ControlNet Universal PCI Communication Interface Card

PCIC-E Series A   Installation Instructions

Online Development Inc

IMPORTANT!

Before you proceed, STOP and REGISTER your module

On our website at

http://www.oldi.com/product-registration

Important User Information

Solid state equipment has operational characteristics differing from those of electromechanical equipment. Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls (Publication SGI-1.1, available from your local Rockwell Automation sales office or online at http://www.literature.rockwellautomation.com) 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 Online Development, Inc. 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, Online Development, Inc. cannot assume responsibility or liability for actual use based on the examples and diagrams.

No patent liability is assumed by Online Development, Inc. with respect to use of information, circuits, equipment, or software described in this manual.

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Throughout this manual we use notes to make you aware of safety considerations.

WARNING ⚠	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 or death, property damage, or economic loss. Attentions help you: • identify a hazard • avoid a hazard • recognize the consequence
BURN HAZARD ⚠	Labels may be located on or inside the drive to alert people that surfaces may be dangerous temperatures.

Table of Contents

Install the PCIC-E Communication Interface Card

For Information On This Topic
Access the Computer's PCI Local Bus Expansion Slots
Insert the PCIC-E Card into the Computer
Connect to the ControlNet Network

Before you install the card, be certain that you:

- know how to install hardware in your computer
- consult your computer's documentation for hardware installation instructions

ATTENTION

This equipment is intended for use in a Pollution Degree 2 industrial environment, in overvoltage Category II applications (as defined in IEC publication 60664-1), at altitudes up to 2000 meters without derating.

This equipment is considered Group 1, Class A industrial equipment according to EN5011. Without appropriate precautions, there may be potential difficulties ensuring electromagnetic compatibility in other environments due to conducted as well as radiated disturbance.

This equipment is supplied as open type equipment. It must be mounted within an enclosure that is suitably designed for those specific environmental conditions that will be present and appropriately designed to prevent personal injury resulting from accessibility to live parts. The interior of the enclosure must be accessible only by the use of a tool. Subsequent sections of this publication may contain additional information regarding specific enclosure type ratings that are required to comply with certain product safety certifications.

ATTENTION

Prevent Electrostatic Discharge

This equipment is sensitive to electrostatic discharge, which can cause internal damage and affect normal operation. Follow these guidelines when you handle this equipment:

- Touch a grounded object to discharge potential static
- Wear an approved grounding wrist strap
- Do not touch connectors or pins on component boards
- Do not touch circuit components inside the equipment
- Use a static-safe workstation, if available
- Store the equipment in appropriate static-safe packaging when not in use

7 European Hazardous Location Approval

European Zone 2 Certification

The following applies when the product bears the EEx Marking:

II 3G Ex nA IIC Gc (Tamb -40 to 90°C)

This equipment is intended for use in potentially explosive atmospheres as defined by European Union Directive 94/9/EC.

The INTERTEK labs certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of Category 3 equipment intended for use in potentially explosive atmospheres, given in Annex II to this Directive. The examination and test results are recorded in confidential report No. ITS11ATEX47275X. Compliance with the Essential Health and Safety Requirements has been assured by compliance with EN60079-0 and EN60079-15

IMPORTANT

This equipment is not resistant to sunlight or other sources of UV radiation.

The secondary of a current transformer shall not be open-circuited when applied in Class I, Zone 2 environments.

Equipment of lesser Enclosure Type Rating must be installed in an enclosure providing at least IP54 protection when applied in Class I, Zone 2 environments.

This equipment shall be used within its specified ratings defined by Online Development.

Provision shall be made to prevent the rated voltage from being exceeded by transient disturbances of more than 40% when applied in Class I, Zone 2 environments.

North American Hazardous Location Approval

The following information applies when operating this equipment in hazardous locations:

Products marked CL I, DIV 2, GP A, B, C, D are suitable for use in Class I Division 2 Groups A, B, C, D, Hazardous Locations and nonhazardous locations only. Each product is supplied with markings on the rating nameplate indicating the hazardous location temperature code. When combining products within a system, the most adverse temperature code (lowest T number) may be used to help determine the overall temperature code of the system. Combinations of equipment in your system are subject to investigation by the local Authority Having Jurisdiction at the time of installation.

WARNING EXPLOSION HAZARD

- Do not disconnect equipment unless power has been removed or the area is known to be nonhazardous.
- Do not disconnect connections to this equipment unless power has been removed or the area is known to be nonhazardous. Secure any external connections that mate to this equipment by using screws, sliding latches, threaded connectors, or other means provided with this product.
- Substitution of components may impair suitability for Class I, Division 2.

