

ACP-2320MB

**2U-high Rackmount IPC
Chassis with Dual SATA
Storage Trays**

User's Manual

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CHAPTER 1

General Information

Chapter 1 General Information

1.1 Introduction

ACP-2320MB is a compact, rugged 19" rackmount industrial computer chassis designed for space-conscious applications. With only 2U height, ACP-2320MB can accept any of Advantech ATX motherboards and up to three full-sized PCI cards with the supported riser card.

Dual easy-to-maintain SATA HDD trays

ACP-2320MB comes with two easy-to-maintain SATA HDD trays, which provides the most economic solution for data mirroring. Users can easily replace a SATA HDD without opening the chassis cover. Other data storage options include one slim-type CD-ROM/-RW and two internal 3.5" HDD bays with shock-resistant protection. Also, the front accessible USB and PS/2 keyboard I/O interfaces can be connected with various peripheral devices for data input, backup, and transferring.

Unique alarm detection and notification to reduce system down time

ACP-2320MB has the unique alarm module. This module automatically detects the system operating conditions, such as power, HDD, FAN, and system temperature, and it shows the system status on the front LED indicators. Once any failure happens, the module also gives an audible alarm to notify users to take necessary actions.

Other Features

ACP-2320MB comes with a 300W ATX 2U-high power supply; a 400W power supply is available for customized projects. The removable and lockable front door prevents any unauthorized access to data storage. Moreover, the specially-design in-chassis airflow keeps the system cool, while the easy-to-maintain fans and filters shorten the system's MTTR (Mean Time to Repair). All these outstanding features make ACP-2320MB the best choice for price, performance and total cost of ownership.

1.2 Specifications

- **Construction:** Heavy-duty steel
- **Disk drive capacity:** two easy-to-main SATA trays, one slim-type CD-ROM/-RW, and two internal SATA/ATA HDDs
- **I/O interfaces on front panel:** dual USB and one PS/2 ports
- **I/O interfaces on rear panel:** one D-SUB 9-pin and one 68-pin SCSI opening
- **Indicators on front panel:** LEDs for Power, HDD, TEMP and FAN
- **Switches on front panel:** Power and Reset
- **Cooling fans:** dual 47CFM
- **Air filters:** one 5.3 cm x 16 cm filter in front of dual fans, and one smaller filter in drive bay door
- **Riser card:** supports up to three PCI add-in cards.

Note:

The riser card (P/N: 9696070000) is specially designed to support Advantech AIMB-700 series. There may be compatibility issues with other vendors' motherboards.

- **Weight:** 10.2 Kg (22.5 lb) with 300W power supply
- **Dimensions:** 482 mm (W) x 88 mm (H) x 480 mm (D) (19" x 3.46" x 18.9")

1.3 Environmental Specifications

- **Temperature**
Operating: 0 to 40°C (32 to 104°F)
Storage: -20 to 60°C (-4 to 140°F)
- **Humidity**
Operating: 10 to 95% @ 40°C, non-condensing
- **Vibration (5 ~ 500 MHz)**
Operating: 1 Grms
Non-operating: 2G
- **Shock**
Operating: 10G with 11 ms duration, half sine wave
Non-operating: 30G 11 ms duration
- **Acoustic Noise** < 52dB sound pressure at 5 ~ 28°C (41 ~ 82°F)
- **Altitude**
Operating: 0 to 3,048 m (0 ~ 10,000ft)
- **Safety:** CE compliant, UL/cUL

1.4 Power Supply Options

1.4.1 300W ATX 2U-high Power Supply

- **Output rating:** 300 watts max.
- **Input rating:** 100 ~ 240 Vac @ 50 ~ 60 Hz (Full range)
- **Output voltage:** +5 V @ 35 A, +3.3 V @ 20A , +12 V @ 16 A, -12 V @ 1A, -5 V @ 0.5 A, +5 Vsb @ 2.0 A

- **Minimum load:** +5V @ 3A, +12V @ 2A, -5V @ 0.05A, -12V @ 0.05A, +3.3V @ 1A, +5Vsb @ 0.1A
- **MTBF:** 978,000 hours @ 25° C, full load
- **Safety:** CE/UL/CSA/TUV/CB/CCC

1.4.2 400W ATX 2U-high Power Supply

- **Output rating:** 400 watts max.
- **Input rating:** 100 ~ 240 V AC @ 50 ~ 60 Hz (Full range)
- **Output voltage:** +5 V @ 25 A, +3.3 V @ 20A, +12 V @ 28 A, -12 V @ 0.2A, -5 V @ 0.5 A, +5 Vsb @ 2 A
- **Minimum load:** +5V @ 3A, +12V @ 2A, +3.3V @ 1A, +5Vsb @ 0.1A
- **MTBF:** 978,000 hours @ 25° C, full load
- **Safety:** CE/UL/CSA/TUV/CB/CCC

