EBC-1000G
Embedded Chassis
Version: 1.1

Quick Installation Guide

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 Base plates
- 1 x Screw set
- 1 x Fan bracket
- 1 x Plastic pillar
- 1 x Cable set
- 1 x Cable tie

ABOUT THE EBC-1000G

The heavy-duty steel EBC-1000G compact embedded industrial chassis is designed to operate reliably in industrial environments where it will be exposed to dust, wide temperature variations, shocks and vibrations.

SPECIFICATION

- **SBC Form Factor:** 3.5" WAFER series SBC
- **Construction:** Metal
- **Cooling:** 1 x 4cm fan
- **Drive Bay:**
  - o 1 x 2.5" Internal HDD
- **Dimensions (DxWxH):**
  - o 130mm x 172.2mm x 116mm
- **Operating Temperature:** 0~50°C
- **Relative Humidity:** 50%~90%
- **Vibration:**
  - o **Operating Random Vibration Mode**：Meet MIL-STD-810F 514.5C-1 standard
  - o **Non-Operating Sine Mode**：5-17Hz, 0.1" double amplitude displacement.17-640Hz, 1.5G acceleration peak to peak.
- **Shock:**
  - o **Operating Shock Half-Sine Wave Shock** 3G: 11ms: 3 shocks per axis: Vertical / Transverse / Longitudinal.
  - o **Non-Operation Shock Half-Sine Wave Shock** 10G: 11ms: 3 shocks per axis: Vertical / Transverse / Longitudinal.

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)
2.5" HDD	1
Power Supply Unit	5
Base plate	3
SBC	3
	2
Ground Wire	3
Fan Bracket	4

Table 1: Screws for Peripheral/Parts

DIMENSION DRAWING

The dimensions of the EBC-1000G are shown below.

162.2

1.0

174.2

130.0

116.0

7.5

20.0

90.0

130.0

172.2

USB   LAN   LAN   COM   VGA   MS   KB

POWER   RESET
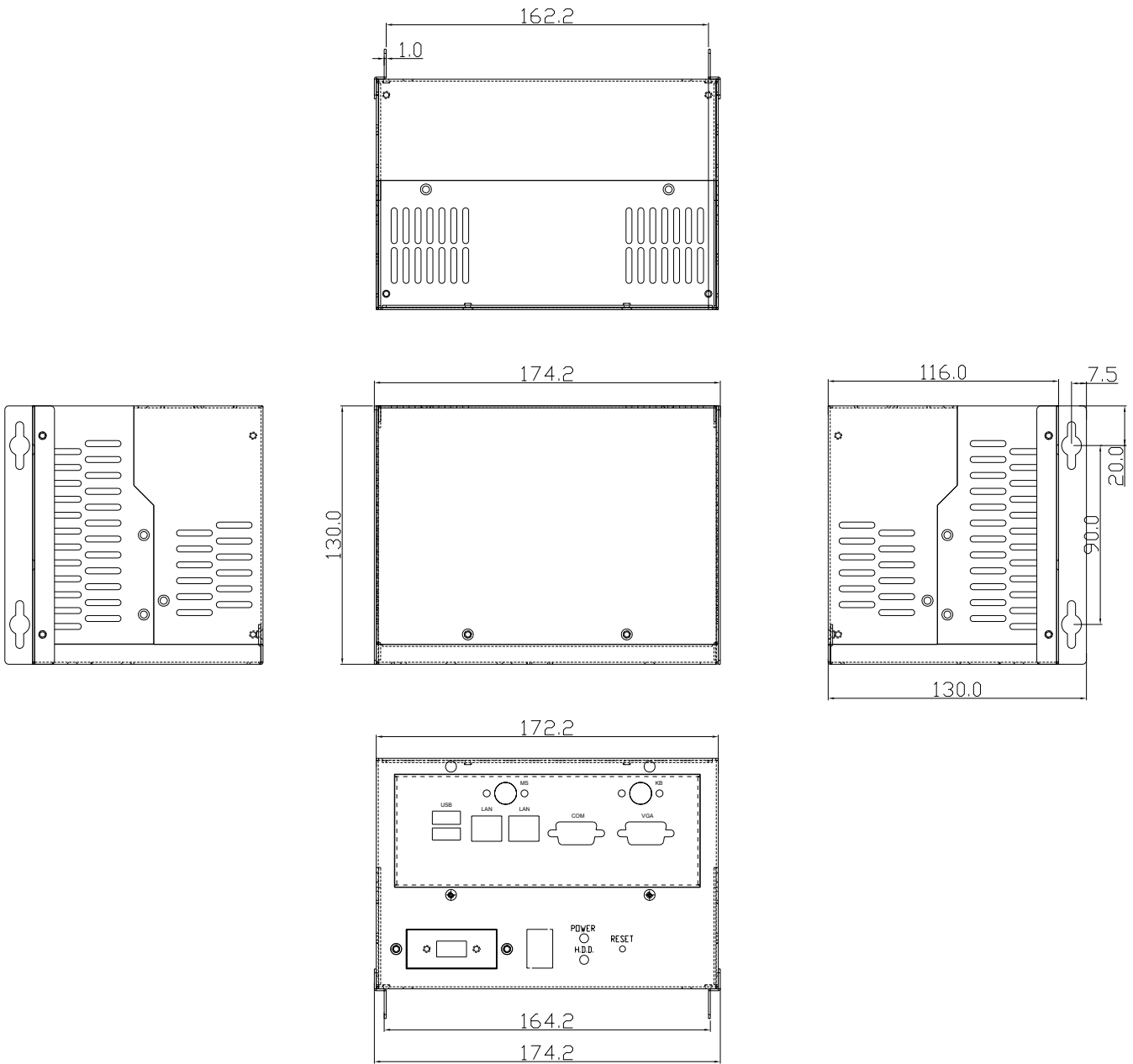H.D.D.

