PACSystems RSTi MODBUS TCP/IP Getting Started Guide

Distributed Slice I/O

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RSTi MODBUS TCP/IP Starter Kit

The RSTi MODBUS TCP/IP Starter Kit includes the following:

- Innovation Starter Kit Flash Drive: The Flash drive includes various RSTi tools.
- RSTi MODBUS TCP/IP Network Interface module (Part Number STXPNS001)
- RSTi 8 points discrete input module, 24VDC positive logic (Part Number ST-1218)
- RSTi 8 points discrete output module, 24VDC source, 0.5amps (Part Number ST-2328)
- RSTi 4 channels analog input module, 4-20ma current (Part Number ST-3214)
- RSTi 2 channels analog output module, 4-20ma current (Part Number ST-4212)

Items required that are not included in the starter kit:

- DIN rail minimum length 6 inches long (150mm)
- Narrow blade screwdriver or other tool to 1/8 to 1/16 inches (3mm to 4mm) wide for depressing the spring clamp wiring terminal
- 24VDC power supply (minimum 1.5 amp, recommend 2 amps or larger
- Controller with MODBUS TCP/IP connectivity
- Ethernet cable

Items on Innovation Starter Kit Flash Drive:

- RSTi Modbus Serial and Ethernet Network Interface Manual
- RSTi PROFINET Interface Manual (GFK-2746)
- RSTi PROFIBUS Network Interface Manual
- RSTi DeviceNet Network Interface Manual
- RSTi I/O Manual (GFK-2745)
- RSTi CAD drawings
- RSTi data sheets
- RSTi IO Configuration Tool for DeviceNet, PROFIBUS, CANOpen, Ethernet IP, Modbus TCP and Modbus serial
- PROFINET GSDML file
- PROFIBUS GSD file

- RXi Controller data sheets and manuals
- RXi IPC data sheets and manuals
- GE Control Solutions Catalog
- GE Automation Solutions
- Proficy MAChine Edition programming tool (45 day free evaluation)
- And other tools

Key Features of the RSTi network Interface and I/O Modules

The RSTi innovative design enables module power, communications and field power to be passed from one module to the next. The RSTi mechanical design provides integrated mechanical interlocking for securing module to module and modules to DIN rail locking.

Module Power and System Power
Pin 0 (24VDC) and Pin 1 (0VDC)

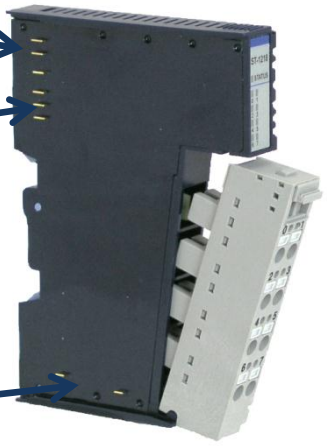
Field Ground
Pin 2 and Pin 3

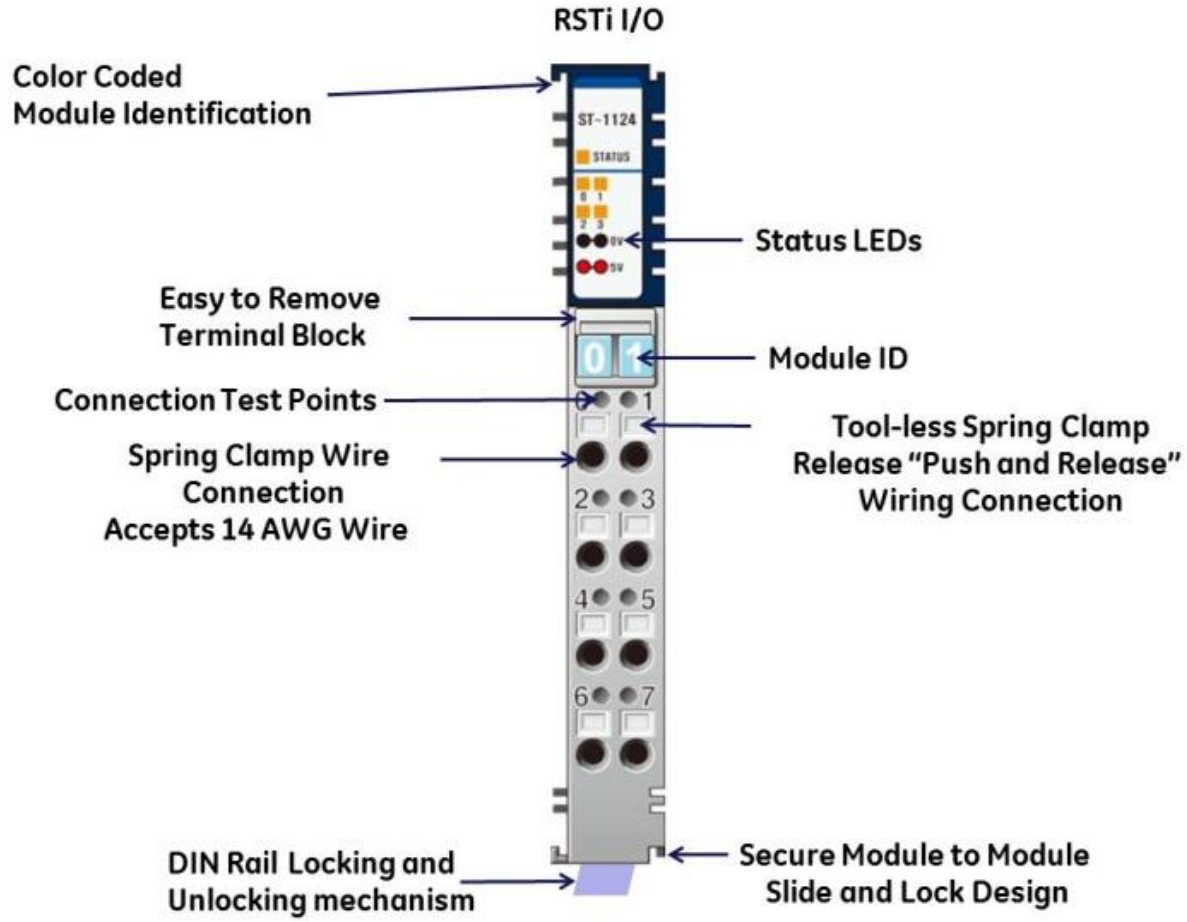
Field Power (Field Power Supply should be independent of Module System Power
Pin 4 and Pin 5 (0VDC)
Pin 6 and Pin 7 (24VDC)

5VDC Bus pins passes power from one module to the next.

Communications passed from one module to the next.

Field Bus power passed from one module to the next.





Getting Started

Building the RSTi

Step 1: **Open the individual boxes and remove modules.**

Step 2: **Attaching the MODBUS TCP/IP network adapter to the DIN rail:**
Remove the end cover from the right side of the MODBUS TCP/IP Network Interface module (Part Number STXMBE001) by sliding the end cover up. On the bottom of the network adapter release the DIN rail locking mechanism by flipping the blue lever downward. Place the network interface module on the DIN rail and engage the DIN rail locking mechanism by flipping the blue lever back to the original position. The module should now be firmly secure on the DIN rail.

Step 3: **Attaching the first I/O module:**
Open the DIN rail locking mechanism on the bottom of the ST-1218 I/O module by flipping the blue lever downward. Slide the I/O module onto the network interface module, from top to bottom, until it is securely on the DIN rail. Lock the I/O module onto the DIN rail by engage the DIN rail locking mechanism. (Flip the blue lever back to the original position).

Note: The RSTi does not limit the sequence of the I/O modules. For the purpose of the startup guide we will place the modules in the following sequence.

1. MODBUS TCP/IP Network adapter (STXMBE001)
2. 24VDC discrete input module (ST-1218)
3. Analog input module (ST-3214)
4. Analog output module (ST-4212)
5. 24VDC discrete output module (ST-2328)
6. End cap cover

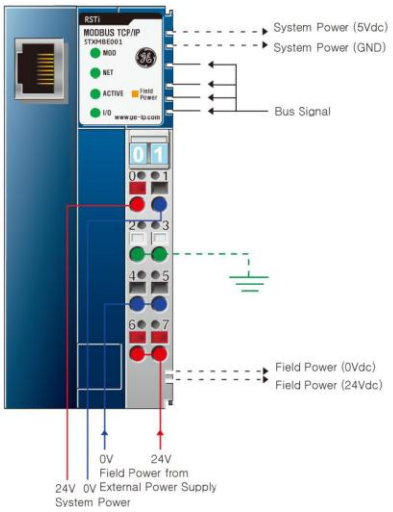
Step 4: **Attach the remaining modules following the sequence in Step 3.** Once all modules are securely attached to the DIN rail place the end cap cover on the right most module.

Step 5: **Attaching 24VDC Power to the Network Interface:**

Connect + 24VDC from the power supply to the terminal **0** of the MODBUS TCP/IP Network Interface Module by pushing in on the spring clamp release button (Red). Attach 0VDC power from the power supply to the terminal **1** of the MODBUS TCP/IP Network Interface Module by pushing in on the spring clamp release button (Black)

MODBUS Electrical Interface

RJ-45	Signal Name	Description
1	TD+	Transmit +
2	TD-	Transmit -
3	RD+	Receive +
4	-	-
5	-	-
6	RD-	Receive -
7	-	-
8	-	-
Case	Shield	-



Note: The 24VDC power is used to power up the network interface module. Internally the 24VDC is converted to 5VDC that is used for the network interface module and is also transferred to all the I/O modules attached to the network interface. If field devices like motors and switches are going to be wired to the RSTi Starter Kit a separate 24VDC power supply is required and should be connected +24VDC to terminal **6** and 0VDC to terminal **4**. Attach terminal 2 to earth ground.

Step 6: **Apply power to the RSTi and connect the Ethernet cable from the PC to the RSTi Modbus TCP/IP.**
The following LEDs should be observed on the RSTi Network Interface and I/O modules.

MODBUS TCP/IP Network adapter (STXMBE001)
- **Mod LED** – Steady Green ON
- **LINK LED** – Green ON (If LED is off check cable connections to the PC)
- **ACTIVE LED** – OFF (LED will be off until the PC sends activity to the RSTi)
- **I/O LED** – Green ON indicating that I/O bus is working properly. If off check to make sure the modules are seated properly.
- **Field Power LED** – OFF if no power is applied to pins 4 or 5 (Ground) and pins 6 or 7 (+24VDC)

24VDC discrete input module (ST-1218)
- Status LED – Green ON for normal operation.
- Input LEDs – OFF unless an input has been connected and in the ON state.

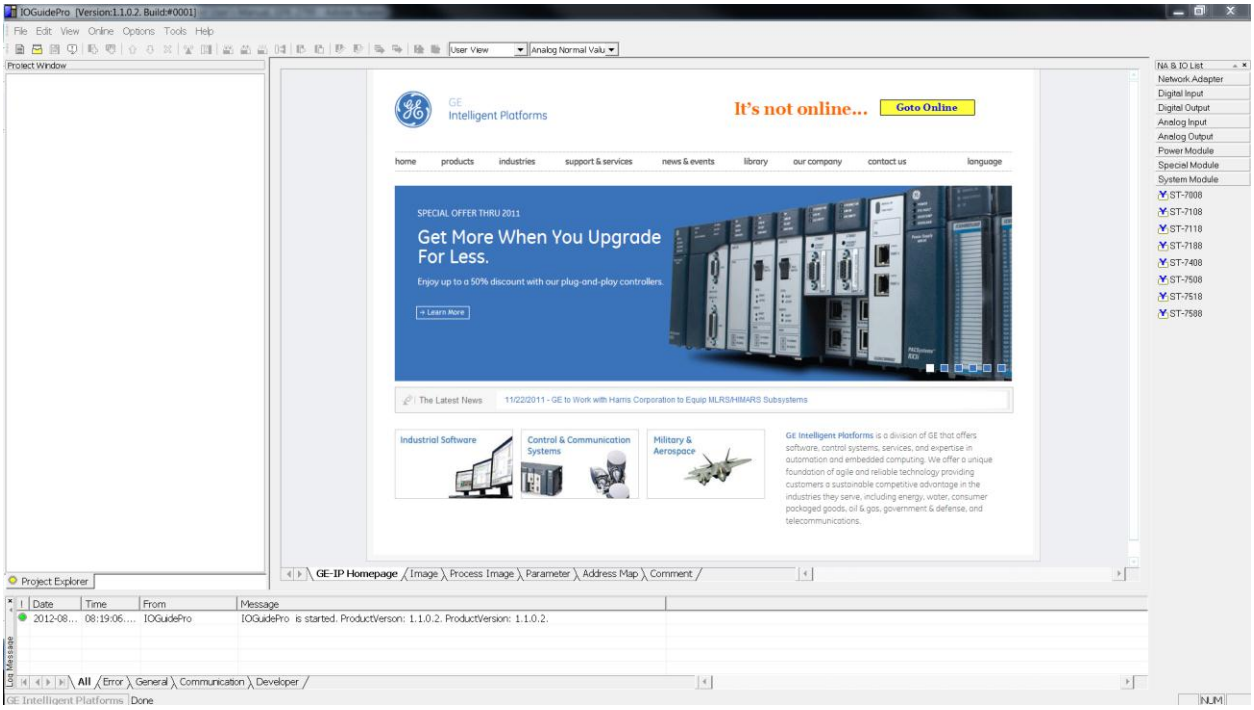
Analog input module (ST-3214)
- Status LED – Green ON for normal operation.
- Input LEDs – Solid Red ON. No inputs wired to inputs, this is a normal operation. Diagnostics is detecting no load or open channel.

Analog output module (ST-4212)
- Status LED – Green ON for normal operation.
- Output LEDs – Solid Green ON. Normal operation.

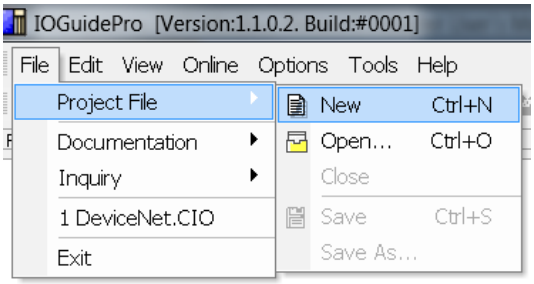
24VDC discrete output module (ST-2328)
- Status LED – Green ON for normal operation.
- Output LEDs – OFF. Normal operation.

Configuring the RSTi from a PC running IO Guide Pro

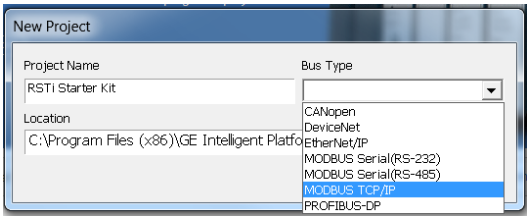
Step 1: **Configuring the RSTi Modbus TCP/IP.** Launch IO Guide Pro from either a standalone application or from Proficy Machine Edition.

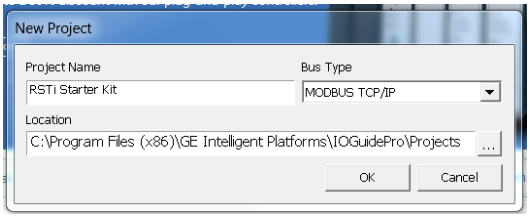


Step 2. Go to File, right click on Project File and New.

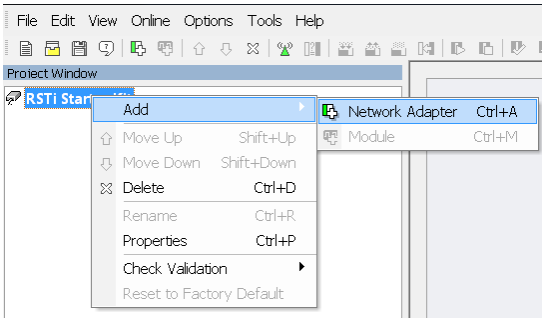


Step 3. Give your project a name like RSTi Starter Kit. Select Modbus TCP/IP for the bus type and click on OK.

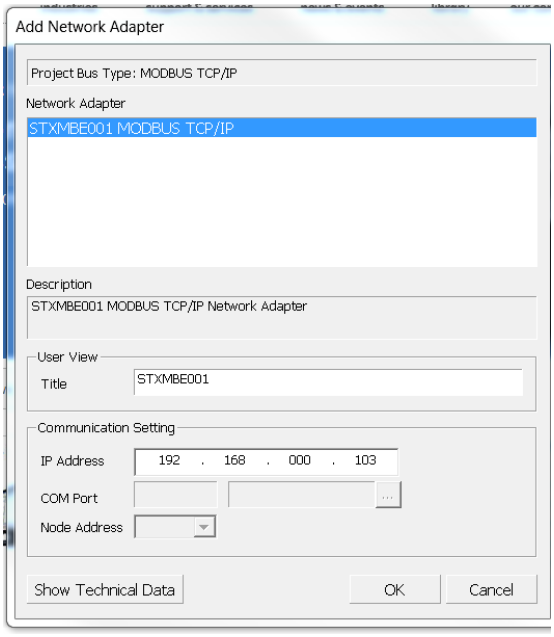




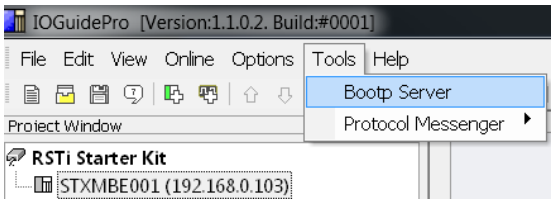
Step 4. Left click on RSTi Starter Kit (or what you called the project) in the Project Window. Right click on Add and then click on Network Adapter.



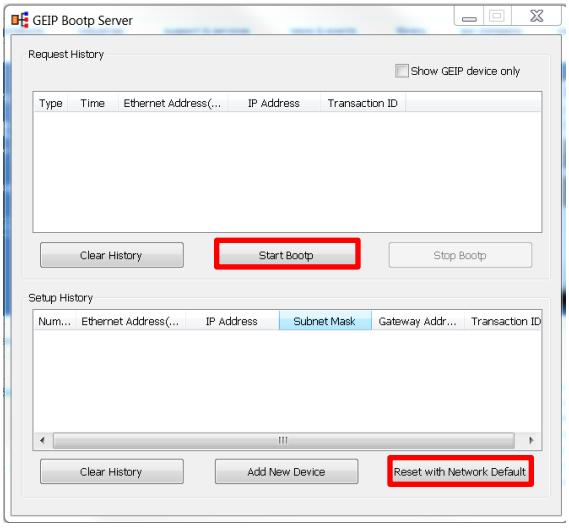
Step 5. The Add Network Adapter box should appear. Add the IP address that you would like to assign the STXMBE001. For this exercise 192.168.0.103 will be used. Click OK when IP address is entered.



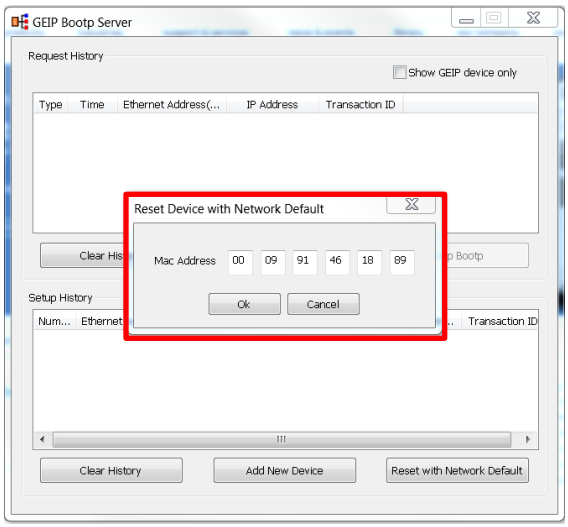
Step 6: Assigning IP Address to the RSTi Modbus TCP : Click on Tools and Bootp Server.



Step 7: Click on Start Bootp. Reset with Network Default to reset the STXMBE001.



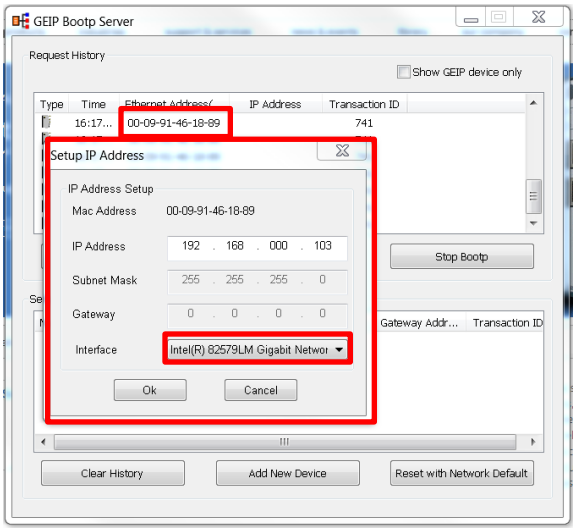
Step 8: The following will reset the STXMBE001 to factory defaults. Enter the MAC address of the STXMBE001, located below the Ethernet port. Click Ok when MAC address is entered. The RSTi STXMBE001 will reset with the lights flashing and returning to their normal state.



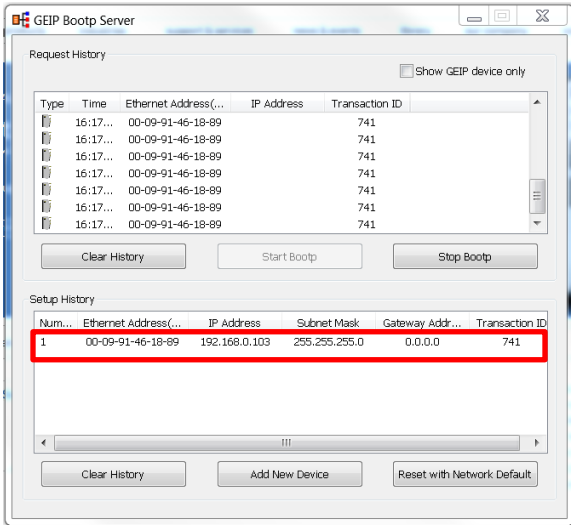
Step 9: After several seconds the Request History window will display the device. Double Click on the MAC Address of the STXMBE001 and the Setup IP Address window will appear. The Bootp Server will update every couple seconds so the device will reappear.

Enter the IP address that you want to use and click on Interface to select the PC network that the STXMBE001 is connected to.

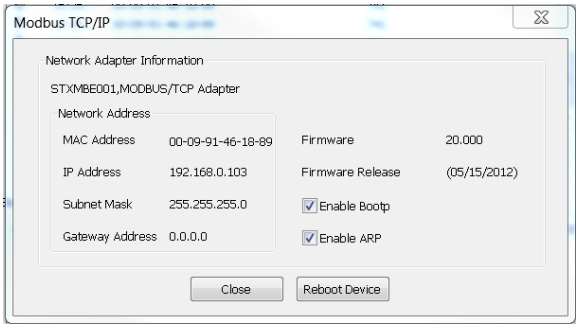
Enter Ok.



Close the Bootp Server once the device with the new IP addresses appears in the Setup History. The STXMBE001 is now enabled with the new IP address. The IP address is stored in the FLASH memory of the STXMBE001 and will not be lost during power outage but can be changed at any time using the same above procedures. Close GEIP Bootp server when complete.

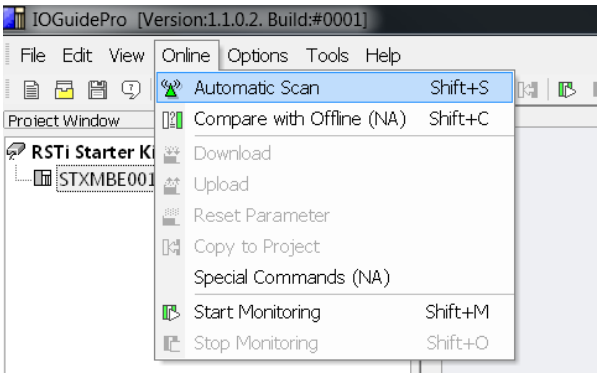


Note: You can right click on the IP address in the Setup History window and click on Device Information to see detailed information on the interface.



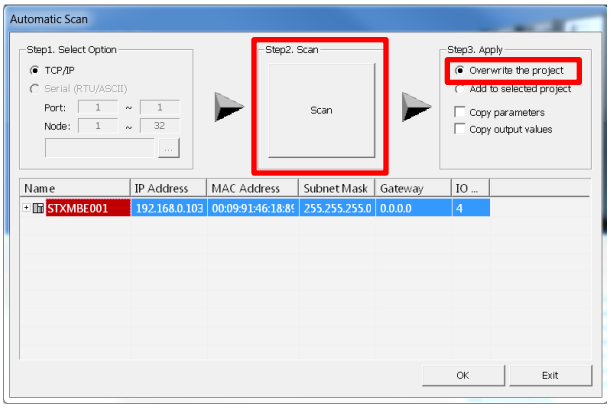
Step 10: **Connecting to the STXMBE001.** The following steps will establish a connection with the STXMBE001 and enable the user to view the configuration, monitor the status and save the configuration to the IOGuidePro.

Click Online and select Automatic Scan.

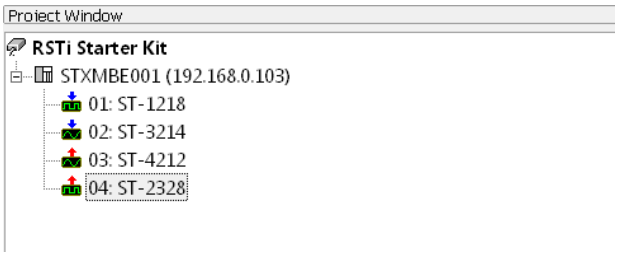


Click the Step 2: Scan button. After several seconds the STXMBE001 should appear with the IP and MAC address. You can double click on the STXMBE001 and the list of modules attached the STXMBE001 will appear.

Selecting the Overwrite the project radial and the tool will download the configuration to the IOGuidePro once the Ok is clicked.

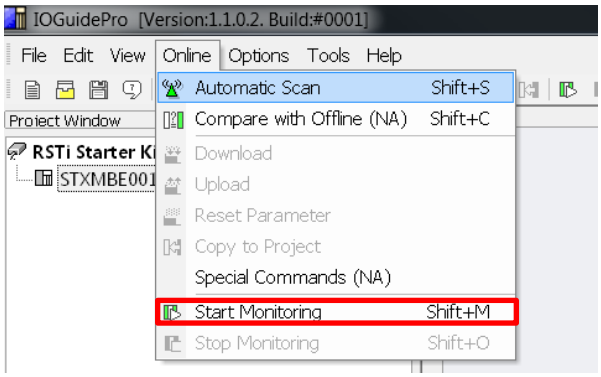


The Project Window will reflect the configuration of your system.



Click Online and click on Start Monitoring. The **IOGuidePro** will now poll the STXMBE001.

