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RTM4807

Rear Transition Module

Hardware Manual

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Document Revision History

Date	Explanation of changes
01/17/02	Added note saying Ethernet is not functional on standard product. Updated Functional Block Diagram. Clarified power connector documentation. Added floppy/IDE power cable descriptions. CTs 6-16 have been removed from the product and documentation.
03/20/02	Documented IDE/floppy cable A86460-001. Removed references to obsolete cables 18031 and 19021.
02/14/03	Updated format, links, references to ZT 4807e, ZT 5504e.
05/28/03	Updated branding and format.
06/22/05	Removed references to unloaded connector J3.
11/17/08	Added RoHS and WEEE Compliance topic. Updated format. Updated URLs.

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Errors and Omissions

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http://www.pt.com.

Performance Technologies, Inc., reserves its right to change product specifications without notice.

Symbol Conventions in This Manual

The following symbols appear in this document:

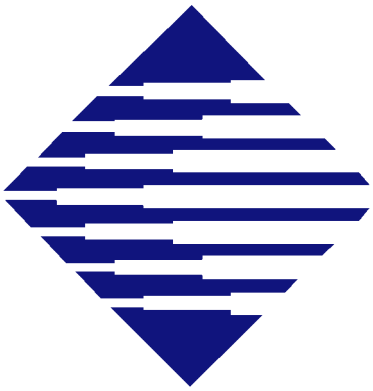
Caution:
There is risk of equipment damage. Follow the instructions.

Warning:
Hazardous voltages are present. To reduce the risk of electrical shock and danger to personal health, follow the instructions.

Caution:
Electronic components on printed circuit boards are extremely sensitive to static electricity. Ordinary amounts of static electricity generated by your clothing or work environment can damage the electronic equipment. It is recommended that anti-static ground straps and anti-static mats are used when installing the board in a system to help prevent damage due to electrostatic discharge.

Additional safety information is available throughout this guide and in the topic “Safety Precautions” on page 45.

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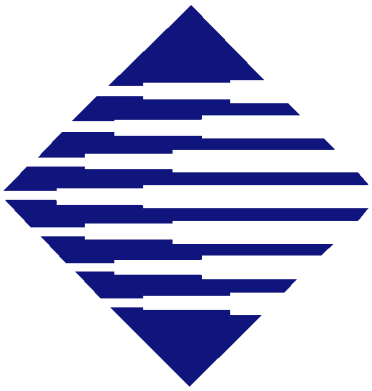
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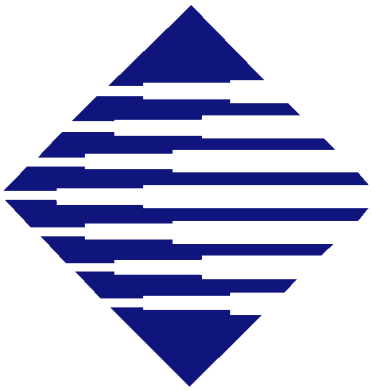
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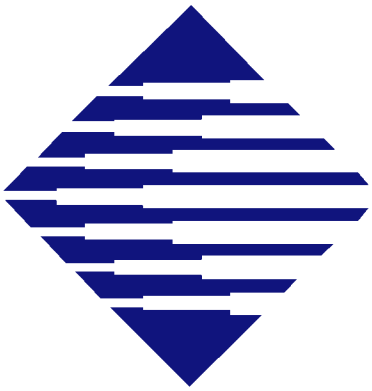
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Chapter

1

About This Guide

This manual describes the operation and use of the RTM4807 Rear Transition Module (referred to as the RTM4807 in this guide). The following outline describes the focus of each chapter.

Chapter 2, “Introduction,” provides an overview of the RTM4807 and includes information such as product features, product description, and a brief description of the product's physical interfaces and functional subsystems.

Chapter 3, “CompactFlash Option,” describes the input characteristics and installation and removal of cards for the CompactFlash interface on the RTM4807.

Chapter 4, “Configuration,” details the options that are configurable by DIP switch settings and cuttable traces on the RTM4807.

Chapter 5, “Connectivity,” provides connector location, description, and pinout information.

Chapter 6, “Specifications,” contains mechanical, electrical, and environmental specifications.

Chapter 7, “Agency Approvals,” presents agency approvals and certification information.

The most current documentation to support the additional components that you purchased from Performance Technologies is available at http://www.pt.com/ under the product you are inquiring about. Specific information about the RTM4807 can be found at:

http://pt.com/content/RTM4807.

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Text Conventions

Conventions in This Guide describes the text conventions that are used in this guide.

Conventions in This Guide

Convention	Used For
`Monospace font`	Monospace font represents sample code.
Bold font	Bold font represents: • paths • file names • UNIX commands • user input.
Italic font	Italic font represents: • notes that supply useful advice • supplemental information • referenced documents.

Customer Support and Services

Performance Technologies offers a variety of standard and custom support packages to ensure customers have access to the critical resources that they need to protect and maximize hardware and software investments throughout the development, integration, and deployment phases of the product life cycle.

If you encounter difficulty in using this Performance Technologies, Inc. product, you may contact our support personnel by:

1. **EMAIL** (Preferred Method) – Email us at the addresses listed below or use our online email support form. Outline your problem in detail. Please include your return email address and a telephone number.
2. **TELEPHONE** – Contact us via telephone at the number listed below, and request Technical Support. Our offices are open Monday to Friday, 8:00 a.m. to 8:00 p.m. (Eastern Standard Time).

Performance Technologies Support Contact Information

	Embedded Systems and Software (Includes Platforms, Blades, and Servers)	SS7 Systems (Includes SEGway™)
Email	support@pt.com	ss7support@pt.com
Phone	+1 (585) 256-0248 (Monday to Friday, 8 a.m. to 8 p.m. Eastern Standard Time)	+1 (585) 256-0248 (Monday to Friday, 8 a.m. to 8 p.m. Eastern Standard Time)

If you are located outside North America, we encourage you to contact the local Performance Technologies' distributor or agent for support. Many of our distributors or agents maintain technical support staffs.

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Customer Support Packages

Our configurable development and integration support packages help customers maximize engineering efforts and achieve time-to-market goals. To find out more about our Customer Support packages, visit http://www.pt.com/page/support/.

Other Web Support

Support for existing products including manuals, release notes, and drivers can be found on specific product pages at http://www.pt.com. Use the product search to locate the information you need.

Return Merchandise Authorization (RMA)

To submit a return merchandise authorization (RMA) request, complete the online RMA form available at http://pt.com/assets/lib/files/rma-request-form.doc and follow the instructions on the form. You will be notified with an RMA number once your return request is approved. Shipping information for returning the unit to Performance Technologies will be provided once the RMA is issued.

