ACP-2000

19" Rackmount 2U Height
Industrial Chassis User's Manual

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General Information

1.1   Introduction

ACP-2000 is a compact yet rugged 19" 2U height rackmount IPC
chassis designed for space-conscious applications. Customers can
expand their businesses without having to worry about space efficien-
cy because the ACP-2000 is only 2U height and satisfies requirements
from CT, voice portal, high-density voice processing, networking and
industrial automation applications. Fast-growing Internet service
providers and corporate enterprise customers can use the ACP-2000
as e-server platforms for their internet/intranet, proxy, caching, access,
DNS, or file and print server. The ultra-thin 2U form factor delivers rack
space optimization without sacrificing performance, expandability,
serviceability, or manageability

1.2 Specifications

General

· **Construction**: Heavy duty steel chassis

· **Drive bay**: Shock-proof and front accessible CD-ROM (x1) & 3.5"
  bay (x2)

· **Cooling system**: Dual easy-to-replace 42 ~ 57 CFM cooling fan with
  front-accessible air filter

· **Controls**: Power On/Off switch or momentary switch
              Reset switch behind lockable door

· **Indicators**:

  · **Power**: Bi-color LED (green/red) for power failure

  · **HDD**: Single color LED (orange) for HDD activity

  · **Fan**: Bi-color LED (green/red) for any fan failure

  · **Temperature**: Bi-color LED (green/red) for overheating average
  temperature 50°C

· **Connectors**: Front accessible USB and PS/2 keyboard, rear panel 9-
  pin connectors

- **Paint Color**: Pantone 4C 2X Black, textured

- **Operating temperature**: 0 ~ +40°C (32°F ~ 104°F)

- **Storage temperature**: -40° to +75°C (-40° to +167°F)

- **Relative Humidity**: 10 ~ 95%@40?, non-condensing

- **Vibration**: (Operating) 5Hz ~ 500Hz, 0.5 G rams

- **Random Vibration**: (Non-operation) 5 to 20 Hz, 0.001 to 0.01 G2 per Hz, 20 to 500 Hz, 0.01 G2 per

- **Shock(operating)**: 2.0 G with 11m Sec duration, 1/2 sine wave

- **Acoustic Noise**: Less than 52 dB sound pressure at +5° to +28°C (+41° to +82°F)

- **Altitude**: 0 to 3048m (0 to 10,000 ft)

- **Slide rails**: General Device C-300 series supported

- **Dimensions**: 482 (W) x 88 (H) x 450 (D) mm or 19" (W) x 3.46" (D) x 17.7" (H)

- **Weight**: 9.8kg.(21.6lb)

- **Safety**: CE compliant, UL/cUL approved

1.3 Passive Backplane Options

Backplane models (refer to appendix for details)

- PCA-6106P3V: CPU/ 2-ISA/ 3-PCI

- PCA-6105P4V: CPU/ 4-PCI

1.4 Power Supply Options

Model Name	Specifications					
	Watt	Input	Output	Mini-load	Safety	MTBF
PS-260-610E(AT)	260W	110/220Vac	+5V@25A+12V@9A-5V@0.5A-12V@2A	+5V@1A+12V@0.1A	UL/CSA/CE/TUV	140,000 hours@50°Cfull load
PS-250-D24(AT)	250W	+19VDC ~ +32VDC	+5V@30A+12V@12A-5V@2A-12V@2A	+5V@1A	UL/CSA/CE	100,000 hours
PS-310-DC48(AT)	310W	-38VDC ~ -58VDC	+5V@25A+12V@10A-5V@1A-12V@5A	+5V@2A	UL/CSA/CE	100,000 hours
PS-250X-DPS(ATX)	250W@25°C-/200W@50°C	110/220Vac	+5V@25+12V@8A-5V@0.5A-12V@0.8A+3.-3V@14A+5Vsb@1A	+5V@1..5A,+1-2V@0.2A	UL, CSA, TUV/CE/N-ordic/CB,	100,000 hours@25 °C full load
PS-300-ATX(ATX)	300W	110/220Vac	+5V@30A+3.3V@26A+1-2V@13A-12V@0.8-A,-5V@0.5A,+5Vsb-@2A	+5V@1A+12V-@0.2A	UL,CSA,T-UV/CE/Nor-dic/CB	100,000 hours@25°Cfull load
PS-300ATX-Z(ATX,PFC)	300W	110/220Vac-(Full-range)	+5V@30A+3.3V@24A+1-2V@15A-12V@0.8-A,-5V@0.3A,+5Vsb-@2A	+5V@1A,+12-V@0.5A,+3.3-V@0.3A	UL,cUL,CS-A,CE EN61000-3--2 Class DTUV,Nord-ic,CB	100,000hours-@25°C 275W load
RPS-300ATX-Z(ATX PFC)	300W	110/220Vac-(Full-range)	+5V@25A+3.3V@18A+1-2V@16A-12V@0.5-A,-5V@0.5A,+5VS-B@2A	+5V@3A+3.3-V@1A +12V@2A+5V-SB@0.1A	UL/TUV/CB	150,000hours-@25°C full load

