SHUTTLE BPCWL02/03 IPC Series In a Ruggedized Box User Manual

Contents

SHUTTLE

SHUTTLE BPCWL02/03 IPC Series In a Ruggedized Box

User Manual
BPCWL02 / BPCWL03 BPCEL02 / BPCEL03 / BPCEL07 BPCAL02 / BPCAL03

Notice

The illustrations in this user's manual are for reference only. Actual product specifications may vary with territories. The information in this user's manual is subject to change without notice. THE MANUFACTURER OR RESELLER SHALL NOT BE LIABLE FOR ERRORS OR OMISSIONS CONTAINED IN THIS MANUAL AND SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL DAMAGES, WHICH MAY RESULT FROM THE PERFORMANCE OR USE OF THIS MANUAL.

Do not throw this electronic device into the trash when discarding. To minimize pollution and ensure utmost protection of the global environment, please recycle. For more information on the Waste from Electrical and Electronics Equipment (WEEE) regulations, visit **http://ec.europa.eu/environment/waste/weee/index_en.htm**

Regulations information

FCC rules

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

- CAN ICES-003(B) / NMB-003(B)
- CE compliance

This device is classed as a technical information equipment (ITE) in class A and is intended for use in commercial, transport, retailer, public, automation field.

WARNING

THIS PRODUCT CONTAINS A BUTTON BATTERY
If swallowed, a lithium button battery can cause severe or fatal injuries within 2 hours. Keep batteries out of reach of children. If you think batteries may have been swallowed or placed inside any part of the body, seek immediate medical attention.

CAUTION: This product is intended for exclusive use and will not be used in places where children may come into contact with it.

CAUTION: Any changes or modifications not expressly approved by the guarantee of this device could void the user's authority to operate the equipment.

Safety instructions
The following safety precautions will increase the life of the Box-PC. Follow all Precautions and instructions.

- Do not place this device underneath heavy loads or in an unstable position.

- Do not use or expose this device around magnetic fields as magnetic interference may affect the performance of the device.
- Do not expose this device to high levels of direct sunlight, high humidity or wet conditions.
- Do not block the air vents to this device or impede the airflow in any way.
- Do not expose to or use near liquid, rain, or moisture.
- Do not use the modem during electrical storms.
- BPCWL02, BPCEL02, BPCAL02:
  The unit can be operated at an ambient temperature of max. 40°C (104°F). Do not expose it to temperatures below 0°C (32°F) or above 40°C (104°F).
- BPCWL03, BPCEL03, BPCAL03:
  The unit can be operated at an ambient temperature of max. 60°C (140°F). Do not expose it to temperatures below -20°C (-4°F) or above 60°C (140°F). Ideal for industrial applications: factory, engine room etc. Touching of Box-PC in operation at a temperature range of -20°C (-4°F) and
  60°C (140°F) must be avoided.
- BPCEL07:
  The unit can be operated at an ambient temperature of max. 70°C (158°F). Do not expose it to temperatures below -30°C (-22°F) or above 70°C (158°F). Ideal for industrial applications: factory, engine room… etc.
  Touching of Box-PC in operation at a temperature range of -30°C (-22°F) and
  70°C (158°F) must be avoided.

 **Caution** high surface temperature!
Please don’t touch the set directly till the set cool down.

CAUTION: Incorrectly replacing the battery may damage this computer. Replace only with the same or equivalent as recommended by manufacturer. Dispose of used batteries in accordance with the laws of your country.

Notes for this manual
CAUTION! Important information that must be followed for safe operation.

 NOTE: Information for special situations.

Release history

- Version Revision note Date
- 1.0 First released 10.2023

Getting to know the basics

Product specification

- This User’s Manual provides instructions and illustrations on how to operate this Box-PC. It is recommended to read this manual carefully before using this Box-PC.

NOTE: The product’s color, I/O port, indicator location, and specification will depend upon the actually shipped product.

System		
Processor	BPCWL02 BPC WL03	8th Gen. Intel® Whiskey Lake-U series Processors – Intel® Core™ i7-86 65UE vPro Intel® Core™ i7-8565U Intel® Core™ i5-8365UE vPro Intel® Core™ i5-8265U Intel® Core™ i3-8145UE Intel® Celeron 4305UE
	BPCEL02 BPCE L03 BPCEL07	Intel® Elkhart Lake CPU, Atom® x6425E, 4 Core, 1.5M Cache, 2.0GHz (3.0GHz), 12W (optional) Pentium® J6426, 4 Core, 1.5M Cache, 2.0GHz (3.0GHz), 10W (optional) Celeron® J6412, 4 Core, 1.5M Cache, 2.0GHz (2.6GHz), 10W (optional)
	BPCAL02 BPCA L03	12th Gen. Intel® Alder Lake-U series Processors – Intel® Core™ i7-1265UE vPro Intel® Core™ i7-1255U vPro Intel® Core™ i5-1245UE vPro Intel® Core™ i5-1235U vPro Intel® Core ™ i3-1215UE Intel® Core ™ i3-1215U Intel® Celeron 7305E
Memory	BPCWL02 BPC WL03	2 x 260 pin SO-DIMM up to 64GB, Dual Channel 1.2 V DDR4 2400MHz
	BPCEL02 BPCE L03 BPCEL07	2 x 260 pin SO-DIMM up to 32GB, Dual Channel 1.2 V DDR4 3200MHz
	BPCAL02 BPCA L03	2 x 262 pin SO-DIMM up to 64GB, Dual Channel 1.1 V DDR5 4800MHz

