

IPC-622MS

Industrial PC Chassis

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Chapter 1 General Information

1.1 Introduction

The IPC-622MS is a 20-slot, 19" rackmount industrial PC chassis with 400-watt AC-DC power supply.

IPC-622MS features an advanced fault detection and alarm notification system to monitor its own hardware status, including overheating and fan-failure problems. It is dangerous and will cause a lot of loss if your PC system shuts down without any warning in advance. IPC-622MS, the fault resilient IPC, is designed to prevent from this situation to be more reliable.

The IPC-622MS will withstand shock, vibration, dust and a wide range of operating temperatures in harsh environments. The chassis is positively pressurized by six filtered push-pull cooling fans to exclude dust and dirt. A lockable door protects drives and switches from tampering and particles.

1.2 Specifications

General

- **Construction:** Heavy-duty steel
- **Disk drive capacity:** Six 3.5" disk drives
- **Cooling system:** Four 49 CFM cooling fan (flow in) in front and two 49CFM cooling fans (flow out) in rear panel with an air filter
- **Controls:** Power On/Off switch, CPU reset and alarm reset button are protected by a lockable door
- **Indicators:** LEDs for power On/Off and HDD activity. Bi-color LEDs(green and red) for fan failure failure and overheating
- **Speaker:** One 8 ohm / 0.2Watt speaker, volume control on board
- **Dimensions:** 19" (W) x 10.5" (H) x 18" (D)
482mm(W) x 267mm(H) x 457 mm(D)
- **Weight:** 66 lb (30 Kg)
- **Paint color:** Pantone 414U

Passive Backplane (PCA-6119P17)

- **Slots:** 17PCI / 1PICMG -slot
- **PC board:** 4-layer PCB with ground and power planes for reduced noise and lower power supply impedance
- **Indicators:** LEDs for +5 V, -5 V, +12 V and -12 V

400-watt AC-DC Power Supply

- **Output rating:** 400 watts (Max.)
- **Input voltage:** 100 to 130 V_{AC} or 200 to 260 V_{AC} @ 47~63 Hz, switchable
- **Output voltages:** +5 V @ 40 A, +12 V @ 20 A, -5 V @ 0.5 A, -12 V @ 1 A
Maximum power output of all outputs combined must not exceed 400watts
- **Minimum load:** +5 V @ 3 A, +12 V @ 0.5 A
- **MTBF:** 150,000 hours
- **Safety:** UL/CSA Approved

Environmental Specifications

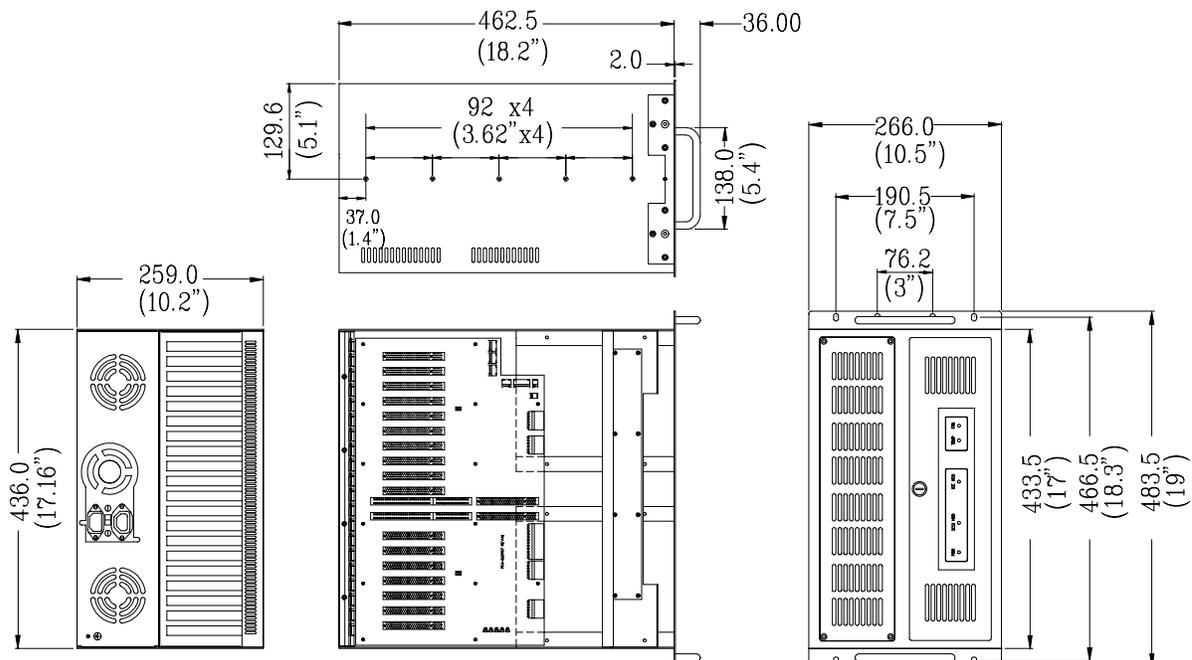
- **Operating temperature:** 41 to 95°F (5 to 35°C), Relative humidity : 10 to 85% @ 35°C
- **Storage Temperature :** -13 to 140°F (-25 to 60°C), 0 to 95% relative humidity
- **Safety:** UL / C-UL Listed
- **EMI:** FCC Class A

Fault Detection and Alarm Notification

- **Fan failure:** If either of the four cooling fans fails, the FAN LED changes color from green to red also audio alarm. The dedicated LED remains red for failed fan set until it fixed.
- **High Temperature:** If the chassis interior temperature exceeds 55°C(131°F)(standard setting), the LED changes color from green to red also audio alarm.

