SPC-520

Rackmount Server PC

Copyright Notice

Acknowledgments

SPC-520, SPC-520MB, SPC-520P4, SPC-520P7, SPC-520MB-UW, SPC-520MB-U2 series and PCA-6109P4, PCA-6109P7 are the trademark of Advantech Co., Ltd.

NOTE:

The information in this document is provided for reference only. Advantech does not assume any liability arising out of the application or use of the information or products described herein. This manual is subject to change without notice.

Part No. 2002052000 1st Edition
Printed in Taiwan October 1999

Contents

Chapter 1 General Information

1.1 Introduction

The SPC-520P7 / SPC-520MB are PC/AT-compatible computer designed for high relibility applications, not only easily installation and maintain for mission critical applications and harsh environment use, is a high-end rackmount Fault Resilient IPC chassis. The SPC-520P7 includes a 7PCI/1ISA/1PICMG-slot PC-bus compatible passive backplane and 400-watt ATX redudnant power supply. The SPC-520MB can be installed ATX mother board and includes one 400-watt ATX power supply. Both SPC-520P7/MB provide three hot-swappable fan cooling system and accepts up to ten front-accessable half-heigh disk drives.

SPC-520P7/MB feature an advanced fault detection and alarm notification system to monitor its own hardware status. It is dangerous and will cause a lot of loss if your PC system shuts down without any warning in advance.

1.2 Model List

Model Number	Backplane	400-watt AC-DC Power Supply
SPC-520P7	7PCI / 1ISA / 1PICMG -slot	400-watt ATX Redudnant Power Supply
SPC-520MB	*** (Reserve the space for ATX Mother board)	400-watt ATX Power Supply (PS/2 size)

1.3 Specifications

- **Construction**: Heavy-duty steel chassis
- **Disk drive capacity**: Front-accessible eight half-height drives (vertical), and two half-height drives (Horizontal)
- **Cooling system**: Three 86 CFM cooling fans inside the chassis
- **Controls**: Power On/Off switch on power supply module in rear panel, Alarm Reset botton, ATX Soft-Switch and system reset botton on the front panel
- **Indicators**: Bi-color LEDs (green and red) for Power failure, fan failure and overheating. LED indicator (green) for system power on/off.
- **Buzzer**: One buzzer for audio alarm / volumn control on board
- **Dimensions**: 19"(W) x 8.75"(H) x 26"(D), 482mm(W) x 222.25mm(H) x 660mm(D)
- **Net Weight**: RAID-520MB : 37.4 lb (17 Kg), RAID-500P7 : 44 lb (20 Kg)
- **Paint color:** (Front panel) Pantone Black 4C 2X, (Chassis) Brushed finish, Ni
- **Operating temperature**: 0 to 50°C (32 to 122°F)
- **Relative humidity**: 20% to 90%
- **CE Compliant**

Passive Backplane: PCA-6109P7 (for SPC-520P7)

- **Slots**: 1 ISA/7 PCI/1 PICMG-slot
- **PC Board**: 4-layer PCB with ground and power planes for reduced noise and ower power supply impedance
- **Indicators**: LEDs for +3.3V, +5 V, -5 V, +12 V and -12 V

Hot-swappable AC-DC 400-watt ATX Redundant Power Supply (RPS-400ATX)

- **Output rating**: 400 watts (Max.)
- **Input voltage**: 90 to 132 V_{AC} or 180 to 264 V_{AC} @ 47~63 Hz, switchable
- **Output voltages**: +5 V @ 42 A, +3.3V @ 20A, +12 V @ 14 A, -5 V @ 1 A, -12 V @ 1 A
  +5Vsb @ 0.75A (+5V /+3.3V Total: 210Watt)
- **Minimum load:** +5 V @ 2 A, +3.3V @ 0.3A, +12 V @ 0.5 A
- **MTBF**: 100,000 hours at 25°C, 70% Load
- **Safety**: UL/C-UL/TUV/CE Approved

AC-DC 400-watt ATX Power Supply PS/2-size (PS-400ATX)

- **Output rating**: 400 watts (Max.)
- **Input voltage**: 90 to 132 V_{AC} or 180 to 264 V_{AC} @ 47~63 Hz, switchable
- **Output voltages**: +5 V @ 42 A, +3.3V @ 20A, +12 V @ 14 A, -5 V @ 1 A, -12 V @ 1 A
  +5Vsb @ 0.75A (+5V /+3.3V Total : 210Watt)
- **Minimum load:** +5 V @ 2 A, +3.3V @ 0.3A, +12 V @ 0.5 A
- **Minimum load:** +5 V @ 3 A, +12 V @ 1 A
- **MTBF**: 100,000 hours at 25°C, 70% Load
- **Safety**: UL/C-UL/TUV/CE Approved

Fault Detection and Alarm Notification

• **Power failure:** It works only when you install the redundant power supply (RPS-400ATX)
If either of the two power modules fails, the dedicated LED (PWR) changes color from green to red also audio alarm. The dedicated LED remains red for failed power module until it fixed.

•**Fan failure:** If either of the three cooling fans fails, the dedicated LED (Fan 1 or Fan 2) changes color from green to red also audio alarm. The dedicated LED remains red for failed fan set until it fixed.

