HITACHI
Inspire the Next

User Manual – PROFINET Network Adapter

EH-RIO2 Series
RIO2-PNA
Version 1. 07

User Manual – PROFINET Network Adapter

DOCUMENT CHANGE SUMMARY				
REV	PAGE	REMARKS	DATE	EDITOR
1.05	New	Created	26.09.2017	Mitachi
1.06	P17	Correction of mistakes	08.10.2019	Mitachi
1.07	P17	Correct value from 0~99 to 00~99	19.10.2021	Faber

HITACHI
Inspire the Next

User Manual – PROFINET Network Adapter

Table of CONTENTS

User Manual – PROFINET Network Adapter

1. Important Notes

Solid state equipment has operational characteristics differing from those of electromechanical equipment.
Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls describes some important differences between solid state equipment and hard-wired electromechanical devices.
Because of this difference, and also because of the wide variety of uses for solid state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

In no event will Hitachi be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.
The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, Hitachi cannot assume responsibility or liability for actual use based on the examples and diagrams.

Warning!

✓ **If you don't follow the directions, it could cause a personal injury, damage to the equipment or explosion**

● Do not assemble the products and wire with power applied to the system. Else it may cause an electric arc, which can result into unexpected and potentially dangerous action by field devices. Arching is explosion risk in hazardous locations. Be sure that the area is non-hazardous or remove system power appropriately before assembling or wiring the modules.

● Do not touch any terminal blocks or IO modules when system is running. Else it may cause the unit to an electric shock or malfunction.

● Keep away from the strange metallic materials not related to the unit and wiring works should be controlled by the electric expert engineer. Else it may cause the unit to a fire, electric shock or malfunction.

Caution!

✓ **If you disobey the instructions, there may be possibility of personal injury, damage to equipment or explosion. Please follow below Instructions.**

● Check the rated voltage and terminal array before wiring. Avoid the circumstances over 55℃ of temperature. Avoid placing it directly in the sunlight.

● Avoid the place under circumstances over 85% of humidity.

● Do not place Modules near by the inflammable material. Else it may cause a fire.

● Do not permit any vibration approaching it directly.

● Go through module specification carefully, ensure inputs, output connections are made with the specifications. Use standard cables for wiring.

● Use Product under pollution degree 2 environment.

1.1 Safety Instruction

1.1.1 Symbols

DANGER ⚠	Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death property damage or economic loss.
IMPORTANT	Identifies information that is critical for successful application and understanding of the product.
ATTENTION ⚠	Identifies information about practices or circumstances that can lead to personal injury, property damage, or economic loss. Attentions help you to identity a hazard, avoid a hazard, and recognize the consequences.

1.1.2 Safety Notes

DANGER ⚠	The modules are equipped with electronic components that may be destroyed by electrostatic discharge. When handling the modules, ensure that the environment (persons, workplace and packing) is well grounded. Avoid touching conductive components, e.g. FnBUS Pin.

1.1.3 Certification (TBD)

c-UL-us UL Listed Industrial Control Equipment, certified for U.S. and Canada
See UL File E235505

CE Certificate
EN 61000-6-2:2005
EN 61000-6-4/A11:2011

FCC
RoHS (EU, China)

