RACK-305G
4U Rackmount Chassis
Version: 1.0

Quick Installation Guide

ABOUT THE RACK-305G

The 4U, heavy-duty steel RACK-305G AT/ATX compatible rackmount industrial chassis is designed to operate reliably in industrial environments where it will be exposed to dust, wide temperature variations, and shocks and vibrations, among other things.

SPECIFICATIONS

- **Form Factor:** Standard 4U, 19" wide
- **SBC Form Factor:** Full-size, slot CPU cards
- **Construction:** Heavy-duty steel
- **Slots Number:** 14-slot (305G), 7-slot (305GATX)
- **Cooling:** 2 x 8cm fan
- **Drive Bay Combinations:**
  - o   3 x 5.25" Optical drives + 1 x 3.5" FDD (floppy disk drive)
  - o   2 x 5.25" Optical drives + 1 x 3.5"HDD (hard disk drive) + 1 x 3.5" FDD
  - o   2 x 5.25" Optical drives+ 2 x 3.5" FDD
- **Dimensions (DxWxH):**
  - o   413mm x 431mm x 176mm
- **Operating Temperature:** 0~40°C
- **Relative Humidity:** 5~95%
- **Vibration:**
  - o   5-17Hz, 0.1" double amplitude displacement
  - o   17-640Hz, 1.5G acceleration peak to peak
- **Shock:** 10G acceleration peak to peak

PACKING LIST

When you unpack the chassis, make sure the following items have been shipped.

- 1 x Quick Installation Guide
- 1 x Power cord
- 2 x Handles and handle plates
- 1 x Screw set
- 2 x Keys

DETAILS OF INCLUDED SCREWS

The attached screw set includes five types of screws. Screws used for chassis installation are shown below.

Peripherals/Parts	Screw Label (refer to the picture above)
5.25" Optical Drives	5
3.5" FDD	5
3.5" HDD	1
2.5" HDD	4
Power Supply Unit	1
Rackmount Bracket	3
Backplane	3
	2

Table 1: Screws for Peripheral/Parts

DIMENSION DRAWING

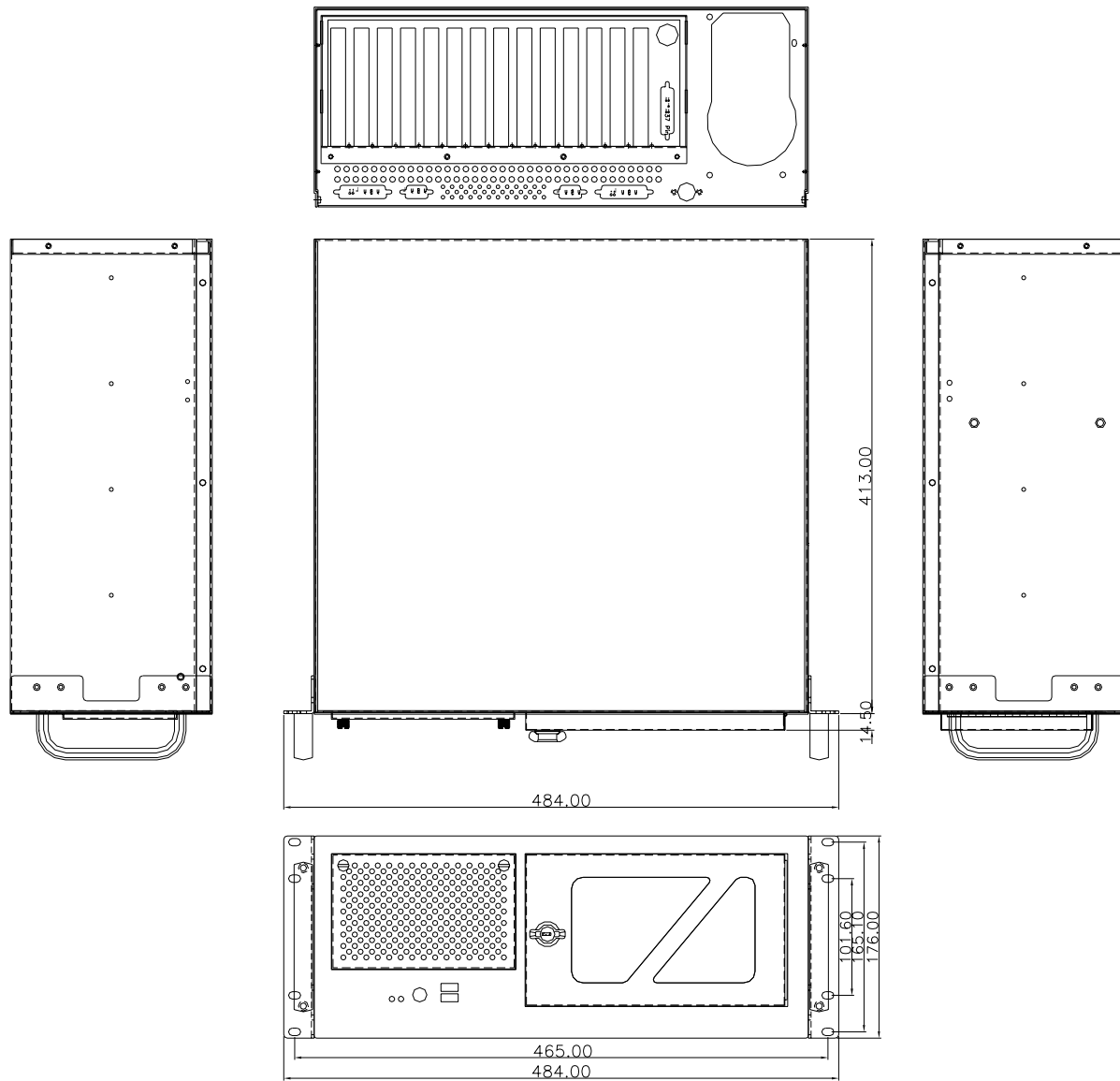The dimensions of RACK-305G are shown below.

