Bull ESCALA

Adapters for Multiple Bus Systems

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Hardware

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About this book

This book describes adapters used on systems which have a Peripheral Components Interconnect (PCI) bus or an Industry Standard Interconnect (ISA) bus.

This book can be used to help identify an adapter and aid in servicing some devices. It presents the adapter's main characteristics, requirements and connector signals (if applicable). You can also use this book to find more detailed manuals for specific adapters.

Note: The MI numbers found in this manual are given as an indication and are subject to change without notice.

Audience Description

This book is used by service representatives specifically trained on the system unit being serviced and by people planning for system installation.

Overview of Contents

Chapter 1 gives general information and security measures on PCI and ISA adapters used with system units. It also provides a cross-reference list which helps identify adapters and the system which support them.

Chapters 2, 3, 4, 5 and 6 presents the specifications and switch settings (if any) of the adapters:

- Chapter 2 graphics adapters.
- Chapter 3 storage adapters.
- Chapter 4 LAN / WAN adapters.
- Chapter 5 asynchronous adapters.
- Chapter 6 ISA internal modems.

Chapter 7 lists important considerations regarding placement of adapters within some system units.

Appendix A gives the type of information available when using the VPD command.

Appendix B lists the drivers needed for PCI/ISA adapters.

Appendix C helps users to find the documents related to an adapter.

Glossary

Related Publications

Refer to Appendix C at the end of this book for detailed information about related documents.

Note: A document similar to this manual deals with MCA adapters:

- *Adapters for Micro Channel Architectures*, 86 A1 76AT.

Communication Statements

The following statement applies to this equipment. The statement for other products intended for use with this equipment appears in their accompanying manuals.

Federal Communications Commission (FCC) Statement

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 an authorized dealer or service representative for help.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. Proper cables and connectors are available from authorized dealers. Neither the provider nor the manufacturer are responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

European Union (EU) Statement:

This equipment is in conformity with the protection requirements of EC Council Directives 89/336/EEC relating to electromagnetic compatibility, 91/263/EEC relating to telecommunications terminal equipements and with 73/23/EEC (Low Voltage Directive).

Label:

or

Label:

Neither the provider nor the manufacturer can accept responsibility for any failure to satisfy the protection requirements resulting from a non–recommended modification of the equipment, including the fitting of option cards not supplied by the manufacturer.

This equipment has been tested and found to comply with the limits for Class B Information Technology Equipment according to CISPR 22 / European Standard EN 55022. The limits for Class B equipment were derived for typical residential environments to provide reasonable protection against interference with licensed communication devices.

International Electrotechnical Commission (IEC) Statement

This equipment has been designed and built to comply with IEC Standard 950.

United Kingdom Telecommunications Safety Requirements

This equipment is manufactured to the International Safety Standard EN60950 and as such is approved in the UK under the General Approval Number NS/G/1234/J/100003 for indirect connection to the public telecommunication network.

The network adapter interfaces housed within this equipment are approved separately, each one having its own independent approval number. These interface adapters, supplied by the manufacturer, do not use or contain excessive voltages. An excessive voltage is one which exceeds 70.7 V peak ac or 120 V dc. They interface with this equipment using Safe Extra Low Voltages only. In order to maintain the separate (independent) approval of the manufacturer's adapters, it is essential that other optional cards, not supplied by the manufacturer, do not use main voltages or any other excessive voltages. Seek advice from a competent engineer before installing other adapters not supplied by the manufacturer.

Avis de conformité aux normes du ministère des Communications du Canada

Les appareils numériques de la classe B respectent toutes les exigences du Réglement sur le matériel brouilleur du Canada.

Canadian Department of Communications Compliance Statement

The Class B digital apparatus meets the requirements of the Canadian Interference–Causing Equipment Regulations.

この装置は，第二種情報装置（住宅地域又はその隣接した地域において使用されるべき情報装置）で住宅地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）基準に適合しております。

しかし，本装置をラジオ，テレビジョン受信機に近接してご使用になると，受信障害の原因となることがあります。

取扱説明書に従って正しい取り扱いをして下さい。

VCCI Statement

The following is a summary of the VCCI Japanese statement in the box above.

This equipment is in the Class 2 category (information equipment to be used in a residential area or an adjacent area thereto) and conforms to the standards set by the Voluntary Control Council For Interference by Data Processing Equipment and Electronic Office Machines aimed at preventing radio interference in such residential area.

When used near a radio or TV receiver, it may become the cause of radio interference.

Read the instructions for correct handling.

Radio Protection for Germany

Dieses Gerät ist berechtigt in Übereinstimmung mit dem deutschen EMVG vom 9.Nov.92 das EG–Konformitätszeichen zu führen.

Der Aussteller der Konformitätserklärung ist die Bull Germany.

Dieses Gerät erfüllt die Bedingungen der EN 55022 Klasse B.

Table of Contents

Chapter 1. Introduction

The information about adapters contained in this book is used during non-directed service activities and for new system installations.

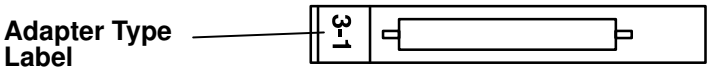
How to Use the Adapter Information

The information in this document is used to:

- Identify an adapter.
- Find specific technical information about an adapter.
- Show signal names for the output pins of most of the adapter connectors.
- Where applicable, show the settings for switches or jumpers.
- Help to choose the better place for installing an adapter.

The adapters are labeled to identify the adapter type. If you know the adapter type number, use the Adapter Identification Label Cross-Reference List on the following page to find the name of the adapter. You can also use the listing shipped with your system unit to identify an adapter.

This drawing shows how an adapter is labeled.



Adapter Static Precautions

Adapters have parts which are static-sensitive. If you touch static-sensitive parts of the adapter and discharge static electricity, the components might be damaged. Observe static precautions. Use an antistatic wrist strap when installing adapters.

PCI/ISA Adapters Cross Reference List

The adapters in this list are classified according to their type.

Note: The MI numbers listed here are given as an indication and are subject to change without notice.

Type	MI Number	FC	System	Adapter	Page
None	DCCG123-0000	2741	T610, PL600T, PL400T EPC440, EPC610/810, PL1600R, PL3200R PL600R, PL400R, PL800R EPC1200/2400/2450, RL470/A	FDDI Optical Fiber Single Ring PCI	4-27
None	DCCG124-0000	2742	T610, PL600T, PL400T EPC440, EPC610/810, PL600R, PL400R, PL800R, PL1600R, PL3200R EPC1200/2400/2450, RL470/A	FDDI Optical Fiber Dual Ring PCI	4-27
None	DCCG125-0000	2743	T610, PL600T, PL400T, EPC440, EPC610/810, PL600R, PL400R, PL800R EPC1200/2400/2450, RL470/A	FDDI UTP Single Ring PCI	4-25
None	GTFG041-0000	2839	Estrella	Power GXT110P High Performance Graphics PCI	2-2
None	DCCG066-0000		Estrella	Ethernet 10Mbps PCI (See adapter B2–E)	4-6
5700	DCCG156-0000	5700	PL220T, PL220R, PL400T, PL600T PL400R, PL600R, PL800R, PL1600R, PL3200R	Gigabit Ethernet 1000 Base–SX PCI–X	4-19
	DCCG163-0000		PL240T, PL240R, PL420T, PL420R, PL820R		
5701	DCCG157-0000	5701	PL220T, PL220R, PL400T, PL600T, PL400R, PL420, PL600R, PL800R, PL1600R/R+, PL3200R/R+	Ethernet 10/100/1000 Base–TX PCI–X	4-10
	DCCG164-0000		PL240T, PL240R, PL420T, PL420R, PL820R		
5703	MSCG053–0000	5703	PL240T, PL240R, PL420	Dual Channel Ultra320 SCSI RAID PCI–X	
	MSCG059–0000		PL220T, PL220R		
5704	DCCG172–0000	6239	PL240T, PL240R, PL420, PL820R	PCI 64 bits Fibre Channel 2Gb/s	3-50
	DCCG173–0000		PL220T, PL220R, PL1600R, PL1600R+, PL 3200R, PL3200R+		
5706	DCCG169-0000	5706	PL240T, PL240R, PL420, PL820R	Ethernet 10/100/1000 Base–SX PCI–X	4-10
	DCCG165–0000		PL1600R+, PL3200R+		
5707	DCCG168-0000	5707	PL240T, PL240R, PL420, PL820R	Ethernet 10/100/1000 Base–TX PCI–X	4-10
	DCCG166–0000		PL1600R+, PL3200R+		
5710	MSCG056–0000	5710	PL820R	Dual Channel Ultra320 SCSI	
	MSCG058–0000		PL1600R, PL 1600R+, PL3200R, PL3200R+		
5711	MSCG055–0000	5711	PL820R	Dual Channel Ultra320 SCSI RAID	
	MSCG057–0000		PL1600R, PL1600R+, PL3200R, PL3200R+		
5712	MSCG054–0000	5712	PL420, PL820R	Dual Channel Ultra320 SCSI PCI–X	
	MSCG060–0000		PL220T, PL220R		
1–N	GTFG042-0000	2852	Estrella	Power GXT255P High Performance Graphics PCI	2-4

Type	MI Number	FC	System	Adapter	Page
1–P	GTFG046-0000	2838	S, EPC1200, RL470/A	Power GXT120P VideoAccelerator Graphics PCI	2-6
	GTFG047-0000		S		
1–T	GTFG048-0000	2830	S100/120, E230/250 T430/450, T610, PL600T, PL400T EPC430/450, EPC440 EPC610/810, PL600R, PL400R, PL800R, EPC1200/2400/2450	Power GXT130P Graphics Accelerator PCI	2-8
1–S	GTFG049-0000	2823	S100/120	Power GXT2000P 3D Graphics Accelerator PCI	2-10
1–X	GTFG050-0000	2848	T610, PL600T, PL400T, PL420T, EPC2400/2450 EPC810, PL420R, PL800R, PL820R, PL1600R, PL3200R EPC440, EPC610, PL600R, PL400R, PL220R/220T	Power GXT135P Graphics PCI	2-19
	GTFG051–0000	2849	PL240T, PL240R, PL420, PL820R		
3–B	DCCG130-0000	2943	T610, PL600T, PL400T EPC440, EPC610/810, PL600R, PL400R, PL800R, EPC2400/2450, PL220R/220T, PL1600R/R+, PL3200R/R+	8-Port Async EIA-232/RS-422 PCI	5-6
	DCCG160-0000		PL240T, PL240R, PL420T, PL420R, PL820R		
	DCCG132-0000	8137	RL470/A & EPC1200	Enhanced EIA-232 async 16-port connector box	5-6
	DCCG133-0000	8138	RL470/A & EPC1200		
3–C	DCCG131-0000	2944	RL470/A & EPC1200, PL220R/220T	128-Port Async PCI	5-11
4–A	MSCG031-0000	6208	RL470/A & EPC1200	SCSI-2 F/W SE PCI	3-2
4–B	MSCG032-0000	6209	RL470/A & EPC1200	SCSI-2 F/W DE PCI	3-5
4–H	MSCG033-0000	2493	RL470/A & EPC1200	SCSI-2 F/W RAID PCI	3-33
4–K	MSCG040-0000 CKTG188–0000 CKTG146–0000	6206	S100/120, T610, PL1600R, PL3200R, EPC440, EPC2400/2450, RL470/A, PL220R/220T PL400T, PL600T	Ultra SCSI SE PCI	3-13
4–L	MSCG030-0000	6207	EPC440, EPC610/810, PL600R, PL400R EPC1200/2400/2450 RL470/A	Ultra SCSI DE PCI	3-16
4–N	MSCG036-0000	6215	RL470/A & EPC1200	SSA 4-Port Multi-Initiator/ RAID EL PCI	3-37
	MSCG024-0000		E & T		
	MSCG039-0000		E, EPC400 & T		
	CMMG109-0000	6222	RL470/A & EPC1200	SSA Fast/Write 4MB Cache Option Card PCI	3-37
4–R	MSCG043-0000	6205	T610, PL600T, PL400T, EPC610/810, PL600R, PL400R, PL800R	Dual Channel Ultra2 SCSI PCI	3-18
4–T	MSCG042-0000	2494	EPC440	3-Channel Ultra2 SCSI RAID PCI	3-20
4-U	MSCG044-0000	6204	T610, PL600T, PL400T, EPC440, EPC610/810, PL600R, PL400R, PL800R, EPC1200/2400/2450 RL470, PL220R/220T, PL1600R/R+, PL3200R/R+	Universal Differential Ultra SCSI Adapter PCI	3-22
	MSCG049-0000		PL240T, PL240R, PL420T, PL420R, PL820R		
4–X	MSCG047-0000	2498	T610, PL600T, PL400T EPC440, EPC610/810, PL600R, PL400R, PL800R, PL220R/220T	4–Channel Ultra3 SCSI RAID Adapter PCI	3-24
	MSCG050-0000		PL240T, PL240R, PL420T, PL420R, PL820R		

Type	MI Number	FC	System	Adapter	Page
4–Y	MSCG048-0000	6203	S120, T610, PL600T, PL400T EPC440, EPC610/810, PL400R, PL600R, PL800R, PL220R/220T, PL1600R/R+, PL3200R/R+	PCI Dual–Channel Ultra3 SCSI Adapter	3-52
	MSCG051-0000		PL240T, PL240R, PL420T, PL420R, PL820R		
8–L[1]	DCCG129-0000	2962	RL470	2-Port X25 Sync. Comm PCI	4-43
8–T	DCCG071-0000	2979	Estrella 200	Auto LANStreamer Token Ring PCI	4-31
	DCCG071-0100		Estrella 300 & 700		
	DCCG104-0000		E, T, EPC400/430/450		
	DCCG126-0000		RL470/A		
9–F[3]	DCCG127-0000	2988	EPC440, EPC1200/2400/2450, RL470/A, PL400R, PL600R, PL800R	TURBOWAYS ATM 155Mb/s MMF PCI	4-5
9–J	DCCG128-0000	2963	T610, PL600T, PL400T, EPC440, EPC610/810, PL600R, PL400R EPC1200/2400/2450, RL470/A	TURBOWAYS ATM 155Mb/s UTP PCI	4-3
9–L[1]	DCCG129-0000	2962	EPC1200/2400/2450, PL800R RL470/A, PL220R/220T	2-Port X25 Sync. Comm PCI	4-43
9–N	DCCG123–0000	2741	PL400T, PL400R, PL600T, PL600R, PL800R, PL820R, PL1600R, PL3200R	Syskonnect FDDI–LP SAS PCI	
	DCCG124–0000	2742			
	DCCG125–0000	2743			
9–O[7]	DCCG136-0000	2920	RL470/A & EPC1200, S120	Token Ring PCI	4-34
9–P	DCCG122-0000	2986	RL470	Etherlink XL Ethernet 10/100Mbps PCI – Older Deliveries	4-7
9–P[8]	DCCG137-0000	2968	T610, PL600T, PL400T, PL1600R, PL3200R EPC440, EPC610/810, PL600R, PL400R, PL800R, S120 EPC1200/2400/2450, RL470/A	Ethernet 10/100Mbps PCI	4-7
	DCCG161-0000		PL420T, PL420R, PL820R		
9–U[6]	DCCG142-0000	2969	RL470/A	Gigabit Ethernet-SX PCI	4-17
9-Z	DCCG149-0000	4951	S120, E230/250, T430/450, EPC440, EPC430/450	4-Port 10/100 Base-TX Ethernet PCI	4-21
A–A	DCCG150–000	2975	T610, PL600T, PL400T, PL220R/220T, PL1600R, PL3200R EPC430/450, EPC440, EPC610/810, PL600R, PL400R, PL800R, EPC1200/2400/2450	10/100/1000 Base–T Ethernet PCI	4-8
A-E	DCCG152-0000	4961	T610, PL600T, PL400T EPC610/810, , PL220R/220T PL600R, PL800R, PL400R EPC1200A/2400/2450, PL1600R+, PL3200R+	4-Port 10/100 Base-TX Ethernet PCI	4-23
	DCCG162-0000		PL240T, PL240R, PL420T, PL420R, PL820R		
A–F[8]	DCCG137–0000	4962	S120, T610, PL600T, PL400T, PL420T, EPC610/810, PL220R/220T, PL400R, PL420R, PL600R, PL800R, PL820R, EPC2400/2450, PL1600R/R+, PL3200R/R+	10/100 Ethernet PCI adapter II	4-16
	DCCG161–0000		PL240T, PL240R, PL820R		
B1–2	GTFG043-0000		Estrella	64-bit 2MB RAM Graphics PCI	2-13
B1–3	GTFG039-0000		E & T	64-bit 4MB RAM Graphics PCI	2-15
B1–4	GTFG039-0100		E, T, EPC400	4MB RAM Graphics PCI	2-17

Type	MI Number	FC	System	Adapter	Page
B2–B	DCCG063-0000		Estrella 200	1-Port X25 Comm V24 – ATRV24 ISA	4-45
	DCCG063-0100		Estrella 300/700		4-45
B2–C	DCCG064-xx00		Estrella	1-Port X25 Comm V35 – ATRV35 ISA	4-45
B2–D	DCCG065-0100		Estrella	1-Port X25 Comm V11 – ATRV11 ISA	4-45
B2–E	DCCG066-0000		Estrella	Ethernet 10Mbps PCI	4-6
B2–F[2]	DCCG072-0000		Estrella	Ethernet 10/100Mbps PCI	4-12
B2–G	DCCG120-0000		Estrella	1-Port Multiprotocol Serial I/O (Sync. Comm) PCI	4-47
	DCCG097-0000		S100/120, E, E230/250, T, T430/450, T610, PL600T, PL400T, EPC400/430/450, EPC440, EPC610/810, PL600R, PL400R, PL800R EPC1200/2400/2450, PL220R/220T		
B2–H	DCCG121-0000		Estrella	4-Port Multiprotocol Serial I/O (Sync. Comm) PCI	4-49
	DCCG098-0000		S100/120, E, E230/250, T, T430/450, T610, PL600T, PL400T, EPC400/430/450 EPC440, EPC610/810, PL600R, PL400R, PL800R EPC1200/2400/2450, PL220R/220T		
B2–L	DCCG140-0000	2962	S100/120, E, E230/250, T, T430/450, PL1600R/R+, PL3200R/R+, T610, PL600T, PL400T, PL420T, EPC400/430/450, PL220R/220T, EPC610/810, PL400R, PL420R, PL600R, PL800R, PL820R, PL240T/240R	X25 2-Port Sync. Comm PCI	4-43
B3–1	DCCG059-0000		Estrella 200	4-Port Async EIA-232 with Connector Box ISA	5-2
	DCCG059-0100		Estrella 300/700		
B3–3	DCCG061-0000		Estrella 200	8-Port Async EIA-232 with Connector Box ISA	5-2
	DCCG061-0100		Estrella 300/700		
B3–4	DCCG062-0000		Estrella 200	8-Port Async RS-422A with Connector Box ISA	5-4
	DCCG062-0100		Estrella 300/700		
B3–8	DCCG079-0000		Estrella 200	128-Port Async EIA-232 ISA	5-19
	DCCG079-0100		Estrella 300/700		
	DCCG078-0000		Estrella	16-Port EIA 232 Concentrator Box ISA	5-19
B3–9	DCCG090-0000		S100/120, E, E230/250, T, T430/450, T610 EPC400/430/450 EPC440, EPC610/810, EPC2400/2450	128-Port Async EIA-232 PCI	5-21
	DCCG093-0000		S100/120, E, E230/250, T, T430/450, T610 EPC400/430/450 EPC440, EPC610/810 EPC2400/2450	16-Port EIA232 Concentrator Box PCI for 128-Port Adapter	5-21
B3–A	DCCG087-0000		S100/120, E, E230/250, T, T430/450, T610, PL600T, PL400T EPC400/430/450	8-Port Async EIA-232 with Connector Box PCI	5-8
B3–B	DCCG088-0000		S100/120, E, E230/250, T, T430/450, T610, PL600T, PL400T EPC400/430/450	8-Port Async RS-422A with Connector Box PCI	5-8
B3–C	DCCG089-0000		S100/120, E, E230/250, T, T430/450, T610, PL600T, PL400T EPC400/430/450	64-Port Async EIA-232 / RS-422A PCI	5-9

Type	MI Number	FC	System	Adapter	Page
	DCCG091-0000		S100/120, E, E230/250, T, T430/450, T610, PL600T, PL400T EPC400/430/450	16-Port EIA232 Connector Box for 64-Port Adapter	5-9
	DCCG092-0000		S100/120, E, E230/250, T, T430/450, T610, PL600T, PL400T EPC400/430/450	16-Port RS422 Connector Box for 64-Port Adapter	5-9
B4–1	MSCG027-0000		Estrella, S	SCSI-2 F/W SE PCI – Newer Deliveries	3-7
	MSCG014-0000		Estrella	SCSI-2 F/W SE PCI – Older Deliveries	3-7
B4–2	MSCG028-0000		Estrella	SCSI-2 F/W DE PCI – Newer Deliveries	3-10
	MSCG015-0000		Estrella	SCSI-2 F/W DE PCI – Older Deliveries	3-10
B4–3	MSCG027-0000		Estrella	Wide SCSI Host F/W SE PCI	3-31
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	DCCG134-A000		RL470		
B4–8	DCCG141-0000	6227	E, E230/250, T, T430/450 EPC400/430/450, EPC1200, RL470, PL220T/220R	Enhanced Fibre Channel PCI (LP7000 32b)	3-41
B4–9	MSCG041-0000		E, E230/250, T, T430/450 EPC430/450,	Ultra2 SCSI SE/LVD PCI	3-28
B4–A	DCCG147-0000		S, E, E230/250, T, T430/450, T610, PL600T, PL400T EPC400/430/450, EPC440, EPC610/810, PL600R, PL400R, PL800R, EPC1200/2400/2450, PL220T/220R, PL1600R, PL3200R	64-bit Copper Fibre Channel PCI (LP8000)	3-43
B4–B	DCCG148-0000		S, E, E230/250, T, T430/450, T610, PL600T, PL400T EPC400/430/450, EPC440, EPC610/810, PL600R, PL400R, PL800R, EPC1200/2400/2450 PL220T/220R, PL1600R, PL3200R	64-bit Optical Fibre Channel PCI (LP8000)	3-45
B4–C	CKTG148-0000		E230/250, T430/450	Ultra2 SCSI High Performance RAID Adapter	3-47
	CKTG149-0000		EPC430/450	Ultra2 SCSI High Performance RAID Adapter	3-47
B4–E	DCCG154-0000	6228	E230/250, T430/450, T610, PL600T, PL400T, PL420T, EPC430/450, EPC440, EPC610/810, PL600R, PL400R, PL420R, PL800R, PL820R, EPC1200/1200A EPC2400/2450, PL220T/220R, PL1600R, PL3200R	2 Gbit Fibre Channel Adapter for 64–bit PCI BUS	3-50
	DCCG155-0000		PL220T, PL400T, PL420T, PL600T, PL220R, PL400R, PL420R, PL600R, PL800R, PL820R, PL1600R, PL3200R		
B5–2	DCCG154-0000		Estrella	ISDN ISA	4-30
B5–3	DCCG084-0000		S100/120, E, E230/250, T, T430/450, EPC400/430/450	FDDI UTP Single Ring PCI	4-25
B5–4	DCCG082-0000		Estrella	FDDI Optical Fiber Single Ring PCI	4-27

Type	MI Number	FC	System	Adapter	Page
	DCCG102-0000		S100/120, E, E230/250, T, T430/450, EPC400/430/450		
B5–5	DCCG083-0000		Estrella	FDDI Optical Fiber Dual Ring PCI	4-27
	DCCG103-0000		S100/120, E, E230/250, T, T430/450, EPC400/430/450		
B5–6[2],[5]	DCCG072-0200		Estrella	Ethernet 10/100Mbps PCI	4-13
	DCCG085-0000		E, T, EPC400/430/450		
B5–9[3]	DCCG099-0000		S100/120, E, E230/250, T, T430/450, T610, PL600T, PL400T EPC400/430/450, PL800R EPC610/810, PL600R, PL400R	TURBOWAYS ATM 155 Mbps MMF PCI	4-5
B5–A	DCUG001-000F DCCG086-0000		S100, E, E230/250, T, T430/450, EPC400/430	Internal Modem FRANCE ISA	6-1
B5–B	DCUG001-000H DCCG086-0000		S100, E, E230/250, T, T430/450, EPC400/430/450	Internal Modem UK ISA	6-1
B5–C	DCUG001-000U DCCG086-0000		S100, E, E230/250, T, T430/450, EPC400/430/450	Internal Modem BELGIUM ISA	6-1
B5–D	DCUG001-000D DCCG086-0000		S100, E, E2, 30/250, T, T430/450, EPC400/430/450	Internal Modem NETHERLANDS ISA	6-1
B5–E	DCUG001-000T DCCG086-0000		S100, E, E230/250, T, T430/450, EPC400/430/450	Internal Modem ITALY ISA	6-1
B5–H[5]	DCCG072-xxxx		Estrella	Ethernet 10/100Mbp PCI	4-14
	DCCG085-0000		E & T		
B5–J[7]	DCCG135-0000		E, E230/250, T, T430/450, EPC400/430/450 EPC1200/2400, PL1600R, PL3200R	Token Ring PCI	4-37
B5–K[4]	DCUG001-000E DCCG086-0000		S100, E, E230/250, T, T430/450, EPC400/430/450	Internal Modem USA ISA	6-1
B5–L[4]	DCUG001-000G DCCG086-0000		S100, E, E230/250, T, T430/450, EPC400/430/450	Internal Modem Germany ISA	6-1
B5–M	DCCG143-0000		S100/120, E, E230/250, T, T430/450, EPC400/430/450	Ethernet 10/100Mbp PCI	4-15
B5–N[6]	DCCG144-0000	2969	S120, E, E230/250, T, T430/450, T610, PL600T, PL400T EPC400/430/450 EPC440, EPC610/810, PL600R, PL400R, PL800R, EPC1200/2400/2450, RL, PL220R/220T, PL1600R, PL3200R	Gigabit Ethernet-SX PCI	4-17
B5–R[7]	DCCG135-0000	4959	S100/120, E, E230/250, PL1600R/R+, PL3200R/R+ T, T430/450, T610, PL600T, PL400T, PL420T, EPC400/430/450 EPC610/810, PL600R, PL400R, PL420R, PL800R, PL820R, EPC1200/2400/2450, PL220R/220T, PL240T/240R	High–Speed Token Ring PCI	4-40
B5–S[4]	DCCG086-0000		S, E, E230/250, T, T430/450, EPC400/430/450	Internal Modem Pan European ISA	6-1

Notes:

1 – Adapter type 9-L replaces adapter type 8-L.

2 – Adapter type B5-6 replaces adapter type B2-F.

3 – Adapter type B5-9 replaces adapter type 9-F for all systems except for Escala RL470/A.

4 – The ISA Internal Modem is composed of two MI numbers one which corresponds to the modem adapter itself (which is the same for all countries) and the other which corresponds to the localization option.

5 – Adapter type B5-H replaces adapter type B5-6.

6 – Adapter type B5-N replaces adapter type 9-U.

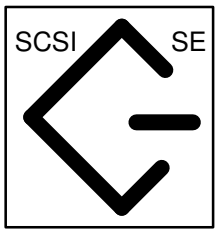
7 – Adapter type B5-R replaces adapters type B5-J and type 9-O.

8 – Adapter type A-F replaces adapter 9-P.

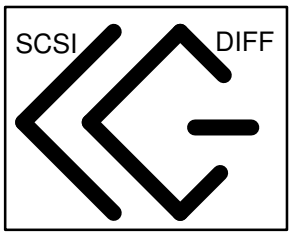
General SCSI Considerations

The following sections give general SCSI considerations for the SCSI devices.

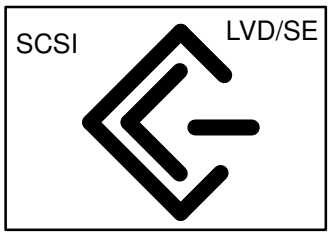
OEM SCSI-1 or SCSI-2 single-ended and SCSI-2 differential devices may carry one of the following ANSI icons:



Single-Ended



Differential



LVD/SE

CAUTION:
There must be two and only two terminators on the SCSI bus, and they must be located at each extreme physical end of the bus.

SCSI Bus Length General Guidelines

SCSI bus length is defined as the distance between terminators at either end of a SCSI bus.

- For configurations using both internal and external cabling, length restrictions refer to the length from the end of the internal cable (terminator) to the terminator on the last device on the external bus.
- Devices which have two SCSI connectors have internal cabling which must be included when calculating total cable length. When connecting these devices, connect one cable into one connector and the other cable (or terminator, if this is the last device on the bus) to the second connector. Do not “piggy back” the second cable/terminator onto the first as you would on a device with only one connector.

SCSI Device Addresses or IDs

The SCSI-1 and SCSI-2 single-ended adapters support a maximum of eight SCSI addresses.

- For any single-adapter configuration, a maximum of seven additional devices are permitted, providing that the supported configuration specific bus lengths are not exceeded. Other restrictions such as bus length may further limit the number of allowable devices.
- For two-adapter configurations (high-availability), up to six devices are permitted, providing that the supported configuration specific bus lengths are not exceeded. Other restrictions such as bus length may further limit the number of allowable devices.
- The SCSI bus address determines priority on the bus. Address priority from the highest to the lowest is as follows:
  - 7, ..0, 15,...8 (address 15 to 8 are only used on SCSI-2 wide buses). Address 7, the highest priority, must always be assigned to the adapter. In general, assign the fastest devices the lowest priority. Disk drives should be assigned IDs in the range of 0 to 3; CD-ROMs in the range of 3 to 4, and tapes in the range of 4 to 6 (addresses 15 to 8 can also be used on SCSI-2 wide buses as additional lower-priority addresses)
- The default ID of the SCSI adapter in a single adapter configuration is 7. All devices on that bus must have a unique ID from 0 to 6 (8 to 15 are also valid if it is SCSI-wide); two different devices **must not** have the same SCSI ID. In the high-availability configurations, the second adapter must have its address changed to avoid conflicts.

Note: The SCSI address switch or jumpers for each device must be set while power to the system unit is off. The operating system determines the system configuration during

IPL. If a SCSI address is changed after the operating system is loaded, the operating system must be stopped and loaded again to have the correct configuration.
Standalone diagnostics will always default to a SCSI ID of 7 when testing SCSI adapters and devices. Choosing SCSI IDs other than 7 for both adapters will prevent any problems when using standalone diagnostics on systems in HA clusters.

To determine what SCSI addresses are available you must know what SCSI addresses are already in use. The following describe several ways to do this:

- If the system is operational and AIX is loaded and configured, use the **lsdev -C –s scsi** (where the l in lsdev is a lowercase L) command to list all of the devices in the Customized Devices Object Class. The list shows name, status, location (the software location code), and the description.

Overload Protection and Terminator Power (Term Power)

The SCSI adapters provide term power for the SCSI bus; connect devices to the bus so they do not provide term power. The adapter uses either a fuse that must be replaced after failure, or a Positive Temperature Coefficient (PTC) resistor that resets within five minutes after the overload cause is removed. SCSI-2 adapters all use a PTC resistor.

- Do not connect or disconnect any SCSI device while power is on (unless the device is hot unplugable specified). Such “hot plugging” is forbidden because this practice may blow the adapter fuse, trip the PTC resistor, corrupt data or permanently damage SCSI adapter chips in adapters or devices.
- The fuse or PTC on a SCSI adapter protects the external and internal SCSI bus. The fuse may be blown or the PTC tripped by a defective cable, terminator, or device attached to the adapter.

Adapter Access Time

Consider the following to keep adapter access time within reasonable limits:

- Have the disk being backed up and the backup device on separate adapters.
- Attach four or fewer disk drives to the same SCSI-1 adapter and six or fewer disk drives to a SCSI-2 adapter.
- If possible have the high-usage disk drives (such as operating system drives) on the same adapter with low-usage devices to improve access time.

Chapter 2. Graphics Adapters

This chapter describes graphics adapters, lists their main characteristics and requirements, and when applicable, connector signals.

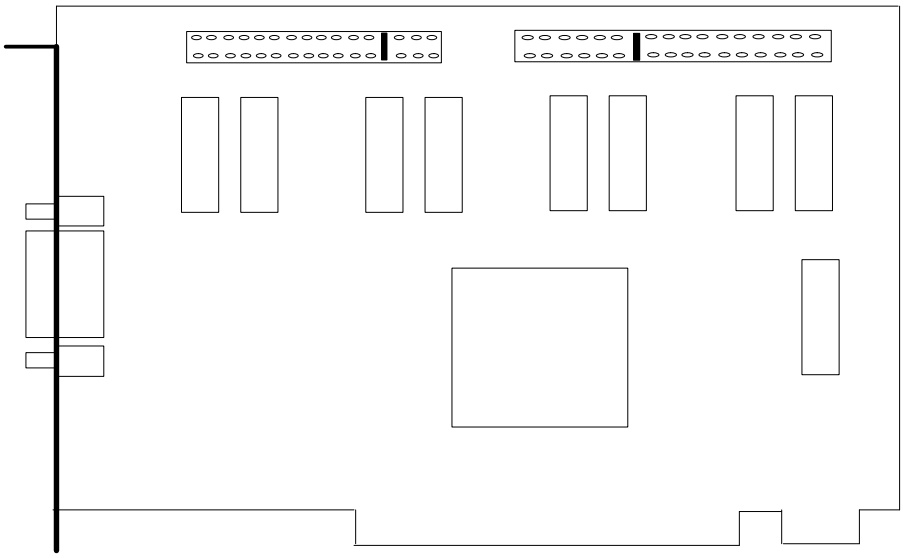
If switches or jumpers need to be configured, this information is also indicated.

In this chapter, you will find the following graphics adapters:

POWER GXT110P Video Accelerator PCI Adapter (no label)

The POWER GXT110P Video Accelerator Adapter is a high-performance graphics adapter designed to operate in any computer that supports the Peripheral Component Interconnect (PCI) bus interface.

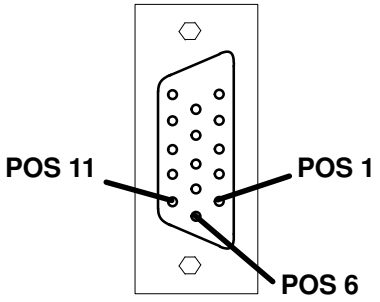
Note: This adapter does not have a label.



POWER GXT110P Video Accelerator Adapter Specifications

Bus architecture	PCI	
Bus width	32-bit	
Interrupt level	Int A	
Maximum number	2	
Number of colors supported	8-bit	
Screen resolution	640x480 at 60	- 85Hz Vertical Refresh
	800x600 at 60	- 85Hz Vertical Refresh
	1024 X 768 at 60	- 85 Hz Vertical Refresh
	1280 X 1024 at 60	- 85 Hz Vertical Refresh
Display power management	Supports Video Electronics Standards Association (VESA) Display Power Management Signalling (DPMS)	
Connector	15 pin D-shell connector	

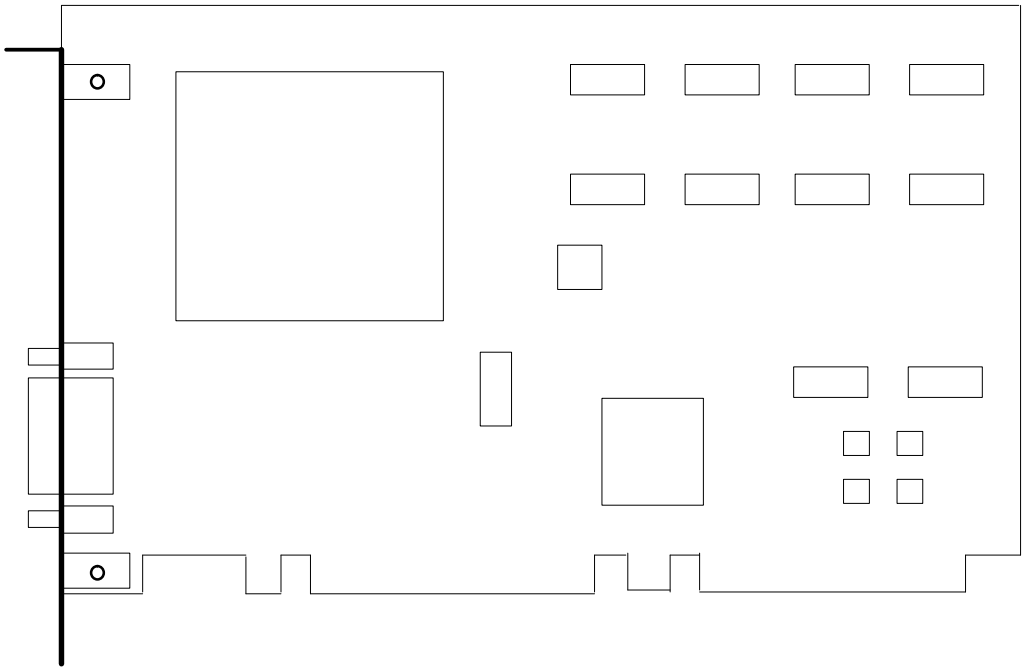
POWER GXT110P Video Accelerator Adapter 15-Pin D-shell (HD-15) Connector



Position	Signal Name
1	Red
2	Green
3	Blue
4	Reserved
5	DDC return (ground)
6	Red Video Return
7	Green Video Return
8	Blue Video Return
9	+5V Supply
10	SYNC Return
11	Reserved
12	Bi-directional Data
13	HSYNC
14	VSYNC
15	Data clock

POWER GXT255P High-Performance Graphics PCI Adapter (Type 1-N)

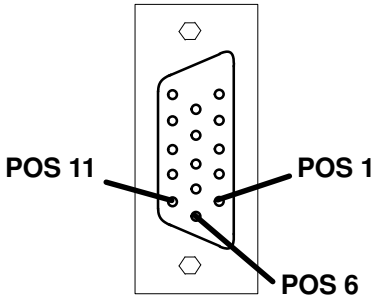
The POWER GXT255P High-Performance Graphics Adapter is designed to operate in any computer that supports the Peripheral Component Interconnect (PCI) bus interface.



POWER GXT255P High-Performance Graphics Adapter Specifications

Bus architecture	PCI
Bus width	32-bit or 64-bit
Interrupt level	Int A
Maximum number	Can be put in any slot
Number of colors supported	8, 16, and 24-bit color supports up to 1280x1024 monitor resolution
Screen resolution	1024 X 768 at 60 - 85 Hz Vertical Refresh 1280 X 1024 at 60 - 85 Hz Vertical Refresh
Display power management	Supports Video Electronics Standards Association (VESA) Display Power Management Signalling (DPMS)
Connector	15-Pin D-shell (HD-15) connector

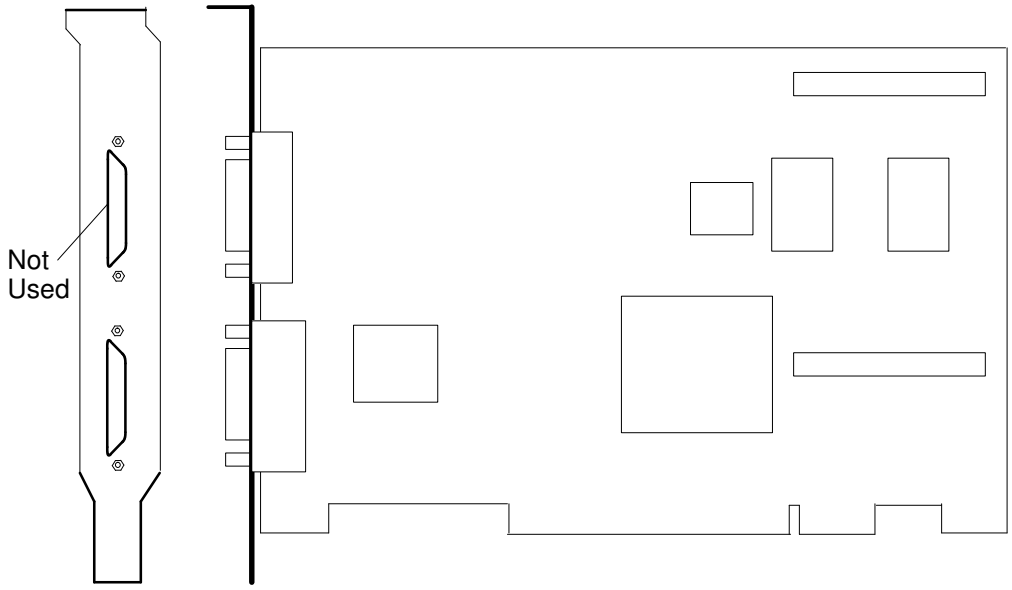
POWER GXT255P High-Performance Graphics Adapter 15-Pin D-shell (HD-15) Connector



Position	Signal Name
1	Red
2	Green
3	Blue
4	Monitor ID Bit 2
5	Test (ground)
6	Red Video Return
7	Green Video Return
8	Blue Video Return
9	No connection
10	SYNC Return (ground)
11	Monitor ID Bit 0
12	Monitor_ID Bit 1
13	HSYNC
14	VSYNC
15	Monitor ID Bit 0

POWER GXT120P 2D Video Accelerator PCI Adapter (Type 1-P)

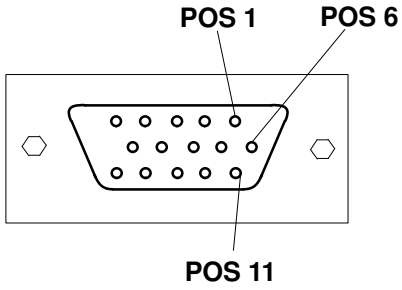
The POWER GXT120P 2D Video Accelerator Adapter is a high-performance graphics adapter designed to operate in any computer that supports the Peripheral Component Interconnect (PCI) bus interface.



POWER GXT120P 2D Video Accelerator Adapter Specifications

Bus architecture	PCI	
Bus width	32-bit	
Interrupt level	Int A	
Maximum number	2	
Number of colors supported	8-bit	
Screen resolution	640x480 at 60	- 85Hz Vertical Refresh
	800x600 at 60	- 85Hz Vertical Refresh
	1024 X 768 at 60	- 85 Hz Vertical Refresh
	1280 X 1024 at 60	- 85 Hz Vertical Refresh
Display power management	Supports Video Electronics Standards Association (VESA) Display Power Management Signalling (DPMS)	
Connector	15 pin HD-15 D-shell connector	

POWER GXT120P 2D Video Accelerator Adapter 15-Pin D-shell (HD-15) Connector



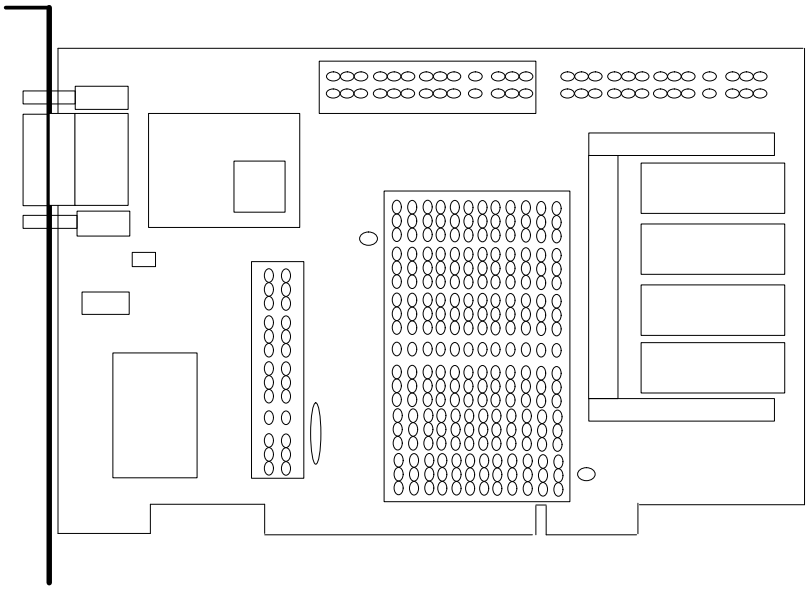
Position	Signal Name
1	Red
2	Green
3	Blue
4	Reserved
5	DDC return (ground)
6	Red Video Return
7	Green Video Return
8	Blue Video Return
9	Not used
10	SYNC Return
11	Reserved
12	Bi-directional Data
13	HSYNC
14	VSYNC
15	Data clock

POWER GXT130P PCI Graphics Adapter (Type 1-T)

The POWER GXT130P Graphics Adapter is a low-cost, medium performance, entry-point, 2D graphics adapter.

This adapter supports multisync displays having a least 60 Khz horizontal scan capability. The GXT130P adapter contains an 8 MB frame buffer. This provides for resolutions up to 1600 X 1200 pixels.

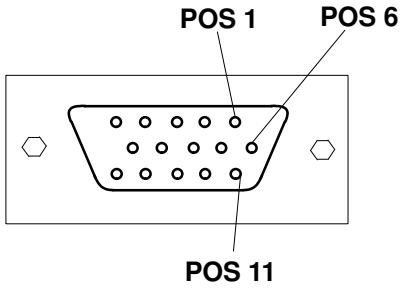
The GXT130P adapter also supports video electronics standards association (VESA) and display power management signalling (DPMS).



POWER GXT130P Graphics Adapter Specifications

Bus architecture	PCI	
Bus width	32-bit	
Interrupt level	Int A	
Maximum number	4	
Number of colors supported	8-bit	
Screen resolution	640x480 at 60	- 85Hz Vertical Refresh
	800x600 at 60	- 85Hz Vertical Refresh
	1024 X 768 at 60	- 85 Hz Vertical Refresh
	1280 X 1024 at 60	- 85 Hz Vertical Refresh
	1600 X 1200 at 75	- 85 Hz Vertical Refresh
Display power management	Supports Video Electronics Standards Association (VESA) Display Power Management Signalling (DPMS)	
Connector	15 pin D-shell connector	

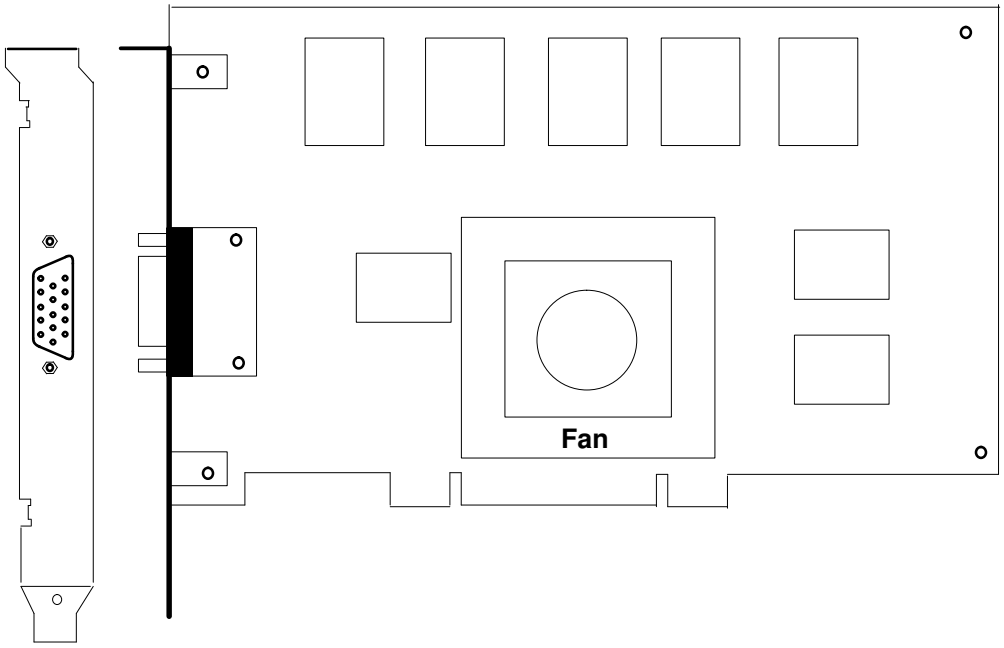
POWER GXT130P Graphics Adapter 15-Pin D-shell Connector



Position	Signal Name
1	Red
2	Green
3	Blue
4	Reserved
5	DDC return (ground)
6	Red Video Return
7	Green Video Return
8	Blue Video Return
9	Not used
10	SYNC Return
11	Reserved
12	Bi-directional Data
13	HSYNC
14	VSYNC
15	Data clock

POWER GXT2000P 3D PCI Graphics Adapter (Type 1-S)

The POWER GXT2000P 3D Graphics Adapter is an entry level that attaches to your system unit in a PCI bus 32 or 64 bit slot. This adapter provides 3D graphics acceleration.



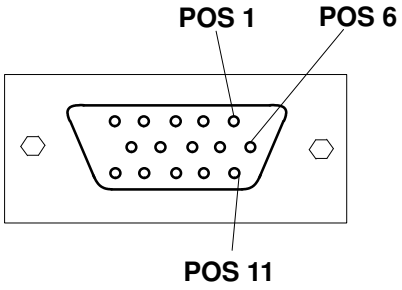
POWER GXT2000P 3D Graphics Adapter Specifications

Bus architecture	PCI
Bus width	32-bit or 64-bit
Maximum number	Up to 4 per system
Number of colors supported	24-bit, 16.7 million (all resolutions)
Screen resolution	640x480 at up to 85 (Welcome Center Only) 1024 X 768 at up to 85 1280 X 1024 at up to 85 1600 X 1280 at up to 85 1900x1200 at up to 76
Display power management	Supports Video Electronics Standards Association (VESA) Display Power Management Signalling (DPMS)
Connector	15 pin D-shell (HD-15) connector

The Power GXT2000P 3D adapter supports the following:

- 8, 16 or 24 bit double-buffered color
- 8-bit stored alpha
- 32MB unified frame buffer
- 8-bit single-buffered or 4-bit double-buffered overlay
- 4 bits of window ids
- 24-bit Z-buffer
- 8-bit stencil
- OpenGL, graPHIGS
- Trilinear texture mapping
  - 16 MB Texture memory @ 1280x1024
- Separate gamma correction table
- Video support
  - Point sampling and bilinear scaling
  - Color space conversion
- Scissor registers
- 3D acceleration
  - Depth buffering
  - Antialiasing
  - Gouraud shading
  - Fog and atmospheric effects
  - Stencil test
  - Alpha test
  - Blending
  - Dithering

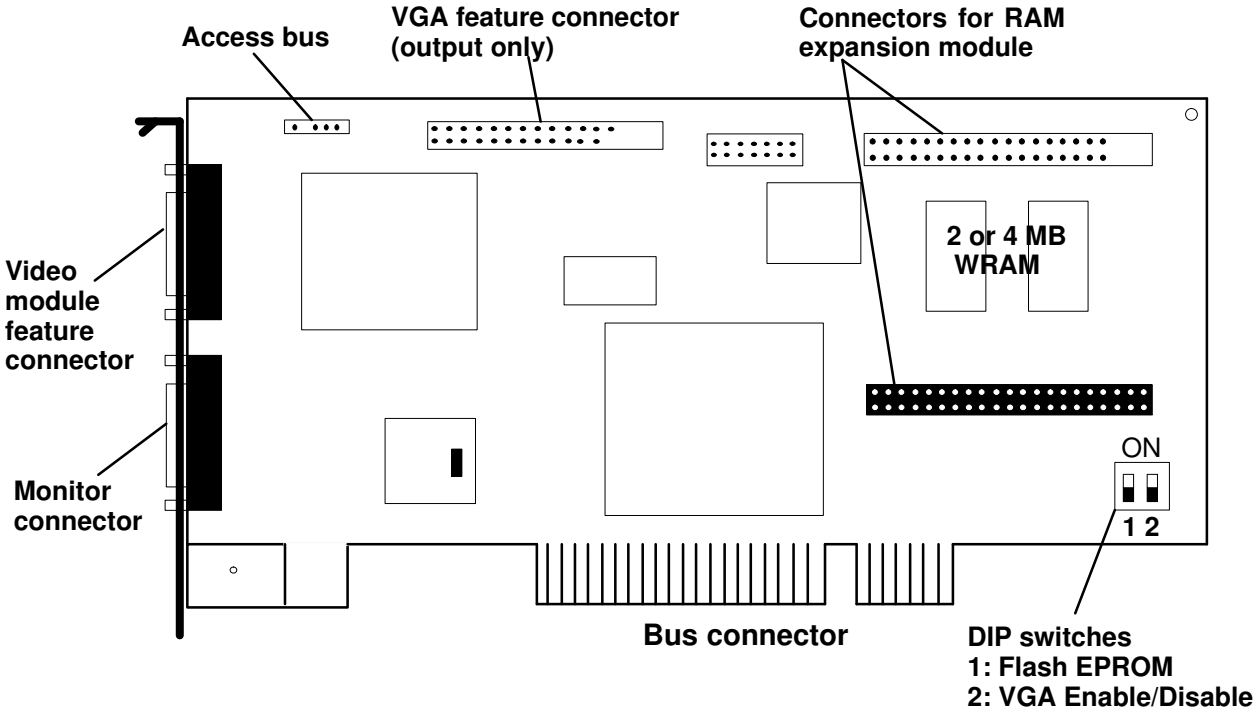
POWER GXT2000P 3D Graphics Adapter 15-Pin D-shell (HD-15) Connector



Position	Signal Name
1	Red
2	Green
3	Blue
4	Not used
5	DDC return
6	Red Video Return
7	Green Video Return
8	Blue Video Return
9	Not used
10	SYNC Return
11	Not used
12	DDC data
13	H_SYNC
14	V_SYNC
15	DDC clock

2MB High-Resolution Graphics PCI Adapter (Type B1-2)

The 2MB High-Resolution Graphics Adapter takes advantage of the 64-bit graphics engine technology, which provides you with very fast graphics and video acceleration. This board is 100% VGA compatible, VESA compatible (SVGA, DPMS, DDC), and provides many additional features including high speed, high-resolution and a flicker-free display. It is designed to be installed on a PCI bus system.
For more detailed information and installation instructions refer to *PCI High–Resolution Graphics Adapter Installation and Configuration Guide*, 86 A1 43HX.



The two DIP switches are reserved for internal use. By default they are set to OFF.

2MB High-Resolution Graphics Adapter Specifications

Bus architecture	PCI
Connector	15-pin D-shell connector

The following tables provide information on supported resolutions, pixel depths (colors), and refresh rates.

Resolution	Bits/Pixel (2MB)	Maximum Refresh (220 MHz board)
640x480	8, 16, 24	200 Hz
800x600	8, 16, 24	200 Hz
1024x768	8, 16	130 Hz
1152x882	8, 16	110 Hz
1280x1024	8	100 Hz
1600x1200	8	78 Hz

Technical Features

- 64-bit VGA-compatible drawing engine
- TVP 3026-220 64-bit RAMDAC
- Separate sync monitors only

Electrical Specifications

Operating voltage and current:

- 0.6 A typical with no module
- 0.8 A with 2 MB Module
- 1.0 A with 6 MB Module

Video Specifications

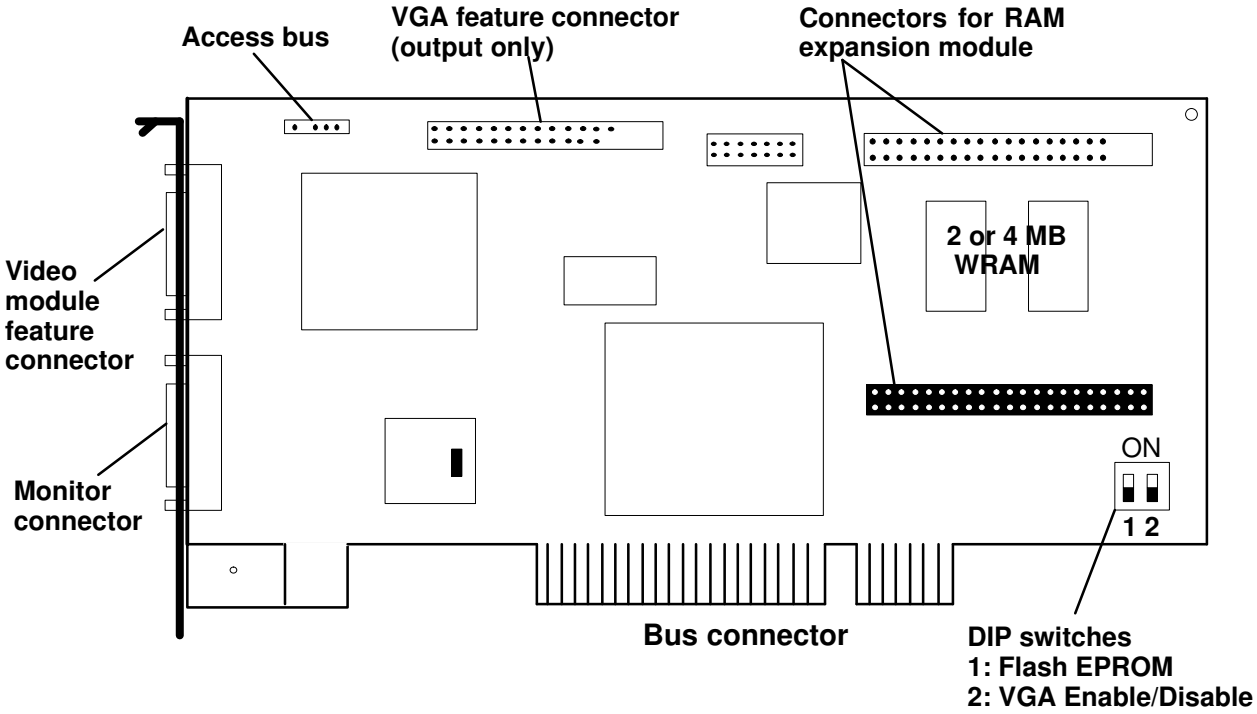
The video follows the PS/2 standard, with no sync on RGB, and no blanking pedestal. Black or blank: 0,0 V; White: 0.700V.

Environmental Specifications

- Minimum/maximum ambient operating temperatures: 0° C to 55° C
- Minimum/maximum storage temperature: –40° C to 75° C
- Maximum altitude for operation: 3 000 meters
- Maximum altitude for transport: 12 000 meters
- Operating humidity: 20 to 80% relative humidity (non-condensing)
- Storage humidity: 5 to 95% relative humidity (non-condensing)

4MB High-Resolution Graphics PCI Adapter (Type B1-3)

The 4MB High-Resolution Graphics Adapter takes advantage of the 64-bit graphics engine technology, which provides you with very fast graphics and video acceleration. This board is 100% VGA compatible, VESA compatible (SVGA, DPMS, DDC), and provides many additional features including high speed, high-resolution and a flicker-free display. It is designed to be installed on a PCI bus system.
For more detailed information and installation instructions refer to *PCI High–Resolution Graphics Adapter Installation and Configuration Guide*, 86 A1 43HX.



The two DIP switches are reserved for internal use. By default they are set to OFF.

4MB High-Resolution Graphics Adapter Specifications

Bus architecture	PCI
Connector	15-pin D-shell connector

The following table provide information on supported resolutions, pixel depths (colors) and refresh rates.

Resolution	Bits/Pixel (4MB)	Maximum Refresh (220 MHz board)
640x480	8, 16, 24	200 Hz
800x600	8, 16, 24	200 Hz
1024x768	8, 16, 24	130 Hz
1152x882	8, 16, 24	110 Hz
1280x1024	8, 16, 24	100 Hz
1600x1200	8, 16	78 Hz

Technical Features

- 64-bit VGA-compatible drawing engine
- TVP 3026-220 64-bit RAMDAC
- Separate sync monitors only

Electrical Specifications

Operating voltage and current:

- 0.6 A typical with no module
- 0.8 A with 2 MB Module
- 1.0 A with 6 MB Module

Video Specifications

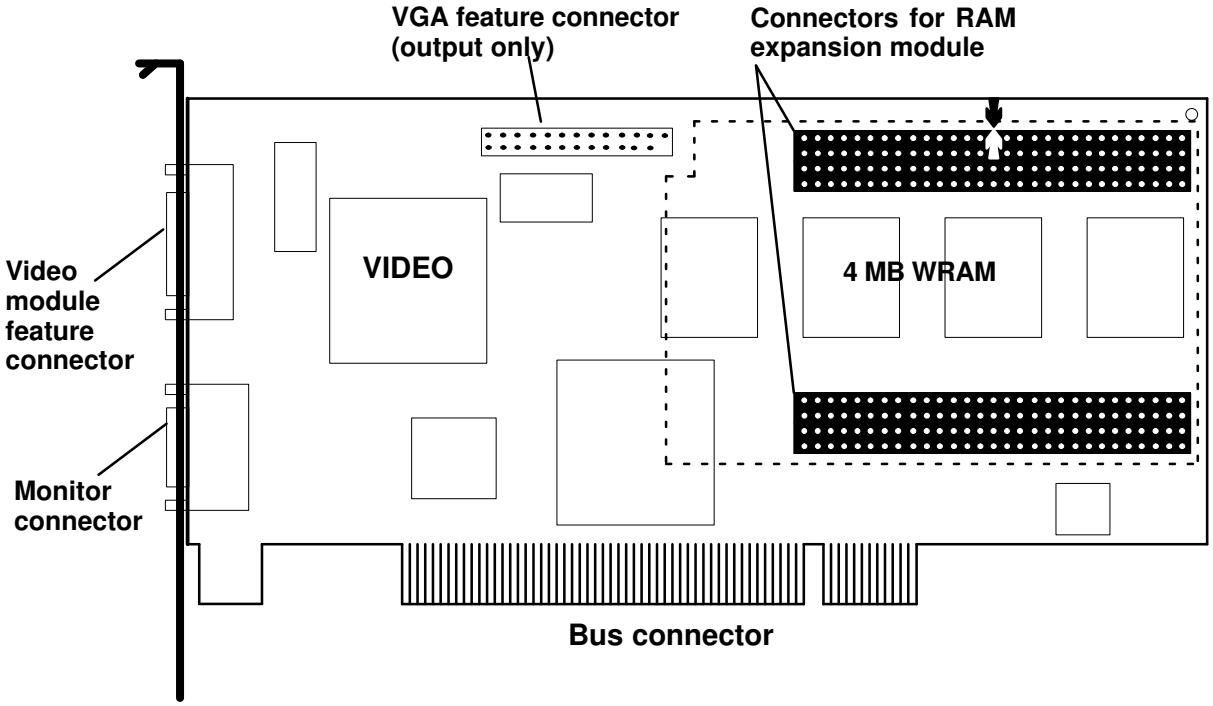
The video follows the PS/2 standard, with no sync on RGB, and no blanking pedestal. Black or blank: 0,0 V; White: 0.700V.

