EPS-CDV

Fanless Intel® Atom™ D2550 Rugged Embedded System with Intel® NM10 Express Chipset

Quick Reference Guide

2nd Ed –01 August 2013

Part No. E2017EPSVA1R

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-CDV Fanless Intel® Atom™ D2550 Rugged Embedded System with Intel® NM10 Express Chipset
- 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:
  - Adapter
  - Power Cord
  - Screw kit for 2.5" Drive bay/Mini Card
  - 44-Pin Multiple Function Cable

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

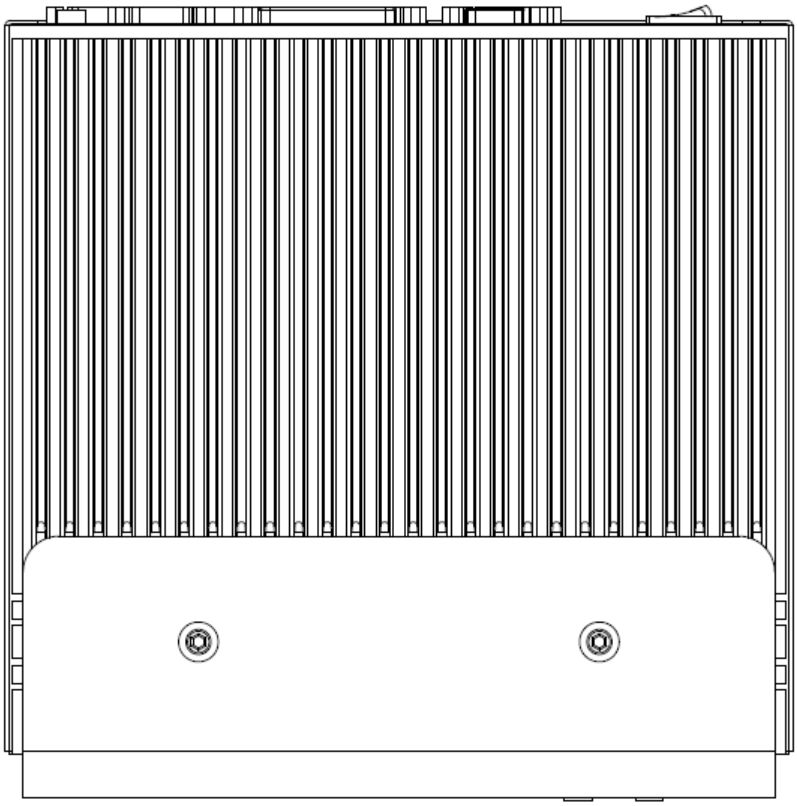
1.3 System Specifications

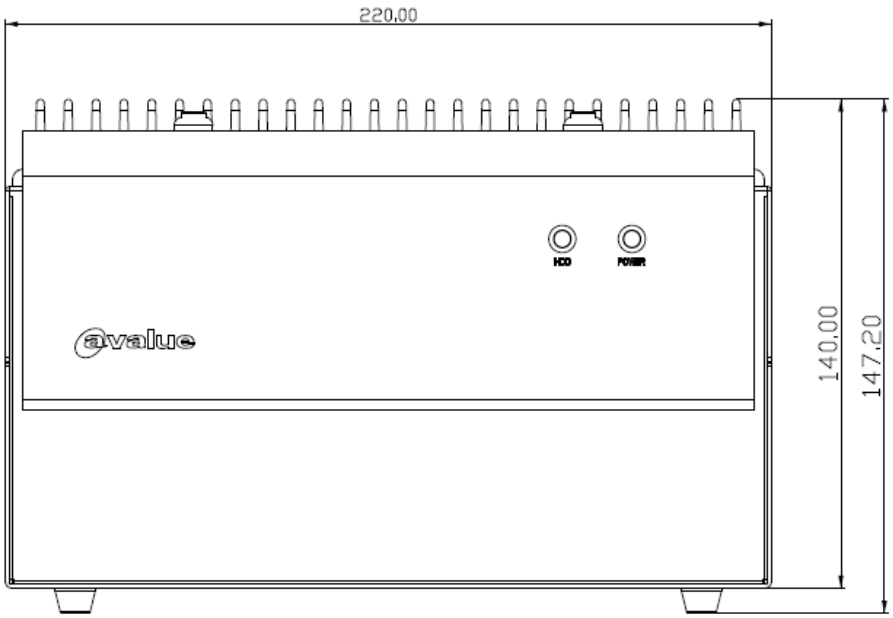
System		
Model	**EPS-CDV-255-A1-1R**	**EPS-CDV-255-A1-2R**
Board	EBM-CDVS + AUX-M01 + AUX-M05 + AUX-M06	EBM-CDVS + AUX-M02 + AUX-M05 + AUX-M06
CPU	Onboard Intel® Atom™ D2550 1.86GHz CPU	
BIOS	AMI 16Mbit SPI BIOS	
System Chipset	Intel® NM10 Express Chipset	
I/O Chip	Nuvoton W83627DHG-P	
System Memory	One 204-pin DDR3 SODIMM Socket Up to 4GB DDR3 800/ 1066 SDRAM	
Storage	1 x 2.5” Drive Bay, 1 x mSATA	
Watchdog Timer	Reset: 1sec. ~ 255sec./min. and 1sec. or 1min./step	
H/W Status Monitor	Monitoring System Temperature and Voltage with Auto Throttling Control	
Expansion Interface	2 PCI Slots, 1 Mini PCIe Socket	
External I/O		
COM	6 x RS-232 (Can be Set as 422/ 485 by BIOS, +5V and 12V Support on Pin-9 (Selected by Jumper)	2 x RS-232 (Can be Set as 422/ 485 by BIOS, +5V and 12V Support on Pin-9 (Selected by Jumper)
LAN	1 x RJ45	5 x RJ45
VGA	1 x VGA	
Audio Port	Mic-in, Line-in, Line-out	
GPIO	6-bit GPI and 6-bit GPO	
USB Port	4 x USB 2.0	
PS/2	2 x PS/2 for KB & MS	
SIM	1 x SIM Card Slot	
SMBUS	1 x SMBUS	
Antenna	2 Knockouts for Antenna Mounting (Options to Add WiFi & 3G)	
Display		
Chipset	Intel® Cedarview Integrated Graphics	
Resolution	CRT Mode: 1920 x 1200 @ 60Hz	
Audio		
Audio Chipset	Realtek ALC892 Supports 5.1-CH Audio	
Audio Interface	Line-in, Line-out and Mic-in	
Ethernet		
LAN Chip	1 x Intel® 82574L Gigabit Ethernet	
Ethernet Interface	10/ 100/ 1000 Base-Tx Gigabit Ethernet Compatible	

Environment & Mechanical	
Power Requirement	+12 ~ +26Vdc (Lockable DC Jack)
ACPI	Single Power ATX Support S0, S3, S4, S5 ACPI 3.0 Compliant
Power Mode	AT/ ATX (ATX is The Default Setting)
Operating Temperature	-10 ~ 60°C (w/ mSATA and 2.5” SSD), Ambient w/ Air Flow
Storage Temperature	-40 ~ 75°C (-40 ~ 167°F)
Relative Humidity	0% ~ 90% Relative Humidity, Non-condensing
Vibration Protection	With mSATA/ SSD: 5Grms, IEC 60068-2-64, Random, 10 ~ 500Hz, 1hr/axis
Shock Protection	With mSATA/ SSD: 50G, IEC 60068-2-27, Half Sine, 11ms
Certification	CE, FCC Class B
Dimension (W x D x H)	220mm x 215mm x 147mm
Weight	7.7lbs (3.5Kgs)

