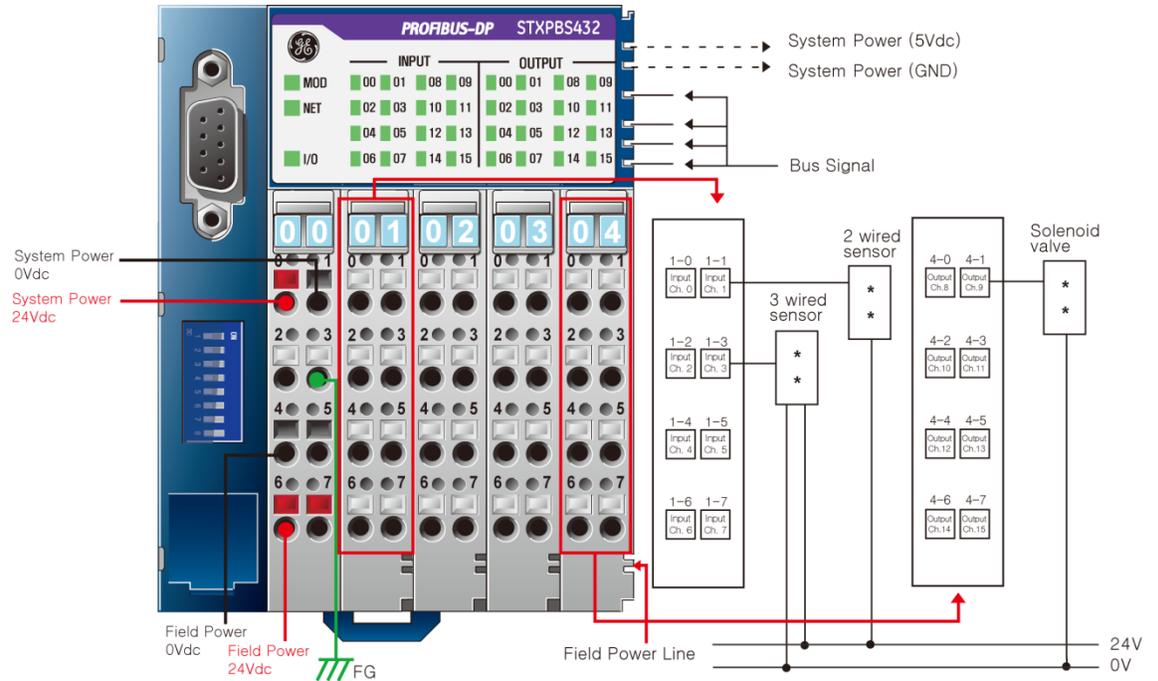
Figure 8: PROFIBUS Network Adaptor Module: STXPBS432

The following table lists the pin numbers and their description for STXPBS432.

Table 9: STXPBS432: Pin Description

Pin Number	*Description*	*Pin Number*	*Description*
01-0	Input Channel 0	03- 0	Output Channel 0
01-1	Input Channel 1	03-1	Output Channel 1
01-2	Input Channel 2	03-2	Output Channel 2
01-3	Input Channel 3	03-3	Output Channel 3
01-4	Input Channel 4	03-4	Output Channel 4
01-5	Input Channel 5	03-5	Output Channel 5
01-6	Input Channel 6	03-6	Output Channel 6
01-7	Input Channel 7	03-7	Output Channel 7
02-0	Input Channel 8	04-0	Output Channel 8
02-1	Input Channel 9	04-1	Output Channel 9
02-2	Input Channel 10	04-2	Output Channel 10

02-3	Input Channel 11	04-3	Output Channel 11
02-4	Input Channel 12	04-4	Output Channel 12
02-5	Input Channel 13	04-5	Output Channel 13
02-6	Input Channel 14	04-6	Output Channel 14
02-7	Input Channel 15	04-7	Output Channel 15

STXPBS532- Profibus Network Adapter with 16 Negative Logic in/16 Negative Logic out

The following screenshot shows the interface diagram for STXPBS532.
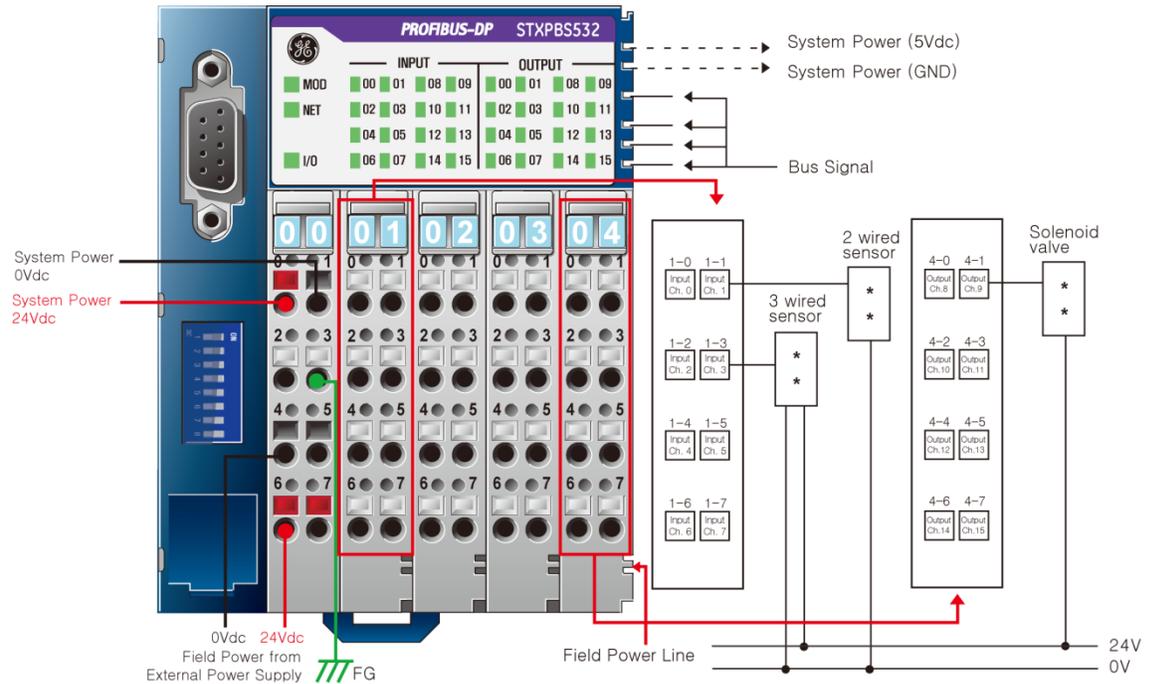
Figure 9: PROFIBUS Network Adaptor Module: STXPBS532

The following table lists the pin numbers and their description for STXPBS532.

Table 10: STXPBS532: Pin Description

Pin Number	Description	Pin Number	Description
01-0	Input Channel 0	03- 0	Output Channel 0
01-1	Input Channel 1	03-1	Output Channel 1
01-2	Input Channel 2	03-2	Output Channel 2
01-3	Input Channel 3	03-3	Output Channel 3
01-4	Input Channel 4	03-4	Output Channel 4
01-5	Input Channel 5	03-5	Output Channel 5
01-6	Input Channel 6	03-6	Output Channel 6
01-7	Input Channel 7	03-7	Output Channel 7
02-0	Input Channel 8	04-0	Output Channel 8

02-1	Input Channel 9	04-1	Output Channel 9
02-2	Input Channel 10	04-2	Output Channel 10
02-3	Input Channel 11	04-3	Output Channel 11
02-4	Input Channel 12	04-4	Output Channel 12
02-5	Input Channel 13	04-5	Output Channel 13
02-6	Input Channel 14	04-6	Output Channel 14
02-7	Input Channel 15	04-7	Output Channel 15

STXPBS824- Profibus Network Adapter with 16 Positive Logic in/16 relay out

The following screenshot shows the interface diagram for STXPBS824.
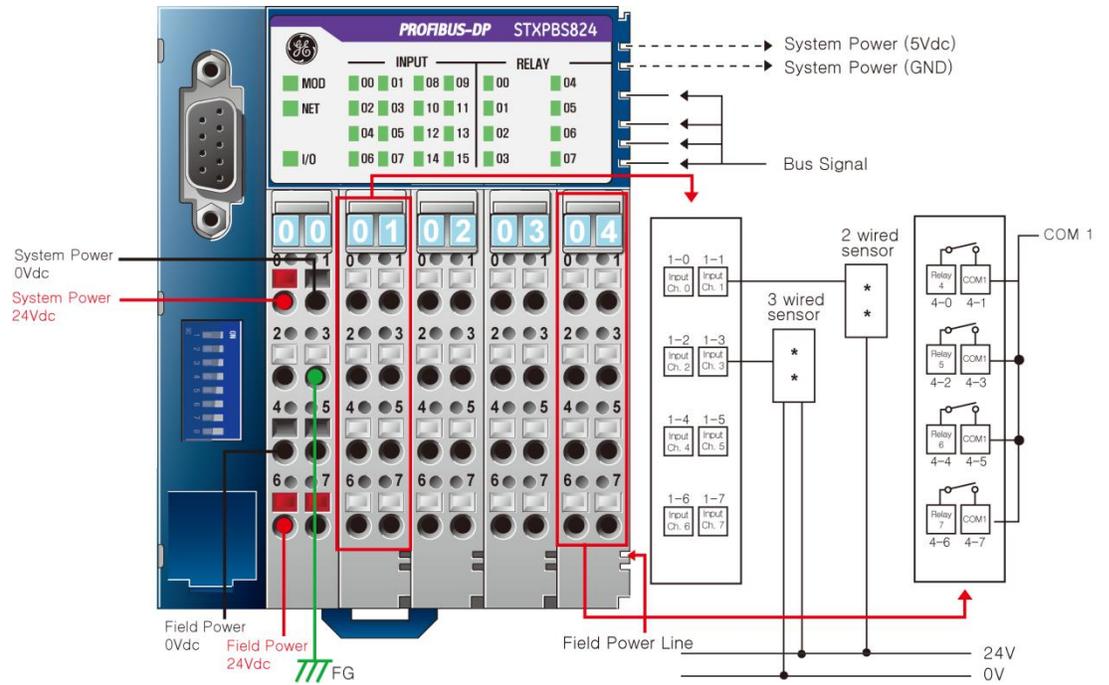
Figure 10: PROFIBUS Network Adaptor Module: STXPBS824

The following table lists the pin numbers and their description for STXPBS824.

Table 11: STXPBS824: Pin Description

Pin Number	Description	Pin Number	Description
01-0	Input Channel 0	03- 0	Relay Output 0
01-1	Input Channel 1	03-1	COM 0
01-2	Input Channel 2	03-2	Relay Output 1
01-3	Input Channel 3	03-3	COM 1
01-4	Input Channel 4	03-4	Relay Output 2
01-5	Input Channel 5	03-5	COM 2
01-6	Input Channel 6	03-6	Relay Output 3

01-7	Input Channel 7	03-7	COM 3
02-0	Input Channel 8	04-0	Relay Output 4
02-1	Input Channel 9	04-1	COM 4
02-2	Input Channel 10	04-2	Relay Output 5
02-3	Input Channel 11	04-3	COM 5
02-4	Input Channel 12	04-4	Relay Output 6
02-5	Input Channel 13	04-5	COM 6
02-6	Input Channel 14	04-6	Relay Output 7
02-7	Input Channel 15	04-7	COM 7

STXPBS924- Profibus Network Adapter with 16 Negative Logic in/16 relay out

The following screenshot shows the interface diagram for STXPBS924.
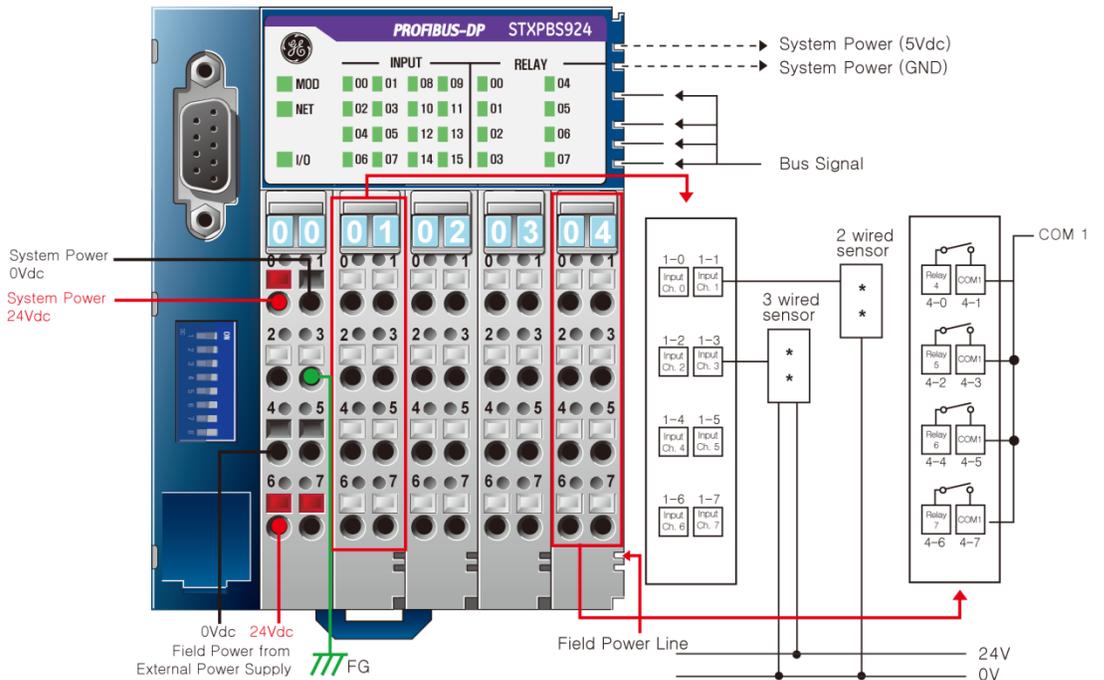
Figure 11: PROFIBUS Network Adaptor Module: STXPBS924

The following table lists the pin numbers and their description for STXPBS924.

Table 12: STXPBS924: Pin Description

Pin Number	Description	Pin Number	Description
01-0	Input Channel 0	03- 0	Relay Output 0
01-1	Input Channel 1	03-1	COM 0
01-2	Input Channel 2	03-2	Relay Output 1
01-3	Input Channel 3	03-3	COM 0
01-4	Input Channel 4	03-4	Relay Output 2

01-5	Input Channel 5	03-5	COM 0
01-6	Input Channel 6	03-6	Relay Output 3
01-7	Input Channel 7	03-7	COM 0
02-0	Input Channel 8	04-0	Relay Output 4
02-1	Input Channel 9	04-1	COM 1
02-2	Input Channel 10	04-2	Relay Output 5
02-3	Input Channel 11	04-3	COM 1
02-4	Input Channel 12	04-4	Relay Output 6
02-5	Input Channel 13	04-5	COM 1
02-6	Input Channel 14	04-6	Relay Output 7
02-7	Input Channel 15	04-7	COM 1

STXPBS825- Profibus Network Adapter with 16 Positive Logic in/16 relay out isolated

The following screenshot shows the interface diagram for STXPBS825.
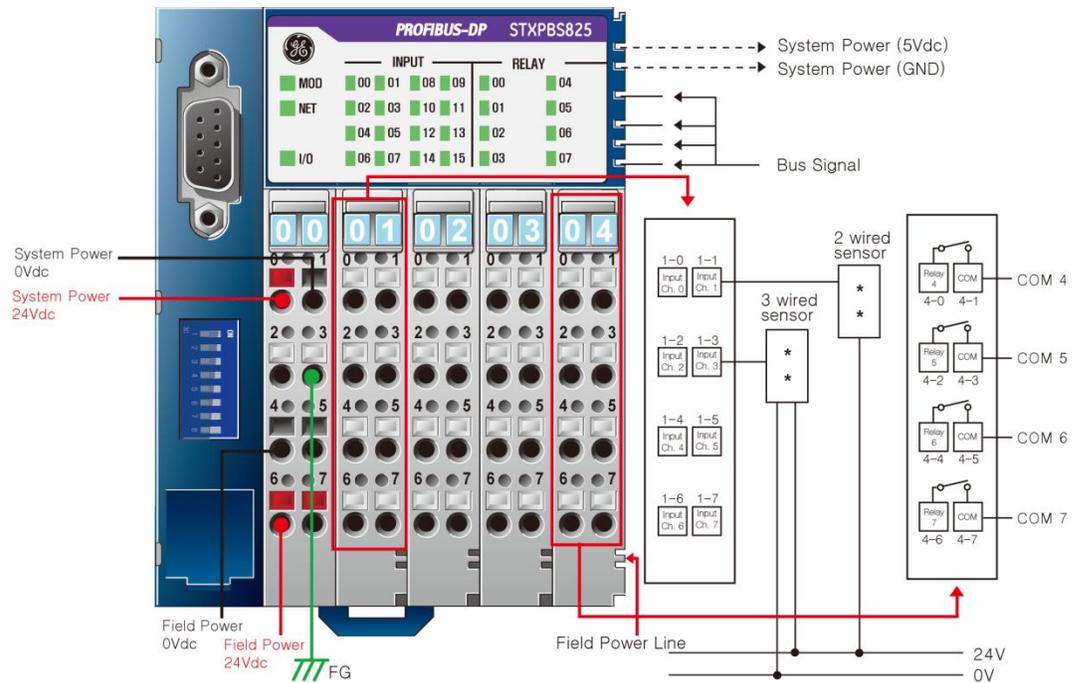
Figure 12: PROFIBUS Network Adaptor Module: STXPBS825

The following table lists the pin numbers and their description for STXPBS825.

Table 13: STXPBS825: Pin Description

Pin Number	Description	Pin Number	Description
01-0	Input Channel 0	03- 0	Relay Output 0
01-1	Input Channel 1	03-1	COM 0
01-2	Input Channel 2	03-2	Relay Output 1

01-3	Input Channel 3	03-3	COM 1
01-4	Input Channel 4	03-4	Relay Output 2
01-5	Input Channel 5	03-5	COM 2
01-6	Input Channel 6	03-6	Relay Output 3
01-7	Input Channel 7	03-7	COM 3
02-0	Input Channel 8	04-0	Relay Output 4
02-1	Input Channel 9	04-1	COM 4
02-2	Input Channel 10	04-2	Relay Output 5
02-3	Input Channel 11	04-3	COM 5
02-4	Input Channel 12	04-4	Relay Output 6
02-5	Input Channel 13	04-5	COM 6
02-6	Input Channel 14	04-6	Relay Output 7
02-7	Input Channel 15	04-7	COM 7

STXPBS925- Profibus Network Adapter with 16 Negative Logic in/16 relay out isolated

The following screenshot shows the interface diagram for STXPBS925.
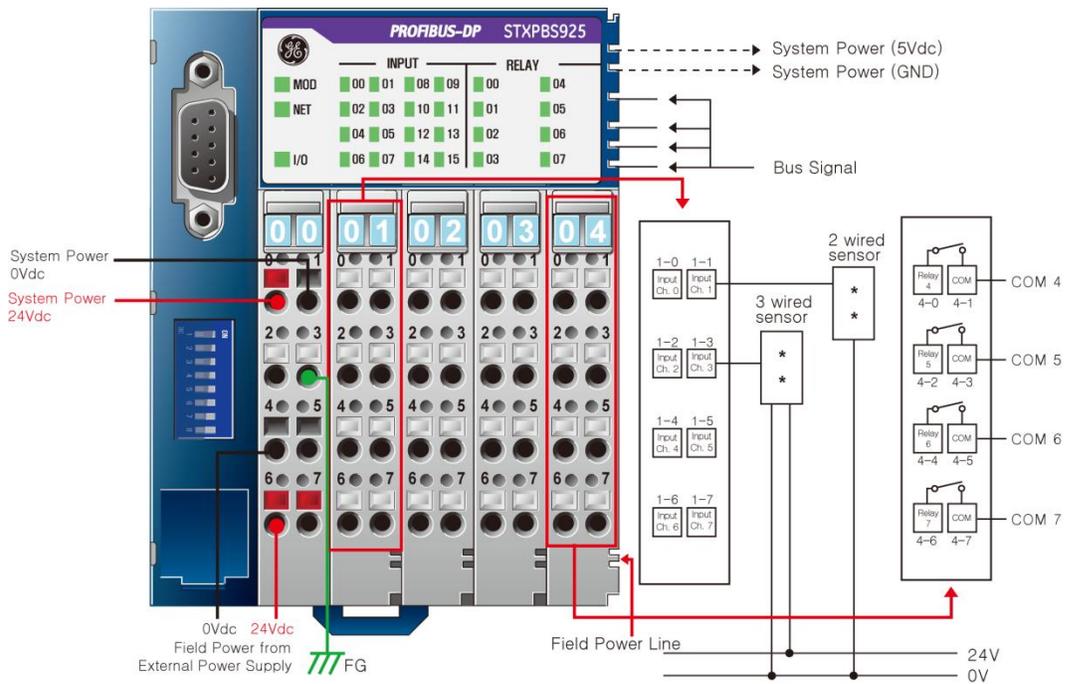
Figure 13: PROFIBUS Network Adaptor Module: STXPBS925

The following table lists the pin numbers and their description for STXPBS925.

Table 14: STXPBS925: Pin Description

Pin Number	Description	Pin Number	Description
01-0	Input Channel 0	03- 0	Relay Output 0

01-1	Input Channel 1	03-1	COM 0
01-2	Input Channel 2	03-2	Relay Output 1
01-3	Input Channel 3	03-3	COM 1
01-4	Input Channel 4	03-4	Relay Output 2
01-5	Input Channel 5	03-5	COM 2
01-6	Input Channel 6	03-6	Relay Output 3
01-7	Input Channel 7	03-7	COM 3
02-0	Input Channel 8	04-0	Relay Output 4
02-1	Input Channel 9	04-1	COM 4
02-2	Input Channel 10	04-2	Relay Output 5
02-3	Input Channel 11	04-3	COM 5
02-4	Input Channel 12	04-4	Relay Output 6
02-5	Input Channel 13	04-5	COM 6
02-6	Input Channel 14	04-6	Relay Output 7
02-7	Input Channel 15	04-7	COM 7

Specifications

Table 15: STXPBS* Specifications

Model	STXPB S032	STXPB S132	STXPB S232	STXPB S332	STXPB S432	STXPB S532	STXPB S016	STXPB S116	STXPB S824	STXPB S924	STXPB S825	STXPB S925
Input/Interface Specification												
Number of Input	32 Points				16 Points				16 Points			
Type	Positive Logic	Negative Logic			Positive Logic	Negative Logic			Positive Logic	Negative Logic	Positive Logic	Negative Logic
Indicates	1 LED/ 1 point											
Input Voltage	24Vdc	0Vdc			24Vdc	0Vdc			24Vdc	0Vdc	24Vdc	0Vdc
Maximum Off-State Voltage	5Vdc				5Vdc				5Vdc			
Minimum On-State Voltage	9Vdc				9Vdc				9Vdc			
Input Signal Delay	< 0.5msec				< 0.5msec				< 0.5msec			
Input Impedance	About 5.4KΩ				About 5.4KΩ				About 5.4KΩ			
Output Specification												
Number of Output			32 Points		16 Points							
Type			Negative Logic	Positive Logic		Negative Logic						

Output Load Current			Maximum 0.5A/1pt, 8A/All									
Output Voltage			0Vdc	24Vdc	0Vdc							
Drop Voltage (ON-state)			Maximum 0.3Vdc									
Leakage Current (OFF-state)			Maximum 50uA									
Output Signal Delay			< 0.3msec									
Protection			Short protection, Over Temperature protection, Over Current Limit									

Model	STXPB S032	STXPB S132	STXPB S232	STXPB S332	STXPB S432	STXPB S532	STXPB S016	STXPB S116	STXPB S824	STXPB S924	STXPB S825	STXPB S925
Relay Output Specification												
Number of Output							16 points		8 points			
Relay Type							Normally Open, Single Pole, Single Throw					
Output Rating							2A@5~28.8Vdc,240Vac, 0.8A@48Vdc, 0.5A@110Vac,					
Minimum Load							100uA, 100mVdc/Point					
Minimum On-Stage Voltage Drop							0.5V@2.0A, Resistive Load, 24Vdc					
Output Delay Time							Maximum 10ms					
Initial Contact Resistance							30mΩ					
Expected Contact Life							300K Cycle Resistive, 100K Cycle Inductive					
Common Type							4 Point /1 COM	1 Point /1 COM	4 Point/1 COM		1 Point/1 COM	
Isolation							Relay Coil/Contact Isolation					
IO Common Specification												

Power Dissipation	Maximum 50mA@24Vdc
Isolation	System Power to internal logic: Non-isolation, Internal logic to I/O driver: Isolation
Field Power	Supply Voltage: 24Vdc nominal, Supply Voltage range: 11~28.8Vdc
Field Power Current	Maximum 6A@24Vdc
Weight	Maximum 340g
Module Size	83mm x 99mm x 70mm
Environment Condition	See "Environmental Specifications" in Appendix A.

LED Indicators

Module Status LED (MOD)

Table 16: Module Status LED

Color	Status	Function
Off	No Power	No power is supplied to the unit.
Green	Device Operational	The unit is operating in normal condition.
Flashing Green	Device in Standby	The device needs commissioning due to configuration missing, incomplete or incorrect.
Flashing Red	Minor Fault	Recoverable Fault
Red	Unrecoverable Fault	An unrecoverable fault has occurred in self-testing: − Invalid Module ID − Firmware fault − Hardware fault

Network Status LED (NET)

Table 17: Network Status LED

Color	Status	Function
Off	Not Powered, Not On-line	Device is not on-line or may not be powered
Flashing Green	On-line, Not connected	Device is on-line but has no connections in the established state − Not allocated to a master
Green	On-line, Connected	Device is on-line and allocated to a master.
Flashing Red	Connection Time-out	One or more I/O connections are in the time-out state.
Red	Critical Communication Failure	Failed communication.

IO Module Status LED (I/O)

Table 18: IO Module Status LED

Color	Status	Function
Off	Not Powered No IO Module	Device has no IO module or may not be powered
Flashing Green	RSTi bus On-line,	RSTi bus is on-line but does not exchange I/O data. − Valid IO module configuration.
Green	RSTi bus Connection	IO module is connected and run exchanging I/O data
Flashing Red	RSTi bus connection fault	One or more IO module occurred in fault state. − Changed IO module configuration. − RSTi bus communication failure.
Red	IO Module Configuration Failed	Failed to initialize IO module − Detected invalid IO module ID. − Overflowed Input/Output Size − Too many IO module − Initial protocol failure − Mismatch vendor code between adapter and IO module.

Field Power Status LED

Table 19: STXPBS001: Field Power Status LED

Color	Status	Function
Off	Not Supplied Field Power	Not supplied 24V dc field power
Green	Supplied Field Power	Supplied 24V dc field power

PROFIBUS Module Installation

Dimensions

STXPBS001 Dimension

The following screenshot displays the dimension for STXPBS001.
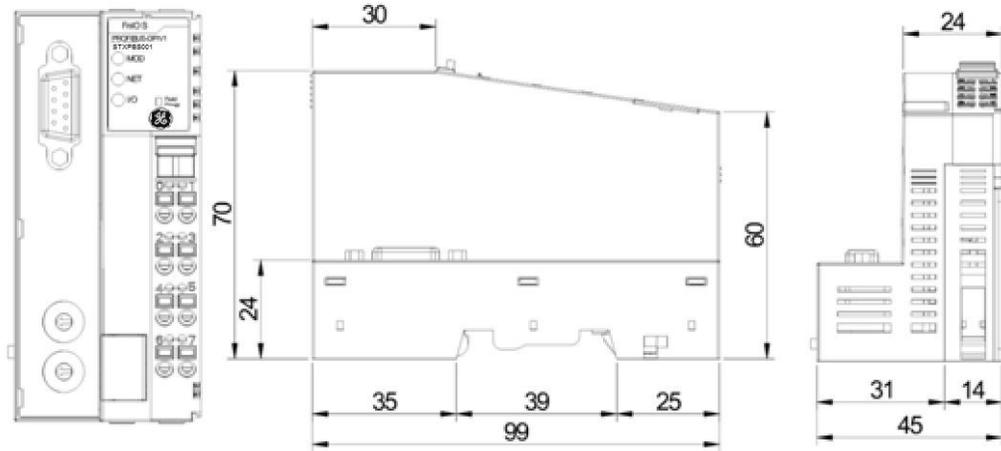
Figure 14: Dimension for STXPBS001

STXPBS* Dimension

The following screenshot displays the dimension for STXPBS*.
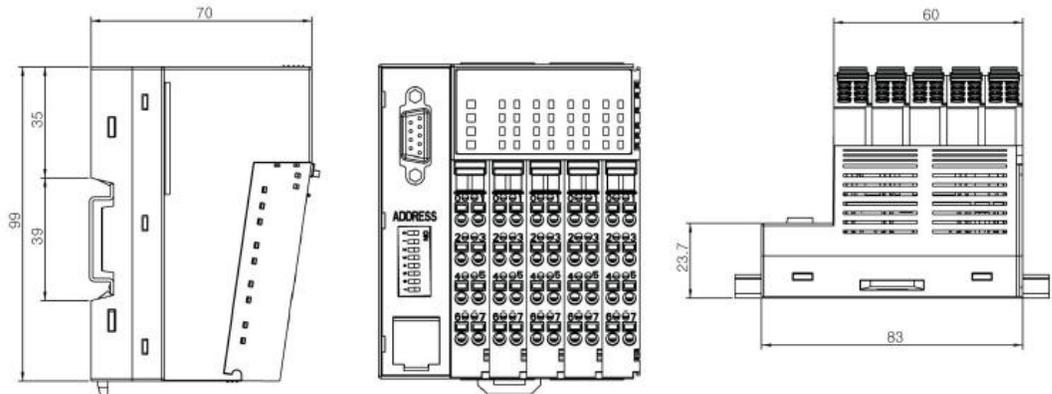
Figure 15: Dimension for STXPBS*

Mechanical Set Up

This section describes the mechanical set up for RSTi family.

Total Expansion

The number of the module assembly that can be connected is 32 for STXPBS001 and 8 for STXPBS*. So the maximum length is 426mmm and 179mm respectively. (These maximum length figures are considering all single wide modules. These values need to be adjusted if double wide modules like ST-2748 are considered)

Plugging and Removing the Components

Caution

Before work is done on the components, the voltage supply must be turned off.

As the figure below indicates, in order to safeguard the RSTi module from jamming, it should be fixed onto the DIN rail with locking level.
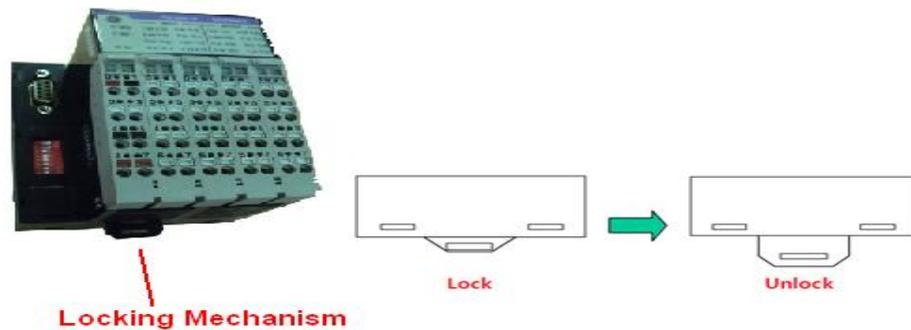
Figure 16: Installing module on DIN rail

Use a small-bladed screwdriver to lift down Locker. Install the Module on Din rail firmly. Lift up locker to lock.

