RACK-500G
5U Rackmount Chassis
Version: 1.0

Quick Installation Guide

ABOUT THE RACK-500G

The 5U, heavy-duty steel RACK-500G 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

- **SBC Form Factor:** Full-size, slot CPU cards
- **Construction:** Metal
- **Slots Number:** 5-slot
- **Cooling:** 1 x 8cm fan
- **Drive Bay(s):**
  - o   1 x 3.5" Internal HDD
  - o   1 x 3.5" Front accessible FDD
- **Dimensions (DxWxH):**
  - o   440.2mm x 110.6mm x 221.3mm
- **Operating Temperature:** 0~40°C
- **Relative Humidity:** 5~95%
- **Vibration:**
  - o   5 to 17Hz, 0.1" double amplitude displacement
  - o   17 to 640Hz, 1.5G acceleration peak to peak
- **Shock:** 10G acceleration peak to peak

PACKING LIST

When the chassis is unpacked, make sure the following items have been shipped.

- 1 x Quick Installation Guide
- 1 x Power cord
- 1 x Screw set

DETAILS OF INCLUDED SCREWS

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

Peripherals/Parts	Screw Label (refer to the picture above)
3.5" FDD	4
3.5" HDD	4
1U Power Supply Unit	4
Backplane	3
Chassis Carrier	6

Table 1: Screws for Peripheral/Parts

DIMENSION DRAWING

The dimensions of the RACK-500G are shown below.