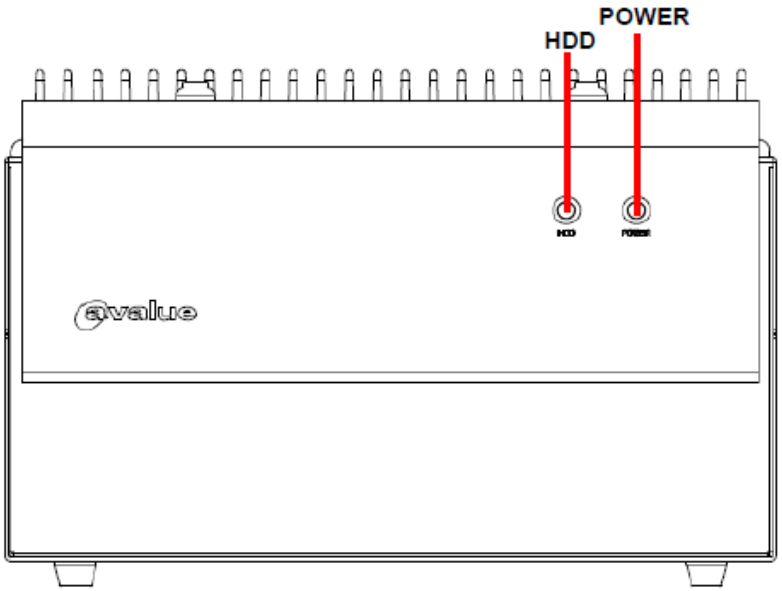
1.4 System Overview

1.4.1 Front & Top View



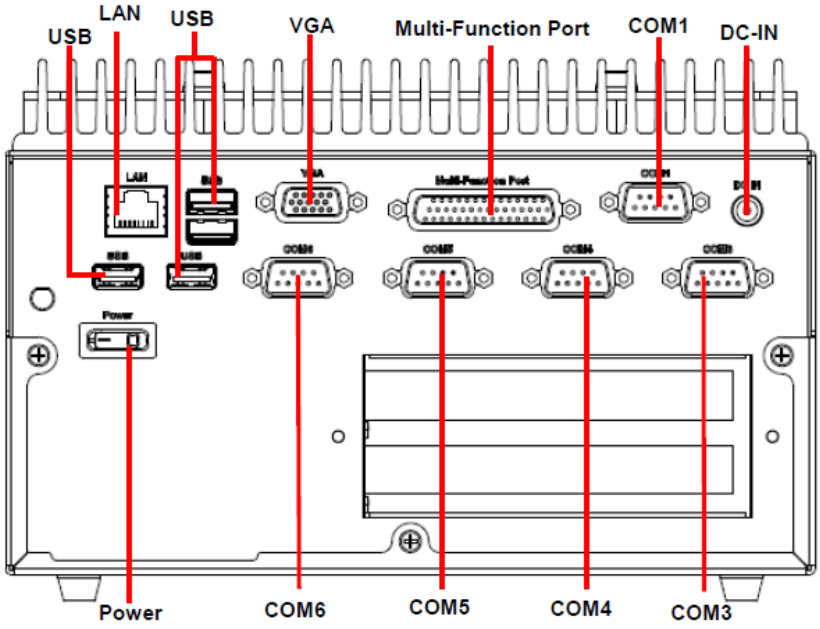


1.4.2 Front View

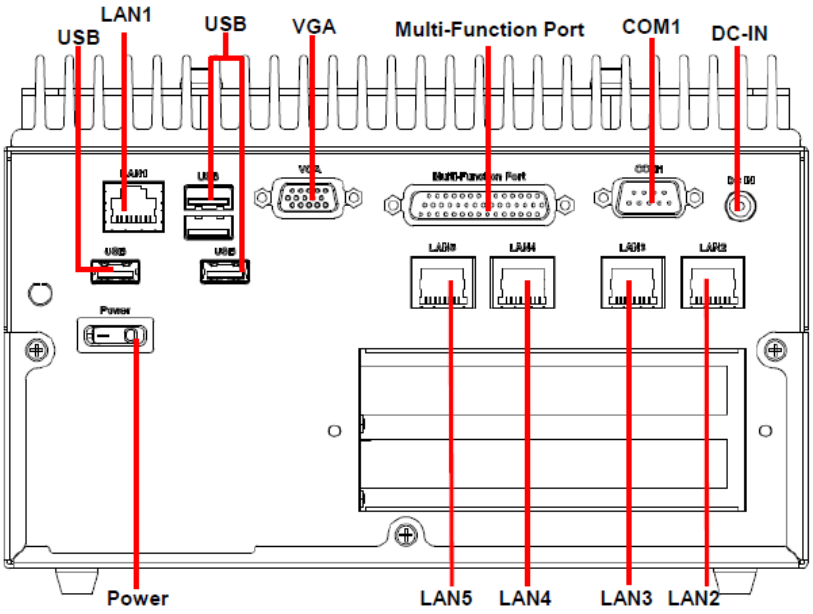


1.4.3 Rear View

EPS-CDV-255-A1-1R



EPS-CDV-255-A1-2R



EPS-CDV-255-A1-1R

Connectors

Label	Function	Note
COM1	Serial port connector 1	
COM3~6	Serial port connector 3~6	
DC-IN	DC power-in connector	
LAN	RJ-45 Ethernet	
Multi-function port	Multi-Function Port combined COM2, 2 PS/2, Audio, GPIO and SMBus	
USB	USB connector	
VGA	VGA connector	
Power	Power connector	

EPS-CDV-255-A1-2R

Connectors

Label	Function	Note
COM1	Serial port connector 1	
DC-IN	DC power-in connector	
LAN1~5	RJ-45 Ethernet 1~5	
Multi-function port	Multi-Function Port combined COM2, 2 PS/2, Audio, GPIO and SMBus	
USB	USB connector	
VGA	VGA connector	
Power	Power connector	

2. Hardware Configuration

Jumper and Connector Setting, Driver and BIOS Installing

For advanced information, please refer to:

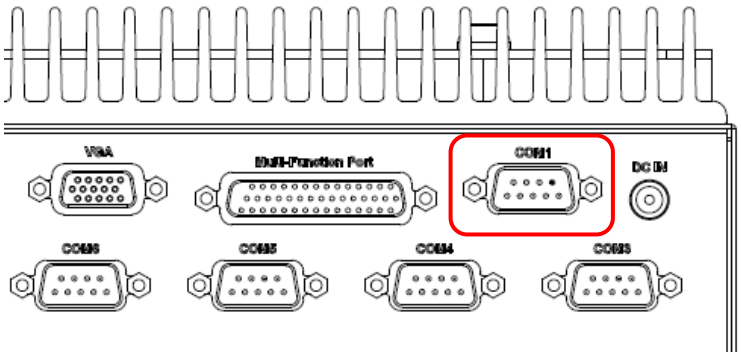
1- EBM-CDVS, AUX-M01, AUX-M02, AUX-M05 and AUX-M06 included in this manual.

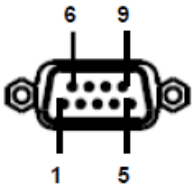
Note: If you need more information, please visit our website:

http://www.avalue.com.tw

2.1 EPS-CDV connector mapping

2.1.1 External Serial Port 1 connector (COM1)





Signal	PIN	PIN	Signal
NDCDA#_485TXN	1	6	NDSRA#
NRXDA#_485TXP	2	7	NRTSA#
NTXDA#_485RXP	3	8	NCTSA#
NDTRA#_485RXN	4	9	NRIA#
GND	5		

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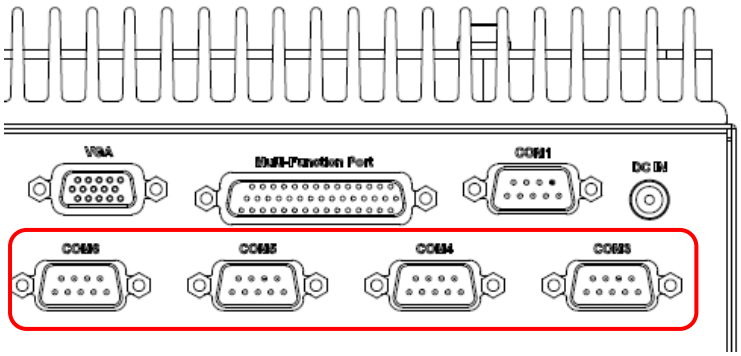
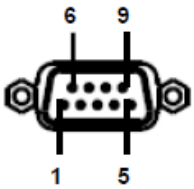
2.1.2 External Serial Port 3/4/5/6 connector (COM3/4/5/6)





