MIC-3037

1U high 2-slot CompactPCI™ enc/osure

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CE Notification

The MIC-3037, developed by Advantech Co., Ltd., has passed the CE test for environment specifications when shielded cables are used for external wiring. We recommend the use of shielded cables.

Product warranty

Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for one year from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. For example, CPU speed, Advantech products used, other hardware and software used, etc. Note anything abnormal and list any on-screen messages you get when the problem occurs.

2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.

3. If your product is diagnosed as defective, obtain an RMA (return merchandise authorization) number from your dealer. This allows us to process your return more quickly.

4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.

5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Packing List

Before installation, ensure that the following materials have been received:

- One MIC-3037 CompactPCI enclosure with backplane

- One box of accessories

- One warranty certificate

- This user's manual

If any of these items are missing or damaged, contact your distributor or sales representative immediately.

Technical Support and Sales Assistance

If you have any technical questions about the MIC-3037 or any other Advantech products, please visit our support website at:

- **http://www.advantech.com.tw/support**

For more information about Advantech's products and sales information, please visit:

- **http://www.advantech.com**

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General Information

1.1 Introduction

The MIC-3037 is Advantech's latest CompactPCI™ enclosure with the most compact mechanical design of only 1U height. With the 6U-sized 2-slot backplane, the MIC-3037 supports one single-slot SBC (such as Advantech's MIC-3377/M) and one single-slot peripheral.

The MIC-3037 does not provide the space for any devices because of the increasing demands for the space efficiency on some specific applications, such as CT and networking. Users may use a DOM (Dick On Module) on the CPU board for data storage.

1.2 Features

- The most compact 1U-high enclosure
- Two 6U-sized CompactPCI™ slots (one system slot and one peripheral slot)
- 200 W ATX power supply
- Optional intelligent fault detection and alarm module

1.3 Specifications

1.3.1 General

- **Construction:** Aluminum frame and galvanized sheet steel

- 2-slot space (8 TE), including one system slot and one peripleral slot

- "Hot swappable" platform complies with PICMG 2.1 R 1.0 Hot Swap Specification

- **Dimensions** (W x H x D, mounting flanges not included)**:**
  440 x 44 x 231 mm (17.3" x 1.7" x 9.1")

- **Weight:** 3.9 kg (8.6 lb)

- **Operating temperature:** 0 ~ 50° C (32 ~ 122° F)

- **Storage temperature**: -20° C ~ 60° C (-4 ~ 158° F)

- **Relative humidity:** 10 ~ 95% @ 40° C, non-condensing

- **Operating altitude**: 0 ~ 3,048 meters (0 ~ 10,000 feet)

- **Storage/transit altitude**: 0 ~ 12,190 meters (40,000 feet)

- **Shock**: 10 G (operating); 30 G (storage/transit)

- **Random vibration**: 1.0 Grms (operating)

1.3.2 Fans

- **Air flow**: Three 10.5-CFM cooling fans (flow in), one 10.5-CFM cooling fan (flow out)

- **Power consumption:** 0.10 A @ 12 V

- **Rated fan speed:** 7800 rpm

- **Life expectancy:** 50,000 hours @ 25° C

1.3.3 Power Supply

- **Input:** 100~240 V$_{AC}$ @ 50~60 Hz, switchable

- PFC (Power Factor Correction) can reach the furget of 95% @ 115 V, full load, following the standard of IEC 1000-3-2