1.3 Dimensions

Unit = mm



Chapter 2 System Setup

Setting up your IPC-622MS 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.

The lockable door is located on the lower chassis front cover providing access to the control panel. This offers protection and for disk drive and air filter against damage and easily access. The control panel functions include Power on/off switch , CPU reset switch and alarm reset switch and five LED indicators to assist in monitoring system status. On the rear panel there is a Ground point (earthing point) located on the bottom right hand corner. This provides an earth for the whole system and is attached via a screw.

WARNING:



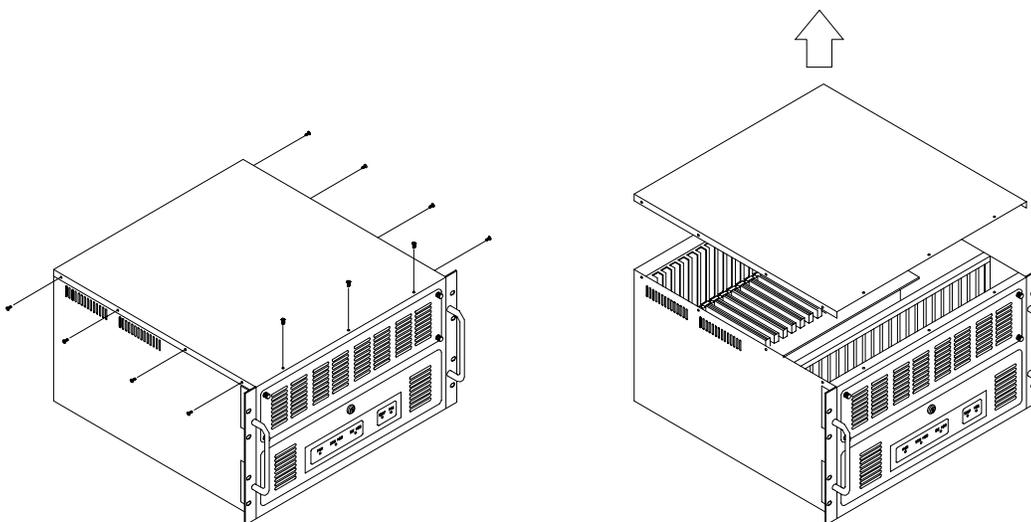
Disconnect all power from the chassis before you install the CPU cards. Unplug the power cord from the wall, don't just turn off the power switch. If you are not sure what to do, take the job to an experienced professional.

CAUTION:

When pull-out the disk drive, it will cause the IDE / SCSI drives' cable wiring disconnected. Be sure all the cables are well-connected before slide back the disk drive bay.

2.1 Remove the cover

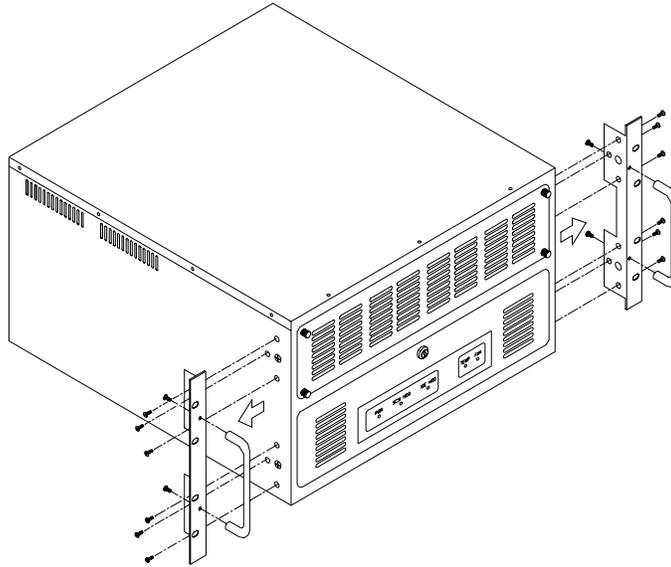
There are screws near the top along the sides secure the cover to the chassis. Remove them, and then slide the cover toward the rear chassis. See figure 2.1 below:



2.1 Remove the cover

2.2 Remove the handles

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

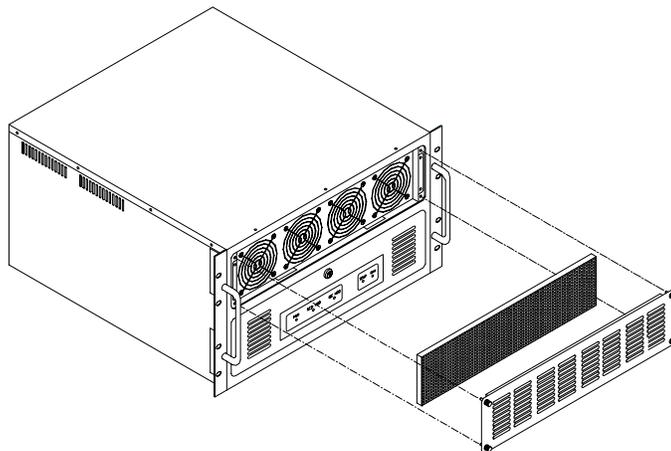


2.2 Removing the handles

2.3 Replacing the filter

The filter is located on the front upper chassis. Under continuous use, the filter should be replaced about once a month. To replace the filter, refer to figure 2.4 below and do as the following steps :