Signal	PIN	PIN	Signal
DCD#_485TXN	1	6	DSR#
RXD_485TXP	2	7	RTS#
TXD_485RXP	3	8	CTS#
DTR#_485RXN	4	9	RI#
GND	5		

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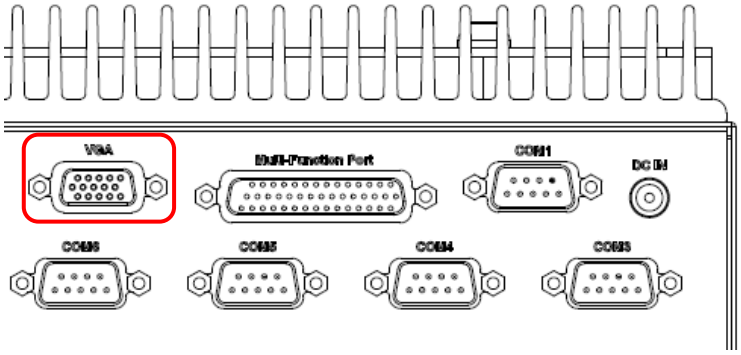
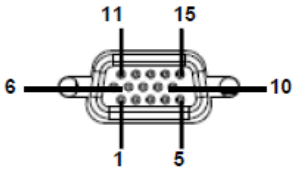
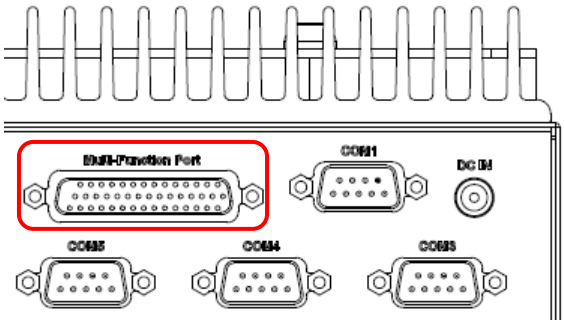
2.1.3 VGA connector (VGA)

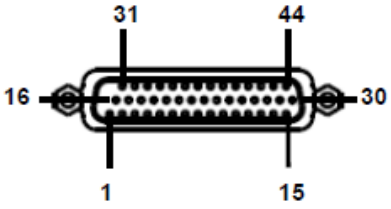




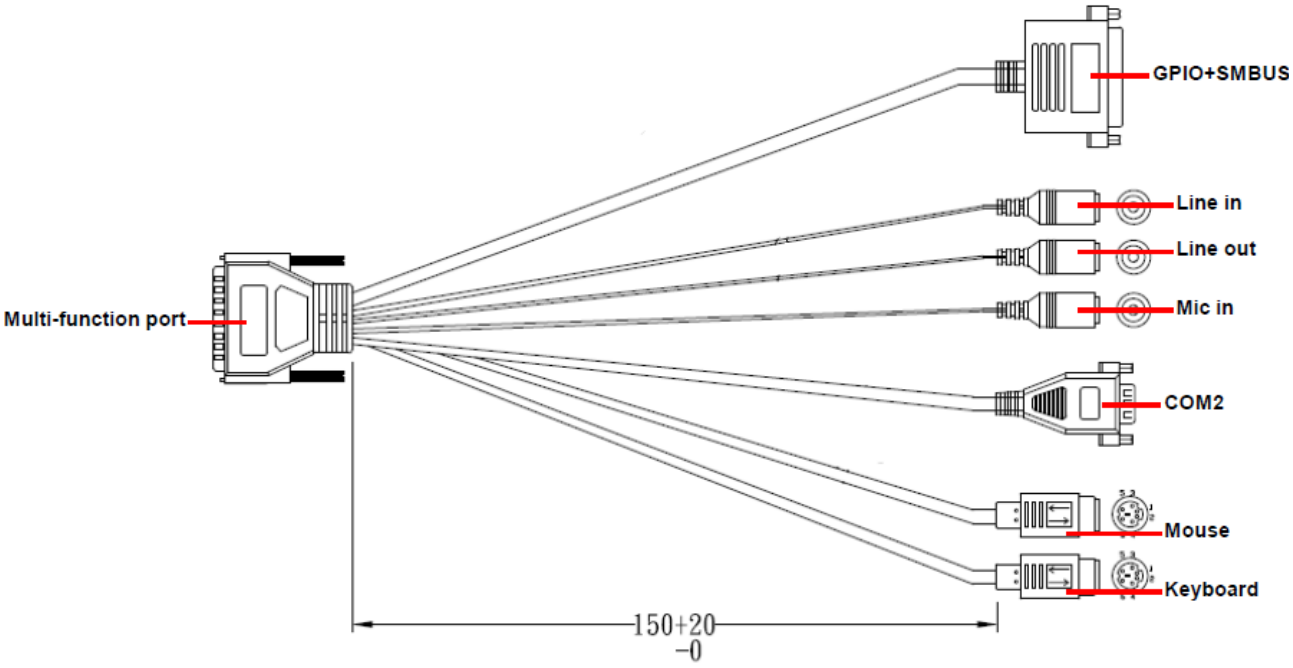
PIN	Signal	PIN	Signal	PIN	Signal
1	RED	6	GND	11	NC
2	GREEN	7	GND	12	SDT_DDC
3	BLUE	8	GND	13	VGA_HS
4	NC	9	+5V	14	VGA_VS
5	GND	10	GND	15	SCK_DDC

2.1.4 Multi-Function Port combined COM2, 2 PS/2, Audio, GPIO and SMBus (Multi-function port)

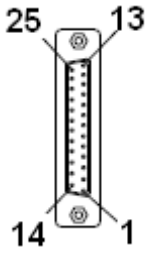




PIN	Signal	PIN	Signal	PIN	Signal
1	LINE1_JD	16	FRONT_JD	31	LINE1_RIN
2	MIC1_JD	17	LINEOUT_R	32	GND
3	MIC_RIN	18	GND	33	LINE1_LIN
4	GND	19	LINEOUT_L	34	+5V
5	MIC_LIN	20	GND	35	DO3
6	DO5	21	DO4	36	DO0
7	DO2	22	DO1	37	DI3
8	DI5	23	DI4	38	DI0
9	DI2	24	DI1	39	SMB_CLK
10	MSCK	25	SMB_DATA	40	NRIB#
11	GND	26	GND	41	NRTSB#
12	MSDA	27	NCTSB#	42	COM2_GND
13	KBDA	28	NDSRB#	43	NTXDB_485RXP
14	VCC_PS2	29	NDTRB#_485RXN	44	NDCDB#_485TXN
15	KBCK	30	NRXDB_485TXP		