164.2

174.2

Figure 1: Dimension Drawing (measurement units: millimeter)

INSTALLATION STEPS

To install the EBC-1000G chassis, the following installation steps must be completed:

Step 1: Unpack the chassis.

Step 2: Remove the cover.

Step 3: Remove the Internal bracket.

Step 4: Install the PSU.

Step 5: Install the internal 2.5" HDD.

Step 6: Install the SBC (Single Board Computer).

Step 7: Install the I/O bracket.

Step 8: Reinstall the Internal bracket.

Step 9: Connect the cables.

Step 10: Install the I/O connectors.

Step 11: Reinstall the top cover.

Step 12: Install the base plates.

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

STEP 1: UNPACK

The EBC-1000G is shipped in a plastic bag that is placed inside a cardboard box. 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 six retention screws, two at the rear, one on the right side, one on the left and two on the top of the chassis.

Step 1: Remove all six top cover retention screws from the top, rear, left and right sides of the chassis.

Figure 2: Top Cover Retention Screws on the Top and Sides

Figure 3: Top Cover Retention Screws at the Rear

Step 2: Remove the top cover gently.

STEP 3: INTERNAL BRACKET REMOVAL

The internal bracket divides the EBC-1000G chassis into the upper compartment and the lower compartment. To remove the Internal bracket, remove the four Internal bracket retention screws, two from each side of the chassis.

Figure 4: Internal bracket Retention Screws

STEP 4:POWER SUPPLY UNIT (PSU) INSTALLATION

Compatible IEI PSUs are listed in **table 2** on *page 4*.

The PSU is secured to the lower compartment of EBC-1000G chassis. To install a compatible PSU, please follow the steps below:

Step 1: Connect the PSU cables to the terminal blocks on the PSU. Make sure the input PSU cables connected to the power socket and the output PSU cables are correctly connected to the PSU. The power cable pin definitions are shown in the following drawings.
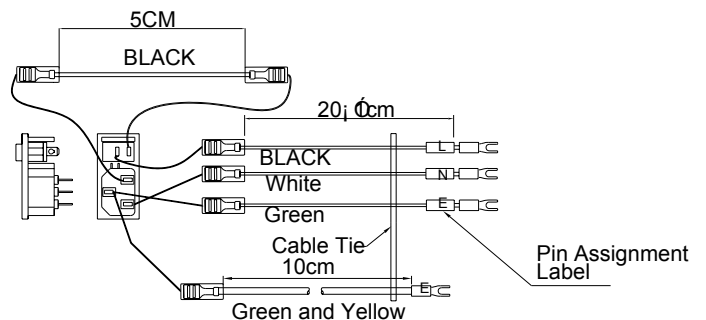

