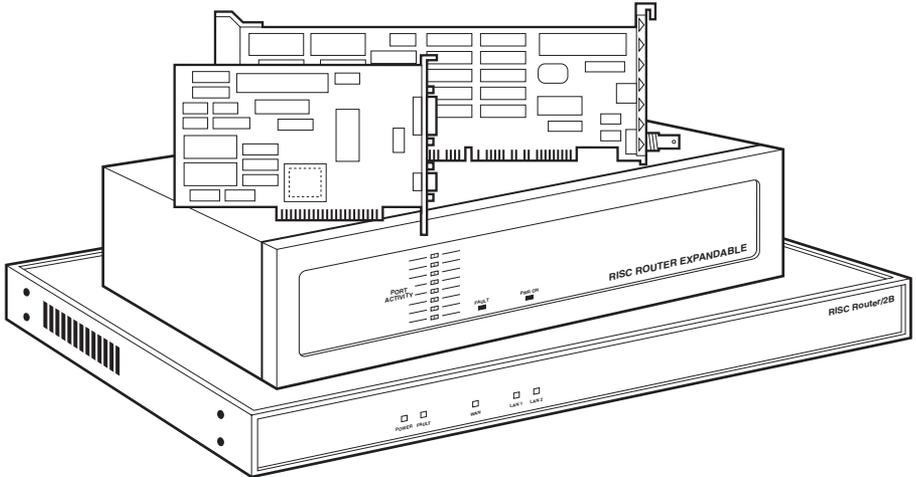




RISC Router Expandable



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This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par Industrie Canada.

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1.0 Specifications

Processor — AMD 29000

Clocking Rate — 20 MHz

Line Rate — 10 Mbps

Data Rate — 20 Megabytes per second

Buffer Memory — 1/2 to 2 MB

Ethernet

LAN Interface — 1-8 IEEE 802.3; Ports configured as:
DTE (AUI): Female DB15;
Thin Ethernet: BNC barrel connector;
MAU: Male DB15

WAN Interface — (2) RS-449 Serial ports configured as EIA-530,
V.35, or RS-232

Control Port

Interface — RS-232 (local/modem connection)

Max. Filtering

Rate — 90,000 packets per second (64-byte packets)

Max. Forwarding

Rate — 56,000 packets per second (64-byte packets)

Power — 90 to 132 or 175 to 264 VAC (47 to 440 Hz)

Size — 5.3"H x 17.5"W x 14"D (13.5 x 44.5 x 35.6 cm)

Weight — 23 lb. (10.4 kg)

2.0 Introduction

This chapter describes the RISC Router Expandable inter-networking platform, and contains information on the following:

- Major components
- Connectors (with pin assignments)
- Cables (with pin assignments)
- Hardware specifications

2.1 General Description

The RISC Router Expandable is a state-of-the-art RISC-based intelligent bridge/router, employing the AMD® 29000 microprocessor. The RISC Router Expandable is a transparent network inter-connection device operating on the MAC layer, level 2, of the OSI model. The RISC Router Expandable currently routes TCP, IP, IPX™, and XNS protocols and bridges all others.

With eight Ethernet expansion slots, the RISC Router Expandable supplies a variety of mixed-media hardware interfaces. The RISC Bridge/E Expansion Card (LB521C) supports three interfaces:

- **A Media-Access Unit (MAU) interface** — a standard 15-pin male connector. You can connect a workstation directly to this interface.
- **A ThinNet (BNC) interface** — a standard Thin Ethernet connection.
- **A Data Terminal Equipment (DTE) interface** — a standard 15-pin female connector for a transceiver.

NOTE

IEEE 802.3 and Ethernet v.2 are identified as simply “Ethernet” in this text.

The RISC Router Expandable delivers maximum bandwidth at 10 megabits per second across eight individual LAN Ethernet ports. Peak filtering rates of up to 90,000 64-byte packets per second and forwarding at full Ethernet line speeds of 56,000 64-byte packets per second are achieved under ideal conditions.

For wide area network connection, the RISC Router Expandable provides two RS-449 serial links. The WAN interface supplies two high-speed transparent serial channels operating at 384 Kbps. These channels provide a single logical connection to a remote RISC Router Expandable while balancing the traffic load over the two channels.

The RISC Router Expandable currently supports the following wide-area network protocols:

- X.25
- Frame Relay
- Point-to-point
- HDLC raw

The RISC Router Expandable is equipped with 1 CPU board, 1 PROM card, and up to eight expansion cards. A network control port is standard and supports a user-interface via any VT100™ compatible terminal. Each Ethernet card is equipped with an Ethernet terminator switch. The RISC Router Expandable operates on 90-132/175-264 VAC, (47-440 Hz) and meets all regulatory power-safety requirements.

The Network Control program is the user interface to the RISC Router Expandable and provides the software tools for the internetworking platform. Depending on the hardware and software configuration of the RISC Router Expandable, Network Control provides the following:

- TCP/IP routing, IPX/NetWare® routing
- Protocol-transparent, high-speed bridging
- Multiple logical bridges
- Ethernet switching
- Telnet™, SNMP
- Spanning Tree
- Custom-address filtering
- Network statistics
- Password-protected security

2.2 Front-Panel Components

This section describes the front panel of the RISC Router Expandable. The numbers in Figure 2-1 correspond to the numbered descriptions below:

- 1. Port Activity LEDs** — The Port Activity LEDs (green) indicate traffic on the ports of the RISC Router Expandable. Each port has a corresponding LED that lights when that port is active. The ports are shown from 1 through 8.
- 2. FAULT LED** — The FAULT LED (amber) indicates a software problem. The software triggers a hardware timer once a second. If it fails to do so, the FAULT LED lights.
- 3. PWR OK LED** — The PWR OK LED is green when the unit is ON.