To remove the modules, unfold the locking lever as shown below.
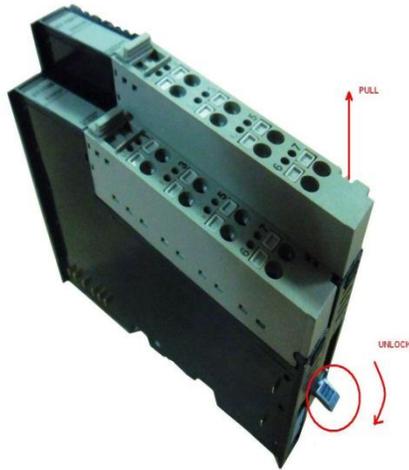
Figure 17: Removing RSTi module from DIN rail

Internal RSTi bus/Field Power Contacts

Communication between the RSTi network adapter and the IO module as well as system/field power supply of the bus modules is carried out by means of the internal bus. It is comprised of 6 data pin and 2 field power pin.
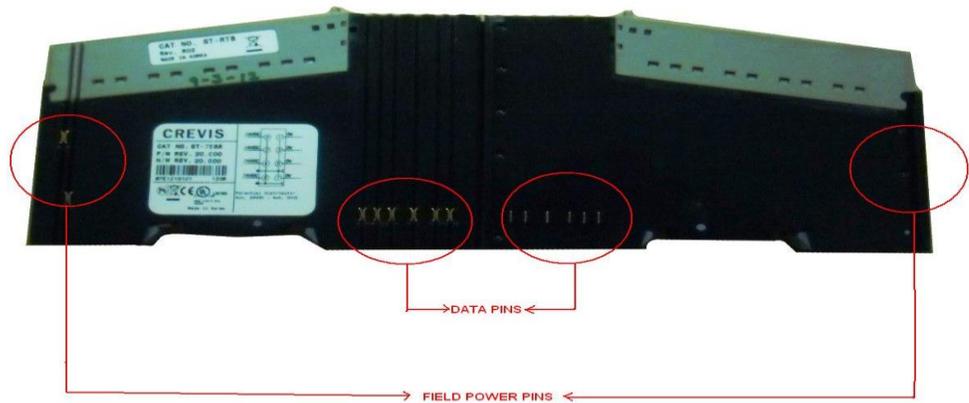
Figure 18: Internal RSTi bus

| Caution |

Do not touch data and field power pins, in order to avoid soiling and damage by ESD noise.

RSTi bus Specification

RSTi bus System

The following screenshot displays the RSTi bus system for STXPBS001.
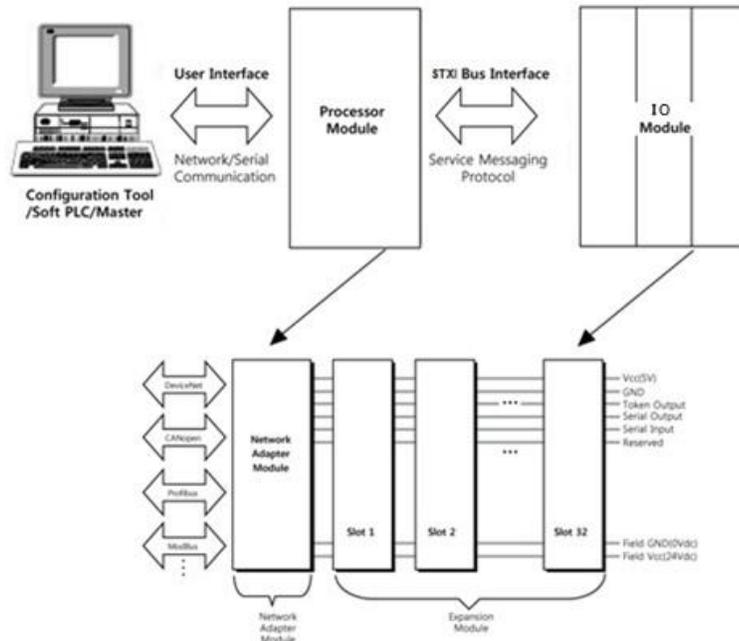
Figure 19: RSTi bus System for STXPBS001

The following screenshot displays the RSTi bus system for STXPBS*.
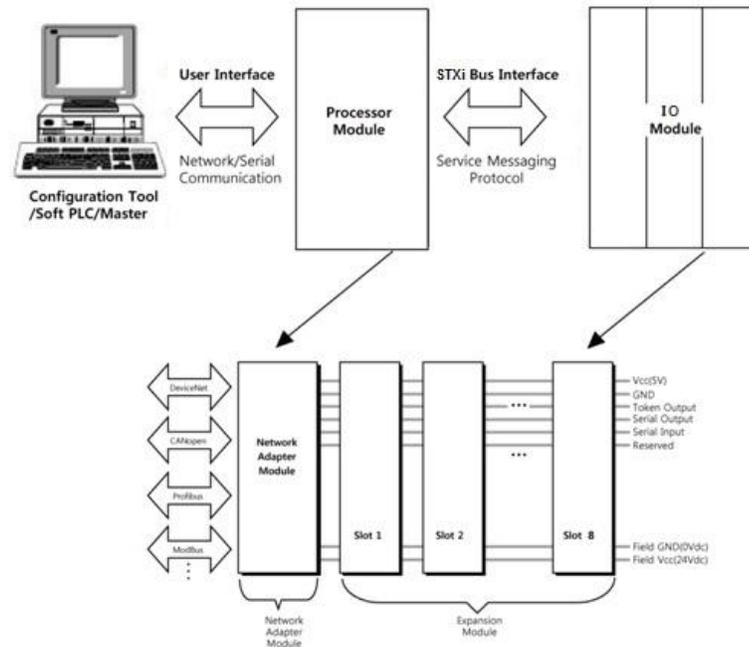
Figure 20: RSTi bus System for STXPBS*

- **Network Adapter Module**: The Network Adapter Module forms the link between the field bus and the field devices with the IO Modules. The connection to different field bus systems can be established by each of the corresponding Network Adapter Module, for example, for SyncNet, PROFIBUS, CANopen, DeviceNet, Ethernet/IP, CC-Link, MODBUS/Serial, MODBUS/TCP etc.
- **IO Module**: The IO Modules are supported by a variety of input and output field devices. There are digital and analog input/output modules and special function modules.
- **Two types of RSTi bus Message**:
  - Service Messaging
  - I/O Messaging

RSTi bus Pin Description

Table 20: RSTi bus Pin and Description

No.	Name	Description
1.	Vcc	System supply voltage (5Vdc)
2.	GND	System Ground
3.	Token Output	Token output port of Processor module
4.	Serial Output	Transmitter output port of Processor module
5.	Serial Input	Receiver input port of Processor module
6.	Reserved	Reserved for bypass Token
7.	Field GND	Field Ground
8.	Field Vcc	Field supply voltage (24Vdc)

PROFIBUS Communication Interface

PROFIBUS Communication Interface
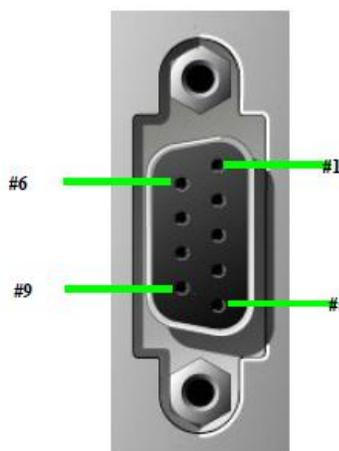
Figure 21: PROFIBUS Adapter Communication interface

The following table describes the Signal Name and Description.

Table 21: Signal name and Description

No.	Name	Description
1.	FG	
2.	-	
3.	RXD/TXD-P	Receive/Transmit data-plus (B wire)
4.	CNTR-P	Repeater control signal (direction control), RTS signal
5.	DGND	Data ground (reference potential for VP)
6.	VP	Supply voltage-Plus (P5V)

Chapter

7.	-	
8.	RXD/TXD-N	Receive/Transmit data-minus (A-wire)
9.	CNTR-N	Repeater Control Signal (direction control)

All FieldBus devices which use a standard 9-pin Sub-D connector should provide the VP and DGND signals on the bus connector in addition to receive and transmit signals. With all other connector types, only receive and transmit signals need to be connected.

Make sure that the connector type used is suitable for the selected baud rate.

If optional signals are provided, they must also comply with EN50170 Volume 2 and they must be correctly described in the respective GSD file.

To prevent EMC interface from entering the device, the cable shield should be connected to the functional ground of the device (generally the electrically conductive case). This is done by connecting the cable shield to the metal case of the Sub-D connector and the functional ground over a larger area. The bus connector must have a low-impedance connection to the cable shield.

The data transfer technology of the serial bus system, which uses a shielded twisted pair data cable, is described in the specification of the interface-immune RS 485 interface standard. To allow correct bus termination, each station must connect the signals DGND and VP (5V) to pins 5 and 6 of the connector respectively. The 5V supply for the terminating resistors (VP) should have a minimum current rating of 10mA (the current load can increase to 12mA if a NULL signal is sent through the bus). The current rating should be increased to approximately 90mA if you need to supply other types of devices on the bus such as bus terminals and optical fiber cable drivers. Due to the capacitive load of the station and the resulting cable reflections, bus connectors should be provided with built-in series inductors.

Caution

The use of an incorrect supply voltage or frequency can cause severe damage to the component.

Choice of PROFIBUS data transfer cable type

- Depending on the application, the user can choose between electrical and optical fiber data transfer cables. The following types of electrical data cables can be used:
  - Standard bus cable
  - Standard bus cable with halogen-free sheath (type FRNC)
  - Cable with PE Sheath for use in the food and manufacturing industries. (It differs from the standard bus cable solely in the cable sheath).
  - Direct buried cable with additional protective sheath for lying in the ground.
  - Trailing cable: This is a special cable type which is used where parts of the machine move occasionally or continuously.
  - Festooned cable: Compared to a trailing cable, a festooned cable has an additional strain relief element.
- The bus cable is specified in EN 50170 part 8-2 as "Cable Type A", and should comply with the parameters in the following table. Cable Type B, which is also described in EN 50170, is outdated and should no longer be used.
- Parameters for standard type A bus cables:

Table 22: Parameters for Standard Type A Bus Cables

Parameter	Cable Type A
Characteristic impedance in Ω	135..165 at a frequency of (3..20MHz)
Operating capacity(pF/m)	< 30
Loop resistance (Ω/km)	<=110
Core diameter (mm)	>0.64*
Cora cross-section (mm)	>0.34*

* The cable cross-sections used should be compatible with the mechanical specifications of the bus interface connector.

The cable parameters specified for standard Type A bus cables result in the maximum length of each bus segment for the respective data transfer rate as shown in the below table.

- Maximum Cable Lengths per Segments

Table 23: Maximum Cable Lengths per Segments

Baudrate	9.6	19.2	45.45	93.75	187.5	500	1500	3000	6000	12000
Maximum segment Length in 'm'(m)	1200	1200	1200	1200	1000	400	200	100	100	100

Note: In a PROFIBUS-DP/FMS installation, you must choose a data transfer rate which is supported by all devices connected to the bus. The chosen data transfer rate then determines the maximum segment lengths as shown above.

The maximum admissible distance between two bus stations in each PROFIBUS network can be calculated as follows:

(NO_REP+1)*Segment length,
Where NO_REP =The maximum number of repeaters connected in series (depends on repeater type).

Example: The repeater manufacture specifications allow nine repeaters to be connected in series. The maximum distance between two bus stations at a data transfer rate of 1500 kbit/s is then as follow:
(9+1)*200m=2000 m

PROFIBUS Module Configuration

DIP Switch Setting

DIP Setting Switch

Station Address

Quick Start Mode

Station Number setting Switch

Relevant Value						
1	2	4	8	16	32	64
1	2	3	4	5	6	7
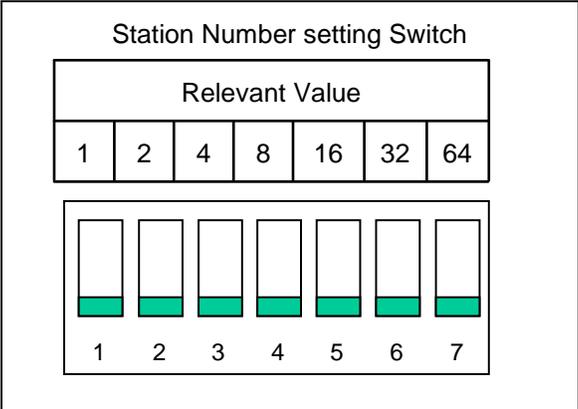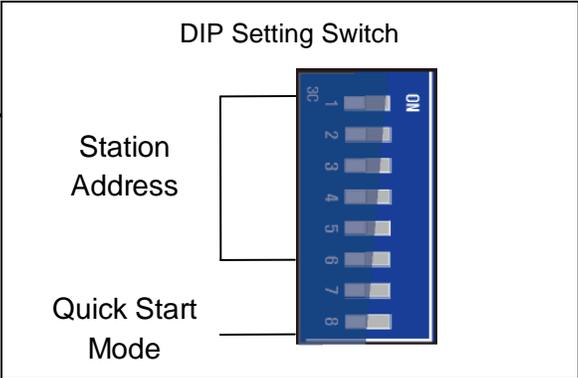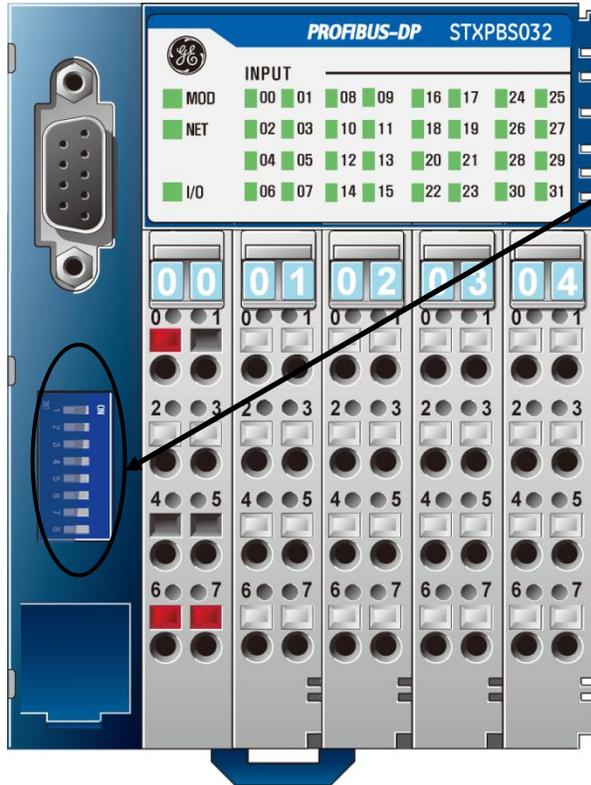
* Dip No.8 Mode Setting:
  - Off: Normal Booting
  - On: Quick Booting

* Station No. Setting example

When setting Station Number to 20, 3 and 5, Dip S/W On.

1	2	3	4	5	6	7

* Directions for setting Node Number (Station No)

1. Select address within the range of 00 to 99 (Station no. 00~99)
2. Station number setting out of the range will cause communication error.
3. Duplicating Station No. will cause communication error.

Wiring of Communication and Power Cable and Installation of the Modules

PROFIBUS Connection cable wiring and Installation
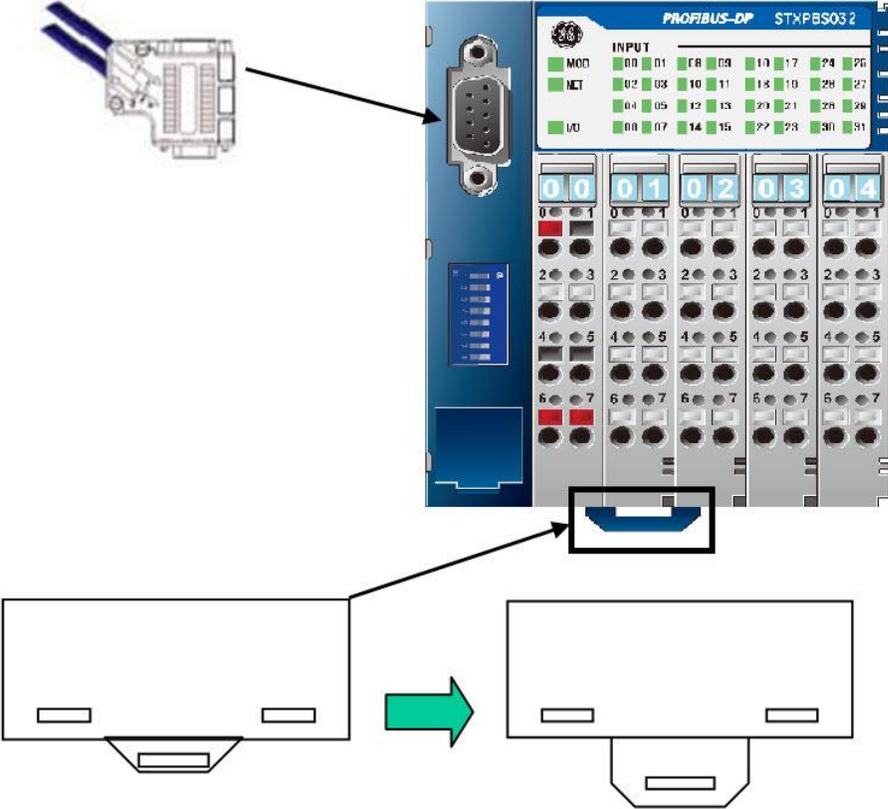
Using a small-bladed screwdriver, release the DIN rail locking clip by pulling clip downward. The clip will click and lock into the open position. Install the module on the DIN rail firmly. Once module is in place on the DIN rail, push the clip upward to secure the module on the DIN rail. To remove, pull clip downward until the locking clip clicks and locks, the module can now be removed from the DIN rail.

Note: Make sure that the locking clip is in the upward position to ensure the module is properly grounded and secured to the DIN rail.

System and Field Power cable wiring
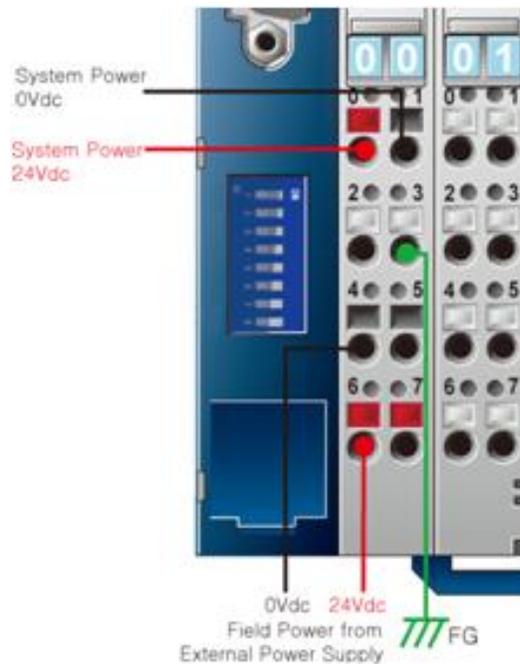
Directions for PROFIBUS connection for field bus network interface power & ST I/O field power wiring.

1. For safety, supply system power and field power should be separated.
   - System Power: for System & PROFIBUS communications
   - Field Power: for I/O field device connections
2. Make sure power supplies for system power and field power are supplied separately.
3. Use PROFIBUS certified cables only.
4. Do not insert any other devices or components (such as transistor) into PROFIBUS field bus besides PROFIBUS qualified products.

Station Number Setting S/W
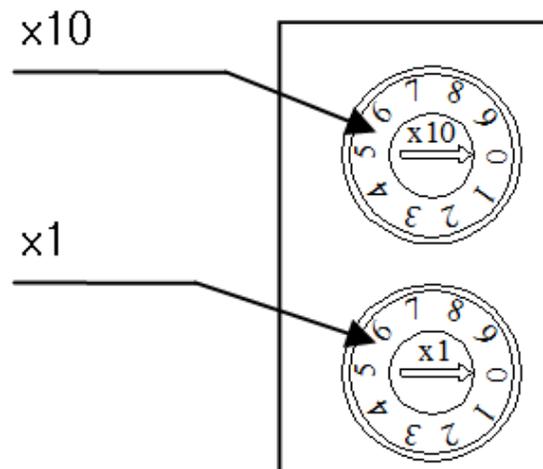
1. Set station number within the specified range (00 ~ 99).

2. Note that if the station number is once set and an attempt is made to change the station number, it would result in communication errors. Power cycle the module and download the new assigned station number to restore communication.

Configuring an I/O Station for PROFIBUS Communication

To configure I/O station, add a GE-IP PROFIBUS master module at the desired slot in the Rx3i or 90-30 Proficy Machine Edition project. Ensure that you have the latest GSD file imported. Right click on the master module and choose "Add Slave". Select "STXPBS001" for PROFIBUS Network Adapter or STXPBS for all-in-one PROFIBUS Network Adapter. Select "OK".
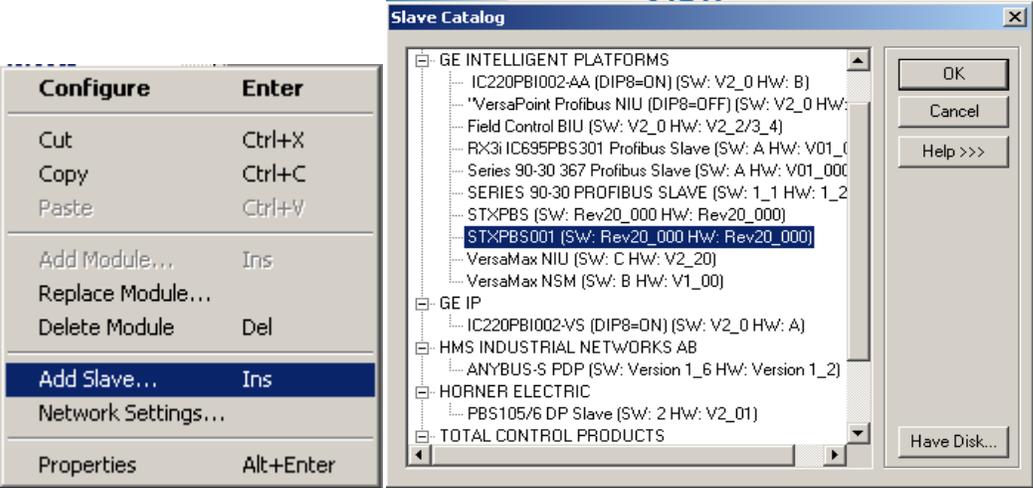
A pop-up menu will appear which can help you in configuring the I/O station along with the I/O modules.

1. Assign a name, description and station address for the I/O station.

2. Select the Modules tab and add the desired I/O modules as per the application. Ensure that the first module is always STXPBS001 or STXPBS* (in case you have selected network adapter as STXPBS) at position"0".

   At least one I/O module must be configured for successful PROFIBUS communication.

3. Go to the Parameters tab and select the parameters according to the application. The Parameters tab is as shown below:
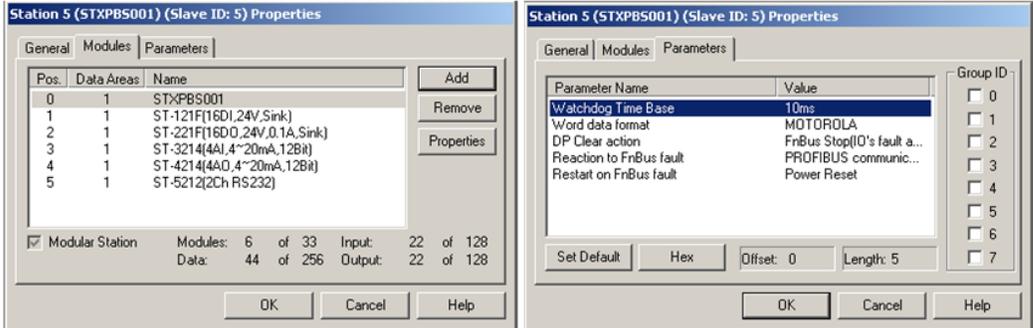
Five parameters can be configured as follows:

1. **Watchdog time base**: The watchdog timer can be used for detection of a network fault. If the Network Adapter detects a network error within the watchdog time, STXPBS001 will control slots depending on the values in DP Clear Action. Options are 10ms and 1ms.

2. **Word Data Format**: The options are MOTOROLA & INTEL.

   MOTOROLA (big endian): The Swap Bytes parameter must be set to False for the IO modules connected to the node.

   INTEL (little endian): The Swap Bytes parameter must be set to true for the IO modules connected to the node.

3. **DP Clear Action**: If a network fault is detected within the specified watchdog time base, the outputs of an I/O station will acquire values as per the options specified in DP clear action. The options are:

   a. *Bus Stop (I/O Fault action)*: The communication between STXPBS001 and modules will be stopped and each module will control its IO Data according to the Fault Action selected for it. The Bus status will be ready (IO status LED will blink). To configure the I/O module for fault action, go to the Modules tab and select Properties. The example below uses an ST-4522 module. Note that substitute value low or high denotes low or high byte values.
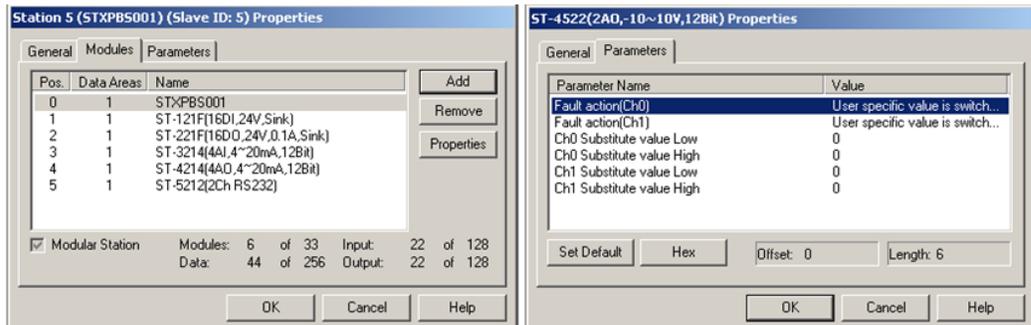
   b. *Bus Run (Clear output)*: The communication between STXPBS001 and modules will run. All the modules' outputs will be set to 0. The IO status LED will be green.

   c. *Bus Run (Hold output)*: The communication between STXPBS001 and modules will run. All module outputs will hold the last value but bus will run. The IO status LED will be green.

4. **Reaction to Bus Fault**: If Bus error is detected, the behavior of the network module will be as per the options selected below. It should be noted that "Restart to Bus Fault" should be set to "Power restart" for this parameter to behave appropriately. Note that in order to observe a "loss of Device" in IO fault table , the "slave status Fault table entries" must be set to "true" in the GE IP Profibus master settings tab as shown below:

Chapter Chapter
Chapter

Parameters	
InfoViewer	(0.8) IC695PBM300 [iPAT_PAC_Sup]

Settings | Power Consumption |

Parameters	
Slave Status Bit Array Address	%I00273
Length	128
Slave Diagnostics ID Address	%AI00137
Length	2
Sync/Freeze Control Bits Address	%Q00049
Length	16
DPV1 Status	%AI00139
Length	2
Slave Configured Bits	%I00001
Length	0
Slave Diagnostic Bits	%I00001
Length	0
Network Settings	<Double Click to Configure>
Inputs Default	Force Off
Slave Status Fault Table Entries	True
I/O Scan Set	1

a. *Profibus Communication*: Last input values will not hold. NET LED will be blinking Green. Network adaptor communication with master stops. IO LED will be red and fault "Loss of device' logged in I/O fault table.

b. *Clear Input Data*: Input values will be zero. NET LED will be Green. Network adaptor communication with master intact. IO LED will be red and fault "Loss of device' logged in I/O fault table.

c. *Stay with last Input data*: Input values will be holding. NET LED will be Green. Network adaptor communication with master intact. IO LED will be red and fault "Loss of device' logged in I/O fault table.

5. **Restart on Bus Fault**: If Bus error is detected, the network module will power up depending upon the options selected for this parameter. The options are "Power restart" & "Auto restart".

It should be noted that only (1. Watch dog time base) and (4. Reaction to Bus Fault) are applicable for STXPBS (Network adapter with Integrated IO modules).

Apart from these settings, for Analog output modules, serial modules, digital output modules etc., select the module at the "modules" tab and choose properties for additional settings. Refer to individual module description for more details.

Note: Refer to the examples section in the Power Modules chapter in New Slice IO manual for more details about the IO node configuration using the different power modules.

The Profibus network module also supports DPV1 service. The details are as below:

DPV1 Write service

- Slot#=0, Index 1: Write STXPBS001 extension parameter(2Byte)
- Slot#0~31, Index 1: Write parameter for an IO module.
- Slot#0~31, Index 2: Write memory data to an IO module.
- Slot#= 254: Write user data to EEPROM user area

    Index=0~127(Offset in EEPROM user area)

    Data Ln=Length for data to be written

    Data [0] ~Data[n] =User data

List of valid commands for (Slot#=0, Index 1: Write STXPBS001 extension parameter (2 bytes). Note that the length of parameter may vary depending upon the module chosen for STXPBS* Network adapter with Integrated IO modules and hence the command word.