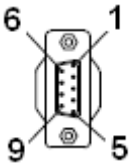


2.1.4.1 GPIO+SMBUS



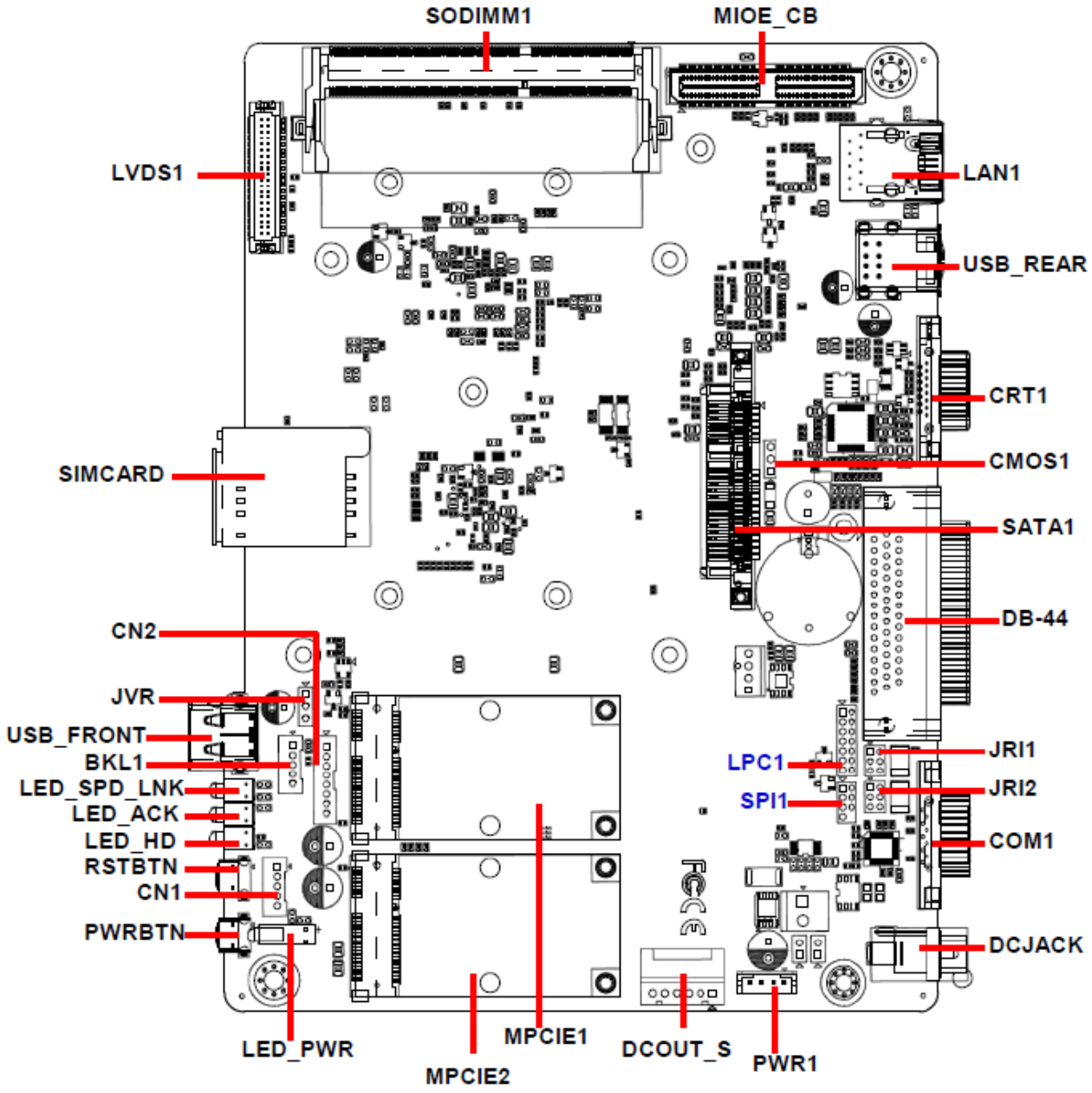
Signal	PIN	PIN	Signal
	25	13	
	24	12	
	23	11	
	22	10	
SMBUS_DATA	21	9	
SMBUS_CLK	20	8	GND
GPI-D5	19	7	5V
GPI-D4	18	6	GPO-D5
GPI-D3	17	5	GPO-D4
GPI-D2	16	4	GPO-D3
GPI-D1	15	3	GPO-D2
GPI-D0	14	2	GPO-D1
		1	GPO-D0