The fan ass'y can be hot-swap if either fan is fail Dual fans for redundant application

• **High Temperature:** If the chassis interior temperature exceeds 65°C(149°F)(standard setting), the LED changes color from green to red also audio alarm. The LED remains red until the temperature goes below 63°C

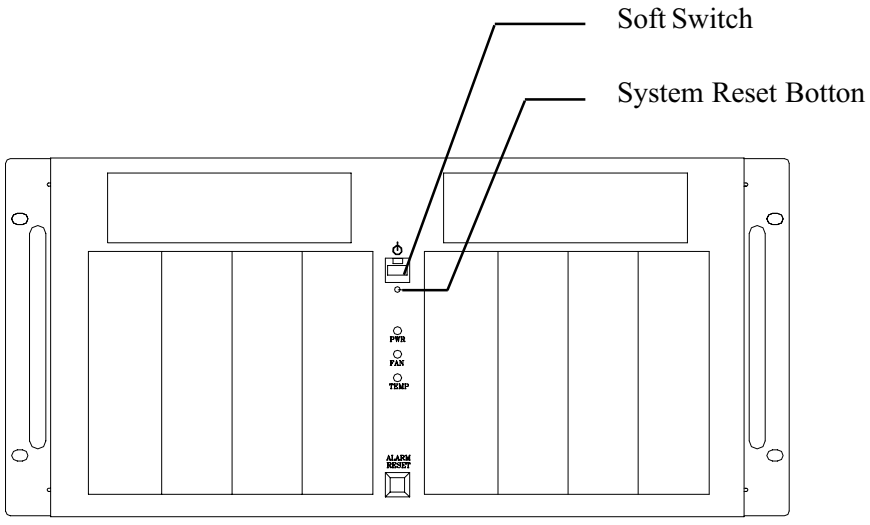
• **Temperature Select:** The temperature can be set on four status by adjust the switch on alarm board : 65°C (Default setting) , 55°C , 70°C and 75°C

• **Audible Alarm:** Buzzer on board is activated (continous beep)as soon as a malfunction is detected and sounds until the alarm reset button is pressed. The alarm reset button is on the front panel. However, the alarm indicator will stay red until the fault condition is resolved.

• **Self-Test:** Press the Alarm reset button for 8 senconds, the alrm board will self-test automatically for all functions. The alarm board also can monitor the temperature's sensor IC. If the sensor is failed or no connection, the buzzer will alarm as " Beep x Beep x ...".

The Controls for System

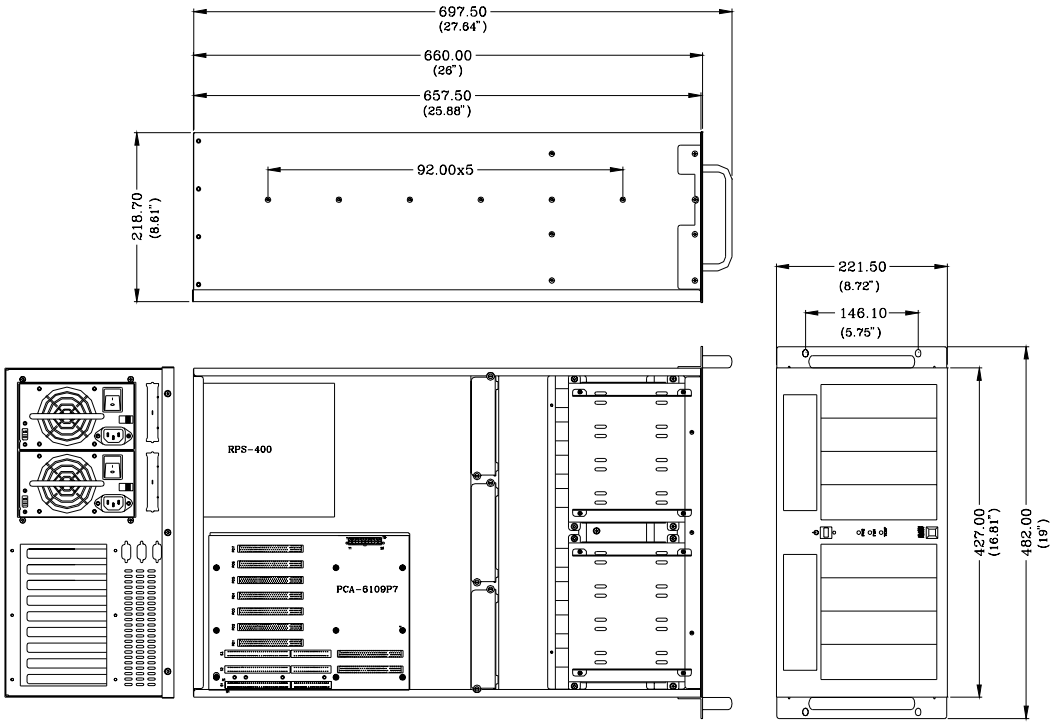
The SPC-520 provides one soft-switch and one system reset botton to re-boot the PC system on the front panel. See figure as following :