Graphics		
Chipset	Intell® UHD Graphics	
Display Interface	BPCWL02 BPCWL03	2 x HDMI 1.4b: 4096 x 2160@30Hz Supports dual displays
	BPCEL02 BPCEL03 BPCEL07	2 x HDMI 2.0b: 4096 x 2160@60Hz Supports dual displays
	BPCAL02 BPCAL03	2 x HDMI 2.0: 4096 x 2160@60Hz Supports dual displays
Storage		
Internal	1 x M.2 2280 M key (PCIe NVMe / SATA)	
Audio		
Audio Codec	• BPCWL02, BPCWL03: Realtek ALC662/ALC888S 2-channel • BPCEL02, BPCEL03, BPCEL07, BPCAL02, BPCAL03AL: C888S-VD 2 CH HD audio	
Network		
Ethernet	• BPCWL02, BPCWL03: 2 x Intel® Gigabit LAN • BPCEL02, BPCEL03, BPCEL07, BPCAL02, BPCAL03AL: 2 x Intel® 2.5G LAN	
WLAN	Intel WiFI Module (802.11 a/b/g/n/ac) & BT 5.0 (Option) Realtek RTL8821CE 802.11a/b/g/n/ac + Bluetooth 4.2 WLAN card M.2 2230 E key (Option) External antenna (Dipole) x2 (Option)	
I/O Interface		
LAN	• BPCWL02, BPCWL03: 2 x RJ-45 (10/100/1000Mbps), Supports Wake On LAN • BPCEL02, BPCEL03, BPCEL07, BPCAL02, BPCAL03AL: 2 x RJ-45 (10/100/1000Mbps/2.5GbE) Supports Wake On LAN, Teaming Mode	

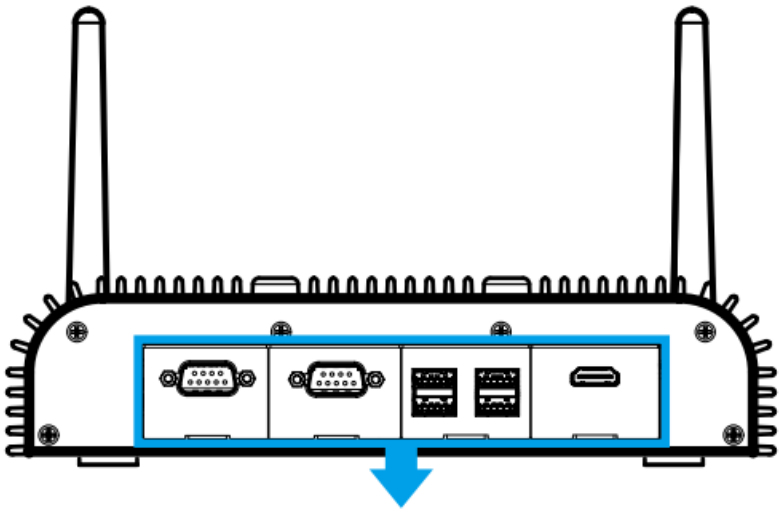
Serial Ports	1 x RS-232 (DB-9) 2 x RS-232/422/485 (DB-9) (RS232 with power supply : ring in/ 5V (standard) &12V (with specific optional board)
USB	4 x USB2.0 • BPCWL02, BPCWL03,BPCEL02, BPCEL03, BPCEL07: 4 x USB3.2 Gen 1 (Type A) • BPCAL02, BPCAL03AL: 4 x USB3.2 Gen 2 (Type A)
Audio	1 x Line-out, 1 x Mic-in
Power	
Type	1. 19V (without wide range board) 2. With wide range board, MB support 9-36V DC-in
Adapter	• BPCWL02, BPCEL02, BPCAL02: 19V/4.74A 90W external adapter • BPCWL03, BPCEL03, BPCEL07, BPCAL03: 19V/7.89A 150W external adapter
Watchdog Timer	
OS Support	• BPCWL02, BPCWL03: Windows 10/11 Embedded 64bit, Linux 64bit • BPCEL02, BPCEL03, BPCEL07: Windows 11 OS / Linux (base on Elkhart Lake Atom support OS) • BPCAL02, BPCAL03AL: Windows 11 OS / Linux (base on Alder Lake support OS)
Mechanism	
Mounting	VESA Mount 75 x 75 mm Ear Mount 256 x 100 mm Din Rail
Dimension	(W) 245mm x (H) 57mm x (D) 169mm
Weight	2.85kg

