

# EPS-QM87E

Intel® Haswell Core i7/i5/i3 Processor

Fanless Rugged Embedded System with Intel® QM87 Chipset

## Quick Reference Guide

3<sup>rd</sup> Ed – 26 February 2019

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## 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 UNDESIRE 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.

## A Message to the Customer

### *Avalue Customer Services*

Each and every Avalue's product is built to the most exacting specifications to ensure reliable performance in the harsh and demanding conditions typical of industrial environments. Whether your new Avalue device is destined for the laboratory or the factory floor, you can be assured that your product will provide the reliability and ease of operation for which the name Avalue has come to be known.

Your satisfaction is our primary concern. Here is a guide to Avalue's customer services. To ensure you get the full benefit of our services, please follow the instructions below carefully.

### *Technical Support*

We want you to get the maximum performance from your products. So if you run into technical difficulties, we are here to help. For the most frequently asked questions, you can easily find answers in your product documentation. These answers are normally a lot more detailed than the ones we can give over the phone. So please consult the user's manual first.

To receive the latest version of the user's manual; please visit our Web site at:

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# 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 EPS-QM87E Fanless Intel® 4th Generation Core™ i7/ i5/ i3 Rugged Embedded System with Intel® QM87 Chipset
- Other major components include the followings:
  - Screw kit
  - Adapter
  - Power Cord
  - DVI-I to VGA Adapter
  - Wall Mount Kit



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

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## 1.3 System Specifications

Component	
Mother Board	<ul style="list-style-type: none"> <li>EPI-QM87</li> </ul>
CPU	<ul style="list-style-type: none"> <li>Intel® Core™ i7-4700EQ, 4-Core, 2.4GHz, 6M Cache</li> <li>Intel® Core™ i5-4422E, 2-Core, 1.8GHz, 3M Cache</li> <li>Intel® Core™ i3-4110E, 2-Core, 2.6GHz, 3M Cache</li> </ul>
CPU Cooler (Type)	<ul style="list-style-type: none"> <li>AMI uEFI BIOS, 128 Mbit SPI Flash ROM</li> </ul>
Memory	<ul style="list-style-type: none"> <li>One 204-pin SODIMM Up to 8GB DDR3L 1333/1600MHz SDRAM</li> </ul>
Power Supply	<ul style="list-style-type: none"> <li>Power Input: 100 ~ 240Vac/50 ~ 60Hz</li> <li>Power Output: 12Vdc/7A or 19Vdc/6.32A Depend on Model</li> </ul>
Adapter	<ul style="list-style-type: none"> <li>84W Adapter/ 120W Adapter</li> </ul>
System Fan	<ul style="list-style-type: none"> <li>Fanless</li> </ul>
Operating System	<ul style="list-style-type: none"> <li>Windows and Linux</li> </ul>
Expansion Card	<ul style="list-style-type: none"> <li>1 x Mini PCIe Slot (mSATA Supported)</li> </ul>
Storage	
Hard Disk Drive	<ul style="list-style-type: none"> <li>1 x Bay 2.5" SSD/HDD</li> </ul>
External I/O	
Serial Port	<ul style="list-style-type: none"> <li>4 x COM (2 x RS-232, 2 x RS-232/422/485 Factory Optional)</li> </ul>
USB Port	<ul style="list-style-type: none"> <li>6 x USB (2 x USB 2.0, 4 x USB 3.0)</li> </ul>
Video Port	<ul style="list-style-type: none"> <li>2 x HDMI, 1 x DVI-I</li> </ul>
Audio Port	<ul style="list-style-type: none"> <li>Mic-In, Line-Out</li> </ul>
LAN Port	<ul style="list-style-type: none"> <li>2 x RJ-45</li> </ul>
Wireless LAN Antenna	<ul style="list-style-type: none"> <li>2 x Knockouts for Antenna Mounting (Options to Add WiFi &amp; 3G)</li> </ul>
Switch	<ul style="list-style-type: none"> <li>1 x Power Switch</li> </ul>
Indicator Light	<ul style="list-style-type: none"> <li>2 x Power, 2 x HDD (1 pair on front)</li> </ul>
Expansion Slots	<ul style="list-style-type: none"> <li>1 x mPCIe (mSATA Supported)</li> </ul>
Mechanical	
Power Type	<ul style="list-style-type: none"> <li>AT/ATX (ATX is Default Setting)</li> </ul>
Power Connector Type	<ul style="list-style-type: none"> <li>Lockable DC Jack</li> </ul>
Dimension	<ul style="list-style-type: none"> <li>250mm x 220mm x 60mm</li> </ul>
Weight	<ul style="list-style-type: none"> <li>7.7lbs(3.5KG)</li> </ul>
Color	<ul style="list-style-type: none"> <li>Silver and Black</li> </ul>
Fanless	<ul style="list-style-type: none"> <li>Fanless</li> </ul>
Reliability	
EMI Test	<ul style="list-style-type: none"> <li>CE FCC Class A</li> </ul>
Dust and Rain Test	<ul style="list-style-type: none"> <li>IP 30</li> </ul>
Vibration Test	<ul style="list-style-type: none"> <li>With SSD/mSATA: 5Grms, IEC 60068-2-64, Random, 10 ~ 500Hz,</li> </ul>