1.5 ACP-2320MB Dimensions

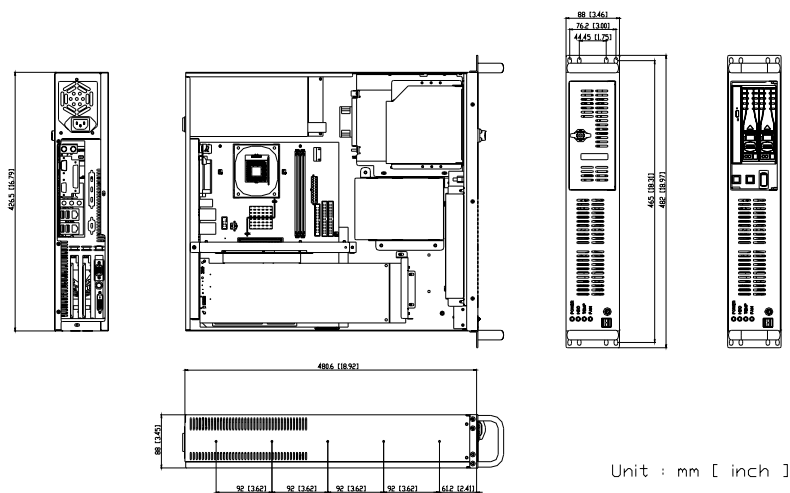


Figure 1-1: ACP-2320MB Dimensions

CHAPTER 2

System Setup

Chapter 2 System Setup

The following procedures are provided to assist you in installing motherboard, drives, and add-in cards into the ACP-2320MB chassis. Please also refer to Appendix A, Exploded Diagram, for the parts named in this manual.

2.1 Removing the cover

To remove the cover of the ACP-2320MB, please refer to Figure 2-1.

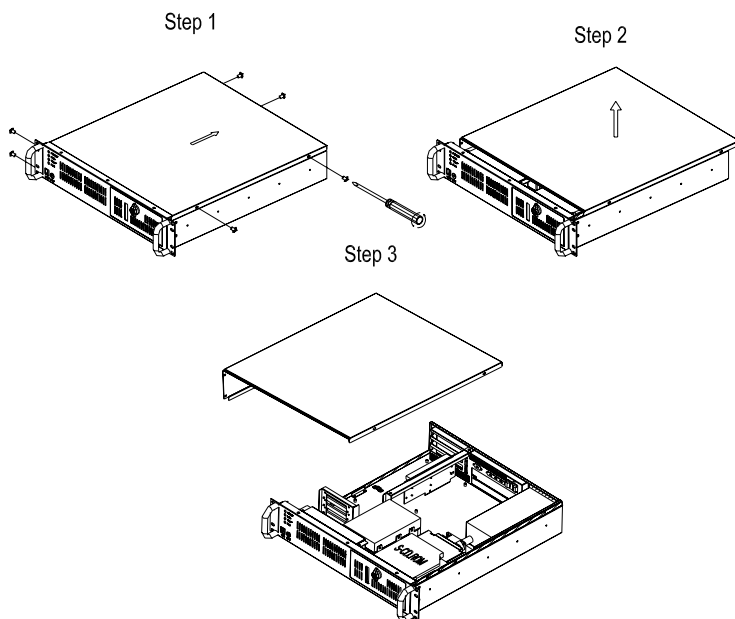


Figure 2-1 Removing the cover

2.2 Installing a motherboard

ACP-2320MB accepts both ATX and microATX motherboards. To install a motherboard, refer to Figure 2-2 and proceed as follows:

Note:

To avoid any interference with the motherboard or the chassis and to ensure the best air flow inside the chassis, it is highly recommended that you choose a CPU cooler which is no taller than **67** mm.

1. Remove the two screws, which mount the L-form bracket on the ACP-2320MB chassis. (It is NOT necessary to remove the riser card from the L-form bracket.)
2. From inside of the chassis, attach the motherboard I/O shield to the rear plate of the chassis.
3. Fix the motherboard in the chassis with screws.

Note:

If you choose Advantech AIMB-744, 750 or 760, please remove the Spacer Bracket before installing the motherboard in the ACP-2320MB chassis.

4. Plug in the 20-pin ATX power connector and the +12 V power connector from the power supply, also the 9-pin USB and the 5- or 6-pin PS/2 connectors from the front panel of the chassis.
5. Connect the POWER SW, RESET SW, and HDD LED cables from the alarm board to the motherboard.
6. Re-install the L-form bracket (together with the riser card) and fasten it with screws.

