RACK-3000G
4U Rackmount Chassis
Version: 1.0

Quick Installation Guide

ABOUT THE RACK-3000G

The 4U, heavy-duty steel RACK-3000G 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:** Metal
- **Slot Number:**
  - 14 slots for RACK-3000G
  - 7 slots for RACK-3000GATX
- **Cooling:** 2 x 8cm fans
- **Drive Bay Combinations:**
  - 3 x 5.25" Optical drive bays
  - 3 x 3.5" FDD (floppy disk drive) or HDD (hard disk drive) bay
- **Dimensions (DxWxH)**:
  520 mm x 431mm x 176mm
- **Operating Temperature**: 0~40°C
- **Relative Humidity**: 10~90%
- **Vibration:**
  5-17Hz, 0.1" double amplitude displacement
  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
- 1 x Screw set
- 3 x Shock absorbers
- 5 x Shock absorbers
- 2 x Plastic pillars
- 1 x Cable tie
- 1 x backplane-to-CPU card ATX cable
- 2 x Keys

DETAILS OF INCLUDED SCREWS

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

1 2 3 4 5

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-3000G are shown in the figure below.

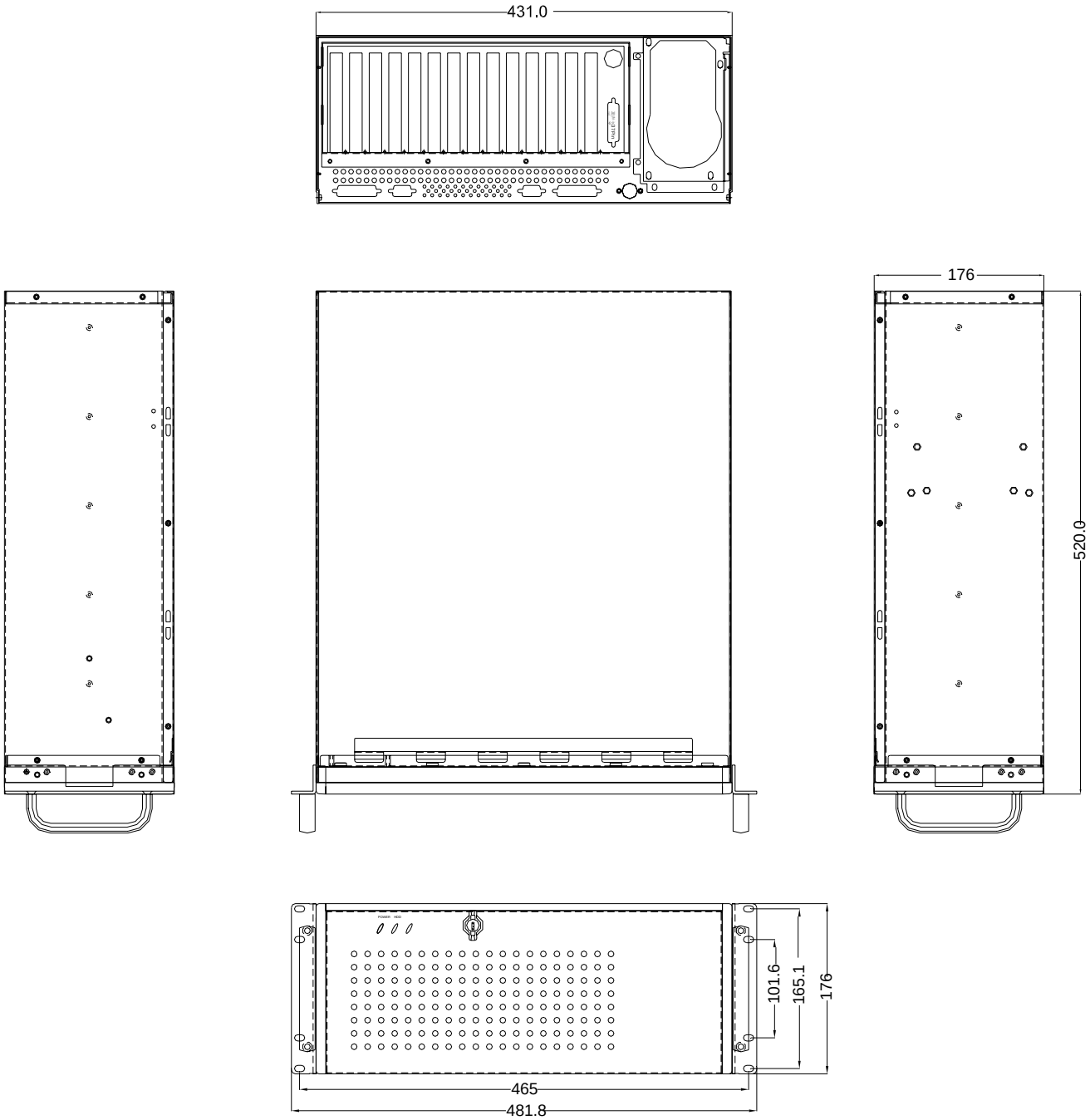


Figure 1: Dimension Drawing (measurement units: millimeter)

INSTALLATION STEPS

To install the RACK-3000G chassis, the following installation steps must be completed.

Step 1: Unpack the chassis.

Step 2: Remove the top cover and hold-down clamp.

Step 3: Install the PSU.

Step 4: Install the backplane.

Step 5: Install the CPU card.

Step 6: Install the PCI and ISA expansion cards.

Step 7: Install the internal HDD.

Step 8: Install the disk drives.

Step 9: Connect the cables.

Step 10: Connect PSU cable and interface cable.

Step 11: Install the front handles.

Step 12: Reinstall the hold-down clamp and the top cover.

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

STEP 1: UNPACK

The RACK-3000G is shipped in a plastic bag that is placed inside a cardboard box. When the chassis is unpacked, make sure

- All the items listed in the **PACKING LIST** section are present.
- The chassis has not been damaged in anyway.

STEP 2: TOP COVER AND HOLD-DOWN CLAMP REMOVAL

STEP 2.1: REMOVE THE TOP COVER