110.6

440.2

440.2

31.35

211.5
221.3

110.6

221.3

96.4

75
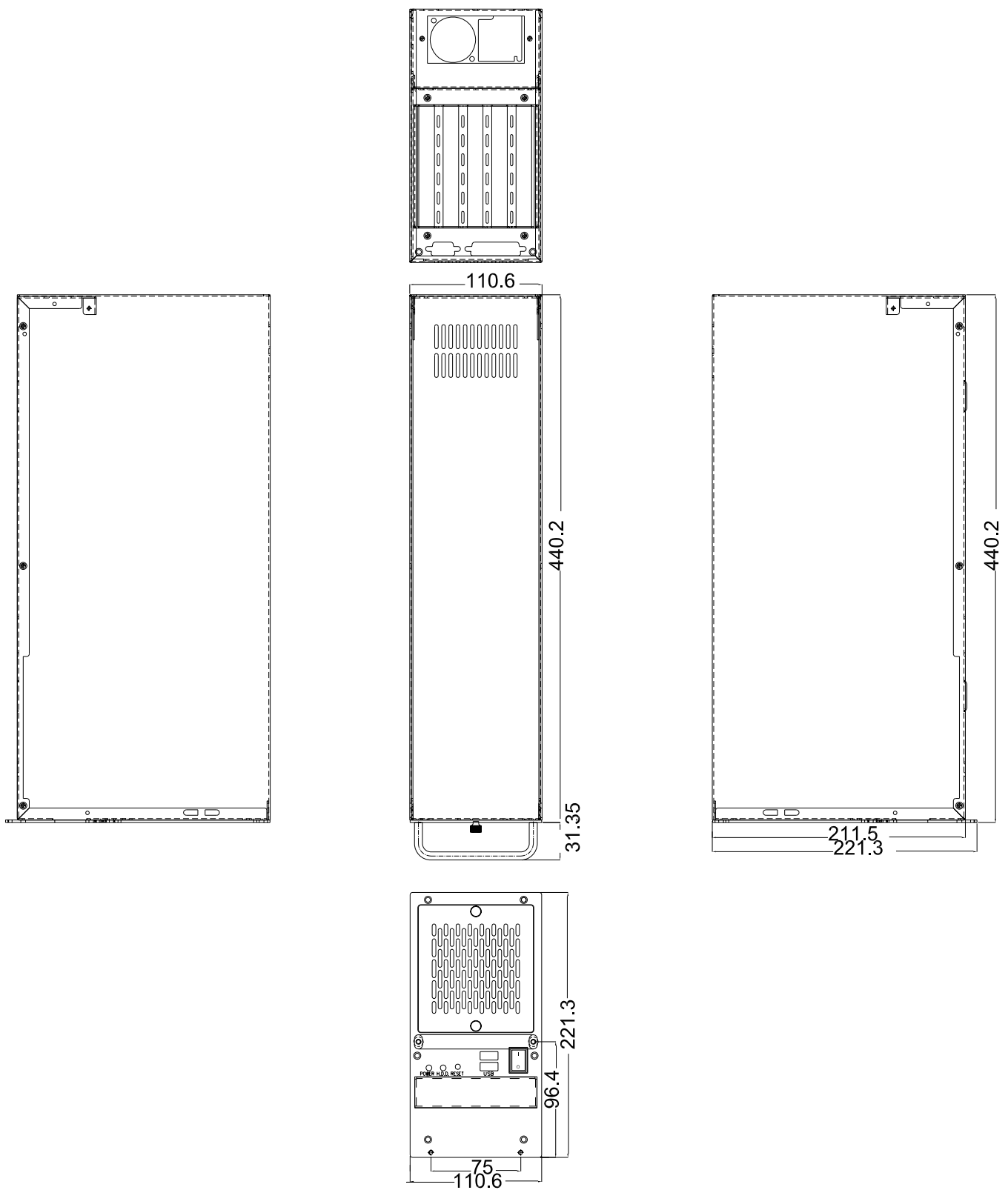110.6

POWER H.D.D. RESET   USB

Figure 1: Dimension Drawing (measurement units: millimeter)

INSTALLATION STEPS

To install the RACK-500G chassis, the following installation steps must be completed:

Step 1:   Unpack the chassis.

Step 2:   Remove the cover.

Step 3:   Install the PSU.

Step 4:   Install the HDD.

Step 5:   Install the FDD.

Step 6:   Reinstall the upper compartment.

Step 7:   Install the backplane.

Step 8:   Connect the cables.

Step 9:   Install the CPU card.

Step 10:   Install the PCI and ISA expansion cards.

Step 11:   Reinstall the top cover.

Step 12:   Install the CA-950G chassis carrier.

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

STEP 1: UNPACK

The RACK-500G is shipped in a plastic bag that is placed inside a cardboard box. The items are also shipped with the chassis. When the chassis is unpacked, you must make sure:

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

STEP 2: REMOVE THE TOP COVER

The top cover is secured to the chassis with six retention screws, three on each side of the chassis.

Step 1:   Remove all six top cover retention screws, three from the left side and three from the right 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 3: INSTALL THE POWER SUPPLY UNIT (PSU)

Once the top cover has been removed, the PSU must be installed. The RACK-500G chassis is compatible with the IEI 1U PSU ACE-916AP-RS. The details of the ACE-916AP-RS is listed below:

- **Input:** AC
- **Type:** AT
- **Power:** 150W
- **Output Range**:
  - o   +5V: 16V
  - o   +12V1: 6V
  - o   -12V: 0.3V

The PSU is secured to the rear of the lower compartment. To install the ACE-916AP-RS PSU, please follow the steps below:

Step 1:   Remove the hold-down bracket by removing four retention screws, two from the sides at the front of the chassis and two from the rear of the chassis.
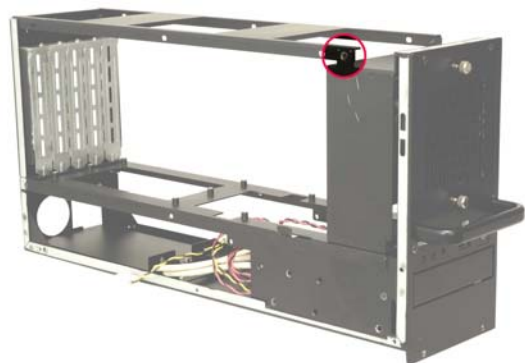
Figure 4: Hold-Down Bracket Retention Screws on the Sides of the Chassis