To install the card, you need to:

- Set the card's ControlNet address

- Access the computer's expansion slots

- Insert the card into the computer

Figure 1.1 PCIC-E Card Dimensions
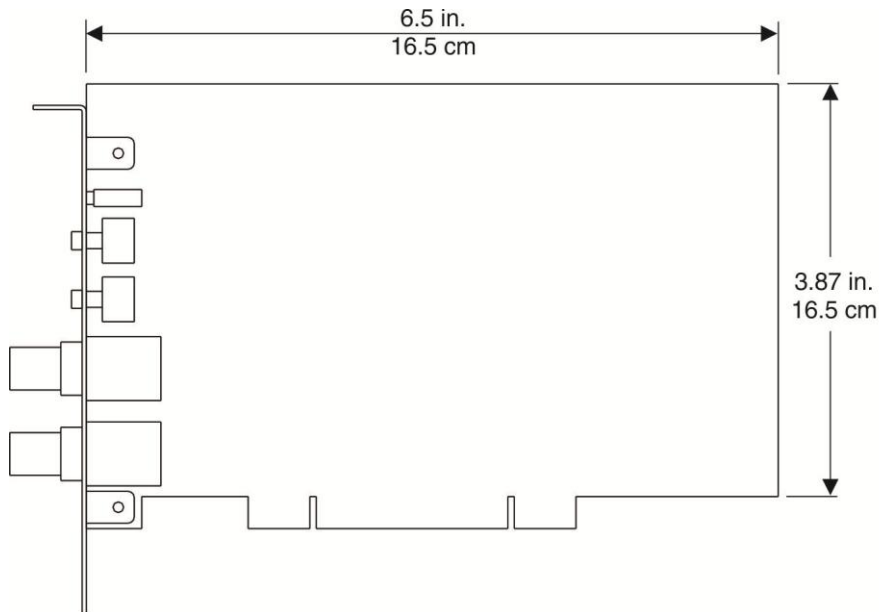
Access the Computer's PCI Local Bus Expansion Slots

To install the card, you must access the computer's PCI local bus expansion slots. Follow these general steps, or refer to your computer's user guide for further instructions.

1.   Shut down the host computer.

2.   Remove the computer's cover.

3.   Select a vacant PCI local bus expansion slot.

4.   Loosen the screw (if present) on the back (rear bracket) of the computer.

5.   Remove the slot's expansion cover.

Insert the PCIC-E Card into the Computer

WARNING	When used in a Class I, Division 2, hazardous location, this equipment must be mounted in a suitable enclosure with proper wiring method that complies with the governing electrical codes. If you insert or remove the card while host power is on, an electrical arc can occur. This could cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.

1. Handle the card so that you prevent electrostatic discharge.

   Refer to the Preface of this manual for more information.

2. Insert the card into the edge connector and tighten the expansion slot screw.

3. Replace the computer cover.

4. Turn on the computer to be certain that it comes up correctly.

If the Computer	Then
Turns on	Go to the next section, Connect to the ControlNet Network
Hangs up	Either the card is not seated correctly in the PCI slot or you have a memory or I/O conflict. You should: • remove and reinsert the card into the same PCI slot and try again • remove and reinsert the card into a different PCI slot and try again • remove all other non-essential cards and try again If you continue to experience difficulty, contact Online Development Technical Support. Goto **www.oldi.com** and select **Support**.

Connect to the ControlNet Network

WARNING

When used in a Class I, Division 2, hazardous location, this equipment must be mounted in a suitable enclosure with proper wiring method that complies with the governing electrical codes.

If you connect or disconnect the ControlNet cable with power applied to this module or any device on the network, an electrical arc can occur. This could cause an explosion in hazardous location installations. Be sure that power is removed or the area is nonhazardous before proceeding.

Set the PCIC-E Card's ControlNet Address

To set the PCIC-E card's ControlNet node address, you use the two selector switches on the front of the card.

Turn the top switch to set the one's digit, and the bottom to set the ten's digit. For instance, if the ControlNet address needs to be 23, the top switch should be set to 3, and the bottom to 20.

Figure 1.2, on the next page, describes the connectors and indicators on the front of the PCIC-E card.

