EPS-BDWE

**Fanless Intel® 5th Generation CoreTM i7-5850EQ
Rugged Embedded System with Intel® QM87 Chipset**

Quick Reference Guide

1st Ed – 20 August 2015

Part No. E2017DAE0A0R

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 INSTATLLED 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:

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

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 EPS-BDWE Fanless Intel® 5th Generation CoreTM i7-5850EQ
- Rugged Embedded System with Intel® QM87 Chipset
- 1 x DVD-ROM contains the followings:
  — QRG in PDF file
  — Ethernet driver and utilities
  — VGA drivers and utilities
  — Audio drivers and utilities
  — Chipset drivers and utilities
- Other major components include the followings:
  — Screw kit
  — Adapter
  — Power Cord
  — DVI-I to VGA Adapter

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

1.3 System Specifications

System		
Mother Board	•	EPI-BDW
CPU	•	Intel® Core™ i7-5850EQ, 4-Core, 2.7GHz, 6M Cache
BIOS	• •	AMI uEFI BIOS, 128 Mbit SPI Flash ROM iAMT9.0 supported
System Chipset	•	Intel® QM87 Express Chipset
System Memory	•	One 204-pin SODIMM Socket Up to 8 GB DDR3L 1333/1600MHz SDRAM
Watchdog Timer	•	H/W Reset, 1sec. ~ 65535sec
H/W Status Monitor	•	Monitoring System Temperature and Voltage with Auto Throttling Control
Battery	•	Wide Temperature RTC Battery
Expansion	•	1 x Mini PCIe Slot (mSATA Supported)
Storage		
Combination	• •	1 x mSATA 1 x 2.5" Drive Bay
External I/O		
Serial Port	•	4 x COM (2 x RS-232, 2 x RS-232/422/485 Factory optional)
USB Port	•	6 x USB (2 x USB 2.0, 4 x USB 3.0)
Others	•	2 x Knockouts for Antenna Mounting
Display		
Chipset	• •	Intel® QM87 Chipset Integrated Supports triple display(2xHDMI+1xCRT)
Resolution	• • •	DVI-I: Max. resolution 1920x1200@ 60Hz HDMI: Max. resolution 4096x2304@ 24Hz HDMI: Max. resolution 4096x2304@ 24Hz
Ethernet		
Chipset	• •	1 x Intel I210AT GbE controller 1 x Intel I217LMGbE PHY
Ethernet Interface	•	10/100/1000 Base-Tx GbE compatible
Lan Port	•	2 x RJ45
Audio		
Chipset	•	Realtek ALC892 HD codec
Audio Interface	•	Mic-In and Line-Out
Mechanical		
Power Connector	•	Lockable DC Jack

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| Power Requirement	• DC +12V ~ +19V
Power Type	• AT/ATX (ATX is default)
ACPI	• Single power ATX Support S0,S3, S4, S5 • ACPI 5.0 Compliant
Dimension	• 250 x 220 x 60mm
Weight	• 7.7lbs(3.5KG)
Color	• Black + Silver
Mounting Kit	• Wall mount kit is the standard accessory
Reliability	
Vibration Test	• With SSD/mSATA : 5Grms, IEC 60068-2-64, Random, 10 ~ 500Hz, 1hr/axis • With HDD : 0.5Grms, IEC 60068-2-64, Random, 10 ~ 500Hz, 1hr/axis
Mechanical Shock Test	• With SSD/mSATA : 50G, IEC 60068-2-27, Half Sine, 11ms • With HDD : 10G, IEC 60068-2-27, Half Sine, 11ms
Drop Test	• Avalue Standard Test Criteria
Operating Temperature	• -10°C ~ 50°C (w/SSD, mSATA) ambient w/ air flow
Operating Humidity	• 5% ~ 90% relative humidity, non-condensing
Storage Temperature	• -40°C ~ 75°C
Certification	• CE, FCC Class A
OS Supported	• Win 8, Win 7, Linux

Note: Specifications are subject to change without notice.