Figure 1: Dimension Drawing (measurement units: millimeter)

INSTALLATION STEPS

To install the RACK-305G chassis, the following installation steps must be completed:

Step 1: Unpack the chassis.

Step 2: Install the front handles.

Step 3: Remove the top cover and hold-down clamp.

Step 4: Install the PSU.

Step 5: Install the backplane.

Step 6: Install the CPU card.

Step 7: Install the PCI and ISA expansion cards.

Step 8: Install the disk drives.

Step 9: Front Panel cables.

Step 10: PSU cable and interface cable connections

Step 11: Replace the top cover.

The installation steps outlined above are described in detail below. Please refer to the relevant section.

STEP 1: UNPACK

The RACK-305G is shipped in a plastic bag that is placed inside a cardboard box. The accessories are also shipped with the chassis. When you unpack the chassis you must:

- Make sure all the accessories and components listed above are present.
- Make sure the chassis has not been damaged in anyway.

STEP 2: FRONT HANDLE INSTALLATION

Two handles are shipped with the RACK-305G chassis. The handles are installed on the sides, at the front of the chassis. Each handle is secured to the chassis by four retention screws. To install the handles, please follow the steps below.

Step 1: Align the retention screw holes on the side of the chassis with the retention screws in the handle.

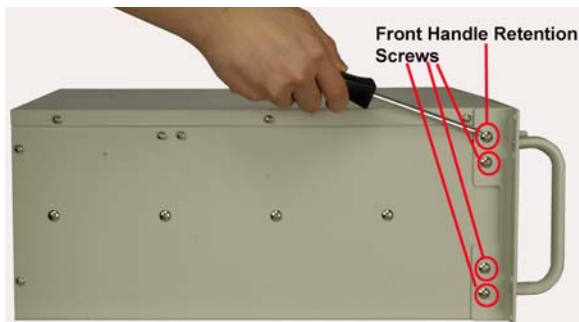**Step 2:** Insert and fasten four retention screws for each handle.

Figure 2: Front Handle Retention Screws

STEP 3: TOP COVER AND HOLD-DOWN CLAMP REMOVAL

3.1: TOP COVER REMOVAL

The top cover is secured to the chassis with six retention screws, three on each side of the chassis. To remove the top cover, please follow the steps below.

