BMX-T524

Mini ITX Barebone System with Intel® H110 Chipset

Quick Reference Guide

2nd Ed –27 November 2019

Copyright Notice

Part No. E2017B524A1R

FCC Statement

THIS DEVICE COMPLIES WITH PART 15 FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:

(1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE.

(2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRED OPERATION.

THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS "A" 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 COMMERCIAL ENVIRONMENT. 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.

OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE.

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CONTENT

1. Getting Started

1.1 Safety Precautions

Warning!

Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.

Caution!

Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.

1.2 Packing List

- 1 x BMX-T524 Barebone system
- Accessories:
  - ➢ 1 x 24V/5A 120W adapter
  - ➢ 1 x Power Cord
  - ➢ HDD screws (4pcs. 6#32*5mm, 4pcs. M2*L4, and 8pcs. M3*4)
  - ➢ 2 x 2.5" HDD mylar

If any of the above items is damaged or missing, contact your retailer.

1.3 System Specifications

System	
Mother Board	EMX-H110P-A1R
CPU	Intel® LGA1151 Socket Supports 6th Generation Core™ i7/ i5/ i3 Processors (Max. TDP at 65W depending on CPU cooler selection (optional))
CPU Cooler (Type)	1U blow type cooler (35W: ACC-FAN-115-03R / 65W: E1961121840000R)
Memory	2 x 260-pin DDR4 2133MHz SO-DIMM supports up to 32GB
Power Supply	DC to DC CONVERTER 120W 18~28V/10A
Adapter	120W 24V/5A Power Din Adapter
Storage	
Hard Disk Drive	1 x 3.5" or 2 x 2.5" HDD bracket
External I/O	
PS/2 KB & Mouse	1 x PS/2 KB or Mouse
Serial Port	4 x RS232, 1 x RS232 or 422/485(Optional)
USB Port	4 x USB 3.0 (Rear) 4 x USB 2.0 (Front x 2, Rear x 2)
Video Port	1 x HDMI, 1 x VGA (or DP) Dual display
Audio Port	1 x Mic-in, 1 x Line-out, 1 x Line-in
LAN Port	1 x Intel® I219LM PCI-e Gigabit Ethernet PHY 1 x Intel® I211AT PCI-e Gigabit Ethernet
Switch	1 x Power Button with LED
Indicator Light	1 x HDD LED, 2 x LAN LED
Expansion Slots	1 x Full Size Mini-PCI-e Supports mSATA (SATA III) 1 x Half Size Mini PCI-e
Mechanical	
Power Type	DC in 18~28V via power converter
Power Connector Type	Power din 4 pin
Dimension	205 x 205 x 75 mm (L x W x H) 8.07" x 8.07" x 2.95"
Weight	3.3lbs / 1.5 kg
Color	Black
OS Support	Win 7 (with Intel 6th Gen Mini-ITX motherboard only), Win 10.
Reliability	
EMI Test	CE/FCC Class B design compatible

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Safety	UL/CB design compatible

Vibration Test	Sine Vibration test (Non-operation)
	
