

# EPS-QM57

Fanless Intel® Core™ i7/ Celeron® P4505  
Rugged Embedded System with QM57 Chipset

## Quick Reference Guide

2<sup>nd</sup> Ed –5 March 2012

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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

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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

<b>1. Getting Started</b>	<b>4</b>
1.1 Safety Precautions	4
1.2 Packing List	4
1.3 System Specifications	5
1.4 System Overview	7
1.4.1 Front & Top View	7
1.4.2 Rear View	8
<b>2. Hardware Configuration</b>	<b>9</b>
2.1 EPS-QM57 connector list	10
2.2 EPS-QM57 connector mapping	11
2.2.1 DC power-in connector (DC-IN)	11
2.2.2 External LVDS connector (LVDS)	11
2.2.3 External Serial Port 1/2/3/4 connector (COM1/2/3/4)	12
2.2.4 External Serial Port 5/6/7/8 connector (COM5/6/7/8)	12
2.2.5 External LPT connector (LPT)	13
2.2.6 External Digital I/O connector (GPIO 4IN/ 4 OUT)	13
2.2.7 External Digital I/O connector (GPIO 8IN/ 8 OUT)	14
2.2.8 VGA connector (VGA)	14
2.3 EAP-CE01 Jumper & Connector list	15
2.4 EAP-CE01 Jumpers & Connectors settings	16
2.4.1 Clear CMOS (CN1)	16
2.4.2 Serial port 2 setting in RS232/422/485 (CN7)	16
2.4.3 Serial port 2 setting in RS232/422/485 (CN8)	17
2.4.4 Serial port 1 Pin9 setting in RING/12V/5V (CN9)	17
2.4.5 Power In (8V ~30V) connector (JVIN1)	18
2.4.6 Power button connector (J3)	18
2.4.7 Power button Extension connector (J4)	19
2.4.8 SATA Power connector 1/2 (SATA_PWR1/2)	19
2.4.9 Digital I/O Connector (CN2)	20
2.4.10 Serial port 5/6/7/8 connector (CN4)	20
2.4.11 LPT connector (CN6)	21
2.4.12 Serial port 4 connector (CN10)	21
2.4.13 CPU Fan Connector (C_FAN1)	22
2.4.14 System Fan Connector (S_FAN1)	22
2.4.15 LCD inverter connector (JBKL1)	23
2.4.15.1 Signal Description – LCD Inverter Connector (JBKL1)	23
2.4.16 LVDS Connector (JLVDS1)	24
2.5 Daughter Boards (AUX-036 – AUX-037)	25
2.6 Installing Mounting Brackets (EPS-QM57)	26
2.7 Installing Hard Disk & Memory (EPS-QM57)	27
2.8 Installing PCI devices (EPS-QM7)	28

# 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-QM57 Fanless Intel® Core™ i7/ Celeron® P4505 Rugged Embedded System.
- 1 x Quick Reference Guide
- 1 x DVD-ROM contains the followings:
  - User's Manual (this manual in PDF file)
  - Ethernet driver and utilities
  - VGA drivers and utilities
  - Audio drivers and utilities
- Other major components include the followings:
  - 1 x COM Port splitter cable (COM5/6/7/8)



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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

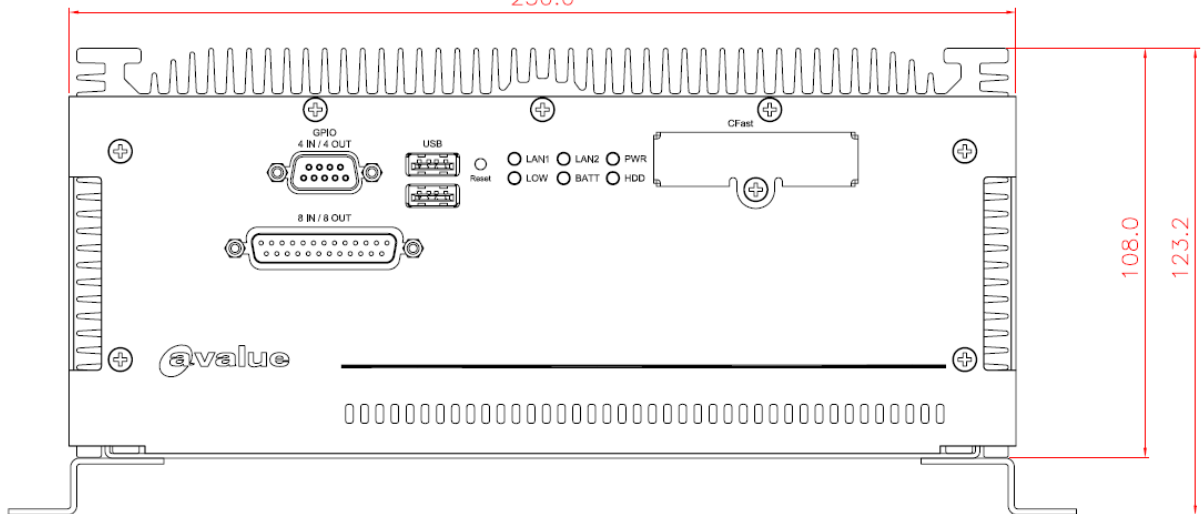
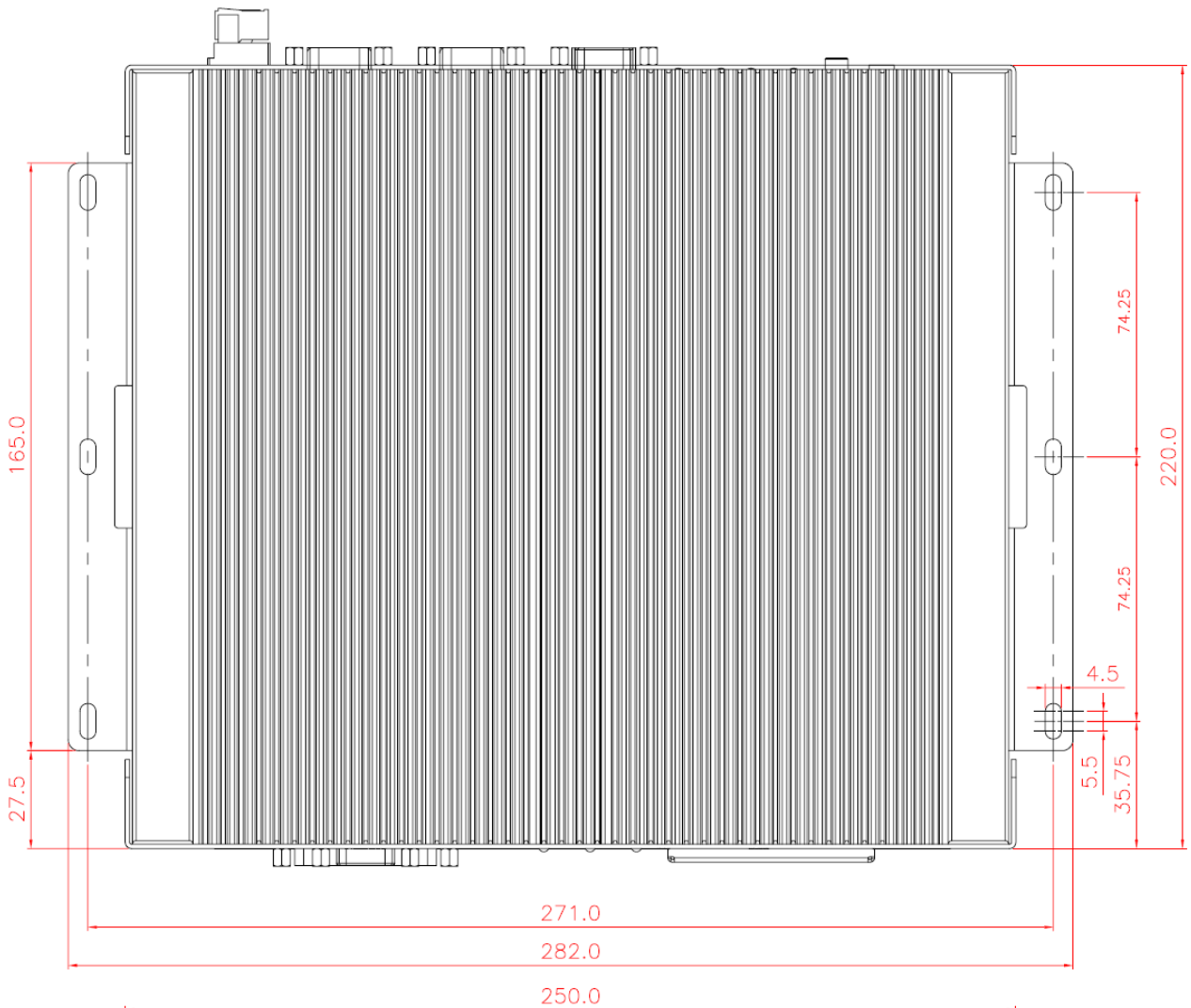
<b>System</b>	
<b>CPU</b>	Intel® Core™ i7-620LE 2.0GHz with 4MB Cache CPU Intel® Celeron® P4505 1.86GHz with 2MB Cache CPU
<b>BIOS</b>	AMI 8MBit Flash BIOS
<b>System Chipset</b>	Intel® QM57 Chipset
<b>I/O Chip</b>	Winbond W83627DHG-P
<b>System Memory</b>	Two 204-pin SODIMM Sockets Up to 8GB DDR3 800/1066 SDRAM
<b>SSD</b>	1 x CFAST
<b>Watchdog Timer</b>	Reset: 1sec. ~ 255min. and 1sec. or 1min./step
<b>Display</b>	Intel® QM57 with Integrated Graphics Engine
<b>Ethernet</b>	Dual Intel® Gigabit Ethernet
<b>System Indicator</b>	6 LED Indicators Show Power, HDD, LAN
<b>Drive Bay</b>	Mounting Kit for One 2.5" HDD
<b>Expansion</b>	2 PCI Slots, 2 Mini PCIe Sockets
<b>I/O</b>	
<b>COM</b>	8 x RS-232
<b>LAN</b>	2 x RJ-45
<b>Display Output</b>	1 x VGA, 1 x Dual-channel 18/24-bit LVDS
<b>Audio</b>	Mic-in, Line-out
<b>USB</b>	6 x USB 2.0 (Rear 4; Front 2)
<b>Digital I/O</b>	1 x DB-9 (8-bit), 1 x DB-25 (16-bit)
<b>Antenna</b>	2 Knockouts for Antenna Mounting (Options to add WiFi & 3G)
<b>Extending Switch</b>	1 x 2-pin Phoenix Type Connector
<b>Display</b>	
<b>Chipset</b>	Intel® QM57 with Integrated Graphics Engine
<b>Display Memory</b>	
<b>Resolution</b>	CRT Mode: 2048 x 1536 @ 60Hz LCD/ Simultaneous Mode: 1600 x 1200 @ 75Hz
<b>Multiple Display</b>	CRT + LVDS
<b>LCD Interface</b>	Dual channel 18/24-bit LVDS
<b>Audio</b>	
<b>Chipset</b>	Realtek HD Audio supports 5.1-CH Audio
<b>Audio Interface</b>	line-Out, Mic-In