- **Output:** +3.3 V @ 14 A, +5 V @ 16 A, +12 V @ 9 A, -12 V @ 0.7 A

- **Minumum load:** +3.3 V @ 1.0 A, + 5V @ 2 A, +12 V @ 1.0 A

- **Max output**: 185 W for +5V, +3.3 V and +12 V, 110 W for +5 V and +3.3 V

- **MTBF:** 100,000 hours @ 70% load

- **Safety:** UL/CUL/CE/FCC

1.4 Dimensions
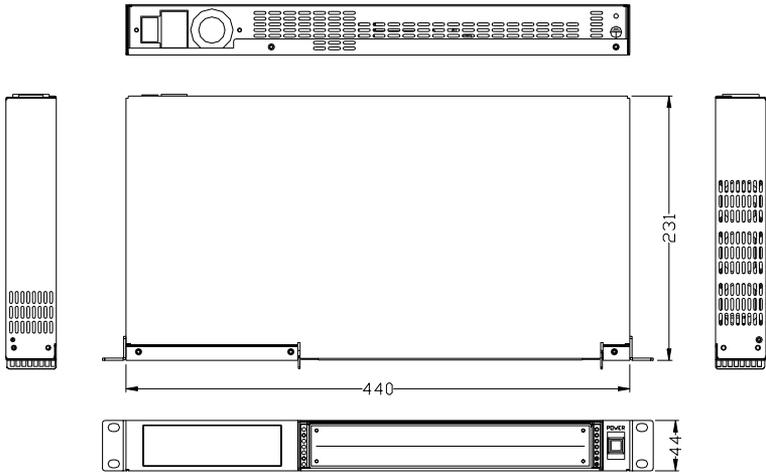
Figure 1-1: MIC-3037 dimensions

1.5 Ordering Information

- **MIC-3037:** 1U-high CompactPCI™ enclosure with 2- slot backplane, cooling fans and poweer supply

- **MIC-3377/M:** Single-slot 6U CompactPCI™ Pentium® III processor board with VGA and dual LANs

- **MIC-3357:** Single-slot 6U CompactPCI™ Pentium® MMX processor board with VGA and three LANs (Available in August 2001)
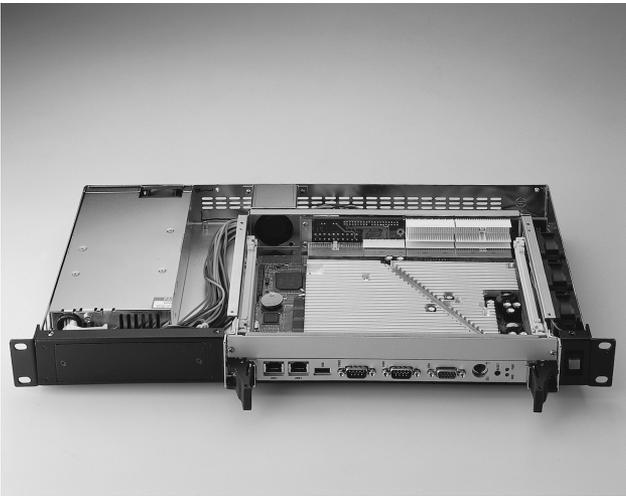
Figure 1-2: Inside View of MIC-3037 and MIC-3377/M

CHAPTER **2**

Installation

2.1 Initial Inspection

We have carefully inspected the MIC-3037 mechanically and electrically before shipping. It should be free of marks and scratches and in perfect working order upon receipt.

As you unpack the MIC-3037, check it for signs of shipping damage (damaged box, scratches, dents, etc.). If it is damaged or fails to meet specifications, notify our service department or your local representative immediately. Also notify the carrier. Retain the shipping carton and packing material for inspection by the carrier. After inspection, we will make arrangements to repair or replace the unit.

Warning!   *We strongly recommend that only qualified, experienced personnel install or remove components. They must exercise extreme caution when doing so.*

2.2 The MIC-3037 Illustration

The MIC-3037 is designed to be installed and maintained easily. Figure 2-1 and Figure 2-2 illustrate important components on the front and rear side of the enclosure.
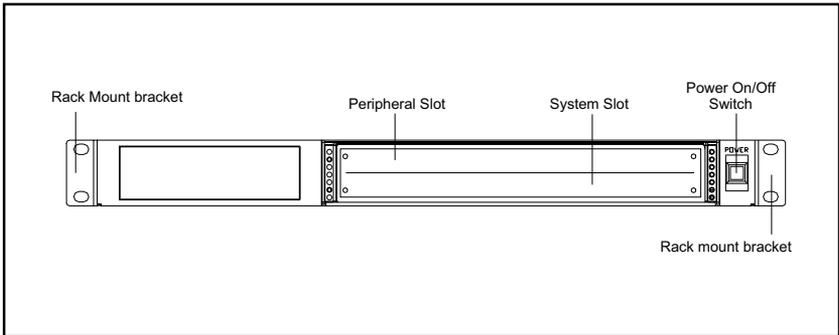
Figure 2-1: Front view of MIC-3037
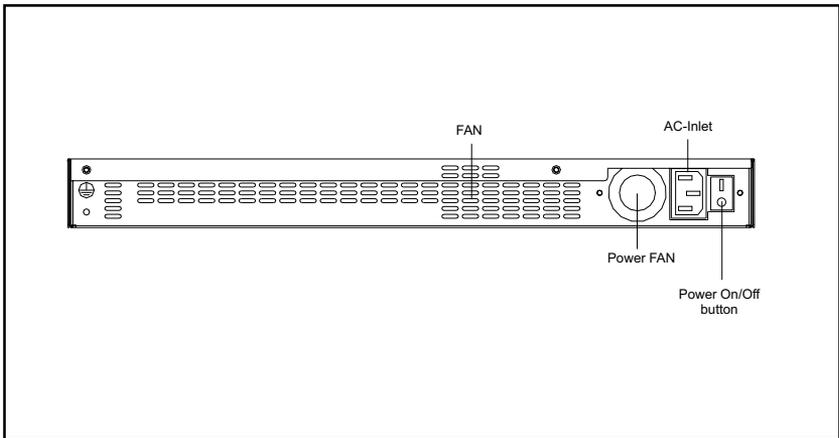
Figure 2-2: Rear view of MIC-3037