You will notice the ACTIVE LED on the STXMBE001 will flash showing activity.



By clicking on the modules and the tabs in the view window the user can see a wide range of information.

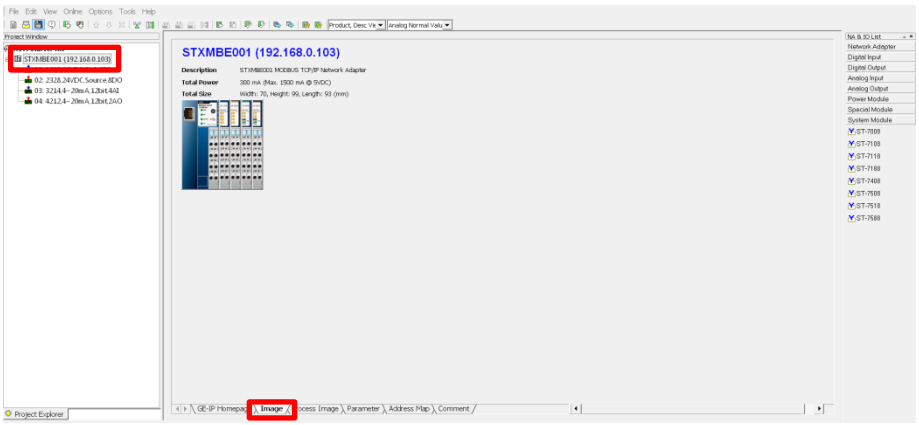
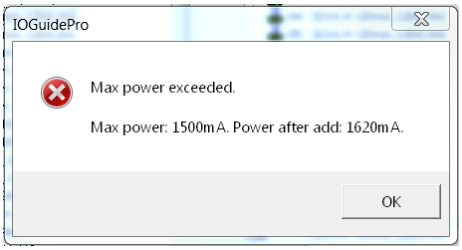


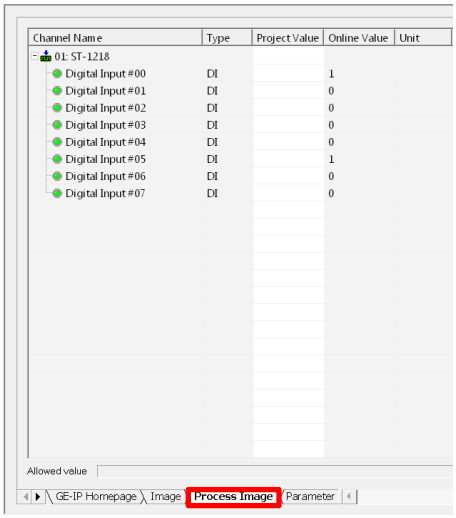
Image tab shows module description, image and specification data.

By clicking on the modules in the Project Window such as STXMBE001 the Image tab will show the modules along with loading of the 5VDC bus and the dimensions.

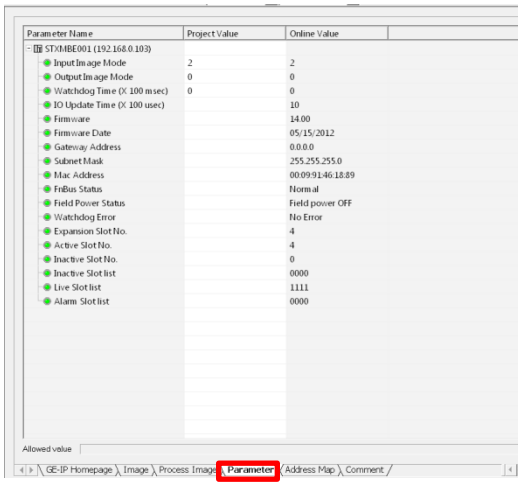


Note: The current modules consume 300mA of the 1500mA available from the STXMBE001. If this data had been close to the 1500mA limit a warning would pop up. When this occurs you should add a ST-7511 (with module ID and occupies a bus address) or ST-7111 (without module ID and does not occupy a bus address). The ST-7x11 module must be left of the module that exceeded the 1500mA. The ST-7x11provides an additional 1500mA to all modules to the right of the ST-7x11.

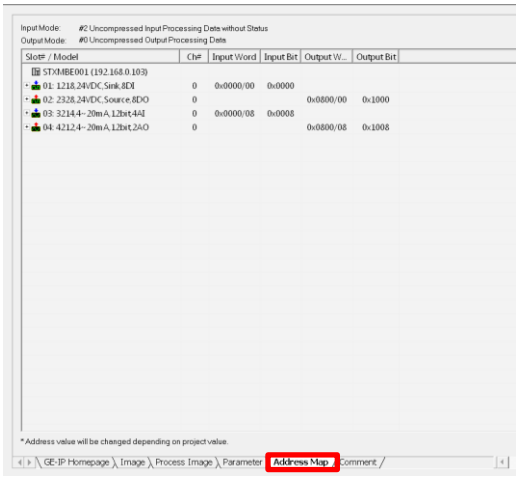
Process Image tab displays the individual parts, data types and values. When in the Monitoring mode it will display the status of inputs and outputs.



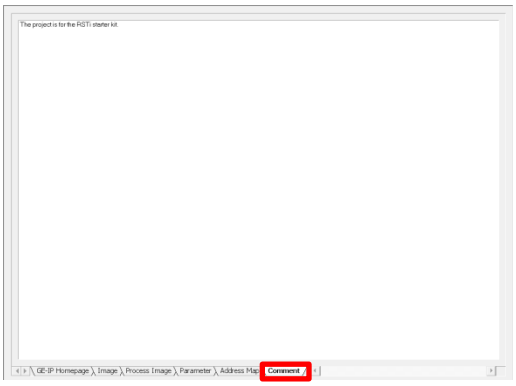
The Parameter tab provides key information such as firmware revision, date of revision and other system status of the modules selected in the Project Window.



The Address Map tab lays out the addressing of each module that data will be mapped to.



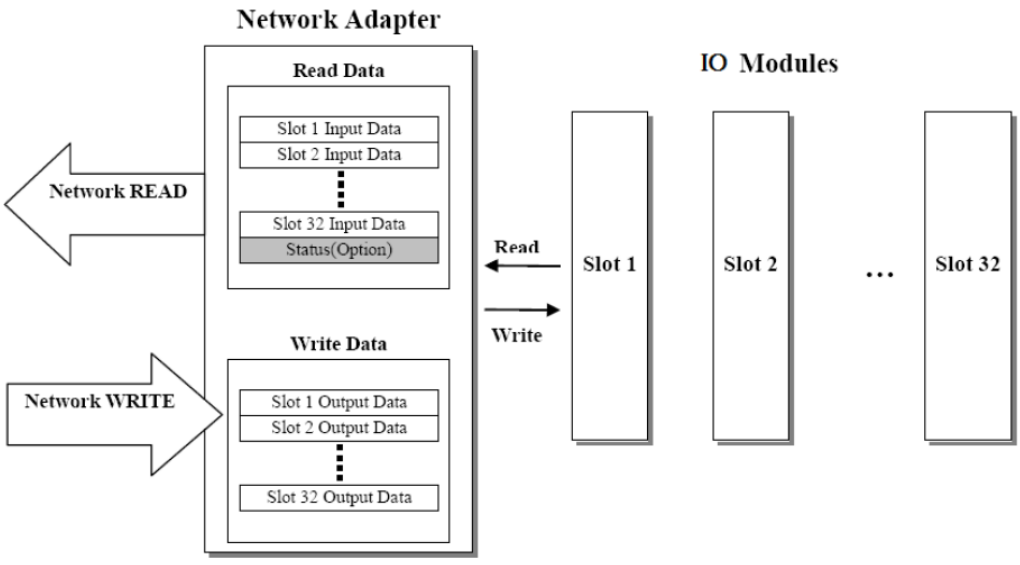
The Comment tab enables the user to document the application. The text is saved in the project.



Transferring Data from RSTi to a controller

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 via an I/O process image data by Bus protocol. The following figure shows the data flow of process image between network adapter and IO modules.



Controlling and Monitoring I/O from IOGuidePro

The following steps will enable the user to exercise inputs and outputs using the Modbus TCP commands. The Modbus Communications window in the Tools tab will enable you to enter the functions.

MODBUS Interface Register Map / Bit Map

Table 33: Register Map: Read/Write Pattern**

Start Address	Read/Write	Description	Function Code
0x0000 ~	Read	Process input image registers (Real Input Register)	4, 23
0x0800 ~	Read/Write	Process output image registers (Real Output Register)	3, 16, 23
0x1000 ~*	Read	Adapter Identification special registers.	3, 4, 23
0x1020 ~*	Read/Write	Adapter Watchdog, other time special register.	3, 4, 6, 16, 23
0x1100 ~*	Read/Write	Adapter Information special registers.	3, 4, 6, 16, 23
0x2000 ~*	Read/Write	IO Module Information special registers.	3, 4, 6, 16, 23

* The special register map must be accessed by read/write of every/each address (one address).

Table 34: Bit Map: Read/Write Pattern**

Start Address	Read/Write	Description	Function Code
0x0000 ~	Read	Process input image bits All input registers area is addressable by bit address. Size of input image bit is size of input image register * 16.	2
0x1000 ~	Read/Write	Process output image bits All output registers area is addressable by bit address. Size of output image bit is size of output image register * 16.	1, 5, 15

** Note: In term of decimal notation some Modbus masters read register address with +1 offset, e.g.: 0x1000 = 4096 +1 =4097.

Reading Hex data to and from the STXMBE001

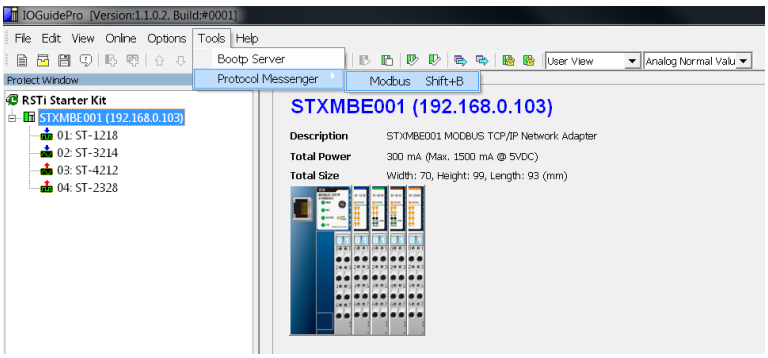
The following example demonstrates how the input and output data is packed into the Hex addressing when reading from the STXMBE001 Modbus TCP network interface configured as Uncompressed (The default for the STXMBE001 is Uncompressed Input Processing). It is important to note that modules with only 4 or 8 bits of data, such as a discrete in or output module, will have their data packed the next modules word data.

Starter Kit Memory Addressing Example with the following:

- Discrete inputs (0) and (5) ON, on ST-1214
- Analog inputs channels (0) 10.0mA and channel (1) 20mA, on ST-3214
- Analog outputs channels (0) 10.0mA and channel (1) 20mA, on ST-4212
- Discrete outputs (1), (2) and (4) forced ON, on ST-2328

All address are in Hex	ST-1214 Discrete Input (8 Points)	ST-3214 Analog Input (2 channels)	ST-4212 Analog Out (2 channels)	ST-2328 Discrete Out (8 Points)
Reading Input Registers (Function 4) the first 3 Hex words from STXMBE001. Hex **000F FF05 FE21**	Hex 000F FF05 FE**21** **21** represents the inputs (0) and (5) ON	Hex 000F FF**05 FE**21 Channel (0) 10mA 00**0F FF**05 FE21 Channel (1) 20mA		
Writing Multiple registers (Function 16) first 3 Hex words from STXMBE001. Hex **0016 05FF 0FFF** to set analog output channel (0) to 20mA, channel (1) to 10mA and turn outputs 1, 2 and 4 ON.			Hex 0016 05FF **0FFF** Writes 20mA to channel (0) 0016 **05FF** 0FFF Writes 10mA to channel 1	Hex **0016** 05FF 0FFF Turns outputs 1, 2 and 4 ON
Reading Discrete Inputs (Function 2) ST-1214 Input Module Hex **21**	Hex **21** represents the inputs (0) and (5) ON			
Writing Single Coil (Function 5) a single output (3) ON ST-2328. Write Hex **1022**. The base address is decimal 4096 (Hex 1000) + 32 (32 bits used by the analog output module ST-4212)+2 = 4130 or 1022 Hex.				Hex **1022**, Send **FF00** to turn ON the first output.
Writing Single Register (Function 6) 7 mA to channel 2, of ST-4212. Write Hex **0300** to Hex register address 0801. Hex register address 0800 is channel 1, 0801 is channel 2. Hex register 0802 are the 8 bits of ST-2328			Address Hex **0801** Write Hex **0300** for 7 mA or decimal 768	

Step 1: Open Protocol Messenger by clicking on **Tools**, Protocol Messenger and clicking on Modbus.

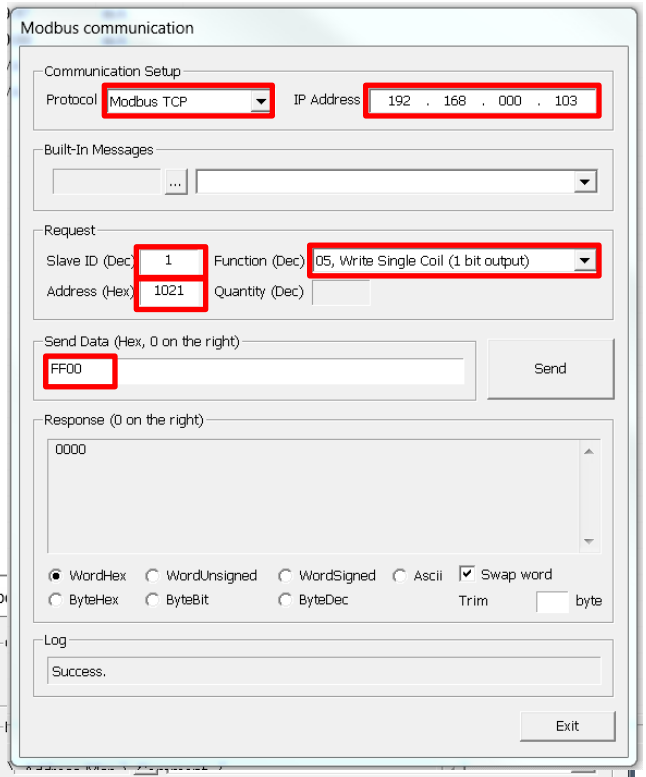


Step 2: **Writing a single output ON.** The following steps will turn output 1 ON (second output on ST-2328).

The following will allow you to determine the Hex address that will be written to based on decimal addressing and then converting to Hex.

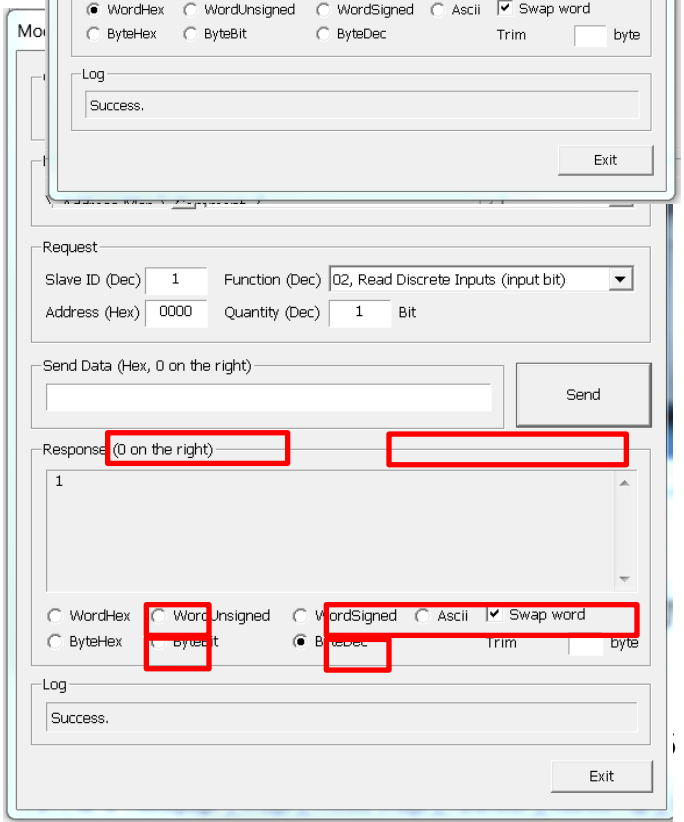
The base address is 4096 (Hex 1000) + 32 (32 bits used by the analog output module ST-4212) + 1= 4129 or 1021 Hex.

a) In Protocol field select Modbus TCP.
b) In IP Address field enter IP address of RSTi Modbus TCP slave device.
c) Slave ID: 1
d) Select Function: 05, Write Single Coil (1bit output)
e) Address (Hex format): 1021 (this will control output 2)
f) Send Data (Hex) **FF00** will turn ON (**0000** will turn OFF output 1)
g) Click Send.
h) You will see the response back from the slave in the Response window.
i) Change the Send Data to 0000 and you will see the output 1 go OFF.



Step 3: **Reading a single discrete input status.** The following steps will read input status. This assumes input 0 is wired ON.

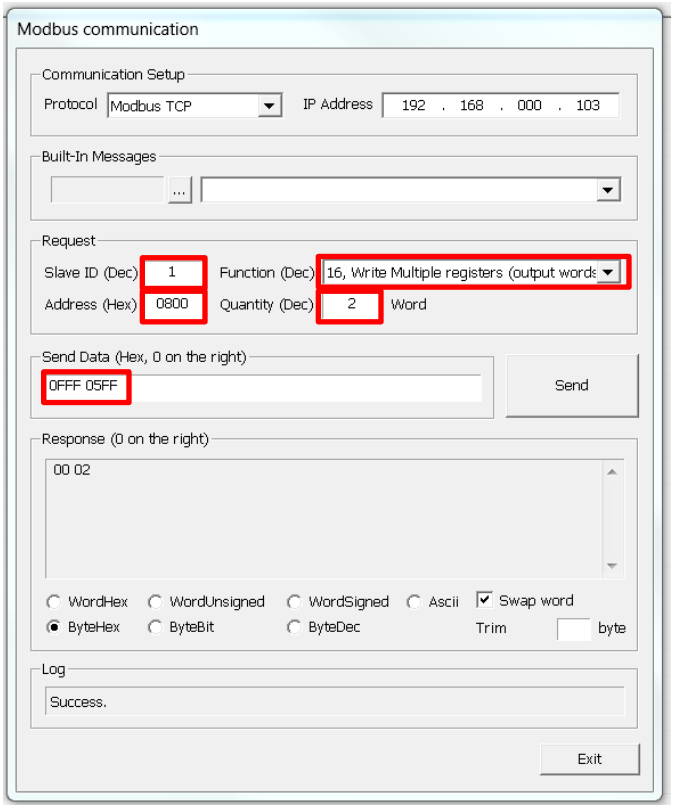
a) In Protocol field select Modbus TCP.
b) In IP Address field enter IP address of RSTi Modbus TCP slave device.
c) Slave ID: 1
d) Select Function: 02, Read Discrete Inputs (input bit)



e) Address (Hex format): 0000 (this will read input address 0)
f) Quantity (Dec): Enter 1 bit
g) Send Data (Hex) should be blank
h) Click Send.
i) You will see the response back from the slave in the Response window. Click on radial ByteDec and a 1 will appear showing that input 0 is ON.
j) By changing the Quantity (Dec) to 8 and click ByteBit in the Response window. The data should reflect the status of the 8 inputs on the module 00000001. The 1 represents input zero.

Step 4: Writing to analog outputs. The following steps will write two analog output channels on the ST-4212. The example will write Hex 05FF (10mA) to channel 0 and Hex 0FFF (20mA)to channel 1

a) In Protocol field select Modbus TCP.
b) In IP Address field enter IP address of RSTi Modbus TCP slave device.
c) Slave ID: 1
d) Select Function: 16, Write Multiple registers (output words)
e) Address (Hex format): 0800 (this will write to starting address 0800 Hex which is the starting address of analog output channel 0)
f) Quantity (Dec): Enter 2 words
g) Send Data (Hex): 0FFF 05FF
   a. Reading from right to left
      - Hex 05FF will command channel 0 on the ST-4212 to go to 10ma Analog out 1, 0FFF (20ma) Analog out 2
h) Click Send.



For more information on how to read and write to the RSTi Modbus TCP slave device refer to GFK-2799, chapter 4.

First two are output module Hex 02, 05FF(10ma) Analog out 1, 0FFF (20ma) Analog out 2

View Process Image

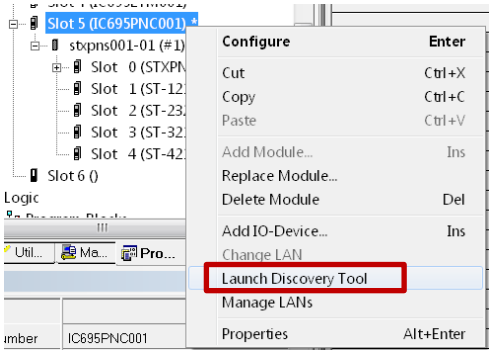
Congratulations on a successful RSTi MODBUS TCP/IP hardware configuration.

Using Auto Discovery Tool to Find PROFINET Devices on the network

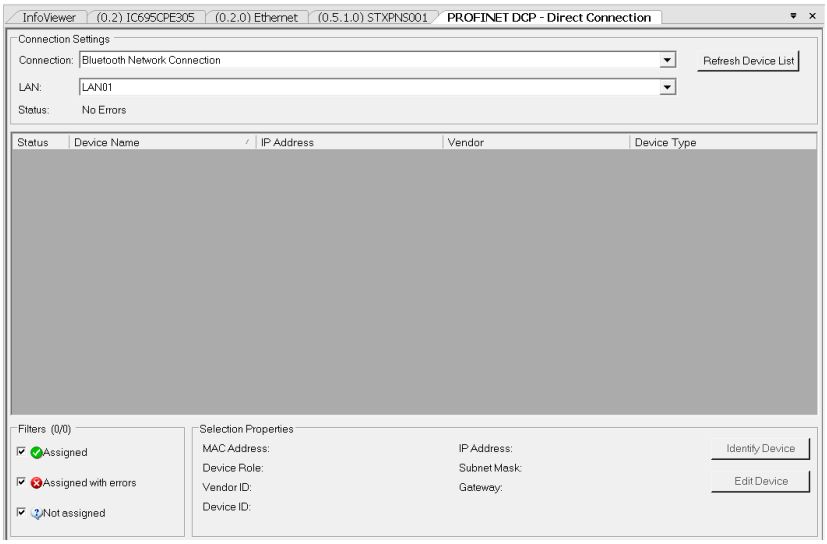
The Proficy MAChine Edition has a powerful tool that enables the user to see all of the devices on the network. Follow the following steps to use the Auto Discovery Tool:

Step 1: Connect the PC directly to the PROFINET controller. Place the MAChine Edition in the Offline mode.

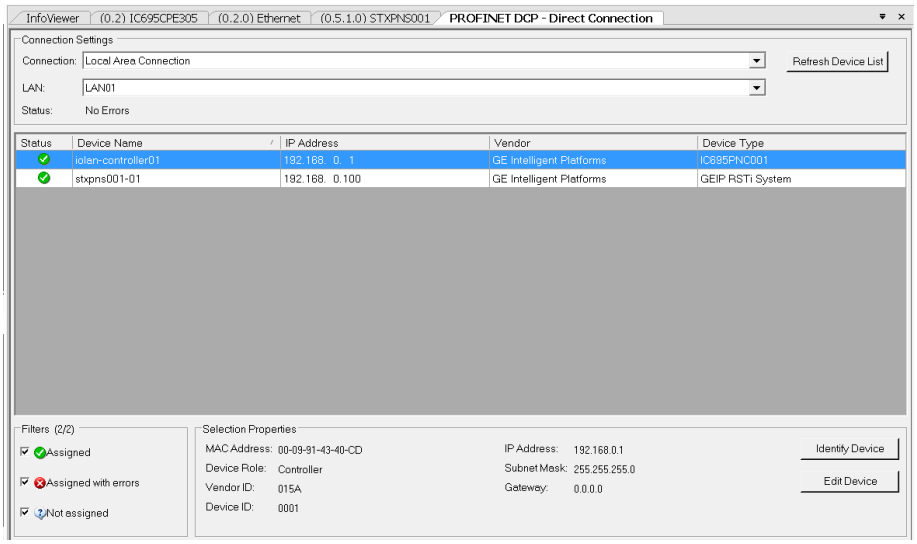
Step 2: Left click on the PROFINET Controller and when the pop up appears right click on Launch Discovery Tool.



The following should appear in the InfoViewer Window.



Step 3: In the Connection Settings change the Connection to Local Area Connection and then click on Refresh Device-List. The tool will display the devices on the network, Device Name, IP Address, Vendor and Device Type. The slave devices can be dragged from the list to the PROFINET controller to be configured. The discovery tool will not bring over the I/O configuration only the network interface.



RSTi STXPNS001 Status LEDs

RSTi STXPNS001 Module	Before Download	After Download	Comments
MOD Status LED (Module status LED)	Green "ON" Normal	Green "ON" Normal	If OFF check to make sure power is on module. Check wiring. If there is a hardware fault the LED could also be off. RED LED solid or blinking is a firmware or hardware fault on the STXPNS001.
Net Status LED (Network Status LED)	No LED: Normal This is normal indication until controller is connected and configuration is downloaded.	Green "ON" Flashing (0.5 seconds) Normal when CPU in Stop mode Green "ON" Controller in RUN mode	If LED is "OFF" after a controller configuration is downloaded, check cable and rotary switch to make sure it matches device name (STXPNS001-01 as example if rotary is in 0 1 positions) in the Inspector window for the STXPNS001. If LED is Flashing RED or solid RED the configuration did not download properly. Check configuration and download again to the controller.
I/O LED indicates the status of the network interface and the I/O it is connected to.	"OFF" No power or no I/O attached Green "ON" I/O Bus and Configuration is normal.	"OFF" No power or No I/O attached Green "ON" I/O Bus and Configuration is normal.	"RED" solid or flashing bus or configuration error. Check configuration and try downloading again Network interface requires at least one I/O module attached to function properly.
Port 1 and Port 2	"OFF" No cable or PROFINET Controller attached Green "Flashing" PROFINET Controller attached and activity.	"OFF" No cable or PROFINET Controller attached Green "Flashing" PROFINET Controller attached and activity.	If "OFF" confirm cable is attached to both ends and controller is powered and connected. Note: RSTi STXPNS001 does not support MRP therefore it should not be used in a ring.
Field Power	"OFF" no field power applied Green "ON" when field power is applied	"OFF" no field power applied Green "ON" when field power is applied	If field power is "ON" but LED is not, check wiring. Field power should be an independent power source from the Network Interface power

RSTi ST-xxxx I/O Modules Status LEDs

RSTi ST-xxxx I/O Modules	Before Download	After Download	Comments
Status LED	Green "Flashing" normal. I/O is ok and waiting for configuration.	Green "ON" normal.	Flashing Red: I/O bus time out Red: module fault.
Discrete LEDs	**Discrete In:** Green when power is "ON" **Discrete Out:** Off	**Discrete In:** Green when power is "ON" **Discrete Out:** Off logic control is off Green when logic is turning output on.	
Analog LEDs	**Analog In:** LED Green: Normal **Analog Out:** LED Green: Normal operation	**Analog In:** LED Green: Normal **Analog Out:** LED Green: Normal operation	**Analog In:** If LED is RED check field wiring for open wire. **Analog Out:** LED off module not working properly.