Command		Reaction to Bus Fault	DP Clear Action	Word data Format	Restart on Bus fault
Hex	Binary				
00 00	00000000 00000000	00: Profibus communication	00: Bus Stop IO fault action	00:INTEL	00:Power reset
00 10	00000000 00010000	00: Profibus communication	00: Bus Stop IO fault action	00:INTEL	01: auto reset
01 00	00000001 00000000	00: Profibus communication	00: Bus Stop IO fault action	01:MOTOROLA	00:Power reset
01 10	00000001 00010000	00: Profibus communication	00: Bus Stop IO fault action	01:MOTOROLA	01: auto reset
00 04	00000000 00000100	00: Profibus communication	01: Bus Run (clear Output)	00:INTEL	00:Power reset
00 14	00000000 00010100	00: Profibus communication	01: Bus Run (clear Output)	00:INTEL	01: auto reset
01 04	00000001 00000100	00: Profibus communication	01: Bus Run (clear Output)	01:MOTOROLA	00:Power reset
01 14	00000001 00010100	00: Profibus communication	01: Bus Run (clear Output)	01:MOTOROLA	01: auto reset
00 08	00000000 00001000	00: Profibus communication	10: Bus Run (Hold Output)	00:INTEL	00:Power reset
00 18	00000000 00011000	00: Profibus communication	10: Bus Run (Hold Output)	00:INTEL	01: auto reset
01 08	00000001 00001000	00: Profibus communication	10: Bus Run (Hold Output)	01:MOTOROLA	00:Power reset
01 18	00000001 00011000	00: Profibus communication	10: Bus Run (Hold Output)	01:MOTOROLA	01: auto reset
00 01	00000000 00000001	01: Clear Input data	00: Bus Stop IO fault action	00:INTEL	00:Power reset
00 11	00000000 00010001	01: Clear Input data	00: Bus Stop IO fault action	00:INTEL	01: auto reset
01 01	00000001 00000001	01: Clear Input data	00: Bus Stop IO fault action	01:MOTOROLA	00:Power reset

Command		Reaction to Bus Fault	DP Clear Action	Word data Format	Restart on Bus fault
Hex	Binary				
01 11	00000001 00010001	01: Clear Input data	00: Bus Stop IO fault action	01:MOTOROLA	01: auto reset
00 05	00000000 00000101	01: Clear Input data	01: Bus Run (clear Output)	00:INTEL	00:Power reset
00 15	00000000 00010101	01: Clear Input data	01: Bus Run (clear Output)	00:INTEL	01: auto reset
01 05	00000001 00000101	01: Clear Input data	01: Bus Run (clear Output)	01:MOTOROLA	00:Power reset
01 15	00000001 00010101	01: Clear Input data	01: Bus Run (clear Output)	01:MOTOROLA	01: auto reset
00 09	00000000 00001001	01: Clear Input data	10: Bus Run (Hold Output)	00:INTEL	00:Power reset
00 19	00000000 00011001	01: Clear Input data	10: Bus Run (Hold Output)	00:INTEL	01: auto reset
01 09	00000001 00001001	01: Clear Input data	10: Bus Run (Hold Output)	01:MOTOROLA	00:Power reset
01 19	00000001 00011001	01: Clear Input data	10: Bus Run (Hold Output)	01:MOTOROLA	01: auto reset
00 02	00000000 00000010	10: Stay with last input	00: Bus Stop IO fault action	00:INTEL	00:Power reset
00 12	00000000 00010010	10: Stay with last input	00: Bus Stop IO fault action	00:INTEL	01: auto reset
01 02	00000001 00000010	10: Stay with last input	00: Bus Stop IO fault action	01:MOTOROLA	00:Power reset
01 12	00000001 00010010	10: Stay with last input	00: Bus Stop IO fault action	01:MOTOROLA	01: auto reset
00 06	00000000 00000110	10: Stay with last input	01: Bus Run (clear Output)	00:INTEL	00:Power reset
00 16	00000000 00010110	10: Stay with last input	01: Bus Run (clear Output)	00:INTEL	01: auto reset
01 06	00000001 00000110	10: Stay with last input	01: Bus Run (clear Output)	01:MOTOROLA	00:Power reset
01 16	00000001 00010110	10: Stay with last input	01: Bus Run (clear Output)	01:MOTOROLA	01: auto reset
00 0A	00000000 00001010	10: Stay with last input	10: Bus Run (Hold Output)	00:INTEL	00:Power reset
00 1A	00000000 00011010	10: Stay with last input	10: Bus Run (Hold Output)	00:INTEL	01: auto reset
01 0A	00000001 00001010	10: Stay with last input	10: Bus Run (Hold Output)	01:MOTOROLA	00:Power reset
01 1A	00000001 00011010	10: Stay with last input	10: Bus Run (Hold Output)	01:MOTOROLA	01: auto reset

DPV1 Read service

- Slot#=0, Index 1: Read STXPBS001 extension parameters (2Byte)
- Slot#1~32, Index 1: Read parameter for an IO module.
- Slot#1~32, Index 2: Read memory data from an IO module.
- Slot#=0, Index 254: Read vendor code from EEPROM directly.

- Data Ln=1(Fixed)

    Slot#=0, Index 253: read FW revision

    Data Ln=4(Fixed for STXPBS001), 1(all-in-one modules)

- Slot#=254: read user data from EEPROM user area

    Index=0~127(Offset in EEPROM user area)

    Data Ln=Length for data to be read*.*

Terminator Resistor

The following screenshot displays the terminator resistor specification.
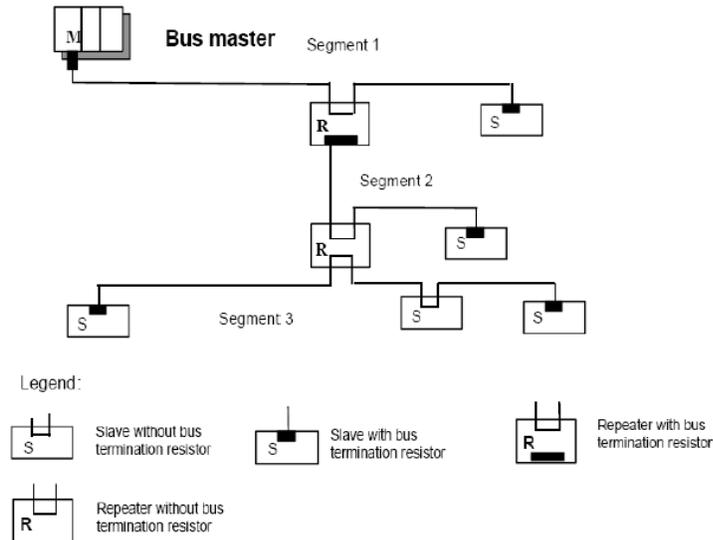
Figure 22: Terminator Resistor Specification

In order to minimize cable reflections and ensure a defined noise level on the data lines, the data transfer cable must be terminated at both ends with a terminating resister combination as follows:
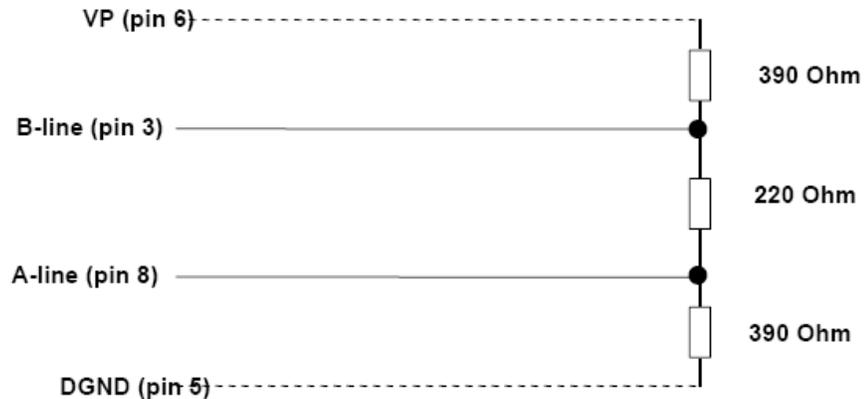
Figure 23: Terminating Resistor Combination

Station Address and Quick Startup Mode Setup

Station Address Setup for STXPBS001

Each PROFIBUS Adapter must have a unique address (from 1 to 99) so that it can be addressed independently from other nodes. The address 0 is reserved to identify a broadcast exchange. No response is returned to broadcast requests sent by the master.
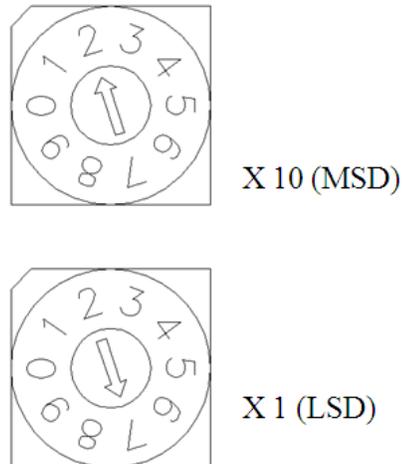
Figure 24: MAC ID of a slave node

The above figure shows MAC ID 27(=2*10 + 7*1) of a slave node.

- Communication Speed Setting
    - Refer to GEIP PROFIBUS master module settings to change the communication speed.

Caution

MAC ID addresses have to be unique throughout the entire interconnected networks.

Station Address Setup for STXPBS*

Each PROFIBUS Adapter must have a unique Node Station address (from 0 to 99) so that it can be addressed independently from other nodes.

The below screenshot shows Dip Switch #1~7 setting.

DIP Switch (Relevant Value)							
1	2	4	8	16	32	64	Quick Start Mode
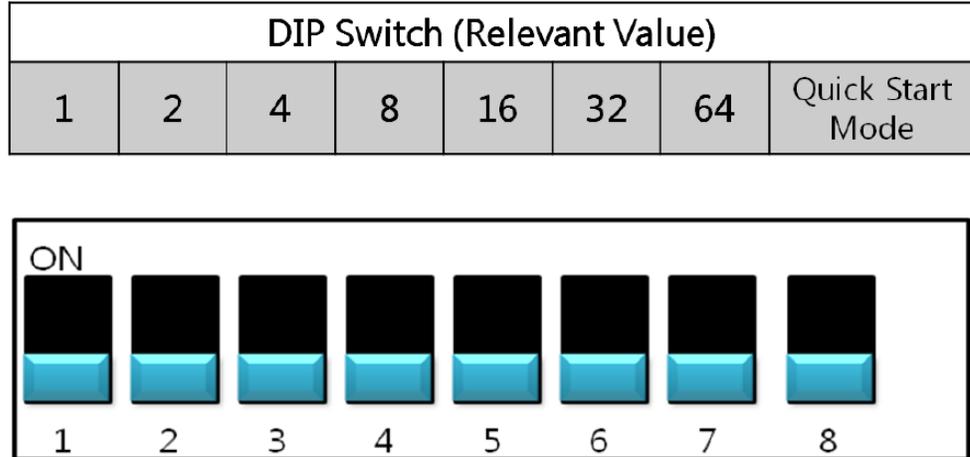
Figure 25: DIP Switch

■   Node Station Address Setting Example

In order to change station ID to No. 20 (Bin 10100), Dip switch No.3 and 5 must be ON and others must be OFF.
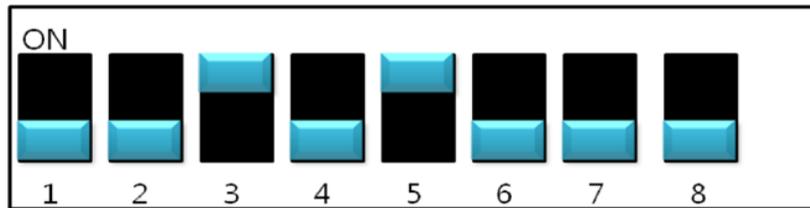
Figure 26: Node Station Address Setting

■   Mode Setting

Table 24: Mode Setting

Dip #8.	Start Mode
OFF	Normal Booting
ON	Quick Booting

Note: Directions for setting Node Number (Station number)

1.   Please set it within the range of contactable Station number (Station no. 00~99).
2.   Station number setting out of the range will cause Communication Error.
3.   When double setting Station Number, communication error will occur.

I/O Process Image Map

An IO module may have three types of data: I/O data, configuration parameter, and memory register. The data exchange between network adapter and IO modules is done by means of an I/O process by RSTi bus protocol.

The following screenshot shows the data flow between network adapter and IO modules for STXPBS001.
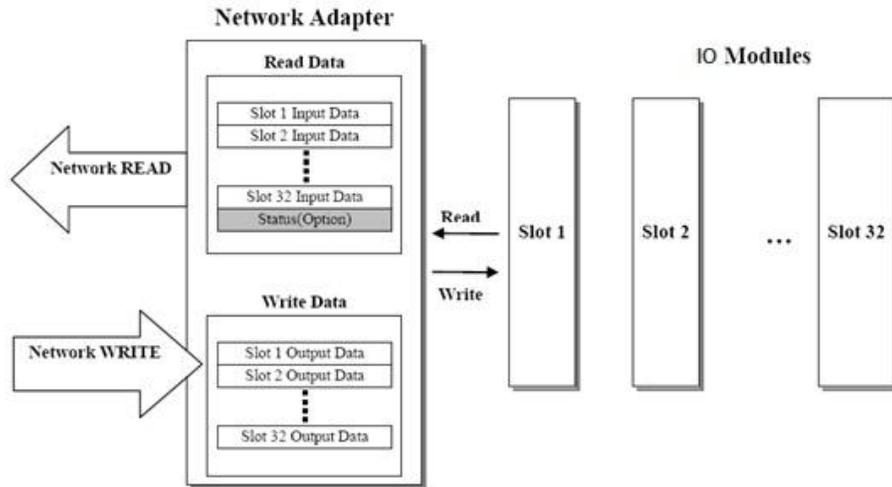
Figure 27: STXPBS001: Data flow between Network Adapter and IO Modules

The following screenshot shows the data flow of process image between network adapter and IO modules for STXPBS*.
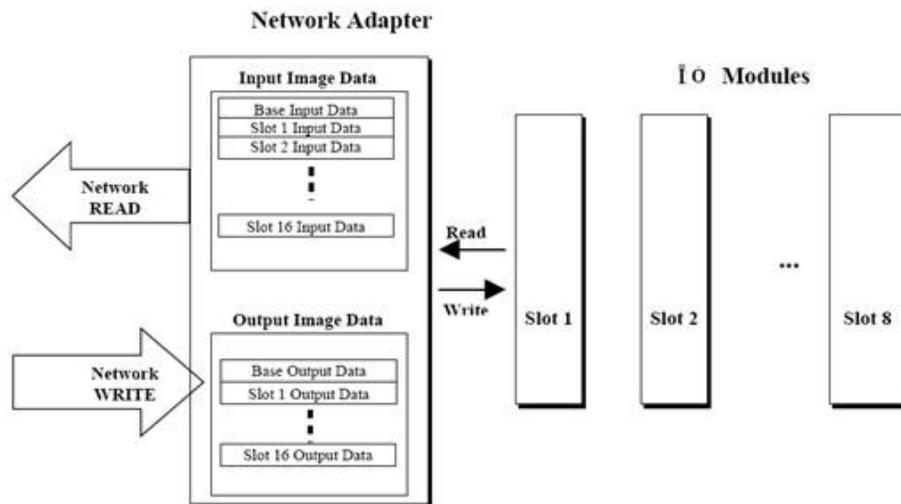
Figure 28: STXPBS*: Data flow between Network Adapter and IO Modules

GSD and I/O Module Setting

GSD (Electronic data sheet of a device) files contain and describe the functions and characteristics of PROFIBUS devices. The abbreviation GSD means Generic Station Description (Device Base Files). All the available GSD files together form the device database.

When Proficy machine edition/ configuration tool is started, the system configurator automatically retrieves all the GSD files stored in the GSD directory.

The device names are placed into an internal list. During the configuration, the device-specific data is retrieved directly from the GSD files.

If a DP Slave device does not appear in the selection list, a corresponding GSD file can be added as shown below:

Right click on the GEIP profibus master and choose "add slave", a pop up window will open showing the available slave modules.
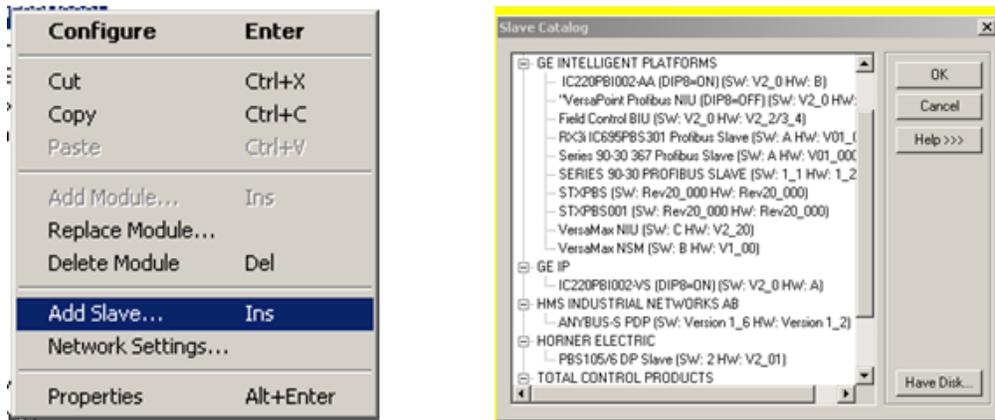
Figure 29: Adding slave modules

Choose the desired slave device or choose "Have Disk" to add other slave devices. Now click on "Toolchest", choose "Profibus Devices", select the desired network adapter and hit F1 to see the contents of the GSD file. For latest GSD file, please visit GE-IP support site.
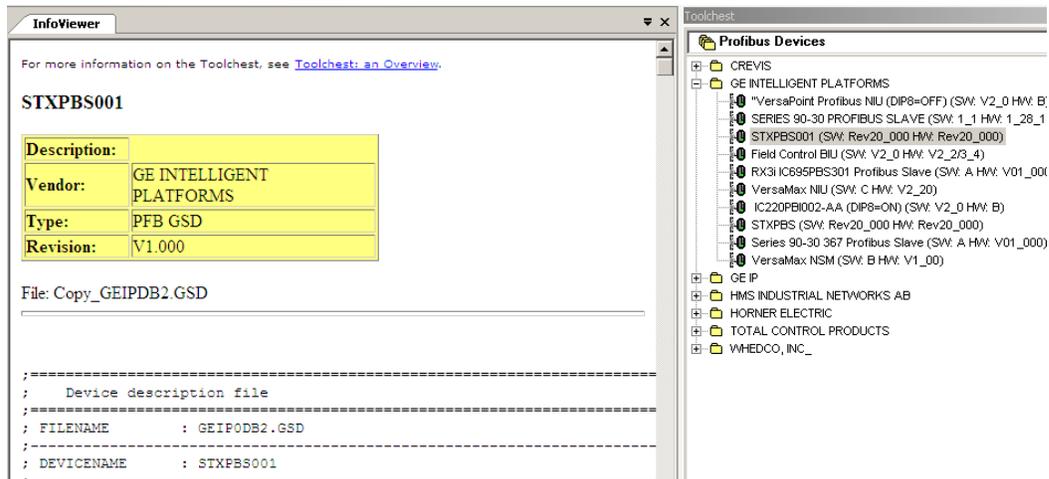
Example

Example of Output Process Image (Output Register) Map for STXPBS001

■ For example: Slot configuration
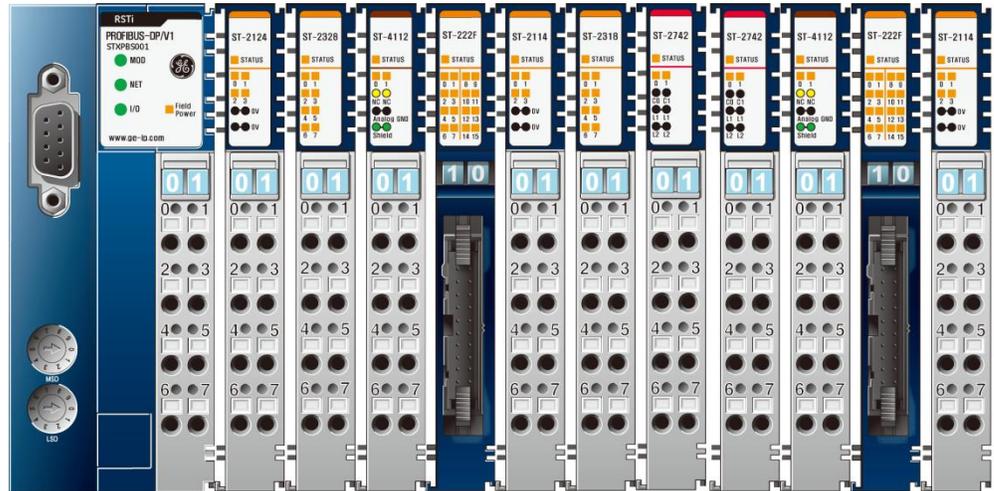
Figure 31: Slot Configuration

The following table lists the slot number and the module description for that slot.

Table 25: Slot number and Module Description

Slot Address	Module Description
#0	PROFIBUS Adapter
#1	4-discrete output
#2	4-discrete output
#3	8-discrete output
#4	2-analog output
#5	16-discrete output
#6	4-discrete output
#7	8-discrete output
#8	2-relay output
#9	2-relay output
#10	2-analog output
#11	16-discrete output

■ Output Process Image Mode#0 (Uncompressed Input Processing Data), default output image

Table 26: Output Process Image Mode

Byte	Slot #	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Write Byte 0	Slot 1	Not used				Discrete Output 4 points			
Write Byte 1	Slot 2	Discrete Output 8 points							
Write Byte 2	Slot 3	Analog Output Ch0 low byte							
Write Byte 3		Analog Output Ch0 high byte							
Write Byte 4		Analog Output Ch1 low byte							
Write Byte 5		Analog Output Ch1 high byte							
Write Byte 6	Slot 4	Discrete Output low 8 points							
Write Byte 7		Discrete Output high 8 points							
Write Byte 8	Slot 5	Not used				Discrete Output 4 points			
Write Byte 9	Slot 6	Discrete Input 8 points							
Write Byte 10	Slot 7	Not used						Discrete Output 2 points	
Write Byte 11	Slot 8	Not used						Discrete Output 2 points	
Write Byte 12	Slot 9	Analog Output Ch0 low byte							
Write Byte 13		Analog Output Ch0 high byte							
Write Byte 14		Analog Output Ch1 low byte							
Write Byte 15		Analog Output Ch1 high byte							
Write Byte 16	Slot 10	Discrete Output low 8 points							
Write Byte 17		Discrete Output high 8 points							
Write Byte 18	Slot 11	Reserved				Discrete Output 4 points			
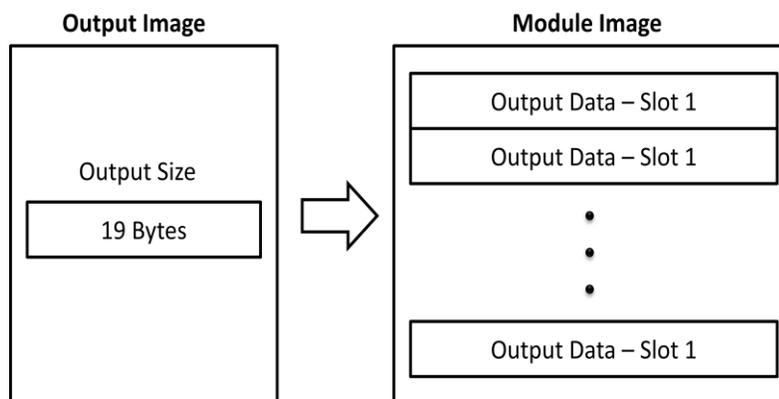
Figure 32: Output Process Image Mode

Example of parameter assign

■ For example: Slot configuration
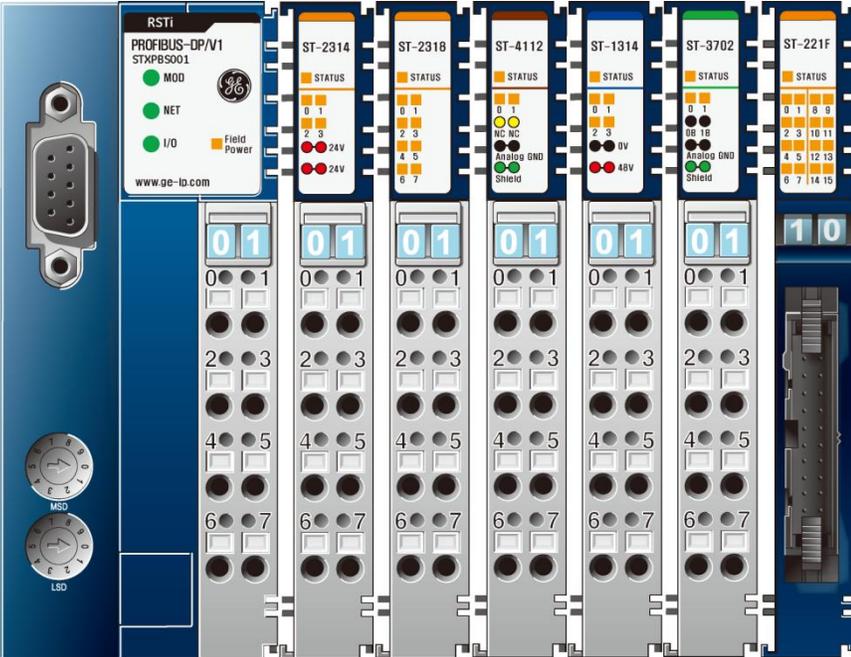
Figure 33: Slot Configuration

The following table lists the slot number, module description, and parameter size.

Table 27: Slot number and Module Description

Slot Address	Module Description	Parameter Size
#0	STXPBS001	2 Byte
#1	ST-2314 (4-discrete output)	2 Byte
#2	ST-2318 (8-discrete output)	2 Byte
#3	ST-4112 (2-analog output)	6 Byte
#4	ST-1314 (4-discrete input)	0 Byte
#5	ST-3702 (2-RTD input)	2 Byte
#6	ST-221F (16-discrete output)	4 Byte

■ Parameter

Table 28: Parameter Description

Byte offset	Slot #	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0									
Byte 1									
Byte 2									
Byte 3		PROFIBUS-DP Standard Parameter							
Byte 4									
Byte 5									
Byte 6									
Byte 7									
Byte 8		PROFIBUS-DPV1 Parameter							
Byte 9									
Byte 10	Slot 0	STXPBS001 User Parameter							
Byte 11									
Byte 12	Slot 1	ST2314 Parameter							
Byte 13									
Byte 14	Slot 2	ST2318 Parameter							
Byte 15									
Byte 16	Slot 3								
Byte 17									
Byte 18		ST4112 Parameter							
Byte 19									
Byte 20									
Byte 21									
Byte 22	Slot 5	ST3702 Parameter							
Byte 23									
Byte 24	Slot 6								
Byte 25		ST221F Parameter							
Byte 26									
Byte 27									

Note: The "STXPBS001 User Parameter" size is 5 bytes instead of 2 Bytes.

Example of Input Process Image Map for STXPBS*

Input image data depends on slot position and IO Module data type.

■ For example: Slot configuration
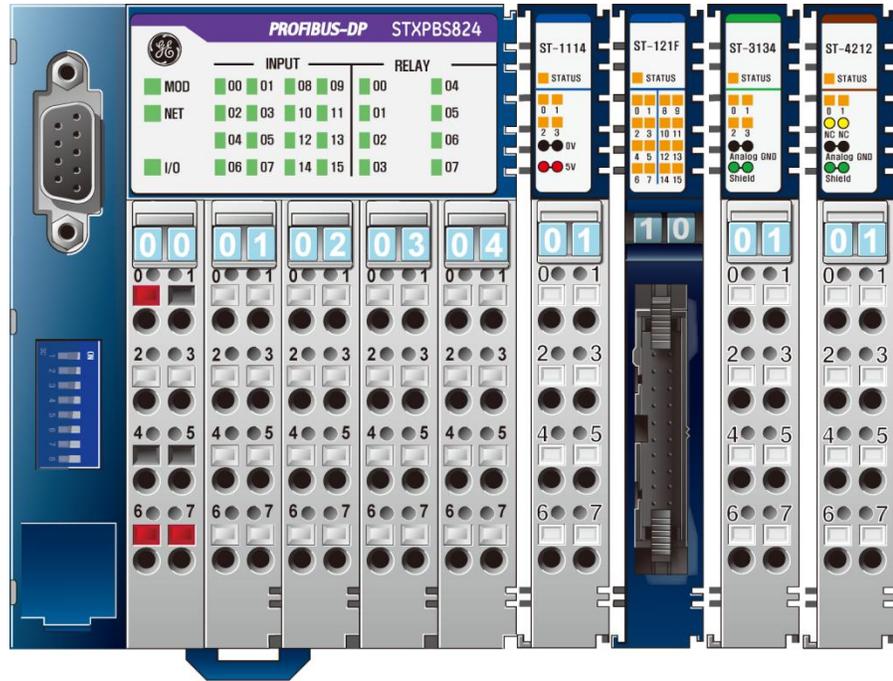
Figure 34: Slot Configuration

The following table lists the slot number and module description.

Table 29: Slot number and Module Description

Slot Address	Module Description
#0	STXPBS032 32-discrete input (4byte)
#1	4-discrete Input (4 bit)
#2	16-discrete Input (2 byte)
#3	4-analog Input (4 word)
#4	2-analog output (2 word)

■ Input Process Image Mode#0 (Uncompressed Input Processing Data)

Table 30: Input Process Image Mode

Byte	Slot #	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	0 (AT2)	1st input byte (Base IO)							
Byte 1		2nd input byte (Base IO)							
Byte 2		3rd input byte (Base IO)							
Byte 3		4th input byte (Base IO)							
Byte 4	1	Empty, Always 0				Discrete Input 4 points (Slot# 1)			
Byte 5	2	Discrete Input low 8 pts (Slot#2)							
Byte 6		Discrete Input high 8 pts (Slot#2)							
Byte 7	3	Analog Input Ch0 low byte (Slot#3)							
Byte 8		Analog Input Ch0 high byte (Slot#3)							
Byte 9		Analog Input Ch1 low byte (Slot#3)							
Byte 10		Analog Input Ch1 high byte (Slot#3)							
Byte 11		Analog Input Ch2 low byte (Slot#3)							
Byte 12		Analog Input Ch2 high byte (Slot#3)							
Byte 13		Analog Input Ch3 low byte (Slot#3)							
Byte 14		Analog Input Ch3 high byte (Slot#3)							

*Example of Output Process Image Map for STXPBS**

■ For example: Slot configuration
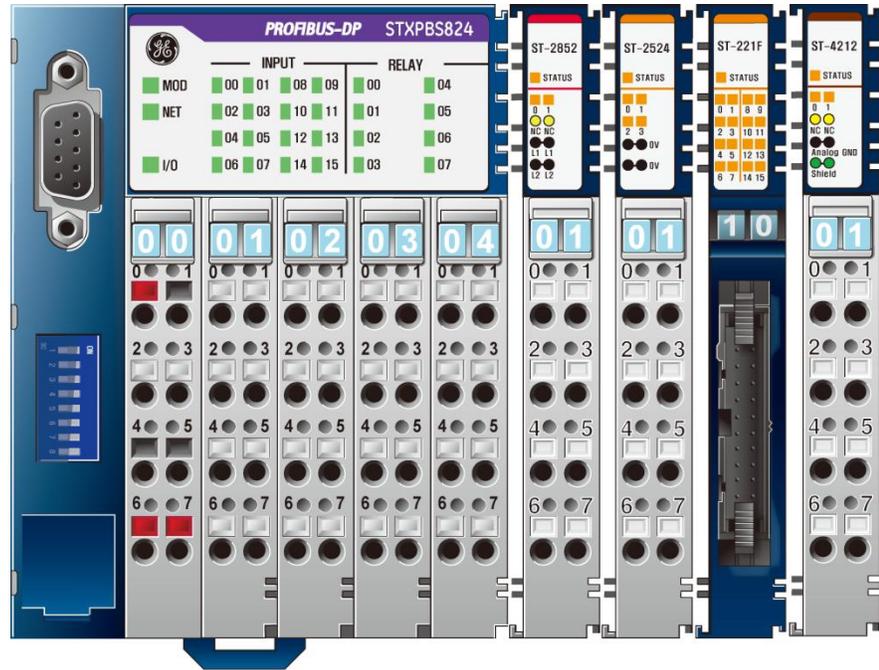
Figure 35: Slot Configuration

The following table lists the slot number and module description.