2.3 Installation Procedures

2.3.1 Card Installation and Removal

The CompactPCI™ connectors are firm and rigid, and require careful handling while plugging and unplugging. Improper installation of a card can easily damage the backplane of the chassis.

The system card can be installed only in the system slot. The CompactPCI™ specification allows the system slot to be in any position in the backplane. Do not insert the system card into the other slot, or insert a peripheral card into the system slot. The system slot is marked by a triangle enclosing the slot number. Please refer to the backplane user's manual.

Note: *Another easy way to distinguish the system slot is that the system slot uses red guide rails while the peripheral slots use gray ones.*

The insert/eject handles on CompactPCI™ cards help users to install and remove the cards easily and safely. Follow the procedures below to install a card into a chassis:

To install a card:
1. Hold the card horizontally. Be sure that the card is oriented correctly. The components of the card should be pointing to the upper side.

2. Be sure that the handles of the card are not latched. Release the handles if they are latched. Handles from different vendors may have different latch designs.

Caution: *Keep your fingers away from the latch hinges to prevent your fingers from getting pinched.*

3. Insert the card into the chassis by sliding the both edges of the card into the card guides.

4. Push the card into the slot gently by sliding the card along the card guide until the handles meet the rectangular holes of the cross rails.

Note: *If the card is correctly positioned and has been slid all the way into the chassis, the handles should match the rectangular holes. If not, remove the card from the card guide and repeat step 3 again. Do not try to install a card by forcing it into the chassis.*

5. Left-pull the right handle and right-pull the left handle to push the card into place.

6. Secure the card by locking the handles into place.
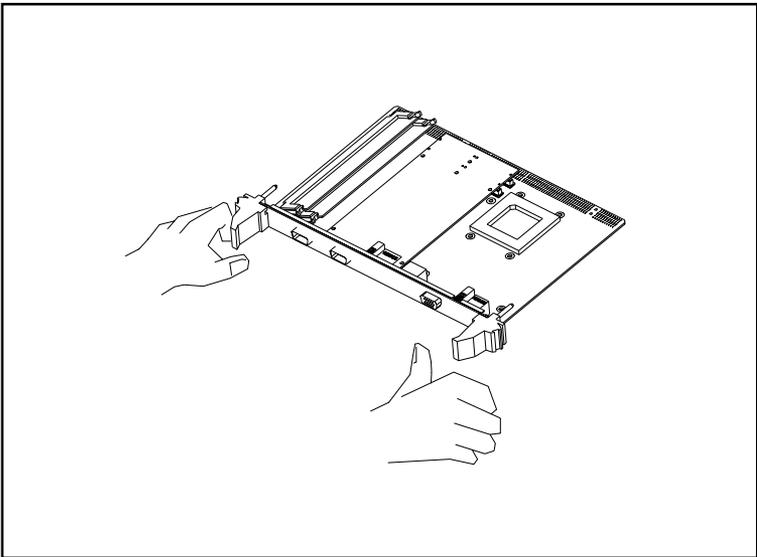
Figure 2-3: Installing a card into the chassis

To remove a card:

1. Release the locking latches on the handles.

2. Push the both handles out to release the card from the backplane.

3. Slide the card out.

2.3.2 Before Operating the System

Before operating your system, first check your power supply source. Adjust the switch on the power supply to the correct voltage.

Two mounting flanges are included for users who would like to install the MIC-3037 on a 19" rack.