1.4 System Overview

### 1.4.1   Front View
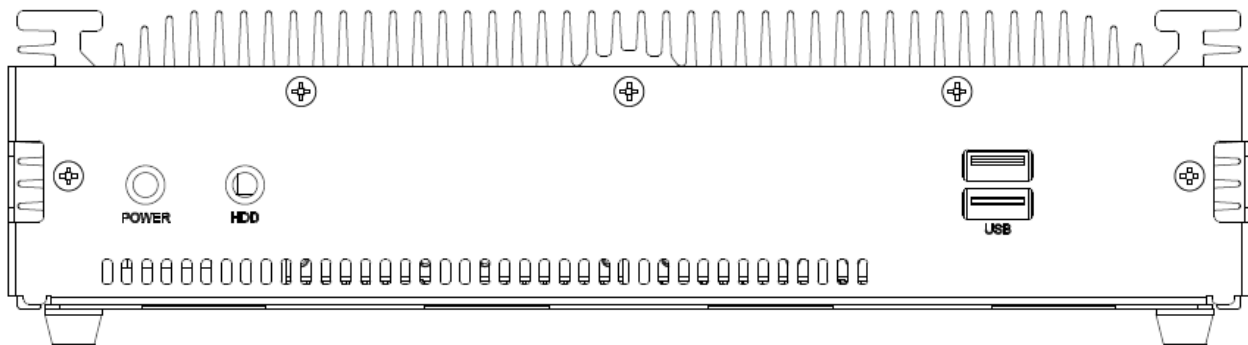
1.4.2   Rear View
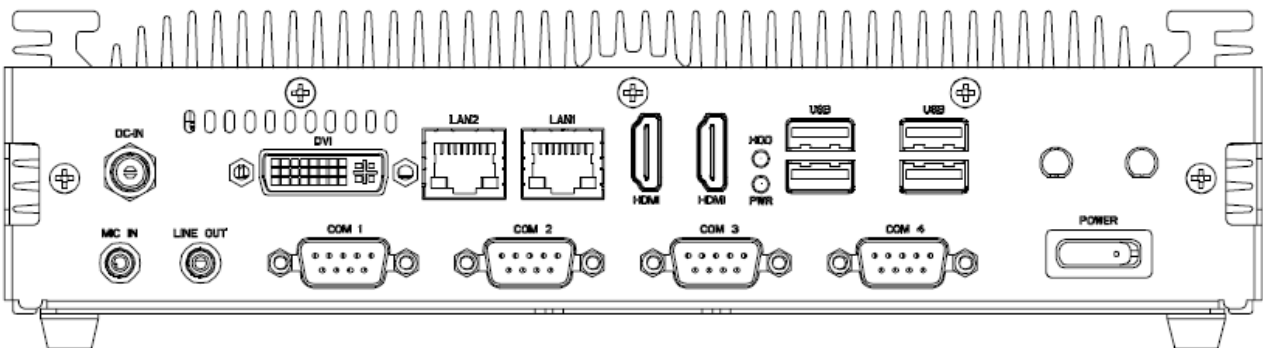
Connectors

Label	Function	Note
COM1/2/3/4	Serial port 1/2/3/4 connector	D-sub 9-pin, male **Note**：COM1/2 support RS422/485 by factory optional
DVI	DVI connector	
HDD	HDD indicator	
LAN1/2	RJ-45 Ethernet x 2	
PWR	System power indicator	
USB	USB 2.0 connector x 2 USB 3.0 connector x 4	
POWER	Power on button	
HDMI	HDMI connector x 2	

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DC-IN	DC Power-in connector
MIC IN	Mic-in audio jack
LINE OUT	Line-out audio jack