ATTENTION

Do not connect different ControlNet networks to this card. If you attempt to connect a second network to this card, your communication system will operate erratically.
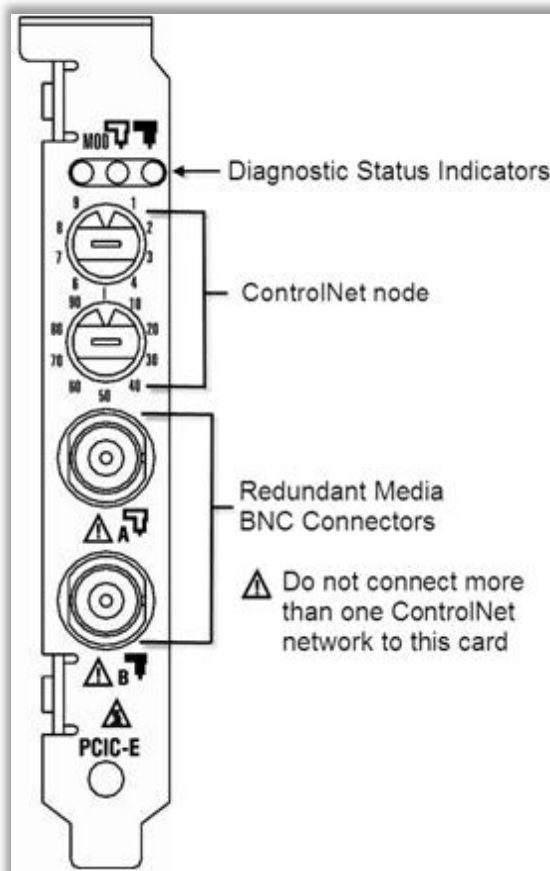



Figure 1.2 PCIC-E Card's Ports and Indicators

Connect the ControlNet Media

To connect the PCIC-E card to a ControlNet network, follow the instructions in these publications:

- ControlNet Coax Tap Installation Instructions, Rockwell Automation publication 1786-IN007
- ControlNet Coax Media Planning and Installation Manual, Rockwell Automation publication CNET-IN002

Figure 1.3 shows how to connect the PCIC-E card to a ControlNet network, and Figure 1.4 shows a configuration with two computers.

Figure 1.3 Connect the PCIC-E Card to a ControlNet Network
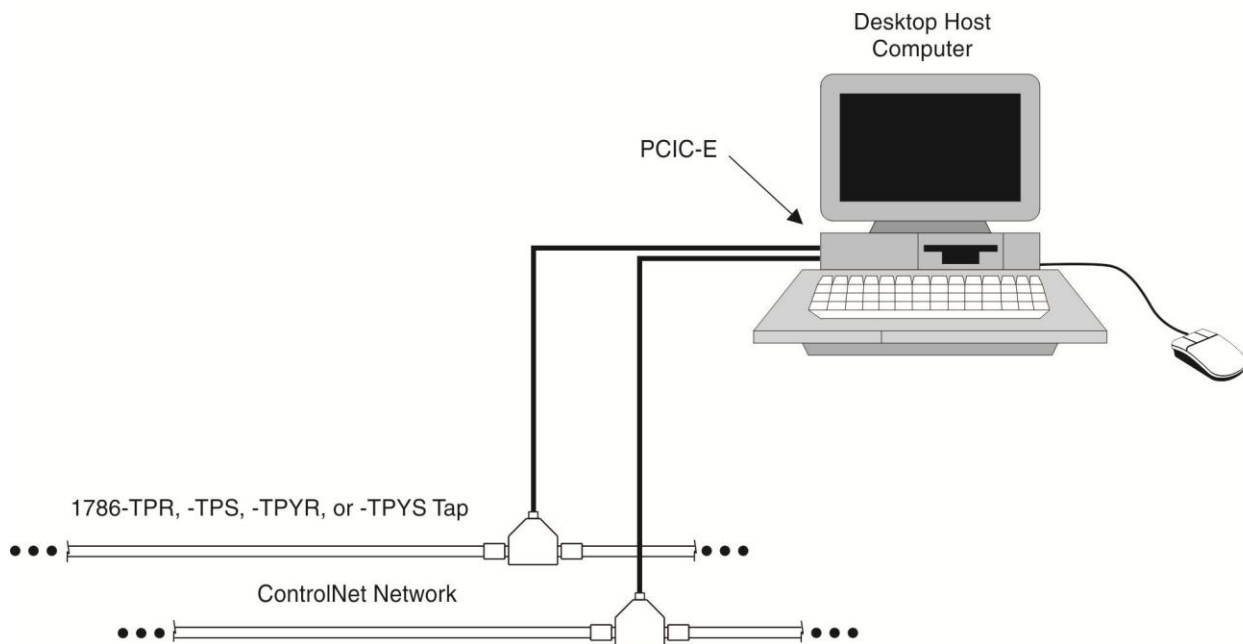
ATTENTION ⚠️	If you connect the product to a cable system that does not support redundant media, connect the tap dropline to the BNC connector labeled channel A. The channel B is left unconnected.
	If the cable system is redundant, connect the product so that all devices on the network use the same cable for the same channel. That is, all channel A connectors connect to one cable; all channel B connectors connect to the other cable.