## EPS-QM57

<b>Ethernet</b>	
<b>LAN Chip</b>	1 x Intel® 82577LM (PHY) /1 x Intel® 82574L Gigabit Ethernet supports wake on LAN
<b>Ethernet Interface</b>	10/100/1000 Base-Tx Gigabit Ethernet Compatible
<b>Mechanical &amp; Environmental</b>	
<b>Power Requirement</b>	+9~32V
<b>ACPI</b>	Single power ATX Support S0~S5 ACPI 2.0B
<b>Power Type</b>	ATX
<b>Operating Temp.</b>	-10 ~ 55°C (-14 ~ 131°F), 1 SODIMM Slot Occupied -10 ~ 50°C (-14 ~ 122°F), 2 SODIMM Slots Occupied
<b>Storage Temp.</b>	-40 ~ 75°C (-40 ~ 167°F)
<b>Operating Humidity</b>	5 ~ 90% @ 40°C (104°F), Relative Humidity, Non-condensing
<b>Vibration Protection</b>	With CFast: 5Grms, IEC 60068-2-64, Random, 5 ~500Hz, 1hr/axis With HDD: 1Grms, IEC 60068-2-64, Random, 5 ~ 500Hz, 1hr/axis
<b>Shock Protection</b>	With CFast: 50G, IEC 60068-2-27, Half Sine, 11ms With HDD: 20G, IEC 60068-2-27, Half Sine, 11ms
<b>Dimension (WxDxH)</b>	250mm x 220mm x 108mm
<b>Weight</b>	10lbs(5Kgs)

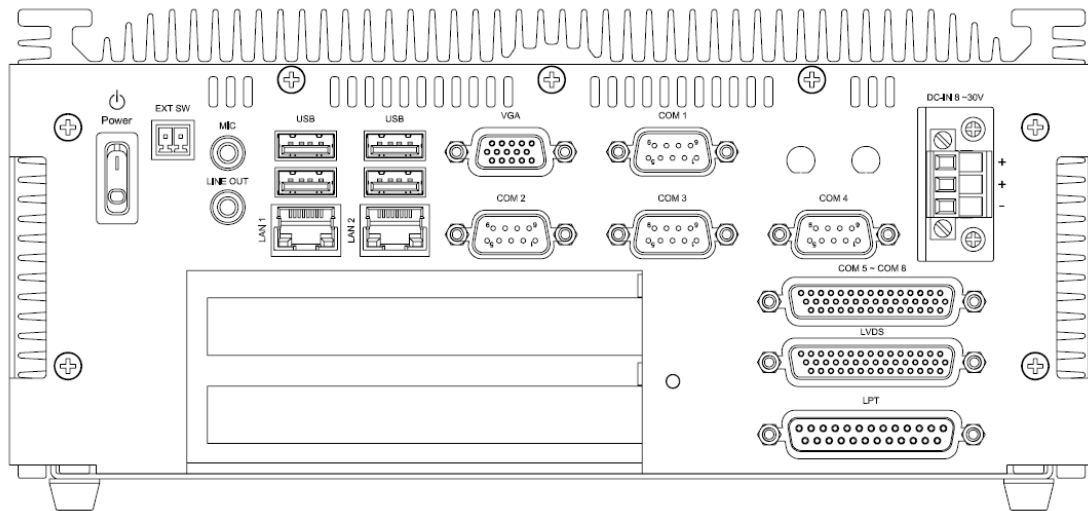
## 1.4 System Overview

### 1.4.1 Front & Top View



**Please note:** LOW & BATT signals are reserved functions.

1.4.2 Rear View



**Connectors**

Label	Function	Note
COM1~8	Serial port connector1~8	
CFAST	CFAST card connector	
DC-IN	DC power-in connector (Phoenix Type)	
EXT SW	Power button Extension connector	1 x 2-pin Phoenix Type
GPIO	Digital I/O	1 x DB-9 (8-bit)
		1 x DB-25 (16-bit)
HDD	HDD Indicator	
PWR	Power Indicator	
LAN1	RJ-45 Ethernet 1	
LAN2	RJ-45 Ethernet 2	
LINE OUT	Line-out audio jack	
LPT	LPT connector	
LVDS	External LVDS connector	1 x DB-44
MIC IN	Microphone-in audio jack	
Power	System power switch	
USB1~6	USB connector 1~6	
VGA	VGA connector	



# 2. Hardware Configuration

## Jumper and Connector Setting, Driver and BIOS Installing

For advanced information, please refer to:

- 1- ESM-QM57 Quick Installation Guide or User's Manual
- 2- EAP-CE01 and AUX-036/ AUX -037 (Optional) included in this manual.



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

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

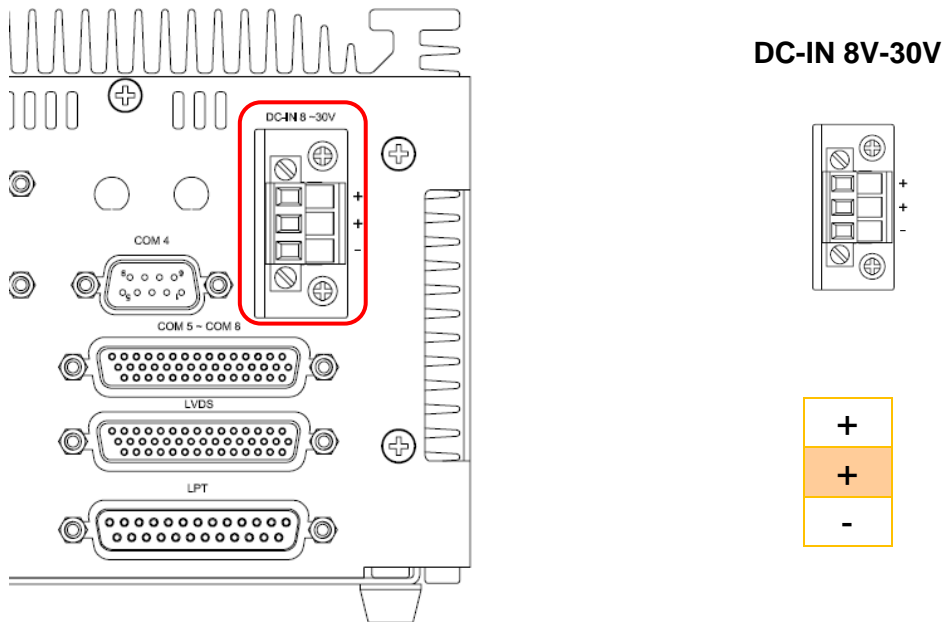
## 2.1 EPS-QM57 connector list

### Connectors

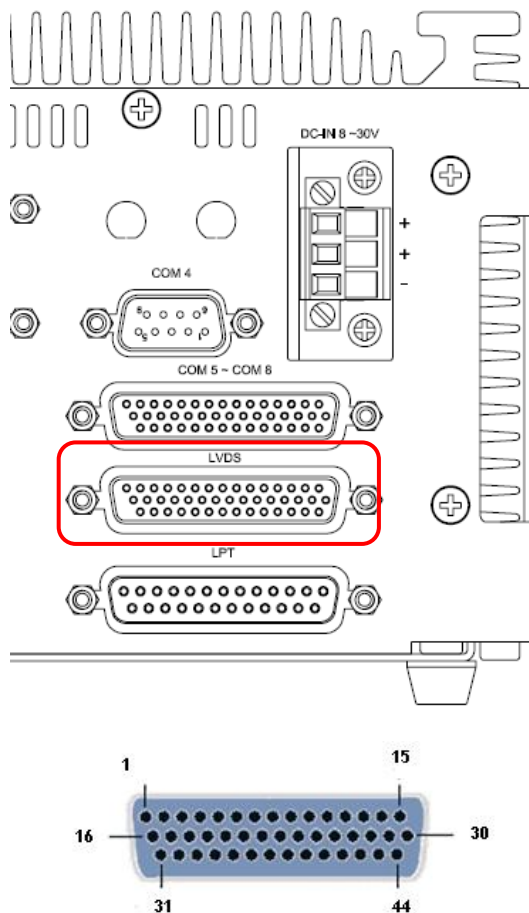
Label	Function	Note
COM1~8	Serial port connector1~8	
CFAST	CFAST card connector	
DC-IN	DC power-in connector (Phoenix Type)	
EXT SW	Power button Extension connector	1 x 2-pin Phoenix Type
GPIO	External Digital I/O connector	1 x DB-9 (8-bit)
		1 x DB-25 (16-bit)
HDD	HDD Indicator	
PWR	Power Indicator	
LAN1	RJ-45 Ethernet 1	
LAN2	RJ-45 Ethernet 2	
LINE OUT	Line-out audio jack	
LPT	External LPT connector	
LVDS	External LVDS connector	1 x DB-44
MIC IN	Microphone-in audio jack	
Power	System power switch	
USB1~6	USB connector 1~6	
VGA	VGA connector	

