



Intel® NetStructure™ MPRTM4808 Rear Transition Board

Installation Guide

December 2004

Order Number: 301370-002



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Contents

1	Using This Guide	6
1.1	Terms and Definitions	6
1.2	Other Sources of Information	6
2	Operating Safety	7
2.1	Electromagnetic Compatibility (EMC)	7
2.2	Switch Settings	7
2.3	Installation	8
2.4	Operation	8
2.5	Replacement/Expansion	8
2.6	RJ-45 Connector	9
2.7	Environment	9
3	Installation	10
3.1	Introduction	10
3.2	Standard Compliances	11
3.3	On-Board Connectors	11
3.3.1	Secondary EIDE Interface	12
3.3.2	Floppy Disk Drive	14
3.3.3	Intelligent Peripheral Management Bus (IPMB)	14
3.3.4	PMC I/O Signals	15
3.4	Switch Settings	17
3.5	Installing and Removing the Board	17
3.5.1	Installation Procedure	18
3.5.2	Removal Procedure	19
3.6	CompactPCI Connectors	19
3.7	Front Panel Connectors and Controls	22
3.7.1	ICMB Connector	23
3.7.2	PS/2 Keyboard or Mouse	23
3.7.3	Serial Connectors	24
3.7.4	Reset Key	25
4	Agency Approvals	26
4.1	CE Certification	26
4.2	Safety Certifications	26
4.3	Emissions Test Regulations	26
4.3.1	EN 50081-1 Emissions	26
4.3.2	EN 55024 Immunity	27
4.4	Regulatory Information	27
4.4.1	FCC (USA)	27
4.4.2	Industry Canada (Canada)	27
4.5	Product Safety Information	28
4.5.1	Safety Precautions	28
4.6	AC and/or DC Power Safety Warning (AC and/or DC Powered Units)	29
4.7	Rack Mount Enclosure Safety	29

5	Warranty Information	30
5.1	Intel® NetStructure™ Compute Boards & Platform Products Limited Warranty	30
5.1.1	Returning a Defective Product (RMA)	30
6	Customer Support	33
6.1	Technical Support and Return for Service Assistance	33
6.2	Sales Assistance	33

Figures

1	Location of IPMB1 and ICMB Connectors	10
2	On-Board Connectors	11
3	EIDE Connector Pinout	12
4	Location of CompactFlash Slot	13
5	Inserting a CompactFlash Disk into Socket	13
6	Floppy Connector Pinout	14
7	IPMB1 Connector Pinout	14
8	PMC 1 Connector Pinout	15
9	PMC 2 Connector Pinout	16
10	Location of Switches	17
11	Connecting Intel® NetStructure™ MPRTM4808 Rear Transition Board to Backplane	18
12	J3 Connector Pinout (Rows A-C)	19
13	J3 Connector Pinout (Rows D and E)	20
14	J5 Connector Pinout (Rows A-C)	20
15	J5 Connector Pinout (Rows D and E)	21
16	Front Panel Connectors and Controls	22
17	ICMB Connector Pinout	23
18	PS/2 Keyboard/Mouse Connector Pinout	23
19	USB Connector Pinout	24
20	COM Connector Pinout	24
21	DB9 to RJ-45 Translation	25
22	Reset Key	25

Tables

1	Terms and Definitions	6
2	Standard Compliances	11
3	Switch Settings	17

Revision History

Date	Revision	Description
May 2004	001	Initial release of this manual
December 2004	002	Modified Serial Connectors information

Using This Guide

1

The Intel® NetStructure™ MPRTM4808 Rear Transition Board Installation Guide is intended for users qualified in electronics or electrical engineering. Users should have a working understanding of PCI, CompactPCI, and telecommunications.

1.1 Terms and Definitions

Table 1. Terms and Definitions

Abbreviation	Description
EMI	Electromagnetic Interference
GPO	General Purpose
ICMB	Intelligent Chassis Management Bus
IPMB	Intelligent Peripheral Management Bus
SCSI	Small Computer System Interface
RTB	Rear Transition Board
IPMI	Intelligent Platform Management Interface
SELV	Safety Extra Low Voltages

1.2 Other Sources of Information

For further information, refer to the Intel® NetStructure™ MPRTM4808 Rear Transition Board User's Manual, Order number 301070.

Operating Safety

2

This section provides safety precautions to follow when installing, operating, and maintaining the Intel® NetStructure™ MPRTM4808 Rear Transition Board.

Intel intends to provide all necessary information to install and handle the Intel MPRTM4808 board in this Installation Guide. However, as the product is complex and its usage manifold, Intel does not guarantee that the given information is complete. For additional information, contact your Intel representative.

The Intel MPRTM4808 board has been designed to meet standard industrial safety requirements. It must be used only in the area of office telecommunication and industrial control.

Only personnel trained by Intel or persons qualified in electronics or electrical engineering are authorized to install, maintain, and operate the Intel MPRTM4808 board. The information given in this manual is meant to complete the knowledge of a specialist and must not be taken as replacement for qualified personnel.

2.1 Electromagnetic Compatibility (EMC)

The Intel MPRTM4808 board has been tested in a standard system and found to comply with the limits for a Class A digital device in this system, pursuant to part 15 of the FCC Rules respectively EN 55022 Class A. These limits are designed to provide reasonable protection against harmful interference when the system is operated in a commercial, business or industrial environment.

The board generates and uses radio frequency energy and, if not installed properly and used in accordance with this Installation Guide, may cause harmful interference to radio communications. Operating the system 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.

If boards are integrated into open systems, always cover empty slots.

2.2 Switch Settings

The board provides two onboard switches and one FP reset switch. The switches must be set to OFF upon initial installation of the board. Refer to [Section 3.4, “Switch Settings” on page 17](#) for additional configurations.

2.3 Installation

Electrostatic discharge and incorrect board installation and removal can damage circuits or shorten their life. Therefore:

- Make sure that you are working in an ESD-safe environment before touching boards or electronic components.
- When plugging in or removing the board, do not press or pull on the front panel; use the handles.
- Before installing or removing an additional device or module, read the device's documentation.
- Make sure that the **board** is connected to the CompactPCI backplane via all assembled connectors and that power is available on all power pins.
- Only install and use the rear transition module with CPU boards especially designed for it. Otherwise, both the CPU board and the rear transition module may be damaged.
- Make sure to use only the backplane's rear slot position.

2.4 Operation

When operating the Intel MPRTM4808 board in areas of electromagnetic radiation, ensure that the board is bolted on the CompactPCI system and the system is shielded by enclosure.

Make sure that the board's contacts and cables cannot be touched while the board is operating.

Do not operate the board outside the specified environmental limits. High humidity and condensation may cause short circuits. Make sure the product is completely dry and there is no moisture on any surface before applying power. Do not operate the product below 0°C.

2.5 Replacement/Expansion

Only replace or expand components or system parts with those recommended by Intel. Otherwise, you are fully responsible for the impact on EMC or any possible malfunction of the product.

Check the total power consumption of all components installed and ensure that any individual output current of any source stays within its acceptable limits. (See the technical specification of the respective source.)

If more than two IDE devices are connected to the IDE bus, the bus is not able to recognize all of the devices and the Intel MPRTM4808 board might not start correctly. Therefore, only connect up to two devices to the secondary EIDE interface on the RTB.

If the secondary EIDE interface on the Intel MPRTM4808 board is connected to an external device, data may get lost. Therefore, always save data on disk before installing or removing the baseboard under hot-swap conditions.

2.6 RJ-45 Connector

The Intel MPRTM4808 board provides several RJ-45 connectors that commonly serve as different interfaces (RS-485, twisted-pair Ethernet, and telephone). Connecting different interfaces (e.g., Ethernet and RS-485) may damage the board. Therefore, make sure that you only connect matching interfaces. Furthermore, take note of the following:

- Clearly mark TPE connectors near your working area as network connectors.
- Connect TPE bushing of the system to safety extra low voltage (SELV) circuits only.
- Make sure that the electric cable connected to a TPE bushing does not exceed 100 meters.