Figure 5: Hold-Down Bracket Retention Screws at the Rear of the Chassis

Step 2: Remove the upper compartment by removing the four upper compartment retention screws, two from the top at the front and two from the rear on the sides of the chassis.
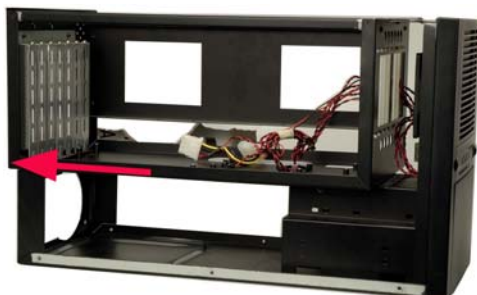

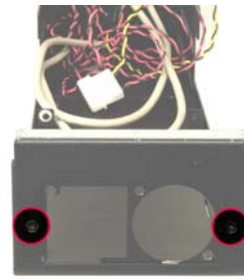**Figure 6: Upper Compartment Retention Screws on the Top at the front of the chassis**

Figure 7: Upper Compartment Retention Screws on the Sides at the rear of the chassis

Step 3: To remove the upper compartment, slide the upper compartment backwards and lift it up gently.

Figure 8: Slide the Upper Compartment Backwards

Step 4: To remove the PSU bracket, remove three PSU bracket retention screws, two rear retention screws and one internal retention screw.

Figure 9: Rear PSU Bracket Retention Screws

Figure 10: Internal PSU Bracket Retention Screw

Step 5: Mount a PSU onto the PSU bracket. Make sure the PSU fan and the power socket are installed into the corresponding holes in the rear of the PSU bracket.

Step 6: To secure the PSU to the PSU bracket, insert three retention screws into the rear of the PSU and two into the front of the PSU.

Figure 11: Rear PSU Retention Screws
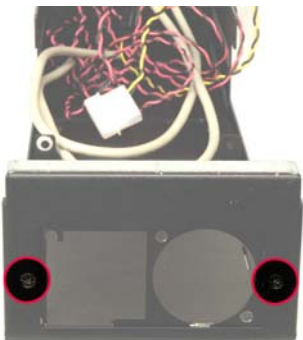

Figure 12: Front PSU Retention Screws

Step 7: Reinstall the PSU bracket with the PSU.

Step 8: To secure the PSU bracket to the chassis, reinsert the three previously removed PSU bracket retention screws.

Step 9: Connect the AT power switch cable.

The RACK-500G chassis is shipped with an optional PSU bracket for the ACE-4525AP-RS PSU. To install the ACE-4525AP-RS PSU, please follow the steps outlined below:

Step 1: Remove the PSU bracket by removing three PSU bracket retention screws, two rear retention screws and one internal retention screw.

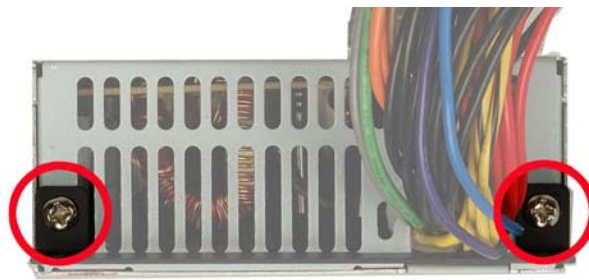**Figure 13: Rear PSU Bracket Retention Screws**

Figure 14: Internal PSU Bracket Retention Screw

Step 2: Remove the ACE-4525AP-RS PSU clamp by removing the two PSU clamp retention screws.

Figure 15: PSU Clamp Retention Screws

Step 3: Attach the ACE-4525AP-RS PSU clamp to the front, at the bottom, of the ACE-4525AP-RS PSU.

Step 4: Align the two ACE-4525AP-RS PSU clamp retention screw holes with the two retention screw holes at the front of the ACE-4525AP-RS PSU.

Step 5: To secure the ACE-4525AP-RS PSU clamp to the ACE-4525AP-RS PSU, insert two retention screws into the front of the ACE-4525AP-RS PSU.

