



# **EB100-KU**

## **Fanless Embedded System User's Manual**



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3.

## FCC and DOC Statement on Class A

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio TV technician for help.

### Notice:

1. The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
2. Shielded interface cables must be used in order to comply with the emission limits.

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## About this Manual

An electronic file of this manual can be obtained from the DFI website at [www.dfi.com](http://www.dfi.com). To download the user's manual from our website, please go to Support > Download Center. On the Download Center page, select your product or type the model name and click "Search" to find all technical documents including the user's manual for a specific product.

## Warranty

1. Warranty does not cover damages or failures that arised from misuse of the product, inability to use the product, unauthorized replacement or alteration of components and product specifications.
2. The warranty is void if the product has been subjected to physical abuse, improper installation, modification, accidents or unauthorized repair of the product.
3. Unless otherwise instructed in this user's manual, the user may not, under any circumstances, attempt to perform service, adjustments or repairs on the product, whether in or out of warranty. It must be returned to the purchase point, factory or authorized service agency for all such work.
4. We will not be liable for any indirect, special, incidental or consequential damages to the product that has been modified or altered.



### Hot Parts!

Burned fingers when handling electronic parts.  
Wait for 30 minutes after switching off the system and before handling parts.

## Static Electricity Precautions

It is quite easy to inadvertently damage your PC, system board, components or devices even before installing them in your system unit. Static electrical discharge can damage computer components without causing any signs of physical damage. You must take extra care in handling them to ensure against electrostatic build-up.

1. To prevent electrostatic build-up, leave the system board in its anti-static bag until you are ready to install it.
2. Wear an antistatic wrist strap.
3. Do all preparation work on a static-free surface.
4. Hold the device only by its edges. Be careful not to touch any of the components, contacts or connections.
5. Avoid touching the pins or contacts on all modules and connectors. Hold modules or connectors by their ends.



### Important:

Electrostatic discharge (ESD) can damage your processor, disk drive and other components. Perform the upgrade instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.

## Safety Measures

To avoid damage to the system:

- Use the correct AC input voltage range.

To reduce the risk of electric shock:

- Unplug the power cord before removing the system chassis cover for installation or servicing. After installation or servicing, cover the system chassis before plugging the power cord.

Battery:

- Danger of explosion if battery incorrectly replaced.
- Replace only with the same or equivalent type recommend by the manufacturer.
- Dispose of used batteries according to local ordinance.

## Safety Precautions

- Use the correct DC input voltage range.
- Unplug the power cord before removing the system chassis cover for installation or servicing. After installation or servicing, cover the system chassis before plugging the power cord.
- Danger of explosion if battery incorrectly replaced.
- Replace only with the same or equivalent type recommend by the manufacturer.
- Dispose of used batteries according to local ordinance.
- Keep this system away from humidity.
- Place the system on a stable surface. Dropping it or letting it fall may cause damage.
- The openings on the system are for air ventilation to protect the system from overheating. **DO NOT COVER THE OPENINGS.**
- Place the power cord in such a way that it will not be stepped on. Do not place anything on top of the power cord. Use a power cord that has been approved for use with the system and that it matches the voltage and current marked on the system's electrical range label.
- If the system will not be used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
- If one of the following occurs, consult a service personnel:
  - The power cord or plug is damaged.
  - Liquid has penetrated the system.
  - The system has been exposed to moisture.
  - The system is not working properly.
  - The system dropped or is damaged.
  - The system has obvious signs of breakage.
- The equipment power cord should be connected to a outlet with earthing connection.
- Disconnect the system from the DC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
- For USA region, please purchase the approved power source that is certified by an UL through the specified dealer.
- For European region, please purchase the approved power source that is certified by an IEC through the specified dealer. Adapter Rating: 12 Vdc, min. 5 A, min. Tma=40°C, comply with L.P.S.

## About the Package

The package contains the following items. If any of these items are missing or damaged, please contact your dealer or sales representative for assistance.

- One EB100-KU system unit
- One Quick Installation Guide

## Optional Items

- Wall Mount/VESA Mount kit
- Power Cord

The board and accessories in the package may not come similar to the information listed above. This may differ in accordance to the sales region or models in which it was sold. For more information about the standard package in your region, please contact your dealer or sales representative.

## Chapter 1 - Introduction

### Overview



The EB100-KU is a fanless box PC that provides rich connectivity including two independent displays and Ethernet ports as well as multiple USB ports in a compact chassis. It is designed for various industrial applications for market segments such as IoT edge computing and factory automation.