The top cover is secured by six retention screws on both sides, three on each side, of the chassis. To remove the top cover, follow the steps below:

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

Figure 2: Top Cover Retention Screws

Step 2: Slide the cover backwards and then lift the cover up gently.

Figure 3: Remove the Top Cover

STEP 2.2: HOLD-DOWN CLAMP REMOVAL

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

Figure 4: Hold-Down Clamp Retention Screws

STEP 3: 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 **table 2** on ***page 4***.

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: Mount the PSU at the rear of the chassis. Make sure the power socket and the PSU fan face outwards.

Step 2: To secure the PSU to the chassis, insert six retention screws, four rear retention screws and two internal retention screws.

Figure 5: PSU Retention Screws at the Rear

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
ACE-R4130AP-RS	AC	ATX	300W	18A	25A	16A	N/A	0.5A	0.5A	2A

Table 2: Compatible IEI PSUs.

Figure 6: PSU Internal Retention Screws

The RACK-3000G chassis can also support a redundant PSU. To install a redundant PSU, follow the steps outlined below:

Step 1: Remove the PSU frame by removing the four retention screws from the rear of the chassis.

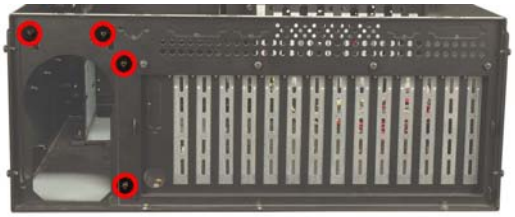


Figure 7: PSU Frame Retention Screws

Step 2: Attach two redundant PSU clamps to the PSU, one to the top and the other one to the left side of the redundant PSU.

Step 3: Insert two retention screws for each clamp to secure the clamps to the redundant PSU.

Figure 8: Redundant PSU Clamp Retention Screws

Step 4: Install a redundant PSU at the rear of the chassis. Make sure both the power socket and the PSU fans face the rear of the chassis.

Step 5: To secure the redundant PSU to the chassis, reinsert the four previously removed PSU frame retention screws.

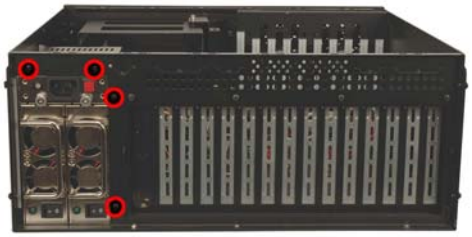


Figure 9: Redundant PSU Retention Screws

STEP 4: BACKPLANE INSTALLATION

The IEI backplanes listed below are compatible with the RACK-3000G chassis.