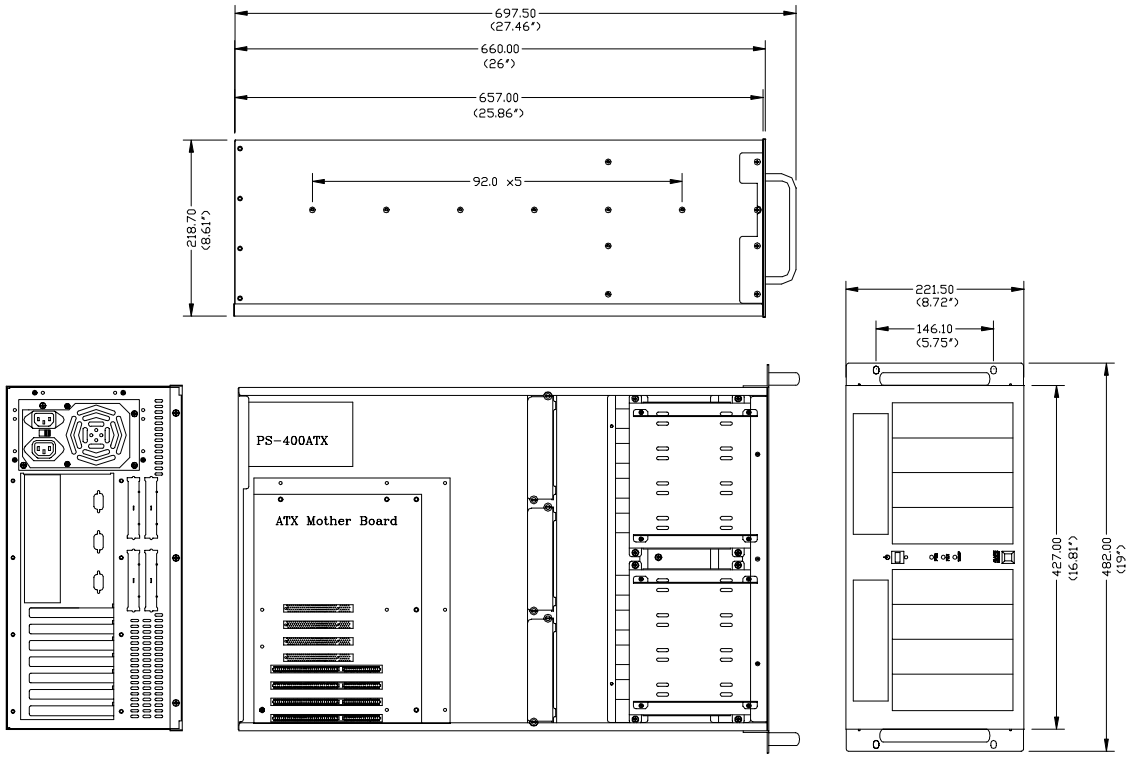
1.4 Dimensions

Unit = mm

SPC-520P7



SPC-520MB



Chapter 2 System Setup

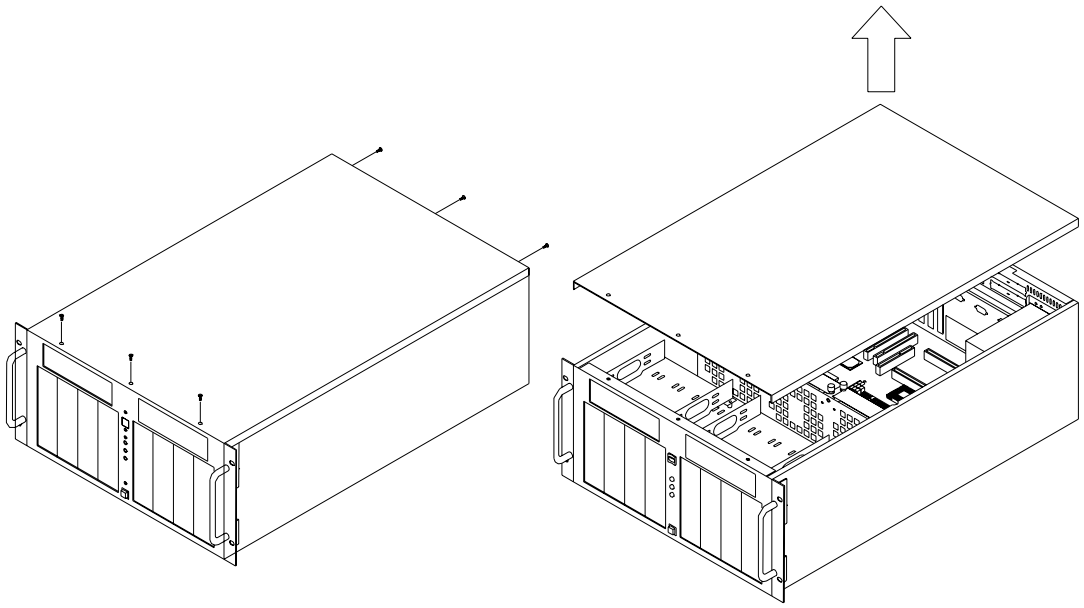
The SPC-520 is a ATX-compatible computer designed for industrial applications. This rugged chassis meets the EIA RS-310C 19" rackmount standard.