### Key Features

<b>Model Name</b>	<b>EB100-KU</b>
<b>Processor</b>	7th Generation Intel® Core™ Processors
<b>LAN</b>	Two LAN ports
<b>Display</b>	Two HDMI outputs
<b>USB</b>	Four USB 3.0 and two USB 2.0 Type A ports
<b>Audio</b>	Speaker and Mic-in combo port

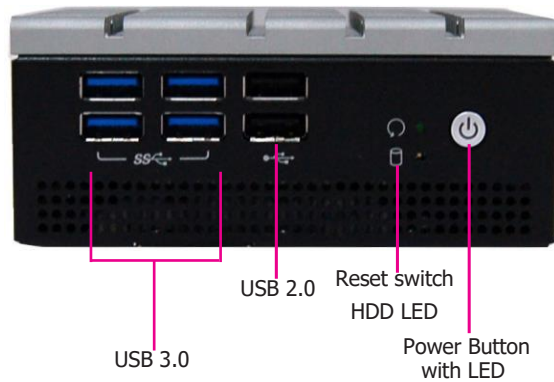
## Specifications

<b>Processor System</b>	7th Generation Intel® Core™ Processors, BGA1356 Intel® Core™ i7-7600U Processor, Dual Core, 4M Cache, 2.8GHz (3.9GHz), 15W Intel® Core™ i5-7300U Processor, Dual Core, 3M Cache, 2.6GHz (3.5GHz), 15W Intel® Core™ i3-7100U Processor, Dual Core, 3M Cache, 2.4GHz, 15W
<b>Memory</b>	<ul style="list-style-type: none"> <li>Two 260-pin SODIMM up to 32GB</li> <li>Dual Channel DDR4 1866/2133MHz</li> </ul>
<b>Graphics</b>	<ul style="list-style-type: none"> <li>2 x HDMI</li> <li>DP: resolution up to 2560x1600 @ 60Hz or 4096x2304 @ 24Hz</li> <li>Supported drivers and codecs:               <ul style="list-style-type: none"> <li>OpenGL 4.2, Direct X 11.1, OpenCL 1.2, OGL ES 3.0</li> <li>HW Decode: H.264, MPEG2, VC1, VP8, H.265, MPEG4, MVC, VP9, WMV9, JPEG/MJPEG</li> <li>HW Encode: H.264, MPEG4, VP8, H.265, MVC</li> </ul> </li> </ul>
<b>Storage/Expansion</b>	<ul style="list-style-type: none"> <li>Storage:               <ul style="list-style-type: none"> <li>1 x 2.5" SATA 3.0 Drive Bay</li> </ul> </li> <li>Expansion:               <ul style="list-style-type: none"> <li>1 x Half-size Mini PCIe socket (supports PCIe/USB 2.0 signals)</li> <li>1 x M.2 M Key 2280 (Supports SATA signal only)</li> </ul> </li> </ul>
<b>Ethernet</b>	<ul style="list-style-type: none"> <li>Intel® I210AT PCIe (10/100/1000Mbps)</li> <li>Intel® I219LM</li> </ul>
<b>I/O Ports and LED Indicators</b>	<ul style="list-style-type: none"> <li>Front Panel               <ul style="list-style-type: none"> <li>- 4 x USB 3.0 (type A)</li> <li>- 2 x USB 2.0 (type A)</li> <li>- 1 x power button</li> <li>- 1 x reset switch</li> <li>- 1 x HDD LED</li> </ul> </li> <li>Rear Panel               <ul style="list-style-type: none"> <li>- 2 x GbE ports</li> <li>- 2 x HDMI</li> <li>- 1 x Line-out &amp; Mic-in combo port</li> </ul> </li> </ul>
<b>Security (optional)</b>	Trusted Platform Module (TPM) 1.2/2.0 by request
<b>Power</b>	<ul style="list-style-type: none"> <li>12V DC-in jack</li> </ul>
<b>Environment</b>	<ul style="list-style-type: none"> <li>Temperature               <ul style="list-style-type: none"> <li>- Operating: 0°C ~ 40°C</li> <li>- Storage: -20 to 85°C</li> </ul> </li> <li>Relative Humidity               <ul style="list-style-type: none"> <li>- 5% to 95% RH (non-condensing)</li> </ul> </li> </ul>

<b>Vibration</b>	IEC68-2-64
<b>Shock</b>	Half sine wave 3G, 11ms, 3 shock per axis
<b>Construction</b>	<ul style="list-style-type: none"> <li>Aluminum Alloy</li> </ul>
<b>Mounting</b>	<ul style="list-style-type: none"> <li>Wall/VESA Mount</li> </ul>
<b>Dimensions</b>	<ul style="list-style-type: none"> <li>115mm x 48.7mm x 111mm (W x H x D)</li> </ul>
<b>Weight</b>	<ul style="list-style-type: none"> <li>TBD</li> </ul>
<b>OS Support</b>	Windows 10 IoT Enterprise LTSB 64 Bit
<b>Certifications</b>	CE, FCC Class A Specifications

## Getting to Know the EB100-KU

### Front View



#### Reset Switch

Press to reset the system without disconnecting the system's power.