## 2.2 EPS-QM57 connector mapping

### 2.2.1 DC power-in connector (DC-IN)

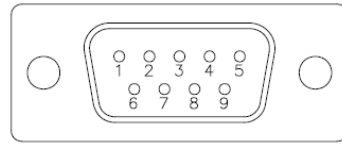
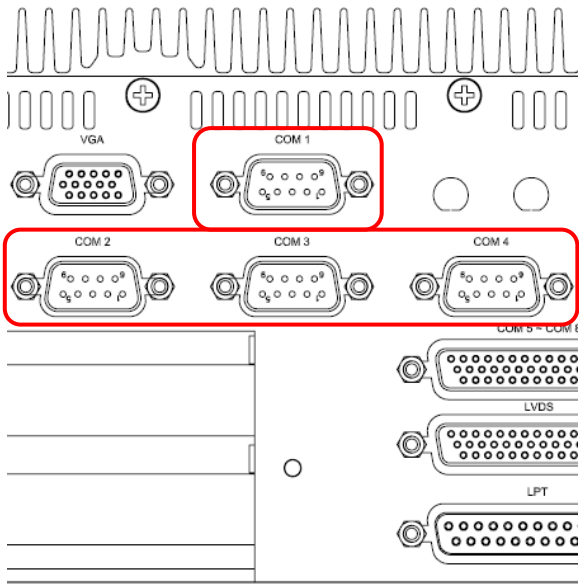


### 2.2.2 External LVDS connector (LVDS)



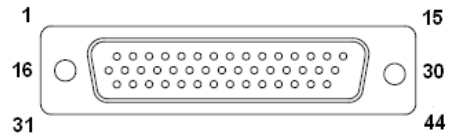
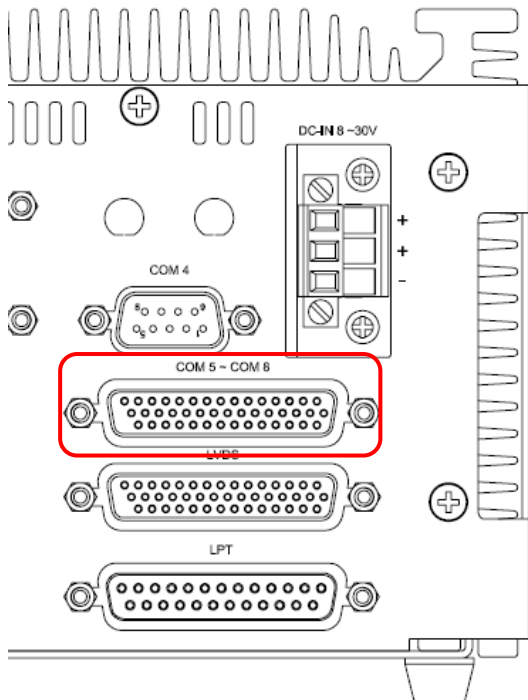
Signal	PIN	PIN	Signal
3.3V	1	23	E_Txout0#
3.3V	2	24	GND
GND	3	25	E_Txout1
I2C_DAT1	4	26	E_Txout1#
I2C_CLK1	5	27	GND
GND	6	28	E_Txout2
Txout0	7	29	E_Txout2#
Txout0#	8	30	GND
GND	9	31	E_Txout3
Txout1	10	32	E_Txout3#
Txout1#	11	33	GND
GND	12	34	Txclk
NC	13	35	Txclk#
5V	14	36	GND
5V	15	37	E_Txclk
Txout2	16	38	E_Txclk#
Txout2#	17	39	GND
GND	18	40	5V
Txout3	19	41	Bright
Txout3#	20	42	BLK_ON
GND	21	43	GND
E_Txout0	22	44	12V

2.2.3 External Serial Port 1/2/3/4 connector (COM1/2/3/4)

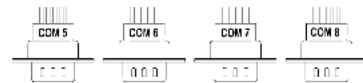


Signal	PIN	PIN	Signal
DCD	1	6	DSR
RxDD	2	7	RTS
TxDD	3	8	CTS
DTR	4	9	RI
GND	5		

2.2.4 External Serial Port 5/6/7/8 connector (COM5/6/7/8)

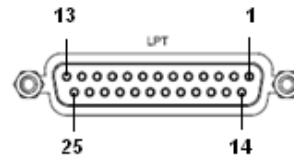
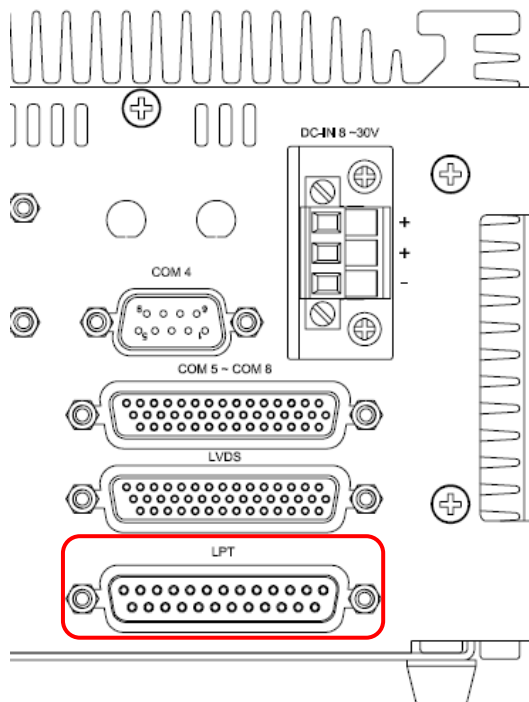


To use COM5/6/7/8, attach the 1:4 serial port splitter provided with this product.



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

### 2.2.5 External LPT connector (LPT)

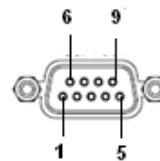
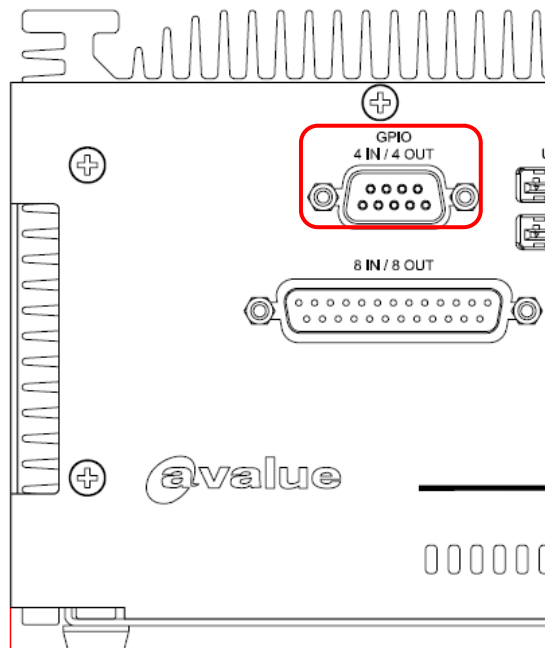


Signal	PIN	PIN	Signal
STB-	1	14	AFD#
PTD0	2	15	ERR#
PTD1	3	16	PAR_INIT#
PTD2	4	17	SLIN#
PTD3	5	18	GND
PTD4	6	19	GND
PTD5	7	20	GND
PTD6	8	21	GND
PTD7	9	22	GND
ACK#	10	23	GND
BUSY	11	24	GND
PE	12	25	GND
SLCT	13		



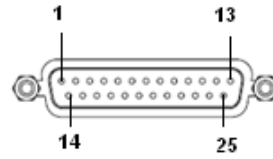
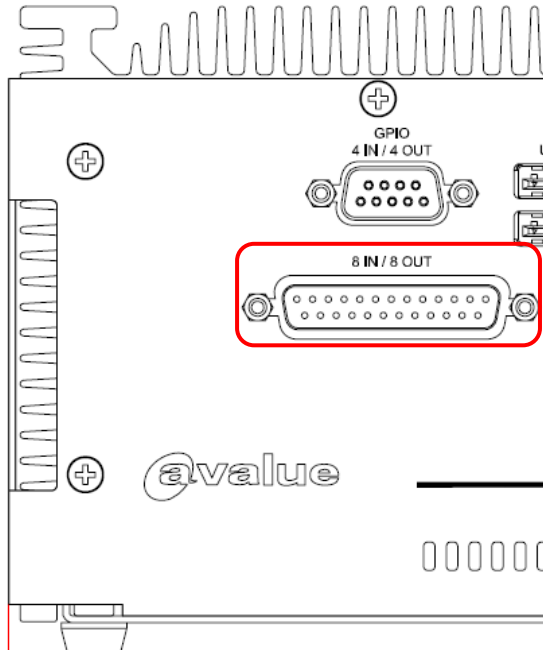
Please refer to CN6 (section 2.4.11) in EAP-CE01 for LPT onboard pin assignments.