Setting up your SPC-520 requires only a screwdriver and a small amount of time. Before you begin, you should also gather together all of the cards you plan to install, as well as the disk drives you plan to use.

WARNING: ***Disconnect all power from the chassis before you install the CPU cards. Unplug the power cord from the wall, don't just turn off the power switch. If you are not sure what to do, take the job to an experienced professional.***

2.1 Removing the Cover

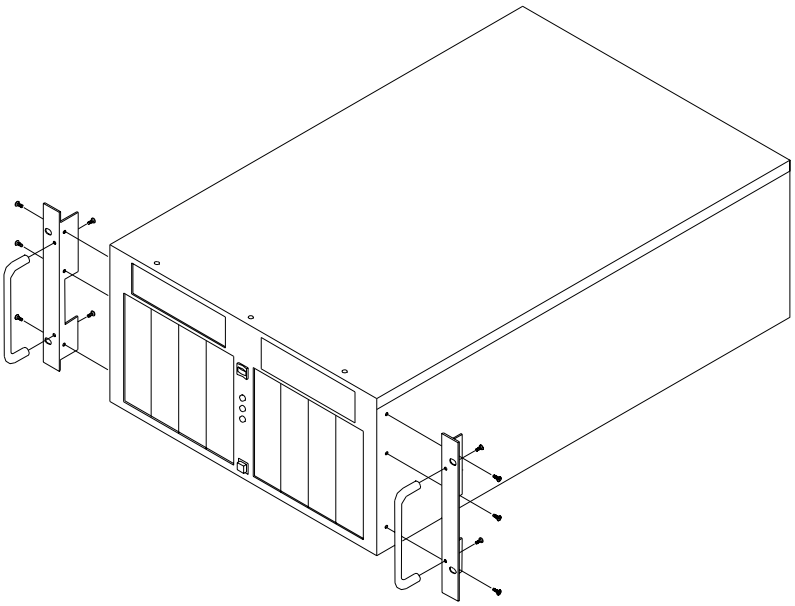
There are screws near the top along the sides and on the rear secure the cover to the chassis. Remove them, and then slide the cover toward the rear chassis. See figure 2.1 below:



2.1 Remov the cover

2.2 Removing the Handles

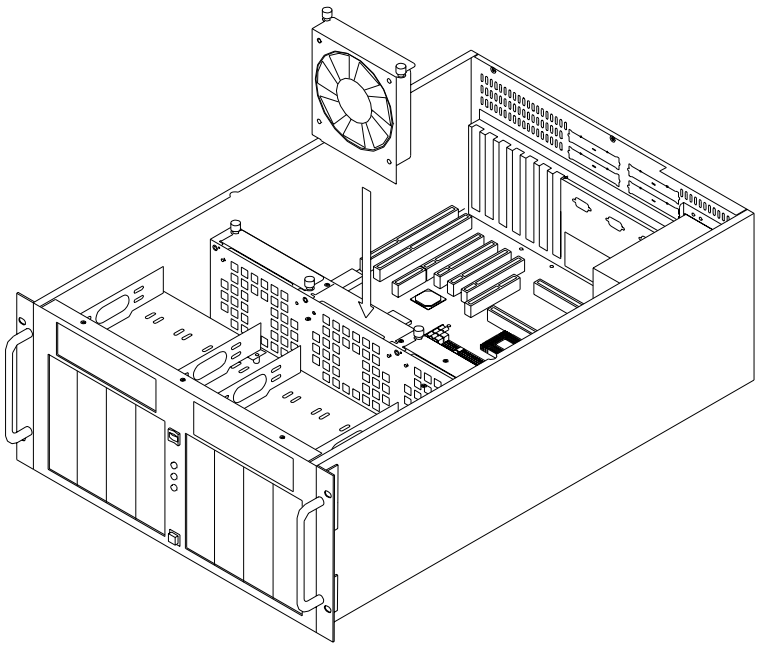
The handles and mounting ears for the front panel can be removed as follows. Please see figures 2.2 below



2.2 Removing the handles

2.3 The Cooling Fans

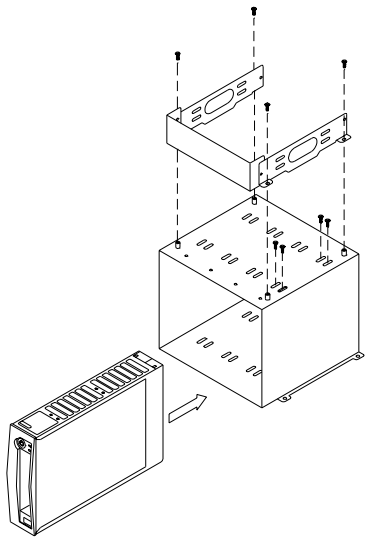
There are three cooling fans inside the chassis. To replace the fans for maintainence : open the top cover as the figure 2.1 and loosen the thumbscrews, then plug the whole fan ass'y. please refer to figure 2.3 below.