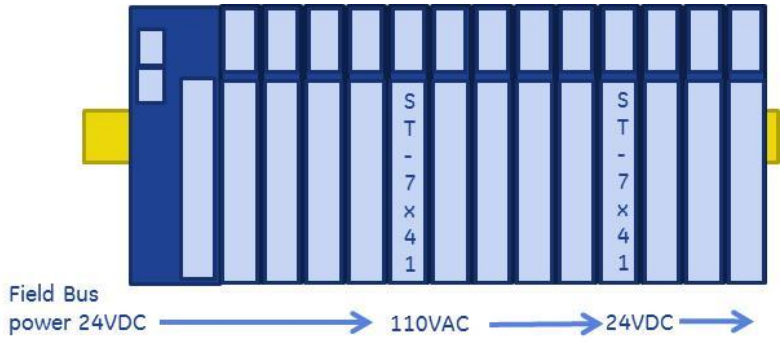
RSTi Additional Power Module Information

System Power: It is recommended that the 24VDC System Power be from an independent power source than the Field Bus Power. The separation allows the field power to be turned off without impacting the Network Interface. The network interface provides 5VDC to the corresponding I/O modules and each module passes the 5VDC to the next module.

> **5VDC Booster Module:** The ST-7111 (No bus ID type support, does not occupy an address on the bus) or ST-7511 (Uses a bus ID and occupies an address on the bus) are available to boost the 5VDC signal in the event that modules power consumption exceed network interface. The booster module will provide 5VDC at 1 amp to modules to the right of the booster module. The module requires 24VDC System Power. 24VDC Field Power is also required and is supplied to all modules to the right.

Field Power: Field Power on the Network Interface is 24VDC and the Field Power is passed from one module to the next. The maximum current available on the Field Power Bus is 10 amps.

> **Isolated Field Distribution Module:** The ST-7241 (No bus ID type support, does not occupy an address on the bus) or ST-7641 (Uses a bus ID and occupies an address on the bus) are available to change field voltages such as 5VDC, 24VDC, 48VDC or AC with a maximum of 10 amps available on the Field Power Bus to the right of the module. The module can also be used when additional current and isolation. The Field Bus on the I/O modules to the right of the Isolated Field Distribution Module will carry the voltage of the Isolated Field Distribution Module.



Shield Termination Modules: The ST-7008 (No bus ID type support, does not occupy an address on the bus) or ST-7408 (Uses a bus ID and occupies an address on the bus) is available to group all shields to the RSTi bus ground. Modules such as analog and motion could use the module to reduce noise impact on the RSTi system. Field Bus power is passed through the module to the module on the right.

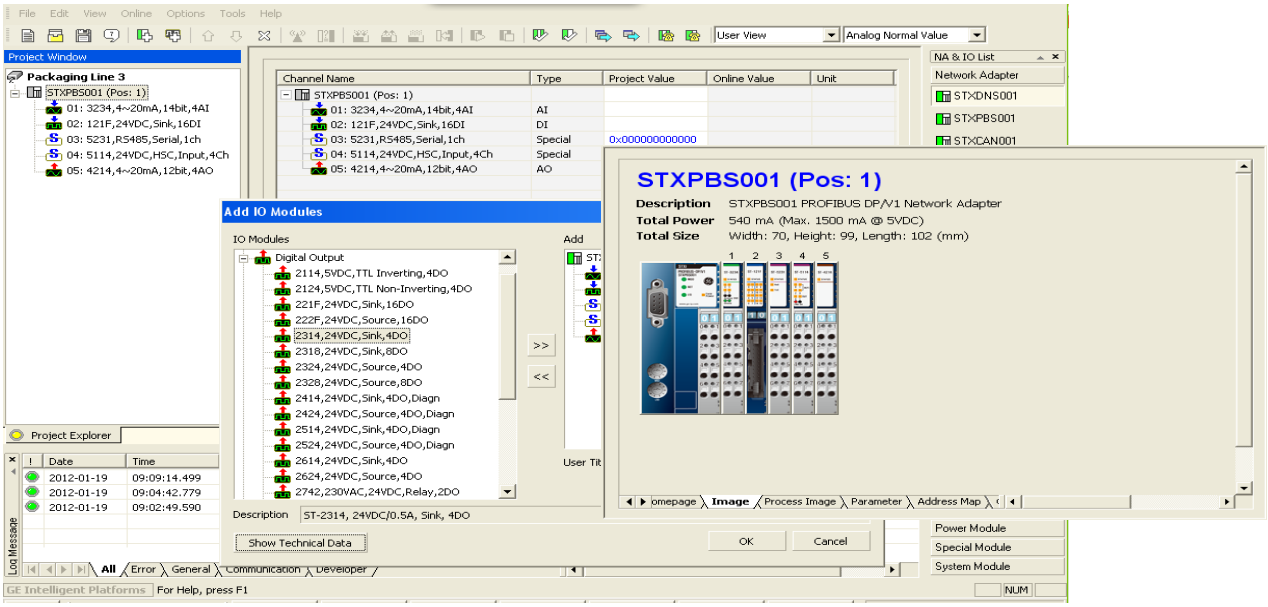
0VDC Distribution Modules 8 points, 10 amps: The ST-7108 (No bus ID type support, does not occupy an address on the bus) or ST-7508 (Uses a bus ID and occupies an address on the bus) is available to group commons from field devices to simplify wiring. The module commons group is connected to the Field Power 0VDC bus. Field Bus power is passed through the module to the module on the right.

24VDC Distribution Modules 8 points, 10 amps: The ST-7118 (No bus ID type support, does not occupy an address on the bus) or ST-7518 (Uses a bus ID and occupies an address on the bus) is available to group 24VDC from field devices to simplify wiring. The module 24VDC group is connected to the Field Power 24VDC bus. Field Bus power is passed through the module to the module on the right.

0VDC and 24VDC Distribution Modules 4 points each, 10 amps: The ST-7188 (No bus ID type support, does not occupy an address on the bus) or ST-7588 (Uses a bus ID and occupies an address on the bus) is available to group four 0VDC and four 24VDC from field devices to simplify wiring. The module 0VDC is connected to the Field Power 0VDC and the 24VDC group is connected to the Field Power 24VDC bus. Field Bus power is passed through the module to the module on the right.

IO Guide Pro - Third Party Configuration Tool

The IO Guide Pro enables integrators network independence. I/O systems can be easily configured using the various RSTi network interfaces. Changing from Ethernet IP to PROFIBUS is as simple as a mouse click without impacting the rest of the I/O configuration. The tool provides technical data, address mapping, product image and bus loading.



The IO Guide Pro Supports the Following Network Interfaces:

- DeviceNet STXDNX001 only
- PROFIBUS DP STXPBS001 only
- CANOpen STXCAN001
- Ethernet IP STXEIP001
- Modbus TCP STXMBE001
- Modbus serial RS-232 STXMBS001
- Modbus serial RS-485 STXMBS002

Key Features:

- Automatic scan Modbus devices online
- Configuration validation
- View address map
- Configure parameters
- Documentations

RSTi Part Numbers:

Network Interface Units (*Check for release date)			
STXPNS001	PROFINET RT Network Adapter	STXMBE001	MODBUS/TCP network adapter
STXPBS001	PROFIBUS DP/V1 network adapter	STXECT001*	EtherCAT Network Adapter
STXDNS001	DeviceNet network adapter	STXEIP001*	EtherNet/IP Network Adapter
STXMBS001	MODBUS RS-232C network adapter	STXCAN001*	CANopen network adapter
STXMBS002	MODBUS RS-485 network adapter	STXCCL001*	CC-link network adapter
Discrete Inputs			
ST-1124	4 points, Negative Logic 5VDC	ST-1218	8 points, Positive Logic, 12V/ 24VDC
ST-1114	4 points, Positive Logic 5VDC	ST-1228	8 points, Negative Logic, 12V/ 24VDC
ST-1214	4 points, Positive Logic, 12V/ 24VDC	ST-121F	16 points, Positive Logic, 12V/ 24VDC (Requires connector Type Hirose , HIF3BA-20D-2.54C)
ST-1224	4 points, Negative Logic, 12V/ 24V DC	ST-122F	16 points, Negative Logic, 12V/ 24VDC (Requires connector Type Hirose , HIF3BA-20D-2.54C)
ST-1314	4 points, Positive Logic, 48V DC	ST-1804	4 points, 110V AC (AC 85V ~ 132V)
ST-1324	4 points, Negative Logic, 48VDC	ST-1904	4 points, 220V AC (AC 170V ~ 264V)
ST-131F	16 points, Positive Logic, 48VDC (Requires connector Type Hirose , HIF3BA-20D-2.54C)		
Digital Outputs			
ST-2114	4 points, TTL, 5VDC/20mA Inverting	ST-2318	8 points, Negative Logic, 24VDC/ 0.5A
ST-2124	4 points, TTL, 5VDC/20mA Non inverting	ST-2328	8 points, Positive Logic, 24VDC/ 0.5A
ST-2314	4 points, Negative Logic, 24VDC/ 0.5A	ST-221F	16 points, Negative Logic, 24VDC/ 0.3A (Requires connector Type Hirose , HIF3BA-20D-2.54C)
ST-2324	4 points, Positive Logic, 24VDC/ 0.5A	ST-222F	16 points, Positive Logic, 24VDC/ 0.3A (Requires connector Type Hirose , HIF3BA-20D-2.54C)
ST-2414	4 points, Negative Logic, Diagnostics, 24VDC/ 0.5A	ST-2742	Isolated Relay Output 2 points, 230V AC/ 2A
ST-2424	4 points, Positive Logic, Diagnostics, 24VDC/ 0.5A	ST-2744	Isolated Relay Output 4 Points, 230V AC/ 2A
ST-2514	4 points, Negative Logic, Diagnostics, 24VDC/ 2A	ST-2748	Isolated Relay Output 8 Points, 230V AC/ 2A
ST-2524	4 points, Positive Logic, Diagnostics, 24VDC/ 2A	ST-2792	Relay Output 2 points, 230V AC/ 2A, Manual
		ST-2852	Triac Output 2 points, 12V ~ 125VAC/ 0.5A
Analog Inputs			
ST-3114	4 Channels, 0~20mA, 12-bit	ST-3524	4 Channels, -10~+10Vdc, 12-bit
ST-3118	8 Channels, 0~20mA, 12bit	ST-3544	4 Channels, -10~+10Vdc, 14-bit
ST-3134	4 Channels, 0~20mA, 14-bit	ST-3624	4 Channels, 0~5Vdc, 12-bit
ST-3214	4 Channels, 4~20mA, 12-bit	ST-3644	4 Channels, 0~5Vdc, 14-bit
ST-3218	8 Channels, 4~20mA, 12bit	ST-3702	2 Channels, RTD
ST-3234	4 Channels, 4~20mA, 14-bit	ST-3704	4 Channels, RTD (Requires connector Type Hirose , HIF3BA-20D-2.54C)
ST-3274*	4 Channels, 4~20mA, 12-bit, (Requires Sensor Connect 3M Mini-Clamp Plug, 37104 Series)	ST-3708	8 Channels, RTD Connector Type (Requires connector Type Hirose , HIF3BA-20D-2.54C)
ST-3424	4 Channels, 0~10Vdc, 12-bit	ST-3802	2 Channels, Thermocouple
ST-3428	8 Channels, 0~10V, 12bit	ST-3804	4 Channels, Thermocouple Connector Type (Requires connector Type Hirose , HIF3BA-20D-2.54C)
ST-3444	4 Channels, 0~10Vdc, 14-bit	ST-3808	8 Channels, Thermocouple Connector Type (Requires connector Type Hirose , HIF3BA-20D-2.54C)
Analog Output			
ST-4112	2 Channels, 0~20mA, 12-bit	ST-4424	4 Channels, 0~10Vdc, 12bit
ST-4114	4 Channels, 0~20mA,, 12bit	ST-4474*	4 Channels, 0~10Vdc, 12bit, (Requires Sensor Connect 3M Mini-Clamp Plug, 37104 Series)
ST-4212	2 Channels, 4~20mA, 12-bit	ST-4491	1 Channel, 0~10V, 12bit, Manual type
ST-4214	4 Channels, 4~20mA, 12bit	ST-4522	2 Channels, -10~+10Vdc, 12-bit
ST-4274*	4 Channels, 4-20mA, 12bit, (Requires Sensor Connect 3M Mini-Clamp Plug, 37104 Series)	ST-4622	2 Channels, 0~5Vdc, 12-bit
ST-4422	2 Channels, 0~10Vdc, 12-bit	ST-4911	1 Channel, 0~1 A, 12bit

PID Loop Controllers (*Check release date)

ST-3814*	1 Loop PID Controller 4 Channels, TC, Temp. Controller, SSR out (DeviceNet only)	ST-3714*	1 Loop PID Controller 4 Channels, RTD, Temp. Control, SSR Out (DeviceNet only)
ST-3834*	1 Loop PID Controller 4 Ch. TC, Temp. Controller, Current out (DeviceNet only)	ST-3734*	1 Loop PID Controller 4 Ch, RTD, Temp. Control, Current Out (DeviceNet only)

Serial Interface Modules (ASCII)

ST-5211	Serial Interface RS-232C, 1 Channel	ST-5231	Serial Interface RS-485, 1 Channel
ST-5212	Serial Interface RS-232C, 2 Channels	ST-5232	Serial Interface RS-485, 2 Channels
ST-5221	Serial Interface RS-422, 1 Channel		

Motion Modules

ST-5101	High Speed Counter, 1 Channel, 5VDC 1.5MHz	ST-5442	2 Channel, PWM Out, 0.5A/24V, Positive Logic, 2.5Khz
ST-5111	High Speed Counter, 1 Channel, 24VDC 1.5MHz	ST-5444	PWM Out, 0.5A/24V, Positive Logic, 4 Channels, 2.5Khz
ST-5112	High Speed Counter, 2 Channel, 24VDC,100Khz	ST-5641	1 Channel, Pulse Out, 0.5A/24V, Positive Logic, 20Khz
ST-5114	High Speed Counter, 4 Channel, 24VDC, 50Khz	ST-5642	2 Channel, Pulse Out, 0.5A/24V, Positive Logic, 20Khz
ST-5351	SSI Interface 1 CH; 62.5K, 100K, 125K, 250K, 500K, 1M, 2Mbps	ST-5651	1 Channel, Pulse Out, 0.5A/5V (RS422), 20Khz
ST-5422	PWM Out, 2A/24V, Positive Logic, 2 Channels 2.5Khz		

System Modules

(Modules with ID type occupy 1 of the 32 available module ID addresses and will appear in the hardware configuration. The modules without ID support will not occupy a module address and will not appear in the hardware configuration.)

ST-7008	Shield termination module, 8 points, 10A No LED	ST-7588	0VDC and 24VDC 4 points distribution module for field devices ID type with status LEDs (ID type uses module address)
ST-7408	Shield termination module, 8 points, 10A, ID type with LED (ID type uses module address)	ST-7111	5VDC bus booster, 24VDC in
ST-7108	0VDC distribution module for field devices, 8 points, 10A	ST-7511	5VDC bus booster, 24VDC in with LED ID type (ID type uses module address)
ST-7508	0VDC distribution module for field devices, 8 points, 10A with LED (ID type uses module address)	ST-7241	Isolated Field Power Distribution, 5 VDC, 24VDC, 48VDC, 120/240VAC 10 Amp no LED status
ST-7118	24VDC distribution module for field devices, 8 points, 10A	ST-7641	Isolated Field Distributor 5 VDC, 24VDC, 48VDC, 120/240VAC, 10 amp with LED status ID type (ID type uses module address)
ST-7518	24VDC distribution module for field devices, 8 points, 10A ID type with status LEDs (ID type uses module address)	ST-5725*	Extension IO, Master (Tx). Up to 3 master/slave combinations supported. Maximum 300 meters. Only one slave supported per master module.
ST-7188	0VDC and 24VDC 4 points distribution module for field devices	ST-5726*	Extension IO, Slave (Rx). Each Slave requires a Master module.

PROFIBUS Network Interface with built-in I/O (Up to 8 expansion modules supported) (* Check release date)

STXPBS032	24VDC Positive Logic input, 32 points	STXPBS432	16 24VDC Positive Logic input and 16 24VDC Positive Logic output
STXPBS132	24VDC Negative Logic input, 32 points	STXPBS532	16 24VDC Negative Logic input and 16 24VDC Negative Logic output
STXPBS232	24VDC Negative Logic output, 32 points	STXPBS824	16 24VDC Positive Logic input and 16 relay output
STXPBS332	24VDC Positive Logic output, 32 points	STXPBS924	16 24VDC Negative Logic input and 16 relay output
STXPBS016	Relay output, 16 points	STXPBS825	16 24VDC Positive Logic input and 16 isolated relay output
STXPBS116	Relay output, 16 points, isolated	STXPBS925	16 24VDC Negative Logic input and 16 isolated relay output

DeviceNet Network Interface with built-in I/O (Up to 10 expansion modules supported) (* Check release date)

STXDNS032	24VDC Positive Logic input, 32 points	STXDNS532	16 24VDC Negative Logic input and 16 24VDC Negative Logic output
STXDNS132	24VDC Negative Logic input, 32 points	STXDNS824	16 24VDC Positive Logic input and 16 relay output
STXDNS232	24VDC Negative Logic output, 32 points	STXDNS924	16 24VDC Negative Logic input and 16 relay

			output
STXDNS332	24VDC Positive Logic output, 32 points	STXDNS825	16 24VDC Positive Logic input and 16 isolated relay output
STXDNS016	Relay output, 16 points	STXDNS925	16 24VDC Negative Logic input and 16 isolated relay output
STXDNS116	Relay output, 16 points, isolated	STXDNS032	24VDC Positive Logic input, 32 points
STXDNS432	16 24VDC Positive Logic input and 16 24VDC Positive Logic output	STXDNS132	24VDC Negative Logic input, 32 points

Accessories

STXACC004	End Module, 7pcs (End module ships with Network Interface)	STXACC001	Marker with numbers 100pcs
STXRTB009	Removable Terminal Block, 9pcs (Modules ship with terminal block except connector style.)	STXACC002	Blank markers 100pcs

Typical Configuration Example:

Requirement: PROFINET network connection, (24) 24VDC positive logic inputs, (12) 24VDC Positive Logic, 0.5 amp outputs, (4) analog inputs 4-20mA, (2) analog outputs 4-20mA, (6) 120VAC inputs

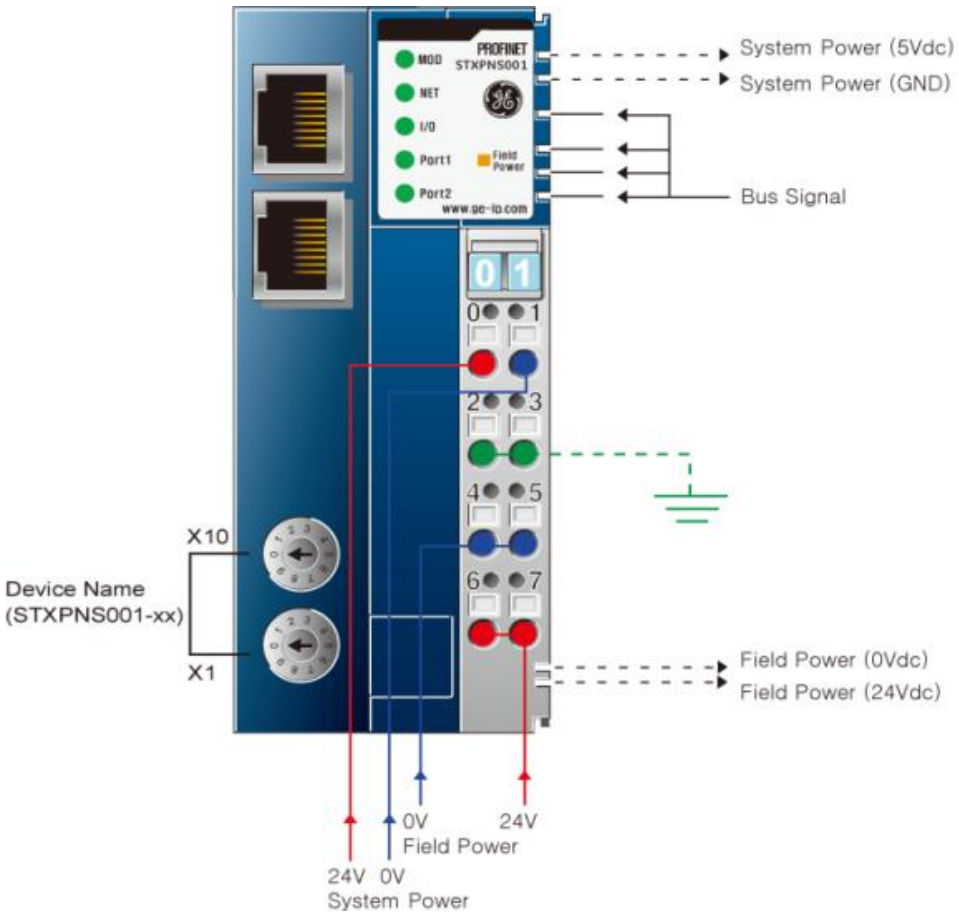
QTY	Part Number	Description	Comments
1	STXPNS001	PROFINET RT Network Adapter	Supports up to 32 modules with built-in Ethernet switch (ring topology not supported)
3	ST-1218	8 points, Positive Logic 12V/ 24VDC inputs	Includes terminal block
1	ST-2328	8 points, Positive Logic, 24VDC/ 0.5A outputs	Includes terminal block
1	ST-2324	4 points, Positive Logic, 24VDC/ 0.5A outputs	Includes terminal block
1	ST-3214	4 Channels, 4~20mA, 12-bit in	Includes terminal block
1	ST-4212	2 Channels, 4~20mA, 12-bit out	Includes terminal block
1	ST-7408	Shield module, ID type with LED (ID type uses module address)	Optional Shield module for analog modules.
1	ST-7641	Power distribution module 5, 24, 48, AC , 10 amp with LED status ID type (ID type uses module address)	The ST-7641 is needed to support the 120VAC input module ST-1804. All modules to the right of the ST-7641 will be 120VAC unless a ST-7641 is installed to switch the bus voltage.
2	ST-1804	4 points, 110V AC (AC 85V ~ 132V) inputs	Includes terminal block

Notes:

A. The total number of modules used is 11 (ST-7408 and ST-7641 occupy a module address)
B. The above configuration only requires 177mm width by 70mm deep and 99mm high. (6.97 in. W x 2.76 in. D x 3.9 in. H)

PROFINET Network Interface Specifications – STXPNS001

ITEM	SPECIFICATION	ITEM	SPECIFICATION
Network Type	PROFINET I/O RT Slave (No MRP support) with built-in switch	Surrounding Air Temperature	-20C to 55C Storage -40C to 85C
Cable Type	Ethernet RJ 45 (2) connections	Relative Humidity	5% to 90% Non condensation
Cable Length	Up to 100 meters from Ethernet Hub	Vibration	IEC 60068-2-6:1995
Communication Rate	10/100Mbps	Atmosphere	No excessive dust No corrosive gases
Maximum number of nodes	Limited by the IP address	Module Power	24VDC Nominal (11 to 28.8VDC) Supplies 1.5 amps to I/O modules
Topology	Line or Star Topology	Backplane Power	1.5 amps to I/O modules
Mounting Position	First module of the RSTi I/O sytem	Field Power	Class II 24VDC Nominal (11 to 28.8VDC) 10 amps
Number of I/O	Up to 32 I/O modules supported	Isolation	System power to internal logic: Non-isolated System power to I/O driver: Isolated
Maximum Digital I/O	Input: 1,024 points Outputs: 1,024 points	Power Dissipation	115mA typical @ 24VDC
Maximum Analog I/O	Input: 64 channels Outputs: 64 channels	Weight	150 grams
Maximum Byte Size	Input: 1288 bytes Output: 1288 bytes	Size (W x H x D)	45mm x 99mm x 70mm
Node Address	Rotary Selection 1 to 99	Certification	UL/CUL/CE PROFINET UL Class 1/Div 2 and ATEX pending

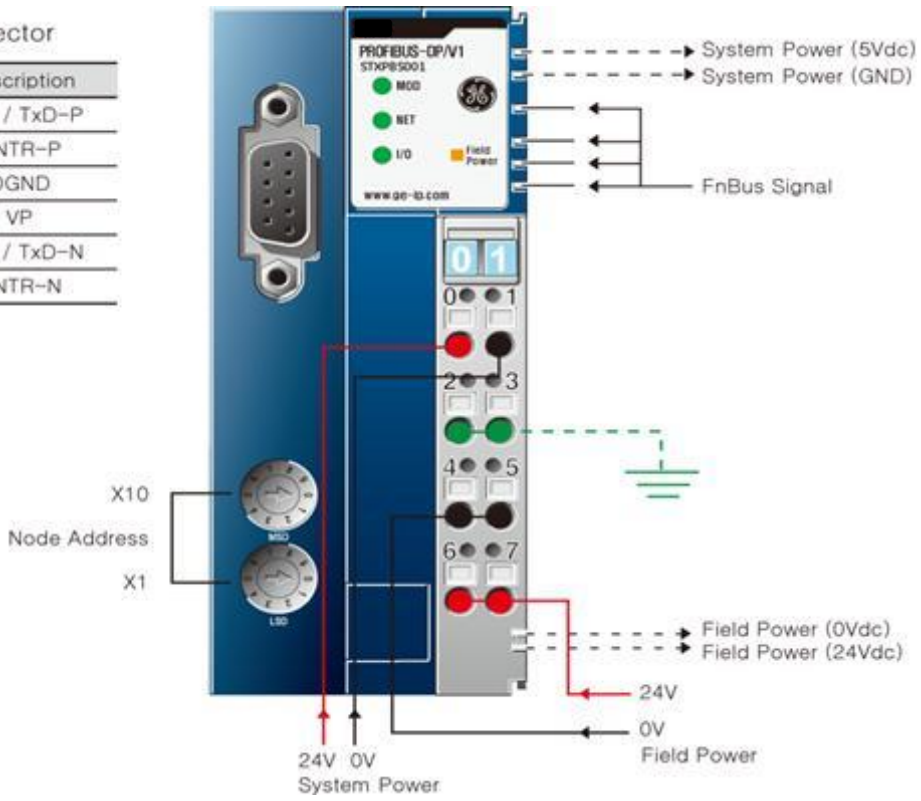


PROFIBUS DP Interface Specifications – STXPBS001

ITEM	SPECIFICATION	ITEM	SPECIFICATION
Network Type	PROFIBUS DP/V1 Slave	Surrounding Air Temperature	-20C to 55C for UL -20 to 60C for non-UL Storage -40C to 85C
Cable Type	PROFIBUS DP Cables	Relative Humidity	5% to 90% Non condensation
Cable Length	1.2Km to 100 meters	Vibration	IEC 60068-2-6:1995
Communication Rate	9.6 kbaud to 12 Mbaud Supports Auto Sensing	Atmosphere	No excessive dust No corrosive gases
Maximum number of nodes	101 including master	Module Power	24VDC Nominal (11 to 28.8VDC) Supplies 1.5 amps to I/O modules
Topology	Line	Backplane Power	1.5 amps to I/O modules
Mounting Position	First module of the RSTi I/O sytem	Field Power	Class II 24VDC Nominal (11 to 28.8VDC) 10 amps
Number of I/O	Up to 32 I/O modules supported	Isolation	System power to internal logic: Non-isolated System power to I/O driver: Isolated
Maximum Digital I/O	Input: 1,024 points Outputs: 1,024 points	Power Dissipation	60mA typical @ 24VDC
Maximum Analog I/O	Input: 64 channels Outputs: 64 channels	Weight	155 grams
Maximum Byte Size	Input: 1288 bytes Output: 1288 bytes	Size (W x H x D)	42mm x 99mm x 70mm
Station Number	Rotary switch 1 to 99	Certification	UL/CUL/CE PROFIBUS UL Class 1/Div 2 and ATEX pending