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	1hr/axis
<b>Mechanical Shock Test</b>	<ul style="list-style-type: none"><li>• With SSD/mSATA: 50G, IEC 60068-2-27, Half Sine, 11ms</li></ul>
<b>Operating Temperature</b>	<ul style="list-style-type: none"><li>• -10 ~ 60°C (w/SSD), Ambient w/Air Flow; i5/i3</li><li>• -10 ~ 50°C (w/SSD), Ambient w/Air Flow; i7</li></ul>
<b>Operating Humidity</b>	<ul style="list-style-type: none"><li>• 0% ~ 90% Relative Humidity, Non-condensing</li></ul>
<b>Storage Temperature</b>	<ul style="list-style-type: none"><li>• -40 ~ 75°C (-40 ~ 167°F)</li></ul>

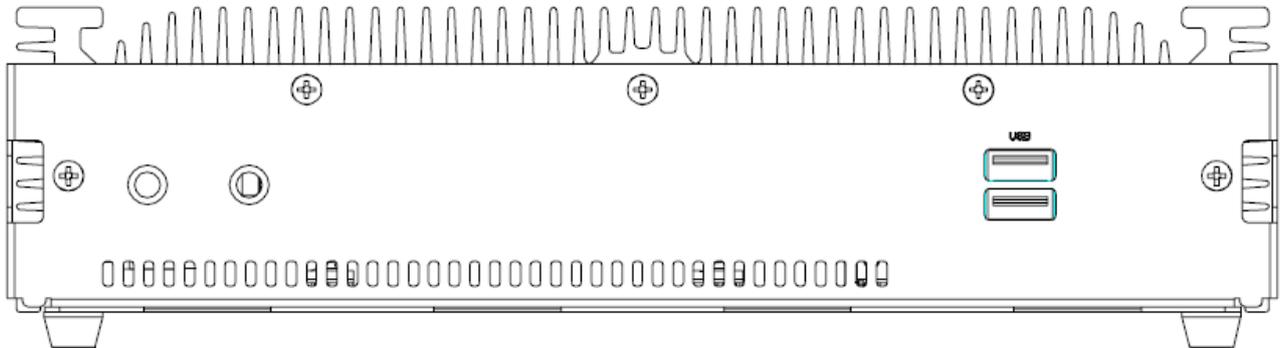


### **Note:**

1. Triple Independent Display, Dual HDMI + CRT (via DVI to VGA Adapter).
2. Specifications are subject to change without notice.