TIP	If you use a non-redundant cable system, all ControlNet devices must be on the same channel, channel A.

Figure 1.5 Connect a Portable Host Computer to the ControlNet Network Through the PCIC-E Card
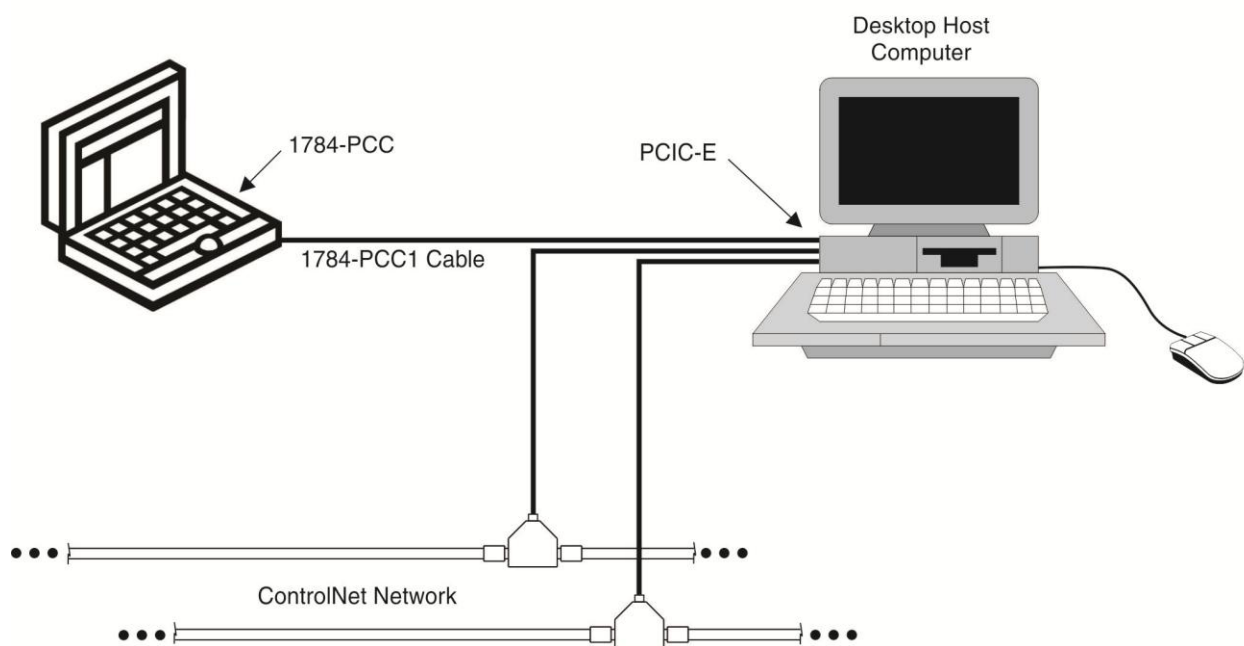
Install the Driver in Windows XP

## Install the Driver for the First Time

Follow these steps to install the driver for the first time on a personal computer running Windows XP.
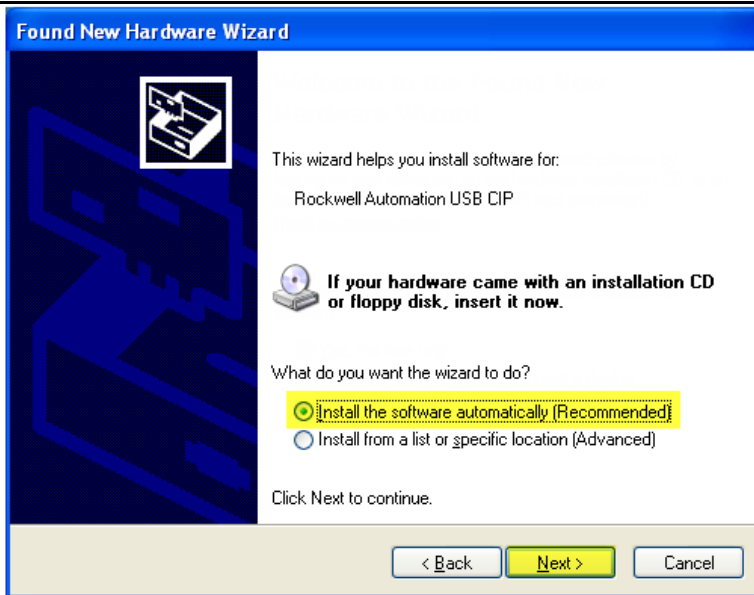
1. Shut down the computer.