Step 1: Remove all six top cover retention screws. Remove three retention screws from each side of the chassis.
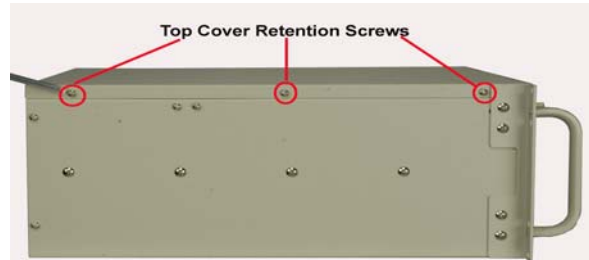

Figure 3: Top Cover Retention Screws

Step 2: Lift the top cover up gently.

Figure 4: Remove the Top Cover

STEP 3.2: HOLD-DOWN CLAMP REMOVAL

Detach the hold-down clamp by removing the two screws located on each side of the chassis and lift the hold-down clamp off the chassis.

Figure 5: Remove the Hold-Down Clamp

STEP 4: Install the Power Supply unit (PSU)

Once the top cover and hold-down clamp have been removed, the PSU must be installed. Compatible IEI PSUs are listed in the table below.

Model No.	Input	Type	Watt	Output Range						
				+3.3V	+5V	+12V1	+12V2	-5V	-12V	+5Vsb
ACE-940AP-RS	AC	AT	390W	N/A	40A	15A	N/A	0.3A	0.8A	N/A
ACE-832AP-RS	AC	ATX	300W	28A	30A	15A	N/A	0.3A	0.8A	2A
ACE-841AP-S-RS	AC	ATX	400W	28A	33A	20A	N/A	0.5A	1A	2A
ACE-850AP-RS	AC	ATX	500W	27A	29A	18A	18A	0.3A	0.8A	2A

Table 2: Compatible IEI PSUs.

The PSU is installed at the rear of the chassis and secured to the chassis with six retention screws. To install the PSU, please follow the steps below.

Step 1: Correctly position the PSU at the rear of the chassis making sure that the power switch and the cable socket both face outwards.

Step 2: Once the PSU has been correctly positioned, secure the PSU to the chassis by inserting two retention screws through the side internally, and four retention screws through the rear of the chassis.
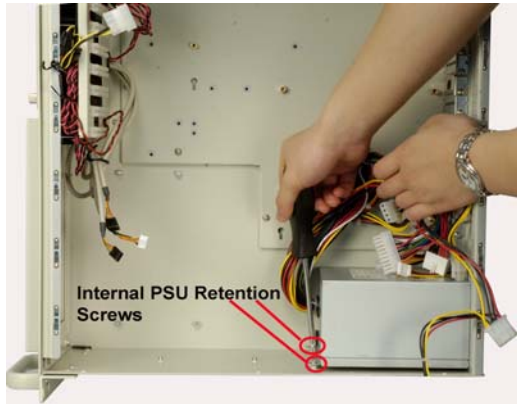

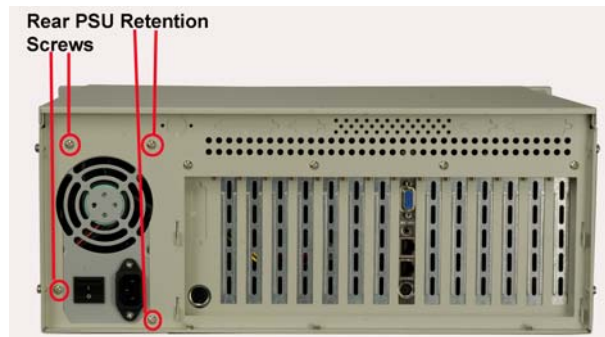**Figure 6: Insert Internal PSU Retention Screws**

Figure 7: Insert PSU Retention Screws.

STEP 5: BACKPLANE INSTALLATION

The IEI backplanes listed below are compatible with the RACK-305G chassis.