2. Specification

2.1 The Interface

2.1.1 RIO2-PNA (PROFINET)
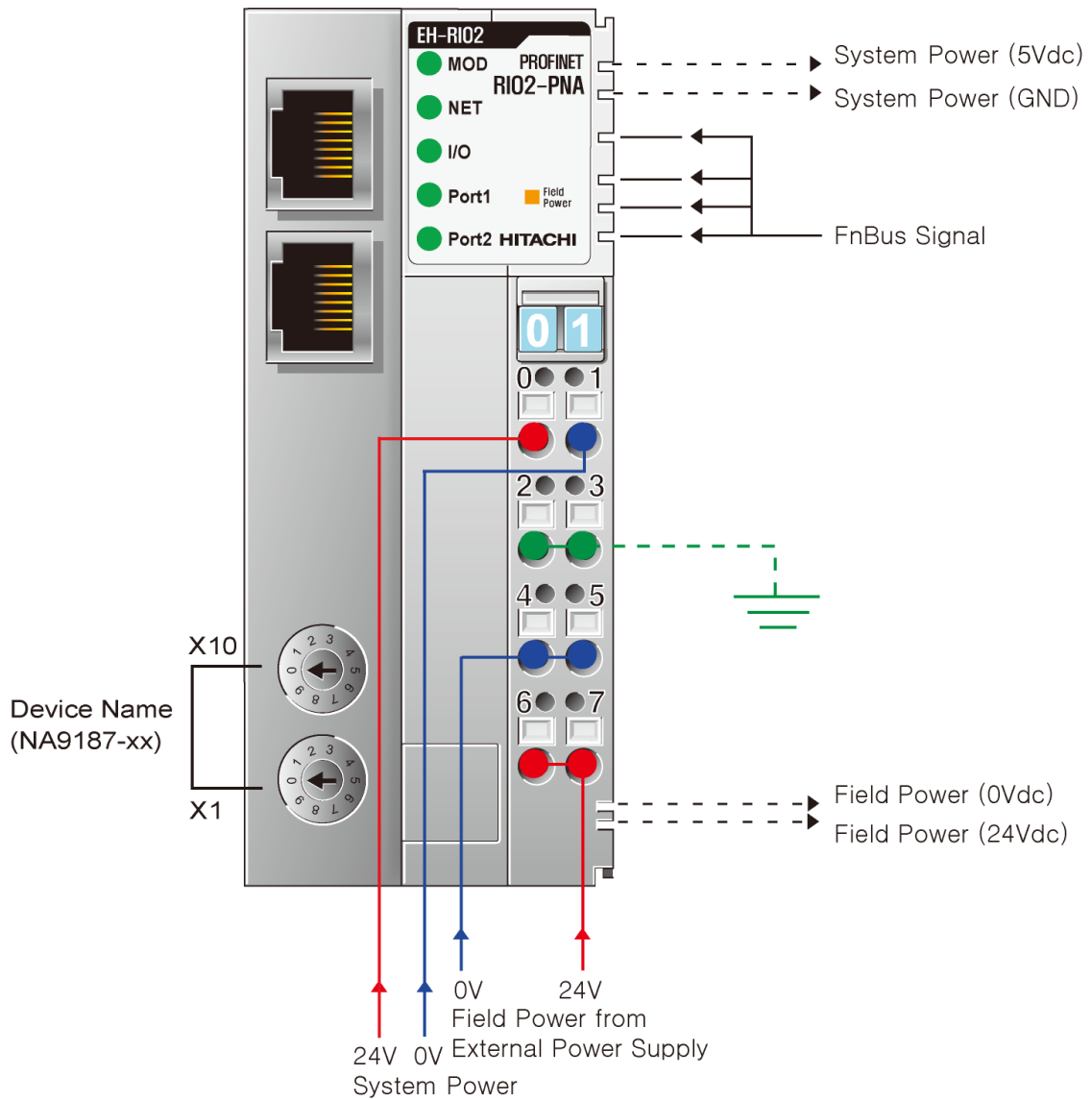
2.2 Specification

2.2.1 General Specification

General Specification	
System Power	Supply voltage : 24Vdc nominal Supply voltage range : 11~28.8Vdc Protection : Output current limit (Min. 1.5A) Reverse polarity protection
Power Dissipation	115mA typical @24Vdc
Current for I/O Module	1.5A @5Vdc
Isolation	System power to internal logic : Non-isolation System power to I/O driver : Isolation
Field Power	Supply voltage : 24Vdc nominal Supply voltage range : 11~28.8Vdc
Current in Jumper Contacts	DC 10A Max.
Weight	150g
Module Size	45mm x 99mm x 70mm
Environment Condition	Refer to Environment Specification

Environmental Specifications	
Surrounding Temperature	0 to 55℃
Operating Temperature	0 to 55℃
Storage Temperature	-40℃ to 85℃
Relative Humidity	90% non-condensing
Protection Class	IP 20
Mounting	DIN rail

2.2.2 Interface Specification

Interface Specification, RIO2-PNA	
Protocol	PROFINET I/O RT, DCP, SNMP, LLDP
Station Type	PROFINET IO Device
Topology	Line or Star topology
Number of Nodes	Limited by the IP address
Number of Expansion I/O slots	Max. 32 slots
I/O Data Size	252 Bytes inputs/252 Bytes outputs
Indicators	1 green/red MOD Status Indicator 1 green/red NET Status Indicator 1 green/red I/O Status Indicator 1 green Port1 Link/Active Status Indicator 1 green Port2 Link/Active Status Indicator 1 green Field Power Status indicator
Baud rate	100Mbps Full-Duplex
Module Location	Starter module - Left side of FnIO System

2.3 LED Indicator

2.3.1 Module Status LED (MOD)

State	LED is :	To indicate :
No Power	Off	No power is supplied to the unit.
OS Handle Error	Flashing Green 0.2s	OS handle unexpected exceptions.
Wrong IP address	Flashing Green 1s	IP address is 0.0.0.0
Device Operational	Green	The unit is operating in normal condition.
OS Fatal Error	Flashing Red 0.2s	OS Fatal error is occurred
Invalid RAM Image	Flashing Red 1s	Invalid RAM Image
User fatal error	Red	Invalid boot image header(Flash), ROM Boot loader

2.3.2 Network Status LED (NET)

State	LED is :	To indicate :
Not Powered Not On-line	Off	Device is not on-line or may not be powered
On-line, Not connected	Flashing Green 0.2s	PROFINET IO connection has been established. Wait parameters.
Data Exchange Stop	Flashing Green 1s	PROFINET IO data exchange stop
On-line, Connected	Green	Device is on-line and allocated to a master
Invalid Configuration	Flashing Red 0.2s	Invalid Configuration
Minor Fault	Flashing Red 1s	PROFINET IO Connection is aborted after Data exchange
Fault	RED	PROFINET IO connection is aborted before a data exchange

2.3.3 Expansion Module Status LED (I/O)

State	LED is :	To indicate :
Not Powered No Expansion Module	Off	Device has no expansion module or may not be powered
Fn-Bus On-line, Do not Exchanging I/O	Flashing Green	Fn-Bus is on-line but does not exchanging I/O data - Passed the expansion module configuration.
Fn-Bus Connection, Run Exchanging IO	Green	Expansion Slot is connected and run exchanging I/O data
FnBus connection fault during exchanging IO	Red	One or more expansion module occurred in fault state. - Changed expansion module configuration. - FnBus communication failure. - Word data type error - Parameter setting error
Expansion Configuration Failed	Flashing Red	Failed to initialize expansion module - Detected invalid expansion module ID. - Overflowed Input / Output Size - Too many expansion module - Initial protocol failure - Mismatch vendor code between adapter and expansion module.