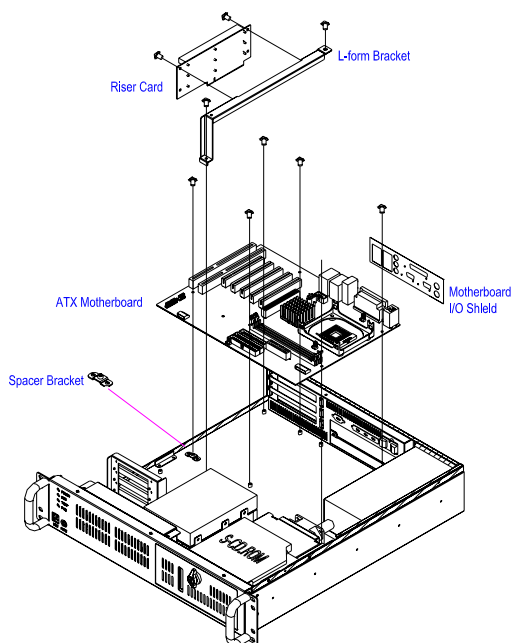


Figure 2-2 Installing a motherboard

2.3 Adding disk drives

ACP-2320MB comes with two easy-to-maintain SATA HDD trays; it can also hold one Slim CD-ROM/-RW and two internal SATA/ATA HDD. To install any of these disk drives, refer to Figures 2-3 ~ 2-5 and proceed as follows:

2.3.1 Installing a SATA HDD

ACP-2320MB accepts both SATA and SATA II HDD. It is not necessary to remove ACP-2320MB's cover when installing a SATA HDD in any of the SATA HDD trays.

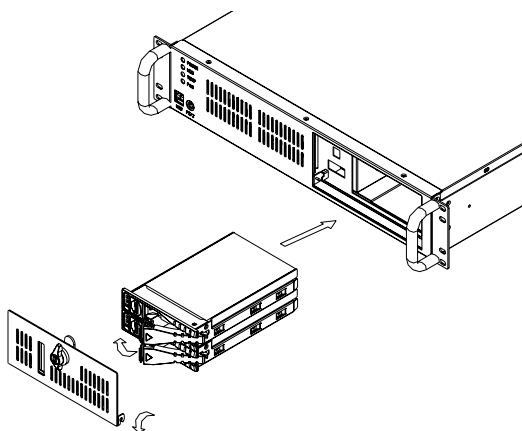


Figure 2-3 Removing drive bay door

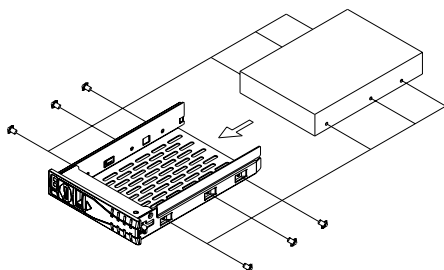


Figure 2-4 Installing SATA HDD

1. Open the front door of the drive bay.
2. *If you want to install a SATA HDD into the lower SATA tray, it is necessary to remove the front door first. The small door is attached to the ACP-2320MB with the dual hinges, but is NOT fixed with screws.*
3. Left-shift the key latch of one SATA HDD tray to unlock the tray. Hold the handle of the tray and draw it out from ACP-2320MB chassis.

4. Slide one SATA disk drive into the proper location in the tray and fix it with 4 ~ 6 screws.
5. Return and push the SATA tray to the chassis until the handle of tray is moving back. Left-shift the key latch of the HDD tray to lock the tray.
6. Repeat Steps 3 to 5 if there is a second SATA HDD to be installed.

2.3.2 Installing a Slim CD-ROM/-RW

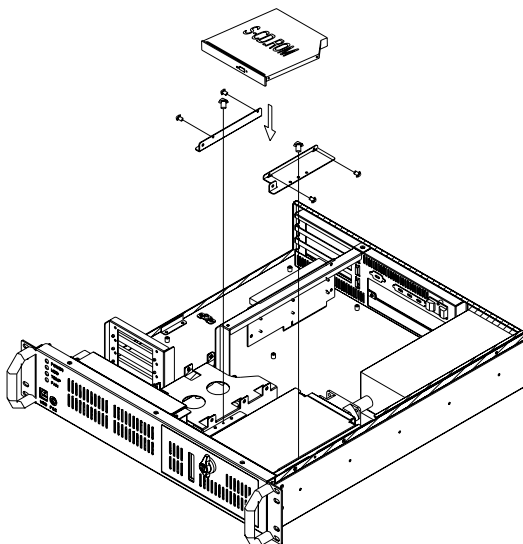


Figure 2-5 Installing Slim CD-ROM/-RW

1. Remove the two screws, which mount the Slim CD-ROM brackets on the SATA HDD enclosure.
2. Remove the cover of the Slim CD-ROM from the brackets.
3. Place the brackets on both sides of one Slim CD-ROM/-RW, and fix them with 4 screws.
4. Return the slim-type CD-ROM/-RW with the brackets on the proper location and fix it with two screws.

