USER'S MANUAL

AMB-310/311 Series

Flat Panel Industrial Chassis
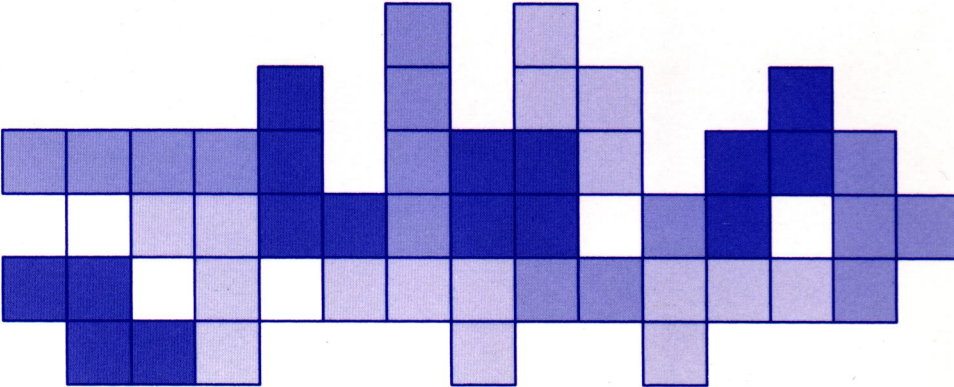
Table of Contents

The manual is made to help you understand how to set up and use the AMB-310/311 series industrial chassis. It is divided into three chapters and two appendixes. Chapter one gives you an overview of the workstations. Chapter two tells you how they are basically constructed and what procedures you should take for system setup or upgrading. Chapter three tells you how to maintain them. Appendix A gives detailed specifications of power supply used in them. Appendix B gives a picture of exploded diagram on them.

But before we come to all that the first thing you should do when you receive your unit is check if it is the right version you ordered. The series has three versions respectively named as: AMB-310M, AMB-310/311C, AMB-310/311T (please refer to the display selection table in section 1.3 for details). Then you should also check if the package contains the following items. You should contact your dealer immediately if any of them is missing or damaged:

* One AMB-310/311 industrial chassis with flat panel display
* One flat panel/CRT display control card
* One power cord
* One accessory box
* One user's manual

Chapter 1　　Overview
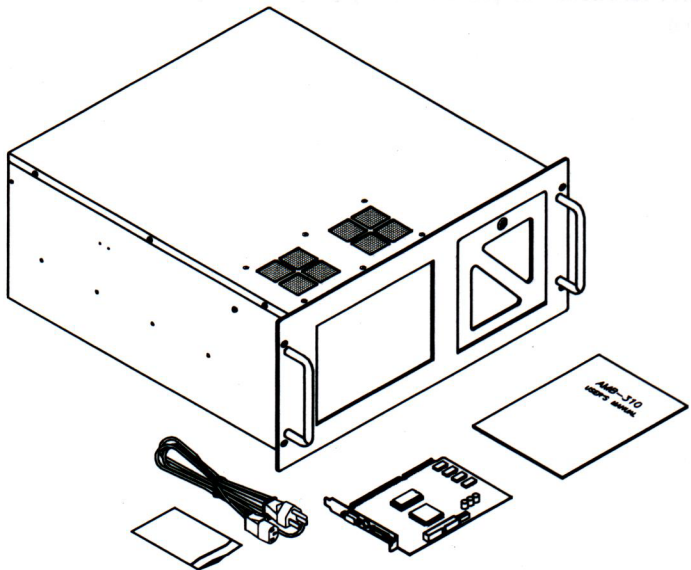
1.1 General

The AMB-310/311 series industrial chassis are IBM PC/AT compatible computers specially designed to meet the harsh requirements by factory floor and other strict industrial environments. They come equipped with one of the following flat panel displays: 9.4" color TFT LCD, color D_STN LCD, B/W LCD or 10.4" color DSTN, color TFT; an ISA-bus 14-slot (default) or PCI-bus 14-slot passive backplane, or space for motherboard; a universal 250W switching power supply (refer to the selection table for other options); an ISA-bus (default) or PCI-bus flat panel/CRT display control card; one disk drive housing (for four half-high 5.25" HDDs or FDD, and one 3.5" HDD). All of them are enclosed with a heavy-duty steel chassis and a high-quality front panel which meet the harsh industrial and environmental protection standards.