Figure 5: Input PSU Cable Pin Definitions

Model No.	Input	Type	Watt	Output Range						
				+3.3V	+5V	+12V1	+12V2	-5V	-12V	+5Vsb
ACE-890A-RS	AC	AT	86W	N/A	10A	2.5A	N/A	N/A	0.5A	N/A
ACE-890AP-R20-RS	AC	AT	86W	N/A	10A	2.5A	N/A	N/A	0.5A	N/A
ACE-890V-RS	DC 12V	AT	72W	N/A	9A	2A	N/A	N/A	0.3A	N/A
ACE-890C-RS	DC 24V	AT	86W	N/A	10A	2.5A	N/A	N/A	0.5A	N/A
ACE-890T-RS	DC 48V	AT	86W	N/A	10A	2.5A	N/A	N/A	0.5A	N/A
ACE-890P-RS	DC 110V	AT	86W	N/A	10A	2.5A	N/A	N/A	0.5A	N/A

Table 2: Compatible IEI PSUs
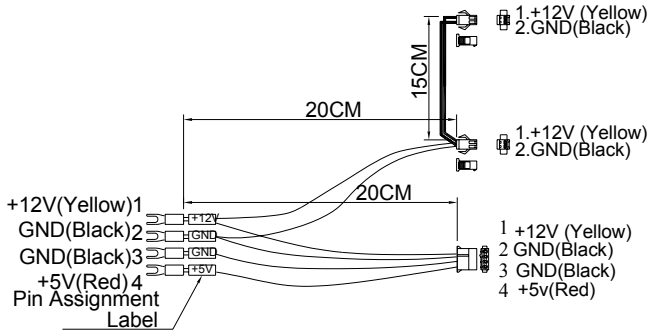
Figure 6: Output PSU Cables Pin Definitions

Figure 7: Connect the Power Cables to the Terminal Blocks

Step 2: Mount the PSU onto the lower compartment base.

Step 3: To secure the PSU to the lower compartment, insert four retention screws through the bottom surface of the lower compartment into the four PSU retention screw holes.

Figure 8: PSU Retention Screws

STEP 5: 2.5" HDD INSTALLATION

The EBC-1000G chassis can support one 2.5" HDD on the Internal bracket. To install a 2.5" HDD, follow the steps below:

Step 1: Position the 2.5" HDD in the 2.5" HDD bay. Make sure the PCB board faces the bottom of the Internal bracket and the IDE/SATA connector faces the rear of the Internal bracket.

Figure 9: 2.5" HDD Position

Step 2: Align the four 2.5" HDD retention screw holes on the sides of the 2.5" HDD with the four retention screw holes on the sides of the 2.5" HDD drive bay in the Internal bracket.

Step 3: Insert four retention screws, two into each side of the 2.5" HDD, to secure the 2.5" HDD to the Internal bracket.

Figure 10: 2.5" HDD Retention Screws

Step 4: Connect the 2.5" HDD ribbon cable.

STEP 6: SBC INSTALLATION

Compatible IEI SBCs are listed in the table below:

SBC Model	CPU
WAFER-C400-RS	ULV Intel® Celeron® 400MHz
WAFER-9371A	ULV Intel® Celeron® 400/650MHz
WAFER-6612	Intel® Pentium® M/Celeron® M CPU
WAFER-LUKE	VIA® LUKE 1GHz/533MHz
WAFER-MARK	VIA® MARK 533/800 MHz
WAFER-LX	AMD® Geode LX800 500MHz
WAFER-GX	AMD® Geode GX466 333MHz

Table 3: Compatible SBC Modules

To install an SBC, please follow the instructions below:

Step 1: Insert four copper pillars into the Internal bracket.

Figure 11: Copper Pillars

NOTE:

One of the WAFER-6612 SBC retention screw holes cannot be perfectly aligned with the copper pillar retention screw hole. To install a WAFER-6612 SBC, one of the copper pillars has to be replaced by a plastic pillar stuck to the Internal bracket.
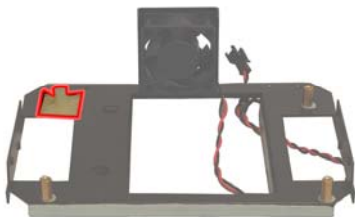
Figure 12: WAFER-6612 Plastic Pillar

Step 2: Mount the SBC onto the copper pillars. Make sure the I/O connectors face the front of the Internal bracket.

Figure 13: I/O Connectors Direction

Step 3: Align the retention screw holes in the SBC with the four copper pillar retention screw holes.