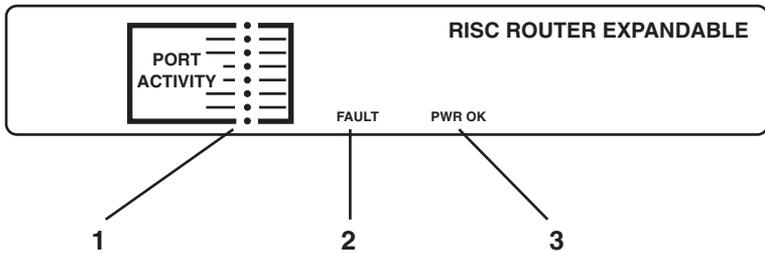


Figure 2-1. Front Panel of the RISC Router Expandable.

2.3 Back-Panel Components

This section describes the back panel components of the RISC Router Expandable. The numbers in Figure 2-2 correspond to the numbered descriptions below:

1. **AC Power Port** — The AC power port is a three-pronged grounded AC input port for the RISC Router Expandable. The unit uses 110 or 220 VAC and automatically configures to the appropriate voltage.
2. **ON/OFF Switch** — The ON/OFF switch provides power to the RISC Router Expandable. The “1” indicates ON. The “0” indicates OFF.
3. **Reset Switch** — The switch is reserved for future use.
4. **FAULT LED** — The FAULT LED (amber) indicates a software problem. The software triggers a hardware timer once a second. If it fails to do so, the FAULT LED lights. This LED is the same as the FAULT LED on the front of the RISC Router Expandable.
5. **Wide Area Network (WAN) Port(s)** — The two WAN ports provide remote transparent bridging. Each WAN port has a male DB37 connector. You can jumper the signaling on the two ports to meet either RS-423/RS-232, RS-422, or V.35. The signal definitions for the EIA-530 specification follow the RS-422 specification. The V.35-compatible interface is typically an M-block connector. The pin assignments for these connectors are in Table 2-1.
6. **RS-232 Serial Port** — The RS-232 serial port is a DB25 connector used to provide access to the Network Control program via VT100 compatible terminal. The pin assignments used in the RISC Router Expandable RS-232 port are listed in Table 2-2.

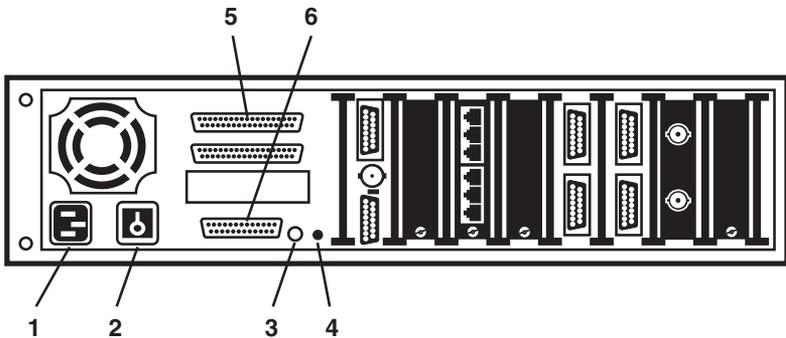


Figure 2-2. Back Panel of the RISC Router Expandable.

Table 2-1. Pin Assignments for the Wide Area Network Port.

RS-449	EIA-530	RS-232	V.35	Circuit
1	1	1	A	Shield
2	—	12	—	Signaling Rate
3	—	—	—	Spare
4	2	2	P	Send Data (D)
5	15	15	Y	Send Timing (A)
6	3	3	R	Receive Data (A)
7	4	4	C	Request To Send
8	17	17	V	Receive Timing (A)
9	5	5	D	Clear To Send (A)
10	18	—	—	Local Loopback
11	6	6	E	Data Set Ready (A)
12	20	20	E	Terminal Ready (A)
13	8	8	F	Receiver Ready (A)
14	21	—	—	Remote Loopback
15	—	22	—	Incoming Call
16	—	23	—	Select Frequency
17	24	24	U	Terminal Timing (A)
18	25	—	—	Test Mode
19	7	7	B	Signal Ground
20	—	7	B	Receive Ground
21	—	—	—	Spare
22	14	—	S	Send Data (B)
23	12	—	AA	Send Timing (B)
24	16	—	T	Receive Data (B)
25	19	—	—	Request To Send (B)
26	9	—	X	Receive Timing (B)
27	13	—	—	Clear To Send (B)
28	—	25	—	Terminal Service
29	22	—	—	Data Set Ready
30	23	—	—	Terminal Ready (B)
31	10	—	—	Receiver Ready (B)
32	—	—	—	Select Standby
33	—	21	—	Signal Quality
34	—	18	—	New Signal
35	11	—	W	Terminal Timing (B)
36	—	—	—	Standby Indicator
37	—	7	B	Send Common

Table 2-2. Pin Assignments for the RS-232 Port.