### 2.2.6 External Digital I/O connector (GPIO 4IN/ 4 OUT)



Signal	PIN	PIN	Signal
GPO0	1	6	GPI0
GPO1	2	7	GPI1
GPO2	3	8	GPI2
GPO3	4	9	GPI3
GND	5		

2.2.7 External Digital I/O connector (GPIO 8IN/ 8 OUT)



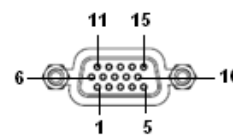
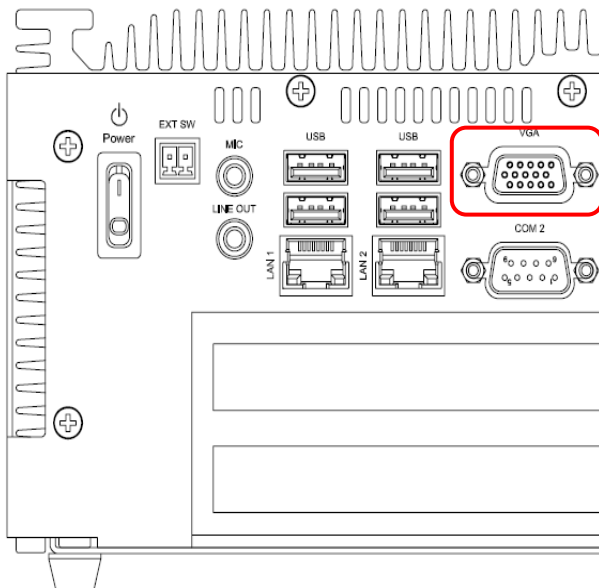
Signal	PIN	PIN	Signal
DIO0	1	14	DIO10
DIO1	2	15	DIO11
DIO2	3	16	DIO12
DIO3	4	17	DIO13
DIO4	5	18	DIO14
DIO5	6	19	DIO15
DIO6	7	20	DIO16
DIO7	8	21	DIO17
SMB_CLK	10	23	SMB_DATA
GND	13	25	+V5S



Pin 9.11.12.22 and 24 are empty.

Please refer to CN2 (section 2.4.9) in EAP-CE01 for GPIO 8PIN/ 8 OUT onboard pin assignments.

2.2.8 VGA connector (VGA)



PIN	Signal	PIN	Signal	PIN	Signal
1	R	6	GND	11	NC
2	G	7	GND	12	DATA
3	B	8	GND	13	HSYNC
4	NC	9	+5V	14	VSYNC
5	GND	10	EN#	15	CLK

## 2.3 EAP-CE01 Jumper & Connector list

### Jumpers

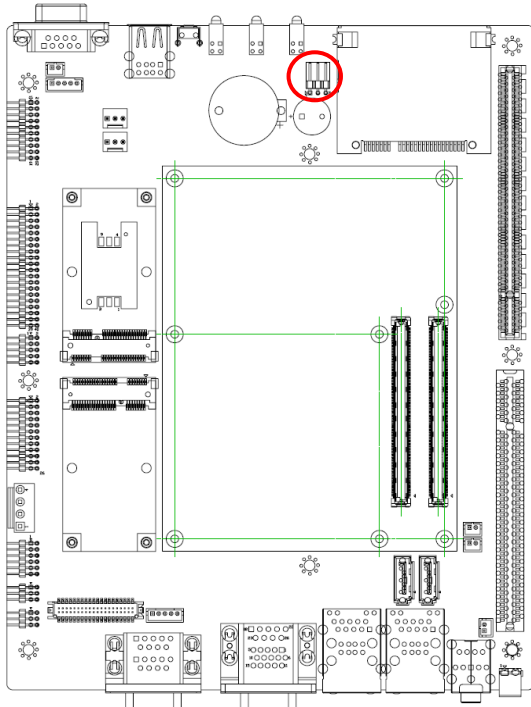
Label	Function	Note
CN1	Battery selector	3 x 1 header, pitch 2.54mm
CN7	Serial port 2 setting in RS232/422/485	6 x 2 header, pitch 2.00mm
CN8	Serial port 2 setting in RS232/422/485	3 x 2 header, pitch 2.00mm
CN9	Serial port 1 Pin9 setting in RING/12V/5V	3 x 2 header, pitch 2.00mm

### Connectors

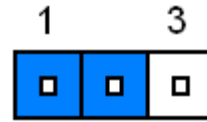
Label	Function	Note
AUDIO1	Audio connector	Phone Jack
CFAST1	CFAST Slot	
COM1/3	Serial port 1/3 connector	D-sub 9-pin, male
CN2	Digital I/O connector (8in/8 out)	10 x 2 header, pitch 2.00mm
CN4	Serial port 5/6/7/8 connector	20 x 2 header, pitch 2.00mm
CN6	LPT connector	13 x 2 header, pitch 2.00mm
CN10	Serial port 4 connector	5 x 2 header, pitch 2.00mm
CN5A/B	COM-Express connector A/B	
C_FAN1	CPU Fan connector1	3 x 1 wafer
DIO1	Digital I/O connector (4 in / 4 out)	D-sub 9-pin, female
JBKL1	LCD inverter connector	5 x 1 wafer, pitch 2.0mm
JLVDS1	LVDS connector	Din40-pitch1.25mm
JVIN1	Power In connector (8V ~30V)	4 x 1 Wafer, pitch 3.96mm
J3	Power button connector	2 x 1 box header, pitch 2.00mm
J4	Power button Extension connector	2 x 1 pin header, pitch 3.5mm
LAN1/2	LAN connector 1/2	
LED1	Up: reserved (RED) Down: LAN1 Active (GREEN)	
LED2	Up: reserved (YELLOW) Down: LAN2 Active (GREEN)	
LED3	Up: SATA Active (YELLOW) Down: Power (GREEN)	
MPCIE1/2	Mini PCI Express connector 1/2	52pin
PCI1	PCI Connector 1	PCI slot
PCIE1	PCI Express connector 1	
RSTBTN1	Reset button	
SATA1/2	Serial ATA connector 1 & 2	
SATA_PWR1/2	SATA Power connector 1/2	2 x 1 box header, pitch 2.00mm
S_FAN1	System Fan connector 1	3 x 1 wafer
SIM1	SIM card slot	6pin
USB1	USB connector 4 & 5	Double deck
VGA1/COM2	VGA / COM2 connector	D-sub 15-pin, female D-sub 9-pin, male

## 2.4 EAP-CE01 Jumpers & Connectors settings

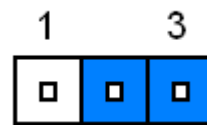
### 2.4.1 Clear CMOS (CN1)



Protect\*



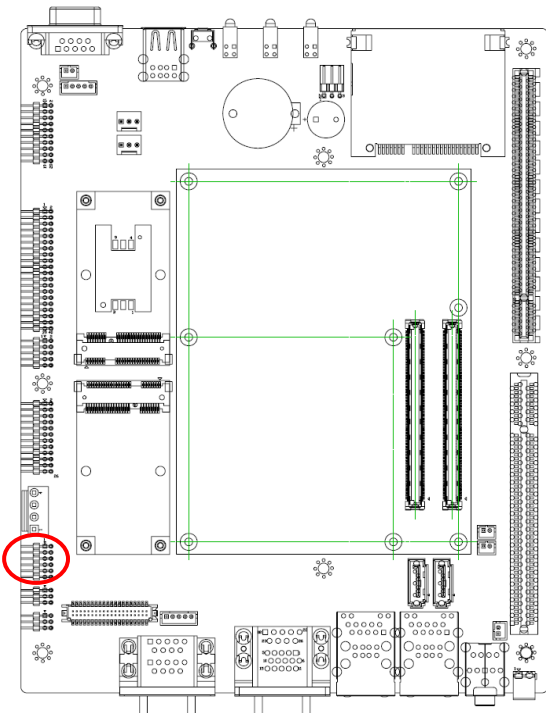
Clear CMOS



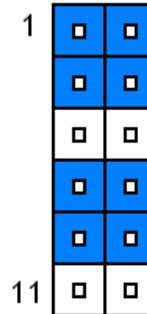
Signal	PIN
+V3.3A	1
+VBAT	2
GND	3

\*Default

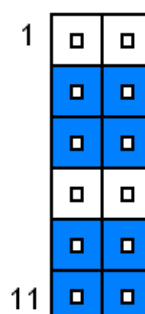
### 2.4.2 Serial port 2 setting in RS232/422/485 (CN7)