2.3.4 Field Power Status LED

State	LED is :	To indicate :
Not Supplied Field Power	Off	Not supplied 24V dc field power
Supplied Field Power	Green	Supplied 24V dc field power

2.3.5 Port1, Port2 : Link and Activity

State	LED is :	To indicate :
Link Down	Off	Link is down
Active	Flashing Green	Active is present
Link UP	Green	Link is up (Physical connection is established)

3. Dimension

3.1 RIO2-PNA

(mm)
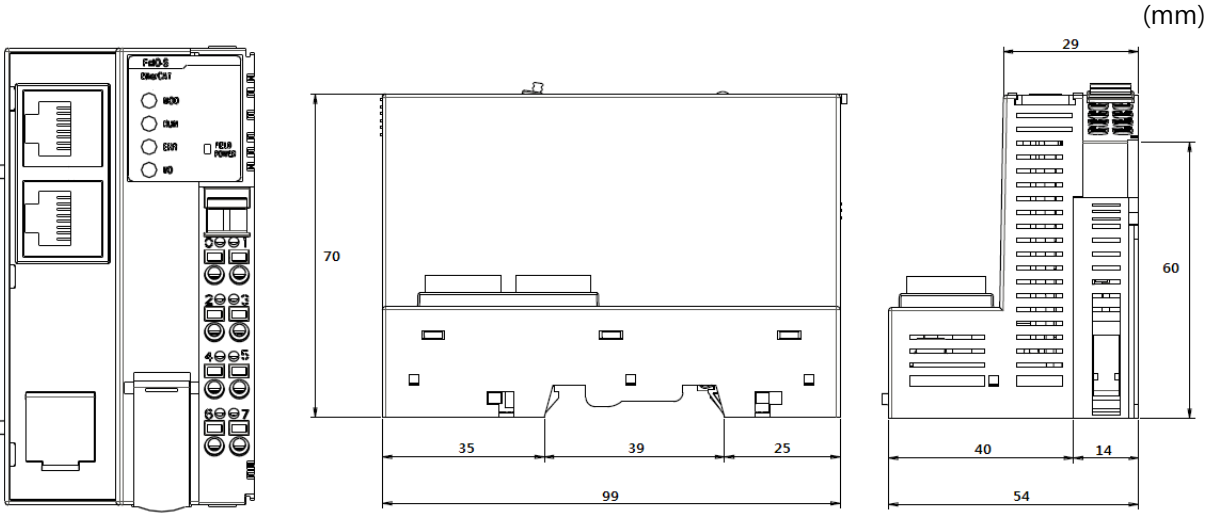
4. Mechanical Setup

4.1 Total Expansion

The number of the module assembly that can be connected is 63. So the maximum length is 426mm Exception. RIO2-YR8 is excepted to calculate maximum length because that is double width module.

4.2 Plugging and Removal of the Components.
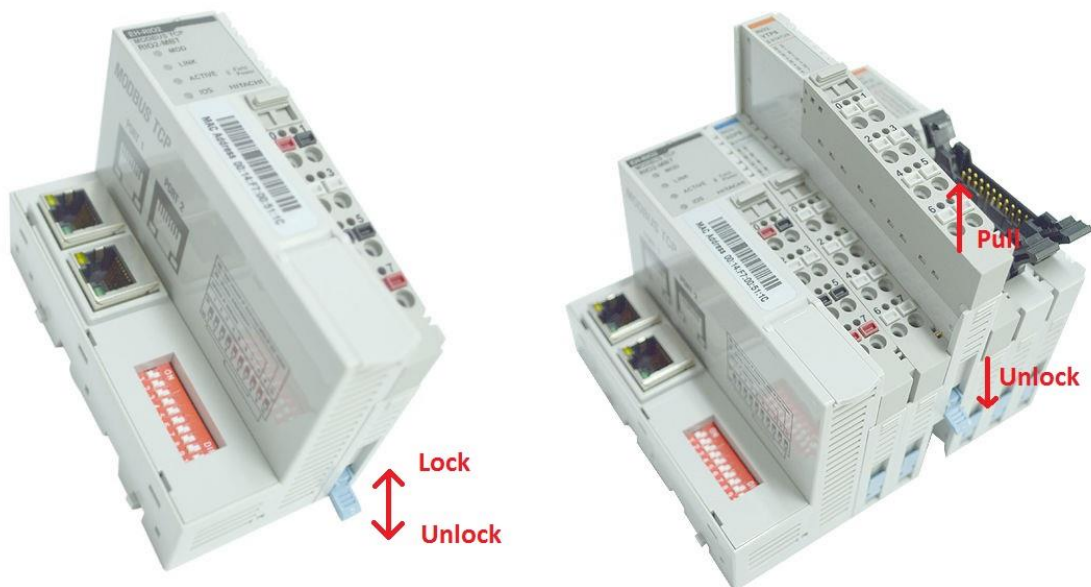
As above figure in order to safeguard the FnIO module from jamming, it should be fixed onto the DIN rail with locking level. To do so, fold on the upper of the locking lever.

To pull out the FnIO module, unfold the locking lever as below figure.