Table 31: Slot number and Module Description

Slot Address	*Module Description*
#0	STXPBS032 32-discrete input (4 byte)
#1	2-discrete Input (2 bit)
#2	4-discrete Input (4 bit)
#3	16-discrete output (2 byte)
#4	2-analog output (2 word)

■ Output Process Image Mode#0 (Uncompressed Output Processing Data)

Table 32: Output Process Image Mode

Byte	Slot #	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	0 (AT2)	1st output byte (Base IO)							
Byte 1		2nd output byte (Base IO)							
Byte 2		3rd output byte (Base IO)							
Byte 3		4th output byte (Base IO)							
Byte 4	1	Empty, Don't care						Discrete Output 2 points (Slot# 1)	
Byte 5	2	Empty, Don't care				Discrete Output 4 points (Slot#2)			
Byte 6	3	Discrete Output low 8 pts (Slot#3)							
Byte 7		Discrete Output high 8 pts (Slot#3)							
Byte 8	4	Analog Output Ch0 low byte (Slot#4)							
Byte 9		Analog Output Ch0 high byte (Slot#4)							
Byte 10		Analog Output Ch1 low byte (Slot#4)							
Byte 11		Analog Output Ch1 high byte (Slot#4)							

STXPBS001: DPV1 Service Specification

Supported Service

- MSAC1 Read
- MSAC1 Write
- MSAC2 Initiate / MSAC2 Abort
- MSAC2 Read
- MSAC2 Write

MSAC1 Read (PROFIBUS-DP Extensions to EN 50170)

- MSAC1 Read Request

Parameter	Description
Remote Address	Slave Address (0~99)
Slot Number	Slot Number (0~32), 0 : STXPBS001
Index	1 : Parameter 2 : Memory ... 252: IO Module Vendor code (Not used by user) 253: Revision (Not used by user) 254: Vendor code (Not used by user)
Length	1~128

- MSAC1 Read Confirm (+)

Parameter	Description
Remote Address	Slave Address (0~99)
Length	1~128
Data	User Data

- MSAC1 Read Confirm (-)

Parameter	Description
Remote Address	Slave Address (0~99)
Error Decode	-
Error code 1	-
Error code 2	Reserved

MSAC1 Write (PROFIBUS-DP Extensions to EN 50170)

■   MSAC1 Write Request

Parameter	Description
Remote Address	Slave Address (0~99)
Slot Number	Slot Number (0~32), 0: STXPBS001
Index	1: Parameter 2: Memory
Length	1~128
Data	1. Parameter 2. Memory ■ Data[0]: Offset Low ■ Data[1]: Offset High ■ Data[2]…: User Data 3. Revision(Not used by user) ■ Data[0]: 0xAE ■ Data[1]: 0xBE ■ Data[2]: 0xCE ■ Data[3]: 0xDE ■ Data[4]: 4. Vendor(Not used by user) ■ Data[0]: 0xAE ■ Data[1]: 0xBE ■ Data[2]: 0xCE ■ Data[3]: 0xDE ■ Data[4]:

■   MSAC1 Write Confirm (+)

Parameter	Description
Remote Address	Slave Address (0~99)
Length	1~128

■   MSAC1 Write Confirm (-)

Parameter	Description
Remote Address	Slave Address (0~99)
Error Decode	-
Error code 1	-
Error code 2	Reserved

MSAC2 Initiate (PROFIBUS-DP Extensions to EN 50170)

■ MSAC2 Initiate Request

Parameter	Description
C_Ref	PROFIBUS-DP Extensions to EN50170
Rem_Add	Slave station address(0~99)
Send Timeout	PROFIBUS-DP Extensions to EN50170
Features_Supported_1	0x03
Features_Supported_2	Reserved
Profile_Features_Supported_1	PROFIBUS-DP Extensions to EN50170
Profile_Features_Supported_2	PROFIBUS-DP Extensions to EN50170
Profile_Ident_Number	PROFIBUS-DP Extensions to EN50170
Add_Addr_Param	PROFIBUS-DP Extensions to EN50170 (S-Addr = 0, D-Addr = 0)

■ MSAC2 Initiate Confirm (+)

Parameter	Description
C_Ref	PROFIBUS-DP Extensions to EN50170
Features_Supported_1	PROFIBUS-DP Extensions to EN50170
Features_Supported_2	PROFIBUS-DP Extensions to EN50170
Profile_Features_Supported_1	0
Profile_Features_Supported_2	0
Profile_Ident_Number	0
Add_Addr_Param	PROFIBUS-DP Extensions to EN50170 (S-Addr = 0, D-Addr = 0)

■ MSAC2 Initiate Confirm (-)

Parameter	Description
Remote Address	Communication Reference
Error Decode	-
Error code 1	-
Error code 2	Reserved

MSAC2 Abort (PROFIBUS-DP Extensions to EN 50170)

- MSAC2 Initiate Request

Parameter	Description
C_Ref	PROFIBUS-DP Extensions to EN50170
Subnet	Slave station address
Instance	PROFIBUS-DP Extensions to EN50170
Reason_code	PROFIBUS-DP Extensions to EN50170 MSAC2_Read,MSAC2_Write

MSAC2 Read (PROFIBUS-DP Extensions to EN 50170)

- MSAC2 Read Request

Parameter	Description
C_Ref	Communication-Reference
Slot Number	Slot Number (0~32), 0: STXPBS001
Index	1: Parameter 2: Memory 252: IO Module Vendor code (Not used by user) 253: Revision (Not used by user) 254: Vendor code (Not used by user)
Length	1~128

- MSAC2 Read Confirm (+)

Parameter	Description
C_Ref	Communication-Reference
Length	1~128
Data	-

- MSAC2 Read Confirm (-)

Parameter	Description
Remote Address	Communication-Reference
Error Decode	-
Error code 1	-
Error code 2	Reserved

MSAC2 Write (PROFIBUS-DP Extensions to EN 50170)

■   MSAC2 Write Request

Parameter	*Description*
Remote Address	Slave Address (0~99)
Slot Number	Slot Number (0~32), 0: STXPBS001
Index	1: Parameter 2: Memory
Length	1~128
Data	1. Parameter 2. Memory ■ Data[0]: Offset Low ■ Data[1]: Offset High ■ Data[2]…: User Data 3. Revision ■ Data[0]: 0xAE ■ Data[1]: 0xBE ■ Data[2]: 0xCE ■ Data[3]: 0xDE ■ Data[4]: 4. Vendor ■ Data[0]: 0xAE ■ Data[1]: 0xBE ■ Data[2]: 0xCE ■ Data[3]: 0xDE ■ Data[4]:

■   MSAC2 Write Confirm (+)

Parameter	*Description*
Remote Address	Communication-Reference
Length	1~128

■   MSAC2 Write Confirm (-)

Parameter	*Description*
Remote Address	Communication-Reference
Error Decode	-
Error code 1	-
Error code 2	Reserved

Error Decode (PROFIBUS-DP Extensions to EN 50170)

- 0~127 : Reserved
- 128 : DPV1
- 129~253 : Reserved
- 254 : FMS
- 255 : HART

Error Code_1 (PROFIBUS-DP Extensions to EN 50170)

Bit	7	6	5	4	3	2	1	0

	■ Error Class
	  − 0xA : Application class
					■ Error code
					  − 0: Read Error
					  − 1: Write Error
					  − 2: Module Failure
					  − 3 ~7: Reserved
					  − 8: Version conflict
					  − 9: Feature not supported
					  − 10~15: User specific			

	■ Error Class
	  − 0xB : Access class
					■ Error code
					  − 0: Invalid index
					  − 1: Write length error
					  − 2: Invalid slot
					  − 3: Type conflict
					  − 4: Invalid area
					  − 5: state conflict
					  − 6: access denied
					  − 7: invalid range
					  − 8: invalid parameter
					  − 9: invalid type
					  − 10~15: User specific			

	■ Error Class
	  − 0xC : Resource class
					■ Error code
					  − 0: read constrain conflict
					  − 1: Write constrain conflict
					  − 2: Resource busy
					  − 3 Resource unavailable
					  − 4 ~7: Reserved
					  − 8~15: User specific			

Chapter

	■ Error Class	■ Error code
	− 0xD : STXPBS001 Specific Class	− 1: Slot Parameter write error
		− 2: Read memory error
		− 3: Write memory error

Diagnostics

Byte	*Item*	*Description*
0	Station status 0	PROFIBUS Standard Diagnostic
1	Station status 0	
2	Station status 0	
3	Master Address	
4	PNO Ident Number High	
5	PNO Ident Number Low	
6	ID Diagnostic Header	Extended Diagnostic (ID Related Diagnostic)
7	Diagnostic allocation (Slot0~7)	
8	Diagnostic allocation (Slot8~15)	
9	Diagnostic allocation (Slot16~23)	
10	Diagnostic allocation (Slot24~31)	
11	Diagnostic allocation (Slot32~39)	
12	Reserved	
13		
14		
15	Device Status Diagnostic Header	Extended Diagnostic (Device Status)
16	Status Type (0xA0:Manufacture-specific)	
17	Slot Number	
18	Status differentiation (0:No differentiation)	
19	Status message	
20	Reserved	

■ ID Related Diagnostic

Byte	*Bit 7*	*Bit 6*	*Bit 5*	*Bit 4*	*Bit 3*	*Bit 2*	*Bit 1*	*Bit 0*
6	ID Diagnostic Header (0x45)							
7	Slot 7	Slot 6	Slot 5	Slot 4	Slot 3	Slot 2	Slot 1	STXPB S001
8	Slot 15	Slot 14	Slot 13	Slot 12	Slot 11	Slot 10	Slot 9	Slot 8
9	Slot 23	Slot 22	Slot 21	Slot 20	Slot 19	Slot 18	Slot 17	Slot 16
10	Slot 31	Slot 30	Slot 29	Slot 28	Slot 27	Slot 26	Slot 25	Slot 24
11	Reserved							Slot 32

- Device Related Diagnostic (Status message byte)
    - 0x21: No response from expansion slot
    - 0x22: Response error (Type)
    - 0x23: Response error (Slot Number)
    - 0x24: Response error (Length)
    - 0x25: Response error (Protocol)
    - 0x26: Response error (ID)
    - 0x27: Response error (Function code)
    - 0x28: Response error (CRC)
    - 0x29: Response error (Data)
    - 0x2A: Response error (Sequence)
    - 0x2B: STXPBS001 Request error
    - 0x2C: STXPBS001 Broadcasting error
    - 0x41: RSTi bus Rx Timeout
    - 0x42: Faulty input data (Type)
    - 0x43: Faulty input data (Slot number)
    - 0x44: Faulty input data (Length)
    - 0x45: Faulty input data (CRC)
    - 0x46: Faulty input data (Slot diag.)
    - 0x47: Input update timeout
    - 0x48: RSTi bus token fault
    - 0xC1: Resource error of slot
    - 0xC2: Not supported service from slot
    - 0xC3: Attribute error from slot
    - 0xC4: Slot is already in this mode
    - 0xC5: Object conflict from slot
    - 0xC6: Attribute not settable
    - 0xC7: Insufficient data
    - 0xC8: Not supported attribute
    - 0xC9: Too much data
    - 0xCA: Object not exist
    - 0xCB: Invalid slot parameter
    - 0xCC: Store fail
    - 0xCD: Access denied
    - 0xCE: RSTi bus token error
    - 0xCF: Object not exist
    - 0xD0: Slot memory size over
    - 0xE1: No expansion slot
    - 0xE2: Too many slots
    - 0xE3: Input data size overflow

- − 0xE4: Output data size overflow
- − 0xE5: Invalid product code
- − 0xE6: Set output-offset error
- − 0xE7: Set slot active-flag error
- − 0xE8: Set slot parameter error
- − 0xE9: Set RSTi bus parameter error
- − 0xEA: Slot warm-start error
- − 0xEB: Get slot catalog number error
- − 0xEC: Invalid slot request
- − 0xED: Firmware fault
- − 0xEE: Set word-type error
- − 0xF0: Vendor code fault
- − 0xFF: Not ready

Diagnostics

How to diagnose by LED Indicator

The following table lists the LED Color, status, and the action to be taken during troubleshooting.

Table 33: LED Indicators

Color	*Status*	*Action*
All LED turns off	− No power	− Check main power Cable
	− System power is not supplied.	− Contact Sales team and send module for repair.
MOD LED flashes green	− Failure of initialization EEPROM parameter.	− Contact Sales team and send module for repair.
MOD LED flashes red	− Excess of IO Modules connected − Excess of IO size − Wrong IO composition − Occurrence of EEPROM checksum error	− Use IO modules up to 32. − Compose that IO total size is not excess. − Check composition I/O Module
MOD LED is red	− Wrong address ID − Occurrence critical error in firmware	− Contact Sales team and send module for repair.
I/O LED turns off	− Failure of realization IO Module − None IO Module	− Check connector status both RSTi series and IO module.
I/O LED flashes red	Failure of configuration baud rate	− Check communication cable with Master − Check power for master.
	Failure of initialization I/O	− Use IO modules up to 32 − Compose that IO total size is not excess.
		RSTi series notice unidentified IO module ID. Check status of IO module.
I/O LED is red	Failure of exchanging I/O data	Check status of IO connection.
NET LED turns off	Failure of communication with Master	Check main power for master and communication cable.
NET LED flashed green	Failure of exchanging data with master	Check status in software for Master configuration.
NET LED is red	Communication connecting lost	Check BUS line cable for connection with master.
		Check duplication address.

How to diagnose when device cannot communicate to network

■ Inspection of wrong or omission cable connection

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       – Check status of cable connection for each node.

       – Check that color matches between connector and cable.

       – Check wire omission.

- Terminator resistor
  - If terminator resistor is not installed, install terminator resistor.
  - Check location of terminator resistor.
- Configuration of Node address
  - Check duplication node address.
- Configuration of Master
  - Check configuration of master.
  - Check whether to download.
  - Check composition is right
- Configuration of communication baud rate
- I/O size
- Configuration of each nodes
- Ground and environment
  - Check ground is contacted
  - Check environment factor (temperature, humidity, and so on) is less than regular limit.

PROFINET Network Adapters

The Adapter, STXPNS001 is connected with PROFINET by means of RS-45 Connector and supports PROFINET I/O RT Protocol.

STXPNS001 works as PROFINET IO Device in the PROFINET I/O Controller/Device environment. It can control a maximum of 2,024 digital input/ 2,024 digital output, or 64analog input/64 analog output channels.

 It is configured into the PROFINET connected with EtherNet by means of Line or Star topology. The station depends on EtherNet Specification.

STXPNS001

Interface and Data

The following screenshot shows the interface design for STXPNS001.
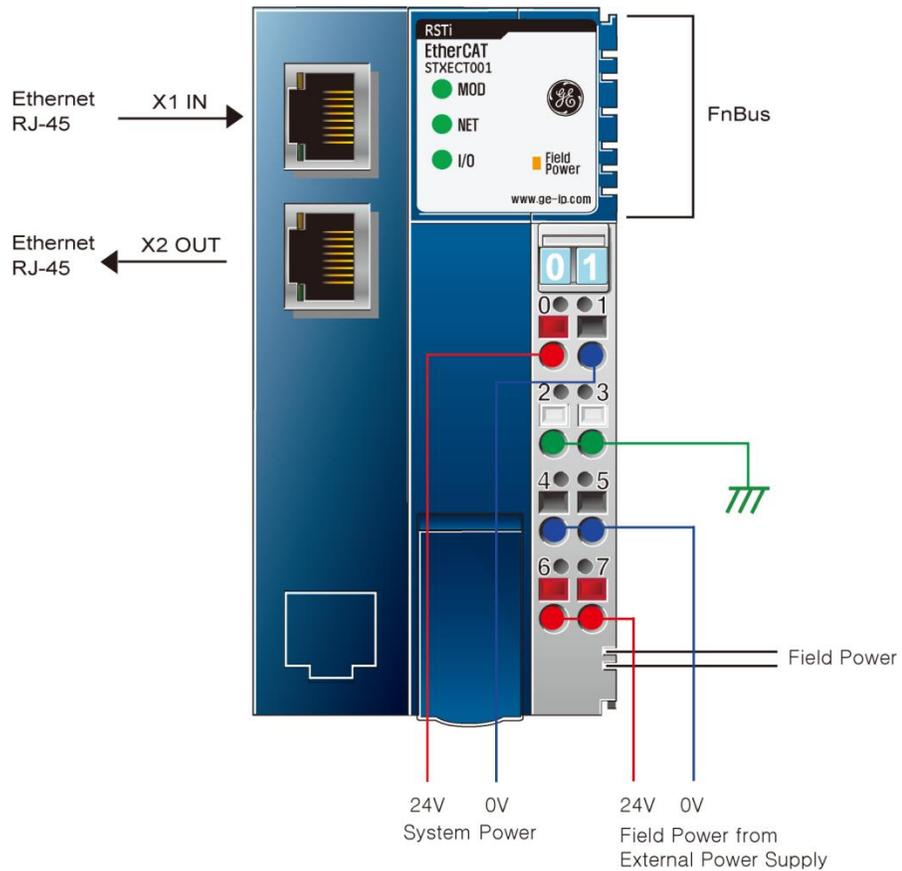
Figure 36: PROFINET Network Adaptor Module: STXPNS001

The following table lists the pin numbers and their description for STXPNS001.

Table 34: STXPNS001: Pin Description

Pin Number	Description	Pin Number	Description
0	Input Channel 0	1	Input Channel 1
2	Input Channel 2	3	Input Channel 3
4	Input Channel Common (0V)	5	Input Channel Common (0V)
6	Chassis Ground/Shield	7	Chassis Ground/Shield

Specification

The following table describes the Interface Specifications and General Specifications of STXPNS001.

Table 35: STXPNS001: General and Environment Specifications

Items	*Specification*
Communication Interface Specifications	
Protocol	PROFINET IO RT
Station type	PROFINET IO Device
Topology	Line or Star topology
Number of Nodes	Limited by the IP address
Number of Expansion I/O slots	Maximum 32 slots
I/O Data Size	252 Bytes inputs/252 Bytes outputs
Indicators	1 green/red MOD Status Indicator 1 green/red NET Status Indicator 1 green/red IO Status Indicator 1 green Port1 Link/Active Status Indicator 1 green Port2 Link/Active Status Indicator 1 green Field Power Status indicator
Communication Rate	10*/100Mbps *10Mbps for FTP only
Module Location	Starter module - left side of RSTi system
General Specification	
System Power	Supply voltage : 24Vdc nominal Supply voltage range : 11~28.8Vdc Protection : Output current limit (Minimum 1.5A) Reverse polarity protection
Power Dissipation	115mA typical @24Vdc
Current for I/O Module	1.5A @5Vdc
Isolation	System power to internal logic: Non-isolation System power to I/O driver: Isolation
Field Power	Supply voltage: 24Vdc nominal Supply voltage range : 11~28.8Vdc
Current in Jumper Contacts	DC 10A Maximum
Weight	150g
Module Size	45mm x 99mm x 70mm
Environment Condition	See "Environmental Specifications" in Appendix A.

LED Indicators

Module Status LED (MOD)

Table 36: STXPNS001: Module Status LED

Color	Status	Function
Off	Power off H/W Fault	No power is supplied to the unit.
Green	Invalid boot image header (Flash), ROM Boot loader	The unit has occurred unrecoverable fault in self-testing. − Firmware fault
Flashing Red (0.5S)		Invalid RAM Image
Flashing Red (0.1S)		OS Fatal error is occurred
Flashing Green (0.1S)		OS Handle Unexpected Exceptions
Green On	Normal Operation	The unit is operating in normal condition.

Network Status LED (NET)

Table 37: STXPNS001: Network Status LED

Color	Status	Function
Off	Power off No Connection has been established with IO-controller.	Device is not on-line or may not be powered.
Flashing Red (0.1s)	Invalid Configuration	Invalid Configuration
Flashing Green (0.1s)	Wait parameters	PROFINET IO connection has been established.
Red		PROFINET IO connection is aborted after a data exchange has taken place.
Flashing Red (0.5s)		PROFINET IO connection is aborted before a data exchange has taken place.
Flashing Green (0.5s)		PROFINET IO Data Exchange stop
Green		PROFINET IO Data Exchange Run

IO Module Status LED (I/O)

Table 38: STXPNS001: IO Status LED

Color	Status	Function
Off	Not Powered No IO Module	Device has no IO module or may not be powered
Flashing Green	RSTi Bus On-line	RSTi Bus is on-line but does not exchanging I/O data –
Green	RSTi Bus Connection	IO module is connected and run exchanging I/O data
Flashing Red	RSTi Bus connection fault	One or more IO module occurred in fault state. – Changed IO module configuration. – RSTi Bus communication failure.
Red	IO Configuration Failed	Failed to initialize IO module – Detected invalid IO module ID. – Overflowed Input / Output Size – Too many IO module – Initial protocol failure – Mismatch vendor code between adapter and IO module.

Field Power Status LED

Table 39: STXPNS001: Field Power Status LED

Color	Status	Function
Off	Not Supplied Field Power	Not supplied 24Vdc field power
Green	Supplied Field Power	Supplied 24Vdc field power

Port1, Port2: Link and Activity

Table 40: STXPNS001: Port1, Port2: Link and Activity

Color	Function
Green On	Link is up (Physical connection is established)
Flashing Green	Active is present
Off	Link is down

PROFINET Module Installation

STXPNS001 Dimension

The following screenshot displays the dimension for STXPNS001.
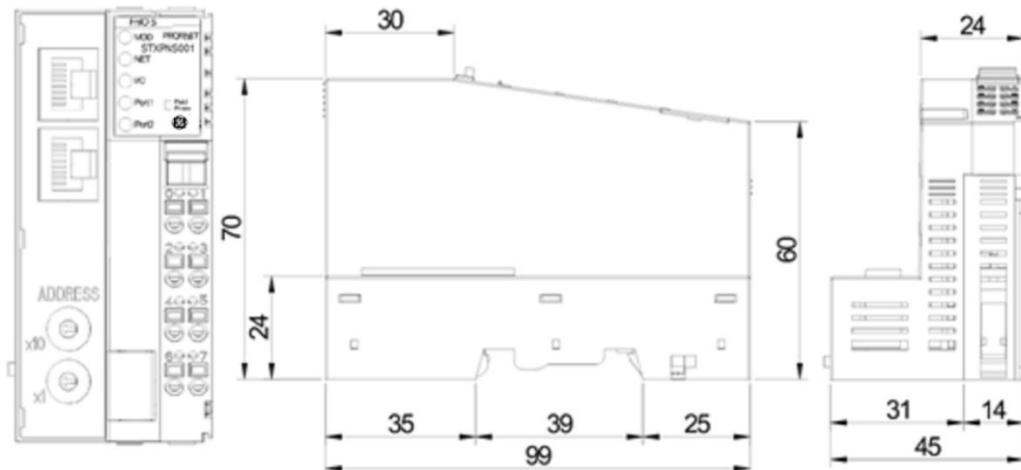
Figure 37: Dimension for STXPNS001

Mechanical Set Up

Total Expansion

The number of the module assembly that can be connected is 32. So the maximum length is 426mm Exception.

ST-2748 is expected to calculate maximum length because it is a double width module.

Plugging and Removing the Components

Caution

Before work is done on the components, the voltage supply must be turned off.

As the above screenshot indicated below, in order to safeguard the RSTi module from jamming, it should be fixed onto the DIN rail with locking level. To do so, fold on the upper of the locking lever.

To pull out the RSTi module, unfold the locking lever as shown below.
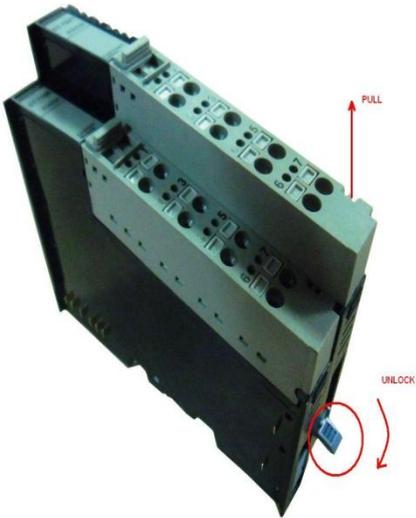
Figure 38: Removing RSTi module from DIN rail

Internal RSTi Bus/Field Power Contacts

Communication between the RSTi series and the IO module as well as system/field power supply of the bus modules is carried out by means of the internal bus. It is comprised of 6 data pin and 2 field power pin.
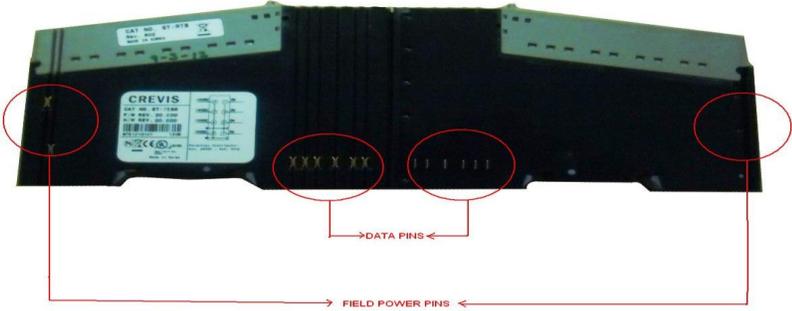
Figure 39: Internal RSTi Bus

```
Caution
```

Do not touch data and field power pins, in order to avoid soiling and damage by ESD noise.

RSTi bus Specification

RSTi bus System

The following screenshot displays the RSTi bus system.
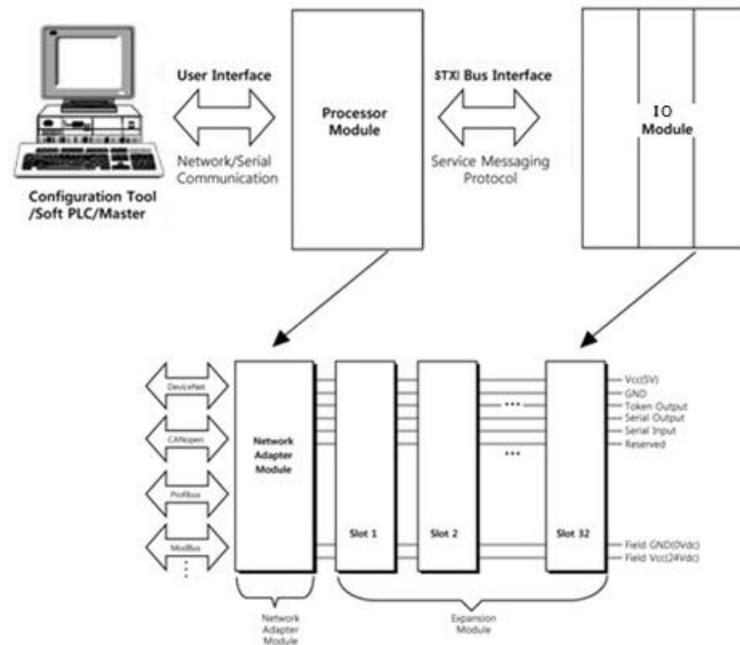
Figure 40: RSTi bus System

- **Network Adapter Module**: The Network Adapter Module forms the link between the field bus and the field devices with the IO Modules. The connection to different field bus systems can be established by each of the corresponding Network Adapter Module, for example, for SyncNet, PROFIBUS, CANopen, DeviceNet, Ethernet/IP, CC-Link, MODBUS/Serial, MODBUS/TCP, and so on.
- **IO Module**: The IO Modules are supported by a variety of input and output field devices. There are digital and analog input/output modules and special function modules.
- **Two types of RSTi bus Message**:
  - Service Messaging
  - I/O Messaging

RSTi bus Pin Description

The following table describes the RSTi bus pin and description.

Table 41: RSTi bus Pin and Description

No.	Name	Description
9.	Vcc	System supply voltage (5Vdc)
10.	GND	System Ground
11.	Token Output	Token output port of Processor module
12.	Serial Output	Transmitter output port of Processor module
13.	Serial Input	Receiver input port of Processor module
14.	Reserved	Reserved for bypass Token
15.	Field GND	Field Ground
16.	Field Vcc	Field supply voltage (24Vdc)

PROFINET Communication Interface

PROFINET Communication Interface for STXPNS001
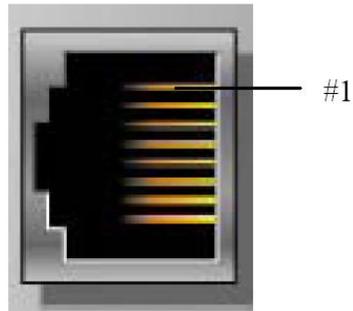
Figure 41: Shielded RJ-45 Socket

The following table describes the Signal Name and Description.

Table 42: Signal name and Description

RJ-45	Signal Name	Description
10.	TD+	Transmit +
11.	TD-	Transmit -
12.	RD+	Receive +
13.	-	
14.	-	
15.	RD-	Receive -
16.	-	
17.	-	
Case	Shield	

Warning

The use of an incorrect supply voltage or frequency can cause severe damage to the component.

PROFINET Parameterization by Rotary Switch

Table 43: Rotary switch: Values and Description

Value	Description	Factory Setting
0	− Name of the station will be read from flash memory. (For example,STXPNS001-1) − IP address will be read from flash memory.	Name of station : STXPNS001 − IP address:192.168.0.100 − Subnet mask: 255.255.255.0 − Gateway: 192.168.0.1
1~99	− Name of the station will be STXPNS001-xx. (xx is the value of Rotary Switch) − IP address will be read from flash memory.	

■ **When the rotary switch is not set to non-zero (1~99):**

If the decimal value of the rotary switch is not zero (0), the name of device will be fixed as "STXPNS001-xx" (xx: 1~99). You must put the fixed device name.
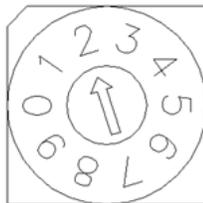
X 10 (MSD)
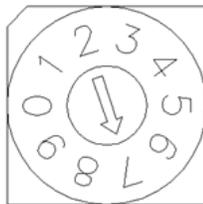
X 1 (LSD)

■ **When the rotary switch is not set to zero (0):**

If the decimal value of the rotary switch is set to zero (0), the device name will be read from non-volatile memory. You should put the same name as the name from non-volatile memory. If you want to read the name in non-volatile memory, please refer to Editing Ethernet nodes.

STXPNS001 Devices on a PROFINET subnet must have unique names. The device names must satisfy the following DNS naming conventions:

− Names are limited to a total of 127 characters (letters, numbers, dashes or dots).

− Any component part (that is, a character string between two dots) of the device name may only be up to 63 characters long.

- Names cannot contain any special characters such as umlauts, parentheses, underscores, forward or backward slashes, empty spaces, and so on. The dash is the only special character allowed.
- Names must not begin or end with the "-" or "." characters.
- Names must not have the format n.n.n.n (where n = 0...999).
- The device name must not start with numbers.
- Names must not begin with the character sequence "port-xyz-" (where x, y, z = 0...9).
- If you want to change the IP address in non-volatile memory, please refer to Configuration section for more details.

Device names are assigned to PROFINET IO device when the device is being set up and placed in operation for the first time ("commissioned").

The default name is "STXPNS001-SW" (see "Short Designation").
If several devices of the same type are arranged on the same PROFINET IO system, then PME/ Programing software automatically adds sequential number to the name from the GSD file. In this case, the second device has the extension "-1", the third one has the extension "-2", and so on.

- Communication Speed Setting
  - Refer to GEIP PROFINET master module settings to change the communication speed (GE-IP Profinet Controller User Manual- GFK-2571).

I/O Process Image Map

An IO module may have three types of data as I/O data, configuration parameter, and memory register. The data exchange between network adapter and IO modules is done by means of an I/O process image data by RSTi bus protocol.