Contact	Circuit	Use
1		Shield
2	BA	Transmitted Data
3	BB	Received Data
4	CA	Request To Send
5	CB	Clear To Send
6	CC	DCE Ready
7	AB	Signal Ground
8	CF	Received Line Signal Detector
9		Reserved For Testing
10		Reserved For Testing
12		Not Used
13		Not Used
14		Not Used
15	DB	Transmitted Signal Element Timing (DCE Source)
16		Not Used
17	DD	Received Signal Element Timing (DCE Source)
18		Not Used
19		Not Used
20	CD	DTE Ready
21		Not Used
22	CE	Ring Indicator
23		Not Used
24		Transmitted Signal Element Timing (DTE Source)
25		Not Used

2.4 RISC Bridge/E Expansion Card

The RISC Bridge/E Expansion Card (LB521C) has three interface ports: A Media Attachment Unit (MAU) interface, a Data Terminal Equipment (DTE) interface and a Thin Net (BNC) interface. The interface you choose is automatically configured when you connect a cable to it. Only one interface per card is configurable at a time. The RISC Router Expandable has eight total expansion slots that can be configured in any combination. A description of each interface follows below.

- 1. Data Terminal Equipment (DTE) Interface** — The DTE interface is a 15-pin female Thick Ethernet connector with a standard locking slide clip. This connector is an Attachment Unit Interface (AUI) interface that meets the 10BASE5 specification. The pin assignments for this connector are the same as those on the MAU port and are listed in the Table 2-3.
- 2. BNC (Thin Net) Interface** — The BNC connector is an IEEE 802.3 Ethernet specification connector used for Thin Ethernet LAN connection. This connector has built-in transceiver circuitry and provides a direct connection to a ThinNet network.
- 3. Terminator Switch** — This switch terminates the Ethernet connection. In the ON position, the BNC connection is terminated. The switch is ON when it points towards the word “TERM” on the back panel. When the switch is OFF, the connection is not terminated. The switch is OFF when it points away from the word “TERM” on the back panel.

NOTE

If you are using a BNC “T” adapter and two sections of coaxial cable to terminate your Ethernet connection, the “TERM” switch must be OFF.

- 4. Media Attachment Unit (MAU) Connector** — This is a 15-pin male Ethernet transceiver connector. This connector has built-in transceiver circuitry and provides a direct-connect (DCE) to a workstation DTE port. The pin assignments for this connector are the same as those on the DTE port and are listed in Table 2-2.

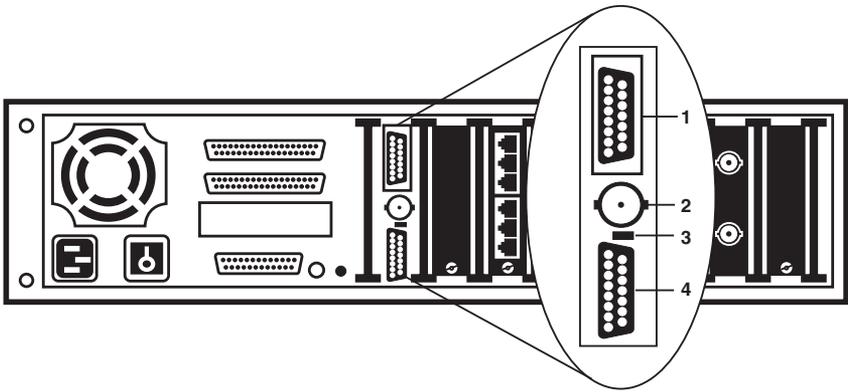


Figure 2-3. RISC Bridge/E Expansion Card Components.

Table 2-3. Port Pin Assignments for the DTE/MAU.

Contact	Circuit	Use	DTE	MAU
3	DO-A	Data Out Circuit A	Out	In
10	DO-B	Data Out Circuit B	Out	In
11	DO-S	Data Out Circuit Shield	Out	In
5	DI-A	Data In Circuit A	In	Out
12	DI-B	Data In Circuit B	In	Out
4	DI-S	Data In Circuit Shield	In	Out
8	CO-S	Control Out Circuit Shield		
2	CI-A	Control In Circuit A	In	Out
9	CI-B	Control In Circuit B	In	Out
1	CI-S	Control In Circuit Shield	In	Out
6	VC	Voltage Common	Out	In
13	VP	Voltage Plus	Out	In
14	VS	Voltage Shield	Out	In
Shell	PG	Protective Ground (Conductive shell)		

3.0 Installation

This chapter describes the installation of the RISC Router Expandable. Information included in this chapter is listed below:

- Unpacking Instructions
- Mounting Instructions
- Network Cabling
- Network Installation

NOTE

Cables and transceivers are not provided with the RISC Router Expandable.

3.1 Unpacking Instructions

Your RISC Router Expandable Package includes the following:

- RISC Router Expandable
- AC Power Cord
- Manual

Follow these steps to unpack the RISC Router Expandable:

1. Remove the foam insert from the RISC Router Expandable carton. Set it aside and save it.
2. Remove the RISC Router Expandable and place it on a clean, flat surface.
3. Read the remainder of this installation chapter before you power up the unit.

3.2 Mounting Instructions

3.2.1 MOUNTING IN A RACK

You will need an ¼-inch nut driver to install the RISC Router Expandable in a rack. Follow these steps:

1. Remove the bezel (front panel) from the front of the RISC Router Expandable. The bezel is held by four threaded ball studs. Pry the bezel off with your hands and set it aside.
2. Remove the four threaded ball studs from the front panel using the nut driver. Turn the nut driver counterclockwise.
3. Rotate the mounting bracket from the front panel so that the cut-outs are facing the outside of the RISC Router Expandable.
4. Re-install the four threaded ball studs and tighten them.
5. Re-install the front bezel by pressing it onto the ball studs.
6. The RISC Router Expandable is ready to be mounted in a standard 19-inch rack.