#### Power Button with LED (green)

Press to power on or off the system.

#### USB 2.0 Ports

Connects USB 2.0 and 1.1 devices.

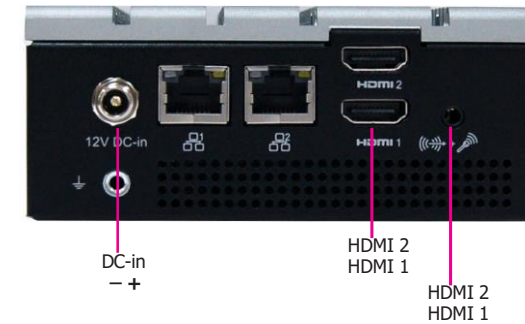
#### USB 3.0 Ports

Connect USB 3.0 devices and devices based on previous versions.

#### HDD LED

Flashes to indicate data transfer activities of the storage device.

### Back View



#### DC-in Connector

DC 12V power input via a terminal block connector.

#### COM/DIO Port

Connects RS232/422/485 devices. It can also be used as an 8-bit digital input/output via jumper settings.

#### LAN Ports

Connect the system to a local area network.

#### HDMI Ports

Connects the HDMI port of an LCD monitor.

#### Mic & Speaker Ports

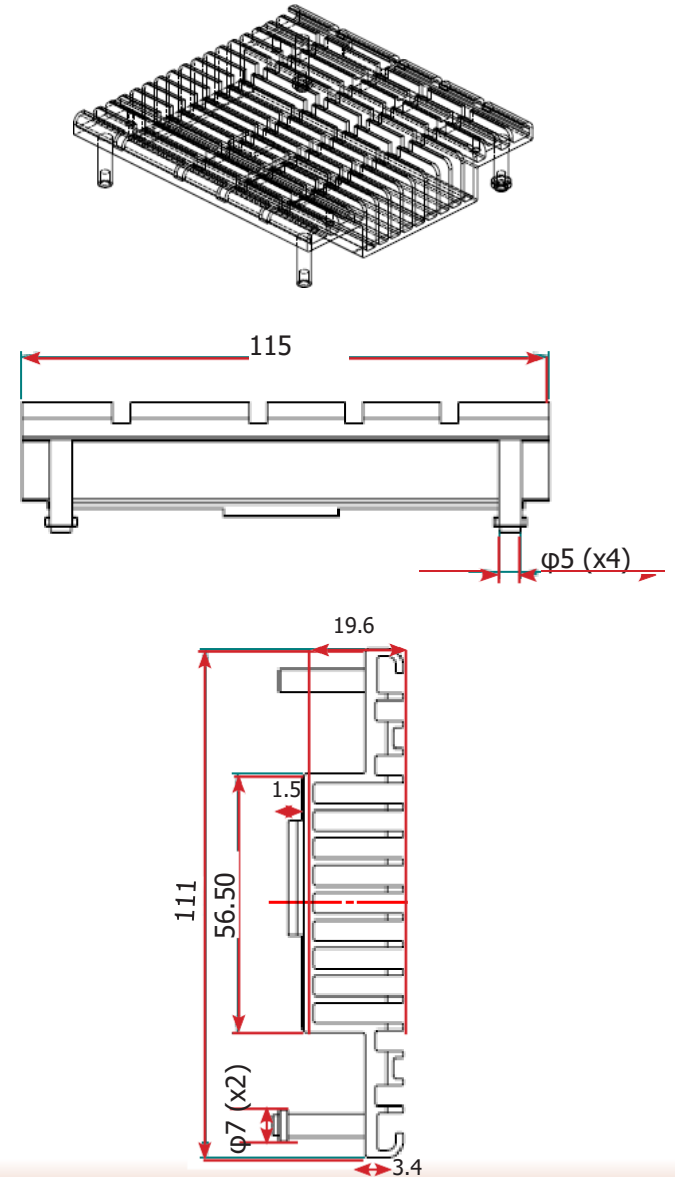
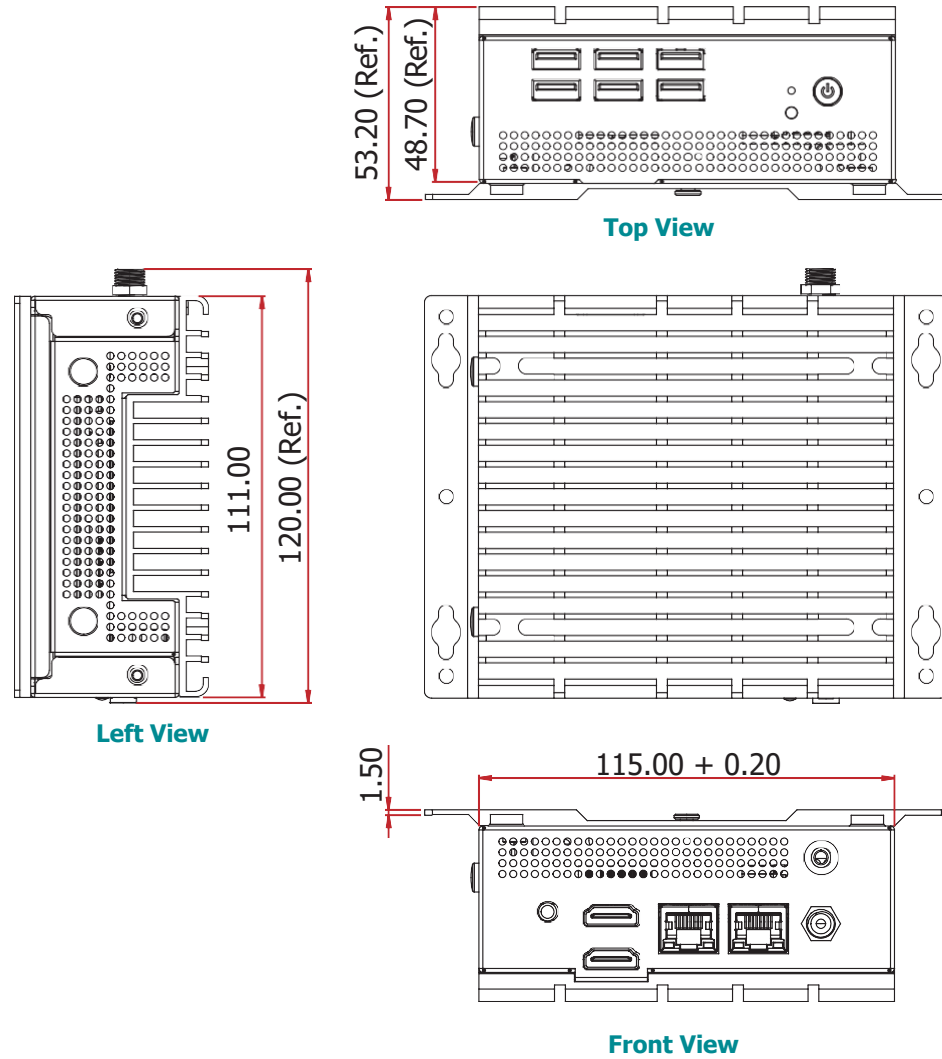
A combo port for both microphone and speaker connections.