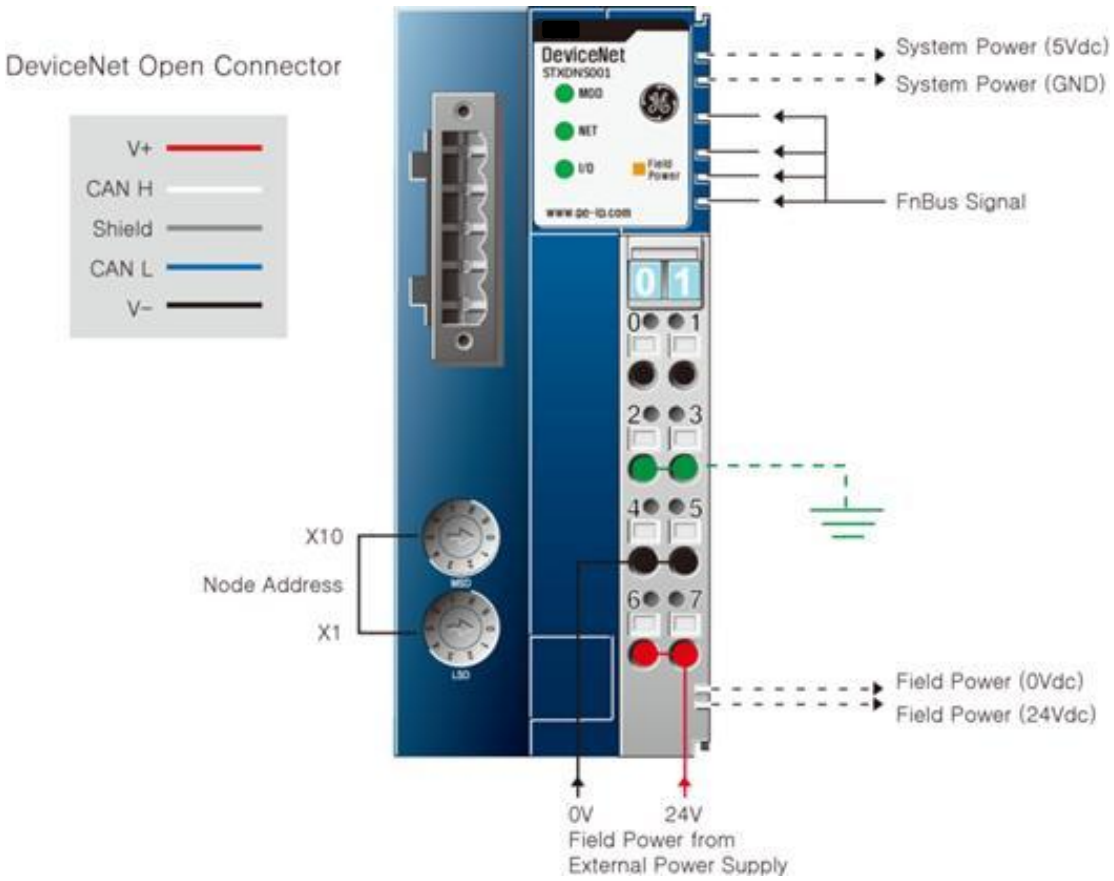
PROFIBUS Connector

Pin No.	Description
3	RxD / TxD-P
4	CNTR-P
5	DGND
6	VP
8	RxD / TxD-N
9	CNTR-N



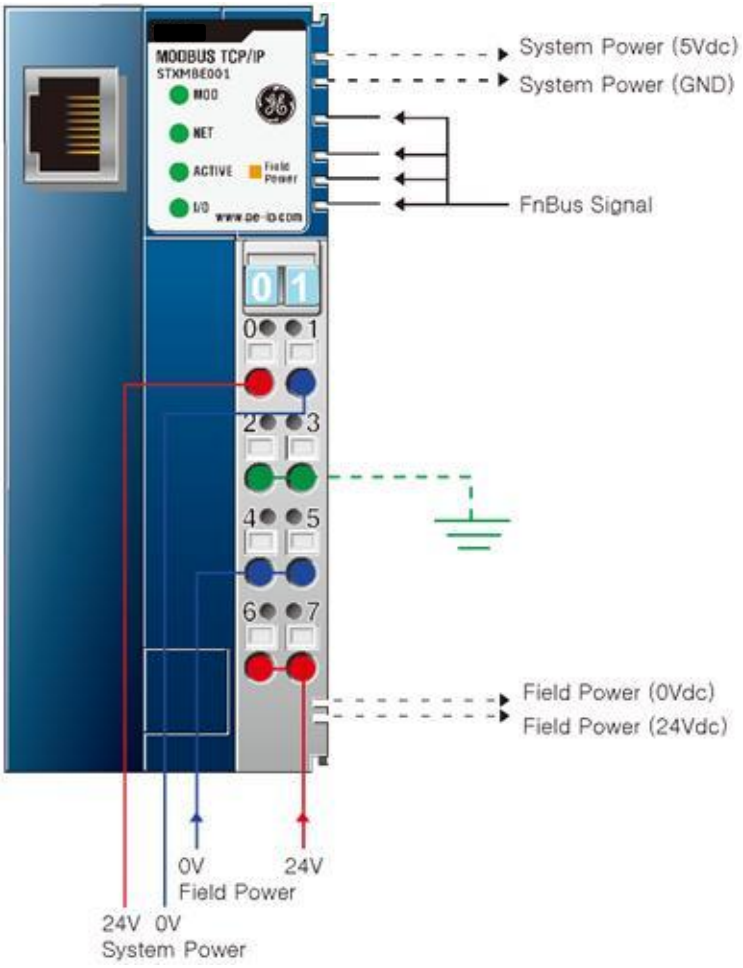
DeviceNet Interface Specifications – STXDNS001

ITEM	SPECIFICATION	ITEM	SPECIFICATION
Network Type	DeviceNet Supports Bit Strobe, Polling, Cyclic, COS	Surrounding Air Temperature	-20C to 55C for UL -20 to 60C for non-UL Storage -40C to 85C
Cable Type	Dedicated DeviceNet Cable 5 pin	Relative Humidity	5% to 90% Non condensation
Cable Length	100 to 500 meters	Vibration	IEC 60068-2-6:1995
Communication Rate	125Kbps, 250Kbps and 500Kbps with auto negotiating	Atmosphere	No excessive dust No corrosive gases
Maximum number of nodes	64	Module Power	24VDC Nominal (11 to 28.8VDC) Supplies 1.2 amps to I/O modules
Topology	Line	Backplane Power	1.5 amps to I/O modules
Mounting Position	First module of the RSTi I/O sytem	Field Power	Class II 24VDC Nominal (11 to 28.8VDC) 10 amps
Number of I/O	Up to 32 I/O modules supported	Isolation	System power to internal logic: Non-isolated System power to I/O driver: Isolated
Maximum Digital I/O	Input: 2,016 points Outputs: 2,016 points	Power Dissipation	30mA typical @ 24VDC
Maximum Analog I/O	Input: 126 channels Outputs: 126 channels	Weight	155 grams
Maximum Byte Size	Input: 252 bytes Output: 252 bytes	Size (W x H x D)	42mm x 99mm x 70mm
Station Number	Rotary switch 1 to 99	Certification	UL/CUL/CE DeviceNet (ODVA) UL Class 1/Div 2 and ATEX pending



Modbus TCP Specifications – STXMBE001

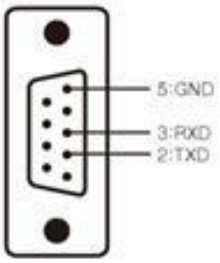
ITEM	SPECIFICATION	ITEM	SPECIFICATION
Network Type	Modbus TCP Slave (1 port) Supports 16 connection	Surrounding Air Temperature	-20C to 55C -20 to 60C Non-UL Storage -40C to 85C
Cable Type	Ethernet Shielded RJ 45	Relative Humidity	5% to 90% Non condensation
Cable Length	Up to 100 meters from Ethernet Hub	Vibration	IEC 60068-2-6:1995
Communication Rate	10/100Mbps	Atmosphere	No excessive dust No corrosive gases
Maximum number of nodes	Limited by the IP address	Module Power	24VDC Nominal (11 to 28.8VDC) Supplies 1.5 amps to I/O modules
Topology	Line or Star Topology	Backplane Power	1.5 amps to I/O modules
Mounting Position	First module of the RSTi I/O sytem	Field Power	Class II 24VDC Nominal (11 to 28.8VDC) 10 amps
Number of I/O	Up to 32 I/O modules supported	Isolation	System power to internal logic: Non-isolated System power to I/O driver: Isolated
Maximum Digital I/O	Input: 2,016 points Outputs: 2,016 points	Power Dissipation	60mA typical @ 24VDC
Maximum Analog I/O	Input: 126 channels Outputs: 126 channels	Weight	150 grams
Maximum Byte Size	Input: 252bytes Output: 252 bytes	Size (W x H x D)	45mm x 99mm x 70mm
Operating Mode	8 Modbus TCP, 4 HTTP, BOOTP	Certification	UL/CUL/CE UL Class 1/Div 2 and ATEX pending



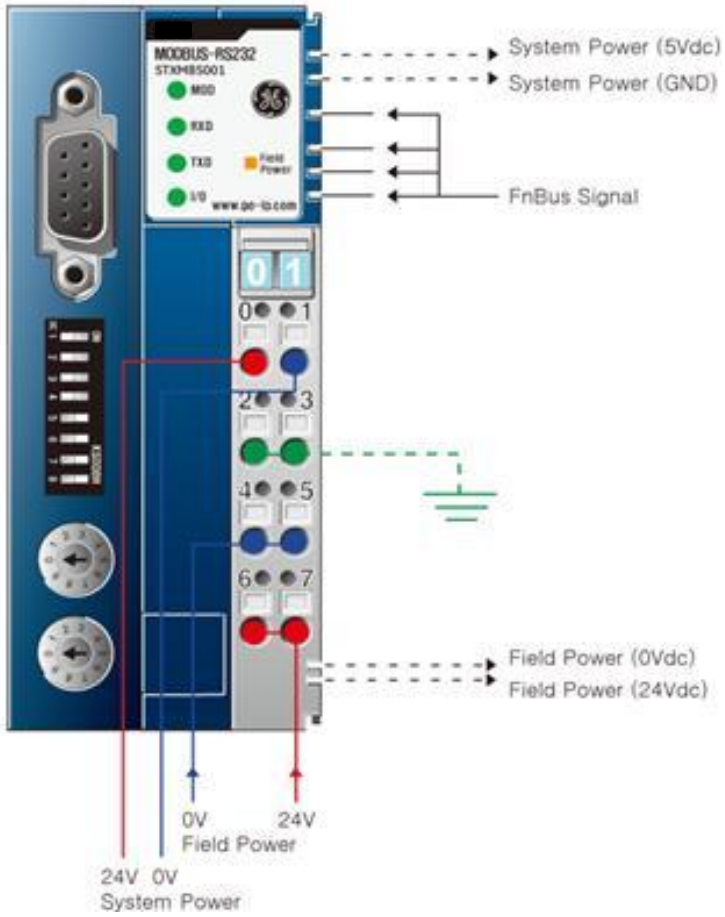
Modbus Serial RS-232 Specifications – STXMBS001

ITEM	SPECIFICATION	ITEM	SPECIFICATION
Network Type	Modbus RS-232 Slave	Surrounding Air Temperature	-20C to 55C -20 to 60C Non-UL Storage -40C to 85C
Cable Type	Serial Twisted Cable	Relative Humidity	5% to 90% Non condensation
Cable Length	15 meters	Vibration	IEC 60068-2-6:1995
Communication Rate	1.2Kbps to 115.2kbps	Atmosphere	No excessive dust No corrosive gases
Maximum number of nodes	1	Module Power	24VDC Nominal (11 to 28.8VDC) Supplies 1.5 amps to I/O modules
Topology	Point to Point	Backplane Power	1.5 amps to I/O modules
Mounting Position	First module of the RSTi I/O sytem	Field Power	Class II 24VDC Nominal (11 to 28.8VDC) 10 amps
Number of I/O	Up to 32 I/O modules supported	Isolation	System power to internal logic: Non-isolated System power to I/O driver: Isolated
Maximum Digital I/O	Input: 2,016 points Outputs: 2,016 points	Power Dissipation	70mA typical @ 24VDC
Maximum Analog I/O	Input: 126 channels Outputs: 126 channels	Weight	150 grams
Maximum Byte Size	Input: 252bytes Output: 252 bytes	Size (W x H x D)	45mm x 99mm x 70mm
Node Address	Rotary Selection 1 to 99	Certification	UL/CUL/CE UL Class 1/Div 2 and ATEX pending

MODBUS Electrical Interface

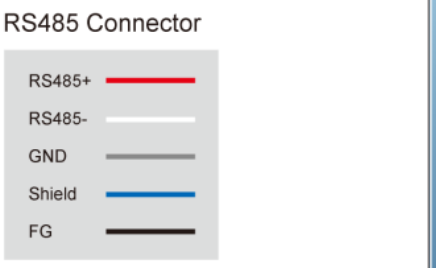


Dsub 9–Pin (Female)	SignalName	Description
1		
2	TXD	Output, Transmitted Data
3	RXD	Input, Received Data
4		
5	GND	Signal Common
6		
7		
8		
9		

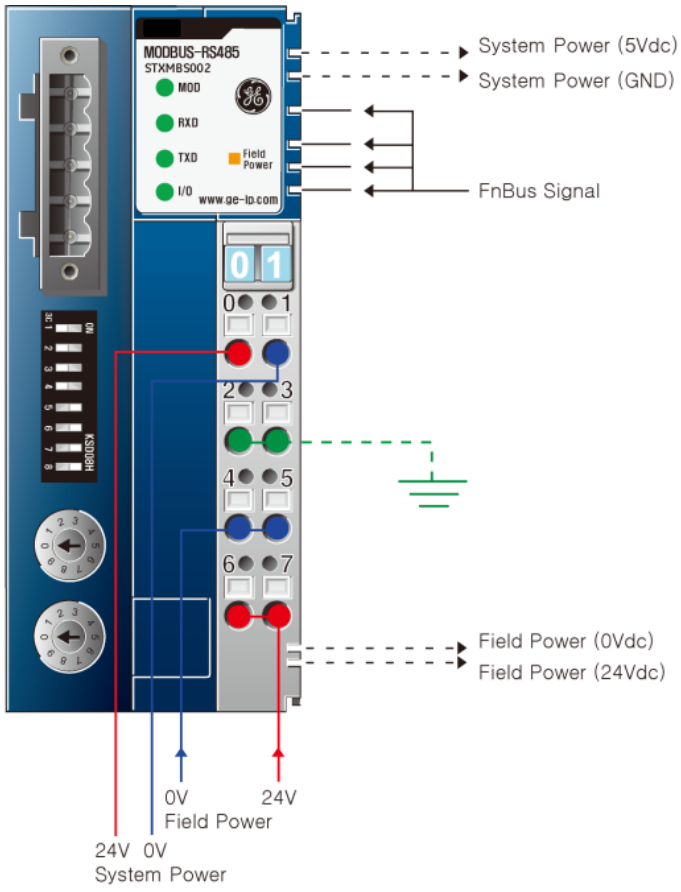


Modbus Serial RS-485 Specifications – STXMBS002

ITEM	SPECIFICATION	ITEM	SPECIFICATION
Network Type	Modbus RS-485 Slave RTU and ASCII	Surrounding Air Temperature	-20C to 55C -20 to 60C Non-UL Storage -40C to 85C
Cable Type	Serial Twisted Cable	Relative Humidity	5% to 90% Non condensation
Cable Length	1200 meters	Vibration	IEC 60068-2-6:1995
Communication Rate	1.2Kbps to 115.2kbps	Atmosphere	No excessive dust No corrosive gases
Maximum number of nodes	1	Module Power	24VDC Nominal (11 to 28.8VDC) Supplies 1.5 amps to I/O modules
Topology	Point to Point	Backplane Power	1.5 amps to I/O modules
Mounting Position	First module of the RSTi I/O sytem	Field Power	Class II 24VDC Nominal (11 to 28.8VDC) 10 amps
Number of I/O	Up to 32 I/O modules supported	Isolation	System power to internal logic: Non-isolated System power to I/O driver: Isolated
Maximum Digital I/O	Input: 2,016 points Outputs: 2,016 points	Power Dissipation	70mA typical @ 24VDC
Maximum Analog I/O	Input: 126 channels Outputs: 126 channels	Weight	150 grams
Maximum Byte Size	Input: 252bytes Output: 252 bytes	Size (W x H x D)	45mm x 99mm x 70mm
Node Address	Rotary Selection 1 to 99	Certification	UL/CUL/CE UL Class 1/Div 2 and ATEX pending

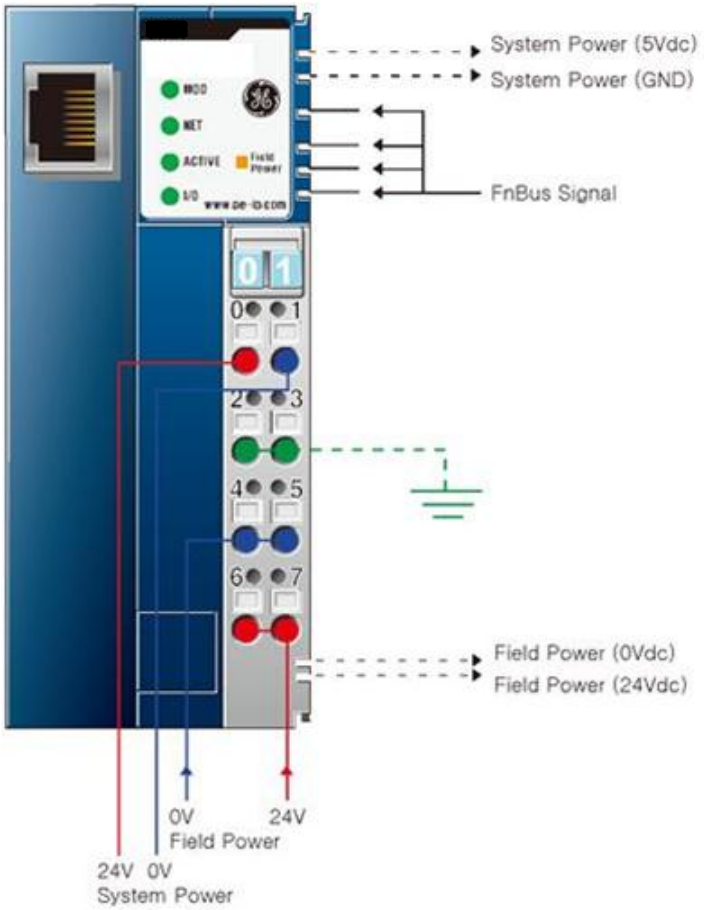


Dsub 5-Pin (Female)	SignalName	Description
1	RS485+	In/Out, Transceiver Data High
2	RS485-	In/Out, Transceiver Data Low
3	GND	Signal Common
4	Shield	Shield
5	FG	Frame Ground. Internally shorted with Shield



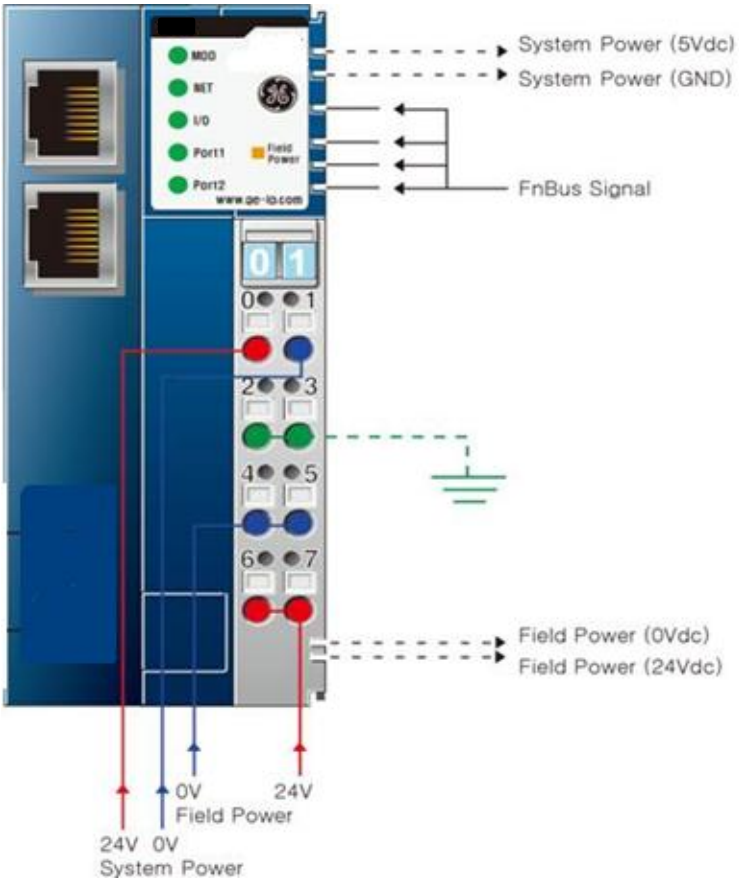
Ethernet IP Specifications – STXEIP001 (Target October 2012 release)

ITEM	SPECIFICATION	ITEM	SPECIFICATION
Network Type	EtherNet/IP Slave (1 port) BOOTP,Level 2 I/O Server (Explicit, I/O Message) 16 IO Message connections 64 CIP connections 64 Explicit message connections	Surrounding Air Temperature	-20C to 55C -20 to 60C Non-UL Storage -40C to 85C
Cable Type	Ethernet Shielded RJ 45	Relative Humidity	5% to 90% Non condensation
Cable Length	Up to 100 meters from Hub	Vibration	IEC 60068-2-6:1995
Communication Rate	10/100Mbps	Atmosphere	No excessive dust No corrosive gases
Maximum number of nodes	Limited by the IP address	Module Power	24VDC Nominal (11 to 28.8VDC) Supplies 1.5 amps to I/O modules
Topology	Line or Star Topology	Backplane Power	1.5 amps to I/O modules
Mounting Position	First module of the RSTi I/O sytem	Field Power	Class II 24VDC Nominal (11 to 28.8VDC) 10 amps
Number of I/O	Up to 32 I/O modules supported	Isolation	System power to internal logic: Non-isolated System power to I/O driver: Isolated
Maximum Digital I/O	Input: 2,016 points Outputs: 2,016 points	Power Dissipation	60mA typical @ 24VDC
Maximum Analog I/O	Input: 126 channels Outputs: 126 channels	Weight	150 grams
Maximum Byte Size	Input: 252bytes Output: 252 bytes	Size (W x H x D)	45mm x 99mm x 70mm
Operating Mode	8 Modbus TCP, 4 HTTP, BOOTP	Certification	UL/CUL/CE UL Class 1/Div 2 and ATEX pending



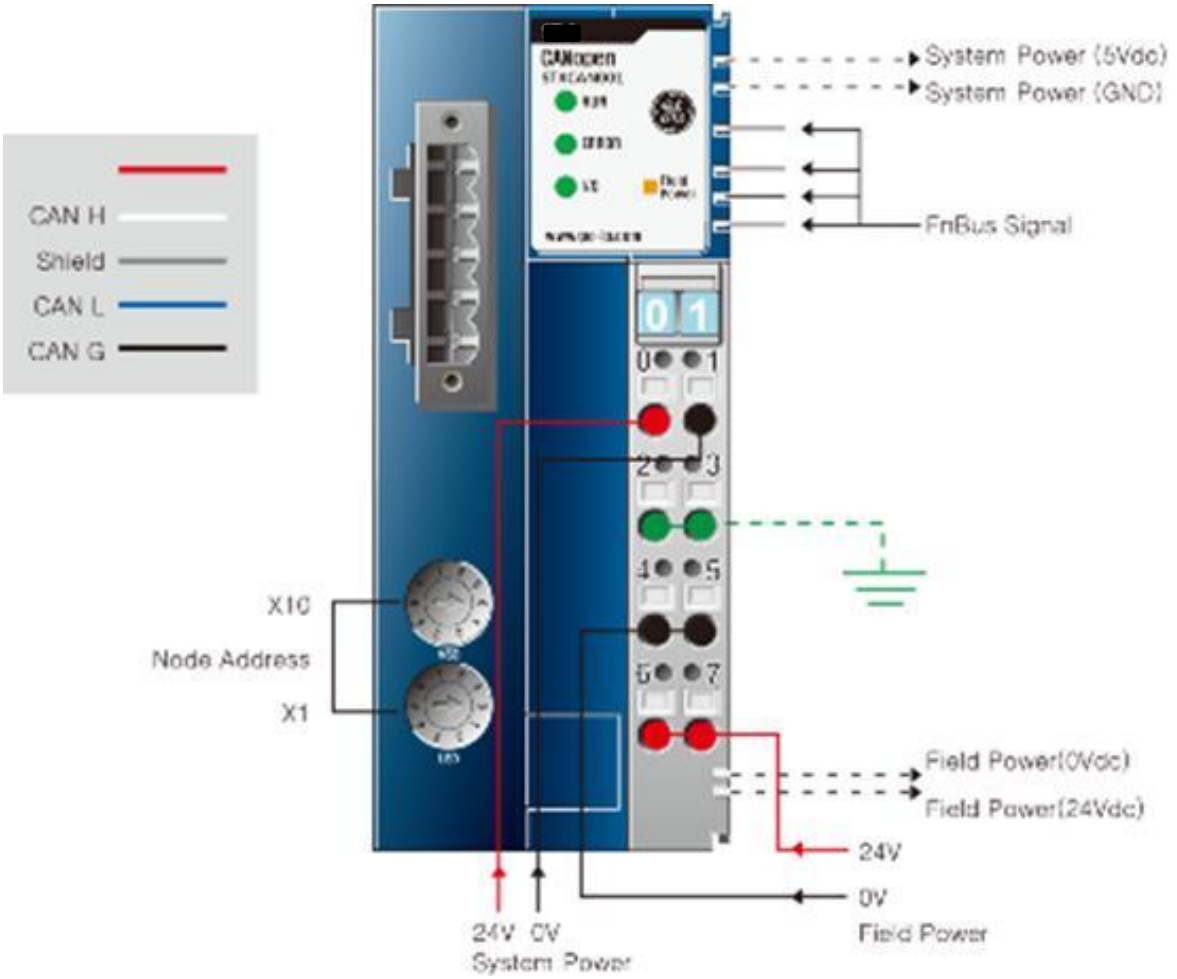
EtherCAT Specifications – STXECT001 (Target November 2012 release)