2.7 Environment

Always dispose of used batteries and/or old boards according to your country's legislation and in an environmentally acceptable way.

Installation

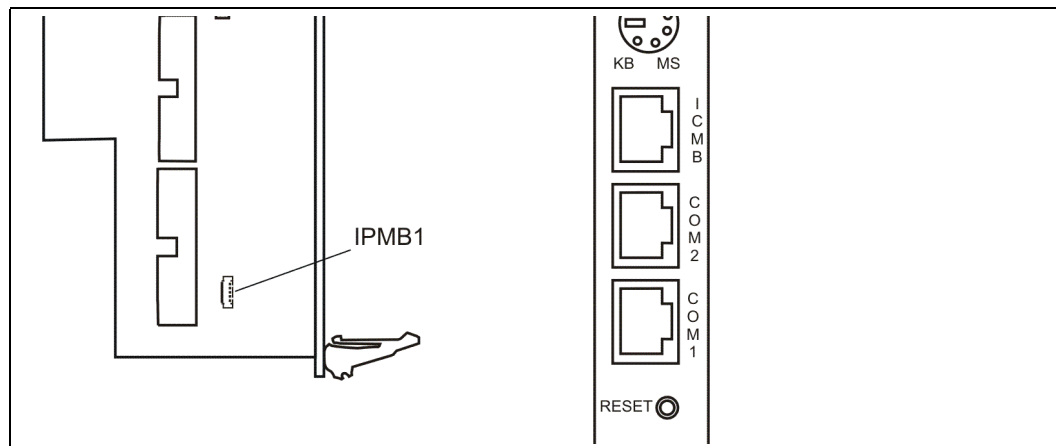
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3.1 Introduction

The Intel® NetStructure™ MPRTM4808 Rear Transition Board provides easy access to I/O signals of boards via the CompactPCI backplane.

Backplane I/O signals are available at connector J5. To connect System Management Bus 1 and the Chassis Management Bus to the board, the Intel MPRTM4808 board provides the Intelligent Platform Management Bus 1 (IPMB1) and Intelligent Chassis Management Bus (ICMB) connectors.

Figure 1. Location of IPMB1 and ICMB Connectors



Check that the items listed were shipped together with the accessory kit:

- Intel® NetStructure™ MPRTM4808 Rear Transition Board
- Installation Guide

If delivered as part of a system design, the Intel MPRTM4808 board is already installed in the system. For information on system connectors available for user-defined system configuration, refer to the respective system's guide. The cabling of all other connectors of the Intel MPRTM4808 board must remain as configured at system delivery.

3.2 Standard Compliances

The Intel MPRTM4808 board meets the following standards:

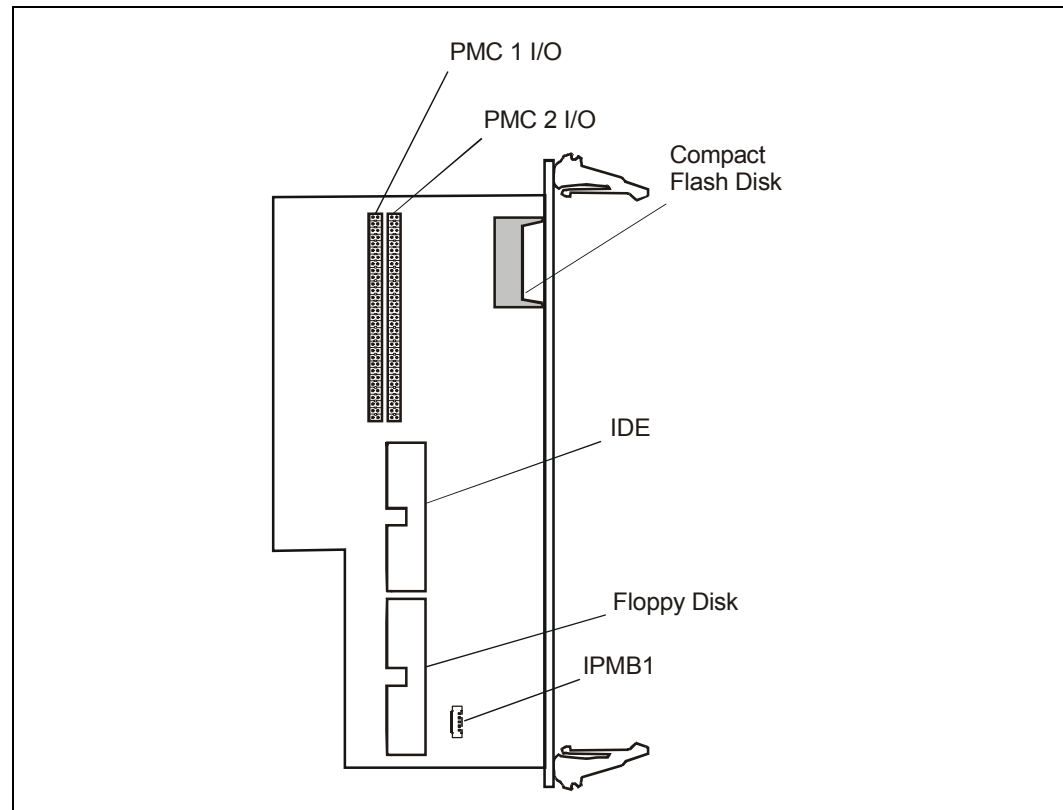
Table 2. Standard Compliances

Standard	Description
EN 60950 UL/cUL 1950	Legal safety requirements
EN 55022 EN 55024 EN 61000-6-2 FCC Part 15 Class A	EMC requirements on system level
ANSI/IPC-A-610 Rev.C Class 2 ANSI/IPC-7711 ANSI/IPC-7721 ANSI-J-001...003	Manufacturing standards

3.3 On-Board Connectors

The Intel MPRTM4808 board provides the following on-board connectors:

Figure 2. On-Board Connectors



3.3.1 Secondary EIDE Interface

The Intel MPRTM4808 board provides the secondary EIDE interface via CompactPCI connector J5. The secondary EIDE interface can be used for:

- One EIDE device
- Two EIDE devices
- One EIDE device and one CompactFlash disk

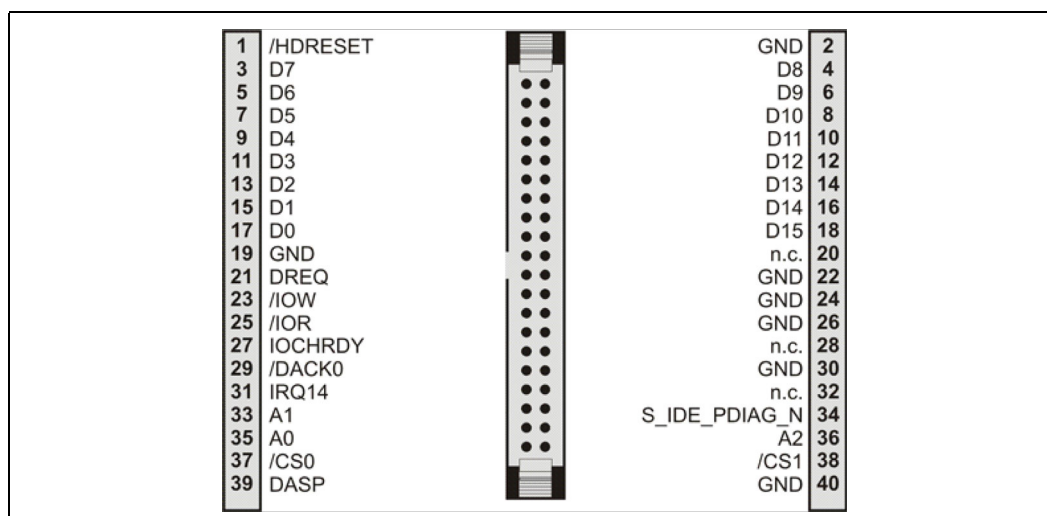
Caution:

- If more than two IDE devices are connected to the IDE bus, the bus is unable to recognize all of the devices, and the baseboard might not start correctly. Therefore, only connect up to two devices to the secondary EIDE interface on the Intel MPRTM4808 board.
- If the secondary EIDE interface on the Intel MPRTM4808 board is connected to an external device, the board is hot-swappable, but data may get lost. Therefore, always save data on disk before installing or removing the baseboard under hot-swap conditions.