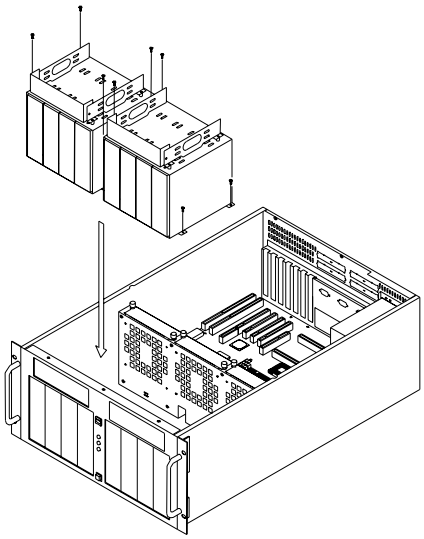
2.3 Cooling fans

2.4 Installing the Disk Drives

1. Open the top cover as figure2.1. There are two independent disk drive bays on the both sides. Remove the four outer screws which mount the drive-bay to the chassis. See figure 2.4 below
2. Slide the drive-bay toward the rear chassis and lift it free of the chassis. Remove the cover of the drive bay front and insert the drives into their proper locations in the drive bay. See figure 2.5



2.4 Removing the disk drive bay



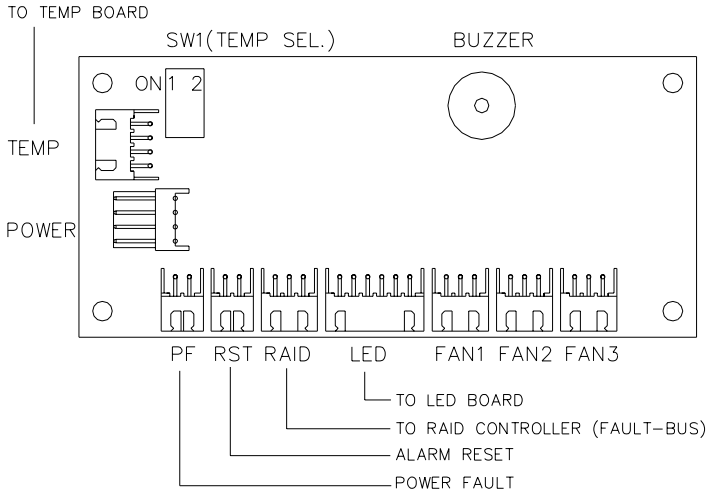
2.5 Inserting the drives into the drive bay

2.5 Temperature Setting

If the chassis interior temperature exceeds 65°C(149°F)(default setting), the LED changes color from green to red also audio alarm. The LED remains red until the temperature goes below 63°C

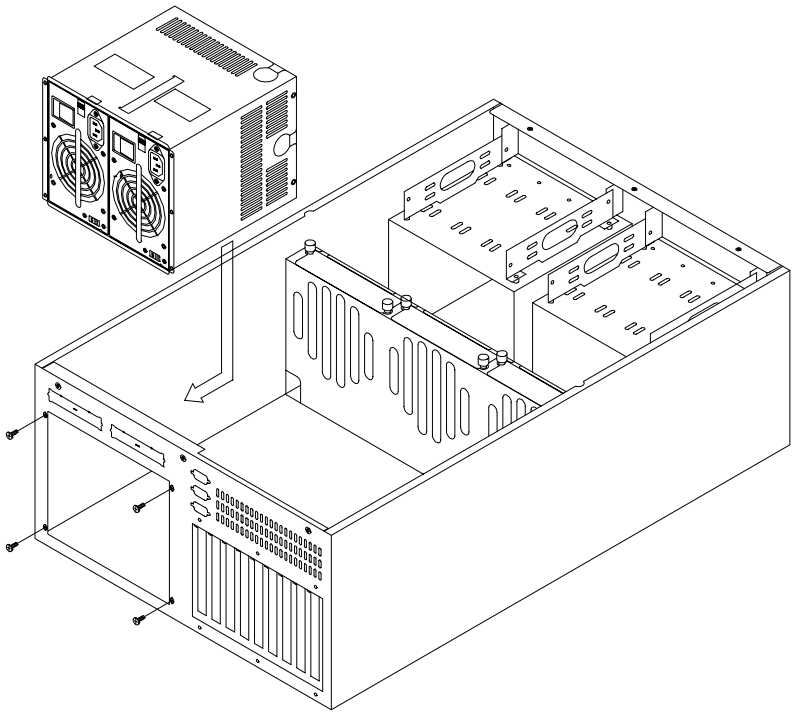
Temperature also can be selected (SW1) on the alarm board inside the chassis :