NOTE

The RISC Router Expandable is compatible with any standard 19-inch component rack. However, the rack-mount brackets are not sufficient to support the unit. You must have support rails or a shelf installed in your rack to fully support the RISC Router Expandable.

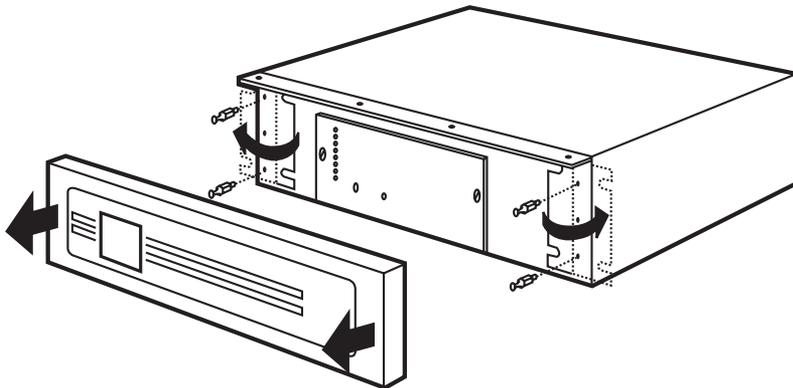


Figure 3-1. Preparing the RISC Router Expandable for Rack Mounting.

3.2.2 TABLE MOUNTING

Follow these steps to table-mount your RISC Router Expandable:

1. Set your RISC Router Expandable on a safe, clean, static-free surface.
2. Make sure that the vents and fans are not blocked. Do not place anything on top of the RISC Router Expandable.
3. Be sure a grounded (three-prong) plug is available. Do not use an extension cord.

3.3. Network Cables

This section describes the network cables that connect to the RISC Router Expandable interfaces.

3.3.1 DTE (AUI) INTERFACE

The male connector and cable shown in Figure 3-2 connects to the female DTE interface of the RISC Router Expandable. This connector is identified by the two round posts that secure the connector. The cable must conform to the IEEE 802.3 specification, and the AUI electrical and hardware specification. See Table 2-3 for the pin assignments.

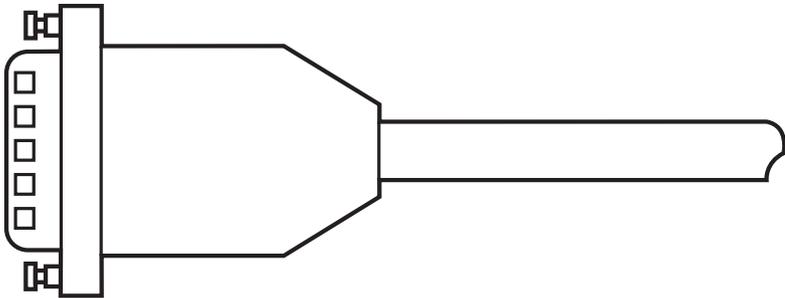


Figure 3-2. DTE Interface Cable (Male).

The female connector and cable, shown in Figure 3-3, connects to the male MAU interface of the RISC Router Expandable. This cable is identified by the locking slide clip. This connector must conform to the IEEE 802.3 specification, and the AUI electrical and hardware specification. See Table 2-3 for the pin assignments.

3.3.2 THINNET (BNC) INTERFACE

The ThinNet connector and cable shown in Figure 3-4 connects to the ThinNet interface on the RISC Router Expandable. The connector is the male end and is identified by the rotating lock mechanism. The connector and cable must conform to the IEEE 802.3 10BASE-2 specification.

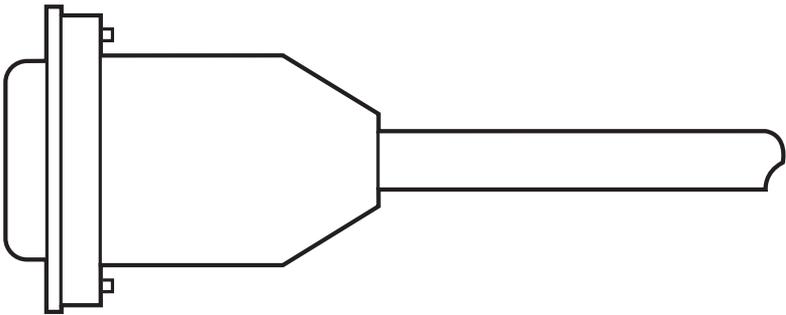


Figure 3-3. MAU Interface Cable (Female).

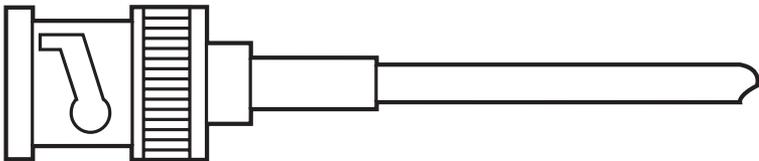


Figure 3-4. ThinNet (BNC) Interface Cable (Male).