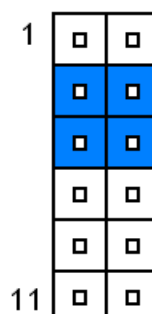
RS-232\*



RS-422



RS-485



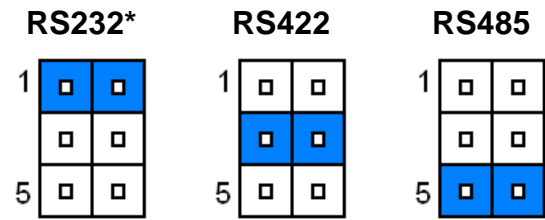
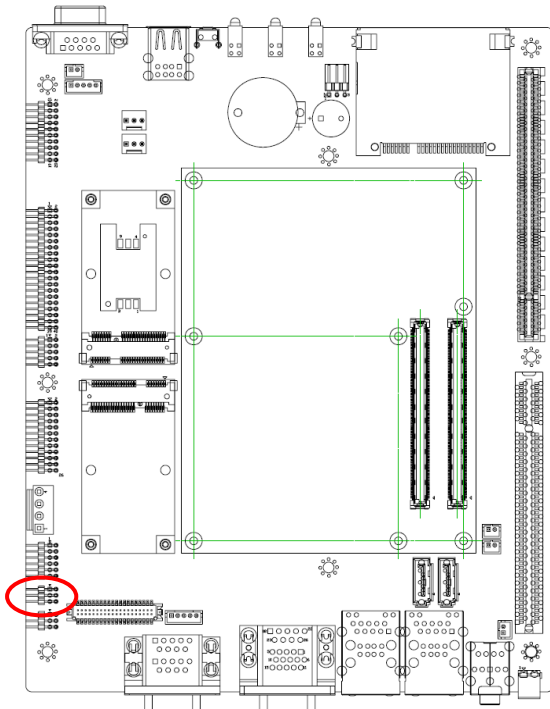
Signal	PIN	PIN	Signal
DCD2	1	2	RXDD2
CM1_1	3	4	CM1_2
485TX-	5	6	485TX+
TXDD2	7	8	DTR2
CM1_3	9	10	CM1_4
485RX+	11	12	485RX-

\*Default

**Note:** For using COM2 in RS-232/422/485 Mode, please adjust both CN7 and CN8 with correct Jumper setting



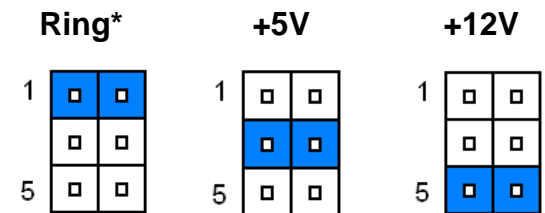
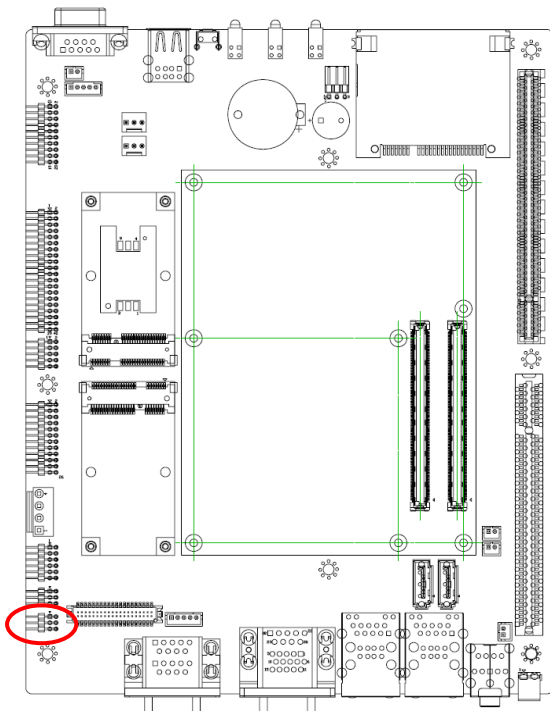
### 2.4.3 Serial port 2 setting in RS232/422/485 (CN8)



Signal	PIN	PIN	Signal
SIN2	1	2	RX232
SIN2	3	4	RX422
SIN2	5	6	RX485

\*Default

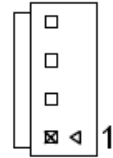
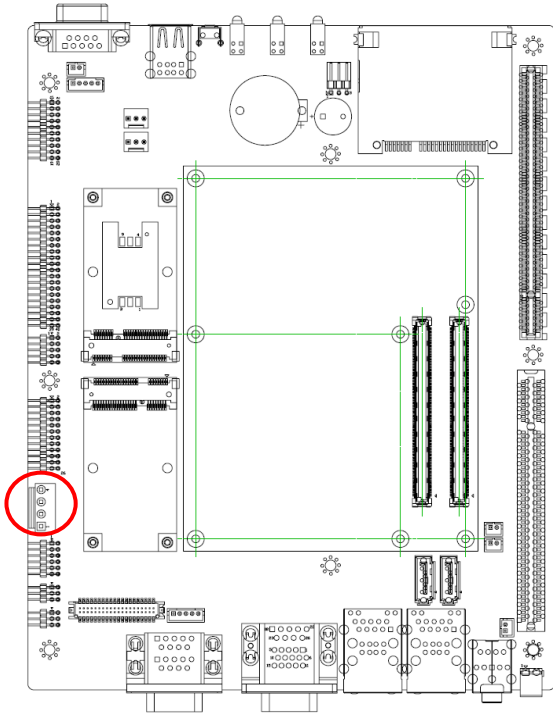
### 2.4.4 Serial port 1 Pin9 setting in RING/12V/5V (CN9)



Signal	PIN	PIN	Signal
RI1	1	2	NR11
+V5S	3	4	NR11
+V12S	5	6	NR11

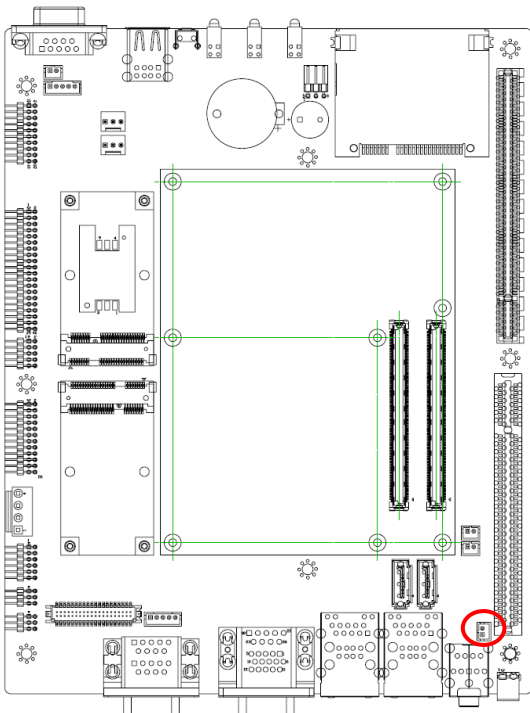
\*Default

2.4.5 Power In (8V ~30V) connector (JVIN1)



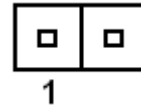
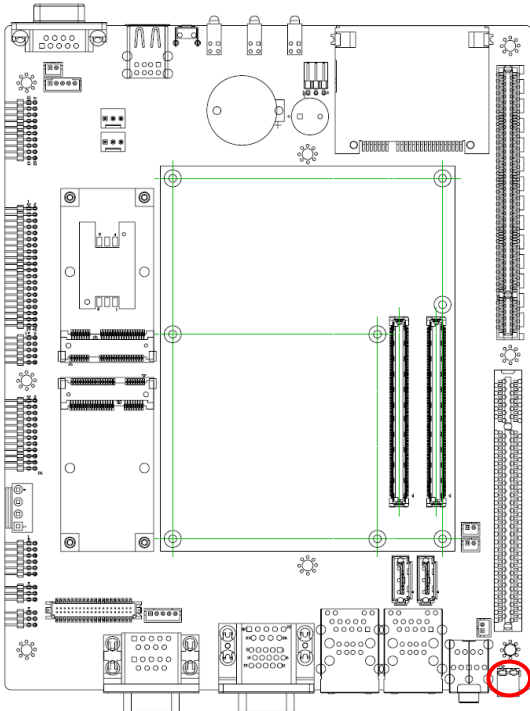
Signal	PIN
+VIN	4
+VIN	3
GND	2
GND	1

2.4.6 Power button connector (J3)



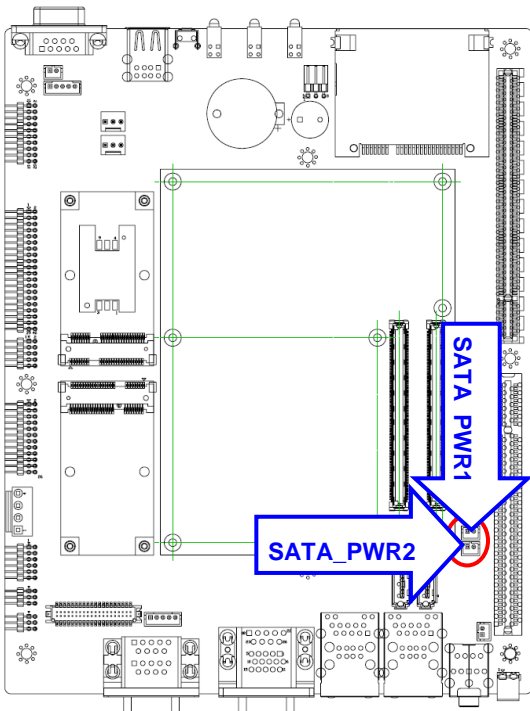
Signal	PIN
GND	2
PWRBTN#	1

### 2.4.7 Power button Extension connector (J4)



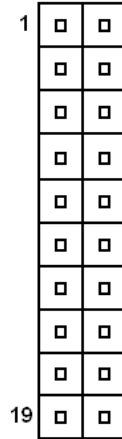
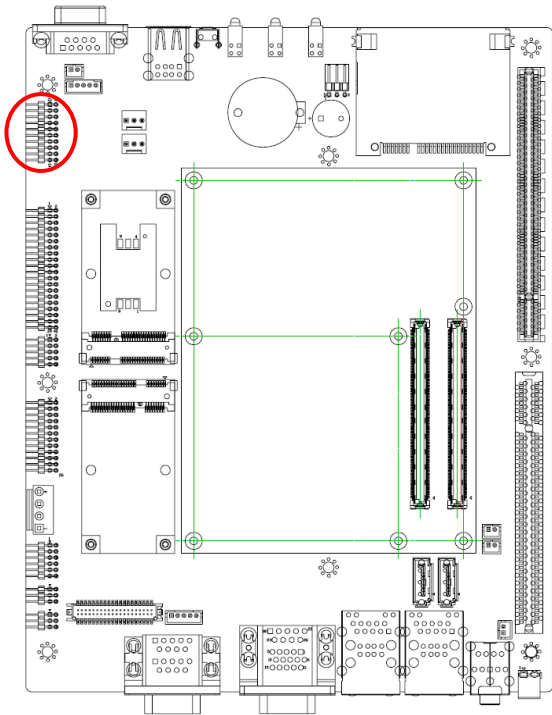
Signal	PIN
GND	2
PWRBTN#	1