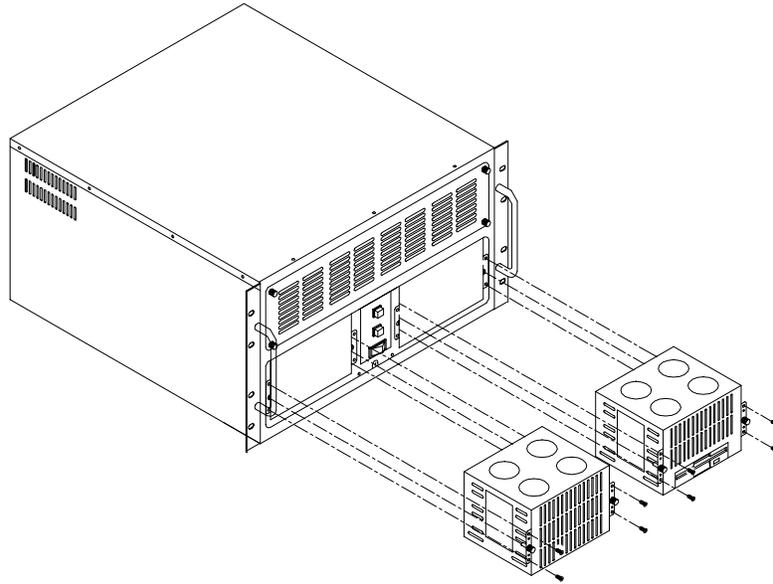
1. Unscrewing the four thumb screws.
2. Take out the old filter and replace it with a new filter.
3. Fix it by thumb screw.



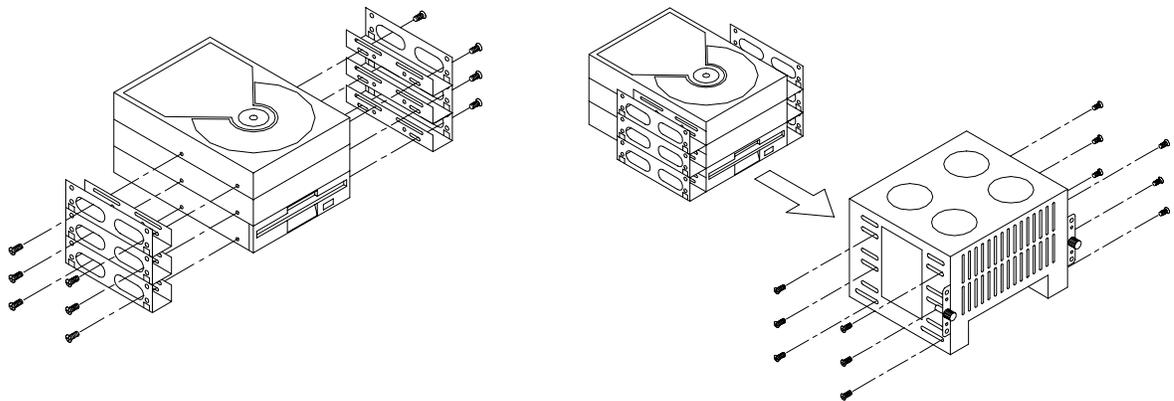
2.3 Replacing the filter

2.4 Installing the disk drives

1. Open the lockable door on the front panel of lower chassis. There are two independent disk drive bays on the both sides. Remove the four outer screws which mount the shock-resistant drive-bay to the chassis. See figure 2.4 below
2. Slide the drive-bay toward the front 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

