

# RACK-220G

## 2U Rackmount Chassis

### Version: 1.0

## Quick Installation Guide



### ABOUT THE RACK-220G

The 2U, metal RACK-220G 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.

### SPECIFICATONS

- **Form Factor:** Standard 2U, 19" wide
- **SBC Form Factor:** Full-size, slot CPU cards
- **Construction:** Metal
- **Slots Number:** 6-slot
- **Cooling:** 2 x 8cm fans
- **Drive Bays:**
  - o 1 x 5.25" Front accessible optical drive bay
  - o 1 x 3.5" Front accessible FDD (floppy disk drive) bay
  - o 1 x 3.5" Internal HDD (hard disk drive) bay
- **Dimensions (DxWxH):**
  - o 487.5mm x 431mm x 88mm
- **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 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
- 1 x PCI/ISA shock absorber
- 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" Disk 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-220G are shown below.

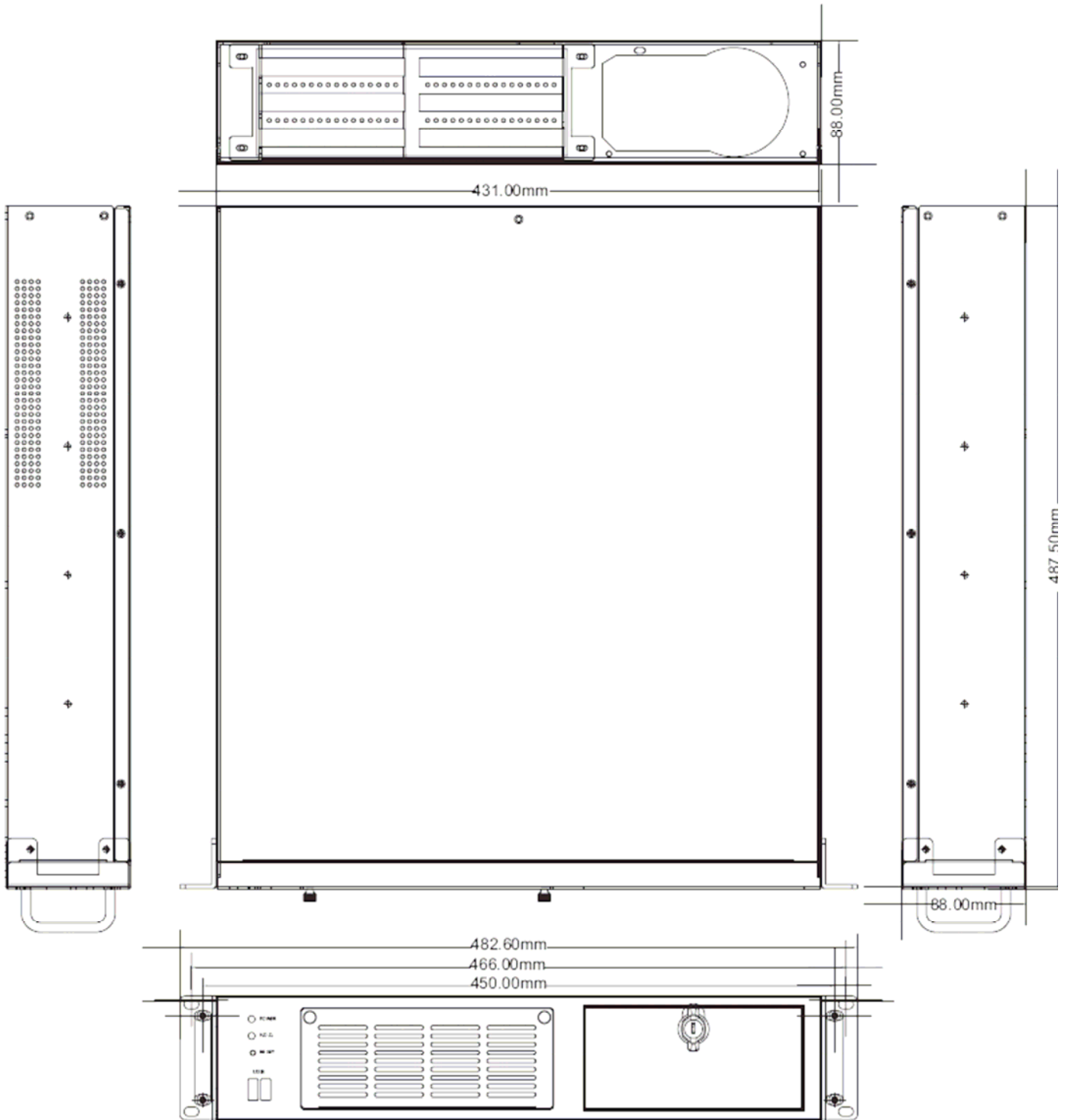


Figure 1: Dimension Drawing (measurement units: millimeter)