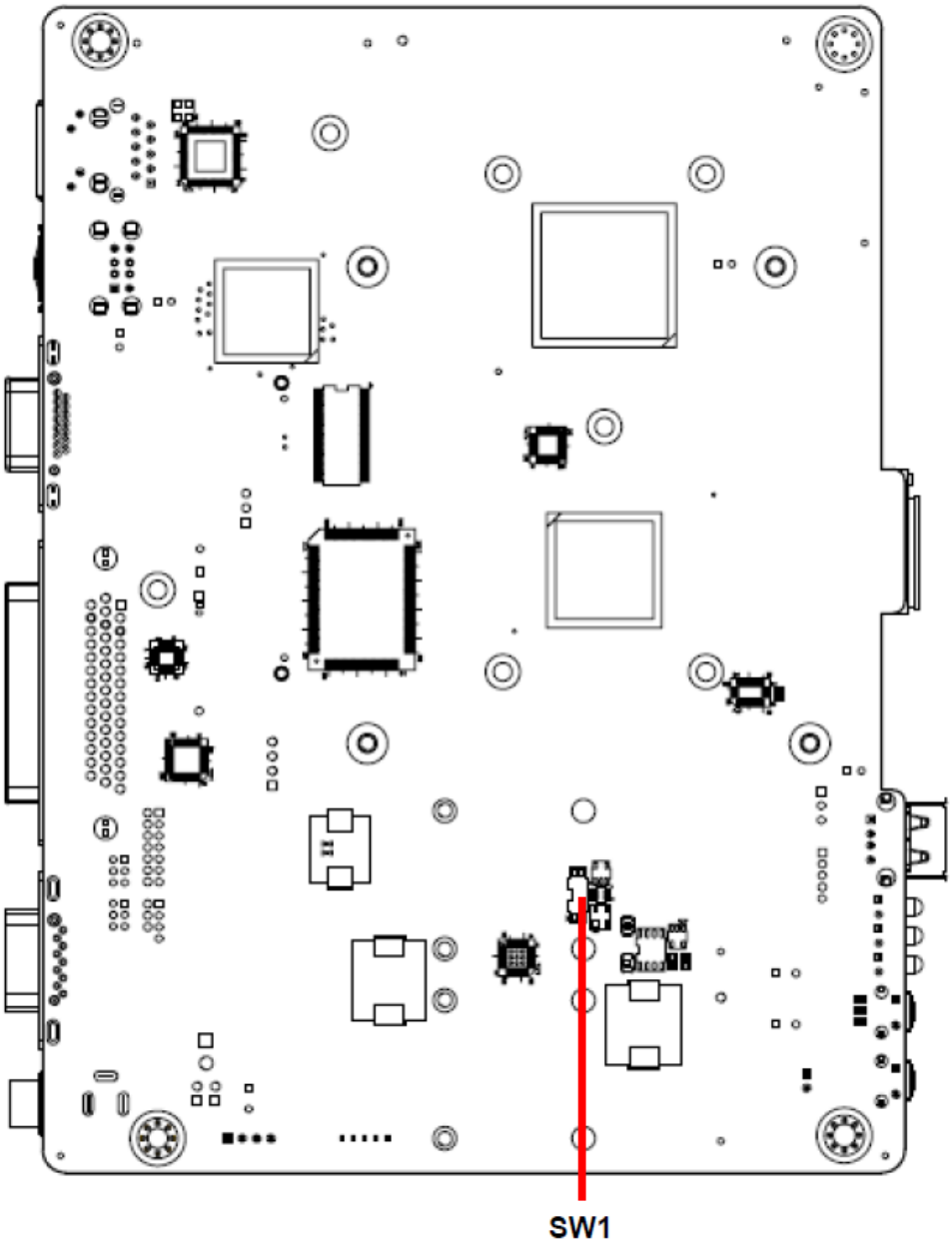
2.1.4.2 COM2



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

2.2 EBM-CDVS Overviews




SW1

2.3 EBM-CDVS Jumper & Connector list

Jumpers

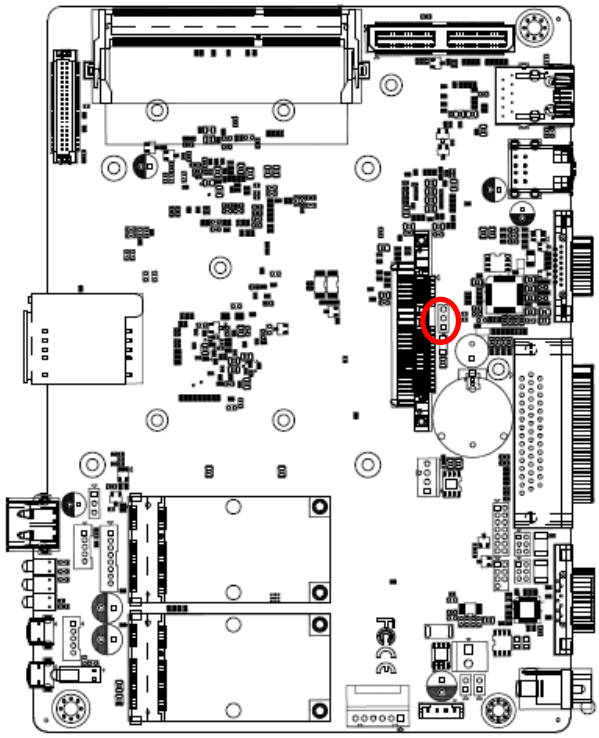
Label	Function	Note
CMOS1	Clear CMOS	3 x 1 header, pitch 2.54mm
JRI1/2	COM 1/2 pin 9 signal select	3 x 2 header, pitch 2.00mm

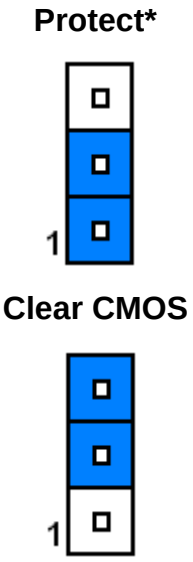
Connectors

Label	Function	Note
USB_REAR	USB connector	
USB_FRONT	USB connector	
LAN1	LAN connector	
CRT1	VGA connector	
DB-44	Multi-function port	1. COM2 2. Audio(line-in, line-out, mic-in) 3. 2 x PS/2 for KB/MS, 4. 12 bit GPIO/SMBUS
COM1	Serial port connector 1	
DCJACK	DC-IN connector	
MPCIE1/2	Mini PCI Express connector 1/2	52 pin
PWR1	Power connector	
PWRBTN	Power button	
RSTBTN	Reset button	
LED_PWR	LED Power	
LED_HD	LED HDD	
LED_ACK	LED LAN	
LED_SPD_LNK	LED LAN	
SIMCARD	SIM card slot	
LVDS1	LVDS connector	
SODIMM1	DDR3 SODIMM connector	
MIOE_CB	IET Expansion slot	
LPC1	Low pin count interface	7 x 2 header, pitch 2.00 mm
SPI1	SPI connector	4 x 2 header, pitch 2.00 mm
PWR1	Power connector	4 x 1 wafer, pitch 2.50 mm
BKL1	LCD inverter connector	5 x 1 wafer, pitch 2.00 mm
JVR	LCD backlight brightness adjustment	3 x 1 header, pitch 2.54 mm
CN1	Front Panel Connector 1	5 x 1 wafer, pitch 2.00 mm
CN2	Front Panel Connector 2	8 x 1 wafer, pitch 2.00 mm
DCOUT_S	DC Output connector	6 x 1 wafer, pitch 2.00 mm
SW1	AT/ATX mode selector	

2.4 EBM-CDVS Jumpers & Connectors settings

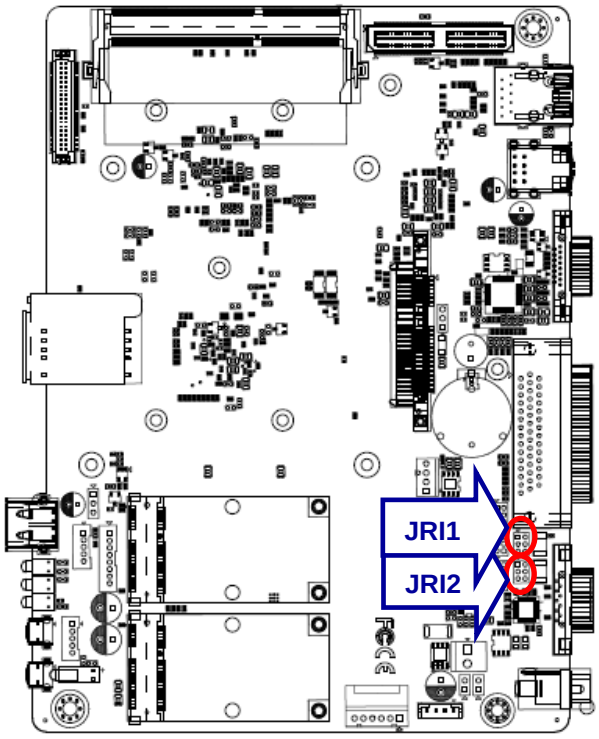
2.4.1 Clear CMOS (CMOS1)

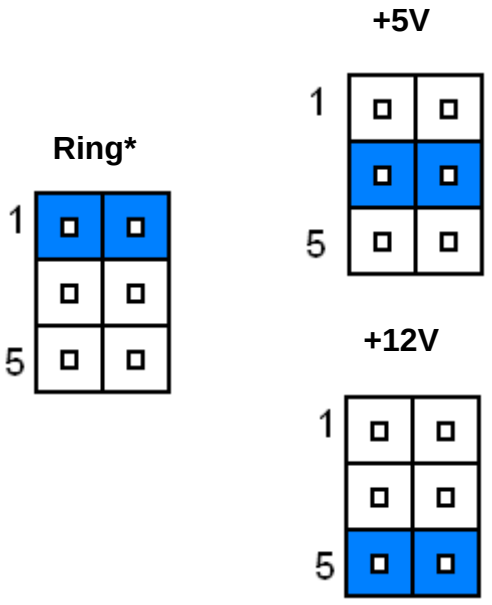




*Default

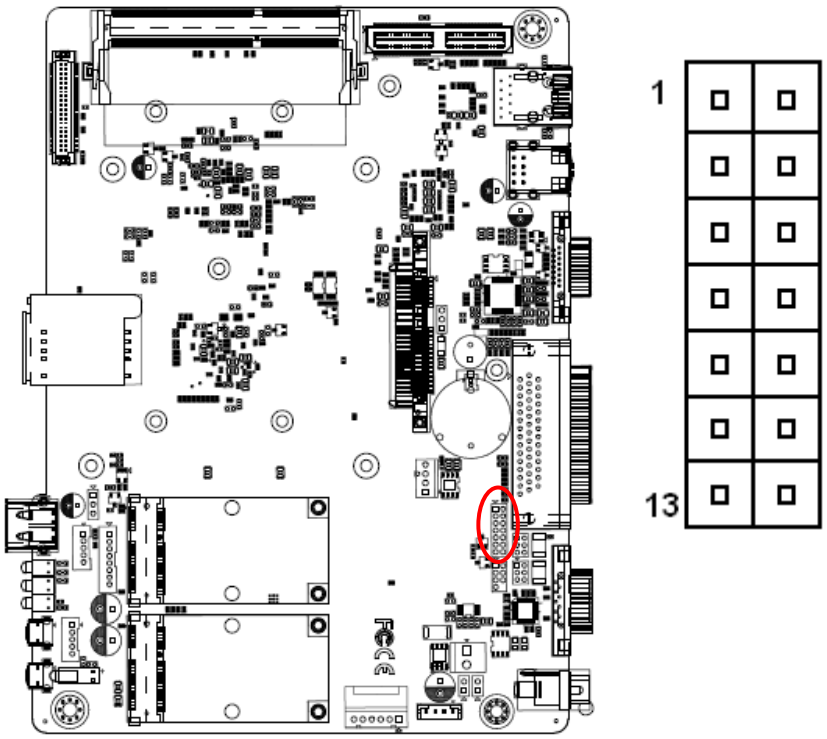
2.4.2 COM 1/2 pin 9 signal select (JRI1/2)