### 2.4.8 SATA Power connector 1/2 (SATA\_PWR1/2)



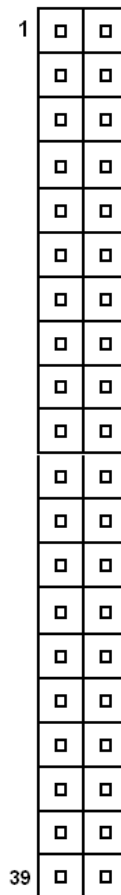
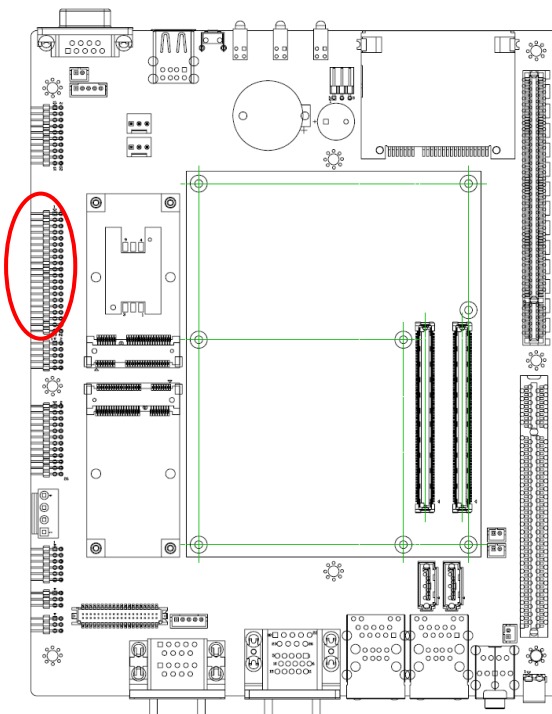
Signal	PIN
GND	1
+5V	2

### 2.4.9 Digital I/O Connector (CN2)



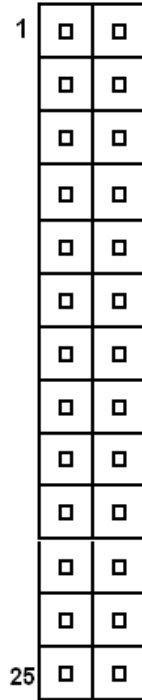
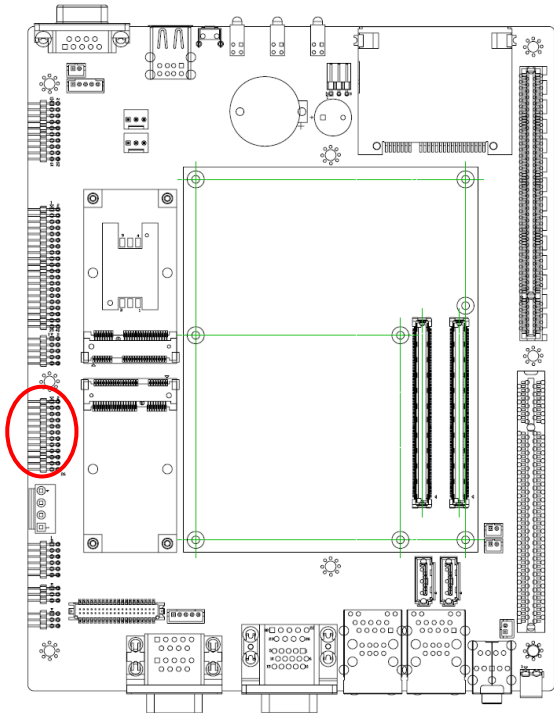
Signal	PIN	PIN	Signal
DIO0	1	2	DIO10
DIO1	3	4	DIO11
DIO2	5	6	DIO12
DIO3	7	8	DIO13
DIO4	9	10	DIO14
DIO5	11	12	DIO15
DIO6	13	14	DIO16
DIO7	15	16	DIO17
SMB_CLK	17	18	SMB_DATA
GND	19	20	+V5S

### 2.4.10 Serial port 5/6/7/8 connector (CN4)



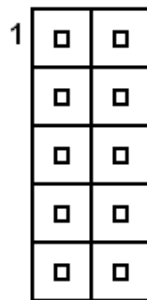
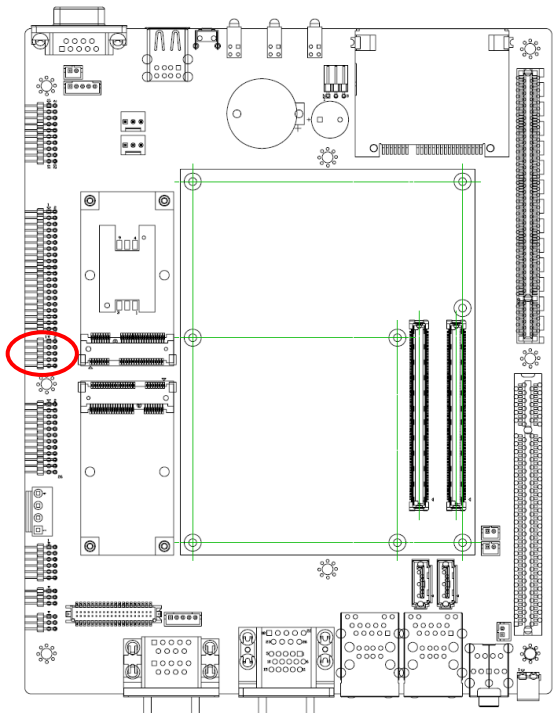
Signal	PIN	PIN	Signal
DCD5	1	2	RxDD5
TxDD5	3	4	DTR5
GND	5	6	DSR5
RTS5	7	8	CTS5
RI5	9	10	NC
DCD6	11	12	RxDD6
TxDD6	13	14	DTR6
GND	15	16	DSR6
RTS6	17	18	CTS6
RI6	19	20	NC
DCD7	21	22	RxDD7
TxDD7	23	24	DTR7
GND	25	26	DSR7
RTS7	27	28	CTS7
RI7	29	30	NC
DCD8	31	32	RxDD8
TxDD8	33	34	DTR8
GND	35	36	DSR8
RTS8	37	38	CTS8
RI8	39	40	NC

### 2.4.11 LPT connector (CN6)



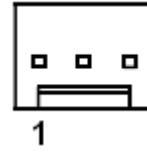
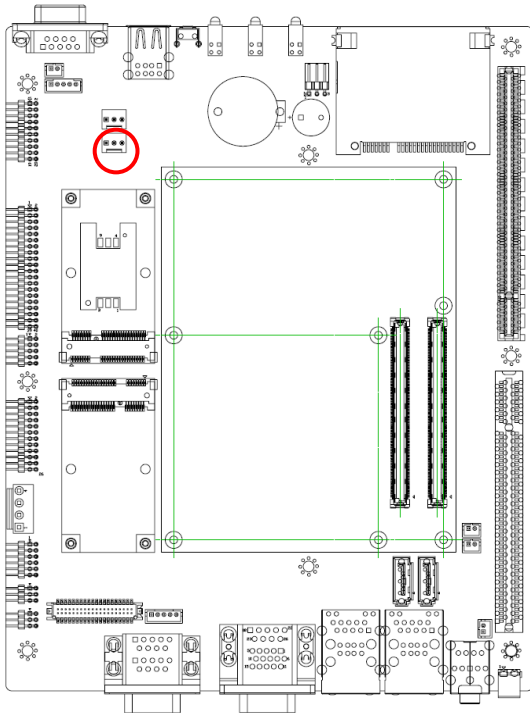
Signal	PIN	PIN	Signal
STB-	1	2	AFD#
PTD0	3	4	ERR#
PTD1	5	6	PAR_INIT#
PTD2	7	8	SLIN#
PTD3	9	10	GND
PTD4	11	12	GND
PTD5	13	14	GND
PTD6	15	16	GND
PTD7	17	18	GND
ACK#	19	20	GND
BUSY	21	22	GND
PE	23	24	GND
SLCT	25	26	GND