3.3.1.1 Hard-Disk Drives

Hard-disk drives are connected to the secondary EIDE interface via an EIDE connector. It is implemented with a 40-pin 2.54-mm pin-pitch connector. The following connector pinout shows how the pins are assigned.

Figure 3. EIDE Connector Pinout



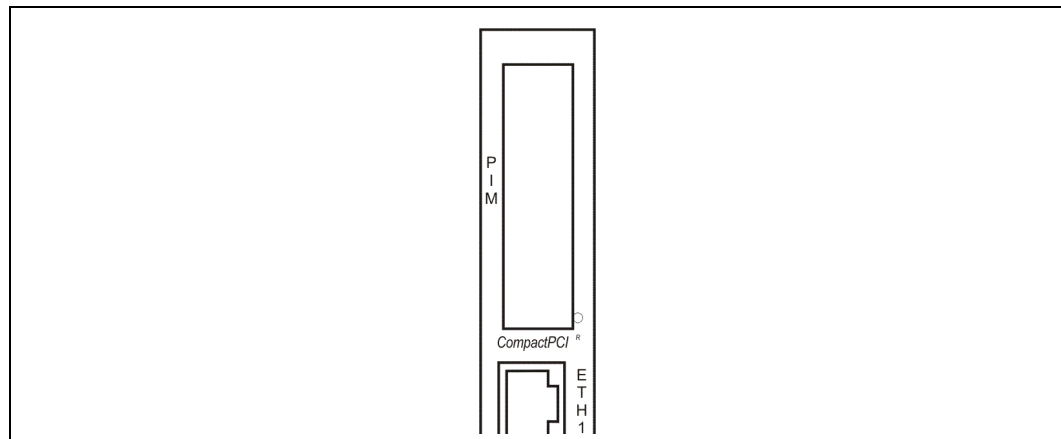
3.3.1.2 CompactFlash Disk

CompactFlash is slave by default. If used, it should be configured as master; set SW3-1 to ON.

The flash disk is connected to the secondary EIDE interface via a flash disk holder with an ejector at the front panel.

The CompactFlash slot is integrated into the front panel to allow installation and/or removal of a CompactFlash card without having to remove the board from the system.

Figure 4. Location of CompactFlash Slot



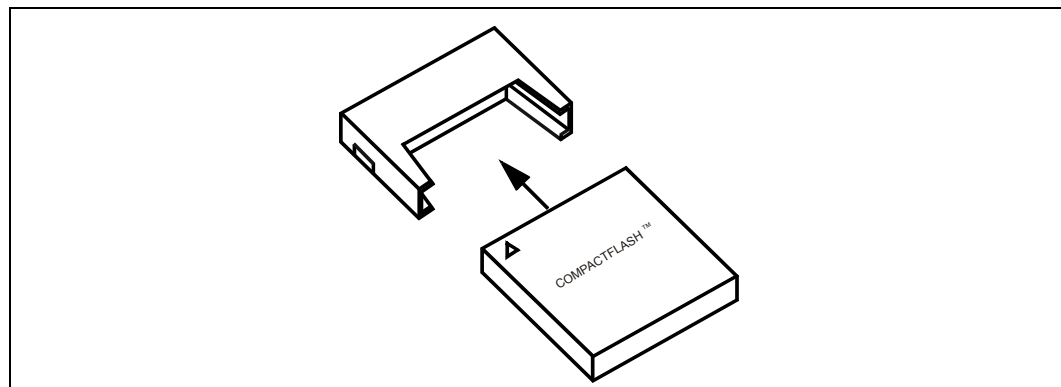
Note: CompactFlash disks of types I and II are supported.

3.3.1.3 Installation Procedure

Note: To configure the card to the supported true-IDE mode, the card must already be inserted when the board's power is turned on. Inserting the CompactFlash while the board's power is still on will configure the CompactFlash disk to PC Card ATA mode, which is not supported by the CPU board. If you have inserted the card while the board's power has been turned on, remove the card and reinsert it with the board's power turned off.

1. Consult system documentation and perform any steps required before turning off CPU power.
2. Turn off CPU power.
3. Check that disk's connectors face CompactFlash socket.
4. Plug the CompactFlash disk into socket. The CompactFlash disk is connected to the socket if the ejector pin on the front panel is pushed out of the recess.

Figure 5. Inserting a CompactFlash Disk into Socket



5. Turn on CPU power.

3.3.1.4 Removal Procedure

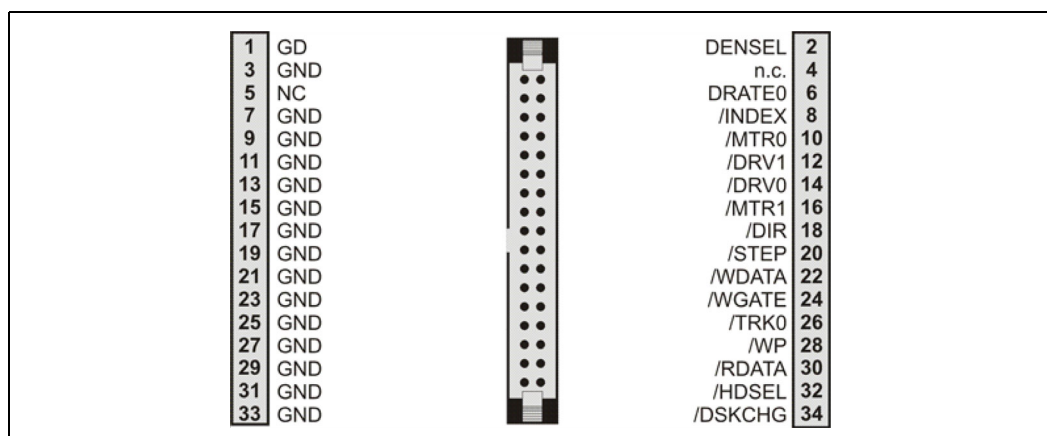
1. Turn off CPU power.
2. Press ejector pin. The ejector pin loosens the CompactFlash disk from the socket.
3. Remove CompactFlash disk from Intel MPRTM4808 board.
4. Turn on CPU power.

3.3.2 Floppy Disk Drive

Note: The board is not hot-swappable if a floppy disk drive is connected to the Intel MPRTM4808 board.

The floppy disk drive connector is a 34-pin 2.54-mm pin-pitch connector. The following connector pinout shows how the pins are assigned.

Figure 6. Floppy Connector Pinout



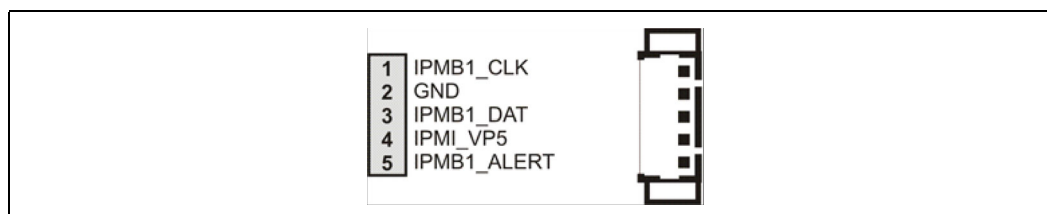
3.3.3 Intelligent Peripheral Management Bus (IPMB)

The Intelligent Peripheral Management Bus 1 (IPMB1) can be used to connect, control and monitor critical components such as power supply units, fans etc. It provides information on the system inventory, temperature, voltage level, etc.