## 1.4 System Overview

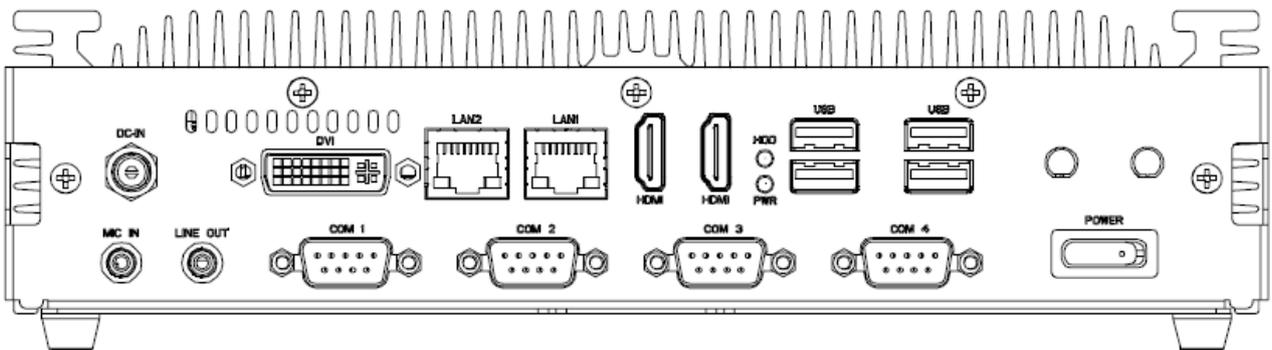
### 1.4.1 Front View



#### Connectors

Label	Function	Note
USB	USB 2.0 connector	

### 1.4.2 Rear View



#### Connectors

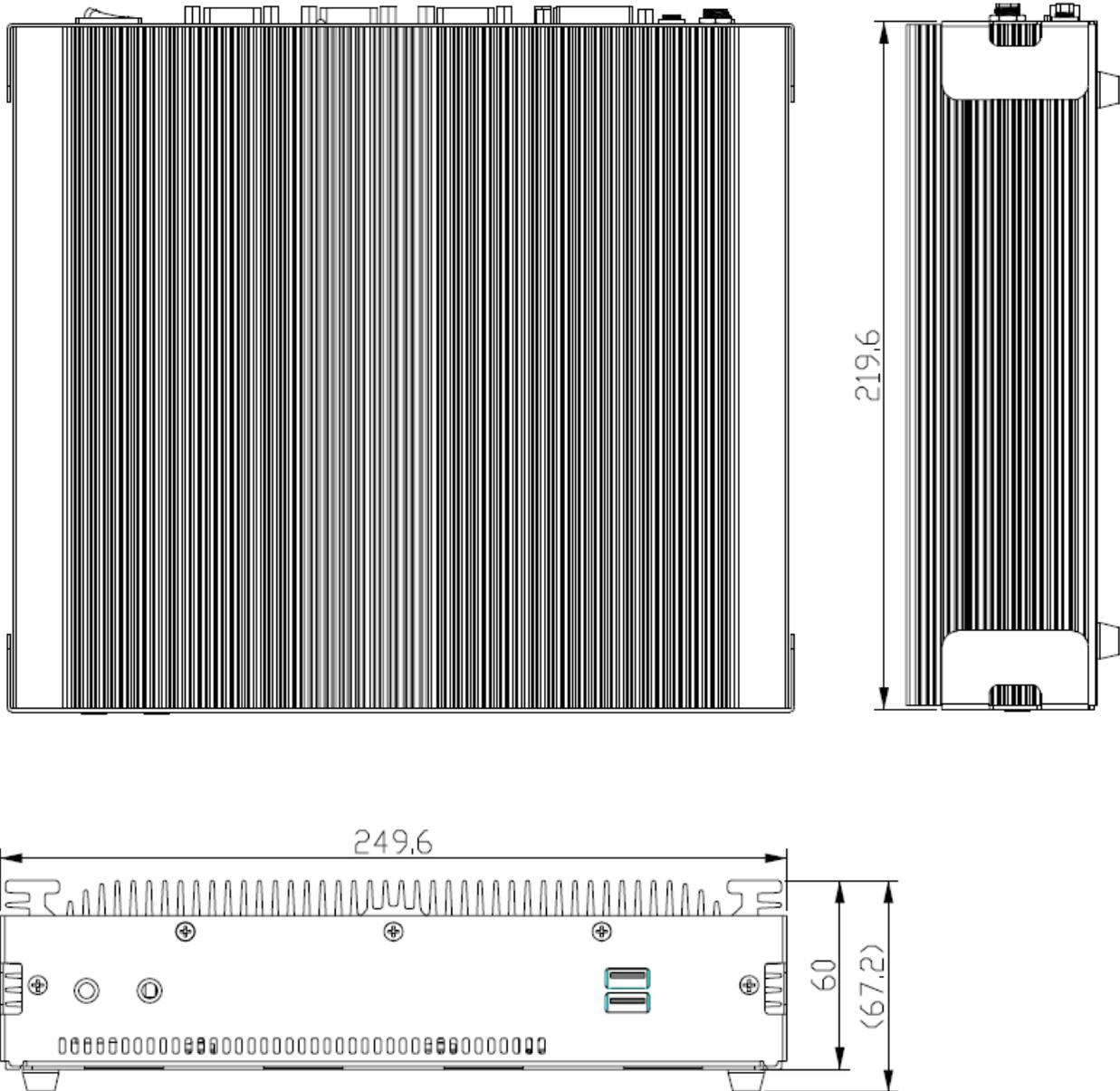
Label	Function	Note
COM1/2/3/4	Serial port 1/2/3/4 connector	D-sub 9-pin, male <b>Note</b> : COM1/2 support RS422/485 by factory optional
DVI	DVI connector	
HDD	HDD indicator	
LAN1/2	RJ-45 Ethernet 1	
PWR	System power indicator	