ITEM	SPECIFICATION	ITEM	SPECIFICATION
Network Type	EtherCAT Slave (2 ports) Supports redundancy	Surrounding Air Temperature	-20C to 55C -20 to 60C Non-UL Storage -40C to 85C
Cable Type	Ethernet Shielded RJ 45	Relative Humidity	5% to 90% Non condensation
Cable Length	Up to 100 meters from Hub	Vibration	IEC 60068-2-6:1995
Communication Rate	100Mbps	Atmosphere	No excessive dust No corrosive gases
Maximum number of nodes	65,535	Module Power	24VDC Nominal (11 to 28.8VDC) Supplies 1.5 amps to I/O modules
Topology	Line or Star Topology	Backplane Power	1.5 amps to I/O modules
Mounting Position	First module of the RSTi I/O sytem	Field Power	Class II 24VDC Nominal (11 to 28.8VDC) 10 amps
Number of I/O	Up to 32 I/O modules supported	Isolation	System power to internal logic: Non-isolated System power to I/O driver: Isolated
Maximum Digital I/O	Input: 2,016 points Outputs: 2,016 points	Power Dissipation	60mA typical @ 24VDC
Maximum Analog I/O	Input: 126 channels Outputs: 126 channels	Weight	150 grams
		Size (W x H x D)	54.2mm x 99mm x 70mm
		Certification	UL/CUL/CE UL Class 1/Div 2 and ATEX pending



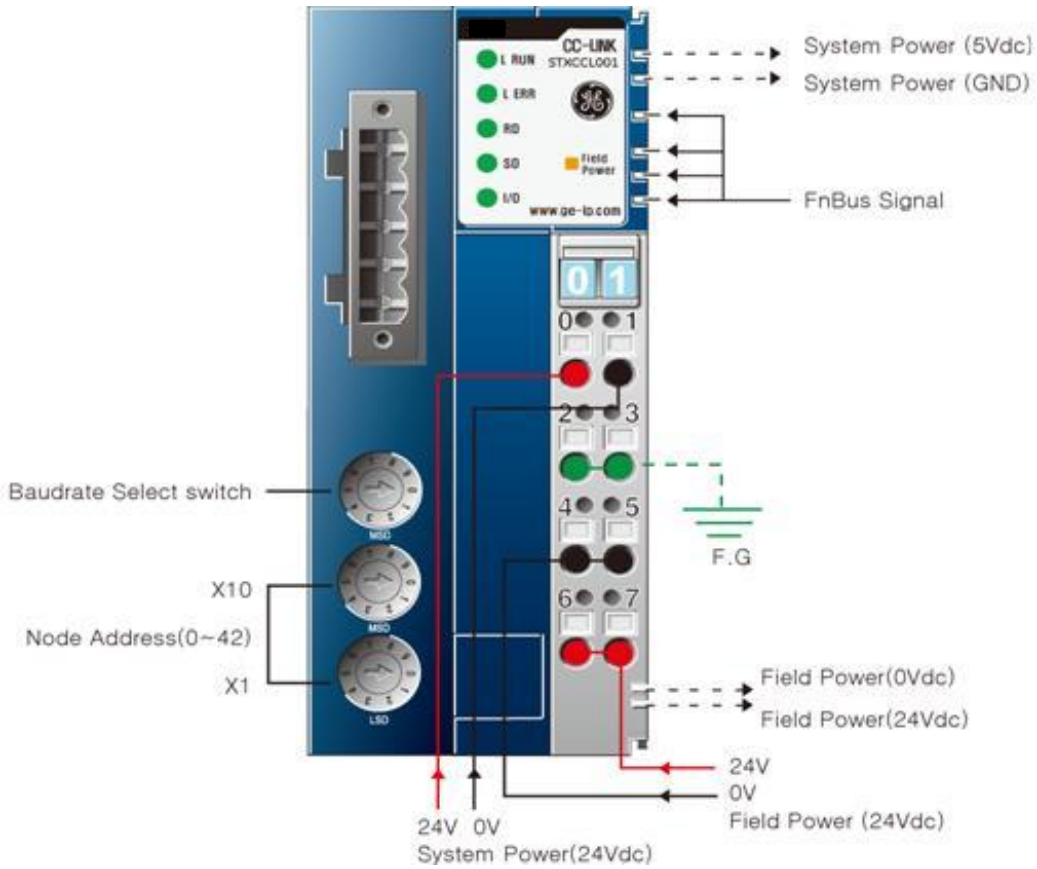
CANOpen Specifications – STXCAN001 (Target October 2012 release)

ITEM	SPECIFICATION	ITEM	SPECIFICATION
Network Type	CANOpen	Surrounding Air Temperature	-20C to 55C for UL -20 to 60C for non-UL Storage -40C to 85C
Cable Type	Dedicated CAN Cable 5 pin	Relative Humidity	5% to 90% Non condensation
Cable Length	25 meters to 25 Kmeters	Vibration	IEC 60068-2-6:1995
Communication Rate	10Kbps to 1Mbps with auto negotiating	Atmosphere	No excessive dust No corrosive gases
Maximum number of nodes	99	Module Power	24VDC Nominal (11 to 28.8VDC) Supplies 1.2 amps to I/O modules
Topology	Line	Backplane Power	1.5 amps to I/O modules
Mounting Position	First module of the RSTi I/O sytem	Field Power	Class II 24VDC Nominal (11 to 28.8VDC) 10 amps
Number of I/O	Up to 32 I/O modules supported	Isolation	System power to internal logic: Non-isolated System power to I/O driver: Isolated
Station Number	Rotary switch 1 to 99	Power Dissipation	100mA typical @ 24VDC
Number of PDOs available	8 Transmit PDOs 8 Receive PDOs	Weight	155 grams
Number SDOs Available	1 Standard SDOs	Size (W x H x D)	42mm x 99mm x 70mm
		Certification	UL/CUL/CE DeviceNet (ODVA) UL Class 1/Div 2 and ATEX pending



CC-Link Specification – STXCCL001 (Target release October 2012)

ITEM	SPECIFICATION	ITEM	SPECIFICATION				
Surrounding Air Temp./ Ambient Temp.	-20°C~50°C / -40°C~85°C	**Network Type**	CC-Link				
Relative Humidity	5% ~ 90% without condensation	**Cable**	Cable for CC-Link only				
Durable-vib. /impact	IEC68-2-6(2G) / 10G	**Cable Length(m)**	1200	900	400	160	100
EMC/ESD	EN50082 / EN50081	**Comm. Sp(Kbps)**	156	625	2500	5000	10000
Mount Position	On the left of ST-xxx I/O series	**Operating Mode**	Broadcast Polling Method				
Atmosphere	Not so dusty without corrosive gas	**Expansion No.**	Max. 32 Module				
Field Supp.Volt.	Class 2, 24VDC 24VDC (11VDC ~ 28.8VDC)	**Max. Digital I/O**	Input : 112point Output : 112point (4station)				
Field Supp. Cur.	Max. 10A	**Max. Analog I/O**	Input : 16Ch/Output : 16Ch (4station)				
FnBus Sup. Cur	Max. 1.5A@5Vdc	**Available Station**	Max. 4 Station				
Pwr Dissipation	60mA	**Station Type**	Remote Device				
Size	45mm × 99mm × 70mm	**No. of Station**	Max. 42 Station				
Weight	155g	**Baudrate Setting**	Rotary Switch 1개				
Certification	UL / cUL / CE / CC-Link	**Station No. Sett.**	Rotary Switch #2, #3 (x10, x1)				



Discrete Input Specifications

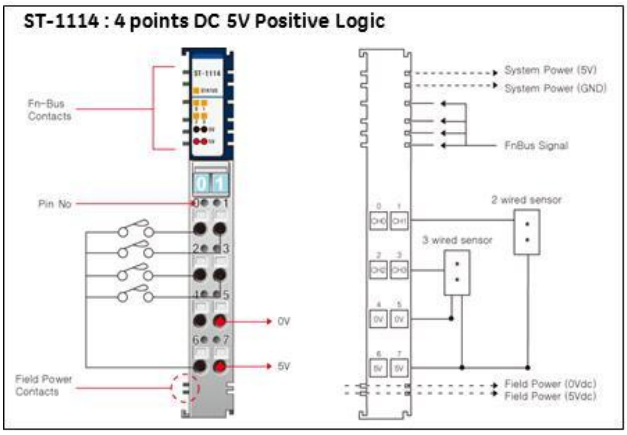
Model	ST-1114	ST-1124	ST-1214	ST-1224	ST-1314	ST-1324	ST-1804	ST-1904
Points	4 Points							
Type	Positive Logic	Negative Logic	Positive Logic	Negative Logic	Positive Logic	Negative Logic	AC	
Normal Voltage	5Vdc		12V/24Vdc		48Vdc		110Vac	220Vac
Allowed Voltage	2.4Vdc ~ 5.5Vdc		10.2Vdc ~ 28.8Vdc		34Vdc ~ 60Vdc		85Vac ~ 132Vac	170Vac ~ 264Vac
On Voltage	Over 2.4Vdc		Over 10.2Vdc		Over 34Vdc		Over 85Vac	Over 170Vac
Off Voltage	Below 0.8Vdc		Below 5Vdc		Below 10Vdc		Below 60Vac	Below 130Vac
Point Consump. Curr.	Below 4.5mA		Below 6mA		Below 4mA		Below 8mA	Below 12mA
Module Consump. Curr.	35mA/5Vdc							
Response Time	OFF->ON: Below 0.5ms, ON->OFF: Below 0.5ms		OFF -> ON : Below 3ms, ON -> OFF : Below 3ms				OFF->ON: Below 10ms, ON->OFF: Below 10ms	
Common Type	4 Points / 2COM (Single Common)							
Isolation	Photocoupler Isolation							
Connection	terminal block							

Model	ST-1218	ST-1228	ST-121F	ST-122F	ST-131F
Points	8 Points		16 Points		
Type	Positive Logic	Negative Logic	Positive Logic	Negative Logic	Positive Logic
Normal Voltage	12V/24Vdc		12V/24Vdc		48Vdc
Allowed Voltage	10.2Vdc ~ 28.8Vdc		10.2Vdc ~ 28.8Vdc		34Vdc ~ 60Vdc
On Voltage	Over 10.2Vdc		Over 10.2Vdc		Over 34Vdc
Off Voltage	Below 5Vdc		Below 5Vdc		Below 10Vdc
Point Consump. Curr.	Below 6mA		Below 6mA		Below 4mA
Module Consump. Curr.	35mA/5Vdc		45mA/5Vdc		
Response Time	OFF -> ON : Below 3ms, ON -> OFF : Below 3ms				
Common Type	External Common		16 Points / 2COM		
Isolation	Photocoupler Isolation				
Connection	terminal block		20P Connector		

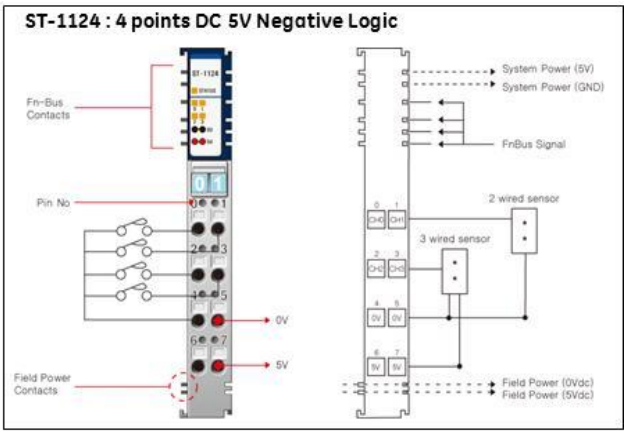
Note: The 20 pin connector for ST-121F, ST-122F and ST-131F require a Hirose , HIF3BA-20D-2.54C connector http://www.hirose.co.jp/cataloge_hp/e61000010.pdf

Discrete Digital Input Wiring Diagrams

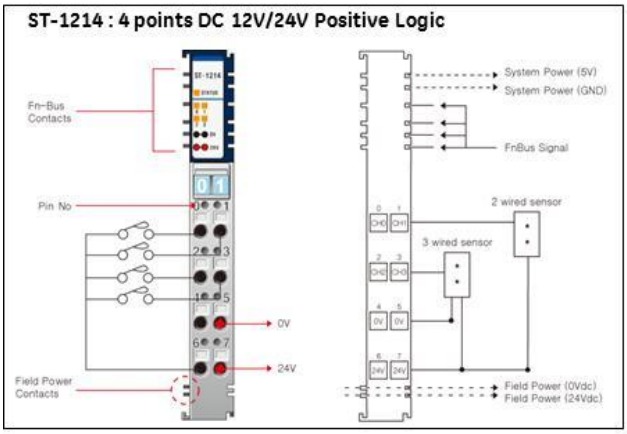
ST-1114 : 4 points DC 5V Positive Logic



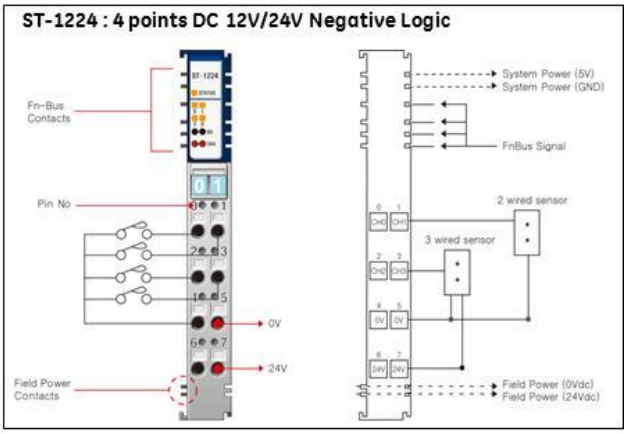
ST-1124 : 4 points DC 5V Negative Logic



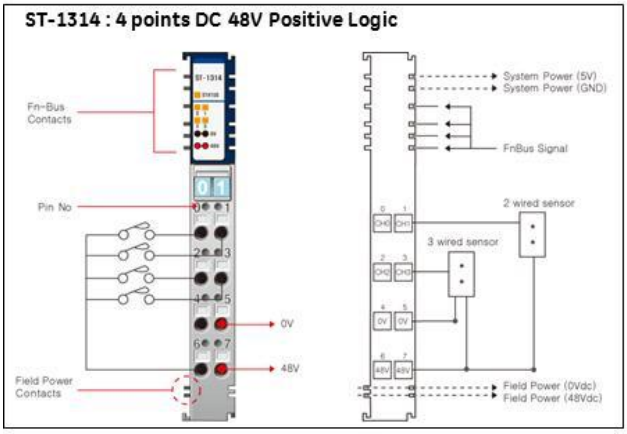
ST-1214 : 4 points DC 12V/24V Positive Logic



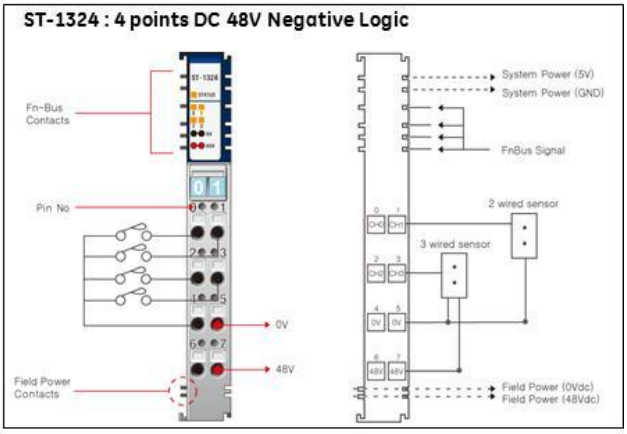
ST-1224 : 4 points DC 12V/24V Negative Logic



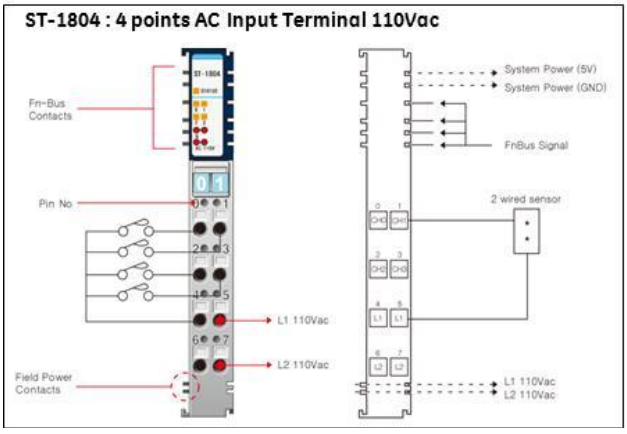
ST-1314 : 4 points DC 48V Positive Logic



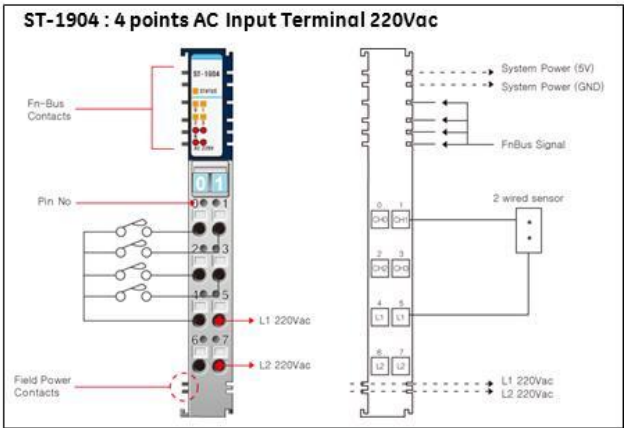
ST-1324 : 4 points DC 48V Negative Logic



ST-1804 : 4 points AC Input Terminal 110Vac

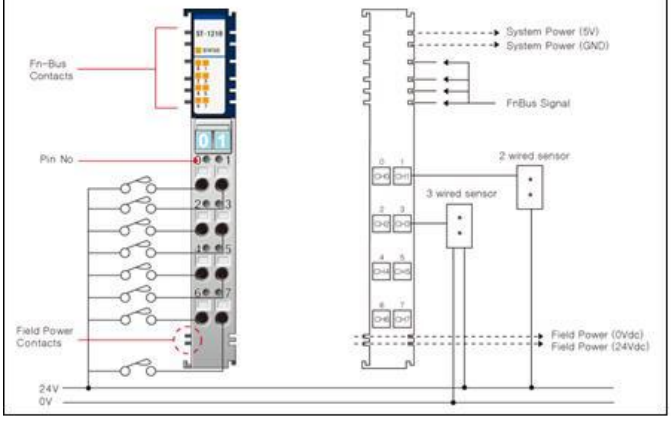


ST-1904 : 4 points AC Input Terminal 220Vac

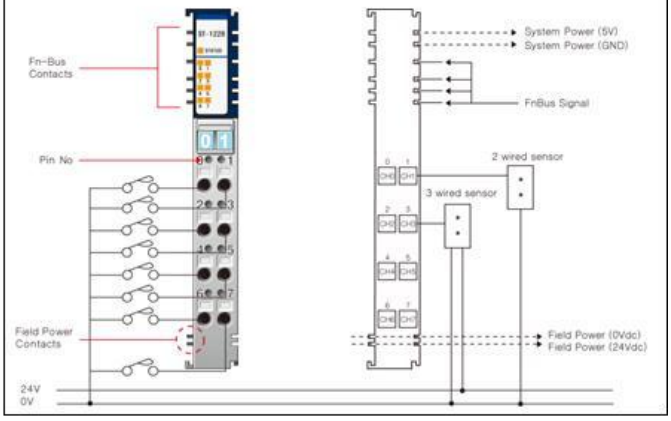


***External Field Power and Field Power are same power.**

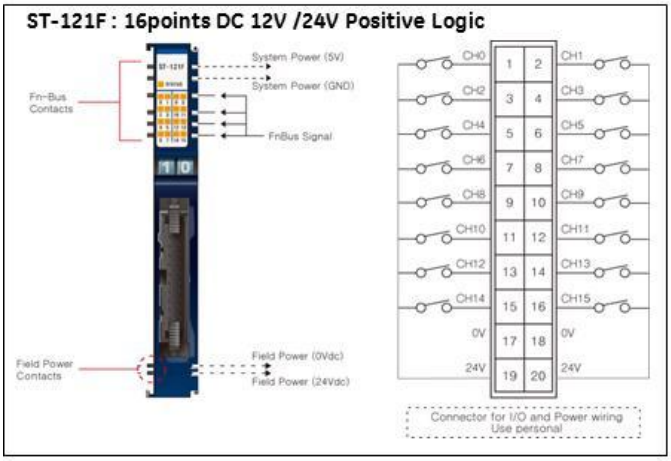
ST-1218 : 8 points DC 12V/24 Positive Logic



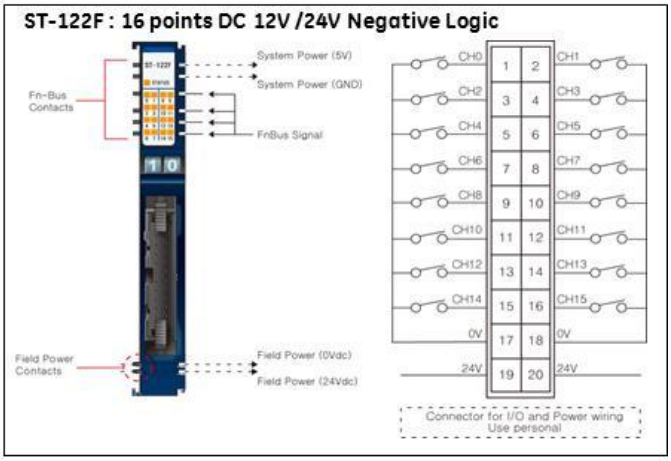
ST-1228 : 8 points DC 12V/24V Negative Logic



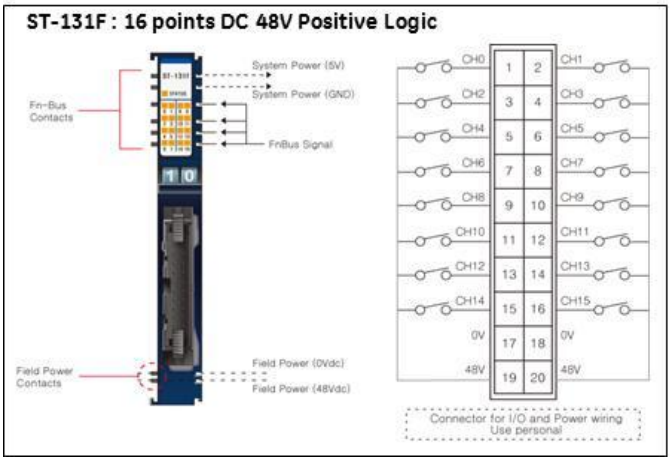
ST-121F : 16points DC 12V /24V Positive Logic



ST-122F : 16 points DC 12V /24V Negative Logic



ST-131F : 16 points DC 48V Positive Logic



***External Field Power and Field Power are same power.**

Discrete Output Specifications

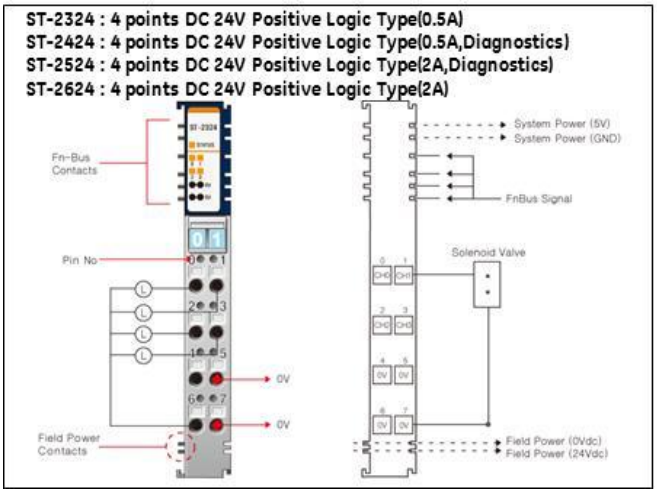
Model	ST-2114	ST-2124	ST-221F	ST-222F	ST-2314	ST-2324	ST-2318	ST-2328
Point NO.	4 Points		16Points		4Points		8Points	
Type	TTL Inverting	TTL Non-Inverting	Negative Logic	Positive Logic	Negative Logic	Positive Logic	Negative Logic	Positive Logic
Special Fun.	-							
Allo. Voltage	5Vdc		24Vdc					
Volt. Range	4.5Vdc~5.5Vdc		11Vdc~28.8Vdc					
Loading Cur	20mA/Point		0.5A/Point					
Consum Cur	50mA/5Vdc		80mA/5Vdc		45mA/5Vdc		60mA/5Vdc	
Fuse	-		3.5A, 40V	3.5A, 36V	3.5A, 40V	3.5A, 36V	3.5A, 40V	3.5A, 36V
Common	4points/4COM (Single Common)		16Points/2COM (Single Common)		4points/4COM (Single Common)		8 Points/Extermal Common	