Environmental Specifications

- Minimum/maximum ambient operating temperatures: 0° C to 55° C
- Minimum/maximum storage temperature: –40° C to 75° C
- Maximum altitude for operation: 3 000 meters
- Maximum altitude for transport: 12 000 meters
- Operating humidity: 20 to 80% relative humidity (non-condensing)
- Storage humidity: 5 to 95% relative humidity (non-condensing)

4MB High-Resolution Graphics PCI Adapter (Type B1-4)

The 4MB High-Resolution Graphics Adapter takes advantage of the 64-bit graphics engine technology, which provides you with very fast graphics and video acceleration. This board is 100% VGA compatible, VESA compatible (SVGA, DPMS, DDC), and provides many additional features including high speed, high-resolution and a flicker-free display. It is designed to be installed on a PCI bus system.
For more detailed information and installation instructions refer to *PCI High–Resolution Graphics Adapter Installation and Configuration Guide*, 86 A1 43HX.



4MB High-Resolution Graphics Adapter Specifications

Bus architecture	PCI
Connector	15-pin D-shell connector

The following table provide information on supported resolutions, pixel depths (colors) and refresh rates.

Resolution	Bits/Pixel (4MB)	Maximum Refresh (220 MHz board)
640x480	8, 16, 24	200 Hz
800x600	8, 16, 24	200 Hz
1024x768	8, 16, 24	130 Hz
1152x882	8, 16, 24	110 Hz
1280x1024	8, 16, 24	100 Hz
1600x1200	8, 16	78 Hz

Technical Features

- 64-bit VGA-compatible drawing engine
- TVP 3026-220 64-bit RAMDAC
- Separate sync monitors only

Electrical Specifications

Operating voltage and current:

- 0.6 A typical with no module
- 0.8 A with 2 MB Module
- 1.0 A with 6 MB Module

Video Specifications

The video follows the PS/2 standard, with no sync on RGB, and no blanking pedestal.

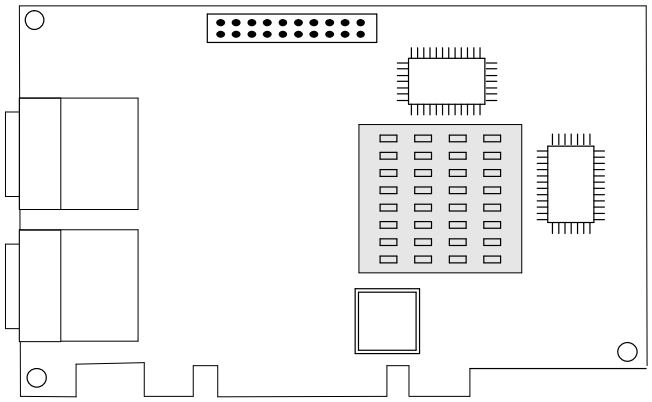
Black or blank: 0,0 V; White: 0.700V.

Environmental Specifications

- Minimum/maximum ambient operating temperatures: 0° C to 55° C
- Minimum/maximum storage temperature: –40° C to 75° C
- Maximum altitude for operation: 3 000 meters
- Maximum altitude for transport: 12 000 meters
- Operating humidity: 20 to 80% relative humidity (non-condensing)
- Storage humidity: 5 to 95% relative humidity (non-condensing)

Power GXT135P Graphics PCI Adapter (Type 1-X)

The POWER GXT135P Graphics PCI Adapter is a high–performance PCI graphics adapter that accelerates and enhances your system unit video. POWER GXT135P Graphics PCI Adapter has no hardware switches to set. Mode selection is made through the software. Connection to the video monitor is made through a high density 15–pin D–shell connector.



POWER GXT135P Graphics PCI Adapter Specifications

Bus architecture	PCI	
Bus width	32-bit	
Interrupt level	Int A	
Maximum number	2	
Memory	16MB SDRAM	
Number of colors supported	8-bit or 24-bit	
Screen resolution	640x480 at 60	- 85Hz Vertical Refresh
	1024x768 at 60	- 85Hz Vertical Refresh
	1280 X 1024 at 60	- 85 Hz Vertical Refresh
	2048 X 1536 at 60	- 75 Hz Vertical Refresh
Display power management	Supports Video Electronics Standards Association (VESA) Display Power Management Signalling (DPMS)	
Connector	15 pin D-shell connector	

Chapter 3. Storage Adapters

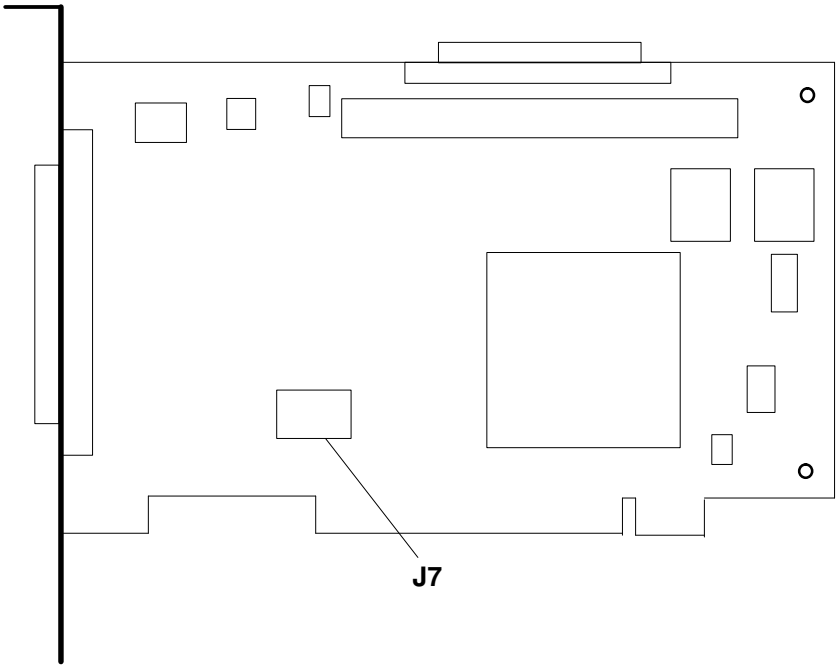
This chapter describes storage adapters, lists their main characteristics and requirements, and when applicable, connector signals.

If switches or jumpers need to be configured, this information is also indicated.

In this chapter, you will find the following storage adapters:

SCSI-2 Single-Ended Fast/Wide PCI Adapter (Type 4-A)

The SCSI-2 Fast/Wide Adapter enables you to use internal and external Small Computer System Interface (SCSI) devices with computers containing a Peripheral Component Interconnect (PCI) bus.



Jumper Settings and Multi-Adapter Configurations

The default configuration for jumper block J7 on the SCSI adapter is shown below. The adapter is shipped with the jumpers in this configuration. This configuration is used for a single adapter on a SCSI chain. It allows the adapter to sense whether it is at the end of a SCSI chain or in the middle of a SCSI chain. The adapter then enables or disables its built-in SCSI terminators as required.

Default Position of Jumper Block J7 for Automatic Terminator Selection

Jumper J7 Settings			
s4	s3	s2	s1
out	out	out	out

SCSI-2 SE Fast/Wide Adapter Specifications

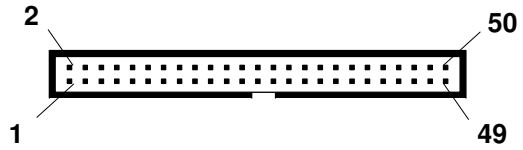
Microcode	No microcode required
Bus architecture	PCI
Interrupt levels	PCI interrupt A
Maximum number	A controller may be installed in any/all available 32 or 64 bit, 33MHz PCI bus slots.
Connectors	External 68-position high-density micro D-Shell Internal 68-position high-density plastic D-Shell Internal 50-pin header (2x25) connector
SCSI bus overcurrent protection device	Positive Temperature Coefficient (PTC) resistor

For information concerning terminators refer to *General SCSI considerations*, on page 1-9.

SCSI-2 SE Fast/Wide Adapter Connectors

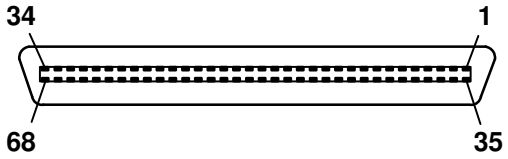
Note: Only one internal connector can have a cable attached at a time.

Internal 50-pin Header (2x25) Connector



Signal Name	Pin	Pin	Signal Name
Ground	1	2	–DB(0)
Ground	3	4	–DB(1)
Ground	5	6	–DB(2)
Ground	7	8	–DB(3)
Ground	9	10	–DB(4)
Ground	11	12	–DB(5)
Ground	13	14	–DB(6)
Ground	15	16	–DB(7)
Ground	17	18	–DB(P)
Ground	19	20	Ground
Ground	21	22	CPRSNT
Reserved	23	24	Reserved
Open	25	26	TERMPWR
Reserved	27	28	Reserved
Ground	29	30	Ground
Ground	31	32	–ATN
Ground	33	34	Ground
Ground	35	36	–BSY
Ground	37	38	–ACK
Ground	39	40	–RST
Ground	41	42	–MSG
Ground	43	44	–SEL
Ground	45	46	–C/D
Ground	47	48	–REQ
Ground	49	50	–I/O

Internal and external 68-Position 16-Bit SCSI Connectors

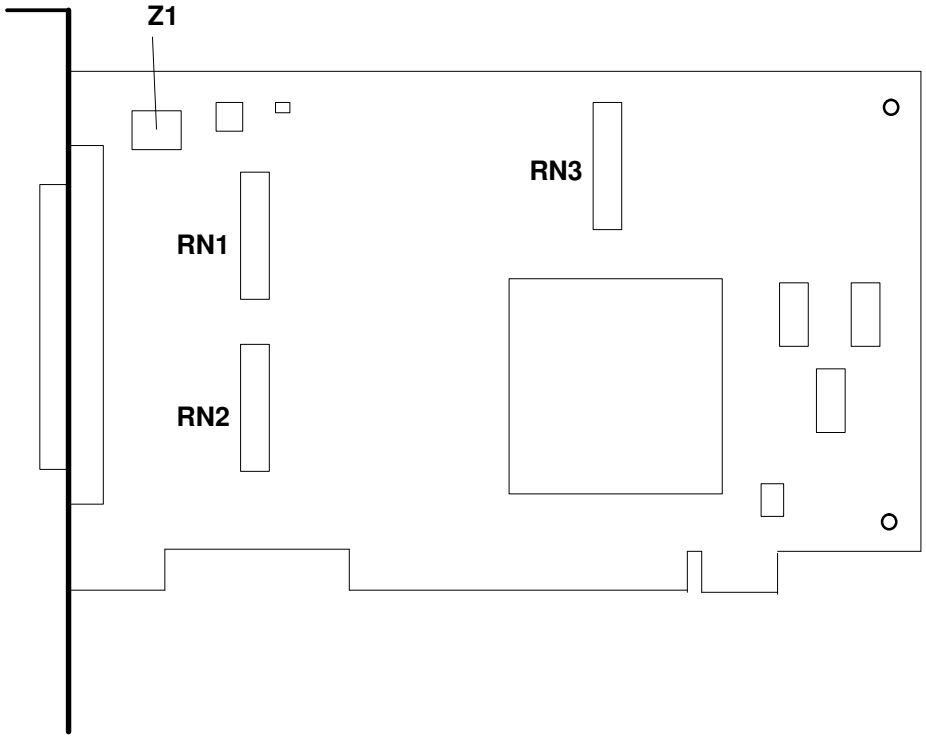


Signal Name	Pin	Pin	Signal Name
Ground	1	35	–DB(12)
Ground	2	36	–DB(13)
Ground	3	37	–DB(14)
Ground/CPRNDT_16*	4	38	–DB(15)
Ground	5	39	–DB(P1)
Ground	6	40	–DB(0)
Ground	7	41	–DB(1)
Ground	8	42	–DB(2)
Ground	9	43	–DB(3)
Ground	10	44	–DB(4)
Ground	11	45	–DB(5)
Reserved*	12	46	–DB(6)
Ground	13	47	–DB(7)
Ground	14	48	–DB(P)
Ground	15	49	Ground
Ground	16	50	CPRNST
TERMPWR	17	51	TERMPWR
TERMPWR	18	52	TERMPWR
Reserved	19	53	Reserved
Ground	20	54	Ground
Ground	21	55	–ATN
Ground	22	56	Ground
Ground	23	57	–BSY
Ground	24	58	–ACK
Ground	25	59	–RST
Ground	26	60	–MSG
Ground	27	61	–SEL
Ground	28	62	C/D
Ground	29	63	–REQ
Ground	30	64	–I/O
Ground	31	65	–DB(8)
Ground	32	66	–DB(0)
Ground	33	67	–DB(10)
Ground	34	68	–DB(11)

Note: * applies to the External Connector only

SCSI-2 Differential Fast/Wide PCI Adapter (Type 4-B)

The SCSI-2 Fast/Wide Adapter enables you to use external differential Small Computer System Interface (SCSI) devices with computers containing a Peripheral Component Interconnect (PCI) bus. The adapter conforms to the American National Standards Institute (ANSI) SCSI-2 standard and the PCI local specification, revision 2.0.



RN1, RN2 and RN3: differential terminator chips.

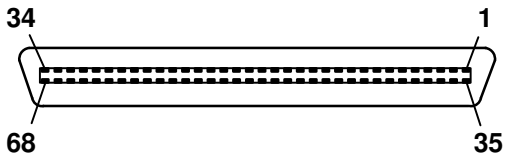
Z1: PTC resistor.

SCSI-2 Differential Fast/Wide Adapter Specifications

Microcode	No microcode required
Bus architecture	PCI
Interrupt levels	Int A
Maximum number	A controller may be installed in any/all available 32 or 64 bit, 33MHz PCI bus slots.
Connectors	External 68-position high-density micro D-Shell
SCSI bus overcurrent protection device	Positive Temperature Coefficient (PTC) resistor

For information concerning terminators refer to *General SCSI considerations*, on page 1-9.

SCSI-2 Fast/Wide SCSI-Bus Adapter Connector



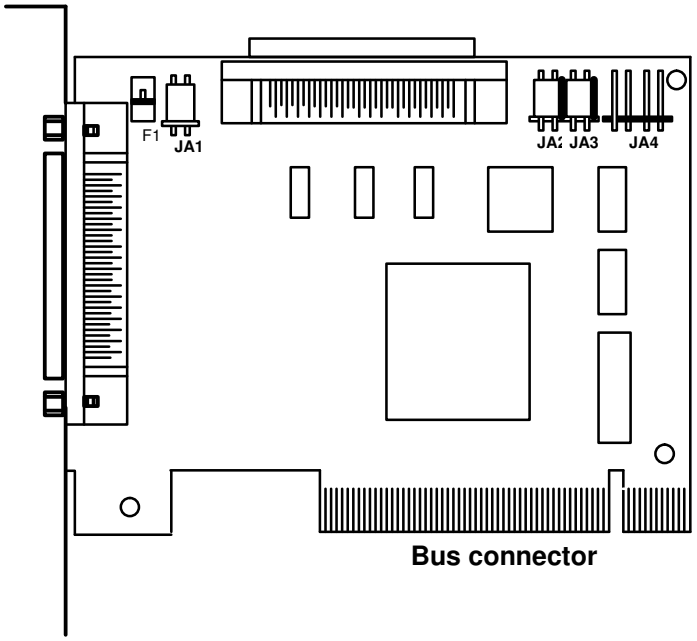
Signal Name	Pin	Pin	Signal Name
+DB(12)	1	35	–DB(12)
+DB(13)	2	36	–DB(13)
+DB(14)	3	37	–DB(14)
+DB(15)	4	38	–DB(15)
+DB(P1)	5	39	–DB(P1)
Ground	6	40	Ground
+DB(0)	7	41	–DB(0)
+DB(1)	8	42	–DB(1)
+DB(2)	9	43	–DB(2)
+DB(3)	10	44	–DB(3)
+DB(4)	11	45	–DB(4)
+DB(5)	12	46	–DB(5)
+DB(6)	13	47	–DB(6)
+DB(7)	14	48	–DB(7)
+DB(P)	15	49	–DB(P)
DIFFSENS	16	50	Ground
TERMPWR	17	51	TERMPWR
TERMPWR	18	52	TERMPWR
Reserved	19	53	Reserved
+ATN	20	54	–ATN
Ground	21	55	Ground
+BSY	22	56	–BSY
+ACK	23	57	–ACK
+RST	24	58	–RST
+MSG	25	59	–MSG
+SEL	26	60	–SEL
+C/D	27	61	–C/D
+REQ	28	62	–REQ
+I/O	29	63	–I/O
Ground	30	64	Ground
+DB(8)	31	65	–DB(8)
+DB(9)	32	66	–DB(9)
+DB(10)	33	67	–DB(10)
+DB(11)	34	68	–DB(11)

SCSI-2 Fast/Wide SE PCI Adapter (Type B4-1)

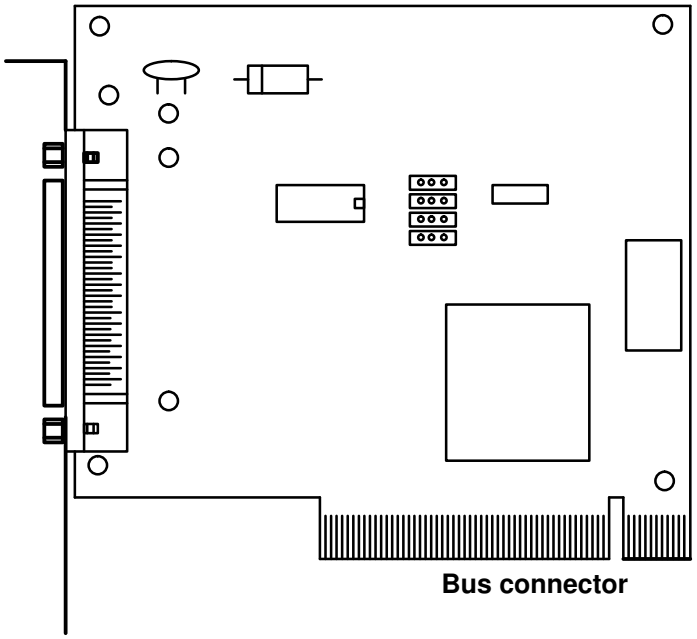
The SCSI-2 Fast/Wide Single Ended (SE) Adapter enables you to use internal and external Small Computer System Interface (SCSI) devices with computers implemented with a Peripheral Component Interconnect (PCI) bus.

An upgrade in the equipment has led to a slight difference in older and newer deliveries of this adapter. When there is a difference between older equipment and newer equipment this is specified.

SCSI–2 Fast Wide SE Adapter Newer Version



SCSI–2 Fast Wide SE Adapter Older Version



SCSI-2 Fast/Wide SE Adapter Specifications

Bus architecture	PCI
Data transfer rate	Wide – 20Mb/s synchronous and 10Mb/s asynchronous Fast/Narrow – 10Mb/s synchronous and 5Mb/s asynchronous
Connectors	68-position connector
Cables/terminators	Refer to the *Cabling Guide*.

For information concerning terminators, refer to *General SCSI considerations*, on page 1-9.

SCSI-2 Fast/Wide SE Adapter Requirements

Temperature

	Newer deliveries	Older deliveries
Operating	+0° C to +55° C	+0° C to +55° C
Storage	–20° C to +70° C	–40° C to +60° C

Humidity

	Newer deliveries	Older deliveries
Operating	10% to 90% *	8% to 85% *
Storage	5% to 95% *	5% to 95% *

*Non-condensing

Altitude

Operating conditions	0 to 3 000 meters
Storage conditions	0 to 5 000 meters

DC Power

Newer deliveries	Older deliveries
+5 Vdc +/– 5%	+5 Vdc +/– 5%
1.0 A max.	0.4 A max.
	25 mV max. ripple

SCSI-2 Fast/Wide SE Adapter Jumper Settings

For Newer Deliveries Only:

Jumper	Default Position	Description
JA1	On	TERM PWR is supplied to the SCSI bus
JA2	On	*Active termination on the SCSI data lines d15 – d8 (upper for wide devices) enabled
JA3	On	*Active termination on the SCSI data lines d7 – d10 (lower for wide/narrow devices) enabled
JA4	Off	LED enabler for an external LED

*When using only an internal connector or only an external connector.

Note: If both internal and external connections are used, then both ends of the bus must be terminated.

SCSI-2 Fast/Wide SE Adapter 68-Position Connector

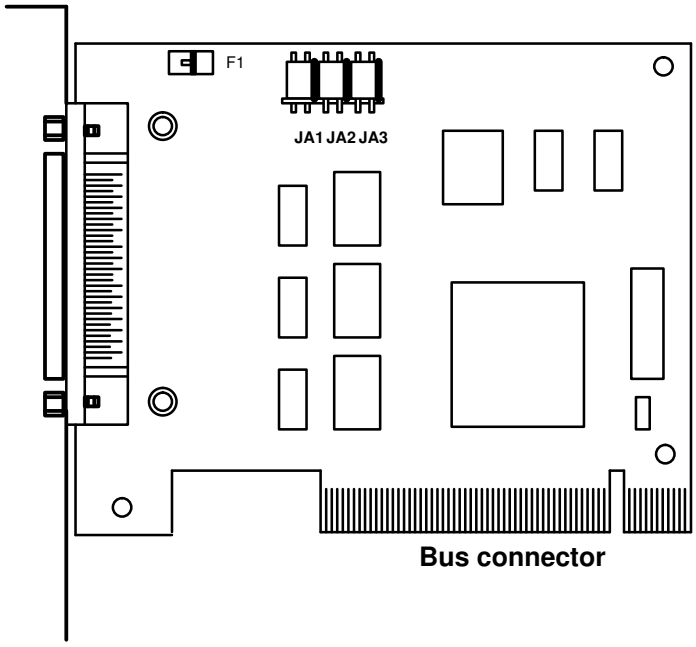
Signal Name	Pin	Pin	Signal Name
Ground	1	35	–DB(12)
Ground	2	36	–DB(13)
Ground	3	37	–DB(14)
Ground	4	38	–DB(15)
Ground	5	39	–DB(P1)
Ground	6	40	–DB(0)
Ground	7	41	–DB(1)
Ground	8	42	–DB(2)
Ground	9	43	–DB(3)
Ground	10	44	–DB(4)
Ground	11	45	–DB(5)
Ground	12	46	–DB(6)
Ground	13	47	–DB(7)
Ground	14	48	–DB(P)
Ground	15	49	Ground
Ground	16	50	Ground
TERMPWR	17	51	TERMPWR
TERMPWR	18	52	TERMPWR
Reserved	19	53	Reserved
Ground	20	54	Ground
Ground	21	55	–ATN
Ground	22	56	Ground
Ground	23	57	–BSY
Ground	24	58	–ACK
Ground	25	59	–RST
Ground	26	60	–MSG
Ground	27	61	–SEL
Ground	28	62	–C/D
Ground	29	63	–REQ
Ground	30	64	–I/O
Ground	31	65	–DB(8)
Ground	32	66	–DB(9)
Ground	33	67	–DB(10)
Ground	34	68	–DB(11)

SCSI-2 Fast/Wide DE PCI Adapter (Type B4-2)

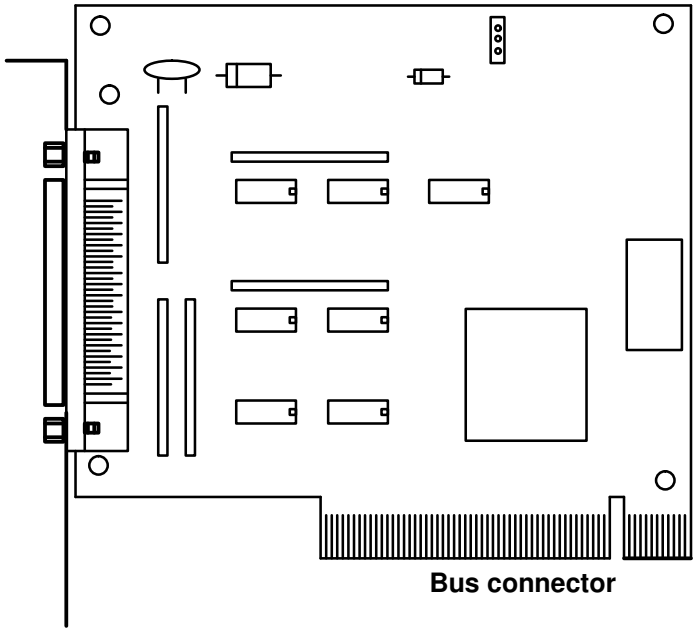
The SCSI-2 Fast/Wide Adapter enables you to use internal and external Small Computer System Interface (SCSI) devices with computers implemented with a Peripheral Component Interconnect (PCI) bus.

An upgrade in the equipment has led to a slight difference in older and newer deliveries of this adapter. When there is a difference between older equipment and newer equipment this is specified.

SCSI-2 Fast/Wide DE Adapter Newer Version



SCSI-2 Fast/Wide DE Adapter Older Version



SCSI-2 Fast/Wide DE Adapter Specifications

Bus architecture	PCI
Data transfer rate	Wide – 20Mb/s synchronous and 10Mb/s asynchronous Fast/Narrow – 10Mb/s synchronous and 5Mb/s asynchronous
Connectors	68-position connector
Cables/terminators	Refer to the *Cabling Guide*

For information concerning terminators, refer to *General SCSI considerations*, on page 1-9.

SCSI-2 Fast/Wide DE Adapter Requirements

Temperature

	Newer deliveries	Older deliveries
Operating	+0° C to +55° C	+0° C to +55° C
Storage	–20° C to +70° C	–40° C to +60° C

Humidity

	Newer deliveries	Older deliveries
Operating	10% to 90% *	8% to 85% *
Storage	5% to 95% *	5% to 95% *

*Non-condensing

Altitude

Operating conditions	0 to 3 000 meters
Storage conditions	0 to 5 000 meters

DC Power

Newer deliveries	Older deliveries
+5 Vdc +/– 5%	+5 Vdc +/– 5%
1.0 A max.	0.4 A max.
	25 mV max. ripple

SCSI-2 Fast/Wide DE Adapter Jumper Settings

For Newer Deliveries Only:

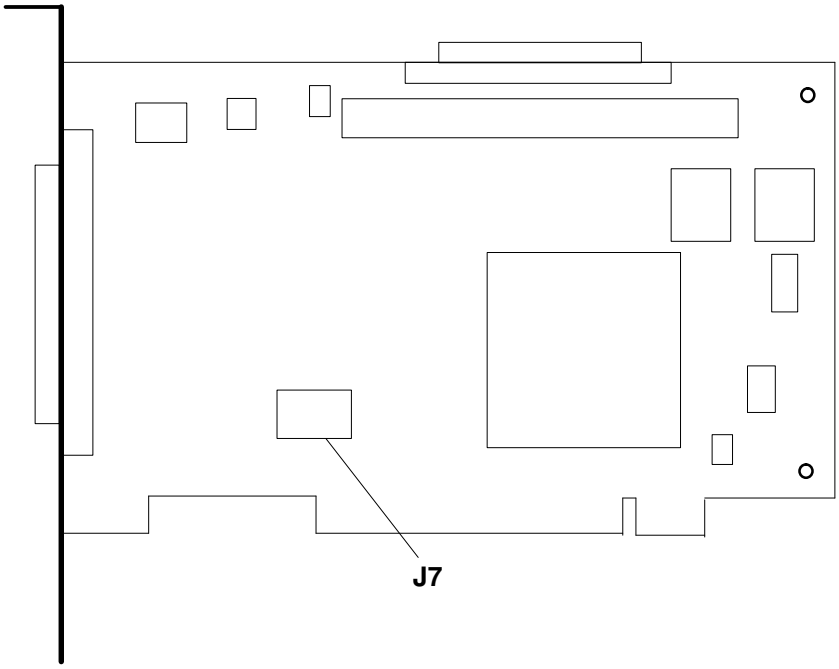
Jumper	Default Position	Description
JA1	On	TERM PWR is supplied to the SCSI bus
JA2	Off	If jumper **OFF**: active termination on the SCSI data lines d7 – d10 (lower for wide/narrow devices) enabled
JA3	Off	If jumper **OFF**: active termination on the SCSI data lines d15 – d8 (upper for wide devices) enabled

SCSI-2 Fast/Wide DE Adapter 68-Position Connector

Signal Name	Pin	Pin	Signal Name
Ground	1	35	–DB(12)
Ground	2	36	–DB(13)
Ground	3	37	–DB(14)
Ground	4	38	–DB(15)
Ground	5	39	–DB(P1)
Ground	6	40	–DB(0)
Ground	7	41	–DB(1)
Ground	8	42	–DB(2)
Ground	9	43	–DB(3)
Ground	10	44	–DB(4)
Ground	11	45	–DB(5)
Ground	12	46	–DB(6)
Ground	13	47	–DB(7)
Ground	14	48	–DB(P)
Ground	15	49	Ground
Ground	16	50	Ground
TERMPWR	17	51	TERMPWR
TERMPWR	18	52	TERMPWR
Reserved	19	53	Reserved
Ground	20	54	Ground
Ground	21	55	–ATN
Ground	22	56	Ground
Ground	23	57	–BSY
Ground	24	58	–ACK
Ground	25	59	–RST
Ground	26	60	–MSG
Ground	27	61	–SEL
Ground	28	62	–C/D
Ground	29	63	–REQ
Ground	30	64	–I/O
Ground	31	65	–DB(8)
Ground	32	66	–DB(9)
Ground	33	67	–DB(10)
Ground	34	68	–DB(11)

Single-Ended Ultra SCSI PCI Adapter (Type 4-K)

The Single-Ended Ultra SCSI Adapter enables you to use internal and external Small Computer System Interface (SCSI) devices with computers containing a Peripheral Component Interconnect (PCI) bus.



Jumper Settings and Multi-Adapter Configurations

The table below shows the default configuration for jumper block J7 on the SCSI adapter. The adapter is shipped with the jumpers in this configuration. This configuration is used for a single adapter on a SCSI chain. It allows the adapter to sense whether it is at the end of a SCSI chain or in the middle of a SCSI chain. The adapter then enables or disables its built-in SCSI terminators as required.

Default Position of Jumper Block J7 for Automatic Terminator Selection

Jumper J7 Settings			
s4	s3	s2	s1
out	out	out	out

SCSI-2 SE Fast/Wide Adapter Specifications

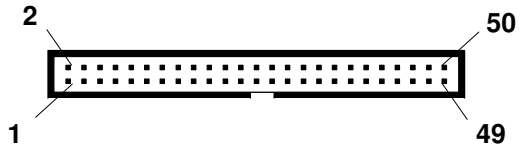
Microcode	No microcode required
Bus architecture	PCI
Interrupt levels	PCI interrupt A
Maximum number	An adapter may be installed in any/all available 32 or 64 bit, 33MHz PCI bus slots.
Connectors	External 68-position high-density micro D-Shell Internal 68-position high-density plastic D-Shell Internal 50-pin header (2x25) connector
SCSI bus overcurrent protection device	Positive Temperature Coefficient (PTC) resistor

For information concerning terminators refer to *General SCSI considerations*, on page 1-9.

Single-Ended Ultra SCSI Adapter Connectors

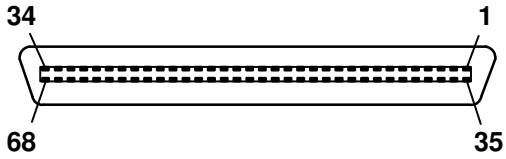
Note: Only one internal connector can have a cable attached at a time.

Internal 50-pin Header (2x25) Connector



Signal Name	Pin	Pin	Signal Name
Ground	1	2	–DB(0)
Ground	3	4	–DB(1)
Ground	5	6	–DB(2)
Ground	7	8	–DB(3)
Ground	9	10	–DB(4)
Ground	11	12	–DB(5)
Ground	13	14	–DB(6)
Ground	15	16	–DB(7)
Ground	17	18	–DB(P)
Ground	19	20	Ground
Ground	21	22	CPRNST
Reserved	23	24	Reserved
Open	25	26	TERMPWR
Reserved	27	28	Reserved
Ground	29	30	Ground
Ground	31	32	–ATN
Ground	33	34	Ground
Ground	35	36	–BSY
Ground	37	38	–ACK
Ground	39	40	–RST
Ground	41	42	–MSG
Ground	43	44	–SEL
Ground	45	46	–C/D
Ground	47	48	–REQ
Ground	49	50	–I/O

Internal and external 68-Position 16-Bit SCSI Connectors

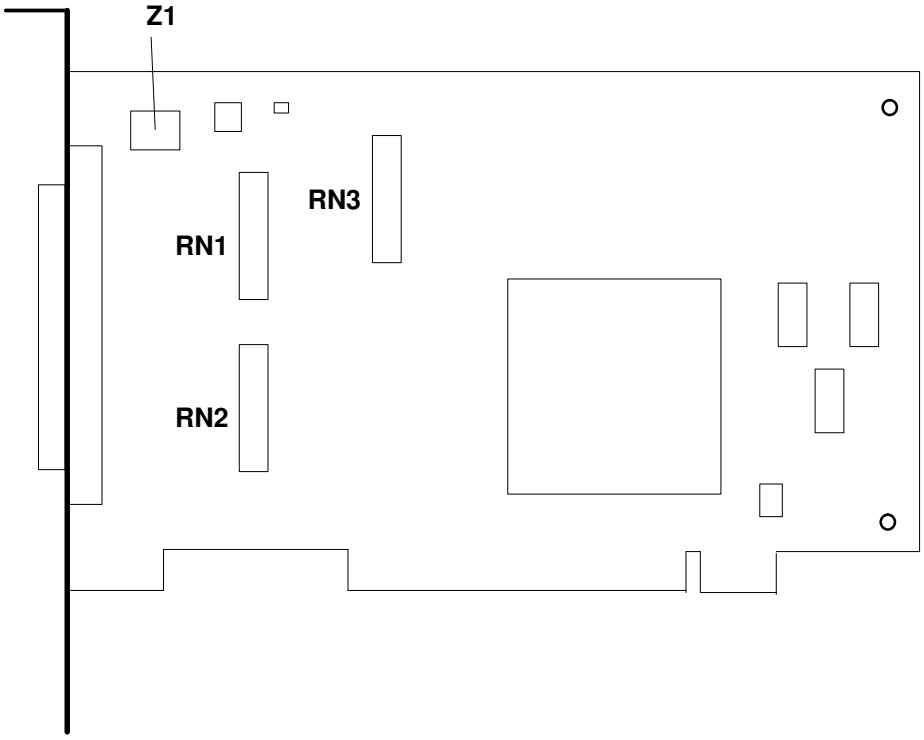


Signal Name	Pin	Pin	Signal Name
Ground	1	35	–DB(12)
Ground	2	36	–DB(13)
Ground	3	37	–DB(14)
Ground/CPRNDT_16*	4	38	–DB(15)
Ground	5	39	–DB(P1)
Ground	6	40	–DB(0)
Ground	7	41	–DB(1)
Ground	8	42	–DB(2)
Ground	9	43	–DB(3)
Ground	10	44	–DB(4)
Ground	11	45	–DB(5)
Reserved*	12	46	–DB(6)
Ground	13	47	–DB(7)
Ground	14	48	–DB(P)
Ground	15	49	Ground
Ground	16	50	CPRNST
TERMPWR	17	51	TERMPWR
TERMPWR	18	52	TERMPWR
Reserved	19	53	Reserved
Ground	20	54	Ground
Ground	21	55	–ATN
Ground	22	56	Ground
Ground	23	57	–BSY
Ground	24	58	–ACK
Ground	25	59	–RST
Ground	26	60	–MSG
Ground	27	61	–SEL
Ground	28	62	C/D
Ground	29	63	–REQ
Ground	30	64	–I/O
Ground	31	65	–DB(8)
Ground	32	66	–DB(0)
Ground	33	67	–DB(10)
Ground	34	68	–DB(11)

Note: * applies to the External Connector only

Enhanced Ultra SCSI Differential PCI Adapter (Type 4-L)

The Enhanced Differential Ultra SCSI Adapter enables you to use external differential Small Computer System Interface (SCSI) devices with computers containing a Peripheral Component Interconnect (PCI) bus.



RN1, RN2 and RN3: differential terminator chips.

Z1: PTC resistor

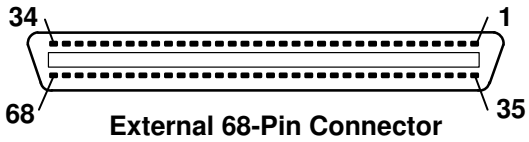
Ultra SCSI Differential Adapter Specifications

Microcode	No microcode required
Interrupt levels	Int A
Bus architecture	PCI
Maximum number	A controller may be installed in any/all available 32 or 64 bit, 33MHz PCI bus slots.
Connectors	External 68-position high-density micro D-Shell
SCSI bus overcurrent protection device	Positive Temperature Coefficient (PTC) resistor

For information concerning terminators refer to *General SCSI considerations*, on page 1-9.

External 68-Position 16-Bit Differential High-Density SCSI Bus Connector

The following table gives the pinout information for the external 68-pin 16-bit connector.



External 68-Pin Connector

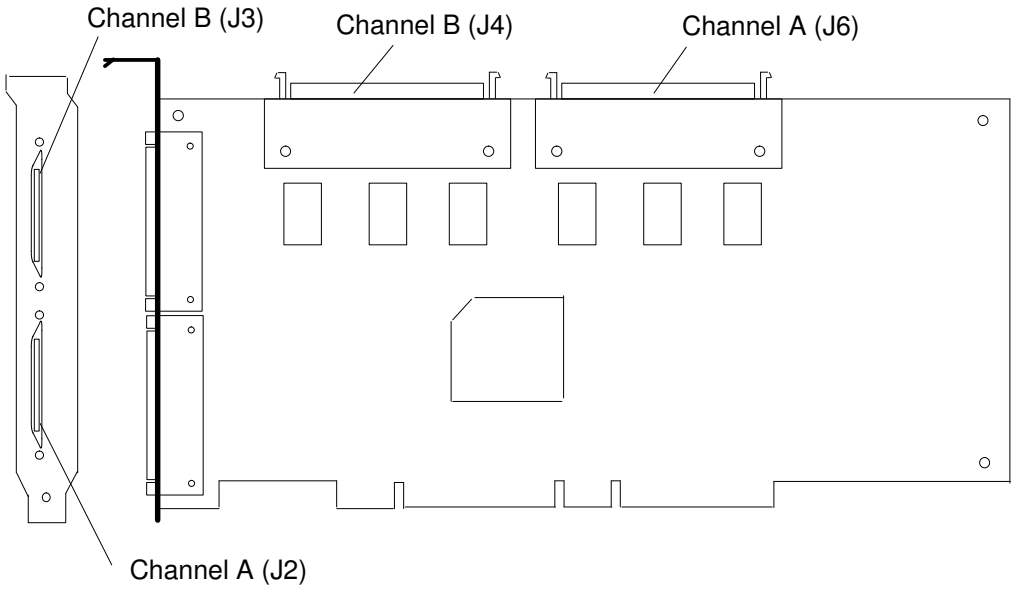
Signal Name	Pin	Pin	Signal Name
+DB(12)	1	35	–DB(12)
+DB(13)	2	36	–DB(13)
+DB(14)	3	37	–DB(14)
+DB(15)	4	38	–DB(15)
+DB(P1)	5	39	–DB(P1)
Ground	6	40	Ground
+DB(0)	7	41	–DB(0)
+DB(1)	8	42	–DB(1)
+DB(2)	9	43	–DB(2)
+DB(3)	10	44	–DB(3)
+DB(4)	11	45	–DB(4)
+DB(5)	12	46	–DB(5)
+DB(6)	13	47	–DB(6)
+DB(7)	14	48	–DB(7)
+DB(P)	15	49	–DB(P)
DIFFSENS	16	50	Ground
TERMPWR	17	51	TERMPWR
TERMPWR	18	52	TERMPWR
Reserved	19	53	Reserved
+ATN	20	54	–ATN
Ground	21	55	Ground
+BSY	22	56	–BSY
+ACK	23	57	–ACK
+RST	24	58	–RST
+MSG	25	59	–MSG
+SEL	26	60	–SEL
+C/D	27	61	–C/D
+REQ	28	62	–REQ
+I/O	29	63	–I/O
Ground	30	64	Ground
+DB(8)	31	65	–DB(8)
+DB(9)	32	66	–DB(9)
+DB(10)	33	67	–DB(10)
+DB(11)	34	68	–DB(11)

Dual-Channel Ultra2 SCSI PCI Adapter (Type 4-R)

Th Dual-channel Ultra2 SCSI adapter enables you to use internal or external single-ended or low-voltage differential (LVD) small computer system interface (SCSI) devices with computers containing a peripheral component interconnect (PCI) type bus. This adapter provides two channels for SCSI devices (channel A and channel B).

The Dual-channel Ultra2 SCSI adapter has both an internal and an external connector on each channel. Only one connector (internal or external) can be used on each channel.

Note: Devices *cannot* be attached to both the internal and the external connector on the same channel (A or B).

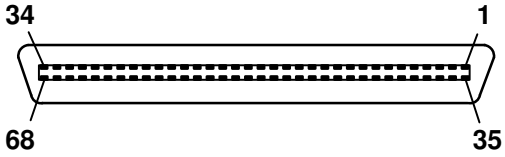


Dual-Channel Ultra2 SCSI Adapter Specifications

Microcode	No microcode required
Bus architecture	PCI
Interrupt levels	PCI interrupt A
Maximum number	A controller may be installed in supported 32 or 64 bit, 33MHz PCI bus slots.
Connectors	Each channel (A and B) has both an internal and an external connector, however, only one connector on each can have devices attached. External 68-position, very-high-density cable interconnect (VHDCI) Internal 68-position high-density plastic D-Shell
SCSI bus overcurrent protection device	Positive Temperature Coefficient (PTC) resistor

For information concerning terminators refer to *General SCSI considerations*, on page 1-9.

Dual-Channel Ultra2 SCSI Adapter Connectors



Signal Name		Connectors		Signal Name
SE	LVD	Pin	Pin	SE and LVD
Ground	+DB(12)	1	35	–DB(12)
Ground	+DB(13)	2	36	–DB(13)
Ground	+DB(14)	3	37	–DB(14)
Ground/CPRNDT_16	+DB(15)	4	38	–DB(15)
Ground	+DB(P1)	5	39	–DB(P1)
Ground	+DB(0)	6	40	–DB(0)
Ground	+DB(1)	7	41	–DB(1)
Ground	+DB(2)	8	42	–DB(2)
Ground	+DB(3)	9	43	–DB(3)
Ground	+DB(4)	10	44	–DB(4)
Ground	+DB(5)	11	45	–DB(5)
Reserved	+DB(6)	12	46	–DB(6)
Ground	+DB(7)	13	47	–DB(7)
Ground	+DB(P)	14	48	–DB(P)
Ground	Ground	15	49	Ground
Ground	DIFFSENS	16	50	CPRNST
TERMPWR	TERMPWR	17	51	TERMPWR
TERMPWR	TERMPWR	18	52	TERMPWR
Reserved	Reserved	19	53	Reserved
Ground	Ground	20	54	Ground
Ground	+ATN	21	55	–ATN
Ground	Ground	22	56	Ground
Ground	+BSY	23	57	–BSY
Ground	+ACK	24	58	–ACK
Ground	+RST	25	59	–RST
Ground	+MSG	26	60	–MSG
Ground	+SEL	27	61	–SEL
Ground	+C/D	28	62	–C/D
Ground	+REQ	29	63	–REQ
Ground	+I/O	30	64	–I/O
Ground	+DB(8)	31	65	–DB(8)
Ground	+DB(9)	32	66	–DB(0)
Ground	+DB(10)	33	67	–DB(10)
Ground	+DB(11)	34	68	–DB(11)

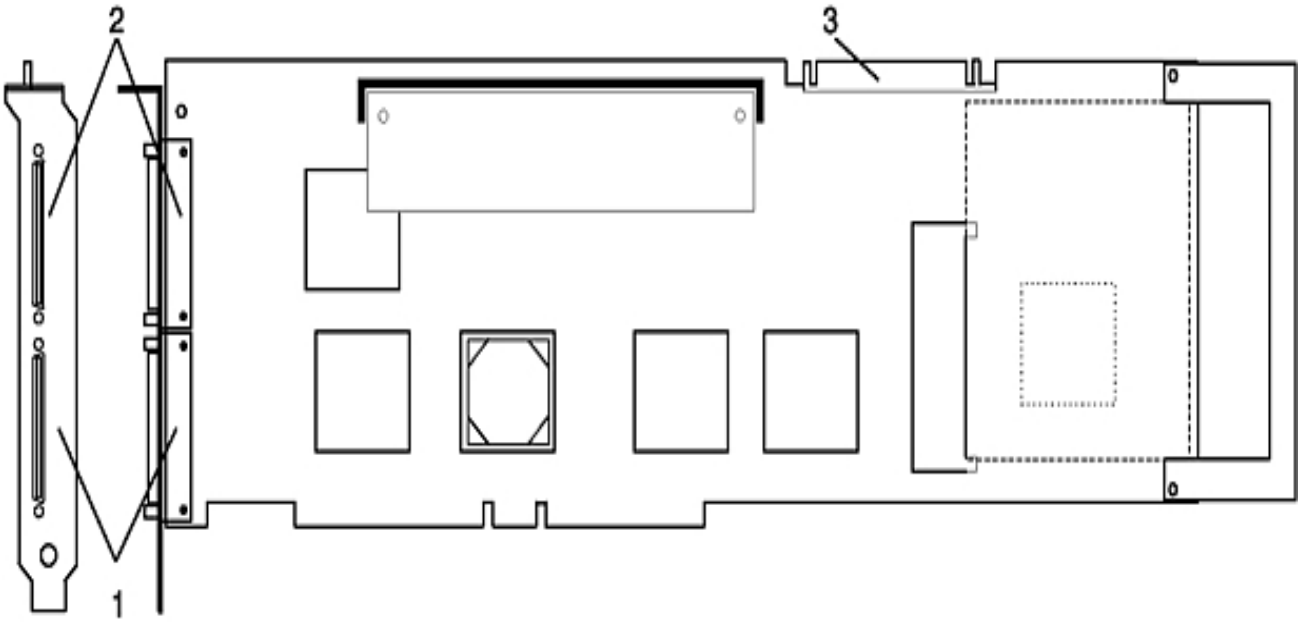
Notes:

1. For 8-bit SE devices that connect to the P-cable, tie the following signals inactive high: –DB(8), –DB(9), –DB(10), –DB(11), –DB(12), –DB(13), –DB(14), –DB(15), –DB(P1), or select Disable Wide Negotions on the front option jumper block and float the same signal lines.
2. For 8-bit LVD devices or SE mode, the following signals must be tied inactive (+ = inactive low, – = inactive high): +/–DB(8), +/–DB(9), +/–DB(10), +/–DB(11), +/–DB(12), +/–DB(13), +/–DB(14), +/–DB(15), +/–DB(P1). Floating these signals is not sufficient.
   All other signals shall be connected as defined.

PCI 3-Channel Ultra2 SCSI RAID Adapter (Type 4-T)

The PCI 3–Channel Ultra2 SCSI RAID Adapter (Type 4–T) allows you to connect SCSI hard disk drives in RAID 0, 1 and 5 configurations to system units with a Peripheral Component Interconnect (PCI) bus. This adapter only supports SCSI hard disk drives.

Note: Other SCSI devices *cannot* be attached to the PCI 3–Channel Ultra2 SCSI RAID Adapter.



1 Channel A: 68–pin SCSI Very High Density Connector Interface external connector.

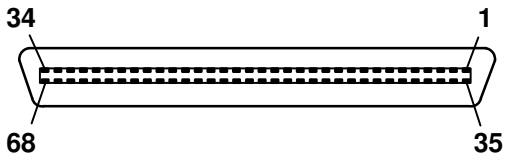
2 Channel B: 68–pin SCSI Very High Density Connector Interface external connector.

3 Channel C: 68–pin SCSI standard internal connector.

PCI 3-Channel Ultra2 SCSI Adapter Specifications

Microcode	No microcode required
Bus architecture	PCI
Interrupt levels	PCI interrupt A
Maximum number	A controller may be installed in supported 32 or 64 bit, 33MHz PCI bus slots.
Connectors	Each channel (A, B and C) has both an internal and an external connector, however, only one connector on each can have devices attached. External 68-position, very-high-density cable interconnect (VHDCI) Internal 68-position high-density plastic D-Shell
SCSI bus overcurrent protection device	Positive Temperature Coefficient (PTC) resistor

PCI 3-Channel Ultra2 SCSI Adapter Connectors



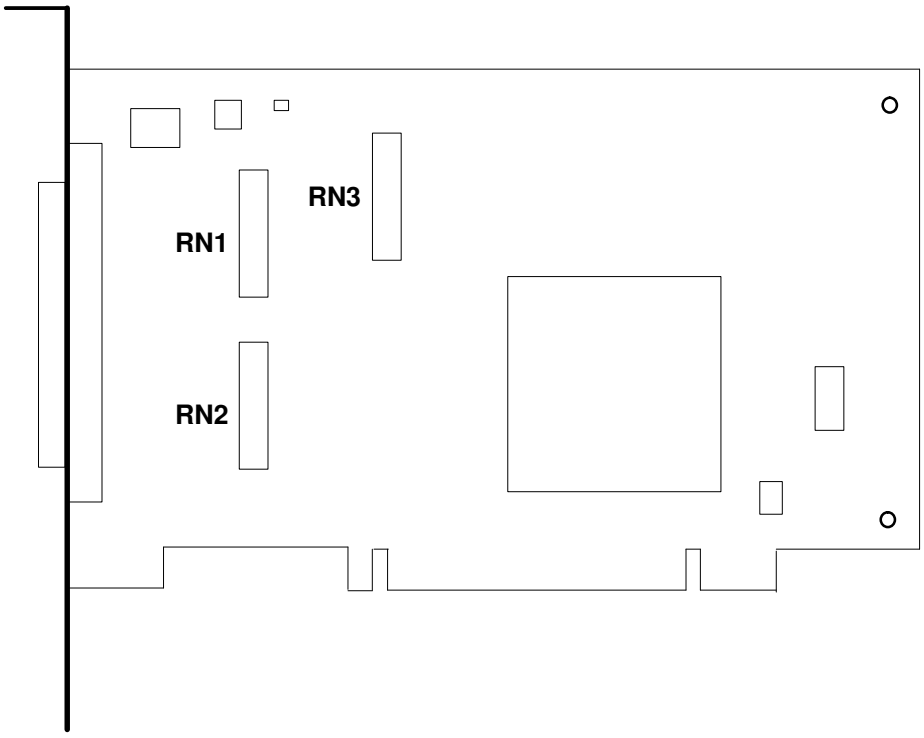
Signal Name		Connectors		Signal Name
SE	LVD	Pin	Pin	SE and LVD
Ground	+DB(12)	1	35	–DB(12)
Ground	+DB(13)	2	36	–DB(13)
Ground	+DB(14)	3	37	–DB(14)
Ground	+DB(15)	4	38	–DB(15)
Ground	+DB(P1)	5	39	–DB(P1)
Ground	+DB(0)	6	40	–DB(0)
Ground	+DB(1)	7	41	–DB(1)
Ground	+DB(2)	8	42	–DB(2)
Ground	+DB(3)	9	43	–DB(3)
Ground	+DB(4)	10	44	–DB(4)
Ground	+DB(5)	11	45	–DB(5)
Ground	+DB(6)	12	46	–DB(6)
Ground	+DB(7)	13	47	–DB(7)
Ground	+DB(P)	14	48	–DB(P)
Ground	Ground	15	49	Ground
Ground	DIFFSENS	16	50	CPRNST
TERMPWR	TERMPWR	17	51	TERMPWR
TERMPWR	TERMPWR	18	52	TERMPWR
Reserved	Reserved	19	53	Reserved
Ground	Ground	20	54	Ground
Ground	+ATN	21	55	–ATN
Ground	Ground	22	56	Ground
Ground	+BSY	23	57	–BSY
Ground	+ACK	24	58	–ACK
Ground	+RST	25	59	–RST
Ground	+MSG	26	60	–MSG
Ground	+SEL	27	61	–SEL
Ground	+C/D	28	62	–C/D
Ground	+REQ	29	63	–REQ
Ground	+I/O	30	64	–I/O
Ground	+DB(8)	31	65	–DB(8)
Ground	+DB(9)	32	66	–DB(0)
Ground	+DB(10)	33	67	–DB(10)
Ground	+DB(11)	34	68	–DB(11)

Notes:

3. For 8-bit SE devices that connect to the P-cable, tie the following signals inactive high: –DB(8), –DB(9), –DB(10), –DB(11), –DB(12), –DB(13), –DB(14), –DB(15), –DB(P1).
4. For 8-bit LVD devices or SE mode, the following signals must be tied inactive (+ = inactive low, – = inactive high): +/–DB(8), +/–DB(9), +/–DB(10), +/–DB(11), +/–DB(12), +/–DB(13), +/–DB(14), +/–DB(15), +/–DB(P1). Floating these signals is not sufficient.
   All other signals shall be connected as defined.

PCI Universal Differential Ultra SCSI Adapter (Type 4–U)

The PCI Universal Differential Ultra SCSI Adapter enables you to use external differential small computer system interface (SCSI) devices with computers containing a Peripheral Component Interconnect (PCI) bus.



RN1, RN2 and RN3: differential terminator chips.

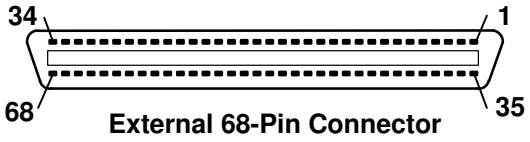
PCI Universal Differential Ultra SCSI Adapter Specifications

Microcode	No microcode required
Interrupt Levels	Int A
Bus architecture	PCI
Maximum number	A controller may be installed in any/all available 32 or 64 bit, 33 MHz PCI bus slots
Connectors	External 68–position high–density micro D–shell
SCSI bus overcurrent protection device	Positive btemperature coefficient (PTC) resistor

For information concerning terminators refer to *General SCSI considerations*, on page 1-9

PCI Differential Ultra SCSI Adapter Connector

THe following table shows the pinout information for the4 external 68–pin 16–bit SCSI connector.

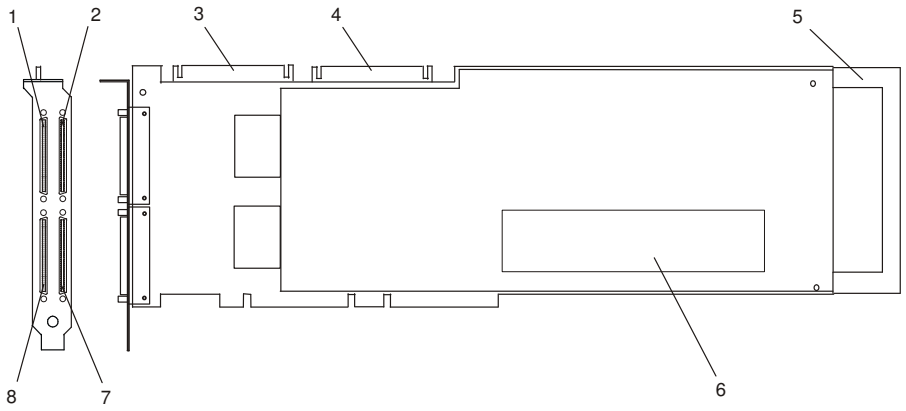


External 68-Pin Connector

Signal Name	Pin	Pin	Signal Name
+DB(12)	1	35	–DB(12)
+DB(13)	2	36	–DB(13)
+DB(14)	3	37	–DB(14)
+DB(15)	4	38	–DB(15)
+DB(P1)	5	39	–DB(P1)
Ground	6	40	Ground
+DB(0)	7	41	–DB(0)
+DB(1)	8	42	–DB(1)
+DB(2)	9	43	–DB(2)
+DB(3)	10	44	–DB(3)
+DB(4)	11	45	–DB(4)
+DB(5)	12	46	–DB(5)
+DB(6)	13	47	–DB(6)
+DB(7)	14	48	–DB(7)
+DB(P)	15	49	–DB(P)
DIFFSENS	16	50	Ground
TERMPWR	17	51	TERMPWR
TERMPWR	18	52	TERMPWR
Reserved	19	53	Reserved
+ATN	20	54	–ATN
Ground	21	55	Ground
+BSY	22	56	–BSY
+ACK	23	57	–ACK
+RST	24	58	–RST
+MSG	25	59	–MSG
+SEL	26	60	–SEL
+C/D	27	61	–C/D
+REQ	28	62	–REQ
+I/O	29	63	–I/O
Ground	30	64	Ground
+DB(8)	31	65	–DB(8)
+DB(9)	32	66	–DB(9)
+DB(10)	33	67	–DB(10)
+DB(11)	34	68	–DB(11)

PCI 4–Channel Ultra3 SCSI RAID Adapter (Type 4–X)

The PCI 4–Channel Ultra3 SCSI RAID Adapter allows you to use internal and external small computer system interface (SCSI) devices with computers containing the Peripheral Component Interconnect (PCI) in RAID configurations.



1 Channel 1 connector (68–pin VHDCI)
2 Channel 2 connector (68–pin VHDCI)
3 Channel 1 connector (68–pin high–density plastic D–shell)
4 Channel 2 connector (68–pin high–density plastic D–shell)
5 Handle
6 Memory
7 Channel 3 connector (68–pin VHDCI)
8 Channel 4 connector (68–pin VHDCI)

PCI 4–Channel Ultra3 SCSI RAID Adapter Specifications

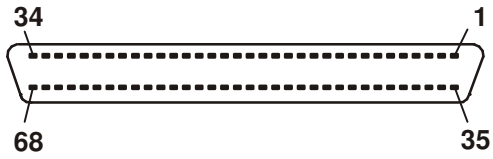
FRU numbers	Base card, 37L6892 128 MB write cache with battery, 37L6902, U.S. 128 MB write cache with battery, 19K0561, Japan Battery for write cache, 37L6903, U.S. Battery for write cache, 00N9561, Japan
Microcode	Provided on adapter
I/O bus architecture	PCI
InterruptPCI	interrupt A
Adapter slots	For system specific adapter placement, see the *PCI Adapter Placement Reference Guide*, order number SA23–2504.
Connectors	External, four 68–pin very high–density connector interface (VHDCI)Internal, two 68–pin high–density plastic D–Shell
SCSI bus overcurrent Protection device	Positive temperature coefficient (PTC) resistor.

Notes:

1. For information on configuring disk arrays attached to this adapter, see *Ultra3 SCSI PCI RAID Adapter Reference Guide*, order number 86 A1 87JX.
2. Only supported disk drives can be connected to the adapter. Other SCSI devices cannot be connected to the SCSI bus.

Internal/External 68–Pin 16–Bit SCSI Connector

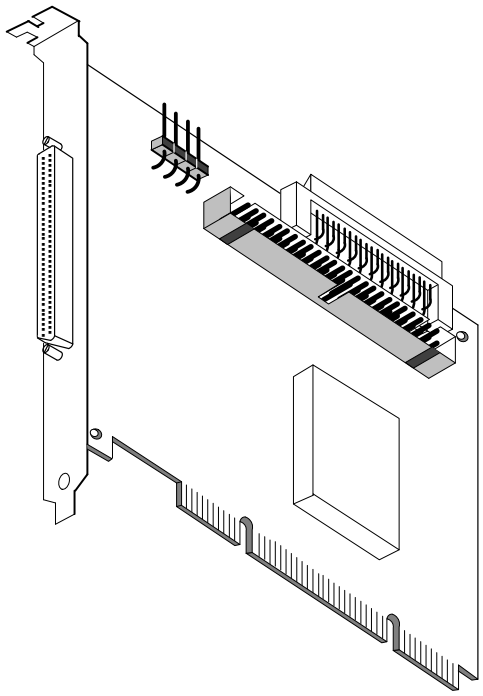
The following table shows the pinout for the internal and external 68–pin SCSI connectors.