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<b>USB</b>	USB 3.0 connector x 4
<b>POWER</b>	Power on button
<b>HDMI</b>	HDMI connector x 2
<b>DC-IN</b>	DC Power-in connector
<b>MIC IN</b>	Mic-in audio jack
<b>LINE OUT</b>	Line-out audio jack

## 1.5 System Dimensions

### 1.5.1 Front & Top View



(Unit: mm)

# 2. Hardware Configuration

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For advanced information, please refer to:

- 1- EPI-QM87 User's Manual

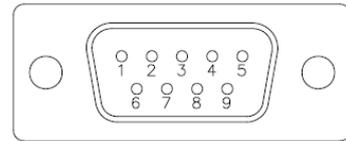
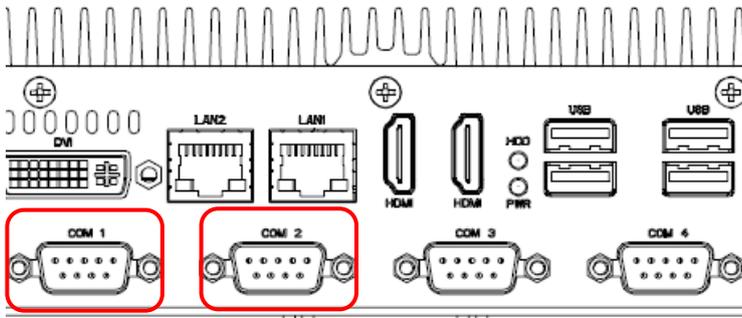


**Note:** If you need more information, please visit our website:

<http://www.avalue.com.tw>

## 2.1 EPS-QM87E connector mapping

### 2.1.1 Serial port 1/2 connector (COM1/2)



#### In RS-232 Mode

Signal	PIN	PIN	Signal
DCD	1	6	DSR
RxDD	2	7	RTS
TxDD	3	8	CTS
DTR	4	9	RI
GND	5		

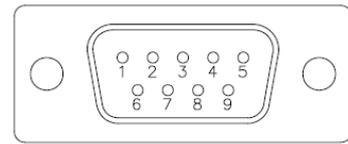
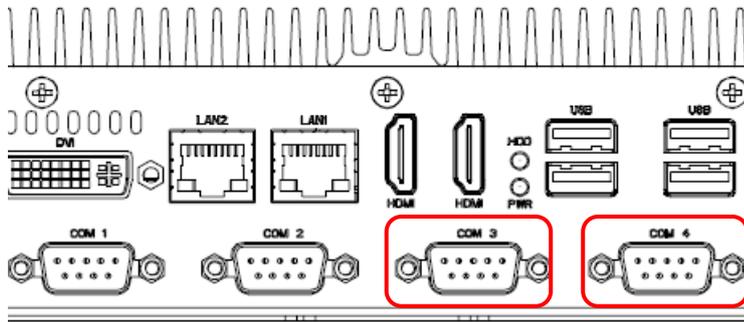
#### In RS-422 Mode