The following screenshot shows the data flow between network adapter and IO modules.
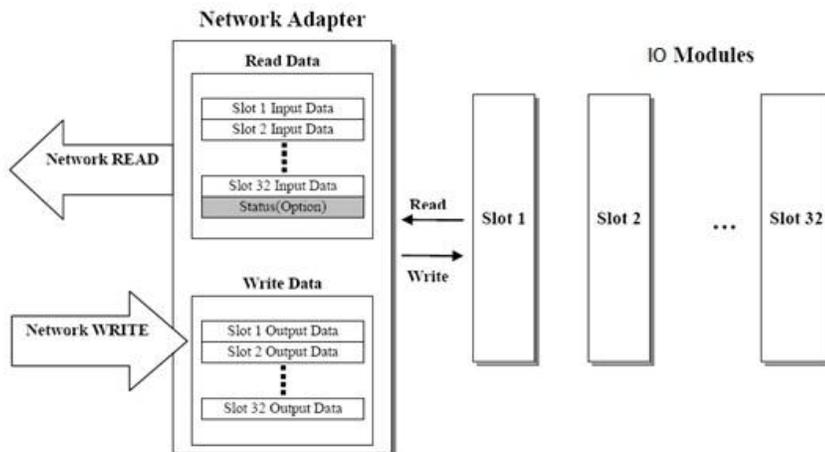
Figure 42: Data Flow between Network Adapter and IO Modules

STXPNS001 Parameter Settings

STXPNS001 Parameter

The following table describes the STXPNS001 parameter settings.

Table 44: STXPNS001: Parameter Setting and Description

Parameter	Setting	Description
Word data type	MOTOLORA *	Big Endian format(MSB-LSB)
	INTEL	Little Endian format(LSB-MSB)
Stop action	Clear output image to 0 *	All outputs are set to 0.
	Hold last valid output image	All Outputs hold the last valid output values.
	Depends on IO's fault action parameters	The communication between STXPNS001 and modules will be stopped and each module will control its IO Data according to the Fault Action selected for it.
Reaction on RSTi Bus error	Clear input image	The input values are cleared
	Hold last image	The input values hold the last valid values.
	Auto reset *	STXPNS001 performs reset.
	Disconnect PROFINET	Stop the communication with Controller.
* Default settings		

PROFINET Module Configuration

Configuring an I/O Station for PROFINET Communication

To configure I/O station, add a GE-IP Profinet master module at the desired slot in the RX3i PME project. Ensure that you have the latest GSDML file imported. Right click on master module and choose "Add IO Device". Select "STXPNS" for PROFINET Network adapter and Select "OK". For latest GSDML file, please visit GE-IP support site.
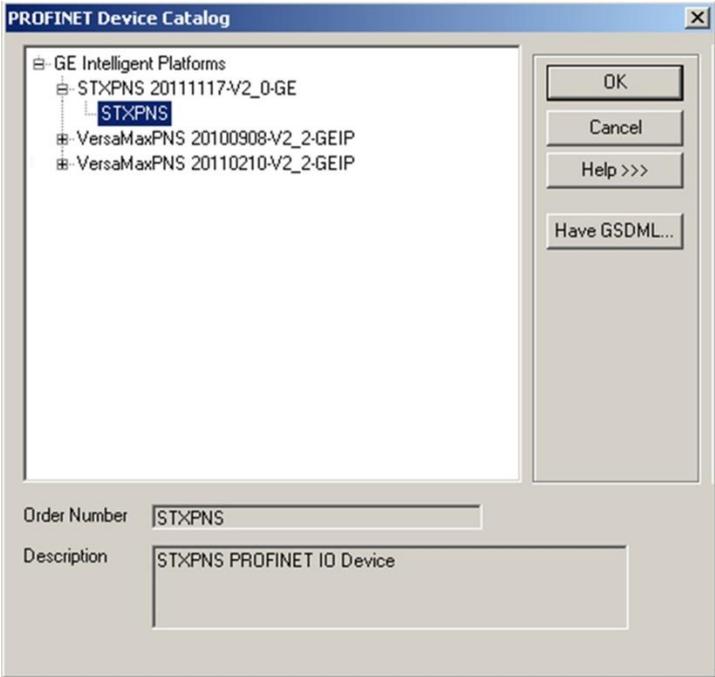
Figure 43: PROFINET Device Catalog

In order to add IO modules in this node, right click on recently added network adapter node and select "Change Module List"; a pop up window will open as shown below:
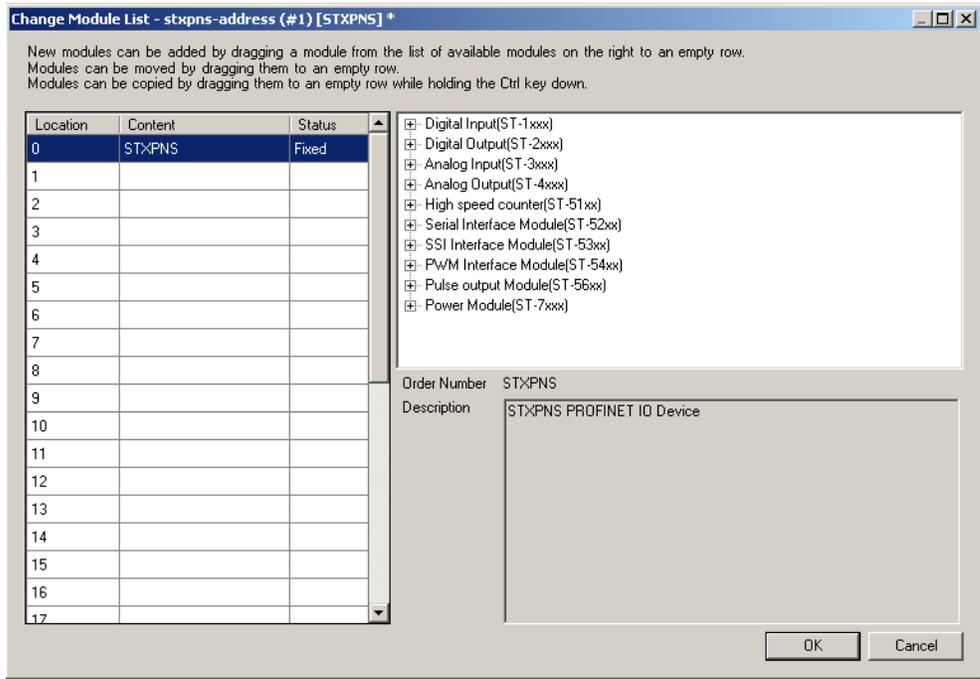
Figure 44: Change Module List

Now start adding the IO modules as per the physical setup; after you add all the desired IO modules, select "OK".

To configure Profinet network adapter configuration, right click on the Profinet adapter node and select "Configure", a window will open as shown below:
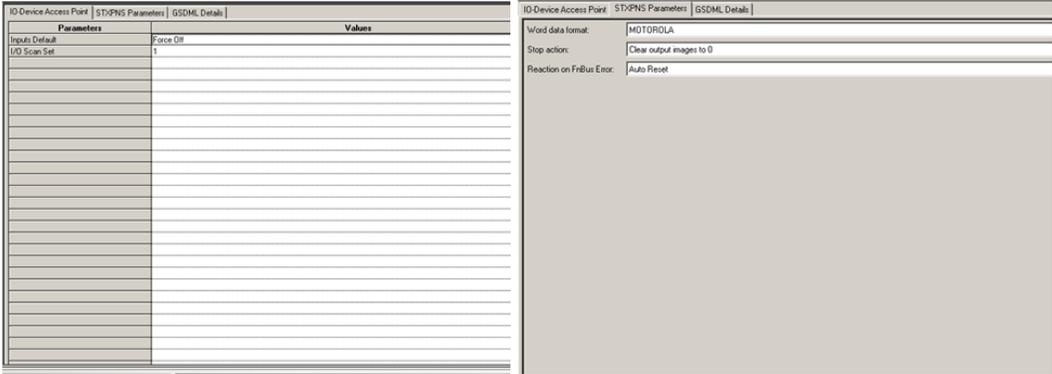
Figure 45: Configuring PROFINET Adapter

There are three tabs in this window IO Device Access point, STXPNS Parameters, and GSDML details.

Choose "STXPNS Parameters" for parameter settings. There are three options:

1. **Word Data Format**: The options are MOTOROLA & INTEL. MOTOROLA format is big endian; therefore ensure that the IO modules connected to the node are

configured with "False" for the swap bytes input for proper operation. INTEL format is little endian, therefore ensure that in the IO modules connected to the node are configured with "True" for the swap bytes input for proper operation.

2. **Stop Action**: If a network fault is detected within the specified watchdog time base, the outputs of a slot under test of I/O station will acquire output values as per the options specified in DP clear action. The options are:

   a. *Clear Output images to 0*: The communication between STXPNS001 and slots will run. All outputs of Slot will be cleared. The output value should be set to '0' but Bus will run (IO status LED would be green)

   b. *Hold Last Valid Output image*: The communication between STXPNS001 and slots will run. All outputs of Slot will hold last value but Bus run (IO status LED would be green)

   c. *Depends on IO Fault Action Parameters*: The communication between STXPNS001 and slots will be stopped. Slots will control IO Data by itself. The output value should be ON/OFF by Fault action which it is depended on IO fault action. Bus should be ready status (IO status LED would be blinked). In order to configure the I/O module for fault action, go to "Modules" tab and select properties. For example, I have used ST-4522. Upon network fault, a user can configure the Module action as shown below. Note that substitute value low or high denotes low or high byte values.

Settings	Module Parameters	GSDML Details
Fault action(Ch 0):	User specific value is switched	
Fault action(Ch 1):	User specific value is switched	
Ch0 Substitute value(Low Byte):	0	
Ch0 Substitute value(High Byte):	0	
Ch1 Substitute value(Low Byte):	0	
Ch1 Substitute value(High Byte):	0	
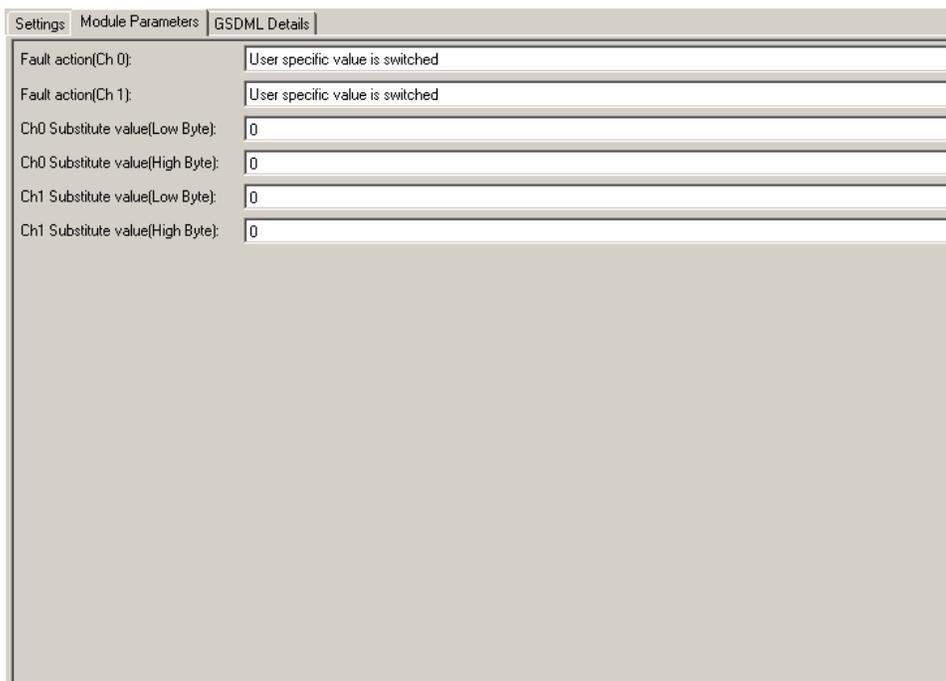
Figure 46: Module Parameters tab

3. **Reaction to Bus Error**: If Bus error is detected, the behavior of the network module will be as per the options selected below:

   a. *Clear Input Image*: Input values will be zero. NET LED will be Green. Network adaptor communication with master intact. IO LED will be red and fault "Loss/addition of device' logged in I/O fault table. Ensure that –

Force OFF- is set for the Inputs Default at "IO device Access point tab for successful operation.

b. *Hold Last Image*: Input values will be holding. NET LED will be Green. Network adaptor communication with master intact. IO LED will be red and fault "Loss/addition of device' logged in I/O fault table. Ensure that – Hold last State- is set for the Inputs Default at "IO device Access point tab for successful operation.

c. *Auto Reset*: This option will reset the profinet Adapter module.

d. *Disconnect Profinet*: Last input values will not hold. NET LED will be blinking Green. Network adaptor communication with master stops .IO LED will be red and fault "Loss/addition of device' logged in I/O fault table.

Note: Refer to the examples section in the power modules chapter in New Slice IO manual for more details about the IO node configuration using the different power modules.

STXPNS001 PROFINET IO Characteristics

Device Identity

Table 45: STXPNS001: Device Identity

Item	Value
Vendor	GE Intelligent Platforms
Vendor ID	0x015A
Product family	GEIP RSTi System
Device ID	0x9187
Details	STXPNS001 PROFINET IO Device

Device Access Point

Table 46: STXPNS001: Device Access Point

Item	Value
Module Ident Number	0x00009187
Details	STXPNS001 PROFINET IO Device
Vendor Name	GE Intelligent Platforms
Order Number	STXPNS001
Category	STXPNS Network Adapter
Software Version	V20.000
Hardware Version	V20.000
Maximal Input Length	252 Bytes
Maximal Output Length	252 Bytes
Physical Slots	0..32
Minimal Device Interval	4 ms
Based on	NS9360
DNS Compliant Name	STXPNS001-address
Supports Extended Assignment of IP Address	No
Fixed in Slots	0
Instance Field of the Object UUID	1
Supports Multiple Write	No
Requires IOPS/IOCS	Yes
Requires Engineering tool which supports at least GSDML Version	V2.0

Sub-slot of STXPNS001

Table 47: STXPNS001: Sub-slot

Item	Value
Sub-slot Number	Sub-slot Label
32768 (0x8000)	X1
32769 (0x8001)	X1 P1
32770 (0x8002)	X1 P2

For more Details of the GSDML file, click on "Tool chest", choose "Profinet Devices", select the desired profinet network adapter and hit F1 to see the contents of the GSDML file.

Diagnostics

How to diagnose by LED Indicator

The following table lists the LED Color, Status and the action to be taken while troubleshooting.

Table 48: LED Indicators

Color	*Status*	*Action*
All LED turns off	− No power	− Check main power Cable
	− System power is not supplied.	− Contact Sales team and send module for repair.
MOD LED flashes green	− Failure of initialization of EEPROM parameter.	− Contact Sales team and send module for repair.
MOD LED flashes red	− Excess of IO Modules connected − Excess of IO size − Wrong IO composition − Occurrence of EEPROM checksum error	− Use IO Modules up to 32. − Compose that IO total size is not excess. − Check composition I/O Module
MOD LED is red	− Wrong address ID − Occurrence of critical error in firmware	− Contact Sales team and send module for repair.
I/O LED turns off	− Failure of realization IO Module − No IO Module connected	− Check connector status both RSTi series and IO module.
I/O LED flashes red	Failure of configuration baud rate	− Check communication cable with Master − Check power for master.
	Failure of initialization I/O	− Use IO Modules up to 32. − Compose that IO total size is not excess.
		RSTi series notice unidentified IO module ID. Check status of IO module.
I/O LED is red	Failure of exchanging I/O data	Check status of IO connection.
NET LED turns off	Failure of communication with Master	Check main power for master and communication cable.
NET LED flashed green	Failure of exchanging data with master	Check status in software for Master configuration.
NET LED is red	Communication connecting lost	Check BUS line cable for connection with master.
		Check duplication address.

How to diagnose when device cannot communicate to network

■ Inspection of wrong or omission cable connection

- Check status of cable connection for each node.
- Check that all color matches between connector and cable.
- Check wire omission.

■ Terminator resistor
- If terminator resistor is not installed, install terminator resistor.
- Check location of terminator resistor.

■ Configuration of Node address
- Check duplication node address.

■ Configuration of Master
- Check configuration of master.
- Check whether to download.
- Check composition is right.

■ Configuration of communication baud rate
■ I/O size
■ Configuration of each nodes
■ Ground and environment
- Check ground is contacted.
- Check environment factor (temperature, humidity, and so on) is less than regular limit

IO Guide Pro

IOGuidePro is an application program for the RSTi family manufactured by GE Intelligent Platforms. With IOGuidePro, user can calculate power consumption in the system and make a system configuration virtually in online and offline mode respectively. It provides user with significant information to save time to configure a system.

IOGuidePro manual consists of the following:

- [Installation](): shows how to install and provides installed folder/file information.
- [User Interface](): shows several interfaces such as Menu, Toolbar, and Main Window.
- [Using IOGuidePro](): shows procedure, methods, and how to obtain the desired result.
- [Tools](): explains function of Bootp Server and Protocol Messenger.
- [Error Code](): explains the error listed in Validation Error Code and Application Error Code.

Notation

The notations used in this document are as given below:

1. A Procedure component in displayed in Italic.

   Example: *'Next '*

2. Note is displayed as below.

   Example: note that input Project Name.

Note: Project Name does not allow these characters: /: \" *? \\ < >.

3. Normally function explains as an example but in vacant case function does not support.

   Example: In case of Automatic Scan, choose from the options mentioned below for creating a new project.

Menu	File → Project File → New
Toolbar	📄
Shortcuts	Ctrl + N

4. Refer to Hyperlink

   Example: refer to 'System Requirement' Page

   📝 Refer to <u>System Requirement</u>

5. NA stands for 'Network Adapter'.

System Requirement

PC Requirement

Item	Description
OS	Windows NT 4.0 (SP>3), Windows 2000, XP, Vista and Windows 7
CPU	200MHz
Memory	64MB RAM
Hard Disk	60MB of free hard disk space
Communication	Ethernet Port, Serial Port

Note: 64bit OS has not been tested yet.

Offline Support

Item	Description
Only Offline Support	STXPBS001

Installation

This topic describes how to install IOGuidePro.

■　Setup: Installation Program consists of Wizard structure. The dialog in each page guides you how to proceed further.

■　Installed Files: Consists of details of files and folder after performing installation.

Setup

How to start

Automatically	Insert CD into Optical CD-ROM Drive.
Manually	Execute Windows Explorer and insert CD into Optical CD-ROM Drive, then double-click Setup.exe.

Setup Procedure
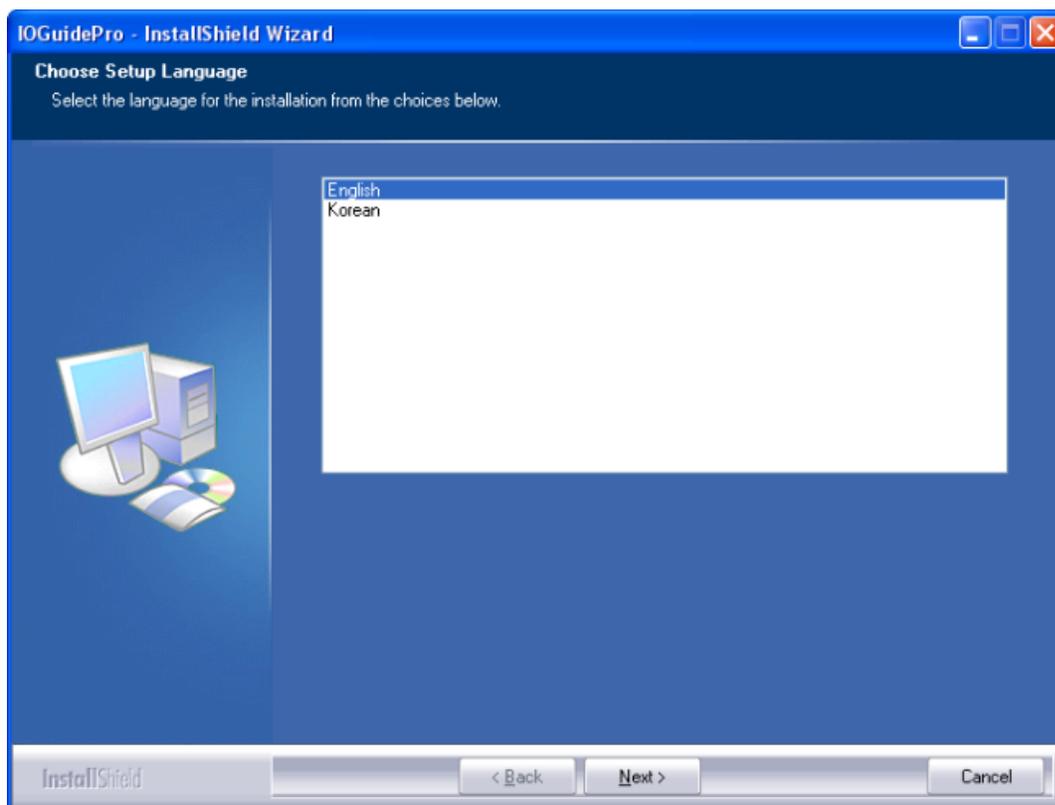
[Page 1] Select language and click *'Next '*.
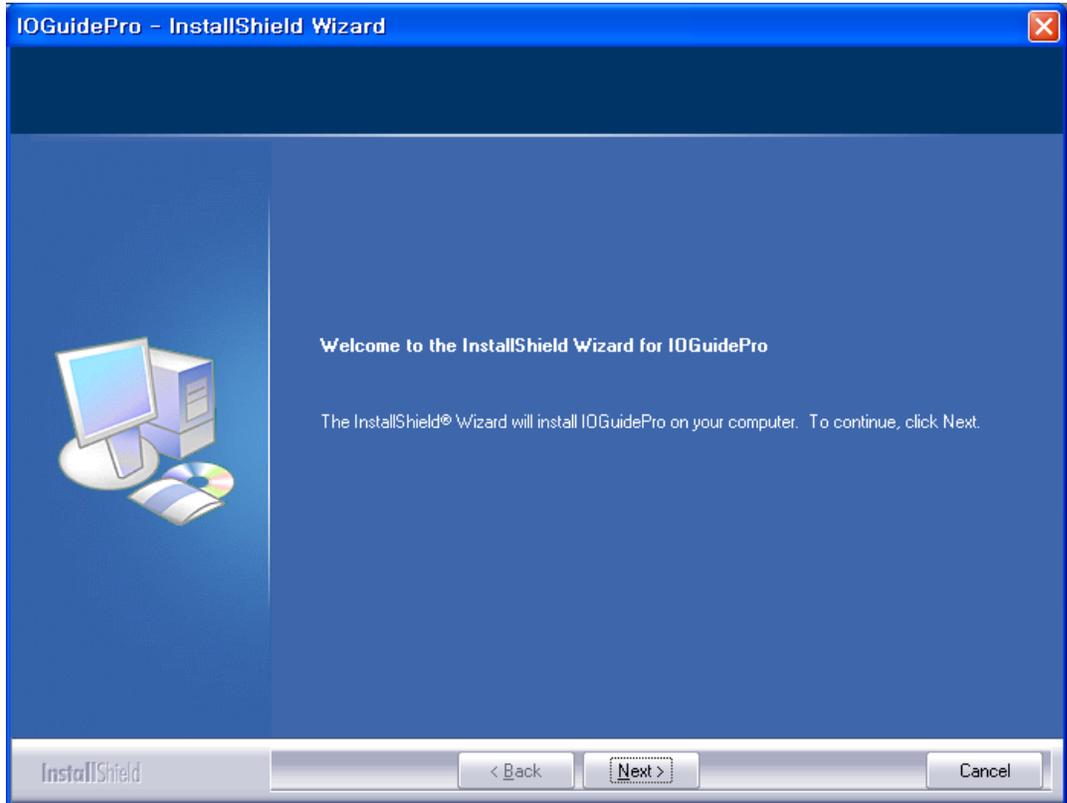
[Page 2] Click *'Next'*.
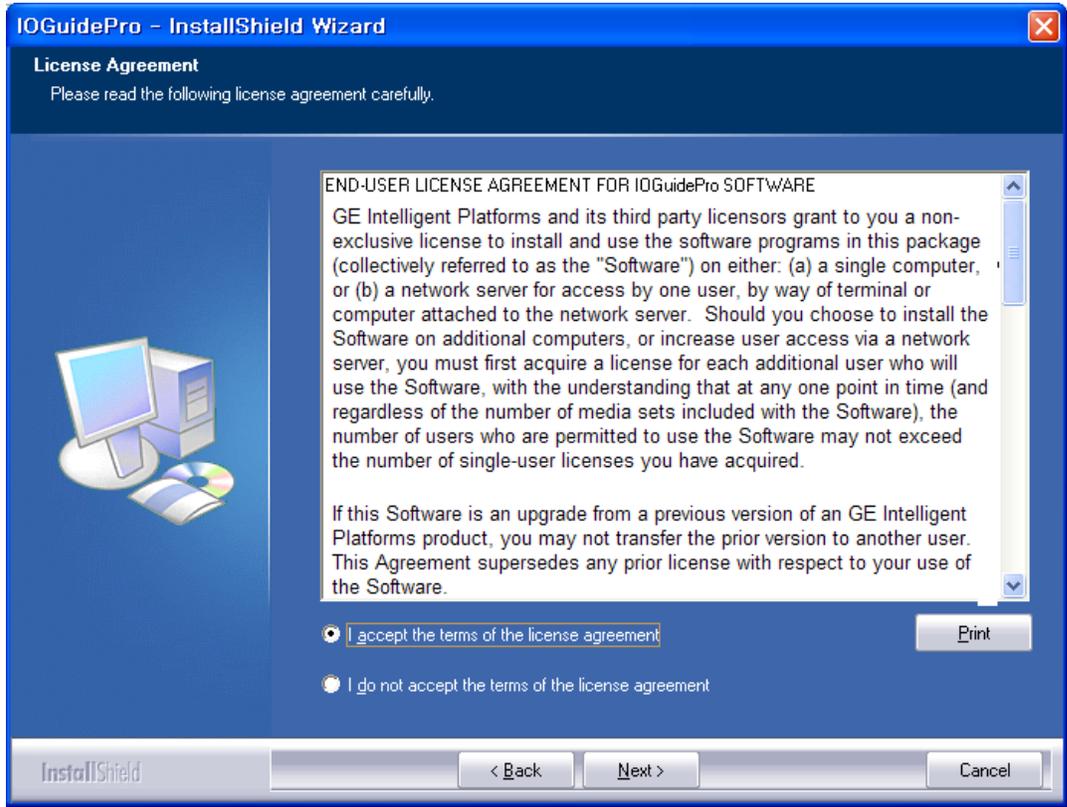
[Page 3] Choose *'I accept* ... ' and click *'Next* '.
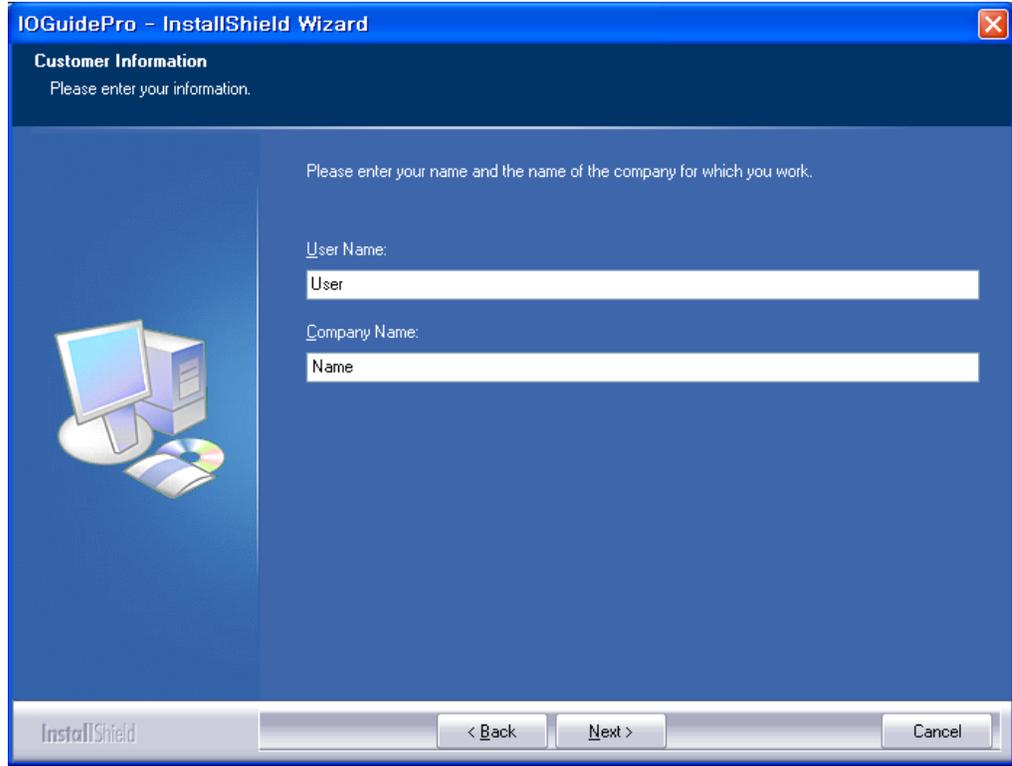
[Page 4] Enter the '*User Name*' and '*Company Name*' and then click '*Next* '.
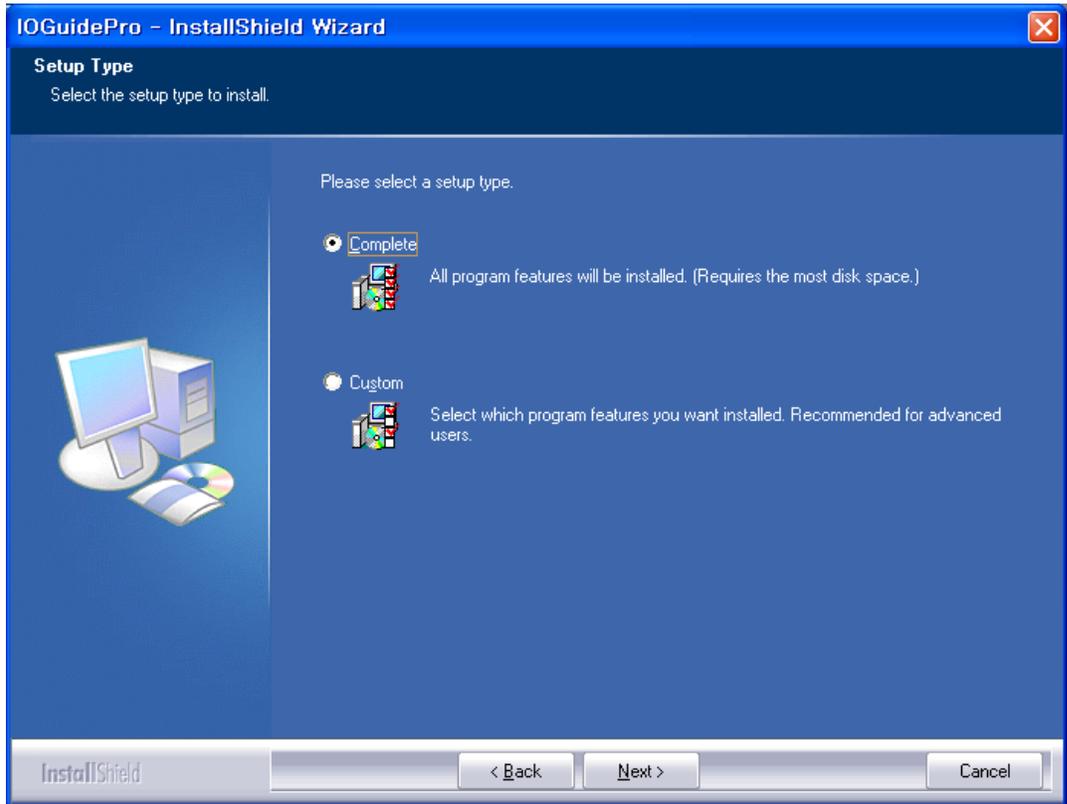
[Page 5] Choose '*Complete*' and click '*Next* '.
If necessary to change the install folder, choose '*Custom*' and then click '*Next*'.
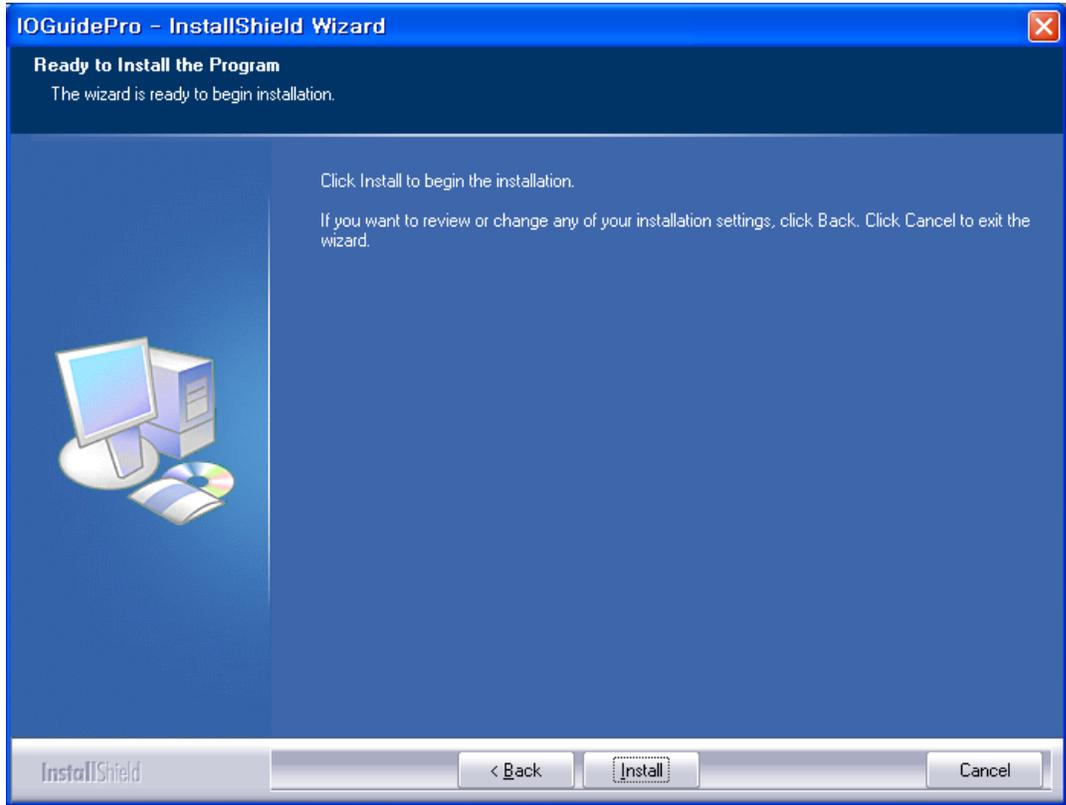
[Page 6] Click '*Install*'.
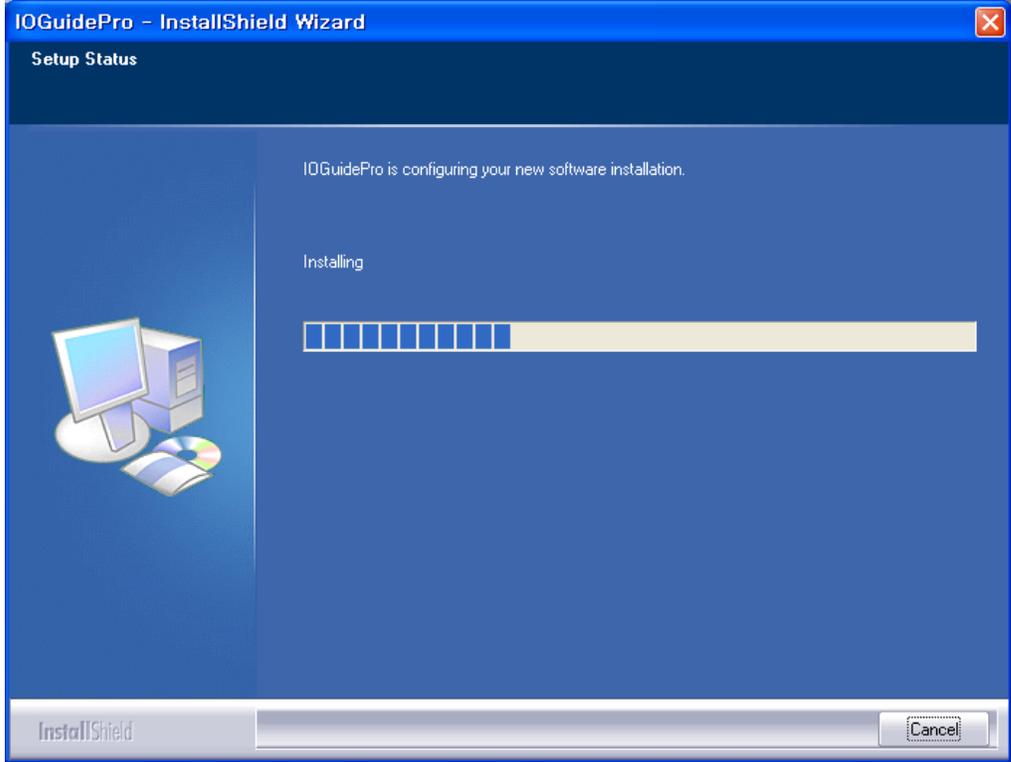
[Page 7] The actual file starts getting installed.
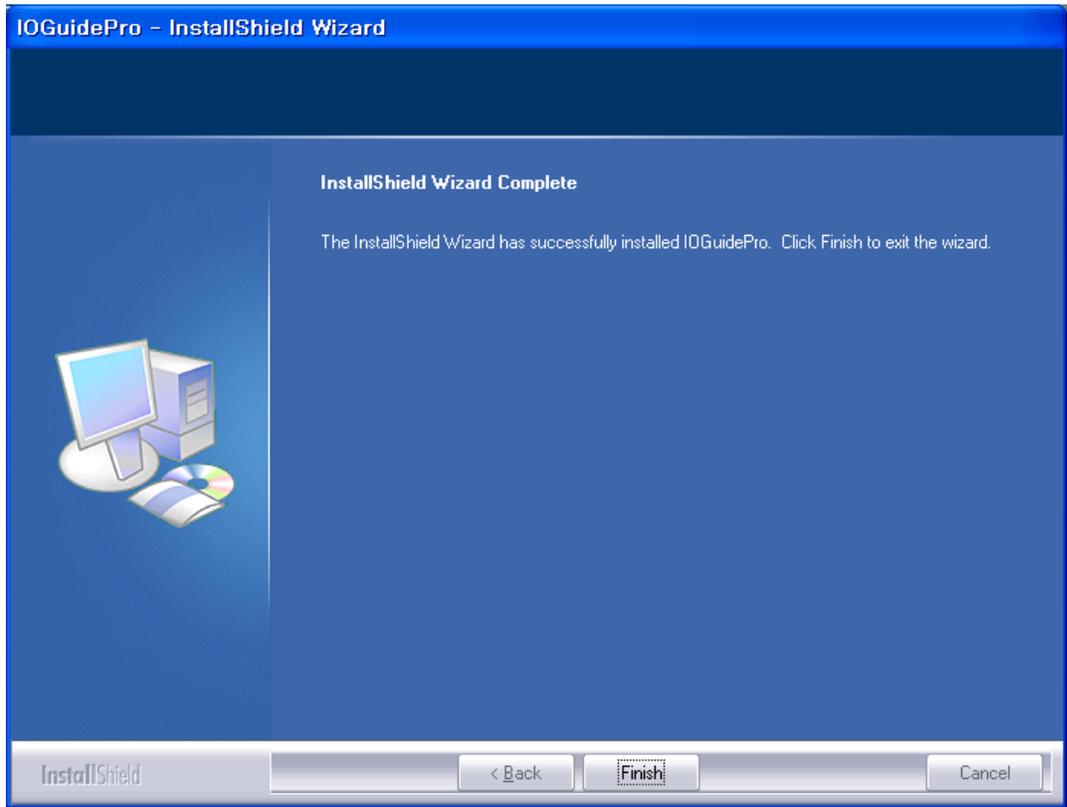
[Page 8] Click '*Finish*' when the install is completed.