SW1		
1	2	TEMP
OFF	OFF	65°C
OFF	ON	55°C
ON	OFF	70°C
ON	ON	75°C

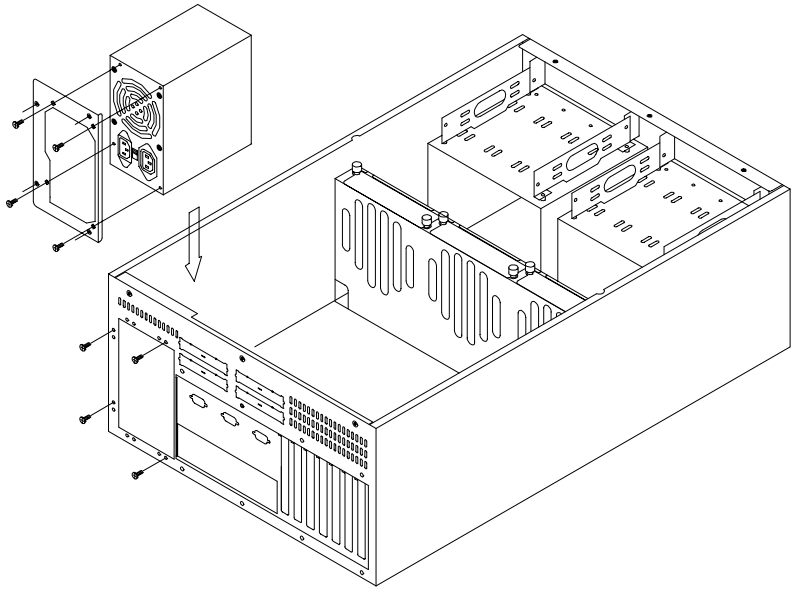


2.6 Alarm board

2.6 Installing the Power Supply Unit



2.7 ATX power supply (SPC-520P7)

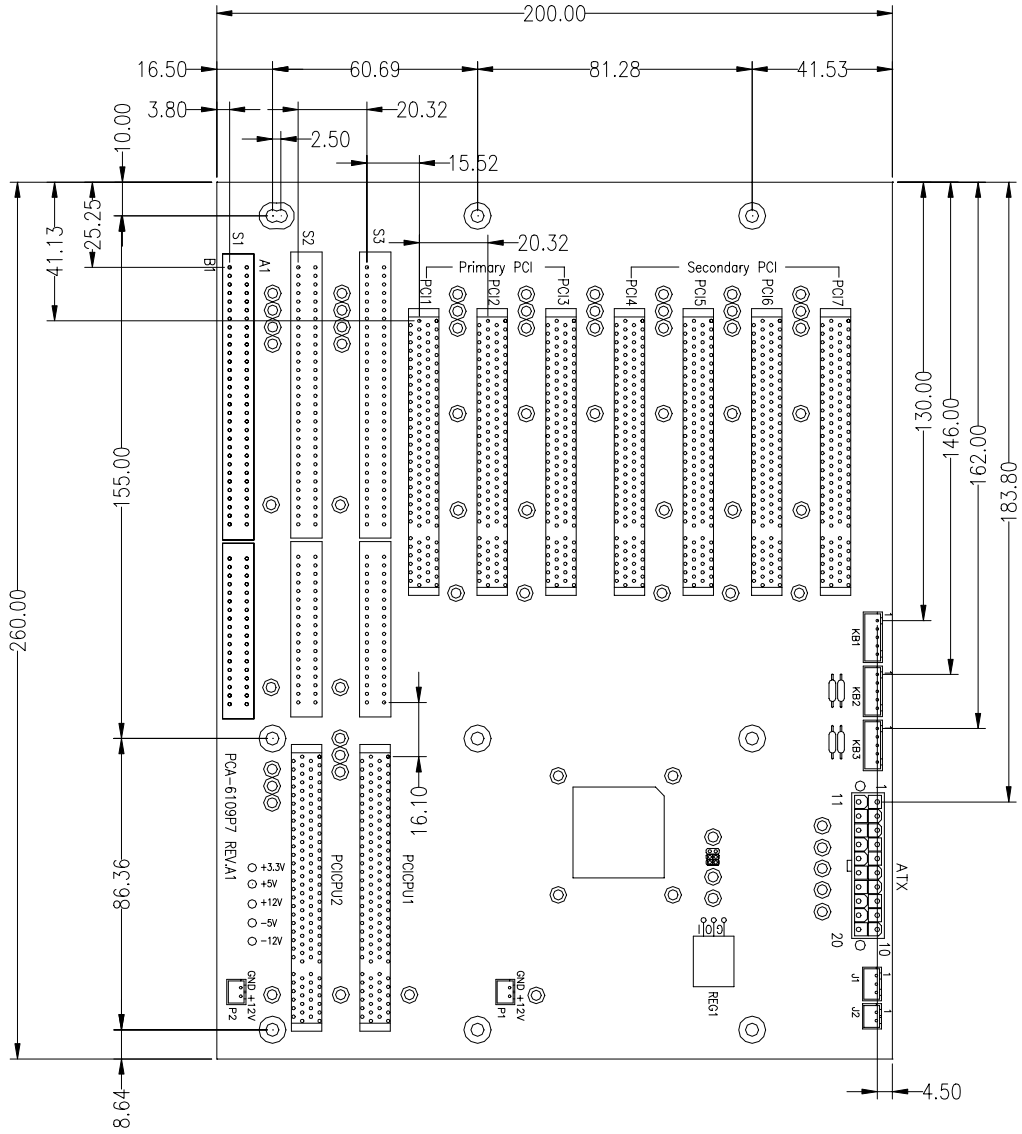


2.8 ATX Redundant power supply (SPC-520MB)

Appendix A Passive Backplane

Unit = mm

