

# **Eiconcard C2x Family**

**for ISA-Compatible Bus**

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**First Edition (July 2001)**

**203-225-01**

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# Introduction

The Eiconcard C2x is an ISA Plug-and-Play (PnP) card that offers X.25 connectivity through a V.24 serial port at speeds of up to 64 Kbps, and/or through an ISDN BRI port (Eiconcard C21) at speeds of up to 128 Kbps (over the “D” channel or the “B” channels). The Eiconcard C2x is typically used for stand-alone or remote LAN gateways.

**Note** *The Eiconcard C2x also supports protocols such as SDLC, PPP, and Frame Relay.*



All Eiconcards have been tested and found to comply with the Electromagnetic compatibility, Safety and Network connection regulations within the European Union, North America, and other major territories. Read the regulatory information on page 17 before installing and using your adapter.

## Hardware Features

The Eiconcard C2x features the following:

Eiconcard	CPU/Memory/Flash	# of HSI Ports	#of ISDN BRI Ports
Eiconcard C20	15.36 MHz Motorola 68302 512 KB RAM / 512 KB Flash	1	N/A
Eiconcard C21	15.36 MHz Motorola 68302 512 KB RAM / 512 KB Flash	1	1

The V.24 port, supports full duplex communications over a V.24 interface at speeds of up to 64 Kbps.

The ISDN BRI port supports transfer rates of up to 128 kbps (over the “D” channel or the “B” channels).

## About this Manual

This guide describes how to install the Eiconcard C2x in any computer with an IBM PC-compatible ISA bus. It covers the following topics:

- Installing the card and connecting cables.
- Interpreting the status lights on the card.

For instructions on setting up communications protocols and using applications, consult the documentation provided with your networking software.

# Installing the Eiconcard C2x

Follow the steps below to install the Eiconcard C2x. If you want the Eiconcard C2x to be available to multiple users on a LAN, install it in the PC that will function as a gateway for the LAN.

## 1 Prepare the PC

Turn off the PC and disconnect its power cable. Remove the cover of the PC according to the instructions that came with it.

## 2 Install the Eiconcard C2x

- a) Drain static electricity from your body by touching the metal chassis (the unpainted metal at the back of your PC).
- b) Locate a slot in your PC that has the same bus type as your adapter.  
If your PC has both ISA and PCI slots, the ISA slots are longer, as shown.

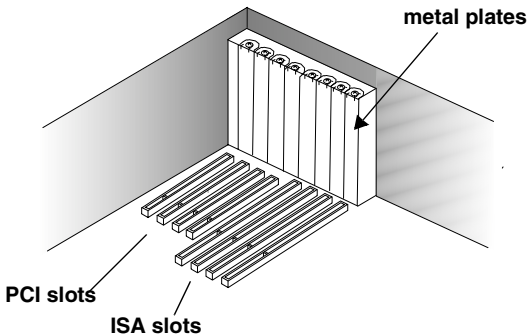


Figure 1. Locating a PCI slot

- c) If there is a metal plate at the end of the slot, remove it and keep the screw.
- d) Firmly insert the adapter into the selected slot.



To avoid damaging your hardware, insert the adapter only into a slot with the same bus type as the adapter. Inserting the adapter into any other type of slot can damage your adapter, your PC, or both.

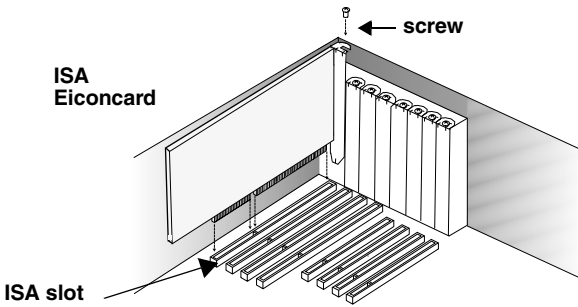


Figure 2. Inserting the Eiconcard C2x.

- e) Fasten the adapter with the screw (to ensure that the adapter is properly secured and grounded to the PC's chassis).
- f) Replace the cover of your PC as described in your PC's manual.
- g) Reconnect the power cable.