Signal	PIN	PIN	Signal
422TX-	1		
422TX+	2		
422RX+	3		
422RX-	4		
GND	5		

#### In RS-485 Mode

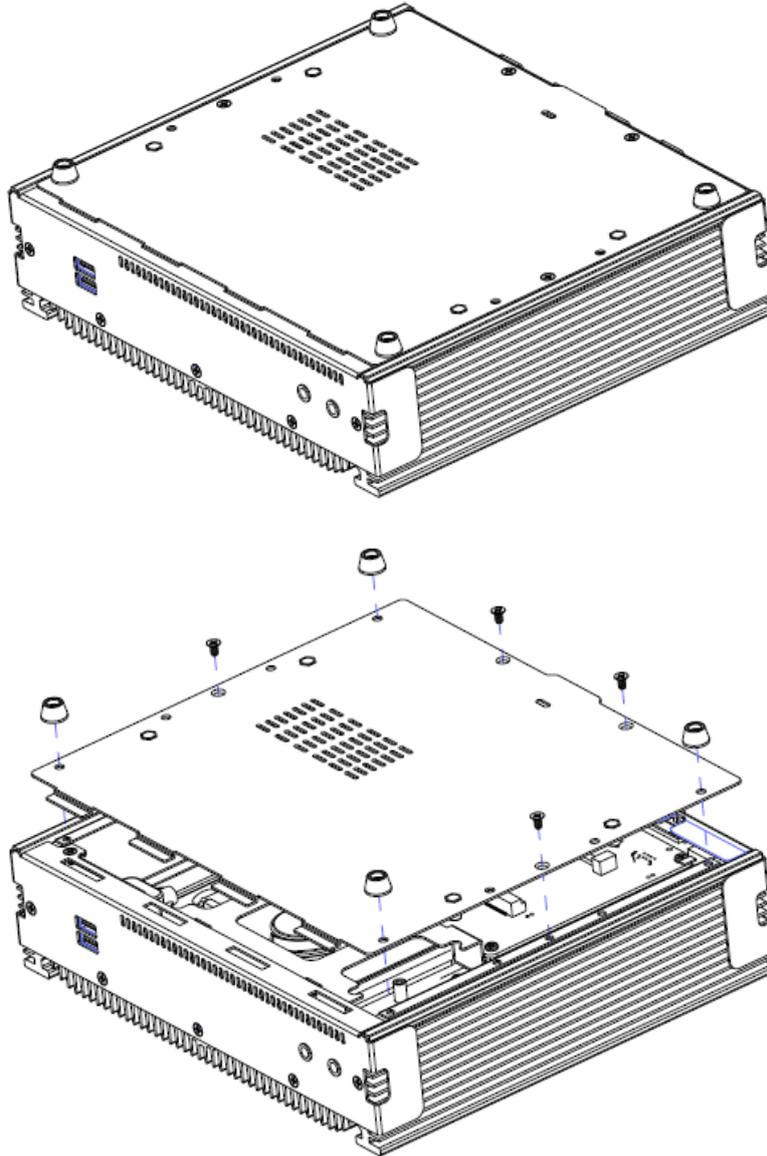
Signal	PIN	PIN	Signal
485TX-	1		
485TX+	2		
GND	5		