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

5. Electrical Interface

5.1 FnBus System
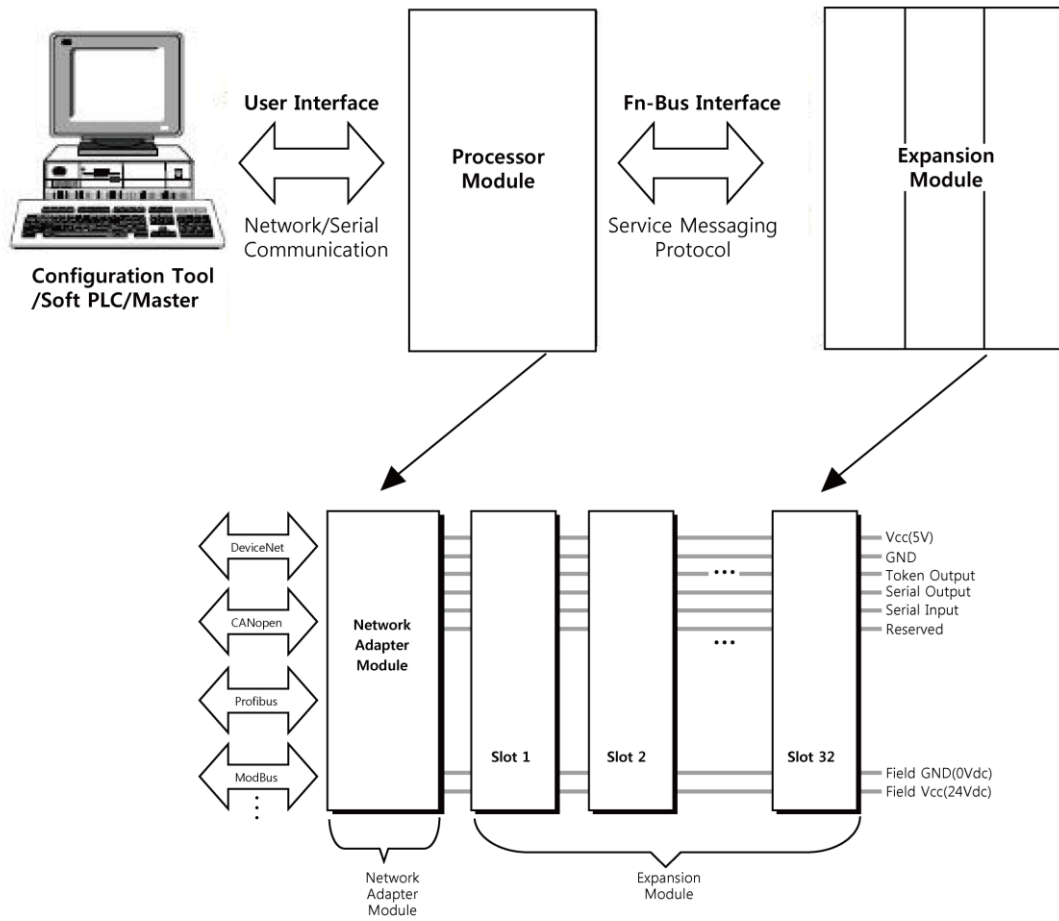
• Network Adapter Module

The Network Adapter Module forms the link between the field bus and the field devices with the Expansion Modules.

The connection to different field bus systems can be established by each of the corresponding Network Adapter Module, e.g. for SyncNet, PROFIBUS, CANopen, DeviceNet, Ethernet/IP, EtherCAT, CC-Link, MODBUS/Serial, MODBUS/TCP etc.

• Expansion Module

The Expansion Modules are supported a variety of input and output field devices.
There are digital and analog input/output modules and special function modules.

• Two types of FnBus Message

- Service Messaging
- I/O Messaging

5.1.1 FnBus Pin Description

Communication between the NA series and the expansion module as well as system / field power supply of the bus modules is carried out via the internal bus. It is comprised of 6 data pin and 2 field power pin.

Field Power Pins

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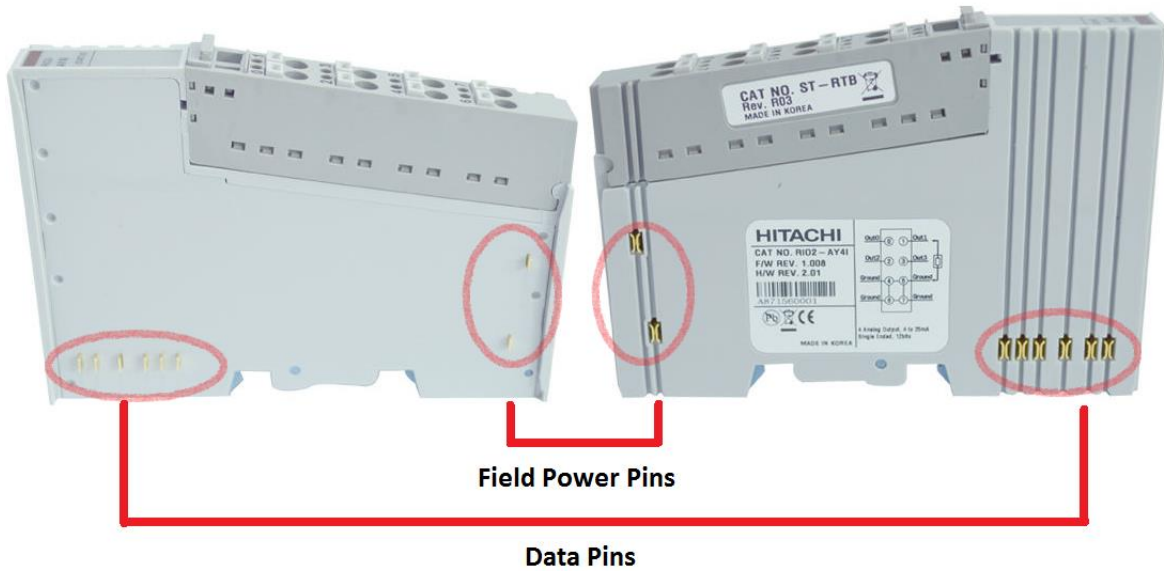
No.	Name	Description
1	Vcc	System supply voltage (5V dc).
2	GND	System Ground.
3	Token Output	Token output port of Processor module.
4	Serial Output	Transmitter output port of Processor module.
5	Serial Input	Receiver input port of Processor module.
6	Reserved	Reserved for bypass Token.
7	Field GND	Field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