Model No.	SBC Interface	PCI	ISA	PSU Connector
BP-14S-RS-R30	ISA	N/A	14	AT
PE-6S	PICMG 1.3	2	N/A	ATX
PE-10S	PICMG 1.3	4	N/A	ATX
PCI-13SD-RS-R30	PICMG 1.0	3+4	3+3	AT/ATX
PCI-14S2-RS-R30	PICMG 1.0	4	8	AT/ATX
PCI-14S3-RS-R30	PICMG 1.0	4	9	AT/ATX
PX-14S3-RS-R30	PICMG 1.0	12	2	AT/ATX
PX-14S5-RS-R30	PICMG 1.0	7	6	AT/ATX
PXAGP-13S3-RS-R30	PCIAGP	11	N/A	AT/ATX

Table 3: Compatible Backplane Modules

To install a backplane please follow the instructions below.

Step 1: Mount the backplane onto the base of the chassis and find out the corresponding retention screw holes in the base of the chassis.

Step 2: Insert nine copper pillars in the nine corresponding holes in the base of the chassis.

Figure 10: Copper Pillars

Step 3: Insert two plastic pillars into the two holes reserved for plastic pillars.

Figure 11: Plastic Pillars

Step 4: Mount the backplane onto the nine copper pillars and the two plastic pillars. Make sure the two plastic pillars are installed into the corresponding holes in the backplane.

Figure 12: Copper Pillars in the Corresponding Holes in the Backplane

Step 5: To secure the backplane to the chassis, insert nine retention screws.

Figure 13: Backplane Retention Screws

STEP 5: 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.

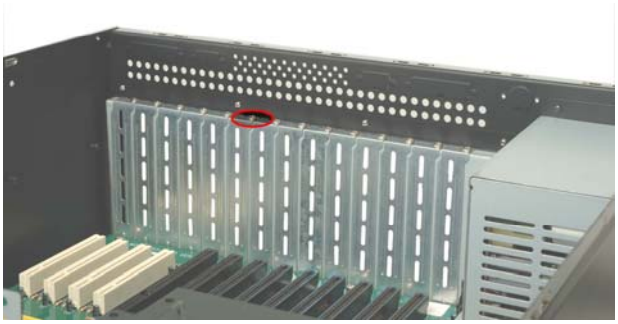


Figure 14: Remove the Slot Cover Retention Screw

Step 2: Slide a full-size CPU card into the socket on the backplane reserved for the CPU card. Make sure the back edge of the CPU card slots into the corresponding card guide located behind the cooling fans.

Figure 15: Slide the CPU Card into the Sockets

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

Step 4: If the installed PSU is ATX PSU, connect the backplane-to-CPU card ATX cable to the backplane and the CPU card to enable the ATX PSU.

Figure 16: Backplane-to-CPU Card ATX Cable

STEP 6: PCI/ISA EXPANSION CARD INSTALLATION

The RACK-3000G supports up to thirteen PCI/ISA expansion cards with backplane rear panel, seven with motherboard rear panel. If you wish to install a PCI expansion card or an ISA expansion 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.

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

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

STEP 7: INTERNAL HDD INSTALLATION

The RACK-3000G chassis supports an internal HDD on the top of the fan bracket. To install an internal HDD, follow the steps below:

Step 1: Remove the two internal HDD clamps by removing the four HDD clamp retention screws, two for each clamp.

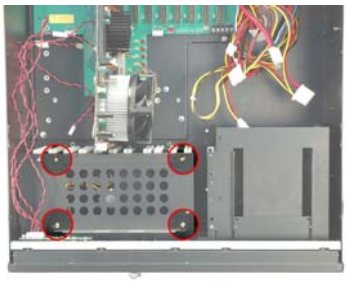


Figure 17: Internal HDD Clamps

Step 2: Attach the two HDD clamps to the sides of the 3.5" HDD.

Step 3: Align the HDD retention screw holes with the retention screw holes in the two HDD clamps. Make sure both clamps are aligned with each other, so that both clamps can be reinstalled later in the procedure.

Step 4: Insert four retention screws, two into each side of the HDD to secure the HDD clamps to the HDD.

Figure 18: Internal HDD Clamp Retention Screws

Step 5: Mount the internal HDD on the top of the fan bracket. Make sure the power socket and the IDE/SATA connectors face the right side of the chassis.