Signal Name		Connector		Signal Name
SE	LVD	Pin	Pin	SE and LVD
Ground	+DB(12)	1	35	–DB(12)
Ground	+DB(13)	2	36	–DB(13)
Ground	+DB(14)	3	37	–DB(14)
Ground	+DB(15)	4	38	–DB(15)
Ground	+DB(P1)	5	39	–DB(P1)
Ground	+DB(0)	6	40	–DB(0)
Ground	+DB(1)	7	41	–DB(1)
Ground	+DB(2)	8	42	–DB(2)
Ground	+DB(3)	9	43	–DB(3)
Ground	+DB(4)	10	44	–DB(4)
Ground	+DB(5)	11	4	–DB(5)
Reserved	+DB(6)	12	46	–DB(6)
Ground	+DB(7)	13	47	–DB(7)
Ground	+DB(P)	14	48	–DB(P)
Ground	Ground	15	49	Ground
Ground	DIFFSENS	16	50	Ground
TERMPWR	TERMPWR	17	51	TERMPWR
TERMPWR	TERMPWR	18	52	TERMPWR
Reserved	Reserved	19	53	Reserved
Ground	Ground	20	54	Ground
Ground	+ATN	21	55	–ATN
Ground	Ground	22	56	Ground
Ground	+BSY	23	57	–BSY
Ground	+ACK	24	58	–ACK
Ground	+RST	25	59	–RST
Ground	+MSG	26	60	–MSG
Ground	+SEL	27	61	–SEL
Ground	+C/D	28	62	–C/D
Ground	+REQ	29	63	–REQ
Ground	+I/O	30	64	–I/O
Ground	+DB(8)	31	65	–DB(8)
Ground	+DB(9)	32	66	–DB(9)
Ground	+DB(10)	33	67	–DB(10)
Ground	+DB(11)	34	68	–DB(11)

Ultra SCSI SE Host PCI Adapter (Type B4-5)

The Ultra SCSI SE Host Adapter combines high Ultra SCSI data transfer rates with the high performance PCI system bus. It ensures compatibility with SCSI-1 and SCSI-2 Fast devices as well as with Ultra SCSI devices.



Ultra SCSI SE Host Adapter Specifications

Bus architecture	PCI 2.1
Bus master	Yes
Connectors	Internal 50-pin low density Internal 68-position 16-bit High-Density SCSI bus External 68-position 16-bit High-Density SCSI bus
Cables/terminators	Refer to the *Cabling Guide*.

The host adapter recognizes the type of peripheral device (8-bit, 16-bit) connected and automatically enables active termination accordingly. For more information concerning terminators also refer to *General SCSI considerations*, on page 1-9.

The ability to lock the external SCSI connector in Fast/Wide mode is not supported by this adapter. The selection of Fast/Wide or Ultra SCSI mode is automatically performed on a per peripheral protocol negotiation basis.

Note: The item below, which appears in the lsattr command, is not applicable to this adapter:

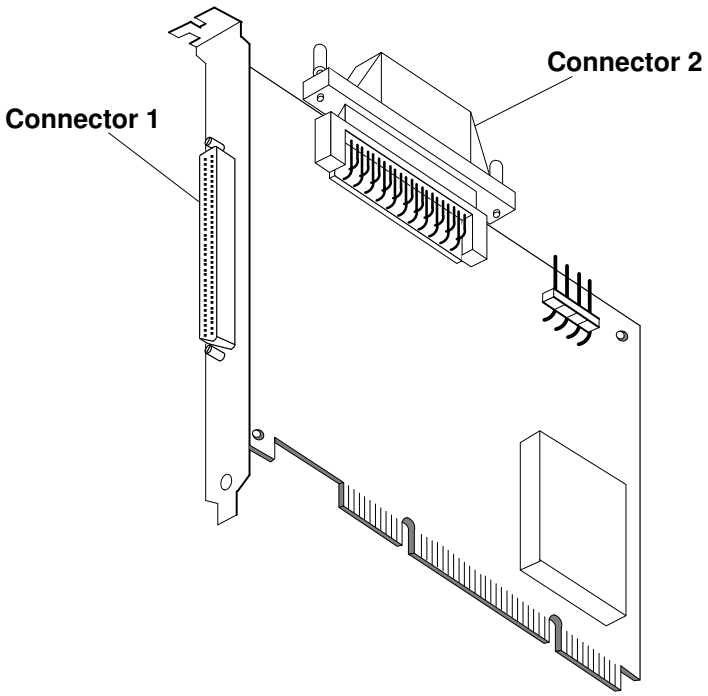
```
ext_se_ultra  disabled  Enable ULTRA speed on SE bus with external cable
```

Ultra SCSI SE Host Adapter Requirements

Operating Temperature	+5 °C to +55 °C
Storage Temperature	–55 °C to +85 °C
Relative Humidity	5% to 90% non-condensing
Max. Dew Point Temperature	32 °C
Electrical	5 V +/– 5% (1.5 A max.) 12 V +/– 5% (50 mA max.)

Ultra SCSI DE Host PCI Adapter (Type B4-6)

The Ultra SCSI DE Host Adapter combines high Ultra SCSI data transfer rates with the high performance PCI system bus. It ensures compatibility with SCSI-1 and SCSI-2 Fast devices as well as with Ultra SCSI devices.



Connector 1 and connector 2 are physically connected within the adapter. There is no internal termination. You can plug either an internal cable and disks, or an external cable and disks but not at the same time.

A terminator can be placed either on connector 1 or connector 2.

Ultra SCSI DE Host Adapter Specifications

Bus architecture	PCI 2.1
Bus master	Yes
Connectors	External 68-position 16-bit Differential High-Density SCSI bus
Cables/terminators	Refer to the *Cabling Guide*.

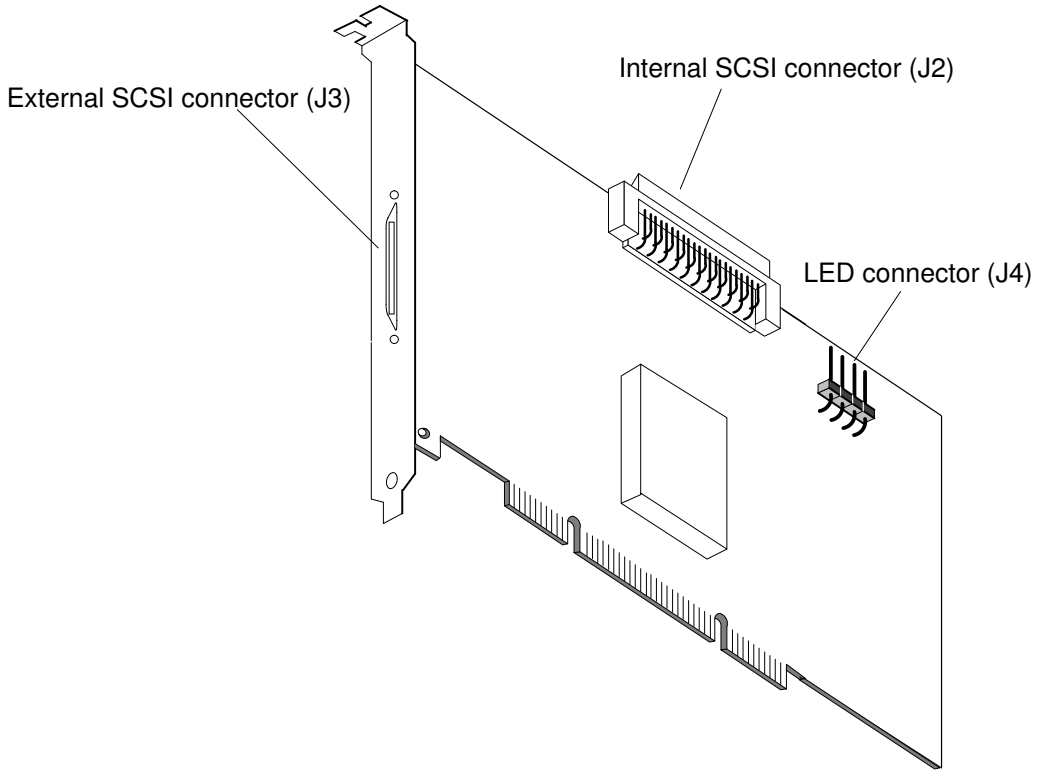
For more information concerning terminators also refer to *General SCSI considerations*, on page 1-9.

Ultra SCSI DE Host Adapter Requirements

Operating Temperature	+5 °C to +55 °C
Storage Temperature	–55 °C to +85 °C
Relative Humidity	5% to 90% non-condensing
Max. Dew Point Temperature	32 °C
Electrical	5 V +/– 5% (1.5 A max.) 12 V +/– 5% (50 mA max.)

Ultra2 SCSI SE/LVD Host PCI Adapter (Type B4-9)

The Ultra2 SCSI SE/LVD Host Adapter combines high Ultra2 SCSI data transfer rates with the high performance PCI system bus. It ensures compatibility with SCSI-1 and SCSI-2 Fast devices as well as with Ultra SCSI devices.



Ultra2 SCSI SE/LVD Host Adapter Specifications

Bus architecture	PCI 2.1
Bus master	Yes
Connectors	Internal 68-position 16-bit High-Density SCSI bus External 68-position 16-bit Very-High-Density SCSI bus
Cables/terminators	Refer to the *Cabling Guide*.

The host adapter recognizes the type of peripheral device (8-bit, 16-bit, LVD) connected and automatically enables active termination and SE or LVD accordingly. For more information concerning terminators also refer to *General SCSI considerations*, on page 1-9.

The ability to lock the external SCSI connector in Fast/Wide mode is not supported by this adapter. The selection of Fast/Wide or Ultra SCSI mode is automatically performed on a per peripheral protocol negotiation basis.

Note: The items below, which appear in the lsattr command, are not applicable to this adapter:

- ext_se_ultra disabled Enable ULTRA speed on SE bus with external cable
- term_wide_u2 Bus mode limiting wide transfer with two cables

Ultra2 SCSI SE/LVD Host Adapter Requirements

Operating Temperature	+5 °C to +55 °C
Storage Temperature	–55 °C to +85 °C
Relative Humidity	5% to 90% non-condensing
Max. Dew Point Temperature	32 °C
Electrical	5 V +/– 5% (1.5 A max.); 12 V +/– 5% (50 mA max.)

Pinout Information for the Internal 68-Position 16-Bit High-Density SCSI Bus Connector

Signal Name	Pin	Pin	Signal Name
SD12+	1	35	SD12–
SD13+	2	36	SD13–
SD14+	3	37	SD14–
SD15+	4	38	SD15–
SDP1+	5	39	SDP1–
SD00+	6	40	SD00–
SD01+	7	41	SD01–
SD02+	8	42	SD02–
SD03+	9	43	SD03–
SD04+	10	44	SD04–
SD05+	11	45	SD05–
SD06+	12	46	SD06–
SD07+	13	47	SD07–
SDP0+	14	48	SDP0–
Ground	15	49	Ground
DIFFSENS	16	50	J2_SENS
TERMPWR	17	51	TERMPWR
TERMPWR	18	52	TERMPWR
N/C	19	53	N/C
Ground	20	54	Ground
SATN+	21	55	SATN–
Ground	22	56	Ground
SBSY+	23	57	SBSY–
SACK+	24	58	SACK–
SRST+	25	59	SRST–
SMSG+	26	60	SMSG–
SSEL+	27	61	SSEL–
SCD+	28	62	SCD–
SREQ+	29	63	SREQ–
SIO+	30	64	SIO–
SD08+	31	65	SD08–
SD09+	32	66	SD09–
SD10+	33	67	SD10–
SD11+	34	68	SD11–

Pinout Information for the External 68-Position 16-Bit Very-High-Density SCSI Bus Connector

Signal Name	Pin	Pin	Signal Name
SD12+	1	35	SD12–
SD13+	2	36	SD13–
SD14+	3	37	SD14–
SD15+	4	38	SD15–
SDP1+	5	39	SDP1–
SD00+	6	40	SD00–
SD01+	7	41	SD01–
SD02+	8	42	SD02–
SD03+	9	43	SD03–
SD04+	10	44	SD04–
SD05+	11	45	SD05–
SD06+	12	46	SD06–
SD07+	13	47	SD07–
SDP0+	14	48	SDP0–
Ground	15	49	Ground
DIFFSENS	16	50	J3_SENS
TERMPWR	17	51	TERMPWR
TERMPWR	18	52	TERMPWR
N/C	19	53	N/C
Ground	20	54	Ground
SATN+	21	55	SATN–
Ground	22	56	Ground
SBSY+	23	57	SBSY–
SACK+	24	58	SACK–
SRST+	25	59	SRST–
SMSG+	26	60	SMSG–
SSEL+	27	61	SSEL–
SCD+	28	62	SCD–
SREQ+	29	63	SREQ–
SIO+	30	64	SIO–
SD08+	31	65	SD08–
SD09+	32	66	SD09–
SD10+	33	67	SD10–
SD11+	34	68	SD11–

SCSI PCI Adapter with RAID Cache Module (Type B4-3)

The SCSI RAID Adapter is a high-performance adapter for PCI bus computers which supports SCSI storage devices in hot-pluggable carriers. The SCSI RAID adapter provides wide internal or external SCSI connectors and cables.

The SCSI RAID adapter consists of three parts, which are factory-assembled, with at least a 4MB memory module:

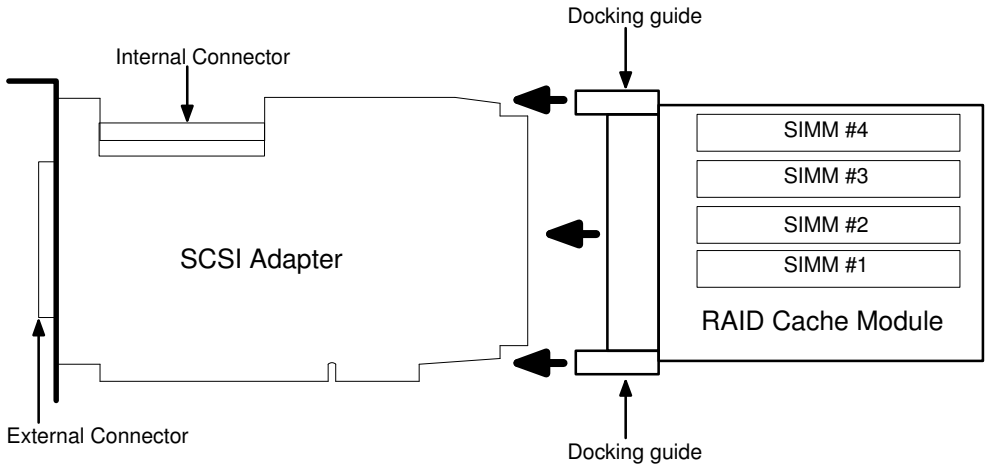
- the SCSI adapter
- the cache RAID extension
- SIMM memory modules

The SCSI RAID adapter is RAID-ready with integrated hardware caching. The SCSI RAID adapter with four SIMM sockets accepts up to 64MB of cache, providing maximum performance and data integrity. One, two, three or four SIMMs may be installed in the adapter. At least one is required for proper operation.

SCSI RAID adapters conform to the SCSI specification, defined in ANSI document number X3.131–1986. In addition, SCSI RAID adapters conform to the ANSI SCSI-2 and SCSI-3 specifications and CCS (Common Command Set) documents.

The SCSI RAID adapter complies with EATA and ASPI protocols that provide universal support for third-party applications and utilities.

For more information concerning the SCSI RAID adapter, refer to the *SCSI RAID User's Manual*, 86 A1 16GX.



Different SIMM sizes may be mixed, however, the SIMMs must be installed so that socket #1 always contain the largest SIMM, and so on, until socket #4 which must contain the smallest SIMM.

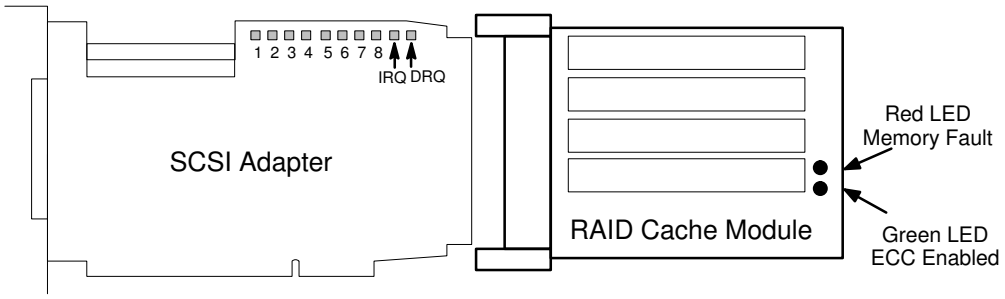
SCSI RAID Adapter Specifications

Bus architecture	PCI 2.1
Bus master	Yes
Hard disk drives	1GB, 2GB and 4 GB Wide SCSI
Hardware RAID levels	0, 1 and 5. Multi-RAID levels and duplexing, dynamic, hot spare
Connector	68-position internal SCSI connector 68-position external SCSI connector

For information concerning terminators, refer to *General SCSI considerations*, on page 1-9.

The SCSI RAID adapter supports SCSI, SCSI-2 and SCSI-3.

SCSI RAID Adapter LEDs and Alarms



SCSI Adapter Activity LEDs

Ten activity LEDs on SCSI RAID adapters provide a means to visually monitor adapter activity.

When no commands are in progress and all SCSI activity has ceased, the adapter enters the idle state. This is indicated by a rotating bit pattern in LEDs 1 through 8.

By viewing these LEDs, the user can determine information concerning cache hits and misses, disk reads and writes, and computer bus reads and writes. In addition several LEDs are provided for troubleshooting purposes.

LED	Function
1	Busy
2	Computer bus transfer to adapter
3	Computer bus transfer from adapter
4	Cache hit
5	Disk read-ahead active
6	Disk read
7	Disk write
8	Adapter reset
9	Interrupt pending to computer
10	DRQ asserted to computer

Cache Status LEDs

Two LEDs on the RAID caching module indicate the status of the on-board cache RAM.

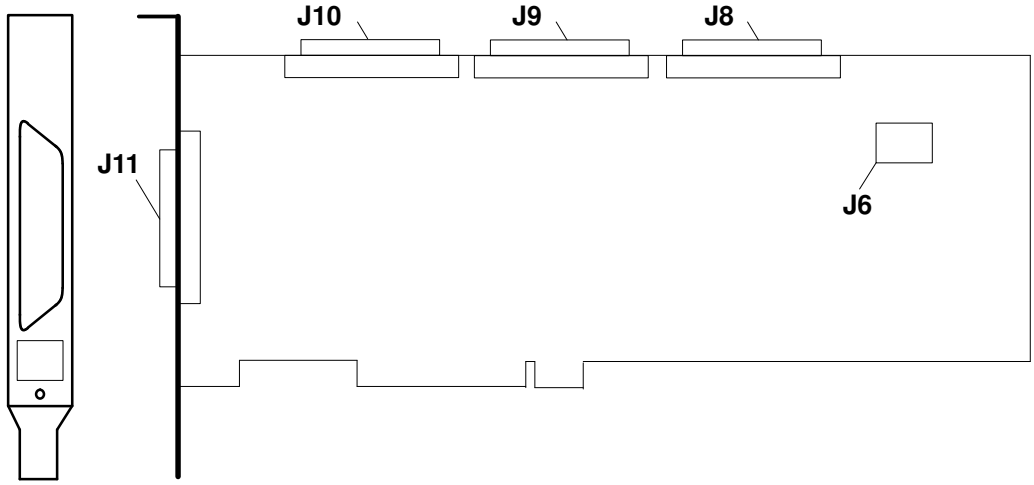
- When lit, the green **ECC Enabled** LED indicates that all installed SIMMs are ECC SIMMs, and thus the adapter cache and internal data paths are ECC protected. In that case, hard drives may be formatted to support SCSI bus ECC protection.
- When lit, the red **Memory Fault** LED indicates that a parity error has been detected in one of the parity SIMMs or that a non-correctable error has been detected in an ECC SIMM. This LED remains lit after the error has been corrected until the adapter is powered-down. Cache failure information is recorded in the adapter error log and can be viewed through Storage Manager.

Audible Alarm

The failure of a hard drive which is a member of an Array Group causes an audible alarm to sound on the adapter with the failed drive. This alarm is automatically silenced when the Storage Manager is entered.

SCSI-2 Fast/Wide RAID PCI Adapter (Type 4-H)

The SCSI-2 F/W RAID Adapter enables you to use internal and external Small Computer System Interface (SCSI) devices with computers containing the Peripheral Component Interconnect (PCI) bus in RAID configurations.



J6 – Boot block enable jumper

J8 – Channel 2

J9 – Channel 1

J10 – Channel 0

J11 – Channel 0

Notes:

1. Only supported disk drives given through smit (Devices menu, Fixed Disks menu, List all supported disks menu) can be connected to the adapter. Other SCSI devices cannot be connected to the SCSI bus.
2. The adapter SCSI-2 connectors J11 and J10 are physically connected within the adapter. You can attach an internal cable and disks to J10, or an external cable and disks to J11, but not at the same time.

Jumper Settings

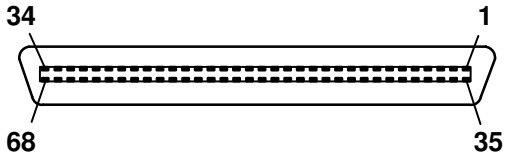
Use jumper J6 in those rare instances when you update the adapter boot initialization code. Under normal conditions, you should not use jumpers when you update the adapter runtime firmware or while the adapter is operating. When you download the adapter boot initialization code, you must place a jumper on J6. Remove the jumper after the update operation is completed.

SCSI-2 F/W RAID Adapter Specifications

Microcode	Provided on adapter
Bus architecture	PCI
Interrupt levels	PCI interrupt A
Maximum number	Two controllers may be installed in any available 32 or 64 bit, 33MHz PCI bus slots.
Connectors	External 68-position high-density micro D-Shell Internal 68-position high-density micro D-Shell
SCSI bus overcurrent protection device	Positive Temperature Coefficient (PTC) resistor

For information concerning terminators refer to *General SCSI considerations*, on page 1-9.

Internal and external 68-Position 16-Bit SCSI Connectors



Signal Name	Pin	Pin	Signal Name
Ground	1	35	–DB(12)
Ground	2	36	–DB(13)
Ground	3	37	–DB(14)
Ground/CPRNDT_16*	4	38	–DB(15)
Ground	5	39	–DB(P1)
Ground	6	40	–DB(0)
Ground	7	41	–DB(1)
Ground	8	42	–DB(2)
Ground	9	43	–DB(3)
Ground	10	44	–DB(4)
Ground	11	45	–DB(5)
Reserved*	12	46	–DB(6)
Ground	13	47	–DB(7)
Ground	14	48	–DB(P)
Ground	15	49	Ground
Ground	16	50	CPRNST
TERMPWR	17	51	TERMPWR
TERMPWR	18	52	TERMPWR
Reserved	19	53	Reserved
Ground	20	54	Ground
Ground	21	55	–ATN
Ground	22	56	Ground
Ground	23	57	–BSY
Ground	24	58	–ACK
Ground	25	59	–RST
Ground	26	60	–MSG
Ground	27	61	–SEL
Ground	28	62	C/D
Ground	29	63	–REQ
Ground	30	64	–I/O
Ground	31	65	–DB(8)
Ground	32	66	–DB(0)
Ground	33	67	–DB(10)
Ground	34	68	–DB(11)

Note: * applies to the external connector only.

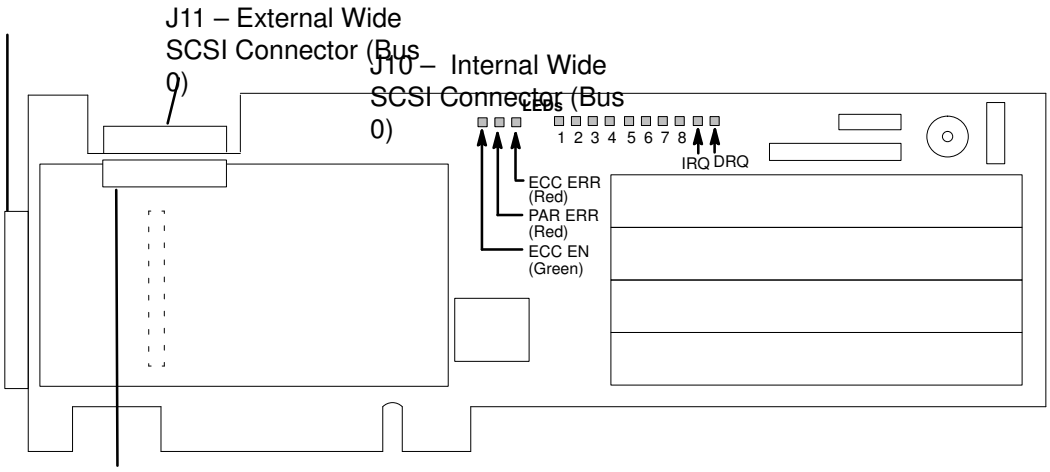
SCSI RAID PCI Adapter (Type B4-4)

The SCSI RAID Adapter is a high-performance adapter for PCI bus computers which supports SCSI storage devices in hot-pluggable carriers. The SCSI RAID adapter provides wide internal or external SCSI connectors and cables.

This adapter is RAID-ready with integrated hardware caching. The SCSI RAID adapter with four SIMM sockets accepts up to 64MB of cache, providing maximum performance and data integrity.

The Small Computer Systems Interface is an ANSI standard parallel interface designed to communicate with intelligent peripheral devices. SCSI RAID adapters conform to the SCSI specification, defined in ANSI document number X3.131–1986. In addition, SCSI RAID adapters conform to the ANSI SCSI-2 and SCSI-3 specifications and CCS (Common Command Set) documents.

For more information concerning the SCSI RAID Adapter, refer to the *ESCALA SCSI RAID Adapter Installation and Configuration Guide*, 86 A1 44HX, the *SCSI RAID User's Manual*, 86 A1 16GX and the *PCI SSA RAID Adapters Technical Reference*, 86 A1 42KX.



SCSI RAID Adapter Specifications

Maximum number	The maximum number SCSI RAID adapters allowed is one half of the maximum number of PCI slots available in the System Unit.
Bus architecture	PCI
Bus master	Yes
Data transfer rate	132 MB/second across the PCI bus
Hardware RAID levels	0, 1 and 5. Multi-RAID levels and duplexing, dynamic, hot spare
Connectors	Internal 50-pin low density Internal 68-position 16-bit High-Density SCSI bus External 68-position 16-bit High-Density SCSI bus

For information concerning terminators, refer to *General SCSI considerations*, on page 1-9.

The SCSI RAID adapter supports:

- SCSI
- SCSI-2
- SCSI-3

- Fast/Wide SCSI
- Ultra Wide SCSI

SCSI RAID Adapter LEDs

SCSI Adapter Activity LEDs

Ten activity LEDs on SCSI RAID adapters provide a means to visually monitor adapter activity.

When no commands are in progress and all SCSI activity has ceased, the adapter enters the idle state. This is indicated by a rotating bit pattern in LEDs 1 through 8.

By viewing these LEDs, the user can determine information concerning cache hits and misses, disk reads and writes, and computer bus reads and writes. In addition several LEDs are provided for troubleshooting purposes. More detailed information on the activity LEDs and their sequences for error detection is given in the *ESCALA SCSI RAID Adapter Installation and Configuration Guide*, 86 A1 44HX.

LED	Function
1	Busy
2	Computer Bus Transfer to Adapter
3	Computer Bus Transfer from Adapter
4	Cache Hit
5	Disk Read-Ahead Active
6	Disk Read
7	Disk Write
8	Adapter Reset
9	Interrupt Pending to Computer
10	DRQ Asserted to Computer

Cache Status LEDs

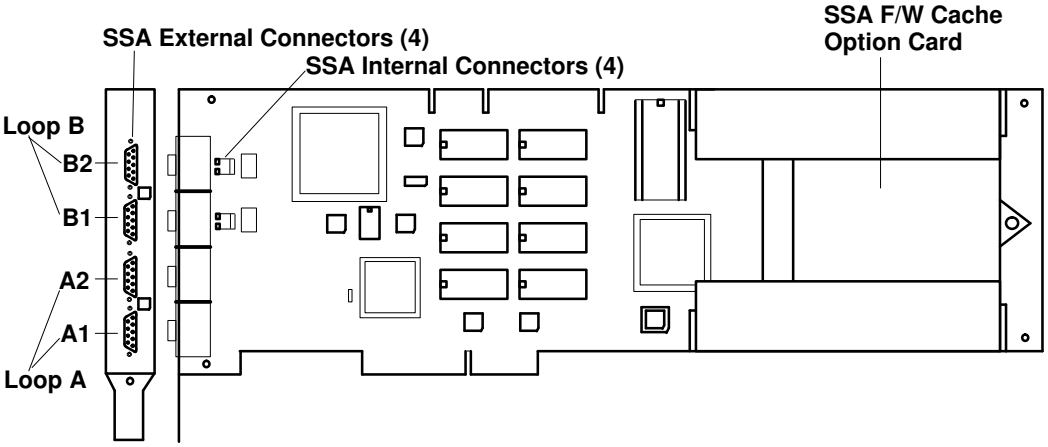
Three LEDs on the SCSI RAID adapter indicate the status of the on-board cache RAM.

- When lit, the green **ECC Enabled** LED indicates that all installed SIMMs are ECC SIMMs, and thus the adapter cache and internal data paths are ECC protected. In that case, hard drives formatted for 528-byte sectors supports SCSI bus ECC protection.
- When lit, the red **Parity Error** LED indicates that a parity error has been detected in one of the parity SIMMs. This LED remains lit until the adapter is powered-down. Cache failure information is recorded in the adapter error log and can be viewed through Storage Manager.
- When lit, the red **ECC Error** LED indicates that a correctable or non-correctable error has been detected in one of the ECC SIMMs. The LED stays lit after the error has been corrected until the adapter is powered-down. Cache failure information is recorded in the adapter error log and can be viewed through Storage Manager.

SSA Multi-Initiator/RAID EL PCI Adapter (Type 4-N) and SSA Fast/Write Cache Option Card

The SSA Multi-Initiator/RAID EL Adapter provides support for two SSA loops. Each loop can contain a maximum of 48 disk drives. If the fast/write cache or RAID functions of the adapter are used, no other adapter can be connected in an SSA loop with this adapter. If those functions are not used, a second PCI SSA Multi-Initiator/RAID EL Adapter or (micro-channel SSA Multi-Initiator/RAID EL Adapter) can be connected to the loop. To use the fast/write cache functions, an SSA Fast-Write Cache Option Card must be installed on the adapter.

For more information concerning this adapter, you can also see the *SSA 4-Port Adapter: Installation and Reference Guide,* 86 A1 95GX, the *SSA Adapters User's Guide and Maintenance Information,* 86 A1 99GX*,* the *PCI SSA RAID Adapters Technical Reference,* 86 A1 42KX and the *PCI SSA Multi-Initiator/RAID EL Adapter Installation Guide,* 86 A1 41KX.



SSA Multi-Initiator RAID/EL Adapter Specifications

Bus architecture	PCI
Bus width	32
Maximum number	The maximum number SSA Multi-Initiator/RAID EL adapters and PCI SSA 4-Port adapters allowed is one half of the maximum number of PCI slots available in the System Unit.
Bus master	Yes
Adapter type	Long
Data transfer rate	80 MB/second per loop
Connector	9-position, subminiature D
Cables	Serial link.

SSA Multi-Initiator RAID/EL Adapter Information

The adapter card has four SSA connectors that are arranged in two pairs. Connectors A1 and A2 are one pair; connectors B1 and B2 are the other pair.

The SSA link must be configured as loops. Each loop is connected to a pair of connectors on the SSA adapter card. These connectors *must* be a valid pair (that is, A1 and A2, or B1 and B2); otherwise the disk drive modules on the loop are not fully configured and the diagnostics fail. Operations to all the disk drive modules on a particular loop can continue if that loop breaks at any one point.

The adapter also contains *array management software* that provides RAID-5 functions to control the *arrays* of the RAID subsystem. An array can have from 3 to 16 *member disk drives*. Each array is handled as *one large disk* by the operating system. The array management software translates requests to this large disk into requests to member disk

drives. Although this adapter is a RAID adapter, it can be configured so that all, some, or none of the disk drives that are attached to it are member disks of arrays.

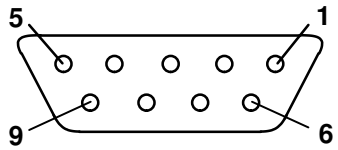
Other software in the adapter controls the Fast/Write Cache Option Card. This card provides 4MB of cache which can improve performance for jobs that include many write operations. The fast/write cache card has a standard PCMCIA connector.

Lights of the SSA Multi-Initiator/RAID EL Adapter

Each pair of connectors has a green light that indicates the operational status of its related loop:

Status of light	Meaning
Off	Both SSA connectors are inactive. If disk drive modules or other SSA adapters are connected to these connectors, either those modules or adapters are failing or their SSA links are not active.
Permanently On	Both SSA links are active (normal operating conditions).
Slow Flash	Only one SSA link is active.

SSA Multi-Initiator/RAID EL Adapter 9-Position Connector



Position	Signal Name
1	Ground
2	– Line Out
3	Ground
4	– Line In
5	Ground
6	+ Line Out
7	Reserved
8	+ 5 V
9	+ Line In

Fibre Channel PCI Adapter (Type B4-7)

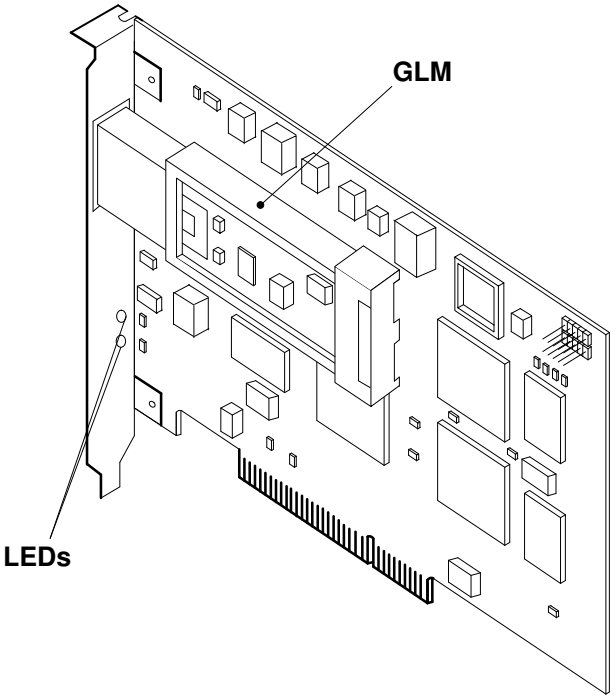
The Fibre Channel Adapter (PCI) is a high performance adapter allowing the connection a PCI host computer to a Fibre Channel network or device (e.g. support TCP/IP and FCP protocols).

Connection to the physical layer (FC-0) is accomplished through the industry standard GLM (Gigabaud Link Module) which allows speeds of 1063 Mbps.

The Fibre Channel Adapter (PCI) supports the three Fibre Channel topologies:

- Point to Point
- Arbitrated Loop
- Fabric Switch

For more information, refer to the *PCI Fibre Channel Adapters Installation and Configuration Guide*, 86 A1 95HX.



Fibre Channel Adapter Characteristics

- Interface to the 32-bit PCI local bus.
- 32-bit data path with bus-master design.
- Support PCI INTA (INTerrupt A).
- Connector DB 9-pin

Environment Requirements

Electrical power source loading

+5,0 VDC at 8 watts (without GLM)

Environment

Operating temperature : 0 to 45 °C (32 to 113°F)
Storage temperature : –10 to 55 °C (14 to 131°F)
Humidity : 5% to 95% (non-condensing)

Fibre Channel Adapter LEDs

When power is applied, the host adapter begins a Power On Self Test (POST) to verify internal operation prior to loading operational software.

Green and yellow LEDs are observed through the host adapter mounting bracket. The green LED indicates power functions and yellow signifies port activity. One of the LEDs will be blinking at all times during normal operations.

Green LED	Yellow LED	State
OFF	OFF	Wake-up failure (dead board)
OFF	ON	POST failure (dead board)
OFF	Slow blink (1 Hz)	Wake-up failure (dead board)
OFF	Fast blink (4 Hz)	Failure in POST (dead board)
OFF	Flashing (irregular)	POST processing in progress
ON	OFF	Failure while functioning
ON	ON	Failure while functioning
ON	Slow blink (1 Hz)	Normal – link up
ON	Fast blink (4 Hz)	Normal – updating firmware or driver initializing
Blink	OFF	Normal – link down or not yet started

Enhanced Fibre Channel PCI Adapter (Type B4-8)

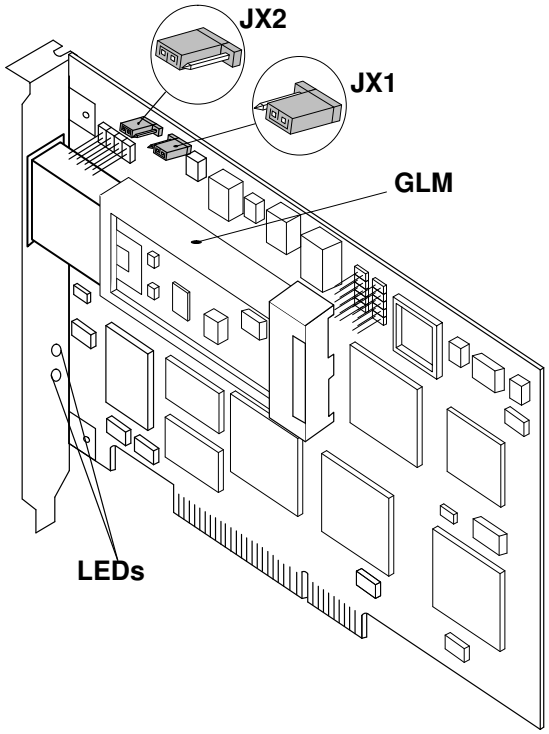
The Enhanced Fibre Channel Adapter (PCI) is a high performance adapter allowing the connection a PCI host computer to a Fibre Channel network or device (e.g. support TCP/IP and FCP protocols).

Connection to the physical layer (FC-0) is accomplished through the industry standard GLM (Gigabaud Link Module) which allows speeds of 1063 Mbps.

The Enhanced Fibre Channel Adapter (PCI) supports the three Fibre Channel topologies:

- Point to Point
- Arbitrated Loop
- Fabric Switch

For more information, refer to the *PCI Fibre Channel Adapters Installation and Configuration Guide*, 86 A1 95HX.



Jumpers labelled JX1 and JX2 must be set as shown in the figure above.

Enhanced Fibre Channel Adapter Characteristics

- Interface to the 32-bit PCI local bus.
- 32-bit data path with bus-master design.
- Support PCI INTA (INTerrupt A).
- Connector DB 9-pin

Environment Requirements

Electrical power source loading

+5,0 VDC at 8 watts (without GLM)
+5,0 VDC at 10 watts (with GLM)

Environment

Operating temperature : 0 to 45 °C (32 to 113°F)
Storage temperature : –10 to 55 °C (14 to 131°F)
Humidity : 5% to 95% (non-condensing)

Enhanced Fibre Channel Adapter LEDs

When power is applied, the host adapter begins a Power On Self Test (POST) to verify internal operation prior to loading operational software.

Green and yellow LEDs are observed through the host adapter mounting bracket. The green LED indicates power functions and yellow signifies port activity. One of the LEDs will be blinking at all times during normal operations.

Green LED	Yellow LED	State
OFF	OFF	Wake-up failure (dead board)
OFF	ON	POST failure (dead board)
OFF	Slow blink (1 Hz)	Wake-up failure (dead board)
OFF	Fast blink (4 Hz)	Failure in POST (dead board)
OFF	Flashing (irregular)	POST processing in progress
ON	OFF	Failure while functioning
ON	ON	Failure while functioning
ON	Slow blink (1 Hz)	Normal – link up
ON	Fast blink (4 Hz)	Normal – updating firmware or driver initializing
Blink	OFF	Normal – link down or not yet started

64-Bit Copper Fibre Channel PCI Adapter (Type B4-A)

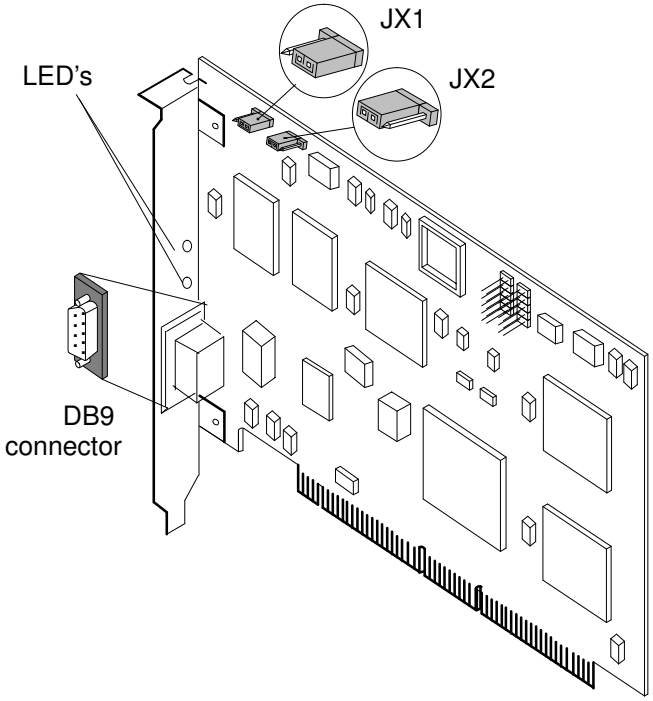
The 64-bit Copper Fibre Channel Adapter (PCI) is a high performance adapter allowing the connection of a PCI host computer to a Fibre Channel network or device (e.g. support TCP/IP and FCP protocols).

Connection to the physical layer (FC-0) is accomplished through an embedded DB9 copper connector which allows speeds of 1063 Mbps.

The 64-bit Copper Fibre Channel Adapter (PCI) supports the three Fibre Channel topologies:

- Point to Point
- Arbitrated Loop
- Fabric Switch

For more information, refer to the *PCI Fibre Channel Adapters Installation and Configuration Guide*, 86 A1 95HX.



Jumpers labelled JX1 and JX2 must be set as shown in the figure above.

64-bit Copper Fibre Channel Adapter Characteristics

- Interface to the 32-bit or 64–bit PCI local bus.
- 64-bit data path with bus-master design.
- Support PCI INTA (INTerrupt A).
- Connector DB 9-pin

Environment Requirements

Electrical power source loading

11 watts at +5,0 VDC (typical)

Environment

Operating temperature : 0 to 45 °C (32 to 113°F)
Storage temperature : –10 to 55 °C (14 to 131°F)
Humidity : 5% to 95% (non-condensing)

64-bit Copper Fibre Channel Adapter LEDs

When power is applied, the host adapter begins a Power On Self Test (POST) to verify internal operation prior to loading operational software.

Green and yellow LEDs are observed through the host adapter mounting bracket. The green LED indicates power functions and yellow signifies port activity. One of the LEDs will be blinking at all times during normal operations.

Green LED	Yellow LED	State
OFF	OFF	Wake-up failure (dead board)
OFF	ON	POST failure (dead board)
OFF	Slow blink (1 Hz)	Wake-up failure (dead board)
OFF	Fast blink (4 Hz)	Failure in POST (dead board)
OFF	Flashing (irregular)	POST processing in progress
ON	OFF	Failure while functioning
ON	ON	Failure while functioning
ON	Slow blink (1 Hz)	Normal – link up
ON	Fast blink (4 Hz)	Normal – updating firmware or driver initializing
Blink	OFF	Normal – link down or not yet started

64-Bit Optical Fibre Channel PCI Adapter (Type B4-B)

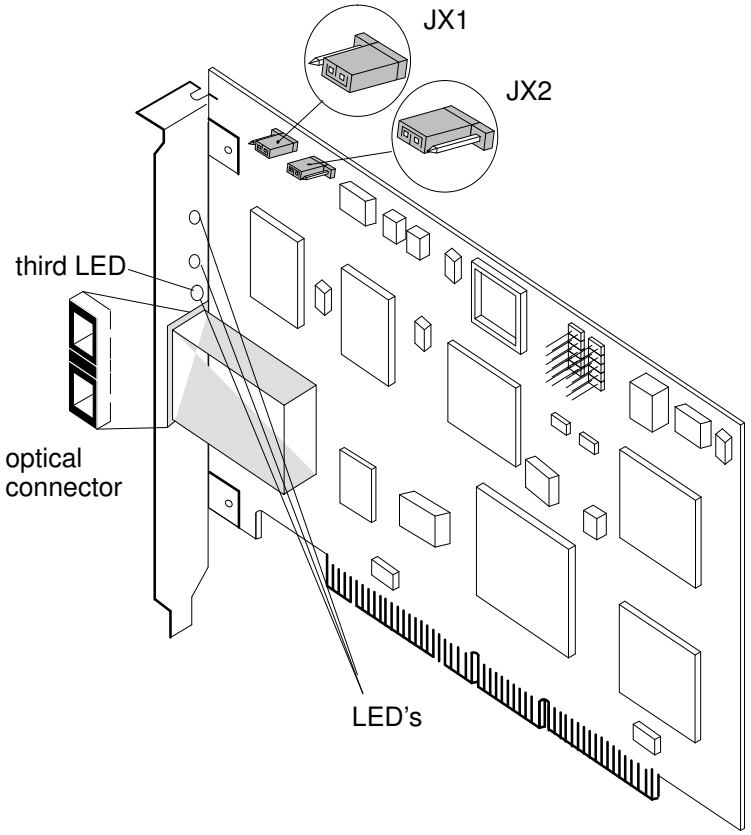
The 64-bit Optical Fibre Channel Adapter (PCI) is a high performance adapter allowing the connection of a PCI host computer to a Fibre Channel network or device (e.g. support TCP/IP and FCP protocols).

Connection to the physical layer (FC-0) is accomplished an embedded optical connector which allows speeds of 1063 Mbps.

The 64-bit Optical Fibre Channel Adapter (PCI) supports the three Fibre Channel topologies:

- Point to Point
- Arbitrated Loop
- Fabric Switch

For more information, refer to the *PCI Fibre Channel Adapters Installation and Configuration Guide*, 86 A1 95HX.



Jumpers labelled JX1 and JX2 must be set as shown in the figure above.

64-bit Optical Fibre Channel Adapter Characteristics

- Interface to the 32-bit or 64–bit PCI local bus.
- 64-bit data path with bus-master design.
- Support PCI INTA (INTerrupt A).
- Optical connector SC2

Environment Requirements

Electrical power source loading

+5,0 VDC at 8 watts (without GLM)
+5,0 VDC at 10 watts (with GLM)

Environment

Operating temperature : 0 to 45 °C (32 to 113°F)
Storage temperature : –10 to 55 °C (14 to 131°F)
Humidity : 5% to 95% (non-condensing)

64-bit Optical Fibre Channel Adapter LEDs

When power is applied, the host adapter begins a Power On Self Test (POST) to verify internal operation prior to loading operational software.

Green and yellow LEDs are observed through the host adapter mounting bracket. The green LED indicates power functions and yellow signifies port activity. One of the LEDs will be blinking at all times during normal operations.

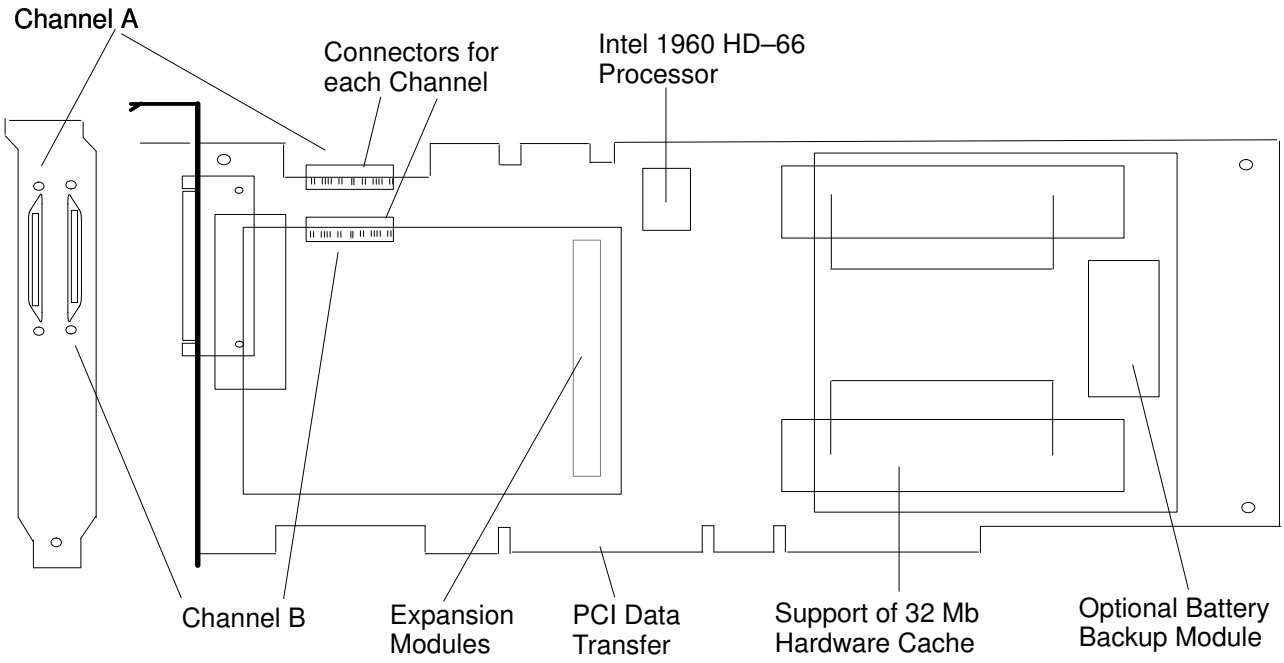
A third LED is present on type B4-B adapter with embedded optical interfaces, and indicates light is being received by the port.

Green LED	Yellow LED	State
OFF	OFF	Wake-up failure (dead board)
OFF	ON	POST failure (dead board)
OFF	Slow blink (1 Hz)	Wake-up failure (dead board)
OFF	Fast blink (4 Hz)	Failure in POST (dead board)
OFF	Flashing (irregular)	POST processing in progress
ON	OFF	Failure while functioning
ON	ON	Failure while functioning
ON	Slow blink (1 Hz)	Normal – link up
ON	Fast blink (4 Hz)	Normal – updating firmware or driver initializing
Blink	OFF	Normal – link down or not yet started

Ultra2 SCSI High Performance RAID Adapter (Type B4-C)

The Ultra2 SCSI High Performance RAID Adapter allows you to add one or two additional SCSI channels.

Note: This adapter is fully I_2O

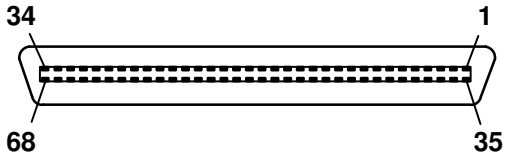


Ultra2 SCSI High Performance RAID Adapter Specifications

SCSI features	Ultra 2 SCSI–3 interface, maximum SCSI transfer rate 80MB, 16–bit SCSI bus with multi–mode SE/LVD termination, 2 SCSI busses, 30 SCSI devices, external connector, internal connector
Battery backup	72 hours with 16 MB, 2–4 3A NiMh batteries
PCI	64–bit PCI 2.1 with a maximum transfer rate of 264MBs
Power Requirements	5V +/– 5%, 50Mv peak–to–peak max, 1.87 A (single channel)
Reliability	MTBF >350.000 hours
Agency Certification	FCC, CE, UL, CSA, AUSTEL, SMA

Complete Kit Content	PMK3755U2B Ultra 2 SCSI high performance RAID controller, 1 additional adapter for 1 SCSI LVD, external and internal channel, battery backup module adds up to 72 hours of protection for cache data in the event of a power failure

Ultra2 SCSI High Performance RAID Adapter Connectors



Signal Name		Connectors		Signal Name
SE	LVD	Pin	Pin	SE and LVD
Ground	+DB(12)	1	35	–DB(12)
Ground	+DB(13)	2	36	–DB(13)
Ground	+DB(14)	3	37	–DB(14)
Ground/CPRNDT_16	+DB(15)	4	38	–DB(15)
Ground	+DB(P1)	5	39	–DB(P1)
Ground	+DB(0)	6	40	–DB(0)
Ground	+DB(1)	7	41	–DB(1)
Ground	+DB(2)	8	42	–DB(2)
Ground	+DB(3)	9	43	–DB(3)
Ground	+DB(4)	10	44	–DB(4)
Ground	+DB(5)	11	45	–DB(5)
Reserved	+DB(6)	12	46	–DB(6)
Ground	+DB(7)	13	47	–DB(7)
Ground	+DB(P)	14	48	–DB(P)
Ground	Ground	15	49	Ground
Ground	DIFFSENS	16	50	CPRNST
TERMPWR	TERMPWR	17	51	TERMPWR
TERMPWR	TERMPWR	18	52	TERMPWR
Reserved	Reserved	19	53	Reserved
Ground	Ground	20	54	Ground
Ground	+ATN	21	55	–ATN
Ground	Ground	22	56	Ground
Ground	+BSY	23	57	–BSY
Ground	+ACK	24	58	–ACK
Ground	+RST	25	59	–RST
Ground	+MSG	26	60	–MSG
Ground	+SEL	27	61	–SEL
Ground	+C/D	28	62	–C/D
Ground	+REQ	29	63	–REQ

Signal Name		Connectors		Signal Name
SE	LVD	Pin	Pin	SE and LVD
Ground	+I/O	30	64	–I/O
Ground	+DB(8)	31	65	–DB(8)
Ground	+DB(9)	32	66	–DB(0)
Ground	+DB(10)	33	67	–DB(10)
Ground	+DB(11)	34	68	–DB(11)

Notes:

1. For 8-bit SE devices that connect to the P-cable, tie the following signals inactive high: –DB(8), –DB(9), –DB(10), –DB(11), –DB(12), –DB(13), –DB(14), –DB(15), –DB(P1), or select Disable Wide Negotions on the front option jumper block and float the same signal lines.
2. For 8-bit LVD devices or SE mode, the following signals must be tied inactive (+ = inactive low, – = inactive high): +/–DB(8), +/–DB(9), +/–DB(10), +/–DB(11), +/–DB(12), +/–DB(13), +/–DB(14), +/–DB(15), +/–DB(P1). Floating these signals is not sufficient.
   All other signals shall be connected as defined.

2Gbit/s Fibre Channel Adapter for 64 bits PCI Bus (Type B4_E)

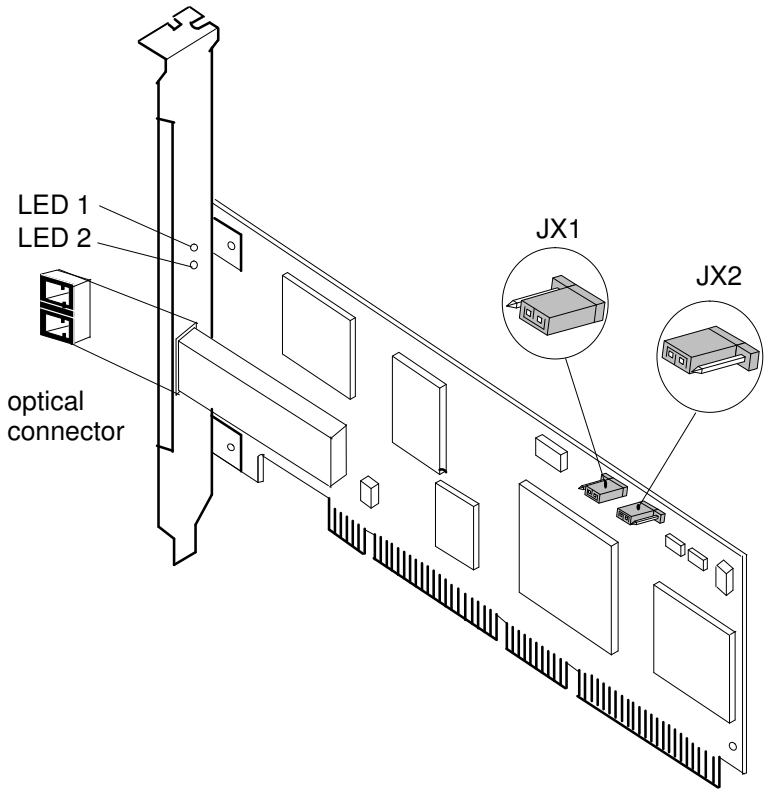
The 2Gbit/s Fibre Channel 64 bits PCI Adapter is a low profile high performance adapter allowing the connection of a PCI host computer to a Fibre Channel network or device (e.g. support TCP/IP and FCP protocols).

Connection to the physical layer (FC–0) is accomplished through an embedded Dual LC optical connector which allows operationy at 1Gbit/s or 2Gbit/s with auto sensing facility.

It supports the three Fibre Channel topologies:

- point to point
- Arbitrated loop
- Fabric switch

For more information, refer to the *PCI Fibre Channel Adapters Installation and Configuration Guide*, 86 A1 95HX.



The jumpers JX1 and JX2 must be set as shown in figure above.

Fibre Channel Adapter Characteristics

- Interface to the 32-bit or 64–bit PCI local bus.
- 64-bit data path with bus-master design.
- Optical connector LC2

Environment Requirements

Electrical power source loading

+3.3 VDC +/–5% 8,5 watts (typical)

Environment

Operating temperature : 0 to 45 °C (32 to 113°F)
Storage temperature : –10 to 55 °C (14 to 131°F)
Humidity : 5% to 95% (non-condensing)

2 Gbit/s Optical Fibre Channel Adapter LEDs

When power is applied, the host adapter begins a Power On Self Test (POST), to verify internal operation prior to loading operational software.

Green and yellow LEDs are observed through the host adapter mounting bracket. The green LED indicates power functions and yellow indicates port activity. One of the LEDs will be blinking all the time during normal operations.

POST conditions and results are summerized in this table.

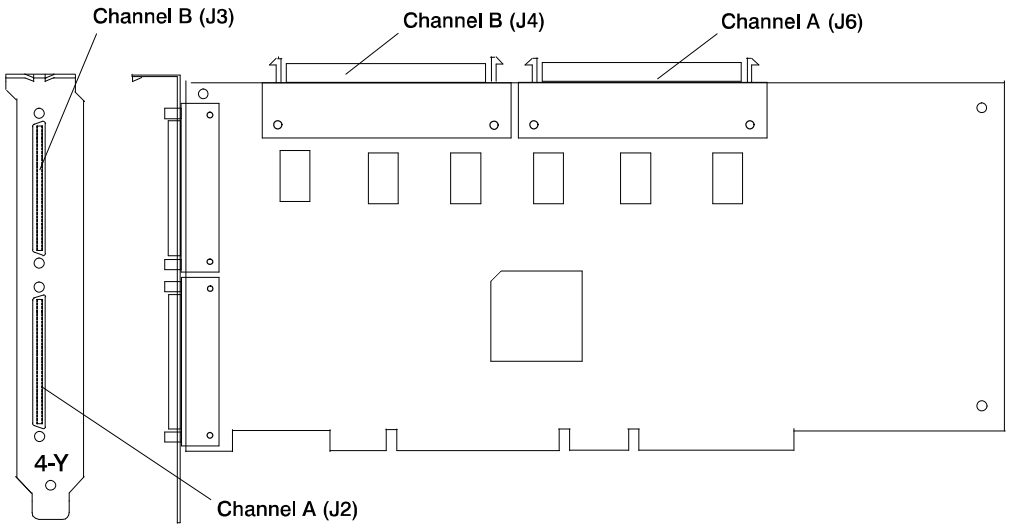
Green LED	Yellow LED	State
OFF	OFF	Wake-up failure (dead board)
OFF	ON	POST failure (dead board)
OFF	Slow blink (1 Hz)	Wake-up failure (dead board)
OFF	Fast blink (4 Hz)	Failure in POST (dead board)
OFF	Flashing (irregular)	POST processing in progress
ON	OFF	Failure while functioning
ON	ON	Failure while functioning
ON	Slow blink (1 Hz)	Normal – link up for all adapters except B4–E Normal – 1 Gb link rate for B4–E
ON	Fast blink (4 Hz)	Normal – updating firmware or driver initializing for all adapters except B4–E Normal – 2 Gb link rate for B4–E
Blink	OFF	Normal – link down or not yet started

PCI Dual–Channel Ultra3 SCSI Adapter (Type 4-Y)

The PCI Dual–Channel Ultra3 SCSI Adapter enables you to use internal or external single–ended or low–voltage differential (LVD) small computer system interface (SCSI) devices with computers containing a peripheral component interconnect (PCI) type bus. This adapter provides two channels for SCSI devices (channel A and channel B).

The PCI Dual–Channel Ultra3 SCSI Adapter has both an internal and an external connector on each channel. Only one connector (internal or external) can be used on each channel.

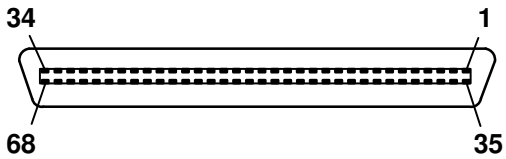
Note: Devices cannot be attached to both the internal and the external connector on the same channel (A or B).