IPMB1 is routed to CompactPCI connector J5. In addition, the Intel MPRTM4808 board provides the IPMB1 connector to attach the system management bus via J5. In accordance with PICMG Specification 2.9, the board uses a Molex 53398-0590 connector.

The following connector pinout shows how the pins are assigned.

Figure 7. IPMB1 Connector Pinout



3.3.4 PMC I/O Signals

The I/O signals of PMC Slots 1 and 2 of the CPU board are routed to two 64-pin connectors. [Figure 8](#) and [Figure 9](#) show the pinouts.

Figure 8. PMC 1 Connector Pinout

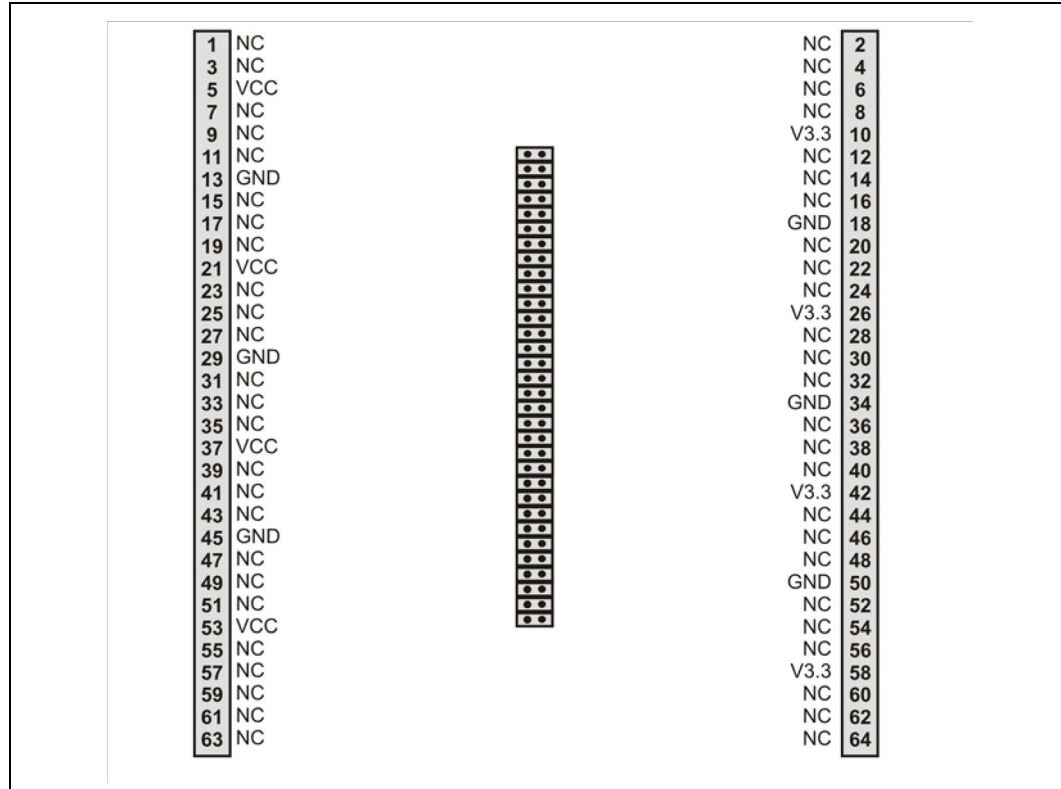
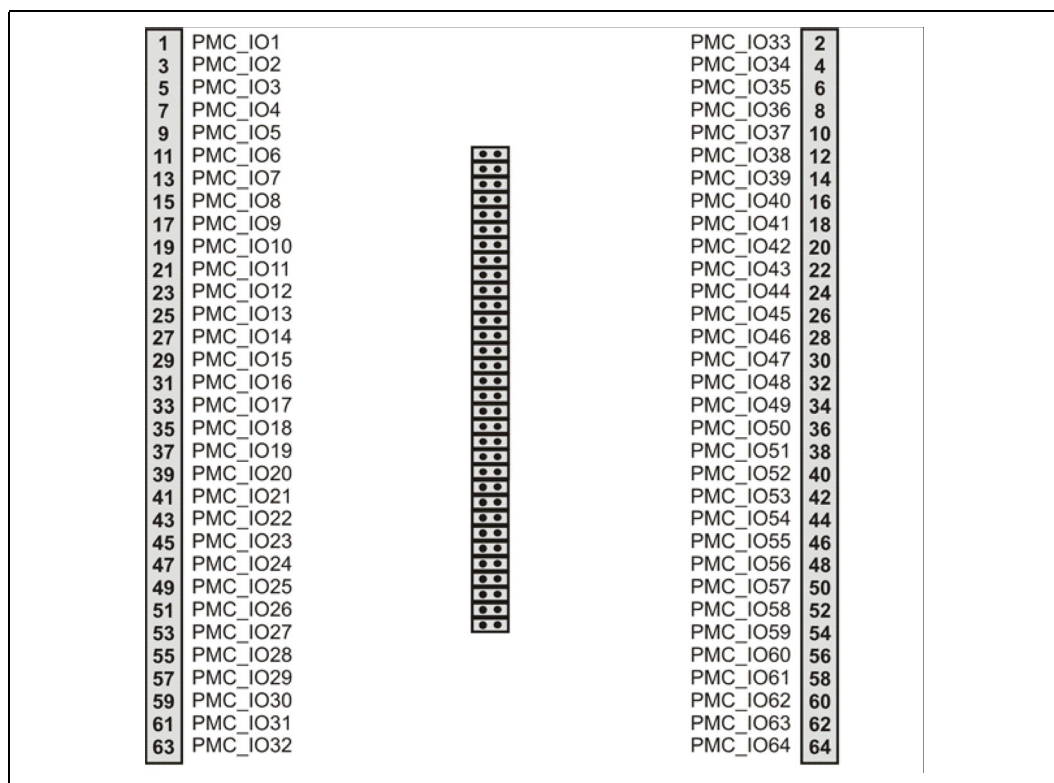


Figure 9. PMC 2 Connector Pinout



3.4 Switch Settings

Caution: The Intel MPRTM4808 board provides two on-board switches and one FP reset switch. The switches must be set to OFF to avoid damage to attached PMC modules.

Figure 10. Location of Switches

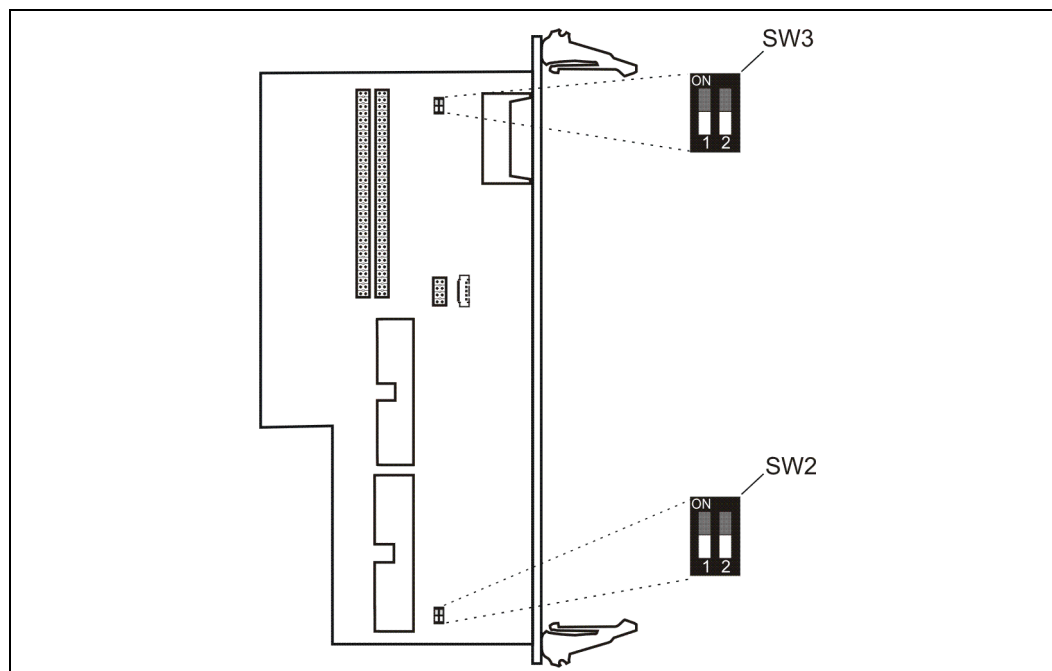


Table 3. Switch Settings

Switch	No.	Description
SW2 	1	ON: Reset disabled OFF: RESET enabled(default)
	2	Reserved, must be OFF (default)
SW3 	1	ON: Flash disk is master OFF: Flash disk is slave (default)
	2	Reserved, must be OFF (default)