BIOS	AMI UEFI 64 Mbit
Environment	
Operating Temperature	• BPCWL02, BPCEL02, BPCAL02: 0 ~ 40°C • BPCWL03, BPCEL03, BPCAL03: -20 ~ 60°C • BPCEL07: -30 ~ 70°C
Relative Humidity	20% – 80% RH (non-condensing)
EMC	• BPCWL02, BPCEL02, BPCEL03, BPCEL07, BPCAL02, BPCAL03 : CE, FCC, VCCI, RCM, BSMI • BPCWL03: CE, FCC, VCCI, RCM
Safety	• BPCWL02, BPCEL02, BPCEL03, BPCEL07, BPCAL02, BPCAL03 : cTUVus, CB, BSMI • BPCWL03: cTUVus, CB

CAUTION! MODEL BPCWL02/ BPCEL02/ BPCAL02 IS DESIGNED TO USE WITH THE DC INPUT: (19Vdc / 4.74A) ADAPTERS. MODEL BPCWL03/ BPCEL03/ BPCEL07/ BPCAL03 IS DESIGNED TO USE WITH THE DC INPUT: (19Vdc / 7.89A) ADAPTERS.
Adapter watt should follow default setting or refer to rating label information.

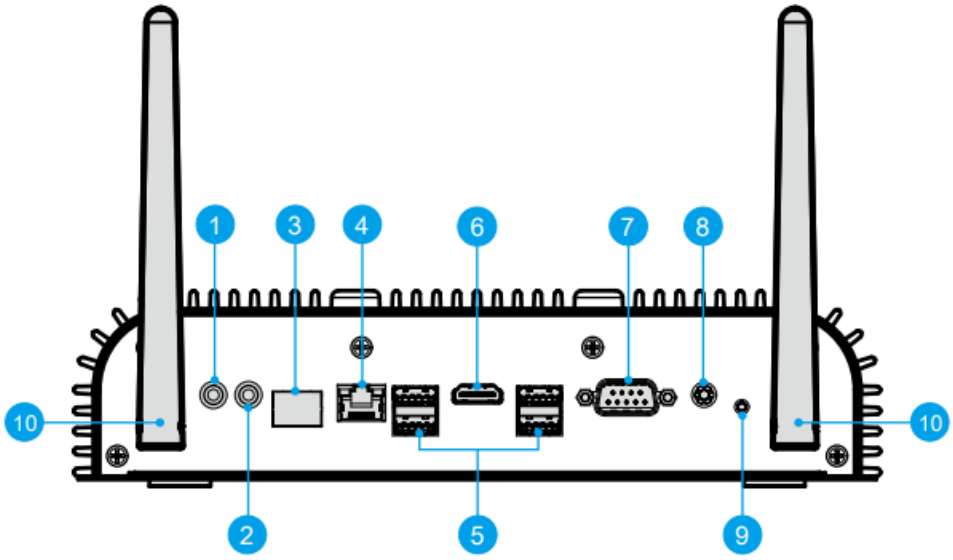
Product overview

Front Panel: Optional I/O ports are available depending on the specs of the actually shipped product.



Optional I/O Port	Occupied Sections		Specifications / Limitations
HDMI	1		Choose one from four optional display boards. Max. resolution: 1. HDMI 1.4: 4k/30Hz 2. HDMI 2.0: 4k/60Hz 3. DisplayPort: 4k/60Hz 4. DVI-I/D-Sub: 1920x1080
DisplayPort 1.2 (DP)	1		
D-Sub (VGA)	1		
DVI-I (Single Link)	1		
USB 2.0	1		Maximum: 2 x Quad USB 2.0 board
COM4	1		RS232 only
COM2, COM3	2		RS232 / RS422 / RS485 Power supply : Ring in/5V

Back Panel: Refer to the following illustration to identify the components on this side of the Box-PC. Features and configurations vary by model.