3.3.3 RS-232 INTERFACE

The female RS-232 connector and cable, shown in Figure 3-5, connects to the male RS-232 connector on the RISC Router Expandable. The connector must conform to the RS-232 EIA specification. See Table 2-2 for pin assignments.

3.3.4 RS-449 INTERFACE

The Wide Area Network port on the RISC Router Expandable is configured to support RS-449 communications. The RS-449 WAN connector and cable, shown in Figure 3-6, connects to the RS-449 WAN connector on the RISC Router Expandable. This connector has a spring clip on each side that must be pinched for the two connectors to attach. This port can be configured to support RS-232, EIA-530, and V.35 communications. See Table 2-1 for the pin assignments.

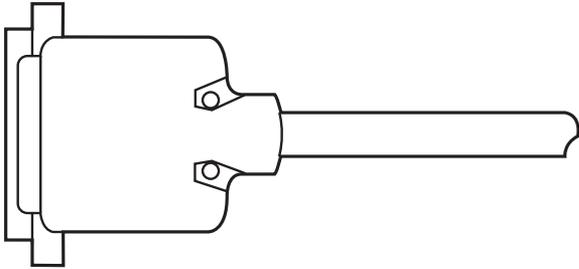


Figure 3-5. RS-232 Connector and Cable (Female).

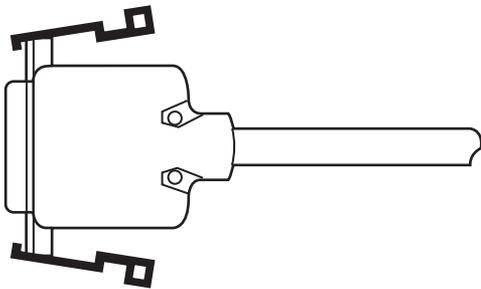


Figure 3-6. RS-449 (WAN) Connector and Cable.

3.4 Network Installation

Determine the configuration of your network and the type of interfaces your users require. The installation procedures are based on the type of interface. Refer to the appropriate section for the type of interface you are using. The RISC Router Expandable automatically configures to the type of interface.

CAUTION

Be sure to remove the power cord from the back of the RISC Router Expandable before you install any cables.

3.4.1 CONNECTING AN RS-232 TERMINAL TO THE CONTROL PORT

To view the network management software of the RISC Router Expandable, you must attach a VT100 compatible ASCII terminal to the RS-232 port.

The software provides the user interface to all the configurable parameters of the RISC Router Expandable. Set your terminal to match the following RS-232 interface defaults: 9600 baud, one stop bit, no parity.

1. Locate the RS-232 interface on the lower-left-hand corner of the RISC Router Expandable. The connector is a 25-pin male connector (Figure 3-7).
2. Attach a 25-pin female RS-232 connector to the male interface on the back panel of the RISC Router Expandable.
3. Secure the locking screws.

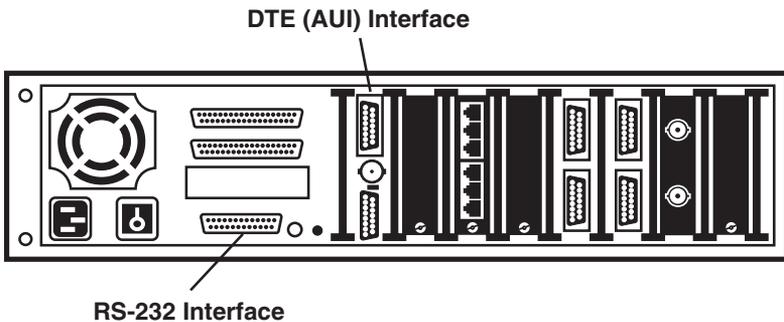


Figure 3-7. RS-232 Connection.

3.4.2 DTE (AUI) CONNECTION

The DTE (AUI) interface is the top connector of a the RISC Bridge/E Expansion Card (see Figure 3-7). This interface is a 10BASE5 Thick Ethernet Attachment Unit Interface (AUI).

Follow these steps to make the DTE connection:

1. Attach a male DTE connector to the female DTE interface on the RISC Router Expandable.
2. Slide the locking clip on the RISC Router Expandable interface.

3.4.3 BNC CONNECTION

The BNC interface is the center connector of a single-port RISC Bridge/E Expansion Card (see Figure 3-8). This interface is a 10BASE2 Thin Ethernet connector. The BNC interface has a built-in terminator. The terminator switch terminates the BNC segment.

1. Attach a male BNC connector to the female BNC interface on the RISC Router Expandable.
2. Twist the locking barrel on the male connector clockwise to secure the connection to the interface.
3. Locate the terminator on the RISC Bridge/E Expansion Card. It is located directly below the BNC interface.
4. Set the terminator according to your network:

ON if the BNC segment *ends* with your RISC Router Expandable. The switch must point *towards* the word “Term” on the RISC Bridge/E Expansion Card mounting bracket.

OFF if the BNC segment does *not* end with your RISC Router Expandable. The switch must point *away from* the word “Term” on the RISC Bridge/E Expansion Card mounting bracket.