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

5.2 PROFINET Electrical Interface

5.2.1 RIO2-PNA RJ-45 Socket

#1
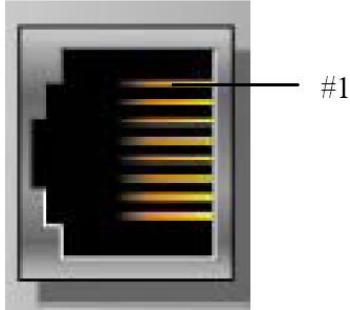
Shielded RJ-45 Socket

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

✓ **Cable : EtherNet Cable**

Up to 100m from Ethernet Hub

| Upto 100m | | Upto 100m |

RIO2-PNA   Hub   RIO2-PNA

※ **Caution**
- Industrial HUB for EIP recommended
- Cable, the noise cable recommended

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

5.2.2 PROFINET Parameterization by Rotary Switch

Value	Description	Factory settings
00	- Name of station will be read from flash memory. (For example, rio2_pna_1) - IP address will be read from flash memory.	- Name of station : RIO2-PNA-00 - IP address :192.168.0.254 - Subnet mask : 255.255.255.0 - Gateway : 192.168.0.1
01~99	- Name of station will be rio2_pna_xx. (xx is the value of Rotary Switch) - IP address will be read from flash memory.	

When the rotary switch is not set to non-zero (01~99):
If the decimal value of the rotary switch is not zero (00), the name of device will be fixed as
"rio2_pna_xx" (xx: 01~99). You must put the fixed device name.
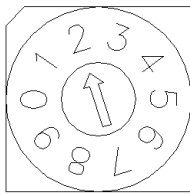
 X 10 (MSD)
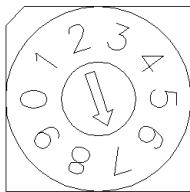
 X 1 (LSD)

When the rotary switch is set to zero (00):
If the decimal value of the rotary switch set to zero (00), the device name will be read from nonvolatile memory. You should put the same name as the name from non-volatile memory.

RIO2-PNA Devices on a PROFINET subnet must have unique names. The device names must satisfy DNS naming conventions. This means that the following rules must be observed:
– Names are limited to a total of 127 characters (letters, numbers, dashes or dots)
– Any component part (that is, a character string between two dots) of the device name may only be up to 63 characters long.
– Names cannot contain any special characters such as umlauts, parentheses, underscores, forward or backward slashes, empty spaces, etc. The dash is the only special character allowed.
– Names must not begin or end with the "-" or "." characters.
– Names must not have the format n.n.n.n (where n = 0...999).
– The device name must not start with numbers.
– Names must not begin with the character sequence "port-xyz-" (where x, y, z = 0...9).

Device names are assigned to PROFINET IO device when the device is being set up and placed in operation for the first time ("commissioned").
The default name is "RIO2-PNA-SW" (see "Short Designation").
If several devices of the same type are arranged on the same PROFINET IO system, then STEP7 automatically adds sequential number to the name from the GSD file. In this case, the second device has the extension "-1", the third one has the extension "-2", etc.

◆ Communication Speed Setting

- See Master Module Setting about communication speed setting.

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

5.3 Example

5.3.1 Example of Input Process Image (Input Register) Map

Input image data depends on slot position and expansion slot data type. Input process image data is only ordered by expansion slot position.