2. Insert the PCIC-E card into an unused PCI slot.

    Refer to the previous section in this document **"Install the PCIC-E Communication Interface Card"** for installation information.
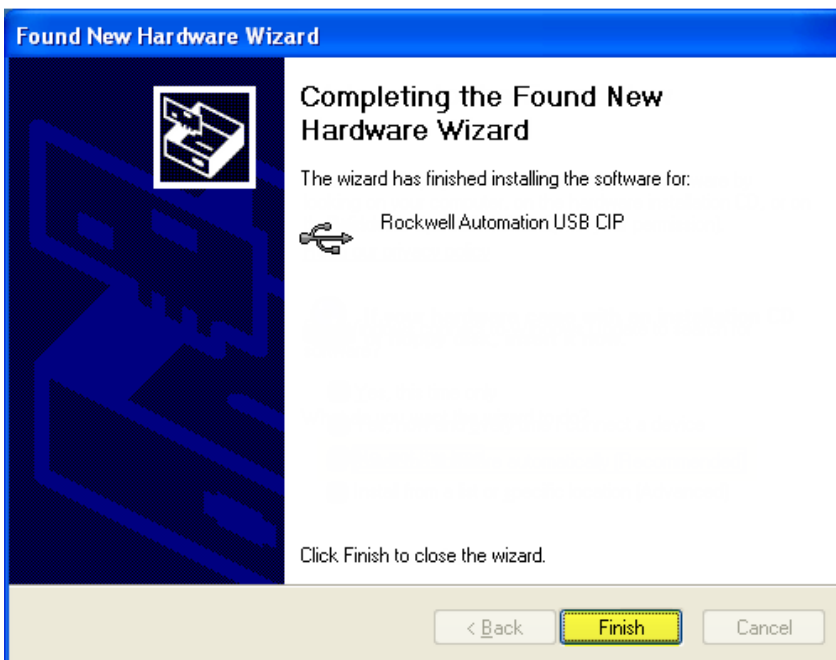
3. Restart the computer.

    After the computer restarts, the operating system detects the new PCI card and displays the Found New Hardware Wizard.
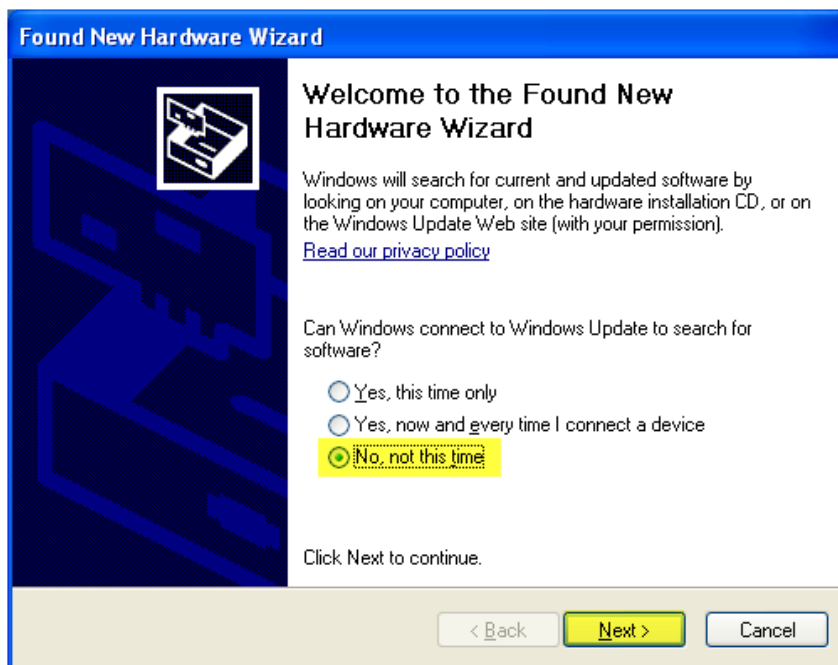
4. Select the Install from a list or specific location (Advanced) radio button.