	Reference IEC60068-2-6 Testing procedures
	
	Test Fc : Vibration sinusoidal
	
	    1 Test Acceleration : 2G
	
	    2 Test frequency : 5 ~ 500 Hz
	
	    3 Sweep：1 Oct/ per one minute. (logarithmic)
	
	    4 Test Axis : X,Y and Z axis
	
	    5 Test time :30 min. each axis
	
	    6 System condition : Non-Operating mode
	
	Package Vibration Test
	
	Reference IEC60068-2-64 Testing procedures
	
	Test Fh : Vibration boardband random Test
	
	    1. PSD: 0.026G²/Hz , 2.16 Grms
	
	    2. Non-operation mode
	
	    3. Test Frequency : 5-500Hz
	
	    4. Test Axis : X,Y and Z axis
	
	    5. 30 min. per each axis
	
	Random Vibration Operation
	
	Reference IEC60068-2-64 Testing procedures
	
	Test Fh : Vibration boardband random Test
	
	    1. PSD: 0.00050513G²/Hz, 0.5Grms
	
	    2. Operation mode
	
	    3. Test Frequency : 5-500Hz
	
	    4. Test Axis : X,Y and Z axis
	
	    5. 30 minutes per each axis
	
	    6. IEC 60068-2-64 Test: Fh
	
	    7. Storage : SSD or HDD or mSATA

Mechanical Shock Test	Bump Test
	
	Reference IEC 60068-2-29 Testing procedures
	
	Test Eb : Bump Test
	
	    1. Wave form：Half Sine wave
	
	    2. Acceleration Rate：3g for operation mode
	
	    3. Duration Time：11ms
	
	    4. No. of Shock：Z axis 300 times
	
	    5. Test Axis: Z axis
	
	    6. Operation mode

Drop Test	Packing Drop

|	

	Reference ISTA 2A, Method : IEC-60068-2-32 Test:Ed Test Ea : Drop Test
	    1. One corner , three edges, six faces
	    2. ISTA 2A, IEC-60068-2-32 Test:Ed

Operating Temperature	(w/HDD), ambient w/ air flow 0°C ~ 40°C (32°F ~ 104°F)
Operating Humidity	0% ~ 90% Relative Humidity, Non-condensing
Storage Temperature	-20°C ~ 75°C (-4°F ~ 158°F)

Note:

Specifications are subject to change without notice.