1.5 System Regulation

Ordering Information			
Model name	With Power Supply	With Backplane	Regulation
ACP-2000P3-00P	Without power supply, with on-off switch	With PCA-6106P3V	None
ACP-2000P3-00X	Without power supply, with momentary switch	With PCA-6106P3V	None
ACP-2000P3-30Z	With 300W ATX PFC power supply	With PCA-6106P3V	UL.cUL,CE
ACP-2000P3-30D	With 300W DC48V power supply	With PCA-6106P3V	UL, cUL, CE
ACP-2000P3-30R	With 300W ATX PFC redundant power supply	With PCA-6106P3V	UL, cUL, CE
ACP-2000P4-00P	Without power supply, with on-off switch	With PCA-6105P4V	None
ACP-2000P4-00X	Without power supply, with momentary switch	With PCA-6105P4V	None
ACP-2000P4-30Z	With 300W ATX PFC power supply	With PCA-6105P4V	UL.cUL,CE
ACP-2000P4-30D	With 300W DC48V power supply	With PCA-6105P4V	UL, cUL, CE
ACP-2000P4-30R	With 300W ATX PFC redundant power supply	With PCA-6105P4V	UL, cUL, CE

1.6   Dimensions
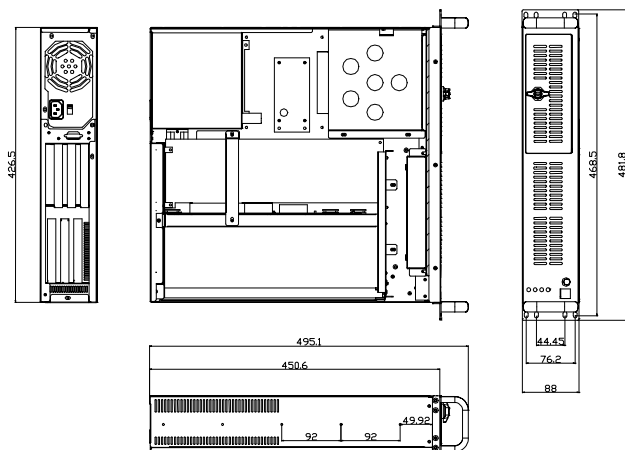
1.7   Exploded Diagram
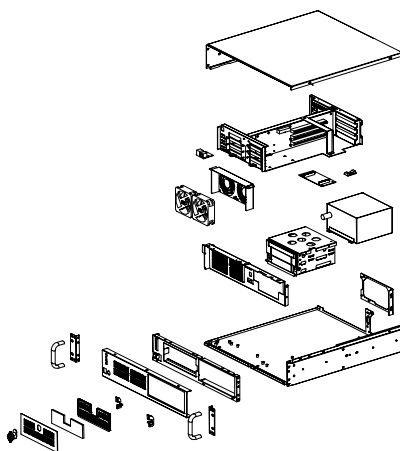
Figure 1.7-1 ACP-2000 Full Exploded Diagram
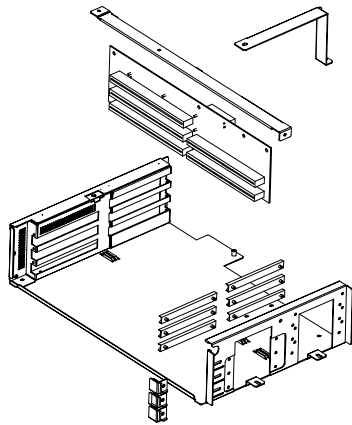
Figure 1.7-2 ACP-2000 Backplane Holder (Card Cage) Exploded Diagram
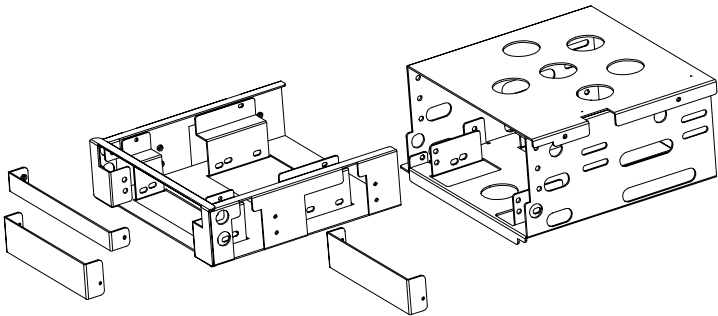
Figure 1.7-3 ACP-2000 Driver Bay Exploded Diagram