PCA-6109P7: 7 PCI / 1 ISA / 1 PICMG-slot Backplane Dimensions: 260 x 200 mm

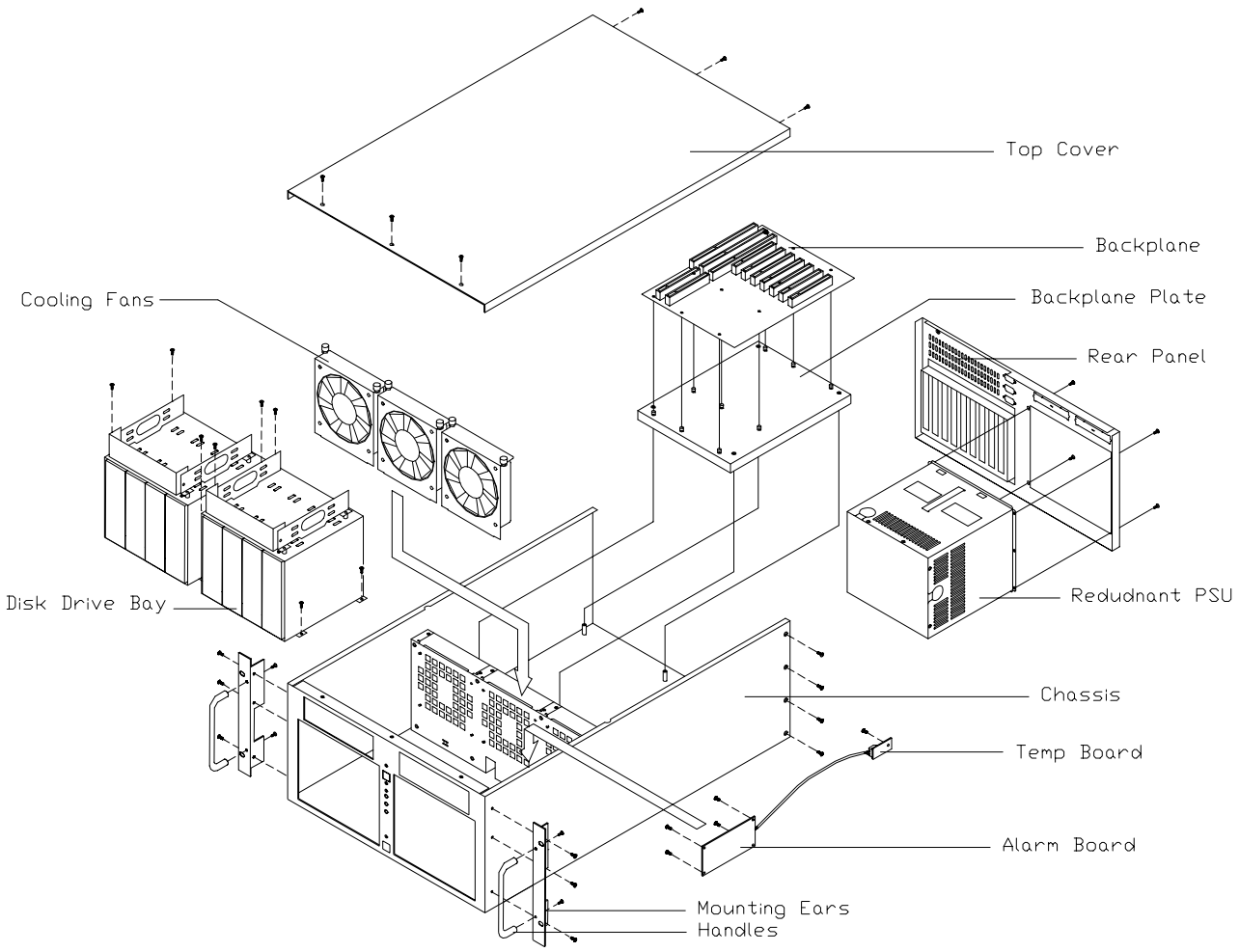


PCICPU PIN&NET					
PCI PIN	IDSEL				
PCI1 NET	AD31	INTB	INTC	INTD	INTA
PCI2 NET	AD30	INTC	INTD	INTA	INTB
PCI3 NET	AD29	INTD	INTA	INTB	INTC
PCI4 NET	SAD20	INTA	INTB	INTC	INTD
PCI5 NET	SAD21	INTB	INTC	INTD	INTA
PCI6 NET	SAD22	INTC	INTD	INTA	INTB
PCI7 NET	SAD23	INTD	INTA	INTB	INTC