## 1.4 System Overview

1.4.1 Front/Rear View
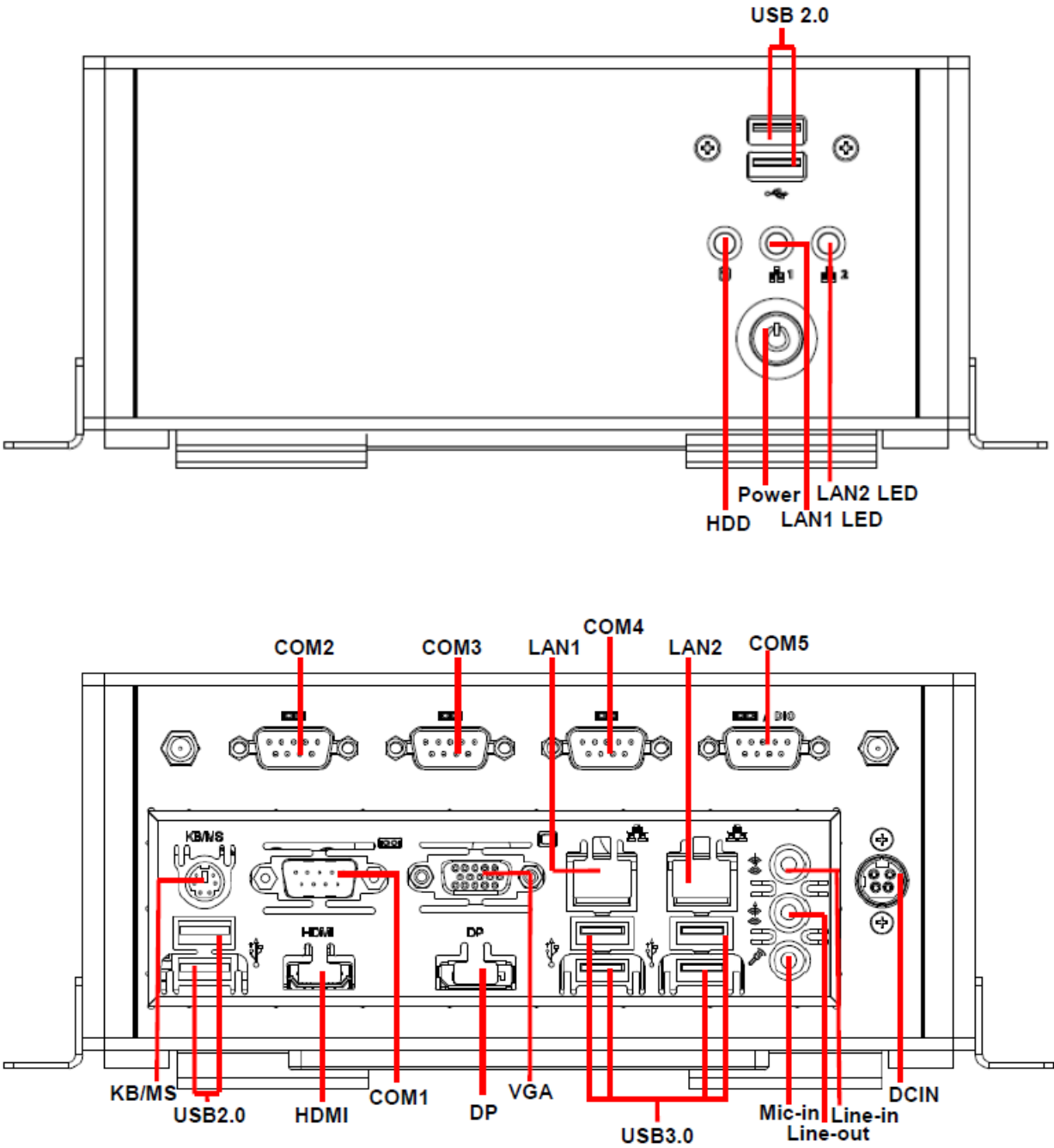
Connectors

Label	Function	Note
Power	Power on button	
HDD	HDD Indicator	
LAN1/2	RJ-45 Ethernet 1/2	
USB2.0	4 x USB2.0 connector	

USB3.0	4 x USB3.0 connector
COM1~5	Serial port 1~5 connector
DCIN	DC power-in connector
HDMI	HDMI connector
DP	DP connector
Line-out	Line-out audio jack
Line-in	Line-in audio jack
Mic-in	Mic-in audio jack
KB/MS	PS/2 keyboard & mouse connector
VGA	VGA connector