**Note** Although the Eiconcard C2x can be installed in any available ISA expansion slot (unless the PC's documentation specifies otherwise), it is recommended that you install the card in a 16-bit slot to take advantage of the higher IRQs and memory-address locations available only through 16-bit slots.

### 3 Test the Eiconcard C2x

The application software purchased with the Eiconcard C2x contains a test program to verify the card's integrity. Consult the documentation supplied with this software for details.

### 4 Configure the Eiconcard C2x

Before you can use the Eiconcard C2x, you must configure it to work with your communications software. The documentation which came with this software contains complete instructions on how to configure the card.

For information on the LED functionality, see "LED Functionality" on page 15.

### 5 Connect to the outside world

You are now ready to connect the Eiconcard C2x to the outside world.

- To set up ISDN connections, consult "Making an ISDN Connection" on page 8.
- To set up a V.24 connection, consult "Making a V.24 Connection" on page 13.

# Making an ISDN Connection

**Note** Only the Eiconcard C21 supports ISDN connections.

After you have installed your Eiconcard C21, connect your ISDN line.

## In Europe and most countries worldwide

In Europe as well as most countries outside of North America and Japan, your Eiconcard C21 adapter can be connected directly to your ISDN line using the included cable.

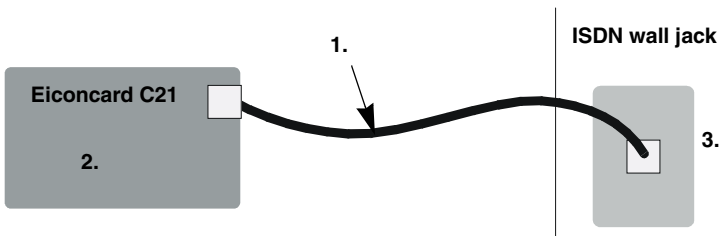


Figure 3. Connecting the ISDN cable.

- 1 Take the cable included with the Eiconcard C21.
- 2 Plug one end into the Eiconcard C21.
- 3 Plug the other end into the ISDN wall jack.

## In North America and Others

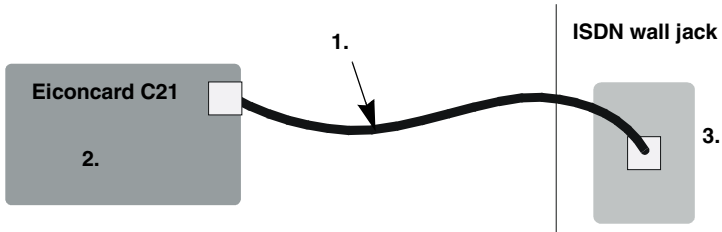
In North America and some other countries (check with your ISDN provider), you need an NT1 (network terminating device) to connect your ISDN line. However, depending on your Eiconcard C21 interface, the NT1 might be integrated into the adapter. Follow the instructions for your adapter (with U-interface or S/T-interface).

**Note** North American and Australian Eiconcard C21 S/T users may need to adjust the Eiconcard C21 termination. Refer to the section "Termination" on page 11, for more information.



### **Eiconcard C21 U-interface:**

If your Eiconcard C21 has a U-interface, the NT1 is integrated into the adapter, and you do not need a separate NT1.



*Figure 4. Connecting the ISDN cable.*

- 1** Take the cable included with the Eiconcard C21.
- 2** Plug the RJ-45 end into the Eiconcard C21.
- 3** Plug the RJ-11 end into the ISDN wall jack.

**Note** *In North America, many ISDN wall jacks (with a U-interface) are RJ-11. However, if your ISDN wall jack is RJ-45, you can still plug the RJ-11 end of the cable into your RJ-45 ISDN wall jack (there will be some space on both sides of the plug).*

### Eiconcard C21 S/T-interface:

If your Eiconcard C21 has an S/T-interface, you need a separate NT1.