Model No.	SBC Type	PCI	ISA	PSU Connector
BP-14S-RS	ISA	N/A	14	AT
PCI-13SD-RS	PCIMG 1.0	3+4	3+3	AT/ATX
PCI-14S2-RS	PCIMG 1.0	4	8	AT/ATX
PCI-14S3-RS	PCIMG 1.0	4	9	AT/ATX
PX-14S3-RS	PCIMG 1.0	12	2	AT/ATX
PX-14S5-RS	PCIMG 1.0	7	5	AT/ATX
PXAGP-13S3-RS	PCIAGP	11	N/A	AT/ATX
PE-10S	PICMG 1.3	4	0	ATX

Table 3: Compatible Backplanes

To install the backplane please follow the instructions below.

Step 1: Insert the nine copper pillars in the predrilled screw holes in the bottom of the chassis.
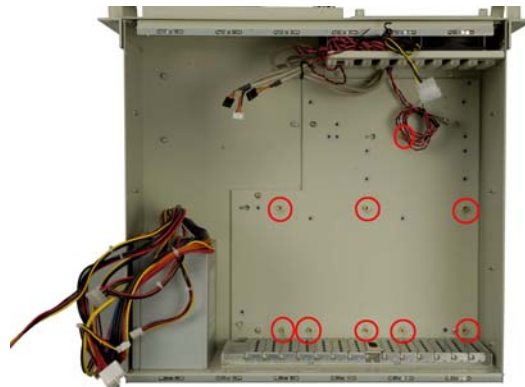

Figure 8: Locations of the Nine Copper Pillars

Step 2: Mount the backplane onto the copper pillars and align the backplane mounting holes with the nine screw holes in the copper pillars.

Step 3: Once the backplane is properly aligned with the retention screw holes, insert nine retention screws to secure the backplane to the chassis.

STEP 6: CPU CARD INSTALLATION

To install the CPU card please follow the instructions below.

Step 1: Remove the slot cover at the back of the chassis. To do this, remove the slot cover retention screw at the top of the slot cover.

Figure 9: Remove the Slot Cover Retention Screw

Step 2: Slide the CPU card into the socket on the backplane reserved for the CPU card. If you are installing a full size CPU card, make sure the back edge of the CPU card slots into the corresponding plastic guide rail located behind the cooling fans.
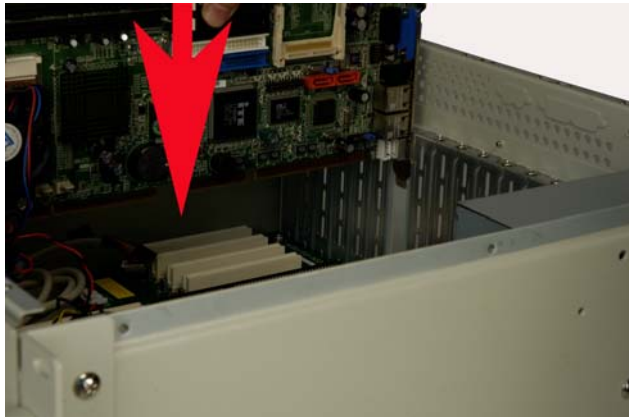

Figure 10: Slide the CPU Card into the Sockets

Step 3: To secure the CPU card, reinsert the previously removed slot cover retention screw.

STEP 7: PCI/ISA EXPANSION CARD INSTALLATION

The RACK-360G supports up to 14 PCI/ISA expansion cards and the RACK-305GATX variant supports up to 7 expansion cards. To install an expansion card (PCI or ISA) please follow the steps below.

Step 1: Remove the slot cover at the back of the chassis. To do this, remove the slot cover retention screw at the top of the slot cover.

Step 2: Slide the PCI/ISA expansion card into reserved PCI/ISA socket on the backplane.

Step 3: To secure the PCI/ISA expansion card, reinsert the previously removed slot cover retention screw.

STEP 8: DISK DRIVES INSTALLATION

The RACK-305G chassis has two drive brackets: one main drive bracket and a side bracket. The main drive bracket supports up to three 5.25" optical drives or two 5.25" drives and one 3.5" drive (HDD or FDD). The side bracket supports one 3.5" FDD drive.
To install the drives, please follow the steps outlined in the sections below.