We put all the controls at the front of the chassis for your easy access. They are all placed behind a lockable door which protects them against pollution. They are: brightness & contrast control VRs, external keyboard connector, disk drive slots.

You can also add a touchscreen (option) to the chassis. That allows you to control functions and processes simply by touching the figures shown on the screen.

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1.2 Features

* Heavy-duty steel chassis, high-quality front panel
* 9.4" color TFT LCD, color D_STN LCD, B/W LCD or 10.4" color DSTN, color TFT LCD display
* Analog resistive touchscreen (option)
* ISA-bus 14-slot (default) or PCI-bus 14-slot passive backplane, or space for motherboard
* Universal 250W switching power supply (or other options)
* ISA-bus (default) or PCI-bus flat panel/CRT display control card
* One disk drive housing: for four half-high 5.25" HDDs or FDDs
* Two 64 CFM cooling fans
* Brightness & contrast control VRs, external keyboard connector, disk drive slots behind a lockable door on the front panel
* Hold-down clamp for keeping add-on cards from vibration
* 19" rack mounting

* **General**
  Construction: heavy-duty steel chassis, high-quality front panel
  Disk Drive housing: for four half-high 5.25" HDDs or FDDs and one 3.5"
  HDD
  Cooling system: Two 64 CFM fans
  Dimensions: 483mm(W)x211mm(H)x470mm(D)
  Weight: 16 kgs
* **Front panel**
  Dust-preventing lockable door: covering keyboard connector, contrast and
  brightness control VRs, disk drive slots.
* **Display**
  (refer to the selection table)
* **Power supply**
  (refer to the selection table and appendix A)
* **Passive backplane**
  14-slot ISA-bus passive backplane:
  4-layer PCB with ground/power-plane for reduction in noise and
  power supply impedance.
  LED power indicators for +5V, -5V, +12V, -12V.
  14-slot PCI-bus passive backplane: (option)
  Multi-layer PCB design with UL 94V-0 approval
  LED power indicators for +5V, -5V, +12V, -12V, +3.3V
* **Environmental**
  Operating temperature: 0°C to 45°C
  Storage temperature: -20°C to 60°C
  Relative humidity: 5 to 95%, non-condensing
  Altitude: 10,000 ft (3000 meters)
  Vibration: 5 to 17 Hz, 0.1" double-amplitude displacement
          17 to 500 Hz, 1.5 G peak to peak
  Shock: 10 G peak acceleration (11 msec. duration)
  Safety: meets UL/CSA/TUV
  EMI: meets FCC/VDE Class A

* Display Selection Table

Item	Mono_DD	Color DSTN	Color TFT
Diagonal	9.4"	9.4"	9.4"
Display area	196(H) x147.6(V)	195(H) x147(V)	192(H) x144(V)
Resolution	640 x 480	640 x 480	640 x 480
Color or Gray scale	16 gray scales	16 colors	256 colors

Item	Color DSTN	Color TFT
Diagonal	10.4"	10.4"
Display area	211.2(H) x158.4(V)	211.2(H) x158.4(V)
Resolution	640 x 480	640 x 480
Color or Gray scale	16 colors	256 colors

**AMB-310M: with 9.4" Mono_DD
AMB-310C: with 9.4"color DSTN
AMB-310T: with 9.4"color TFT
AMB-311C: with 10.4" color DSTN
AMB-311T: with 10.4" color TFT
(When you opt for a touchscreen, the above version names will be attached
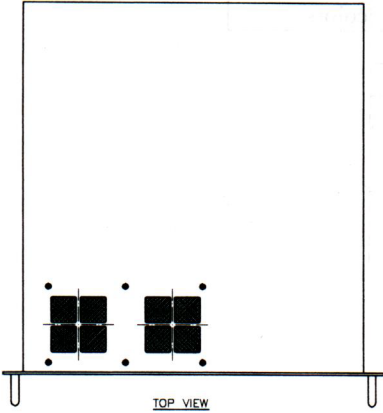with a T, AMB-310TT as an example)