### Mechanical Dimensions

#### Chassis Dimension

#### Heat Sink Dimension



## Chapter 2 - Getting Started

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### Preparing the System

Before you start using the system, you need the following items:

- Power adapter (an optional item) or other means of power supply
- Screwdriver

### Installing Devices

The following devices can be installed in the system.

- SATA drive
- Mini PCIe card
- M.2 card

### Configuring the BIOS

To get you started, you may need to change configurations such as the date, time and the type of hard disk drive.

1. Power on the system.
2. After the memory test, the message "Press DEL to run setup" will appear on the screen. Press the Delete key to enter the BIOS setup utility.

### Installing an Operating System

Most operating system software can be installed using a DVD (and DVD burner) or bootable USB drive.

Please refer to your operating system manual for instructions on installing an operating system.

### Installing Drivers

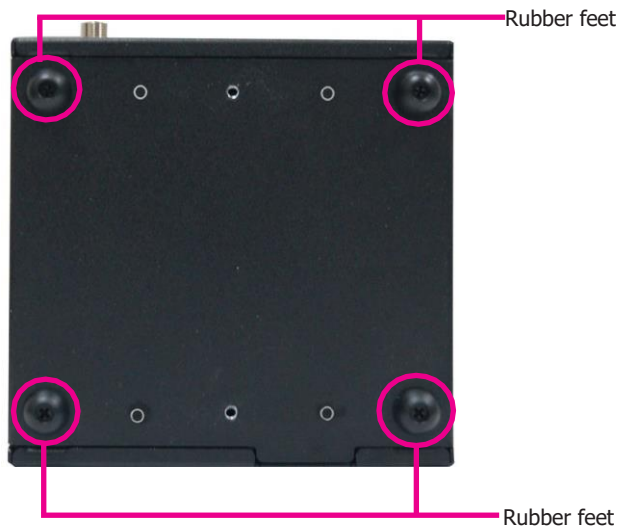
The system comes with a software package including drivers. These drivers must be installed to provide the best system performance. Refer to the Supported Software Chapter for instructions on installing drivers.