1.5 System Dimensions
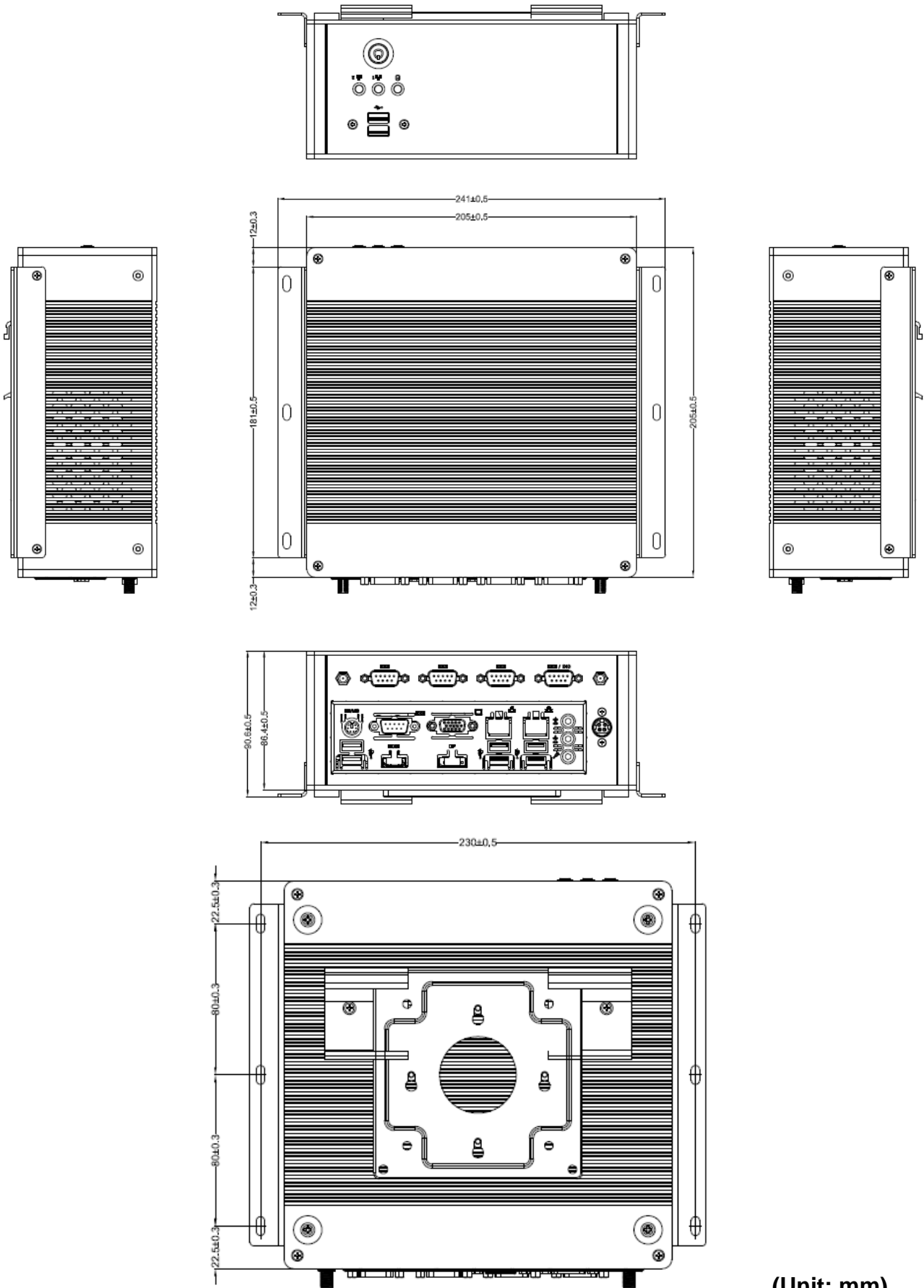
(Unit: mm)

2. Hardware Configuration

For advanced information, please refer to:
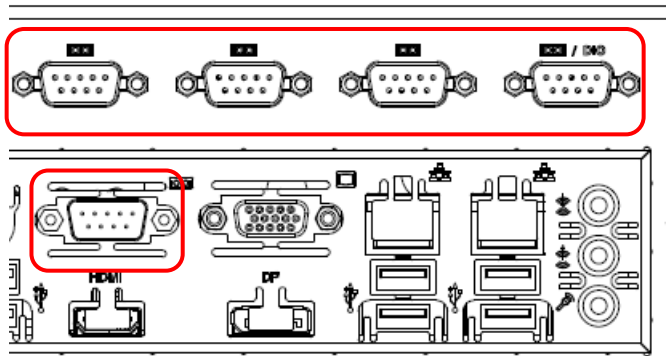
1- EMX-H110P User's Manual

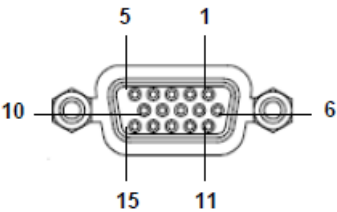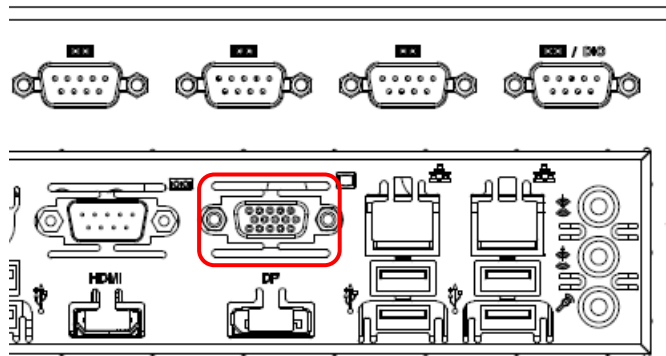**Note:** If you need more information, please visit our website:

http://www.avalue.com.tw

2.1 BMX-T524 connector mapping

2.1.1   Serial port 1~5 connector (COM1~5)
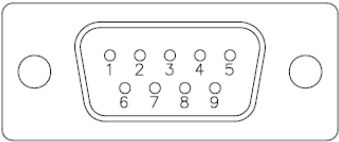
Signal	PIN	PIN	Signal
DCD	1	6	DSR
RXD	2	7	RTS
TXD	3	8	CTS
DTR	4	9	RI
GND	5		

2.1.2   VGA connector (VGA)

| PIN	Signal	PIN	Signal	PIN	Signal
1	RED	6	GND	11	NC
2	GREEN	7	GND	12	DDCDAT
3	BLUE	8	GND	13	HSYNC
4	NC	9	+5V	14	VSYNS
5	GND	10	GND	15	DDCCLK

2.2 Installing Hard Disk & Memory, Mini-PCI-e devices (BMX-T524)
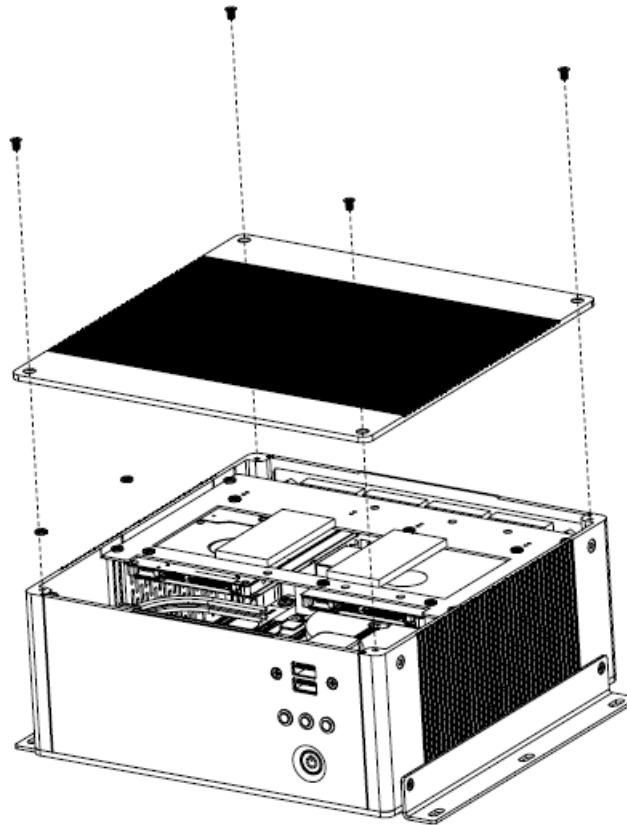
Step1. Remove 4 screws from rear side before removing back cover.

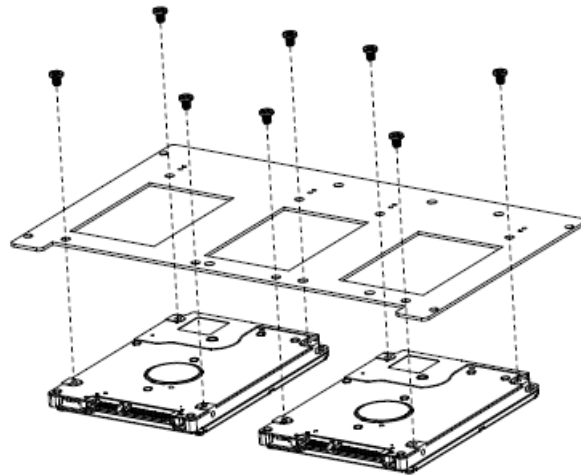**Note:** the mounting brackets are optional, to be ordered separately.