Step 6: Reinstall both HDD clamps and reinsert the four previously removed HDD clamp retention screws.

STEP 8: DISK DRIVES INSTALLATION

The RACK-3000G chassis has the capacity for

- o 3 x 5.25" Optical drives
- o 3 x 3.5" FDD or HDD

To install the drives please follow the steps outlined in the sections below.

STEP 8.1: DRIVE BRACKET REMOVAL

The drive bracket is secured to the front, on the right, of the chassis. To remove the drive bracket, follow the steps below:

Step 7: Remove the four drive bracket retention screws, two from the front and two from the right side at the bottom of the drive bracket.

Figure 19: Drive Bracket Retention screws at the Front

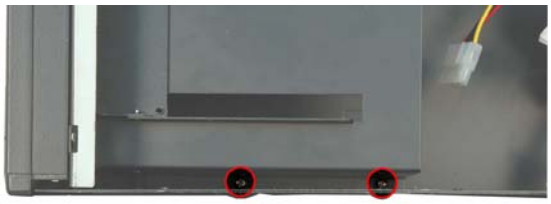


Figure 20: Drive Bracket Retention Screws on the Right Side of the Drive Bracket

Step 8: Slide the drive bracket backwards and lift it up gently.

STEP 8.2: OPTICAL DRIVE INSTALLATION

The RACK-3000G chassis can support up to three optical drives. To install a 5.25" drive into the drive bracket, please follow the steps below.

Step 1: Remove the drive bracket. To do this, please refer to **STEP 8.1: DRIVE BRACKET REMOVAL.**

Step 2: Remove the 3.5" drive bay front cover on the left side of the drive bracket by removing two retention screws, one on each side of the 3.5" drive bay.

Figure 21: Left 3.5" Drive Bay Front Cover Retention Screws

Step 3: Remove the 5.25" optical drive bay front cover by removing four retention screws, two from each side of the drive bay.

Figure 22: 5.25” Drive Bay Front Cover Retention Screws

Step 4: Slide a 5.25” optical drive into the 5.25” drive bay making sure both the power connector and the IDE/SATA connector face the rear of the chassis.

Step 5: Insert four retention screws, two into each side of the drive bay to secure the 5.25” optical drive.

Figure 23: 5.25” Optical Drive Retention Screws

STEP 8.3: FDD/HDD INSTALLATION

To install a 3.5” FDD, follow the steps below.

Step 1: Remove the drive bracket. To do this, please refer to **STEP 8.1: DRIVE BRACKET REMOVAL**.

Step 2: Remove the 3.5” drive bay front cover by removing the two retention screws, one from each side.

Figure 24: Top 3.5” Drive Bay Front Cover Retention Screws

Figure 25: Left 3.5” Drive Bay Front Cover Retention Screws

Step 3: Mount a 3.5” FDD onto the 3.5” drive bay. Make sure both the power connector and the IDE/SATA connector face the rear of the bracket.

Step 4: Align the 3.5” FDD retention screw holes with the retention screw holes in the 3.5” drive bay. Make sure the front of the FDD is aligned with the front of the drive bracket.

Step 5: To secure the 3.5” FDD insert four retention screws.

Figure 26: FDD Retention Screws

To install a 3.5” HDD, follow the steps below.

NOTE:

When 3.5” HDDs are installed, the front covers of the 3.5” drive bays do not need to be removed.

Step 1: Mount a 3.5” HDD onto the 3.5” drive bay. Make sure both the power socket and the IDE/SATA connectors face the rear of the chassis.

Step 2: Align the 3.5” HDD retention screw holes with the retention screw holes in the 3.5” drive bay.

Step 3: To secure the 3.5” HDD, insert four retention screws, two into each side of the 3.5” HDD.

Figure 27: HDD Retention Screws

STEP 8.4: DRIVE BRACKET REINSTALLATION

After the disk drives have been properly 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. Make sure the front of the drives face out of the chassis, the power connectors and IDE/SATA interface connectors all face the rear of the chassis, and the two clips at the bottom of the bracket slides into the bracket at the base of the chassis.

Figure 28: Bottom Clips of the Drive Bracket

Figure 29: Bracket at the Base of the Chassis

Step 2: Secure the drive bracket into the chassis by reinserting the four previously removed retention screws.