DC-IN   DC Power-in connector

MIC IN   Mic-in audio jack

1.5 System Dimensions

1.5.1   Front & Top View
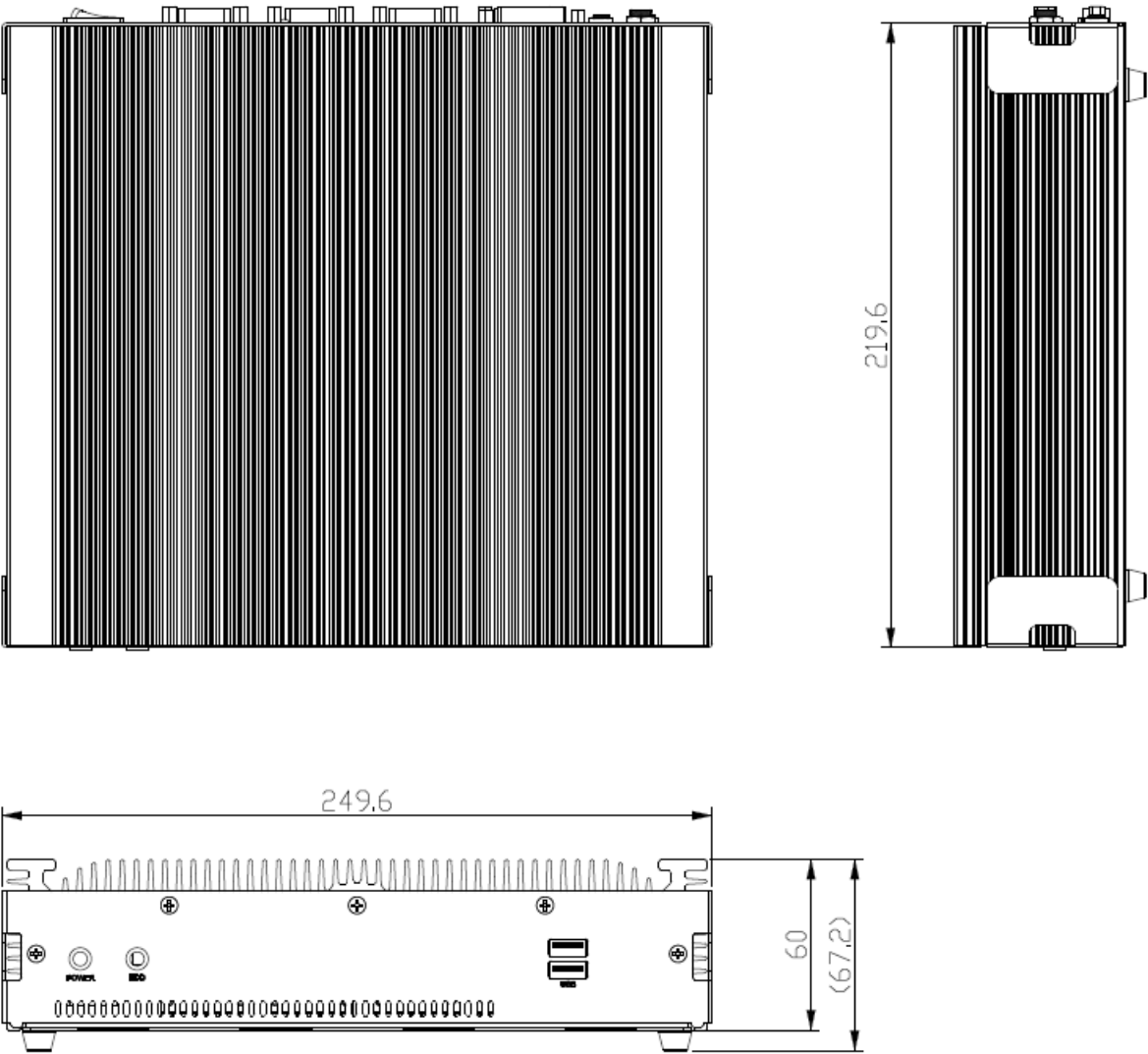
(Unit: mm)

2. Hardware Configuration

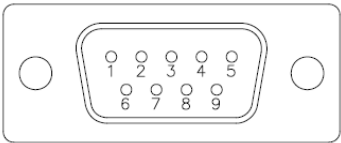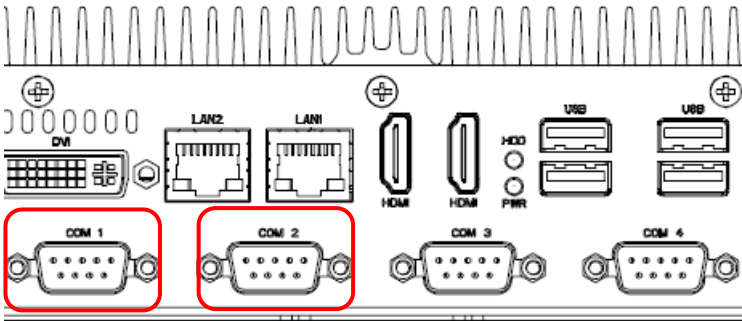For advanced information, please refer to:

1- EPI-BDW User's Manual

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

http://www.avalue.com.tw

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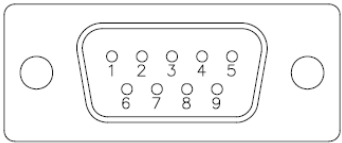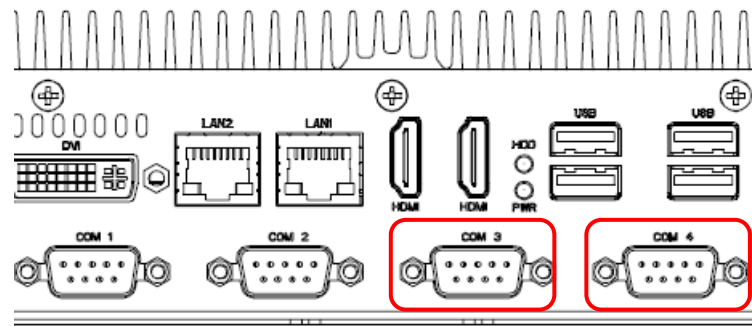
Signal	PIN	PIN	Signal
NDCD#	1	6	NDSR#
NRXD	2	7	NRTS#
NTXD	3	8	NCTS#
NDTR#	4	9	NRI#
GND	5		