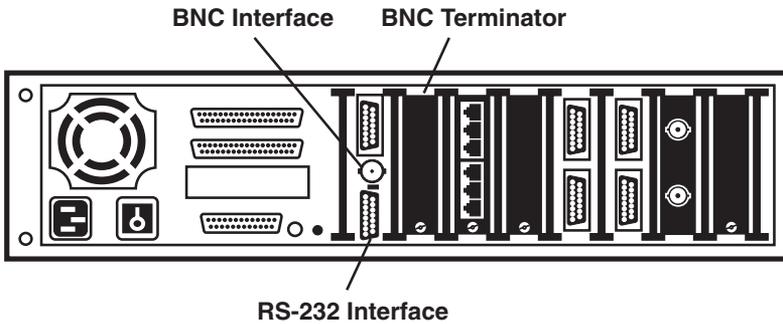


Figure 3-8. BNC Connection.

3.4.4 MAU CONNECTION

The MAU interface is the bottom connector of a RISC Bridge/E Expansion Card (see Figure 3-8). This interface is a 10BASE5 connector that has a built-in transceiver for a direct-connect to a workstation.

1. Attach a female AUI connector to the MAU interface on the RISC Router Expandable.
2. Slide the locking clip on the AUI connector to secure the connection.

3.4.5 WIDE-AREA NETWORK CONNECTION

The Wide-Area Network (WAN) interfaces are located in the left-hand center of the back panel of the RISC Router Expandable. Each interface is configurable for RS-449, RS-232, EIA-530, or V.35. Each interface has jumper settings for the interface type. Follow these steps:

1. Remove the cover of the RISC Router Expandable. Refer to Chapter 4.
2. Locate the jumpers on the motherboard. See Figure 3-9.

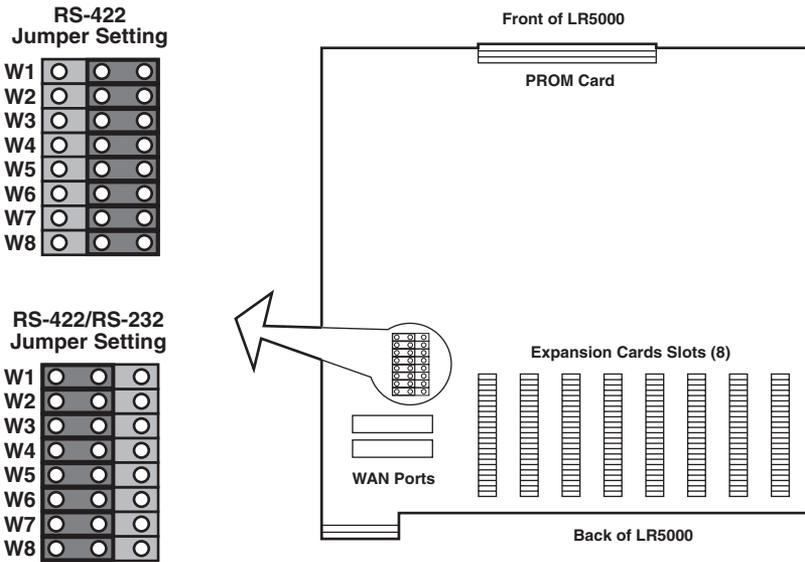


Figure 3-9. Jumper Settings on the Motherboard.

WAN Connection Jumpers

There is one jumper block for the both WAN ports, but you set each port independently. WAN port 1 is set by moving the jumpers on pins W5 through W8. WAN port 2 is set by moving the jumpers on pins W1 through W4. Refer to the illustrations below. The jumpers are made up of eight rows of three pins each. You change the setting by moving the jumper position on the pins. The “W” numbers appear upside-down on the motherboard.

- **WAN Port 1 (RS-422)** — jumpers on pins W5, W6, W7, and W8 are set to the two pins to the right.
- **WAN Port 1 (RS-423/232)** — jumpers on pins W5, W6, W7, and W8 are set to the two pins on the left.
- **WAN Port 2 (RS-422)** — jumpers on pins W1, W2, W3, and W4 are set to the two pins on the right.
- **WAN Port 2 (RS-422/232)** — jumpers on pins W1, W2, W3, and W4 are set to the pins on the left.

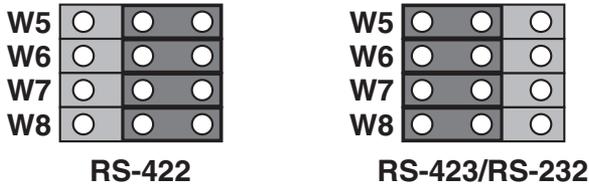


Figure 3-10. Jumpers on WAN Port 1.

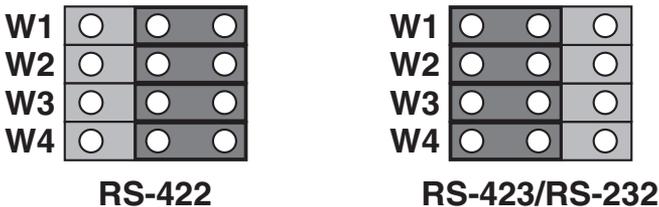


Figure 3-11. Jumpers on WAN Port 2.

WAN Connectors

The WAN ports are initially configured for RS-449 and are compatible with the RS-422/423 electrical standard.

1. Locate the two WAN interfaces on the back panel of the RISC Router Expandable. The interfaces are labeled “WAN #1” and “WAN #2.”
2. Connect a 37-pin female RS-449 connector to either WAN interface. The connector has clamps on each side that must be pinched to attach to the interface.