### 2.4.12 Serial port 4 connector (CN10)



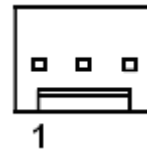
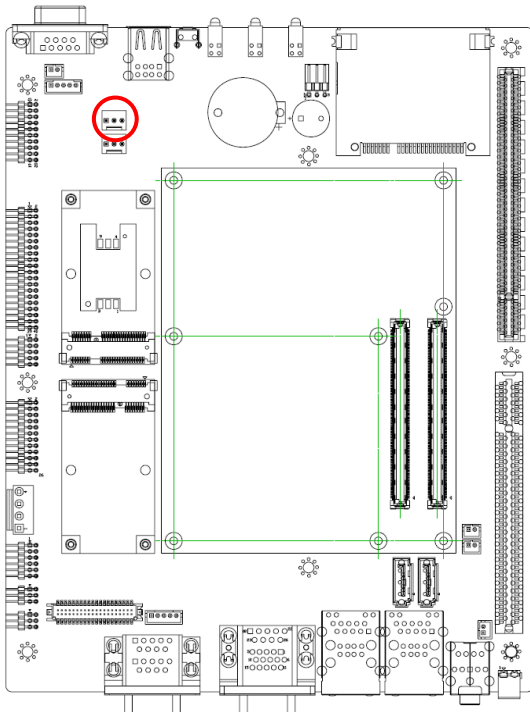
Signal	PIN	PIN	Signal
DCD4	1	2	RxDD4
TxDD4	3	4	DTR4
GND	5	6	DSR4
RTS4	7	8	CTS4
RI4	9	10	NC

2.4.13 CPU Fan Connector (C\_FAN1)



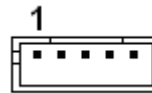
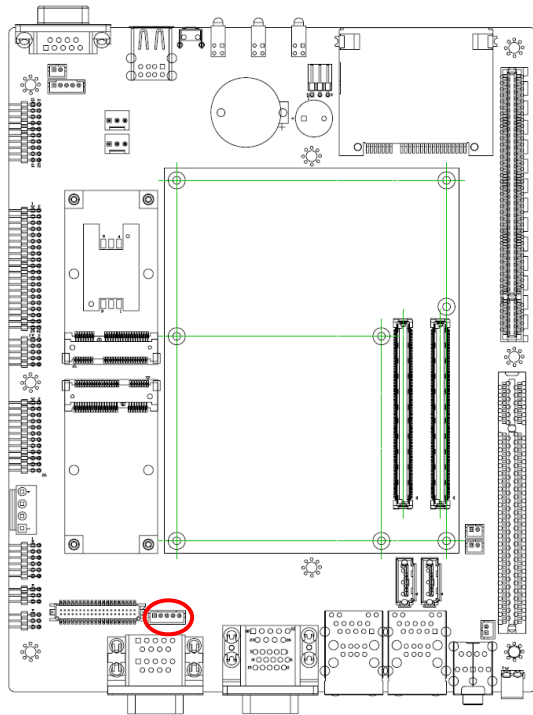
Signal	PIN
GND	1
+12V	2
CPUFANIN	3

2.4.14 System Fan Connector (S\_FAN1)



Signal	PIN
GND	1
+12V	2
SYSFANIN	3

### 2.4.15 LCD inverter connector (JBKL1)



Signal	PIN
12V	1
GND	2
BLK_ON	3
NC	4
5V	5



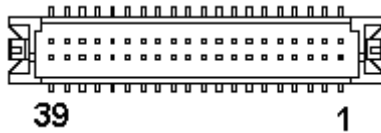
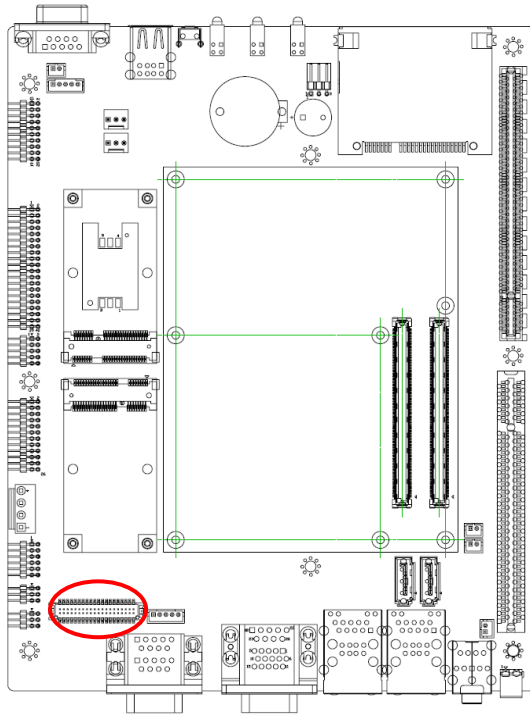
**Note:**

For inverters with Brightness adjustment, this Board didn't include this feature, please connect your inverter brightness control pin to GND or 5V depending on your inverter specification.

#### 2.4.15.1 Signal Description – LCD Inverter Connector (JBKL1)

Signal	Signal Description
BKL_ON	LCD backlight ON/OFF control signal

2.4.16 LVDS Connector (JLVDS1)



Signal	P N	PIN	Signal
+5V	2	1	+3.3V
+5V	4	3	+3.3V
DDC_DATA	6	5	DDC_CLK
ND	8	7	GND
LA_DATAP0	10	9	LA_DATAP1
LA_DATAN0	12	11	LA_DATAN1
GND	14	13	GND
LA_DATAP2	16	15	LA_DATAP3
LA_DATAN2	18	17	LA_DATAN3
GND	20	19	GND
LB_DATAP0	22	21	LB_DATAP1
LB_DATAN0	24	23	LB_DATAN1
GND	26	25	GND
LB_DATAP2	28	27	LB_DATAP3
LB_DATAN2	30	29	LB_DATAN3
GND	32	31	GND
LA_CLKP	34	33	LB_CLKP
LA_CLKN	36	35	LB_CLKN
GND	38	37	GND
+12V	40	39	+12V

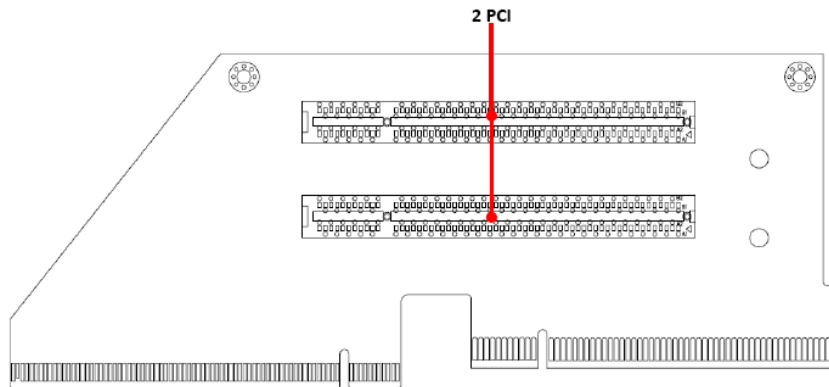


## 2.5 Daughter Boards (AUX-036 – AUX-037)

### 2.5.1 AUX-036

#### Connectors

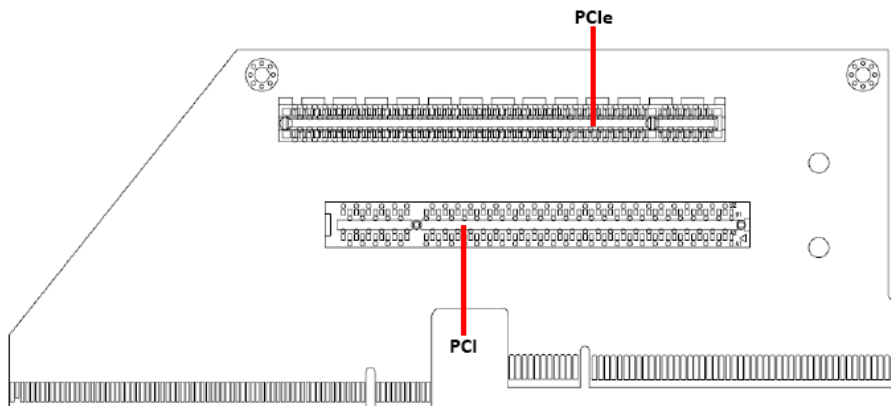
Label	Function	Note
PCI1/2	PCI connector 1/2	



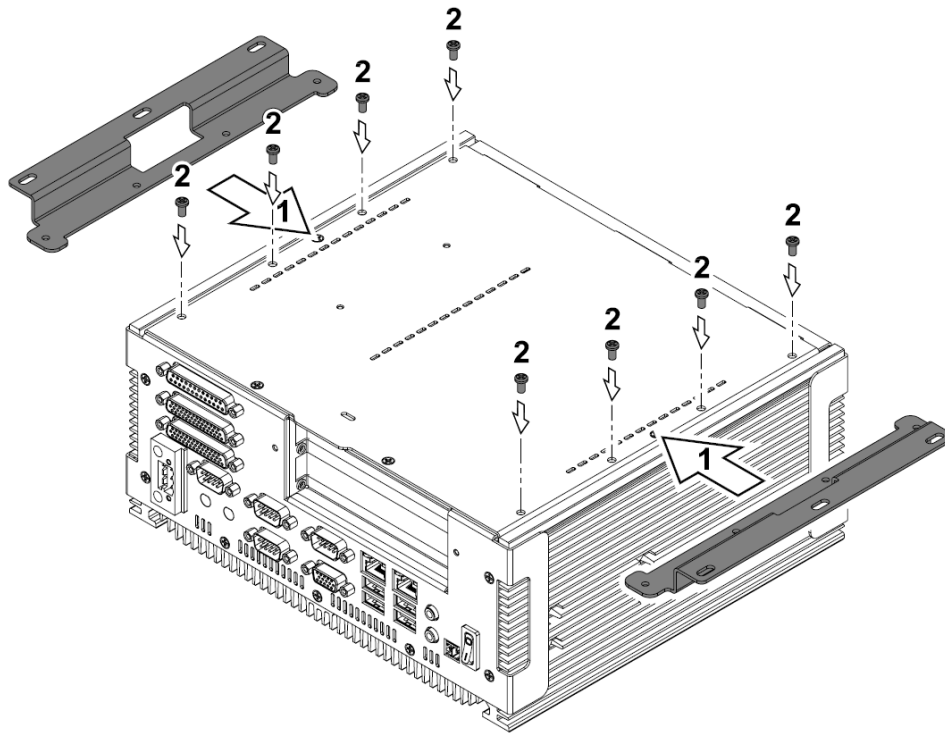
### 2.5.2 AUX-037 (optional)