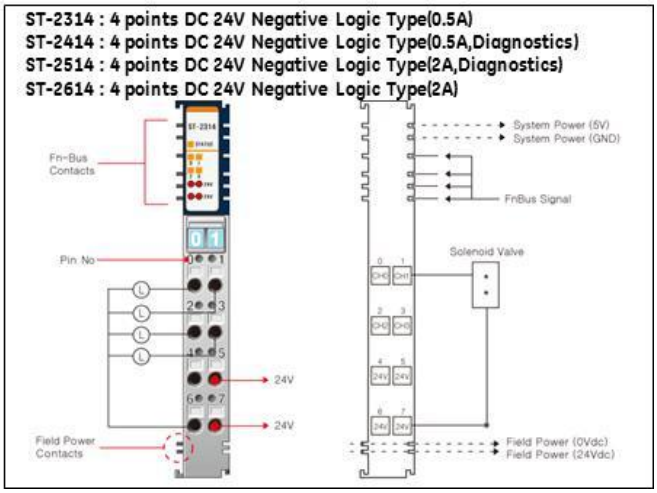
Model	ST-2414	ST-2424	ST-2514	ST-2524	ST-2614	ST-2624
Point NO.	4Points					
Type	Negative Logic	Positive Logic	Negative Logic	Positive Logic	Negative Logic	Positive Logic
Special Fun.	Diagnostics				-	
Allo. Voltage	24Vdc					
Volt. Range	11Vdc~28.8Vdc					
Loading Cur	0.5A/point		2.0A/Point			
Consum Cur	45mA/5Vdc					
Fuse	3.5A, 40V	3.5A, 36V	3.5A, 40V	3.5A, 36V	3.5A, 40V	3.5A, 36V
Common	4 points/4COM(Single Common)					

Model	ST-2742	ST-2744	ST-2748	ST-2792	ST-2852
Point NO.	2Points	4Points	8Points	2Points	
Type	Relay				Triac
Special Fun.	-			Manual Type	-
Allo. Voltage	24Vdc/230Vac				12~125Vac
Volt. Range	5~28.8Vdc/110~250Vac				12~132Vac
Loading Cur	2.0A/Point				0.5A/Point
Consum Cur	65mA/5Vdc	130mA/5Vdc	150mA/5Vdc	70mA/5Vdc	35mA/5Vdc
Common	1 Points/1COM				2Points/2COM

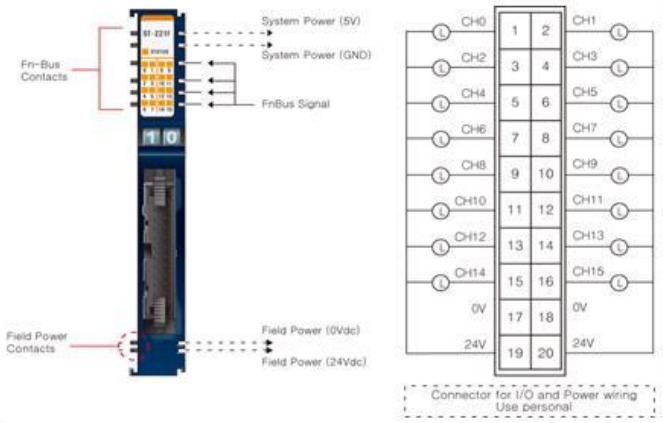
Note: The 20 pin connector for ST-221F and ST-222F require a Hirose , HIF3BA-20D-2.54C connector
http://www.hirose.co.jp/cataloge_hp/e61000010.pdf

Discrete Digital Output Wiring Diagrams

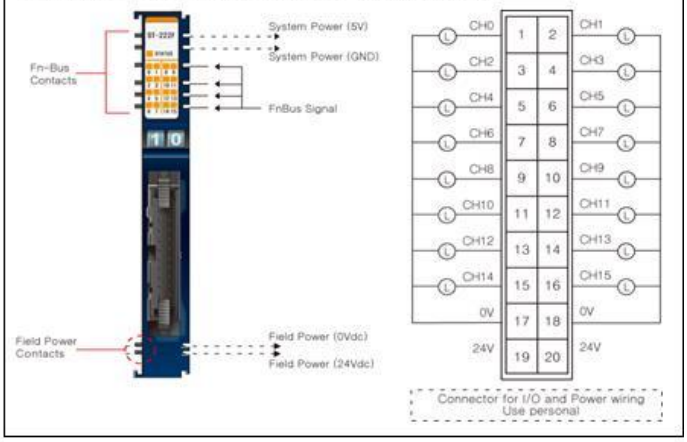




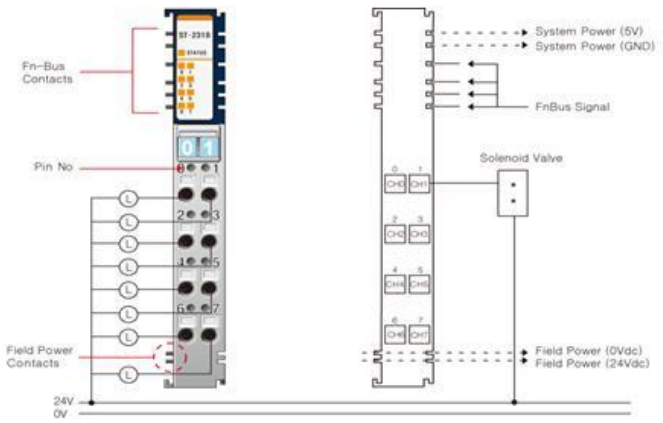
ST-221F : 16 points DC 24V Negative Logic Type



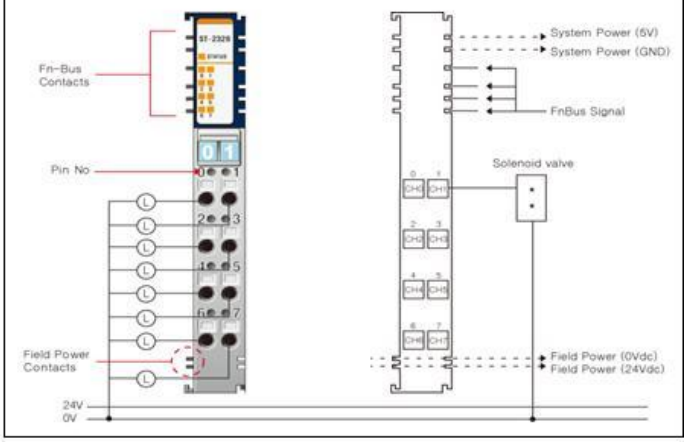
ST-222F : 16 points DC 24V Positive Logic Type



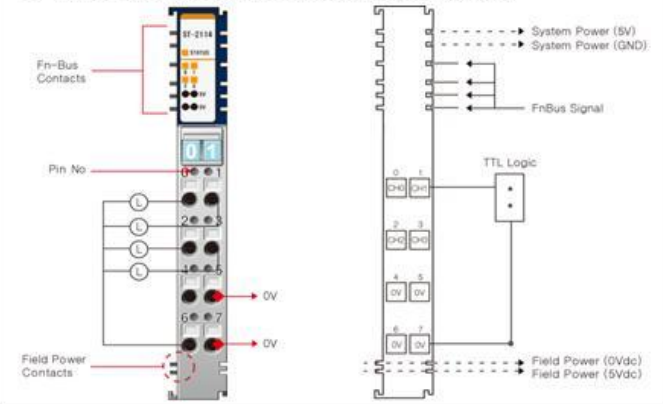
ST-2318 : 8 points DC 24V Negative Logic Type



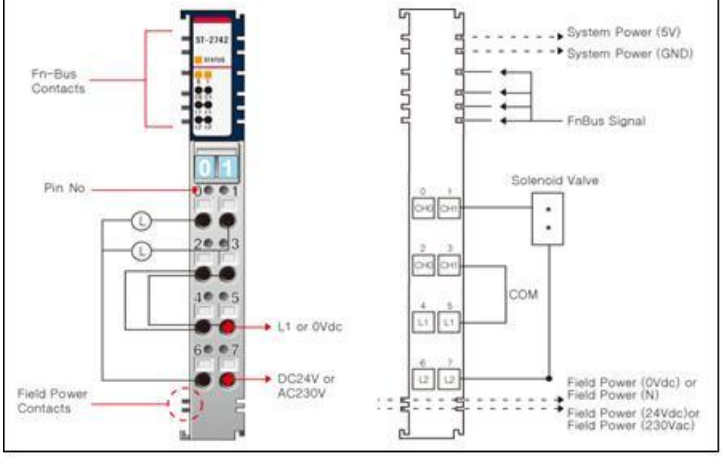
ST-2328 : 8 points DC 24V Positive Logic Type



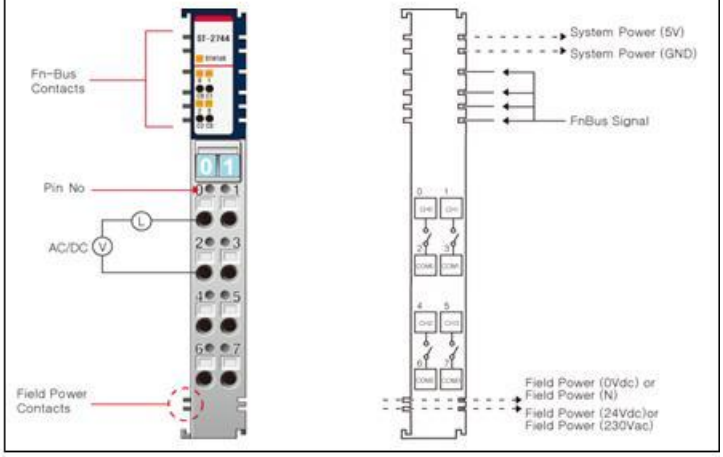
ST-2114 : 4 points DC 5V TTL Inverting Type
ST-2124 : 4 points DC 5V TTL Non-Inverting Type



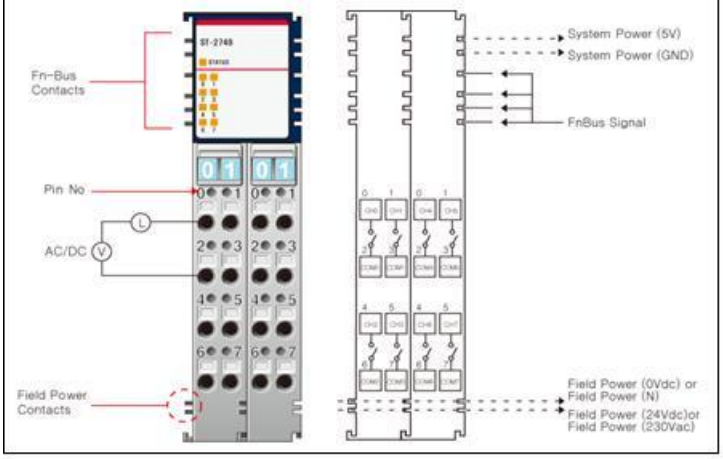
ST-2742 : 2 point Relay Type



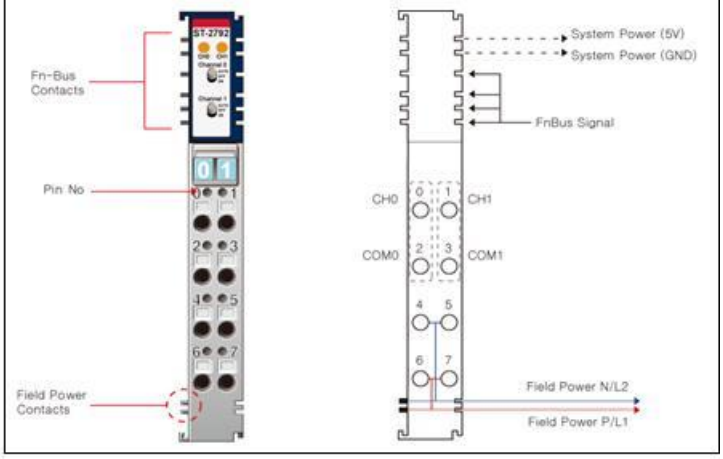
ST-2744 : 4 point Relay Type



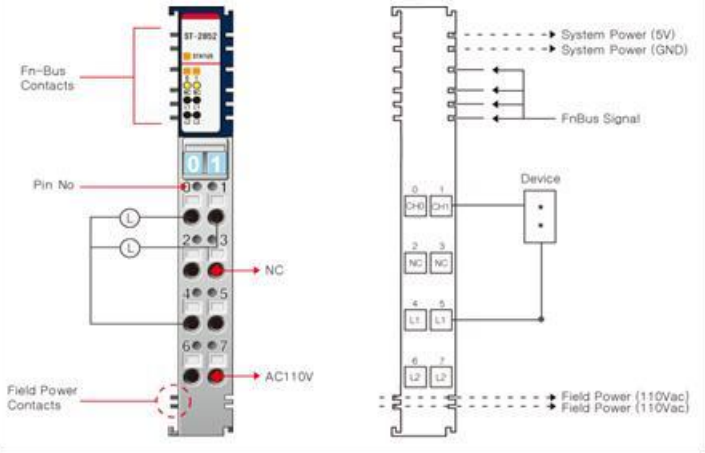
ST-2748 : 8 point Relay Type



ST-2792 : 2 point Manual/Auto Relay Type



ST-2852 : 2 point Triac Type



Analog Input Specifications

Model	ST-3114	ST-3134	ST-3214	ST-3234	ST-3118	ST-3218	ST-3428	ST-3474	ST-3274
Channel	4 Channel				8 Channel			4 Channel	
Input Range	0 ~ 20mA		4 ~ 20mA		0 ~ 20mA	4 ~ 20mA	0~10V		4 ~ 20mA
Type	Current						Voltage		Current
Resolution	12bit	14bit	12bit	14bit	12bit			12bit	
Connector	Terminal block							Sensor Connector	
Accuracy	±0.1% Full Scale @25°C, ±0.3% Full Scale @ 0°C, 60°C								
Input Impedance	120Ω						500KΩ		120Ω
Update Time	4ms / All channel								
Consum. Current	165mA/5Vdc				60mA/5Vdc			40mA/5Vdc	
Common	4 Channels / 2COM (Single Common)				Nothing in the module terminal, Field Power 0V is Common(AGND)				
Isolation	Photocoupler isolation								

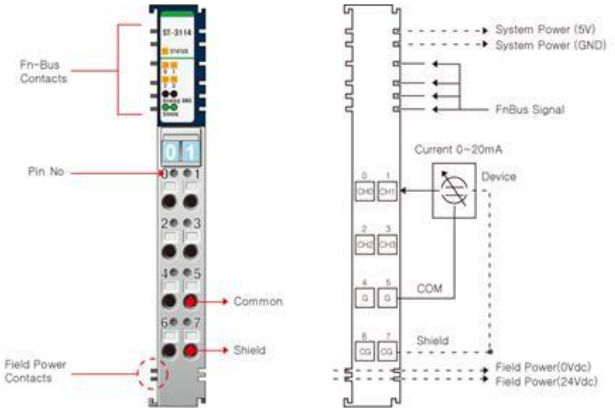
Model	ST-3424	ST-3444	ST-3524	ST-3544	ST-3624	ST-3644	ST-3702	ST-3802	ST-3704	ST-3708	ST-3804	ST-3808
Channel	4 Channel						2 Channel		4Ch	8Ch	4Ch	8Ch
Input Range	0~10V		-10V~10V		0~5V		RTD	TC	RTD		TC	
Type	Voltage						PT100 etc	TypeK etc	PT100 etc.		Type K etc.	
Resolution	12bit	14bit	12bit	14bit	12bit	14bit	±0.1°C/ F, 10mΩ					
Special Function	-						Diagnostic					
Accuracy	±0.1% Full Scale @25°C, ±0.3% Full Scale @ 0°C, 60°C											
Input Impedance	500KΩ						-					
Update Time	4ms / All channel						200msec / All Channel		30msec/1Channel when Normal Conversion			
Consum. Current	165mA /5Vdc	170mA/5Vdc					70mA/5Vdc		100mA/ 5Vdc	110mA/ 5Vdc	120mA/ 5Vdc	140mA/ 5Vdc
Common	4 Channels / 2COM (Single Common)						2 Channels/2COM (Single Common)		4 Common/Module			
Isolation	Photocoupler isolation											

Note: The ST-3704, ST-3708, ST-3804 and ST-3808 require a 20 pin connector. The connector uses a Hirose , HIF3BA-20D-2.54C connector http://www.hirose.co.jp/cataloge_hp/e61000010.pdf

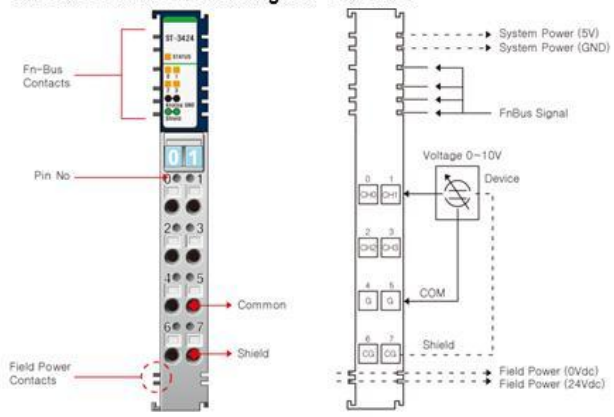
Note: The ST-3274 requires Sensor Connect 3M Mini-Clamp Plug, 37104 Series
http://multimedia.3m.com/mws/mediawebserver?66666UuZjcFSLXTt4xMcLXTyEVuQEcuZgVs6EVs6E666666--

Analog Input Wiring Diagrams

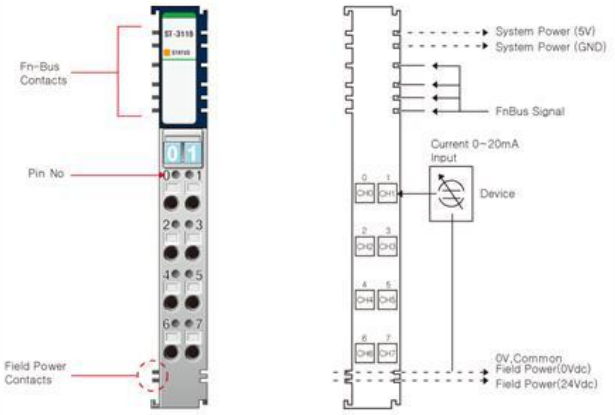
ST-3114 : 4 channels Current 0~20mA 12bit
ST-3214 : 4 channels Current 4~20mA 12bit
ST-3134 : 4 channels Current 0~20mA 14bit
ST-3234 : 4 channels Current 4~20mA 14bit



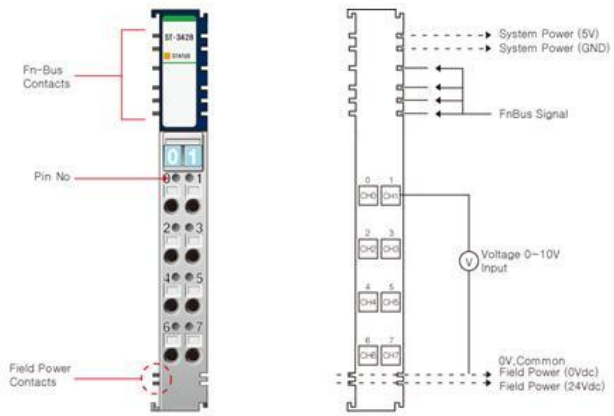
ST-3424 : 4 channels Voltage 0~10V 12bit
ST-3524 : 4 channels Voltage -10~10V 12bit
ST-3444 : 4 channels Voltage 0~10V 14bit
ST-3544 : 4 channels Voltage -10~10V 14bit
ST-3624 : 4 channels Voltage 0V~5V 12bit
ST-3644 : 4 channels Voltage 0V~5V 14bit



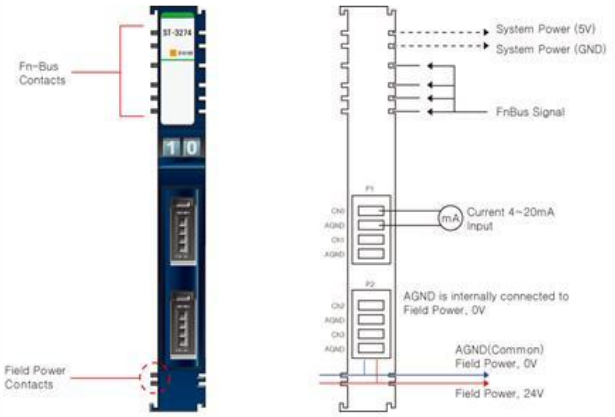
ST-3118 : 8 channels Current 0~20mA 12bit
ST-3218 : 8 channels Current 4~20mA 12bit



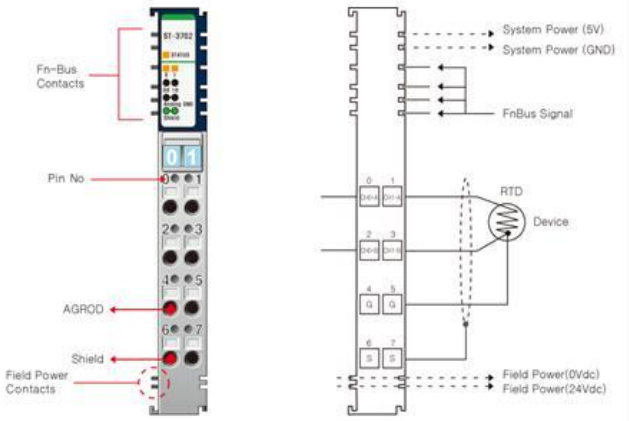
ST-3428 : 8 channels Voltage 0~10V 12bit



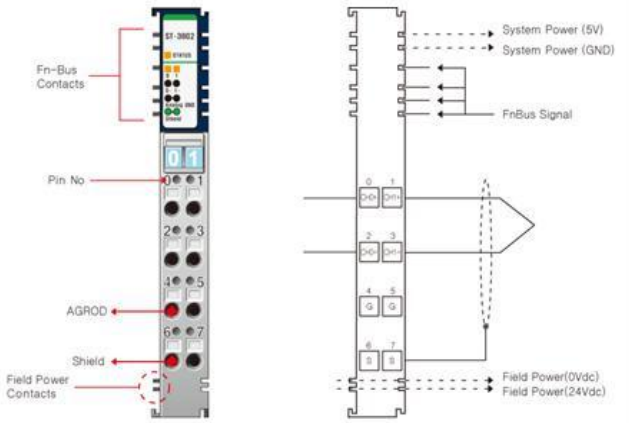
ST-3274 : 4 channels Current Sensor Connector
4~20mA, 12bit



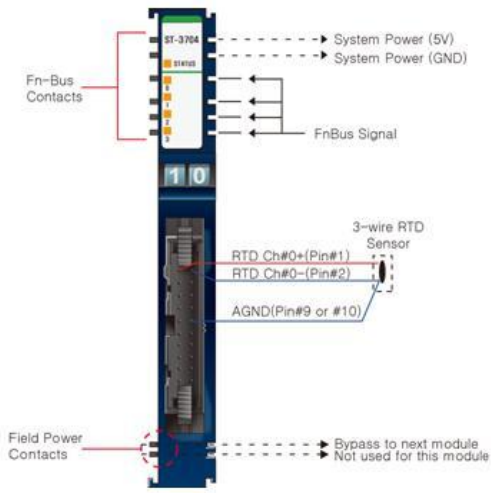
ST-3702 : 2 channels RTD / Resistance



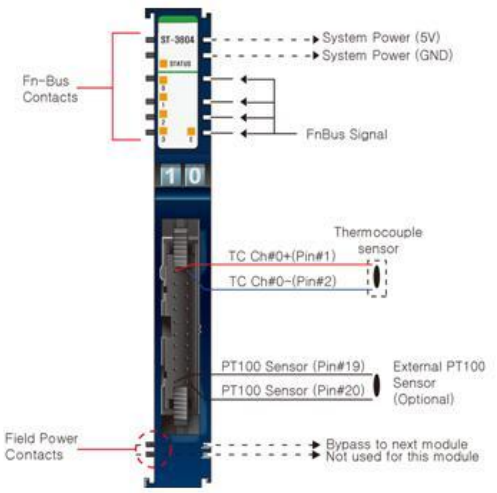
ST-3802 : 2 channels TC / mV



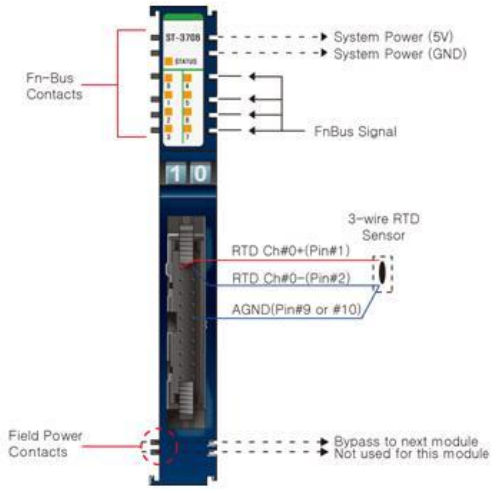
ST-3704 : 4 channels RTD / Resistance



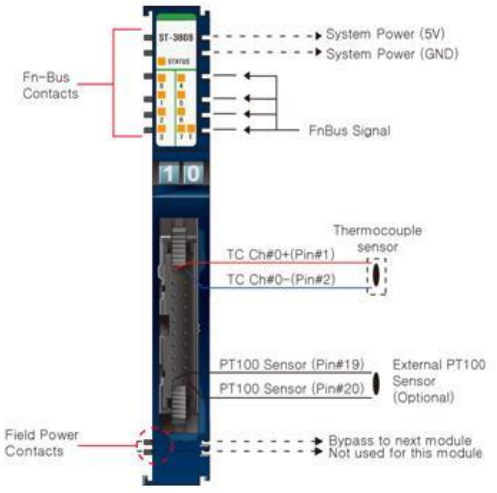
ST-3804 : 4 channels TC / mV



ST-3708 : 8 channels RTD / Resistance



ST-3808 : 8 channels TC / mV



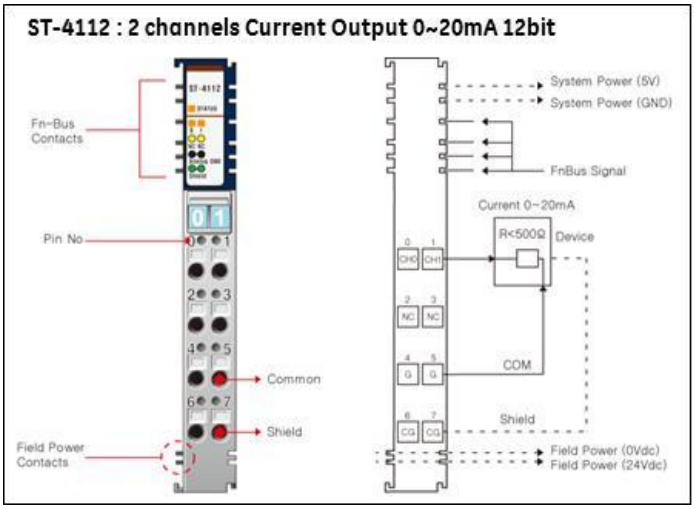
Analog Output Specifications

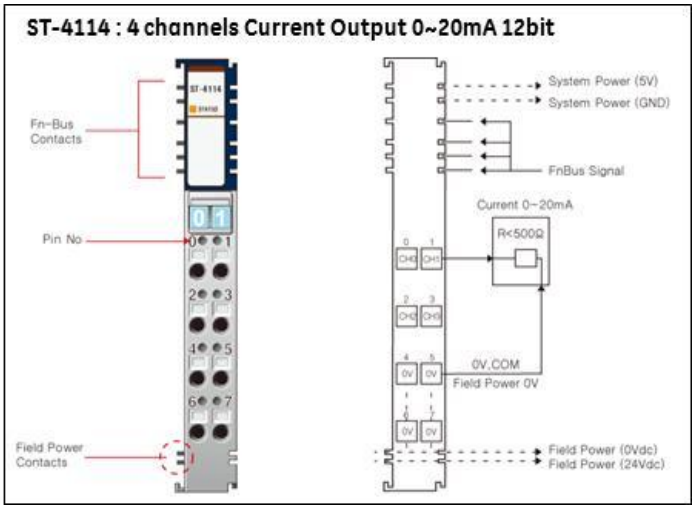
Model	ST-4112	ST-4212	ST-4114	ST-4214	ST-4274	ST-4474	ST-4491
Channels	2 Channels		4 Channels				1 Channel
Analog Output	0~20mA	4~20mA	0~20mA	4~20mA	4~20mA	0~10V	
Connector	Terminal block				Sensor Connector		Terminal block
Resolution	12bit						
Accuracy	±0.1% Full Scale @25°C						
Output Impedance	Max. 500Ω					Min. 2KΩ	
Update Time	2ms / All Channel		4ms / All Channel		1.2ms / All Channel		
Consum. Current	60mA/5Vdc				40mA/5Vdc	60mA/5Vdc	
Common	2 Channels / 2 COM (Single common)		4 Common, Field Power 0V is Common (AGND)			Nothing in the module terminal, Field Power 0V is Common (AGND)	2 Common /Module
Isolation	Photocoupler Isolation						