## INSTALLATION STEPS

To install the RACK-220G chassis, the following installation steps must be completed:

- Step 1:** Unpack the chassis.
- Step 2:** Remove the top cover.
- 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 backplane bracket.
- Step 8:** Install the disk drives.
- Step 9:** Connect the cables.
- Step 10:** Connect the PSU cable and interface cable.
- Step 11:** Reinstall the top cover.
- Step 12:** Install the front handles.

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

### STEP 1: UNPACK

The RACK-220G is shipped in a plastic bag that is placed inside a cardboard box. The items are also shipped with the chassis. When you unpack the chassis you must

- Make sure all the items listed in the **PACKING LIST** section are present.
- Make sure the chassis has not been damaged in any way.

### STEP 2: REMOVE THE TOP COVER

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

- Step 1:** Remove all seven top cover retention screws. Remove three retention screws from each side of the chassis and one retention screw from the top, at the rear, of the cover.



Figure 3: Top Cover Retention Screws

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



Figure 2: Remove the Top Cover

### STEP 3: INSTALL THE POWER SUPPLY UNIT (PSU)

Once the top cover has been removed, install a user supplied PSU. 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 four retention screws. To install a compatible PSU, please follow the steps below.

- Step 1:** Correctly position the PSU at the rear of the chassis making sure 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 four retention screws from the rear of the chassis.



Figure 4: Insert Four PSU Retention Screws

Model No.	Input	Type	Watt	Output Range						
				+3.3V	+5V	+12V1	+12V2	-5V	-12V	+5Vsb
ACE-925AP-U-RS	AC	AT	250W	N/A	22A	11A	N/A	0.5A	0.7A	N/A
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.**

## STEP 4: BACKPLANE INSTALLATION

The IEI backplanes listed below are compatible with the RACK-220G chassis.

Model No.	SBC Type	PCI	PSU
PCI-5SDA-RS-R30	PICMG 1.0	L2+R2	AT/ATX
PCI-5SD5-RS-R30	PICMG 1.0	L2+R2	AT
PCIAGP-5SD-RS-R30	PICMG 1.0	L2+R1	ATX

**Table 3: Compatible Backplane Modules**

The backplane is installed into a backplane bracket. To install a backplane please follow the instructions below.

**Step 1:** Remove the backplane by removing the six retention screws that secure the backplane bracket. Remove two retention screws from the base and four from the rear of the chassis.

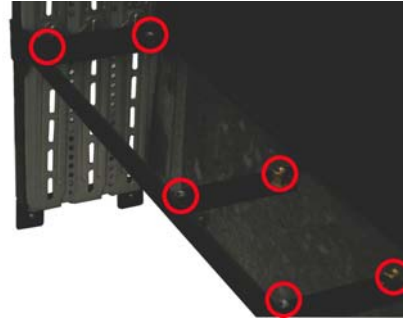


**Figure 5: Two Backplane Bracket Retention Screws on the Base of the Chassis**



**Figure 6: Four Backplane Bracket Retention Screws at the Rear of the Chassis**

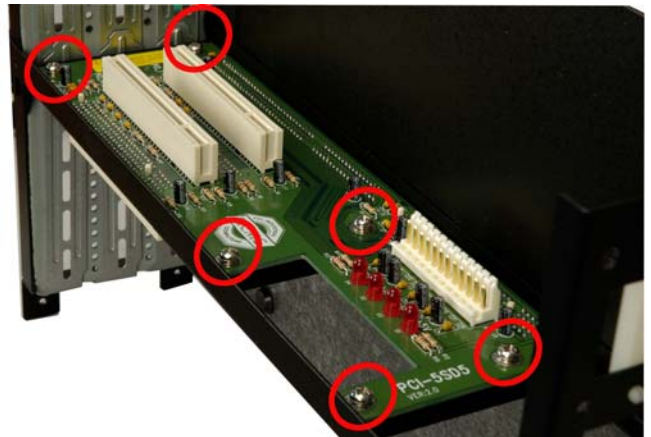
**Step 2:** Insert two copper pillars in the predrilled screw holes in the backplane bracket.