System Setup

2.1 System Installation

WARNING: Before starting the installation process, be sure to shut down all power from the chassis. Do this by turning off the power switch, and unplugging the power cord from the power outlet. When in doubt, consult with an experienced technician.

2.1.1 Attaching the handles.

The handles for the front panel are in the accessory box. To install the handles, simply secure them to the front panel with the provided screws.

2.1.2 Removing the top cover

The first installation step is removing the chassis cover. You will need a Phillips screwdriver.

The top cover is fixed to the chassis with six (6) M4 screws.

To remove the top covers:

1. Detach the six screws on the chassis.

2. Lift off the cover.

Figure 2.1.2-1

2.1.3 Front and Rear Sections of the Chassis

The front panel switches located behind the door are used for system power, system reset and alarm reset. On the left side of front panel, there are system LED status, USB and P/S 2 keyboard connector. On the left side of the front panel is the door cover with a key lock.
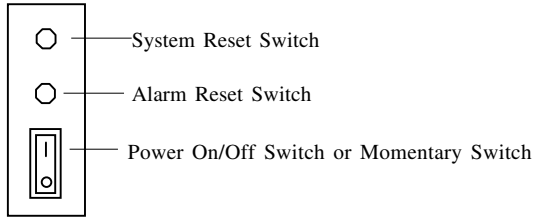
Figure 2.1.3-1

Figure 2.1.3-2

Figure 2.1.3-3

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

Momentary Switch: Using the ATX (PS_ON) function, turn on the system power.

Please use the system shutdown to turn off system power automatic, or press momentary switch to turn off the system power.

System Reset Switch: Press this switch to reinitialize the system, which is the same as the hardware reset button.

Alarm Reset Switch: Press this switch to pause or stop an audible alarm. Whenever a fault in the system occurs

(e.g. fan failure, rising chassis temperature, backplane voltage problem), an audible alarm is activated. Pressing this switch will cause the alarm to stop.

USB connector: Used in connecting USB interface device to the system.

PS/2 connector: Used in connecting PS/2 keyboard.

The Rear Section includes: 6-slot I/O bracket, DB-9 bracket and PS/2 or redundant power supply

Figure 2.1.3-4

2.1.4 Drive Bay Installation

The ACP-2000 standard drive bay can hold one slim-type CD-ROM, and two 3.5" bay or 5.25" bay & one 3.5" bay.

Installation disk drives

a. Remove the Top Front Cover

b. Undo the six screws fixing the Standard Drive Bay.

c. Lift off the Standard Drive Bay. See Figure 2.1.4-1

d. Insert the drives into their proper locations in the drive bay, and secure with the provided screws.

e. Connect the disk drive power and signal cables.
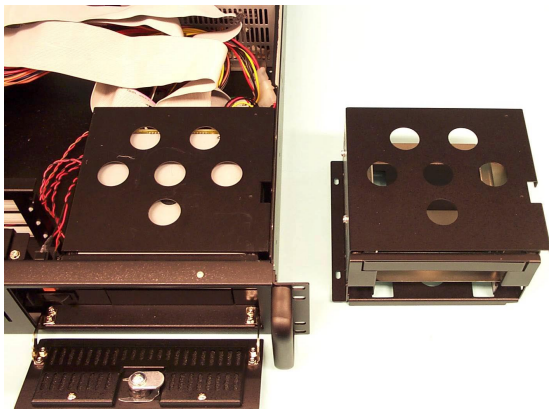
Figure 2.1.4-1

2.2 ACP-2000 Series Installation

The ACP-2000 can be of two basic models: ACP-2000P3 series and ACP-2000P4 series.