PCI Dual–Channel Ultra3 SCSI Adapter Specifications

Microcode	No microcode required
Bus architecture	PCI
Interrupt levels	PCI interrupt A
Maximum number	A controller may be installed in supported 32 or 64 bit, 33MHz or 66MHz PCI bus slots.
Connectors	Each channel (A and B) has both an internal and an external connector, however, only one connector on each channel can have devices attached. External 68-position, very-high-density cable interconnect (VHDCI) Internal 68-position high-density plastic D-Shell
SCSI bus overcurrent protection device	Positive Temperature Coefficient (PTC) resistor

PCI Dual–Channel Ultra3 SCSI Adapter Connectors



Signal Name		Connectors		Signal Name
SE	LVD	Pin	Pin	SE and LVD
Ground	+DB(12)	1	35	–DB(12)
Ground	+DB(13)	2	36	–DB(13)
Ground	+DB(14)	3	37	–DB(14)
Ground/CPRNST_16	+DB(15)	4	38	–DB(15)
Ground	+DB(P1)	5	39	–DB(P1)
Ground	+DB(0)	6	40	–DB(0)
Ground	+DB(1)	7	41	–DB(1)
Ground	+DB(2)	8	42	–DB(2)
Ground	+DB(3)	9	43	–DB(3)
Ground	+DB(4)	10	44	–DB(4)
Ground	+DB(5)	11	45	–DB(5)
Reserved	+DB(6)	12	46	–DB(6)
Ground	+DB(7)	13	47	–DB(7)
Ground	+DB(P)	14	48	–DB(P)
Ground	Ground	15	49	Ground
Ground	DIFFSENS	16	50	CPRNST
TERMPWR	TERMPWR	17	51	TERMPWR
TERMPWR	TERMPWR	18	52	TERMPWR
Reserved	Reserved	19	53	Reserved
Ground	Ground	20	54	Ground
Ground	+ATN	21	55	–ATN
Ground	Ground	22	56	Ground
Ground	+BSY	23	57	–BSY
Ground	+ACK	24	58	–ACK
Ground	+RST	25	59	–RST
Ground	+MSG	26	60	–MSG
Ground	+SEL	27	61	–SEL
Ground	+C/D	28	62	–C/D
Ground	+REQ	29	63	–REQ
Ground	+I/O	30	64	–I/O
Ground	+DB(8)	31	65	–DB(8)
Ground	+DB(9)	32	66	–DB(0)
Ground	+DB(10)	33	67	–DB(10)
Ground	+DB(11)	34	68	–DB(11)

Notes:

1. For 8–bit SE devices that connect to the P–cable, tie the following signals inactive high: –DB(8), –DB(9), –DB(10), –DB(11), –DB(12), –DB(13), –DB(14), –DB(15), –DB(P1), or select Disable Wide Negations on the front Option Jumper Block and float the same signal lines.
2. For 8–bit LVD devices or SE mode, the following signals must be tied inactive (+ = inactive low, – = inactive high): +/–DB(8), +/–DB(9), +/–DB(10), +/–DB(11), +/–DB(12), +/–DB(13), +/–DB(14),+/–DB(15), +/–DB(P1). Floating these signals is not sufficient.
3. All other signals shall be connected as defined.

Chapter 4. LAN/WAN Adapters

This chapter describes LAN/WAN adapters, lists their main characteristics and requirements, and when applicable, connector signals.

If switches or jumpers need to be configured, this information is indicated.

In this chapter, you will find the following LAN/WAN adapters:

ATM Adapters:

Ethernet Adapters:

FDDI Adapters:

ISDN Adapters:

Token Ring Adapters:

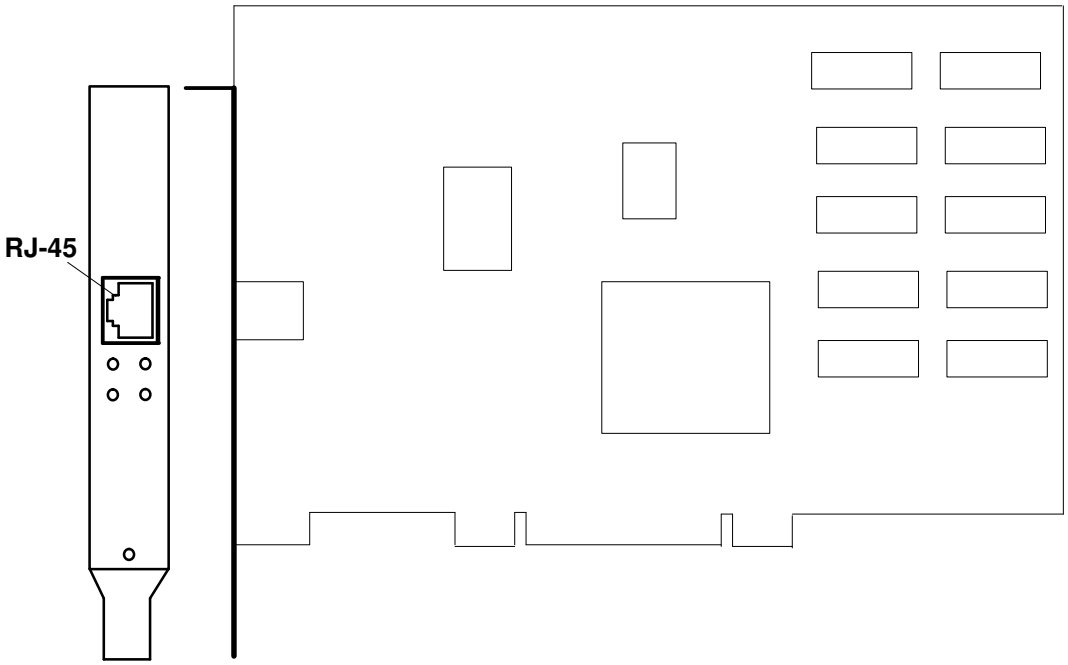
- Token Ring PCI Adapter (Type B5-R), on page 4-40.

X.25 Adapters:

- X.25 2-Port Multiprotocol PCI Adapter (Type 8-L), on page 4-43.
- X.25 2-Port Multiprotocol PCI Adapter (Type 9-L), on page 4-43.
- X.25 2-Port Multiprotocol PCI Adapter (Type B2-L), on page 4-43.
- 1-Port WAN Comm V24 ISA Adapter (Type B2-B), on page 4-45.
- 1-Port WAN Comm V35 ISA Adapter (Type B2-C), on page 4-45.
- 1-Port WAN Comm V11 ISA Adapter (Type B2-D), on page 4-45.
- 1-Port Multiprotocol Serial I/O PCI Adapter (Type B2-G), on page 4-47.
- 4-Port Multiprotocol Serial I/O PCI Adapter (Type B2-H), on page 4-49.

TURBOWAYS 155 UTP ATM PCI Adapter (Type 9-J)

The TURBOWAYS 155 Unshielded Twisted Pair (UTP) Asynchronous Transfer Mode (ATM) Adapter provides the interface between the ATM 155 Mbit/sec unshielded twisted pair network and the PCI bus in your system.

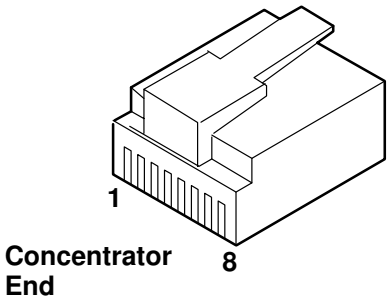


TURBOWAYS 155 UTP ATM Adapter Specifications

Bus architecture	PCI 2.1
Card Type	Half
Maximum number*	For the maximum number of adapters allowed in your system, see your system's reference guide
Connector	RJ-45
Wrap Plug	Supplied with adapter (21H3547)
Cables	The cable can be Unshielded Twisted Pair (UTP) or Shielded Twisted Pair (STP), up to 100 meters long.

*The maximum number of TURBOWAYS 155 PCI adapters must include both the TURBOWAYS 155 PCI MMF ATM adapters and TURBOWAYS 155 PCI UTP ATM adapters.

TURBOWAYS 155 UTP ATM Adapter Connector



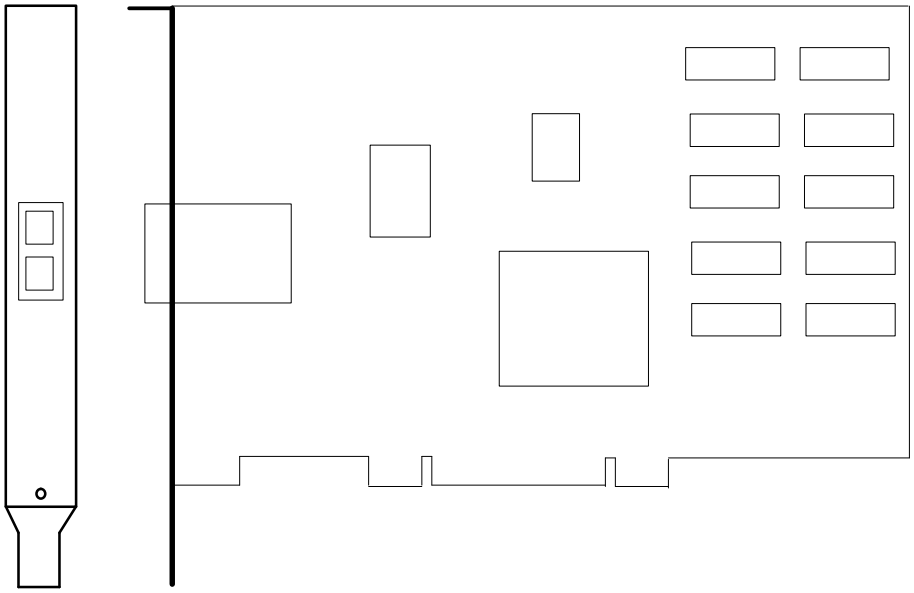
Position	Signal Name
1	Transmit A
2	Transmit B
3	No Connection
4	No Connection
5	No Connection
6	No Connection
7	Receive A
8	Receive B

TURBOWAYS ATM 155 Mbps MMF PCI Adapters (Type 9-F) and (Type B5-9)

Note: Label type B5-9 has replaced label type 9-F for all systems except for ESCALA RL470, ESCALA RL470A and EPC1200.

The TURBOWAYS ATM 155 Mbps MMF Adapter provides the interface between the ATM 155 Mbit/sec fiber-optics network and the PCI bus in your system. It provides dedicated 155 Mbit/s full-duplex connection using PVCs or SVCs and enables TCP/IP to run over an ATM network (classical IP). This adapter can also support ATM, token ring, Ethernet or LAN emulation.

For more detailed information, refer to the *PCI 155 Mbps ATM Adapter Installation and User's Guide*, 86 A1 86HX.



ATM 155 Mbps MMF Adapter Specifications

Bus architecture	PCI 2.1
Bus master	32-bit bus master capability
Card Type	half
Maximum number	For the maximum number of adapters allowed in your system, see your system's reference guide
Connector	ANSI specified SC duplex (SC-Fiber female)
Wrap plug	Shipped with assembly (21H3547)
Cables	62.5 micron multi-mode Fiber-optic, customer provided

Note: The maximum number of TURBOWAYS 155 PCI adapters must include both the TURBOWAYS 155 PCI MMF ATM adapters and TURBOWAYS 155 PCI UTP ATM adapters.

Ethernet 10Mbps PCI Adapter (Type B2-E or no Label)

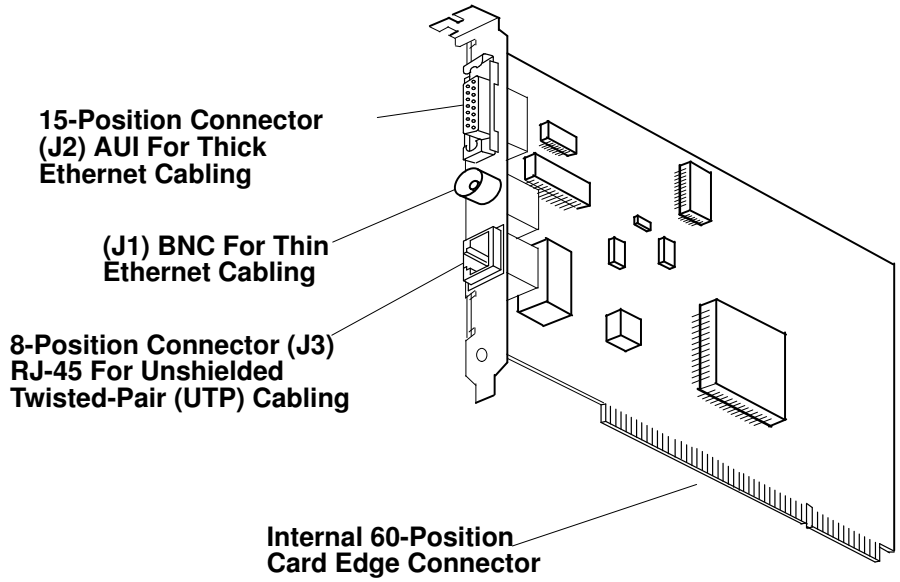
The Ethernet 10 Mbps Adapter is a 32-bit bus master board based on the Peripheral Component Interface (PCI) local bus architecture. It provides a PCI-based connection to an Ethernet network.

The Ethernet 10 Mbps Adapter supports thick (10BASE5 or DIX), thin (10BASE2 or BNC) and twisted-pair (10BASE–T) Ethernet connections.

The PCI Ethernet device driver interfaces with a DEC2104x Ethernet chip located on the adapter card installed in one of the PCI slots of the system.

The Ethernet 10 Mbps Adapter is fully compliant with the IEEE 802.3 and ISO/IEC 8802-3 Ethernet protocols with support for a transmission rate of 10 megabits per second.

For more information, refer to the *Ethernet 10 & 10/100 Mbps PCI Adapters Installation and Configuration Guide*, 86 A1 18GX.



Ethernet 10 Mbps Adapter Specifications

Bus architecture	PCI
Bus master	Yes
Interrupt level	INT A
Connector	15-position AUI for Thick Ethernet cabling BNC for Thin Ethernet cabling 8-position RJ-45 connector for twisted-pair cabling
Cables	Thick Ethernet Thin Ethernet Twisted-Pair – Category 3, 4 and 5 UTP cables
Wrap plugs	RJ-45

The main supported characteristics are:

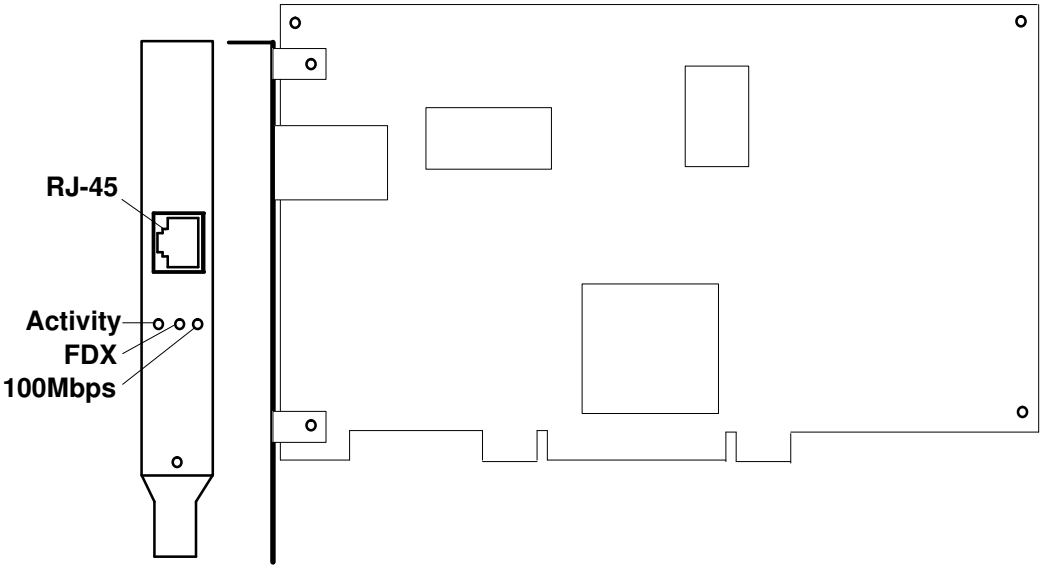
- Supports full-duplex Ethernet on Twisted-Pair.
- Interface to the 32-bit PCI local bus.
- 32-bit data path with bus master design.
- Software selection of active network connector.

10/100 Mbps Ethernet Tx PCI Adapter (Type 9-P)

Note: Some older deliveries were made with a slightly different adapter also bearing the label 9-P and ensuring a similar functionality. The card documented here is the adapter corresponding to more recent deliveries.

The 10/100 Ethernet Tx Adapter provides attachment at 10Mbps or 100Mbps to a carrier sense multiple access/collision detection (CSMA/CD) ethernet local area network (LAN) for systems designed to operate with the Peripheral Component Interconnect (PCI) bus interface. It uses the IEEE-802.3u standard for communications.

This adapter supports connections to 10BaseT or 100BaseTx on unshielded twisted pair networks through a RJ-45 connector. It also supports full duplex operations both at 10Mbps and at 100Mbps



10/100 Ethernet - 10/100 PCI Adapter Specifications

Bus architecture	PCI
Bus master	Yes
Connector	8-position RJ-45
Cables	Customer supplied (use type connection)
For 10Mbps	Use category 3, 4, or 5 unshielded twisted pair
For 100Mbps	Use category 5 only unshielded twisted pair
Wrap plug	RJ-45

Viewing the LEDs

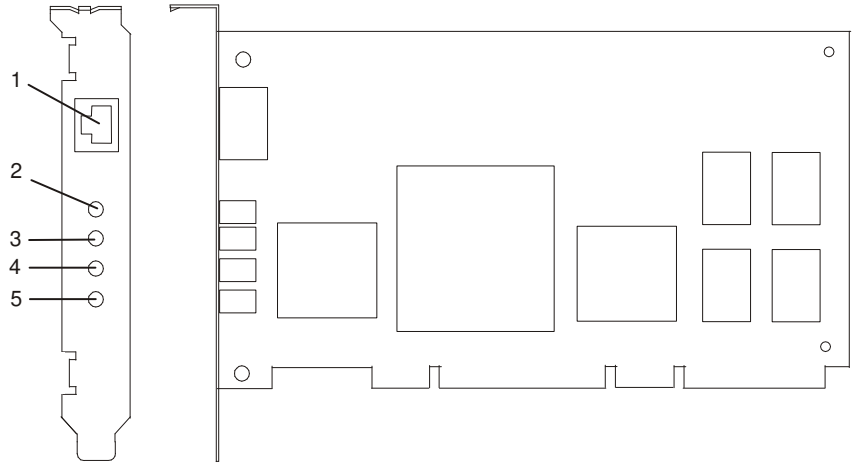
The adapter features three LEDs that provide information on the status of the card's operation. The LEDs are visible through the card's mounting bracket (see figure above).

LED	Color	Status
100 Mbps	Yellow	100 Mbps operation
FDX	Green	Full duplex operation
Activity	Green	Transmit or receive activity

10/100/1000 Base–T Ethernet PCI Adapter (Type A–A)

The 10/100/1000 Base–T Ethernet PCI Adapter provides copper–cabling attachment using a RJ–45 connector. This adapter provides operating speeds of 10, 100, or 1000 Mbps to an Ethernet local area network (LAN). At speeds of 10 or 100 Mbps, both full–duplex and half–duplex modes are supported. At the speed of 1000 Mbps, only full–duplex mode is supported. This adapter auto–negotiates to the highest available link speed.

This adapter is designed to operate on systems with 32– or 64–bit Peripheral Component Interconnect (PCI) bus interface. This adapter uses the IEEE–802.3z standard for communications.



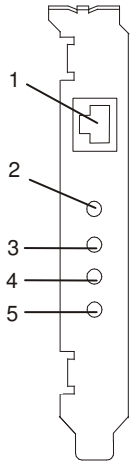
1	RJ–45 Connector
2	Yellow LED (data)
3	Green LED (1000 Mbps Speed)
4	Green LED (100 Mbps Speed)
5	Green LED (10 Mbps Speed)

10/100/1000 Base–T Ethernet PCI Adapter Specifications

FRU number	00P1690
I/O bus architecture	PCI 2.1 compliant
Busmaster	Yes
Maximum number	For system specific adapter placement, see the *PCI Adapter Placement Reference Guide*, in your system documentation.
Connector	RJ–45
Wrap plug	RJ–45, part number 00P1689
Cables	Customer supplied. Use CAT–5 twisted pair bulk cables (TIA/EIA 568A is recommended). See 10/100/1000 Base–T Ethernet PCI Adapter Cables, on page 0 .

10/100/1000 Base–T Ethernet PCI Adapter LEDs

The adapter has four LEDs that provide information on the status and speed of the adapter's operation. The LEDs are visible through the card's mounting bracket and indicate the following conditions when lit.

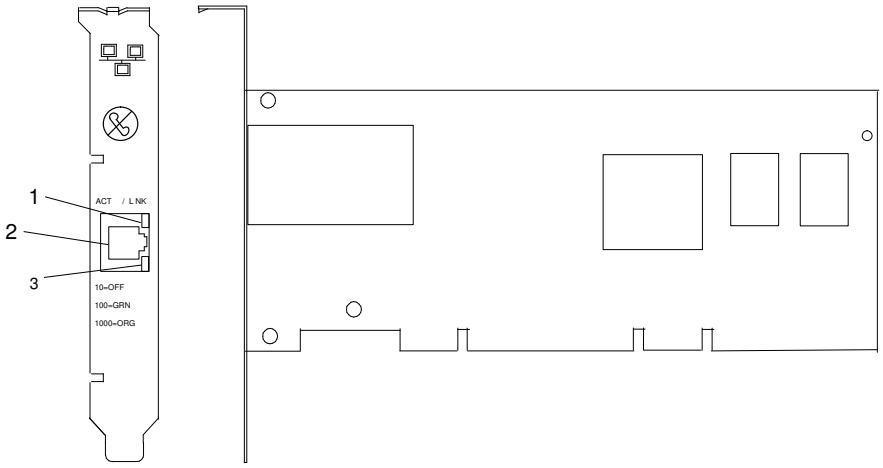


1 RJ–45 Connector
2 Yellow LED (data)
3 Green LED (1000 Mbps Speed)
4 Green LED (100 Mbps Speed)
5 Green LED (10 Mbps Speed)

Any of the three green Link LEDs	On	Indicates the speed of the link (10, 100, 1000 Mbps), and the fact the link is operational
	Blinking	Port is disabled by software
Yellow data LED	On	Indicates transmit or receive activity
Note: If all LEDs are on, the adapter link is not setup.		

10/100/1000 Base TX Ethernet PCI X Adapter (no label)

The 10/100/1000 Base–TX Ethernet PCI–X Adapter is a high performance, highly integrated, universal Ethernet LAN adapter for PCI–X and PCI systems. The adapter provides 10/100/1000 Mbps connectivity over 4 pairs of standard CAT–5 cable up to 100 meters. It conforms to IEEE 802.3ab 1000 Base–T standard. The adapter runs in standard PCI–X V1.0a compliant systems with 32/64–bit PCI–X Bus Master slots at 66/133 MHz, as well as PCI 2.2 compliant systems with 32/64–bit PCI bus master slots at 33/66 MHz.



1	ACT/LNK LED
2	RJ–45 Connector
3	Link Speed LED

10/100/1000 Base TX Ethernet PCI X Adapter Specifications

The 10/100/1000 Base–TX Ethernet PCI–X Adapter provides the following features:

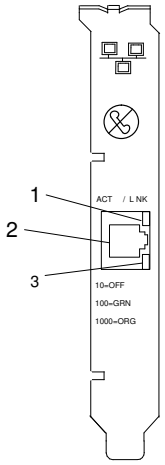
- Support for 64–bit Direct Bus Mastering on the PCI/PCI–X bus
- Uses a shared memory structure in host memory and copies data directly from and to host memory
- Supports Boot ROM
- Operates in 10/100/1000 Base–T modes
- Supports 1000 Mbps throughput on 4 pairs of standard CAT–5 cabling
- Supports 100 Mbs and 10 Mbps throughput on 2 pairs of standard CAT–5 and CAT–3 cabling
- Full–duplex operation
- IEEE 802.3ab 1000 Base–T compliant
- IEEE 802.3u 100 Base–TX compliant
- IEEE 802.3 10 Base–T compliant
- Supports Dual address cycle for access to 64–bit addresses
- Supports 64–bit addressing for systems with greater than 4 GB of physical memory v Supports PCI–X split transactions
- Two bi–color LED adapter status indicators for link activity and baud rate, see Figure on next page 2.

- RJ–45 UTP Connector for Category–5 Copper Cabling
- Surface mount technology (SMT)

Understanding the Adapter LEDs

The LEDs on the 10/100/1000 Base–TX Ethernet PCI–X Adapter provide information about the card
and, when lit, indicate the following conditions:

LED	Light	Description
Link Speed	Off	10 Mbps
	Green	100 Mbps
	Orange	1000 Mbps
Link	Green	Good Link
	Off	No link: could be the result of a bad cable, bad connector, configuration mismatch, or not selected
	Blinking	Indicates data activity



1. ACT/LNK LED
2. RJ–45 Connector
3. Link Speed LED

10/100 Mbps Ethernet PCI Adapter (Type B2-F)

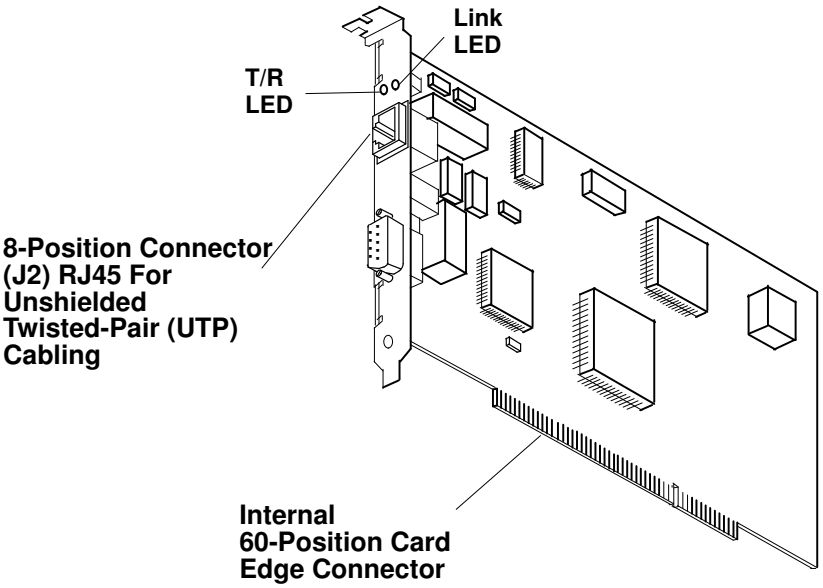
The Ethernet 10/100 Mbps Adapter (PCI) is a Fast Ethernet network adapter that runs at 10 Mbps or 100 Mbps. It works with PCI (Peripheral Component Interconnect) buses and connects to any 100BASE–TX compliant Ethernet hub to deliver ten times the bandwidth supported by 10BASE–T Ethernet or any 10BASE–T compliant Ethernet hub.

For 100 Mbps operation, the adapter supports operation on Category 5 unshielded twisted-pair (UTP) cable. For 10 Mbps operation, the adapter supports Category 3, 4 and 5 UTP cable.

The bus-mastering Ethernet 10/100 Mbps Adapter (PCI) is software-selectable between 10 and 100 Mbps operation and compliant with both the IEEE 802.3 10BASE–T (twisted-pair) and Fast Ethernet 100BASE–TX standard.

In newer deliveries this card has been replaced by the 10/100Mbps Ethernet Adapter (Type B5-H).

For more information on this adapter, refer to the *Ethernet 10 & 10/100 Mbps PCI Adapters Installation and Configuration Guide*, 86 A1 18GX.



Ethernet 10/100 Mbps Adapter Characteristics

The main supported characteristics are:

- Supports full-duplex operation at 100 Mbps.
- Support for Category 3 or 4 UTP cable for 10 Mbps operation, Category 5 UTP cable for 10 Mbps or 100 Mbps operation.
- Interface to the 32-bit PCI local bus.
- 32-bit data path with bus-master design.
- Activity (transmit/receive) and link integrity LED indicators mounted on bracket.
- Support PCI INTA.
- Wrap plug: RJ-45

10/100 Mbps Ethernet PCI Adapter (Type B5-6)

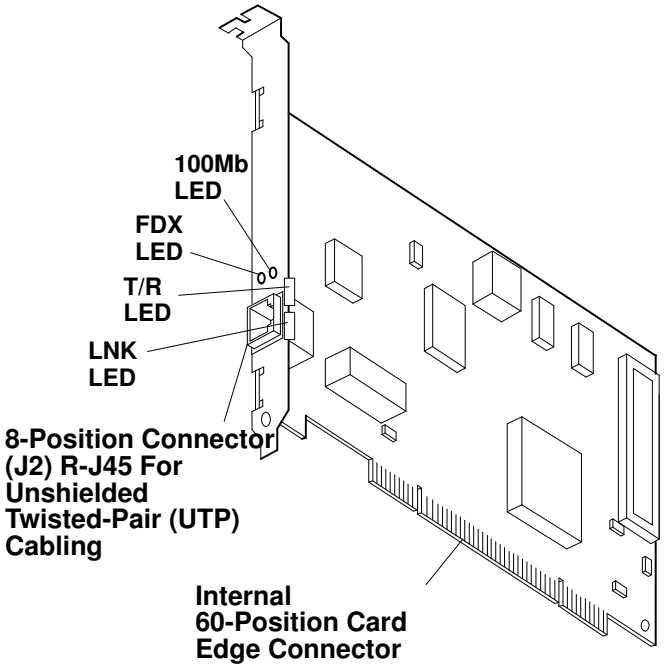
The Ethernet 10/100 Mbps Adapter (PCI) is a Fast Ethernet network adapter that runs at 10 Mbps or 100 Mbps. It works with PCI (Peripheral Component Interconnect) buses and connects to any 100BASE–TX compliant Ethernet hub to deliver ten times the bandwidth supported by 10BASE–T Ethernet or any 10BASE–T compliant Ethernet hub.

For 100 Mbps operation, the adapter supports operation on Category 5 unshielded twisted-pair (UTP) cable. For 10 Mbps operation, the adapter supports Category 3, 4 and 5 UTP cable.

The bus mastering Ethernet 10/100 Mbps Adapter (PCI) performs full auto negotiation between 10 and 100 Mbps operation and is compliant with both the IEEE 802.3 10BASE–T (twisted-pair) and Fast Ethernet 100BASE–TX standard.

For more information on this adapter, refer to the *Ethernet 10 & 10/100 Mbps PCI Adapters Installation and Configuration Guide*, 86 A1 18GX.

This adapter has been replaced by adapter label B5-H.



Ethernet 10/100 Mbps Adapter Characteristics

The main supported characteristics are:

- Supports full-duplex operation at 10 Mbps and 100 Mbps.
- Support for Category 3 or 4 UTP cable for 10 Mbps operation, Category 5 UTP cable for 10 Mbps or 100 Mbps operation.
- Interface to the 32-bit PCI local bus.
- 32-bit data path with bus master design.
- Activity (transmit/receive) and link integrity LED indicators mounted on bracket.
- Auto-negotiation
- Support PCI INTA.
- Connector RJ-45 for UTP cabling
- Wrap plug: RJ-45

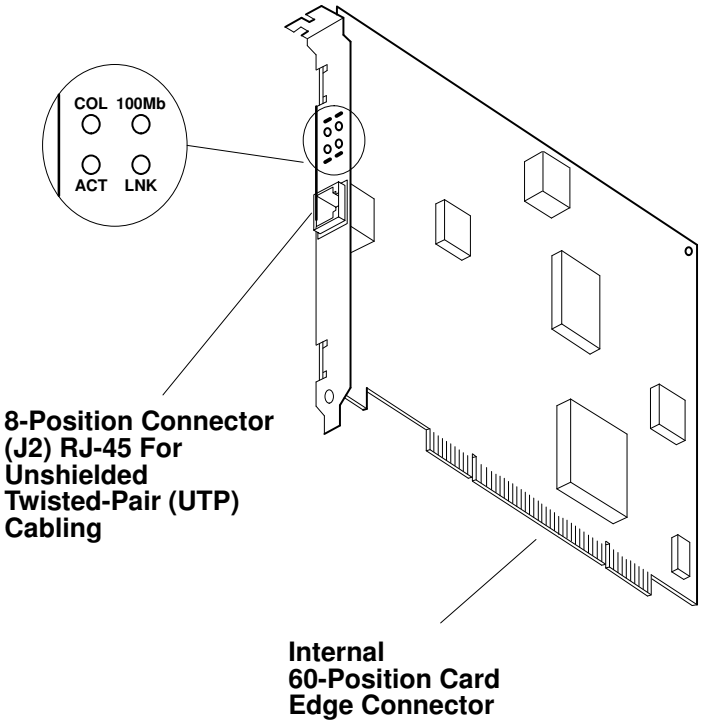
10/100 Mbps Ethernet PCI Adapter (Type B5-H)

The Ethernet 10/100 Mbps Adapter (PCI) is a Fast Ethernet network adapter that runs at 10 Mbps or 100 Mbps. It works with PCI (Peripheral Component Interconnect) buses and connects to any 100BASE–TX compliant Ethernet hub to deliver ten times the bandwidth supported by 10BASE–T Ethernet or any 10BASE–T compliant Ethernet hub.

For 100 Mbps operation, the adapter supports operation on Category 5 unshielded twisted-pair (UTP) cable. For 10 Mbps operation, the adapter supports Category 3, 4 and 5 UTP cable.

The bus mastering Ethernet 10/100 Mbps Adapter (PCI) performs full auto negotiation between 10 and 100 Mbps operation and is compliant with both the IEEE 802.3 10BASE–T (twisted-pair) and Fast Ethernet 100BASE–TX standard.

For more information on this adapter, refer to the *Ethernet 10 & 10/100 Mbps PCI Adapters Installation and Configuration Guide*, 86 A1 18GX.



Ethernet 10/100 Mbps Adapter Characteristics

The main supported characteristics are:

- Supports full-duplex operation at 10 Mbps and 100 Mbps.
- Support for Category 3 or 4 UTP cable for 10 Mbps operation, Category 5 UTP cable for 10 Mbps or 100 Mbps operation.
- Interface to the 32-bit PCI local bus.
- 32-bit data path with bus master design.
- Activity (transmit/receive) and link integrity LED indicators mounted on bracket.
- Auto-negotiation
- Support PCI INTA.
- Connector RJ-45 for UTP cabling
- Wrap plug: RJ-45

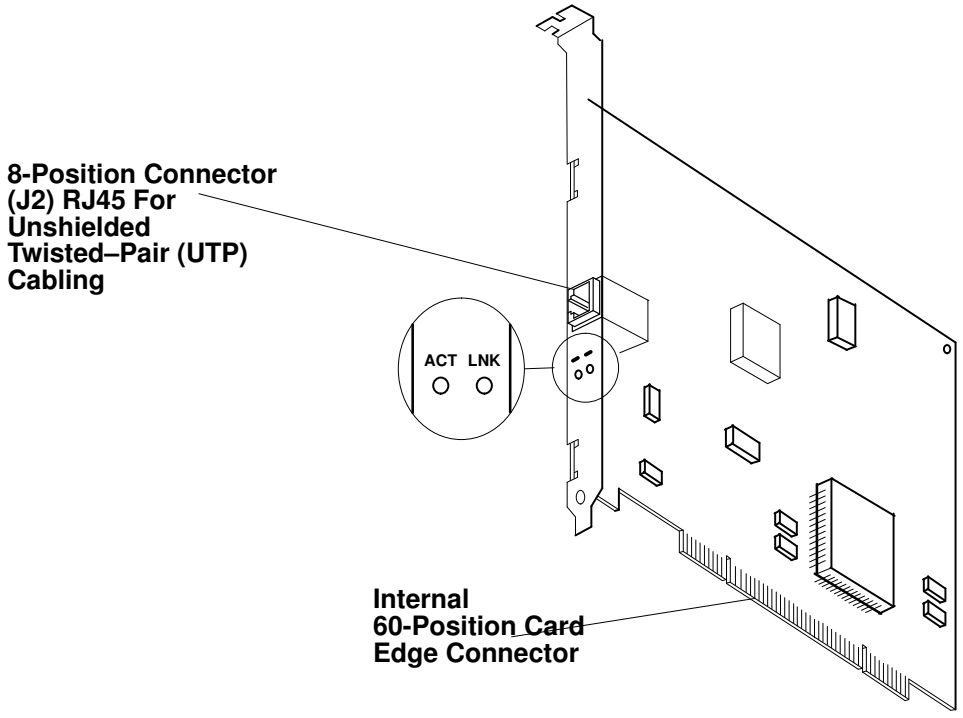
10/100 Mbps Ethernet PCI Adapter (Type B5-M)

The Ethernet 10/100 Mbps Adapter (PCI) is a Fast Ethernet network adapter that runs at 10 Mbps or 100 Mbps. It works with PCI (Peripheral Component Interconnect) buses and connects to any 100BASE–TX compliant Ethernet hub to deliver ten times the bandwidth supported by 10BASE–T Ethernet or any 10BASE–T compliant Ethernet hub.

For 100 Mbps operation, the adapter supports operation on Category 5 unshielded twisted-pair (UTP) cable. For 10 Mbps operation, the adapter supports Category 3, 4 and 5 UTP cable.

The bus mastering Ethernet 10/100 Mbps Adapter (PCI) performs full auto negotiation between 10 and 100 Mbps operation and is compliant with both the IEEE 802.3 10BASE–T (twisted-pair) and Fast Ethernet 100BASE–TX standard.

For more information on this adapter, refer to the *Ethernet 10 & 10/100 Mbps PCI Adapters Installation and Configuration Guide*, 86 A1 18GX.



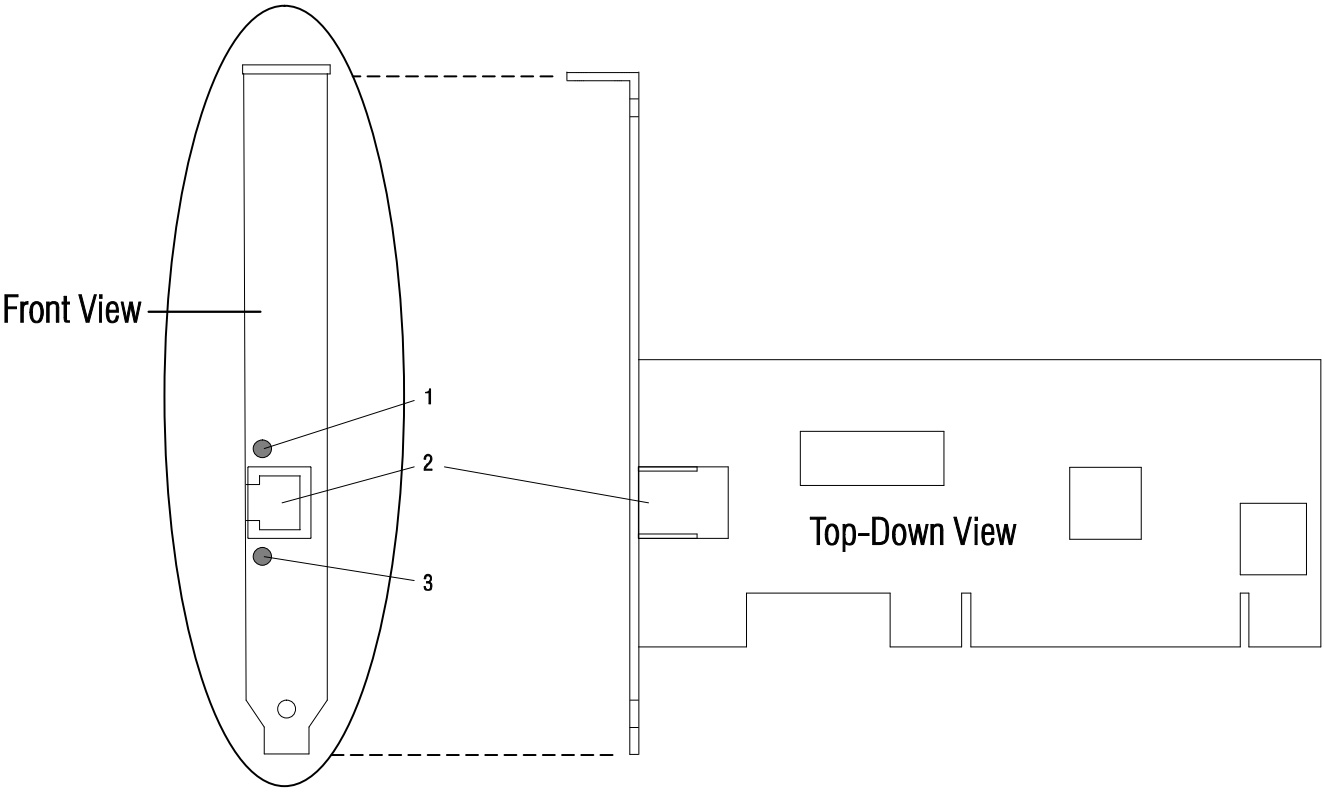
Ethernet 10/100 Mbps Adapter Characteristics

The main supported characteristics are:

- Supports full-duplex operation at 10 Mbps and 100 Mbps.
- Support for Category 3 or 4 UTP cable for 10 Mbps operation, Category 5 UTP cable for 10 Mbps or 100 Mbps operation.
- Interface to the 32-bit PCI local bus.
- 32-bit data path with bus master design.
- Activity (transmit/receive) and link integrity LED indicators mounted on bracket.
- Auto-negotiation
- Support PCI INTA.
- Connector RJ-45 for UTP cabling
- Wrap plug: RJ-45

10/100 Mbps Ethernet PCI Adapter II (Type A-F)

The 10/100 Mbps Ethernet PCI Adapter II is a 32–bit, 33 MHz high performance expansion adapter card for systems adhering to the Peripheral Component Interconnect (PCI) and IEEE 802.3 standards. The adapter connects the system to an Ethernet LAN at either 10 Mbps or 100 Mbps data rate.



1 ACT/LINK LED

2 RJ–45 connector

3 100 TX LED

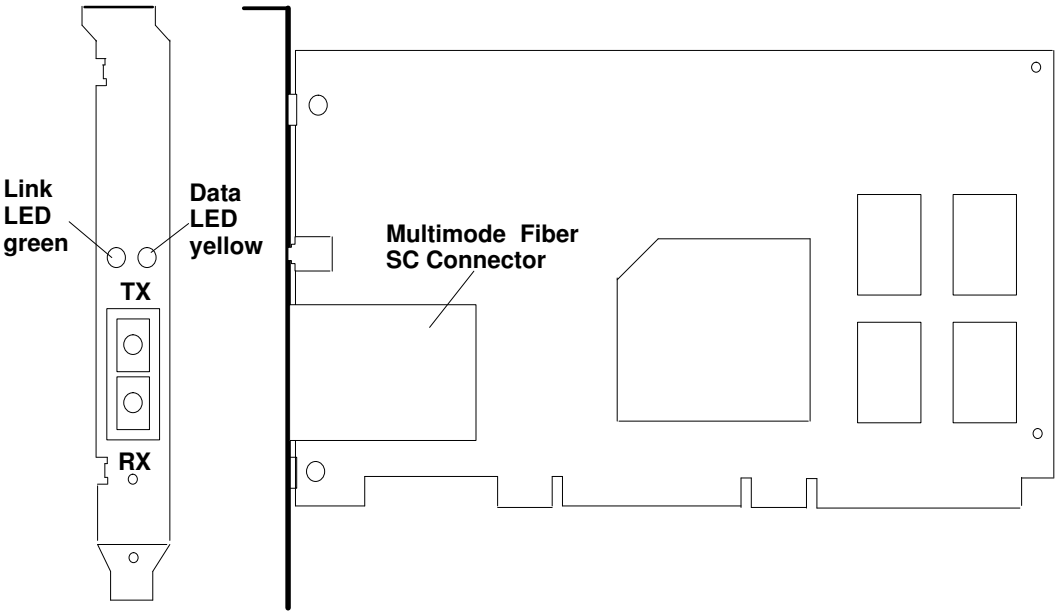
10/100 Mbps Ethernet PCI Adapter II Specifications

Bus architecture	PCI 2.2 compliant
Busmaster	Yes
Connector	RJ-45
Cables	Customer supplied Use CAT–5 twisted pair bulk cables (TIA/EIA 568A is recommended).
Wrap plug	RJ-45

Gigabit Ethernet-SX PCI Adapter (Type 9-U) and (Type B5-N)

The Gigabit Ethernet-SX Adapter provides attachment at 1000Mbps to an ethernet local area network (LAN). It is designed to operate on systems with 32-bit or 64-bit Peripheral Component Interconnect (PCI) bus interface. It uses the IEEE-802.3z standard for communications.

This adapter supports connections at 1000Mbps with full duplex operation on fiber optic networks through an SC connector.



Gigabit Ethernet-SX Adapter Specifications

Bus architecture	PCI 2.1 compliant
Bus master	Yes
Maximum number	For the maximum number of adapters allowed, see your system's reference guide
Adapter size	PCI Short form
Connector	SC Fiber optic
Wrap plug	SC Fiber optic

Viewing the LEDs

The adapter features two LEDs that provide information on the status of the adapter's operation. The LEDs are visible through the card's mounting bracket (see figure above).

LED	Color	Status	
Link LED	Green	On	Indicates link is up
		Blinking	Port is disabled by software
		Off	No link. This can result from a bad cable, a bad connector or a configuration mismatch.
Data LED	Yellow	On	Indicates transmit or receive activity
		Off	No data detected

Gigabit Ethernet-SX Cable Length

The 1000Mbps adapter uses multimode fiber optic cable. The following table shows the allowable cable length from the adapter to the local switch.

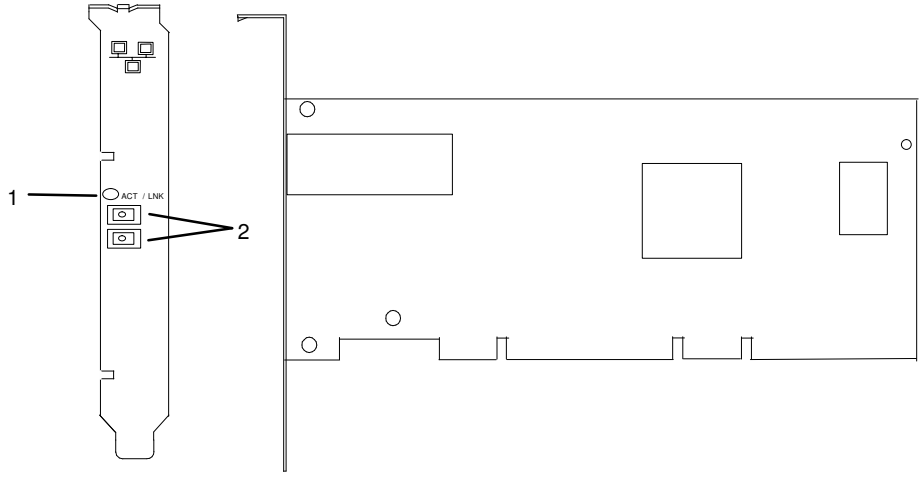
Fiber Type	Modal bandwidth (MHZ-km)	Range (in meters)
62.5 μm MMF	160	2 to 220
62.5 μm MMF	200	2 to 275
50 μm MMF	400	2 to 500
50 μm MMF	500	2 to 500

Note: MMF – Multimode Fiber

Gigabit Ethernet SX PCI X Adapter (no label)

The Gigabit Ethernet–SX PCI–X Adapter is a high performance, highly integrated, universal, Ethernet LAN adapter for PCI–X and PCI systems. The adapter provides 1000 Mbps throughput on a standard shortwave (850 nm) 50/62.5 micron multimode optical cable and conforms to the IEEE 802.3z standards and supports distances of 260 meters for 62.5u MMF and 550 meters for 50.0u MMF.

The adapter runs in standard PCI–X V1.0a compliant systems with 32/64–bit PCI–X Bus Master slots at 66/133 MHz, as well as PCI 2.2 compliant systems with 32/64–bit PCI bus master slots at 33/66 MHz.



1. LED
2. Multimode Fiber LC Receptacle

Gigabit Ethernet SX PCI X Adapter Specifications

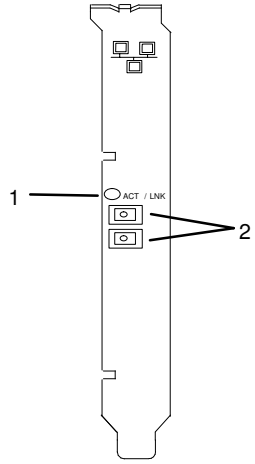
The Gigabit Ethernet–SX PCI–X Adapter provides the following features:

- Support for 64 bit Direct Bus Mastering on the PCI/PCI–X bus
- Uses a shared memory structure in host memory and copies data directly from and to host memory
- Supports Boot ROM
- 1000 Mbps Full Duplex throughput on standard 50u or 62.5u MMF optical cable
- IEEE 802.3z 1000 Base–SX compliant
- Supports Dual address cycle for access to 64–bit addresses
- Supports 64–bit addressing for systems with greater than 4 GB of physical memory
- Supports PCI–X split transactions
- Surface mount technology (SMT)
- LC physical connector

Understanding the Adapter LED

The LED on the Gigabit Ethernet–SX PCI–X Adapter provides information about the card's operation status. The LED is visible through the card¿
indicates the following conditions:

LED	Status
Off	No Link/No Activity
On (Green)	Link, No Activity
Flashing (Green)	Link, Activity

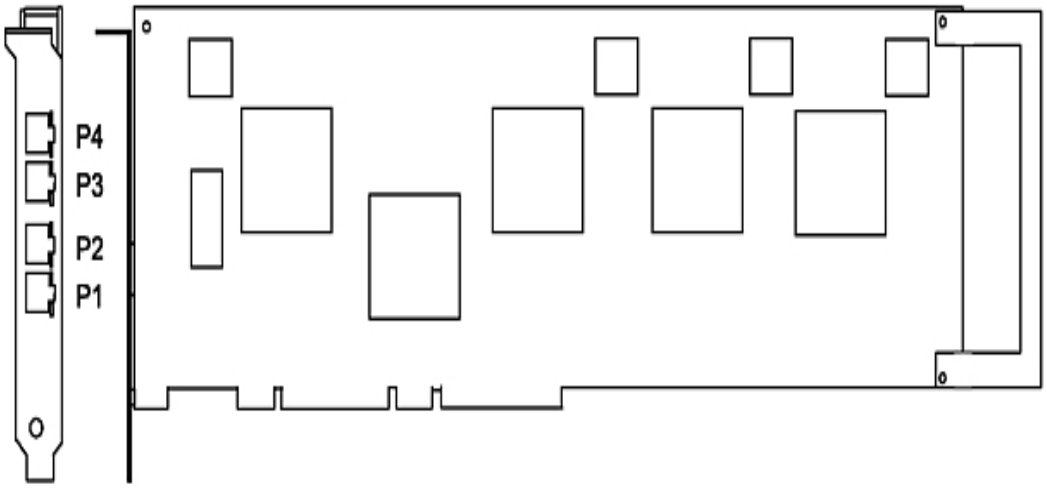


1. LED
2. Multimode Fiber LC Receptacle

4–Port 10/100 Base–TX Ethernet PCI Adapter (Type 9-Z)

The 4–port 10/100 Base-TX Ethernet PCI Adapter provides attachment at 10 Mbps or 100 Mbps to a carrier sense multiple access/collision detection (CSMA/CD) ethernet local area network (LAN) for systems designed to operate with the Peripheral Component Interconnect (PCI) bus interface. It uses the IEEE-802.3u standard for communications.

The adapter supports connections to 10BaseT or 100BaseTx on unshielded twisted pair networks through an RJ-45 connector.



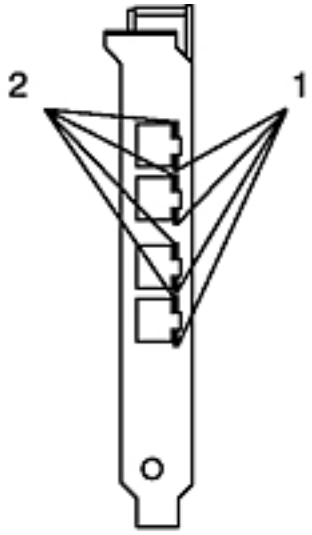
4–Port 10/100 Base-TX Ethernet PCI Adapter Specifications

Bus architecture	PCI
Busmaster	Yes
Connector information	Four 8–position RJ-45 connectors for UTP
Cables	Customer supplied (use Y–type connection)
For 10 Mbps	Use category 3, 4 or 5 unshielded twisted pair
For 100 Mbps	Use category 5 only unshielded twisted pair
Wrap plug	RJ-45

Note: The cable segment length for either of the cables listed above can be no longer than 100 metres (328 feet). This is the maximum permitted cable length from the adapter to the local concentrator, including patch cables.

Viewing the LEDs

The adapter has two LEDs for each port to provide status on the operation of each adapter. The LEDs are visible on the mounting bracket at the connector of each port. They indicate the following conditions when lit.



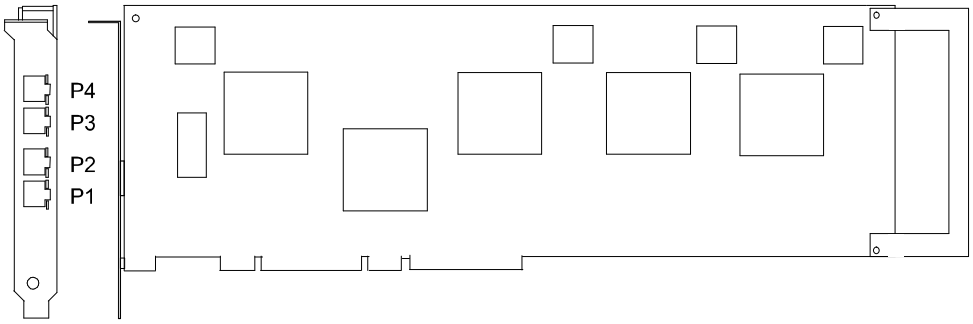
The green LED (1) indicates operation at 100 Mbps.

The yellow LED (2) indicates that packets are being received or transmitted over the network.

4–Port 10/100 Base–TX Ethernet PCI Adapter (Type A-E)

The 4–Port 10/100 Base–TX Ethernet PCI Adapter provides attachment at 10 Mbps or 100 Mbps to a carrier sense multiple access/collision detection (CSMA/CD) Ethernet local area network (LAN) for systems designed to operate with the PCI bus interface. The adapter uses the IEEE–802.3u standard for communications. The adapter will occupy a single slot but will appear to the system to be four unique 10/100 Ethernet adapters.

The adapter supports connections to 10BaseT or 100BaseTx on unshielded twisted pair networks through an RJ–45 connector.

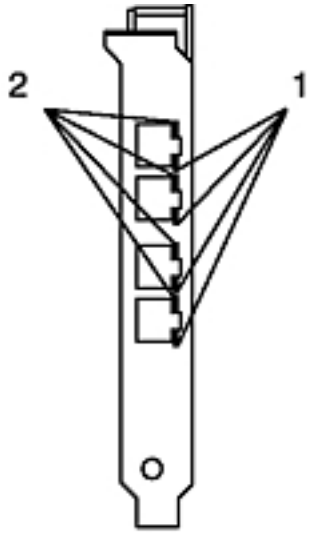


4–Port 10/100 Base-TX Ethernet PCI Adapter Specifications

Bus architecture	PCI
Busmaster	Yes
Connector information	8–position RJ-45 connectors
Cables	Customer supplied (use Y–type connection)
For 10 Mbps	Use category 3, 4 or 5 unshielded twisted pair
For 100 Mbps	Use category 5 only unshielded twisted pair
Wrap plug	Twisted–pair

Viewing the LEDs

The adapter has two LEDs for each port to provide status on the operation of each adapter. The LEDs are visible on the mounting bracket at the connector of each port. They indicate the following conditions when lit.



The green LED (1) indicates operation at 100 Mbps.

The yellow LED (2) indicates that packets are being received or transmitted over the network.

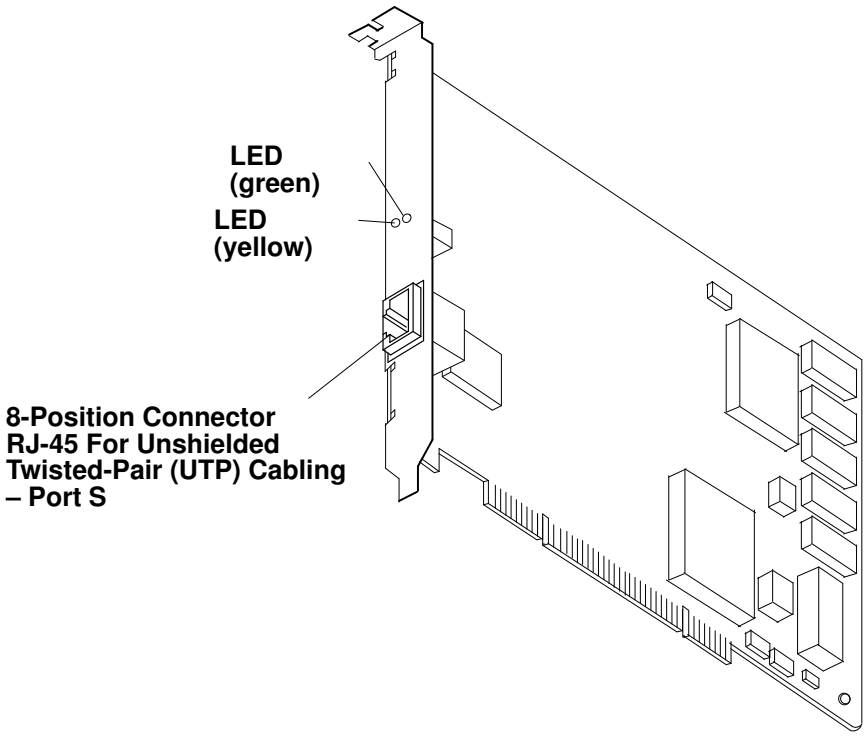
FDDI UTP Single Ring PCI Adapter (Type B5-3 or no label)

Note: FDDI adapters are delivered without labels for ESCALA RL470, ESCALA RL470A, EPC1200 and EPC1200A systems.

The FDDI UTP Single Ring Adapter is fitted with an Unshielded Twisted-Pair/TP-PMD (MLT 3) connector which offers cost-effective integration of PCI Platforms into the fast 100 Mbps FDDI network.

The card complies with ANSI TP-PMD Revision 2.1 (MTL 3). Its RJ-45 connector provides for attachment of 100 ohm UTP category 5 cables.

To know more about this adapter, refer to the *FDDI Adapters Installation and Configuration Guide*, 86 A1 53GX.



UTP Single Ring Adapter Characteristics

The main characteristics are:

- Data Streaming support
- Low cost RJ-45 connector
- MLT-3 interoperability
- Up to 100 m between nodes
- Fully software configurable
- SMT 7.3
- Suitable for multimedia applications (support of synchronous mode).

UTP Single Ring Adapter Connector

Unshielded twisted-pair port pinouts for port type A, B, M (Master) and S (Slave).

The UTP Single Ring Adapter uses standard RJ-45 connectors and receptacles. The table below summarizes the port pinouts.

Note: Category 5 UTP cables for FDDI require 1 ↔ 7 and 2 ↔ 8 crossovers.

RJ-45 Contact	Signal
1	Transmit (Tx+)
2	Transmit (Tx–)
7	Receive (Rx+)
8	Receive (Rx–)

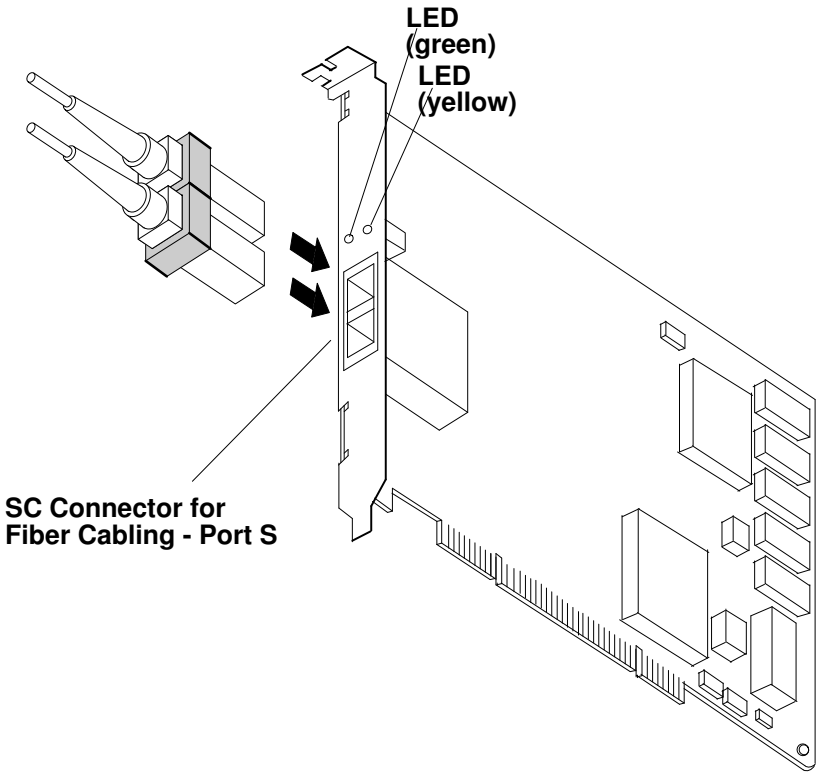
FDDI Fiber Single Ring (Type B5-4 or no label) and Dual Ring (Type B5-5 or no label) PCI Adapters

Note: FDDI adapters are delivered without labels for ESCALA RL470, ESCALA RL470A, EPC1200 and EPC1200A systems.