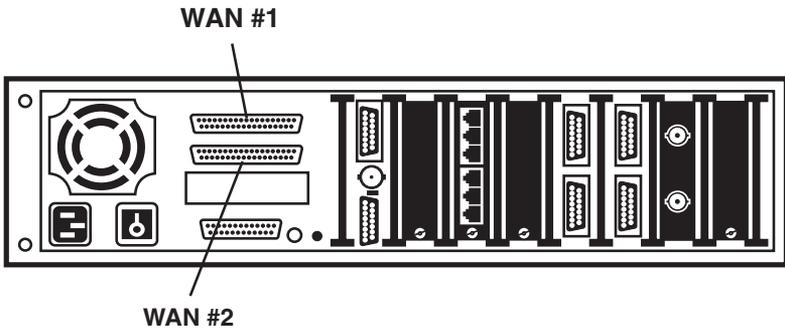


Figure 3-12. WAN Port Location on the RISC Router Expandable.

WAN V.35 Connection

The RISC Router Expandable supports a V.35-compatible connection on the WAN interface. You must use a specially configured cable that attaches between the DB37 interface on the RISC Router Expandable and a V.35 M-block connector on the V.35 device.

3.5 AC Connection

After you have installed the network cables, attach the AC plug to the RISC Router Expandable. Follow these steps:

1. Attach the AC plug to the back of the RISC Router Expandable. Be sure the power is OFF and the other end of the power cable is unplugged from the wall socket. Refer to **Section 2.3** for the location of the AC plug. **Chapter 1** lists the power requirements.
2. Plug the AC power cord into a wall socket rated for 120 VAC.
3. Power on the RISC Router Expandable. Refer to the software manuals for instructions on the resident software.

4.0 Upgrades

This chapter describes how to install additional expansion cards and PROM card updates in the RISC Router Expandable.

4.1 PROM Card Installation

The removable PROM card may be replaced to accomodate revised firmware of the RISC Router Expandable.

WARNING

Be sure to disconnect the power cord from the back panel of the RISC Router Expandable. High voltage may be present when you remove the front bezel.

CAUTION

Be sure to secure proper grounding for the RISC Router Expandable when you install a PROM card. Electrostatic discharge can destroy the card.

1. Power down your RISC Router Expandable.
2. Remove the power cord from the back panel of the unit.
3. Remove the front bezel from the RISC Router Expandable by prying the edges of the bezel with your fingers and pulling it forward.

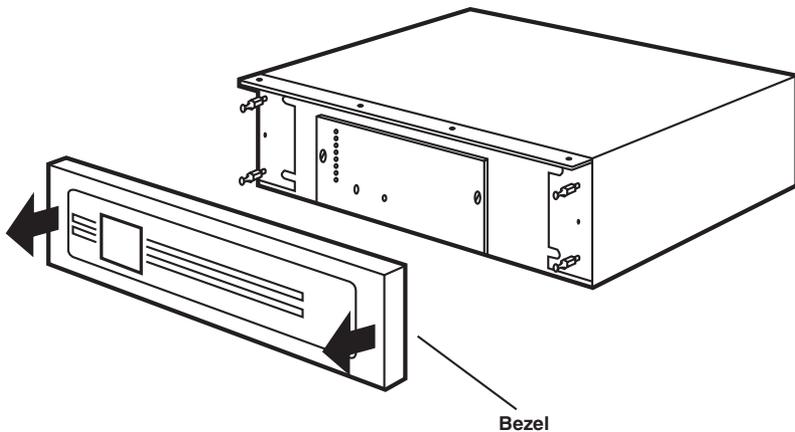


Figure 4-1. Removing the Bezel.

4. Remove the two screws on the front of the PROM Card. The screws are quarter-turn locking screws and are permanently attached to the PROM card. Do not remove them.
5. Grasp the old PROM card holding plate by the edges and pull it forward.
6. Press the new PROM card firmly onto the motherboard. The connector, which is at the bottom of the PROM card, connects with the gold contacts on the motherboard.
7. Secure the new PROM card. Hold the back of the RISC Router Expandable and press the PROM card until it is completely seated.
8. Turn the quarter-turn locking screws counter-clockwise to secure the PROM card.
9. Re-install the bezel by pressing it back onto the four ball-studs on the front panel of the RISC Router Expandable.
10. Plug the power cord into the back panel and power on the RISC Router Expandable.

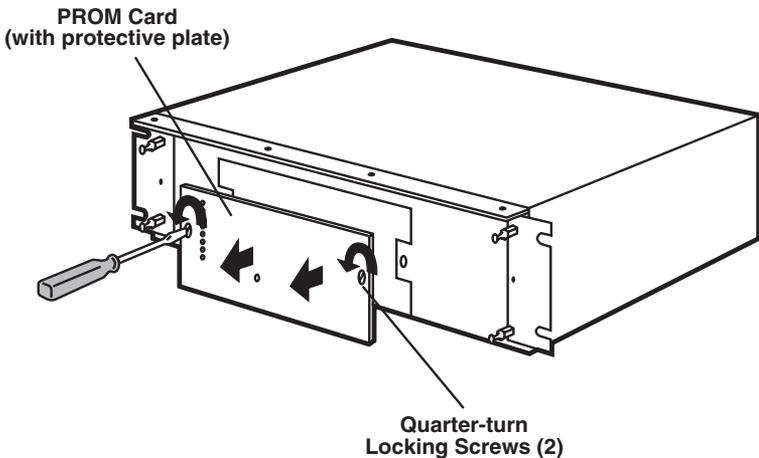


Figure 4-2. Removing the PROM Card.