STEP 8.1: REMOVE THE SIDE BRACKET

Before any drives can be installed, the side bracket attached to the main drive bracket must be removed. To remove the side bracket, remove the two retention screws from the top of the side bracket that secure the side bracket to the main bracket.

Figure 11: Remove the Side Bracket

STEP 8.2: INSTALL 3.5" DRIVES INTO THE SIDE BRACKET

The side bracket supports one 3.5" FDD. If you want to install a 3.5" FDD drive into the side bracket, please follow the steps below.

Step 1: Remove the front flap from the side bracket by removing the two retention screws that secure the front flap to the side bracket.

Step 2: Place a 3.5" FDD drive into the bracket. Make sure the FDD PCB board is facing the surface of the bracket and the 4-pin power connector and the IDE/SATA interface connector are facing the rear of the bracket.

Step 3: To secure the 3.5" FDD to the side bracket, insert four retention screws.

STEP 8.3: REMOVE THE MAIN DRIVE BRACKET

If you wish to install 5.25" optical drives or more than one 3.5" drive (HDD or FDD), the main drive bracket must be removed. To remove the main drive bracket from the chassis, follow the steps below.

Step 1: Remove the side bracket. See Step 8.1: Remove the Side Bracket above.

Step 2: Remove the four retention screws that secure the main bracket to the base of the chassis.
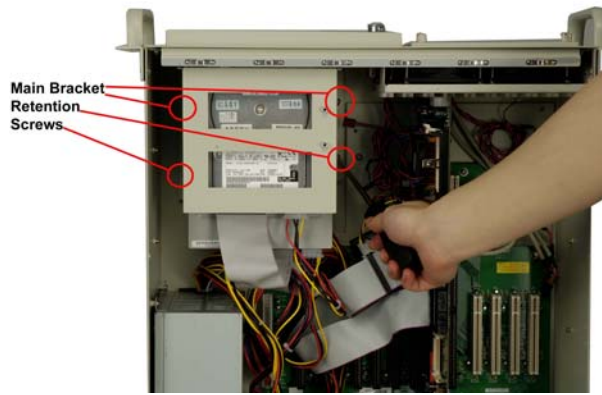
Figure 12: Remove the Four Retention Screws on the Sides of the Main Bracket

STEP 8.4: INSTALL DRIVES INTO THE MAIN DRIVE BRACKET

The main drive bracket has three bays that support the combinations as follows:

- o   3 x 5.25" Optical drives
- o   2 x 5.25" Optical drives + 1 x 3.5" HDD
- o   2 x 5.25" Optical drives + 1 x 3.5" FDD

A 3.5" drive tray (HDD or FDD) is installed into the top drive bay. The two lower drive bays are covered with two metal plates. The 3.5" drives (HDD or FDD) are always installed in the drive bracket in the top drive bay. The 5.25" optical drives can be installed in all three drive bays.

When you are installing drives into the main drive bracket, always install the 5.25" optical drives into the two lower drive bays first.

If you want to install a 5.25" optical drive into the main drive bracket, follow the steps below:

Step 1:   If you are installing the 5.25" optical drive into the lower two drive trays, remove the front metal covers from the drive bays by removing the four retention screws that secure the front metal plates to the main drive bracket.

Step 2:   If you are installing the 5.25" optical drive into the top drive bay, remove the 3.5" drive bracket from the main drive bracket. To do this, remove the four retention screws that secure the 3.5" drive tray to the main bracket and then slide the 3.5" drive tray out of the main drive bracket.

Figure 13: Remove the Front Metal Cover Retention Screws

Figure 14: Remove the Four Retention Screws on the Sides of the Main Bracket

Step 3:   Slide the 5.25" optical drive into the selected drive bay. Make sure the drive is upright and the 4-pin power connector and the IDE/SATA drive interface connector are at the rear of the drive bay.

Step 4:   Secure the 5.25" optical drive to the chassis by inserting four retention screws through the sides of the main drive connector and into the 5.25" drive. The retention screws are inserted into the same locations as the retention screws for the front metal flaps and the 3.5" drive tray.