## Chapter 3 - Installing Devices

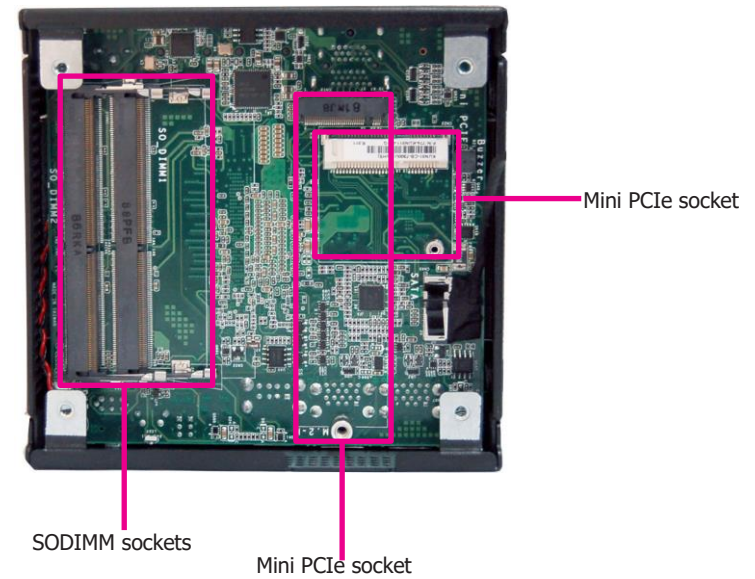
### Removing the Chassis Cover

Please observe the following guidelines and follow the procedure to open the system.

1. Make sure the system and all other peripheral devices connected to it have been powered off.
2. Disconnect all power cords and cables.
3. The 4 rubber feet on the bottom of the system are used to secure the cover to the chassis. Remove these screws and put them in a safe place for later use.



4. Lift the cover to open the system. The SATA drive bay is on top of the system board. Remove the SATA drive bay to access the Mini PCIe socket, M.2 socket and SODIMM sockets



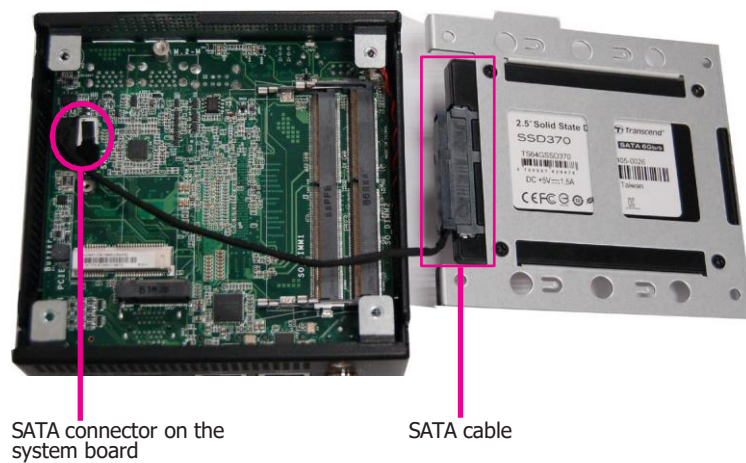
## Installing a SATA Drive

The SATA HDD bracket is included in the product package and can accommodate one SATA drive.

1. Place the SATA drive on the SATA drive bay and secure it in place with the provided screws.



2. Connect the SATA data and power cables to the drive.



2. Place the SATA drive bay with the installed SATA drive into the system.



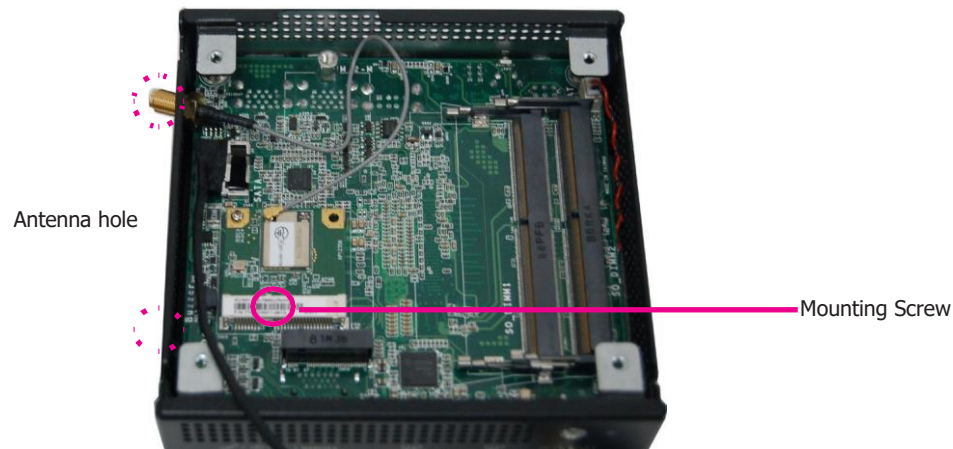
## Installing a Mini PCIe Card

The system board is equipped with one Mini PCIe slot that supports both PCIe and USB interfaces.