* Touchscreen (option)
(refer to the touchscreen user's guide which will be included in the package
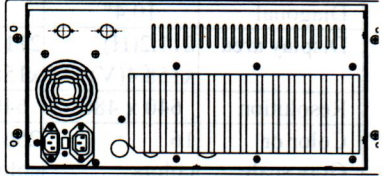if you opt for a touchscreen)

* Power Supply Selection Table

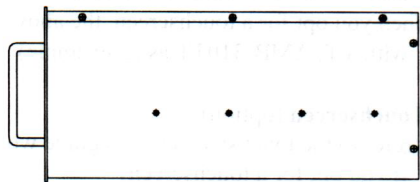| Model	Input voltage	Max. Output Current			
		+5V	+12V	-5V	-12V
Universal/ 250W	85-265VAC	22A	7A	0.5A	0.7A
-48VDC/250W	-40V to -57VDC	25A	8A	1A	2A
+24VDC/250W	19V-30VDC	25A	6A	1A	2A

1.4 Dimensions

TOP VIEW

REAR VIEW
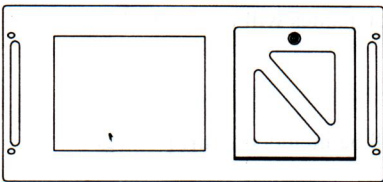
FRONT VIEW

RIGHT VIEW

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Chapter 2   System Setup

2.1 General

The AMB-310/311 chassis are very easy to set up for operation, all you have to do is open their top cover, install your CPU card, display control card, hard disk drives, other I/O cards required by your application, and attach a keyboard, you are ready to mount them onto a 19" rack and start operating. You can be assured of that   because we have set them up and tested them at our factory before they were shipped.

But before you come to that you should first make sure that: *you haven't plugged in any power and if you have you should now switch them off and unplug them. Also remember that each time you want to open the chassis again for either upgrading or maintenance you have to switch all the power off and unplug them.*

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2.2 Open the top cover

The top cover is fastened to the chassis with six screws, so you need to unfasten them to open the cover.

Once opened you will see a hold-down clamp which stretches across the chassis . You have to remove it also before you can start installing your add-on cards (please refer to section 2.3 for details on how the clamp can be removed).
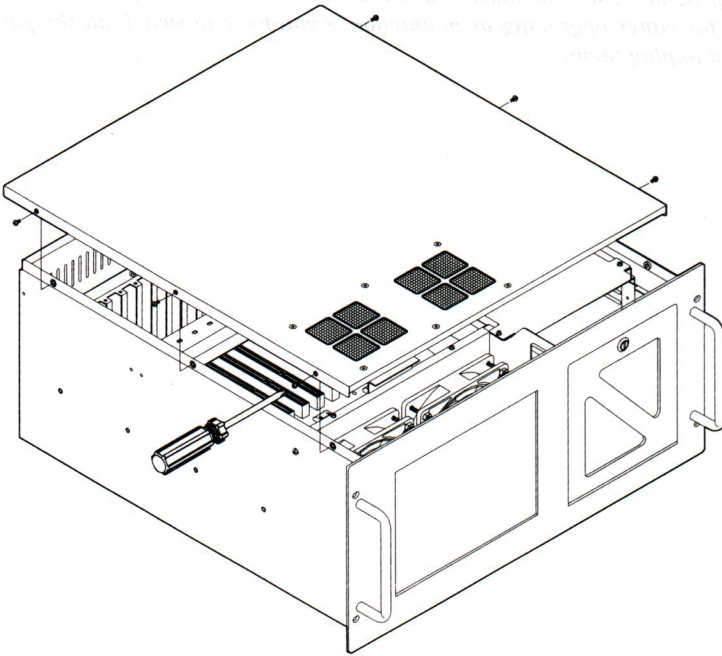
2.3 Remove the hold-down clamp

The clamp is designed to hold the add-on cards which you are going to install from vibration during operation. It lies across the chassis and is fastened with three screws (two on one end, one on the other) on two stoppers. So you need to unfasten the three screws to remove the clamp.