#### Connectors

Label	Function	Note
PCI	PCI connector 1	
PCIe	PCI express connector	

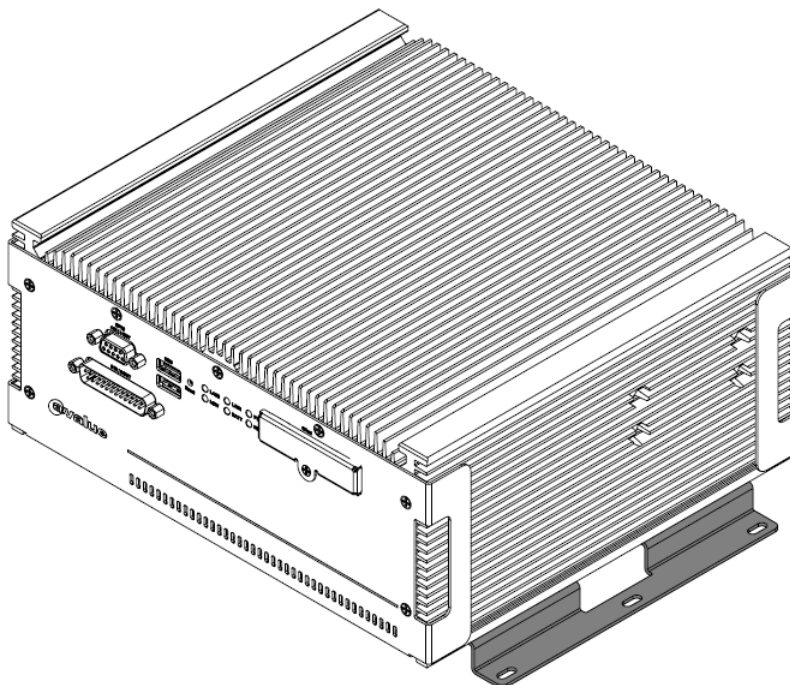


## 2.6 Installing Mounting Brackets (EPS-QM57)



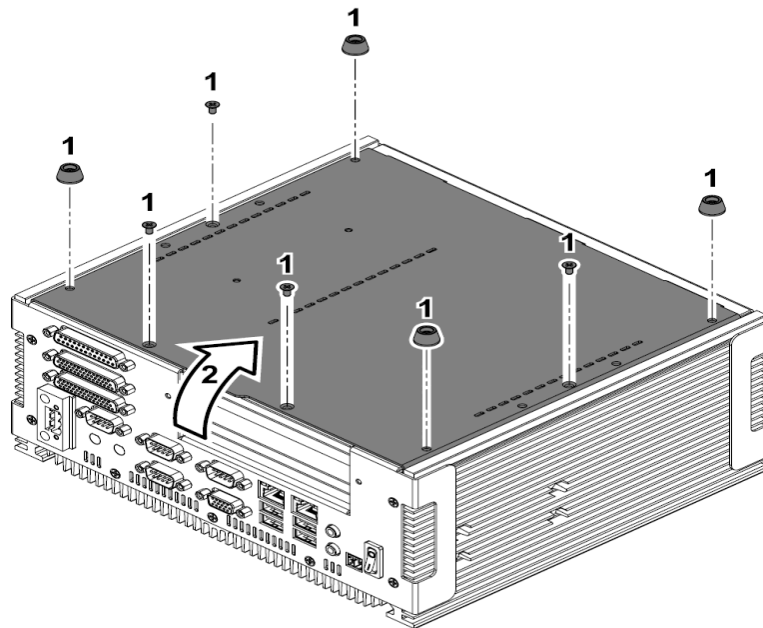
**Step 1.** Locate brackets on both sides, matching the holes on the system

**Step 2.** Insert and fasten 4 screws on each side of the system to secure Mounting brackets



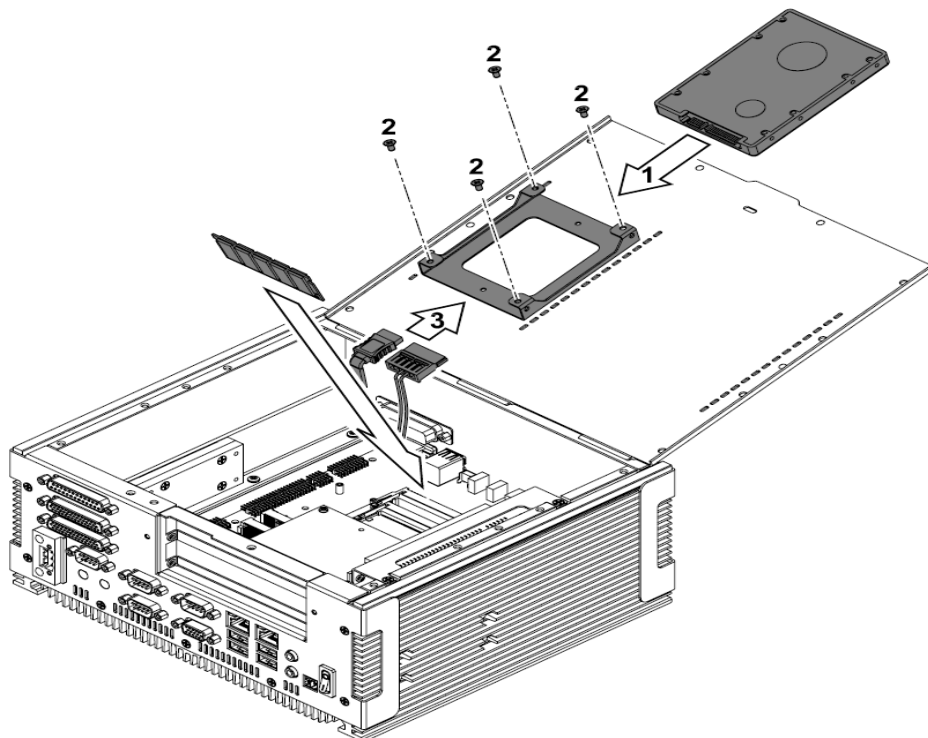
**Step 3.** Installation completed

## 2.7 Installing Hard Disk & Memory (EPS-QM57)



**Step 1.** Remove 8 screws from the bottom of your system.

**Step 2.** Remove the chassis cover.



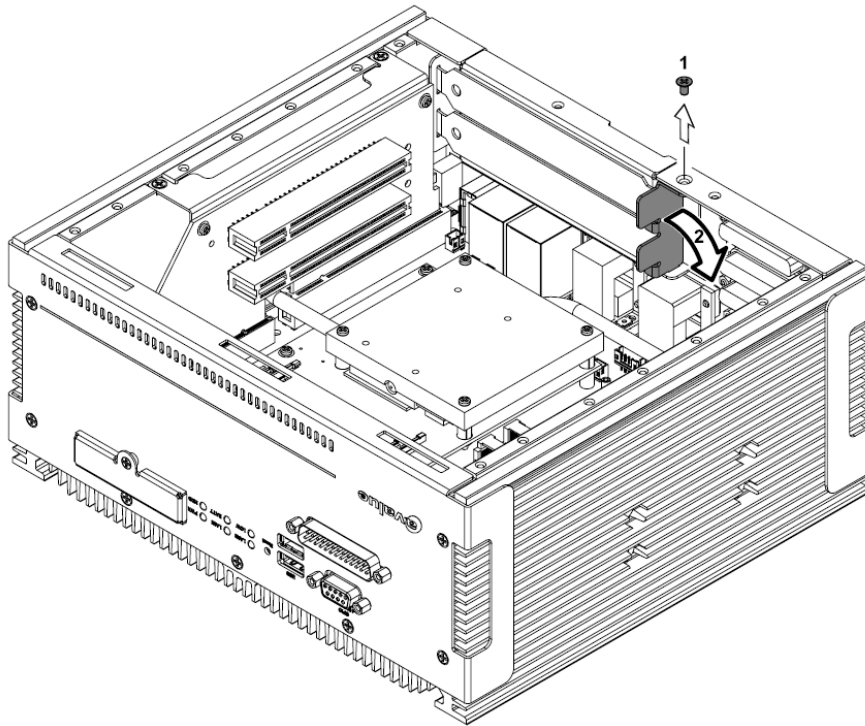
**Step 1.** Slide HDD into its bracket until properly seated.

**Step 2.** Secure HDD by means of 4 screws.

**Step 3.** Connect necessary cables to the HDD

**Step 4.** Slide the DDR3 SODIMM into the memory socket and press it down to seat it properly.

## 2.8 Installing PCI devices (EPS-QM7)



**Step1.** Remove one screw to release the retention clip

**Step2.** The retention clip can now be removed to open slot cover for PCI installation

