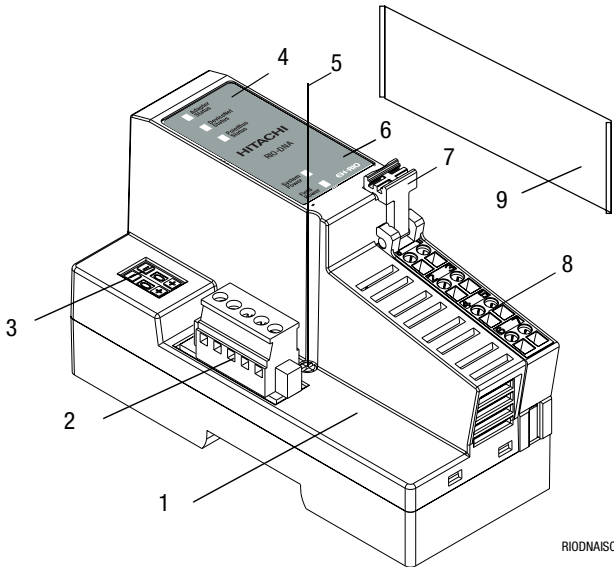


Installation Instructions

EH-RIO DeviceNet Adapter (RIO-DNA)



RIODNAISO

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

EH-RIO is a trademark of Hitachi, Ltd.

DeviceNet is a trademark of ODVA, Inc. Publication IG-RIO-DNA-e - August 2000

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) by applying the following standards, in whole or in part, documented in a technical construction file:

- EN 50081-2 EMC — Generic Emission Standard, Part 2 — Industrial Environment
- EN 50082-2 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 DeviceNet 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 DeviceNet 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

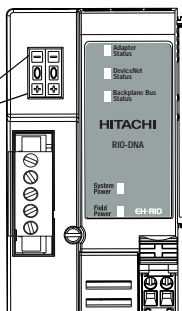


Do not discard the end cap. Use this end cap to cover the exposed interconnections on the last mounting base on the DIN rail. Failure to do so could result in equipment damage or injury from electric shock.

Setting the Node Address

Set the node address using the 2-position thumbwheel switch. Valid settings range from 00 to 63. Press either the + or - buttons to change the number.

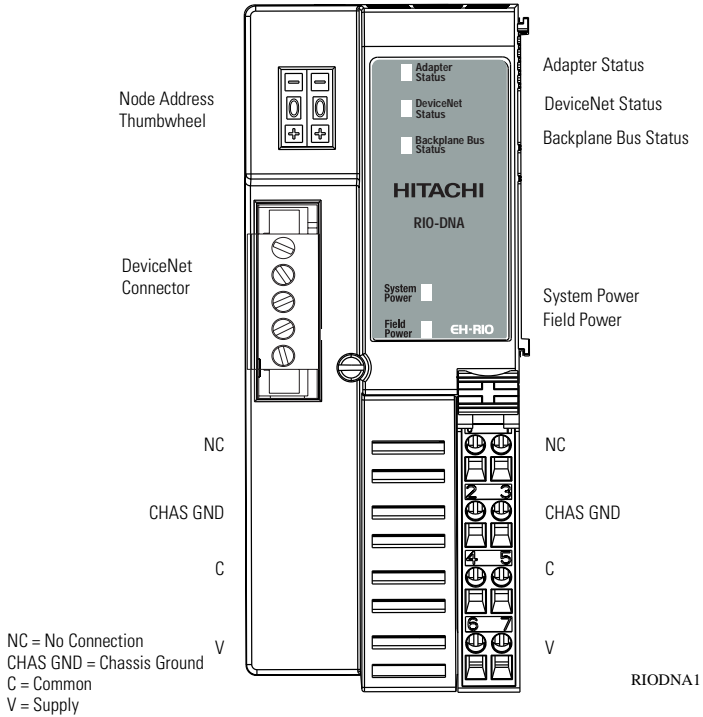
Network Node
Address Thumbwheel
Press either the + or -
buttons to change the
number



Installing a Replacement DeviceNet Adapter to an Existing System

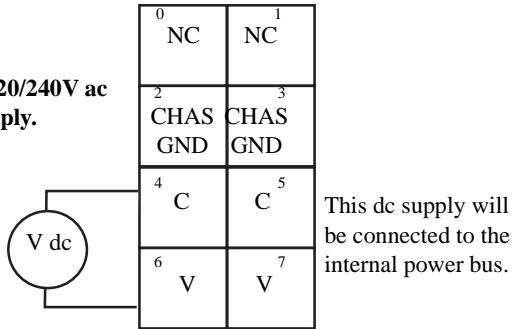
1. Remove the existing adapter from the DIN rail as follows:
 - A. Pull up on the RTB removal handle (7) to remove the terminal block.
 - B. Loosen the screws holding the DeviceNet Network plug and pull up to remove.
 - C. Remove the adjacent module from its base.
 - D. Use a small bladed screwdriver 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 DeviceNet 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 DeviceNet Adapter