2.2.1 ACP-2000P3-00P, ACP-2000P4-00P

ACP-2000P3-00P comes with the PCA-6106P3V backplane, and ACP-2000P4-00P with the PCA-6105P4V-B backplane. Both of them are without power supply installation, but with on-off switch on the front panel. The on-off switch is suitable for AT power supply such as PS-250, PS-260, PS-300, PS-310DC48 and PS-250-D24. Refer to figure 2.2.1-1 for reference. (ACP-2000P4-00P, PCA-6105P4V-B will be available on Q2/2002)
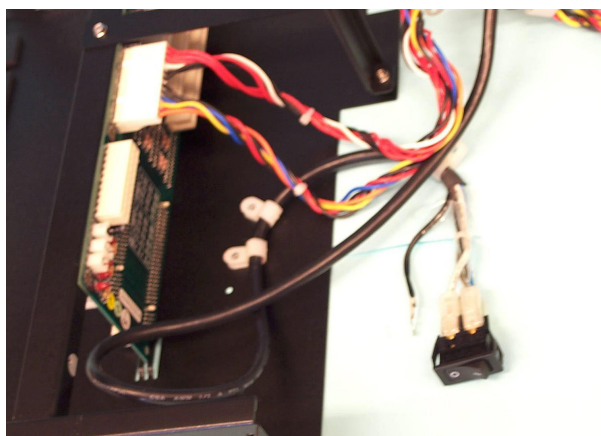
Figure 2.2.1-1

2.2.2 ACP-2000P3-00X, ACP-2000P4-00X

The ACP-2000P3-00X comes with the PCA-6106P3V backplane, and ACP-2000P4-00X with the PCA-6105P4V backplane. Both of them are without power supply installation, but with momentary switch on front panel. The momentary switch is suitable for ATX power supply such as PS-250X-DPS, PS-300-ATX, PS-300ATX-Z and RPS-300ATX-Z.

For the ACP-2000P3-00X, please connect ATX power connector with PCA-6106P3V backplane, then use the green-purple line (1703030250) to connect J4 (5VSB_GND_PSON) of the Backplane and "ATX feature connector" (CN20) of the SBC. Lastly, connect POWER SW line with "ATX soft power switch"(CN21) of the SBC to finish the installation. Refer the figure 2.2.2-1.

For the ACP-2000P4-00X, please connect the ATX power connector with the PCA-6105P4V backplane, then use the orange-white line (1700030500) to connect CN3 (PSON_GND_5VSB) of the Backplane and "ATX feature connector" (CN20) of the SBC. Lastly, connect the POWER SW line with "ATX soft power switch"(CN21) of the SBC to finish the installation. Refer Figure 2.2.2-2 for reference.
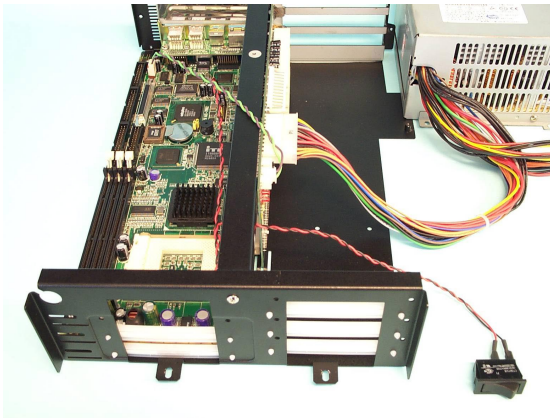
Figure 2.2.2-1
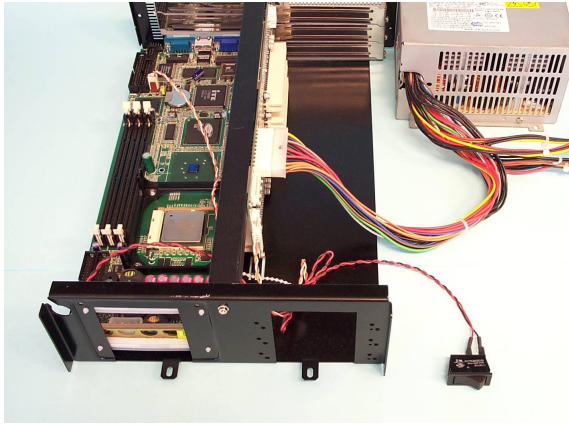
Figure 2.2.2-2

2.3 System Status Indicators

The System Status LED shows as follows:

LED	Description	RED	GREEN or Orange
PWR	System Power	Abnormal	Normal
HDD	Hard Drive activity	No light	Data access
FAN	Cooling Fan status	Abnormal	Normal
TEMP	Chassis Temperature	Abnormal	Normal

When the PWR LED is RED, it indicates a failure on redundant power supply. To stop the alarm buzzer, press the Alarm Reset button. Please check the redundant power supply right away, and replace power failure supply module with a good one.