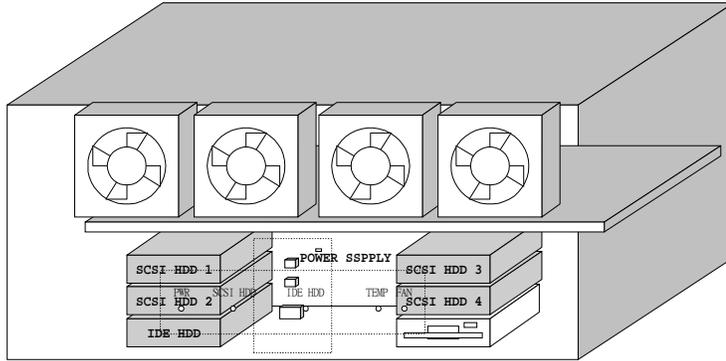


2.4 Removing the disk drive bay



2.5 Inserting the drives into the drive bay

2.5 HDDs layout & ID setting



Rackmount PC
IPC-622MS

Layout and ID setting of SCSI HDD

Item	Wide SCSI HDD				Remark
	No.1	No.2	No.3	No.4	
Arrangement to Expansion bay	Left Upper	Left Center	Right Upper	Right Center	Refer to above figure
ID	1	2	3	4	
Termination	On	Off	Off	Off	
The details of the setting					
Position #1 (ID BIT 3)	OPEN	OPEN	OPEN	OPEN	
Position #2 (ID BIT 2)	OPEN	OPEN	OPEN	CLOSE	
Position #3 (ID BIT 1)	OPEN	CLOSE	CLOSE	OPEN	
Position #4 (ID BIT 0)	CLOSE	OPEN	CLOSE	OPEN	
Position #5 (AUTO SPIN)	CLOSE	CLOSE	CLOSE	CLOSE	
Position #6 (SCSI TER ON)	CLOSE	OPEN	OPEN	OPEN	
Position #7	OPEN	OPEN	OPEN	OPEN	
Position #8	OPEN	OPEN	OPEN	OPEN	
Position #9	OPEN	OPEN	OPEN	OPEN	
Position #10	OPEN	OPEN	OPEN	OPEN	
Position #11	OPEN	OPEN	OPEN	OPEN	
Position #12	OPEN	OPEN	OPEN	OPEN	