**Note** You can order an NT1 from Eicon Networks or from another supplier.

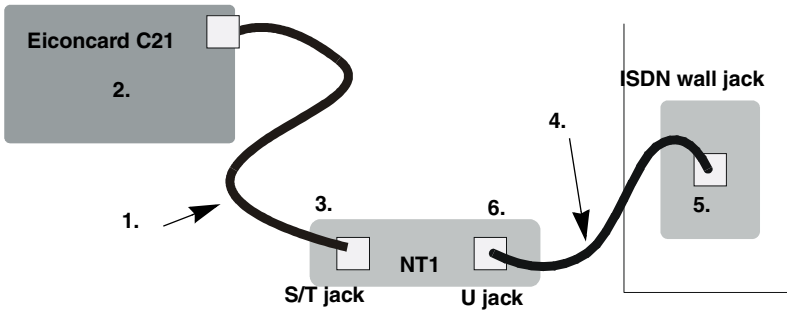


Figure 5. Connecting to an NT1.

- 1 Take the cable included with the Eiconcard C21.
- 2 Plug one end into the Eiconcard C21.
- 3 Plug the other end into the NT1's S/T jack.
- 4 Take the cable included with the NT1.
- 5 Plug one end into the ISDN wall jack.
- 6 Plug the other end into the NT1's U jack.

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## Termination

This section applies to S/T interface users in Australia and North America, and provides instructions to help set up termination scenarios. Termination requirements vary according to: the number of devices connected to the NT1; and the distance between the devices and the NT1.

For users who require termination, the Eiconcard C21 S/T has been shipped with a separate terminating resistor. For information on how to install the terminating resistor, see “Installing a Terminating Resistor” on page 12.

### How do I determine the termination value?

#### Single ISDN Device

If the NT1 is connected to a single ISDN device (e.g. Eiconcard C21), follow the instructions below.

##### 75 meters or more

If the connection spans 75 meters (250 feet) or more, connect the 100 ohm terminating resistor included with the ISDN cable. Set the NT1 to provide 100 ohms of resistance. Consult the manual provided with the external NT1 for more detailed instructions.

**Note** *Some NT1s do not support connections over 75 meters (250 feet). Check your user documentation to determine the distance supported.*

##### 75 meters or less

If the connection spans less than 75 meters (250 feet), set the NT1 to 50 ohms of resistance, and do not connect the terminating resistor. Consult the manual provided with the external NT1 for more detailed instructions.

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## Multiple ISDN Devices

If the NT1 is connected to more than one ISDN device, follow the procedures below.

### 75 meters or more

If the connection spans 75 meters (250 feet) or more, both end devices on the ISDN bus must be set to 100 ohm termination. If the Eiconcard is one of the end devices, connect the 100 ohm terminating resistor included with the ISDN cable. Consult the manuals provided with the other ISDN devices and NT1 for more details.

**Note** *Some NT1s do not support connections over 75 meters (250 feet). Check your user documentation to determine the distance supported*

### 75 meters or less

If the connection spans less than 75 meters (250 feet), set the NT1 to 50 ohms of resistance, and do not connect the terminating resistor. Set the other ISDN devices to no termination. Consult the manuals provided with the NT1 and other ISDN devices for more detailed instructions.

## Installing a Terminating Resistor

If termination is required and your Eiconcard C21 does not have the built in termination switch, you should have been supplied with a 100 ohm terminating resistor. The terminating resistor is installed by inserting the RJ-45 end of the ISDN cable into the terminating resistor, and then inserting the terminating resistor into the wall jack.

# Making a V.24 Connection

The Eiconcard C21 can make V.24 connections using standard V.24 cables.

Connection	Cables Required	Part #
Eiconcard C21 to V.24 DCE	V.24 DCE Cable	300-007
Eiconcard C21 to V.24 DTE	V.24 Null Modem Cable, <b>or</b> V.24 Null Modem Cable (gender-changed)	300-022 300-048

*Table 1. Standard Interface Cables*

## Interface Specifications

The standards compliant with the V.24 interface are listed in Table 2.

Standard	Compatibility
CCITT V.24	Signaling
CCITT V.28	Electrical
CCITT X.21bis	Electrical and signaling
EIA RS-232-C	Electrical and signaling
ISO 2110	Connector type for the DCE side of a V.24 Modem Cable

*Table 2. Interface Compatibility*

## The V.24 DCE Interface

A pin-out diagram for the V.24 DCE interface is shown in Figure 6. The signal definitions and names are listed in Table 3.