2.3.3 Installing a SATA/ATA HDD internally

ACP-2320MB provides a shockproof internal HDD bay, which holds up to two 3.5" SATA/ATA (IDE) hard disk drives, depending on the enclosed ATX/microATX motherboard.

1. Remove the four screws that attach the drive bay to the chassis, and then take out the drive bay.
2. Insert one hard drive disk into the proper location in the drive bay and fix it with 4 ~ 6 screws.
3. Repeat Step 2 if there is more than one drive.
4. Connect a 40-pin flat cable from the motherboard to an ATA (IDE) HDD or a SATA cable to a SATA HDD. Insert the proper power connector into each drive.
5. Return the drive bay to the chassis and fix it with screws.

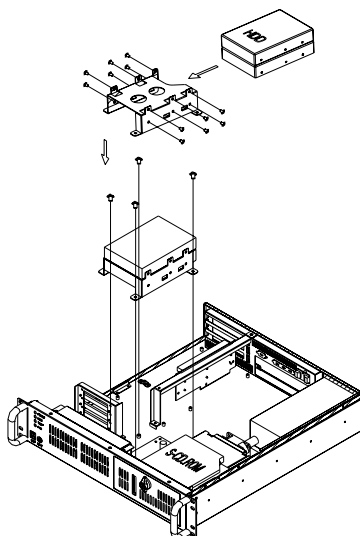


Figure 2-6 Installing an HDD

2.4 Installing add-in cards

ACP-2320MB can hold up to three PCI add-in cards via the riser card, which is inserted in the sixth slot of the enclosed ATX motherboard and mounted on the L-form bracket. To install an add-in card, face the rear side of the chassis and proceed as follows:

1. Check the riser card and find the card insertion slot(s). Remove the blank bracket(s) that attach the slots to the rear plate of the chassis.
3. Evenly push an add-in card horizontally toward the left until the card's gold fingers are completely inserted into the PCI slot of the riser card. Make sure that the card bracket has been inserted properly and the other edge of the card has been fixed in the guiding rail. Fasten the card at the top of the bracket with a screw.
4. Repeat Step 3 if there is more than one card.

CHAPTER 3

Operation

Chapter 3 Operation

3.1 The Front Section of ACP-2320MB

3.1.1 Switches

There are three switches behind the drive bay door that are used to switch the power on or off, to reset the system, and to reset the alarm.

System Reset Switch: Press this switch to reinitialize the system.

Alarm Reset Switch: Press this switch to suppress or stop an audible alarm. Whenever a fault in the system occurs (e.g. fan failure or chassis overheating), an audible alarm is activated. Pressing this switch will turn off the alarm.

Power On-Off Switch: Use this switch to turn the system power on or off.

3.1.2 LED indicators

Four LED indicators are placed below the drive door to show system status. Please refer to Table 3-1 for the LED summary.

LED	Description	Green/Orange	Red
PWR	System Power	Normal	Abnormal
FAN	Cooling Fan Status	Normal	Abnormal
TEMP	In-chassis Temperature	Normal	Abnormal
HDD	Hard Drive Disk Activity	Data Access	No light

Table 3-1 System status LED summary

If the system is connected with a single power supply, the **PWR LED** is always Green when power on.

When the **PWR LED** is RED, it indicates a redundant power supply failure. To stop the alarm buzzer, press the **Alarm Reset** button. Then, check out the redundant power supply right away and replace the failed power supply module with an operational one.

When the **FAN LED** is RED, it indicates a failed cooling fan, and the alarm buzzer is also activated. To stop the alarm buzzer, press the **Alarm Reset** button; then replace the failed fan immediately.

If the **TEMP LED** is RED, it means that the system detects overheating in the chassis. In this case, an audible alarm is activated. To stop the alarm buzzer, press the **Alarm Reset** button. Inspect the fan filter and the rear section of the chassis immediately. Make sure airflow inside the chassis is smooth and not blocked by dust or other particles.

3.2 Replacing the fans

There are two fans behind the front plate of ACP-2320MB chassis and one fan behind the SATA drive bay.

3.2.1 Replacing the drive bay fan

1. Un-plug the fan power connector.
2. Remove the SATA drive bay door and take out the drive bay.
3. Remove the two screws, which mount the failed fan to the fan bracket, and take out the fan.
4. Place a new fan on the fan bracket, and then fasten them with four screws.
5. Place the fan bracket back on the drive bay and fasten it with two screws.
6. Re-install the SATA drive bay in the chassis, then plug in the fan power connector.