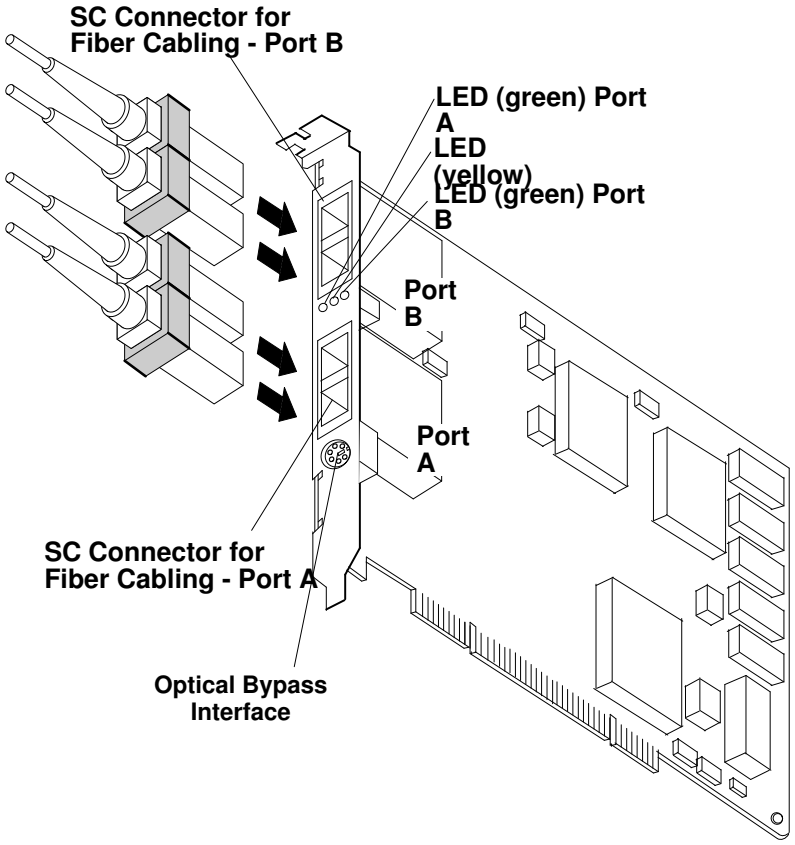
The FDDI Fiber Single Ring (Type B5-4) Adapter and the FDDI Fiber Dual Ring (Type B5-5) Adapter use an SC fiber optic cabling connection.

To know more about these adapters, refer to the *FDDI Adapters Installation and Configuration Guide*, 86 A1 53GX.

FDDI Fiber Single Ring Adapter (Type B5-4)



FDDI Fiber Dual Ring Adapter (Type B5-5)



FDDI Fiber Adapter Characteristics

The main characteristics are:

- Data Streaming support
- SC connector
- Up to 2 km between nodes
- Fully software configurable
- SMT 7.3
- Suitable for multimedia applications (support of synchronous mode).
- Dual Ring Adapter: the Optical Bypass Interface provides the facility of optical isolation from the FDDI network while maintaining continuity of cabling connections.

Fiber Ring Adapter Driver – LED Information

LED Status for FDDI Single Ring Adapter

Green LED	Yellow LED	State
off	off	Driver not loaded, adapter not operational.
off	on	Station management code is running, adapter is not connected to the network (for example, cable is disconnected).
on	off	Adapter is ready for use (connected to network and operational).

LED Status for FDDI Dual Ring Adapter

Green LED PORT A	Green LED PORT B	Yellow LED	State
off	off	off	Driver not loaded, adapter not operational.
off	off	on	Station management code is running, adapter is not connected to the network (for example, cable is disconnected).
off	on	off	Port B adapter is operational in single-ring mode.
on	off	off	Port A adapter is operational in single-ring mode.
on	on	off	Adapter is operational in dual ring.

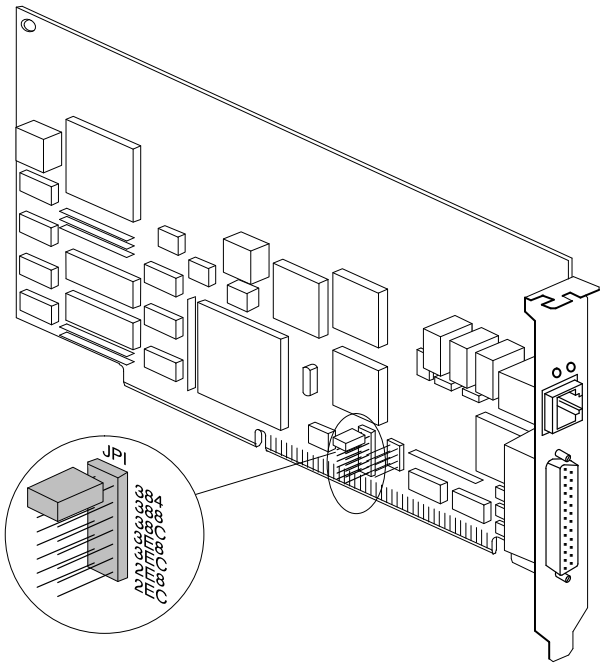
ISDN ISA Adapter (Type B5-2)

The ISDN Adapter enables you to connect a workstation to an ISDN network and possibly an X.25 network.

The main components of the ISDN adapters are:

- Intel 80C186 (25Mhz) processor,
- 1 Mo dual port access memory,
- ISDN AMD 79C32 and 82525 controllers,
- S0 ISDN interface,
- RJ-45 connector: enables connection to an ISDN network via a basic S0 access (2B+D) for communications on the B and/or D channels.

To know more about this adapter, refer to the *ISDN Adapter Installation Guide*, 86 A1 80GX and to the *ISDN Adapter Configuration Guide*, 86 A2 81GX .



The I/O address is set by positioning a jumper on the pins corresponding to the address (see figure above). The I/O address selected in the figure is 384 the adapter's default position.

ISDN Specifications

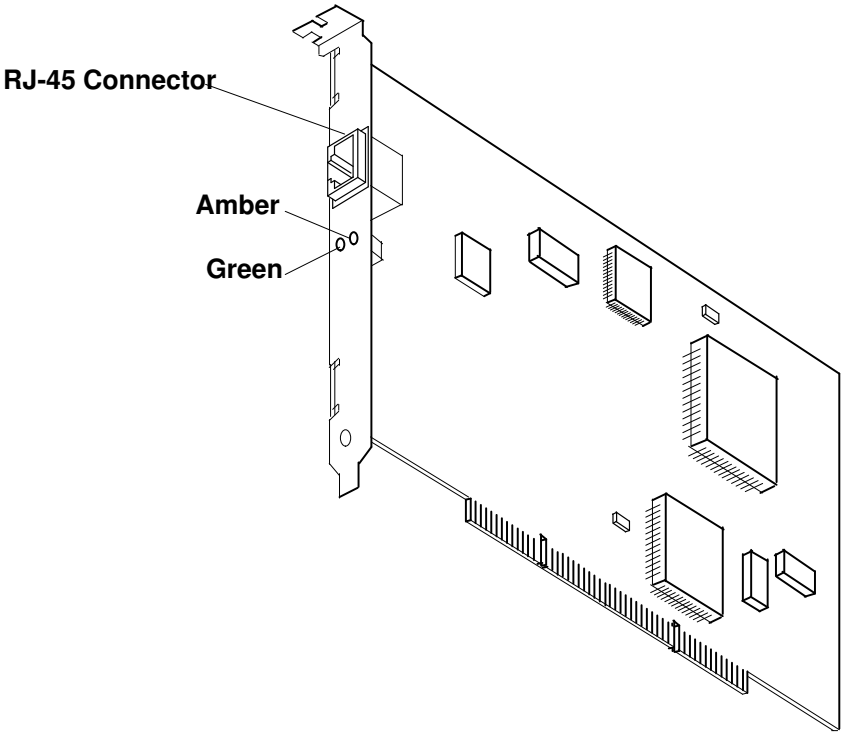
Bus Architecture	ISA
I/O address	384, 388, 38C, 3E8, 3EC, 2E8, 2EC Default value: **384**
Connector	RJ-45 connector

Auto LANstreamer Token Ring PCI Adapter (Type 8-T)

The Auto LANstreamer Token Ring Adapter is a high-performance adapter designed to operate in any computer that supports the Peripheral Component Interconnect (PCI) bus interface. This adapter provides a way for the system units to attach to a token ring Local Area Network (LAN).

Considerations for token ring applications are found in the IEEE-802.5 requirements.

For more detailed information refer to the *Token Ring PCI Adapters Installation and Configuration Guide*, 86 A1 31GX.



AUTO LANstreamer Token Ring Adapter Specifications

I/O bus architecture	PCI 2.0
Bit rate	4Mbps or 16Mbps set manually or automatically sensed
Modes	Half or full duplex
Bus master	Yes
Maximum number	4
Connector	RJ-45
Cables	Token ring RJ-45 STP adapter cable or Token ring 9-pin D-shell network adapter cable with conversion token ring cable supplied with adapter.

Interpreting the AUTO LANstreamer Token Ring Adapter LEDs

The Auto LANstreamer token ring adapter's LEDs provide information for monitoring its status and for problem determination.

If the green LED is on and the amber LED is off, the adapter is operating correctly.

If the amber LED is blinking and the green LED is steady, the adapter has detected a potential problem.

In the table below, the first four LED states indicate the sequence that is displayed when power is first applied to the computer and the adapter reaches the open state successfully. Some of these states may be too brief to observe. The last three LED states listed in the table indicate adapter faults.

Amber	Green	Explanation
Blinking	Blinking	The adapter is waiting for initialization.
Off	Off	The adapter initialization is in progress, or the computer is powered off.
Off	Blinking	The adapter did not detect any problems during its self-diagnostic tests and is waiting to open.
		If this LED state occurs after the adapter is open, this state indicates that the adapter has closed.
Off	On	The adapter is open and operating correctly.
On	Off	The adapter self-diagnostic tests failed or there is a problem with the adapter.
Blinking	Off	The adapter is closed. One of the following conditions exist: • The adapter open failed. • The adapter detected a wire fault. • The adapter failed the auto-removal test.
Blinking	On	The adapter has detected beaconing or a hard error.
On	On	The adapter has failed.

The following definitions are of terms referred to in the table:

Auto-removal A state in which a token ring adapter removes itself from the network to perform self-tests to determine whether it is the cause of a hard error. If the tests are successful, the adapter will reattach itself to the network.

Beaconing A state that a token ring adapter enters after it detects a hard error. The adapter reports the error condition to the other devices on the network. Beaconing can result in the adapter removing itself from the network (auto-removal) to determine whether it is the cause of the hard error.

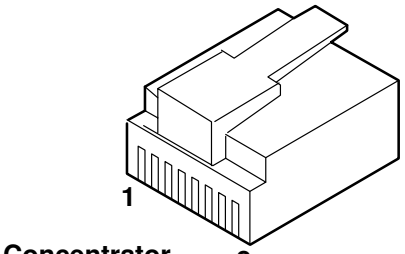
Hard error An error condition on a network that requires removing the source of the error or reconfiguring the network before the network can resume reliable operation.

Initialization An action during which the adapter is prepared for use after its computer is booted. During initialization, the adapter runs its self-diagnostic tests.

Open A state in which the adapter has established connection with other devices on the ring.

Wire fault An error condition caused by a break or a short-circuit in the cable segment that connects the adapter to its access unit.

Auto LANstreamer Token Ring Adapter RJ-45 Connector



Position	Signal Name
1	No Connect
2	No Connect
3	Ring Out A
4	Ring In B
5	Ring In A
6	Ring Out B
7	No Connect
8	No Connect

Token Ring PCI Adapter (Type 9-O)

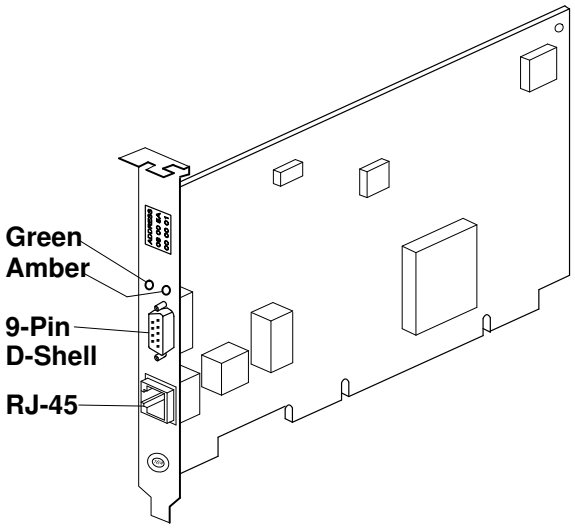
The Token Ring PCI Adapter is a high performance 32-bit, bus master, token ring adapter for the Peripheral Component Interconnect (PCI) bus architecture.

This adapter features an enhanced system interface for higher throughput and lower system utilization, coupled with RJ-45 and DB9 connectors. It is equipped to handle the LAN environment requirements of today's servers and high-end workstation running I/O intensive applications on the network. This adapter complies with IEEE 802.5 requirements.

Additional features and support include:

- Support UTP and STP cabling with both an RJ-45 connector and a 9-pin D-Shell connector.
- External status light-emitting diodes (LEDs), providing visual indication of adapter and ring status without disrupting operation.
- Support for full-duplex, token ring LAN operation.

For more detailed information refer to the *Token Ring PCI Adapters Installation and Configuration Guide*, 86 A1 31GX.



Token Ring PCI Adapter Specifications

Bus architecture	PCI
Bit rate	4Mbps or 16Mbps set manually or automatically sensed
Modes	Half or full duplex
Bus master	Yes
Connector information	RJ-45 and 9-pin D-shell
Cables	
For STP	Token ring RJ-45 STP Adapter cable or token ring 9-pin D-Shell Network Adapter Cable
For UTP	Standard UTP Adapter cable with an RJ-45 connector on one end for the adapter and the appropriate connector for the wall outlet on the other end.

Interpreting the Adapter LEDs

The Token Ring PCI Adapter LEDs provide information useful for monitoring the status of the adapter and for problem solving.

In the following table, the first four LED states indicate the sequence that is displayed when the computer is started and the adapter reaches the open state successfully. Some of these states may be too brief to observe. The last three LED states listed in the table indicate problems.

Amber	Green	Description
Blinking	Blinking	The adapter is waiting for initialization.
Off	Off	The adapter initialization is in progress, or the computer is powered off.
Off	Blinking	The adapter did not detect any problems during its self-diagnostic tests and is waiting to open. If this LED state occurs after the adapter is open, this state indicates that the adapter has closed.
Off	On	The adapter is open and operating correctly.
On	Off	The adapter self-diagnostic tests failed or there is a problem with the adapter.
Blinking	Off	The adapter is closed. One of the following conditions exists: – The adapter open failed. – The adapter detected a wire fault. – The adapter failed the auto-removal test.
Blinking	On	The adapter has detected beaconing or a hard error.
On	On	The adapter has failed.

The following definitions are of terms referred to in the table:

Auto-removal A state in which a token ring adapter removes itself from the network to perform self-tests to determine whether it is the cause of a hard error. If the tests are successful, the adapter will reattach itself to the network.

Beaconing A state that a token ring adapter enters after it detects a hard error. The adapter reports the error condition to the other devices on the network. Beaconing can result in the adapter removing itself from the network (auto-removal) to determine whether it is the cause of the hard error.

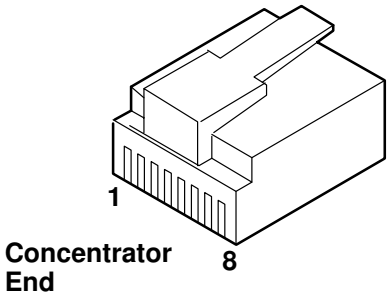
Hard error An error condition on a network that requires removing the source of the error or reconfiguring the network before the network can resume reliable operation.

Initialization An action during which the adapter is prepared for use after its computer is booted. During initialization, the adapter runs its self-diagnostic tests.

Open A state in which the adapter has established connection with other devices on the ring.

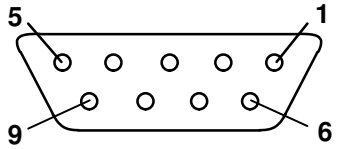
Wire fault An error condition caused by a break or a short-circuit in the cable segment that connects the adapter to its access unit.

Token Ring PCI Adapter RJ-45 Connector



Position	Signal Name
1	No Connect
2	No Connect
3	Ring Out A
4	Ring In B
5	Ring In A
6	Ring Out B
7	No Connect
8	No Connect

Token Ring PCI Adapter 9-Pin D-Shell Connector



Position	Signal Name
1	Ring Out A
2	Gnd
3	+ 5v
4	Gnd
5	Ring In B
6	Ring Out B
7	Gnd
8	Gnd
9	Ring In A

Token Ring PCI Adapter (Type B5-J)

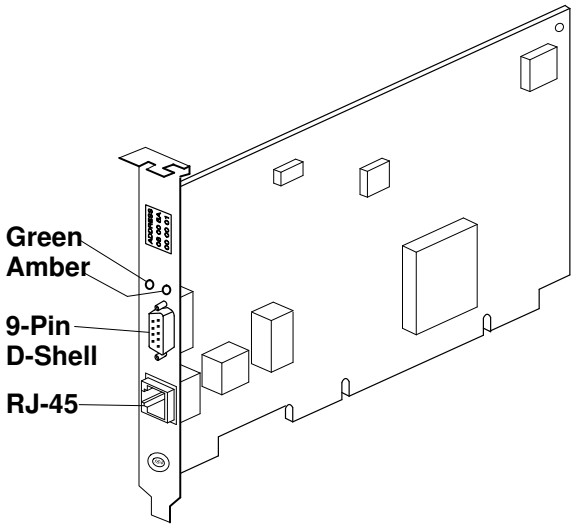
The Token Ring PCI Adapter is a 32-bit, bus master, token ring adapter for the Peripheral Component Interconnect (PCI) bus architecture.

This adapter supports connection to a token ring network that is wired unshielded twisted-pair (UTP) or shielded twisted-pair (STP) cabling.

Additional features and support include:

- Automatic ring speed detection.
- Support UTP and STP cabling with both an RJ-45 connector and a 9-pin D-Shell connector.
- External status light-emitting diodes (LEDs), providing visual indication of adapter and ring status without disrupting operation.
- Support for full-duplex, token ring LAN operation.

For more detailed information refer to the *Token Ring PCI Adapters Installation and Configuration Guide*, 86 A1 31GX.



Token Ring PCI Adapter Specifications

Bit rate	4Mbps or 16Mbps set manually or automatically sensed
Modes	Half or full duplex
Bus master	Yes
Connector information	RJ-45 and 9-pin D-shell
Cables	
For STP	Token ring RJ-45 STP Adapter cable or token ring 9-pin D-Shell Network Adapter Cable
For UTP	Standard UTP Adapter cable with an RJ-45 connector on one end for the adapter and the appropriate connector for the wall outlet on the other end.

Interpreting the Adapter LEDs

The Token Ring PCI Adapter LEDs provide information useful for monitoring the status of the adapter and for problem solving.

In the following table, the first four LED states indicate the sequence that will be displayed when the computer is started and the adapter reaches the open state successfully. Some of those states may be too brief to observe. The last three LED states listed in the table indicate problems.

Amber	Green	Description
Blinking	Blinking	The adapter is waiting for initialization.
Off	Off	The adapter initialization is in progress, or the computer is powered off.
Off	Blinking	The adapter did not detect any problems during its self-diagnostic tests and is waiting to open. If this LED state occurs after the adapter is open, this state indicates that the adapter has closed.
Off	On	The adapter is open and operating correctly.
On	Off	The adapter self-diagnostic tests failed or there is a problem with the adapter.
Blinking	Off	The adapter is closed. One of the following conditions exists: – The adapter open failed. – The adapter detected a wire fault. – The adapter failed the auto-removal test.
Blinking	On	The adapter has detected beaconing or a hard error.
On	On	The adapter has failed.

The following definitions are of terms referred to in the table:

Auto-removal A state in which a token ring adapter removes itself from the network to perform self-tests to determine whether it is the cause of a hard error. If the tests are successful, the adapter will reattach itself to the network.

Beaconing A state that a token ring adapter enters after it detects a hard error. The adapter reports the error condition to the other devices on the network. Beaconing can result in the adapter removing itself from the network (auto-removal) to determine whether it is the cause of the hard error.

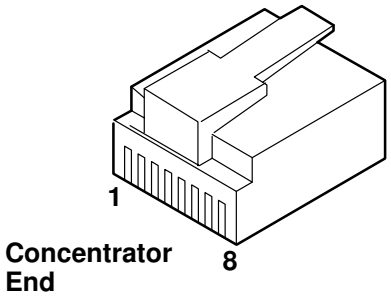
Hard error An error condition on a network that requires removing the source of the error or reconfiguring the network before the network can resume reliable operation.

Initialization An action during which the adapter is prepared for use after its computer is booted. During initialization, the adapter runs its self-diagnostic tests.

Open A state in which the adapter has established connection with other devices on the ring.

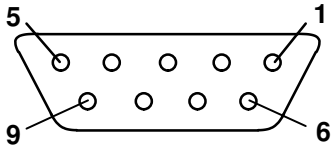
Wire fault An error condition caused by a break or a short-circuit in the cable segment that connects the adapter to its access unit.

Token Ring PCI Adapter RJ-45 Connector



Position	Signal Name
1	No Connect
2	No Connect
3	Ring Out A
4	Ring In B
5	Ring In A
6	Ring Out B
7	No Connect
8	No Connect

Token Ring PCI Adapter 9-Pin D-Shell Connector



Position	Signal Name
1	Ring Out A
2	Gnd
3	+ 5v
4	Gnd
5	Ring In B
6	Ring Out B
7	Gnd
8	Gnd
9	Ring In A

Token Ring PCI Adapter (Type B5-R)

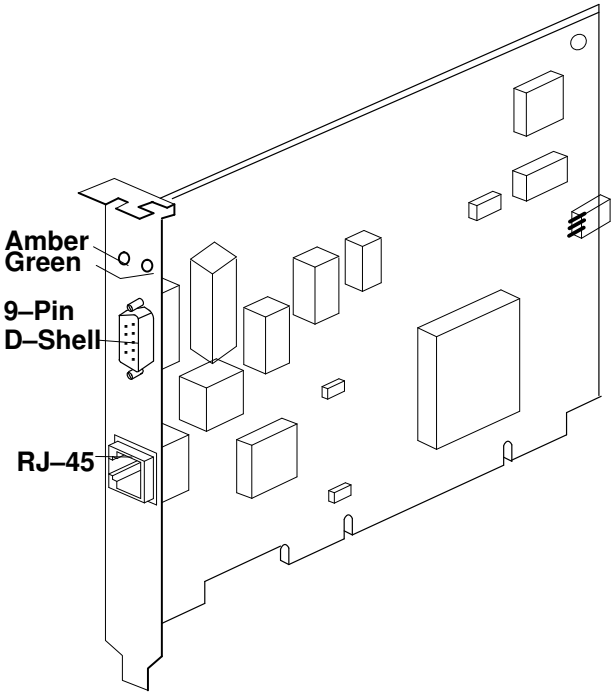
The Token Ring PCI Adapter is a 32-bit, bus master, token ring adapter for the Peripheral Component Interconnect (PCI) bus architecture.

This adapter supports connection to a token ring network that is wired unshielded twisted-pair (UTP) or shielded twisted-pair (STP) cabling.

Additional features and support include:

- Automatic ring speed detection.
- Support UTP and STP cabling with both an RJ-45 connector and a 9-pin D-Shell connector.
- External status light-emitting diodes (LEDs), providing visual indication of adapter and ring status without disrupting operation.
- Support for full-duplex, token ring LAN operation.

For more detailed information refer to the *Token Ring PCI Adapters Installation and Configuration Guide*, 86 A1 31GX.



Token Ring PCI Adapter Specifications

Bit rate	4Mbps or 16Mbps set manually or automatically sensed
Modes	Half or full duplex
Bus master	Yes
Connector information	RJ-45 and 9-pin D-shell
Cables	
For STP	Token ring RJ-45 STP Adapter cable or token ring 9-pin D-Shell Network Adapter Cable
For UTP	Standard UTP Adapter cable with an RJ-45 connector on one end for the adapter and the appropriate connector for the wall outlet on the other end.

Interpreting the Adapter LEDs

The Token Ring PCI Adapter LEDs provide information useful for monitoring the status of the adapter and for problem solving.

In the following table, the first four LED states indicate the sequence that will be displayed when the computer is started and the adapter reaches the open state successfully. Some of those states may be too brief to observe. The last three LED states listed in the table indicate problems.

Amber	Green	Description
Blinking	Blinking	The adapter is waiting for initialization.
Off	Off	The adapter initialization is in progress, or the computer is powered off.
Off	Blinking	The adapter did not detect any problems during its self-diagnostic tests and is waiting to open. If this LED state occurs after the adapter is open, this state indicates that the adapter has closed.
Off	On	The adapter is open and operating correctly.
On	Off	The adapter self-diagnostic tests failed or there is a problem with the adapter.
Blinking	Off	The adapter is closed. One of the following conditions exists: – The adapter open failed. – The adapter detected a wire fault. – The adapter failed the auto-removal test.
Blinking	On	The adapter has detected beaconing or a hard error.
On	On	The adapter has failed.

The following definitions are of terms referred to in the table:

Auto-removal A state in which a token ring adapter removes itself from the network to perform self-tests to determine whether it is the cause of a hard error. If the tests are successful, the adapter will reattach itself to the network.

Beaconing A state that a token ring adapter enters after it detects a hard error. The adapter reports the error condition to the other devices on the network. Beaconing can result in the adapter removing itself from the network (auto-removal) to determine whether it is the cause of the hard error.

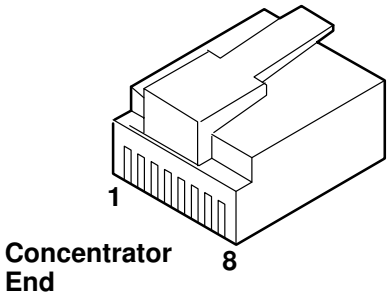
Hard error An error condition on a network that requires removing the source of the error or reconfiguring the network before the network can resume reliable operation.

Initialization An action during which the adapter is prepared for use after its computer is booted. During initialization, the adapter runs its self-diagnostic tests.

Open A state in which the adapter has established connection with other devices on the ring.

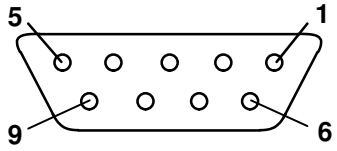
Wire fault An error condition caused by a break or a short-circuit in the cable segment that connects the adapter to its access unit.

Token Ring PCI Adapter RJ-45 Connector



Position	Signal Name
1	No Connect
2	No Connect
3	Ring Out A
4	Ring In B
5	Ring In A
6	Ring Out B
7	No Connect
8	No Connect

Token Ring PCI Adapter 9-Pin D-Shell Connector



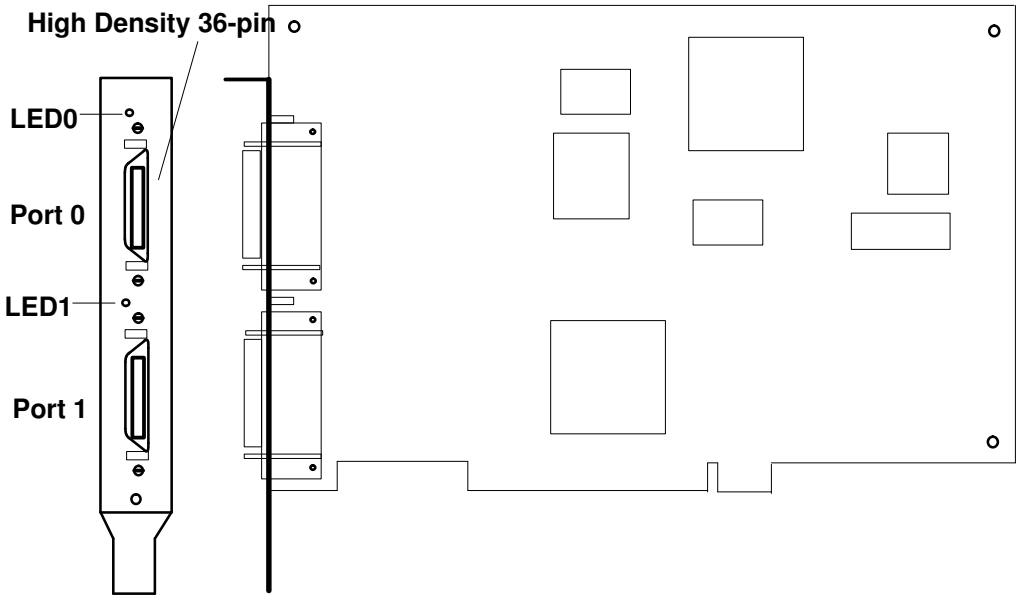
Position	Signal Name
1	Ring Out A
2	Gnd
3	+ 5v
4	Gnd
5	Ring In B
6	Ring Out B
7	Gnd
8	Gnd
9	Ring In A

X.25 2-Port Multi-protocol PCI Adapter (Type 8-L), (Type 9-L) or (Type B2-L)

Note: The label type found on the adapter depends on your system.

The X.25 2-Port Multi-protocol Adapter is used to make high speed connections between stand alone system units on a Wide Area Network (WAN).

For more information, refer to the *2-Port Multiprotocol PCI Adapter – Installation and Configuration Guide*, 86 A1 95JX.



Note: For adapter label 8-L, the port denomination is slightly different. Port 0 is called Port 1 and Port 1 in the figure above is called Port 2.

X.25 2-Port Multi-protocol Adapter Specifications

I/O Bus architecture	PCI
Bit rate	2.048 Mbits maximum per port
Bus master	No
Maximum number	Up to the maximum number of slots available
Connector	36-pin High Density (male)
Cables	V.24, V.35, V.36/EIA-449, X.21

The 2-Port Multi-protocol adapter supports the following communications protocols stacks:

- TCP-IP / X.25
- CSAIX
  - SNA / X.25
  - SDLC

On RL470, RL470A and EPC1200

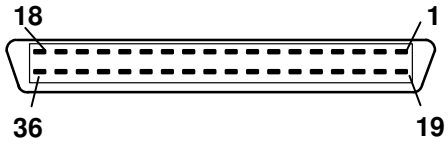
- HVX / X.25

Interpreting the Adapter LEDs (Connection Status Indicators)

Each LED indicates the status of the port to which it is connected (see figure above).

LED State	Connection Status	Remedy
Off	The port is not loaded (the configuration file describing protocol and interface parameters was not read by the device driver on the system unit).	Consult your networking software for instructions to load a configuration file and to start a connection.
Flash	The connection is up and data is being transmitted or received.	
On	The port is active and the connection is good.	

X.25 2-Port Multi-protocol Adapter Connector



Each port on this adapter supports several different interfaces.

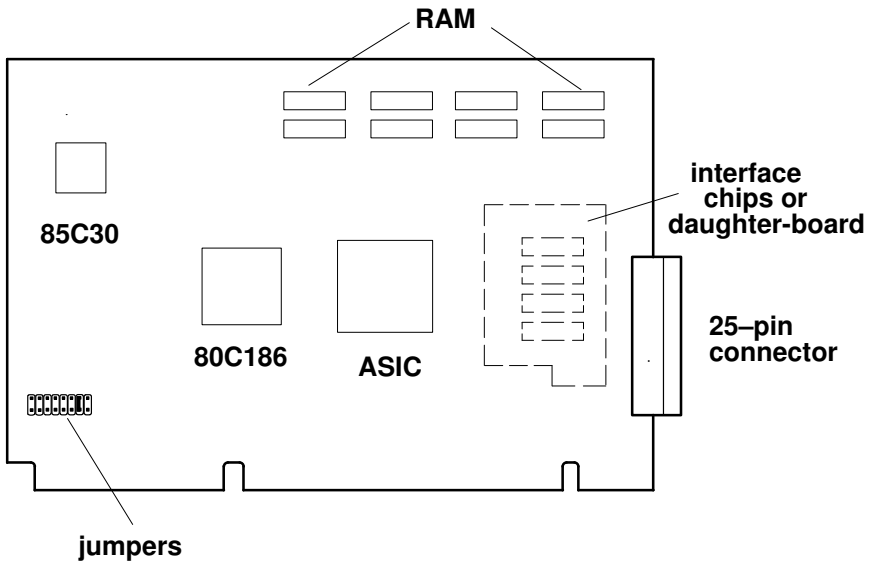
1-Port WAN Comm ISA Adapters (Type B2-B), (Type B2-C) and (Type B2-D)

The 1-Port WAN Comm Adapter provides an X.25 channel, which supports a maximum of 256 virtual circuits (SVC or PVC) with a total data transfer rate of 64 Kbps. Packet size is up to 4096 bytes.

Three types of 1-Port WAN Comm adapter (ISA) are available:

- **1-Port WAN Comm Adapter – V24** (Type B2-B), which implements V24/V28 physical interface, up to 19.2 Kbps,
- **1-Port WAN Comm Adapter – V35** (Type B2-C), which implements V24/V35 physical interface, up to 64 Kbps,
- **1-Port WAN Comm Adapter – V11** (Type B2-D), which implements Leased X21–X24/V11 physical interface, up to 64 Kbps,

For more information concerning installation of the 1-Port WAN Comm adapter or WAN adapters in general refer to the *1 Port WAN Comm Adapter (ISA) Installation Guide*, 86 A1 42AT.



1-Port WAN Comm Adapter Specifications

Bus architecture	ISA
Bit rate	64 Kbps maximum
Bus master	No
Cables	V24/V28
	V35/V24 – VCW3666 for ISO 2593
	VCW3657 for ISO std PTT/TRANSPAC
	VCW3660 for EIA standard
	Leased X21 – X24/V11
	See the Cabling Guide
Connector	25-pin connector

The 1-Port WAN Comm adapter supports the following communications protocols stacks:

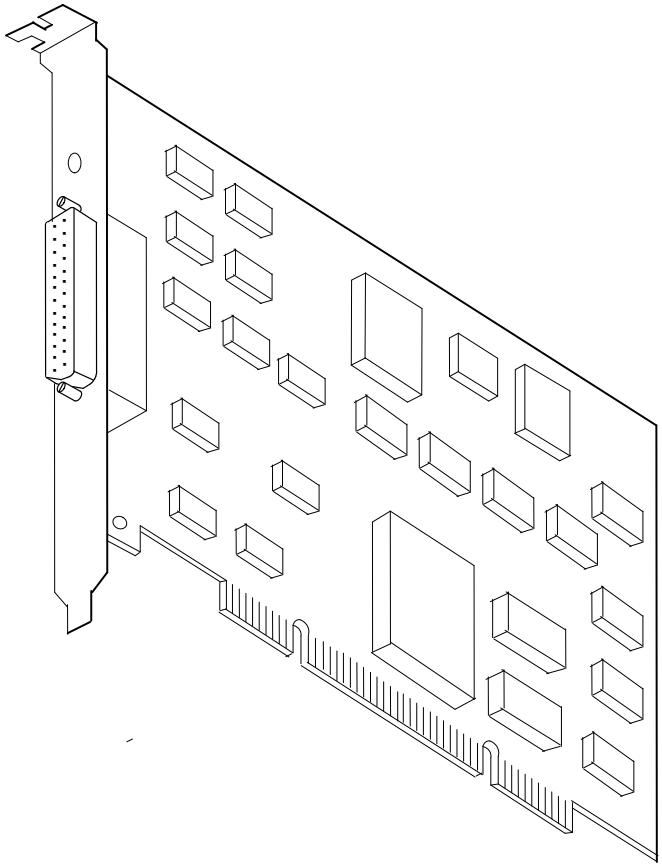
- TCP-IP
- OSI
- SNA20
- HVX / X.25
- XTI API (XX25)

1-Port Multi-Protocol Serial I/O PCI Adapter (Type B2-G)

The 1-Port Multi-protocol Serial I/O adapter is a dumb adapter which provides an X.25 channel.

Three interfaces (V24, V11 and V35) are available on the adapter and ready to use. The cabling and the wrap plugs differ depending on the interface wanted.

You can also refer to the *PCI 1Port & 4Port Multi–protocol Serial I/O Adapters Installation & Service Guide*, 86 A1 42HX and *Power Stream X.25 Installation and Service Guide*, 86 A2 95AT.



1-Port Multi-protocol Serial I/O Adapter Specifications

Bus architecture	PCI
Connector	Sub DB25 pins female
Bit Rate	128 Kbps maximum
Cables	See the *Cabling Guide*.
	V24/V28 cable
	X24/V11 cable
	V24/V35 PTT (France) cable
	V24/V35 ISO/EIA 2593 cable
PCI connector	5V

The 1-Port Multi-protocol Serial I/O adapter supports the following communications protocols stacks:

- TCP-IP
- OSI
- SNA20
- HVX / X.25
- XTI API (XX25)

4-Port Multi-Protocol Serial I/O PCI Adapter (Type B2-H)

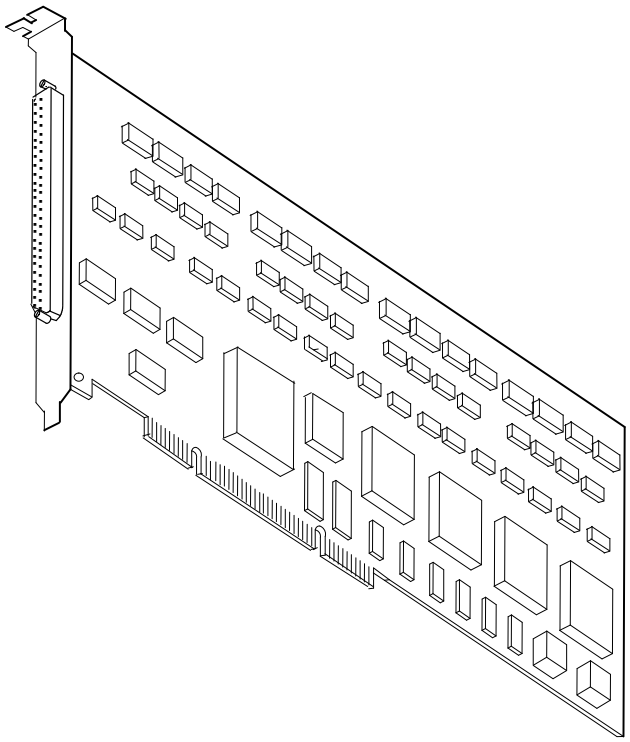
The 4-Port Multi-Protocol Serial I/O adapter is a dumb board, interfacing to the Peripheral Component Interconnect (PCI) bus and adapted for transmission at high data rates.

The 4-Port Multi-Protocol Serial I/O adapter provides four X.25 channels. It supports HDLC, SDLC, Bisync and Asynchronous protocols and three types of serial interfaces (RS-232, RS-422 and V.35) with software selection mechanism, i.e. no daughter-board.

Three interfaces (V24, V11 and V35) are available on the adapter and ready to use. The cabling and the wrap plugs differ depending on the interface wanted.

The 4-Port Multi-Protocol Serial I/O adapter is delivered with a distribution box.

You can refer to the *PCI 1Port & 4Port Multi–protocol Serial I/O Adapters Installation & Service Guide*, 86 A1 42HX and the *Power Stream X.25 Installation and Service Guide*, 86 A2 95AT.



4–Port Multi-Protocol Serial I/O Adapter Specifications

Bus architecture	PCI
Bit Rate	4 x 2 Mbps maximum
Connector	100mDF
Cables	See the *Cabling Guide* V24/V28 cable X24/V11 cable V24/V35 PTT (France) cable V24/V35 ISO/EIA 2593 cable
PCI connector	5V

The 4-Port Multi-protocol Serial I/O adapter supports the following communications protocols stacks:

- TCP-IP
- OSI,
- SNA20
- HVX / X.25
- XTI API (XX25)

Chapter 5. Asynchronous Adapters

This chapter describes asynchronous adapters, lists their main characteristics and requirements, and when applicable, connector signals.

If switches or jumpers need to be configured, this information is indicated.

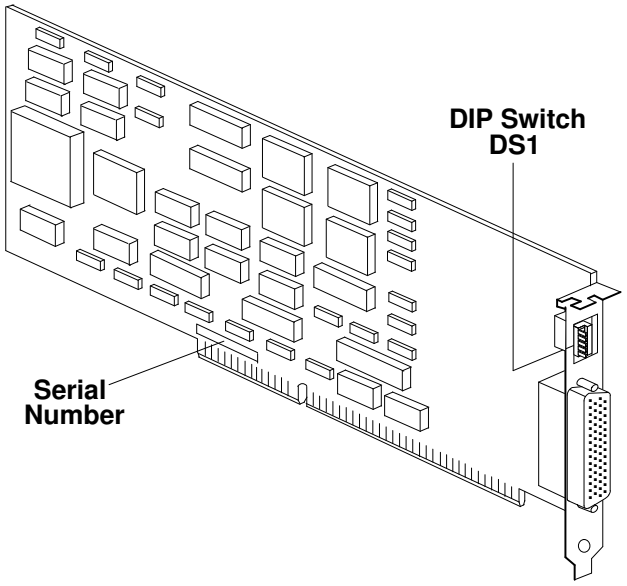
You will find the following asynchronous adapters:

4-Port Async ISA Adapter EIA-232 (Type B3-1) and 8-Port Async ISA Adapter EIA-232 (Type B3-3)

The 4-Port and 8-Port Asynchronous Adapters EIA-232 are multi-channel intelligent serial communications boards each of which occupy one slot of the ISA bus of the system.

The heart of the adapter is a 12.5MHz 80C186 microprocessor and 64 Kbytes of dual ported RAM, which relieves your computer of the burden of managing serial ports.

For more information, you can also refer to the *Estrella Asynchronous Serial Communications Adapters Installation and Configuration Guide,* 86 A1 45AT and for 8-Port adapters the *AIX Asynchronous Communication Guide*, 86 A2 26AQ.



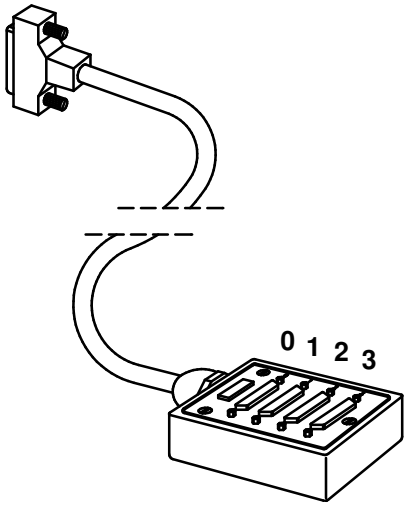
4/8-Port EIA-232 Connector Box

The 4/8-Port EIA-232 connector box picks up all the signals concerning the four or eight ports on the 78-pin connector of the 4/8-Port Async adapter and dispatches them on four or eight 25-pin connectors, one for each channel.

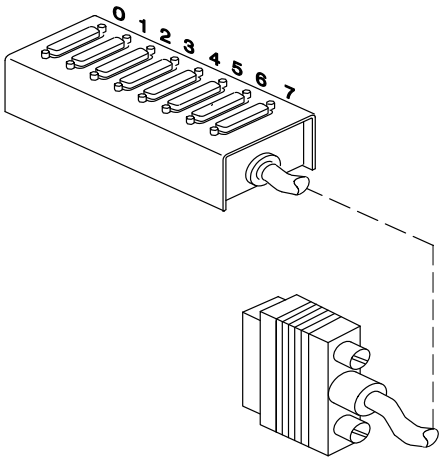
The EIA-232 connector box supplies the following signals for each port:

- TxD
- RxD
- RTS
- CTS
- DSR
- DTR
- DCD
- RI
- Ground

4-Port EIA-232 Connector Box



8-Port EIA-232 Connector Box



4- Port and 8-Port Async Adapter EIA-232 Switch Settings

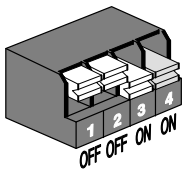
Each ISA adapter must have a unique bus I/O address. This is true whether the adapters are of the same type or a mixture of different types.

Before plugging the adapter into the system, assign it an I/O address.

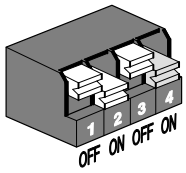
Possible I/O addresses:

- 100h
- 110h
- 120h
- 200h
- 220h
- 300h
- **320h – Factory setting**

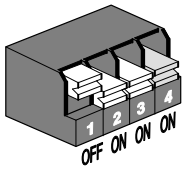
Switch Settings:



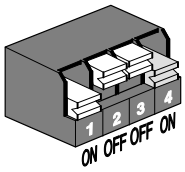
100h-103h



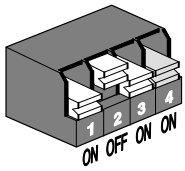
110h-113h



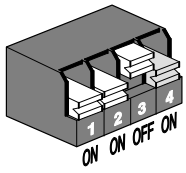
120h-123h



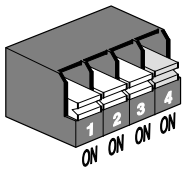
200h-203h



220h-223h



300h-303h



320h-323h

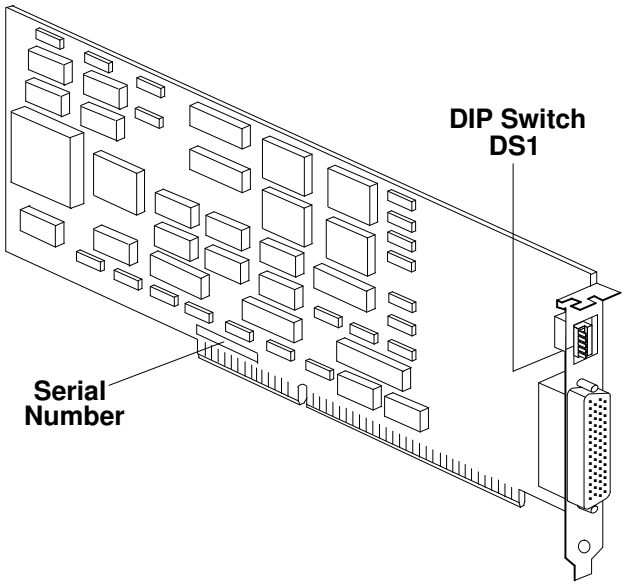
Note: The fourth switch must always be ON.

8-Port Async ISA Adapter RS-422A (Type B3-4)

The 8-Port Asynchronous Adapter RS-422A is a multi-channel intelligent serial communications board which occupies one slot of the ISA bus of the system.

The heart of the adapter is a 12.5MHz 80C186 microprocessor and 64 Kbytes of dual ported RAM, which relieves your computer of the burden of managing serial ports.

For more information, you can also refer to the *Estrella Asynchronous Serial Communications Adapters Installation and Configuration Guide,* 86 A1 45AT and the *AIX Asynchronous Communication Guide*, 86 A2 26AQ.

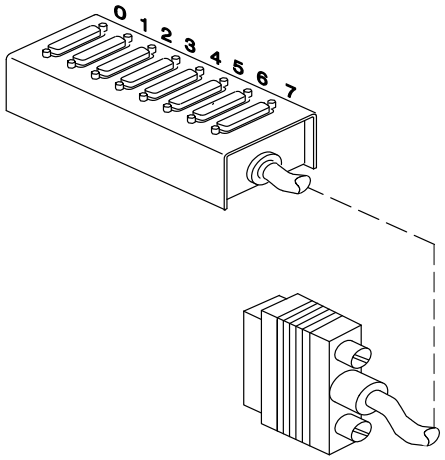


8-Port RS-422A Connector Box

The 8-Port RS-422A connector box picks up all the signals concerning the eight ports on the 78-pin connector of the 8-Port Async adapter and dispatches them on eight 25-pin connectors, one for each channel.

The RS-422A connector box supplies the following signals for each port:

- TxD+
- TxD–
- RxD+
- RxD–
- Ground



8-Port Async Adapter RS-422A Switch Settings

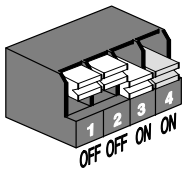
Each ISA adapter must have a unique bus I/O address. This is true whether the adapters are of the same type or a mixture of different types.

Before plugging the adapter into the system, assign it an I/O address.

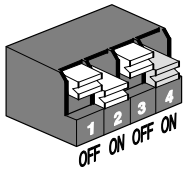
Possible I/O addresses:

- 100h
- 110h
- 120h
- 200h
- 220h
- 300h
- **320h – Factory setting**

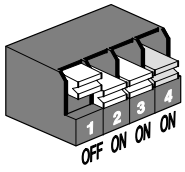
Switch Settings:



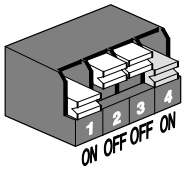
100h-103h



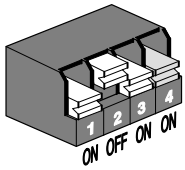
110h-113h



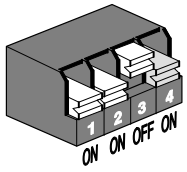
120h-123h



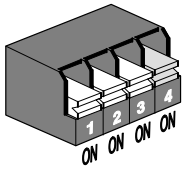
200h-203h



220h-223h



300h-303h



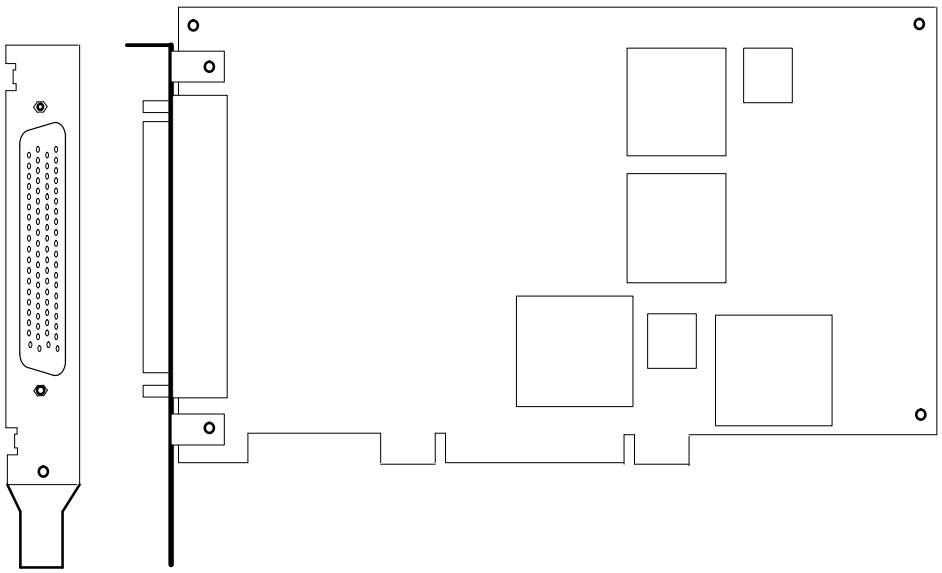
320h-323h

Note: The fourth switch must always be ON.

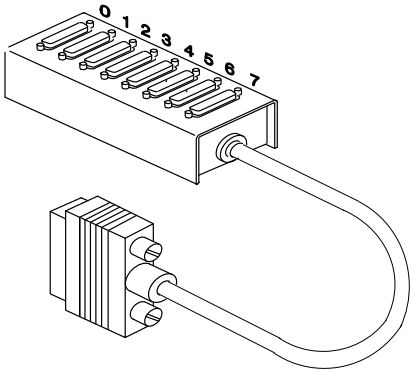
8-Port Asynchronous EIA-232/RS-422A PCI Adapter (Type 3-B)

The 8-Port Async. EIA-232/RS-422A Adapter is a multi-channel intelligent serial communications feature which supports speeds of up to 230 Kbps for each asynchronous port and is run by a 32-bit, 20MHz, IDT 3041 processor.

For more information concerning theis adapter, you can refer to the *AIX Asynchronous Communication Guide*, 86 A2 26AQ.



8-Port DB-25 Connector Box

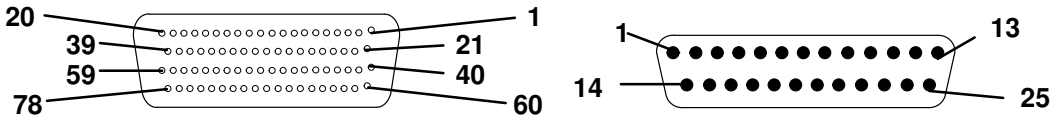


8-Port Asynchronous EIA232/RS422A Adapter Specifications

Bus architecture	PCI
Bit rate	50 – 230,000 (set by the program)
Bits per character	5, 6, 7, 8 (set by the program)
Bus master	No
Maximum number	8
Connector	78-position, D-shell female
Wrap plug	EIA-232 25-position. This wrap plug tests all of the adapter functions for both EIA-232 and RS-422.
Cable	8-port DB-25 connector box included with the adapter.
Modem cable	EIA-232 modem cable, length 3 meters or 10 feet long. RS-422 modem cable customer supplied (must meet RS-422 requirements).
Terminal/printer cable	EIA-232 terminal/printer cable, length 20 meters or 265.5 feet long.

8-Port Asynchronous EIA232/RS422A Adapter 78-position and 25-position Connectors

The 8-Port Async. EIA-232/RS-422A Adapter is shipped with a connector box that provides eight 25-pin D-shell standard connectors.



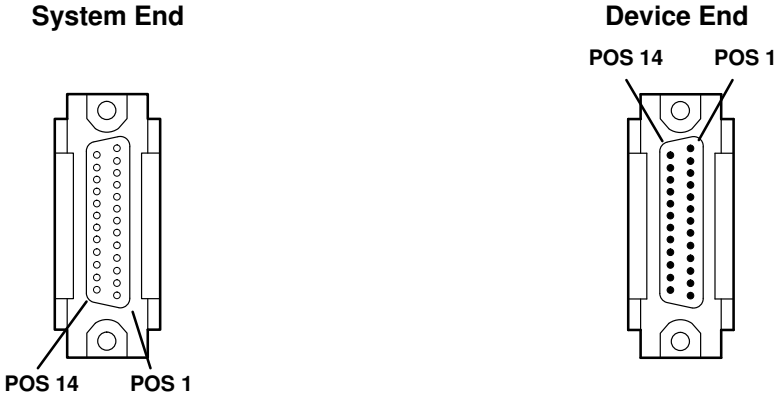
Mnemonic EIA-2332/ RS422-A	I/O	Port 0	Port 1	Port 2	Port 3	Port 4	Port 5	Port 6	Port 7	25-position Connector
TxD/TxDb	O	30	50	11	10	40	02	63	64	02
RxD/RxDb	I	55	17	37	56	28	08	46	27	03
RTS/TxDa	O	51	31	12	14	21	41	62	60	04
CTS/RxDa	I	16	53	59	57	25	04	09	45	05
DCD/DCD	I	35	33	39	18	43	23	48	06	08
DTR/DTR	O	49	32	13	52	22	03	61	01	20
DSR/DSR	I	54	34	58	38	05	42	29	26	06
RI/NA*	I	36	15	20	19	44	24	47	07	22
SGND**	–	–	–	–	–	–	–	–	–	07
FGND										01 Cable shield

* RTS is wrapped internally to CTS and RI for each port in RS-422.

**Pins 65 through 78 are ground.

Asynchronous Cable Connectors

All of the asynchronous cables used for this adapter have the same connectors. In each case, the end that goes to the system has a 25-pin D-shell with sockets (female). The end that goes to the device has a 25-pin D-shell with pins (male). The figure below shows the ends of the 25-pin connectors.



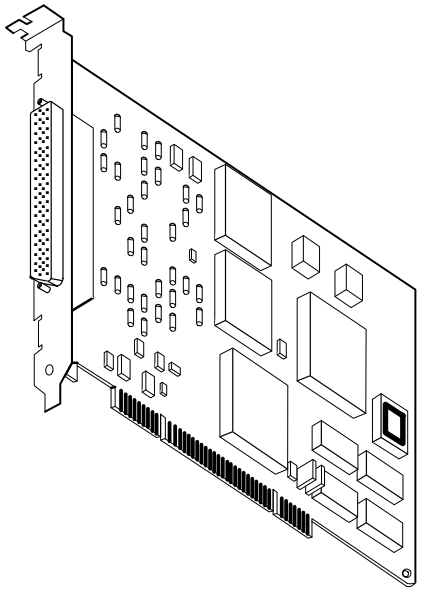
8-Port Async. PCI Adapter EIA-232 (Type B3-A) and 8-Port Async. PCI Adapter RS-422A (Type B3-B)

The 8-Port Asynchronous Adapter EIA-232 and 8-Port Asynchronous Adapter RS-422A are multi-channel intelligent serial communications boards each of which occupy one slot of the PCI bus of the system.

The heart of the adapter is a 20MHz 3041 RISC microprocessor and 128K bytes of dual ported RAM, which relieves your computer of the burden of managing serial ports.

For more information you can also refer to the *PCI Asynchronous Serial Communications Adapters Installation and Configuration Guide*, 86 A1 47AT and the *AIX Asynchronous Communication Guide*, 86 A2 26AQ.

8-Port Asynchronous Serial Communications Board

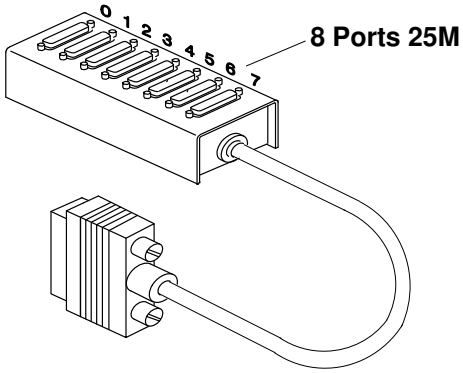


8-Port Connector Box

The 8-port connector box picks up all the signals concerning the eight ports on the 78-pin connector of the 8-Port Async. board and dispatches them on eight 25-pin connectors, one for each channel.

Two connector boxes are available:

- an 8-Port DB25 DTE EIA-232 connector box,
- an 8-Port DB25 DTE RS-422A connector box.

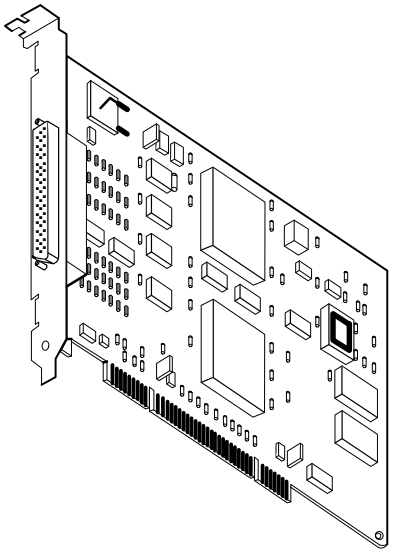


64-Port Async. PCI Adapter EIA-232/RS-422A (Type B3-C)

The 64-Port Asynchronous Adapter EIA-232/RS-422A is a multi-channel intelligent serial communications board which occupies one slot of the PCI bus of the system.

The heart of the adapter is a 20MHz 3051 RISC microprocessor and 1Mbytes of dual ported RAM, which relieves your computer of the burden of managing serial ports.

For more information, you can also refer to the *PCI Asynchronous Serial Communications Adapters Installation and Configuration Guide*, 86 A1 47AT.



16-Port Connector Box Characteristics

The 16-port connector box is a subsystem with four 16C554-compatible UARTs, which support sixteen RJ-45 EIA-232 or sixteen DB25 RS-422A asynchronous serial ports.

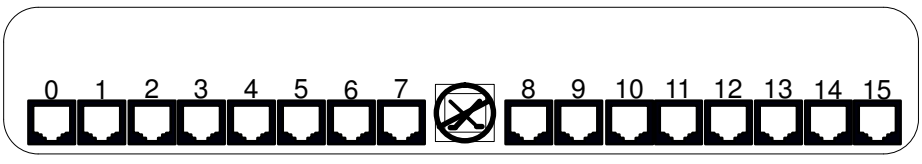
Up to four, 16-port connector boxes may be daisy chained together on the line of the 64-port adapter.

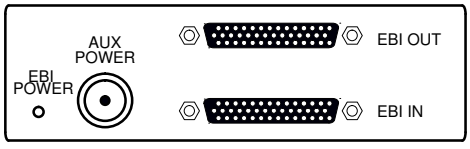
The first two connector boxes are power supplied by the 64-port adapter. For the third and the fourth connector boxes, the external power supply must be connected to the third connector box.

16-port EIA-232 and 16-port RS-422A connector boxes may be mixed.

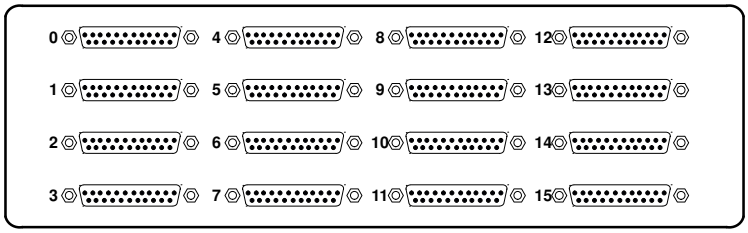
Two connector boxes are available:

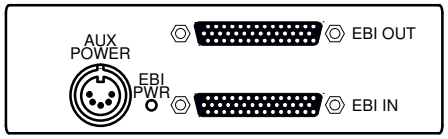
16-Port EIA-232 connector box





16-Port RS-422A connector box

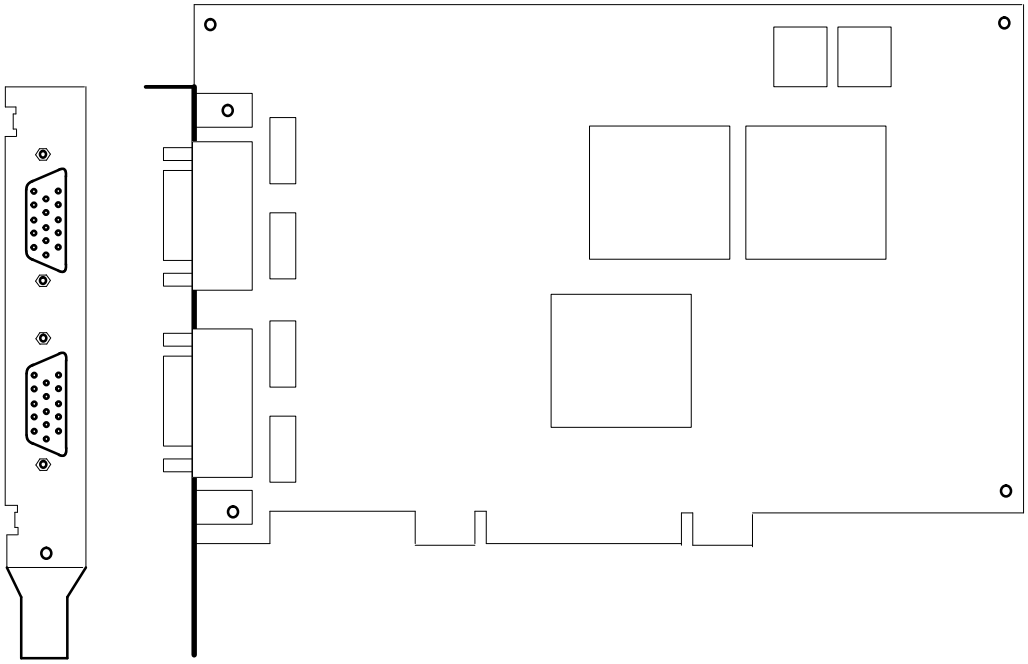




128-Port Async. PCI Adapter (Type 3-C)

This adapter provides the control function and the connectors to attach eight 16-port remote async. nodes (RANs). When all eight nodes are attached, this combination provides 128, EIA-232 or RS-422 communication ports.