Installed Files

Setup Program provides file and folder information to install in the PC.

Folder/File	*Description*
docuRSTi.exe	Documentation execute file
IOGuidePro.chm	Help file
IOGuidePro.exe	IOGuidePro execute file
IOGuidePro.xml	IOGuidePro Configuration file (Authority required)
*.dll	
[~tmp]	Temporary Folder (Related programs are automatically deleted as programs are closed.)
[Image]	Graphic Image Folder (Mandatory)
[Log]	Log File Folder (Related files are automatically deleted according to setup value.)
[Products]	Product Definition Folder (Mandatory)
[Projects]	User Project Save Folder
[StartUpOffline]	StartUp Page Folder (Mandatory)
[Tools]	Tool execute file Folder (Mandatory)

Note: Do not delete files and folder related to a program.

User Interface
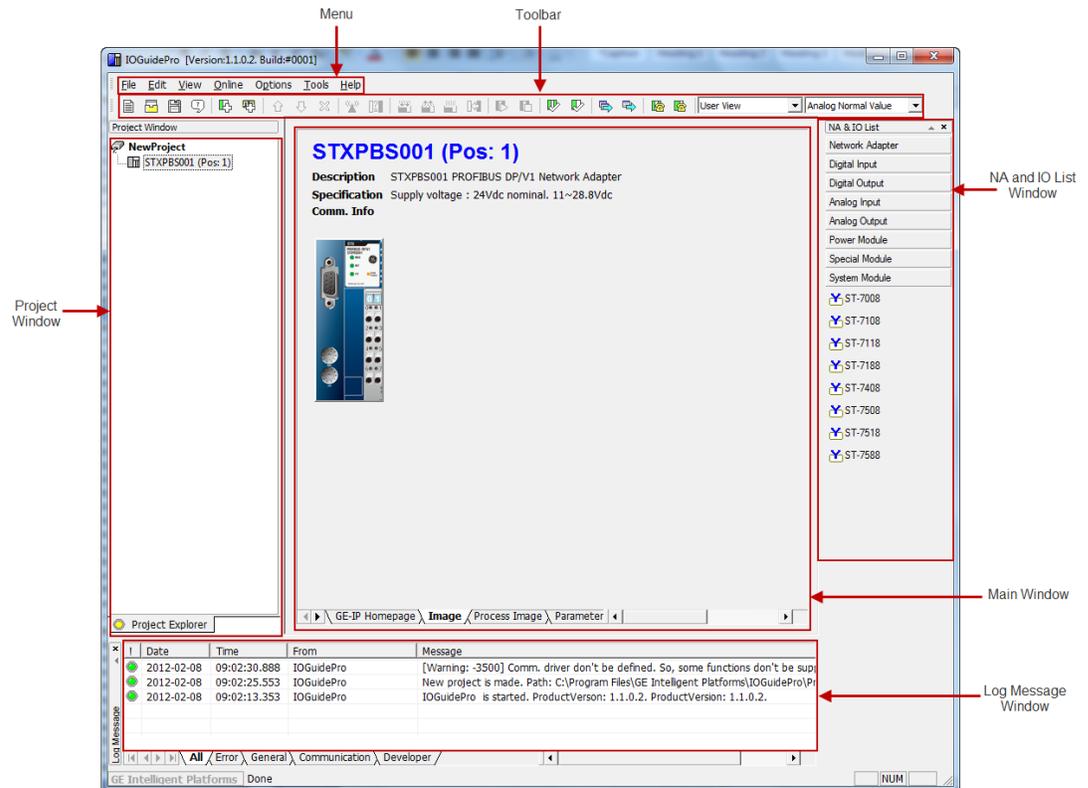
Figure 1: IOGuidePro: User Interface

- **Menu**: Lists the Menu for IOGuidePro.
- **Toolbar**: Displays the frequently used menu.
- **Project Window**: Displays the currently active Project in a tree type.
- **Log Message Window**
  - All Tab: Displays all logs irrespective of the nature of the log. It consists of all the error, general, communication, and developer logs.
  - Error Tab: Displays the log for an error that has occurred.
  - General Tab: Displays the current basic function log.
  - Communication Tab: Displays the log for action related to communication.
  - Developer Tab: Displays the log which requires technical support and needs to be noticed.
- **NA and IO List Window**: Displays all available Network Adapter modules and IO modules
- **Main Window**
  - Start Page Tab: Allows homepage browsing
  - Image Tab: Displays currently activated image and information
  - Process Image Tab: Displays IO information

– Parameters Tab: Displays NA and IO parameter which can be changed.

– Comment Tab: Allows to edit and save an user's comment

■ Editing Grid: Describes a method of control Grid Type.

■ Keyboard Shortcuts: Describes how to use shortcuts that enable to produce results in a relatively shorter time.

■ Context Menu: Offers a limited set of choices that are available in the current state, or context.

Main Menu

File

Menu	*Sub Menu*	*Description*
Project	New	Creates a new project
	Open	Opens the saved project
	Close	Closes the current project
	Save	Saves the current project
	Save as	Save the current project in a new name
Documentation	Project	Make documentation as desired in PDF or Excel format for the selected Project
	Network Adapter	Make documentation as the setting for the selected NA
Inquiry	Project	Provides information on how many quantities are used in the project
	Network Adapter	Provides information on how many quantities are used in the selected NA
Recent File		Displays the latest activated project file
Exit		Closes the program

Edit

Menu	*Sub Menu*	*Description*
Add	Network Adapter	Adds network adapter (NA) to the selected project
	Module	Adds IO module to the selected NA
Move up		Move up the selected IO module
Move down		Move down the selected Project, NA and IO module
Delete		Deletes the selected Project, NA and IO module
Rename		Changes the name of the selected IO module or NA
Properties		Details properties information of the selected NA and IO module
Check Validation	Project	Checks setup error in the selected project
	Network Adapter	Checks setup error of the selected NA
Reset to Factory Default		Reverts back the parameter configuration settings and corresponding values to default factory settings

View

Menu	Description
View Address Map	Displays address map of the selected NA
Standard Toolbar	Choose to activate toolbar
Status Bar	Choose to activate status bar
NA and IO List	Choose to activate NA and IO list window

Online

The Online menu is only available for Modbus and not for PROFIBUS and PROFINET.

Menu	Description
Automatic Scan	Search NA which is connectable and upload searched NA and IO information.
Compare with Offline (NA)	Comparing Project NA in editing with Online NA at the point of structure between NA and parameter information.
Download	Download IO and Parameter Value modified in Project into Online NA.
Upload	Upload IO and Parameter Value of Online NA. At that time, the set value of Project does not change.
Reset Parameter	Reset Parameter Value of Online NA or IO with Factory Default.
Copy to Project	Change Project value into NA or IO value of Online NA or Parameter Value.
Special Commands (NA)	Transfer, Reboot, or Reset Error result to Online NA.
Start Monitoring	Begin monitoring the whole of NA in Project.
Stop Monitoring	Close monitoring the whole of NA in Project.

Option

Menu	Description
Configuration	Change parameter of IOGuidePro program

Tools

Menu	Sub Menu	Description
Bootp Server		Set IP Address of the product which supports Bootstrap Protocol
Protocol Messenger	Modbus	Low Level Communication in the selected protocol

Help

Menu	Description
IOGuidePro	Display manual of IOGuide Pro
RSTi Technical Data	Display technical data of RSTi products
About IOGuidePro	Display version information of IOGuidePro.

Toolbar

[Standard] Toolbar

Icon	Title	Menu	Description
	New	File → Project File → New	Create new project
	Open	File → Project File → Open	Open the saved project
	Save	File → Project File → Save	Save current project
	About	Help → About IOGuidePro	Show version information of IOGuidePro

[Add] Toolbar

Icon	Title	Menu	Description
	Add Network Adapter	Edit → Add → Network Adapter	Add network adapter to the selected project
	Add Module	Edit → Add → Module	Add IO module to the selected NA

[Modify] Toolbar

Icon	Title	Menu	Description
⇧	Move Up	Edit → Move Up	Move up the selected IO module
⇩	Move Down	Edit → Move Down	Move down the selected IO module
✕	Delete	Edit → Delete	Delete the selected item

[Online] Toolbar

Icon	Title	Menu	Description
	Automatic Scan	Online → Automatic Scan	Move up the selected IO module
	Compare with Offline	Online → Compare with Offline	
	Download	Online → Download	Delete the selected item
	Upload	Online → Upload	
	Reset Parameter	Online → Reset Parameter	
	Copy to Project	Online → Copy to Project	

| | Start Monitoring | Online → Start Monitoring | |
| | Stop Monitoring | Online → Stop Monitoring | |

[Validation] Toolbar

Icon	*Title*	*Menu*	*Description*
	Project Validation	Edit → Check Validation → Project	Check setup error in the selected project
	NA Validation	Edit → Check Validation → NA	Check setup error in the selected NA

[Document] Toolbar

Icon	*Title*	*Menu*	*Description*
	Project Documentation	File → Documentation → Project	Make documentation as desired in the selected project
	NA Documentation	File → Documentation → NA	Make documentation as the setting of selected NA

[Inquiry] Toolbar

Icon	*Title*	*Menu*	*Description*
	Project Documentation	Edit → Inquiry → Project	Provides information how many quantities used in the project
	NA Documentation	Edit → Inquiry → NA	Provides information how many quantities used in the selected NA

[Mode] Toolbar
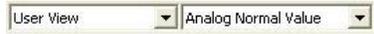
Icon	*Title*	*Menu*	*Description*
User View	Change View Mode	Edit → Inquiry → Project	refer to User Interface - Project window page
Analog Normal Value	Change Analog Value Format	Edit → Inquiry → NA	refer to Using IOGuidePro - IO Test page
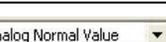
Project Window

The Project window displays currently activated project in tree type.

It has various display methods such as User View, Product View, and Description View. Through View Mode of Toolbar, it can be possible to change name format of NA and IO.

View Mode

The View mode is displayed on the [Mode] toolbar. By default, User View is displayed.
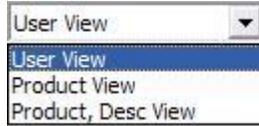
Mode	Description
User	View user defined name
Product	Display only model name
Product, Desc	Model name and main features are described shortly

User View   Product View   Product, Desc View
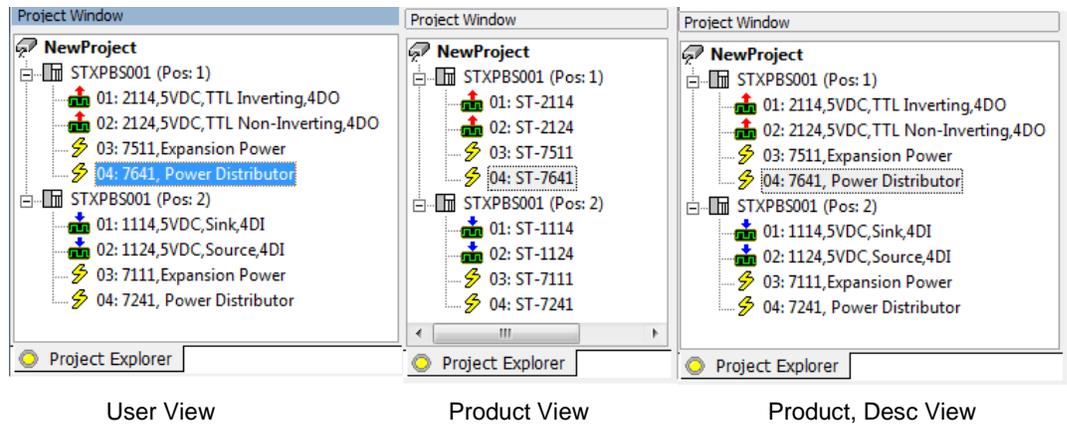
Log Message Window

IOGuidePro consists of five categories which are displayed in Log Message.

The Log category can be modified by means of Option → Configuration window.

Tab	Description
All	Displays log of all error, general, and communication messages
Error	Displays the log for occurred error
General	Displays current basic function log
Communication	Displays log for action related to communication
Developer	Displays log which requires technical support and needs to be noticed
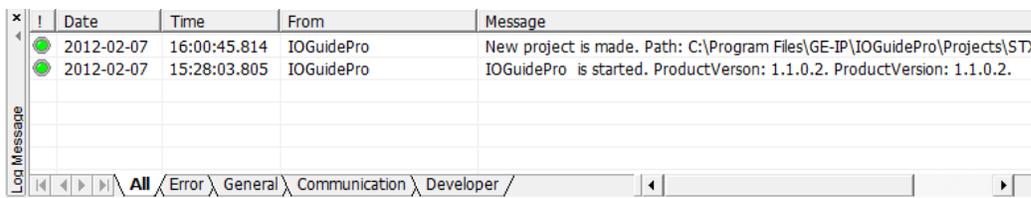
Figure 47: Log Message window

Network Adapter & IO List Window

The Network Adapter and IO window displays the list of NA and IO to be connectable.
Each technical data can be identified by a click.

Tab	Description
All	Displays log of all error, general, and communication messages
Error	Displays the log for occurred error
General	Displays current basic function log
Communication	Displays log for action related to communication
Developer	Displays log which requires technical support and needs to be noticed
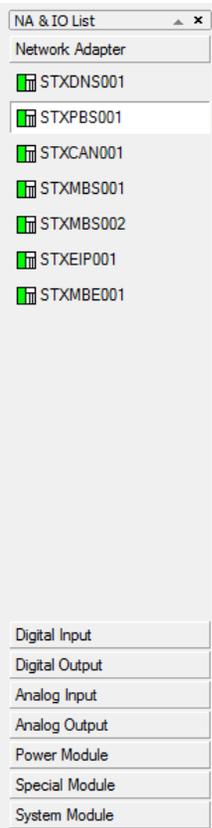
Figure 48: NA and IO list window

Main Window

- ■ **Start Page Tab**: Homepage Browsing

Figure 49: IOGuidePro Home page

It is possible to configure '*Goto Online*' link at Options → Configuration.

Note: In case you want to change Start Page, please contact GE Intelligent Platforms.

- ■ **Image Tab:** displays currently activated image and information

The Image tab displays currently activated image and information
Click image, then [Properties]() of the selected device to display onscreen.

1. **Selection NA from Project Window**

   – Name: Displays the name defined by user and the NA address is displayed in blue.

   – Description: Displays a brief explanation for the selected Network Adapter.

   – Total Power: Displays total power consumption of IO in the connected NA.

   – Total Size: Displays total size of IO and NA at current node

Figure 50: IOGuidePro: Image tab displaying NA

2. **Selecting IO from Project Window**

– Name: Displays the name defined by user; slot number is displayed.

– Description: Displays a brief explanation for the selected IO.

– Specification: Displays the main features for the selected IO
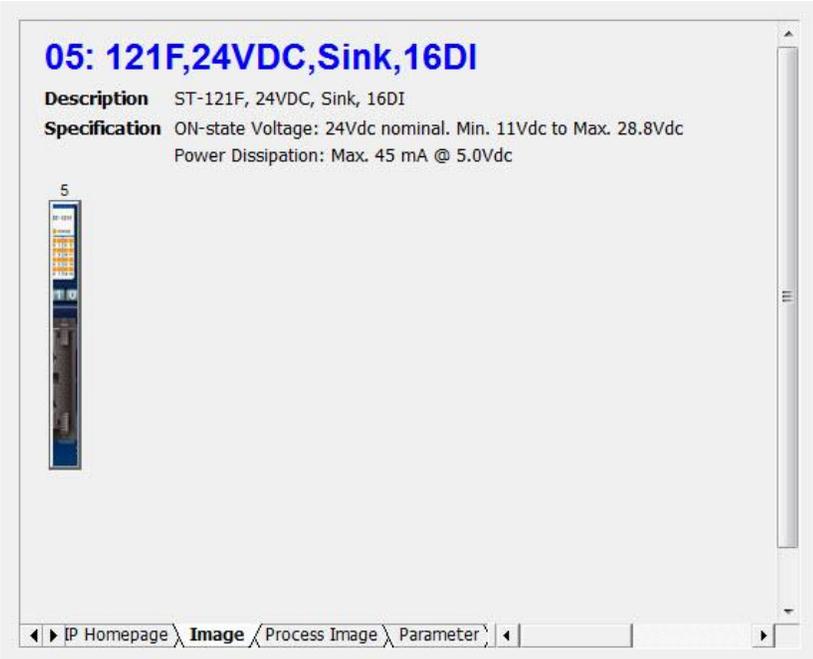
Figure 51: IOGuidePro: Image tab displaying IO

■ **Process Image Tab:** displays IO information

  – Displays IO information

  – Possible to test IO Value

  – Able to test value of all connected IO modules in case of selecting Network Adapter.

  – Able to test value of Base IO in case of selecting all-in-one type of Network Adapter (A-series).

  – Download and apply to Online Device after changing value of Project.

  – To get the latest value in Online, device should be uploaded.

  – During monitoring, the latest update is automatically executed in Online Value

Figure 52: IOGuidePro: Process tab

■ **Parameters Tab:** displays RSTi Network Adapter & and IO parameter. This tab can be used to configure network adapter or IO parameters. Refer to GFK-2746 for more details on parameter configuration.

  – Displays NA and IO parameters.

  – Displays the slot number and the module name as defined by the user.

  – Download and apply to Online Device after changing value of Project.

  – To get the latest value in Online, Device should be uploaded

Figure 53: IOGuidePro: Parameters tab

■ **Comment Tab:** Allows you to edit and save specific comments as per the application or module.

Figure 54: IOGuidePro: Comments tab

Editing Grid

IOGuidePro uses Grid Type of Control in various User Interfaces.

All Grids have the same function so please study it carefully.

■   **Editing Parameters Configuration and Values**

Read-Only	Cell with black characters and Gray Color Column/White Color Column
Writable	Cell with blue characters and White Color Column.
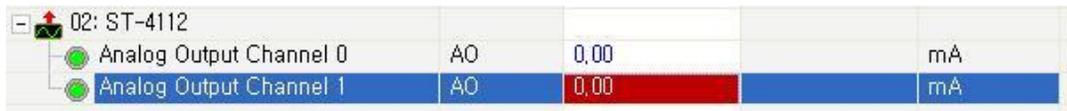
■   **How to edit**

1.   Move to the required cell to edit (cell is displayed in red color)

2.   In case you are unable to edit, 'Allowed value' in the cell is displayed in a range as shown in the below image.

3.   Enter characters directly or click 'Enter' then input the value.

After entering the value, click 'Enter' and move to another cell using the mouse.

4.   If value is invalid, an error message is displayed in Log Message Window, as shown in the below image. You can then return to the value that was present before editing.
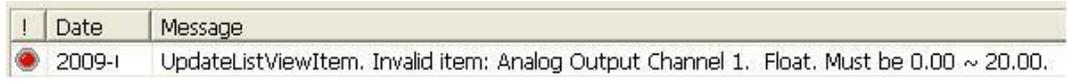
Keyboard Shortcuts

The following table lists the keyboard shortcuts.

Shortcut Key	Menu
F1	Help
Ctrl + N	File → Project File → New
Ctrl + O	File → Project File → Open
Ctrl + S	File → Project File → Save
Shift + P	File → Documentation → Project
Shift + A	File → Documentation → Network Adapter
Ctrl + A	Edit → Add → Network Adapter
Ctrl + M	Edit → Add → Module
Shift + Up-arrow	Edit → Move Up
Shift + Down-arrow	Edit → Move Down
Ctrl + D	Edit → Delete
Ctrl + R	Edit → Rename
Ctrl + P	Edit → Properties
Ctrl + Shift + P	Edit → Check Validation → Project
Ctrl + Shift + A	Edit → Check Validation → Network Adapter
Ctrl + Shift + M	View → View Address Map
Shift + S	Online → Automatic Scan
Shift + C	Online → Compare with Offline (NA)
Shift + M	Online → Start Monitoring
Shift + O	Online → Stop Monitoring
Shift + B	Tools → Protocol Messenger → Modbus

Context Menu

The two types of context menu supported in IOGuidePro are as given below.

1. **Case of IO selection from Project Window**
   - At Project Window, R-Click is enabled to view Context menu.
   - Each function has the same feature as Select in Main menu.
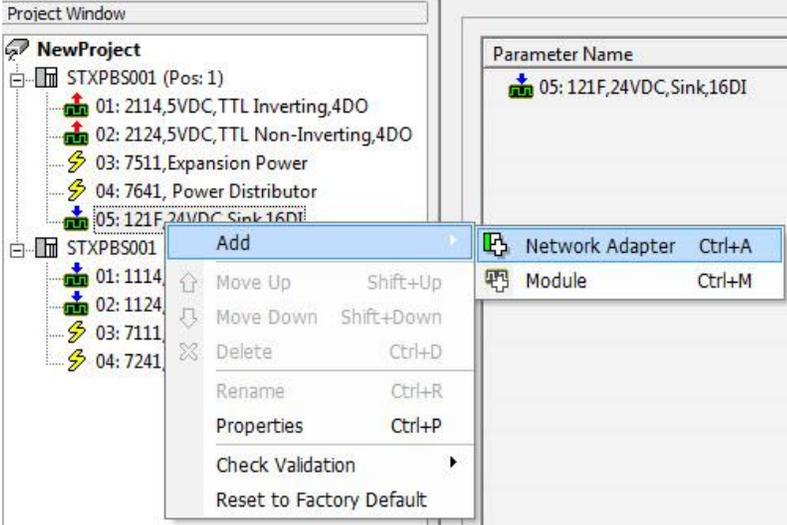
Figure 55: Selecting IO module from Project Window

2. **Context Menu in Log Message Window**

   At Log Message Window, R-Click is enabled to view Context menu.

Using IOGuidePro

Quick Start

Offline Functions

1. Create Project
   - Create a new project by selecting "Project File → New" from the Edit Menu.
   - From New project dialog, choose project name, Bus type and file save location and then click OK.
2. Network configuration
   - Select network adapter in Edit menu.
   - From Add Network Adapter Dialog, choose desired network adapter to be added and setup communication exactly, then click OK.
   - Configure parameters in parameter tab of main window.
3. IO configuration
   - Choose "Add Module" in Edit menu.
   - Choose IO to be added from Add IO Module Dialog.
   - After choosing IO in project window, set parameter value in parameter tab of main window.
4. Validation Check
   - Choose "Check Validation → Project" in Edit menu.
   - Check error in Validation Result Dialog.
5. Documentation
   - Choose "Documentation → Project" of file menu in order to make current project file.
   - Click "Make Report" in Documentation Dialog.

Setting Hardware

In order to complete Online function of IOGuidePro, please complete Hardware Setting for communication.

Modbus TCP/IP support Network Adapter.

1. Connect IO module to Network Adapter.

   Tips: Wire diagram for each IO module of RSTi Technical Data.