Model	ST-4422	ST-4522	ST-4622	ST-4424	ST-4911
Channels	2 Channels			4 Channels	1 Channel
Analog Output	0~10V	-10~10V	0~5V	0~10V	0~1A
Resolution	12bit				
Accuracy	±0.1% Full Scale @25°C				
Output Impedance	Min. 5KΩ				13Ω, ±5%
Update Time	2ms / All Channel			4ms / All Channel	1ms / All Channel
Consum. Current	155mA/5Vdc			60mA/5Vdc	
Common	2Channels / 2COM (Single common)			4 Common, Field Power 0V is Common (AGND)	1 Channel/ 2 Common(Field Power 0V)
Isolation	Photocoupler Isolation				

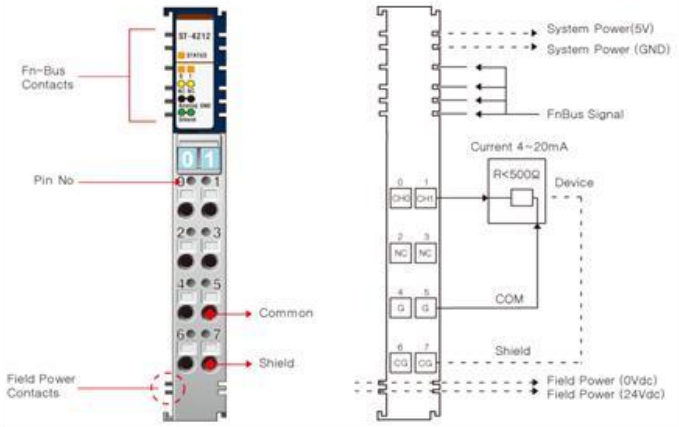
Note: The ST-4274 and ST-4474 requires Sensor Connect 3M Mini-Clamp Plug, 37104 Series
http://multimedia.3m.com/mws/mediawebserver?66666UuZjcFSLXTt4xMcLXTyEVuQEcuZgVs6EVs6E666666--

Analog Output Wiring

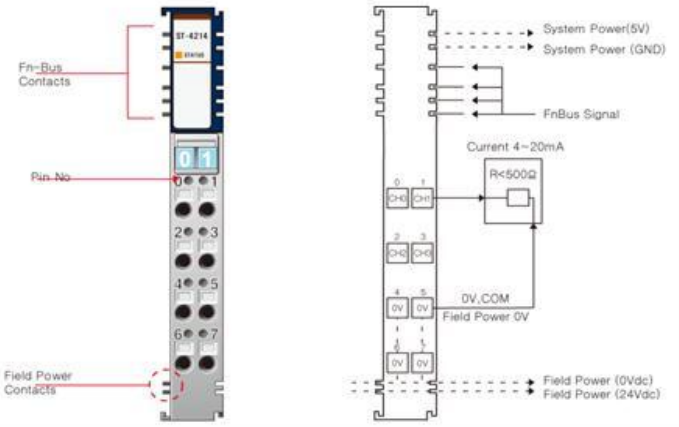




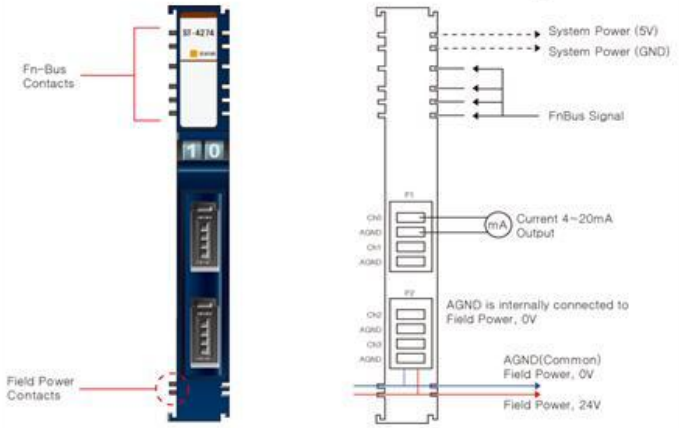
ST-4212 : 2 channels Current Output 4~20mA 12bit



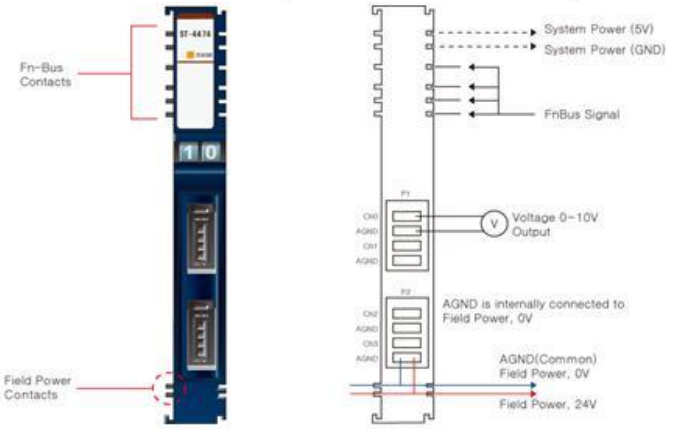
ST-4214 : 4 channels Current Output 4~20mA 12bit



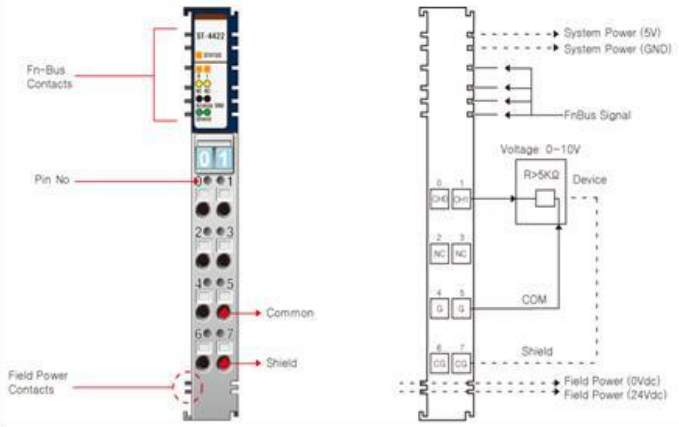
ST-4274 : 4 channels Current Sensor Connector 4~20mA, 12bit



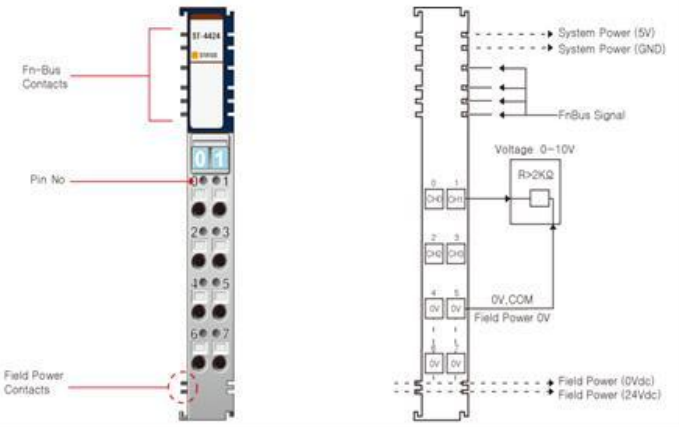
ST-4474 : 4 channels Voltage Sensor Connector 0~10V,12bit



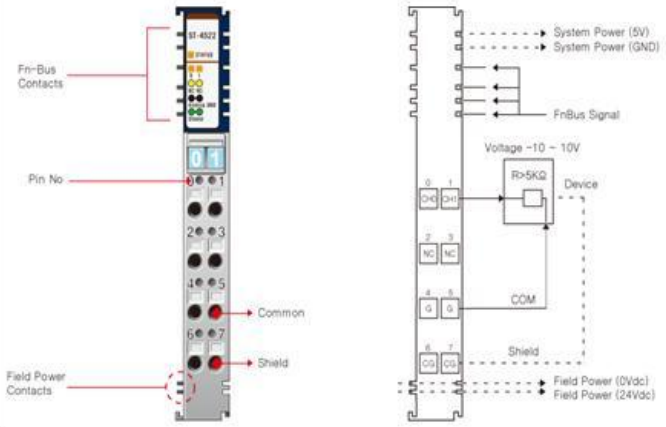
ST-4422 : 2 channels Voltage Output 0~10V, 12bit



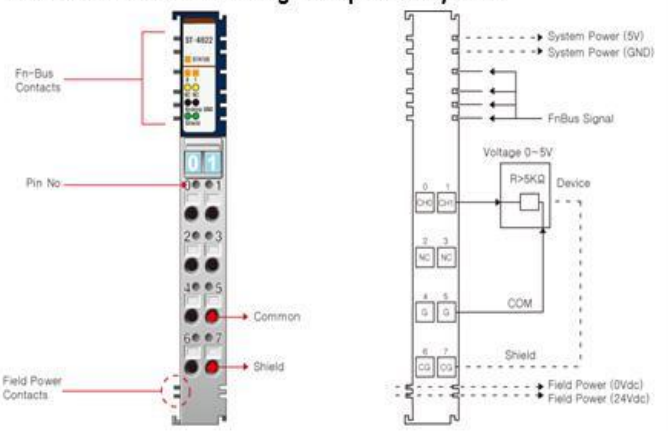
ST-4424 : 4 channels Voltage Output 0~10V, 12bit



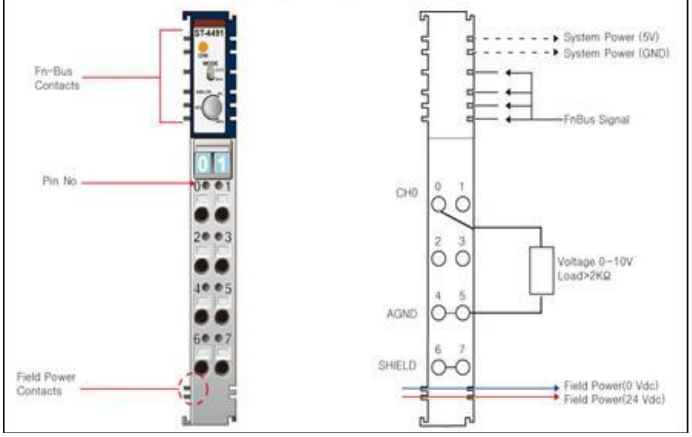
ST-4522 : 2 channels Voltage Output -10~10V , 12bit



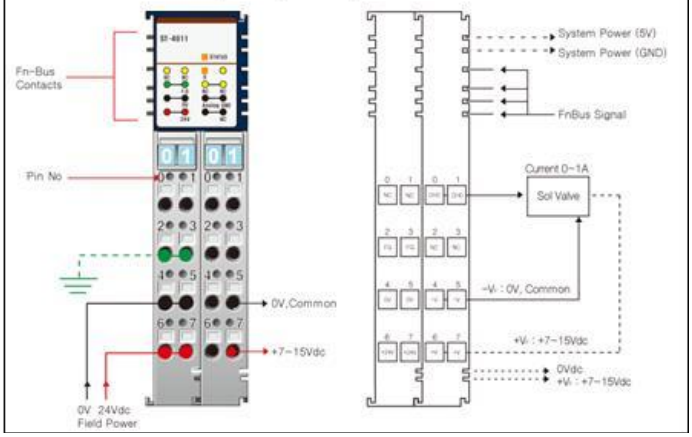
ST-4622 : 2 channels Voltage Output 0~5V, 12bit



ST-4491: 1 channel Voltage Output 0~10V, 12bit



ST-4911 : 1 Channel, 0~1A, 12Bit, RTB

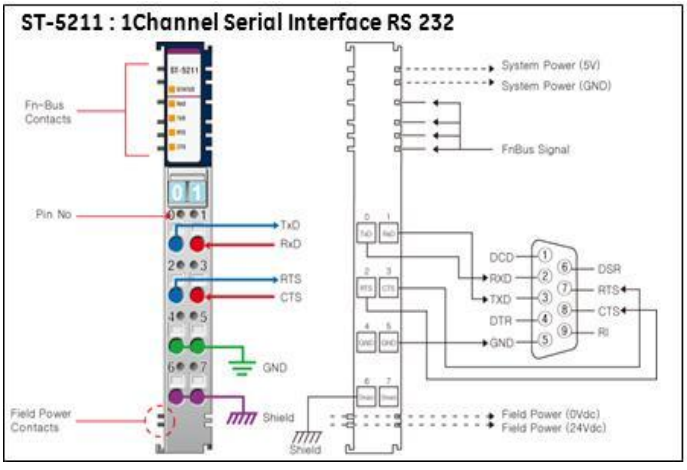


Serial Module Specifications

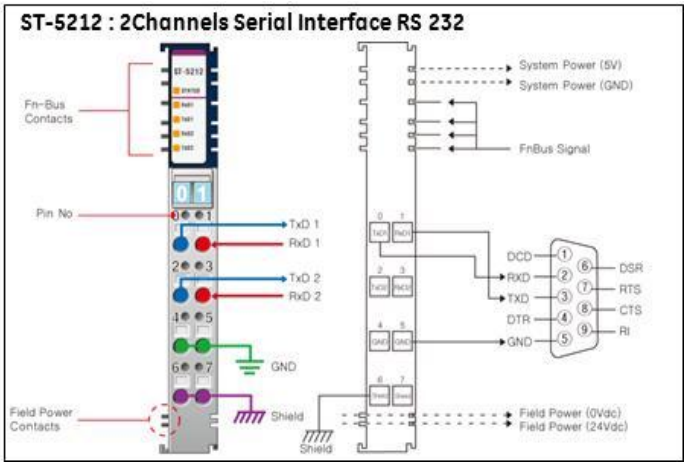
Model	ST-5211	ST-5212	ST-5252	ST-5221	ST-5231	ST-5232	ST-5272
Specificity	Serial Interface						
Communicat. Type	RS 232			RS 422	RS 485		
Channel Number	1 Channel	2 Channels		1 Channel		2 Channels	
Transfer Type	Full Duplex Type				Half Duplex Type		
Transfer Rate	300~115200bps		1200bps ~ 115200bps	300~115200bps			1200bps ~ 115200bps
Data bit	7bits, 8bits, 9bits						
Parity bit	None, Odd, Even						
Stop bit	1bit, 2bits						
Flow Control	RTS, CTS	--					
Bit Distortion	<1.6%						
Connection	Spring force of RTB						
Cable Length	Max. 15m			1Km twisted pair			
Low Signal voltage	-18V ~ -3V			--			
High Signal voltage	3V ~ 18V			--			
Isolation	Photocoupler Isolation, Isolation Voltage:1000Vrms/Vac						
Input Buffer size	1024 bytes		256 byte/ channel	1024 bytes			256 byte/ channel
Output Buffer size	256 bytes		256 byte/channel	256 bytes			
Line Impedance	--			120Ω			
Input Image size	6 Bytes	12 Bytes	38 Bytes	6 Bytes		12 Bytes	38 Bytes
Output Image size	6 Bytes	12 Bytes	38 Bytes	6 Bytes		12 Bytes	38 Bytes
Power Dissipation	95mA Max. @5.0Vdc	110mA Max. @5.0Vdc		155mA Max. @5.0Vdc	110mA Max. @5.0Vdc	155mA Max. @5.0Vdc	

Serial Module Wiring Diagrams

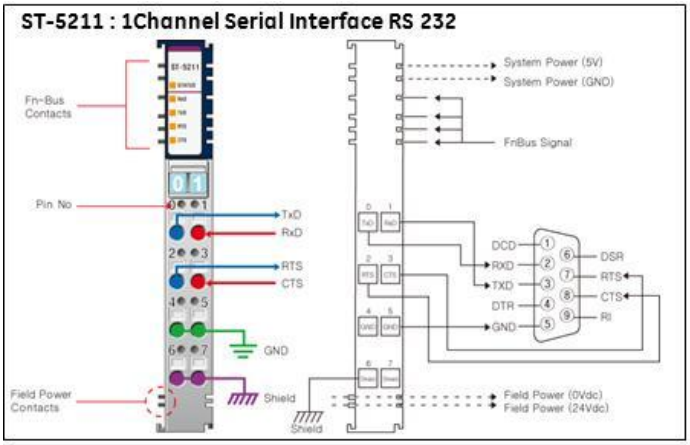
ST-5211 : 1Channel Serial Interface RS 232



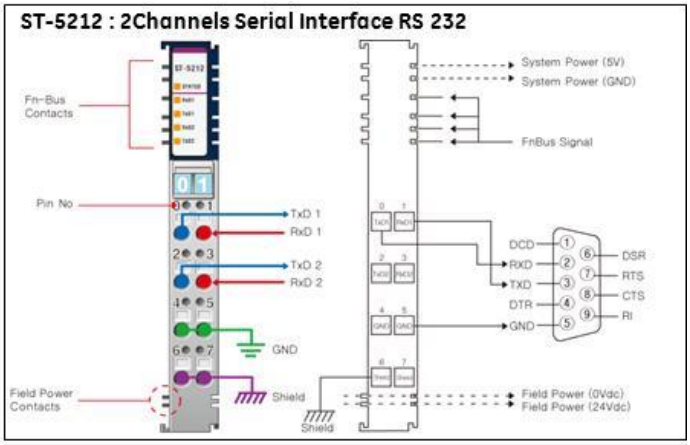
ST-5212 : 2Channels Serial Interface RS 232



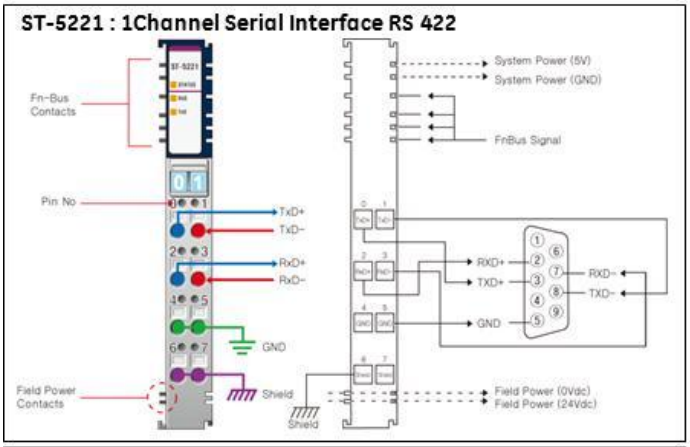
ST-5211 : 1Channel Serial Interface RS 232



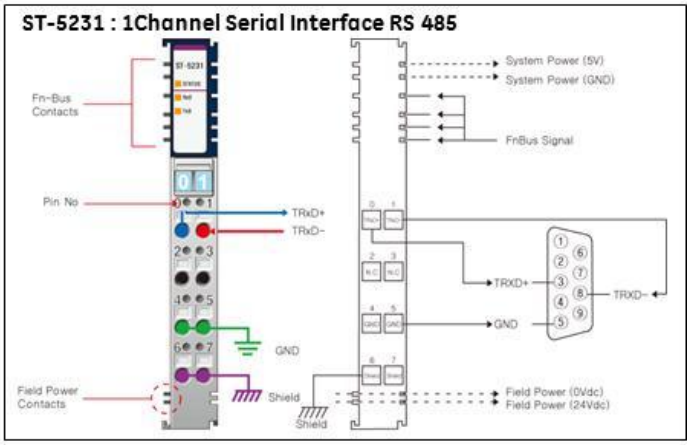
ST-5212 : 2Channels Serial Interface RS 232



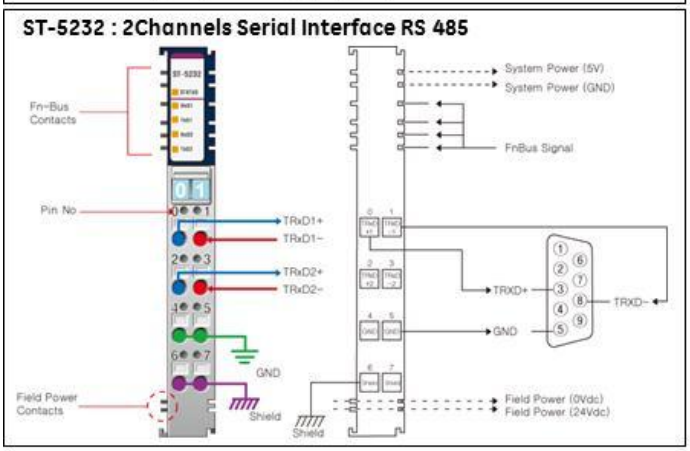
ST-5221 : 1Channel Serial Interface RS 422



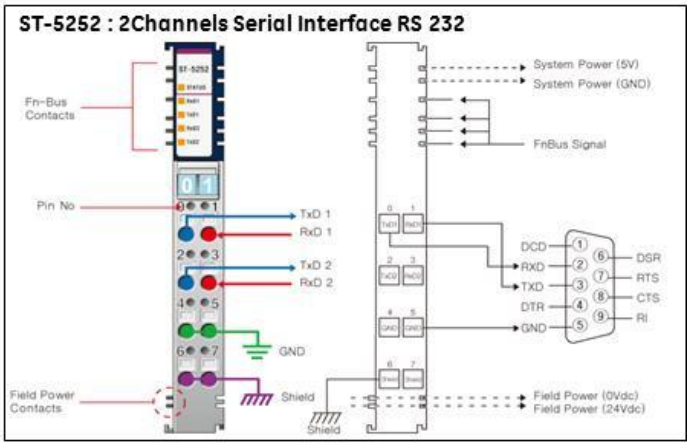
ST-5231 : 1Channel Serial Interface RS 485



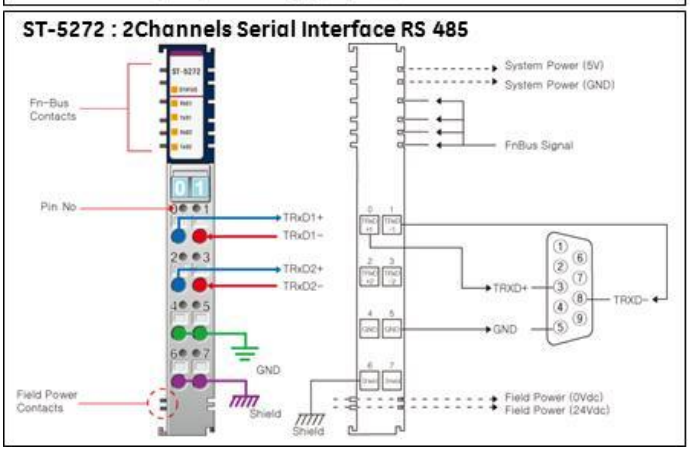
ST-5232 : 2Channels Serial Interface RS 485



ST-5252 : 2Channels Serial Interface RS 232



ST-5272 : 2Channels Serial Interface RS 485



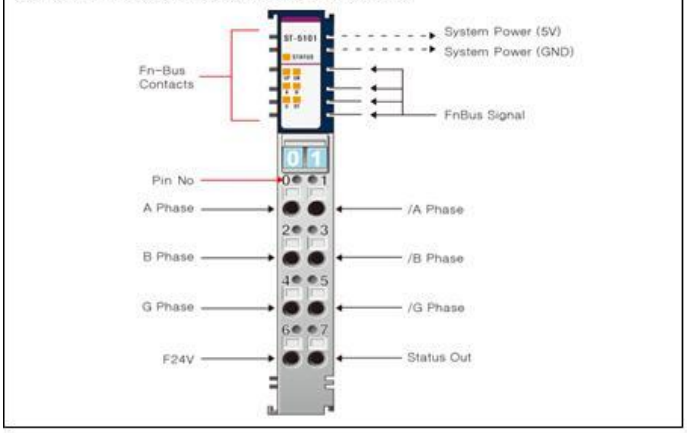
Motion Module Specifications – High Speed Counter

Model	ST-5101	ST-5111	ST-5112	ST-5114
Specificity	High Speed Counter			
Input Channels	1 Channel		2Channels	4Channels
Input Voltage	5Vdc	24Vdc		
Input Current	16.2mA/5Vdc	6.1mA/24Vdc		
Input Frequency	Max. 1.5MHz		0~100KHz except Encoder 4x	0~50KHz except Encoder 4x
Input Duty Range	10%~90%		20%~80%	
Counter Size	24bit-wide		32bit-wide/Channel	
Common Type	0-1, 2-3, 4-5		2Common	
Number of Outputs	6-7 Status Output		2 Channels, source Type	
Output Voltage	5 to 28.8Vdc		24Vdc	
Output Current	Max. 0.5A		0.5A/Ch, 1A/All Channel	
Power Dissipation	Max. 80mA/5.0Vdc		Max. 160mA/5.0Vdc	
Isolation	Photocoupler Isolation			