STEP 9: CABLING

The RACK-3000G has the following components accessible at the front:

- o 1 x Power LED
- o 1 x HDD LED
- o 1 x Power switch
- o 1 x Reset button

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 are listed below:

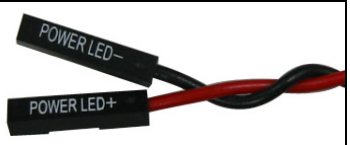
No.	Name
1	 Power LED cable
1	 Reset Switch cable
1	 HDD LED cable
1	 Power switch cable

Table 4: Chassis Connectors

STEP 10: PSU CABLE AND INTERFACE CABLE CONNECTIONS

To connect the power and ribbon cables please follow the instructions below.

Step 1: Connect the PSU cables from the PSUs to the backplane, 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: FRONT HANDLE INSTALLATION

Two handles are shipped with the RACK-3000G 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 screw holes in the handle.

Step 2: Insert four retention screws for each handle.

Figure 30: Front Handle Retention Screws

STEP 12: HOLD-DOWN CLAMP AND TOP COVER REINSTALLATION

On the completion of 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.

There are two 8 cm cooling fans inside the RACK-3000G chassis. To replace a fan, please follow the steps below.

Step 1: Open the front panel. (Please refer to STEP 2: TOP COVER AND HOLD-DOWN CLAMP REMOVAL)

Step 2: Remove the fan bracket securing the fan you want to replace by loosening the two thumbscrews on the upper right and lower left of the fan bracket.

Figure 31: Fan Bracket Thumbscrews

Step 3: Unplug the power cable that is connected to the fan.

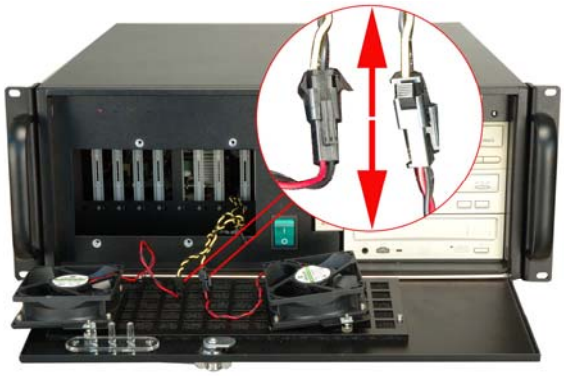


Figure 32: Disconnect the Fan Connector

Step 4: Remove the four retention screws in each of the four corners of the fan that must be replaced.

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

Step 6: Reinstall fan bracket into the chassis and secure the fan bracket to the chassis with the previously loosened thumbscrews.

■ Fan Filter Replacement

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

Step 1: Open the front panel.

Step 2: Remove the four thumbscrews on the fan filter bracket.

Figure 33: Fan Filter Bracket Retention Screws

Step 3: Replace the filter pad inside.

Step 4: Secure the fan filter bracket back to the front panel of the chassis with the four previously removed thumbscrews.

■ Cabinet Installation

Supporting rails, rack trays, or slide rails can be implemented using the four mounting holes on the sides of the chassis. The eight mounting holes in the two handles on the sides of the chassis are shown below.

Figure 34: Four Mounting Holes

NOTE:

If the system is running critical applications, please find the appropriate time to backup data and properly shut down the system.

■ RACK-3000GATX Installation

IEI also offers the RACK-3000GATX chassis that is compatible with motherboards.

The compatible IEI motherboards are listed in **Table 4** below:

Form Factor	Model No.	PSU Connector
ATX	IMBA-8650	ATX
Micro ATX	IMB-9452	ATX
Micro ATX	IMB-9154	ATX
Micro ATX	KINO-6612	ATX
Micro ATX	KINO-LX	ATX
Mini – ITX	KINO-LUKE	ATX
Mini – ITX	KINO-MARK	ATX
Mini – ITX	KINO-9452	ATX
Mini – ITX	KINO-9454	ATX

Table 5: Compatible IEI Motherboard

To install a motherboard, follow the steps below:

Step 1: Mount two 6cm fans onto the rear panel for motherboards. Make sure the fan power cables are at the bottom of the fans.

NOTE:

The two 6cm fans are optional items.

Figure 35: 6cm fan

Step 2: To secure the two fans to the rear panel, insert four retention screws for each fan, one into each corner.