Product Warranty

Performance Technologies, Incorporated, warrants that its products sold hereunder will at the time of shipment be free from defects in material and workmanship and will conform to Performance Technologies' applicable specifications or, if appropriate, to Buyer's specifications accepted by Performance Technologies in writing. If products sold hereunder are not as warranted, Performance Technologies shall, at its option, refund the purchase price, repair, or replace the product provided proof of purchase and written notice of nonconformance are received by Performance Technologies within 12 months of shipment, or in the case of software and integrated circuits within ninety (90) days of shipment and provided said nonconforming products are returned F.O.B. to Performance Technologies's facility no later than thirty days after the warranty period expires. Products returned under warranty claims must be accompanied by an approved Return Material Authorization number issued by Performance Technologies and a statement of the reason for the return. Please contact Performance Technologies, or its agent, with the product serial number to obtain an RMA number. If Performance Technologies determines that the products are not defective, Buyer shall pay Performance Technologies all costs of handling and transportation. This warranty shall not apply to any products Performance Technologies determines to have been subject to testing for other than specified electrical characteristics or to operating and/or environmental conditions in excess of the maximum values established in applicable specifications, or have been subject to mishandling, misuse, static discharge, neglect, improper testing, repair, alteration, parts removal, damage, assembly or processing that alters the physical or electrical properties. This warranty excludes all cost of shipping, customs clearance and related charges outside the United States. Products containing batteries are warranted as above excluding batteries.

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Chapter

2

Introduction

This chapter provides a brief introduction to the RTM4807 Packet Switched Rear Transition Module (RTM). It includes a product definition, a list of product features, an RTM4807 Faceplate figure, a Functional Block Diagram, and a description of each block.

See Chapter 4, “Configuration,” for factory default settings and board options configurable through the RTM4807's switches and cuttable traces.

See Chapter 6, “Specifications,” for complete power and temperature requirements See Chapter 5, “Connectivity,” for connector locations, descriptions, pinout tables, and cable recommendations.

Unpacking

Please check the shipping carton for damage. If the shipping carton and contents are damaged, notify the carrier and Performance Technologies for an insurance settlement. Retain the shipping carton and packing material for inspection by the carrier. Do not return any product to Performance Technologies without a Return Material Authorization (RMA) number. “Customer Support and Services,” on page 12 provides contact information for obtaining an RMA number from Performance Technologies.

Warning:
Like all equipment utilizing MOS devices, the RTM4807 must be protected from static discharge. Never remove any of the socketed parts except at a static-free workstation. Use the anti-static bag shipped with your order to handle the boards.

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Product Definition

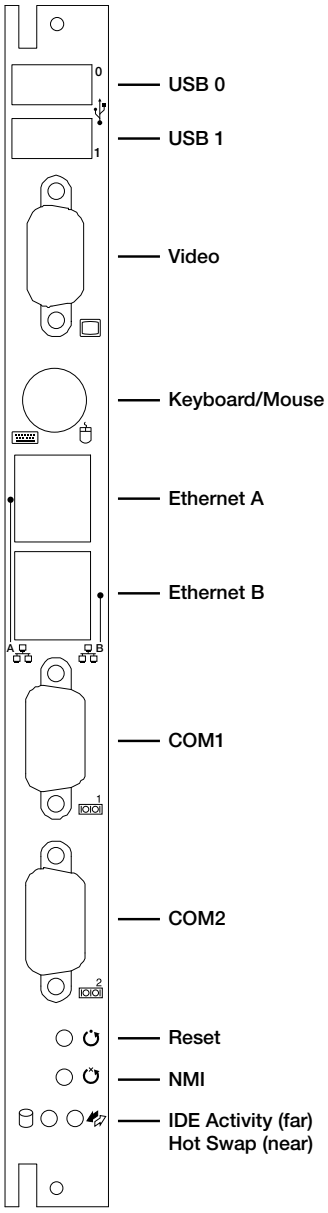
The RTM4807 is a single slot, 6U board providing rear-panel access to the I/O functions of a Performance Technologies processor board with rear panel I/O (RPIO) pin compatibility (see the pin definitions for connector J5 on page 32). An example of a compatible board is the CPC5505. The RTM4807 is designed to function only in the RTM slot of a 6U CompactPCI® system such as the Performance Technologies AMP5091 4U General Purpose Packet-Switched Platform.

Features of the RTM4807

- Rear-panel interface connectors for host processor board:
  - USB 0 and USB1 ports
  - VGA
  - PS/2 Keyboard/Mouse
  - Ethernet A
  - Ethernet B

  Note: *Ethernet is not functional on standard product.*
  - COM 1
  - COM 2
- Internal interfaces not on the faceplate:
  - CompactFlash interface
  - IDE interface (Host processor board secondary channel)
  - 4-pin power connector for external media
  - Floppy interface
  - PC speaker connector
- Reset Switch
- NMI Switch

Figure 2-1: RTM4807 Faceplate

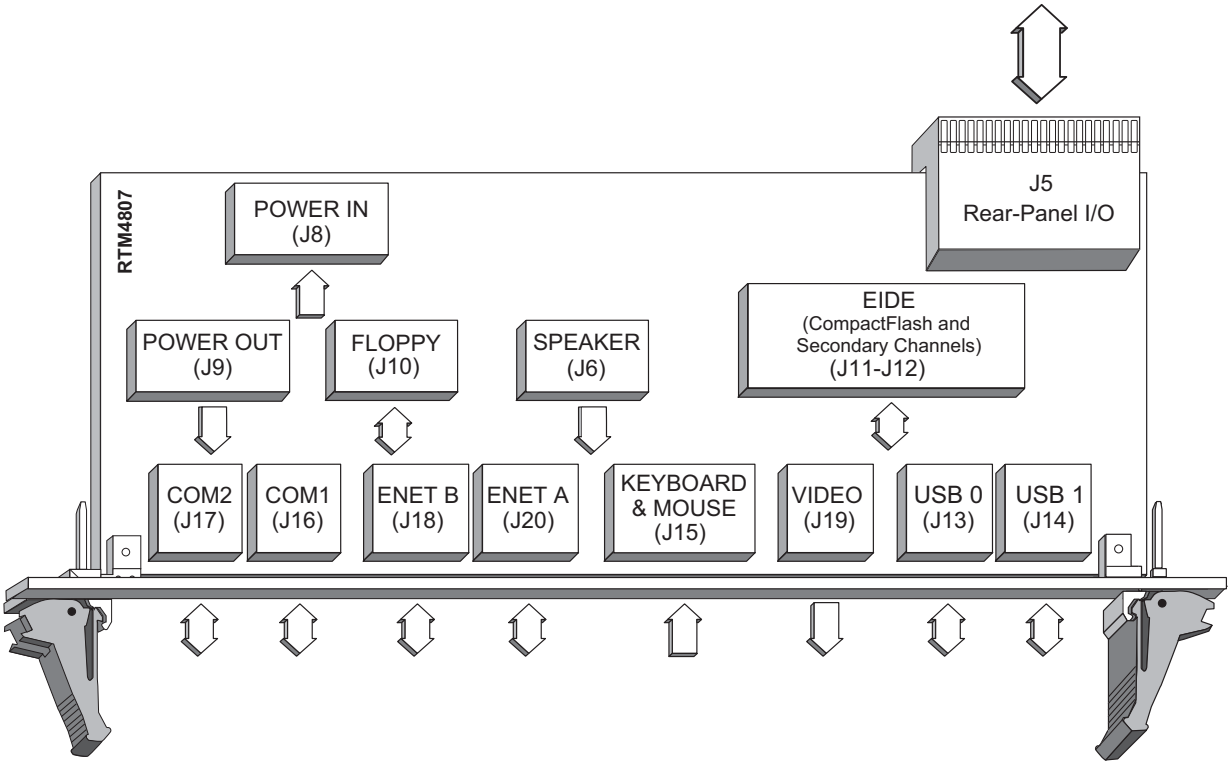


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Functional Blocks

Figure 2-2 is a functional block diagram of the RTM4807. The topics following the diagram provide overviews of the RTM4807's functional blocks.