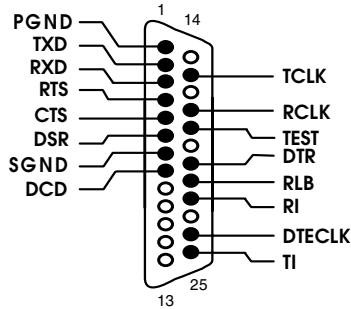


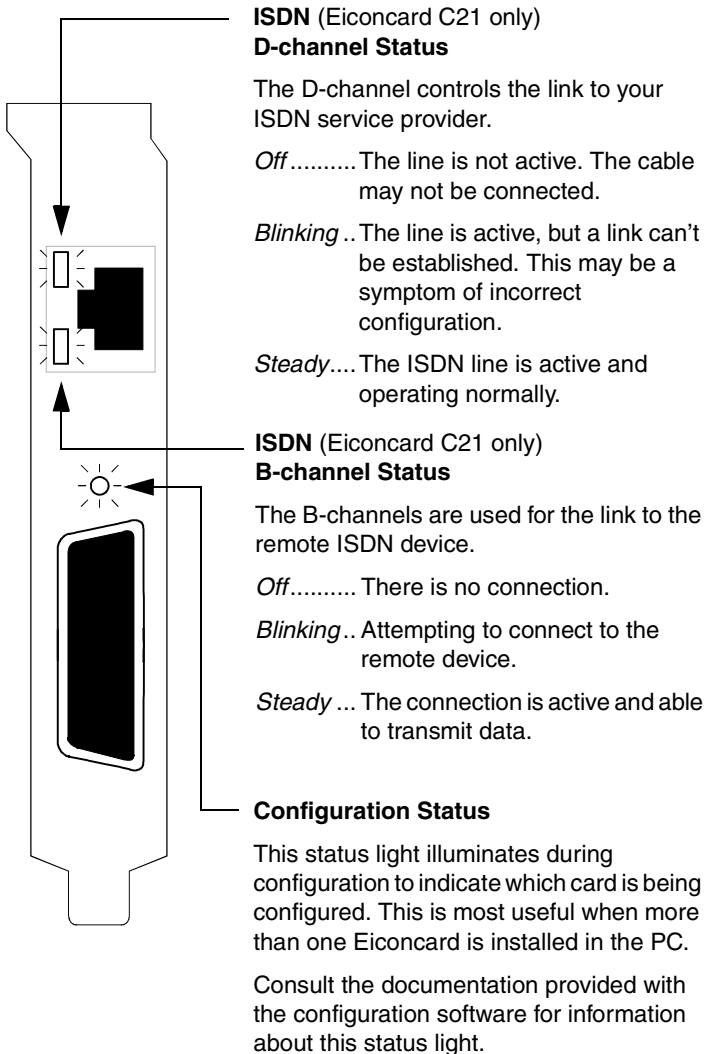
Figure 6. V.24 DCE Interface

Pin #	Signal	Name	Direction	CCITT #
1	PGND	Protective Ground	Common	101
2	TXD	Transmit Data	Output	103
3	RXD	Receive Data	Input	104
4	RTS	Request to Send	Output	105
5	CTS	Clear to Send	Input	106
6	DSR	Data Set Ready	Input	107
7	SGND	Signal Ground	Common	102
8	DCD	Data Carrier Detect	Input	109
15	TCLK	Transmit Clock (DCE)	Input	114
17	RCLK	Receive Clock	Input	115
18	TEST	Local Loopback Activation	Output	141
20	DTR	Data Terminal Ready	Output	108
21	RLB	Remote Loopback	Output	140
22	RI	Ring Indicator	Input	125
24	DTECLK	Transmit Clock (DTE)	Output	113
25	TI	Test Indicator	Input	142

Table 3. V.24 DCE Interface Signals

# LED Functionality

**Note** The Eiconcard C20 only has the V.24 port, the Eiconcard C21 has both the ISDN BRI port and V.24 port..



# Technical Specifications

## Technical Data

- PCI bus compatible (32-bit slot)

Eiconcard	CPU/Memory/Flash	# of HSI Ports	#of ISDN BRI Ports
Eiconcard C20	15.36 MHz Motorola 68302 512 KB RAM / 512 KB Flash	1	N/A
Eiconcard C21	15.36 MHz Motorola 68302 512 KB RAM / 512 KB Flash	1	1

## Hardware Installation

- Automatic configuration of interrupt request level setting and I/O address
- 8-bit I/O access

## External Interface

Eiconcard	External Interface
Eiconcard C20	One DB-25 femaleport.
Eiconcard C21	One DB-25 femaleport and one RJ-45 port.