Backplane

3.1   General Information

This backplane is used for the 1U-high CompactPCI™ enclosures, MIC-3035 and MIC-3037, and provides two CompactPCI slots. One slot is assigned to the CPU board and the other slot to one peripheral board. The MIC-3037 supports front I/O wiring, providing simplified system cabling.

The backplane provides four 3-pin connector for connecting up to 5 cooling fans. A 20-pin connector can be used for connecting an external alarm module to detect the system internal conditions, such as bus voltages, fan speed, and temperatures.

In order to provide users with a flexible system configuration, the MIC-3037 includes one standard ATX power connector to accpet one ATX power supply.

The MIC-3037 complies with PICMG 2.1 Hot-Swap Specification, providing full hot-swapping capability. Users can build a hot-swap system using hot-swap plug-in boards and software.

3.2 Features

- Two CompactPCI™ slots (one system slot and one peripheral slot)
- 64-bit bus width
- Complies with PICMG 2.1 Hot-Swap Specification
- Accepts up to two ATX power supplies
- Alarm module interface
- Fan interface

3.3 Specification

- Two CompactPCI slots (one system slot and one peripheral slot)

- Bus width: 64-bit

- 8-layer PCB, 3.0 mm thick

- Power connector: One ATX power connector for connecting standard ATX power supply

- Complies with CompactPCI Specification PICMG 2.0, Ver.3.0

- Complies with CompactPCI Hot Swap Specification PICMG 2.1, Ver.1.0

- Logic Ground and Chassis Ground are common

- Dimensions: 36 x 224 mm

- Operating temperature: -40 ~ 80°C (-40 ~ 176°F)

3.4 Slot Assignments

The CompactPCI™ specification defines slot numbering seperating for physical and logical slots. Each slot has a physical number and a logical number (refer to the CompactPCI™ specification version 2.0 R 3.0 for further information on slot assignments). The physical numbers are printed on the backplane, enclosed in circles or triangles, below each slot. Slot 2, marked by a triangle, is the system slot and can only be used by a CPU board. The other slot (slot 1) are a peripheral slot and can be used by one peripheral card.

The logical number of each slot is defined according to the IDSEL signal and the associated address used to select the slot. Table 3-1 shows the system slot and peripheral slot relationships on the backplane. Physical slot 2 (system slot) has a logical number of 1, and physical slot 1 has a logical number of 2. The connectors in logical slot 1 are designated as 1-P1, 1-P2 and 1-P3 from the bottom up. Nomenclature for connectors in the other slot is similar, such as 2-P1 and 2-P2.

Connector P1 on the system slot (slot 2) is a keyed connector providing 32-bit CompactPCI bus between the system slot and the peripheral slot. Connector P2 on the system slot (slot 2) is an un-keyed connector providing 64-bit CompactPCI bus between the system slot and the peripheral slots. Connector P3 on the system slot (slot 2) is open for user definition.

Appendix A gives the pin assignment for all the connectors on the backplane.

System Slot 2, (Logical Slot 1):		Peripheral Slot 1, (Logical slot 2)	
CLK0	P1:D6	CLK	P1:D6
AD28	P1:C7	IDSEL	P1:B9
REQ3#	P2:E2	REQ#	P1:A6
GNT3#	P2:C3	GNT#	P1:E5

Table 3-1: System to peripheral slot signal assignment
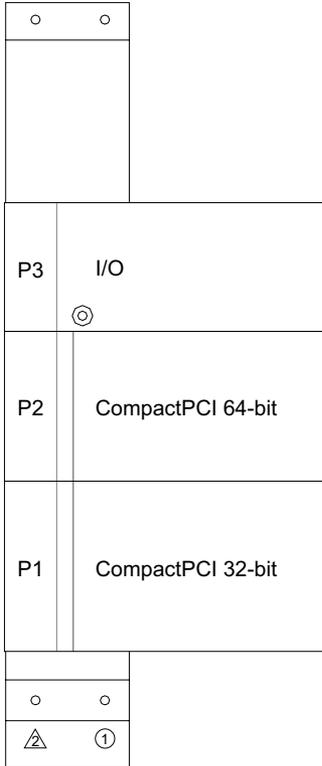
Figure 3-1: Slot numbering of the backplane

3.5 Connector and Jumper Locations

The backplane provides connectors and jumpers for users to configure the backplane for specific application. Table 3-2 gives a brief description to each connector on the backplane. Figure 3-2 and Figure 3-3 illustrate the connector locations of the backplane.

