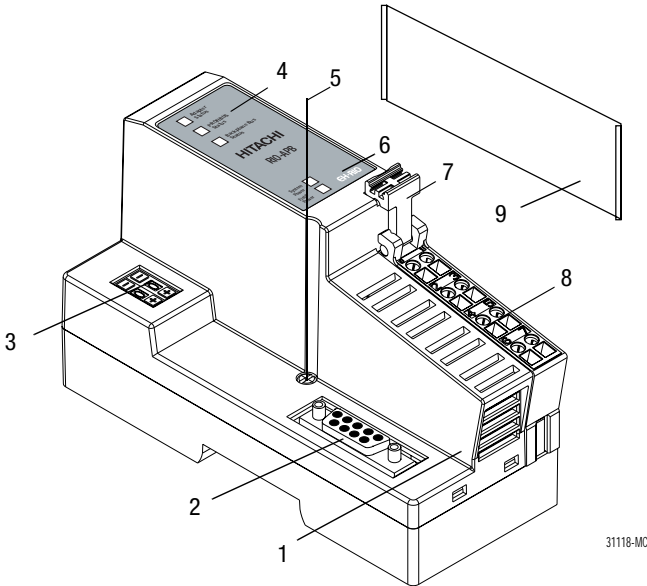


## Installation Instructions

### EH-RIO PROFIBUS Adapter (RIO-PBA)



31118-MC

	Description		Description
1	RIO-PBA PROFIBUS Adapter Module	6	System Power and Field Power Indicators
2	PROFIBUS Connector	7	RTB Removal Handle
3	Node Address Thumbwheel	8	Removable Terminal Block (RTB)
4	Status Indicators - Adapter, PROFIBUS and Backplane Bus	9	Safety End Cap
5	DIN Rail Locking Screw (orange)		

**ATTENTION**



EH-RIO is grounded through the DIN rail to chassis ground. Use zinc plated, yellow chromated steel DIN rail to assure proper grounding. Using other DIN rail materials (e.g. aluminum, plastic, etc.) which can corrode, oxidize or are poor conductors can result in improper or intermittent platform grounding.

---

## **European Communities (EC) Directive Compliance**

If this product has the CE mark it is approved for installation within the European Union and EEA regions. It has been designed and tested to meet the following directives.

### **EMC Directive**

This product is tested to meet the Council Directive 89/336/EC Electromagnetic Compatibility (EMC) with amendments 92/31/EEC and 93/68/EEC by applying the following standards, in whole or in part, documented in a technical construction file:

- EN 50081-2 (1993) EMC — Generic Emission Standard, Part 2 — Industrial Environment
- EN 61000-6-2 (1999) EMC — Generic Immunity Standard, Part 2 — Industrial Environment

This product is intended for use in an industrial environment.

### **Low Voltage Directive**

This product is tested to meet Council Directive 73/23/EEC Low Voltage, by applying the safety requirements of EN 61131-2 Programmable Controllers, Part 2 - Equipment Requirements and Tests. For specific information required by EN 61131-2, see the appropriate sections in this publication, as well as chapter 9 on PLC installation in the user's manual for the Hitachi EH-150 Series PLC, publication NJI-281(X)E.

Open style devices must be provided with environmental and safety protection by proper mounting in enclosures designed for specific application conditions. See NEMA Standards publication 250 and IEC publication 529, as applicable, for explanations of the degrees of protection provided by different types of enclosures.

## Installing the PROFIBUS Adapter

To install the adapter on the DIN rail prior to installing other base units, proceed as follows.

1. Position the adapter vertically above the DIN rail.
2. Press down firmly to install the adapter on the DIN rail.
3. The locking mechanism will lock the adapter to the DIN rail.
4. Insert the PROFIBUS network plug and tighten the holding screws.
5. Set the node address on the node address thumbwheel.
6. Slide the safety end cap (9) up to remove. This exposes the backplane and power interconnections.

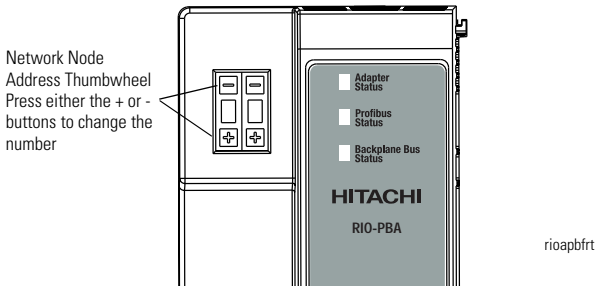
### ATTENTION



Do not discard the end cap. Use this end cap to cover the exposed interconnections on the last mounting base on the DIN rail. Failure to do so could result in equipment damage or injury from electric shock.