**Figure 7: Two Copper Pillars and Four Predrilled Elevated Retention Screw Holes**

**Step 3:** Mount the backplane onto the two copper pillars and the four predrilled elevated screw holes ensuring that the backplane retention screw holes are aligned with the screw holes in the copper pillars and the predrilled elevated retention screw holes in the bracket.

**Step 4:** Secure the backplane to the backplane bracket with six retention screws.



**Figure 8: Insert Six Retention Screws**

## STEP 5: CPU CARD INSTALLATION

Install the CPU card before you reinstall the backplane bracket. To install the CPU card please follow the instructions below.

**Step 1:** Remove the slot cover at the back of the backplane bracket. To do this, remove the slot cover retention screw on the side 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. Make sure the back edge of the CPU card slots into the corresponding plastic card guide on the side opposite the slot cover.

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



**Figure 10: Secure the CPU Card to the Backplane Bracket**

**Step 4:** To secure the CPU card with the PCI/ISA card shock absorber, press the rubber of the PCI/ISA card shock absorber against the top of the CPU card opposite the slot cover side and align the retention screw holes in the backplane bracket with the retention screw holes in the shock absorber.

**Step 5:** Insert two retention screws to secure the shock absorber to the backplane bracket.

## STEP 6: PCI/ISA EXPANSION CARD INSTALLATION

The RACK-220G supports up to five 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 backplane bracket. To do this, remove the slot cover retention screw on the side of the slot cover.

**Step 2:** Slide the PCI/ISA expansion card into a 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 7: BACKPLANE BRACKET REINSTALLATION

After the backplane and the CPU card have been secured to the backplane bracket, the backplane bracket can be installed into the chassis.

**Step 1:** Mount the backplane bracket in the chassis. Make sure the retention screw holes of the bracket are aligned with the screw holes in the base and at the back of the chassis.

**Step 2:** Once the backplane bracket retention screw holes are aligned with the retention screw holes in the chassis, secure the backplane bracket with the 6 previously removed retention screws.

## STEP 8: DISK DRIVES INSTALLATION

The RACK-220G chassis can support

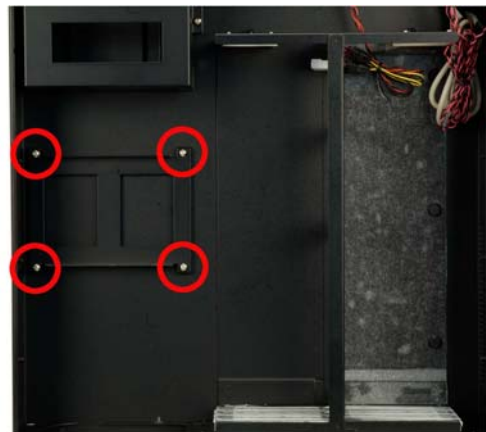
- o 1 x FDD, 1 x HDD and 1 x Optical drive, or
- o 2 x HDDs and 1 x Optical drive

One 3.5" drive (FDD or HDD) and one optical drive are mounted into a front accessible bracket. One HDD is installed into an internal 3.5" drive bracket. To install the drives please follow the steps outlined in the sections below.

### STEP 8.1: INTERNAL 3.5" HDD INSTALLATION

To install an HDD in the internal 3.5" HDD bracket, please follow the steps below.

**Step 1:** First remove the internal 3.5" HDD bracket by removing the four retention screws that attach the internal 3.5" HDD bracket to the base of the chassis.



**Figure 11: Four Internal 3.5" HDD Bracket Retention Screws**

**Step 2:** Correctly position the HDD into the bracket. Make sure the six retention screw holes in the HDD bracket are all aligned with the retention screw holes in the HDD, and that the HDD PCB board is against the bracket surface.

**Step 3:** To secure the HDD to the bracket, insert four retention screws, two on each side.



**Figure 12: Insert HDD Retention Screws**

**Step 4:** Once the HDD is secured, the HDD bracket can be reinstalled. Correctly position the bracket making sure the power connector and the IDE/SATA connector of HDD face the backplane bracket and reinsert the four previously removed retention screws.

### STEP 8.2: FDD INSTALLATION IN THE MAIN BRACKET

The main drive bracket of RACK-220G chassis contains a front accessible FDD drive bay. To install a FDD in the 3.5" front accessible drive bay, please follow the steps below:

**Step 1:** Remove the main drive bracket by removing the four retention screws that connect it to the chassis.



**Figure 13: Four Main Drive Bracket Retention Screws**

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



**Figure 14: Front Accessible 3.5" Drive Bracket Front Cover Retention Screws**

**Step 3:** Correctly position a 3.5" drive into the correct bracket locations. Make sure the power connector and the IDE/SATA connector are at the rear of the main bracket.