To know more about this adapter, refer to the *AIX Asynchronous Communication Guide*, 86 A2 26AQ.

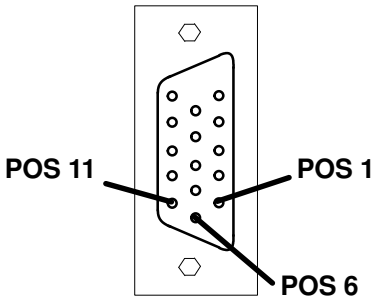


128-Port Async. Adapter Specifications

Memory	1 Mbyte memory on card
Bit rate (synchronous)	75 to 57,600 bps (set by program)
Bits per character	5, 6, 7, 8 (set by program)
Parity	Odd, even or none
Stop bits	1, 2
Bus architecture	PCI
Maximum number*	8
Connectors	Two, HD-15 connectors
Terminator Plugs	Pair, HD-15
Cables	0.2m (9 inches) adapter cable 4.6m (15 feet) adapter cable

15-Position HD-15 Adapter Connector

The signals and connector position numbers are the same for each of the adapter connectors.



Position	Mnemonic
1	RxD-
2	RxD+
3	Reserved
4	RxC-
5	RxC+
6	TxD-
7	TxD+
8	Reserved
9	TxC-
10	TxC+
11	Reserved
12	GND (chassis)
13	Reserved
14	Reserved
15	Reserved

Remote Async. Nodes

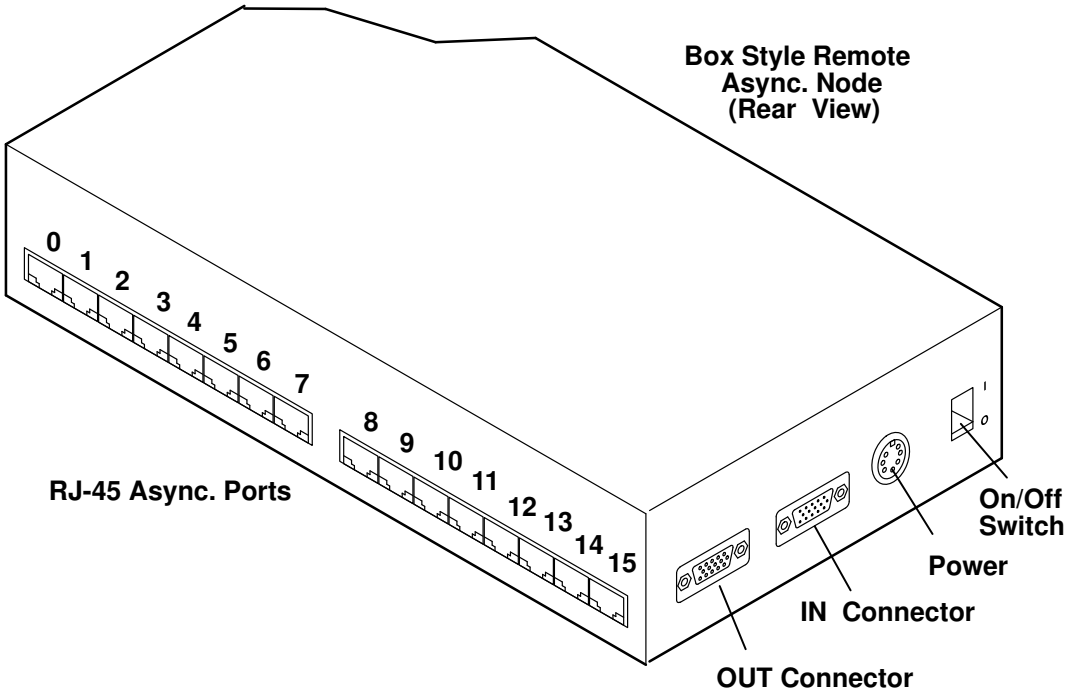
The 16-port enhanced remote async. node (RAN) attaches to a128-port async. adapter. Eight remote async. nodes can be attached to a single 128-port async. adapter. This combination provides a total of 128 communications ports. The original async. nodes and enhanced RANs can be used in any combination. When the RJ-45 to DB-25 converter cable is attached to a port, the port is an EIA-232 or an RS-422 compatible connection.

The last 16-port remote async. node on an adapter line can be located up to 300 meters (1000 feet) from the adapter when configured at the maximum adapter line data rate. Distances up to 1200 meters (3930 feet) are supported at lower adapter line data rates. Remote async. nodes may also be remotely located via either EIA-232 or RS-422 synchronous modems.

There are two types of box style remote async. nodes:

- EIA-232 enhanced
- RS-422 enhanced

More information can also be found in the *AIX Asynchronous Communication Guide*..

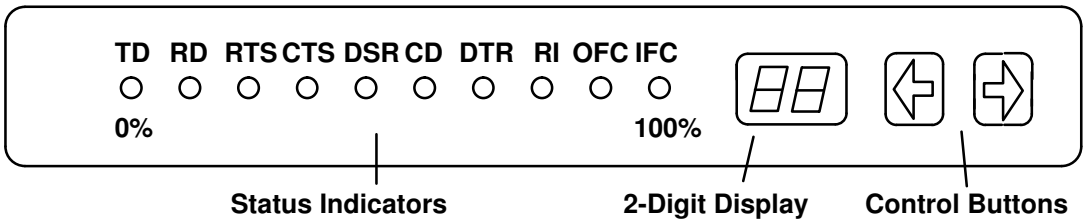


16-Port Remote Async. Node Specifications

Connectors	Sixteen, 10-position RJ-45 connectors One 15-position male HD-15 connector One 15-position female HD-15 connector
Wrap plug	RJ-45
Cables	See the *Cabling Guide for Multiple Bus Systems* manual
Terminator	HD-15

Remote Async. Node Front Panel

The front panel is used to monitor system activity and to program the Remote Async. Node with a unique node number. This node number is used by the 128-Port Async. adapter to identify each Remote Async. Node on an adapter line.



During boot:

- Status indicators and the two-digit display are cycled, indicating that the remote async. node POST is in progress.
- PO in the two-digit display indicates the final POST stages.
- P1 in the two-digit display indicates POST is complete.
- P4 in the two-digit display indicates that microcode is being received.

Following a successful boot:

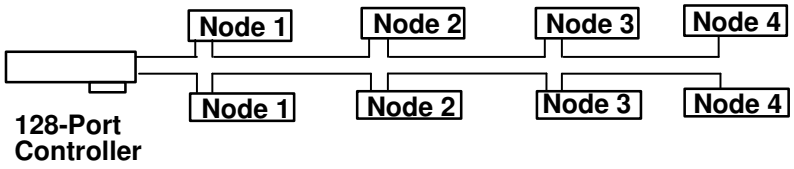
System activity is displayed and the status indicators cycle at a rate proportional to async. traffic. The following display modes can be viewed in the two-digit display by using the left and right arrow buttons on the front panel:

Two-Digit Display/Mode	Description
AC	Activity; status indicators cycle proportionally to async. traffic.
0–15	Port monitor; two-digit displays shows current async. port being monitored; status indicators operational (OFC shows output flow control active; IFC shows input flow control active).
PC	Packet count; status indicators show binary representation of total packets transmitted or received.
EC	Error count; status indicators show binary representation of error counts on the adapter line.
PU	Processor use; status indicators act as bar graph showing percentage of time that the remote async. node microprocessor is being used.
LU	Line utilization; status indicators act as bar graph showing percentage of time that the adapter line is being used.
Ed	POST failed; Fatal error (RAN error, RAN is defective).
1n, 2n, ...8n	Node number; two-digit display shows the node number currently programmed into the remote async. node.

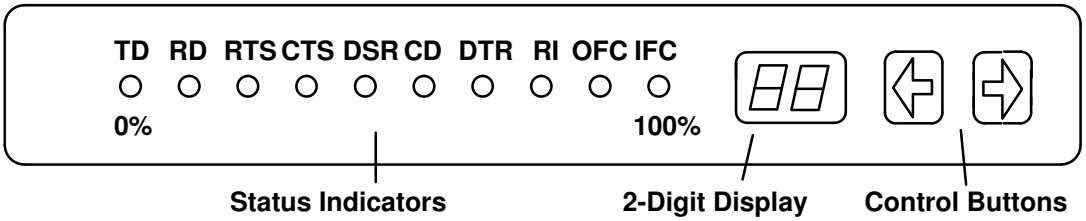
Programming the Remote Async. Node

Each remote async. node must be programmed with a “Node Number” prior to system IPL. The remote async. node front panel is used to perform the following programming steps.

Note: Only four remote async. nodes can be attached to each connector on the adapter; only node numbers 1 through 4 are valid.



1. Perform a system shutdown, and then power-off the system.
2. Power-on the remote async. node; the Power On Self Test (POST) begins. During the POST, the characters PO appear in the two-digit display.
3. When the POST is complete, P1 appears in the two-digit display, and the remote async. node is ready for the following programming steps:



   a. Press the left arrow button to enter the programming mode. The current node number appears in the two-digit display.
   b. Press the right arrow button repeatedly until the desired node number is displayed. Continued pressing of this button cycles the two-digit display through 8 and back to 1.

      Note: Node numbers should be assigned in ascending order on each adapter line, beginning with the remote async. node closest to the adapter. That is, the remote async. node closest to each adapter connector would be assigned number 1. Numbers greater than 4 will not configure.

   c. Press the left arrow to select the node number entered in the previous step. Pn appears momentarily in the two-digit display, meaning that the node has been successfully programmed. The display then returns to P1 and awaits microcode download from the adapter.

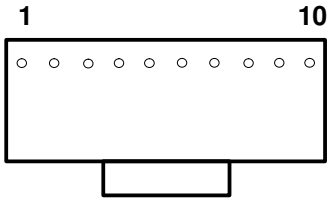
4. The system IPL may be performed now. The characters AC in the two-digit display indicate that IPL is complete and remote access node programming was successfully completed without error.
5. If En appears in the two-digit display, the remote async. node has been improperly programmed in one of the following ways:

   – The remote async. nodes have not been programmed in ascending order. That is, the remote async. node displaying the En has been programmed to a lower number than the preceding node.
   – Two or more remote async. nodes have been programmed assigned the same number. The remote async. node displaying the En has been programmed to the same number as another node on the same adapter connector.

16-Port Remote Async. Node 10-Position RJ-45 Input and Output Connectors

The connector positions and signals for each RJ-45 connector on the Remote Async. Node are the same (see tables below). For more information also see the *Cabling Guide*.

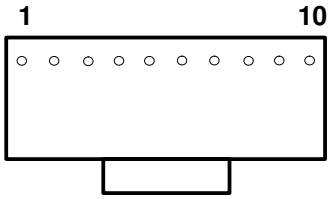
For EIA-232 Remote Async. Nodes



This is the rear view.

Positions	Mnemonic	(Signal Name)
1	RI	(ring indicator)
2	DSR	(data set ready)
3	RTS	(request to send)
4	GND	(chassis ground)
5	TxD	(transmit data)
6	RxD	(receive data)
7	SG	(signal ground)
8	CTS	(clear to send)
9	DTR	(data terminal ready)
10	DCD	(data carrier detect)

For RS-422 Remote Async. Nodes

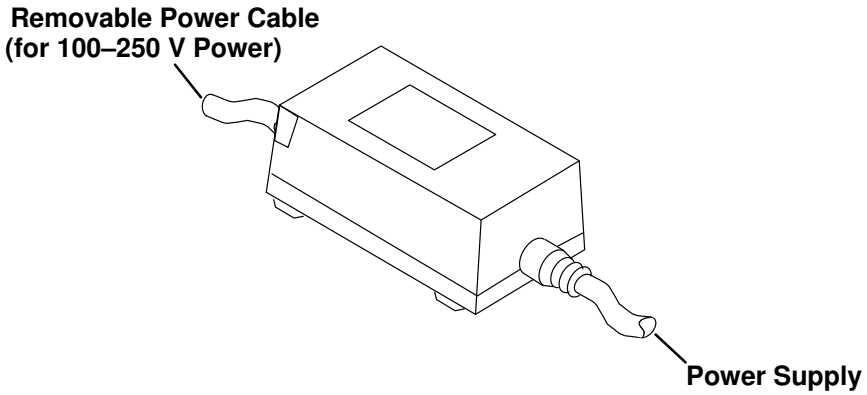


This is the rear view.

Positions	Mnemonic	(Signal Name)
1	Reserved	
2	Reserved	
3	TxD +	(+ transmit data)
4	GND	(chassis ground)
5	TxD –	(– transmit data)
6	RxD –	(– receive data)
7	SG	(signal ground)
8	RxD +	(+ receive data)
9	Reserved	
10	Reserved	

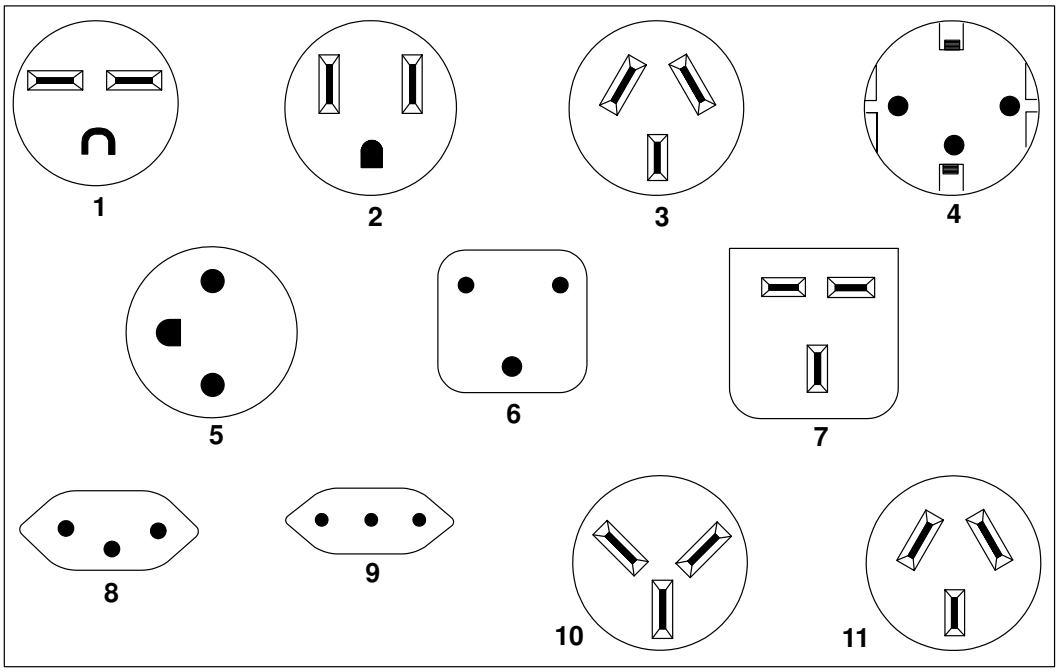
16-Port Async. Node Power Supplies

The box style remote async. nodes use a transformer as shown below.



Node Type	Voltage Range and Frequency	Removable Power Cable	Part Number
EIA–232 enhanced	100–250 V ac at 50 or 60 Hz	Yes	93H7091
RS–422 enhanced	100–250 V ac at 50 or 60 Hz	Yes	93H7091

16-Port Async. Concentrator Removable Power Cables



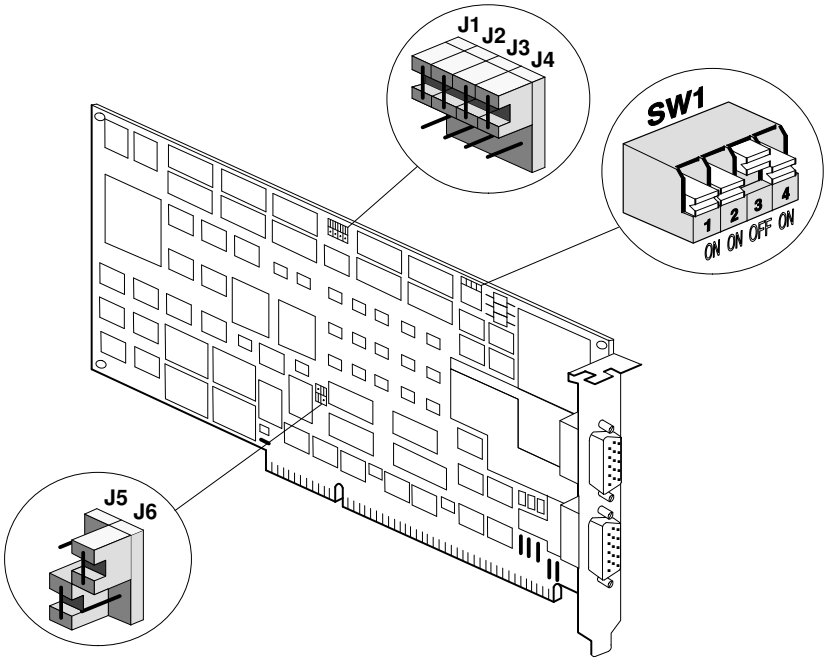
Index	Part Number	Country
1	1838574	Bahamas, Barbados, Bolivia, Canada, Costa Rica, Dominican Republic, El Salvador, Ecuador, Guatemala, Honduras, Jamaica, Japan, Netherlands Antilles, Panama, Peru, Trinidad, Philippines, Taiwan, Thailand, Venezuela
2	6952300 62X1045	Bolivia, Dominican Republic, Ecuador, Guyana, Honduras, Jamaica, Japan, Korea, Netherlands Antilles, Philippines, Suriname, Taiwan, U.S.A.(except Chicago), Venezuela Chicago, U.S.A.
3	6952311	Argentina, Australia, New Zealand
4	6952320	Austria, Belgium, Botswana, Egypt, Finland, France, Korea, Germany
5	6952329	Denmark
6	6952347	Bangladesh, Burma, India, Pakistan, South Africa, Sri Lanka
7	6952356	Bahrain, Bermuda, Brunei, China, Ghana, Hong Kong, Iraq, Ireland, Jordan, Kenya, Kuwait, Malawi, Macao, Malaysia, Nigeria, Oman, Qatar, Singapore, Tanzania, Uganda, United Arab Emirates, U.K., Zambia
8	6952365	Switzerland
9	6952374	Chile, Ethiopia, Italy
10	6952383	Israel
11	6952291	Colombia, Uruguay

128-Port Async ISA Adapter EIA-232 (Type B3-8)

The 128-Port Asynchronous Adapter EIA-232 is a multi-channel intelligent serial communications board which occupies one slot of the ISA bus of the system.

The heart of the adapter is a 10MHz 80186 microprocessor and 512 Kbytes of dual ported RAM, which relieves your computer of the burden of managing serial ports.

For more information, you can also refer to the *Estrella Asynchronous Serial Communications Adapters Installation and Configuration Guide*, 86 A1 45AT and the *AIX Asynchronous Communication Guide*, 86 A2 26AQ.



128-Port Async Adapter EIA-232 Jumper Settings

There are six jumpers on the 128-Port Asynchronous Adapter EIA-232 (J1, J2, J3, J4, J5 and J6 on the figure). These jumpers are factory set and must not be changed.

128-Port Async Adapter EIA-232 Requirements

Electrical Power Requirements

+5V +/–5%	: 2 A for the host + 0.75 A per concentrator
+12V +/–5%	: 40 mA for the host + 0.18 A per concentrator
–12V +/–5%	: 40 mA for the host + 0.05 A per concentrator

Operating Environment

Ambient Temperature	10 to 55°C
Relative Humidity	5 to 90%
Air Movement	30 CFM forced
Altitude	0 to 3660m (12,000feet)

16-Port Concentrator Characteristics

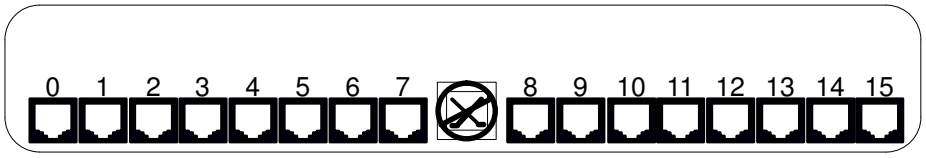
The C/CON 16-port concentrator is a complete subsystem with its own 16MHz 80C186 microprocessor, 128K of RAM, 16K of EPROM, 16C550-compatible UARTs for the sixteen RJ-45 EIA-232 asynchronous serial ports, and a high-speed synchronous EIA-422A port for communication with the 128-port host adapter and other concentrators.

The concentrator receives packets of data from the host adapter at data rates of up to 1.2 megabaud, then distributes the data, as appropriate, to the sixteen EIA-232 ports.

Up to 4 concentrators may be daisy chained together on each of the two lines of the adapter.

Each concentrator is delivered with a power supply.

CAUTION:
The back panel logo warns that the RJ-45 connectors are not telephone connectors.



128-Port Async Adapter EIA-232 Switch Settings

BUS I/O Address DIP Switch

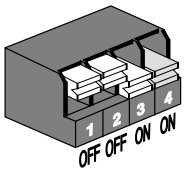
Each ISA adapter must have a unique bus I/O address. This is true whether the adapters are of the same type or a mixture of different types.

Before plugging the adapter into the system, assign it an I/O address.

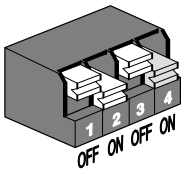
Possible I/O addresses:

- 108h
- 118h
- 128h
- 208h
- 228h
- 308h
- **328h – Factory setting**

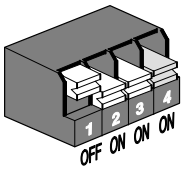
Switch Settings:



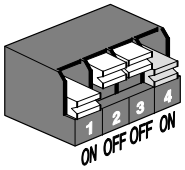
108h



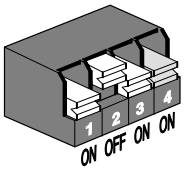
118h



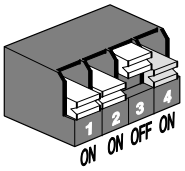
128h



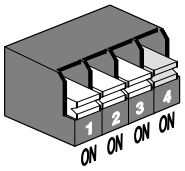
208h



228h



308h



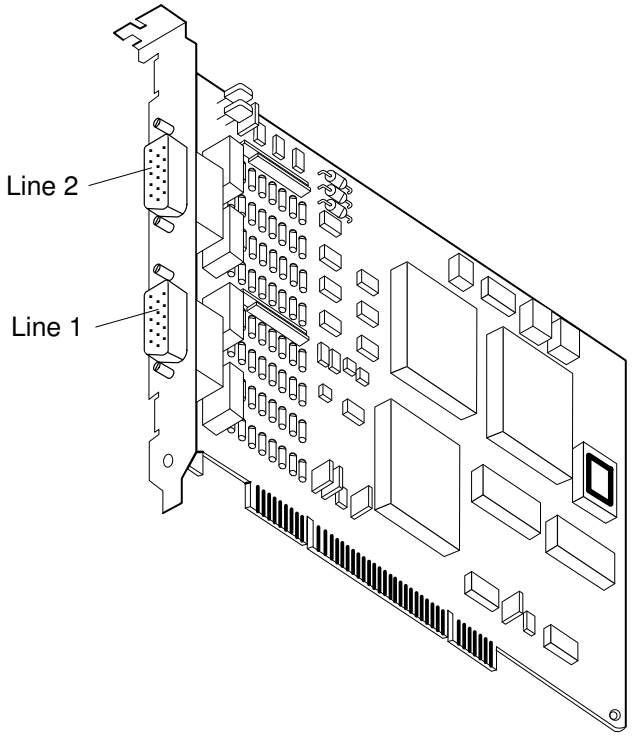
328h

Note: The fourth switch must always be ON.

128-Port Async PCI Adapter EIA-232 (Type B3-9)

The 128-Port Asynchronous Adapter EIA-232 is a multi-channel intelligent serial communications board which occupies one slot of the PCI bus of the system. The heart of the adapter is a 20MHz 3041 RISC microprocessor and 1Mbyte of dual ported RAM, which relieves your computer of the burden of managing serial ports.

For more information, you can also refer to the *PCI Asynchronous Serial Communications Adapters Installation and Configuration Guide*, 86 A1 47AT and the *AIX Asynchronous Communication Guide*, 86 A2 26AQ.

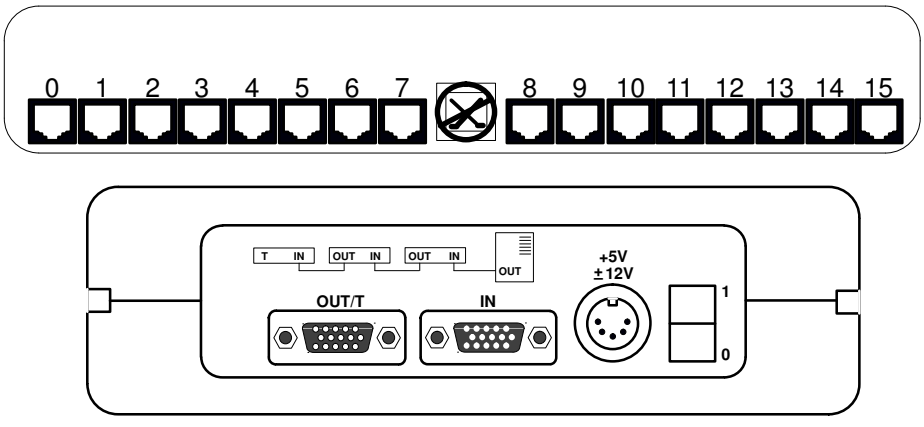


16-Port Concentrator Characteristics

The C/CON 16-port concentrator is a complete subsystem with its own 16MHz 80C186 microprocessor, 128K of RAM, 16K of EPROM, 16C550-compatible UARTs for the sixteen RJ-45 EIA-232 asynchronous serial ports, and a high-speed synchronous RS-422 port for communication with the 128-port host adapter and other concentrators.

The concentrator receives packets of data from the host adapter at data rates of up to 1.2 megabaud, then distributes the data, as appropriate, to the sixteen EIA-232 ports.

Up to 4 concentrators may be daisy chained together on each of the two lines of the adapter. Each concentrator is delivered with a power supply.



Chapter 6. Internal ISA Modem

The Internal ISA Modem is a 'modem adapter'. It allows asynchronous communications with your Customer Service Center in a reliable way and at various speeds, via a connection to the Public Switched Telephone Network (PSTN).

This modem is intended to be used for RSF (Remote Services Facilities) purposes. If RSF is used, the modem cannot be shared with another application.

The Internal ISA Modem has the following features:

- It adapts automatically to the line conditions and capacities of the remote modem. The communication is thus established with the optimum speed, error control and data compression.
- It is compliant with UIT–T V.34 standards and allows you to transfer data at 33.3–14.4 kbits/s through the public switched telephone network. The connection to the telephone line is done via a RJ-11 cable provided with the modem.

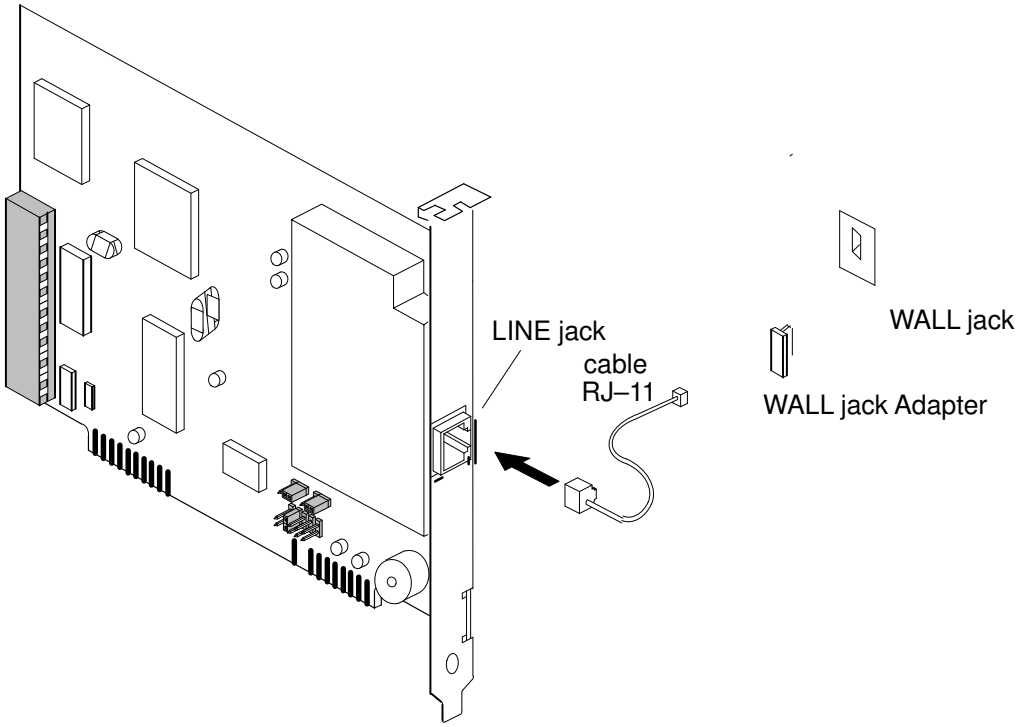
Warning: Only one Internal ISA Modem can be present in the system at the same time.

The label found on the adapter and on the wall jack depends on the country of destination of the modem. You will find them listed in the table below.

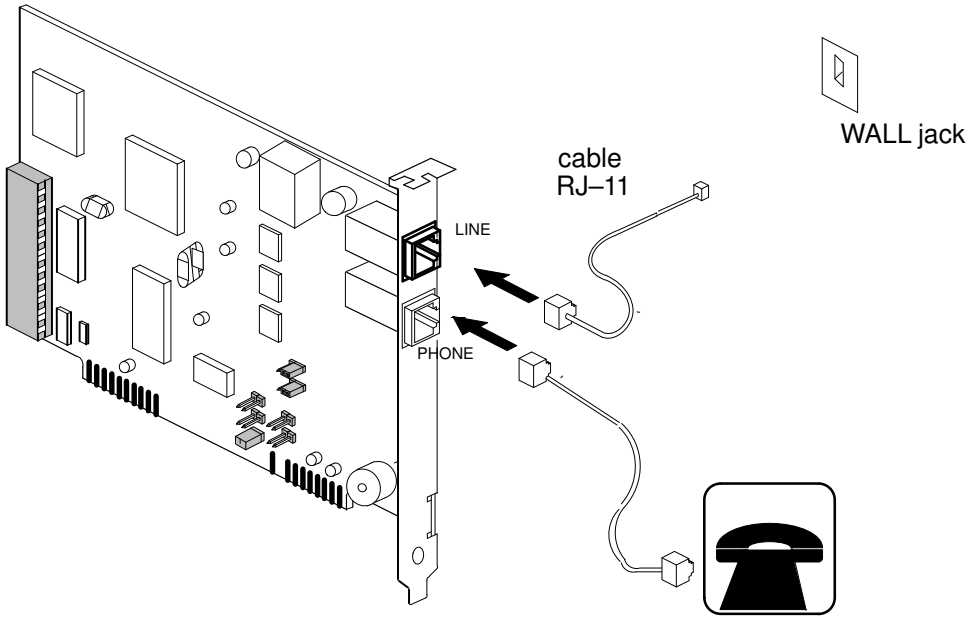
Type	Country of Destination
B5–A	France
B5–B	United Kingdom
B5–C	Belgium
B5–D	Holland
B5–E	Italy
B5–K	USA
B5–L	Germany
B5–S	Pan–European

For more information on the Internal Modem ISA, refer to the *ISA Internal Modem Installation and Configuration Guide*, 86 A1 05HX.

Internal ISA Modem



Internal ISA Modem U.S.A. (Type B5-K)



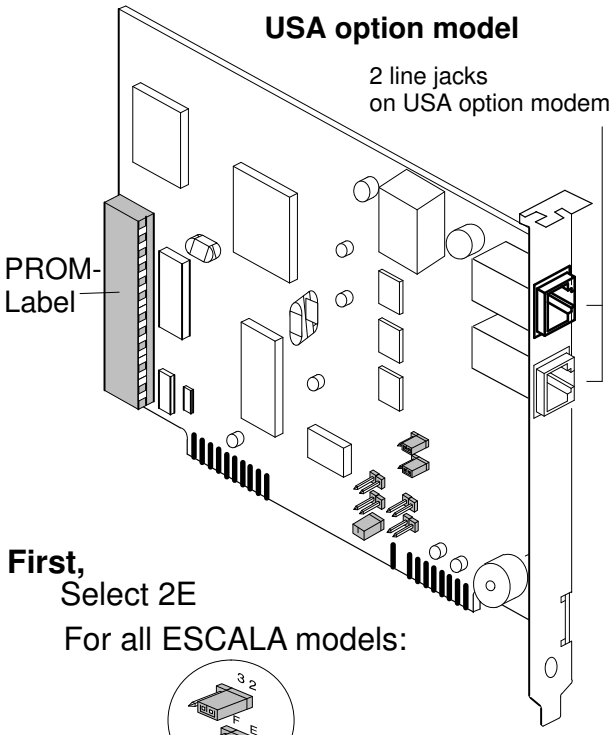
Internal ISA Modem Specifications and Requirements

Data transmission rate	(in bits/s) – 28800, 26400, 21600, 19200, 16800, 14400, 12000, 9600, 4800, 2400, 1200, 0 - 300
Error control	ITU–T V.42 (LAP–M or MNP3 and 4)
Data compression	ITU–T V.42*bis* (rate 4:1)
Throughput conversion	Binary throughput on the serial port: 300, 1200, 2400, 4800, 9600 bit/s,19.2, 38.4, 57.6 et 115.2 kbits/s
Flow control	Xon/Xoff, 105/106,ENQ/ACK (HP), simulation UUCP (Unix-to-Unix Copy Protocol)
Operating mode	Full-duplex or half-duplex on the switched telephone network, automatic or manual dialing, automatic or manual answer
Compatibility	ITU–T V.42*bis*, V.42, V.34, AT&T V.32 Terbo, ITU–T V.32bis, V.32, V.21, V.22*bis*, V.22, V.23, V.17, V.29, V.27*ter*, Groupe3 T.4, T.30 and EIA TR29 class 2

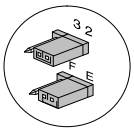
Internal ISA Modem Jumper Settings

Jumper Setting on ISA Internal Modem: **COM4:** **2E8 IRQ7 for ESCALA S100**
2E8 IRQ5 for other models

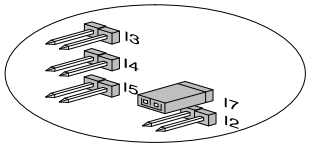
USA option model



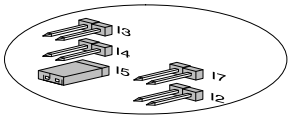
First,
Select 2E
For all ESCALA models:



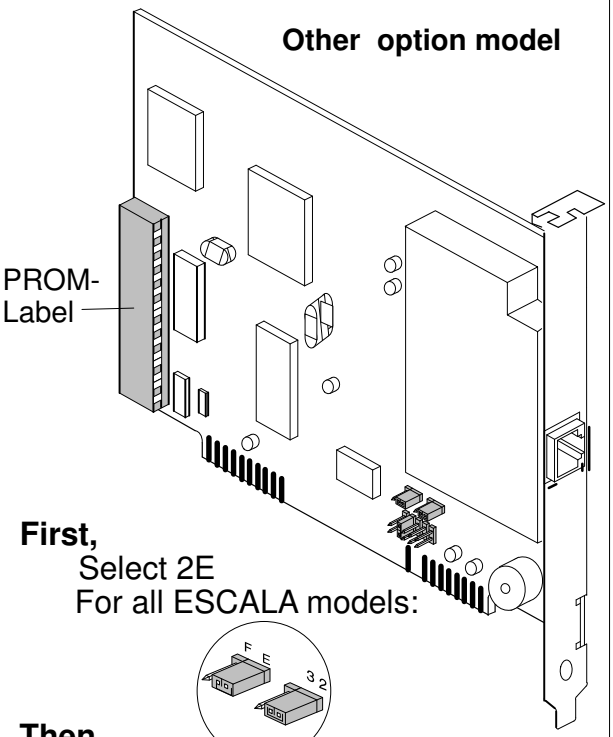
Then,
Select I7
for ESCALA S100:



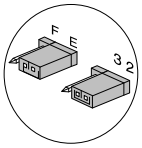
or
Select I5
for all other ESCALA models:



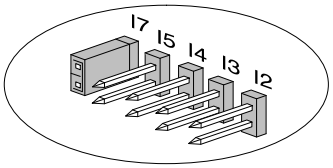
Other option model



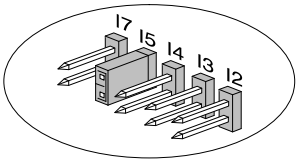
First,
Select 2E
For all ESCALA models:



Then,
Select I7
for ESCALA S100:



or
Select I5
for all other ESCALA models:



Chapter 7. PCI Adapters Placement Reference

This chapter lists a few important considerations regarding placement of adapters within your system unit.

This chapter applies to the following ESCALA system units:.

Peripheral Component Interconnect Overview

This section presents a brief overview of some factors and issues related to Peripheral Component Interconnect (PCI) bus adapter placement. The user can gain a better understanding of system configurations, adapter placement, and performance issues by using the reference. Each of the following chapters provides system–specific slot placement information.

You can install PCI adapters with the power on in some systems. These adapters are referred to as hot–pluggable PCI adapters. Do not hot–plug any PCI adapter supporting the system's boot device or system console.

Refer to your system unit documentation to determine if your system unit supports hot–plugging adapters.

If an adapter is listed as a Type *, this adapter has not been assigned an adapter type.

System Performance

This chapter provides performance information related to PCI adapter placement. Understand that maximizing system performance is relative to software and hardware. Information in this chapter may change as new products are announced.

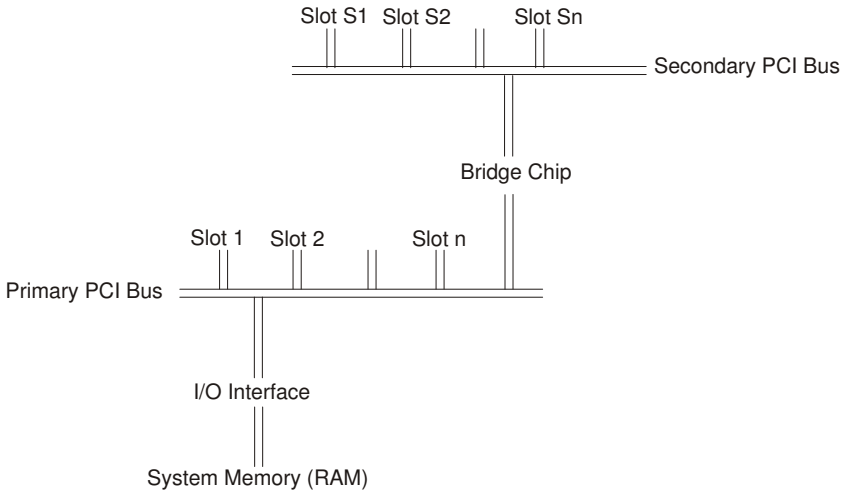
PCI Slots

Each PCI bus has a limit on the number of adapters it can support. Typically, this limit can range from two adapters to six adapters per bus. To overcome this limit, the system design can implement multiple PCI buses. You can use two different methods to add PCI buses to your system. These two methods are:

- Adding secondary PCI buses off the primary PCI bus
- Implementing multiple primary buses

Secondary PCI Bus

If you want to increase the number of PCI slots when designing a system, add a secondary PCI bus. A PCI–to–PCI bridge chip can connect a secondary bus to a primary bus. The following illustration shows how to use a primary PCI bus to increase the total number of PCI slots.

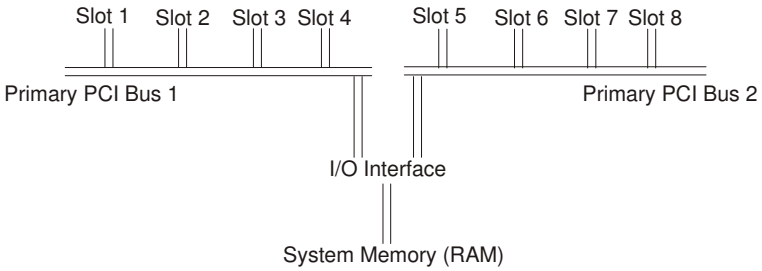


Because the slots on the secondary PCI bus must pass through the bridge chip, certain adapters on a secondary PCI bus may experience lower performance.

Some of the systems in this chapter implement a secondary PCI bus. On these systems, place higher–speed adapters on the primary bus to optimize performance.

Multiple Primary PCI Buses

To add more PCI slots in a different way, design the system with 2 or more primary PCI buses. This design requires a more sophisticated I/O interface with the system memory. The following illustration shows another method of increasing the number of PCI slots.



This design improves I/O performance over the secondary bus method because the I/O interface has created multiple parallel paths into the system memory.

Integrated Adapters

The main processor board now integrates a number of devices, but they physically connect to one of the PCI buses. For this reason, some of the buses may only have two or three slots available to install adapters. Integrated PCI adapters include SCSI adapters and Ethernet adapters.

32–Bits versus 64–Bits PCI Slots

Choosing between 32–bit and 64–bit slots influences slot placement and affects performance. Higher–speed adapters use 64–bit slots because they can transfer 64 bits of data for each data transfer phase.

32–bit adapters can typically function in 64–bit PCI slots; however, 32–bit adapters still operate in 32–bit mode and offer no performance advantage in a 64–bit slot. Likewise, most 64–bit adapters can operate in 32–bit PCI slots but the 64–bit adapter operates in 32–bit mode and reduces performance potential.

33 MHz versus 50 MHz 64–Bit PCI Slots

Some systems (for example, 25F/5 and 26H/5) offer 50 MHz capability on 64–bit slots. Adapters capable of functioning at 50 MHz may take advantage of this. If you plug a 33 MHz adapter into a 50 MHz 64–bit slot, the slot switches to 33 MHz and also switches the remaining slots on this PCI bus to 33 MHz.

The following adapters run at 50 MHz when placed on a 50 MHz PCI bus, or 33 MHz on a 33 MHz PCI bus. If you place a 33 MHz adapter on the same 50 MHz PCI bus with any of these adapters, the system forces the bus to run in 33 MHz mode and reduces the performance potential of these adapters:

- FC 2969: Gigabit Ethernet–SX PCI (Type 9–U, B5–N)
- FC 2851: POWER GXT250P (Type 1–M)
- FC 2852: POWER GXT255P (Type 1–N)
- FC 2841: POWER GXT300P (Type1–U)
- FC 2823: POWER GXT2000P (Type 1–S)
- FC 2825: POWER GXT3000P (Type 1–R)

Connectivity versus Performance Overview

You must consider some performance trade–offs when configuring your system. Installing the maximum number of adapters might affect system performance. The following paragraphs provide an overview of these considerations and how they are documented in later sections of this chapter.

Connectivity limits define how many specified adapters can be physically plugged into a system. This limit defines how many adapters the software and hardware can support. Some adapters have specific placement guidelines. Connectivity limits define the maximum number of adapters for connecting to networks or disks. In many cases, a disk or network has a low duty–cycle and the system needs additional adapters to retain the physical connection to all resources. In these cases, you should follow connectivity limits.

This chapter also provides suggested performance limits, established to determine how many concurrently running adapters can provide good performance. As you add adapters (with each adapter performing at close to its rated speed), additional adapters continue to provide an incremental performance increase. Once the system reaches its performance limit, adding more adapters does not provide an increase in I/O throughput.

A number of factors can determine the performance limit. Bus speed, memory speed, adapter design, or processor speed can influence performance. Quite often, the system processor’s speed may limit how many adapters of a given type the system can support

while maintaining maximum performance. Once a system uses 90 percent of its system processor, adding more adapters only provides a minor throughput increase.

Due to the wide variety of workloads, this chapter provides performance–limit guidelines only. The guidelines are based on I/O streaming of large reads or writes to a disk or network. They are not based on small I/Os, which are more transaction–rate limited. Small I/O workloads probably use more system processor capacity and result in fewer supported adapters for maximum performance.

The chapter bases these guidelines on the maximum number of processors supported for multi–processor systems. If your system runs less than the maximum number of processors supported, then typically you must reduce the maximum number of adapters by the same ratio. For example, if a system with a maximum of twelve processors can support twelve ATM adapters for maximum performance, then the same system with eight processors can only support eight ATM adapters for maximum performance.

If your system uses disk and communication adapters concurrently, use a more conservative estimate of the number of supported adapters.

If your configured system runs close to its performance limits, take extra care to ensure that your system type or configuration provides the desired performance. In these cases, you may need to contact your marketing support personnel for more detailed information.

Other Restrictions

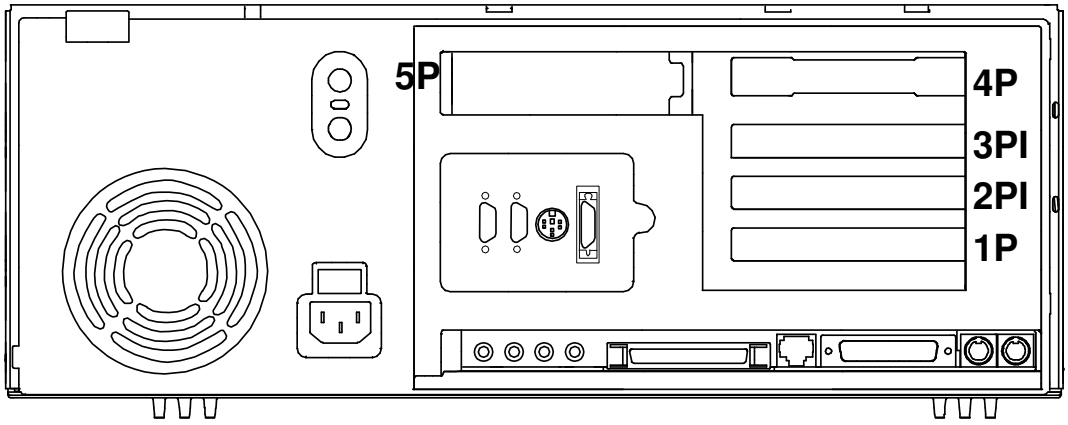
You must install some adapters in specific PCI slots in various systems. Physical size limits, I/O address considerations, thermal limitations, and other factors influence these specifications.

This chapter lists slot placement information for PCI adapters in system units that have specific restrictions or guidelines.However, **this chapter does not list all system–compatible PCI adapters**.

Installing an Adapter in an ESCALA S100

This section outlines adapters slot placement and adapter support configurations that are specific to your system unit. Not all of the adapters supported in stated maximum configurations, run at per adapter maximum performance.

Note: PCI is identified with a 'P', and ISA with a "I" in figure and in tables.



(System Unit rear view with numbered slots)

Adapters Placement

Some adapters must be placed in specific system unit slots to function correctly at highest performance. Use the following tables to determine where to install these adapters in your system unit.

Use the rear view diagram above to identify slot locations described in the following table.

	Slot 1P PCI_1	**Slot 2PI** ISA / PCI_1	**Slot 3PI** ISA / PCI_2	**Slot 4P** PCI_2	**Slot 5P** PCI_2
Ultra SCSI DE	Y	Y	Y	Y	Y
F/W SCSI DE	Y	Y	Y	Y	Y
Ethernet	Y	Y	Y	Y	Y
FDDI	Y	Y	Y	Y	Y
1-Port Sync.	Y	Y	Y	Y	Y
4-Port Sync.	Y	Y	Y	Y	**N**
8-Port Async.	Y	Y	Y	Y	Y
64-Port Async	Y	Y	Y	Y	Y
GXT120P *	Y**	Y**	Y	Y	Y
GXT255P *	Y**	Y**	Y	Y	Y
Modem	**N**	Y	Y	**N**	**N**
Token Ring	Y	Y	Y	Y	Y
ATM	Y	Y	Y	Y	Y

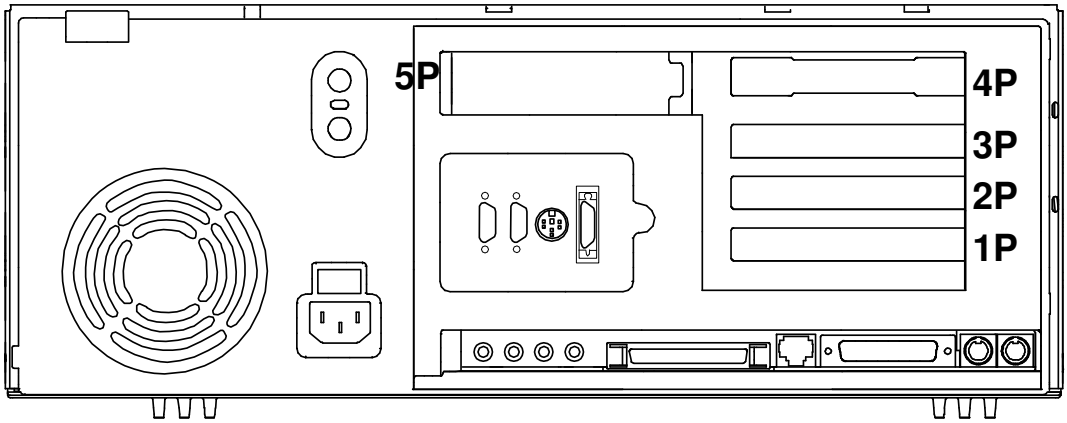
* maximum 4 GXT120P, 2 GXT255P

** prefered slots

Installing an Adapter in an ESCALA S120

This section outlines adapters slot placement and adapter support configurations that are specific to your system unit. Not all of the adapters supported in stated maximum configurations, run at per adapter maximum performance.

Note: PCI is identified with a 'P in figure and in tables.



(System Unit rear view with numbered slots)

Adapters Placement

Some adapters must be placed in specific system unit slots to function correctly at highest performance. Use the following tables to determine where to install these adapters in your system unit.

Use the rear view diagram above to identify slot locations described in the following table.

Adapter	FC	MI	Slot Usage	System Maximum
4–Port 10/100 Base–TX Ethernet PCI (Type 9–Z)	4951	DCCG149–0000	Slots 2P or 3P	2 (see notes 1 and 2)
GXT130P (Type 1–T)	2830	GTFG048–0000	Slots 2P, 3P, 1P, 4P, 5P	4
GXT135P (Type 1–X)	2848	GTFG050–0000	Slots 2P, 3P, 1P, 4P, 5P	4
GXT255P (Type 1–N)	2852	GTFG042–0000	Slots 2P, 3P, 1P, 4P, 5P	4
GXT120P (Type 1–P)	2838	GTFG047–0000	Slots 2P, 3P, 1P, 4P, 5P	4
Ultra SCSI SE (Type 4–K)	6206	MSCG040–0000	Slots 1P, 2P, 3P, 4P, 5P	2 (see note 6)
Ultra SCSI DE (Type B4–6)		MSCG023–0000	Slots 1P, 2P, 3P, 4P, 5P	2
Ultra3 SCSI (Type 4–Y)	6203	MSCG048–0000	Slots 2P, 3P, 4P, 5P	2 (see note 3)
Token Ring PCI (Type 9–O)	2920	DCCG136–0000	Slots 1P, 2P, 3P, 4P, 5P	4
Ethernet 1Port (Type 9–P)	2968	DCCG122–0000	Slots 1P, 2P, 3P, 4P, 5P	4 (see note 4)
10/100 Mbps Ethernet PCI Adapter II (type A–F)	4962	DCCG137–0000	Slots 2P, 3P, 1P, 4P, 5P	4 (see note 5)
8-Port Async. (Type B3–B)		DCCG088–0000	Slots 2P, 3P, 1P, 4P, 5P	2
64-Port Async. (Type B3–C)		DCCG089–0000	Slots 2P, 3P, 1P, 4P, 5P	2
4-Port Sync. (Type B2–H)		DCCG121–0000	Slots 2P, 3P, 4P	2
1-Port Sync. (Type B2–G)		DCCG120–0000	Slots 2P, 3P, 1P, 4P, 5P	2
ATMF (Type 9–F)	2988	DCCG127–0000	Slots 1P, 2P, 3P, 4P, 5P	2
FDDI (Type B5–3)		DCCG084–0000	Slots 1P, 2P, 3P, 4P, 5P	2

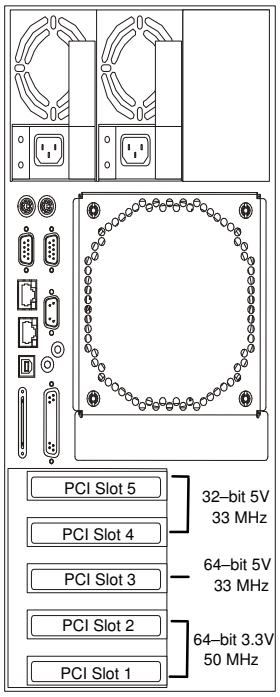
FDDI (Type B5–4)		DCCG102–0000	Slots 1P, 2P, 3P, 4P, 5P	2
FDDI (Type B5–5)		DCCG103–0000	Slots 1P, 2P, 3P, 4P, 5P	2

1. When 10/100 4–Port Ethernet (type 9–Z) is installed, the following adapters must be installed in slots 1, 4 or 5: GTX120P (type 1–P), GTX255P (1–N).
2. For optimum system performance, a maximum of two 100 Mbps ports per system (instead of 4).
3. If the FC 6205: PCI Dual Channel Ultra2 SCSI (Type 4–R) or FC 6203: PCI Dual Channel Ultra3 SCSI (Type 4–Y) adapter is plugged into slot 2 or 3, then the POWER GXT120P or the POWER GXT130P can only be plugged in slots 1, 4, or 5. If you plug the POWER GXT120P or the POWER GXT130P in slots 2 or 3, then you must plug the Ultra2 SCSI adapter in slots 1, 4 or 5.
4. For optimum system performance, place FC 2968: 10/100 Mbps Ethernet PCI Adapter (Type 9–P) adapters in 100 Mbps mode per system unit..
5. For optimum system performance, use two FC 4962: 10/100 Mbps Ethernet PCI Adapter II (Type A–F) in slots 2 and 3, with no more than 2 per system. You may have a total of 5 per system for connectivity, including integrated ethernet.
6. FC 2445 is the internal SCSI cable used with FC 6206: PCI Single–Ended Ultra SCSI (Type 4–K). The SCSI adapter card (FC 6206), which is to be connected to the internal drives using FC 2445, must be installed in Slot 5. If FC 2445 and FC 6206 are on the order, slot location placement for FC 6206 is slot 5 first priority.

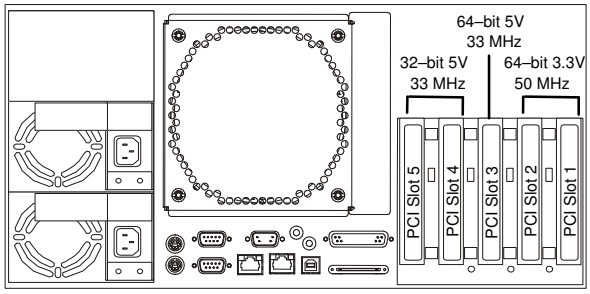
Installing an Adapter in an ESCALA PL 220T or PL220R

This system is designed for customers to install adapters. Use this guide to determine if there are specific slot requirements for adapters that you may be installing.

PL 220T



PL 220R



System Unit Rear View with Numbered Slots

Some adapters must be placed in specific system unit slots to function correctly at optimum performance. Use the table on next pages to determine where to install an adapter in your system unit.

Many of the following notes refer to optimizing system performance.

Use the rear–view diagram above to identify slot locations described in the following tables.

Adapter Placement

Use the following table to identify specific slot location options for the following adapters in your system.

Prio	Adapter	FC	MI	Slot Usage	System Maximum
1	2 port 10/100/1000 Ethernet PCI–X	5706	DCCG165–0000	Slots 1, 2	2
	2 port GBIT–SX Ethernet PCI–X	5707	DCCG166–0000	Slots 3, 2, 1	2
	PCI 64–Bit Fibre Channel 2GB/s (type B4–E)	Bull	DCCG154–0000 DCCG155–0000	Slots 3, 2, 1	2
	PCI 64–Bit Copper Fibre Channel Adapter (type B4–A)	Bull	DCCG147–0000	Slots 3, 2, 1	2
	PCI 64 bits 2 Gbit Fibre Channel	6239	DCCG173–0000	Slots 1, 4, 5, 6	4
2	10/100/1000 Base–T Ethernet PCI (type A–A)	2975	DCCG150–0000	Slots 1, 2, 3, 4, 5	5
	Gigabit Ethernet–SX PCI (type B5–N)	2969	DCCG144–0000		
	10/100/1000 Base–TX Ethernet PCI–X	5701	DCCG157–0000	Slots 1, 2, 3, 4, 5	5
	Gigabit Ethernet 1000 Base–SX PCI–X	5700	DCCG156–0000		
3	Power GXT135P (type 1–X)	2849	GTFG052–0000	Slots 1, 2, 3, 4, 5	4
	X.25 2 Port Multiprotocol com. (type B2–L)	2962	DCCG140–0000	Slots 5, 4, 3	2
4	Dual Channel Ultra320 SCSI adapter PCI–X	5712	MSCG060–0000	Slots 4, 5, 6	3
	Dual Channel Ultra320 SCSI RAID PCI–X	5703	MSCG059–0000	Slots 4, 5, 6	3
5	PCI 4–Channel Ultra3 SCSI RAID (type 4–X)	2498	MSCG047–0000	Slots 1, 2, 3, 4, 5	5
6	PCI Dual Channel Ultra 3 SCSI (type 4–Y)	6203	MSCG048–0000	Slots 1, 2, 3, 4, 5	5
7	10/100 Mbps 4 Ports Ethernet PCI (type A–E)	4961	DCCG152–0000	Slots 5, 4, 3, 2, 1	5
8	8–Port Asynchronous EIA–232E/RS–422A PCI (type 3–B)	2943	DCCG130–0000	Slots 5, 4, 3, 2, 1	5
9	High Speed Token Ring PCI	4959	DCCG135–0000	Slots 5, 4, 3, 2, 1	4
10	10/100 Mbps Ethernet PCI (type A–F)	4962	DCCG137–0000	Slots 5, 4, 3, 2, 1	5

Prio	Adapter	FC	MI	Slot Usage	System Maximum
11	X.25 4–port Sync. Communication Adapter (type B2–H)	Bull	DCCG098–0000	Slots 5, 4, 3, 2, 1	2
12	PCI Universal Differential Ultra SCSI Adapter (type 4–U)	6204	MSCG044–0000	Slots 5, 4, 3, 2, 1	5

Installing an Adapter in an ESCALA PL 240T or PL240R

This system is designed for customers to install adapters. Use this guide to determine if there are specific slot requirements for adapters that you may be installing.

Some adapters must be placed in specific system unit slots to function correctly at optimum performance. Use the information in the following sections of this chapter to determine where to install adapters in your system unit.

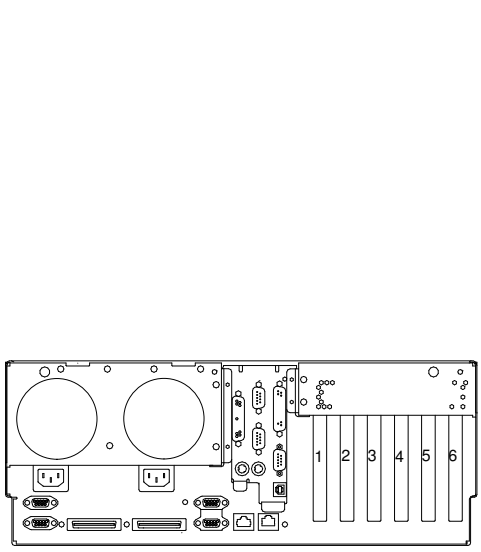
Logical Partition (LPAR) Considerations

Place redundant devices in separate I/O drawers for best availability performance. Place non–redundant devices in the same I/O drawer. If you place non–redundant devices in one drawer, the system is less exposed to other–drawer failures.

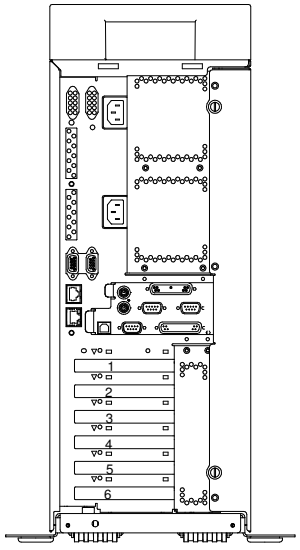
Some devices do not have enhanced error handling (EEH) capabilities built in to their device drivers. If these devices fail, the PCI Host Bridge (PHB) in which they are placed will be affected. If the I/O subsystem encounters a severe error, all slots in the PHB are also affected. To clear this condition, you may reboot the system. In addition, it is also possible to remove the failed PCI slots on an affected PHB from the partition profile or profiles that include these PCI slots, and reboot the partition or partitions that terminated at the time of the error.