Figure 16: ACE-4525AP-RS PSU Retention Screws at the Front

Step 6: Mount the ACE-4525AP-RS PSU onto the base, at the rear, of the lower compartment. Make sure the power socket and the PSU fan face the rear of the chassis.

Step 7: Align the two rear PSU retention screw holes with the two retention screw holes at the rear of the lower compartment.

Step 8: To secure the PSU to the chassis, insert two retention screws into the rear of the ACE-4525AP-RS PSU and reinsert the two previously removed ACE-4525AP-RS PSU clamp retention screws.
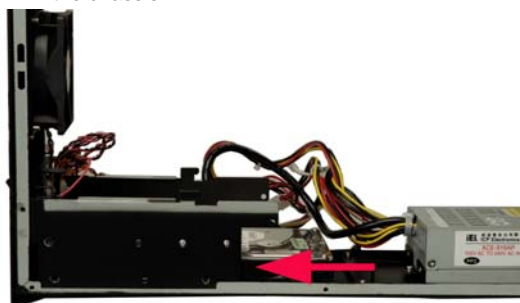

Figure 17: ACE-4525AP-RS PSU Retention Screws at the Rear
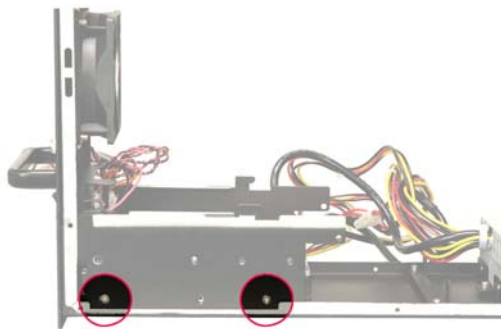
STEP 4: HDD INSTALLATION

The RACK-500G chassis can support one 3.5" internal HDD in the lower compartment. To install a 3.5" HDD, follow the steps below:

Step 1: Slide a 3.5" HDD into the 3.5" HDD drive bay from the rear of the drive bracket. Make sure the power connector and the IDE/SATA connector face the rear of the chassis.

Figure 18: Slide a 3.5″ HDD into the 3.5″ HDD Drive Bay

Step 2: Align the 3.5" HDD retention screw holes with the retention screw holes on the sides of the HDD drive bay.

Step 3: To secure the 3.5" HDD to the 3.5" HDD drive bay, insert four retention screws, two into each side of the HDD.
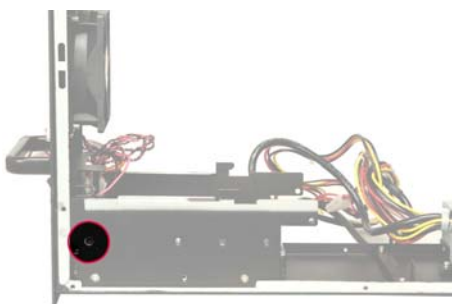

Figure 19: 3.5" HDD Retention Screws

Step 4: Connect the power cable and IDE/SATA connector ribbon cable.

STEP 5: FDD INSTALLATION

The RACK-500G chassis can support one 3.5" front accessible FDD in the lower compartment. To install a 3.5" FDD, please follow the steps below:

Step 1: Remove the FDD drive bay front cover by removing the two retention screws from the sides, one from each side, of the drive bay.

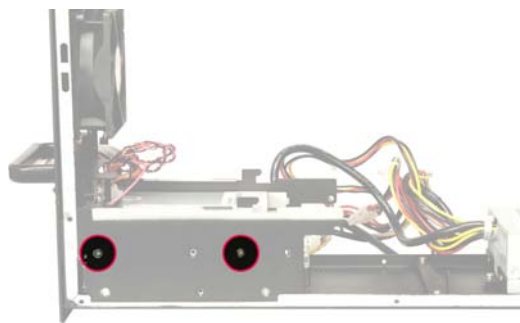**Figure 20: FDD Drive Bay Front Cover Retention Screws**

Step 2: Slide a 3.5" FDD into the FDD drive bay from the front of the chassis. Make sure the power connector and the IDE/SATA connector face the rear of the chassis.