● **For example slot configuration**
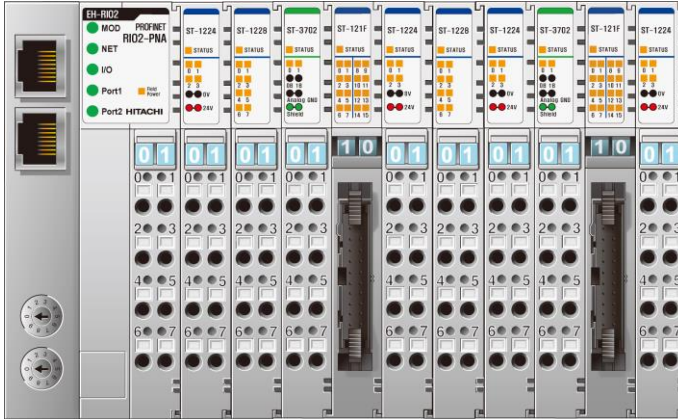
Slot Address	Module Description
#0	PROFINET Adapter
#1	4-discrete input
#2	8-discrete input
#3	2-analog input
#4	16-discrete input
#5	4-discrete input
#6	8-discrete input
#7	4-discrete input
#8	2-analog input
#9	16-discrete input
#10	4-discrete input

● **Input Process Image**

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte #0	Empty, Always 0				Discrete Input 4 pts (Slot#1)			
Byte #1	Discrete Input 8 pts (Slot#2)							
Byte #2	Analog Input Ch0 low byte (Slot#3)							
Byte #3	Analog Input Ch0 high byte (Slot#3)							
Byte #4	Analog Input Ch1 low byte (Slot#3)							
Byte #5	Analog Input Ch1 high byte (Slot#3)							
Byte #6	Discrete Input low 8 pts (Slot#4)							
Byte #7	Discrete Input high 8 pts (Slot#4)							
Byte #8	Empty, Always 0				Discrete Input 4 pts (Slot#5)			
Byte #9	Discrete Input 8 pts (Slot#6)							
Byte #10	Empty, Always 0				Discrete Input 4 pts (Slot#7)			
Byte #11	Analog Input Ch0 low byte (Slot#8)							
Byte #12	Analog Input Ch0 high byte (Slot#8)							
Byte #13	Analog Input Ch1 low byte (Slot#8)							
Byte #14	Analog Input Ch1 high byte (Slot#8)							
Byte #15	Discrete Input low 8 pts (Slot#9)							
Byte #16	Discrete Input high 8 pts (Slot#9)							
Byte #17	Empty, Always 0				Discrete Input 4 pts (Slot#10)			

5.3.2 Example of Output Process Image(Output Register) Map

Output image data depends on slot position and expansion slot data type. Output process image data is only ordered by expansion slot.

- **For example slot configuration**
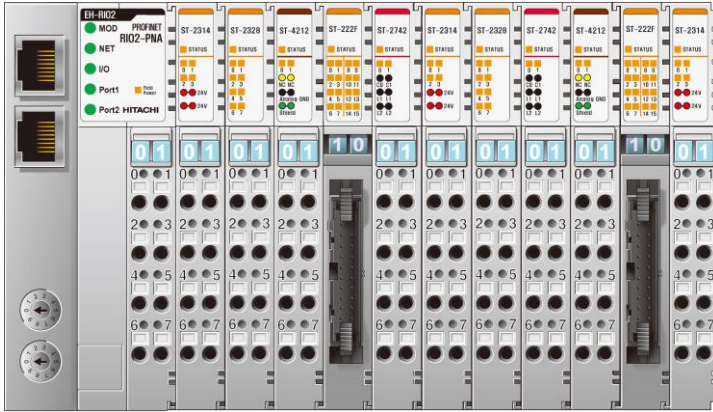
Slot Address	Module Description
#0	PROFINET Adapter
#1	4-discrete output
#2	8-discrete output
#3	2-analog output
#4	16-discrete output
#5	4-discrete output
#6	8-discrete output
#7	4-relay output
#8	8-relay output
#9	2-analog output
#10	16-discrete output
#11	4-discrete output

- **Output Process Image**

Byte	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte #0	Empty, Don't care				Discrete Output 4 pts (Slot#1)			
Byte #1	Discrete Output 8 pts (Slot#2)							
Byte #2	Analog Output Ch0 low byte (Slot#3)							
Byte #3	Analog Output Ch0 high byte (Slot#3)							
Byte #4	Analog Output Ch1 low byte (Slot#3)							
Byte #5	Analog Output Ch1 high byte (Slot#3)							
Byte #6	Discrete Output low 8 pts (Slot#4)							
Byte #7	Discrete Output high 8 pts (Slot#4)							
Byte #8	Empty, Don't care				Discrete Output 4 pts (Slot#5)			
Byte #9	Discrete Input 8 pts (Slot#6)							
Byte #10	Empty, Don't care				Discrete Output 4 pts (Slot#7)			
Byte #11	Discrete Output 8 pts (Slot#8)							
Byte #12	Analog Output Ch0 low byte (Slot#9)							
Byte #13	Analog Output Ch0 high byte (Slot#9)							
Byte #14	Analog Output Ch1 low byte (Slot#9)							
Byte #15	Analog Output Ch1 high byte (Slot#9)							
Byte #16	Discrete Output low 8 pts (Slot#10)							
Byte #17	Discrete Output high 8 pts (Slot#10)							
Byte #18	Empty, Don't care				Discrete Output 4 pts (Slot#11)			

6. RIO2-PNA PROFINET

6.1 RIO2-PNA Parameters

Parameter	Setting	Description
Word data type	MOTOLORA *	Big Endian format(MSB-LSB)
	INTEL	Little Endian format(LSB-MSB)
Stop action	Clear output image to 0 *	All outputs are set to 0.
	Hold last valid output image	All outputs are remain the last value.
	Depends on IO's fault action parameters	Stop the FnBus communication.
Reaction on FnBus error	Clear input image	The input image is clear to 0.
	Hold last image	The input image remain the last valid value.
	Auto reset *	RIO2-PNA performs reset.
	Disconnect PROFINET	Stop the communication with Controller.
* Default settings		