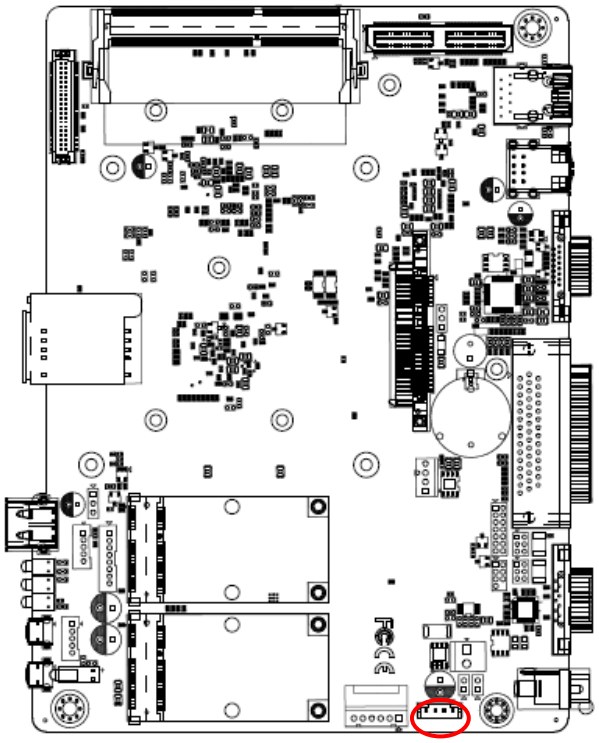
* Default

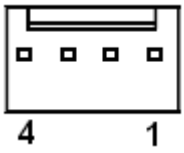
2.4.3 LPC port connector (LPC1)



Signal	PIN	PIN	Signal
LPC_AD0	1	2	+3V
LPC_AD1	3	4	PLTRST#
LPC_AD2	5	6	LPC_LFRAME#
LPC_AD3	7	8	LPC1_PCI_CLK
SERIRQ	9	10	GND
+5V	11	12	GND
+5V	13	14	LPC_LDRQ1#

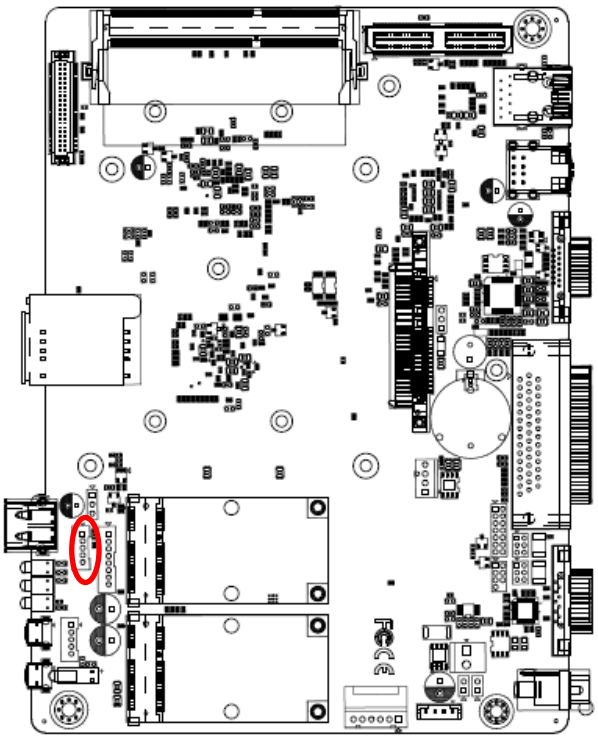
2.4.4 Power connector (PWR1)

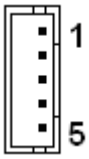




Signal	PIN
+5V	1
GND	2
GND	3
+12V	4

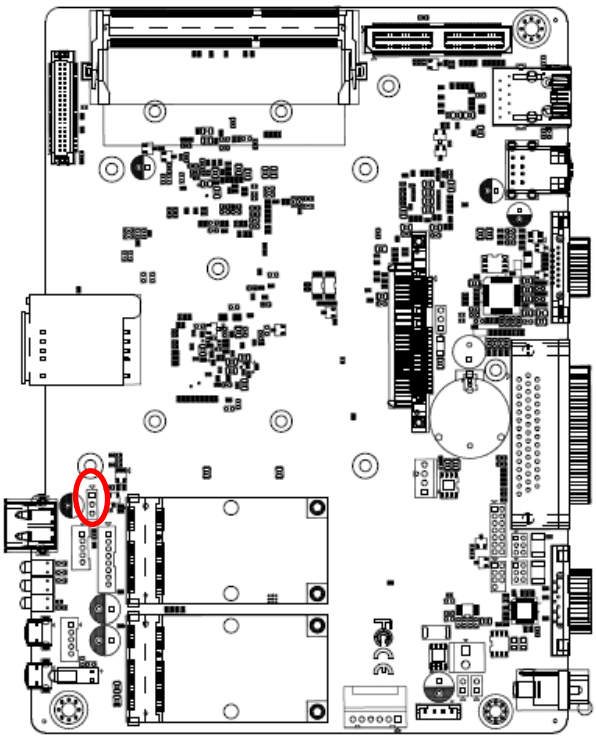
2.4.5 LCD inverter connector (BKL1)

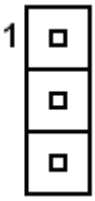




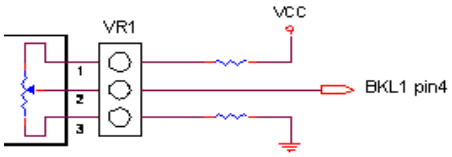
Signal	PIN
+12V	1
GND	2
LVDS_BKLTEN	3
BRIGHT	4
+5V	5

2.4.6 LCD backlight brightness adjustment (JVR)





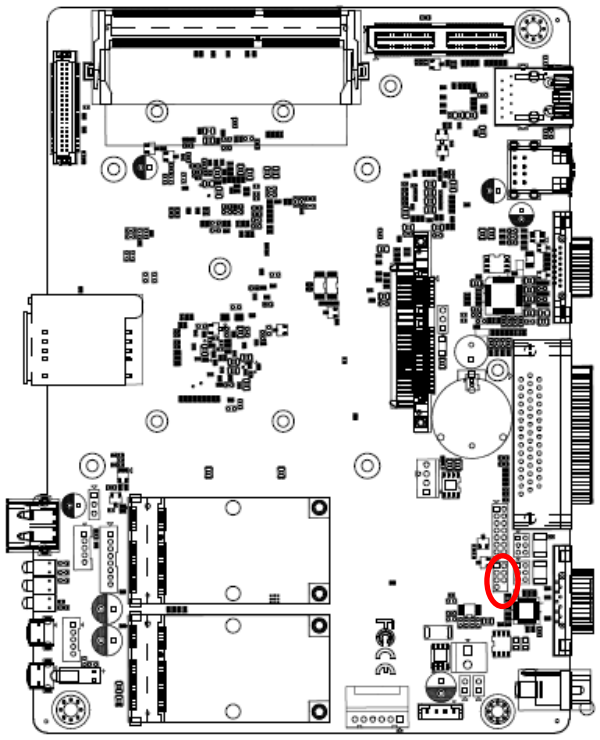
Signal	PIN
+5V	1
BRIGHT	2
GND	3

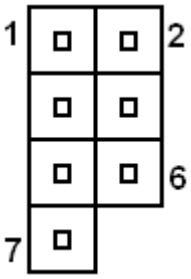


Variation Resistor

(Recommended: 4.7KΩ, >1/16W)