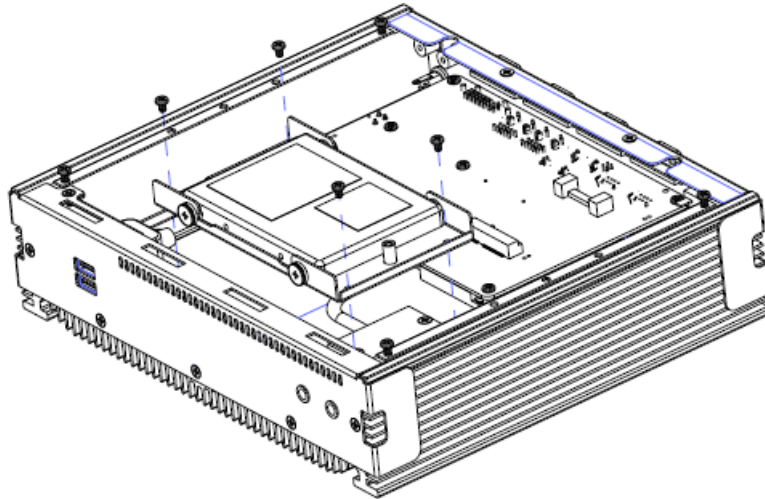## 2.2 Installing Hard Disk & Memory (EPS-BDWE)
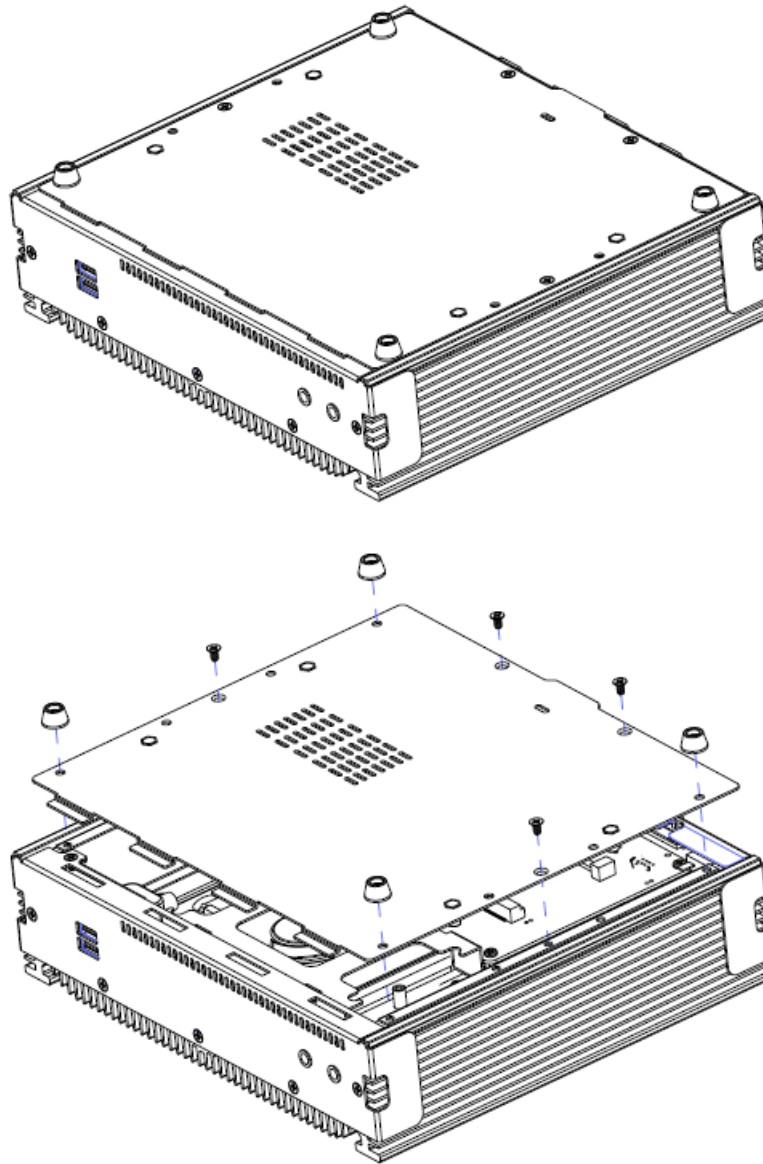
Step1. Remove 8 screws from the rear side before removing back cover.
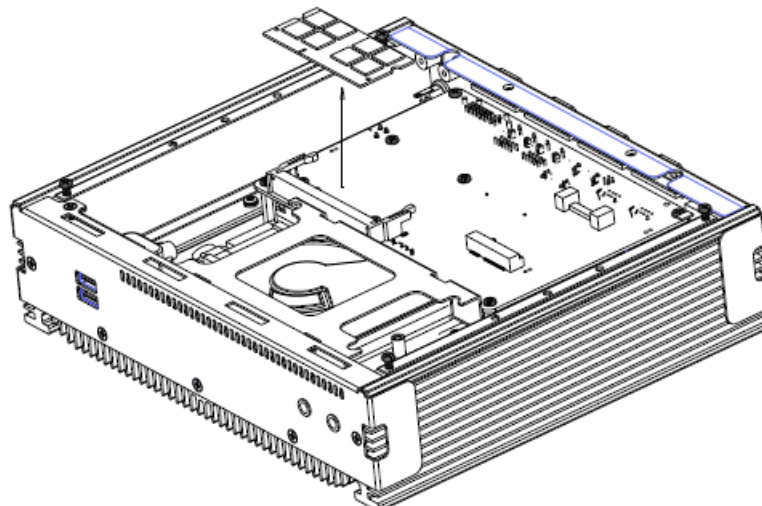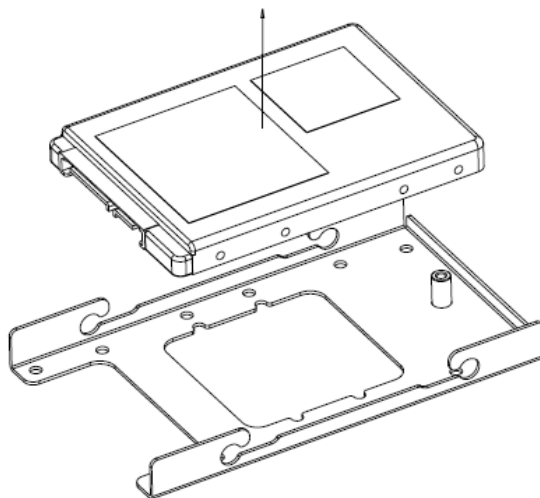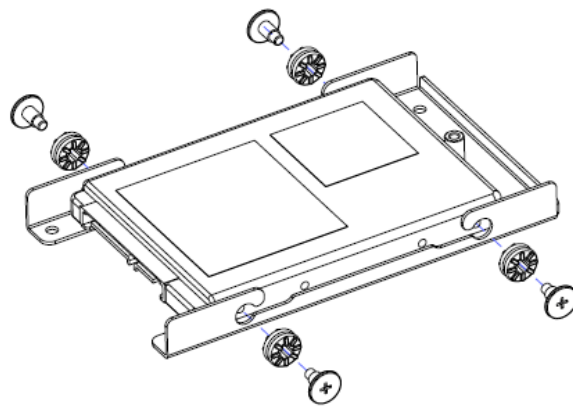
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Step2. Remove the memory module.

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.