Figure 2-2: Functional Block Diagram



Note: *J18 and J20 are not functional on standard product. Contact your sales representative for availability.*

Rear-Panel I/O

The RTM4807 transitions signals from a pin-compatible processor board (such as the Performance Technologies CPC5505) through backplane connector J5 (Rear-Panel User I/O Connector).

PS/2 Keyboard/Mouse Port

The RTM4807 provides rear-panel access to the host processor board keyboard/mouse interface. The host processor board PS/2 style mouse/keyboard controller is connected via J5 (Rear-Panel User I/O Connector) to 6-pin DINN connector J15 (Keyboard/Mouse Connector), labeled KY/MS on the RTM4807 Faceplate. Using J15 for both the PS/2 keyboard and PS/2 mouse connection requires use of a PC keyboard/mouse 'Y' splitter cable. See the topic “Cables,” on page 38 for cabling recommendations.

Note: *The keyboard and mouse do not function properly if devices are connected to both the Host processor board and the RTM4807.*

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Video Interface

The RTM4807 provides rear-panel access to the host processor board VGA accelerator. The host processor board VGA accelerator is connected via J5 (Rear-Panel User I/O Connector) to J19 (VGA Interface Connector), a 15-pin connector on the RTM4807 Faceplate.

Note: *Video does not function properly if devices are connected to both the host processor board and the RTM4807.*

Universal Serial Bus

The RTM4807 provides rear-panel access to the host processor board Universal Serial Bus (USB) signals. The host processor board USB is connected via J5 (Rear-Panel User I/O Connector) to USB connectors J13/J14 (Universal Serial Bus Connectors) on the RTM4807 Faceplate.

Serial Port Connectors (COM1 and COM2)

The RTM4807 provides rear-panel access to the host processor board serial ports. The host processor board COM1 and COM2 ports are connected via J5 (Rear-Panel User I/O Connector) to 9-pin D-shell connectors J16 and J17 (COM1/COM2 Connectors), respectively, on the RTM4807 Faceplate.

Note: *The COM ports do not function properly if devices are connected to the same COM port channel on both the host processor board and the RTM4807.*

EIDE Interface

The host processor board secondary channel is connected via J5 (Rear-Panel User I/O Connector) to internal 40 pin 0.1" vertical header J11 (EIDE Connector) and to internal connector J12 (CompactFlash Connector) on the RTM4807.

Only two IDE devices can be connected on any IDE channel. If the RTM4807 has a CompactFlash device installed, only a single IDE device can be connected to secondary IDE channel connector J11. Refer to Chapter 3, “CompactFlash Option,” for installation and configuration of the RTM4807 for operation with a CompactFlash device.



Caution:
For proper operation, Performance Technologies recommends an ATA-5 compliant 80-conductor IDE cable for external IDE connection. If the external IDE device is configured in a master/slave combination with an on-board IDE device (CompactFlash or processor board-mounted hard disk), a custom 80-conductor IDE cable must be used. Use of industry standard 80-conductor IDE cables in this configuration can cause BIOS drive detection and configuration errors. See the topic “Cables,” on page 38 for cabling recommendations.

An IDE drive that requires +12V/GND/+5V to operate can be connected to power output connector J9. Input power connector J8 must then be connected to a power source supplying +12V/GND/+5V. See the topics “J8, J9 (Floppy Drive/IDE Power Connectors),” on page 33 and “Cables,” on page 38 for more information.

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Speaker Connector

The host processor board speaker interface is connected via J5 (Rear-Panel User I/O Connector) to internal connector J6 (Speaker Connector), allowing connection of a PC speaker.

Floppy Drive Interface and Power Connector

The host processor board floppy drive controller is connected via J5 (Rear-Panel User I/O Connector) to internal 34-pin connector J10 (Floppy Drive Cable Connector). The RTM4807 also provides a 4-pin power connector (J9) that provides +5V, GND, and +12V when input power connector J8 is connected to an appropriate power source. See “J8, J9 (Floppy Drive/ IDE Power Connectors),” on page 33.



Caution:
If power is supplied to J8 from the host processor board and the device connected to J9 draws more power than the host processor board can provide, a power fault or other problems may occur.

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Chapter

3

CompactFlash Option

Connector J12 (CompactFlash Connector) on the RTM4807 provides external, solid state, secondary IDE channel capability to a processor board such as the Performance Technologies CPC5505 single board computer. This connector is designed to accommodate CompactFlash expansion cards operating in True IDE Mode, which appear to the system as a hard drive and are automatically supported by most operating systems.

CompactFlash Input Characteristics

By default, the RTM4807's CompactFlash socket (J12) is set to 5.0V operation (CT5 is in position B). This setting requires the CompactFlash card to have “Type 2" or “Type 3" input characteristics, as shown in Table 3-1. SanDisk® currently manufactures cards meeting these specifications.

Table 3-1: CompactFlash Input Characteristics

Type	Parameter	Symbol	Min.	Typ.	Max.	Min.	Typ.	Max.	Units
			VCC = 3.3 (CT5A)[1]			VCC = 5.0 (CT5B)[2]			
1	Input	Vih	2.4	—	—	4.0[3]	—	—	Volts
	Voltage CMOS	Vil	—	—	0.6	—	—	0.8	
2	Input	Vih	1.5	—	—	2.0	—	—	Volts
	Voltage CMOS	Vil	—	—	0.6	—	—	0.8	
3	Input	Vth	—	1.8	—	—	2.8	—	Volts
	Voltage CMOS	Vtl	—	1.0	—	—	2.0	—	

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Notes: *This table is based on one provided in the CompactFlash Specification Revision 1.3. The shaded area represents operation not supported on the RTM4807.*

1. *If the CompactFlash socket (J12) is set for VCC = 3.3V operation (CT5 is in the A position), do not connect a disk drive on the EIDE connector J11. Doing so will damage the CompactFlash device!*
2. *Factory default configuration.*
3. *CompactFlash cards with "Type 1" input characteristics (operating from VCC = 5.0) should not be used because the RTM4807 does not meet the 4.0V minimum input voltage requirement (RTM4807 EIDE channels VOH = 2.8V).*

5.0V operation has the advantage of allowing master/slave operation, with an additional drive connected to the secondary IDE connector J11 (EIDE Connector) on the RTM4807. See the topic "SW4-1 (Secondary IDE Master/Slave Selection)", on page 24 for more information about configuring the CompactFlash card as a master or slave IDE device on the secondary channel.