If you want to install a 3.5" HDD drive into the main drive bracket, follow the steps below:

Step 1:   Remove the 3.5" drive tray from the top drive bay in the main drive bracket. To do this, remove the four retention screws that secure the 3.5" drive bracket to the main drive bracket and then slide the 3.5" drive tray out of the main drive bracket.

Step 2:   Place a 3.5" HDD into the drive bracket. Make sure the PCB on the 3.5" HDD is placed directly on the bottom surface of the drive bracket, and the 4-pin power connector and the IDE/SATA drive interface connector are facing the rear.

Step 3:   Secure the HDD to the drive bracket by inserting four retention screws (two on each side) through the sides of the drive bracket and into the HDD.

Figure 15: Install a 3.5" Disk Drive into the Adapter Bracket

Step 4: Reinsert the 3.5" drive tray, with the installed 3.5" HDD into the main drive bracket. Make sure that the power connector and the drive interface connector face the rear of the chassis and the drive is at the top of the drive bracket.

Step 5: Reinsert the four, previously removed, 3.5" drive tray retention screws.

If you want to install a 3.5" FDD drive into the main drive bracket, follow the steps below:

Step 1: Remove the 3.5" drive tray from the top drive bay in the main drive bracket. To do this, remove the four retention screws that secure the 3.5" drive tray to the main drive bracket and then slide the 3.5" drive tray out of the main drive bracket.

Step 2: The front of the 3.5" drive tray is covered with a detachable metal cover. Use your fingers to push the detachable cover inwards until the cover snaps off the 3.5" drive tray.

Figure 16: Bend off the front cover of the 3.5" drive bracket

Step 3: Place a 3.5" FDD drive into the bracket. Make sure the FDD is upright and both the 4-pin power connector and the IDE/SATA drive interface connector are facing the rear of the bracket.

Step 4: Make sure the PCB on the 3.5" FDD is placed directly on the bottom surface of the drive bracket and the 4-pin FDD power connector and the IDE/SATA drive interface connector are facing the rear.

Step 5: Secure the FDD to the drive bracket by inserting four retention screws (two on each side) through the sides of the drive bracket and into the HDD.

Step 6: Reinsert the 3.5" drive tray, with the installed 3.5" FDD into the main drive bracket. Make sure the 4-pin power connector and the IDE/SATA drive interface connector face the rear of the chassis and the FDD is at the top of the drive bracket.

Step 7: Reinsert the four, previously removed, 3.5" drive tray retention screws.

Step 8.5: Reinstall the Drive Brackets

Once all the drives have been installed into the drive brackets, reinstall the drive brackets into the chassis. To reinstall the drive brackets into the chassis, please follow the steps below:

Step 1: Place the main drive bracket into the chassis making sure that the front of the 5.25" optical drives are facing out of the chassis and the 4-pin drive power connectors and IDE/SATA interface connectors are all facing the rear of the chassis.

Step 2: Reinsert the four, previously removed, main drive bracket retention screws.

Step 3: Correctly mount the side drive bracket onto the main drive bracket making sure the 4-pin FDD power connector and IDE/SATA interface connector both face the rear of the chassis.

Step 4: Reinsert the two, previously removed, side bracket retention screws into the top of the side bracket.

STEP 9: FRONT PANEL CABLES

The RACK-305G has the following compotents accessible at the front.

- o 1 x Power LED
- o 1 x HDD activity LED
- o 1 x Power switch
- o 2 x Reset buttons
- o 2 x USB ports
- o 1 x PS/2 keyboard/mouse

These components are all connected to the CPU card with cables. To correctly connect these cables, please refer to the technical documentation that came with your CPU card. The connectors that are provided with the chassis are listed below.

No.	Name
2	USB cable
1	KB cable
1	Power LED cable
2	Reset Switch cable
1	HDD LED cable
1	Power switch cable

Table 4: Chassis Connectors

The pin definitions for the USB cable are shown below

PIN No.	Description	Color
1	+5V	Red
2	D-	Dark Yellow
3	D+	Yellow
4	GND	Brown
Table 5: Pin Definitions of USB Cable		

STEP 10: PSU CABLE AND INTERFACE CABLE CONNECTIONS

Before you reinstall the hold-down clamp and the cover, the following cables need to be connected.