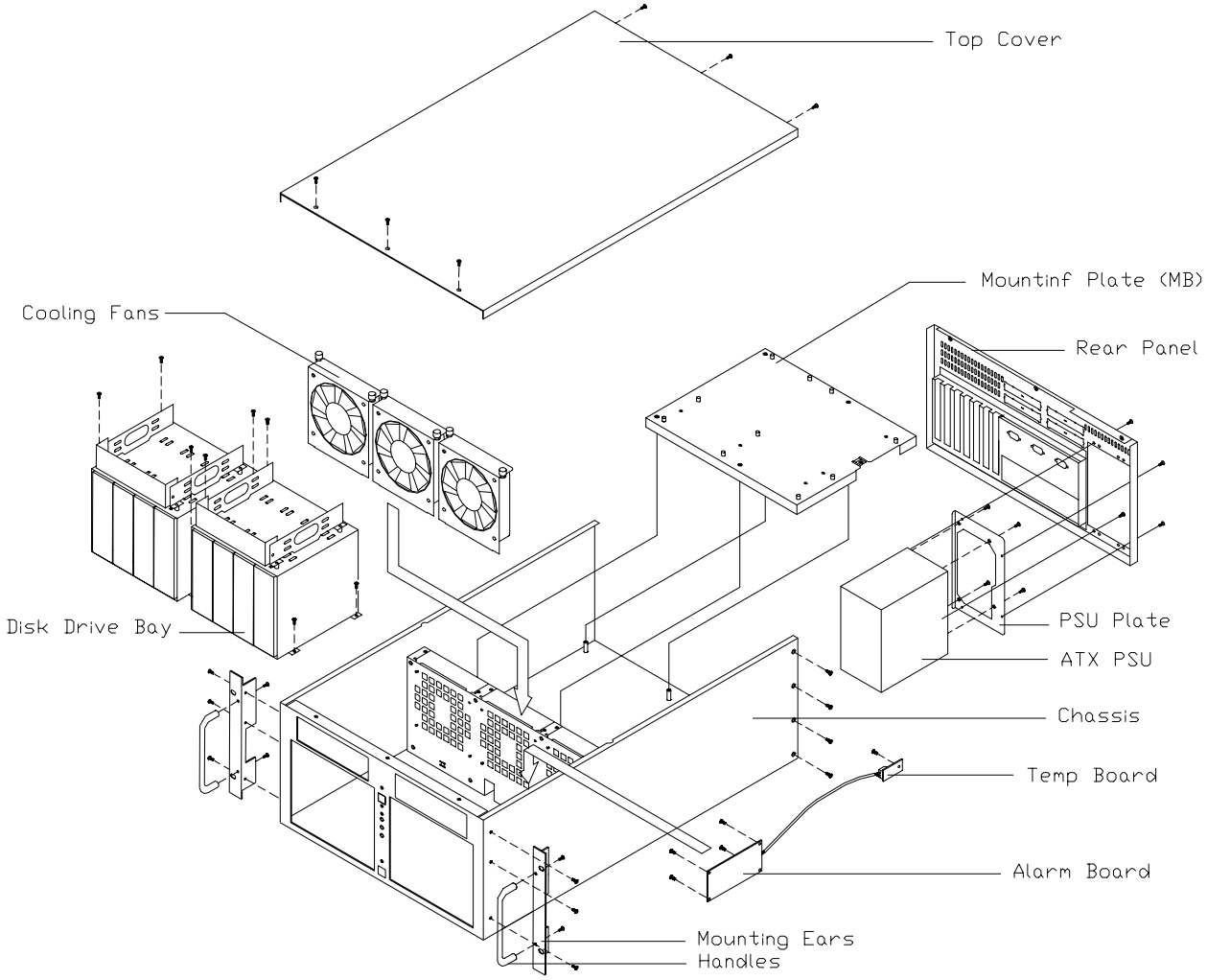
ATX				J1	
Pin	Description	Pin	Description	Pin	Description
1	+3.3V	11	+3.3V	1	+5Vsb
2	+3.3V	12	-12V	2	GND
3	GND	13	GND	3	PS-ON
4	+5V	14	PS-ON	J2	
5	GND	15	GND	Pin	Description
6	+5V	16	GND	1	PS-ON
7	GND	17	GND	2	
8	(NC)	18	-5V	P1/P2	
9	+5Vsb	19	+5V	1	GND
10	+12V	20	+5V	2	+12V

Appendix B Exploded Diagrams

SPC-520P7



SPC-520MB


Top Cover
Mountinf Plate (MB)
Cooling Fans
Rear Panel
Disk Drive Bay
PSU Plate
ATX PSU
Chassis
Temp Board
Alarm Board
Mounting Ears
Handles

Appendix C Safety Instructions

1. Please read these safety instructions carefully.
2. Please keep this User's Manual for later reference.
3. Please disconnect this equipment from AC outlet before cleaning. Don't use liquid or sprayed detergent for cleaning. Use moisture sheet or cloth for cleaning.
4. For pluggable equipment, the socket-outlet shall be installed near the equipment and shall be easily accessible.
5. Please keep this equipment from humidity.
6. Lay this equipment on a reliable surface when install. A drop or fall could cause injury.
7. The openings on the enclosure are for air convection hence protect the equipment from overheating. DO NOT COVER THE OPENINGS.
8. Make sure the voltage of the power source when connect the equipment to the power outlet.
9. Place the power cord such a way that people can not 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 the equipment from mains to avoid being damaged by transient overvoltage.
12. Never pour any liquid into opening, this could cause fire or electrical shock.
13. Never open the equipment. For safety reason, the equipment should only be opened by qualified service personnel.
14. If one of the following situations arises, get the equipment checked by a 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 user's manual.
    e. The equipment has dropped and damaged.
    f. If the equipment has obvious sign of breakage.
15. DO NOT LEAVE THIS EQUIPMENT IN AN UNCONDITIONED ENVIRONMENT, WITH STORAGE TEMPERATURES BELOW -20°C (-4°F) OR ABOVE 60°C (140°F), AS IT MAY DAMAGE THE EQUIPMENT.

The sound pressure level at the operator's position according to IEC 704-1:1982 is equal to or less than 70dB(A).