Step 4: Insert four retention screws to secure the SBC to the chassis.

STEP 7: I/O BRACKET INSTALLATION

The EBC-1000G chassis supports four SBC I/O brackets for the seven compatible IEI SBCs. The user can choose the corresponding I/O bracket according to the installed SBC. The I/O brackets pictures and the corresponding compatible IEI SBC models are shown in the table below.

I/O Bracket	SBC Model
BK-C400-RS	WAFER-C400-RS
BK-9371-RS	WAFER-9371A
BK-6612-RS	WAFER-6612
BK-LX800-RS	WAFER-LUKE WAFER-MARK WAFER-LX WAFER-GX

Table 4: I/O Brackets and Compatible IEI SBCs

The corresponding I/O bracket must be installed before the Internal bracket is reinstalled. To do this, follow the steps below:

Step 1: Install the corresponding I/O bracket at the front of the EBC-1000G chassis. Make sure the words on the I/O bracket face the front of the chassis.

Step 2: To secure the I/O bracket to the chassis, insert four retention screws, two into the top and two into the bottom of the I/O bracket.

Figure 14: I/O Bracket Retention Screws

STEP 8: INTERNAL BRACKET REINSTALLATION

After the corresponding I/O bracket is installed, the Internal bracket can be installed. To do this, follow the steps below:

Step 1: Run the 2.5" HDD ribbon cable, power LED, power switch, reset switch and HDD LED cables through the hole in the left side of the Internal bracket.

Figure 15: The Hole in the Right Side of the Internal bracket

Step 2: Connect the PSU cable to the fan power cable.

Step 3: Run the SBC power cable through the hole in the rear of the Internal bracket.

Figure 16: The Hole in the Rear of the Internal bracket

Step 4: Remove all the barrel screws before the Internal bracket is reinstalled.

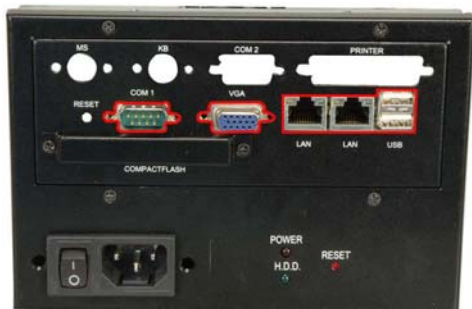**Step 5:** Reinstall the Internal bracket. Make sure the I/O connectors are installed into the corresponding holes in the I/O bracket.

Figure 17: I/O Connectors in the Corresponding Holes

Step 6: To secure the COM 1 and VGA connectors to the I/O connector bracket, insert four barrel screws, two into each I/O connector.

Figure 18: I/O Connector Barrel Screws

Step 7: Reinsert the four previously removed Internal bracket retention screws.

Step 8: Connect the PSU and the 2.5" HDD ribbon cable to the SBC.

Figure 19: SBC Power Cable and 2.5" HDD Ribbon Cable

Step 9: Connect the reset switch, HDD LED and power LED cables to the SBC. The cables provided with the chassis are introduced in **STEP 9: CABLING**.

STEP 9: CABLING

The EBC-1000G chassis front panel has:

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

To connect the power switch and power socket, refer to **STEP 4: POWER SUPPLY UNIT (PSU) INSTALLATION.** The other components are all connected to the SBC with cables. The cables provided with the chassis are listed below.
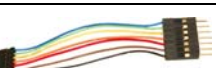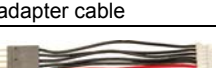
No.	Name
1	Power LED cable
1	Reset Switch cable
1	HDD LED cable
1	2.4mm to 2.0mm adapter cable
1	Pin header to box header adapter cable

Table 5: Chassis Connectors

To correctly connect these cables, please refer to the following steps.

STEP 9A: FRONT PANEL CABLING 1

Use these steps to connect the chassis front panel LEDs and reset switch to the following SBCs:

- WAFER-6612
- WAFER-GX
- WAFER-LX
- WAFER-MARK

Refer to STEP 9B for cabling other SBCs.