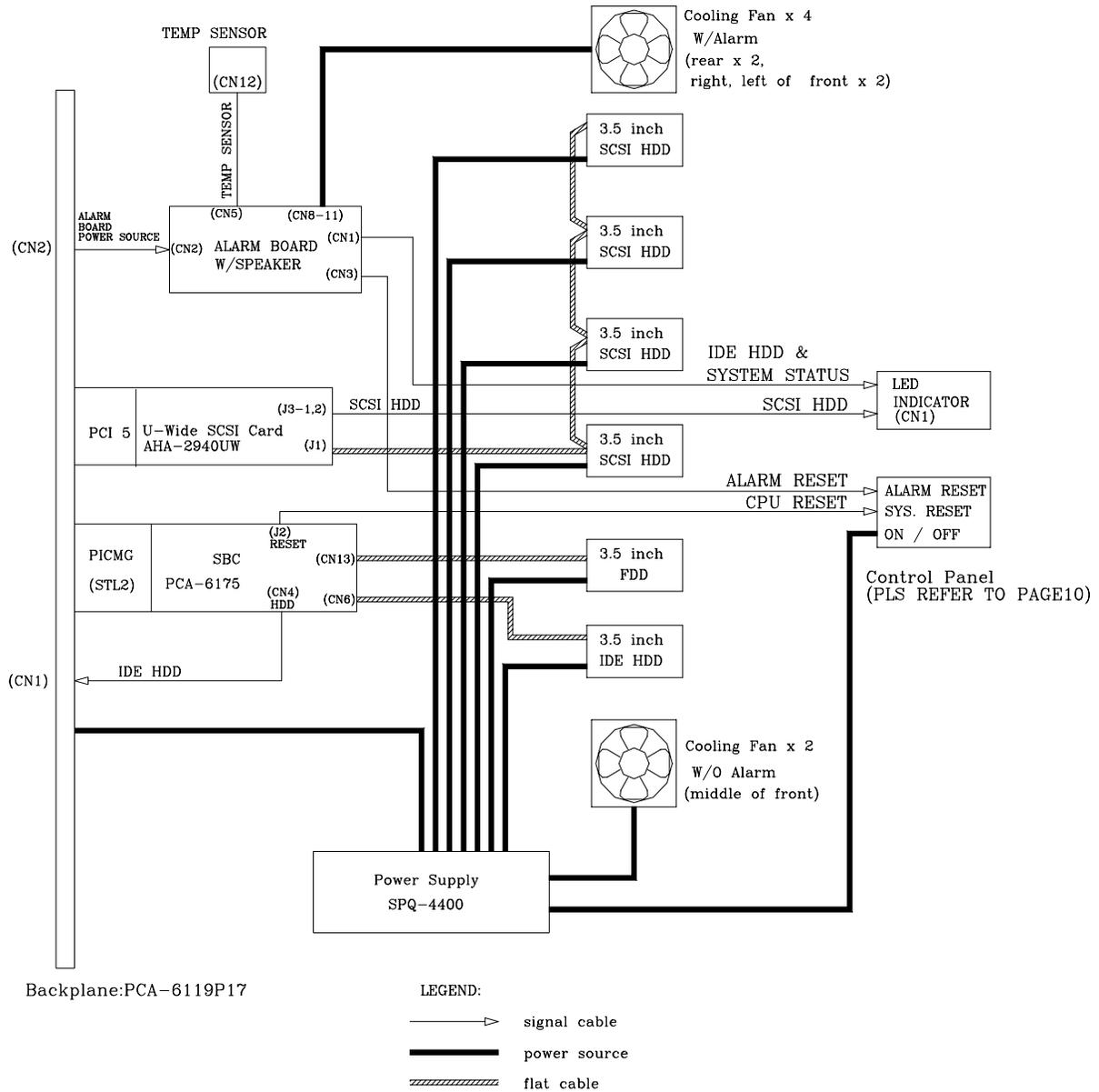
OPEN : Shunt jumper is not installed

CLOSE : Shunt jumper is installed

2.6 HDD layout

2.6 Cable wiring schematic

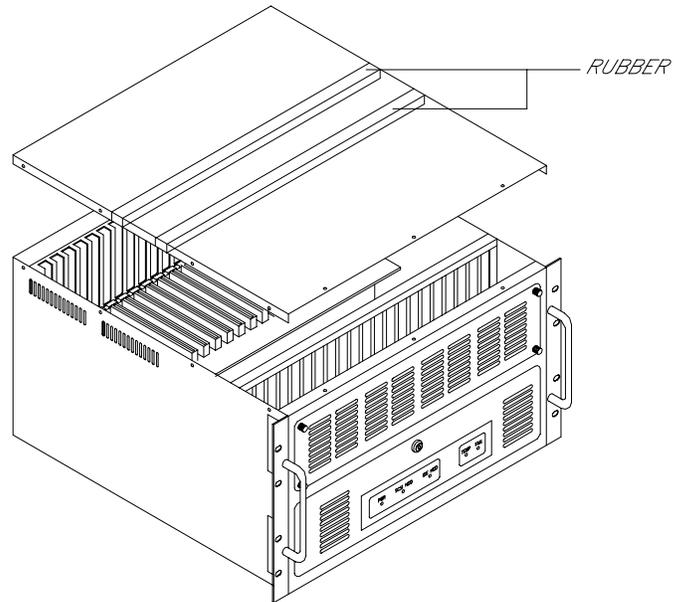
The following picture is the cable schematic for IPC-622MS.



2.7 Cable schematic

2.7 The rubber for card vibration damped

The IPC-622MS uses two rubbers on the inside cover of the chassis to ensure the plug-in cards are located securely. It also offers protection against shock and vibration.



2.8 The rubber for cards vibration damped

Chapter 3 Fault Resilient Function

3.1 Introduction

A fault resilient IPC is one with a fault detection and alarm notification system. That means, a fault resilient IPC should monitor its own status. When a malfunction occurs, the unit should also alert the user of the need for maintenance.

3.2 Fault Detection and Alarm Notification

The IPC-622MS monitors system hardware for fan failure and high temperature within the chassis.

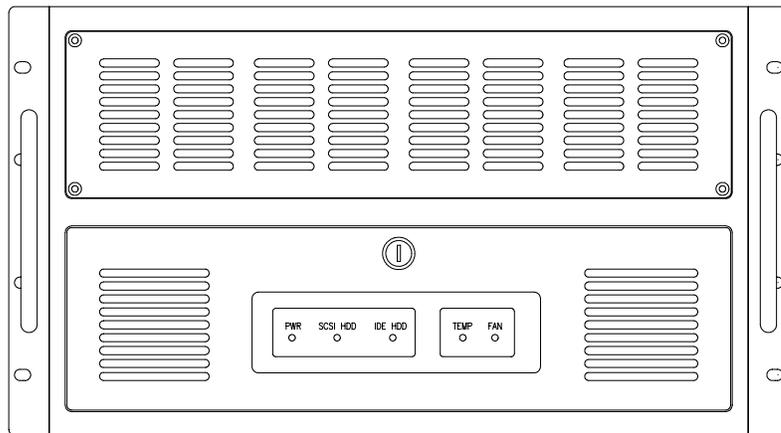
Fault conditions are :

Fan failure : Either of the four cooling fans fails

High Temperature : If the chassis interior temperature exceeds 55°C(131°F) (default setting), the LED changes color from green to red also audio alarm. The LED remains red until the temperature goes below 53°C

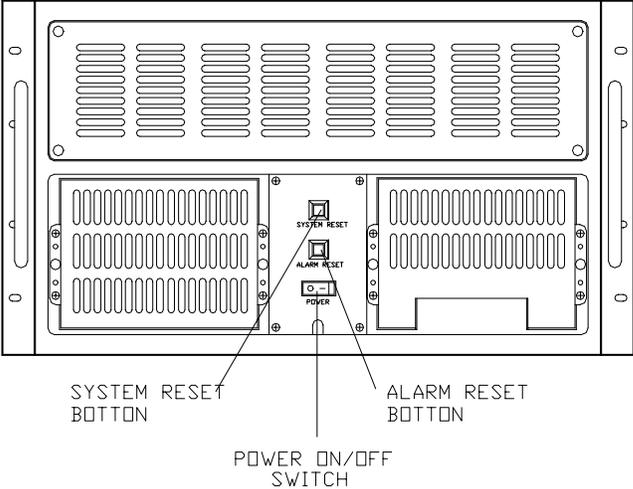
3.3 Visible Alarm and Audible Alarm

The IPC-622MS provides a quick fault identification with two front panel LED indicators display system as follows :



3.1 LED Indicators

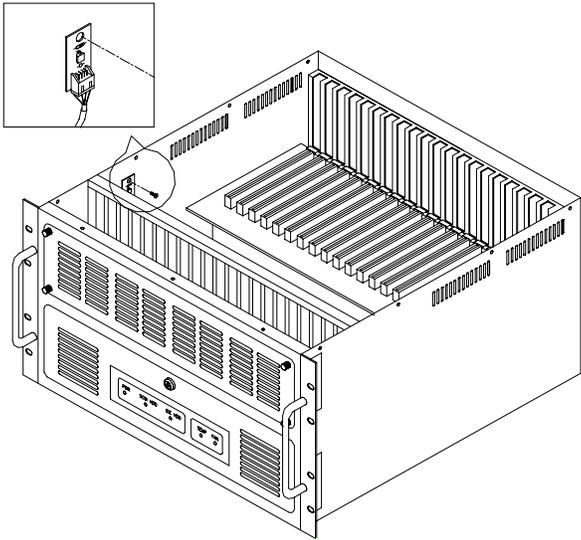
A speaker is activated at the start of a malfunction and sounds until the alarm reset button is reset. However, the alarm indicator will stay red until the fault condition is resolved.