5. Click Next.

6. On the screen that appears, click the Search for the best driver in these locations radio button.

7. Click Finish.

8. Close the Device Manager screen.

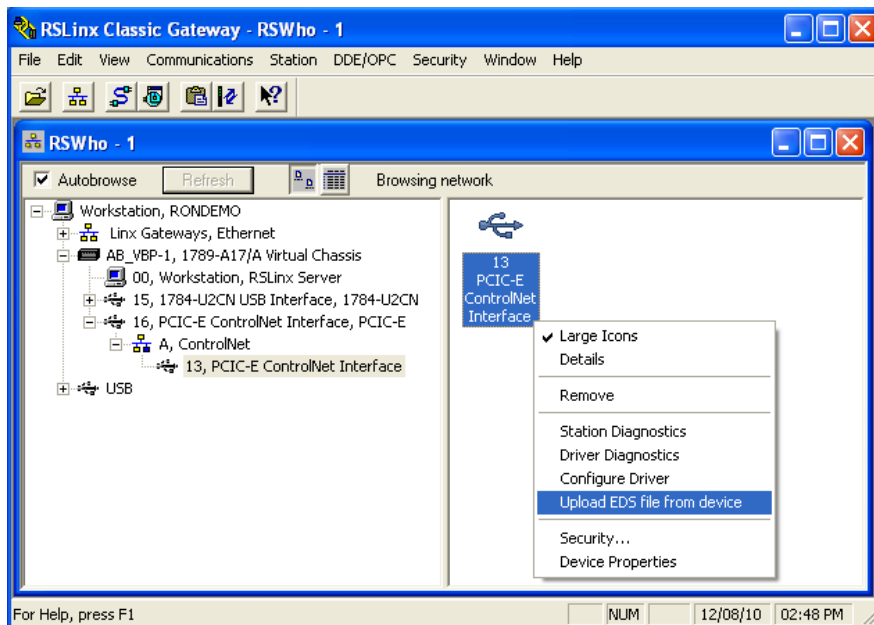9. Shut down and restart the computer.

   The driver is now ready to use. Go on to the upload of the EDS.

Install EDS

Upload EDS from device

Once you have installed the drivers, you can upload the EDS from the module.

1. In **RSLinx** software, select **Communications | RSWho**

2. Select the **"A,ControlNet"** port under the PCIC-E node of the VBP virtual backplane.

3. Right-click the PCIC-E node and select **"Upload EDS file from device"** and to retrieve the EDS file from the module.

The EDS is also available on the Online Development Inc Knowledgebase http://kb.oldi.com.

Use the EDS wizard in either RSLinx or RSNetWorx for ControlNet software to register the EDS file for the PCIC-E card:

Catalog Number	EDS File
PCIC-E	pcice.eds

In Windows, select **Start → Programs → Rockwell Software → RSLinx → Tools → EDS Hardware Installation Tool**.   In RSNetWorx for ControlNet software, select **Tools → EDS Wizard**.

Interpret the LED Indicators

The LED indicators on the card give you information about the card and the network when you're connected via the BNC connectors. **TABLE 4.1 CONTROLNET LED** and **TABLE 4.2 MOD LED** outline the states and explain what each state means to you and the action you should take, if any, to correct that state.
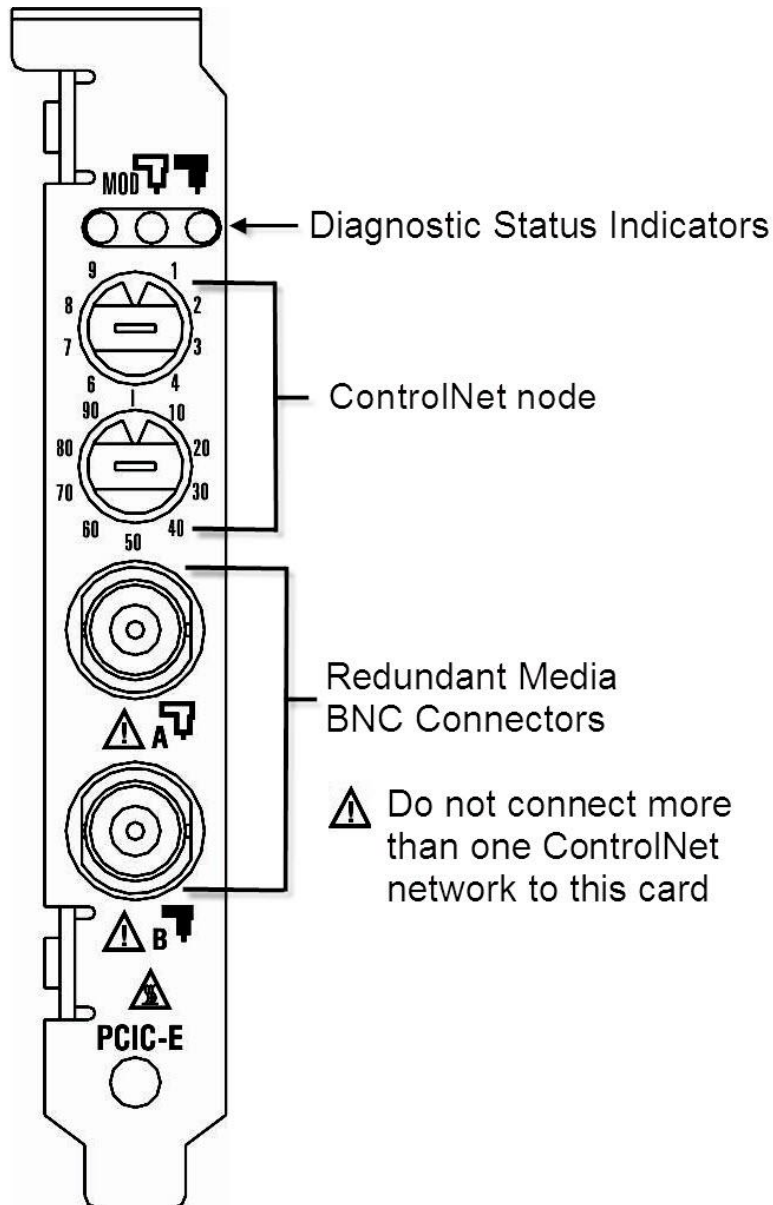
Table 4.1 ControlNet LED status interpretation