Step 1: Connect the front panel LEDs and reset switch to the pin header to box header adapter cable as shown in **Figure-20**. Note that the wire colors of the adapter match the wire colors of the cables when connected properly.
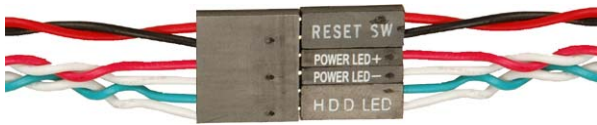

Figure 20: Front Panel to Adapter Cabling

Step 2: Connect the adapter cable to the SBC as shown in **Figure-21**. The adapter cable has a keyed connector to prevent it from being connected to the SBC improperly.
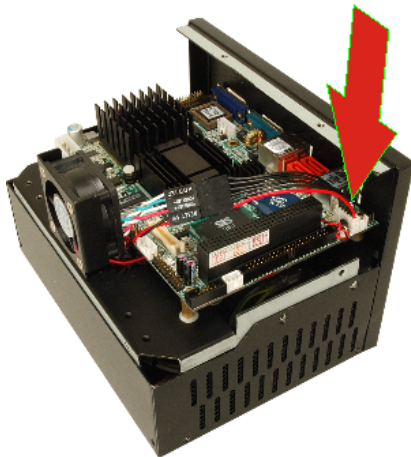
Figure 21: Adapter Cable to SBC Connection

STEP 9B: FRONT PANEL CABLING 2

Use these steps to connect the chassis front panel LEDs and reset switch to the following SBCs:

- WAFER-9371
- WAFER-C400
- WAFER-LUKE

Refer to STEP 9A for cabling other SBCs.

Step 1: Connect the front panel LEDs to the 2.4mm to 2.0mm adapter cable as shown in **Figure-22**.

NOTE:

The adapter cable has no dedicated pin 1 designation. Therefore, in **Figure-22**, the blue wire (seen at top) is considered as pin 1 based on the cable connection to the SBC. Carefully make note of pin 1 when connecting the adapter cable to the SBC.
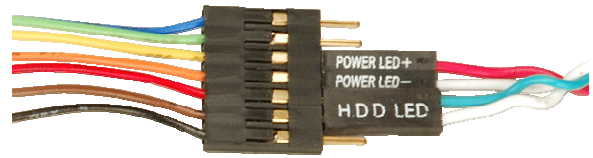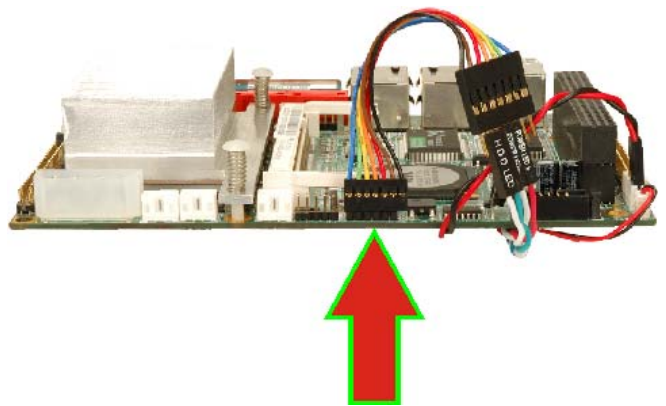

Figure 22: Front Panel to Adapter Cabling

Step 2: Connect the adapter cable to CN1 on the SBC as shown in **Figure-23**.

NOTE:

The adapter cable has 7 pins, but the CN1 pin header only has 6 pins. Therefore, in **Figure-23**, the blue wire (at left) is considered as pin 1 based on the cable connection to the SBC. Carefully make note of pin 1 when connecting the adapter cable to the SBC.

Figure 23: Adapter Cable to SBC Connection

Step 3: Connect the front panel RESET SW cable to CN5 on the SBC as shown in **Figure-24**. Be sure to connect the cable's red wire to pin 1 of the connector.
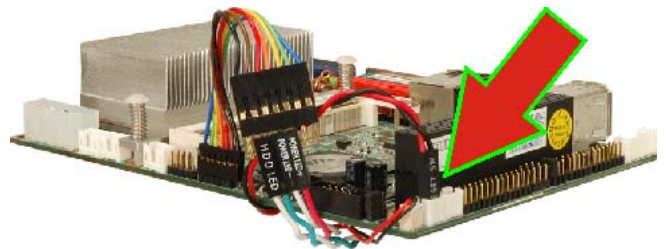

Figure 24: RESET SW Cable to SBC Connection

STEP 10: OPTIONAL CABLE INSTALLATION

The EBC-1000G chassis I/O bracket supports Printer, COM 2, Mouse and Keyboard cables. The I/O cables are listed below:

No.	Name
1	Keyboard/Mouse Cable

1		
	Printer Cable	
1		
	COM 2 Cable	
1		
	USB Cable	

Table 6: I/O Connector Cables

To install the I/O cables to the front of the chassis, follow the steps below:

Step 1: Install the connector to the corresponding hole in the I/O bracket.