3.2 Controls

3.4 Overheating Sensor

There is a small PC board, the Over Temp board, installed on the left interior of the chassis. It senses the chassis' internal temperature.



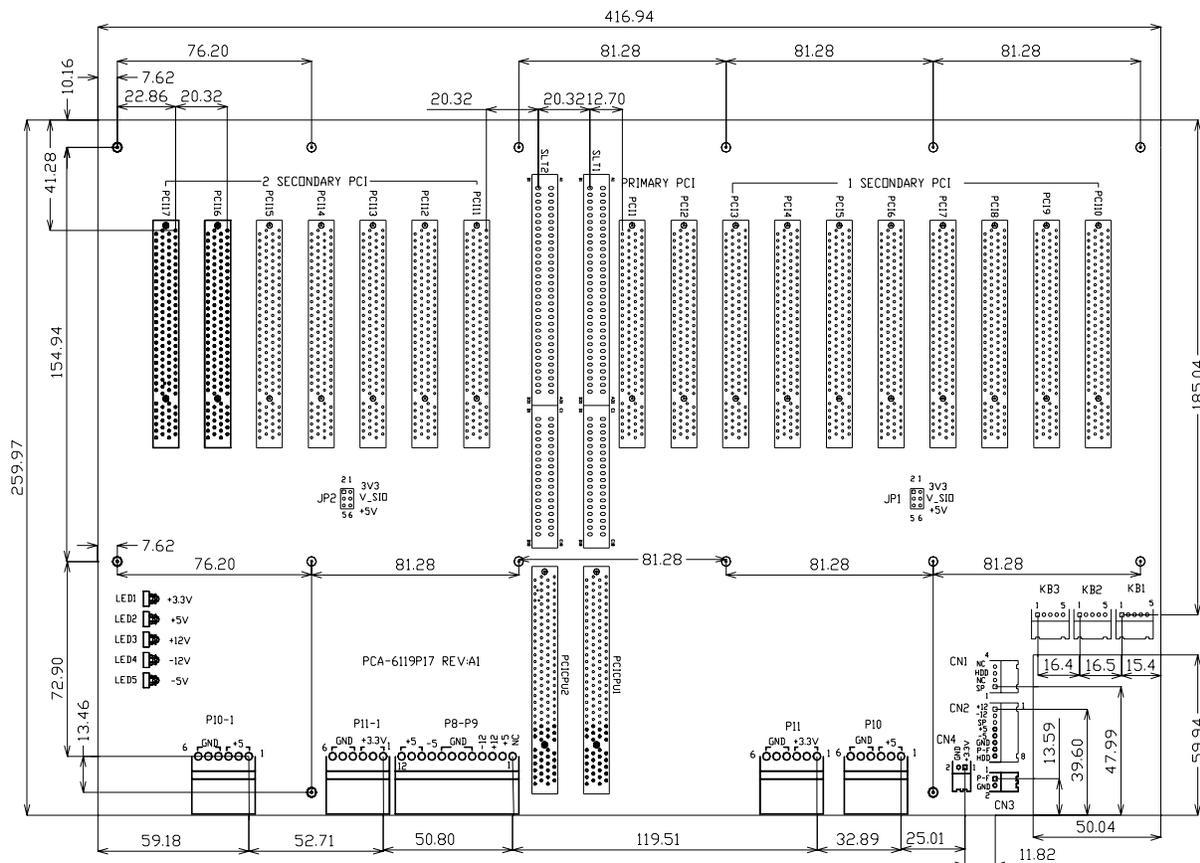
3.3 Overheating sensor

Appendix A Passive Backplane

Unit = mm

PCA-6119P17 : 17PCI / 1PICMG -slot Backplane

Dimension: (420 x 200 mm)



1 . CONNECTORS

CONNECTOR	Description
SLT1 - 2	PCIMG connectors
PCI1 - 2	32 BIT PCI BUS connectors (primary)
PCI 3 - 10	32 BIT PCI BUS connectors (1 secondary)
PCI11 - 17	32 BIT PCI BUS connectors (2 secondary)
KB1 - 3	5 - pin External K/B connectors
CN1	4 - PIN SP and HDD connector
CN2	8Pin Power(+/-5V,+/-12V),SP,HDD,PF CONN.
CN3	2 - PIN PF connector
CN4	2 - PIN +3.3V DC power connector
P8 / P9	10 PS / 2 power connector
P10 , P10 -	1 6 - PIN +5V DC power connectors
P11, P11 - 1	6 - PIN +3.3V DC power connectors
JP1	V - IO for secondary PCI Bus
JP2	V - IO for 2 secondary PCI Bus

JP1	
1-3,2-4 CLOSED	V_IO = +3.3V for 1'st secondary PCI Bus
* 3-5,4-6 CLOSED	V_IO = +5V for 1'st secondary PCI Bus