6.2 RIO2-PNA PROFINET IO Characteristics

6.2.1 Device identity

Item	Value
Vendor	HITACHI
Vendor ID	0x0269
Product family	HITACHI EH-RIO2 System
Device ID	0x9187
Details	RIO2-PNA PROFINET IO Device

6.2.2 Device Access Point

Item	Value
Module Ident Number	0x00009187
Details	RIO2-PNA PROFINET IO Device
Vendor Name	HITACHI
Order Number	RIO2-PNA
Category	HITACHI PROFINET I/O
Software Version	V1.010
Hardware Version	V1.02
Maximal Input Length	252 Bytes
Maximal Output Length	252 Bytes
Physical Slots	0..32
Minimal Device Interval	4 ms
Based on	NS9360
DNS Compliant Name	RIO2-PNA-address
Supports Extended Assignment of IP Address	No
Fixed in Slots	0
Instance Field of the Object UUID	1
Supports Multiple Write	No
Requires IOPS/IOCS	Yes
Requires Engineering tool which supports at least GSDML Version	V2.0

6.2.3 Sub-slot of RIO2-PNA

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

<table>
<tr><th colspan="9">Sub-module</th></tr>
<tr><td>Sub-module Ident Number</td><td colspan="8">0x00000001</td></tr>
<tr><th colspan="9">RIO2-PNA Parameters (Index : 1, Length : 2 Bytes, Transfer sequence : 0)</th></tr>
<tr><td>Byte Offset</td><td colspan="8">Data</td></tr>
<tr><td>0</td><td colspan="8">0x00, 0x00</td></tr>
<tr><td>Name of Parameter</td><td>Data Type</td><td>Byte Offset</td><td>Bit Offset</td><td>Bit Length</td><td>Default value</td><td>Value Range</td><td>Changeable</td><td>Visible</td></tr>
<tr><td>Word data format</td><td>Bit Area</td><td>0</td><td>0</td><td>1</td><td>MOTOROLA</td><td>0..1</td><td>Yes</td><td>Yes</td></tr>
<tr><td>Stop action</td><td>Bit Area</td><td>1</td><td>0</td><td>2</td><td>Clear output images to 0</td><td>0..2</td><td>Yes</td><td>Yes</td></tr>
<tr><td>Reaction on FnBus Error</td><td>Bit Area</td><td>1</td><td>2</td><td>2</td><td>Auto Reset</td><td>0..3</td><td>Yes</td><td>Yes</td></tr>
<tr><th colspan="9">Interface : RIO2-PNA</th></tr>
<tr><td colspan="5">Sub-module Ident Number</td><td colspan="4">0x0001</td></tr>
<tr><td colspan="5">Sub-slot Number</td><td colspan="4">32768 (0x8000)</td></tr>
<tr><td colspan="5">Supports Real time Class</td><td colspan="4">Class 1</td></tr>
<tr><td colspan="5">Supports Isochronous Mode</td><td colspan="4">No</td></tr>
<tr><td colspan="5">AR Block Version</td><td colspan="4">1</td></tr>
<tr><td colspan="5">IOCR Block Version</td><td colspan="4">1</td></tr>
<tr><td colspan="5">Alarm CR Block Version</td><td colspan="4">1</td></tr>
<tr><td colspan="5">Sub-module Data Block Version</td><td colspan="4">1</td></tr>
<tr><td colspan="5">Number of Additional Input CRs</td><td colspan="4">0</td></tr>
<tr><td colspan="5">Number of Additional Output CRs</td><td colspan="4">0</td></tr>
<tr><td colspan="5">Number of Additional Multicast Provider CRs</td><td colspan="4">0</td></tr>
<tr><td colspan="5">Number of Multicast Consumer CRs</td><td colspan="4">0</td></tr>
<tr><td colspan="5">Supported Send-clock Factors (Base 31,25µs)</td><td colspan="4">32   64   128</td></tr>
<tr><td colspan="5">Supported Reduction Ratios</td><td colspan="4">1   2   4   8   16   32   64   128</td></tr>
<tr><th colspan="9">Port 1 : Port 1</th></tr>
<tr><td colspan="5">Sub-module Ident Number</td><td colspan="4">0x0003</td></tr>
<tr><td colspan="5">Sub-slot Number</td><td colspan="4">32769 (0x8001)</td></tr>
<tr><td colspan="5">MAU Type</td><td colspan="4">100BASETXFD</td></tr>
<tr><th colspan="9">Port 2 : Port 2</th></tr>
<tr><td colspan="5">Sub-module Ident Number</td><td colspan="4">0x0004</td></tr>
<tr><td colspan="5">Sub-slot Number</td><td colspan="4">32769 (0x8002)</td></tr>
<tr><td colspan="5">MAU Type</td><td colspan="4">100BASETXFD</td></tr>
</table>