Caution:
If a CompactFlash device is present, and an IDE device is connected to J11, a custom 80-conductor IDE cable must be used. Use of industry standard 80-conductor IDE cables in this configuration can cause BIOS drive detection and configuration errors. See the topic "Cables", on page 38 for cabling recommendations.

CompactFlash Card Installation and Removal

Perform the steps below to install or remove a CompactFlash card.

Caution:
Perform the installation and removal at a static-free workstation to avoid damage to the RTM4807.

Installation

1. Make sure the system is powered off.
2. Put on an anti-static grounding strap.
3. Most CompactFlash cards have an arrow on the top label indicating correct orientation. Align the arrow on the CompactFlash card with the arrow on the connector and slide the card into place until the connection is snug. The dimensions of the grooves in the sides of the CompactFlash card prevent incorrect installation.

Removal

1. Make sure the system is powered off.
2. Put on an anti-static grounding strap.
3. Grasp the card by the sides and pull it out of the connector. Do not apply pressure to the top of the CompactFlash cards: this can damage some CompactFlash devices such as the IBM Microdrive™.

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Chapter

4

Configuration

The RTM4807 includes several options that tailor the operation of the board to requirements of specific applications. These options are configured with a switch or by cuttable traces. Configure a switch option by closing or opening a DIP switch. Configure a cuttable trace option by installing or removing a surface mount zero ohm resistor.

RTM4807 Switch Options and Locations

The RTM4807 includes one bank of switches (SW4) located on the component side of the board. See Figure 4-1, “Switch and Cuttable Trace Locations,” on page 26 for the location of the SW4. SW1 is incorporated into the lower board ejector mechanism. SW2 and SW3 are push-button switches located on the faceplate. See Figure 2-1, “RTM4807 Faceplate,” on page 16 for the location of the SW2 and SW3.

Switch Descriptions

The following topics list the switches in numerical order and provide a detailed description of each switch. Note that where switches are referenced in this chapter, “SWx” corresponds to the switch number and “-N” corresponds to the switch segment (for example, SW2-1 means “switch number 2, segment 1").

SW1 (Hot Swap Ejector)

The lower ejector incorporates an ejector switch, connected to the processor board's Baseboard Management Controller. This switch is used to notify the processor board of the necessity to shut down so the RTM4807 can be removed.

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SW2 (Reset)

SW2 is a push-button on the RTM4807's faceplate. See Figure 2-1, “RTM4807 Faceplate,” on page 16 for the location of the SW2. When pressed, SW2 issues a reset to the host processor board. See the host processor board manual for a detailed description of the reset feature.

SW3 (NMI)

SW3 is a push-button on the RTM4807's faceplate. See Figure 2-1, “RTM4807 Faceplate,” on page 16 for the location of the SW3. When pressed, SW3 issues a non-maskable interrupt to the host processor board. See the host processor board manual for a detailed description of the reset feature.

SW4-1 (Secondary IDE Master/Slave Selection)

SW4-1 configures the CompactFlash card installed in J12 (CompactFlash Connector) as a master or slave IDE device on the secondary channel. This switch also changes the polarity of the “Cable Select” signal available at connector J11 (EIDE Connector), pin 28.

If the CompactFlash card is the only device on the secondary IDE channel then it must be configured as the master (SW4-1 = on).

If another IDE device is connected to the secondary IDE channel (cabled to connector J11) then the CompactFlash should be configured as a slave (SW4-1 = off) and the other device should be configured as the master. See the documentation supplied with your IDE device to see how to configure it as a master.

If a CompactFlash card is not installed in J12, then SW4-1 should be off. SW4-1 affects the “Cable Select” (J11 pin 28) signal on the IDE cable. For normal “cable select” operation SW4-1 must be off.

A maximum of two IDE devices may be connected to the secondary channel. If you have a CompactFlash card installed in J12 then you may have only one IDE device connected to J11 *and* you must use a special cable to connect the external IDE device to J11. See the topic “Cables,” on page 38 for more information. If a CompactFlash card is not installed in J12 then two devices may be installed on the cable connected to J11. A standard 80-pin (UDMA-66 compatible) cable may be used in this case.

The RTM4807 is supplied without a CompactFlash card installed in J12. Therefore SW4-1 is off by default.

See the topic “CompactFlash Input Characteristics,” on page 21 for more information.

SW4-2, SW4-3, SW4-4 (Reserved)

These switch segments are reserved for future use. Factory default is open.

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Cuttable Traces

The RTM4807 includes several cuttable traces (0 ohm shorting resistors) that allow the user to configure certain options not configurable through the processor board's BIOS Setup Utility. In most cases, the default settings are appropriate for normal operation; however, some applications may require different settings. Figure 4-1, “Switch and Cuttable Trace Locations,” on page 26 shows the placement of the RTM4807's cuttable traces.

There are two types of cuttable traces on the RTM4807: single option and double option:

- Single option cuttable traces are implemented using 0603 and 1206 surface mount pads. A 0 Ohm shorting resistor is soldered between these pads to make the connection.
- Double option cuttable traces are implemented using three 0603 surface mount pads. A 0 Ohm shorting resistor is soldered between one set of pads, depending on the chosen option.

Caution:
Only qualified technicians familiar with surface mount soldering techniques should perform cuttable trace modifications. The product warranty is voided if the board is damaged by customer modifications.

Cuttable Trace Descriptions

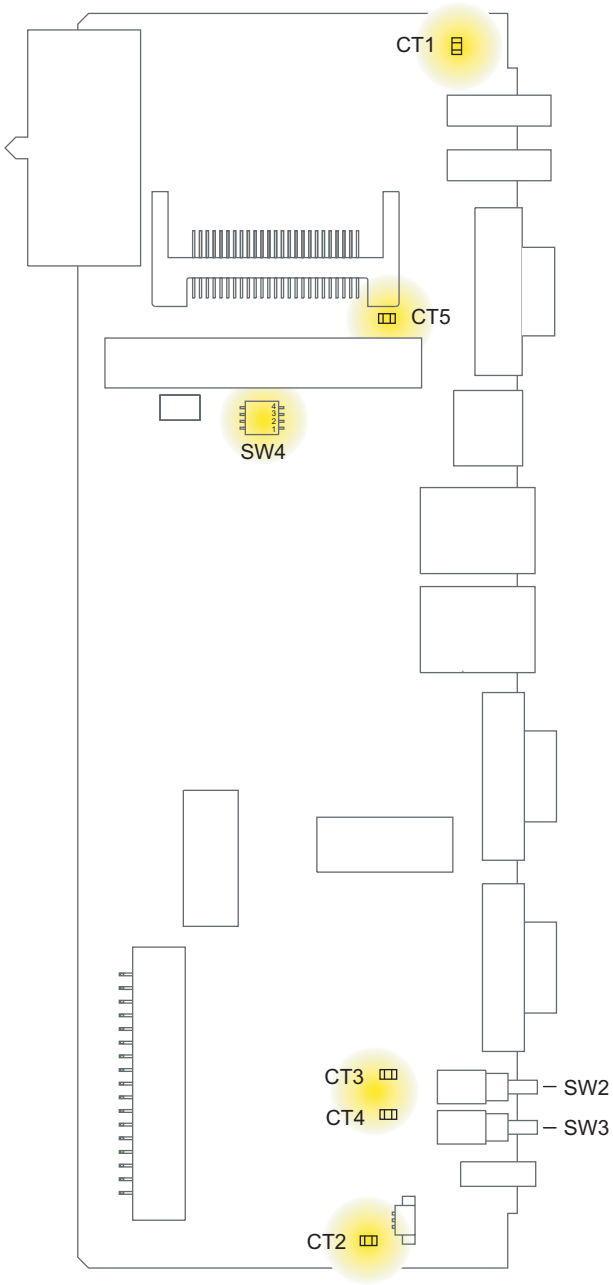
Table 4-1 provides a quick cross reference for the RTM4807 cuttable trace descriptions that follow.