Default*

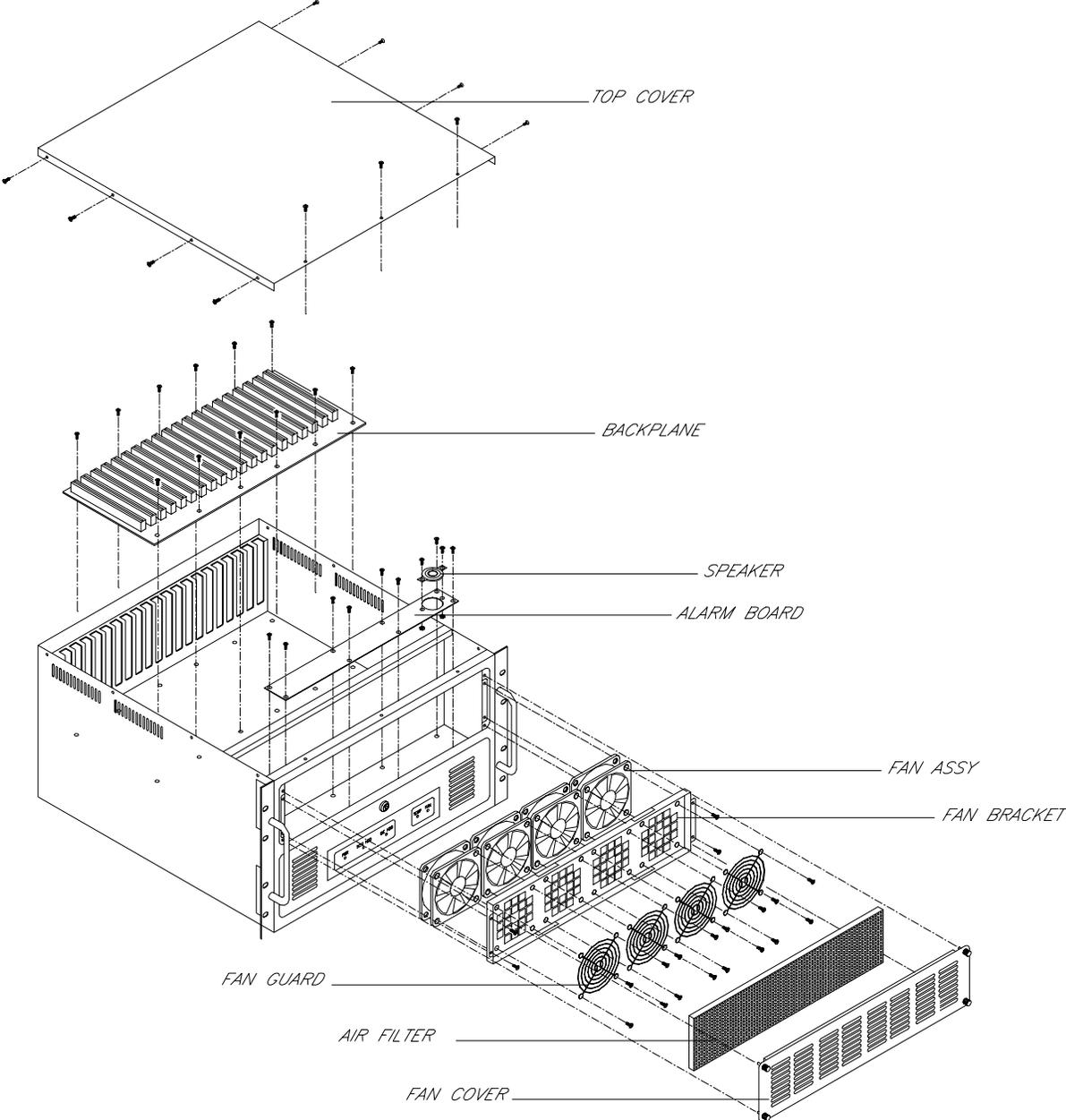
JP2	
1-3,2-4 CLOSED	V_IO = +3.3V for 2'nd secondary PCI Bus
3-5,4-6 CLOSED	V_IO = +5V for 2'nd secondary PCI Bus