3.5 Installing and Removing the Board

Caution:

- To prevent board damage, install and use the Intel MPRTM4808 board only with CPU boards especially designed for it.
- Always turn off system power before installation or removal of the Intel MPRTM4808 board.
- Use only the backplane's rear slot position.

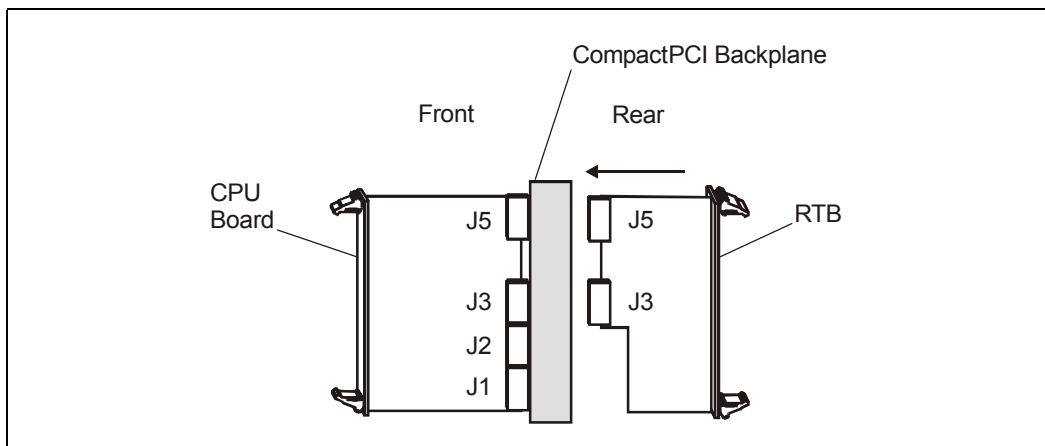
- Before touching integrated circuits, make sure that you are working in an ESD-safe environment.
- When plugging the board in or removing it, use the handles; do not press on the front panel.

3.5.1 Installation Procedure

Note: Connect interface cables to the on-board connectors first, since it may be difficult to reach them when the Intel MPRTM4808 board is already installed into the CompactPCI backplane. Connect interface cables to the front panel connectors after installing the Intel MPRTM4808 board.

1. Check all installed boards for steps to perform before turning off system power.
2. Turn off system power.
3. Check system documentation for switch settings.
4. The Intel MPRTM4808 board provides two on-board switches and one FP reset switch. Make sure that switches are set to OFF (default position)
5. Connect interface cables to on-board connectors.
6. Insert the Intel MPRTM4808 board carefully from rear into same slot as the CPU board, making sure not to bend any pins.

Figure 11. Connecting Intel® NetStructure™ MPRTM4808 Rear Transition Board to Backplane



7. Press handles inward to lock Intel MPRTM4808 board on CompactPCI rack.
8. Fasten Intel MPRTM4808 board with screws.
9. Plug interface cables into front panel connectors, if applicable (see [Section 3.7, “Front Panel Connectors and Controls”](#) on page 22).
10. Turn on system power.

3.5.2 Removal Procedure

1. Check all installed boards for steps to perform before turning off power.
2. Turn off system power.
3. Unfasten screws of front panel until Intel MPRTM4808 board is detached from rack frame.
4. Unlock handles by pressing on red handle buttons.
5. Press handles outward to disconnect the Intel MPRTM4808 board from backplane.
6. Carefully remove Intel MPRTM4808 board from slot, making sure not to bend any pins.
7. Turn on system power.

3.6 CompactPCI Connectors

The Intel MPRTM4808 board provides CompactPCI connectors J3, J4 and J5. The connector pinouts in [Figure 12](#) through [Figure 15](#) show how the pins are assigned.

Figure 12. J3 Connector Pinout (Rows A-C)

A		AB CDE	B C	
19	GND	□□□□	GND	GND
18	ETH_0_TXP/DA_P	□□□□	ETH_0_TXN/DA_N	GND
17	ETH_0_RXP/DB_P	□□□□	ETH_0_RXN/DB_N	GND
16	ETH_1_TXP/DA_P	□□□□	ETH_1_TXN/DA_N	GND
15	ETH_1_RXP/DB_P	□□□□	ETH_1_RXN/DB_N	GND
14	GND	□□□□	GND	GND
13	PMC_1_IO5	□□□□	PMC_1_IO4	PMC_1_IO3
12	PMC_1_IO10	□□□□	PMC_1_IO9	PMC_1_IO8
11	PMC_1_IO15	□□□□	PMC_1_IO14	PMC_1_IO13
10	PMC_1_IO20	□□□□	PMC_1_IO19	PMC_1_IO18
9	PMC_1_IO25	□□□□	PMC_1_IO24	PMC_1_IO23
8	PMC_1_IO30	□□□□	PMC_1_IO29	PMC_1_IO28
7	PMC_1_IO35	□□□□	PMC_1_IO34	PMC_1_IO33
6	PMC_1_IO40	□□□□	PMC_1_IO39	PMC_1_IO38
5	PMC_1_IO45	□□□□	PMC_1_IO44	PMC_1_IO43
4	PMC_1_IO50	□□□□	PMC_1_IO49	PMC_1_IO48
3	PMC_1_IO55	□□□□	PMC_1_IO54	PMC_1_IO53
2	PMC_1_IO60	□□□□	PMC_1_IO59	PMC_1_IO58
1	VP5_RTb	□□□□	PMC_1_IO64	PMC_1_IO63

Figure 13. J3 Connector Pinout (Rows D and E)

D		ABCDE	E	
19	GND	□□□□	GND	19
18	NC/ETH_0_DC_P	□□□□	NC/ETH_0_DC_N	18
17	NC/ETH_0_DD_P	□□□□	NC/ETH_0_DD_N	17
16	NC/ETH_1_DC_P	□□□□	NC/ETH_1_DC_N	16
15	NC/ETH_1_DD_P	□□□□	NC/ETH_1_DD_N	15
14	GND	□□□□	GND	14
13	PMC_1_IO2	□□□□	PMC_1_IO1	13
12	PMC_1_IO7	□□□□	PMC_1_IO6	12
11	PMC_1_IO12	□□□□	PMC_1_IO11	11
10	PMC_1_IO17	□□□□	PMC_1_IO16	10
9	PMC_1_IO22	□□□□	PMC_1_IO21	9
8	PMC_1_IO27	□□□□	PMC_1_IO26	8
7	PMC_1_IO32	□□□□	PMC_1_IO31	7
6	PMC_1_IO37	□□□□	PMC_1_IO36	6
5	PMC_1_IO42	□□□□	PMC_1_IO41	5
4	PMC_1_IO47	□□□□	PMC_1_IO46	4
3	PMC_1_IO52	□□□□	PMC_1_IO51	3
2	PMC_1_IO57	□□□□	PMC_1_IO56	2
1	PMC_1_IO62	□□□□	PMC_1_IO61	1