- **STEADY** - indicator is on continuously in the defined state.
- **ALTERNATING** - the two indicators alternate between the two defined states at the same time (applies to both indicators viewed together). The two indicators are always in opposite states, out of phase.
- **FLASHING** - the indicator alternates between the two defined states (applies to each indicator viewed independent of the other). If both indicators flash, they must flash together, in phase.

⏌ A and ⏋ B	Cause	Action
Off	▪ No power	▪ None or apply power to the personal computer
	▪ PCIC driver not started	▪ Start RSLinx software ▪ Verify that the PCIC-E driver has been configured properly in RSLinx software
	▪ Faulted card	▪ Check operating system event log for details of fault (if the personal computer's operating system supports an event log) ▪ Cycle power to the computer ▪ Verify that you have firmly inserted the PCIC-E card into a PCI local bus expansion slot and that the expansion slot screw is tightened ▪ If fault persists, contact Online Development
Steady red	▪ Faulted card	▪ Check operating system event log for details of fault (if the personal computer's operating system supports an event log) ▪ Cycle power to the computer ▪ Verify that you have firmly inserted the PCIC-E card into a PCI local bus expansion slot and that the expansion slot screw is tightened ▪ If fault persists, contact Online Development
Alternating red/green	▪ Self-test ▪ Incorrect channel configuration	▪ None ▪ Verify that the ControlNet network is connected to the correct channel of the PCIC-E card (for example, if the ControlNet network is configured for channel A only, then the card must be connected to the network via channel A)
Alternating red/off	▪ Incorrect node configuration ▪ Duplicate ControlNet node address	▪ Check PCIC-E node address and other ControlNet configuration parameters

⬆ A or ⬆ B	Cause	Action
Off	▪ Channel disabled	▪ Use RSNetWorx for ControlNet software to configure the ControlNet network for redundant media, if required
Steady green	▪ Normal operation	▪ None
Flashing green/off	▪ Temporary network errors	▪ Check media for broken cables, loose connectors, or missing terminators ▪ If condition persists, refer to the ControlNet Media Planning and Installation Manual, publication CNET-IN002
Flashing red/off	▪ Media fault	▪ Check media for broken cables, loose connectors, or missing terminators ▪ If condition persists, refer to the ControlNet Media Planning and Installation Manual, publication CNET-IN002
Flashing red/off	▪ No other nodes present on network	▪ Add other nodes to the network
Flashing red/green	▪ Incorrect node address	▪ Change the PCIC-E node address so that it is less than or equal to UMAX. UMAX is the highest node address on a ControlNet network that can transmit data. ▪ Stop and restart the PCIC-E drive in RSLinx software
Flashing red/green	▪ Incorrect network configuration	▪ Use RSNetWorx for ControlNet software to reconfigure the ControlNet network so that UMAX is greater than or equal to the PCIC-E node address

Table 4.2 MOD LED status interpretation

- **STEADY** - indicator is on continuously in the defined state.
- **ALTERNATING** - the two indicators alternate between the two defined states at the same time (applies to both indicators viewed together). The two indicators are always in opposite states, out of phase.
- **FLASHING** - the indicator alternates between the two defined states (applies to each indicator viewed independent of the other). If both indicators flash, they must flash together, in phase.