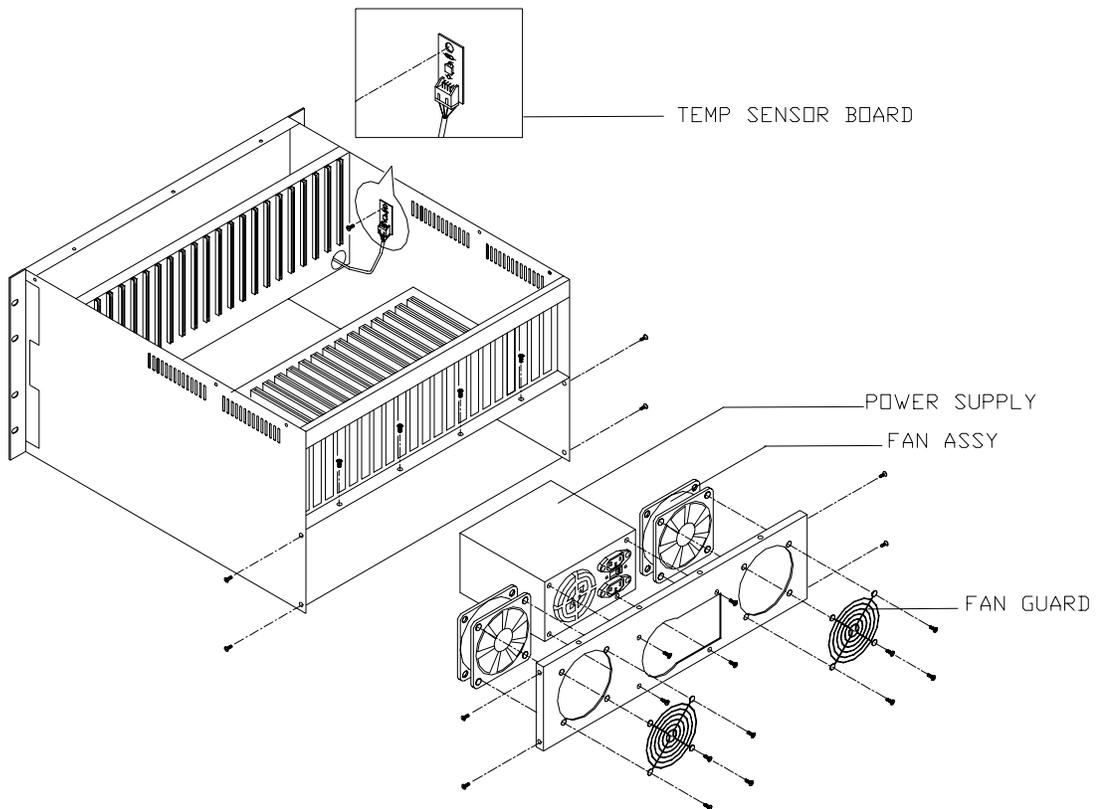
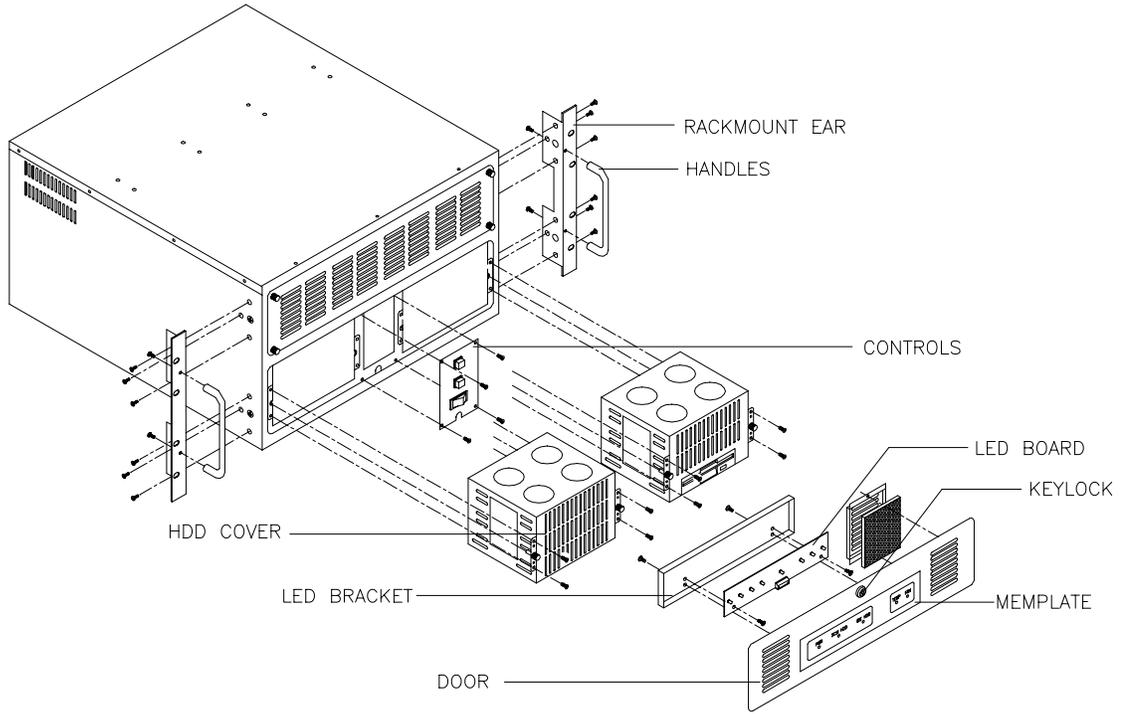
2 . PIN Assigment

KB1~ 3		P8/P9		CN1		CN2	
PIN	Name	PIN	NAME	PIN	NAME	PIN	NAME
1	KBCLK	1	NC	1	SP	1	+12V
2	KBDATA	2	+5V	2	NC	2	-12V
3	NC	3	+12V	3	HDD	3	SP
4	GND	4	-12V	4	NC	4	+5V
5	+5V	5	GND	5	NC	5	-5V
		6	GND			6	GND
		7	GND	P11,P11-1		7	PF
		8	GND	1	+3.3V	8	HDD
		9	-5V	2	+3.3V		
		10	+5V	3	+3.3V		
		11	+5V	4	GND	CN3	
		12	+5V	5	GND	PIN	NAME
				6	GND	1	PF
						2	GND

CN4	
PIN	NAME
1	+3.3V
2	GND

Appendix B Exploded Diagram





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).

Appendix D FCC Statement

Federal Communications Commission (FCC) Statement

The equipment has been tested and found to comply with the limits for 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 equipment 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.

Warning

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.