Table 3-2: Backplane's connector and jumper description

Name	Function
JP1	Power switch connector
ATX1	ATX power connector 1
FAN 1~4	Fan module connectors
CN3	Alarm board interface connector
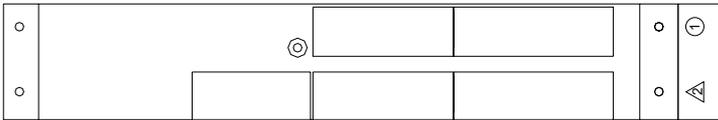
Figure 3-2: The connector and jumper locations on the front side

Figure 3-3: The connector and jumper locations on the rear side

3.5.1 Alarm Board Interface (CN3)

The 30-pin connector CN3 is an interface for an optional external monitoring and alarm module which monitors the conditions of the system. This alarm module will be available in August 2001. For more information about it , please contact with our local sales representives or visit our website.

3.5.2 Fan Module Connector (FAN1~4)

The FAN connectors FAN 1~4 provide +12 V power for fan operation and accepts the tachometer output from the fans.

3.5.3 Power Switch (JP1)

This connector provides power on/off control of the ATX power supply or the plug-in power module. If the CompactPCI^{TM} chassis provides a 2-pin power switch cord, connect this cord to the JP1 connector and users can control the power on/off by the power switch. Or users can directly short this connector by a jumper and control the power on/off by the ATX power supply switch.

3.5.4 Screw terminal for external power supply

Along the upper and lower edges of the backplane are 4 power pads providing external power supply I/O. These 4 pads facilitate input or output of powers and grounds. Contact Advantech for installation help.

3.6 Clock Routing Configuration

The backplane is configured to comply with the clock routing specified in the CompactPCI Hot Swap Specification, PICMG 2.1, version 1.0. This Specification requires that each slot be independently clocked.

If users would like to reconfigure the backplane to comply with the earlier CompactPCI™ Specification, PICMG 2.0, version 3.0, which allows the backplane to be backward compatible with CPUs using shared clocks, please contact Advantech for help.

Pin Assignments

A.1 System Slot P1 Connector

Table A-1: System slot P1 connector

Pin	Z	A	B	C	D	E	F
25	GND	5V	REQ64#	ENUM#	3.3V	5V	GND
24	GND	AD[1]	5V	V(I/O)	AD[0]	ACK64#	GND
23	GND	3.3V	AD[4]	AD[3]	5V	AD[2]	GND
22	GND	AD[7]	GND	3.3V	AD[6]	AD[5]	GND
21	GND	3.3V	AD[9]	AD[8]	M66EN	C/BE[0]#	GND
20	GND	AD[12]	GND	V(I/O)	AD[11]	AD[10]	GND
19	GND	3.3V	AD[15]	AD[14]	GND	AD[13]	GND
18	GND	SERR#	GND	3.3V	PAR	C/BE[1]#	GND
17	GND	3.3V	IPBSCL	IPMBSDA	GND	PERR#	GND
16	GND	DEVSEL#	GND	V(I/O)	STOP#	LOCK#	GND
15	GND	3.3V	FRAME#	IRDY#	GND	TRDY#	GND
12-14			KEY AREA				
11	GND	AD[18]	AD[17]	AD[16]	GND	C/BE[2]#	GND
10	GND	AD[21]	GND	3.3V	AD[20]	AD[19]	GND
9	GND	C/BE[3]#	GND	AD[23]	GND	AD[22]	GND
8	GND	AD[26]	GND	V(I/O)	AD[25]	AD[24]	GND
7	GND	AD[30]	AD[29]	AD[28]	GND	AD[27]	GND
6	GND	REQ#	GND	3.3V	CLK	AD[31]	GND
5	GND	BRSVP1A5	BRSVP1B5	RST#	GND	GNT#	GND
4	GND	IPMB PWR	Healthy#	V(I/O)	INTP	INTS	GND
3	GND	INTA#	INTB#	INTC#	5V	INTD#	GND
2	GND	TCK	5V	TMS	TDO	TDI	GND
1	GND	5V	-12V	TRST#	+12V	5V	GND