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

If the TEMP LED is RED and blinking, the system detects rising temperature inside the chassis. An alarm is activated. To stop the alarm buzzer, press the Alarm Reset button. Inspect the rear section and fan filter immediately. Make sure airflow inside the chassis is smooth and not blocked with dust or other particles.

2.4 Power Supply

ACP-2000 support PS/2 and redundant power supply both mechanical without any modification

Figure 2.4-1

Figure 2.4-2

2.5 Cooling Fan & Filter

There are two (2) Cooling Fans located inside the chassis. The Cooling Fans are easy to maintain and provide adequate cooling to the system by blowing air inward. When one cooling fan breaks down, the system sounds a continuous alarm. To disable the alarm, press the Alarm Reset Switch on the front panel. Replace the failing fan immediately.

Please refer to figure 2.5-1 for filter replacement
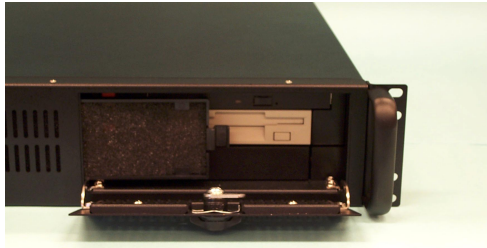
Figure 2.5-1

2.6 Installing CPU Cards and Add-On Cards

To install slot board computers and other add-on boards:

1. Remove the chassis cover.

2. From the backplane, take out the backplane holder.

3. Insert the CPU card from the left-side, or add-on card from the right-side, into the vacant slot.

4. Align and fix the screw to tighten the card to a fixed position, refer to Figure 2.6-1 and Figure 2.6-2.

5. Return the backplane holder, with the backplane, CPU card or add-on cards to the chassis.
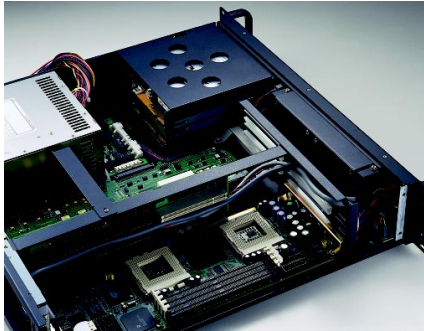
Figure 2.6-1
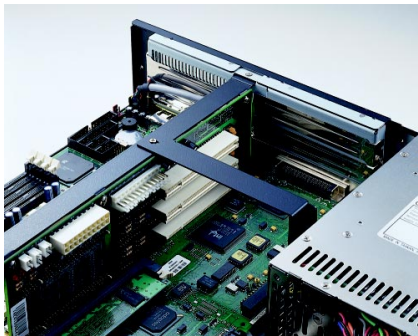
Figure 2.6-2

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 fai1s

c. Temperature inside the chassis rises

d. A problem occurs in one of the backplane voltage levels

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

3.1 Alarm Board Layout
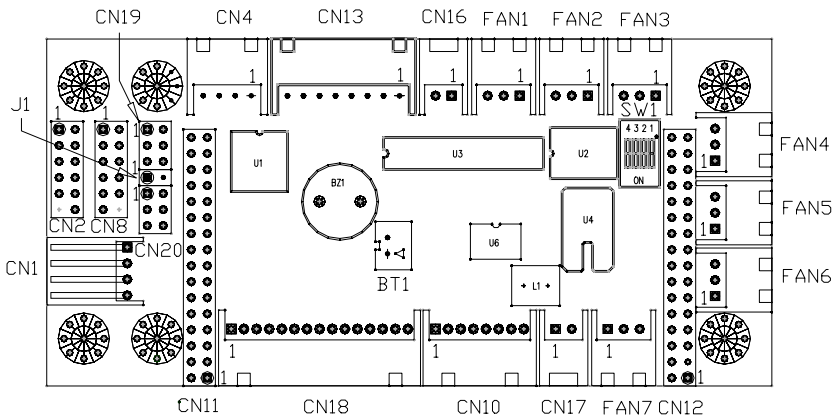
Figure 3.1-1

3.2 Alarm Board Specification

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 good input
- One alarm reset input.
- One voltage signal connector (connect from back plane, includes ±12V, ±5V, 3.3V)
- One ATX power connector (connect from CPU card)
- One system reset connector (connect from CPU card)
- One Hard Disk LED connector (connect from CPU card)