## Performance

- 64 Kbps full duplex (HSI port)
- 128 kbps (ISDN BRI port (over the "D" channel or the "B" channels))

## Power Requirements

- 1.25 A at +5 Volts
- 50 mA at +12 Volts
- 50 mA at -12 Volts

## Environmental Requirements

- Operating temperature: 0°C to 50°C
- Operating humidity: 0 to 90% (non-condensing)
- Barometric operating pressure: 86 to 106 kPascals
- Maximum tolerance in power supply variation: +5% to -5%

## HSI Ports

- DB-25 female connector, supporting V.24 interface (EIA RS-232-C)
- NRZ, NRZI, and FM data encoding
- Internal or external clocking (DTE or DCE) or split (transmit internal, receive external)

## Power Consumption



**Warning:** Check that power supply will not be overloaded. Maximum power consumption of the board is stated above. The user should check that the total power drawn by the host computer, the Eiconcard C2x, and any other peripherals, does not exceed the capability of the host power supply unit.



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# International Regulatory Information

## Regulatory Information for the USA:

**WARNING.** Changes or modifications to this unit not expressly approved by Eicon Networks Corporation could void the user's authority to operate the equipment.

## **FC** Declaration of Conformity

We:

Eicon Networks Corporation  
2155 Chenault Drive, Suite 503  
Carrollton, Texas USA 75006  
1-800-80-EICON  
(972) 417-5500  
Fax: (972) 417-5610

Declare under our sole legal responsibility that the products listed below to which this declaration relates, are in conformity with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

**Note:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

## FCC Part 68 Notice

This unit complies with Part 68 of the FCC rules. On the bottom of this equipment is a label that contains, among other information, the FCC registration number. If requested, this information must be provided to the telephone company.

An FCC compliant telephone cord and modular plug is provided with this equipment, designed to be connected to the telephone network or premises wiring using a compatible modular jack which is Part 68 compliant.

This equipment cannot be used on telephone company-provided coin service. Connection to party line service is subject to state tariffs.

If this equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. If advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make the necessary modifications in order to maintain uninterrupted service.

If trouble is experienced with this equipment, please contact us for repair and warranty information. If the trouble is causing harm to the telephone network, the telephone company may request you remove the equipment from the network until the problem is resolved.

	Facility Interface code	Digital Reg. code	Service Order code	USOC Jack Type
S/T	021S5	XD	6.0N	N/A
U	021S5	DE	6.0N	RJ-49 C

Should you experience trouble with this equipment, please contact the address on the previous page.

## Regulatory Information for Canada

**NOTICE:** The Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational and safety requirements. Industry Canada does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.



**Warning:** For your safety, follow these steps before you remove the cover from your PC:

1. Turn off the power to your PC and all peripheral devices.
2. Disconnect the power cable.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

For their own protection, users should ensure that any electrical ground connections of the power utility, telephone lines and internal metallic water pipe system are connected together. This precaution is particularly important in rural areas.



**Warning:** Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

## Regulatory Information for Europe

### EU Declaration of Conformity

**EN:** Eicon Networks Corporation declares that this equipment is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

**DE:** Eicon Networks Corporation erklärt, daß diese Telekommunikations-endeinrichtung den grundlegenden Anforderungen und anderen relevanten Bestimmungen der Richtlinie 1999/5/EG entspricht.

**DK:** Eicon Networks Corporation erklærer, at dette udstyr er i overensstemmelse med vigtige krav og andre relevante provisioner i Direktiv 1999/5/EC.

**ES:** Eicon Networks Corporation declara que este equipo cumple con los requisitos esenciales y otras disposiciones pertinentes de la Directiva 1999/5/EC.