**Step 4:** The FDD is secured with four retention screws, two on each side.



**Figure 15: Insert Four Retention Screws into FDD**

### Step 8.3: Optical Drive Installation in the Main Bracket

The main drive bracket of RACK-220G chassis contains a front accessible 5.25" optical drive bay. To install an optical drive in the 5.25" front accessible drive bay, please follow the steps below:

**Step 1:** Remove the main drive bracket by removing the four retention screws that connect it to the chassis.

**Step 2:** Remove the front cover of the 5.25" drive bay by removing the four front cover retention screws, two on each side.



**Figure 16: 5.25" Optical Drive Bay Front Cover Retention Screws**

**Step 3:** Correctly position a 5.25" optical drive into the optical drive bay. Make sure the power connector and the IDE/SATA connector are at the rear of the main bracket.

**Step 4:** The 5.25" optical drive is secured with four retention screws, two on each side.



**Figure 17: Insert Four Retention Screws into the 5.25" Optical Drive**





**Step 5:** Reinstall the main drive bracket and reinsert the four previously removed retention screws.

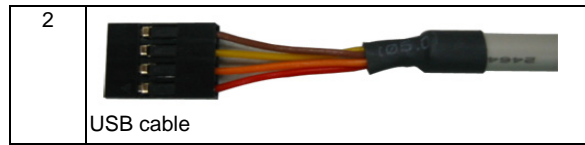
## STEP 9: CABLING

The RACK-220G front bezel contains LEDs, USB ports and buttons listed below.

- 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

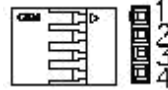
These components are all connected to the CPU card with cables. To correctly connect these cables, please refer to the technical documentation that came with your CPU card. The connectors that are provided with the chassis are listed below.

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



**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: USB Cable Pinout**

## 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 PSU to the backplane, full-size CPU card, HDD, FDD, cooling fan and optical drives power connector.

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

## STEP 11: COVER REINSTALLATION

After you have completed the above procedures, the cover can be reinstalled. To do this, slide the cover back over the chassis and reinsert the seven previously removed retention screws.

## STEP 12: FRONT HANDLE INSTALLATION

Two handles are shipped with the RACK-220G chassis. The handles are installed on the sides, at the front of the chassis. Each handle is secured to the chassis with 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 two retention screws for each handle.



**Figure 18: Insert Two Retention Screws for Each Handle**

## CHASSIS MAINTENANCE

### ■ FAN REPLACEMENT



#### NOTE:

Please ensure that the power of the computer is switched off before replacing a defective cooling fan.

There are two 8cm cooling fans secured to the fan bracket inside the RACK-220G chassis. To replace the fan, please follow the steps below.

**Step 1:** Remove the top cover. (Please refer to **STEP 2: REMOVE THE TOP COVER**)

**Step 2:** To remove the fan bracket, remove two fan bracket retention screws on the base of the chassis.

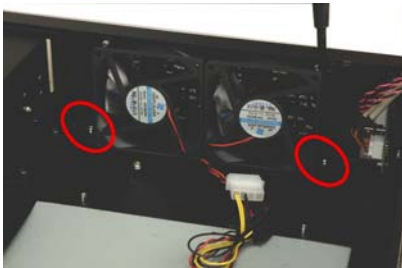


Figure 19: Remove the Two Fan Bracket Retention Screws on the Base of the Chassis

**Step 3:** Unplug the fan power cable.

**Step 4:** Remove two fan retention screws from the fan that must be replaced.



Figure 20: Locations of Fan Retention Screws

**Step 5:** Replace the fan and reinsert the two previously removed fan retention screws.

**Step 6:** Reinstall the fan bracket and reinsert the two previously removed fan bracket retention screws.

### ■ FAN FILTER REPLACEMENT

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

**Step 1:** Loosen the two thumbscrews to open the fan filter cover from the left side of the chassis.



Figure 21: Loosen the Two Thumbscrews on Fan Filter Cover

**Step 2:** Replace the fan filter pad inside.

**Step 3:** Reinstall the fan filter cover and fasten the two previously loosened thumbscrews.

### ■ CABINET INSTALLATION

Supporting rails, rack trays, or slide rails can be implemented using the mounting holes on the sides of the chassis. The four mounting holes in the two handles on the sides of the chassis are used to secure the chassis to the front rack posts in your rack cabinet to prevent the chassis from falling forwards.



Figure 22: Four Mounting Holes in the Two Front Handles



#### NOTE:

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