Table 4-1: Cuttable Trace Definitions

CT#	Default	Description	Page
CT1	Out	Connect Top ESD Strip to Logic Ground	26
CT2	Out	Connect Bottom ESD Strip to Logic Ground	26
CT3	Out	Connect Reset Switch Case to Logic Ground	26
CT4	Out	Connect NMI Switch Case to Logic Ground	26
CT5	B	Connect Compact Flash Power to Switched 5V	27

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Figure 4-1: Switch and Cuttable Trace Locations



CT1-CT4 (Connect Chassis GND to Logic GND)

The RTM4807's switches and ejectors are on an isolated chassis ground. These components can be connected to the RTM4807 logic ground by installing these four cuttable traces. All four cuttable traces should be installed or all four removed. The factory default is removed.

Position		Function
All In		Front panel connectors connected to logic ground
All Out	Default	Front-panel connectors not connected to logic ground

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CT5 (CompactFlash Operating Voltage)

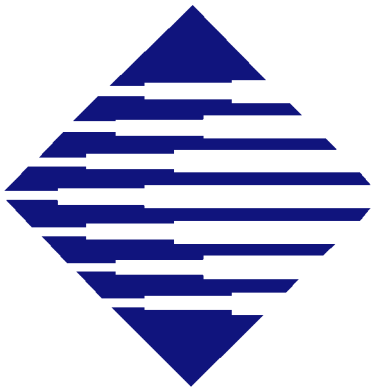
The factory default configuration sets the RTM4807's J12 (CompactFlash Connector) to 5.0V operation (CT5 in position B). This setting requires the CompactFlash card to have "Type 2" or "Type 3" input characteristics. See Table 3-1, "CompactFlash Input Characteristics," on page 21 for more information.

Caution:
If the CompactFlash socket is set for VCC = 3.3V operation (CT5 is in the A position), do not connect a disk drive on EIDE connector J11. Doing so will damage the CompactFlash device!

Position		Function
A		Connects the Compact Flash Circuitry to Switched 3.3VDC.
B	Default	Connects the Compact Flash Circuitry to Switched 5VDC.

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Chapter

5

Connectivity

This chapter includes detailed descriptions and pinouts for the RTM4807's connectors as well as cable recommendations for interfacing to the RTM4807:

- "Connectors" on page 30
  - "Backplane Connectors" on page 32
  - "Internal Connectors" on page 33
  - "Faceplate Connectors" on page 35
- "Cables" on page 38
  - "IDE" on page 38
  - "Floppy/IDE Power" on page 39
  - "PS/2 Keyboard/Mouse" on page 39

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Connectors

As shown in Figure 5-1, “Connector Locations,” on page 31, the RTM4807 includes several connectors to interface with application-specific devices. A brief description of each connector is given in Table 5-1. A detailed description and pinout for each connector is given in the following topics.

Table 5-1: Connector Assignments

Connector	Function	Page
J5	Rear-Panel User I/O Connector (110-pin, 2mm x 2mm, female)	32
J6	Speaker Connector (2-pin, male)	33
J7	Ejector switch connector	-
J8	Floppy Drive/IDE Input Power Connector (4-pin, female)	33
J9	Floppy Drive/IDE Output Power Connector (4-pin, female)	33
J10	Floppy Drive Cable Connector (34-pin, male)	34
J11	Secondary EIDE Connector (40-pin, male)	35
J12	CompactFlash Connector (50-pin, CF Card Slot Header)	34
J13, J14	Universal Serial Bus Connectors (4-pin, USB, Port 1/Port 1)	35
J15	PS/2 Keyboard/Mouse Connector (6-pin, DIN)	36
J16	COM1 Serial Port (9-pin, D-Shell)	37
J17	COM2 Serial Port (9-pin, D-Shell)	37
J18	Ethernet B (8-pin, RJ-45)	37
J19	VGA Interface Connector (15-pin D-shell, female)	38
J20	Ethernet A (8-pin, RJ-45)	37

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Figure 5-1: Connector Locations