▨ = long pins   ▢ = short pins   ☐ = medium length pins

#: Low active

A.2 System Slot P2 Connector

Table A-2: System slot P2 connector

Pin	Z	A	B	C	D	E	F
22	GND	GA4	GA3	GA2	GA1	GA0	GND
21	GND	CLK6	GND	RSV	RSV	RSV	GND
20	GND	CLK5	GND	RSV	GND	RSV	GND
19	GND	GND	GND	RSV	RSV	RSV	GND
18	GND	BRSVP2A18	BRSVP2B18	BRSVP2C18	GND	BRSVP2E18	GND
17	GND	BRSVP2A17	GND	PRST#	REQ6#	GNT6#	GND
16	GND	BRSVP2A16	BRSVP2B16	DEG#	GND	BRSVP2E16	GND
15	GND	BRSVP2A15	GND	FAL#	REQ5#	GNT5#	GND
14	GND	AD[35]	AD[34]	AD[33]	GND	AD[32]	GND
13	GND	AD[38]	GND	V (I/O)	AD[37]	AD[36]	GND
12	GND	AD[42]	AD[41]	AD[40]	GND	AD[39]	GND
11	GND	AD[45]	GND	V (I/O)	AD[44]	AD[43]	GND
10	GND	AD[49]	AD[48]	AD[47]	GND	AD[46]	GND
9	GND	AD[52]	GND	V (I/O)	AD[51]	AD[50]	GND
8	GND	AD[56]	AD[55]	AD[54]	GND	AD[53]	GND
7	GND	AD[59]	GND	V (I/O)	AD[58]	AD[57]	GND
6	GND	AD[63]	AD[62]	AD [61]	GND	AD[60]	GND
5	GND	C/BE[5]#	GND	V (I/O)	C/BE[4]#	PAR64	GND
4	GND	V (I/O)	BRSVP2B4	C/BE[7]#	GND	C/BE[6]#	GND
3	GND	CLK4	GND	NT3#	EQ4#	GNT4#	GND
2	GND	CLK2	CLK3	SYSEN#	GNT2#	REQ3#	GND
1	GND	CLK1	GND	REQ1#	GNT1#	REQ2#	GND

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Note: GA[4...0] shall be used for geographic addressing on the backplane

A.3 System Slot P3 Connector

Table A-**3: System slot P3 connector**

Pin	Z	A	B	C	D	E	F
19	GND	N/C	N/C	N/C	N/C	N/C	GND
18	GND	N/C	N/C	N/C	N/C	N/C	GND
17	GND	N/C	N/C	N/C	N/C	N/C	GND
16	GND	N/C	N/C	N/C	N/C	N/C	GND
15	GND	N/C	N/C	N/C	N/C	N/C	GND
14	GND	N/C	N/C	N/C	N/C	N/C	GND
13	GND	N/C	N/C	N/C	N/C	N/C	GND
12	GND	N/C	N/C	N/C	N/C	N/C	GND
11	GND	N/C	N/C	N/C	N/C	N/C	GND
10	GND	N/C	N/C	N/C	N/C	N/C	GND
9	GND	N/C	N/C	N/C	N/C	N/C	GND
8	GND	N/C	N/C	N/C	N/C	N/C	GND
7	GND	N/C	N/C	N/C	N/C	N/C	GND
6	GND	N/C	N/C	N/C	N/C	N/C	GND
5	GND	N/C	N/C	N/C	N/C	N/C	GND
4	GND	N/C	N/C	N/C	N/C	N/C	GND
3	GND	N/C	N/C	N/C	N/C	N/C	GND
2	GND	N/C	N/C	N/C	N/C	N/C	GND
1	GND	N/C	N/C	N/C	N/C	N/C	GND