2. Connect Cable (RJ-45) to Ethernet Port of PC.

3. Charge up power in Network Adapter.

Modbus Serial support Network Adapter.

1. Connect Serial Cable to Serial Port in PC.

2. Set Node Address. Be sure not to be duplicated in case of RS-485.

   Refer to: RSTi Technical Data.

3. If necessary, set Serial Communication option through DIP Switch. RS-485 requires all the same.

   (Factory Default as Baud Rate: 9600, Data Bit: 8, Parity: None, Stop Bit: 1)

   Refer to: RSTi Technical Data.

Note: IOGuidePro supports RTU communication only, do not change Communication DIP Switch.

4. In order to apply for the changed setting value, please newly charge up power in NA.

Refer to

   System Requirement

   RSTi Technical Data.

Create Project

Each Project holds its own Bus Type (protocol). Each Project contains network adapters compatible with specific Bus Type (protocol). Projects with supported bus type only can be identified by IOGuidePro tool.

IOGuidePro can create and load several Projects.

How to activate

Menu	File → Project File → New
Toolbar	📄
Shortcuts	Ctrl + N

How to create Project
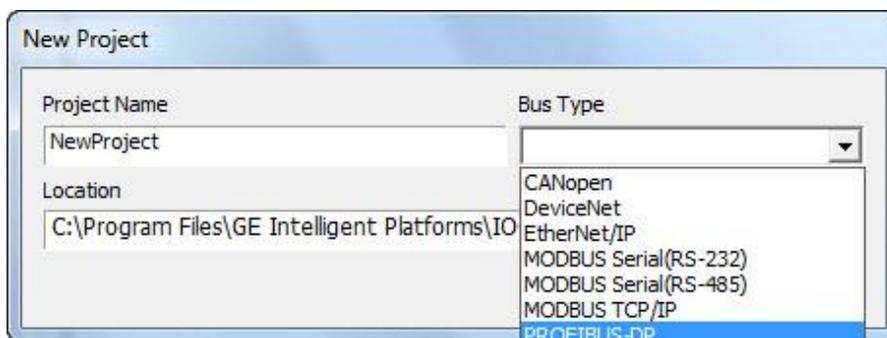
Figure 56: New Project dialog box

1. Enter '*Project Name*'.
2. Select '*Bus Type*'.
3. Browse to the '*Location*' where Project file can be saved.
4. Click '*OK*' button.
5. Create new project in Project Window.

Note: If you try to open a Project which is already open, a warning message is displayed. Also, you are not allowed to use special letter such as / : \" * ? \\ < > |" in Project Name.

Note: A created Project Name cannot be changed by Rename function. Use Save As function to apply to Project Window.

Add Network Adapter

You can add network adapter to the selected project.

How to Add to Network Adapter

1. Select Project to be added to Network Adapters in Project window.
2. Use one of the following methods.

Menu	Edit → Add → Network Adapter
Toolbar	
Shortcuts	Ctrl + A
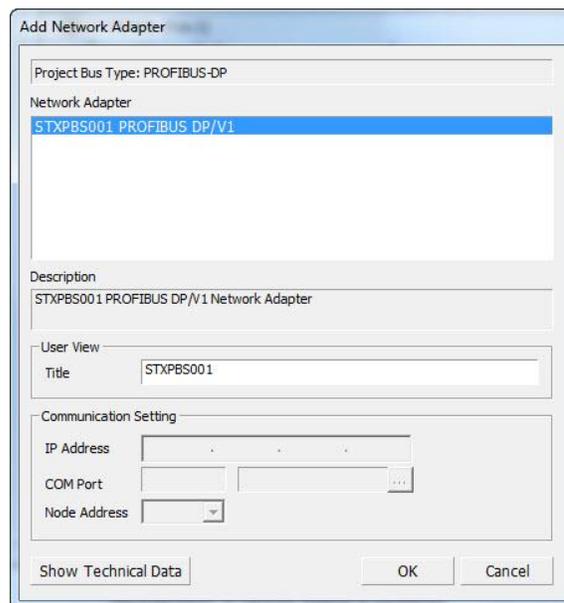
Figure 57: Add Network Adapter window

3. Select which Network Adapter should be added to.
4. Set name and address shown in User View.
5. Click 'Show Technical Data' and check its technical data.
6. Click 'OK' and Network Adapter is added to Project.

Add IO Module

Add IO module to the selected NA.

How to Add to IO Module

1. Select IO Module to be added to Network Adapter in Project window.
2. Use one of the following methods.

Menu	Edit → Add → Module
Toolbar	🔲
Shortcuts	Ctrl + M
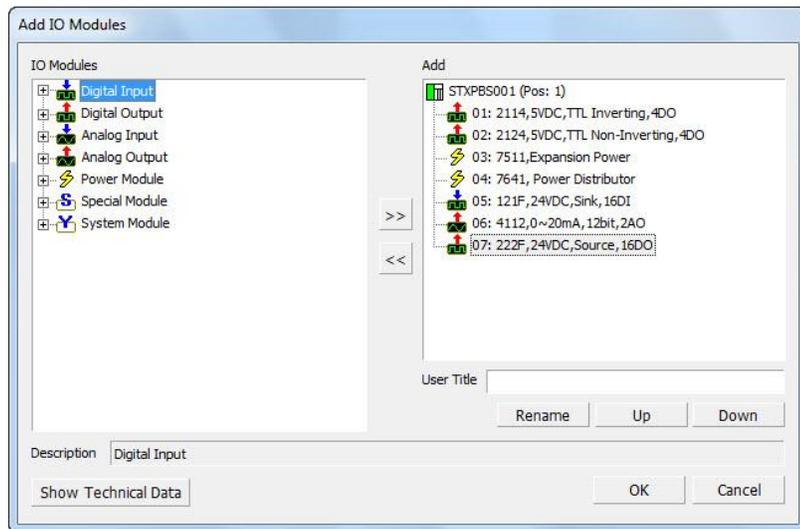
Figure 58: Add IO Modules window

3. Double click to add IO Module or Click '>>' to add to NA.
4. Enter a name in *User Title* form User View.
5. Click '*Show Technical Data*' to check Technical Data.
6. Click '*OK*' to add IO to NA.

Check Validation

Validation allows you to check setup error in the selected project or network adapter.

Through Error Code and description, it can be possible to know where problem exists.

Procedure to Check Validation

1. Select Project or Network Adapter for checking Validation in Project window.
2. Use one of the following methods.

Menu	Edit → Check Validation → Project or Network Adapter
Toolbar	🡇 or 🡇
Shortcuts	Ctrl + Shift + P or Ctrl + Shift + A

3. If no problem occurs in configuring Project or Network Adapter, then a "VALID" Message Box is displayed.
4. If problem occurs in configuring Project or Network Adapter, then a message is displayed in Validation Result Dialog.
5. Error Code and description are provided in Validation Result Dialog.
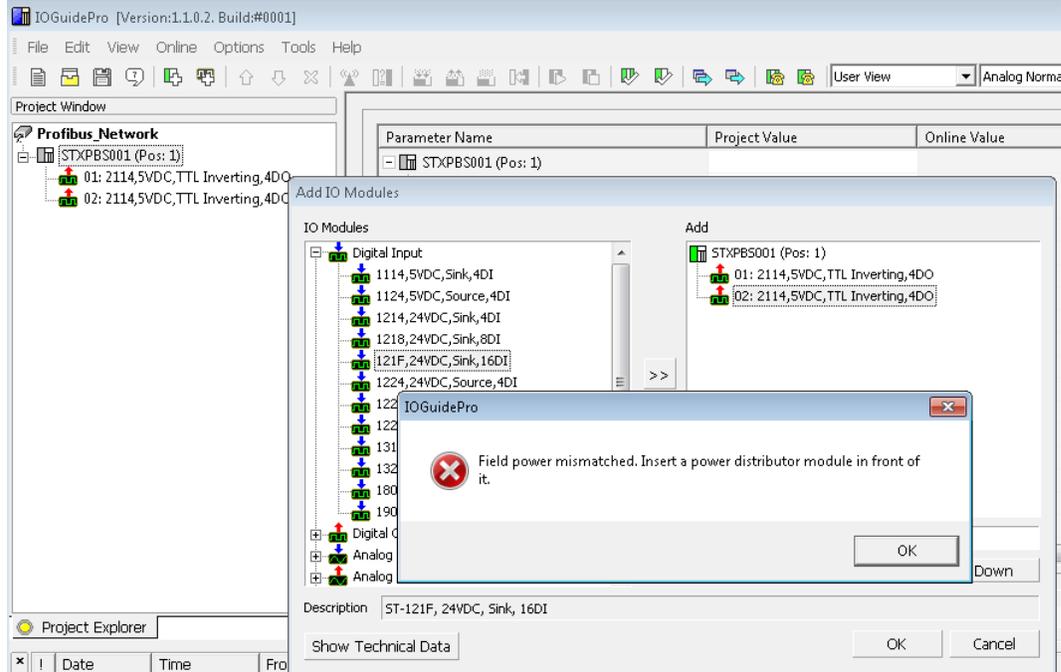
Figure 59: Validation Result Dialog

Properties

You can view the Properties in Selected NA and IO.

Click 'Show Technical Data' and get information of Device

Project

Bus Type supporting Online can reconfigure '*Communication Interval*' and '*View Update Time*'.
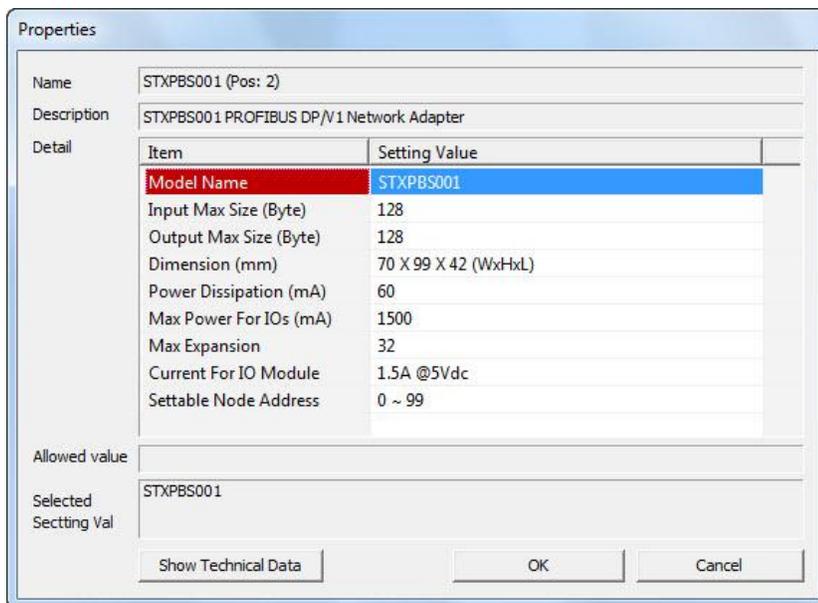
Figure 60: Properties window – NA module

Network Adapter

Modbus TCP/IP - allows ' IP Address' to be changed. The communication interval, IP, and so on are reconfigurable.

IO
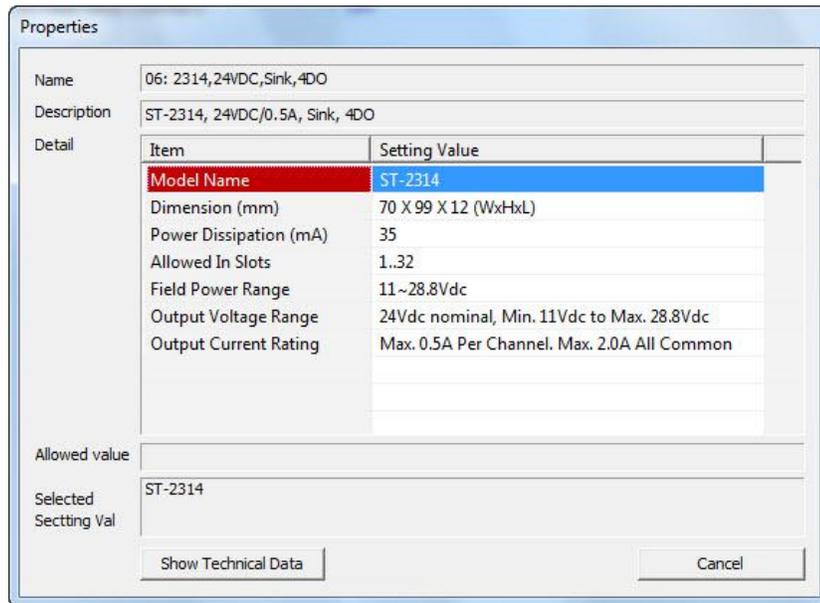
Figure 61: Properties window – IO module

Modify Configuration

■ Move to the selected Module and Folder.

■ Delete the selected item.

■ Change User name of the selected item.

Procedure to Move Up

1. Select IO Module or Folder in Project window.

2. Use one of the following methods.

Menu	Edit → Move Up
Toolbar	⬆
Shortcuts	Shift + Up-arrow

Procedure to Move Down

1. Select IO Module or Folder in Project window.

2. Use one of the following methods.

Menu	Edit → Move Down
Toolbar	⬇
Shortcuts	Shift + Down-arrow

How to Delete

1. Select item to be deleted in Project window.

2. Use one of the following methods.

Menu	Edit → Delete
Toolbar	⊠
Shortcuts	Ctrl + D

How to Rename

1. Rename function is activated only when View Mode is 'User View'.
   ▣ Refer to View Mode Change

2. Select item to be renamed in Project window.

3. Use one of the following methods.

Menu	Edit → Rename
Toolbar	
Shortcuts	Ctrl + R

4. Enter a new name and click 'OK'.

.
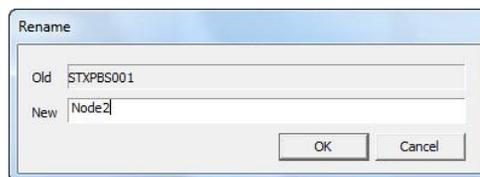
View Address Map

Displays Input/Output mode and Address Map in the selected node.

Address value can be changed by project value.

Procedure to View Address Map

1. Select Network Adapter in Project window.
2. Use one of the following methods.

Menu	View → View Address Map
Toolbar	
Shortcuts	Ctrl + Shift + M

Note: This procedure is not supported for PROFIBUS.

Documentation

It is possible to print information of selected project or NA or to save them as PDF, Excel file.

Document contains the following:

- Communication Parameters of project or NA
- Drawing and actual dimension for the connection between NA and IO Modules
- IO Address Map
- Parameters for IO Module
- Inquiry information

Documentation Procedure

1. Select project or NA to make documentation in Project window.
2. Use one of the following methods.

Menu	File → Documentation → Project or Network Adapter
Toolbar	📤 or 📤
Shortcuts	Shift + P or Shift + A
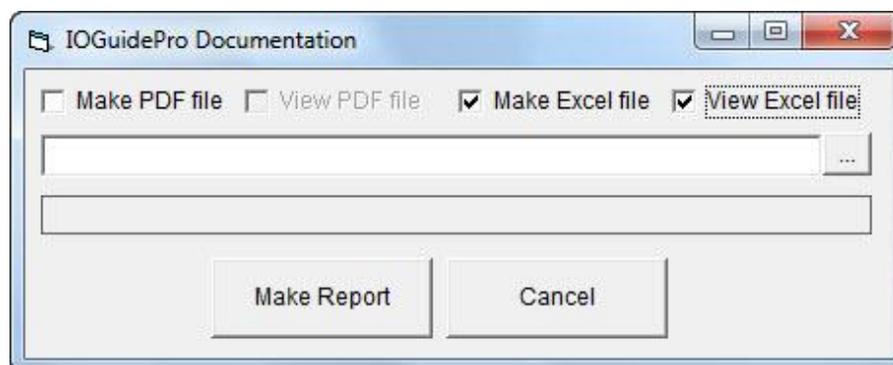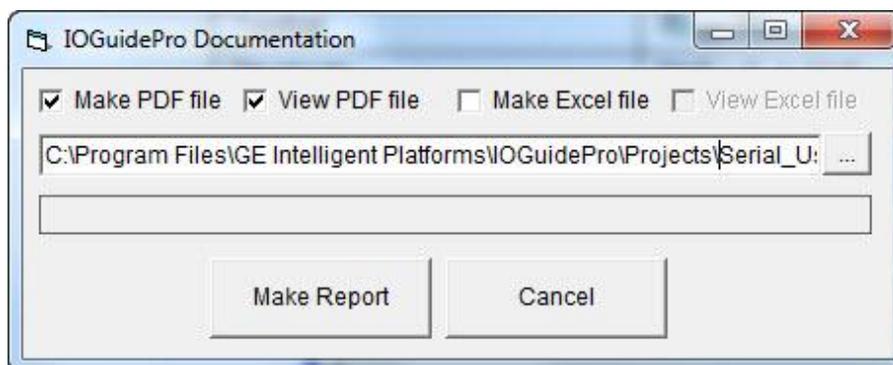
Figure 62: Selecting Documentation procedure

3. Select '*Make PDF file*' if necessary to make PDF file.

    Select '*Make Excel file*' if necessary to make Excel file.

    Click ⸽⸽⸽ button to browse to the desired location and file name.

4. Check '*View PDF file*' to identify the file. It requires Adobe Reader program for viewing.

Check *'View Excel file'* to identify the file. It requires Microsoft Excel program for viewing.

5. Click *'Make Report'*.

Figure 63: Viewing Documentation output

Inquiry

■ Inquiry displays inquiry information of selected project or NA.

■ Check technical data of selected Module.

■ Save inquiry information as CSV (Comma Separated Value) format.

Inquiry Procedure

1. Select project or NA to make inquiry in Project window.

2. Use one of the following methods.

Menu	File → Inquiry → Project or Network Adapter
Toolbar	🖼 or 🖼
Shortcuts	
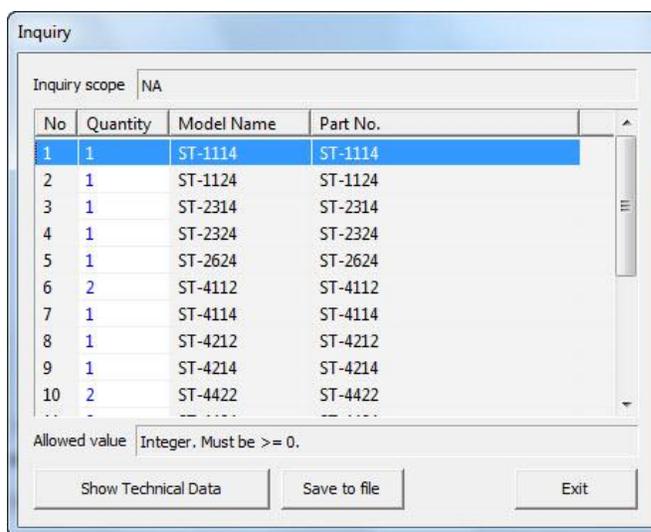
Figure 64: Inquiry window

3. Click '*Save to file*' to save Inquiry information as csv format.

Save Project

Save current Project.

How to save Project

1. Select project to save in Project window.
2. Carry on one of the below method

Menu	File → Project File → Save
Toolbar	💾
Shortcuts	Ctrl + S

3. The Save As dialog box is created for projects that are already saved.

Save As Project

Save as Project.

Save As Project Procedure

1. Select project to save as in Project window.
2. Use one of the following methods.

Menu	File → Project File → Save As
Toolbar	
Shortcuts	

3. Enter file name in Save As Dialog and click '*Save* '.
4. The project name in Project window is changed.

Note: If same name exists, the file gets automatically overwritten.

Error message is displayed as the opened project name is being saved, which is actually incomplete.

Project name does not contain special letters such as / : \" * ? \\ < > | .

Open Project

Open saved Project.

How to open Project

1. Use one of the following methods.

Menu	File → Project File → Open
Toolbar	
Shortcuts	Ctrl + O

2. Select Project to open and click '*OK*'.

Note: If a project is already opened, an error message is displayed.

Configuration

Change parameter of IOGuidePro software

As IOGuidePro restarts, a yellow icon is automatically applied.

Property	Sub Property	Description
Language		Setting Language
StartUp View	Title	A title is displayed in Start Page Tab of Main Window
	Path/Url	Online link URL of Start Page Tab of Main Window
View Mode		Default View Mode
Project Default Folder		Project Save/Open Default Folder Setting
Log Option	Maximum Log Display	Setting the maximum row in Log Window
	Maximum File Size (MB)	Maximum Size for a Log file
	Erase Old Log File (Days)	Setting automatic deletion for the old Log file
Log Window Enable	General Info	Setting Log enables for general display
	Error Info	Setting Log enables for error display
	Communication Info	Setting Log enables for communication display
	Developer Info	Setting Log enables for developer display
Log File Enable	General Info	Setting File Log enables for general type
	Error Info	Setting File Log enables for error type
	Communication Info	Setting File Log enables for communication type
	Developer Info	Setting File Log enables for developer type
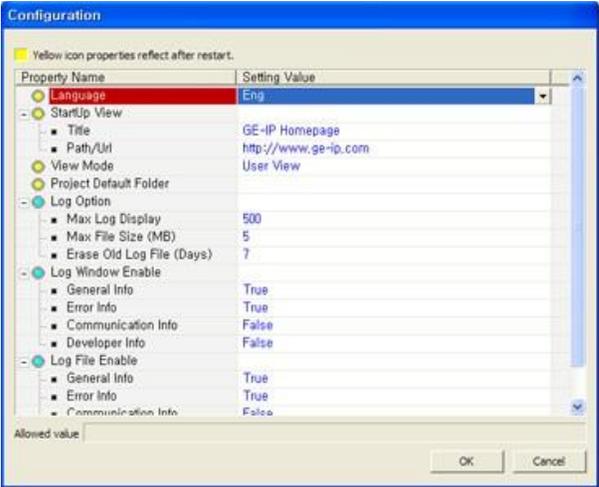
Figure 65: Configuration window

Error Code

Error Code list as IOGuidePro.

- ■ Validation Error Code: Error Code list as 'Check Validation' activated.
- ■ Application Error Code: Error Code Legend and each description.

Validation Error Code

Error Code	Category	Description
-101	Power	Maximum power exceeded.
-102	Expansion	Maximum IO expansion exceeded.
-103	Input Size	Maximum input size exceeded.
-104	Output Size	Maximum output size exceeded
-105	Field Power	Field power mismatches. Insert a power distributor module before this module.
-106	Field Power	First I/O of the network adapter must be a power distributor module.
-107	NA Comm	Communication setting of the network adapter is duplicated.
-108	NA Comm	Communication setting of the network adapter is empty.
-109	NA Comm	Port No is different. Muli-drop bus type must have same port.
-110	NA Comm	Comm. parameter is different. Muli-Drop bus type must have same communication parameter.

Application Error Code

Error Code	Category	Description
-1000		Cannot find a selected project.
-1001		TextID is undefined in listTextId.xml.
-1002		Cannot create the temporary directory.
-1003		Cannot open the file during saving. Check if the file exists or using. File:
-1004		The project name exists in opened projects. Project:
-1005		Out of memory
-1006		Cannot save the file. Cause: . Path: .
-1007		Undefined Wrapper type. May be bug. Type:
-1008		Cannot find a selected Network Adapter
-1009		Cannot run.
-1010		Cannot find NA definition object. NA ID:
-1011		Cannot find IO definition object. IO ID:
-1012		Cannot get active view. May be bug.
-1013		Error value is undefined in listError.xml

-1014		Cannot delete. Error code:
-1015		Cannot get mainframe pointer. May be bug.
-1016		Cannot load module's graph image.
-1017		Cannot get setting value. See below log in detail.
-1018		Cannot delete the project file. Please input another project name.
-1019		API Code: . Project :
-1020		Cannot create new project directory. Path: .
-1021		Cannot find Communication driver. File: .
-1022		Cannot create comm. driver instance. May be out of memory. NA: .
-1023	Application	Cannot find drvShowAddresMap function. Contact the dealer. NA: .
-1024	Standard Error	Cannot find drvGetAddresMap function. Contact the dealer. NA: .
-1025	-1000 ~ -2000	Cannot find drvSetModuleList function. Contact the dealer. NA: .
-1027		Cannot open the file. Check if the file exists or using. XML File: .
-1028		Auto scan is failed. See below log in detail
-1029		Cannot find drvFreeGetAddresMap function. Contact the dealer. NA: .
-1030		Cannot find drvFreeGetIOConfig function. Contact the dealer. NA: .
-1031		Cannot get online data because CommOffset <= 0. "
-1032		[Bug] Cannot get online data because iCommRxOffset < 0.
-1033		Cannot get online data because m_pOnlinValTotal is null.
-1034		Comparison failed. See below log in detail
-1035		Cannot save the file. Check if the file exists or using. File: .
-1036		Undefined help link path. Model:.
-1037		Length is empty in XML. Name:
-1038		Wrapper object is not NAUsr and IOUsr. Loc:
-1039		This version does not support the project that was created by version. Project file:
-1040		Project documentation failed. See below log in detail
-1041		Documentation of network adapter is failed. See below log in detail.
-1042		Bus type does not support online. Bus type: .
-1043		Cannot find a selected item in project window. May be bug.
-1044		Cannot find NA having product ID.
-1045		Cannot find IO having product ID.
-1046		Invalid sModType.
-1047		Cannot find IO definition object. Product ID:

-1048		Cannot get online value. See below log in detail
-4000		Node is not defined. Loc: xml file:
-4001		Not allowed value in xml file. Value: . Loc:
-4002		Wrapper object is null. NA node is not defined Loc:
-4003	XML Parsing Error	Wrapper object is not NAUsr. Loc:
-4004	-4000 ~ -4500	Wrapper object is not NAUsr and IOUsr. Loc:
-4005		Unsupported datatype in XML.
-4006		Parameter's allowed value format is invalid in XML Parameter: .
-4006		Cannot find CommBlock Key. Please define the key in XML. Key:
-3500	App Warning -3500 ~ -3999	[Warning:] Comm. driver cannot be defined. So, some functions cannot be supported. NA: .
-5000	Create Resource Error -5000 ~ -5019 -5020 ~ -5039	Failed to create menubar because of resource lack.\Loc: Error Code: Mainframe. Only MessageBox IOGuideExView. Message Box and log file
-6000	Component Error	Cannot create XML Parser. Please install xml parser. Loc: .
-6001	-6000 ~ -6059	Exception happened. Error Description Loc:. xml file: .

Tools (For Future Release)

Bootp Server

The Bootp Server describes how to activate external program.

■ **Bootp Server:** Software using Bootstrap Protocol (RFC 951) is for IP Address setting to GE IP products.

■ **Protocol Messenger:** Enables to read/write Address Data according to NA communication protocol.

Note: Modbus TCP/Serial (RTU) only support.

Bootp Server Software Using Bootstrap Protocol (RFC 951) is for IP Address setting to RSTi products.

It provides the following:

■ To set IP Address for device supporting Bootstrap Protocol.

■ To reset Network default of device using Bootstrap Protocol.

■ To set parameters for RSTi products supporting Modbus TCP/IP and Ethernet/IP.
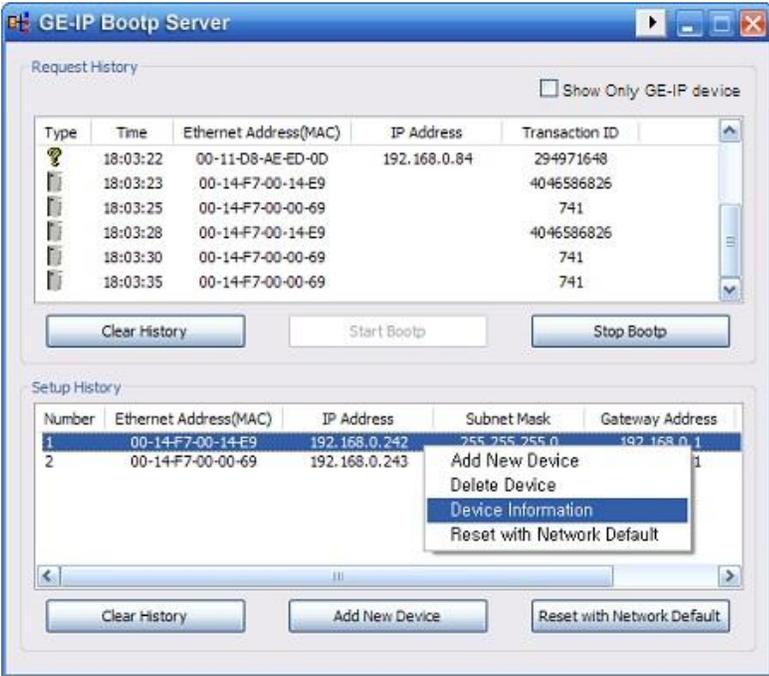
Bootp Server General Description
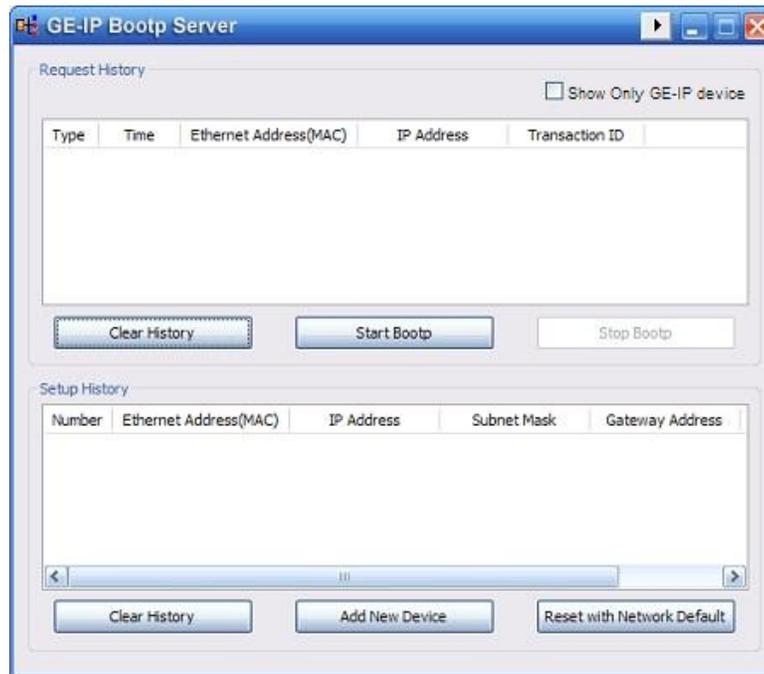
Request History

■ Show only GE-IP device: option for displaying products with only MAC address of GE Intelligent Platforms

■ Request History: a table received Bootp Request.

■ Clear History: clear up a table data

■ Start Bootp: display a received Bootp Request.

■ Stop Bootp: stop displaying of the received Bootp Request.

Request History

■ Setup History Table: Display setup fulfilled

■ Clear History: clear up the data described on Table

■ Add New Device: set IP Address of new device by inputting MAC address directly

■ Reset with Network Default: initialize network of device inputting MAC address directly or selected device from table.