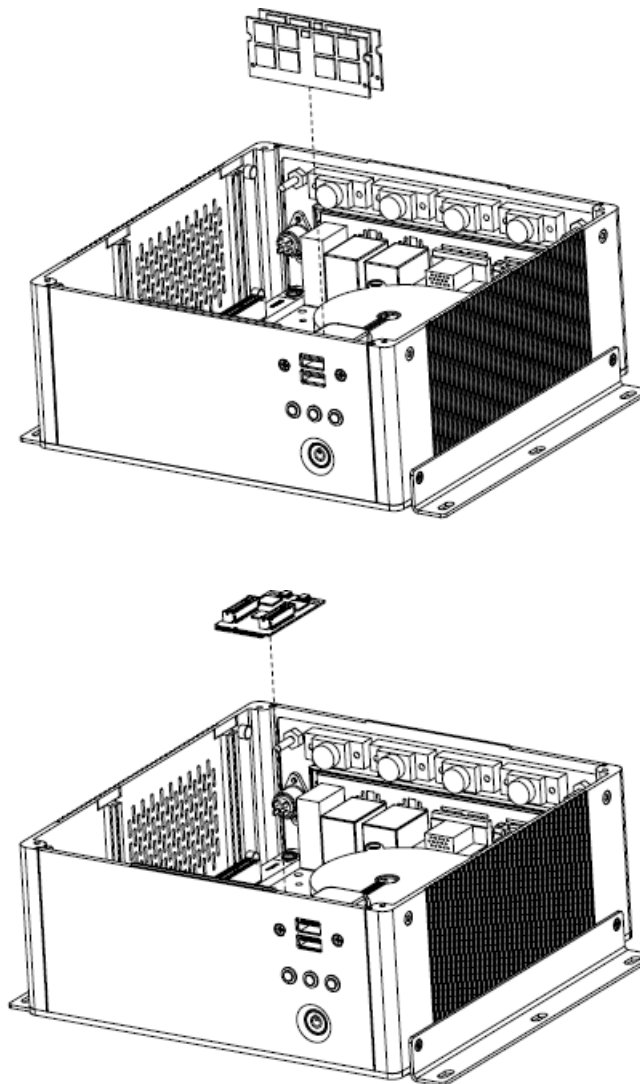Avalue part number: E195BMBMT52100R (2pcs. per unit)
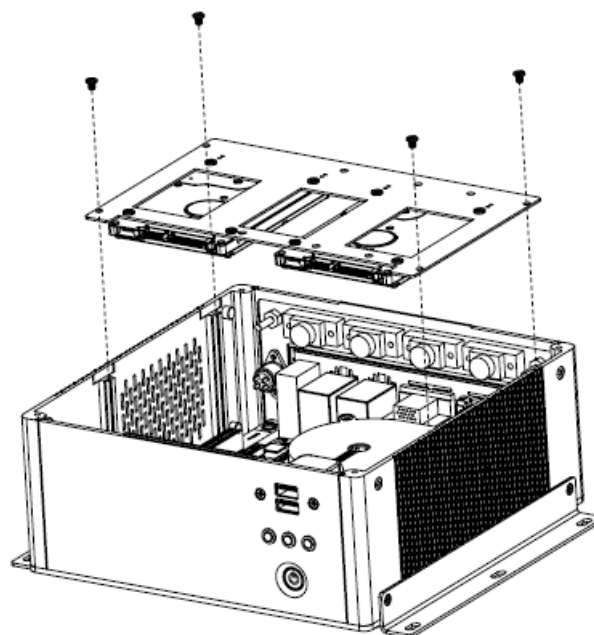
Step2. Remove 4 screws from the system to release the HDD bracket.

Note: the mounting brackets are optional, to be ordered separately.

Avalue part number: E195BMBMT52100R (2pcs. per unit)

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Step3. Secure 2.5" HDD/SSD by means of 8 screws.

Step4. Slide the DDR4 SODIMM and Mini PCIE module into the sockets and press it down until properly seated.