Step 2: To secure the connector to the I/O bracket, insert two retention screws, one into each side of the connector.

Figure 25: I/O Connector Retention Screws

Step 3: Connect the I/O connector cables to the SBC.

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: BASE PLATE INSTALLATION

Two base plates are shipped with the EBC-1000G chassis. The base plates are installed on the sides, at the bottom of the chassis. Each plate is secured to the chassis with three retention screws. To install the base plates, 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 base plate.

Step 2: Insert two retention screws into each base plate.
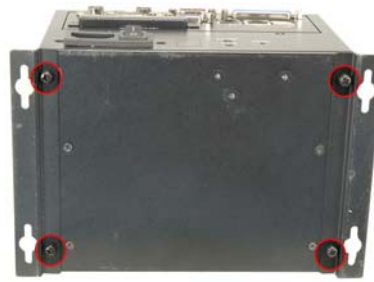
Figure 26: Base plate Retention Screws

CHASSIS MAINTENANCE

■ FAN REPLACEMENT

NOTE:

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

The EBC-1000G chassis can support up to two fans at the rear of the chassis. To replace a fan, please follow the steps below:

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

Step 2: Unplug all the cables, including the 2.5" HDD ribbon cable, that are connected to the SBC.

Step 3: Remove the Internal bracket. (Please refer to **STEP 3: INTERNAL BRACKET REMOVAL**)
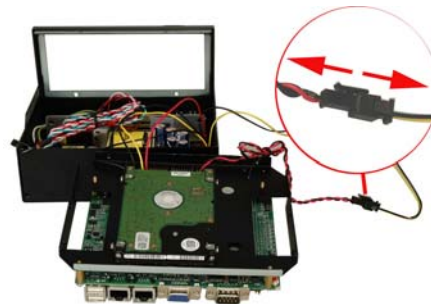
Step 4: Unplug the fan power cable.

Figure 27: Unplug the Fan Power Cable

Step 5: Remove the four fan retention screws, one from each corner of the fan.

Figure 28: Fan Retention Screws

Step 6: Install a new fan into the fan bracket and reinsert the four previously removed fan retention screws.

The EBC-1000G chassis came with an extra fan bracket for an extra fan. To install an extra fan, please follow the steps below:

Step 1: Place the extra fan bracket onto one of the two pairs of the reserved fan bracket retention screw holes at the rear of the Internal bracket.
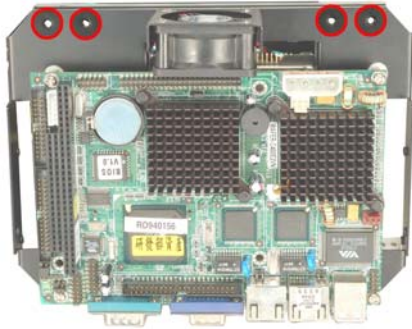

Figure 29: Fan Bracket Retention Screws

Step 2: To secure the fan bracket to the rear of the Internal bracket, insert two retention screws into the bottom of the fan bracket.
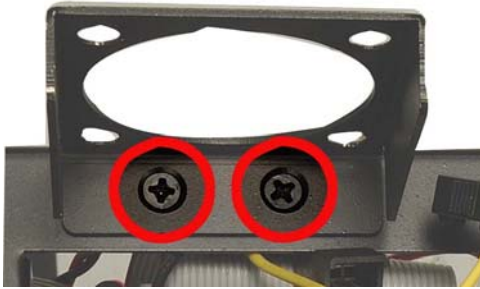

Figure 30: Fan Bracket Retention Screws

Step 3: Install a fan into the fan bracket. Make sure the fan power cable is at the bottom of the fan and the side with the sticker face the rear of the chassis.

Step 4: Insert four retention screws, one into each corner of the fan, to secure the fan to the fan bracket.

■ CABINET INSTALLATION

Supporting rails, rack trays, or slide rails can be installed using the mounting holes on the sides of the chassis. The four mounting holes in the two base plates, two in each base plate, are shown below.

Figure 31: 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.