Figure 14. J5 Connector Pinout (Rows A-C)

A	ABCDE	B	C
22	NC	NC	NC
21	IPMB1_DAT	ICMB_RXD	NC
20	NC	NC	NC
19	IPMB1_CLK	ICMB_TXD	NC
18	NC	NC	NC
17	COM1_CTS	COM2_CTS	COM1_DTR
16	COM1_RTS	COM2_RTS	COM2_DTR
15	COM1_RXD	COM2_RXD	COM1_DCD
14	COM1_TXD	COM2_TXD	COM2_DCD
13	FD_DENSEL	FD_RDATA_N	FD_WDATA_N
12	FD_DSKCHG_N	FD_INDEX_N	FD_TRK0_N
11	FD_WP_N	FD_MTR1_N	FD_MTR0_N
10	RTB_DAT	RTB_CLK	VP5_RTb
9	IDE_BRSDR_N	IDE_IORDY	V2P5_ETHREF
8	IDE_A2	IDE_IOR_N	IDE_IOW_N
7	IDE_A1	IDE_D15	IDE_D14
6	IDE_A0	IDE_D11	IDE_D10
5	IDE_D7	IDE_D6	IDE_D5
4	IDE_D2	IDE_D1	IDE_D0
3	IDE_DASP_N	GND	GND
2	USB_VCC0	USB_P0_N	USB_P0_P
1	EXTSMI	VP5_RTb	V3P3_RTb

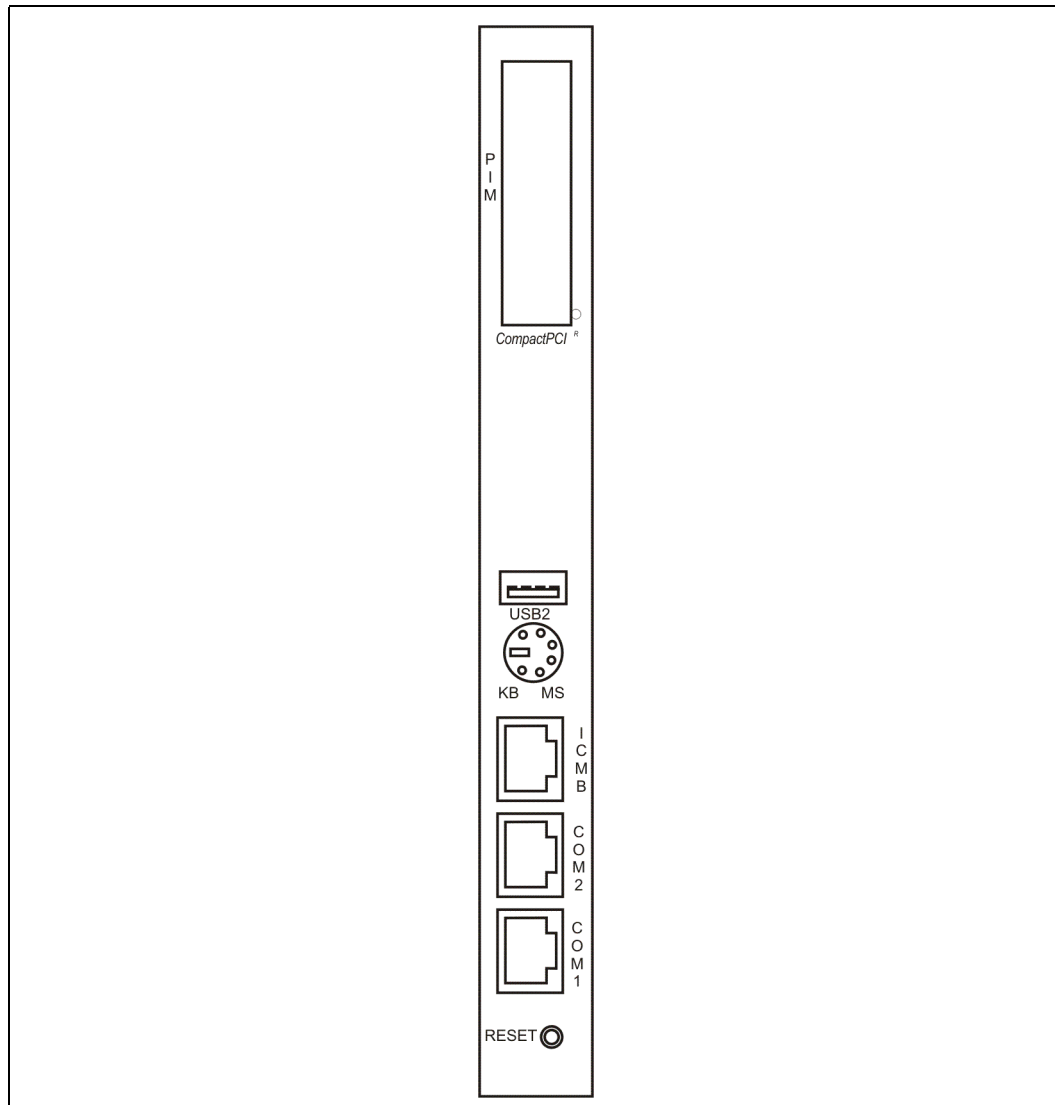
Figure 15. J5 Connector Pinout (Rows D and E)

D		A B C D E	E	
22	NC	□□□□□	NC	22
21	NC	□□□□□	ICMB_DE	21
20	NC	□□□□□	NC	20
19	NC	□□□□□	SMB_ALERT	19
18	NC	□□□□□	NC	18
17	COM1_DSR	□□□□□	KB_DAT	17
16	COM2_DSR	□□□□□	KB_CLK	16
15	COM1_RI	□□□□□	MS_DAT	15
14	COM2_RI	□□□□□	MS_CLK	14
13	FD_WGATE_N	□□□□□	FD_HDSEL_N	13
12	FD_STEP_N	□□□□□	FD_DIR_N	12
11	FD_DR1_N	□□□□□	FD_DR0_N	11
10	V3P3_RTb	□□□□□	FD_DRATE0	10
9	IDE_DREQ	□□□□□	IDE_DACK_N	9
8	IDE_CS1_N	□□□□□	IDE_CS0_N	8
7	IDE_D13	□□□□□	IDE_D12	7
6	IDE_D9	□□□□□	IDE_D8	6
5	IDE_D4	□□□□□	IDE_D3	5
4	IDE_IRQ	□□□□□	NC	4
3	GND	□□□□□	VP5_RTb	3
2	RTb_GPO	□□□□□	RTb_PRES_N	2
1	VP5_IPMI	□□□□□	RTb_RSTN_N	1

3.7 Front Panel Connectors and Controls

The Intel MPRTM4808 board front panel provides the following connectors and controls:

Figure 16. Front Panel Connectors and Controls



Caution: The Intel MPRTM4808 board provides several RJ-45 connectors that commonly serve as different interfaces (RS-485, twisted pair Ethernet and telephone). Connecting different interfaces (e.g. Ethernet and RS-485) may damage the board. Therefore, make sure that you only connect matching interfaces. Furthermore, take note of the following:

- Clearly mark TPE connectors near your working area as network connectors.
- Connect TPE bushing of the system to safety extra low voltages (SELV) circuits only.
- Ensure that the length of electric cable connected to TPE bushing does not exceed 100 meters.

3.7.1 ICMB Connector

The ICMB connector can be used to attach the Intel NetStructure MPCBL5525 System Master Board via the Intel MPRTM4808 board to other systems based on the IPMI. To monitor the overall system, the chassis can be connected via the Intel MPRTM4808 boards. The IPMI signals are routed from the CPU via the backplane to the Intel MPRTM4808 board and are then available on the ICMB connector.

The ICMB bus must be connected via a multi-drop cable or star topology.

The following figure shows how the pins are assigned.