Output Signals:
- One LED board connector
- One LCM board connector
- SNMP daughter board connector (connect to SNMP-1000 main board)
- One Buzzer output
- ATX power connector (connect to chassis)
- System reset connector (connect to chassis)

Other Interfaces:
- One pair of Watch dog input/output signals
- One pair of I2C Bus signals (DATA and CLK)
- One LAN connector
- One COM connector
- One Battery pack connector

Pin Definition

CN1 : External Power Connector, stander 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 : TERMPLANE
Pin 3 : RX+   Pin 4 : RX-
Pin 5 : GND   Pin 6 : LVCC
Pin 7 : TX+   Pin 8 : TX-
Pin 9 : LILED   Pin 10 : TERMPLANE
Pin 11 : N/A   Pin 12 : NC
CN4 : I2C Sensor board (LM75) Connector
Pin 1 : +5V   Pin 2 : Sensor board I2C bus clock
Pin 3 : Sensor board I2C 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 : TERMPLANE   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 Clock   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 : Watch Dog IN   Pin 6 : Watch Dog OUT
J1 : External Speaker
Pin 1 : Buzzer   Pin 2 : +5V

3.3 Switch Setting

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

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

3.4 Thermal Sensor

There is one temperature sensor inside the chassis, See Figure 3.4-1.to find the location.

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.
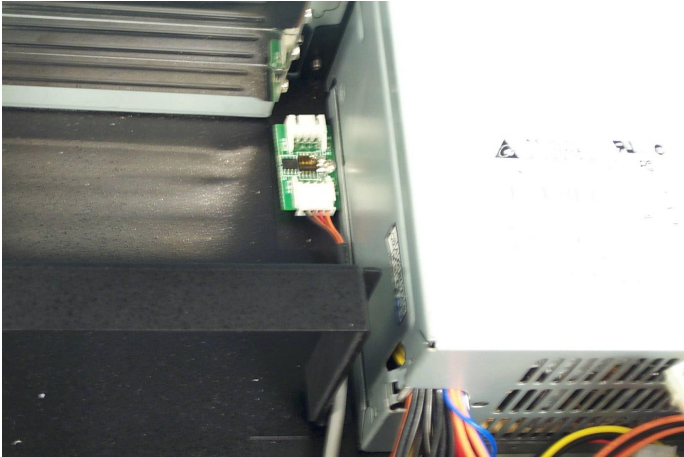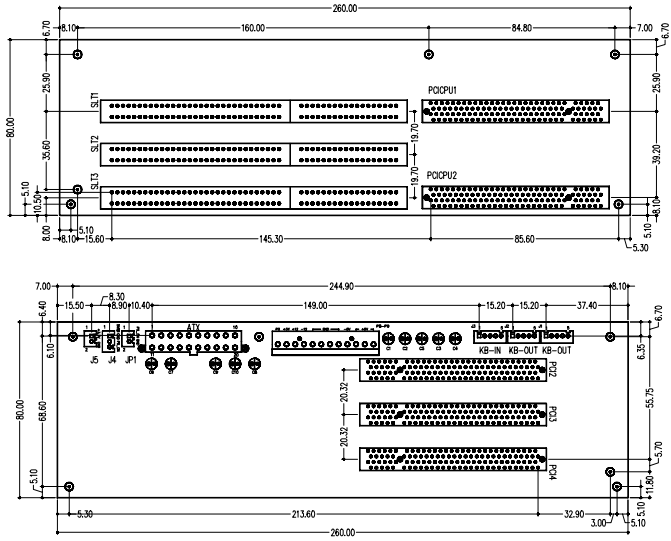

Figure 3.4-1

Appendix A

PCA-6106P3V

PCA-6106P3VE
Dimension: 260x80mm

PCA-6105P4V

PCA-6105P4V

CN2	
PIN	NAME
1	+5VSB
2	GND
3	GND
4	-5V
5	+5V
6	+3.3V
7	-12V
8	+12V

CN1	
PIN	NAME
1	PS-ON
2	GND
3	5V SB

CN3	
PIN	NAME
1	12V
2	GND
3	5V