12/24V dc

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

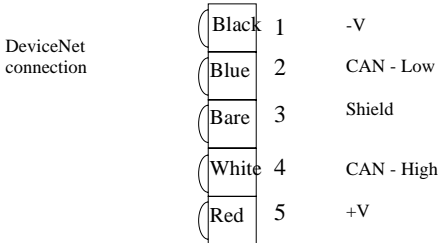


NC = No Connection
C = Common

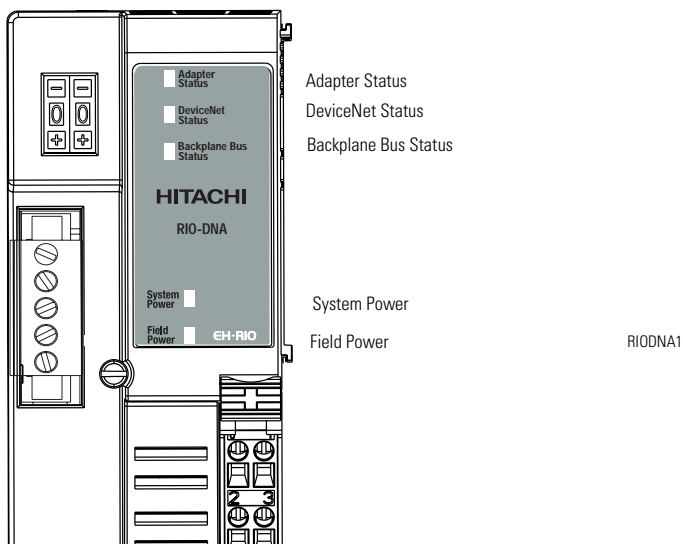
CHAS GND = Chassis Ground
V = Supply

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

DeviceNet Connection Plug Wiring



Troubleshooting with the Indicators



Indicator	Indication	Probable Cause
System Power	Off	Not active. field power is off, or dc-dc converter problem.
	Green	System power on. dc-dc converter active (5V)
Field Power	Off	Not active. Field power is off.
	Green	Power on, 24V present

Indication	Probable Cause
Adapter Status	
Off	No power applied to device
Green	Device operating normally
Flashing Green	Device needs commissioning due to configuration missing, incomplete or incorrect.
Flashing Red	Recoverable fault.
Red	Unrecoverable fault may require device replacement
Flashing Red/Green	Device is in self-test
Backplane Bus Status	
Off	Device is not on-line - Device has not completed Dup_MAC_ID test. - Device not powered - check module status indicator
Flashing Green	Device is on-line but has no connections in the established state.
Green	Device on-line and has connections in the established state.
Flashing Red	One or more I/O connections in timed-out state
Red	Critical link failure - failed communication device. Device detected error that prevents it communicating on the network.
Flashing Red/Green	Communication faulted device - the device has detected a network access error and is in communication faulted state. Device has received and accepted an Identify Communication Faulted Request - long protocol message.

DeviceNet Status	
Off	Device is not on-line - Device has not completed dup_MAC_id test. - Device not powered - check module status indicator
Flashing Green	Device is on-line but has no connections in the established state.
Green	Device on-line and has connections in the established state.
Flashing Red	One or more I/O connections in timed-out state
Red	Critical link failure - failed communication device. Device detected error that prevents it communicating on the network.
Flashing Red/ Green	Communication faulted device - the device has detected a network access error and is in communication faulted state. Device has received and accepted an Identify Communication Faulted Request - long protocol message.

Specifications - RIO-DNA DeviceNet Adapter Module

Communication Interface Specifications

Expansion I/O Capacity	12 modules (Note: Total expansion up to 63 modules possible - 12 modules with RIO-DNA - add one RIO-PSD module for each additional 12 modules up to a maximum of 63)
DeviceNet Communication Rate	125K bit/s (500m maximum) 250K bit/s (250m maximum) 500K bit/s (100m maximum)
Module Location	Starter module - left side of EH-RIO system

DeviceNet Power Specifications

Power Supply	Note: 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
DeviceNet Input Voltage Range	11-25V dc DeviceNet specification
Input Overvoltage Protection	Reverse polarity protected
DeviceNet Power Requirements	24V dc (+4% = 25V dc max) @ 30mA maximum

Power Supply Specifications

Power Supply	Note: 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
Backpl. Bus Output Current	1A maximum @ 5V dc \pm 5% (4.75 - 5.25)

Specifications continued on next page.

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 DeviceNet 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 ²) - 22 AWG (0.25mm ²) 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)

Specifications continued on next page.

Field Wiring Terminations DeviceNet	1 - Black Wire -V 2 - Blue Wire CAN Low 3 - Bare Wire Shield 4 - White Wire CAN High 5 - Red Wire +V
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 DeviceNet compatible as certified by ODVA, Inc.

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