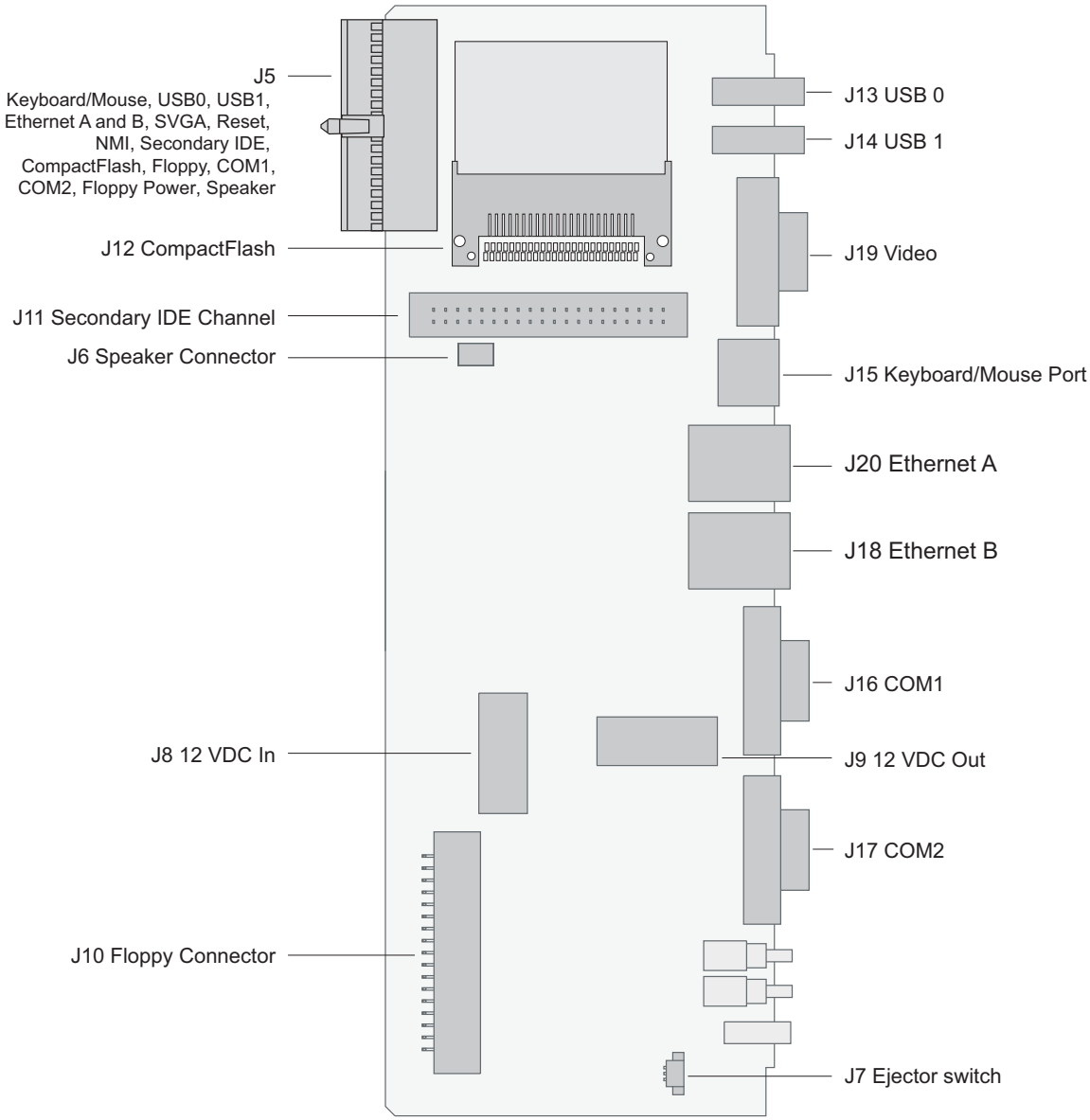
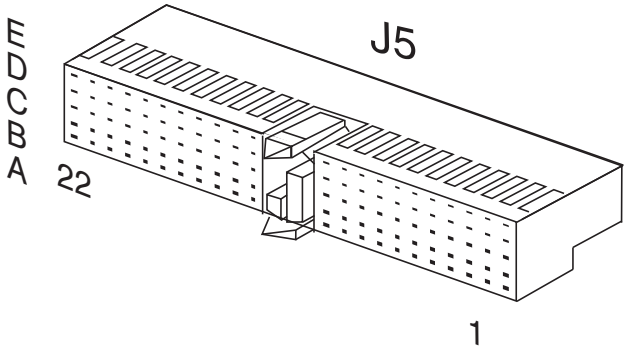


Figure 5-2: Backplane Connectors-Pin Locations



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Backplane Connectors

J5 (Rear-Panel User I/O Connector)

J5 is a 110-pin, 2mm x 2mm, right angle, female connector (AMP 646489-1) capable of transitioning the following signals for rear-panel I/O:

- Keyboard/Mouse
- Compact Flash
- COM1
- COM2
- VGA
- NMI
- Reset
- IDE
- USB0, USB1
- Floppy Power
- Floppy
- Speaker

See Table 5-2 for pin definitions and Figure 5-2, “Backplane Connectors-Pin Locations,” on page 31 for pin placement.

Table 5-2: J5 Rear-Panel User I/O Connector Pinout

Pin	A	B	C	D	E	F
22	USB0+	USB0-	SW-5V	USB1+	USB1-	GROUND SHIELD
21	SW-3.3V	GND	GND	GND	GND	
20	RED	GND	H-SYNC	GND	SMBD	
19	GND	SW-5V	GND	SW-5V	SMBC	
18	GREEN	GND	V-SYNC	GND	SMBA-	
17	GND	RESV	RP_PRES-	RESV	IPMB PWR	
16	BLUE	GND	DDCCLK	KBDAT	KBCLK	
15	GND	SW-5V	DDCDAT	MSDAT	MSCLK	
14	S1RTS	S1CTS	S1RIN	S1DTR	ENETA-LINK	
13	S1DCD	S1TXD	S1RXD	S1DSR	ENETA-ACT	
12	S2RTS	S2CTS	S2RIN	S2DTR	ENETB-LINK	
11	S2DCD	S2TXD	S2RXD	S2DSR	ENETB-ACT	
10	TRK0-	WP-	RDATA-	HDSEL-	DSKCHG-	
9	MTR1-	DIR-	STEP-	WDATA-	WGATE-	
8	DENSL	INDEX-	MTR0-	DR1-	DR0-	
7	CS1S-	CS3S-	DA1	RPELED	RPEJECT-	
6	PWRGD	SPKR	NMI-	DA0	DA2	
5	DDRQ	IORDY	DI0W-	DDACK	DIOR-	
4	DD14	DD0	IDE_ACT	DD15	DRV_IRQ	
3	DD3	DD12	DD2	DD13	DD1	
2	DD9	DD5	DD10	DD4	DD11	
1	PBRST-	DRST-	DD7	DD8	DD6	
Pin	A	B	C	D	E	F

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Internal Connectors

J6 (Speaker Connector)

J6 is an internal (not available on the faceplate) 2-pin connector (Molex 39-27-0021) for connection to an optional PC speaker. The mating connector is a Molex 39-01-0023 or equivalent. The mating connector also requires two Molex 39-01-0031 terminals or equivalent. If you experience difficulty locating parts information from the Molex Web site (www.molex.com), contact your Molex sales representative at 1-800-78MOLEX. See Table 5-3 for pin definitions and Figure 5-1, “Connector Locations,” on page 31 to identify J6 on the RTM4807.

Table 5-3: J6 Speaker Connector Pinout

Pin	Function
1	SPK1
2	SPK2

J8, J9 (Floppy Drive/IDE Power Connectors)

J8 and J9 are internal (not available on the faceplate), four position, female power connectors (AMP 174552-1) with +5V, GND, and +12V pins. Power can be supplied to input power connector J8 from an appropriate external power source supplying +5V, GND, and +12V. Output power connector J9 can then supply power to an external device such as a floppy drive or IDE device. See the topic “Cables” on page 38 for more information.

Caution:
If power is supplied to J8 from the host processor board and the device connected to J8 draws more power than the host processor board can provide, a power fault or other problems may occur.

See Table 5-4 for pin definitions and Figure 5-1, “Connector Locations,” on page 31 to identify J8 and J9 on the RTM4807.

Table 5-4: J8/J9 Power Connector Pinout

Pin	Function
1	+12V
2	Ground
3	Ground
4	+5V

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J10 (Floppy Drive Cable Connector)

J10 is an internal (not available on the faceplate) 34-pin connector (AMP 104340-7) providing a ribbon cable interface for the processor board's floppy drive signals. See Table 5-5 for pin definitions and Figure 5-1, “Connector Locations,” on page 31to identify J10 on the RTM4807.