1. Grasp the Mini PCIe card by its edges and align the notch in the connector of the PCIe card with the key in the connector on the system board. Insert the bottom edge of the card into the socket.



2. Push down on the other end of the Mini PCIe card and use the provided mounting screw to secure the card on the system board. Route the antenna(s) to the antenna holes on side of the chassis.



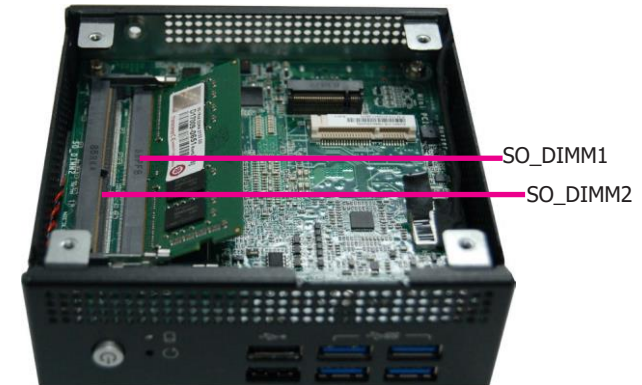
### Note:

If installing a wireless module, place the antenna cable(s) on top of the Mini PCIe card and route the cables to the side of the chassis to reach the antenna holes.

## Installing a SODIMM

The system is equipped with two SODIMM sockets.

1. Grasp the module by its edges and align the SODIMM's notch with the socket's key; then insert the SODIMM into the socket at an angle.



2. Press down the other end of the SODIMM module and make sure that you have inserted the module fully into the socket so that the retaining clips will snap into place.



### Notes:

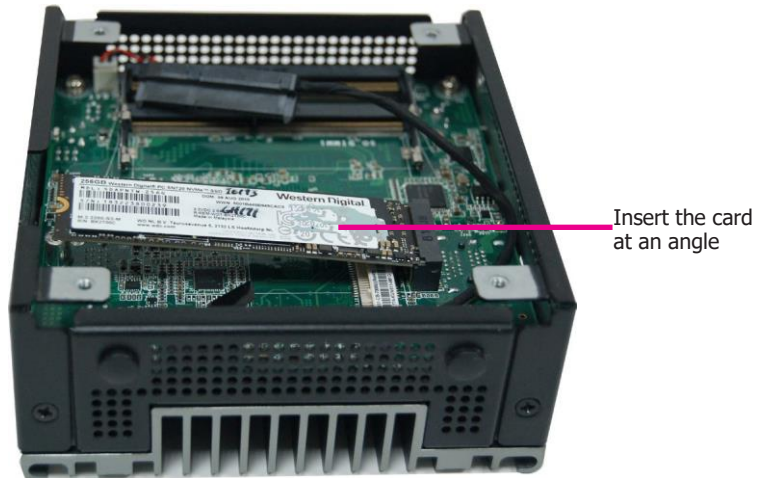
1. The system supports dual-channel configuration. To enable dual-channel, populate both SODIMM sockets.
2. If you plan to install only one SODIMM, install it in the SO\_DIMM1 socket (closer to the center of the system board).
3. The SODIMM sockets can only accept DDR4 memory modules. Please do not install other types of memory modules.



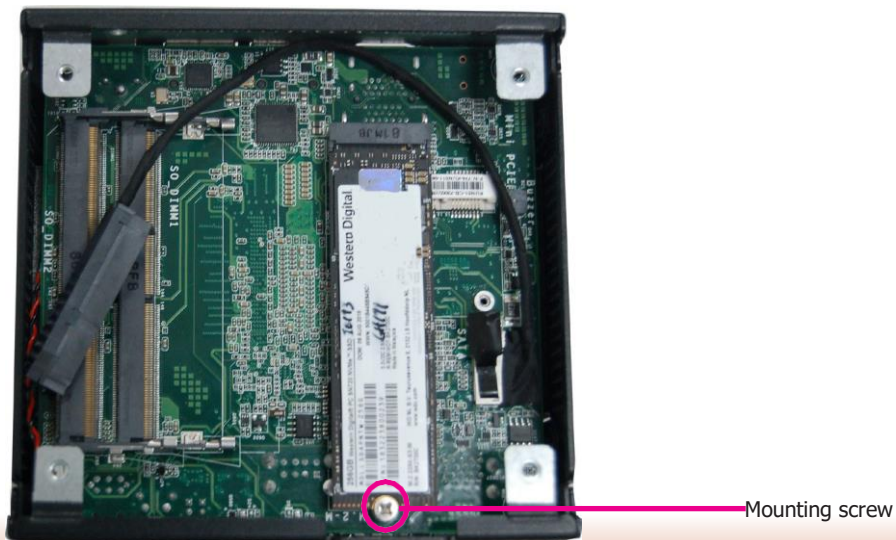
## Installing an M.2 Card

The system board is equipped with one M.2 2280 slot (M key) that supports SATA interface.