Setup IP Address

Automatic Setting

1. Run Bootp Server software
2. Press the button for Start Bootp to activate
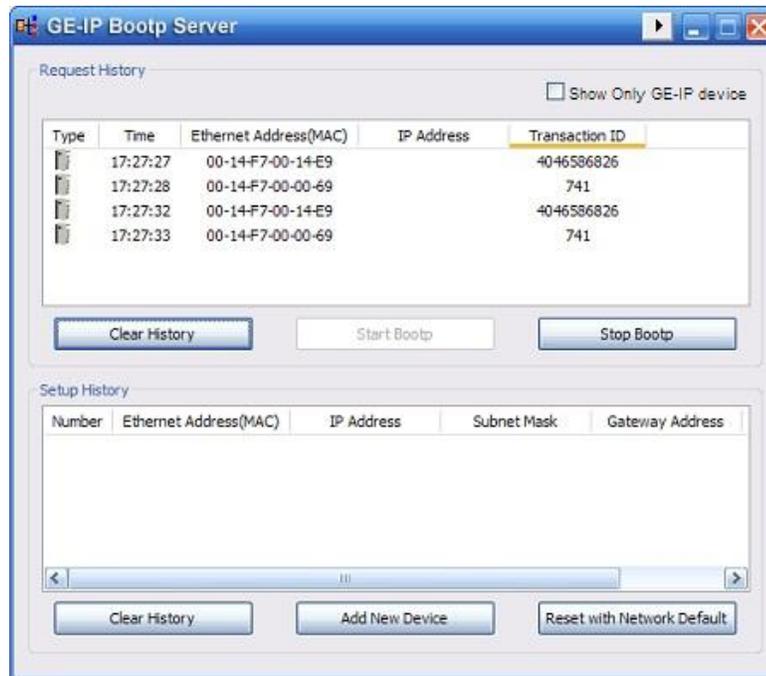
3. Double click device from the Request History Table.
4. Select the right interface (LAN) from Setup IP Address Dialog.

5. Set IP Address and click OK.
6. Check the setting address in Setup History Table.

7. Using mouse, select device information from right click menu in Setup History.
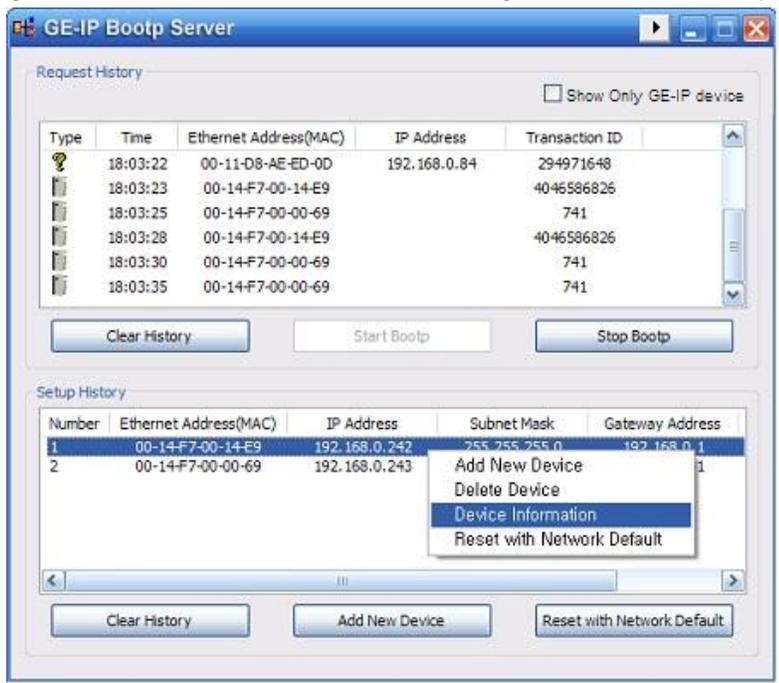
8. Set parameter in Dialog and click Close.
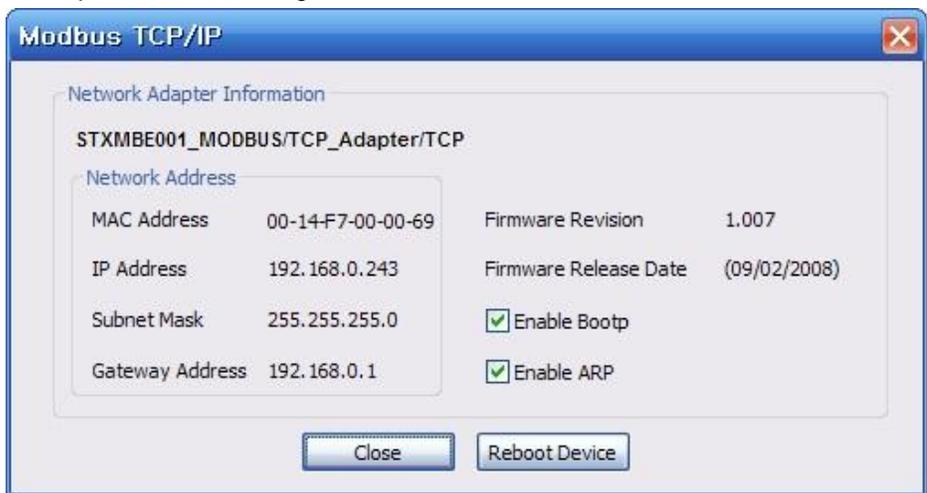
Manual Setting

1. Click "Add New Device" or select right click menu on mouse from Setup History Table
2. Select the suitable interface (LAN) in Setup IP Address Dialog
3. Click OK after entering all address information.

4. Check the setting address in Setup History Table
5. Using mouse, select device information from right click menu in Setup History Table.

6. Set parameter in Dialog and click Close.

Reset IP Address

1. Click "Reset with Network Default". In case of Device reset in Setup History, select the Device first and press the button.

2. Fulfill MAC address of Dialog and press the button for OK.

Protocol Messenger

Modbus

1. Protocol: Modbus TCP/IP, Modbus Serial RTU

   – Data communication is possible at standard Modbus Protocol format.

   – Communication possible with all types of GE-IP's NAs for Modbus TCP/IP, Modbus Serial RTU.

   – Data is transferred after clicking 'Send' button as functions, address are set to protocol specification properly.

2. Built-In Messages

   – The file saved for communication format used frequently

   – As select Built-In Message, type of Request is automatically selected.

   – Built-In Message file consists of standard csv format, which is possible to add and change

3. Response Data format

   – Response Data format displayed in monitor can be changed.

   – Possible to change into 7 sorts of format.
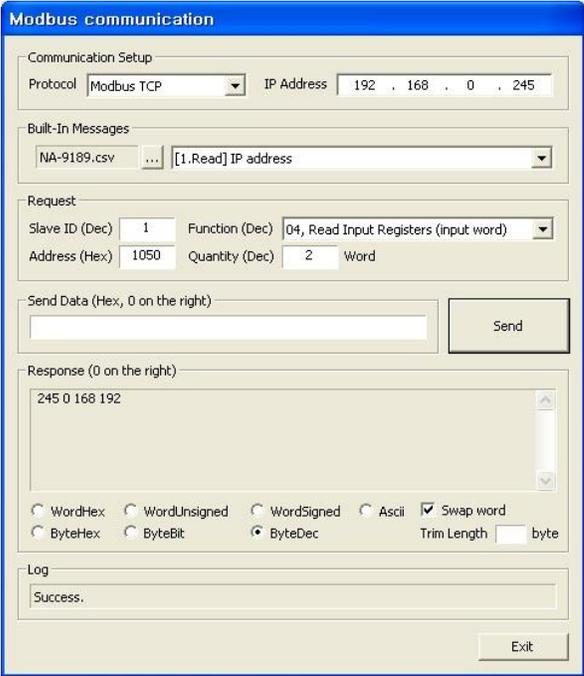
Online Commands

Online commands are only supported by Modbus and not applicable for PROFIBUS/PROFINET.

Automatic Scan online only

Screen a connectable Node and upload the searched Node information.

Supports only Modbus Network Adapter.

In case of TCP/IP Communication Network Adapter, the following information is available:

■ IP Address, Subnet Mask, and GateWay Address in Network Adapter respectively
■ Number of IO modules and Model name.

In case of Serial Communication Network Adapter, the following information is available.

■ Com Port and Node Address in Network Adapter
■ Number of IO modules and Model name

How to Proceed

Menu	Online → Automatic Scan
Toolbar	📶
Shortcuts	Shift + S

■ Automatic Scan – TCP/IP

   1. *Step 1*. From *Selection Option*, choose '*TCP/IP*' option button.
   2. *Step 2*. From *Scan*, click '*Scan*' button.

■ Automatic Scan – Serial

   1. From '*Step 1. Selection Option*', choose '*Serial (RTU/ASCII)*' option button.
   2. Set range of Port and Node for scanning.

      Default Communication Parameter in Network Adapter has 9600, 8, None and 1.

      Thus change occurs, check Serial Communication Parameter
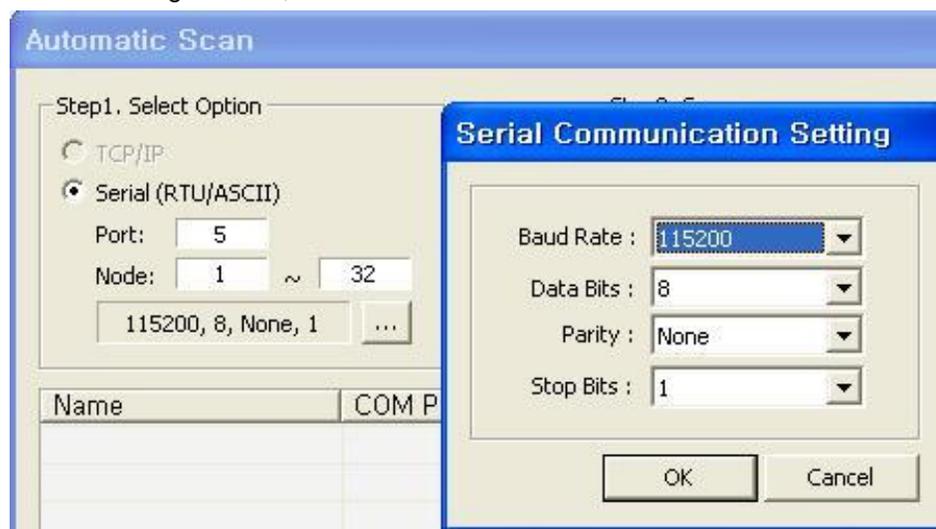
3. From '*Step 2. Scan*', click '*Scan*' button.

Compare with Offline online only

- ■ It compares information of node in online with current project.
- ■ It can compare configuration with parameter.
- ■ Additionally miscellaneous information provided with

How to Compare

1. Select Network Adapter to be compared in Project window.
2. Use one of the following methods.

Menu	Online → Compare with Offline
Toolbar	⏻?⏻
Shortcuts	Shift + C
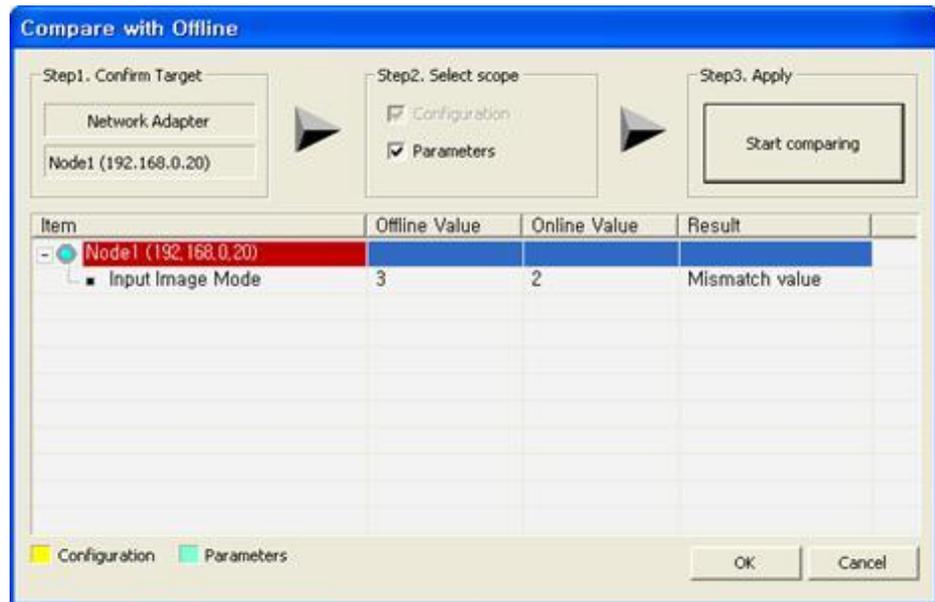
3. Select *'Parameters'* option button in *Step 2. Select scope*.
4. Click '*Start comparing*' in *Step 3. Apply*.
5. If online and offline are same, "EQUAL" Message Box is displayed.
    Otherwise, the result of it is displayed in the monitor.

Note: If IO Configuration is not identified, comparing parameter does not work properly.

■ Applied result Automatic Scan

1. From *Step 3. Apply*, choose options and click '*OK*' button.

Option	Description
Overwrite the project	Erase NA which is already connected to Selected Project and open recently searched Network Adapter.
Add to selected project	Leave NA which is already connected to Selected Project, connect recently searched new NA
Copy parameters	As connect to searched NA, bring parameters.
Copy output values	As connect to searched NA, bring output values
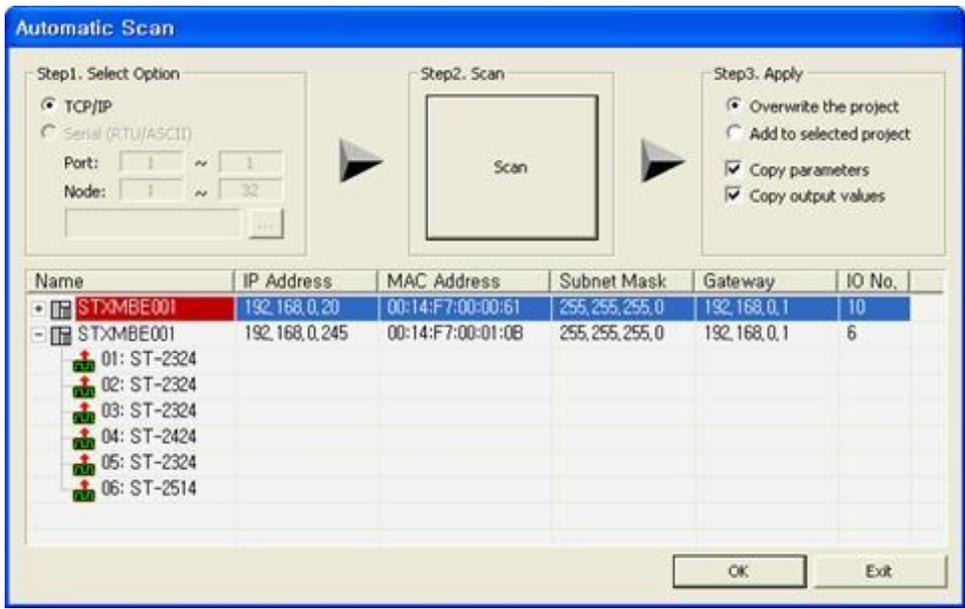
Setup IO Parameters online only

Parameters in Network Adapter or IO module can be changed.

Move to Process Image Tab

1. Select *Process Image* Tab in Main window.
2. Select Network Adapter or IO Module to be tested in Project window.

Network Adapter's Parameters
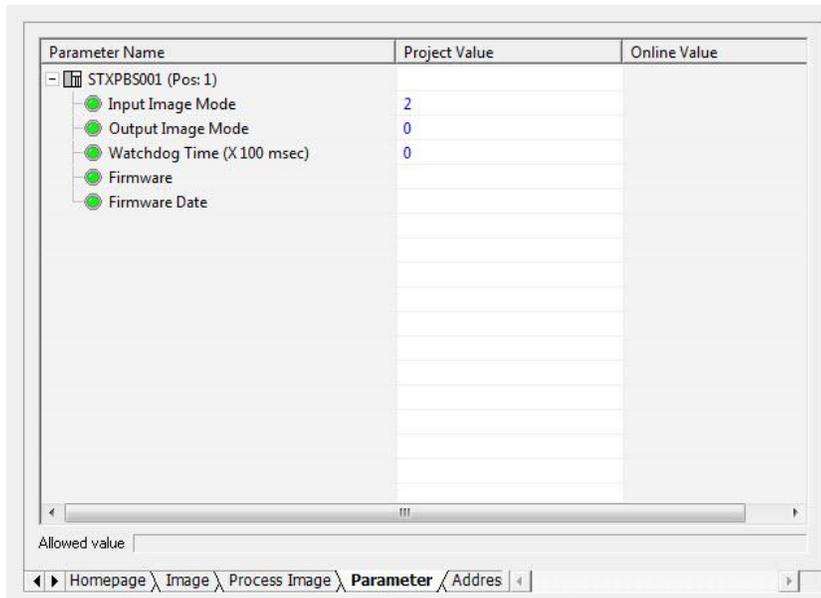
IO module's Parameters
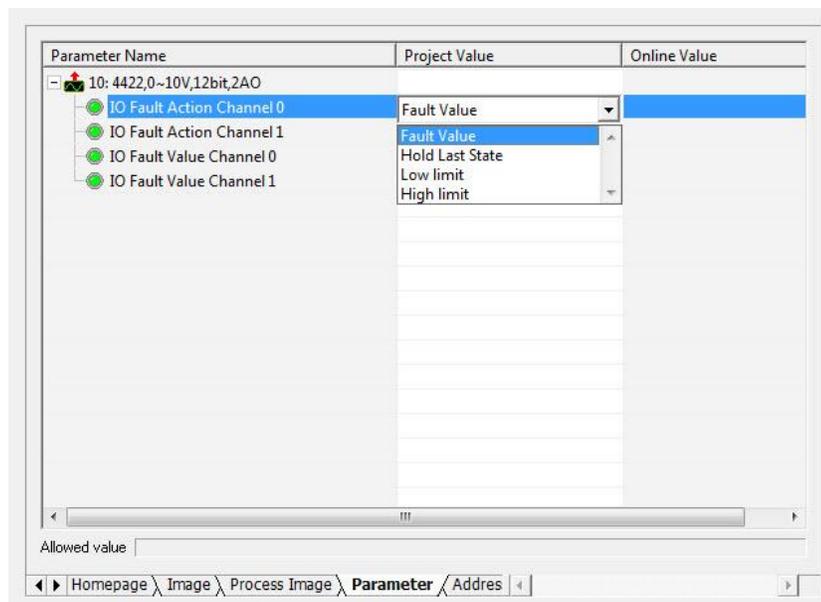
View Online Value

1. Use one of the following methods.

Menu	Online → Upload
Toolbar	
Shortcuts	

2. After communication completed, a value is displayed in '*Online Value*'.

Download Project Value

1. Input parameter to download '*Project Value*'.
2. Use one of the following methods.

Menu	Online → Download
Toolbar	
Shortcuts	

3. Communication completed, then a value is displayed in '*Online Value*'.

Copy Online Value to Project Value

1. Use one of the following methods.

Menu	Online → Copy to Project
Toolbar	
Shortcuts	

2. Communication completed, then current value is displayed in '*Project Value*'.

Initialized value of Online Parameter as Factory Default

1. Use one of the following methods.

Menu	Online → Reset parameter
Toolbar	
Shortcuts	

2. Communication completed, then current value is displayed in '*Online Value*'.

Initialized value of Project Parameter as Factory Default

1. Use one of the following methods.

Menu	Edit → Reset to Factory Default
Toolbar	
Shortcuts	

2. An initialized value is displayed in '*Project Value*'.

Send Special Command online only

- Restart the selected NA.
- Reset Error counter of selected NA.

Start Monitoring online only

- Start monitoring for the selected Project.
- Status of communication and Network Adapter is displayed with icon of Project window.
- Online value in real-time between Process Image Tab and Parameter Tab
- As communication is discontinued after starting monitoring, it tries to reconnect periodically.

How to Start Monitoring

1. Select project to monitor in Project window.

2. Use one of the following methods.

Menu	Online → Start Monitoring
Toolbar	
Shortcuts	Shift + M

3. Change of icons is subject to communication and NA's status.

- Project Icon

Icon	*Description*
	Offline status
	Communication of all network adapters is good.
	Communication of some network adapter has failed.

- Network Adapter Icon

Icon	*Description*
	Offline status
	Communication is good.
	Communication has failed.
	Communication is good, but IO error.
	Communication is good, but field power is off.
	Communication is good, but IO error and field power is off.

Note: As monitoring Starts, each value in NA and Project becomes black letter and cannot change.

  - Related communication
  - Input/Output Image Mode, Watchdog Time in NA

Stop Monitoring online only

Stop monitoring for the selected Project.

How to Stop Monitoring

1. Select project to stop monitoring in Project window.
2. Use one of the following methods.

Menu	Online → Stop Monitoring
Toolbar	🖿
Shortcuts	Shift + O

3. As monitoring stops properly, icon of project and NA is changed accordingly.

Icon	*Description*
📡	Offline status
🏢	Communication is good.

IO Test online only

It can change output value of IO Module and check input value.

Move to Process Image Tab

1. Select *Process Image* Tab in Main window.
2. Select Network Adapter or IO Module to be tested in Project window.

Select Network Adapter: All values are displayed in Hex Format.
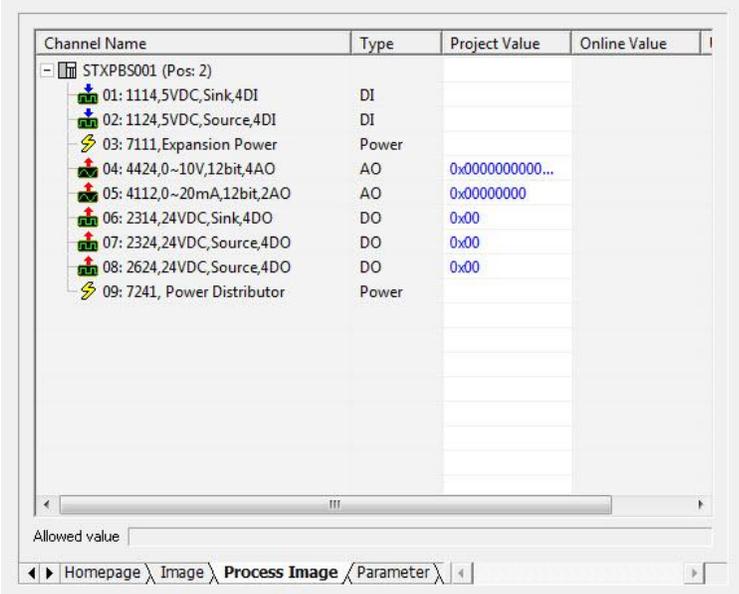
Select IO Module
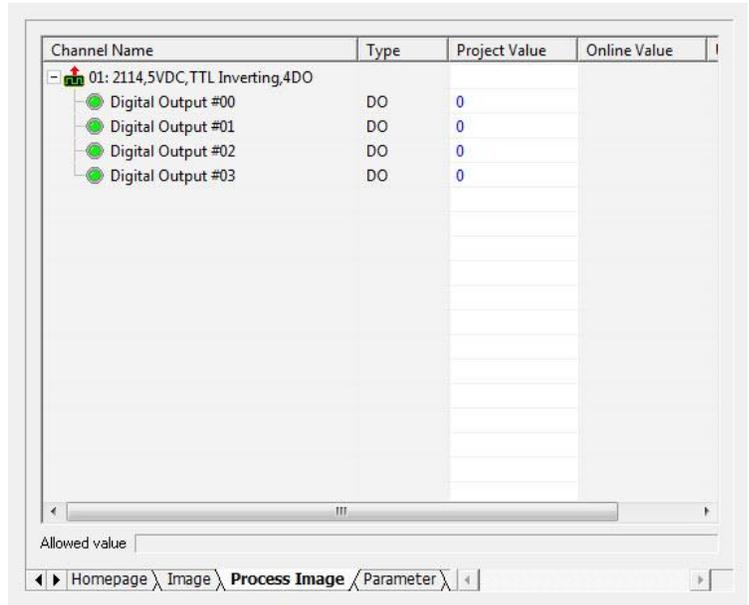
View to Online Value

1. Use one of the following methods.

Menu	Online → Upload
Toolbar	
Shortcuts	

2. After completion, a value is filled in '*Online Value*'.

Download Output Value

1. Input Value of output to download in '*Project Value*'.
2. Use one of the following methods.

Menu	Online → Download
Toolbar	
Shortcuts	

3. After communication is completed the current value is displayed in 'Online Value '.

Copy Output Value to Project Value

1. Use one of the following methods.

Menu	Online → Copy to Project
Toolbar	
Shortcuts	

2. After communication is completed the current value is displayed in '*Project Value*'.

View Analog Value in various Data Format

1. Use one of the following methods.

Menu	
Toolbar	Analog Normal Value ▾
Shortcuts	

2. Analog Normal Value: actual value displayed in unit of mA, V.

Channel Name	Type	Project Value	Online Value	Unit
06: 4112,0~20mA,12bit,2AO				
Analog Output Channel 0	AO	0.00		mA
Analog Output Channel 1	AO	0.00		mA

Allowed value

Homepage \ Image \ **Process Image** \ Parameter \ Addres
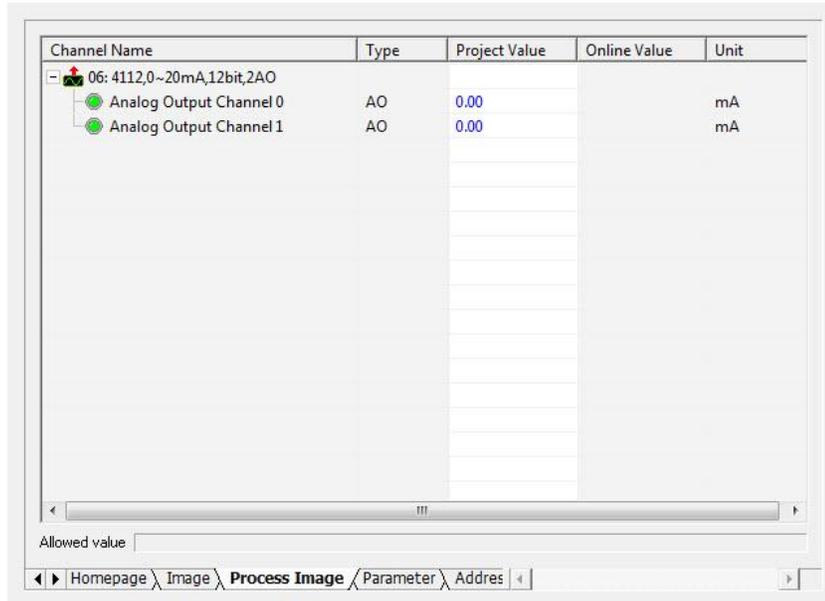
3. Analog Raw Value (Dec): Raw Value of output is displayed in Decimal.

Channel Name	Type	Project Value	Online Value	Unit
10: 4422,0~10V,12bit,2AO				
Analog Output Channel 0	AO	0.00		V
Analog Output Channel 1	AO	0.00		V

Allowed value

Homepage \ Image \ **Process Image** \ Parameter \ Addres
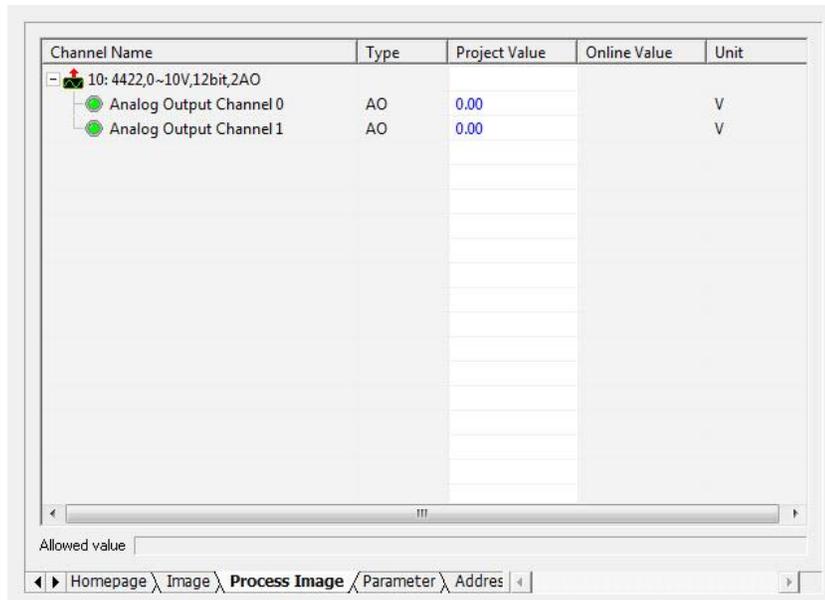
4. Analog Raw Value (Hex): Raw Value of output is displayed in Hexadecimal.

Channel Name	Type	Project Value	Online Value	Unit	
⊟ 02: ST-4422					
Analog Output Channel 0	AO	0x0000		V	
Analog Output Channel 1	AO	0x0000		V	

Allowed value

◀ ▶ \ GE-IP Homepage \ Image \ **Process Image** / Parameter \ A ◀   ▶

Product Certifications and Installation Guidelines for Conformance

This appendix describes the compliance markings and standards to which the RSTi products have been certified.

Important Notes

Solid state equipment has operational characteristics differing from those of electromechanical equipment.

Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls describes some important differences between solid state equipment and hard-wired electromechanical devices.

Because of this difference, and also because of the wide variety of uses for solid state equipment, all persons responsible for applying this equipment must ensure that each intended application of this equipment is acceptable.

In no event will GE be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, GE cannot assume responsibility or liability for actual use based on the examples and diagrams.

Safety Notes

Warning

The modules are equipped with electronic components that may be destroyed by electrostatic discharge. When handling the modules, ensure that the environment (persons, workplace and packing) is well grounded. Avoid touching conductive components, for example, RSTi Bus Pin.

Certifications

c-UL-us UL Listed Industrial Control Equipment, certified for U.S. and Canada
See UL File E105285

CE Mark
EN 61000-6-2:2005; Industrial Immunity
EN 61000-6-4:2007; Industrial Emissions
Profinet certificate: Z10439

Government Regulations

U.S., Canadian, Australian, and European regulations are intended to prevent equipment from interfering with approved transmissions or with the operation of other equipment through the AC power source.

The PACSystems RSTi family of products has been tested and found to meet or exceed the requirements of U.S. (47 CFR 15), Canadian (ICES-003), Australian (AS/NZS 3548), and European (EN 61000-6-4:2007) regulations for Class A digital devices when installed in accordance with the guidelines noted in this manual. These various regulations share commonality in content and test levels with that of CISPR 22 and based on this commonality testing to the each individual standard was deemed inappropriate.

The FCC requires the following note to be published according to FCC guidelines:

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case user will be required to correct the interference at his own expense.

Industry Canada requires the following note to be published:

Note: This Class A digital apparatus complies with Canadian ICES-003.

Environmental Specifications

PROFINET STXPNS001

Items	*Specification*
Environmental Specification	
Operating Temperature	-20℃—50℃ for UL applications. -20℃ to 60℃ for non UL applications.
Storage Temperature	-25°C to 85°C
Relative Humidity	90% Non-condensing
Protection Class	IP 20
Mounting	DIN Rail

PROFIBUS STXPBS001

Items	*Specification*
Environmental Specification	
Operating Temperature	-20℃—50℃ for UL applications. -20℃ to 60℃ for non UL applications.
Non-Operating Temperature	-40°C to 85°C
Relative Humidity	5% to 90% Non-condensing
Operating Altitude	2000m
Mounting	DIN Rail

Abbreviations

Items	*Description*
GND	Ground
GSD	Generic Station Description

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