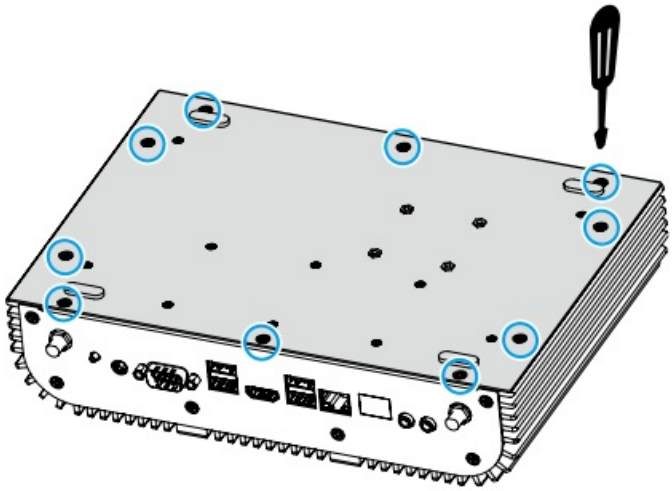
1. Headphones / Line-out jack
2. Microphone jack
3. LAN port (supports wake on LAN)(optional)
4. LAN port (supports wake on LAN)
5. BPCWL02, BPCWL03,BPCEL02, BPCEL03, BPCEL07:
    - USB3.2 Gen 1 (Type A)
    - BPCAL02, BPCAL03AL: USB3.2 Gen 2 (Type A)
6. HDMI port
7. COM port (RS232 only)
8. Power jack (DC-IN)
9. Power button
10. Connector for WLAN Dipole antennas (optional)

Hardware Installation

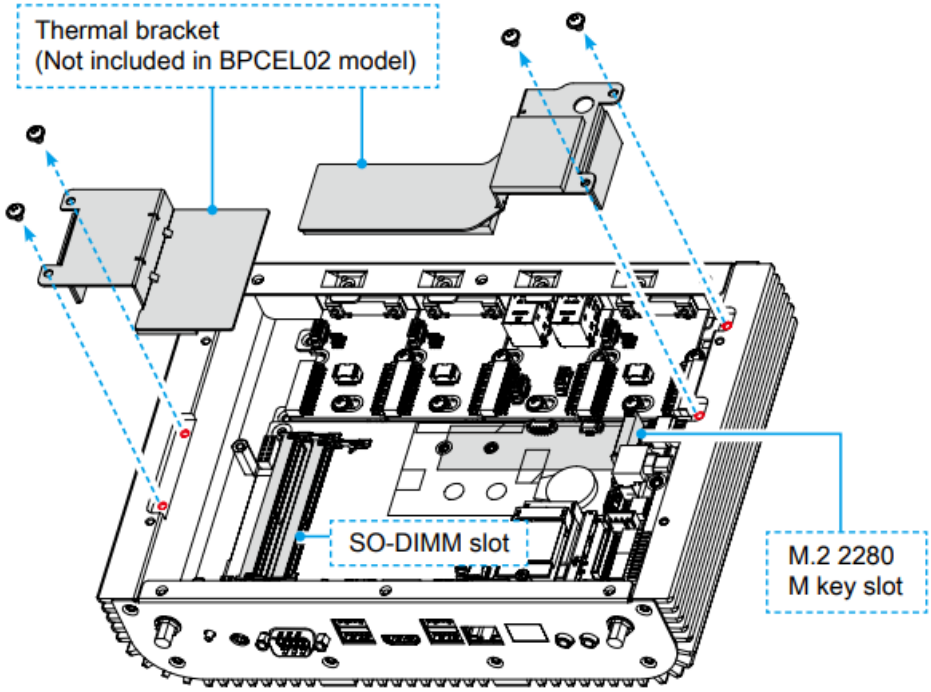
Begin Installation

CAUTION! For safety reasons, please ensure that the power cord is disconnected before opening the case.

1. Unscrew the ten screws of the chassis cover and remove it.



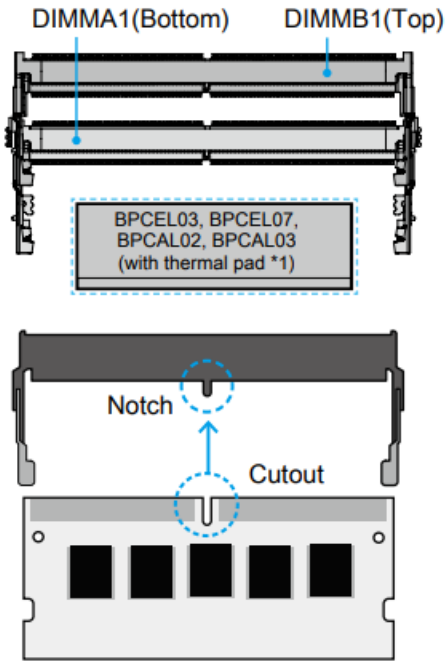
2. Unfasten the thermal bracket mount screws and remove the two thermal brackets.