A.4 Peripheral Slot P1 Connector

Table A-4: Peripheral slot P1 connector

Pin	Z	A	B	C	D	E	F
25	GND	5V	REQ64#	ENUM#	3.3V	5V	GND
24	GND	AD[1]	5V	V(I/O)	AD[0]	ACK64#	GND
23	GND	3.3V	AD[4]	AD[3]	5V	AD[2]	GND
22	GND	AD[7]	GND	3.3V	AD[6]	AD[5]	GND
21	GND	3.3V	AD[9]	AD[8]	M66EN	C/BE[0]#	GND
20	GND	AD[12]	GND	V(I/O)	AD[11]	AD[10]	GND
19	GND	3.3V	AD[15]	AD[14]	GND	AD[13]	GND
18	GND	SERR#	GND	3.3V	PAR	C/BE[1]#	GND
17	GND	3.3V	IPMBSCL	IPMBSDA	GND	PERR#	GND
16	GND	DEVSEL#	GND	V(I/O)	STOP#	LOCK#	GND
15	GND	3.3V	FRAME#	IRDY#	GND	TRDY#	GND
12-14				KEY AREA			
11	GND	AD[18]	AD[17]	AD[16]	GND	C/BE[2]#	GND
10	GND	AD[21]	GND	3.3V	AD[20]	AD[19]	GND
9	GND	C/BE[3]#	IDSEL	AD[23]	GND	AD[22]	GND
8	GND	AD[26]	GND	V(I/O)	AD[25]	AD[24]	GND
7	GND	AD[30]	AD[29]	AD[28]	GND	AD[27]	GND
6	GND	REQ#	GND	3.3V	CLK	AD[31]	GND
5	GND	BRSVP1A5	BRSVP1B5	RST#	GND	GNT#	GND
4	GND	IPMBPWR	Healthy#	V(I/O)	INTP	INTS	GND
3	GND	INTA#	INTB#	INTC#	5V	INTD#	GND
2	GND	TCK	5V	TMS	TDO	TDI	GND
1	GND	5V	-12V	TRST#	+12V	5V	GND

☐ = long pins ☐ = short pins ☐ = medium length pins

#: Low active

A.5 Peripheral Slot P2 Connector

Table A-5: Peripheral slot P2 connector

Pin	Z	A	B	C	D	E	F
22	GND	GA4	GA3	GA2	GA1	GA0	GND
21	GND	RSV	RSV	RSV	RSV	RSV	GND
20	GND	RSV	RSV	RSV	GND	RSV	GND
19	GND	RSV	RSV	RSV	RSV	RSV	GND
18	GND	BRSVP2A18	BRSVP2B18	BRSVP2BC18	GND	BRSVP2E18	GND
17	GND	BRSVP2A17	GND	RSV	RSV	RSV	GND
16	GND	BRSVP2A16	BRSVP2B16	RSV	GND	BRSVP2E16	GND
15	GND	BRSVP2A15	GND	RSV	RSV	NRSV	GND
14	GND	AD[35]	AD[34]	AD[33]	GND	AD[32]	GND
13	GND	AD[38]	GND	V (I/O)	AD[37]	AD[36]	GND
12	GND	AD[42]	AD[41]	AD[40]	GND	AD[39]	GND
11	GND	AD[45]	GND	V (I/O)	AD[44]	AD[43]	GND
10	GND	AD[49]	AD[48]	AD[47]	GND	AD[46]	GND
9	GND	AD[52]	GND	V (I/O)	AD[51]	AD[50]	GND
8	GND	AD[56]	AD[55]	AD[54]	GND	AD[53]	GND
7	GND	AD[59]	GND	V (I/O)	AD[58]	AD[57]	GND
6	GND	AD[63]	AD[62]	AD[61]	GND	AD[60]	GND
5	GND	C/BE[5]#	GND	V (I/O)	C/BE[4]#	PAR64	GND
4	GND	V (I/O)	BRSVP2B4	C/BE[7]#	GND	C/BE[6]#	GND
3	GND	RSV	GND	RSV	RSV	RSV	GND
2	GND	RSV	RSV	UNC	RSV	RSV	GND
1	GND	RSV	GND	RSV	RSV	RSV	GND

#: Low active
Note: GA[4...0] shall be used for geographic addressing on the backplane

A.6 Alarm Board Interface Connector (CN3)

Pin	Assignment
1	+5V
2	+3V
3	+5V
4	NC
5	SDA_EXT
6	NC
7	SCL_EXT
8	NC
9	TX1
10	NC
11	RXI
12~18	NC
19~20	GND
21~30	NC

▶

```
 1   2
 3   4
 5   6
 7   8
 9  10
11  12
13  14
15  16
17  18
19  20
21  22
23  24
25  26
27  28
29  30
```

A.7 Fan Module Connectors (FAN 1~4)

Pin	Assignment
1	+12 V
2	GND

A.8 ATX Power Connector (ATX1)

Pin	Signal
1	+3.3V
2	+3.3V
3	GND
4	+5V
5	GND
6	+5V
7	GND
8	#FAL
9	N/C
10	+12V
11	+3.3V
12	-12V
13	GND
14	#PSON
15	GND
16	GND
17	GND
18	N/C
19	+5V
20	+5V

A.9 Power Switch Connector (JP2)

Pin	Signal
1	#PSON
2	GND