1. Grasp the M.2 card by its edges and align the notch in the bottom edge of the M.2 card with the key in the connector on the system board.
2. Insert the M.2 card into the connector.



3. Push down on the other end of the M.2 card and secure card on the mainboard with the provided mounting screw.

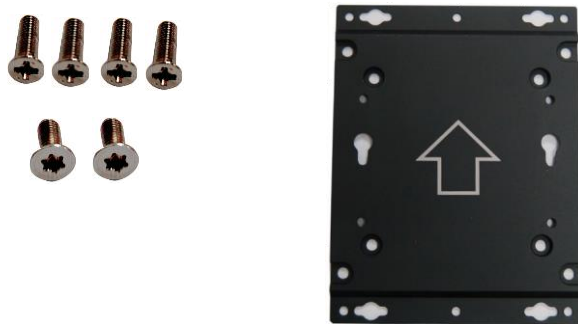


## Chapter 4 - Mounting Options

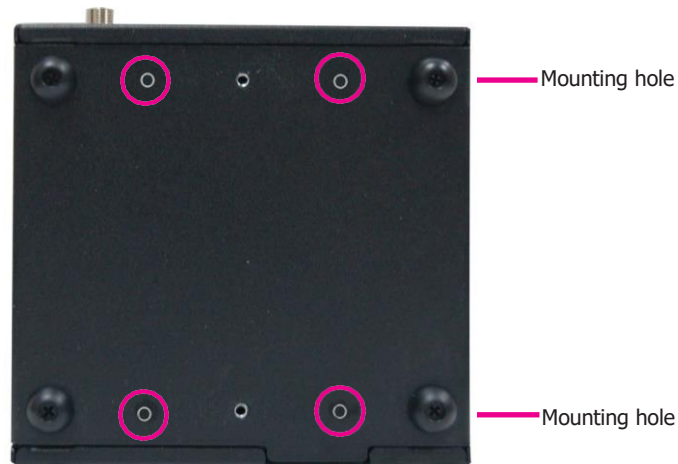
### Wall Mount

The versatile mount kit can facilitate different types of mounting including wall mount and VESA mount. The mount kit includes the following:

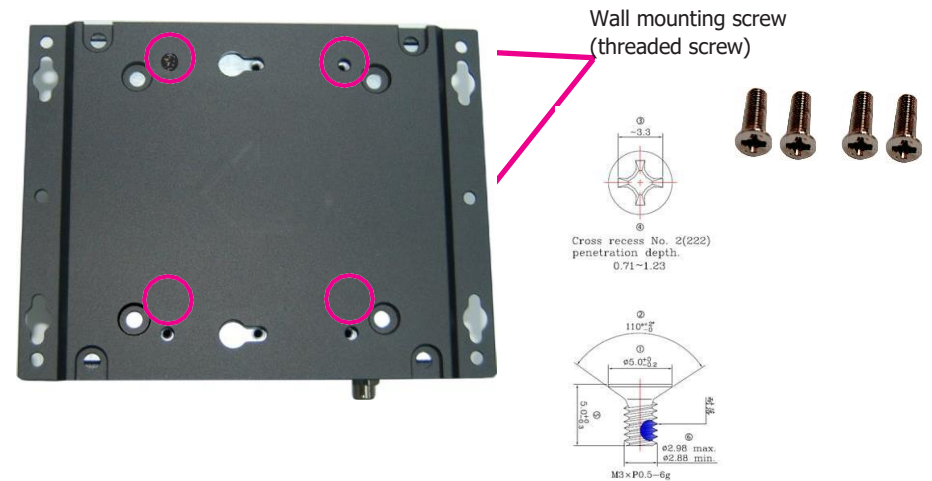
- One mounting bracket for both wall mount and VESA mount
- Mounting screws (4 threaded screws and 2 step screws)