4.2 Expansion Card Installation

The RISC Bridge/E Expansion Card is a three-port expansion card with one AUI, one BNC, and one MAU port. The card supports one interface at a time.

WARNING

Be sure to disconnect the power-cord from the RISC Router Expandable. High voltage may be present when you remove the front bezel.

CAUTION

Be sure to secure proper grounding for the RISC Router Expandable when you install a PROM card. Electrostatic discharge can destroy the card.

1. Power down the RISC Router Expandable and remove the power cord from the back panel of the unit.
2. Remove the front bezel from the RISC Router Expandable. See Figure 4-3.
3. Loosen the four cover-mount screws on top of the cover with a 1/4-inch nut driver.

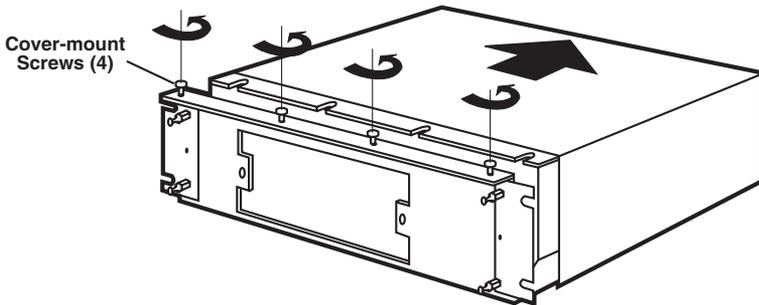


Figure 4-3. Removing the Cover.

4. Slide the top cover toward the back of the unit and remove it.
5. Lift the card-holder bracket from the top of the Ethernet cards and place it toward the back of the unit. See Figure 4-4.
6. Loosen the thumbscrew (counter-clockwise) on the bottom of the expansion filler plate.

NOTE

You may need a flat-blade screwdriver to loosen thumbscrews.

7. Remove the filler plate from the next available slot. Each unoccupied slot in RISC Router Expandable has a protective filler plate that must be removed before you install an expansion card. See Figure 4-5.

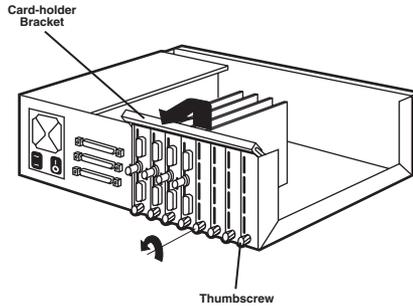


Figure 4-4. Card-Holder Bracket.

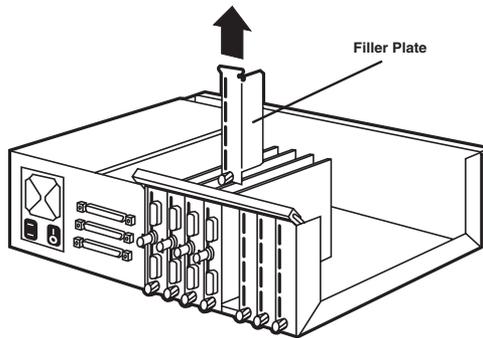


Figure 4-5. Removing a Filler Bracket.

8. Install the expansion card in the next available slot on the motherboard. Press firmly on the board until it is properly seated.
9. Tighten the thumbscrew (clockwise) on the bottom of the expansion card.
10. Secure the card-holder bracket.
11. Slide the top cover back onto the unit and secure the four cover-mount screws.

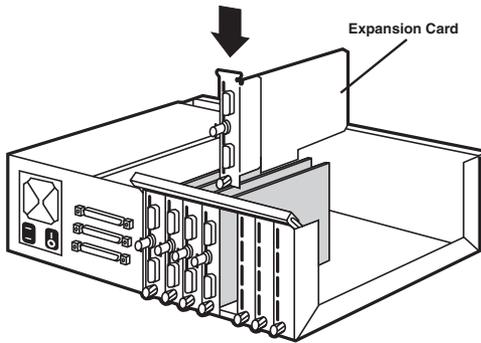


Figure 4-6. Installing the Expansion Card.

5.0 Troubleshooting

This chapter explains basic steps to take in the event of a problem with the installation or operation of the RISC Router Expandable. If your problem is not solved after these steps refer to the RISC Router Network Control Guide.

5.1 Troubleshooting Steps

Check for the problems with your RISC Router Expandable.

- a. With the power down, be sure the three-pronged plug is properly connected to the AC DC port of the RISC Router Expandable.
- b. Verify that the BNC (ThinNet—blue cable), AUI (Thick Ethernet—thick orange cable), or MAU cable is attached to the appropriate connector on the RISC Router Expandable for LAN.
- c. Verify that the WAN cable is attached to the WAN connector on the back panel of the RISC Router Expandable for WAN Operation.
- d. Verify that the WAN jumpers are correctly configured for the interface you are using on the WAN port of the RISC Router Expandable.
- e. Is the FAULT LED on?
- f. (BNC only) Check the terminator switches on the back panel of the RISC Router Expandable.

Check for problems with your network.

- a. Verify that the interconnecting network cables meet the IEEE standard for cabling and Ethernet LAN and WAN.
- b. Verify the cable connection to other computers in the network. In a network using Thin Ethernet (BNC) cabling, check all systems that are daisy-chained to the system you are troubleshooting.
- c. Determine whether or not your system is the only one in the network with a problem.

If none of the steps listed above solves your problem, see the RISC Router Network Control Guide or call your supplier.



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