**FI:** Eicon Networks Corporation takaa, että tämä laite on 1999/5/EC-direktiivin olennaisten vaatimusten ja muiden lausekkeiden mukainen.

**FR:** Eicon Networks Corporation déclare que cet équipement répond aux exigences essentielles et autres dispositions pertinentes de la directive 1999/5/EC.

**GR:** Eicon Networks Corporation προβαίνει στην ανακοίνωση ότι αυτά τα μηχανήματα έχουν τις βασικές απαιτούμενες προδιαγραφές και υπόκεινται στις υπόλοιπες σχετικές διατάξεις της Οδηγητικής 1999/5/EC.

**IC:** Eicon Networks Corporation lýsir hér með yfir að þetta tæki uppfyllir grunnkröfur og tengd ákvæði ESB tilskipunar nr. 1999/5/EC.

**IT:** La Eicon Networks Corporation certifica che la presente apparecchiatura è conforme ai requisiti di legge stabiliti nella direttiva 1999/5/EC.

**NL:** Eicon Networks Corporation verklaart, dat deze uitrusting in overeenstemming is met de essentiële vereisten en andere relevante bepalingen van Richtlijn 1999/5/EC.

**NO:** Eicon Networks Corporation erklærer herved at dette utstyret oppfyller de vesentligste krav og relevante bestemmelser i direktiv 1999/5/EF om radio- og teleterminalutstyr.

**PT:** A Eicon Networks Corporation declara que este equipamento está de acordo com os requisitos básicos e outras provisões relevantes da Directiva 1999/5/EC.

**SE:** Eicon Networks Corporation förklarar att denna utrustning överensstämmer med de väsentliga krav och regler som finns i direktivet 1999/5/EG.

To receive a detailed R&TTE Declaration for this product please send a request specifying the product name to the following e-mail address:  
certification@eicon.com.

## Safety Status: SELV

No voltages within this equipment exceed SELV voltages. All interconnection points and ports are SELV.

## User/Installer Instructions for the United Kingdom

### Important Safety Considerations When Installing Into A Host Computer System

The Eiconcard C2x is a single PCI card.

Installation Within A Spare Slot Position



**Warning:** It is essential that, when other option cards are introduced which use or generate a hazardous voltage, the minimum creepages and clearances specified in the table below are maintained. Suitable user protection to ensure compliance with EN60950/A4 should be present on the card. A hazardous voltage is one which exceeds 42.4V peak a.c or 60V d.c. If you have any doubt, seek advice from a competent engineer before installing other adapters into the host equipment.

The equipment must be installed such that with the exception of the connections to the host, clearance and creepage distances shown in the table below are maintained between the card and any other assemblies which use or generate a voltage shown in the table below.

Clearance X mm	Creepage Y mm	Voltage used or generated by other parts of the host or expansion card Vrms or Vdc
2.0	2.4 (3.8)	up to 50
2.6	3.0 (4.8)	up to 125
4.0	5.0 (8.0)	up to 250
4.0	6.4 (10.0)	up to 300

*Table 4. Creepage Distances*

The larger distance shown in brackets applies where the local environment within the host is subject to conductive pollution or dry non-conductive pollution which could become conductive due to condensation. Failure to maintain these minimum distances would invalidate the approval.

The clearance distance X is the shortest distance in air between two points. The creepage path Y (along surfaces) is the shortest distance between the same two points.

## Regulatory information for Australia

- This customer equipment shall only be installed in a PC that requires the use of a tool to gain access to internal parts (e.g. this customer equipment must not be installed in a PC with a 'flip lid').
- Proper installation of the Eiconcard C2x card requires that it is screwed to the metal backplate of the computer. This ensures proper grounding, which is necessary for safety purposes.
- This customer equipment may only be installed in host equipment where there is at least 2 mm of air gap between the customer equipment and adjacent boards (PCBs).
- Only ACA permitted line cord set(s) or made from ACA certified components shall be used as replacements with this customer equipment.

### ***Eiconcard C2x***



**Warning:** This customer equipment is to be installed and maintained by service personnel as defined by AS/NZS 3260 Clause 1.2.14.3 Service Personnel. It may be hazardous if your computer is not properly plugged in and grounded.



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