Table 5-5: J10 Floppy Drive Cable Connector Pinout

Pin	Function	Pin	Function
1	Ground	2	DENSL
3	Ground	4	N/C
5	Ground	6	N/C
7	Ground	8	INDEX-
9	Ground	10	MTR0-
11	Ground	12	DR1-
13	Ground	14	DR0-
15	Ground	16	MTR1-
17	Ground	18	DIR-
19	Ground	20	STEP-
21	Ground	22	WDATA-
23	Ground	24	WGATE-
25	Ground	26	TRK0-
27	Ground	28	WP-
29	Ground	30	RDATA-
31	Ground	32	HDSEL-
33	Ground	34	DSKCHG-

J12 (CompactFlash Connector)

J12 is a 50-pin, surface mount, right angle, CF card slot header (AMP 788667-1) designed to accommodate a CompactFlash card. Refer to the CompactFlash Specification, Revision 1.X, for pinout and device information. For a copy of the most current specification and more information about CompactFlash, visit the CompactFlash Association's Web site at:

http://www.compactflash.org/.

Refer to Figure 5-1, “Connector Locations,” on page 31 to identify J12 on the RTM4807.

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J11 (EIDE Connector)

J11 is an internal (not on the faceplate), 40-pin, male, unshrouded, 0.25" square posts on 0.1" 2 x 20 grid connector (T&B 609-4027). J11 provides access to the processor board's secondary EIDE channel. The secondary channel is connected from J5 (Rear-Panel User I/O Connector) to the internal IDE connector J11 and J12 (CompactFlash Connector). See Table 5-6 for pin definitions and Figure 5-1, “Connector Locations,” on page 31 to identify J11 on the RTM4807.

Table 5-6: J11 EIDE Connector Pinout

Pin	Function	Pin	Function
1	Reset IDE#	2	Ground
3	Data 7	4	Data 8
5	Data 6	6	Data 9
7	Data 5	8	Data 10
9	Data 4	10	Data 11
11	Data 3	12	Data 12
13	Data 2	14	Data 13
15	Data 1	16	Data 14
17	Data 0	18	Data 15
19	Ground	20	N/C
21	DDRQ	22	Ground
23	DIOW#	24	Ground
25	DIOR#	26	Ground
27	DRDY	28	CSEL (Cable Select pull-down)
29	DDAK#	30	Ground
31	IRQ 14	32	Reserved
33	IDE_A1	34	Reserved
35	IDE_A0	36	IDE_A2
37	IDE_CS1#	38	IDE_CS3#
39	IDE_ACT#	40	Ground

Faceplate Connectors

J13/J14 (Universal Serial Bus Connectors)

J13 and J14 are the rear-panel interface (AMP 440260-1) for the processor board's USB Ports 0 and 1, respectively. J13 and J14 can be used simultaneously with the USB connectors on the processor board's faceplate. See Table 5-7 for pin definitions and Figure 5-1, “Connector Locations,” on page 31 to identify J13 and J14 on the RTM4807 faceplate.

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Table 5-7: J13/J14 Universal Serial Bus Connector Pinout

Pin	Function
1	+5V (Fused)
2	DATA-
3	DATA+
4	Ground

J15 (Keyboard/Mouse Connector)

J15 is a 6-pin DINN connector (AMP 749180-1) for standard PS/2 style keyboard and Mouse devices. See Table 5-8 for pin definitions and Figure 5-1, “Connector Locations,” on page 31 to identify J15 on the RTM4807 faceplate.

Table 5-8: J15 Keyboard/Mouse Connector Pinout

Pin	Function
1	Keyboard Data
2	Mouse Data
3	Ground
4	Switched +5V
5	Keyboard Clock
6	Mouse Clock

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J16 and J17 (COM1/COM2 Connectors)

J16 (COM1) and J17 (COM2) are 9-pin D-shell connectors (AMP 179952-3) providing an interface to the processor board's COM channels. See Table 5-9 for pin definitions and Figure 5-1, “Connector Locations,” on page 31 to identify J16 and J17 on the RTM4807 faceplate.

Table 5-9: J16/J17 COM1/COM2 Connectors Pinout

Pin	Function
1	Data Carrier Detect
2	Received Data
3	Transmitted Data
4	DTE (Data Terminal) Ready
5	Signal Ground

Pin	Function
6	DCE (Data Set) Ready
7	Request to Send
8	Clear to Send
9	Ring Indicator

J18 and J20 (Ethernet Connectors)

J18 and J20 are RJ-45 connectors (AMP 569564-1) providing Gigabit protocols. J20 is Ethernet Channel A and J18 is Ethernet Channel B. Two LEDs are located inside each RJ-45 connector: yellow indicates link; green indicates activity. See Table 5-10 for pin definitions and Figure 5-1, “Connector Locations,” on page 31 to identify J18 and J20 on the RTM4807 faceplate.

Note: *J18 and J20 are not functional on standard product.*

Table 5-10: J18/J20 Ethernet Connector Pinout

Pin	Function
1	TX+ (GB1+, Gigabit)
2	TX- (GB1-, Gigabit)
3	RX+ (GB2+, Gigabit)
4	GB3+ (Gigabit)
5	GB3- (Gigabit)
6	RX- (GB2-, Gigabit)
7	GB4+ (Gigabit)
8	GB4- (Gigabit)

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J19 (VGA Interface Connector)

J19 is an HD15, 15-pin, female, D-shell connector (AMP 177514-9) providing a rear-panel interface for the processor board's video adapter. See Table 5-11 for pin definitions and Figure 5-1, “Connector Locations,” on page 31 to identify J19 on the RTM4809 faceplate.

Table 5-11: J19 VGA Interface Connector Pinout

Pin	Function
1	RED
2	GRN
3	BLUE
4	N/C
5	DGND
6	RGND
7	GGND
8	BGND
9	VCC
10	SGND
11	N/C
12	SDA
13	HSYNC
14	VSYNC
15	SCL

Cables

Performance Technologies recommends the following cables for interfacing to the RTM4807.

IDE

For proper operation, Performance Technologies recommends 80-conductor IDE cables for external IDE connection. If the external IDE device is configured in a master/slave combination with an on-board IDE device (CompactFlash or processor board mounted hard disk) a custom 80-conductor IDE cable must be used. Industry standard 80-conductor IDE cables do not connect PDIAG to the host connector. This causes BIOS drive detection and configuration errors when a master/slave pair exists across the interface.

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Floppy/IDE Power

An IDE/floppy drive power cable is shipped with the RTM4807. This is a 20" Y cable with a 4-pin female D-shell power connector wired to a 4-pin female mini-plug power connector and a second 4-pin female D-shell power connector. Use this cable to connect from RTM4807 output power connector J9 to a floppy drive power input connector and/or an IDE device power input connector. See “J8, J9 (Floppy Drive/IDE Power Connectors)” on page 33.

PS/2 Keyboard/Mouse

Using RTM4807 connector J15 (Keyboard/Mouse Connector) for both PS/2 keyboard and PS/2 mouse connection requires use of a PC keyboard/mouse Y splitter cable, such as the IBM ThinkPad Laptop Y Cable. This cable (P/N BC00210) may be obtained from Black Box Corporation. Contact Black Box at (724) 746-5500, or visit their Web site at http://www.blackbox.com.

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Chapter

6

Specifications

This chapter describes the electrical, environmental, and mechanical specifications of the RTM4807. It also includes an illustration of the board dimensions.