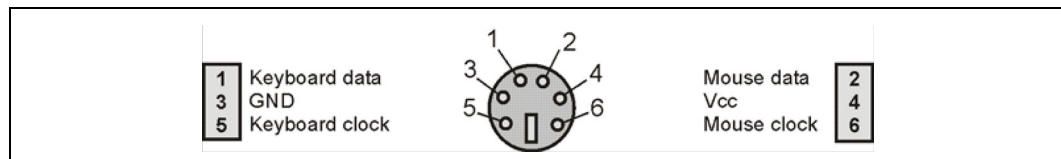
Figure 17. ICMB Connector Pinout



3.7.2 PS/2 Keyboard or Mouse

By using a keyboard/mouse splitter cable, you can use a PS/2 keyboard and a PS/2 mouse at the same time. The cable is included in the cable assembly kit. This cable may be obtained from Black Box Corporation (<http://www.blackbox.com>) or from other qualified vendors.

Figure 18. PS/2 Keyboard/Mouse Connector Pinout





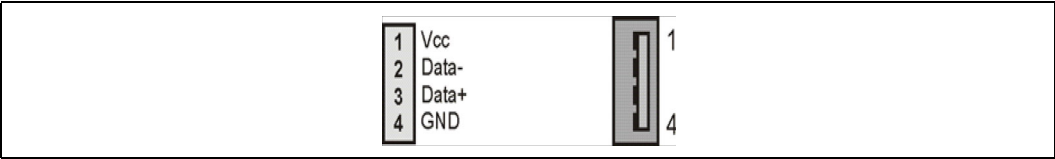
3.7.3 Serial Connectors

Two serial devices can be connected via the two COM connectors, and one USB device (e.g., USB keyboard, USB mouse) can be connected via the USB connector.

Note: The two COM ports are only available if the Intel MPRTM4808 board is used together with the Intel NetStructure MPCBL5525 System Master Board.

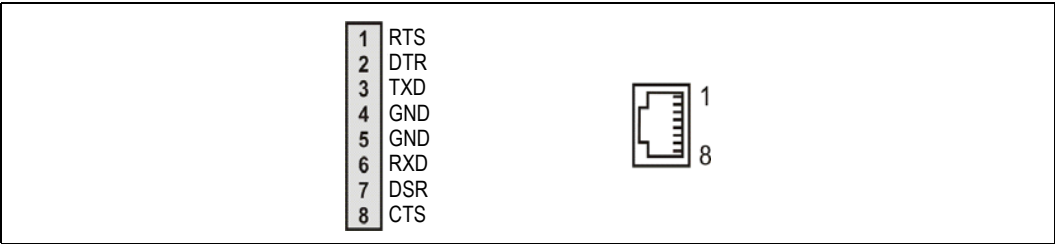
Figure 19 shows how the USB connector pins are assigned.

Figure 19. USB Connector Pinout



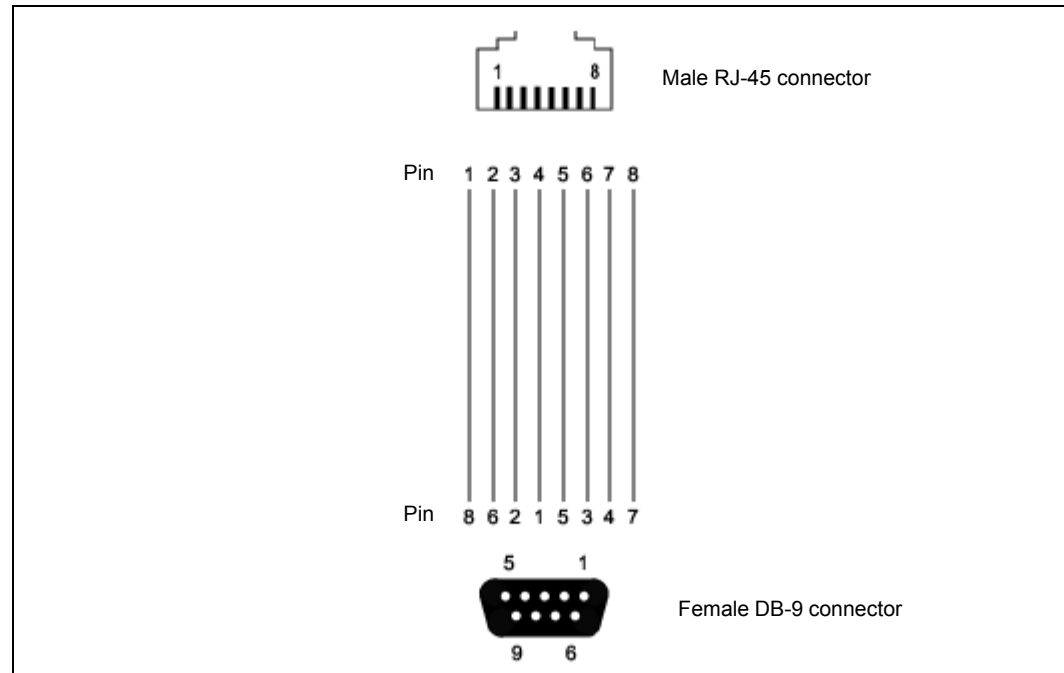
COM connector pins are assigned as shown below.

Figure 20. COM Connector Pinout



The translation between the DB-9 and RJ-45 connectors is illustrated in the following diagram:

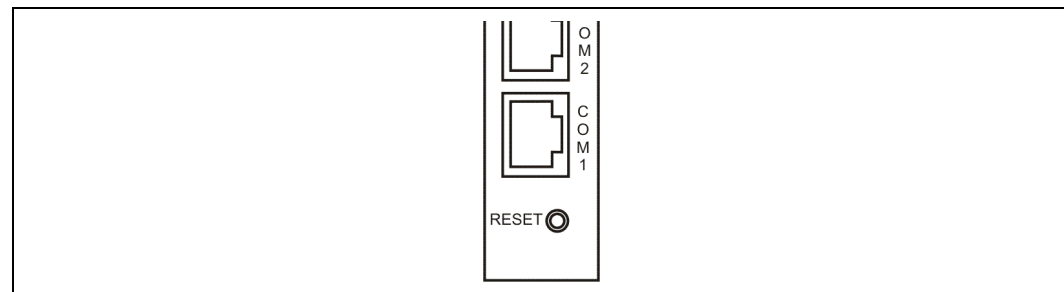
Figure 21. DB9 to RJ-45 Translation



3.7.4 Reset Key

The Intel MPRTM4808 board provides a reset key on the front panel to execute a reset on the Intel NetStructure MPCBL5525 System Master Board in systems where the back can be accessed more easily than the front. The way the reset is performed can be determined by adapting the settings in the Reset Control registers of the CPU board or by changing the settings of the switches on the CPU board. A reset on the CPU board has no consequence for the Intel MPRTM4808 board.

Figure 22. Reset Key



Agency Approvals

4

4.1 CE Certification

The Intel® NetStructure™ MPRTM4808 Rear Transition Board meets intent of Directive 89/336/EEC for Electromagnetic Compatibility and Low-Voltage Directive 73/23/EEC for Product Safety. The Intel MPRTM4808 board has been designed for NEBS/ETSI compliance.

4.2 Safety Certifications

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

4.3 Emissions Test Regulations

FCC Part 15, Subpart B
EN 55022
CISPR 22
Bellcore GR-1089

4.3.1 EN 50081-1 Emissions

GR-1089-CORE	Sections 2 and 3
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

4.3.2 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

4.4 Regulatory Information

4.4.1 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 Intel, you could void your authority to operate the equipment.

4.4.2 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.

4.5 Product Safety Information

4.5.1 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: Microprocessor Heatsinks May Become Hot During Normal Operation: To avoid burns, do not allow anything to touch processor heatsinks.

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.

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.

Caution: Lithium Batteries Are Not Field-Replaceable Units: There is a danger of explosion if a battery is incorrectly replaced or handled. Do not disassemble or recharge the battery. Do not dispose of the battery in fire. When the battery is replaced, the same type or an equivalent type recommended by the manufacturer must be used. Used batteries must be disposed of according to the manufacturer's instructions. Return the unit to Intel for battery service.