2.1.2 Serial port 3/4 connector (COM3/4)

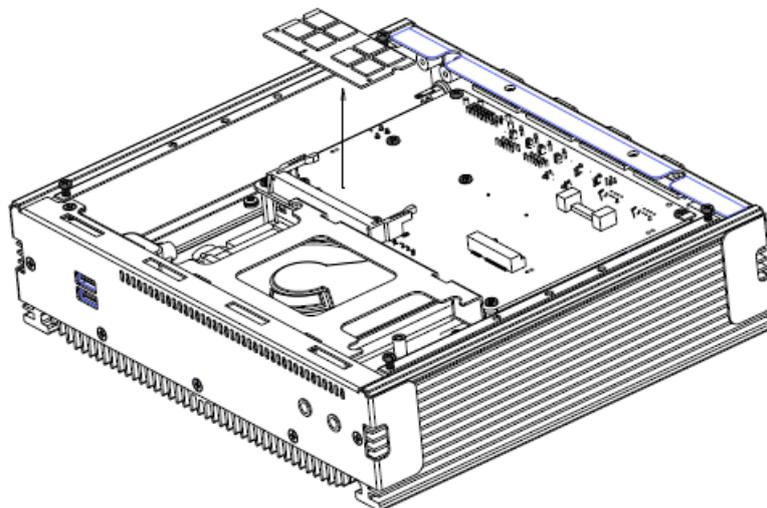


Signal	PIN	PIN	Signal
NDCD#	1	6	NDSR#
NRXD	2	7	NRTS#
NTXD	3	8	NCTS#
NDTR#	4	9	NRI#
GND	5		

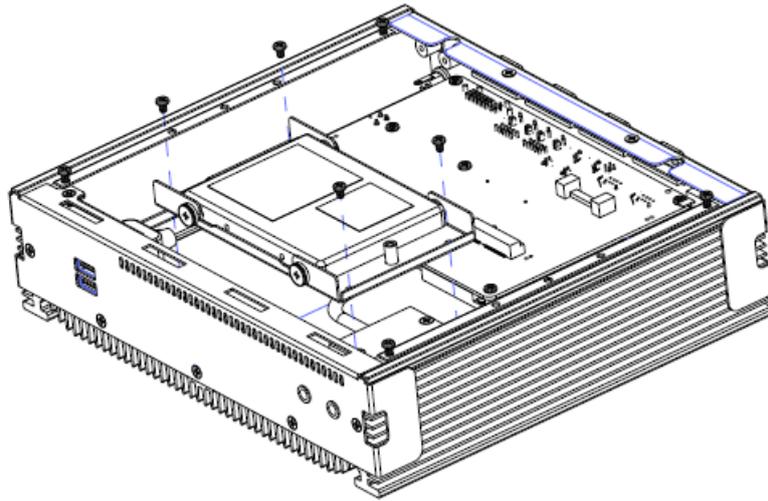
## 2.2 Installing Hard Disk & Memory (EPS-QM87E)



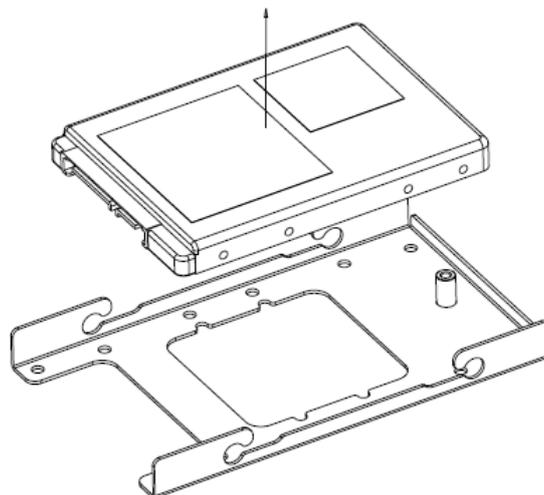
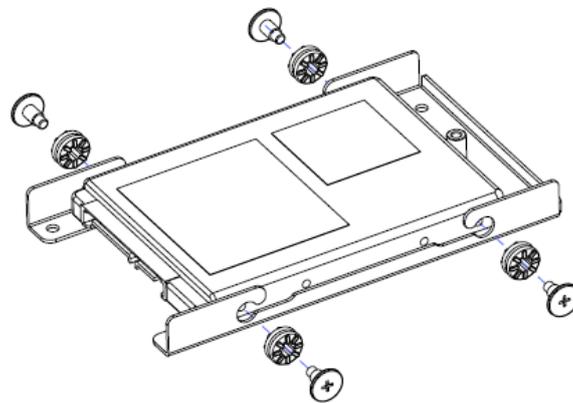
**Step1.** Remove 8 screws from the rear side before removing back cover.



**Step2.** Remove the memory module.



**Step3.** Please loosen 4 screws to remove the HDD bracket from board & system assembly.



**Step 4.1** Remove 4 screws to release the HDD bracket.

**Step 4.2** Remove the HDD.

**Step 4.3** Re-assemble your system back through previous steps to complete the installation.