3.2.2 Replacing the front plate fan

To change any failed fan, face to the front of ACP-2320MB, then refer to Figure 3-1 and proceed as follows:

1. Un-plug both fan power connectors.
2. Remove the two screws that attach the fan bracket to the chassis and lift it with two fingers.
3. Remove the four screws that attach the failed fan to the fan bracket. Remove the fan.
4. Place a new fan on the fan bracket, and then fasten it with four screws.
5. Repeat Step 3 and 4 if you also want to change the other fan.
6. Slide the fan bracket back to the chassis and fasten it with two screws.
7. Plug in both fan power connectors.

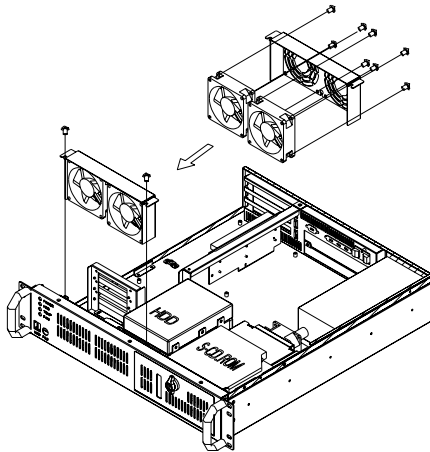


Figure 3-1 Changing the fans

3.3 Replacing the filters

There are two filters in the ACP-2320MB chassis: one in front of the fans and the other in the drive bay door. To change the filters, locate the front end of the chassis and proceed as follows:

3.3.1 Replacing the drive bay filter

1. Open the drive bay door and remove it from the chassis.
2. Remove the two screws that attach the filter cover to the inner side of the drive bay door. Open the filter cover, then remove the filter and replace it with a new one.
3. Fasten the filter cover to the inner side of the drive bay door, and then reattach the drive bay door to the chassis.

3.3.2 Replacing the fan filter

1. Open the drive bay door.
2. Refer to Figure 3-2: Slide the filter holder to the right with two fingers.
3. Remove the filter and replace it with a new one.
4. Slide back the filter holder and close the drive door.

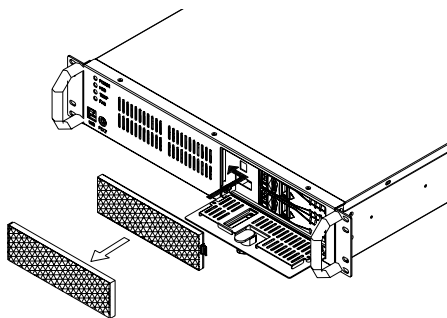


Figure 3-2 Changing the filters

3.4 Replacing the power supply

ACP-2320MB supports a single 2U-high power supply. To change the power supply, refer to Figure 3-3 and proceed as follows:

1. Remove the cover and un-plug the AC inlet from the ACP-2320MB power supply.
2. Unplug the ATX power connector and +12V power connector from the motherboard, and unplug the peripheral power connector(s) from the drive disk(s).
3. Remove the two screws that attach the power supply bracket to the chassis. Remove the three screws that attach the power supply to the rear plate of the chassis, and then lift out the power supply.
4. Place a new power supply into the chassis and attach it with the five screws.
5. Connect the ATX power connector and +12V power connector to the motherboard. Connect the peripheral power connector(s) to the proper drive disks.
6. Replace the cover and plug in the AC inlet.

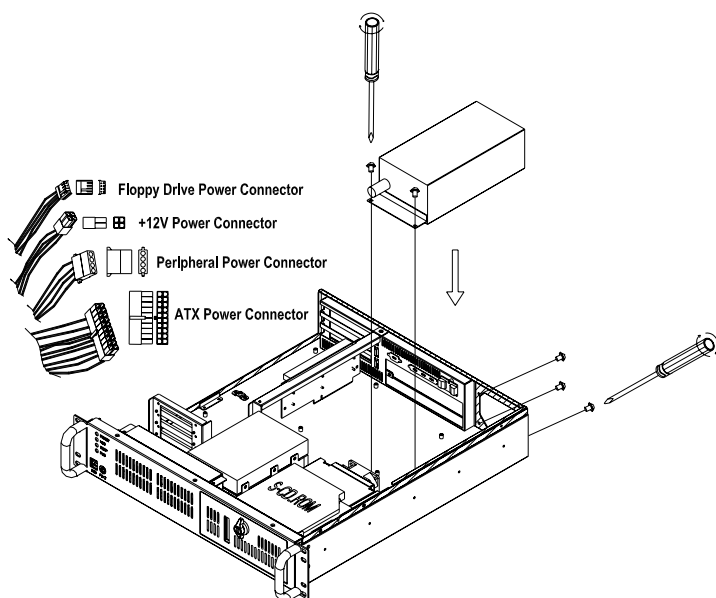


Figure 3-3 Changing the power supply

CHAPTER 4

Alarm Board

Chapter 4 Alarm Board

The alarm board is located in the middle section, between the driver bay and the power supply. The alarm board gives an audible alarm when:

- a. Any power supply module of redundant power supply fails
- b. One of the cooling fans fails
- c. Temperature inside the chassis rises
- d. A problem occurs with one of the backplane voltage levels

The detailed layout and specification of the alarm board are as follows:

4.1 Alarm Board Layout

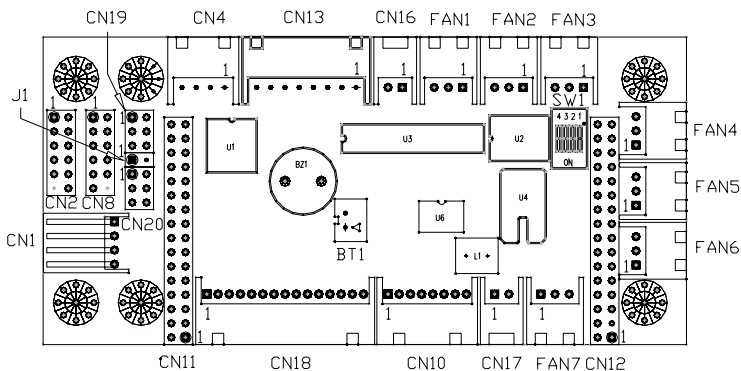


Figure 4-1 Alarm board layout

4.2 Alarm Board Specifications

- **Input Power:** +5V, +12V
- **Input Signals :**
 - 7 FAN connectors
 - One thermal board connector (can connect up to 8 thermal boards in series way)
 - One power indicator input
 - One alarm reset input.
 - One voltage signal connector (connect from back plane, includes $\pm 12V$, $\pm 5V$, $3.3V$)
 - One Hard Disk LED connector (connect from CPU card)
- **Output Signals:**
 - One LED board connector
 - One LCM board connector
 - One Buzzer output
- **Pin Definition:**

CN1: External Power Connector, standard mini 4 Pin power connector			
Pin 1	+12V, 2A current maximum	Pin 2	GND
Pin 3	GND	Pin 4	5V, 2A current maximum
CN2: 10/100M LAN Connector			
Pin 1	SPLED	Pin 2	TERMPANE
Pin 3	RX+	Pin 4	RX-
Pin 5	GND	Pin 6	LVCC
Pin 7	TX+	Pin 8	TX-
Pin 9	LILED	Pin 10	TERMPANE

Pin 11	N/A	Pin 12	NC
CN4: I²C Sensor board (LM75) Connector			
Pin 1	+5V	Pin 2	Sensor board I ² C bus clock
Pin 3	Sensor board I ² C bus data	Pin 4	GND
CN8: RS-232 Connector			
Pin 1	DCD	Pin 2	RX
Pin 3	TX	Pin 4	DTR
Pin 5	GND	Pin 6	DSR
Pin 7	RTS	Pin 8	CTS
Pin 9	RI	Pin 10	NC
Pin 11	NC	Pin 12	N/A
CN10: LCM Display Board Connector			
Pin 1	LCM I2C bus data	Pin 2	LCM I2C bus clock
Pin 3	+12V	Pin 4	GND
Pin 5	+5V	Pin 6	+5V
Pin 7	Diagnostic LED	Pin 8	GND
CN11: SNMP-1000 Daughter Board Connector (Left side)			
Pin 1	SIN	Pin 2	SOUT
Pin 3	CTS#	Pin 4	DCD#
Pin 5	RTS#	Pin 6	DTR#
Pin 7	DSR#	Pin 8	ID 0
Pin 9	ATX ON	Pin 10	DO 4
Pin 11	GND	Pin 12	DO 3
Pin 13	Watchdog IN	Pin 14	DO 2
Pin 15	Watchdog OUT	Pin 16	DO 1
Pin 17	SPLED	Pin 18	NC
Pin 19	LILED	Pin 20	NC
Pin 21	GND	Pin 22	NC
Pin 23	TX+	Pin 24	NC
Pin 25	TX-	Pin 26	NC
Pin 27	RX+	Pin 28	NC
Pin 29	RX-	Pin 30	NC
Pin 31	TERMPANE	Pin 32	NC