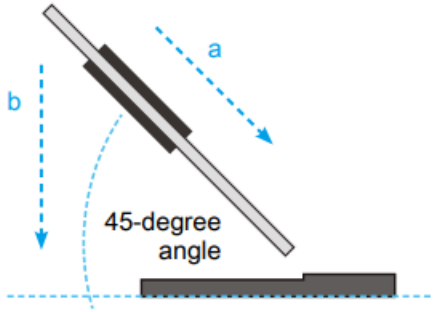
Memory Module Installation

BPCWL02, BPCWL03	2 x 260 pin SO-DIMM up to 64GB, Dual Channel 1.2 V DDR4 2400MHz
BPCEL02, BPCEL03, BPCEL07	2 x 260 pin SO-DIMM up to 32GB, Dual Channel 1.2 V DDR4 3200MHz
BPCAL02, BPCAL03	2 x 262 pin SO-DIMM up to 64GB, Dual Channel 1.1 V DDR5 4800MHz

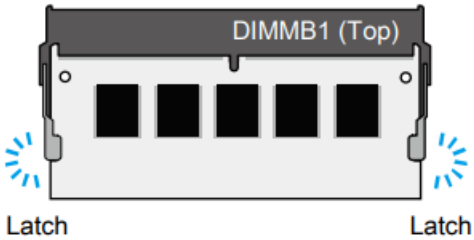
1. Locate the SO-DIMM and paste the thermal pad on the motherboard, which can effectively reduce its temperature. (BPCEL03, BPCEL07, BPCAL02, BPCAL03 only)

2. Install the 1st memory module into the DIMMA1 slot.
3. Align the notch of the memory module with the one of the relevant memory slot.
4. 

   Gently insert the module into the slot in a 45-degree angle.
5. Carefully push down the memory module until it snaps into the locking mechanism.

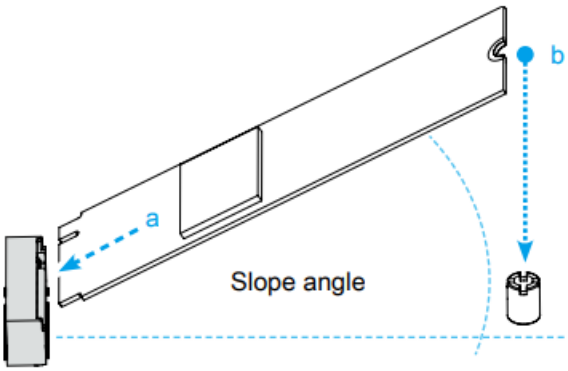


6. Install the 2nd memory module into the DIMMB1 slot (proceed with steps B3 to B5).

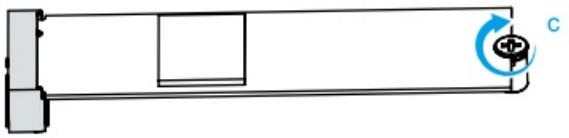


M.2 Device Installation

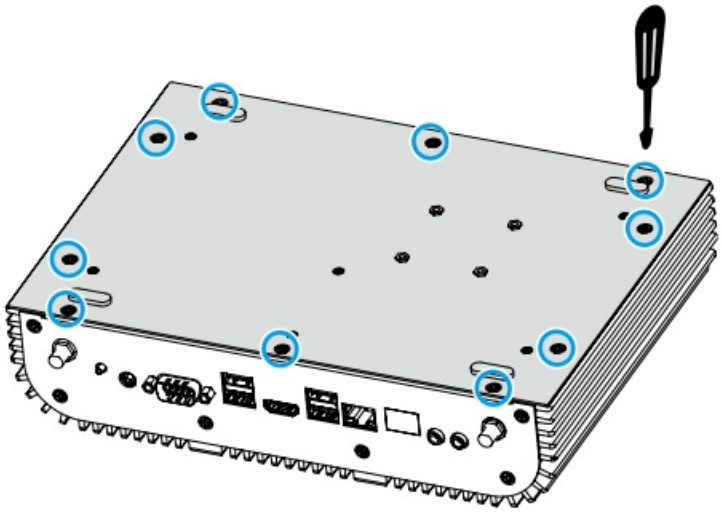
1. Locate the M.2 key slots on the motherboard, unfasten the screw first.
   - M.2 2280 M key slot