Onced removed you will see two long rubber bands going down the clamp which are the part that will come pressing down on the AT add-on cards you may install. You will also see a line of fourteen holes going down the groove in the middle of the clamp. They are for securing the fourteen small clamp kits provided in the accessory box, which will serve to hold down the XT add-on cards you may install.

Do remember to put the clamp back and secure it in place when you have finished installing all your add-on cards (please refer to section 2.4 for details on how the add-on cards can be installed).
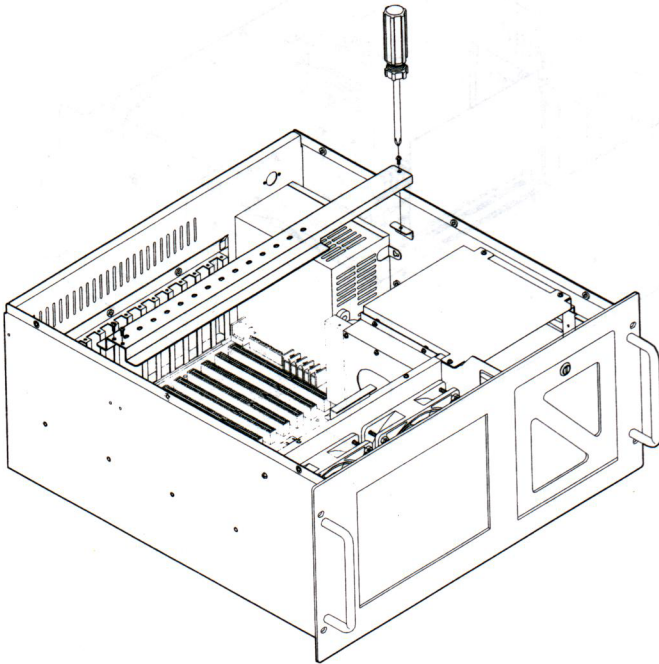
There are 14 slots on the passive backplane, but for the sake of saving them you should basically install an all-in-one SBC and the flat-panel/CRT display control card which comes with the chassis before taking up any of other I/O cards.
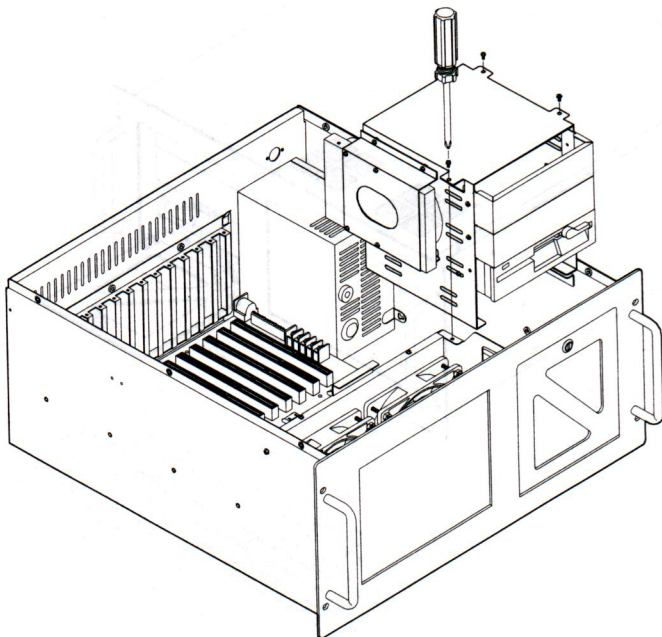
Steps for installing are:
1. Take up a card and slide it slowly into a slot until its bracket goes well down a groove on the securing panel.
2. Match the screw hole on the bracket with the one on the groove and drive a screw tight through.
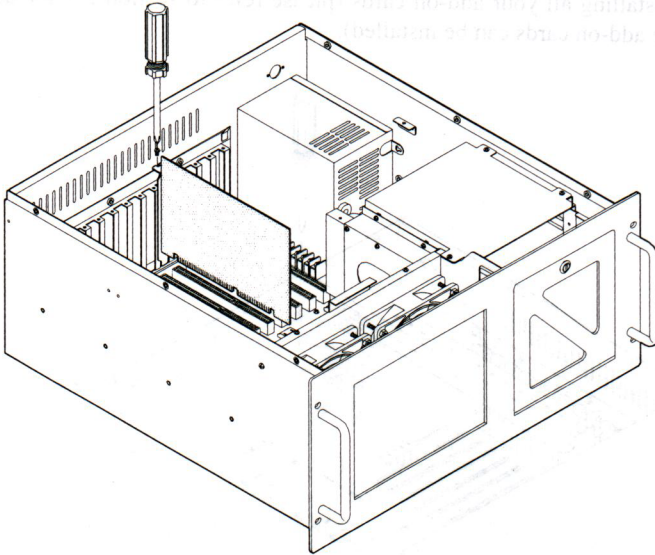
2.5 Install the disk drives