Figure 21: Slide a 3.5" FDD into the FDD Drive Bay

Step 3: Align the 3.5" FDD retention screw holes with the retention screw holes in the FDD drive bay.

Step 4: To secure the FDD to the FDD drive bay, insert four
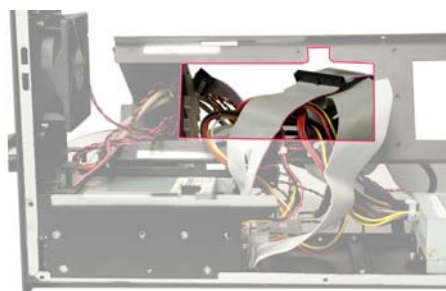
retention screws, two into each side of the FDD.

Figure 22: FDD Retention Screws

Step 5: Connect the power cable and IDE/SATA connector ribbon cable.

STEP 6: UPPER COMPARTMENT REINSTALLATION

Before any other peripherals and components are installed, the upper compartment must be reinstalled. To do this, please follow the steps below:

Step 1: Run all the power cables, FDD and HDD ribbon cables through the space, at the front, in the upper compartment base.

Figure 23: Run the Cables through the Front Space in the Upper Compartment Base

Step 2: Run the LED, USB and fan cables through the space on the right side of the furthest right card guide.

Figure 24: The Space for LED, USB and Fan Cables

Step 3: Reinstall the upper compartment and reinsert the four previously removed upper compartment retention screws.

STEP 7: BACKPLANE INSTALLATION

The RACK-500G chassis is compatible with the IEI backplane PCI-5S2-RS-R30. The details of the PCI-5S2-RS-R30 are listed in the table below:

- o   SBC Type: PICMG 1.0
- o   PCI: 4
- o   ISA: 1
- o   PSU: AT

To install the IEI PCI-5S2-RS-R30 backplane, follow the instructions below:

Step 1: Before you mount the backplane onto the base of the upper compartment, make sure the backplane is positioned so that when the CPU card and PCI/ISA expansion cards are installed, the CPU card and PCI/ISA card I/O connectors face the rear of the chassis.

Step 2: Mount the backplane onto the base of the upper compartment. Make sure the seven backplane retention screw holes are aligned with all the predrilled elevated screw holes in the upper compartment base.

Figure 25: Predrilled Elevated Screw Holes

Step 3: Insert seven retention screws to secure the backplane to the chassis.
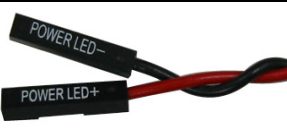
Step 4: Connect the power cable to the backplane.

STEP 8: CABLING

The RACK-500G has LEDs, button, power switch and ports on the front panel:

- o   1 x Power LED
- o   1 x HDD LED
- o   1 x Power switch
- o   1 x Reset button
- o   2 x USB ports

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.

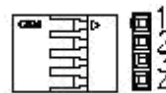| No.	Name
1	Power LED cable

1	Reset Switch cable
1	HDD LED cable
1	Power switch cable
2	USB cable

Table 2: Chassis Connectors

USB cable pin definitions are shown below

PIN No.	Description	Color
1	+5V	Red
2	D-	Dark Yellow
3	D+	Yellow
4	GND	Brown

Table 3: USB Cable Pinout

STEP 9: CPU CARD INSTALLATION

To install a CPU card, please follow the instructions below:

 NOTE:

The cables must be connected to the CPU card before CPU card installation due to space limitation.

Step 1: Connect the HDD, FDD and power cables to the CPU card.

Step 2: 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.
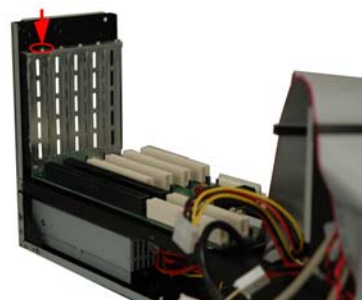

Figure 26: Remove the Slot Cover Retention Screw

Step 3: Slide the 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 at the front of the chassis.