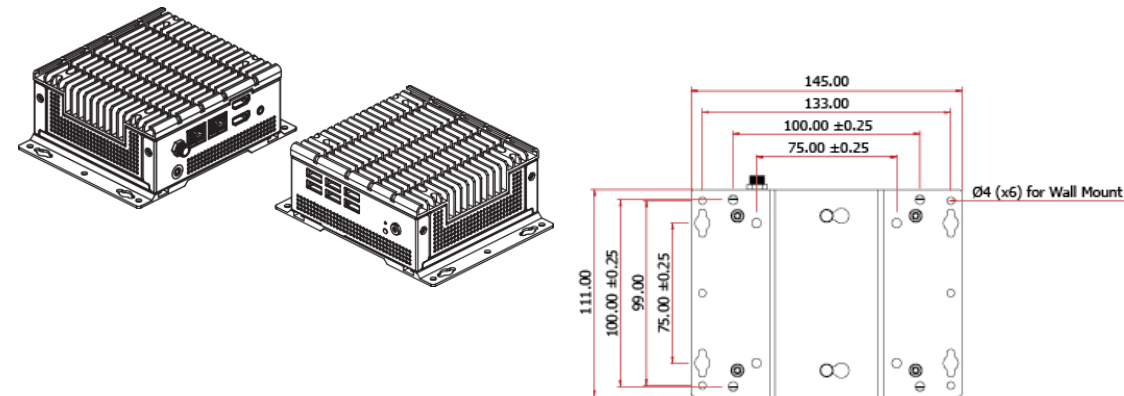
1. The mounting holes are located on the bottom cover of the system as shown below. Please place the device upside down.



2. Align the mounting holes of the wall mounting bracket with the screw holes of the system and use the provided mounting screws to attach the mounting bracket onto the system.



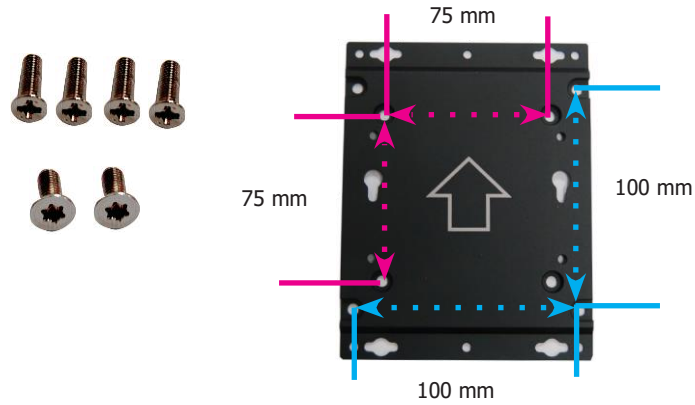
3. Fix the device with the attached wall mount bracket onto a wall with screws (it can be mounted in both horizontal and vertical orientations). The following diagrams show the location and dimension of the wall mounting holes.



## VESA Mount

The VESA mount kit contains the same items as the wall mount kit and includes the following:

- One mounting bracket (for VESA sizes 75 x 75 mm and 100 x 100 mm)
- Screws (4 threaded screws and 2 step screws)

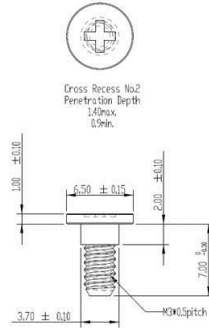


1. Attach the VESA mounting screws (step screws) to the bottom of the device.

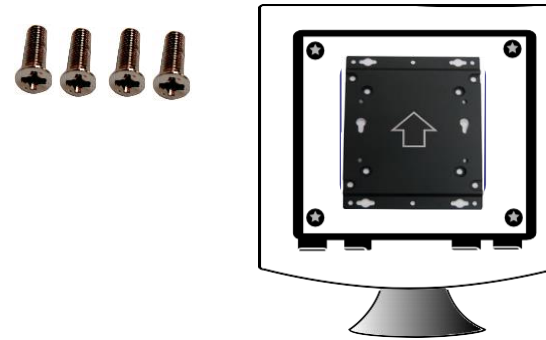
Step screws



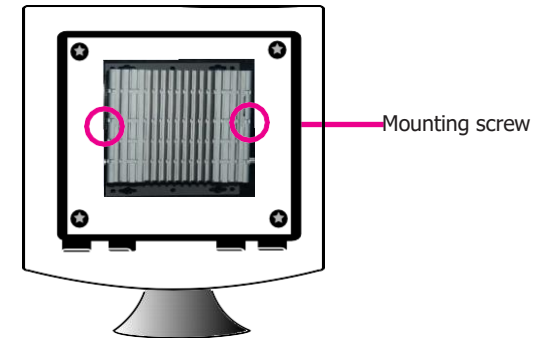
VESA mounting screw (step screw)



2. Attach the VESA bracket to the back of your display using four threaded screws as shown in the picture below.



3. Align the device with the VESA bracket and then hang the device onto the back of the display.



The following diagram shows the location and dimension of the VESA mounting holes.