There is one disk drive housing equipped in the chassis. It has five drive bays respectively for you to install four half-high 5.25" HDDs or FDDs, and one 3.5" HDD. You need to take it out to install. To do that you need to unfasten the three screws which secure it on two stoppers. Then loosen all the screws around it, slide in the disk drives, and tighten back the screws. Then put it in place and fasten it back on the two stoppers.

The chassis have no keypad built on them nor come with any keyboard, as you can use them as a process monitoring station. In case that you want to have a user interface attached to them, there are two keyboard connectors respectively placed on the front and the back, for you to implement.
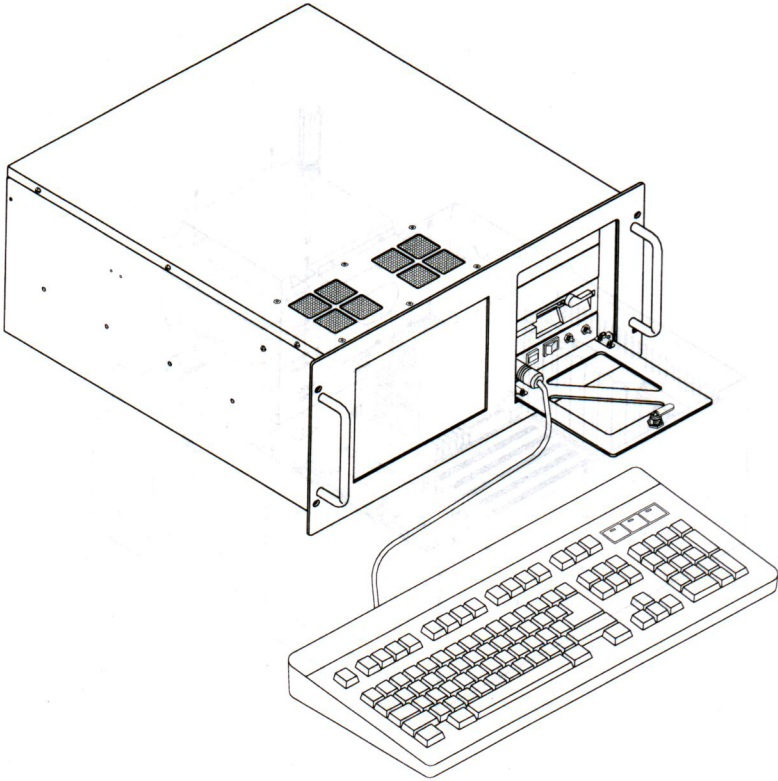
Chapter 3   Maintenance

3.1 General

Now you have known how to set up the panel PCs for operation, hereafter we shall tell you how to maintain them during the operation. There are other essential parts which we haven't mentioned of so far but you will need to know them sooner or later during the operation for the purpose of either maintenance or upgrading. In the following sections they will be introduced to you one by one, and after you have gone through all them you will know almost all the essential parts in the panel PCs, as well as how to take each of them down and put back.