To avoid PHB errors related to non–EEH adapters, it is strongly recommended that if a non–EEH adapter is used, then all slots on that PHB should be assigned to a single LPAR. Refer to the tables in this chapter for additional information about LPAR (logical partitioning) considerations.

PL 240T and PL 240R Adapter Placement Guide



Model PL 240T



Model PL 240R

System Unit Rear View with Numbered Slots

Table 1. Slot Location Reference

Slot	PHB	Planar	Loc. Code	Slot Characteristics
1	1	1	Ux.y–P1–I1	64–bit 3.3V, 133 MHz
2	1	1	Ux.y–P1–I2	32–bit 3.3V, 66 MHz
3	1	1	Ux.y–P1–I3	32–bit 3.3V, 66 MHz
4	1	1	Ux.y–P1–I4	64–bit 3.3V, 133 MHz
5	1	1	Ux.y–P1–I5	64–bit 3.3V, 133 MHz
6	1	1	Ux.y–P1–I6	64–bit 3.3V, 133 MHz

Note: In Table 1, Ux.y represents the Hardware Management Console (HMC) location code where *x* is the rack location and *y* is the drawer position.

Use the following table to identify specific slot location options for the following adapters in your ESCALA PL 240 system.

Table 2. Slot Location Options

Pri	Adapter Type	Label	FC	MI	PCI Slot Location[1] (E) Expansion	Max per system	EEH	Hot plug
1	Dual Channel Ultra320 SCSI adapter	5712	5712	MSCG054–0000	4,5,6	3	Y	Y
	PCI 4 Channel Ultra3 SCSI RAID	4–X	2498	MSCG050–0000	4,5,6	3	Y	Y
	PCI 2 Channel Ultra3 SCSI RAID	4–Y	6203	MSCG051–0000	4,5,6	3	Y	Y
2	Dual Channel Ultra320 SCSI RAID	5703	5703	MSCG053–0000	4,5,6	3	Y	Y
	Ethernet 1000 Base–SX Ethernet 10 /100/1000 Base–TX		5700 5701	DCCG163–0000 DCCG164–0000	1,4,5,6	4	Y	Y
	Ethernet 2 port 10/100/1000 Base–TX Ethernet 2 port 1000 Base–SX PCI–X boards		5706 5707	DCCG168–0000 DCCG169–0000	1,4,5,6	4	Y	Y
	PCI 64 Bits Fibre Channel 2 Gb/s		6239	DCCG172–0000	1,4,5,6	4	Y	Y
3	PCI Universal Differencial Ultra SCSI	4–U	6204	MSCG049–0000	1,4,2,3,5,6	6	Y	Y
4	Power GXT135P	1–X	2849	GTFG051–0000	1,4,2,3,5,6	4	Y	N
5	10/100 Mbps 4 Ports Ethernet PCI	A–E	4961	DCCG162–0000	4,5,6	3	Y	Y
6	10/100 Mbps Ethernet PCI	A–F	4962	DCCG161–0000	1,4,2,3,5,6	6	Y	Y
7	High Speed Token Ring PCI	B5–R	4959	DCCG135–0000	1 ,4,2,3,5,6	6	Y	Y
8	8 Port Asyn. EIA–232E/RS–422A PCI	3–B	2943	DCCG160–0000	1,4,2,3,5,6	6	Y	Y
9	X25 2 port Multiprotocol com.	B2–L	2962	DCCG140–0000	1,4,2,3,5,6	6	Y	N

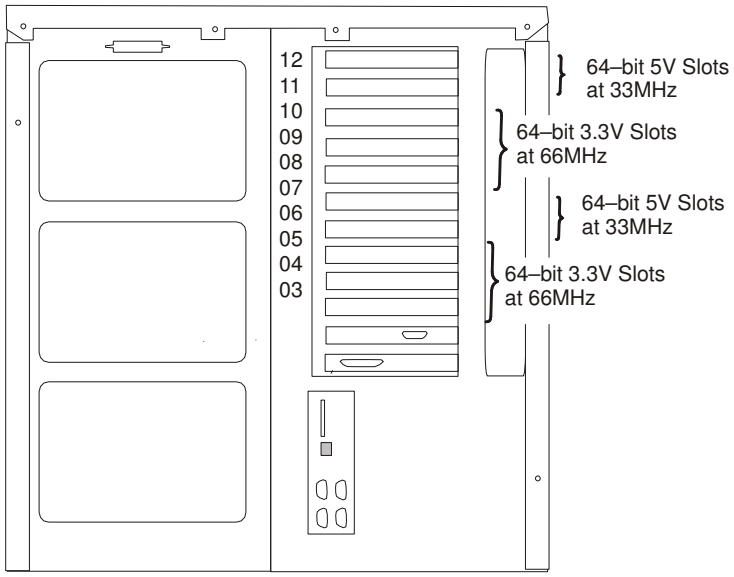
Note:

1) IO Configuration

- Base IO/drawer 6 basic slots:
  - 4 slots PCI–X 64 bits 133 MHz (1,4,5,6)
  - 2 slots PCI–X 32 bits 66 MHz (2,3)

Installing an Adapter in an ESCALA PL400T or PL600T

This system is designed for customers to install adapters. Use this section to determine if there are specific slot requirements for adapters that you may be installing.



(System Unit Rear View with Numbered Slots)

The system can accommodate up to 10 feature adapters based on the PCI bus. All slots are 64 bit with slots 6, 7, 11 and 12 supplying +5v and running at 33Mhz. The remaining slots are 3.3v slots capable of running at 66 Mhz. The slots are numbered 3–12 (C03–C12) starting from the bottom of the machine.

Adapter cards that require +5v supply to operate must be plugged into slots 6, 7, 11 or 12. Adapter cards requiring +3.3v supply must be plugged into slots 3, 4, 5, 8, 9, or 10. Adapter cards that are universal (that is, they run on either voltage) can be plugged into any of the 10 slots.

Adapter Placement

Some adapters must be placed in specific system unit slots to function correctly at highest performance. Use the table below to determine where to install an adapter in your system unit.

Many of the following notes refer to optimizing system performance.

Use the rear–view diagram above to identify slot locations described in the following table.

Use the following table to identify specific slot location options for the following adapters in your Escala PL400T or PL600T system.

Note: The adapters with the highest slot placement priority are listed at the top of the table. The slot numbers in the Slot Usage column represent slot location priorities. Use the first numbered slot first. If an adapter has already filled the first slot in the list, go to the next number in the list.

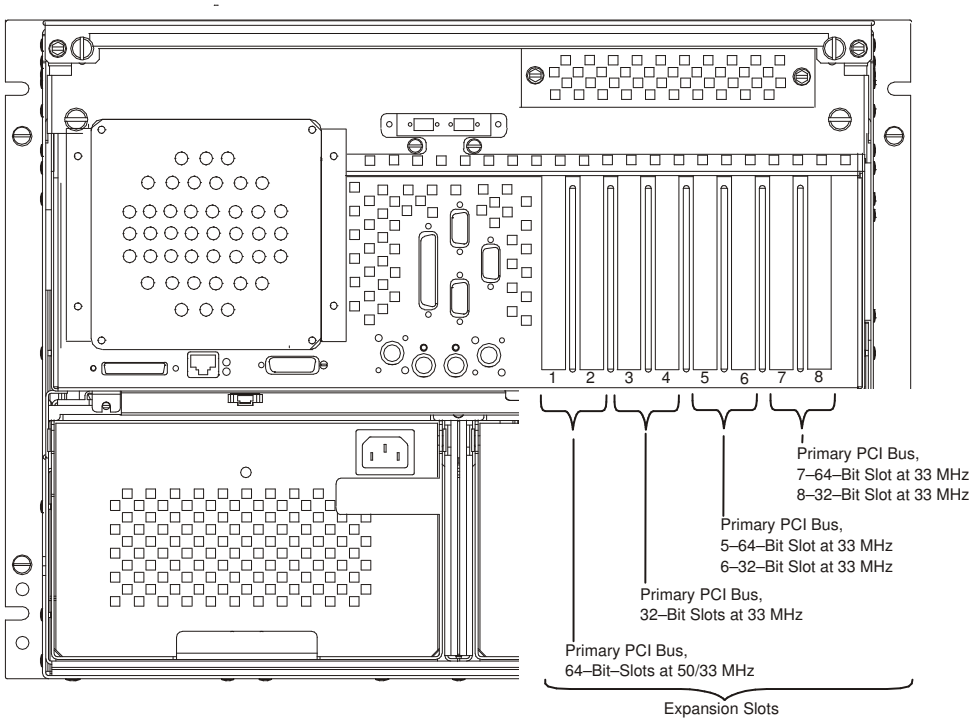
Prio	Adapter	FC	MI	Slot Usage	System Maximum	Hot–Plug
1	PCI 64 bits Fibre Channel 2 GB/s (Type B4–E)	Bull	DCCG154–0000 DCCG155–0000	9, 8, 3, 4, 10, 5, 6, 11, 7, 12	6	Y
2	10/100/1000 Base–T Ethernet PCI (Type A–A)	2975	DCCG150–0000	9, 8, 3, 4, 10, 5, 6, 11, 7, 12	6	Y
	Ethernet 10/1000/1000 Base–TX PCI–X	5701	DCCG157–0000			
3	Gigabit Ethernet–SX PCI (Type B5–N)	2969	DCCG144–0000	9, 8, 3, 4, 10, 5, 6, 11, 7, 12	6	Y
	Gigabit Ethernet 1000 Base–SX PCI–X	5700	DCCG156–0000			
4	PCI Single–Ended Ultra SCSI (Type 4–K)	6206	MSCG040–0000	6, 11, 7, 12	1	Y
4	PCI Dual Channel Ultra2 SCSI (Type 4–R)	6205	MSCG043–0000	9, 8, 3, 4, 10, 5, 6, 11, 7, 12	6	Y
	PCI 4–Channel Ultra3 SCSI RAID (Type 4–X)	2498	MSCG047–0000			
	PCI Dual–Channel Ultra3 SCSI RAID (Type 4–Y)	6203	MSCG048–0000			
5	PCI Universal Differential Ultra SCSI Adapter (Type 4–U)	6204	MSCG044–0000	9, 8, 3, 4, 10, 5, 6, 11, 7, 12	10	Y
6	PCI 64–Bit Copper Fibre Channel Adapter (Type B4–A)	Bull	DCCG147–0000	9, 8, 3, 4, 10, 5, 6, 11, 7, 12	6	Y
	PCI 64–Bit Optical Fibre Channel Adapter (Type B4–B)	Bull	DCCG148–0000			
7	4–Port 10/100 Base–TX Ethernet PCI Adapter (Type A–E)	4961	DCCG152–0000	9, 8, 3, 4, 10, 5, 6, 11, 7, 12	10	Y
8	SysKonnect SK–NET FDDI–LP SAS PCI Adapter (type 9–N)	2741	DCCG123–0000	9, 8, 3, 4, 10, 5, 6, 11, 7, 12	4	Y
	SysKonnect SK–NET FDDI–LP DAS PCI Adapter	2742	DCCG124–0000			
	SysKonnect SK–NET FDDI–UP SAS PCI Adapter	2743	DCCG125–0000			
9	8–Port Asynchronous EIA–232E/RS–422A PCI (Type 3–B)	2943	DCCG130–0000	9, 8, 3, 4, 10, 5, 6, 11, 7, 12	10	Y
10	2–Port Multiprotocol PCI (Type B2–L)	2962	DCCG140–0000	6, 11, 7, 12	4	**N**
11	PCI 1–port Sync. Communication Adapter (Type B2–G)	Bull	DCCG097–0000	9, 8, 3, 4, 10, 5, 6, 11, 7, 12	8	Y

Prio	Adapter	FC	MI	Slot Usage	System Maximum	Hot–Plug
12	PCI 4–port Sync. Communication Adapter (Type B2–H)	Bull	DCCG098–0000	9, 8, 3, 4, 10, 5, 6, 11, 7, 12	8	Y
13	TURBOWAYS 155 PCI UTP ATM (Type 9–J)	2963	DCCG128–0000	9, 8, 3, 4, 10, 5, 6, 11, 7, 12	4	Y
14	10/100 Mbps Ethernet PCI Adapter (Type A–F)	4962	DCCG137–0000	9, 8, 3, 4, 10, 5, 6, 11, 7, 12	10	Y
15	High–Speed Token Ring PCI (Type B5–R)	4959	DCCG135–0000	9, 8, 3, 4, 10, 5, 6, 11, 7, 12	9	Y
16	Power GXT130P (Type 1–T)	2830	GTFG048–0000	6, 11, 7, 12	1	**N**

Note: The total number of Fiber adapters is 6 maximum.

Installing an Adapter in an ESCALA EPC440

This system is designed for service representatives to install adapters. Use this section to determine if there are specific slot requirements for adapters that your service representative may be installing.



(System Unit Rear View with Numbered Slots)

Adapter Placement

Some adapters must be placed in specific system unit slots to function correctly at highest performance. Use the following table to determine where to install an adapter in your system unit.

Use the rear view diagram above to identify slot locations described in the following table.

Adapter	FC	MI	Slot Usage	System Maximum
Gigabit Ethernet–SX PCI (Type 9–U, B5–N))	2969	DCCG144–0000	Slots 1, 5, 2, 7 (see notes 3, 8)	4 (see notes 2, 4, 9)
10/100/1000 Base–T Ethernet PCI (Type A–A)	2975	DCCG150–0000	Slots 1, 5, 2, 7 (see note 3)	4 (see notes 1, 4, 6)
PCI 3-Channel Ultra2 SCSI RAID (Type 4-T)	2494	MSCG045–0000	Any slot (see notes 3, 5)	4 (see note 2)
PCI 4-Channel Ultra3 SCSI RAID (Type 4-X)	2498	MSCG047–0000	Any slot	4
PCI 64–Bit Copper Fibre Channel Adapter (Type B4–A)	Bull	DCCG147–0000	Slots 5,7,1,2 (see note 3)	4 (see notes 2, 9, 10)

Adapter	FC	MI	Slot Usage	System Maximum
PCI 64–Bit Optical Fibre Channel Adapter (Type B4–B)	Bull	DCCG148–0000	Slots 5,7,1,2 (see note 3)	4 (see notes 2, 9, 10)
10/100 4-Port Ethernet (Type 9–Z)	4951	DCCG149–0000	Slots 1,5,7,3	8
10/100 Mbps Ethernet Tx PCI (Type 9–P)	2968	DCCG137–0000	Any slot	8 (see notes 1, 7)
SysKonnect SK–NET FDDI–LP DAS PCI	2742	DCCG124–0000	Any slot	8
SysKonnect SK–NET FDDI–LP SAS PCI	2741	DCCG123–0000	Any slot	8
SysKonnect SK–NET FDDI–UP SAS PCI	2743	DCCG125–0000	Any slot	8
TURBOWAYS 155 PCI MMF ATM (Type 9–F)	2988	DCCG099–0000	Any slot	8 (see note 1)
TURBOWAYS 155 PCI UTP ATM (Type 9–J)	2963	DCCG128–0000	Any slot	8 (see note 1)
POWER GXT130P (Type 1–T)	2830	GTFG048–0000	Any slot (see note 3)	2
PCI Differential Ultra SCSI (Type 4–L)	6207	MSCG030–0000	Any slot	8
PCI Single-Ended Ultra SCSI (Type 4–K)	6206	MSCG040–0000	Any slot	8
High–Speed Token Ring PCI (Type B5–J, B5–R)	4959	DCCG135–0000	Any slot	8
2–Port Multiprotocol PCI (Type 9–L, B2–L)	2962	DCCG129–0000	Any slot	8
8–Port Asynchronous EIA–232E/RS–422A PCI (Type 3–B)	2943	DCCG130–0000	Any slot	8
PCI 1–port Sync. Communication Adapter (Type B2–G)	Bull	DCCG097–0000	Any slot	8
PCI 4–port Sync. Communication Adapter (Type B2–H)	Bull	DCCG098–0000	Any slot (see note 3)	4
128–Port Async Controller PCI (Type B3–9)	Bull	DCCG090–0000	Any slot	8

Notes:

1. For optimum performance, the system supports any combination of the following adapters, but that combination should not exceed a total of six per system:
   - FC 2988: TURBOWAYS 155 PCI MMF ATM (Type 9–F), when used in LAN emulation (LANE) mode.
   - FC 2963: TURBOWAYS 155 PCI UTP ATM (Type 9–J), when used in LAN emulation (LANE) mode.
   - FC 2975: 10/100/1000 Base–T Ethernet PCI (Type A–A), when used in 100 Mbps mode.
   - FC 2968: 10/100 Mbps Ethernet Tx PCI (Type 9–P), when used in 100 Mbps mode. If the integrated 10/100 Mbps controller is also being used at 100 Mbps, then the number of FC 2968 adapters should be limited to five.
2. The system supports any combination of the following adapters, but that combination cannot excced a total of seven:

- FC 2969: Gigabit Ethernet–SX PCI (Type 9–U, B5–N)
- PCI 64–Bit Fibre Channel Adapter (Type B4–A, B4–B)
- FC 2494: PCI 3-Channel Ultra2 SCSI RAID (Type 4-T)

3. For optimum performance, the combination of the following adapters should not exceed one per PCI bus:

   - FC 2969: Gigabit Ethernet–SX PCI (Type 9–U, B5–N)
   - FC 2494: PCI 3-Channel Ultra2 SCSI RAID (Type 4-T)
   - FC 2975: 10/100/1000 Base–T Ethernet PCI (Type A–A)
   - FC 2830: POWER GXT130P (Type 1–T)
   - PCI 4–port Sync. Communication Adapter (Type B2–H)
   - PCI 64–Bit Fibre Channel Adapter (Type B4–A, B4–B)

4. For optimum system performance, a combination of the following adapters should not exceed a maximum of two adapters per system:

   - FC 2969: Gigabit Ethernet–SX PCI (Type 9–U, B5–N)
   - FC 2975: 10/100/1000 Base–T Ethernet PCI (Type A–A)

5. Do not install the FC 2494: PCI 3-Channel Ultra2 SCSI RAID (Type 4-T) adapter on the PCI Bus with the Service Processor card.

6. For optimum system performance, a maximum of one FC 2975: 10/100/1000 Base–T Ethernet PCI (Type A–A) adapter per system is recommended when configured to run at 1000 Mbps. If available, install in slots 1, 5, 2 or 7 (in that order). If your adapter is configured for 100 Mbps mode, use up to six adapters for optimum performance.

7. For optimum system performance, install up to six FC 2968: 10/100 Mbps Ethernet Tx PCI (Type 9–P) adapters in 100 Mbps mode.

8. If there are less than 8 total adapters, place the first FC 2969: Gigabit Ethernet–SX PCI (Type 9–U, B5–N) in slot 1 and leave slot 2 empty. If there are 8 total adapters and there are multiple FC 2969, place the FC 2969 adapters in slot 1 and slot 2.

9. For optimum system performance, a combination of the following adapters should not exceed a maximum of four adapters per system:

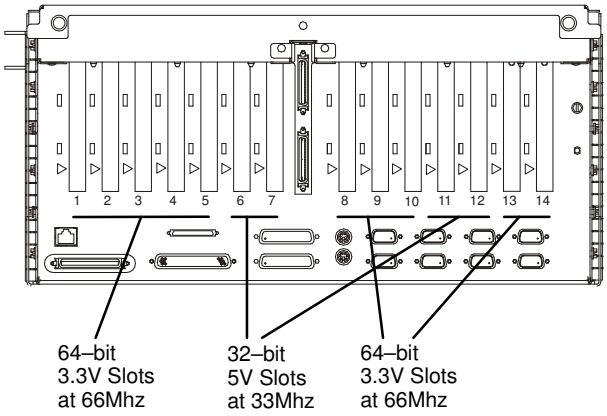
   - FC 2969: Gigabit Ethernet–SX PCI (Type 9–U, B5–N)
   - PCI 64–Bit Fibre Channel Adapter (Type B4–A, B4–B)
   - FC 2494: PCI 3-Channel Ultra2 SCSI RAID (Type 4-T)

   These adapters should be placed one per bus, if possible.

10. It is possible to install two PCI 64–Bit Fibre Channel Adapters (Type B4–A, B4–B) in adjacent slots on the same PCI bus, if these slots are “64 bits” slots, i.e. slots 1 and 2. But you should prefer to install them in separate PCI buses if other free 64 bits slots are available.

Installing an Adapter in an ESCALA PL400R or PL600R

This system is designed for customers to install adapters. Use this section to determine if there are specific slot requirements for adapters that you may be installing.



(System Unit Rear View with Numbered Slots)

Adapter Placement

Some adapters must be placed in specific system unit slots to function correctly at highest performance. Use the table below to determine where to install an adapter in your system unit.

Many of the following notes refer to optimizing system performance.

Use the rear–view diagram above to identify slot locations described in the following tables.

Note: Note: The adapters with the highest slot placement priority are listed at the top of the table. The slot numbers in the Slot Usage column represent slot location priorities. Use the first numbered slot first. If an adapter has already filled the first slot in the list, go to the next number in the list.

Pri	Adapter	FC	MI	Slot Usage (see note 1)	Maximum per Drawer/System	Hot–Plug
1	PCI 64 bits Fibre Channel 2GB/s (Type B4–E)	Bull	DCCG154–0000 DCCG155–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	8/16	Y
2	10/100/1000 Base–T Ethernet PCI (Type A–A)	2975	DCCG150–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	10/20	Y
	Ethernet 10/100/1000 Base–TX PCI–X	5701	DCCG157–0000			
3	Gigabit Ethernet–SX PCI (Type B5–N)	2969	DCCG144–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	10/20	Y
	Gigabit Ethernet 1000 Base–SX PCI–X	5700	DCCG156–0000			
4	PCI Dual Channel Ultra2 SCSI (Type 4–R)	6205	MSCG043–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	10/20	Y
	PCI 4–Channel Ultra3 SCSI RAID (Type 4–X)	2498	MSCG047–0000			
	PCI Dual–Channel Ultra3 SCSI RAID (Type 4–Y)	6203	MSCG048–0000			

Pri	Adapter	FC	MI	Slot Usage (see note 1)	Maximum per Drawer/System	Hot–Plug
5	PCI Universal Differential Ultra SCSI Adapter (Type 4–U)	6204	MSCG044–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	10/20	Y
6	PCI 64–Bit Copper Fibre Channel Adapter (Type B4–A)	Bull	DCCG147–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	8/16	Y
	PCI 64–Bit Optical Fibre Channel Adapter (Type B4–B)	Bull	DCCG148–0000			
7	4–Port 10/100 Base–TX Ethernet PCI Adapter (Type A–E)	4961	DCCG152–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	10/20	Y
8	SysKonnect SK–NET FDDI–LP SAS PCI Adapter (type 9–N)	2741	DCCG123–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	14/28	Y
	SysKonnect SK–NET FDDI–LP DAS PCI Adapter (type 9–N)	2742	DCCG124–0000			
	SysKonnect SK–NET FDDI–UP SAS PCI Adapter (type 9–N)	2743	DCCG125–0000			
9	8–Port Asynchronous EIA–232E/RS–422A PCI (Type 3–B)	2943	DCCG130–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	14/28	Y
10	2–Port Multiprotocol PCI (Type B2–L)	2962	DCCG140–0000	6, 11, 7, 12	4/8	N
11	PCI 1–port Sync. Communication Adapter (Type B2–G)	Bull	DCCG097–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	8/8	Y
12	PCI 4–port Sync. Communication Adapter (Type B2–H)	Bull	DCCG098–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	8/8	Y
13	TURBOWAYS 155 PCI UTP ATM (Type 9–J)	2963	DCCG128–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	7/7	Y
14	10/100 Mbps Ethernet PCI Adapter (Type A–F)	4962	DCCG137–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	10/20	Y
15	High–Speed Token Ring PCI (Type B5–R)	4959	DCCG135–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	14/28	Y
	POWER GXT130P (Type 1–T)	2830	GTFG048–0000	6, 11, 7, 12 (primary only)	1	N

Notes:

1. 2 I/O Drawers maximum. Slot locations are the same on the Primary and Secondary Drawers, except for Power GXT130P (Primary Drawer only)
2. The total number of Fiber adapters is 16 maximum.

Installing an Adapter in an ESCALA PL420

This system is designed for customers to install adapters. Use this guide to determine if there are specific slot requirements for adapters that you may be installing.

Some adapters must be placed in specific system unit slots to function correctly at optimum performance. Use the information in the following sections of this chapter to determine where to install adapters in your system unit.

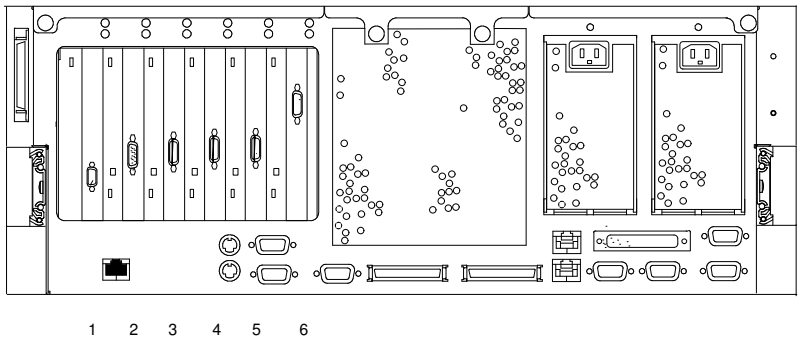
Logical Partition (LPAR) Considerations

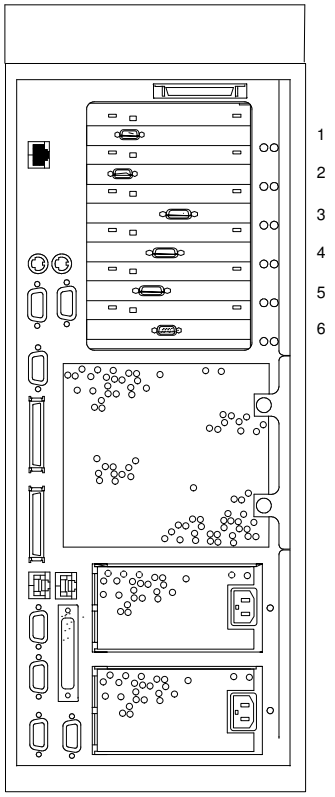
Place redundant devices in separate I/O drawers for best availability performance. Place non–redundant devices in the same I/O drawer. If you place non–redundant devices in one drawer, the system is less exposed to other–drawer failures.

Some devices do not have enhanced error handling (EEH) capabilities built in to their device drivers. If these devices fail, the PCI Host Bridge (PHB) in which they are placed will be affected. If the I/O subsystem encounters a severe error, all slots in the PHB are also affected. To clear this condition, you may reboot the system. In addition, it is also possible to remove the failed PCI slots on an affected PHB from the partition profile or profiles that include these PCI slots, and reboot the partition or partitions that terminated at the time of the error.

To avoid PHB errors related to non–EEH adapters, it is strongly recommended that if a non–EEH adapter is used, then all slots on that PHB should be assigned to a single LPAR. Refer to the tables in this chapter for additional information about LPAR (logical partitioning) considerations.

PL420T and PL420R Adapter Placement Guide





System Unit Rear View with 4–Slot PCI Riser Numbered Slots

Table 1. Slot Location Reference

Slot	PHB	Planar	Loc. Code	Slot Characteristics
1	1	1	Ux.y–P2–I1	64–bit 3.3V, 66 MHz
2	1	1	Ux.y–P2–I2	64–bit 3.3V, 66 MHz
3	1	1	Ux.y–P2–I3	64–bit 3.3V, 133 MHz
4	1	1	Ux.y–P2–I4	64–bit 3.3V, 133 MHz
5	1	1	Ux.y–P2–I5	64–bit 3.3V, 133 MHz
6	1	1	Ux.y–P2–I6	64–bit 3.3V, 133 MHz

Note: In Table 1, Ux.y represents the Hardware Management Console (HMC) location code where *x* is the rack location and *y* is the drawer position.

Use the following table to identify specific slot location options for the following adapters in your ESCALA PL420 system.

Table 2. Slot Location Options

Pri	Adapter Type	Label	FC	MI	PCI Slot Location (see note 1) (B) Base (E) Expan-sion	Max per Riser/ system	Max per LPAR	EEH	Hot–plug
1	PCI 4 Chan-nel Ultra3 SCSI RAID (see note 2)	4–X	2498	MSCG050–0000	(B) 3, 4, 5, 1, 2 (E) 1, 5, 2, 6, 3, 7, 4	3/11	11	Y	Y
2	PCI 64 bits Fibre Chan-nel 2 GB/s (PCI–X)	5704	6239	DCCG172–0000	(B) 3, 4, 5, 6, 1, 2 (E) 1, 5, 2, 6, 3, 7, 4	4/18	18	Y	Y
	PCI 64 bits Fibre Chan-nel 2 GB/s	6228	Bull	DCCG155–0000	(B) 3, 4, 5, 6, 1, 2 (E) 1, 5, 2, 6, 3, 7, 4	4/18	18	Y	Y
3	Power GXT135P	1–X	2849	GTFG051–0000	(B) 3, 4, 5, 6, 1, 2 (E) 1, 5, 2, 6, 3, 7, 4	4/4	1	Y	N
4	Dual Chan-nel Ultra320 SCSI adapt-er	5712	5712	MSCG054–0000	(B) 3, 4, 5, 6, 1, 2 (E) 7, 4, 1, 5, 2, 6, 3	5/19	19	Y	Y
	Dual Chan-nel Ultra320 SCSI RAID	5703	5703	MSCG053–0000	(B) 3, 4, 5, 6, 1, 2 (E) 7, 4, 1, 5, 2, 6, 3	5/19	19	Y	Y
5	Gigabit Ethernet 1000 Base–SX Ethernet 10 /100/1000 Base–TX	5700 5701	5700 5701	DCCG163–0000 DCCG157–0000 DCCG164–0000	(B) 3, 4, 5, 6, 1, 2 (E) 1, 5, 2, 6, 3, 7, 4	4/20	20	Y	Y

5	Ethernet 2 port 10/100/1000 Base–TX Ethernet2 port 1000 Base–SX	5706 5707	5706 5707	DCCG168–0000 DCCG169–0000	(B) 3, 4, 5, 6, 1, 2 (E) 1, 5, 2, 6, 3, 7, 4	6/20	20	Y	Y
6	PCI 2 Channel Ultra3 SCSI RAID (see note 2)	4–Y	6203	MSCG051–0000	(B) 3, 4, 5, 6, 1, 2 (E) 7, 4, 1, 5, 2, 6, 3	6/20	20	N	Y
	PCI Universal Differencial Ultra SCSI	4–U	6204	MSCG049–0000	(B) 3, 4, 5, 6, 1, 2 (E) 1, 5, 2, 6, 3, 7, 4	6/20	20	Y	Y
7	10/100 Mbps Ethernet PCI	A–F	4962	DCCG161–0000	(B) 3, 4, 5, 6, 1, 2 (E) 1, 5, 2, 6, 3, 7, 4	6/20	20	Y	Y
8	High Speed Token Ring PCI	B5–R	4959	DCCG135–0000	(B) 3, 4, 5, 6, 1, 2 (E) 1, 5, 2, 6, 3, 7, 4	6/20	20	Y	Y
9	10/100 Mbps 4 Ports Ethernet PCI	A–E	4961	DCCG162–0000	(B) 3, 4, 5, 6, 1, 2 (E) 1, 5, 2, 6, 3, 7, 4	6/20	20	Y	Y
10	8 Port Asyn. EIA–232E/RS–422A PCI	3–B	2943	DCCG160–0000	(B) 3, 4, 5, 6, 1, 2 (E) 1, 5, 2, 6, 3, 7, 4	6/20	20	Y	Y
11	X25 2 port Multiprotocol com.	B2–L	2962	DCCG140–0000	(B) 3, 4, 5, 6, 1, 2 (E) 1, 5, 2, 6, 3, 7, 4	6/20	20	Y	Y

Notes:

1. IO Configuration
   - Base I/O Drawer: 6 basic PCI–X slots. Up to 2 expansion I/O drawers.
   - Expansion I/O Drawer 0 to 2 I/O Drawers Max. (7 PCI–X slots)
2. High–speed adapters:

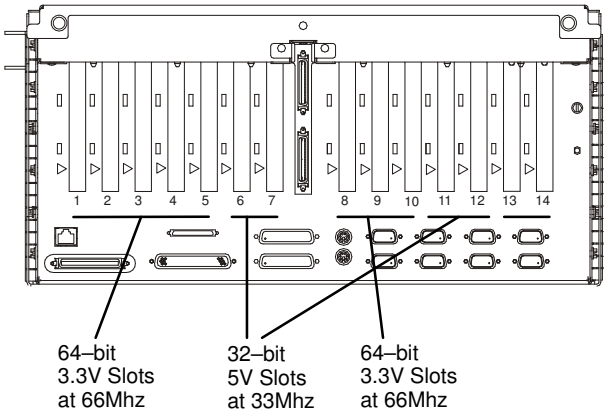
   The high–speed adapters have the same priority.

   In an I/O Drawer, limitations are: :

   - 6 high–speed adapters max., except for PCI 4 Channel Ultra2 SCSI RAID (MSCG050–0000) limited to 4 adapters by I/O drawer.

Installing an Adapter in an ESCALA EPC810 or PL800R

This system is designed for customers to install adapters. Use this section to determine if there are specific slot requirements for adapters that you may be installing.



(System Unit Rear View with Numbered Slots)

Adapter Placement

Some adapters must be placed in specific system unit slots to function correctly at highest performance. Use the table below to determine where to install an adapter in your system unit.

Many of the following notes refer to optimizing system performance.

Use the rear–view diagram above to identify slot locations described in the following tables.

Use the following table to identify specific slot location options for the following adapters in your system.

Note: The adapters with the highest slot placement priority are listed at the top of the table. The slot numbers in the Slot Usage colum represent slot location priorities. Use the first numbered slot first. If an adapter has already filled the first slot in the list, go to the next number in the list.

Pri	Adapter	FC	MI	Slot Usage (see note 1)	Maximum per Drawer/System	Hot–Plug
1	PCI 64 bits Fibre Channel 2GB/s (Type B4–E)	Bull	DCCG154–0000 DCCG155–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	8/16	Y
2	10/100/1000 Base–T Ethernet PCI (Type A–A)	2975	DCCG150–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	10/20	Y
	Ethernet 10/100/1000 Base–TX PCI–X	5701	DCCG157–0000			
3	Gigabit Ethernet–SX PCI (Type B5–N)	2969	DCCG144–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	10/20	Y
	Gigabit Ethernet 1000 Base–SX PCI–X	5700	DCCG156–0000			
4	PCI 4–Channel Ultra3 SCSI RAID (Type 4–X)	2498	MSCG047–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	10/20	Y
	PCI Dual–Channel Ultra3 SCSI RAID (Type 4–Y)	6203	MSCG048–0000			

Pri	Adapter	FC	MI	Slot Usage (see note 1)	Maximum per Drawer/System	Hot–Plug
5	PCI Universal Differential Ultra SCSI Adapter (Type 4–U)	6204	MSCG044–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	10/20	Y
6	PCI 64–Bit Copper Fibre Channel Adapter (Type B4–A)	Bull	DCCG147–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	8/16	Y
	PCI 64–Bit Optical Fibre Channel Adapter (Type B4–B)	Bull	DCCG148–0000			
7	4–Port 10/100 Base–TX Ethernet PCI Adapter (Type A–E)	4961	DCCG152–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	10/20	Y
8	SysKonnect SK–NET FDDI–LP SAS PCI Adapter (type 9–N)	2741	DCCG123–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	14/28	Y
	SysKonnect SK–NET FDDI–LP DAS PCI Adapter (type 9–N)	2742	DCCG124–0000			
	SysKonnect SK–NET FDDI–UP SAS PCI Adapter (type 9–N)	2743	DCCG125–0000			
9	POWER GXT135P (Type 1–X)	2848	GTFG050–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12 (primary only)	1	N
10	8–Port Asynchronous EIA–232E/RS–422A PCI (Type 3–B)	2943	DCCG130–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	14/32	Y
11	2–Port Multiprotocol PCI (Type B2–L)	2962	DCCG140–0000	6, 11, 7, 12	4/10	N
12	PCI 1–port Sync. Communication Adapter (Type B2–G)	Bull	DCCG097–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	8/8	Y
13	PCI 4–port Sync. Communication Adapter (Type B2–H)	Bull	DCCG098–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	8/8	Y
14	TURBOWAYS 155 PCI UTP ATM (Type 9–J)	2963	DCCG128–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	7/7	Y
15	10/100 Mbps Ethernet PCI Adapter (Type A–F)	4962	DCCG137–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	10/20	Y
16	High–Speed Token Ring PCI (Type B5–R)	4959	DCCG135–0000	1, 5, 10, 2, 8, 4, 13, 3, 9, 14, 6, 11, 7, 12	14/28	Y

Notes:

1. 4 I/O Drawers maximum. Slot locations are the same on the Primary and Secondary Drawers, except for Power GXT135P (Primary Drawer only)
2. The total number of Fiber adapters is 16 maximum.

Installing an Adapter in an ESCALA PL 820R

This system is designed for customers to install adapters. Use this guide to determine if there are specific slot requirements for adapters that you may be installing.

Some adapters must be placed in specific system unit slots to function correctly at optimum performance. Use the information in the following sections of this chapter to determine where to install adapters in your system unit.

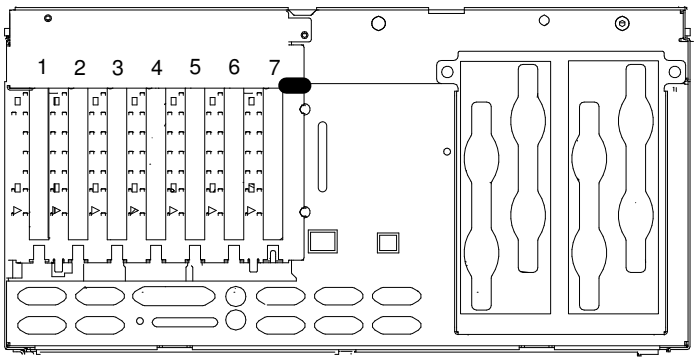
Logical Partition (LPAR) Considerations

Place redundant devices in separate I/O drawers for best availability performance. Place non–redundant devices in the same I/O drawer. If you place non–redundant devices in one drawer, the system is less exposed to other–drawer failures.

Some devices do not have enhanced error handling (EEH) capabilities built in to their device drivers. If these devices fail, the PCI Host Bridge (PHB) in which they are placed will be affected. If the I/O subsystem encounters a severe error, all slots in the PHB are also affected. To clear this condition, you may reboot the system. In addition, it is also possible to remove the failed PCI slots on an affected PHB from the partition profile or profiles that include these PCI slots, and reboot the partition or partitions that terminated at the time of the error.

To avoid PHB errors related to non–EEH adapters, it is strongly recommended that if a non–EEH adapter is used, then all slots on that PHB should be assigned to a single LPAR. Refer to the tables in this chapter for additional information about LPAR (logical partitioning) considerations.

PL820R Adapter Placement Guide



System Unit Rear View with Numbered Slots

Table 1. Slot Location Reference

Slot	PHB	Planar	Loc. Code	Slot Characteristics
1	1	1	Ux.y–P2–I1	64–bit 3.3V, 133 MHz
2	1	1	Ux.y–P2–I2	64–bit 3.3V, 133 MHz
3	1	1	Ux.y–P2–I3	64–bit 3.3V, 133 MHz
4	1	1	Ux.y–P2–I4	64–bit 3.3V, 133 MHz
5	1	1	Ux.y–P2–I5	64–bit 3.3V, 133 MHz
6	1	1	Ux.y–P2–I6	64–bit 3.3V, 133 MHz
7	1	1	Ux.y–P2–I7	32–bit 3.3V, 133 MHz

Note: In Table 1, Ux.y represents the Hardware Management Console (HMC) location code where *x* is the rack location and *y* is the drawer position.

Use the following table to identify specific slot location options for the following adapters in your ESCALA PL820R system.

Table 2. Slot Location Options

Pri	Adapter Type	La-bel	FC	MI	PCI Slot Location (1) (B) Base (D10) Expansion (D20) Expansion	Max per Draw-er/sys-tem	Max per LPAR	EEH	Hot plug
1	Ethernet 1000 Base–SX Ethernet 10 /100/1000 Base–TX	5700 5701	5700 5701	DCCG163 –0000 DCCG164 –0000	(B) 1,6,2,5,3,4 (D10) 2,4,3,5,6,1 (D20) 1,5,2,6,3,7,4	6/30 6/30 7/30	30	Y	Y
	Ethernet 1000 Base–SX Ethernet 10 /100/1000 Base–TX	5706 5707	5706 5707	DCCG169 –0000 DCCG168 –0000	(B) 1,6,2,5,3,4 (D10) 2,4,3,5,6,1 (D20) 1,5,2,6,3,7,4	6/30 6/30 7/30	30	Y	Y
	Dual Channel Ultra320 SCSI adapter	5712	5712	MSCG054 –0000	(D20) 7,4,1,5,2,6,3	7/30		Y	Y
2	PCI 64 Bits Fibre Channel 2 Gb/s	4–W	6228	DCCG155 –0000	(B) 1,6,2,5,3,4 (D10) 2,4,3,5,6,1 (D20) 1,5,2,6,3,7,4	6/32 6/32 7/32	32	Y	Y
	PCI 64 Bits Fibre Channel 2 Gb/s	5704	6239	DCCG172 –0000	(B) 6,2,5,3,4 (D10) 2,4,3,5,6,1 (D20) 1,5,2,6,3,7,4	6/32 6/32 7/32	32	Y	Y
	Dual Channel Ultra320 SCSI RAID	5703	5703	MSCG053 –0000	(D20) 7,4,5,2,6,3,1	7/30	30	Y	Y
3	Dual Channel Ultra320 SCSI Dual Channel Ultra320 SCSI RAID	5710 5711	5710 5711	MSCG056 –0000 MSCG055 –0000	(B) 1,6,2,5,3,4 (D10) 2,4,3,5,6,1	6/30	30	Y	Y
	PCI 4 Channel Ultra3 SCSI RAID	4–X	2498	MSCG050 –0000	(B) 1,6,2,5,3,4 (D10) 2,4,3,5,6,1 (D20) 7,4,5,2,6 ,3,1	4/30	30	Y	Y
	PCI 2 Channel Ultra3 SCSI RAID	4–Y	6203	MSCG051 –0000	(B) 1,6,2,5,3,4 (D10) 2,4,3,5,6,1 (D20) 7,4,1,5,2,6 ,3	6/30 6/30 7/30	30	N	Y
4	10/100 Mbps 4 Ports Ethernet PCI	A–E	4961	DCCG162 –0000	(B) 1,6,2,5,3,4,7 (D10) 2,4,3,5,6,1 (D20) 1,5,2,6,3,7,4	6/20 6/20 7/20	20	Y	Y
5	10/100 Mbps Ethernet PCI	A–F	4962	DCCG161 –0000	(B) 1,6,2,5,3,4 (D10) 2,4,3,5,6,1 (D20) 1,5,2,6,3,7,4	5/55 6/55 7/55	55	Y	Y
6	Power GXT135P	1–X	2849	GTFG051–0000	(B) 1,6,2,5,3,4,7 (D10) 1,6,2,5,3,4 (D20) 1,5,2,6,3,7,4	7/8 6/8 4/8	1	Y	N
7	PCI Universal Differencial Ultra SCSI	4–U	6204	MSCG049 –0000	(B) 1,6,2,5,3,4 (D10) 1,6,2,5,3,4 (D20) 1,5,2,6,3,7,4	6/40 6/40 7/40	40	Y	Y
8	High Speed Token Ring PCI	B5–R	4959	DCCG135 –0000	(B) 1,6,2,5,3,4,7 (D10) 1,6,2,5,3,4 (D20) 1,5,2,6,3,7,4	7/30 6/30 7/30	30	Y	Y
9	8 Port Asyn. EIA–232E/RS–422A PCI	3–B	2943	DCCG160 –0000	(B) 1,6,2,5,3,4,7 (D10) 1,6,2,5,3,4 (D20) 1,5,2,6,3,7,4	7/32 6/32 7/32	32	Y	Y
10	X25 2 port Multiprotocol com.	B2–L	2962	DCCG140 –0000	(B) 1,6,2,5,3,4 (D10) 1,6,2,5,3,4 (D20) 1,5,2,6,3,7,4	5/53 6/53 7/53	14	Y	N

Notes:

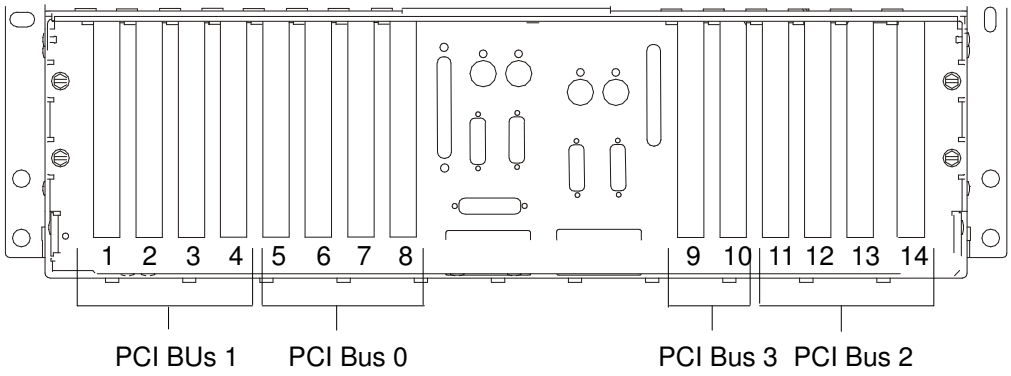
1. IO Configuration
   - Base I/O Drawer: 7 basic PCI–X slots. Up to 8 expansion I/O drawers.
   - Expansion I/O Drawer 0 to 8 I/O Drawers Max. Two models: D10 (5 PCI–X + 1 PCI) and D20 (7 PCI–X).
2. High–speed adapters:

   The high–speed adapters have the same priority.

   In an I/O Drawer, limitations are 6 high–speed adapters max. per I/O drawer (except for PCI 4 Channel Ultra3 SCSI RAID Adapter MSCG050–0000 limited to 4 adapters per I/O Drawer).

Installing an Adapter in an ESCALA EPC1200 or EPC1200A

These systems are designed for service representatives to install adapters. Use this section to determine if there are specific slot requirements for adapters that your service representative may be installing.



(I/O Drawer Rear View with 14 Slots and 4 PCI Buses)

Note: Each drawer has four PCI buses per Drawer: Slots 1-4 (PCI Bus 1), 5-8 (PCI Bus 0), 9-10 (PCI Bus 3), 11-14 (PCI Bus 2). Slots 1, 5, 9, 10 and 14 are 64-bit slots. Remaining slots are 32-bit. The 32-bit adapters also function in the 64-bit slots.

Adapters Placement

Some adapters must be placed in specific I/O drawer slots to function correctly and to achieve highest performance

The following table shows the slot plugging guidelines for all systems. The information in this table has been verified in system testing performed using maximum configurations.

When determining a slot in which to place a new adapter, you should start from the top of the table. The list of slot numbers represent the order that the slots should be used in a drawer.

For complete system placement, the first slot for a group of adapters is selected in the first drawer, and then the first slot is selected in the next drawer. After the first slot selection has been used for each drawer, the second slot in the list is used. This also rotates through the available drawers. If a card has already been placed in a slot, the slot is not available for future adapter placement.

The primary drawer referenced in the following table is the I/O drawer that has a service processor card installed in slot 8. Secondary drawers are additional I/O drawers that may be added to a system configuration. Secondary drawers do not have a service processor installed.

Adapter	Slot Usage	Models EPC1200 Maximum	Models EPC1200A Maximum
Service Processor	Primary drawer slot 8	1 per system	1 per system
PCI SCSI-2 F/W Single-Ended Factory installed to support internal media drives.	**Models EPC1200 Only** Primary drawer – slot 7 Secondary drawer – slot 8 (As required) Systems manufactured before October 23, 1998 may have this adapter in slot 2.	1 per drawer	N/A
PCI SCSI-2 F/W Single-Ended Factory installed to support internal SCSI drives.	**Models EPC1200 Only** Primary drawer – slot 13 Secondary drawer – slot 13 (As required) Systems manufactured before October 23, 1998 may have this adapter in slot 9.	1 per drawer	N/A
PCI Ultra SCSI Single-Ended Factory installed to support internal media drives.	**Models EPC1200A Only** Primary drawer – slot 7 Secondary drawer – slot 8 (As required)	N/A	1 per drawer
PCI Ultra SCSI Single-Ended Factory installed to support internal SCSI drives.	**Models EPC1200A Only** Primary drawer – slots 13, 6 Secondary drawer – slots 13, 6 (As required)	N/A	1 per drawer
Fibre Channel Arbitrated Loop (Type B4–7)	Primary drawer – slots 10, 14, 1 Secondary drawer – slots 1, 5, 10, 14	8 per system	8 per system
1GB Ethernet PCI (Type 9–U, B5–B, A–A)	Primary drawer – slots 10, 1, 9, 3, 4, 2 Secondary drawer – slots 1, 5, 10, 9, 3, 7	8 per system	8 per system[4]
SCSI-2 Fast/Wide PCI RAID	**Models EPC1200 Only** Primary drawer – slots 10, 14, 1 Secondary drawer – slots 1, 5, 10, 14	12 per system	N/A
PCI SSA Multi-Initiator/ RAID EL[1]	Primary drawer – slots 3, 14, 10, 12, 1 Secondary drawer – slots 1, 5, 10, 14, 3, 7, 12	16 per system	26 per system
POWER GXT120P[2]	Primary drawer – slots 1, 4	1 per system	1 per system
155 TURBOWAYS ATM PCI UTP 155 TURBOWAYS ATM PCI MMF	Primary drawer – slots 2, 4, 9, 11, 13, 3, 10, 12 Secondary drawer – slots 2, 4, 6, 8, 9, 11, 13, 3, 7, 10, 12	14 per system	16 per system
10/100 Mbps Ethernet PCI (Type 9–P)	Primary drawer – slots 2, 4, 9, 11, 13, 3, 10, 12 Secondary drawer – slots 2, 4, 6, 8, 9, 11, 13, 3, 7, 10, 12	26 per system	26 per system
SysKonnect SK-NET FDDI-UP SAS PCI SysKonnect SK-NET FDDI-UP DAS PCI SysKonnect SK-NET FDDI-LP SAS PCI	Primary drawer – slots 2, 4, 9, 11, 13, 3, 10, 12 Secondary drawer – slots 2, 4, 6, 8, 9, 11, 13, 3, 7, 10, 12	12 per system	26 per system
8-Port Asynchronous PCI	Primary drawer – slots 1, 3, 4, 11, 12, 13, 14, 10, 5, 9 Secondary drawer – slots 1, 5, 10, 11, 3, 6, 12, 14, 2, 6, 9, 13, 4, 7	8 per system	8 per system
128-Port Asynchronous PCI	Primary drawer – slots 1, 3, 4, 11, 12, 13, 14, 10, 5, 9 Secondary drawer – slots 1, 5, 10, 11, 3, 6, 12, 14, 2, 6, 9, 13, 4, 7	8 per system	16 per system

Adapter	Slot Usage	Models EPC1200 Maximum	Models EPC1200A Maximum
PCI SCSI-2 F/W Single-Ended PCI Single-Ended Ultra SCSI	Primary drawer – slots 1, 10, 14, 3, 9, 4, 12, 11, 5, 6, 2 Secondary drawer – slots 9, 2, 1, 5, 10, 11, 3, 6, 12, 4, 7, 13, 8, 14	40 per system[3]	40 per system[3]
PCI SCSI-2 F/W Differential PCI Differential Ultra SCSI	Primary drawer – slots 1, 10, 14, 3, 13, 4, 12, 11, 5, 6, 7 Secondary drawer –slots 1, 5, 10, 11, 3, 6, 12, 4, 7, 13, 8, 14	40 per system[3]	40 per system[3]
Token Ring PCI	Primary drawer – slots 10, 14, 3, 13, 4, 12, 11, 5, 9, 1, 2, 5 Secondary drawer – slots 1, 5, 10, 11, 3, 6, 12, 4, 7, 13, 8, 14, 9, 2	9 per system	9 per system
1–Port Synchronous PCI	Primary drawer – slots 10, 14, 3, 13, 4, 12, 11, 5, 9, 1, 2, 5 Secondary drawer – slots 1, 5, 10, 11, 3, 6, 12, 4, 7, 13, 8, 14, 9, 2	8 per system	8 per system
4–Port Synchronous PCI	Primary drawer – slots 10, 14, 3, 13, 4, 12, 11, 5, 9, 1, 2, 5 Secondary drawer – slots 1, 5, 10, 11, 3, 6, 12, 4, 7, 13, 8, 14, 9, 2	8 per system	8 per system
2-Port Multiprotocol PCI	Primary drawer – slots 10, 14, 3, 13, 4, 12, 11, 5, 9, 1, 2, 5 Secondary drawer – slots 1, 5, 10, 11, 3, 6, 12, 4, 7, 13, 8, 14, 9, 2	18 per system	18 per system

Notes:

1. The use of the PCI SSA Multi-Initiator/RAID EL in the Models RL470 & EPC1200 I/O drawer limits the system usage to a 28°C (82°F) environment maximum.

   If installing a PCI SSA Multi-Initiator/RAID EL adapter, remove the screws from the blue plastic adapter guide and remove the guide before you install it in your system (save the guide and screws if you plan to install this adapter in a different system later).

2. The manufacturer strongly recommends you locate the POWER GXT120P adapter in the primary I/O drawer. This placement provides you with the maximum amount of diagnostic feedback if your system encounters errors.

3. A maximum of 40 storage adapters per system and 10 storage adapters per I/O drawer.

4. For a maximum of performance, install only two Gigabit Ethernet-SX or two 10/100/1000 Base-T Ethernet PCI adapters (or one or each) per I/O drawer, one per bus.

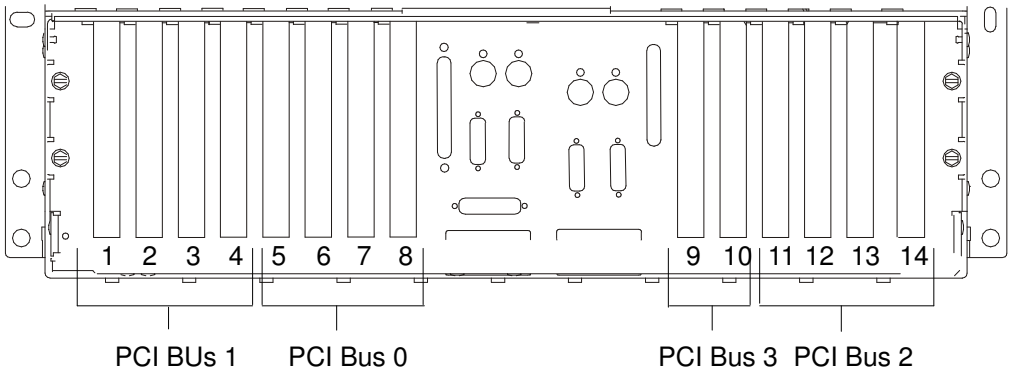
Configuration Details

- The recommended location for the boot device (SCSI or Network) and graphics adapter is within the primary I/O drawer (Drawer 0). This configuration provides service personnel with the maximum amount of diagnostic information if your system encounters errors in the boot sequence.
- Consider placing the AIX rootvg volume group in the primary I/O drawer. This allows AIX to boot if other I/O drawers are found off–line during boot.
- The default Boot Drive is in the lowest location in the center bay six–pack of the primary SCSI I/O drawer. If a boot source other than the internal SCSI disk is configured, the supporting SCSI adapter must also be in the primary I/O drawer.

- SCSI–2 disk bays in an I/O drawer are connected and driven by a single SCSI adapter, installed in **slot 9** or **slot 13**. Ultra SCSI disk bays can each be driven from separate Ultra SCSI adapters. In this configuration, slot 13 drives the default boot device and slot 6 drives the second Ultra SCSI disk bay. These adapters are optional on secondary I/O drawers.
- SCSI–2 Media bays in an I/O drawer are connected and driven by a single SCSI adapter, installed in **slot 2**. Ultra systems have the media bay driven from slot 7. This adapter is optional on secondary I/O drawers.
- The Service Processor must occupy **slot 8** of the primary I/O drawer.
- The SCSI–2 Fast/Wide PCI RAID adapter installed in the primary SCSI I/O drawer can only be connected to external devices. The SCSI RAID Adapter installed in secondary I/O drawers may be connected to internal disk bays.
- When possible, it is suggested that you place the PCI SSA Multi–Initiator/RAID EL and the SCSI–2 Fast/Wide PCI RAID on their own buses,
- Maximum limitations exist on adapters and devices that are specific to the adapter or device and are not interaction limits with others.
- I/O slot 9 does not support any long PCI adapter with backside components.

Installing an Adapter in an ESCALA EPC2400 or EPC2450

These systems are designed for service representatives to install adapters. Use this section to determine if there are specific slot requirements for adapters that your service representative may be installing.



(I/O Drawer Rear View with 14 Slots and 4 PCI Buses)

Note: Each drawer has four PCI buses per drawer: Slots 1–4 (PCI Bus 1), 5–8 (PCI Bus 0), 9–10 (PCI Bus 3), 11–14 (PCI Bus 2). Slots 1, 5, 9, 10 and 14 are 64–bit slots. Remaining slots are 32–bit. The 32–bit adapters also function in the 64–bit slots. Each bus is considered a primary bus. All slots are 33 MHz.

Adapters Placement

Some adapters must be placed in specific I/O drawer slots to function correctly and to achieve highest performance.

The following tables show the slot plugging guidelines for the systems. The information in this table has been verified in system testing performed using maximum configurations.

If two different adapters can be placed in the same slot, the highest priority adapter starts at the top of the table. The list of slot numbers represent the order that the slots should be used in a drawer.

For complete system placement, the first slot for a group of adapters is selected in the first drawer, and then the first slot is selected in the next drawer. After the first slot selection has been used for each drawer, the second slot in the list is used. This also rotates through the available drawers. If a card has already been placed in a slot, the slot is not available for future adapter placement.

The primary drawer referenced in the following table is the I/O drawer that has a service processor card installed in slot 8. Secondary drawers are additional I/O drawers that may be added to a system configuration. Secondary drawers do not have a service processor installed.