## Setting the Node Address

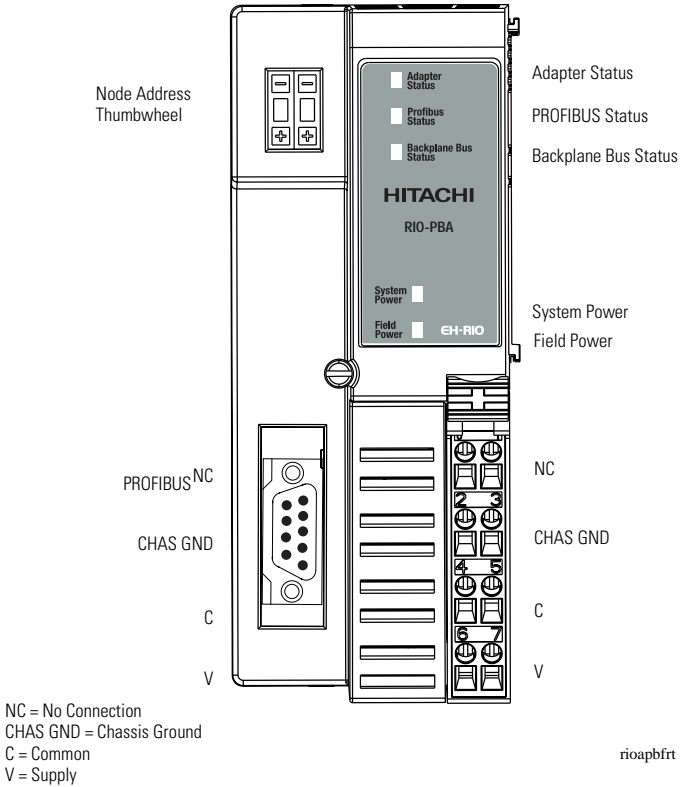
Set the node address using the 2-position thumbwheel switch. Valid settings range from 01 to 99. Press either the + or - buttons to change the number.



## Installing a Replacement PROFIBUS Adapter to an Existing System

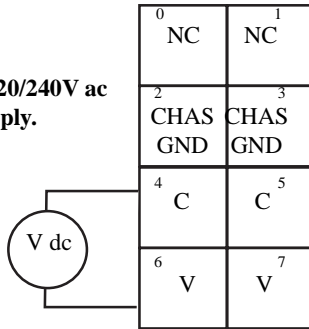
1. Remove the existing adapter from the DIN rail as follows:
  - A. Pull up on the RTB removal handle (7) to remove the terminal block.
  - B. Loosen the screw holding the PROFIBUS network plug and pull up to remove.
  - C. Remove the adjacent module from its base.
  - D. Use a small bladed screwdriver to rotate the DIN rail locking screw (5) to a vertical position. This releases the locking mechanism.
  - E. Lift straight up to remove.
2. Slide the safety end cap up to remove. This exposes the backplane and power connections.
3. Position the replacement adapter (1) vertically above the DIN rail. (Make certain the DIN rail lock is in the horizontal position.) Slide the adapter down, allowing the interlocking side pieces to engage the adjacent module.
4. Press firmly to seat the adapter (1) on the DIN rail. The adapter locking mechanism will snap into place.
5. Set the node address on the node address thumbwheel.
6. Insert the PROFIBUS network plug and tighten the holding screws.
7. Insert the end opposite the handle into the base unit. This end has a curved section that engages with the wiring base.
8. Rotate the terminal block into the wiring base until it locks itself in place.
9. Replace the adjacent module in its base.

**Wiring the PROFIBUS Adapter**



12/24V dc

**Do not connect 120/240V ac power to this supply.**



This dc supply will be connected to the internal power bus.

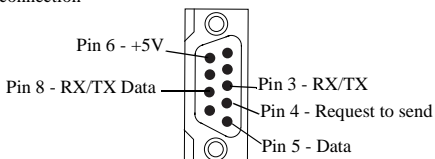
NC = No Connection  
C = Common

CHAS GND = Chassis Ground  
V = Supply

Terminal		Notes
0	No connection	Reserved
1	No connection	
2	Chassis Ground	
3	Chassis Ground	
4	Common	
5	Common	
6	Voltage Input	Apply 12/24V dc. Connects to the internal power bus.
7	Voltage Input	

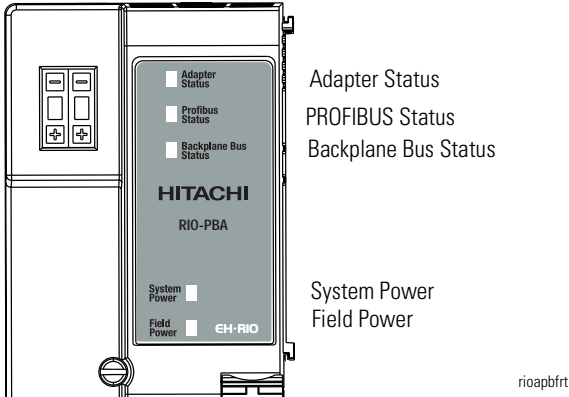
## PROFIBUS Connection Plug Wiring

PROFIBUS connection



Pin Number	Name	Description
Housing	Shield	Connected to Chassis Ground
1	Not connected	
2	Not connected	
3	RX/TX Data +	Positive RX/TX data line
4	RTS	Request to send
5	Data Ground	Isolated ground
6	+5V BUS	Isolated +5V from RS485 side
7	Not connected	
8	RX/TX Data -	Negative RX/TX data line
9	Not connected	