But hereof we would like to remind you once again: *whenever you need to take down a part for either maintenance or upgrading purpose, you should switch off all the power and unplug all the power cords first.*

As we said in section 1.1 the chassis each come with either an ISA-bus 14-slot (default) or PCI-bus 14-slot passive backplane, or space for motherboard . When a backplane is involved and you need to take it down for the purpose of either maintenance or upgrading, please follow the steps described herebelow:

1. Remove all the add-on cards and connecting cords on it
2. Unfasten the 9 screws which fasten it to the bracket behind
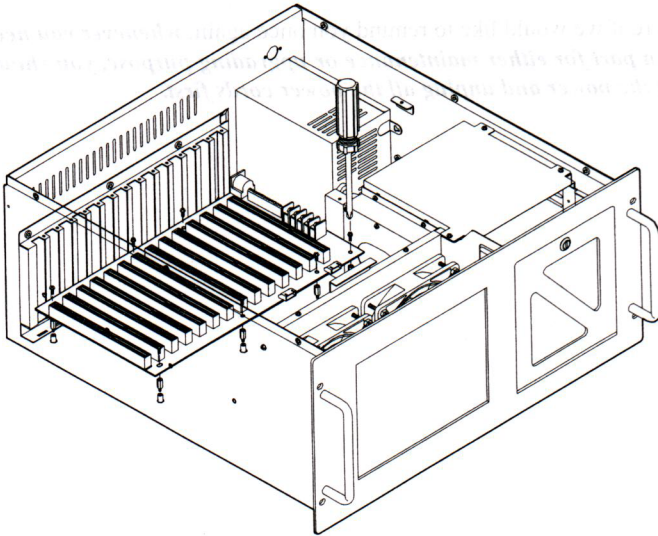
3.3 Power supply

A universal 250W switching power supply is provided in the chassis (for other options please refer to appendix A). It is placed on the back right corner of the chassis with three screws fastening it from outside. You need to unfasten the 3 screws to take it out.
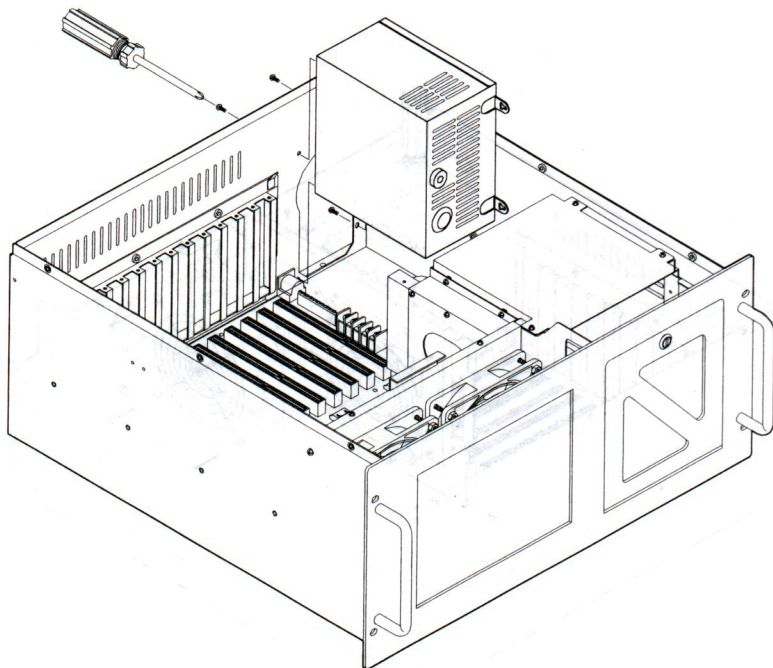
To keep the inside of the chassis cool two 64 CFM fans are installed on the front left corner of the chassis, with two screws fastening them from top within a bracket. You are expected to clean the two fans from time to time, and for that you will need to take them out first. To do that you need to unfasten the two screws and pull by a handle on the top. You will then see the two fans are themselves fastened to a panel with four screws. Unfasten the four screws to strip down the two fans.
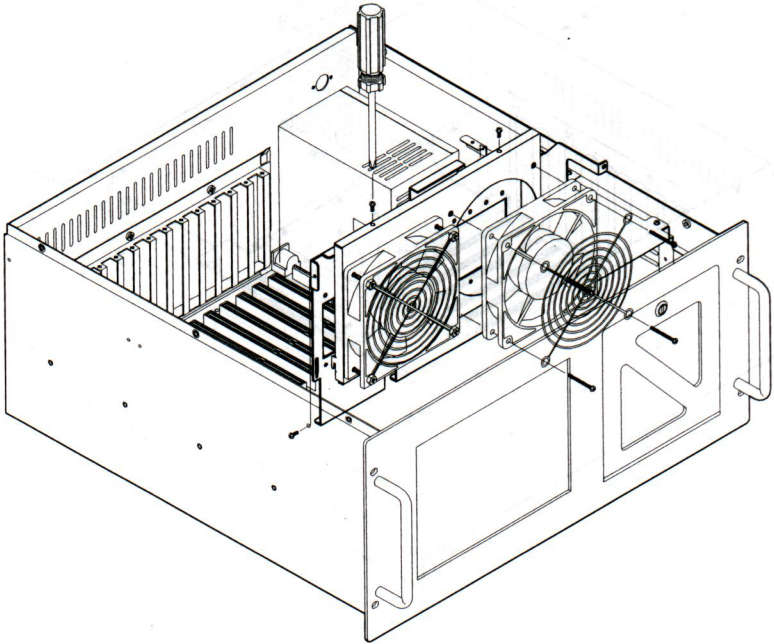
Appendix A
Power supply specification