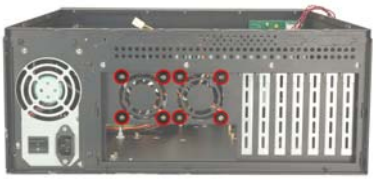


Figure 36: Fan Retention Screws

Step 3: Mount the motherboard onto the base of the chassis to find out the corresponding holes in the base of the chassis.

Step 4: Install five copper pillars and one plastic pillar into the corresponding holes in the base of the chassis.

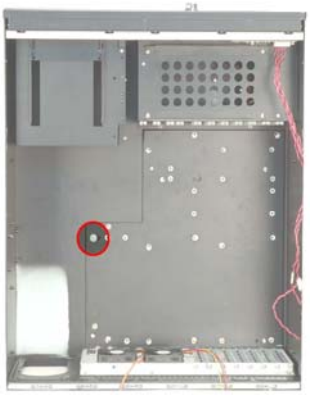


Figure 38: Plastic Pillar

Step 5: Install one plastic pillar into the motherboard and stick one plastic pillar on the base of the chassis correspond to the front right corner of the motherboard.

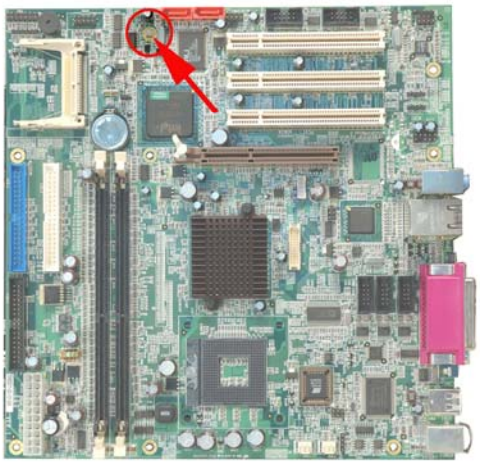


Figure 39: Plastic Pillar in the Motherboard

NOTE:

The pillars needed for motherboard installation differ from motherboard to motherboard.

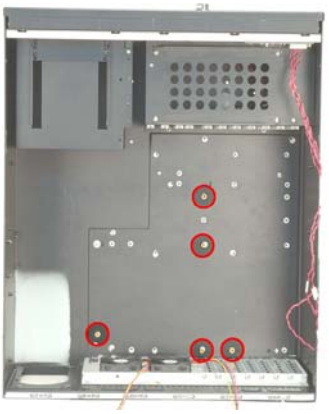


Figure 37: Copper Pillars

Figure 40: Plastic Pillar Stuck on the Base of the Chassis

Step 6: Install the I/O connector bracket at the rear of the chassis.

Figure 41: I/O Connector Bracket

Step 7: Mount the motherboard onto the base of the chassis. Make sure the I/O connectors of the motherboard are installed in the corresponding holes in the I/O connector bracket.

Step 8: To secure the I/O connectors to the I/O connector bracket, insert six copper pillars, two for each I/O connector.

Figure 42: I/O Connectors installed in the I/O Connector Bracket

Step 9: Insert five retention screws to secure the motherboard to the base of the chassis.

Step 10: **Step 0:**

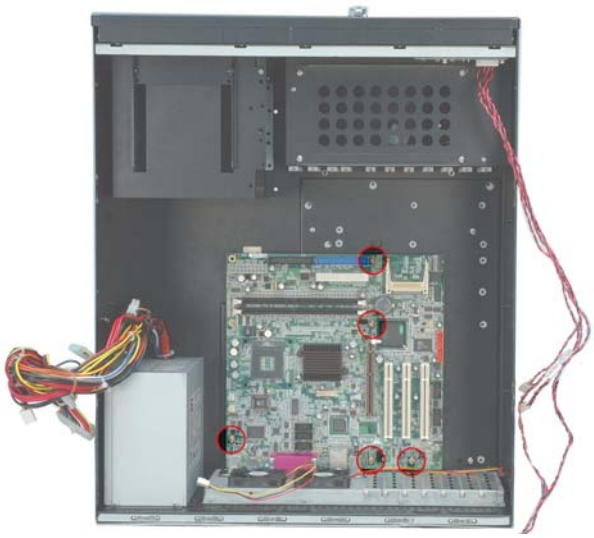


Figure 43: Motherboard Retention Screws