4.6 AC and/or DC Power Safety Warning (AC and/or DC Powered Units)

The AC and/or DC power cord is your unit's main AC and/or DC disconnecting device, and must be easily accessible at all times. Auxiliary AC and/or DC On/Off switches and/or circuit breaker switches are for power control functions only (NOT THE MAIN DISCONNECT).

For your safety, use only a power cord with a grounded plug. The enclosure is also provided with a separate earth ground connection/stud. The earth ground connection should be installed prior to the application of power or peripheral connections and should never be disconnected while power or peripheral connections exist.

To reduce the possibility of electric shock from a telephone or Ethernet system, plug your enclosure into the power source before making these connects. Disconnect these connections before unplugging your enclosure from the power source.

Warning: Verify Power Cord and Outlet Compatibility. Check to ensure you are using the appropriate power cords for your power outlet configurations. Visit the following website for additional information: <http://kropla.com/electric2.htm>.

4.7 Rack Mount Enclosure Safety

Your enclosure may be intended for stationary rack mounting. Mount in a rack designed to meet the physical strength requirements of NEBS GR-63-CORE and NEBS GR 487. Your system may have multiple power sources. Disconnect all power sources and external connections/cables prior to installing or removing your system from a rack frame.

Prior to mounting, Intel recommends you remove all hot-swappable equipment for optimum weight reduction. Be sure to mount your system in a way that ensures even loading of the rack. Uneven mechanical loading of weight can result in a hazardous condition. Secure all mounting bolts when installing the enclosure to the frame/rack.

Caution: Avoid Electric Overload. To avoid electric shock or fire hazard, only connect your system to an input voltage source as specified in the product user manual.

Warranty Information

5

5.1 Intel® NetStructure™ Compute Boards & Platform Products Limited Warranty

Intel warrants to the original owner that the product delivered in this package will be free from defects in material and workmanship for two (2) year(s) following the latter of: (i) the date of purchase only if you register by returning the registration card as indicated thereon with proof of purchase; or (ii) the date of manufacture; or (iii) the registration date if by electronic means provided such registration occurs within 30 days from purchase. This warranty does not cover the product if it is damaged in the process of being installed. Intel recommends that you have the company from whom you purchased this product install the product.

THE ABOVE WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, WHETHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, ANY WARRANTY OF INFRINGEMENT OF ANY OTHER PARTY'S INTELLECTUAL PROPERTY RIGHTS, OR ANY WARRANTY ARISING OUT OF ANY PROPOSAL, SPECIFICATION OR SAMPLE.

This warranty does not cover replacement of products damaged by abuse, accident, misuse, neglect, alteration, repair, disaster, improper installation or improper testing. If the product is found to be otherwise defective, Intel, at its option, will replace or repair the product at no charge except as set forth below, provided that you deliver the product along with a return material authorization (RMA) number (see below) either to the company from whom you purchased it or to Intel. If you ship the product, you must assume the risk of damage or loss in transit. You must use the original container (or the equivalent) and pay the shipping charge. Intel may replace or repair the product with either a new or reconditioned product, and the returned product becomes Intel's property. Intel warrants the repaired or replaced product to be free from defects in material and workmanship for a period of the greater of: (i) ninety (90) days from the return shipping date; or (ii) the period of time remaining on the original two (2) year warranty.

This warranty gives you specific legal rights and you may have other rights which vary from state to state. All parts or components contained in this product are covered by Intel's limited warranty for this product. The product may contain fully tested, recycled parts, warranted as if new.

5.1.1 Returning a Defective Product (RMA)

Before returning any product, contact an Intel Customer Support Group to obtain either a Direct Return Authorization (DRA) or Return Material Authorization (RMA). Return Material Authorizations are only available for products purchased within 30 days.

Return contact information by geography:

5.1.1.1 For the Americas

Return Material Authorization (RMA) credit requests e-mail address: requests.rma@intel.com

Direct Return Authorization (DRA) repair requests e-mail address: uspss.repair@intel.com

DRA on-line form: <http://support.intel.com/support/motherboards/draform.htm>

Intel Business Link (IBL): www.intel.com/ibl

Telephone No.: 1-800-INTEL4U or 480-554-4904

Office Hours: Monday - Friday 0700-1700 MST Winter / PST Summer

5.1.1.2 For EMEA

Return Material Authorization (RMA) e-mail address - emea.fs@intel.com

Direct Return Authorization (DRA) for repair requests e-mail address: emea.fs@intel.com

Intel Business Link (IBL): <http://intel.com/ibl>

Telephone No.: 00 44 1793 403063

Fax No.: 00 44 1793 403109

Office Hours: Monday - Friday 0900-1700 UK time

5.1.1.3 For APAC

RMA/DRA requests email address: apac.rma.front-end@intel.com

Telephone No.: 604-859-3111 or 604-859-3325

Fax No.: 604-859-3324

Office Hours: Monday - Friday 0800-1700 Malaysia time

5.1.1.4 For IJKK

Return Material Authorization (RMA) requests e-mail address: rma.center.jpss@intel.com

Telephone No.: 81-298-47-0993 or 81-298-47-5417

Fax No.: 81-298-47-4264

Direct Return Authorization (DRA) for repair requests, contact the JPSS Repair center.

E-mail address: sugiyamakx@intel.co.jp

Telephone No.: 81-298-47-8920

Fax No.: 81-298-47-5468

Office Hours: Monday - Friday 0830-1730 Japan time



If the Customer Support Group verifies that the product is defective, they will have the Direct Return Authorization/Return Material Authorization Department issue you a DRA/RMA number to place on the outer package of the product. Intel cannot accept any product without a DRA/RMA number on the package. Limitation of Liability and Remedies

INTEL SHALL HAVE NO LIABILITY FOR ANY INDIRECT OR SPECULATIVE DAMAGES (INCLUDING , WITHOUT LIMITING THE FOREGOING, CONSEQUENTIAL, INCIDENTAL AND SPECIAL DAMAGES) ARISING FROM THE USE OF OR INABILITY TO USE THIS PRODUCT, WHETHER ARISING OUT OF CONTRACT, NEGLIGENCE, TORT, OR UNDER ANY WARRANTY, OR FOR INFRINGEMENT OF ANY OTHER PARTY'S INTELLECTUAL PROPERTY RIGHTS, IRRESPECTIVE OF WHETHER INTEL HAS ADVANCE NOTICE OF THE POSSIBILITY OF ANY SUCH DAMAGES, INCLUDING, BUT NOT LIMITED TO LOSS OF USE, BUSINESS INTERRUPTIONS, AND LOSS OF PROFITS. NOTWITHSTANDING THE FOREGOING, INTEL'S TOTAL LIABILITY FOR ALL CLAIMS UNDER THIS AGREEMENT SHALL NOT EXCEED THE PRICE PAID FOR THE PRODUCT. THESE LIMITATIONS ON POTENTIAL LIABILITIES WERE AN ESSENTIAL ELEMENT IN SETTING THE PRODUCT PRICE. INTEL NEITHER ASSUMES NOR AUTHORIZES ANYONE TO ASSUME FOR IT ANY OTHER LIABILITIES.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

Customer Support

6

This section offers technical and sales assistance information for this product, and information on returning an Intel[®] NetStructure[™] product for service.

6.1 Technical Support and Return for Service Assistance

For all product returns and support issues, please contact your Intel product distributor or Intel sales representative for specific information.

6.2 Sales Assistance

If you have a sales question, please contact your local Intel NetStructure sales representative or the regional sales office for your area. Address, telephone and fax numbers, and additional information is available at Intel's website, located at

<http://www.intel.com/network/csp/sales/>

Intel Corporation

Telephone (in U.S.) 1-800-755-4444

Telephone (Outside U.S.) 1-973-993-3030

FAX 1-973-967-8780