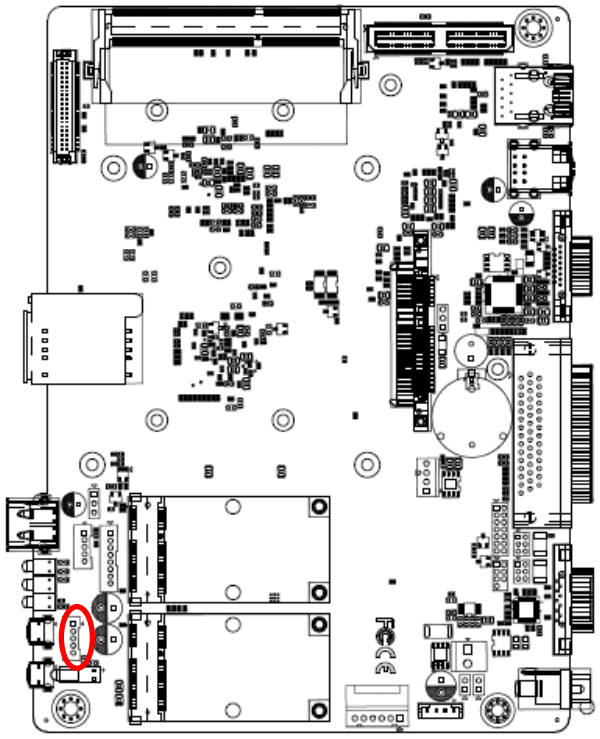
2.4.7 SPI connector (SPI1)





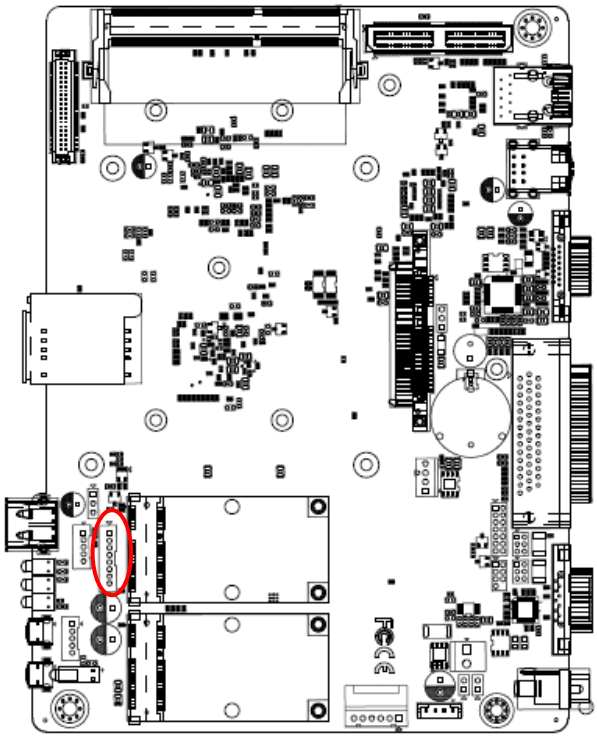
Signal	PIN	PIN	Signal
+3V	1	2	GND
SPI_CS#	3	4	SPI_CLK
SPI_SO	5	6	SPI_SI
SPI_HOLD#	7		

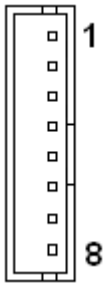
2.4.8 Front Panel Connector 1 (CN1)



Signal	PIN
PWRBTN#	1
RESET#	2
GND	3
POWER LED+	4
POWER LED-	5

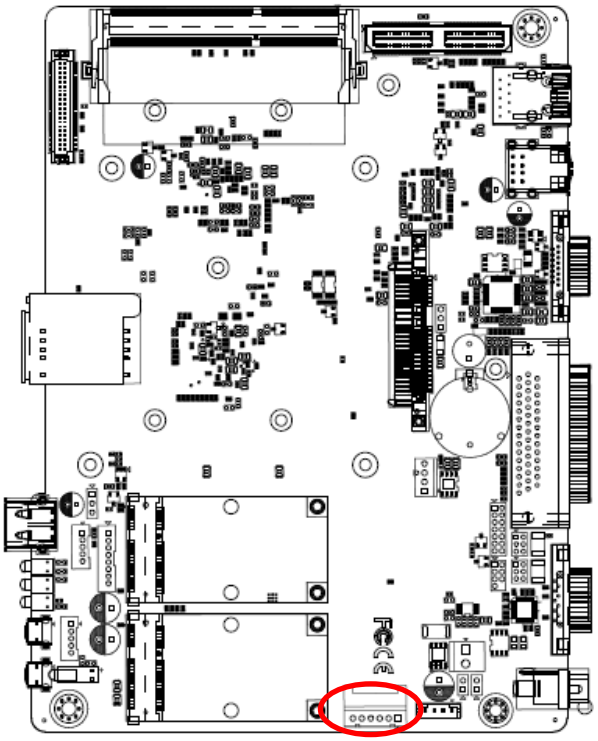
2.4.9 Front Panel Connector 2 (CN2)

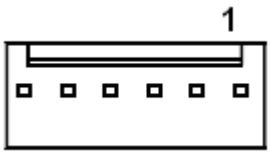




Signal	PIN
SATA_LED+	1
SATA_LED-	2
LAN ACT LED+	3
LAN ACT LED-	4
LAN LINK100+	5
LAN LINK100-	6
LAN LINK1000+	7
LAN LINK1000-	8

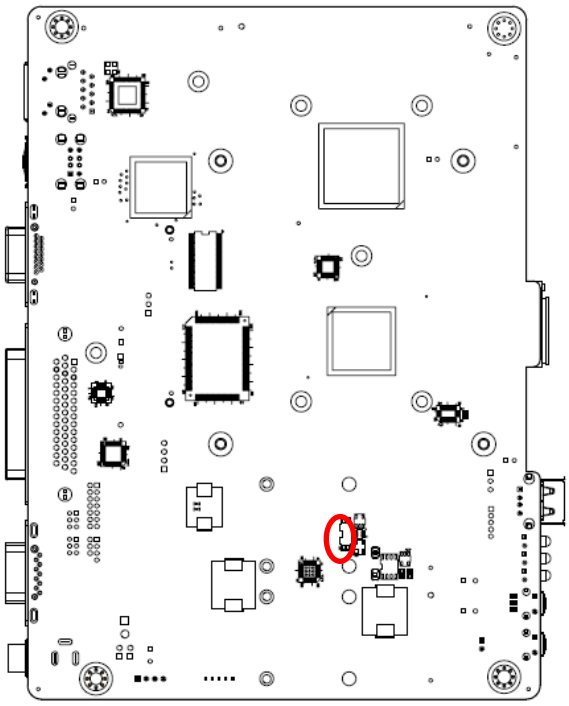
2.4.10 DC Output connector (DCOUT_S)





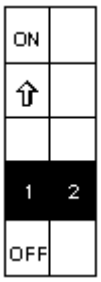
Signal	PIN
DCIN	1
DCIN	2
DCIN	3
GND	4
GND	5
GND	6

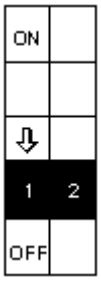
2.4.11 AT/ATX mode selector (SW1)