Step 1: Connect the PSU cables from the PSU to the full-size CPU card, HDD, FDD, cooling fans and optical drives power connector.

Step 2: The drive interface connectors must be connected to the CPU card.

STEP 11: HOLD-DOWN CLAMP AND COVER REINSTALLATION

After you have completed the above procedures, the hold-down clamp and cover can be reinstalled. To do this, align the screw holes on both ends of the hold-down clamp with the screw holes on both sides of the chassis and reinsert the four previously removed retention screws. After that, slide the cover back over the chassis and reinsert the six previously removed retention screws.

CHASSIS MAINTENANCE

■ FAN REPLACEMENT

NOTE:

- Please ensure that the power of the computer is switched off before fan replacement procedure.
- The CPU card has to be removed before removing the fan bracket. Please refer to STEP 6 for the information about CPU card removal.

There are two 8 cm cooling fans inside the RACK-305G chassis. To replace a fan, please follow the instructions below.

Step 1: Remove the chassis cover. (Please refer to **Step 3: Top Cover and Hold-down Clamp Removal**)

Step 2: Unplug the power cable that is connected to the fan.

Step 3: Use a 6mm hexagonal socket head screwdriver to remove two hex nuts from the base of the fan bracket and one hex nut from the rear side of the front panel.
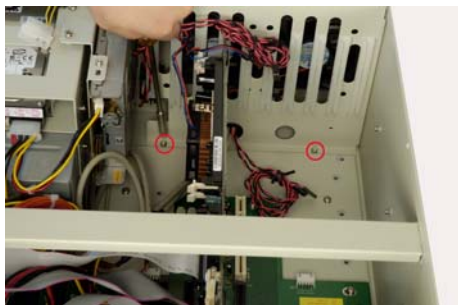

Figure 17: Remove the Two Hexagonal Socket Head Screws at the Bottom of the Fan Bracket
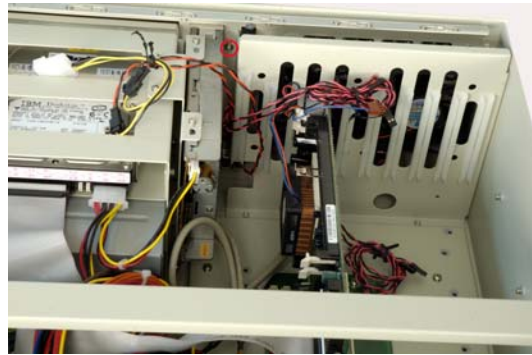

Figure 18: Remove the Hexagonal Socket Head Screw that Secure the Bracket to the Front Panel

Step 4: Lift the fan bracket up and remove the four retention screws on each corner of the fan.
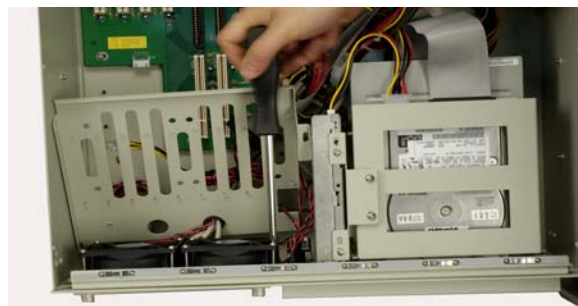

Figure 19: Remove the Fan Retention Screws

Step 5: Replace the fan and secure the new fan to the front of the chassis with the four previously removed retention screws.

Step 6: Reinstall the bracket back in the chassis and secure it to the chassis with the previously removed retention screws.

■ FAN FILTER REPLACEMENT

To replace the fan filter, please follow the steps below.

Step 1: Loosen the two screws at the top of the fan filter bracket and open the bracket.

Figure 20: Remove the Fan Filter

Step 2: Replace the filter pad inside.

Step 3: Put the fan filter bracket back and secure it to the chassis with the two previously removed retention screws.