Adapter	Slot Usage	Maximum
Service Processor	Primary drawer slot 8	1 per system
PCI Ultra SCSI Single-Ended Factory installed to support internal media drives.	Primary drawer – slot 7 Secondary drawer – slot 8 (As required)	1 per drawer
PCI Ultra SCSI Single-Ended Factory installed to support internal SCSI drives.	Primary drawer – slots 13, 6 Secondary drawer – slots 13, 6 (As required)	2 per drawer
Fibre Channel Enhanced Adapter (Type B4–8)	Primary drawer – slots 10, 14, 1 Secondary drawer – slots 1, 5, 10, 14	8 per system

Adapter	Slot Usage	Maximum
1GB Ethernet–SX PCI (Type 9–U, B5–N)	Primary drawer – slots 10, 1, 9, 3, 4, 2 Secondary drawer – slots 1, 5, 10, 9, 3, 7	8 per system[3]
10/100/1000 Base–T Ethernet PCI (Type A–A)	Primary drawer – slots 10, 1, 9, 3, 4, 2 Secondary drawer – slots 1, 5, 10, 9, 3, 7	19 per system[3]
Token Ring PCI	Primary drawer – slots 2, 4, 9, 11, 13, 3, 10, 12, 6, 1, 5 Secondary drawer – slots 2, 4, 6, 8, 9, 11, 13, 3, 7, 10, 12, 14, 1, 5	26 per system
POWER GXT130P[1]	Primary drawer – slots 1, 4	1 per system
155 TURBOWAYS ATM PCI UTP 155 TURBOWAYS ATM PCI MMF	Primary drawer – slots 2, 4, 9, 11, 13, 3, 10, 12, 6, 1, 5 Secondary drawer – slots 2, 4, 6, 8, 9, 11, 13, 3, 7, 10, 12, 14, 15	16 per system
10/100 Mbps Ethernet PCI (Type 9–P)	Primary drawer – slots 2, 4, 9, 11, 13, 3, 10, 12, 6, 1, 5 Secondary drawer – slots 2, 4, 6, 8, 9, 11, 13, 3, 7, 10, 12, 14, 1, 5	26 per system
SysKonnect SK-NET FDDI-UP SAS PCI SysKonnect SK-NET FDDI-UP DAS PCI SysKonnect SK-NET FDDI-LP SAS PCI	Primary drawer – slots 2, 4, 9, 11, 13, 3, 10, 12, 6, 1, 5 Secondary drawer – slots 2, 4, 6, 8, 9, 11, 13, 3, 7, 10, 12, 14, 1, 5	26 per system
8-Port Asynchronous PCI	Primary drawer – slots 1, 3, 4, 11, 12, 13, 14, 10, 5, 9 Secondary drawer – slots 1, 5, 10, 11, 3, 6, 12, 14, 2, 6, 9, 13, 4, 7	16 per system
128-Port Asynchronous PCI	Primary drawer – slots 1, 3, 4, 11, 12, 13, 14, 10, 5, 9, 7 Secondary drawer – slots 1, 5, 10, 11, 3, 6, 12, 14, 2, 6, 9, 13, 4, 7	32 per system
PCI SCSI-2 F/W Single-Ended PCI Single-Ended Ultra SCSI	Primary drawer – slots 1, 10, 14, 3, 9, 4, 12, 11, 5, 6, 2, 7 Secondary drawer – slots 9, 2, 1, 5, 10, 11, 3, 6, 12, 4, 7, 13, 8, 14	40 per system[2]
PCI SCSI-2 F/W Differential PCI Differential Ultra SCSI	Primary drawer – slots 1, 10, 14, 3, 13, 4, 12, 11, 5, 6, 7 Secondary drawer –slots 1, 5, 10, 11, 3, 6, 12, 4, 7, 13, 8, 14	40 per system[2]
1–Port Synchronous PCI	Primary drawer – slots 10, 14, 3, 13, 4, 12, 11, 5, 9, 1, 2, 5 Secondary drawer – slots 1, 5, 10, 11, 3, 6, 12, 4, 7, 13, 8, 14, 9, 2	8 per system
4–Port Synchronous PCI	Primary drawer – slots 10, 14, 3, 13, 4, 12, 11, 5, 9, 1, 2, 5 Secondary drawer – slots 1, 5, 10, 11, 3, 6, 12, 4, 7, 13, 8, 14, 9, 2	8 per system
2-Port Multiprotocol PCI	Primary drawer – slots 10, 14, 3, 13, 4, 12, 11, 5, 9, 1, 2, 5 Secondary drawer – slots 1, 5, 10, 11, 3, 6, 12, 4, 7, 13, 8, 14, 9, 2	18 per system

Notes:

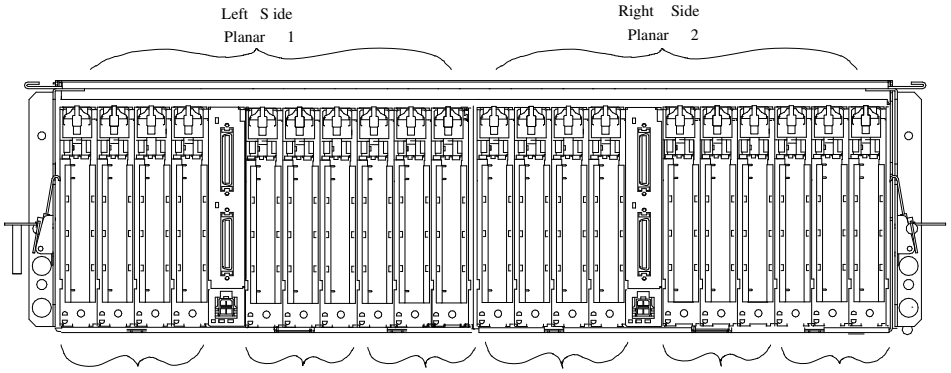
1. The manufacturer strongly recommends you locate the POWER GXT130P adapter in the primary I/O drawer. This placement provides you with the maximum amount of diagnostic feedback if your system encounters errors.
2. A maximum of 40 storage adapters per system and 10 storage adapters per I/O drawer.
3. For maximum performance, install only two Gigabit Ethernet–SX PCI or two 10/100/1000 Base–T Ethernet PCI adapters (or one or each) per I/O drawer, one per bus.

Configuration Details

- The recommended location for the boot device (SCSI or Network) and graphics adapter is within the primary I/O drawer (Drawer 0). This configuration provides service personnel with the maximum amount of diagnostic information if your system encounters errors in the boot sequence.
- Consider placing the AIX rootvg volume group in the primary I/O drawer. This allows AIX to boot if other I/O drawers are found off–line during boot.
- The default Boot Drive is in the lowest location in the center bay six–pack of the primary SCSI I/O drawer. If a boot source other than the internal SCSI disk is configured, the supporting SCSI adapter must also be in the primary I/O drawer.
- SCSI–2 disk bays in an I/O drawer are connected and driven by a single SCSI adapter, installed in **slot 9** or **slot 13**. Ultra SCSI disk bays can each be driven from separate Ultra SCSI adapters. In this configuration, slot 13 drives the default boot device and slot 6 drives the second Ultra SCSI disk bay. These adapters are optional on secondary I/O drawers.
- SCSI–2 Media bays in an I/O drawer are connected and driven by a single SCSI adapter, installed in **slot 2**. Ultra systems have the media bay driven from slot 7. This adapter is optional on secondary I/O drawers.
- The Service Processor must occupy **slot 8** of the primary I/O drawer.
- The SCSI–2 Fast/Wide PCI RAID adapter installed in the primary SCSI I/O drawer can only be connected to external devices. The SCSI RAID Adapter installed in secondary I/O drawers may be connected to internal disk bays.
- Maximum limitations exist on adapters and devices that are specific to the adapter or device and are not interaction limits with others.
- I/O slot 9 does not support any long PCI adapter with backside components.

Installing an Adapter in an ESCALA PL 1600R

Adapter cards for the Escala PL 1600R plug into PCI adapter slots in the left or right side in the I/O subsystem. Each drawer is capable of handling up to 20 PCI adapters. Most of the PCI slots are capable of 32–bit or 64–bit interface with interface speed of 33 MHz or 66 MHz. Three slots/Planar Six/Drawer (P1–I8, P1–I9, P1–I10, P2–I8, P2–I9, P2–I10) are restricted to 5 V dc, 33 MHz adapters.



I/O Subsystem Rear View with Numbered Slots

Use the preceding illustration to identify slot locations described in the following table. The first adapter from an adapter group is placed in the first slot (per the table) in the drawer. After the first slot selection has been used, use the second slot in the list. If a designated slot is filled, move to the next available slot.

Logical Partition (LPAR) Considerations

Place redundant devices in separate I/O drawers for best availability performance. Place non–redundant devices in the same I/O drawer. If you place non–redundant devices in one drawer, the system is less exposed to other–drawer failures.

Some devices do not have enhanced error handling (EEH) capabilities built in to their device drivers. If these devices fail, the PCI Host Bridge (PHB) they are placed in will be affected. If the I/O subsystem encounters a severe error, all slots in the PHB are affected as well. To clear this condition, you may reboot the system. In addition, it is also possible to remove the failed PCI slots on an affected PHB from the partition profile or profiles that include these PCI slots, and reboot the partition or partitions that terminated at the time of the error.

To avoid PHB errors related to non–EEH adapters, it is strongly recommended that if a non–EEH adapter is used, then all slots on that PHB should be assigned to a single LPAR. For information on PHB locations on the I/O subsystem, refer to the preceding illustration. To determine if your adapter has EEH capabilities, refer to the following table.

Note: In regards to the adapters listed as non–EEH below, check with your service provider about the availability of AIX device drivers which might add EEH functionality in the future.

Escala PL 1600R Adapter Placement Guide

The new generation of PL1600R (PL1600R+) supports two evolutions:

1. the RIO link transmission band has doubled (new RIO–2 version)
2. the slot type is PCI–X. instead of PCI.

The PL1600R supports an IO_DRAWER model with two planar groups, each with 10 PCI slots .

The FC 6563 planar is the same as the previous version. It supports PCI slots.

The FC6571 planar is a new model supporting PCI–X slots.

These two planars will not cohabit in the same IO_DRAWER.

Définitions:

SLOT PCI or PCI–X board location.

PHB Group of slots managed by a specific internal interface.

PLANAR group of 10 slots or 3 PHB connected via a RIO (remote IO to the memory)

FC6563 or FC6571
PLANAR model

SLOT	PHB	PLANAR	FC6563	FC6571
1	1	1	64 bit 3.3V 33/66 MHz	64 bit 3.3V 66/133 MHz
2	1	1	64 bit 3.3V 33/66 MHz	64 bit 3.3V 66/133 MHz
3	1	1	64 bit 3.3V 33/66 MHz	64 bit 3.3V 66/133 MHz
4	1	1	64 bit 3.3V 33/66 MHz	64 bit 3.3V 66/133 MHz
5	2	1	64 bit 3.3V 33/66 MHz	64 bit 3.3V 66/133 MHz
6	2	1	64 bit 3.3V 33/66 MHz	64 bit 3.3V 66/133 MHz
7	2	1	64 bit 3.3V 33/66 MHz	64 bit 3.3V 66/133 MHz
8	3	1	64 bit 5V 33 MHz	64 bit 3.3V 66/133 MHz
9	3	1	64 bit 5V 33 MHz	64 bit 3.3V 66/133 MHz
10	3	1	64 bit 5V 33 MHz	64 bit 3.3V 66/133 MHz
11	1	2	64 bit 3.3V 33/66 MHz	64 bit 3.3V 66/133 MHz
12	1	2	64 bit 3.3V 33/66 MHz	64 bit 3.3V 66/133 MHz
13	1	2	64 bit 3.3V 33/66 MHz	64 bit 3.3V 66/133 MHz
14	1	2	64 bit 3.3V 33/66 MHz	64 bit 3.3V 66/133 MHz
15	2	2	64 bit 3.3V 33/66 MHz	64 bit 3.3V 66/133 MHz
16	2	2	64 bit 3.3V 33/66 MHz	64 bit 3.3V 66/133 MHz
17	2	2	64 bit 3.3V 33/66 MHz	64 bit 3.3V 66/133 MHz
18	3	2	64 bit 5V 33 MHz	64 bit 3.3V 66/133 MHz
19	3	2	64 bit 5V 33 MHz	64 bit 3.3V 66/133 MHz
20	3	2	64 bit 5V 33 MHz	64 bit 3.3V 66/133 MHz

Use the following tables to identify specific slot locations for the following adapters in your PL 1600R. The slots listed refer to the HMC (Hardware Management Console) location codes detailed in the preceding illustration.

Version with RIO–2 and PCI–X (PL 1600R+, Planar FC6571)

Priority	Adapter Type	Label	FC	MI	PCI Slot Location (1) per drawer	Max per Planar/ Drawer/ system	Max per LPAR	EEH	Hot plug
1	**PCI 64 Bits Fibre Channel 2 Gb/s**	5704	6239	DCCG173 –0000	1,11,5,15,8,18,2,12,6, 16,9,19,3,13,7,17,10, 20,4,14	10/20/50	50	Y	Y
	Ethernet 1000 Base–SX **Ethernet 10 /100/1000 B–TX**	5700 5701	5700 5701	DCCG156 –0000 DCCG157 –0000	1,11,5,15,8,18,2,12,6, 16,9,19,3,13,7,17,10, 20,4,14	10/20/60	30	Y	Y
	Ethernet 2 port 1000 Base–SX **Ethernet 2 port 10 /100/1000 Base–TX**	5706 5707	5706 5707	DCCG165 –0000 DCCG166 –0000	1,11,5,15,8,18,2,12,6, 16,9,19,3,13,7,17,10, 20,4,14	10/20/40	40	Y	Y
2	**Dual Channel Ultra320 SCSI** **Dual Channel Ultra320 SCSI RAID**	5710 5711	5710 5711	MSCG058 –0000 MSCG057 –0000	1,11,5,15,8,18,2,12,6, 16,9,19,3,13,7,17,10, 20,4,14	10/20/40	40	Y	Y
	PCI 64 bits Fibre Channel 2 Gb/s **PCI 64 bits Fibre Channel 2 Gb/s** **PCI 64 bits Cpper Fibre Channel**	B4–E B4–E B4–A	Bull	DCCG154 –0000 DCCG155 –0000 DCCG147 –0000	1,11,5,15,8,18,2,12,6, 16,9,19,3,13,7,17,10, 20,4,14	10/20/50	50	Y	Y
	PCI 2 Channel Ultra3 SCSI RAID	4–Y	6203	MSCG048 –0000	10,20 ,1,11,5,15,,8,18,2,12,6,16,9,19,3,13,7, 17,4,14	10/20/30	30	Y	Y
3	**10/100 Mbps Ethernet PCI**	A–F	4962	DCCG137 –0000	1,11,2,12,3,13,4,14,5, 15,6,16,7,17,8,18,9,19,10 ,20	10/20/60	60	Y	Y
4	**8 Port Asyn. EIA–232E/RS–422A PCI**	3–B	2943	DCCG130 –0000	10,20,9,19,8,18,7,17,6,16 ,5,15,4,14,3,13,2,12,1,11	4/8/16	16	Y	Y
5	**High Speed Token Ring PCI**	B5–R	4959	DCCG135 –0000	10,20,9,19,8,18,7,17,6,16 ,5,15,4,14,3,13,2,12,1,11	10/20/40	40	Y	Y
6	**X25 2 port Multiprotocol com.**	B2–L	2962	DCCG140 –0000	10,20,9,19,8,18,7,17,6,16 ,5,15,4,14,3,13,2,12,1,11	6/6/18	18	Y	N
7	**PCI Universal Differencial Ultra SCSI**	4–U	6204	MSCG044 –0000	10,20,9,19,8,18,7,17,6,16 ,5,15,4,14,3,13,2,12,1,11	5/10/20	20	Y	Y

1. From 1/2 I/O drawer (one I/O Planar P1) to 3 I/O drawers max. => 6 I/O Planars. PCI Slot locations are 1 to 10 forst the 1st planar, and 11 to 20 for the second one.

Version with RIO–1 and PCI (PL 1600R, Planar FC6563)

Pri	Adapter Type	La-bel	FC	MI	PCI Slot Location (1) 1 or 2 planars per drawer	Max per Planar/ Drawer/ system	Max per LPAR	EEH	Hot plug
1	**ULTRA SCSI SE**	4–K	6206	MSCG040 –0000	10, 20	1/2/2	2	Y	Y
2	**PCI 64 bits Fibre Channel 2 Gb/s**	5704	6239	DCCG173 –0000	1,11,3,13,5,15,7,17,9,19	5/10/30	30	Y	Y
	10/100/1000 Mbps Ethernet PCI **Gigabits Ethernet SX PCI** **Ethernet 1000 Base–SX** **Ethernet 10 /100/1000 Base–TX**	A–A B5–N	2975 2969 5700 5701	DCCG150 –0000 DCCG144 –0000 DCCG156 –0000 DCCG157 –0000	1,11,5,15,8,18,2,12,6,16,9,19,3,14,4,14	5/10/30	30	Y	Y
	Ethernet 2 port 1000 Base–TX **Ethernet 2 port 10/100/1000 Base–SX**	5706 5707	5706 5707	DCCG165 –0000 DCCG166 –0000	1,11,5,15,8,18,2,12,6,16,9,19,3,14,4,14	5/10/20	20	Y	Y
3	**PCI 64 Bits Fibre Channel 2 Gb/s** **PCI 64 Bits Fibre Channel 2 Gb/s** **PCI 64 bits Copper Fibre Channel**	B4–E B4–E B4–A	Bull	DCCG154 –0000 DCCG155 –0000 DCCG147 –0000	1,11,3,13,5,15,7,17,9,19	5/10/30	30	Y	Y
	Dual Channel Ultra320 SCSI **Dual Channel Ultra320 SCSI RAID**	5710 5711	5710 5711	MSCG058 –0000 MSCG057 –0000	1,11,3,13,5,15,7,17,10,20	5/10/20	20	Y	Y
	PCI 2 Channel Ultra3 SCSI RAID	4–Y	6203	MSCG048 –0000	1,11,3,13,5,15,7,17,10,20	5/10/30	30	Y	Y
4	**10/100 Mbps Ethernet PCI**	A–F	4962	DCCG137 –0000	1,11,2,12,3,13,4,14,5,15,6,16,7,17,8,18,9,19,10,20	10/20/60	60	Y	Y
5	**8 Port Asyn. EIA–232E/RS–422A PCI**	3–B	2943	DCCG130 –0000	10,20,9,19,8,18,7,17,6,16,5,15,4,14,3,13,2,12,1,11	4/8/16	16	Y	Y
6	**High Speed Token Ring PCI**	B5–R	4959	DCCG135 –0000	10,20,9,19,8,18,7,17,6,16,5,15,4,14,3,13,2,12,1,11	10/20/40	40	Y	Y

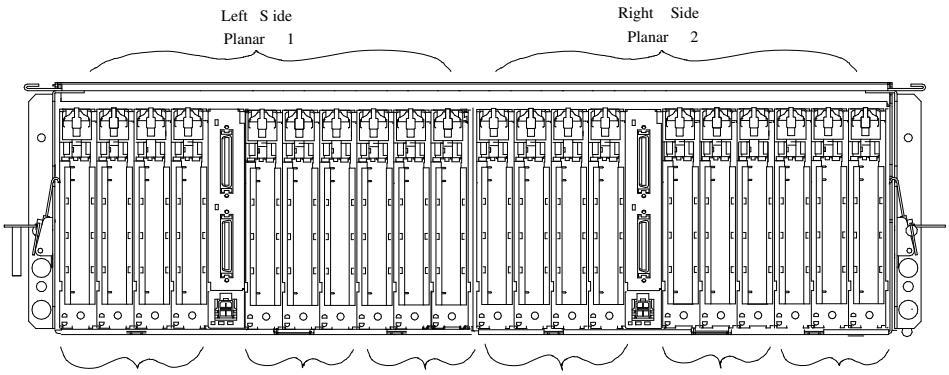
7	**X25 2 port Multiprotocol com.**	B2–L	2962	DCCG140 –0000	10,20,9,19,8,18	3/6/18	18	Y	N
8	**PCI Universal Differencial Ultra SCSI**	4–U	6204	MSCG044 –0000	10,20,9,19,8,18,7, 17,6,16,5,15,4,14, 3,13,2,12,1,11	10/20/20	20	Y	Y

Notes:

1. From 1/2 I/O drawer (one I/O Planar P1) to 3 I/O drawers max. => 6 I/O Planars.
   PCI Slot locations are the same for both planars of an I/O drawer. Planar 1: slots 1 to 10, planar 2: slots 11 to 20. If only one planar per drawer, use only numbers 1 to 10.
2. The high–speed adapters have the same priority. In an I/O drawer, limitations are:
   - one planar: 6 high–speed adapters max.
   - two planars: 5 per planar => 10 per drawer max.
3. The adapters that do not support the EEH function should be placed on different slots that those connected to the same bridge or PHB.
   PHB1: slots 1, 2, 3, 4 (Planar 1 or 2). 533MB/sec max.
   PHB2: slots 5, 6, 7 (Planar 1 or 2). 533 MB/sec max
   PHB3: slots 8, 9, 10 (Planar 1 or 2). 266 MB/sec max.

Installing an Adapter in an ESCALA PL 3200R

Adapter cards for the Escala PL 3200R plug into PCI adapter slots in the left or right side in the I/O subsystem. Each drawer is capable of handling up to 20 PCI adapters. Most of the PCI slots are capable of 32–bit or 64–bit interface with interface speed of 33 MHz or 66 MHz. Three slots/Planar Six/Drawer (P1–I8, P1–I9, P1–I10, P2–I8, P2–I9, P2–I10) are restricted to 5 V dc, 33 MHz adapters.



I/O Subsystem Rear View with Numbered Slots

Use the preceding illustration to identify slot locations described in the following table. The first adapter from an adapter group is placed in the first slot (per the table) in the drawer. After the first slot selection has been used, use the second slot in the list. If a designated slot is filled, move to the next available slot.

Logical Partition (LPAR) Considerations

Place redundant devices in separate I/O drawers for best availability performance. Place non–redundant devices in the same I/O drawer. If you place non–redundant devices in one drawer, the system is less exposed to other–drawer failures.

Some devices do not have enhanced error handling (EEH) capabilities built in to their device drivers. If these devices fail, the PCI Host Bridge (PHB) they are placed in will be affected. If the I/O subsystem encounters a severe error, all slots in the PHB are affected as well. To clear this condition, you may reboot the system. In addition, it is also possible to remove the failed PCI slots on an affected PHB from the partition profile or profiles that include these PCI slots, and reboot the partition or partitions that terminated at the time of the error.

To avoid PHB errors related to non–EEH adapters, it is strongly recommended that if a non–EEH adapter is used, then all slots on that PHB should be assigned to a single LPAR. For information on PHB locations on the I/O subsystem, refer to the preceding illustration. To determine if your adapter has EEH capabilities, refer to the following table.

Note: In regards to the adapters listed as non–EEH below, check with your service provider about the availability of AIX device drivers which might add EEH functionality in the future.

Escala PL 3200R Adapter Placement Guide

The new generation of PL3200R (PL3200R+) supports two evolutions:

1. the RIO link transmission band has doubled (new RIO–2 version)
2. the slot type is PCI–X. instead of PCI.

The PL3200R supports an IO_DRAWER model with two planar groups, each with 10 PCI slots .

The FC 6563 planar is the same as the previous version. It supports PCI slots.

The FC6571 planar is a new model supporting PCI–X slots.

These two planars will not cohabit in the same IO_DRAWER.

Définitions:

SLOT PCI or PCI–X board location.

PHB Group of slots managed by a specific internal interface.

PLANAR group of 10 slots or 3 PHB connected via a RIO (remote IO to the memory)

FC6563 or FC6571
PLANAR model

SLOT	PHB	PLANAR	FC6563	FC6571
1	1	1	64 bit 3.3V 33/66 MHz	64 bit 3.3V 66/133 MHz
2	1	1	64 bit 3.3V 33/66 MHz	64 bit 3.3V 66/133 MHz
3	1	1	64 bit 3.3V 33/66 MHz	64 bit 3.3V 66/133 MHz
4	1	1	64 bit 3.3V 33/66 MHz	64 bit 3.3V 66/133 MHz
5	2	1	64 bit 3.3V 33/66 MHz	64 bit 3.3V 66/133 MHz
6	2	1	64 bit 3.3V 33/66 MHz	64 bit 3.3V 66/133 MHz
7	2	1	64 bit 3.3V 33/66 MHz	64 bit 3.3V 66/133 MHz
8	3	1	64 bit 5V 33 MHz	64 bit 3.3V 66/133 MHz
9	3	1	64 bit 5V 33 MHz	64 bit 3.3V 66/133 MHz
10	3	1	64 bit 5V 33 MHz	64 bit 3.3V 66/133 MHz
11	1	2	64 bit 3.3V 33/66 MHz	64 bit 3.3V 66/133 MHz
12	1	2	64 bit 3.3V 33/66 MHz	64 bit 3.3V 66/133 MHz
13	1	2	64 bit 3.3V 33/66 MHz	64 bit 3.3V 66/133 MHz
14	1	2	64 bit 3.3V 33/66 MHz	64 bit 3.3V 66/133 MHz
15	2	2	64 bit 3.3V 33/66 MHz	64 bit 3.3V 66/133 MHz
16	2	2	64 bit 3.3V 33/66 MHz	64 bit 3.3V 66/133 MHz
17	2	2	64 bit 3.3V 33/66 MHz	64 bit 3.3V 66/133 MHz
18	3	2	64 bit 5V 33 MHz	64 bit 3.3V 66/133 MHz
19	3	2	64 bit 5V 33 MHz	64 bit 3.3V 66/133 MHz
20	3	2	64 bit 5V 33 MHz	64 bit 3.3V 66/133 MHz

Use the following tables to identify specific slot locations for the following adapters in your PL 3200R. The slots listed refer to the HMC (Hardware Management Console) location codes detailed in the preceding illustration.

Version with RIO–2 and PCI–X (PL 3200R+, planar FC6571)

Priority	Adapter Type	Label	FC	MI	PCI Slot Location (1) per drawer	Max per Planar/ Drawer/ system	Max per LPAR	EEH	Hotplug
1	**PCI 64 bits Fibre Channel 2 Gb/s**	5704	6239	DCCG173 –0000	1,11,5,15,8,18,2,12,6,16, 9,19,3,13,7,17,10,20,4, 14	10/20/140	80	Y	Y
	Ethernet 1000 Base–SX **Ethernet 10 /100/1000 B–TX**	5700 5701	5700 5701	DCCG156 –0000 DCCG157 –0000	1,11,5,15,8,18,2,12,6, 16,9,19,3,13,7,17,10, 20,4,14	10/20/140	80	Y	Y
	Ethernet 2 port 1000 Base–SX **Ethernet 2 port 10 /100/1000 Base–TX**	5706 5707	5706 5707	DCCG165 –0000 DCCG166 –0000	1,11,5,15,8,18,2,12,6, 16,9,19,3,13,7,17,10, 20,4,14	10/20/80	40	Y	Y
3	**Dual Channel Ultra320 SCSI** **Dual Channel Ultra320 SCSI RAID**	5710 5711	5710 5711	MSCG058 –0000 MSCG057 –0000	1,11,5,15,8,18,2,12,6,16, 9,19,3,13,7,17,10,20,4, 14	10/20/40	40	Y	Y
3	**PCI 64 bits Fibre Channel 2 GB/s** **PCI 64 bits Cpper Fibre Channel**	B4–E B4–E B4–A	Bull	DCCG154 –0000 DCCG155 –0000 DCCG147 –0000	1,11,5,15,8,18,2,12,6,16, 9,19,3,13,7,17,10,20,4, 14	10/20/80	80	Y	Y
3	**PCI 2 Channel Ultra3 SCSI RAID**	4–Y	6203	MSCG048 –0000	10,20,1,11,5,15,8,18,2,1 2,6,16,9,19,3,13,7,17,4, 14	10/20/30	30	Y	Y
4	**10/100 Mbps Ethernet PCI**	A–F	4962	DCCG137 –0000	1,11,2,12,3,13,4,14,5,15, 6,16,7,17,8,18,9,19,10, 20	10/20/140	80	Y	Y
5	**8 Port Asyn. EIA–232E/RS–422A PCI**	3–B	2943	DCCG130 –0000	10,20,9,19,8,18,7,17,6, 16,5,15,4,14,3,13,2,12,1, 11	4/8/16	16	Y	Y
6	**High Speed Token Ring PCI**	B5–R	4959	DCCG135 –0000	10,20,9,19,8,18,7,17,6, 16,5,15,4,14,3,13,2,12,1, 11	10/20/40	40	Y	Y
7	**X25 2 port Multiprotocol com.**	B2–L	2962	DCCG140 –0000	10,20,9,19,8,18,7,17,6, 16,5,15,4,14,3,13,2,12,1, 11	6/12/20	20	Y	N
30	**PCI Universal Differencial Ultra SCSI**	4–U	6204	MSCG044 –0000	10,20,9,19,8,18,7,17,6,1 6,5,15,4,14,3,13,2,12,1,1 1	5/10/20	20	Y	Y

1. From 1 I/O drawer (2 I/O Planars) to 8 I/O drawers max. => 16 I/O Planars. PCI Slot locations are the same for both planars of an I/O drawer.

Version with RIO–1 and PCI (PL 3200, planar FC6563)

Pri	Adapter Type	La-bel	FC	MI	PCI Slot Location (1) 2 planars per drawer	Max per Planar/ Drawer/ system	Max per LPAR	EEH	Hot plug
1	**ULTRA SCSI SE**	4–K	6206	MSCG040 –0000	10,20	1/2/2	2	Y	Y
2	**PCI 64 bits Fibre Channel 2 Gb/s**	5704	6239	DCCG173 –0000	1,11,3,13,5,15,7, 17,9,19	5/10/80	80	Y	Y
	10/100/1000 Mbps Ethernet PCI	A–A	2975	DCCG150 –0000	1,11,5,15,8,18,2, 12,6,16,9,19,3,13, 4,14	5/10/80	80	Y	Y
	Gigabit Ethernet SX PCI	B5–N	2969	DCCG144 –0000					
	Ethernet 1000 Base–SX	5700	5700	DCCG156 –0000					
	Ethernet 10 /100/1000 B–TX	5701	5701	DCCG157 –0000					
	Ethernet 2 port 1000 Base–SX	5706	5706	DCCG165 –0000	1,11,5,15,8,18,2, 12,6,16,9,19,3,13, 4,14	10/20/80	40	Y	Y
	Ethernet 2 port 10 /100/1000 Base–TX	5707	5707	DCCG166 –0000					
3	**PCI 64 bits Fibre Channel 2 GB/s**	B4–E	Bull	DCCG154 –0000	1,11,3,13,5,15,7,1 7,9,19	5/10/80	80	Y	Y
		B4–E		DCCG155 –0000					
	PCI 64 bits Cpper Fibre Channel	B4–A		DCCG147 –0000					
	Dual Channel Ultra320 SCSI	5710	5710	MSCG058 –0000	1,11,3,13,5,15,7,1 7,10,20	5/10/40	40	Y	Y
	Dual Channel Ultra320 SCSI RAID	5711	5711	MSCG057 –0000					
	PCI 2 Channel Ultra3 SCSI RAID	4–Y	6203	MSCG048 –0000	1,11,3,13,5,15,7,1 7,10,20	5/10/30	30	Y	Y
4	**10/100 Mbps Ethernet PCI**	A–F	4962	DCCG137 –0000	1,11,2,12,3,13,4,1 4,5,15,6,16,7,17,8 ,18,9,19,10,20	10/20/80	80	Y	Y
5	**8 Port Asyn. EIA–232E/RS–422A PCI**	3–B	2943	DCCG130 –0000	10,20,9,19,8,18,7, 17,6,16,5,15,4,14, 3,13,2,12,1,11	4/8/16	16	Y	Y
6	**High Speed Token Ring PCI**	B5–R	4959	DCCG135 –0000	10,20,9,19,8,18,7, 17,6,16,5,15,4,14, 3,13,2,12,1,11	10/20/40	40	Y	Y

7	**X25 2 port Multiprotocol com.**	B2–L	2962	DCCG140 –0000	10,20,9,19,8,18	3/6/20	20	Y	N
8	**PCI Universal Differencial Ultra SCSI**	4–U	6204	MSCG044 –0000	10,20,9,19,8,18,7, 17,6,16,5,15,4,14, 3,13,2,12,1,11	5/10/20	20	Y	Y

Notes:

1. From 1 I/O drawer (2 I/O Planars) to 6 I/O drawers max. => 12 I/O Planars. PCI Slot locations are the same for both planars of an I/O drawer.
2. The adapters that do not support the EEH function should be placed on different slots that those connected to the same bridge or PHB.
   PHB1: slots 1, 11, 2, 12, 3, 13, 4, 14. 533MB/sec max.
   PHB2: slots 5, 15, 6, 16, 7, 17. 533 MB/sec max
   PHB3: slots 8, 18, 9, 19, 10, 20. 266 MB/sec max.

Appendix A. Technical Information Available Using VPD

This section gives for PCI/ISA adapters the type of information available when using the VPD command. It does not give the information itself but only whether or not the information exists. Knowing this is particularly useful for remote maintenance operations.

The information availability is given for the **Part Number** and **EC Level**.

Note: This information is subject to change without notice and the availability of part number and EC level information is given as an indication.

Legend:

Yes	Information available under VPD.
No	Information not available under VPD.
Not Available	The information concerning whether or not the part number and EC Level information is available under VPD was not given.

Availability of Part Number and EC Level Information under VPD

Label	Adapter	Part Number	EC Level
Nolabel	FDDI Opt. Fiber Single Ring PCI	Yes	No
Nolabel	FDDI Opt. Fiber Dual Ring PCI	Yes	No
Nolabel	FDDI UTP Single Ring PCI	Yes	No
Nolabel	PowerGXT110P HighPerformance Graphics PCI	No	No
Nolabel	Gigabit Ethernet 1000 Base–SX PCI–X	Yes	Yes
Nolabel	10/100/1000 Base–TX Ethernet PCI–X	Yes	Yes
1–N	PowerGXT255P HighPerformance Graphics PCI	No	No
1–P	PowerGXT120P VideoAccelerator Graphics PCI	No	No
1–T	PowerGXT130P Graphics PCI	Yes	Yes
1–S	PowerGXT2000P 3D Graphics PCI	Not available	Not available
1–X	PowerGXT135P Graphics PCI	Yes	Yes
3–B	8-Port Async EIA-232/RS-422 PCI	Yes	Yes
”	Enhanced EIA-232 async 16-port connector PCI	Yes	Yes
”	Enhanced RS-422 async 16-port connector PCI	Yes	Yes
3–C	128-Port Async PCI	Not available	Not available
4–A	SCSI-2 F/W SE PCI	Yes	Yes
4–B	SCSI-2 F/W DE PCI	Yes	Yes
4–H	SCSI-2 F/W RAID PCI	Yes	Yes
4–K	Ultra SCSI SE PCI	Not available	Not available
4–L	Ultra SCSI DE PCI	Yes	Yes
4–N	SSA 4-Port Multi-Initiator/ RAID EL PCI	Yes	Yes
”	SSA Fast/Write 4MB Cache Option Card PCI	No	No
4–R	Dual Channel 2Ultra SCSI PCI	Not available	Not available
4–T	3-Channel Ultra2 SCSI RAID PCI	Yes	Yes
4–X	4-Channel Ultra3 SCSI RAID PCI	Not available	Not available
4–Y	PCI Dual-Channel Ultra3 SCSI	Not available	Not available

Label	Adapter	Part Number	EC Level
8–L	X25 2-Port Sync. Comm PCI	No	No
8–T	Auto LANStreamer Token Ring PCI	Yes	Yes
9–F	ATM 155Mb/s MMF PCI	Yes	Yes
9–J	ATM 155Mb/s UTP PCI	Yes	Yes
9–L	X25 2-Port Sync. Comm PCI	No	No
9–O	Token Ring PCI	Not available	Not available
9–P	Ethernet 10/100Mbps PCI	No	No
9–U	Gigabit Ethernet SX PCI	Yes	Yes
A–A	Ethernet 10/100/1000Mbps Base–T PCI	Yes	Yes
A–E	4-Port 10/100 Base–TX Ethernet PCI	Yes	Yes
A–F	10/100 Ethernet PCI adapter II	Yes	Yes
B1–2	64-bit 2MB RAM Graphics PCI	No	No
B1–3	64-bit 4MB RAM Graphics PCI	Yes	No
B1–4	4MB RAM Graphics PCI	Yes	No
B2–B	1-Port X25 Comm V24 – ATRV24 ISA	No	No
B2–C	1-Port X25 Comm V35 – ATRV35 ISA	No	No
B2–D	1-Port X25 Comm V11 – ATRV11 ISA	No	No
B2–E	Ethernet 10Mbps PCI	No	No
B2–F	Ethernet 10/100Mbps PCI	No	No
B2–G	1-Port Multiprotocol Serial I/O (Sync. Comm) PCI	Yes	Yes
B2–H	4-Port Multiprotocol Serial I/O (Sync. Comm) PCI	Yes	Yes
B2–L	X25 2-Port Sync. Comm PCI	No	No
B3–1	4-Port Async EIA-232 with Connector Box ISA	No	No
B3–3	8-Port Async EIA-232 with Connector Box ISA	No	No
B3–4	8-Port Async RS-422A with Connector Box ISA	No	No
B3–8	128-Port Async EIA-232 ISA	Yes	Yes
B3–9	128-Port Async EIA-232 PCI	Yes	Yes
”	16-Port EIA232 Concentrator box (for 128-Port)	Yes	Yes
B3–A	8-Port Async EIA-232 with Connector Box PCI	Yes	Yes
B3–B	8-Port Async RS-422A with Connector Box PCI	Yes	Yes
B3–C	64-Port Async EIA-232 / RS-422A PCI	Yes	Yes
”	16-Port EIA232 Connector Box for 64-Port Adapter	Yes	No
”	16-Port RS422 Connector Box for 64-Port Adapter	Yes	No
B4–1	SCSI-2 F/W SE PCI – Newer Deliveries	No	No
”	SCSI-2 F/W SE PCI – Older Deliveries	No	No
B4–2	SCSI-2 F/W DE PCI – Newer Deliveries	No	No
”	SCSI-2 F/W DE PCI – Older Deliveries	No	No
B4–3	Wide SCSI Host F/W SE PCI	No	Yes
”	RAID Cache Module for Wide SCSI Host Adapter	No	No
B4–4	SCSI RAID PCI	No	Yes
B4–5	Ultra SCSI SE PCI	No	No
B4–6	Ultra SCSI DE PCI	No	No

Label	Adapter	Part Number	EC Level
B4–7	Fibre Channel PCI	Yes	Yes
B4–8	Enhanced Fibre Channel PCI	Yes	Yes
B4–9	Ultra2 SCSI SE/LVD PCI	No	No
B4–A	64-bit Fibre Channel Copper PCI	Yes*	Yes
B4–B	64-bit Fibre Channel Optical PCI	Yes*	Yes
B4–C	Ultra2 High Performance RAID PCI	No	Yes
B4–E	2Gbit/s Fibre Channel Adapter for 64 bits PCI Bus	Yes*	Yes
B5–2	ISDN ISA	Yes	Yes
B5–3	FDDI UTP Single Ring PCI	Yes	No
B5–4	FDDI Opt. Fiber Single Ring PCI	Yes	No
B5–5	FDDI Opt. Fiber Dual Ring PCI	Yes	No
B5–6	Ethernet 10/100Mbps PCI	Yes	No
B5–9	ATM 155 Mbps MMF PCI	Yes	Yes
B5–A	Internal Modem FRANCE ISA	Yes	Yes
B5–B	Internal Modem UK ISA	Yes	Yes
B5–C	Internal Modem BELGIUM ISA	Yes	Yes
B5–D	Internal Modem NETHERLANDS ISA	Yes	Yes
B5–E	Internal Modem ITALY ISA	Yes	Yes
B5–H	Ethernet 10/100Mbp PCI	Yes	Yes
B5–J	Token Ring PCI	No	No
B5–K	Internal Modem USA ISA	Yes	Yes
B5–L	Internal Modem Germany ISA	Yes	Yes
B5–M	Ethernet 10/100Mbp PCI	Yes	Yes
B5–N	Gigabit Ethernet SX PCI	Yes	Yes
B5–R	Token Ring PCI	Yes	Yes

* Model version only: LP8000, LP9002L.

Appendix B. Driver Information

This section gives the drivers needed for PCI/ISA adapters.

Note: This information is subject to change without notice and driver information is given as an indication.

This list is not complete. Missing LPPs are notified by the mention”No information available’.

Driver Information Cross-Reference List

Label	Adapter	LPP
Nolabel	FDDI Opt. Fiber Single Ring PCI	devices.pci.48110040 + pre-requisites
Nolabel	FDDI Opt. Fiber Dual Ring PCI	devices.pci.48110040 + pre-requisites
Nolabel	FDDI UTP Single Ring PCI	devices.pci.48110040 + pre-requisites
Nolabel	PowerGXT110P HighPerformance Graphics PCI	No information available
Nolabel	Gigabit Ethernet 1000 Base–SX PCI–X	devices.pci.14106802
Nolabel	10/100/1000 Base–TX Ethernet PCI–X	devices.pci.14106902
1–N	PowerGXT255P HighPerformance Graphics PCI	No information available
1–P	PowerGXT120P VideoAccelerator Graphics PCI	No information available
1–T	PowerGXT130P Graphics PCI	devices.pci.2b10205
1–S	PowerGXT2000P 3D Graphics PCI	No information available
1–X	PowerGXT135P Graphics PCI	devices.pci.14103302
3–B	8-Port Async EIA-232/RS-422 PCI	devices.pci.4f111110
3–C	128-Port Async PCI	No information available
4–A	SCSI-2 F/W SE PCI	devices.pci.00100300
4–B	SCSI-2 F/W DE PCI	devices.pci.00100300
4–H	SCSI-2 F/W RAID PCI	devices.pci.14102e00
4–K	Ultra SCSI SE PCI	devices.pci.00100f00
4–L	Ultra SCSI DE PCI	devices.pci.00100f00
4–N	SSA 4-Port Multi-Initiator/ RAID EL PCI	devices.pci.14104500
4–R	Dual Channel Ultra2 SCSI PCI	devices.pci.00100b00
4–T	3-Channel Ultra2 SCSI PCI	devices.pci.14102e00
4–X	4-Channel Ultra3 SCSI PCI	No information available
4–Y	PCI Dual-Channel Ultra3 SCSI	No information available
8–L	X25 2-Port Sync. Comm PCI	devices.pci.331121b9
8–T	Auto LANStreamer Token Ring PCI	devices.pci.14101800
9–F	ATM 155Mb/s MMF PCI	devices.pci.14107c00
9–J	ATM 155Mb/s UTP PCI	devices.pci.14104e00
9–L	X25 2-Port Sync. Comm PCI	devices.pci.331121b9
9–O	Token Ring PCI	No information available
9–P	Etherlink XL Ethernet 10/100Mbps PCI – Older Deliveries	devices.pci.b7105090
”	Ethernet 10/100Mbps PCI – Newer Deliveries	devices.pci.23100020
9–U	Gigabit Ethernet SX PCI	devices.pci.14100401

Label	Adapter	LPP
A–A	Ethernet 10/100/1000Mbps PCI	devices.pci.14100401
A–E	4-Port 10/100 Base–TX Ethernet PCI	devices.pci.14100401
A–F	10/100 Ethernet PCI adapter II	devices.pci.1410FF0
B1–2	64-bit 2MB RAM Graphics PCI	devices.graphics + devices.pci.2b101905
B1–3	64-bit 4MB RAM Graphics PCI	devices.graphics + devices.pci.2b101905
B1–4	4MB RAM Graphics PCI	devices.graphics + devices.pci.2b101b05
B2–B	1-Port X25 Comm V24 – ATRV24 ISA	bullx25
B2–C	1-Port X25 Comm V35 – ATRV35 ISA	bullx25
B2–D	1-Port X25 Comm V11 – ATRV11 ISA	bullx25
B2–E	Ethernet 10Mbps PCI	devices.pci.11100200
B2–F	Ethernet 10/100Mbps PCI 10Mbps mode 100Mbps mode	devices.pci.11100200 devices.pci.11100200 + devices.pci.11100900
B2–G	1-Port Multiprotocol Serial I/O Sync.Comm PCI	devices.pci.0a121101 + pre-requisites
B2–H	4-Port Multiprotocol Serial I/O Sync. Comm PCI	devices.pci.0a124101 + pre-requisites
B2–L	X25 2-Port Sync. Comm PCI	devices.pci.331121b9
B3–1	4-Port Async EIA-232 with Connector Box ISA	bullasync.isa + pre-requisites
B3–3	8-Port Async EIA-232 with Connector Box ISA	bullasync.isa + pre-requisites
B3–4	8-Port Async RS-422A with Connector Box ISA	bullasync.isa + pre-requisites
B3–8	128-Port Async EIA-232 ISA	bullasync.isa + pre-requisites
B3–9	128-Port Async EIA-232 PCI	devices.pci.4f111700 + pre-requisites
B3–A	8-Port Async EIA-232 with Connector Box PCI	devices.pci.4f111300 + pre-requisites
B3–B	8-Port Async RS-422A with Connector Box PCI	devices.pci.4f111400 + pre-requisites
B3–C	64-Port Async EIA-232 / RS-422A PCI	devices.pci.4f111500 + pre-requisites
B4–1	SCSI-2 F/W SE PCI– Newer Deliveries	devices.pci.00100300
”	SCSI-2 F/W SE PCI– Older Deliveries	devices.pci.00100300
B4–2	SCSI-2 F/W DE PCI– Newer Deliveries	devices.pci.00100300
”	SCSI-2 F/W DE PCI– Older Deliveries	devices.pci.00100300
B4–3	Wide SCSI Host F/W SE PCI	devices.pci.441000a4
B4–4	SCSI RAID PCI	devices.pci.441000a4
B4–5	Ultra SCSI SE PCI	devices.pci.00100f00
B4–6	Ultra SCSI DE PCI	devices.pci.00100f00
B4–7	Fibre Channel PCI	devices.pci.df10e51a (pre-requisite)
B4–8	Enhanced Fibre Channel PCI	devices.pci.df10e51a (pre-requisite) + devices.pci.df1001f7
B4–9	Ultra2 SCSI SE/LVD PCI	devices.pci.00100c00
B4–A	64-bit Fibre Channel Copper PCI	devices.pci.df10e51a (pre-requisite) + devices.pci.df1001f8
B4–B	64-bit Fibre Channel Optical PCI	devices.pci.df10e51a (pre-requisite) + devices.pci.df1001f8
B4–C	Ultra2 SCSI High Performance RAID PCI	devices.pci.44101a5 + devices.bullraid.rte
B4–E	2Gbit/s Fibre Channel adapter for 64 bits PCI Bus	devices.pci.df10e51a (pre–requisite) + devices.pci.df1001f9
B5–2	ISDN ISA	isdn_access

Label	Adapter	LPP
B5–3	FDDI UTP Single Ring PCI	devices.pci.48110040 + pre-requisites
B5–4	FDDI Opt. Fiber Single Ring PCI	devices.pci.48110040 + pre-requisites
B5–5	FDDI Opt. Fiber Dual Ring PCI	devices.pci.48110040 + pre-requisites
B5–6	Ethernet 10/100Mbps PCI	devices.pci.11100200+ devices.pci.11100900 or devices.pci.11100200+ devices.pci.11100900 +devices.pci.b8100120
B5–9	ATM 155 Mbps MMF PCI	devices.pci.14107c00
B5–A	Internal Modem FRANCE ISA	devices.isa.bullmodem2834I*
B5–B	Internal Modem UK ISA	devices.isa.bullmodem2834I*
B5–C	Internal Modem BELGIUM ISA	devices.isa.bullmodem2834I*
B5–D	Internal Modem NETHERLANDS ISA	devices.isa.bullmodem2834I*
B5–E	Internal Modem ITALY ISA	devices.isa.bullmodem2834I*
B5–H	Ethernet 10/100Mbp PCI	devices.pci.11100200+ devices.pci.11100900
B5–J	Token Ring PCI	devices.pci.14103e00
B5–K	Internal Modem USA ISA	devices.isa.bullmodem2834I*
B5–L	Internal Modem Germany ISA	devices.isa.bullmodem2834I*
B5–M	Ethernet 10/100Mbp PCI	devices.pci.11100200+ devices.pci.0d111200
B5–N	Gigabit Ethernet SX PCI	devices.pci.14100401
B5–R	Token Ring PCI	devices.pci.14103e00

* The ’l’ in devices.isa.bullmodem2834I is an upper case ’i’ and not a lower case L.

Appendix C. Related Documents

This appendix aims at helping users find the documents related to an adapter.

The general structure of the documentation related to the PCI and ISA adapters is an individual manual dedicated to one adapter or a family of adapters and the present document which compiles basic information concerning all the PCI/ISA adapters.

General Documentation

- *AIX and Related Products Documentation Overview*, 86 A2 71WE
- *AIX Asynchronous Communication Guide*, 86 A2 26AQ

Other documents are useful for installing and running PCI/ISA adapters: System guides which explain how the system deals with the card.

Documentation List for Graphics Adapters

Nolabel **PowerGXT110P HighPerformance Graphics PCI**

No other documentation available.

1–N **PowerGXT255P HighPerformance Graphics PCI**

No other documentation available.

1–P **PowerGXT120P VideoAccelerator Graphics PCI**

No other documentation available.

1–T **PowerGXT130P Graphics PCI**

No other documentation available.

1–S **PowerGXT2000P 3D Graphics PCI**

No other documentation available.

1–X **PowerGXT135P Graphics PCI**

No other documentation available.

B1–2 **64-bit 2MB RAM Graphics PCI**

PCI High–Resolution Graphics Adapter Installation and Configuration Guide, 86 A1 43HX

B1–3 **64-bit 4MB RAM Graphics PCI**

PCI High–Resolution Graphics Adapter Installation and Configuration Guide, 86 A1 43HX

B1–4 **4MB RAM Graphics PCI**

PCI High–Resolution Graphics Adapter Installation and Configuration Guide, 86 A1 43HX

Documentation List for Storage Adapters

4–A **SCSI-2 F/W SE PCI**

No other documentation available.

4–B **SCSI-2 F/W DE PCI**

No other documentation available.

B4–1 **SCSI-2 F/W SE PCI**

No other documentation available.

B4–2 SCSI-2 F/W DE PCI

No other documentation available.

4–K Ultra SCSI SE PCI

No other documentation available.

4–L Ultra SCSI DE PCI

No other documentation available.

4–Y Ultra3 SCSI PCI

No other documentation available.

B4–5 Ultra SCSI SE PCI

No other documentation available.

B4–6 Ultra SCSI DE PCI

No other documentation available.

B4–9 Ultra2 SCSI SE/LVD PCI

No other documentation available.

B4–3 Wide SCSI Host F/W SE PCI

SCSI RAID User's Manual, 86 A1 16GX

4–H SCSI-2 F/W RAID PCI

No other documentation available.

B4–4 SCSI RAID PCI

*SCSI RAID Adapter Installation and Configuration Guide***,** 86 A1 44HX
SCSI RAID User's Manual, 86 A1 16GX

4–N SSA 4-Port Multi-Initiator/ RAID EL PCI

SSA 4-Port Adapter: Installation and Reference Guide, 86 A1 95GX
SSA Adapters User's Guide and Maintenance Information, 86 A1 99GX
PCI SSA RAID Adapters Technical Reference, 86 A1 42KX
PCI SSA Multi-Initiator/RAID EL Adapter Installation Guide, 86 A1 41KX

4–R Dual-Channel SCSI RAID PCI

Ultra SCSI PCI RAID Adapter Reference Guide, 86 A1 91KX

4–T 3-Channel SCSI RAID PCI

Ultra SCSI PCI RAID Adapter Reference Guide, 86 A1 91KX

4–X 4-Channel Ultra3 SCSI RAID PCI

PCI 4–Channel Ultra3 SCSI RAID Adapter Install and Using Guide, 86 A1 07EF
PCI 4–Channel Ultra3 SCSI RAID Adapter Reference Guide, 86 A1 87JX

B4–7 Fibre Channel PCI

*PCI Fibre Channel Adapters Installation and Configuration Guide***,** 86 A1 95HX

B4–8 Enhanced Fibre Channel PCI

*PCI Fibre Channel Adapters Installation and Configuration Guide***,** 86 A1 95HX

B4–A 64-bit Fibre Channel Copper PCI

*PCI Fibre Channel Adapters Installation and Configuration Guide***,** 86 A1 95HX

B4–B 64-bit Fibre Channel Optical PCI

*PCI Fibre Channel Adapters Installation and Configuration Guide***,** 86 A1 95HX

B4–C Ultra2 High Performance RAID PCI

*SCSI RAID Adapter Installation and Configuration Guide***,** 86 A1 44HX
SCSI RAID User's Manual, 86 A1 16GX

Documentation List for LAN/WAN Adapters

ATM Adapters

9–J **Turboways ATM 155Mb/s UTP PCI**

No other documentation available.

9–F **Turboways ATM 155Mb/s MMF PCI**

PCI ATM 155Mbps Adapter Installation and User's Guide, 86 A1 86HX

B5–9 **Turboways ATM 155 Mbps MMF PCI**

PCI ATM 155Mbps Adapter Installation and User's Guide, 86 A1 86HX

Ethernet Adapters

Nolabel **Gigabit Ethernet 1000 Base–SX PCI–X**

Gigabit Ethernet , 86 A1 18EG

Nolabel **10/100/1000 Base–TX Ethernet PCI–X Adapter**

10/100/1000 Base–TX Ethernet PCI–X Adapter Installation and Using Guide, 86 A1 17EG

A–A **Ethernet 10/100/1000Mbps Base–T PCI**

10/100/1000 Base–T Ethernet PCI Adapter Install and Using Guide, 86 A1 08EF

B2–E **Ethernet 10Mbps PCI**

*Ethernet 10 & 10/100 Mbps PCI Adapters Installation and Configuration Guide***,** 86 A1 18GX

9–P **Ethernet 10/100Mbps PCI**

No other documentation available.

A–E **4-Port 10/100 Base–TX Ethernet PCI**

No other documentation available.

A–F **10/100 Ethernet PCI adapter II**

No other documentation available.

B2–F **Ethernet 10/100Mbps PCI**

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Glossary

A

AIX
A version of the UNIX operating system developed by IBM.

ANSI
American National Standards Institute.

Array Group
A group of disk drives which appear to the computer as a single LSU. RAID-1 and RAID-5 Arrays can be composed of any number of hardware arrays. RAID-0 Arrays can be composed of any number of individual disk drives.

API
Application Programming Interface: Functional interface allowing a high–level language application program to use specific data or functions of the operating system.

ASPI
Advanced SCSI Programming Interface. A protocol used by some SCSI application programs to communicate with SCSU adapters under DOS, OS/2 and Netware.

Asynchronous
Data transfer protocol which is not synchronized to a set timing interval. Asynchronous SCSI data transmitting devices must wait after each byte for acknowledgement from the receiving device. Either device can take as long as it wishes to send or acknowledge data. Asynchronous SCSI has no defined maximum transfer rate but is typically limited to 1.5 to 3MHz.

ATM
Asynchronous Transfer Mode (ATM).

B

Bus Mastering
A method of data transfers which allows data to be moved between a peripheral adapter and system memory without interaction with the host CPU or a third party DMA adapter. This technique allos the adapter to take control of the system bus and move data at up to 10MB/s for ISA systems and 132 MB/s for PCI systems.

C

Cache
A temporary fast storage area for data which would normally be accessed from a slower storage device. A cache management algorithm monitors the data access patterns and selects which data from the slower device is to be kept in the cache for quick access. Caches are normally transparent or hidden from the accessing device.

D

Differential Ended (DE)
Differential Ended electrical transmission on the bus. An electrical signal protocol which transmits information through a current loop rather than by changes in voltage, thereby reducing the susceptibility to electrical interference. Differential SCSI uses RS-485 transceivers to transfer 10MHz data at distances up to 25 meters (82 feet).

DPMS
Display Managment signalling.

Driver
The end of a stream closest to an external interface. The principal functions of a driver are handling any associated device and transforming data and information between the external device and the stream. It can also be a pseudo-driver, not directly associated with a device, which performs functions internal to a stream, such as multiplexer or log driver.

E

EATA
Extended AT Attachment. A hardware-level high-performance protocol used by DPT products to interface with the host computer. EATA supports bus mastering, Scatter/Gather data transfers, and overlapped and queued commands.

EC Level
Engineering Change Level.

Error Correction Code (ECC)
Error Correction Code. A method of generating

redundant information which can be used to detect and correct errors in stored or transmitted sdata. ECC is stored on disk drives at the end of every sector to correct errors caused by media flaws.

Ethernet
A baseband LAN specification (IEEE 802.3), with bus–type physical interconnections using the CSMA–CD (random) access technique.

F

Fast SCSI
The original SCSI specification defined synchronous data transmission rates of up to 5MHz. By assuming transceivers which provide tighter timing margins, the SCSI–2 standard allows synchronous transfers of up to 10MHz. This provides a transfer speed of 10MB/s for an 8–bit bus, and 20MB/s for a 16–bit bus. Devices which utilize these faster timings are called Fast SCSI devices.

FDDI
Fiber Distributed Data Interface.

Flow control
Compensates for the difference between the rate at which data reaches a device and the rate at which the device processes and transmits. This is controlled by the extended AT commands & K. The two common types of flow control are RTS/CTS signaling (hardware base method) and XON/XOFF (software-based method using standard ASCII control characters to pause and resume transmission).

H

HVX
Emulation of GCOS6/HV6 software on AIX, allowing to run DPS6 applications on AIX systems.

I

IEEE
Institute of Electrical and Electronic Engineers.

IEEE-802.5
IEEE-802.5 is standard for communications.

ISA
Industry Standard Architecture (Bus)– the name given to the original IBM PC/AT 16–bit bus.

ISDN
Integrated Services Digital Network. It is a communications architecture that integrates voice, data and video transmission simultaneously over a single access line. ISDN provides an end to end digital network to expand voice feature capabilities and to facilitate computer connectivity.

L

LAN
Local Area Network (LAN). A network in which communications are limited to a geographic area of up to 10 km.

LED
Light Emitting Diode.

LPP
Licensed Program Product.

LSU
Logical storing unit. A logical device on which the computer can store and receive information. An LSU may represent an individual disk or an Array Group.

LVD
Low Voltage Differential link allows greater Ultra2 SCSI device connectablility and longer SCSI cables. It lowers the amplitude of noise reflection and allows higher transmission frequencies.

M

MI
Marketing Identifier.

MMF
Multi-Mode Fiber (MMF).

O

OSI
Open Systems Interconnection: Reference model defined in OS–IS 7498.

P

PCI
Peripheral Component Interconnect (PCI) bus interface. An intelligent computer bus specification which supports 32-bit data paths, 132 Mbyte/sec data transfers from Bus Mastering devices and plug–and–play automatic configuration of peripheral cards.

Port
The identifier used to select a particular process within a TCP/IP host.

Power Cable Connector
This is the connector for the DC power to the device.

Protocol
Set of semantic and syntactic rules which determines the behavior of functional units in achieving communication.

PSTN
Public Switched Telephone Network.

PVC
Permanent Virtual Circuit. PVC is a virtual circuit which is permanently established between two addresses; it ties up a logical channel permanently. It is like having a leased line. Nowadays in practice, permanent virtual circuits are rarely used.

R

RAID
Redundant Array of Inexpensive Disks – A method of combining hard disks into one logical storage unit which offers disk-fault tolerance and can operate at higher throughput levels than a single hard disk.

RAM
Random Access Memory. A storage device into which data can be written and subsequently read.

Redundant Array
A fault tolerant Array Group. (RAID–1 or RAID–5).

Ring
Loop function which allows several predefined values to be proposed in a parameter field (SMIT).

RSF
Remote Services Facilities. Bull package dedicated to system monitoring and remote maintenance operations.

S

Scatter/Gather
A feature which allows data to be transferred to or from multiple discontiguous areas of host computer memory with a single I/O command.

SCSI
Small Computer Systems. SCSI is an ANSI standard parallel interface designed to communicate with intelligent peripheral devices. The SCSI definition, created by ANSI is defined in document number X3.131–1986. Copies of this document can be obtained from the ANSI X3 Secretariat.

SCSI-2
An improved SCSI enabling communications between devices from different manufacturers. SCSI-2 can use an 8, 16 or 32 bit data path.

SCSI Bus
The SCSI bus is the bus where the peripherals using the SCSI interface are connected. There are 4 different types:

8 bit Single Ended (SE)

8 bit Differential Ended (DE)

16 bit Single Ended (SE)

16 bit Differential Ended (DE)

SCSI Cable Connector
This is the connection for the data cable that connects the drive to the computer.

SDLC
Synchronous Data Link Control: Control using commands to regulate the transfer of data over a communications line.

SIMM
Single In-Line Memory Module. A standard way of packing RAM on a small circuit board with a defined edge connector.

Single Ended (SE)
Single Ended electrical transmission on the bus: the signal and the ground. An electrical signal protocol which transmits information through changes in voltage. Single Ended SCSI uses standard TTL signal-and-ground pairs to transmit information over the SCSI bus. Internal cables can be up to 6 meters long.

SNA
Systems Network Architecture.

STP
Shielded Twisted Pair.

SVC
SVC is a virtual circuit which exists only for the duration of the call, acting like a connection over the normal telephone network.

Synchronous communications
A method of transmission in which data bits are sent continuously at the same rate under the control of a fixed frequency clock signal. Synchronous SCSI can transmit data faster than asynchronous SCSI because the transmitting device does not wait for acknowledgement of each byte from the receiving device. Instead, it continues to transmit data at the rate negotiated by both devices (up to 20MHz).

T

TCP
Transport Control Protocol. Protocol used in ARPA Internet (U.S. Department of Defense standards for inter–networks).

TCP–IP
TCP and IP are the two fundamental protocols of the Internet protocol suite. (Acronym for this suite). TCP provides reliable transfer of data, while IP transmits.

Termination
A method of matching the transmission impedance of a electrical bus so as to eliminate signal reflections from the physical ends of the bus.

TERMPWR
A signal on the SCSI bus which provides power for SCSI bus terminators on remote devices.

Token Ring
A type of LAN in which networked computers are wired into a ring. Each computer (or node) is in constant contact with the next in the ring. A control message called a token is passed from one node to the next allowing the node with the token to send a message out to the network.

U

Ultra SCSI
Another name used for Fast–20 SCSI. The SCSI-3 specification defined synchronous data transmission rate of up to 20MHz. The 20MHz transfer rate provides speeds up to 20MB/s on an 8-bit bus and 40MB/s on a 16-bit Wide SCSI bus. Dveices that support these timings are called Ultra SCSI devices.

Ultra 2
Allows a transfer rate of up to 20 Mbytes/s over an 8-bit SCSI bus and up to 80 Mbytes/s over a 16-bit SCSI bus. STA (SCSI Trade Association) supports using the term ”Ultra2 SCSI” over the older term ”Fast-40”.

UNIX
Portable operating system, implemented in “C” language (AT&T). Trademark of X/Open Co.

UTP
Unshielded Twisted Pair (UTP).

V

VESA
Video Electronics Standards Association.

VGA
Video Graphics Adapter.

VIDEOPAD
Management of VideoTex terminals by TRANSPAC (X.29M).

VIDEOTEX
Communication services using the public switched telephone network enabling users to receive pages from a database connected to the network. Communications are via a terminal (Minitel or Teletel).

VPD
Vital Product Data. Information that uniquely defines system, hardware, software and microcode elements of a processing system. Also known as Software Vital Product Data (SWVPD).

W

WAN
Wide Area Network. Network providing communications capability in geographic areas larger than served by Local Area Networks.

Wide SCSI
A SCSI protocol and signal definition which provides a greater than 8-bit wide data path. Wide SCSI devices may support either 8 and 16-bit, or 8, 16 and 32-bit data transfers.

X

X.11
Protocol defined by the Massachusets Institute of Technology (MIT), for graphic interface access. See X/Window.

X.25
X.25 is a protocol designed to manage communications on a Wide Area Network (WAN).The X.25 protocol was designed in the seventies by CCITT Recommendation X.25. Further revisions of the recommendation were published in 1984 and 1988. The International Organization for Standardization (ISO) has also published the X.25 recommendations as ISO 8208 and ISO 7776.

XON/XOFF
XON and XOFF are the names of two different control characters. See also Flow Control.

XTI
X/Open Transport Interface Definition.

XX25
X.25 Programming Interface using the X/Open Interface. Is defined as an API providing full access to all X25.3 services through the XPI interface.

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