CN12: SNMP-1000 Daughter Board Connector (Right side)			
Pin 1	NC	Pin 2	NC
Pin 3	Power Good A	Pin 4	NC
Pin 5	NC	Pin 6	NC
Pin 7	Diagnostic LED	Pin 8	FAN 1
Pin 9	GND	Pin 10	FAN 2
Pin 11	GND	Pin 12	FAN 3
Pin 13	VCC	Pin 14	FAN 4
Pin 15	VCC	Pin 16	FAN 5
Pin 17	VCC	Pin 18	FAN 6
Pin 19	BEEP	Pin 20	FAN 7
Pin 21	5VSB	Pin 22	NC
Pin 23	-5V	Pin 24	NC
Pin 25	+5V	Pin 26	B_SCLK
Pin 27	+3.3V	Pin 28	B_SDAT
Pin 29	-12V	Pin 30	T_SCLK
Pin 31	+12V	Pin 32	T_SDAT
CN13: Voltage Detect Input Connector			
Pin 1	5VSB	Pin 2	GND
Pin 3	GND	Pin 4	-5V
Pin 5	+5V	Pin 6	+3.3V
Pin 7	-12V	Pin 8	+12V
CN16: 4 bit Power Good Input			
Pin 1	Power Good A	Pin 2	GND
CN18: LED Board Connector			
Pin 1	GND	Pin 2	+5V Signal
Pin 3	+12V Signal	Pin 4	-5V Signal
Pin 5	-12V Signal	Pin 6	HDD Signal
Pin 7	Power Good Signal	Pin 8	Power Fail Signal
Pin 9	Temperature Good Signal	Pin 10	Temperature Fail Signal
Pin 11	FAN Good Signal	Pin 12	FAN Fail Signal
Pin 13	NC	Pin 14	+3.3V Signal
Pin 15	5VSB Signal		

CN19: Connector bank from CPU card			
Pin 1	HDD LED Signal	Pin 2	ATX soft power switch
Pin 3	I2C CLK	Pin 4	ATX soft power switch (-)
Pin 5	I2C DATA	Pin 6	System Reset Signal
CN20: Connector bank to Chassis			
Pin 1	ATX Momentary switch	Pin 2	ATX Momentary switch (-)
Pin 3	GND	Pin 4	System Reset Signal
Pin 5	Watchdog IN	Pin 6	Watchdog OUT
J1: External Speaker			
Pin 1	Buzzer	Pin 2	+5V

4.3 Switch Settings

4.3.1 FAN Number Setting

FAN NUMBER	SW 1-1	SW 1-2	SW 1-3	SW 1-4
1	OFF	OFF	ON	OFF
2	OFF	ON	OFF	OFF
3	OFF	ON	ON	OFF
4	ON	OFF	OFF	OFF
5	ON	OFF	ON	OFF
6	ON	ON	OFF	OFF
7	ON	ON	ON	OFF

4.3.2 Thermal Board Temperature Setting

TEMP INDEX	SW 1 -1	SW 1 - 2	SW 1 - 3	SW 1 - 4
TEMP 1	OFF	OFF	OFF	ON
TEMP 2	OFF	OFF	ON	ON
TEMP 3	OFF	ON	OFF	ON
TEMP 4	OFF	ON	ON	ON
TEMP 5	ON	OFF	OFF	ON
TEMP 6	ON	OFF	ON	ON
TEMP 7	ON	ON	OFF	ON
TEMP 8	ON	ON	ON	ON

4.4 Thermal Sensor

The ACP-2320MB chassis is equipped with one temperature sensor. It is located on the rear side of ACP-2320MB and very close to the power supply.

When the temperature rises, the temperature sensor sends a signal to the alarm board and a continuous alarm will sound. To stop the alarm, press the ***Alarm Reset Switch*** on the front panel.