7. Trouble Shooting

7.1. How to diagnose by LED indicator

LED Status	Cause	Action
All LED turns off	- No power	- Check main power Cable
	- System power is not supplied.	- Contact Sales team and send module for repair.
MOD LED flashes green	- Failure of initialization EEPROM parameter.	- Contact Sales team and send module for repair.
MOD LED flashes red	- Excess of IO size - Wrong IO composition - Occurrence of EEPROM checksum error	- Use expansion slot up to 32. - Compose that IO total size is not excess. - Check composition I/O Module
MOD LED is red	- Wrong address ID - Occurrence critical error in firmware	- Contact Sales team and send module for repair.
I/O LED turns off	- Failure of realization expansion Module - None expansion Module	- Check connector status both RIO2 series and expansion module.
I/O LED flashes red	- Failure of configuration baud rate	- Check communication cable with Master - Check power for master.
	- Excess of expansion slot - Failure of initialization I/O	- Use expansion slot up to 32. - Compose that IO total size is not excess.
		RIO2 series notice unidentified expansion module ID. Check status of expansion module.
I/O LED is red	- Failure of exchanging I/O data	Check status of expansion IO connection.
NET LED turns off	- Failure of communication with Master	Check main power for master and communication cable.
NET LED flashed green	- Failure of exchanging data with master	Check status in software for Master configuration.
NET LED is red	- Communication connecting lost	Check BUS line cable for connection with master.
		Check duplication address.

7.2. How to diagnose when device couldn't communicate network

Inspection of wrong or omission cable connection.

- Check status of cable connection for each node.

- Check that all color matches between connector and cable.

- Check wire omission.

Terminator resistor

- If terminator resistor is not installed, install terminator resistor

- Check location of terminator resistor

Configuration of Node address

- Check duplication node address.

Configuration of Master

- Check configuration of master

- Check whether to do download or don't

- Check composition is right configuration of communication baud rate and I/O size Configuration of each node

Ground and environment

- Check ground is contacted

- Check environment factor (temperature, humidity, etc) is in less than regular limit

8. Appendix

A.1. Product List

No.	ST-Number	Description	ID(hex)			Production Status
Digital Input Module						
	RIO2-XDP4	4 Points, Sink(Positive), 12V/24Vdc,	41	00	03	Active
	RIO2-XDP8	8 Points, Sink(Positive), 12V/24Vdc,	41	00	07	Active
	RIO2-XDP16	16 Points, Sink(Positive), 12V/24Vdc,	41	01	13	Active
	RIO2-XAH4	4 Points, 220Vac,	41	00	0A	Active
Digital Output Module						
	RIO2-YTP16	16 Points Source(Positive Logic), 24Vdc/0.5A,	81	01	16	Active
	RIO2-YTP4	4 Points Source(Positive Logic), 24Vdc/0.5A,	81	00	10	Active
	RIO2-YTP8	8 Points Source(Positive Logic), 24Vdc/0.5A,	81	00	12	Active
	RIO2-YTP4C	4 Points Source(Positive Logic), 24Vdc/2A,	81	00	3C	Active
	RIO2-YR8	8 Points, 230Vac/2A, 24Vdc/2A, Relay	81	00	50	Active
Analog Input Module						
	RIO2-AX4I	4 Channels, Current, 4~20mA, 12bit	41	43	1D	Active
	RIO2-AX8I	8 Channels, Current, 4~20mA, 12bit	41	47	83	Active
	RIO2-AX4V	4 Channels, Voltage, 0~10Vdc, 12bit	41	43	20	Active
	RIO2-AX8V	8 Channels, Voltage, 0~10Vdc, 12bit	41	47	22	Active
	RIO2-AX4H	4 Channels, Voltage, -10Vdc~10Vdc, 12bit	41	43	21	Active
	RIO2-RTD2	2 Channels, RTD, Status	41	41	28	Active
	RIO2-RTD4	4 Channels, RTD, Status	41	43	64	Active
	RIO2-RTD8	8 Channels, RTD, Status	41	47	65	Active
	RIO2-TC2	2 Channels, TC	41	41	2A	Active
	RIO2-TC4	4 Channels, TC	41	43	66	Active
Analog Output Module						
	RIO2-AY2I	2 Channels, Current, 4~20mA, 12bit	81	41	2D	Active
	RIO2-AY4I	4 Channels, Current, 4~20mA, 12bit	81	43	6E	Active
	RIO2-AY2V	2 Channels, Voltage, 0~10Vdc, 12bit	81	41	2E	Active
	RIO2-AY4V	4 Channels, Voltage, 0~10Vdc, 12bit	81	43	6A	Active
	RIO2-AY2H	2 Channels, Voltage, -10~10Vdc, 12bit	81	41	2F	Active

No.	ST-Number	Description	ID(hex)				Production Status
Special Module							
	RIO2-CU24	1 Channel, High Speed Counter, 24V Input	C1	01	05	39	Active
	RIO2-CU24L	2 Channel, High Speed Counter, 24V Sink Input	C1	01	07	4D	Active
	RIO2-RS232	RS232 Communication, 1Channel, RTS/CTS Flow Control	C1	05	05	42	Active
	RIO2-RS485	RS485 Communication, 1Channel	C1	05	05	45	Active
	RIO2-PWM2	2 CH PWM output, 0.5A/24Vdc, source	C1	05	01	56	Active
	RIO2-PO2	2 CH Pulse output, 0.5A/24Vdc, source	C1	09	07	90	Active

A.2. Glossary

- System Power: The power for starting up CPU.

- Field Power: The power for input and output line.

- Terminator Resistor: Resistor for prevention reflected wave.

- EDS: Electronic Data Sheet.

- sinking: The method of input and output what device does not have power source.

- sourcing: The method of input and output what device have power source.

HITACHI
Inspire the Next