Step 4: To secure the CPU card, reinsert the previously removed slot cover retention screw.

STEP 10: PCI/ISA EXPANSION CARD INSTALLATION

The RACK-500G supports up to four PCI/ISA expansion cards. 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 the 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 11: TOP COVER REINSTALLATION

On the completion of the above procedures, the top cover can be reinstalled. To reinstall the top cover, slide the cover back over the chassis and reinsert the six previously removed retention screws.

STEP 12: 19" CHASSIS CARRIER INSTALLATION

The RACK-500G chassis can be installed onto the CA-950G chassis carrier. The CA-950G can support up to four RACK-500G chassis. Each RACK-500G chassis is secured to the chassis with two thumbscrews. To install a RACK-500G chassis onto the chassis bracket, please follow the steps below:

Figure 27: CA-950G

Step 1: Slide the RACK-500G chassis backwards. Make sure the clip at the rear of the chassis bracket slides into the rear of the RACK-500G chassis.
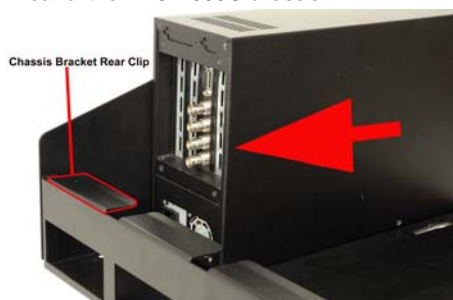

Figure 28: Slide the Chassis Backwards

Step 2: To secure the RACK-500G chassis to the chassis bracket, insert two thumbscrews into the bottom of the front panel.

Figure 29: Chassis Thumbscrews

CHASSIS MAINTENANCE

■ **FAN REPLACEMENT**

 NOTE:

Please ensure that the power of the computer is switched off before you replace a fan.

There is one 8 cm cooling fan inside the RACK-500G chassis. To replace a fan, please follow the steps below.

Step 1: Loosen the two fan filter bracket thumbscrews.

Figure 30: Fan Filter Bracket Thumbscrews

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

Figure 31: Disconnect the Fan Power Cable

Step 3: Remove the four fan filter bracket retention screws from inside.

Figure 32: Fan Retention Screws

Step 4: Remove the four fan retention screws that secure the fan to the fan filter plate.

Figure 33: Fan Retention Screws

Step 5: Install a new fan and reinsert the four previously removed fan filter plate retention screws.

Step 6: Reinstall the fan filter plate with the fan.

Step 7: Reinstall the fan filter bracket and tighten the two fan filter bracket thumbscrews.

■ **FAN FILTER REPLACEMENT**

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

Step 1: Loosen the two fan filter bracket thumbscrews.

Figure 34: Fan Filter Bracket Thumbscrews

Step 2: Pull the fan filter pad out of the space between the fan filter plate and the fan filter bracket.

Figure 35: Pull the Fan Filter Pad out

Step 3: Insert a new fan filter pad.

Step 4: Reinstall the fan filter bracket and fasten the two fan filter bracket thumbscrews.

■ **CABINET INSTALLATION**

Supporting rails, rack trays, or slide rails can be installed using the mounting holes on the sides of the chassis bracket. The six mounting holes on the sides of the chassis, three on each side, are shown below.
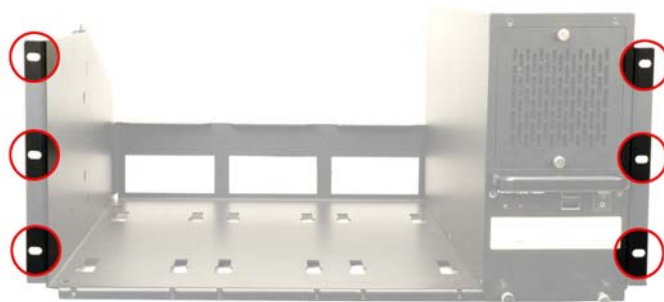

Figure 36: Wall Mounting Holes

NOTE:

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