2. Install the M.2 device into the M.2 slot and secure with the screw.



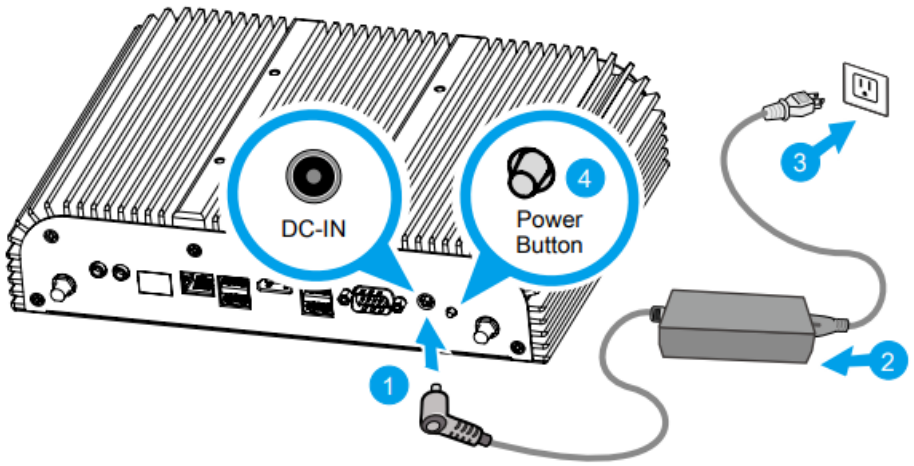
3. Place and refasten the two thermal brackets in the chassis with four screws.
4. Please replace and affix the chassis cover with ten screws.



Powering on the system

Follow the steps (1-3) below to connect the AC adapter to the power jack (DC-IN). .Press the power button (4) to turn on the system.

NOTE: Press and hold the power button for 5 seconds to force shutdown.

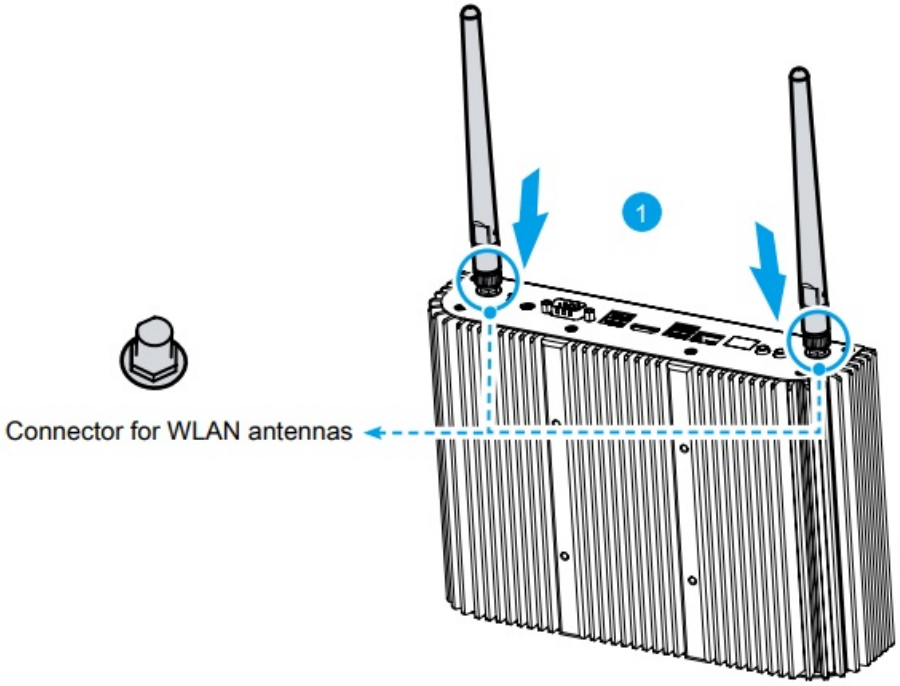


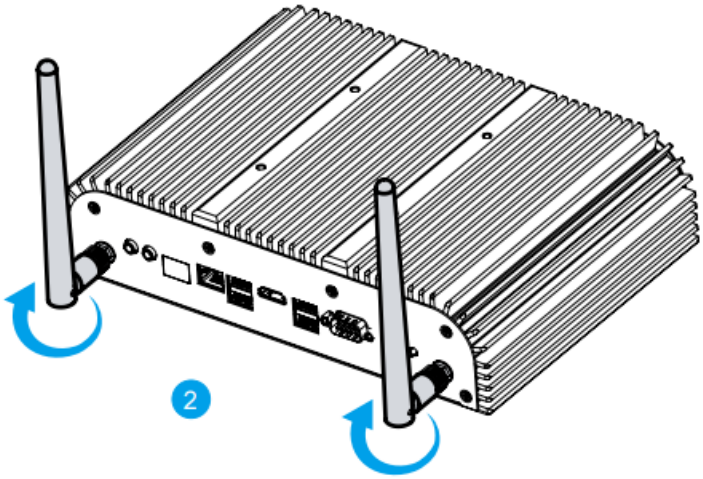
CAUTION: Do not use inferior extension cords as this may result in damage to your Box-PC. The Box-PC comes with its own AC adapter. Do not use a different adapter to power the Box-PC and other electrical devices.

NOTE: The power adapter may become warm to hot when in use. Be sure not to cover the adapter and keep it away from your body.

Installation of WLAN antennas (optional)

1. Take the two antennas out of the accessory box.
2. Screw the antennas on to the appropriate connectors on the back panel. Make sure the antennas are aligned vertically or horizontally to achieve the best possible signal reception.