MOD events:

- **POWER APPLIED** – the device is powered up
- **PASSED TESTS** – the device has successfully passed all the self tests
- **ACTIVATED** – the device's configuration is valid and the application for which the device was designed is now capable of executing (communications channels may or may not yet be established)
- **DEACTIVATED** – the device's configuration is no longer valid and the application for which the device is designed is no longer capable of executing (communications channels may or may not yet be established)
- **MINOR FAULT** – a fault classified as either a minor unrecoverable fault or a minor recoverable fault has occurred
- **MAJOR RECOVERABLE FAULT** – an event classified as Major Recoverable Fault has occurred
- **MAJOR UNRECOVERABLE FAULT** – an event classified as Major Unrecoverable Fault has occurred

MOD LED	Cause	Action
Off	No power	▪ None or apply power to the personal computer
Flashing red/green	Running self-test	▪ None ▪ On completion, it will advance to Standby ▪ On failure, advances to **MAJOR UNRECOVERABLE FAULT**
Flashing green/off	Standby	▪ None ▪ When **ACTIVATED**, the unit will advance to normal operational ▪ When **DEACTIVATED** in normal operation, this state will return ▪ When an event classified as **MAJOR RECOVERABLE FAULT** has occurred, it will advance to **MAJOR RECOVERABLE FAULT**
Steady green	Normal Operational	▪ None ▪ **MINOR FAULT** will return back to the Operation state
Flashing red/off	Major recoverable fault	▪ During normal operation, an event classified as **MAJOR RECOVERABLE FAULT** has occurred
Steady red	Major unrecoverable fault	▪ During normal operation, an event classified as **MAJOR UNRECOVERABLE FAULT** has occurred

Specifications

PCI local bus	Compliant to PCI revision 2.2. The PCIC-E card is compatible with 32-bit 5V and 3.3V PCI slots, Slot must provide 3.3V power. **Attention:** The PCIC-E card is not compatible with PCI Express and should not be inserted into a PCI Express slot.
Mechanical form factor, H x L	Universal PCI 32-bit short card 10.7 cm (4.2 in.) x 16.5 cm (6.5 in.) L
Driver compatibility	Microsoft Windows XP with Service Pack 1 or higher
Software compatibility	Rockwell Software RSLinx software, version 2.42.00 or later
Operational temperature	-40…90 °C (-40...194 °F) The operating parameters describe the environment within the PCI slot. Refer to the documentation for your computer for environmental requirements. This card should not exceed those specifications.
Storage temperature	-40…90 °C (-40...194 °F)
Relative humidity	5...95% noncondensing
Vibration	2g @ 10...500Hz
Operating shock	30 g
Non-operating shock	50 g
Emissions	EN 55011 (2007)
ESD immunity	IEC 61000-4-2: 6 kV contact discharges 8 kV air discharges
Radiated RF immunity	IEC 61000-4-3: 10V/m with 1 k Hz sine-wave 80%AM from 80 MHz...2700 MHz 10V/m with 200 Hz 50% pulse 100%AM at 900 MHz 10V/m with 200 Hz 50% pulse 100%AM at 1890 MHz
EFT/B immunity	IEC 61000-4-4: ± 2 kV at 5 kHz on communications ports

Surge transient immunity	IEC 61000-4-5: ± 2 kV line-earth (CM) on communications ports
Conducted RF immunity	IEC 61000-4-6: 10Vrms with 1 kH sine-wave 80% AM from 150kHz...80MHz
Enclosure type rating	None (open-style)
Power requirements	In US, this equipment must be powered from UL Listed Information Technology Equipment or UL Listed Industrial Control Equipment. In Canada, this equipment must be powered by an SELV source, CSA Certified Information Technology Equipment, or CSA Certified Process Control Equipment. 5 V dc, 200 mA max 3.3 V dc, 150 mA max
Power dissipation	1.5 W
Isolation voltage (continuous-voltage withstand rating)	50V continuous Tested to withstand 600V for 60 s
Wiring category[1]	2 - on communications ports

Certifications (when product is marked)	cUR UL Recognized Component Industrial Control Equipment
	
	CE European Union 89/336/EEC EMC Directive, compliant with:
	        EN 61000-6-2; Industrial Immunity
	        EN 61000-6-4; Industrial Emissions
	        EN 55011 Industrial Scientific and Medical Equipment
	
	EEx European Union 94/9/EC ATEX Directive,
	        compliant with:
	        evaluated to EN60079-0 and EN60079-15; Potentially Explosive
	        Atmospheres, Protection "n" (Zone 2)
	        Product marking: II 3G Ex nA IIC T4 Gc (Tamb -40 to 90°C)
	        ITS11ATEX47275X
	
	IECEx ETL 15.0018X

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[1] Use this Conductor Category information for planning conductor routing. Refer to Industrial Automation Wiring and Grounding Guidelines, Rockwell Automation publication 1770-4.1.