APPENDIX

A

Exploded Diagram

Appendix A Exploded Diagram

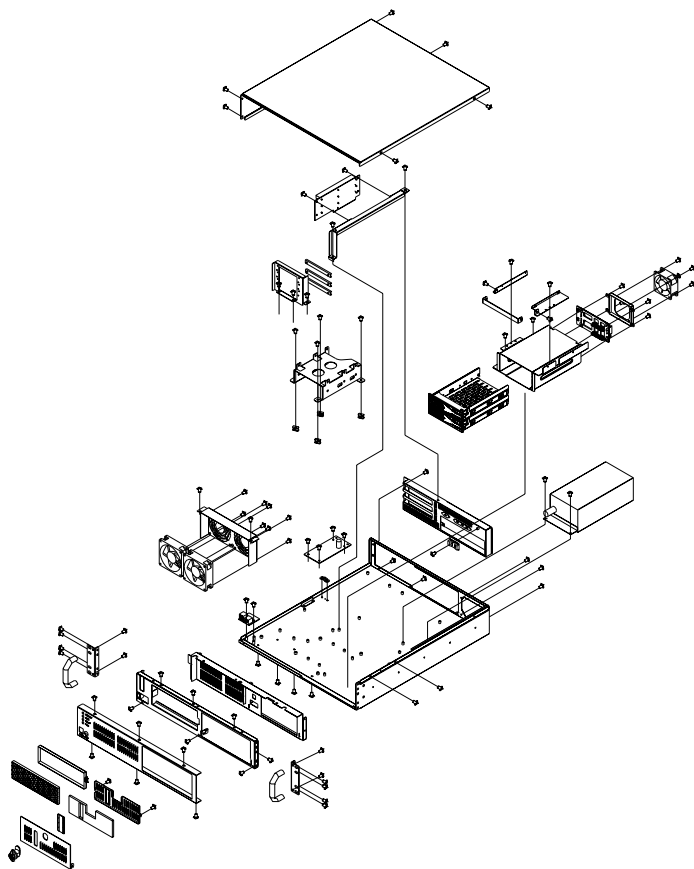


Figure A-1 Exploded Diagram

APPENDIX

B

Safety Instructions

Appendix B Safety Instructions

B.1 English

1. Read these safety instructions carefully.
2. Keep this installation reference guide for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Do not use liquid or spray detergents for cleaning. Use a damp cloth.
4. For pluggable equipment, the power outlet must be installed near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall could cause damage.
7. The openings on the enclosure are for air convection, to protect the equipment from overheating. **DO NOT COVER THE OPENINGS.**
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient over-voltage.
12. Never pour any liquid into an opening. This could cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If any of the following situations arises, get the equipment checked by service personnel:
 - a. The power cord or plug is damaged.
 - b. Liquid has penetrated into the equipment.
 - c. The equipment has been exposed to moisture.
 - d. The equipment does not work well, or you cannot get it to work according to the installation reference guide.
 - e. The equipment has been dropped and damaged.
 - f. The equipment has obvious signs of breakage.

15. DO NOT LEAVE THIS EQUIPMENT IN AN UNCONTROLLED ENVIRONMENT WHERE THE STORAGE TEMPERATURE IS BELOW -20° C (-4° F) OR ABOVE 60° C (140° F). THIS MAY DAMAGE THE EQUIPMENT.
16. The sound pressure level at the operator's position according to IEC 704-1:1982 should be equal to or less than 70 dB(A).

DISCLAIMER: This set of instructions is given according to IEC 704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

B.2 German – wichtige Sicherheitshinweise

1. Bitte lesen sie Sich diese Hinweise sorgfältig durch.
2. Heben Sie diese Anleitung für den späteren Gebrauch auf.
3. Vor jedem Reinigen ist das Gerät vom Stromnetz zu trennen. Verwenden Sie Keine Flüssig-oder Aerosolreiniger. Am besten dient ein angefeuchtetes Tuch zur Reinigung.
4. Die Netzanschlußsteckdose soll nahe dem Gerät angebracht und leicht zugänglich sein.
5. Das Gerät ist vor Feuchtigkeit zu schützen.
6. Bei der Aufstellung des Gerätes ist auf sicheren Stand zu achten. Ein Kippen oder Fallen könnte Verletzungen hervorrufen.
7. Die Belüftungsöffnungen dienen zur Luftzirkulation die das Gerät vor überhitzung schützt. Sorgen Sie dafür, daß diese Öffnungen nicht abgedeckt werden.
8. Beachten Sie beim Anschluß an das Stromnetz die Anschlußwerte.
9. Verlegen Sie die Netzanschlußleitung so, daß niemand darüber fallen kann. Es sollte auch nichts auf der Leitung abgestellt werden.
10. Alle Hinweise und Warnungen die sich am Geräten befinden sind zu beachten.
11. Wird das Gerät über einen längeren Zeitraum nicht benutzt, sollten Sie es vom Stromnetz trennen. Somit wird im Falle einer Überspannung eine Beschädigung vermieden.

12. Durch die Lüftungsöffnungen dürfen niemals Gegenstände oder Flüssigkeiten in das Gerät gelangen. Dies könnte einen Brand bzw elektrischen Schlag auslösen.
13. Öffnen Sie niemals das Gerät. Das Gerät darf aus Gründen der elektrischen Sicherheit nur von autorisiertem Servicepersonal geöffnet werden.
14. Wenn folgende Situationen auftreten ist das Gerät vom Stromnetz zu trennen und von einer qualifizierten Servicestelle zu überprüfen:
15. Netzkabel oder Netzstecker sind beschädigt.
16. Flüssigkeit ist in das Gerät eingedrungen.
17. Das Gerät war Feuchtigkeit ausgesetzt.
18. Wenn das Gerät nicht der Bedienungsanleitung entsprechend funktioniert oder Sie mit Hilfe dieser Anleitung keine Verbesserung erzielen.
19. Das Gerät ist gefallen und/oder das Gehäuse ist beschädigt.
20. Wenn das Gerät deutliche Anzeichen eines Defektes aufweist.
21. Bitte lassen Sie das Gerät nicht unbehehrt hinten unter -20° C (-4° F) oder oben 60° C (140° F), weil diesen Temperaturen das Gerät zerstören könnten.

Der arbeitsplatzbezogene Schalldruckpegel nach DIN 45 635 Teil 1000 beträgt 70dB(A) oder weniger.

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