Power supply constitutes an essential part of the chassis, so we make this section to let you know more about the power supply used in them. It is a universal 250W AC switching power supply (default), and it has the following industrial features:

* 85-265 VAC input
* 47-63Hz and 440Hz input frequency
* 100% equipped "NIPPON CHEMI-CON" super high reliability aluminum electrolytic capacitors
* 60KHz switching frequency control IC inside
* 0-55C operation temperature
* High reliability "ball bearing" cooling fan
* High precision and stable DC outputs for long term operation

It also has the following general specifications:

Ripple and Noise: The peak to peak ripple and noise for +12V is less than 140mV. The other outputs are less than 1% of each output voltage at rated load, 115/230VAC. Measurement is done by 15Mhz band width limited oscilloscope and terminated at each output with a 47 uF capacitor.

Line Regulation: The output line regulation for +12V is less than +/-2%, for other outputs are less than +/-1% while measuring at rated loading and +/-10% of input voltage changing.

Load regulation: The ouput voltage load regulation is less than the values in the following table by changing each output load +/-40% from 60% rated load, and keep all other outputs at 60% rated load.
Output # +5V: +/-3%   +12V: +/-5%
         -5V: +/-1%   -12V: +/-1%

Hold-up Time: Hold-up time is 16ms typical by measuring from the last AC line changing pulse to the point that +5V drop down to +4.75V

Power Good Signal: When power is turned on, the power-good signal will go high for 100ms to 500ms after all output DC voltages are within regulation limits.

Output Protection: The built-in over voltage protection circuit will shut down the outputs to prevent damaging exterbnal circuits. The trip point of crowbar circuit is around 5.9V to 7.0V. The power supply will go into hiccup mode against chort circuit or over load conditions, and will auto-recover while faulty conditions are removed.

Efficiency: The efficiency is higher than 73% by measuring at norminal line and rated load.

Safety: Dsigned to meet the following standards
    UL 1950 D3
    TUV EN60 950
    CSA 22.2 No. 234

EMI: Designed to meet the FCC docket 20780 curve "B"

AC Connectors:
    AC Inlet: Meet IEC 320/CEE 22 standard
    AC Outlet: Meet IEC320 (reverse type)

DC Connectors:
    to Motherboard (P8/P9/P10): Burndy GTC6P-1 or equivalent
    to HDD Drive: AMP 1-480424-0 or equivalent
    to 3.5" FDD: AMP 171822-4 or equivalent

Operating Temperature: 0 to 55C
Storage Temperature: -40C to 75C

Appendix B Exploded diagram