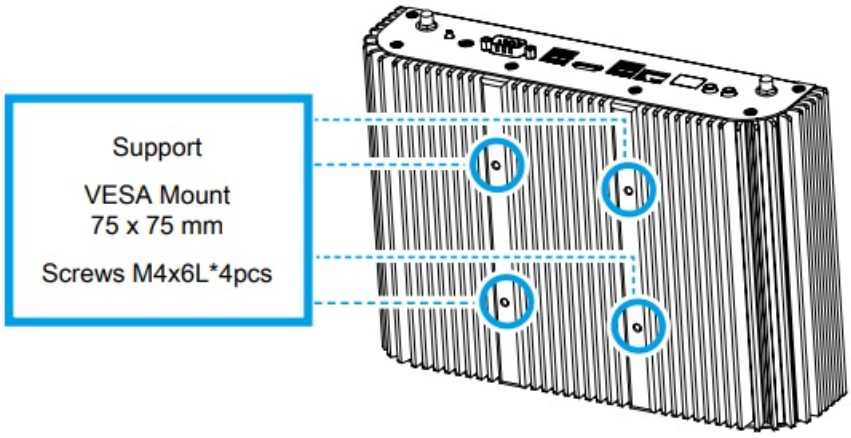




CAUTION: Make sure the two antennas are aligned in the correct direction.

VESA mounting it to the wall (optional)

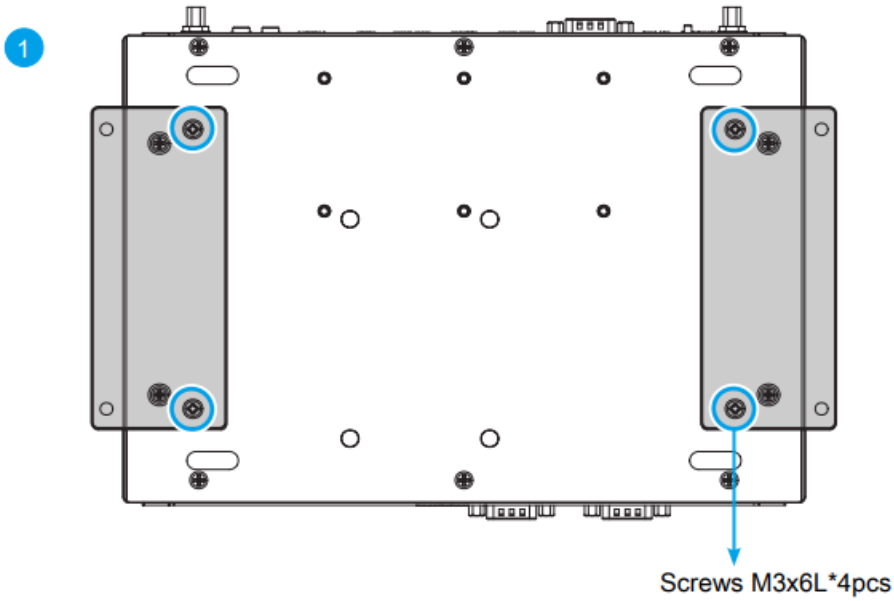
The standard VESA openings show where an arm/wall mount kit which is available separately can be attached.