**Troubleshooting with the Indicators**



Indicator	Indication	Probable Cause
System Power	Off	System power not applied.
	Green	System power (5V) present
Field Power	Off	Field power not applied.
	Green	Field power (24V) applied.

Indication	Probable Cause
<b>Adapter Status</b>	
Off	No power supplied. Hardware check in progress. Initialization in progress.
Green	Operating normally
Red	Hardware check fault.

<b>PROFIBUS Status</b>	
Off	No power supplied. Bus is off-line.
Green	Bus is online (data exchange).
Flashing Green	Adapter has received a CLEAR command from the master.
Red	Error in PROFIBUS initialization. No modules installed in the backplane.
Flashing Red	1Hz - Check_Configuration telegram rejected. - Maximum number of EH-RIO modules in master configuration overridden. 2Hz - SetPrm telegram rejected. - The first byte in user parameter data does not equal zero. - Maximum number of user parameter bytes overridden.

<b>Backplane Bus Status</b>	
Off	No power supplied. Hardware check in progress. Initialization in progress.
Green	Normal operation.
Flashing Red	1Hz - Incorrect EH-RIO module installed. EH-RIO module removed from backplane.
Red	Critical link failure (BUS_OFF).

## Specifications

### Specifications - RIO-PBA PROFIBUS Adapter Module

#### Communication Interface Specifications

Expansion I/O Capacity	12 modules (Note: Total expansion up to 63 modules possible - 12 modules with RIO-PBA - add one RIO-PSD module for each additional 12 modules up to a maximum of 63)
Module Location	Starter module - left side of EH-RIO system

#### Power Supply Specifications

Power Supply	<b>Note:</b> In order to comply with CE Low Voltage Directives (LVD), you must use a Safety Extra Low Voltage (SELV) or a Protected Extra Low Voltage (PELV) power supply to power this adapter.
Input Voltage Rating	24V dc nominal 10-28.8V dc range
Field Side Power Requirements	24V dc (+20% = 28.8V dc maximum) @ 400mA maximum
Inrush Current	6A maximum for 10ms
Backplane Bus Output Current	1A maximum @ 5V dc $\pm 5\%$ (4.75 - 5.25)
Input Overvoltage Protection	Reverse polarity protected
Interruption	Output voltage will stay within specifications when input drops out for 10ms at 10V with maximum load.

#### General Specifications

Indicators	3 red/green status indicators Adapter status PROFIBUS status Backplane Bus status 2 green power supply status indicators: System Power (Backplane Bus 5V power) Field Power (24V from field supply)
Power Consumption	8.1W maximum @ 28.8V dc
Power Dissipation	2.8W maximum @ 28.8V
Thermal Dissipation	9.5 BTU/hr maximum @ 28.8V dc
Isolation Voltage	1250V rms/V ac

Field Power Bus Nominal Voltage Supply Voltage Range Supply Current	24V dc 10-28.8V dc range, 10A maximum
Dimensions Inches (Millimeters)	3.0H x 2.16W x 5.25L (76.2H x 54.9W x 133.4L)
Environmental Conditions Operational Temperature Storage Temperature Relative Humidity Shock Operating Non-operating Vibration	-20 to 55°C (-4 to 131°F) -40 to 85°C (-40 to 185°F) 5 to 95% noncondensing 30g peak acceleration, 11(±1)ms pulse width 50g peak acceleration, 11(±1)ms pulse width Tested 5g @ 10-500Hz per IEC 68-2-6
Conductors Wire Size	14 AWG (2.5mm <sup>2</sup> ) - 22 AWG (0.25mm <sup>2</sup> ) solid or stranded wire rated @ 75°C or higher 3/64 inch (1.2mm) insulation maximum
Terminal Base Screw Torque	7 pound-inches (0.6Nm)
Field Wiring Terminations PROFIBUS	1 - Not connected    6 - +5V Bus 2 - Not connected    7 - Not connected 3 - +RTX/TX data line8 - Negative RTX/ TX 4 - Request to send    9 - Not connected 5 - Ground Bus        Housing - Earth ground
Power Supply	0 - No Connection    1 - No Connection 2 - Chassis Ground    3 - Chassis Ground 4 - Common            5 - Common 6 - Supply              7 - Supply
Mass	9.0 oz/255 grams
Agency Certification (when product is marked)	CE marked for all applicable directives

**HITACHI**