Electrical Specifications

Power Requirements	Minimum	Typical	Maximum
Supply Voltage, VCC	4.75V	5.00V	5.25V
Supply Current, VCC = 5.0V	0mA	--	195mA

Environmental Specifications

Operating Temperature: 0° to +70° Celsius

Storage Temperature: -40° to +85° Celsius

Relative Humidity: < 95% at 40° Celsius, non-condensing

Mechanical Specifications

The topics listed below provide the following mechanical specifications:

- Board Dimensions and Weight
- Connectors

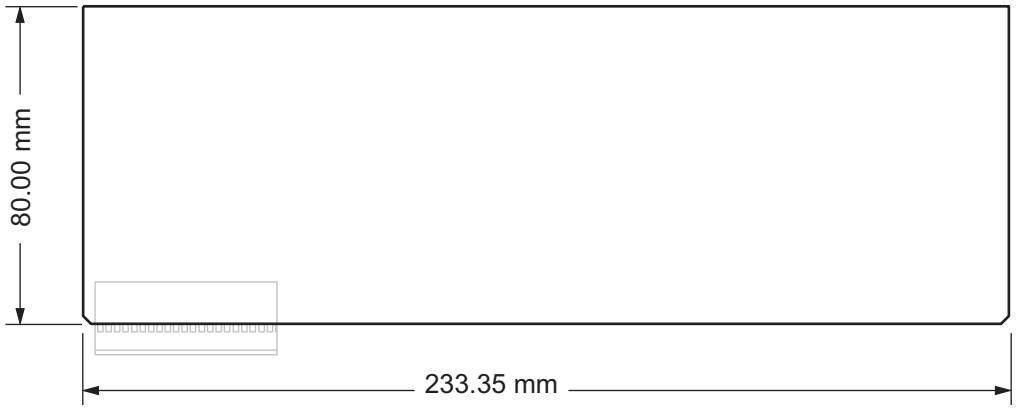
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Board Dimensions and Weight

Mechanical dimensions for the RTM4807 are shown in Figure 6-1 and outlined below.

Board Length:	80mm (3.2 in)
Board Width:	233.35mm (9.2 in)
Board Thickness:	1.6mm (0.063 in)
Board Weight:	202 g (7.13 oz.)

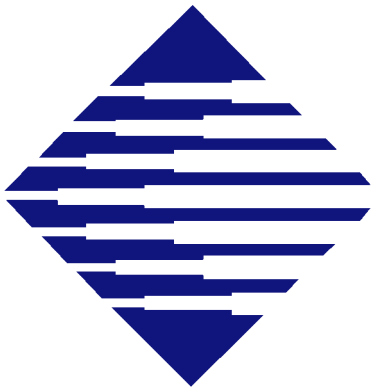
Figure 6-1: Board Dimensions



Connectors

The RTM4807 includes several connectors to interface with application-specific devices. A detailed description and pinout for each connector is given in Chapter 5, “Connectivity.”

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Chapter

7

Agency Approvals

CE Certification

The RTM4807 meets intent of Directive 89/336/EEC for Electromagnetic Compatibility and Low-Voltage Directive 73/23/EEC for Product Safety. The RTM4807 has been designed for NEBS/ETSI compliance.

Safety

UL/cUL 60950	Safety for Information Technology Equipment
	(UL File # E179737)
EN/IEC 60950	Safety for Information Technology Equipment
CB Report Scheme	CB certificate and Report

Emissions Test Regulations

FCC Part 15, Subpart B

EN 55022

CISPR 22

Bellcore GR-1089

EN 50081-1 Emissions

GR-1089-CORE	Sections 2 and 3

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EN 55022	Class A Radiated
EN 55022	Power Line Conducted Emissions
EN 61000-3-2	Power Line Harmonic Emissions
EN 61000-3-3	Power line Fluctuation and Flicker

EN 55024 Immunity

GR-1089-CORE	Sections 2 and 3
EN 61000 4-2	Electro-Static Discharge (ESD)
EN 61000 4-3	Radiated Susceptibility
EN 61000 4-4	Electrical Fast Transient Burst
EN 61000 4-5	Power Line Surge
EN 61000 4-6	Frequency Magnetic Fields
EN 61000 4-11	Voltage dips, Variations, and Short Interruptions

Regulatory Information

FCC (USA)

This product has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This product generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Note: *This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:*

1. *This device may not cause harmful interference.*
2. *This device must accept any interference received, including interference that may cause undesired operation.*

Caution:
If you make any modification to the equipment not expressly approved by Performance Technologies, you could void your authority to operate the equipment.

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Industry Canada (Canada)

Cet appareil numérique respecte les limites bruits radioélectriques applicables aux appareils numériques de Classe A prescrites dans la norme sur le matériel brouilleur: “Appareils Numériques”, NMB 003 édictée par le Ministre Canadien des Communications.

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the interference-causing equipment standard entitled: “Digital Apparatus,” ICES 003 of the Canadian Department of Communications.

Product Safety Information

Safety Precautions

Review the following precautions to avoid injury and prevent damage to this product, or any products to which it is connected. To avoid potential hazards, use the product only as specified.

Read all safety information provided in the component product user manuals and understand the precautions associated with safety symbols, written warnings, and cautions before accessing parts or locations within the unit. Save this document for future reference.



Caution:
To Avoid Electric Overload: To avoid electrical hazards (heat, shock and/or fire hazard), do not make connections to terminals outside the range specified for that terminal. See the product user manual for correct connections.



Caution:
To Avoid the Risk of Electric Shock: When supplying power to the system, always make connections to a grounded main. Always use a power cable with a grounded plug (third grounding pin). Do not operate in wet, damp, or condensing conditions.



Caution:
System Airflow Requirements: Platform components such as processor boards, Ethernet switches, etc., are designed to operate with external airflow. Components can be destroyed if they are operated without external airflow. Chassis fans normally provide external airflow when components are installed in compatible chassis. Filler panels must be installed over unused chassis slots so that airflow requirements are met. Please refer to the product data sheet for airflow requirements if you are installing components in custom chassis.



Caution:
Do Not Operate Without Covers: To avoid electric shock or fire hazard, do not operate this product with any removed enclosure covers or panels.



Caution:
To Avoid the Risk of Electric Shock: Do not operate in wet, damp, or condensing conditions.

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Caution:
Do Not Operate in an Explosive Atmosphere: To avoid injury, fire hazard, or explosion, do not operate this product in an explosive atmosphere.

Caution:
If Your System Has Multiple Power Supply Sources: Disconnect all external power connections before servicing.

Warning:
Power Supplies Must Be Replaced by Qualified Service Personnel Only.

Compliance with RoHS and WEEE Directives

In February 2003, the European Union issued *Directive 2002/95/EC* regarding the Restriction of the use of certain Hazardous Substances in electrical and electronic equipment (RoHS) and *Directive 2002/96/EC* on Waste Electrical and Electronic Equipment (WEEE).

This product is compliant with *Directive 2002/95/EC*. It may also fall under the *Directive 2002/96/EC*.

Performance Technologies' complete position statements on the RoHS and WEEE Directives can be viewed on the Web at: http://pt.com/assets/lib/files/pdfs/rohs/policies/rohs-weee-statement.pdf.

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