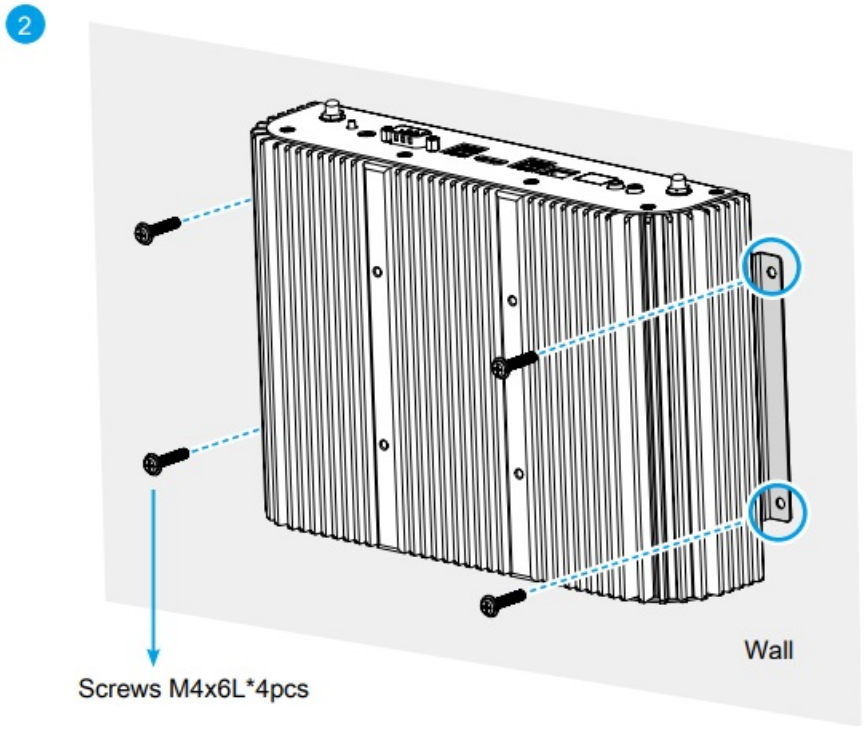


NOTE: The Box-PC can be wall-mounted using a VESA compatible 75 mm x 75 mm wall/arm bracket. The maximum load capacity is 10 kg and mounting suitable in heights of ≤ 2 m only. The metal thickness of the VESA mount must be between 1.6 and 2.0 mm.

Ear mounting to the wall (optional)

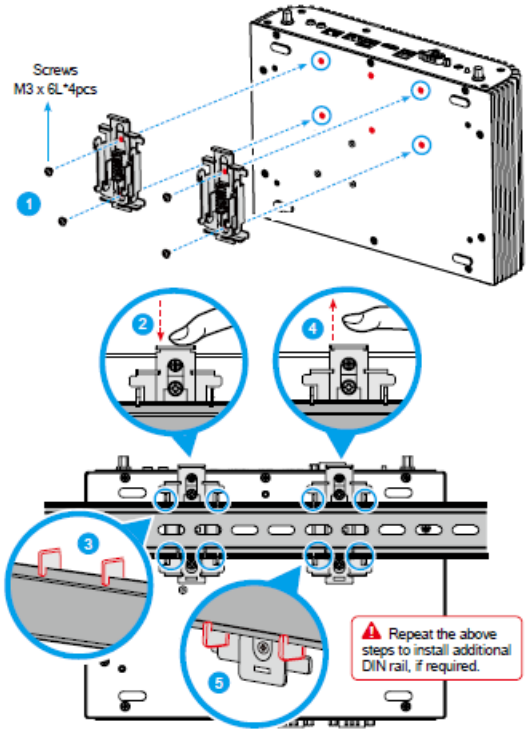
Follow the steps 1-2 to install the ear mount.





Using the Din Rail (optional)

Follow the steps 1-5 to affix the Box-PC on a DIN rail.



BIOS Setup

About BIOS Setup

The default BIOS (Basic Input/Output System) is already properly configured and optimized, there is normally no need to run this utility.

When to Use BIOS Setup ?

You may need to run the BIOS Setup when:

- An error message appears on the screen during the system booting up and is requested to run SETUP.
- You want to change the default settings for customized features.
- You want to reload the default BIOS settings

CAUTION! We strongly recommend that you change the BIOS settings only with the help of a trained service personnel.

How to run BIOS Setup ?

- To run the BIOS Setup Utility, turn on the Box-PC and press the [Del] or [F2] key during the POST procedure.
- If the message disappears before you respond and you still wish to enter Setup, either restart the system by turning it OFF and ON, or simultaneously pressing [Ctrl]+[Alt]+[Del] keys to restart.
- The setup function only can be invoked by pressing [Del] or [F2] key during POST that provide an approach to change some setting and configuration the user prefer, and the changed values will save in the NVRAM and will take effect after the system rebooted.
- Press [F7] key for Boot Menu.

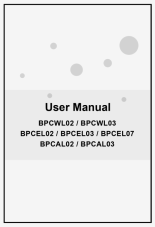
When OS support is Windows 11 :

1. Click the “Start menu” and select “Settings”.
2. Select “Windows Update” and Click “Advanced options”.
3. Click “Recovery”.
4. Under “Advanced startup”, click “Restart now”.
   The system will restart and show the Windows 11 boot menu.
5. Select “Troubleshoot”.
6. Choose “Advanced options”.
7. Select “UEFI Firmware Settings”.
8. Click “Restart” to restart the system and enter UEFI (BIOS).

When OS support is Windows 10 :

1. Click the “Start menu” and select “Settings”.
2. Select “Update and Security”.
3. Click “Recovery”.
4. Under “Advanced startup”, click “Restart now”.
   The system will restart and show the Windows 10 boot menu.
5. Select “Troubleshoot”.
6. Choose “Advanced options”.
7. Select “UEFI Firmware Settings”.
8. Click “Restart” to restart the system and enter UEFI (BIOS).

Documents / Resources

	**SHUTTLE BPCWL02/03 IPC Series In a Ruggedized Box** [pdf] User Manual BPCWL0203 IPC Series In a Ruggedized Box, BPCWL0203 IPC Series, In a Ruggedized Box, Ruggedized Box, Box

References

- **User Manual**