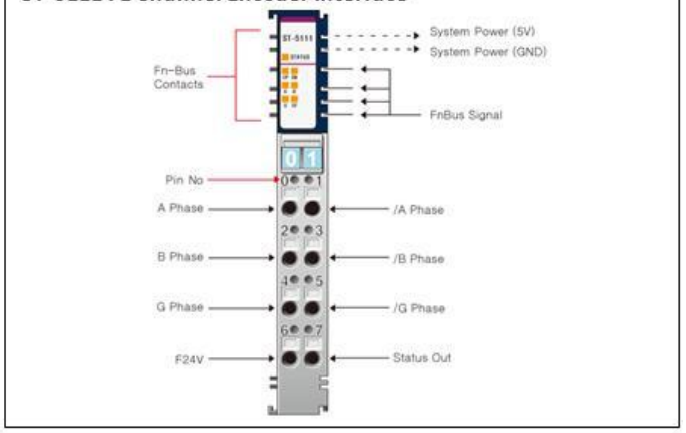
Model	ST-5351
Specificity	SSI Interface
Number of Channels	1 Channel
SSI Data Rate	62.5K, 100K, 125K,250K,500K,1M,2Mbps
SSI Data Width	Max. 30bit
SSI Data Delay Time	20usec~10msec
SSI Output	C+,C- RS422 Differential Output
SSI Input	D+,D- RS422 Differential Input
SSI Data Code Type	Gray Code or Natural Binary
Digital Input	24Vdc Input nominal, Sink Type
Diagnostic	Field Power, SSI Frame
Common Type	1 Common, 1 Shield
Power Dissipation	Max. 150mA@5.0Vdc
Isolation	Photocoupler Isolation

Motion Module Wiring – High Speed Counter

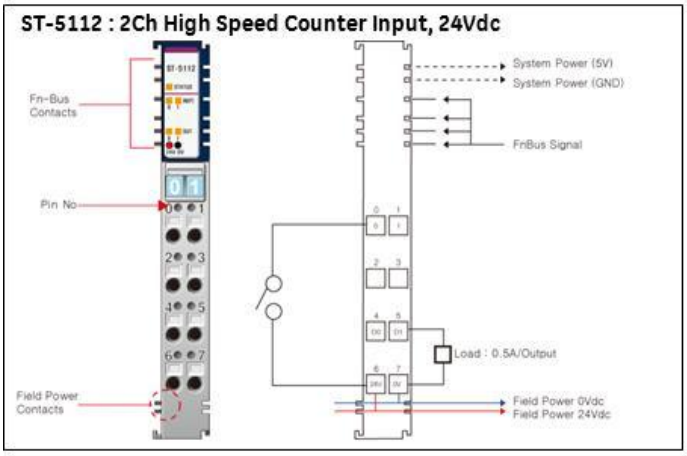
ST-5101 : 1 Channel Encoder Interface



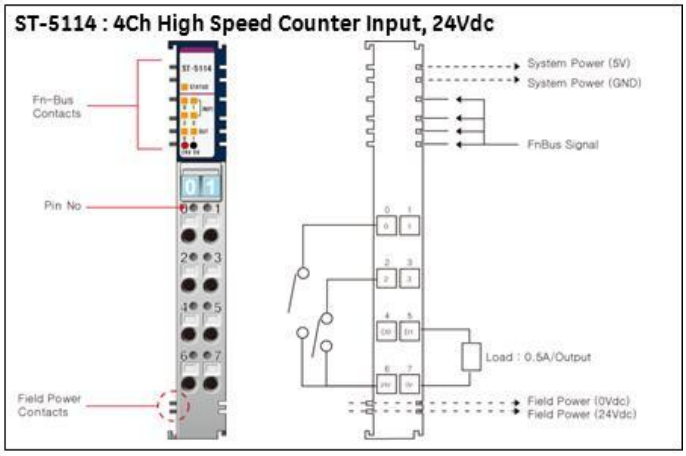
ST-5111 : 1 Channel Encoder Interface



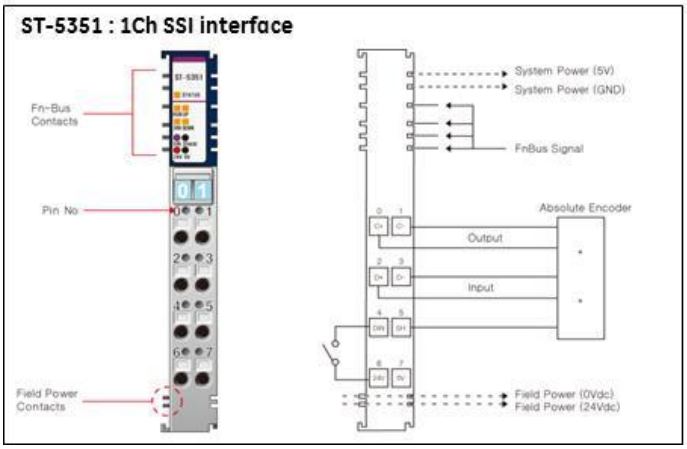
ST-5112 : 2Ch High Speed Counter Input, 24Vdc



ST-5114 : 4Ch High Speed Counter Input, 24Vdc



ST-5351 : 1Ch SSI interface



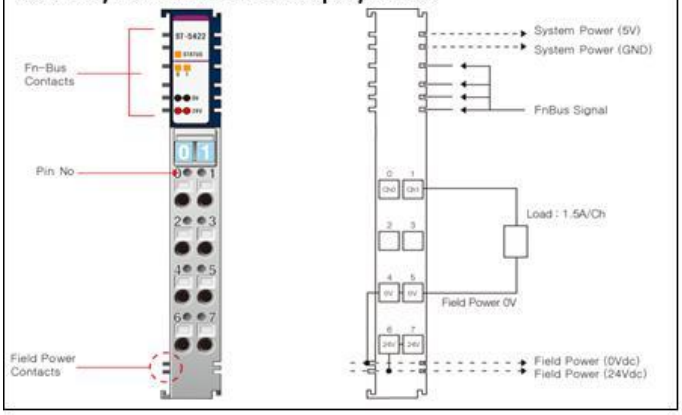
Motion Module Specifications – PWM and Pulse Train Outputs

Model	ST-5422	ST-5442	ST-5444
Specificity	PWM Output		
Number of Outputs	2 Channels		4 Channels
Type	Source		
Output Current	1.5A/Ch, 3A/All Channel	0.5A/Ch, 1A/All Channel	0.5A/Ch, 2A/All Channel
Output Inrush Current	Max. 2A, 100ms/Ch	Max.1.5A, 100ms/Ch	
PWM Frequency	1~2500Hz±0.5%		
PWM Duty	0.0~100.0%±1.0(0.1%/1LSB), Ton>5us, Toff>5us		
Diagnostic	Short Protection		
Common Type	2Common		
Power Dissipation	Max. 150mA@5.0Vdc		
Isolation	Photocoupler Isolation		

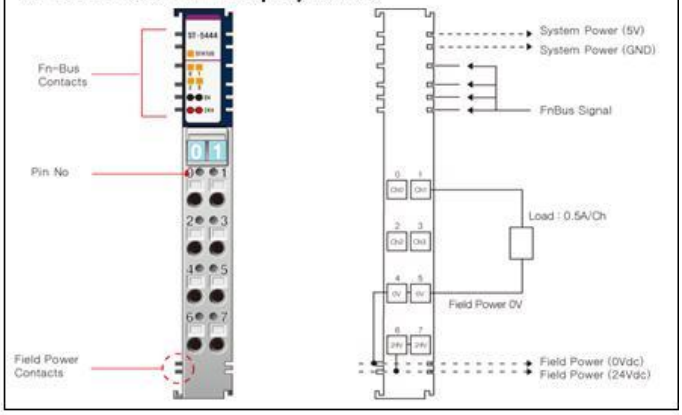
Mode	ST-5641	ST-5642	ST-5651
Specificity	PULSE Output		
Number of Channels	1 Channel	2Channels	1 Channel
Number of Outputs	2 Output/Channel		2 Output
Type	Source		RS 422
Output Current	0.5A/Output, 1A/All Output	0.5A/Output, 2A/All Output,	-
Pulse Output Frequency	1~20,000Hz±0.5%		5~20,000Hz±1.0%
Pulse Output Duty	50%±3.0% Fixed, Ton>5us, Toff>5us		50%±0.1% Fixed, Ton>10ns, Toff>10ns
Pulse Output Quantity	Max. +1~+32767 : Pulse Direction Output OFF, Max. -1~-32767 : Pulse Direction Output ON.		
Pulse Output Counter	Signed 32bit-wide		
Diagnostic	Short protection		-
Common Type	2Common		1 Common, 1 Shield
Power Dissipation	Max. 150mA@5.0Vdc		
Isolation	Photocoupler Isolation		

Motion Module Wiring – PWM and Pulse Train Outputs

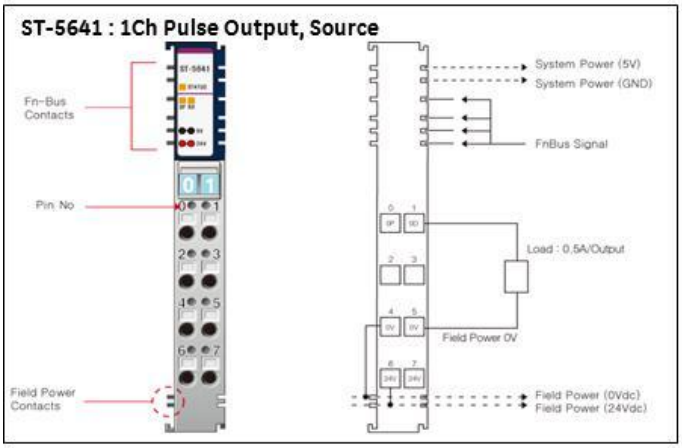
ST-5422, 5442 : 2Ch PWM Output, Source



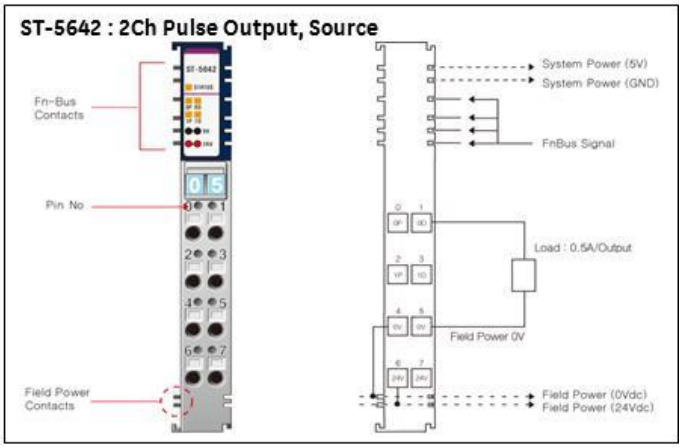
ST-5444 : 4Ch PWM Output, Source



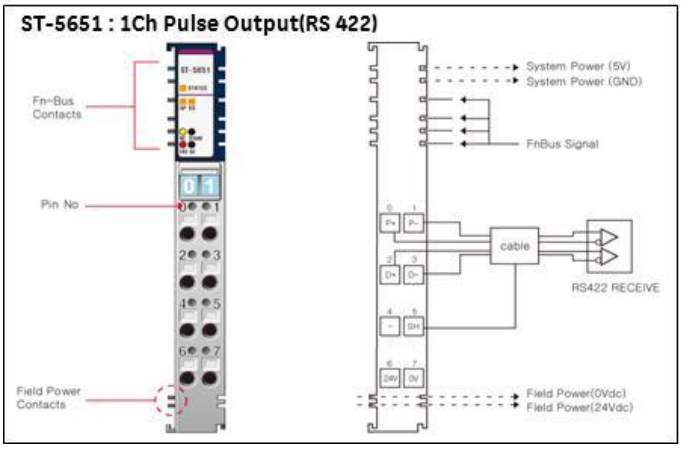
ST-5641 : 1Ch Pulse Output, Source



ST-5642 : 2Ch Pulse Output, Source



ST-5651 : 1Ch Pulse Output(RS 422)



System Modules Specifications

Power Modules	ST-7111	ST-7511	ST-7241	ST-7641
System Input Voltage range	11Vdc to 28.8Vdc		--	
System Power Input Voltage	Normal 24Vdc		--	
Field Power Input Voltage	Normal 24Vdc (20%)		Arbitrary 5Vdc,24Vdc,48Vdc,110Vac,220Vac	
Fn-Bus Output Voltage	Max. 5Vdc, 1A		--	
Field Power Contacts Current	Max. 10A			
Indicator	2 Green Input state	1 Green/Red LED, Module Status / 2Green LED, Input Status	Non Indicate	1 Green/Red LED, Module Status
Type	--	ID Type	--	ID Type
weight	70g			
Cable wiring	I/O Cable Max. 2.0 (AWG 14)			

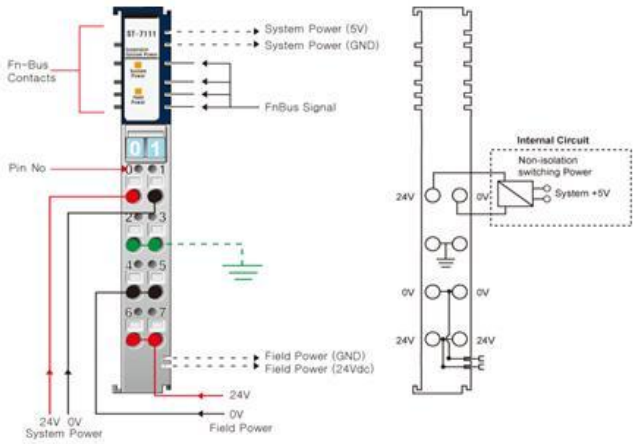
Distribution Modules	ST-7008	ST-7108	ST-7118	ST-7188	ST-7408	ST-7508	ST-7518	ST-7588
Field Power Voltage	Shield	0Vdc	24Vdc	24Vdc, 0Vdc	Shield	0Vdc	24Vdc	24Vdc, 0Vdc
Field Power Contacts Current	Max.10A							
indicator	Non Indicate				1 Green/Red LED, Module Status			
power dissipation	Expansion Power Distributor	--		Expansion Power Distributor	--		Max. 18mA @ 5Vdc	
Type	--				ID Type			
weight	65g				70g	65g	64g	65g
Cable wiring	I/O Cable Max. 2.0㎟(AWG 14)							

Expansion Modules	ST-5725 (Master)	ST-5726 (Slave)
Number of Expansion I/O slots	Max 32 slots	
Max. Length Extension Line	Approximately Max. 300m	
Number of Extension Nodes	Max 3 Nodes	
Connection Type	RTB 8Points	
Power Dissipation	Max. 100mA @5Vdc	
Field Power	No Connection with Field Power	
Wiring	Extension Cable	

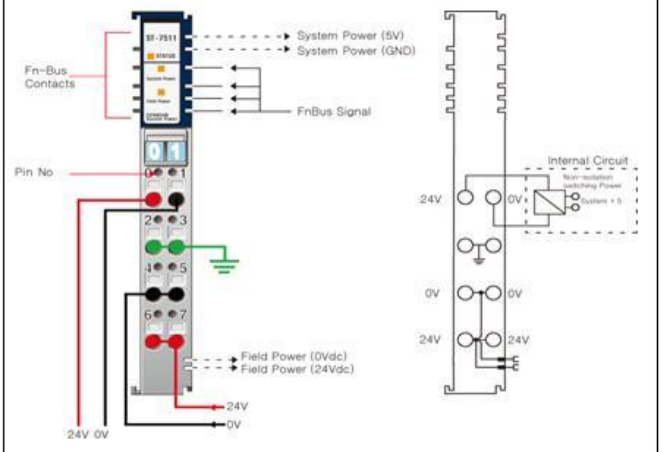
Note: The Bus Master (ST-5725) and Slave (ST-5726) enables the RSTi to break the bus in the event that panel width or the user wishes to distribute the modules. When expansion is required, add a Bus Master to the end of the DIN rail section, then put in a Bus Slave at the beginning of the next set of I/O modules. Connection between the master and slave is a twisted shielded cable. The master and slave have screw terminals so you don't need special connectors. The Master-Slave network is NOT multi-drop. Each Master can have only 1 Slave. You can add more drops by putting a Master at the end of the second DIN rail and connecting to another Slave. The limit is 3 Master Slave pairs with a total distance of 300 meters. The maximum number of modules allowed is a total of 32, Master and Slave modules occupy a module address.

System Modules Wiring

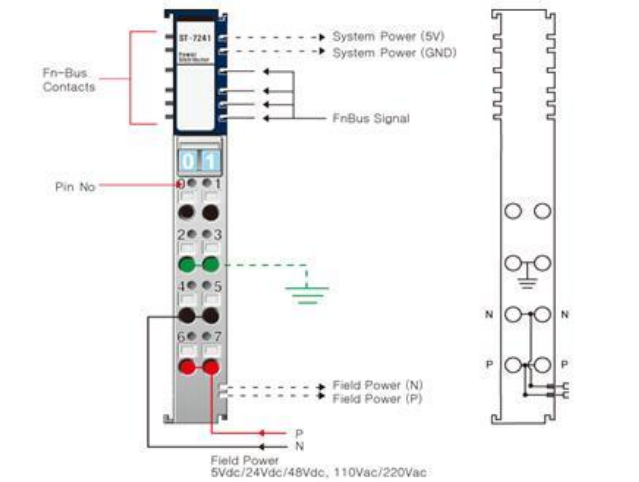
ST-7111 : 1Channel Expansion Power Supply Module



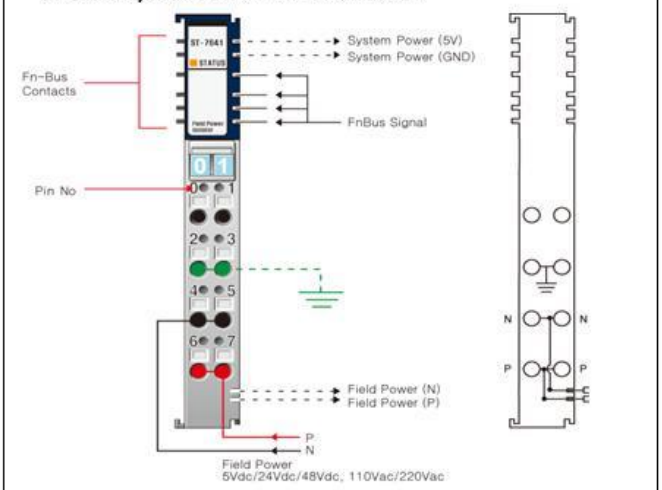
ST-7511 : 1Channel Expansion Power Supply with module ID



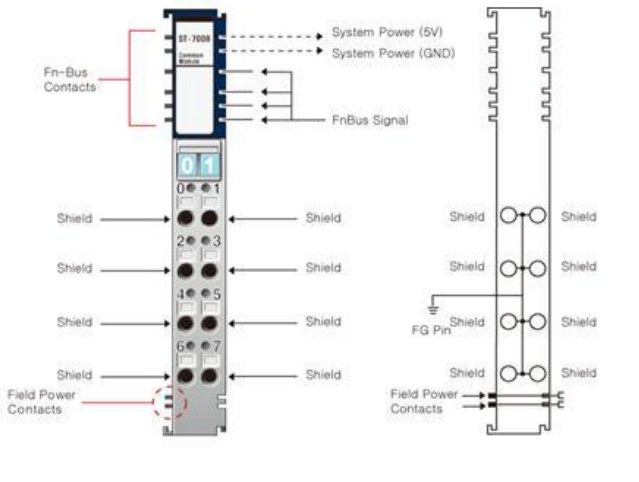
ST-7241 : 1Channel Field Distributor, 5V~48Vdc,110~220Vac



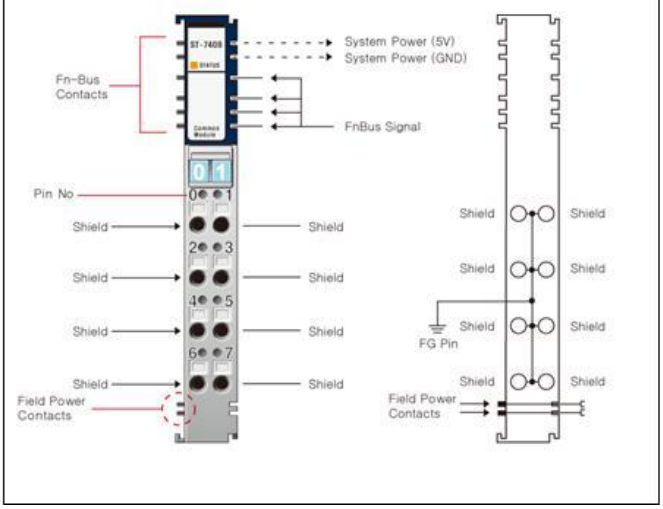
ST-7641 : 1Channel Field Distributor Module 5V~48Vdc,110~220Vac with module ID



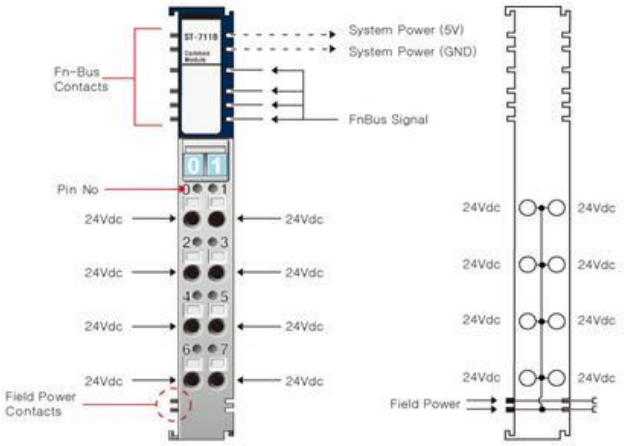
ST-7008 : 8 Channels Shield Module



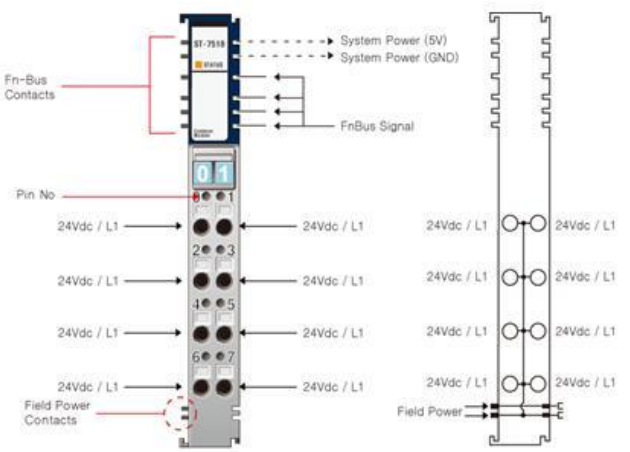
ST-7408 : 8Channels Shield Module with module ID



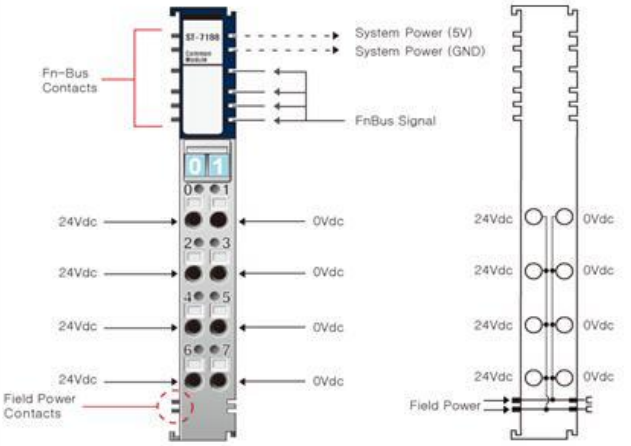
ST-7118 : 8 Channels Common Module for 24Vdc



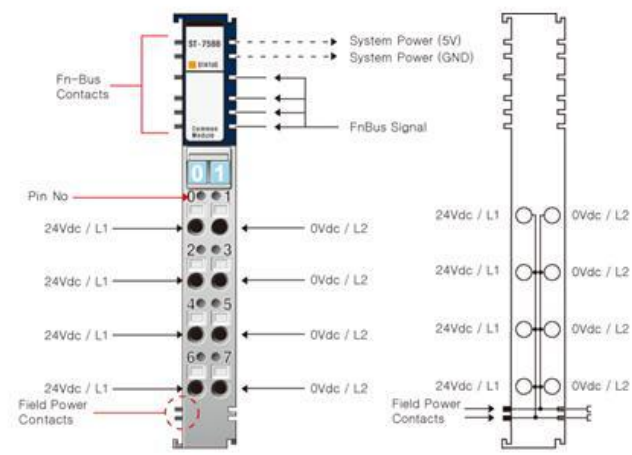
ST-7518 : 8 Channels Common for 24Vdc with module ID



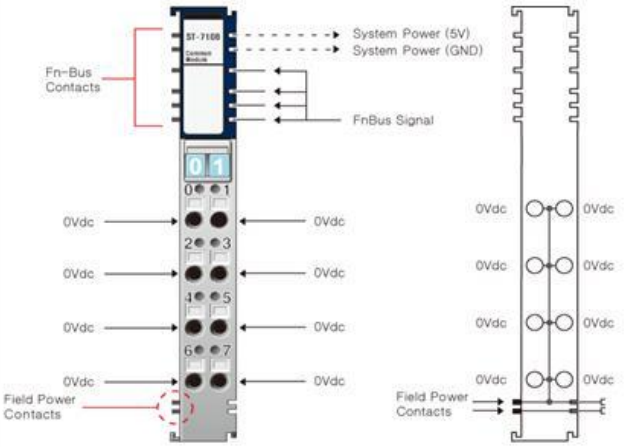
ST-7188 : 8 Channels Common Module 24Vdc/0Vdc



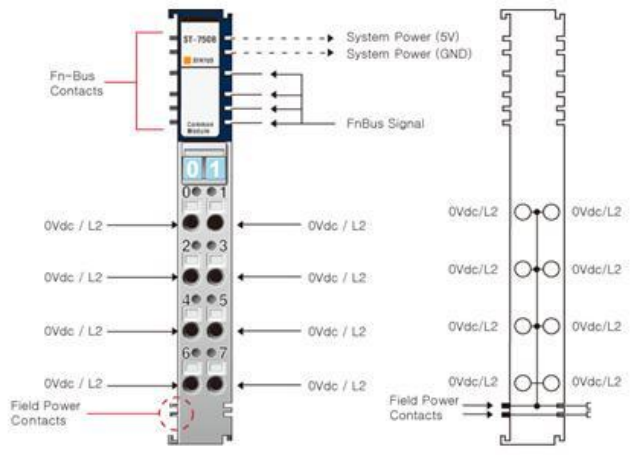
ST-7588 : 8 Channels Common 24Vdc/0Vdc with module ID



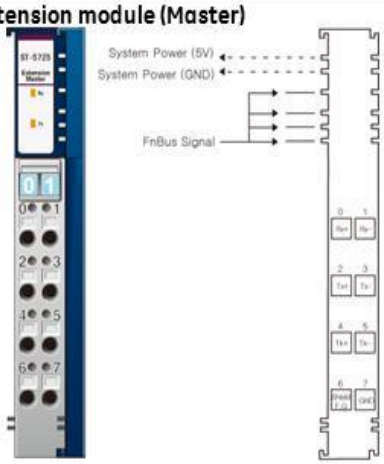
ST-7108 : 8 Channels Common Module, 0V



ST-7508 : 8 Channels Common, 0V with module ID



ST-5725 : Extension module (Master)



ST-5726 : Extension module (Slave)