AT/ATX mode

AT mode **ATX mode***





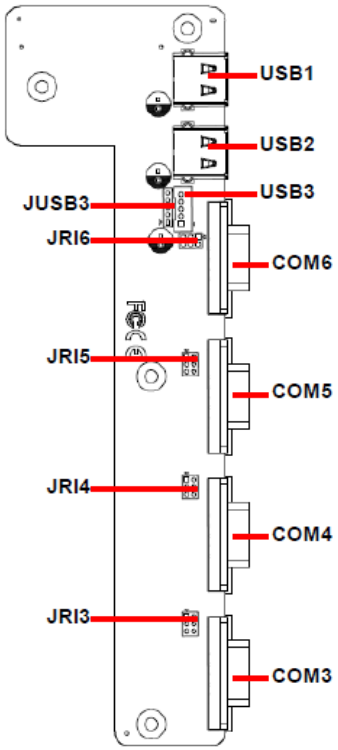
***Default**

2.4.11.1 Signal Description –AT/ATX mode selection

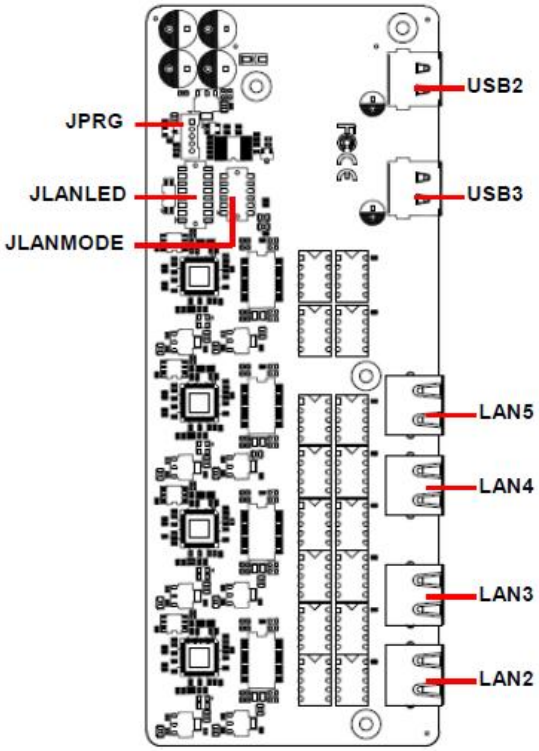
AT/ATX mode	Description
AT mode 	This Mode supports AT power supply, no need to press Power button to enable power on/off
ATX mode 	This Mode supports ATX power supply. Press the ATX power button to enable power on/off

2.5 AUX-M01, AUX-M02, AUX-M05 and AUX-M06 Overviews

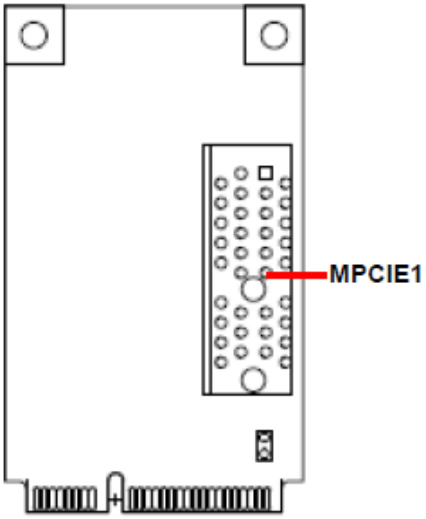
2.5.1 AUX-M01



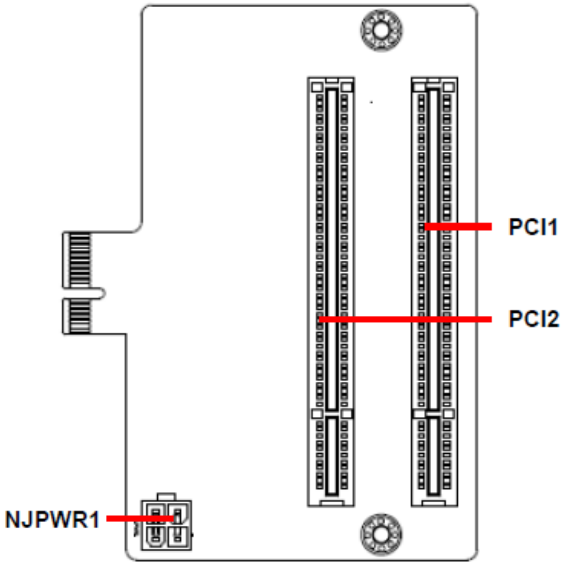
2.5.2 AUX-M02



2.5.3 AUX-M05



2.5.4 AUX-M06



2.6 AUX-M01, AUX-M02, AUX-M05, AUX-M06 Jumper & Connector list

2.6.1 AUX-M01

Jumpers

Label	Function	Note
JRI3/4/5/6	COM 3/4/5/6 pin 9 signal select	3 x 2 header, pitch 2.00mm

Connectors

Label	Function	Note
USB1~2	USB connector 1~2	
USB3	USB connector 3	5 x 1 wafer, pitch 2.00mm
JUSB3	USB connector 3	5 x 1 header, pitch 2.00mm
COM3~6	Serial port connector 3~6	

2.6.2 AUX-M02

Connectors

Label	Function	Note
USB2~3	USB connector 2~3	
LAN2~5	LAN connector 2~5	
JLANLED	LAN ACT/LNK/SPD LED	8 x 2 wafer, pitch 2.00mm
JLANMODE	Normal/Bypass mode LED	6 x 2 wafer, pitch 2.00mm

2.6.3 AUX-M05

Connectors

Label	Function	Note
MPCIE1	Mini PCI Express connector 1	

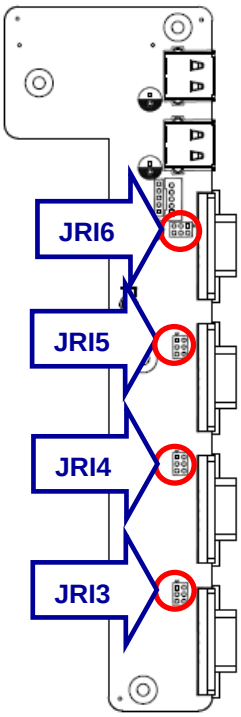
2.6.4 AUX-M06

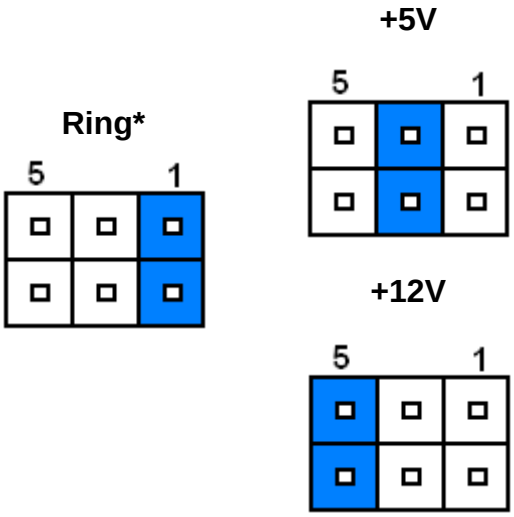
Connectors

Label	Function	Note
PCI1/2	PCI connector 1/2	PCI slot
NJPWR1	Power connector	2 x 2 wafer, pitch 4.20mm

2.7 AUX-M01 Jumpers & Connectors settings

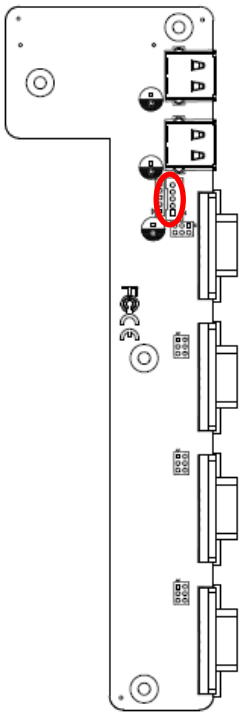
2.7.1 COM 3/4/5/6 pin 9 signal select (JRI3/4/5/6)





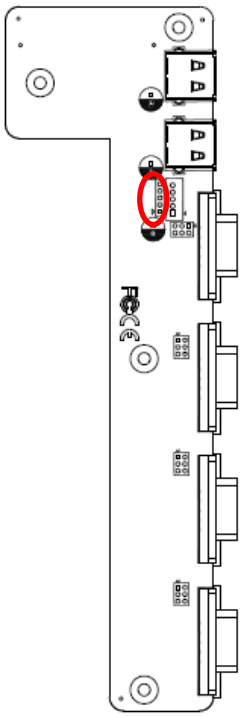
*** Default**

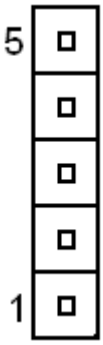
2.7.2 USB connector (USB3)



Signal	PIN
GND	5
GND	4
PUSBP3	3
PUSBN3	2
PV5A_USB3	1

2.7.3 USB connector (JUSB3)

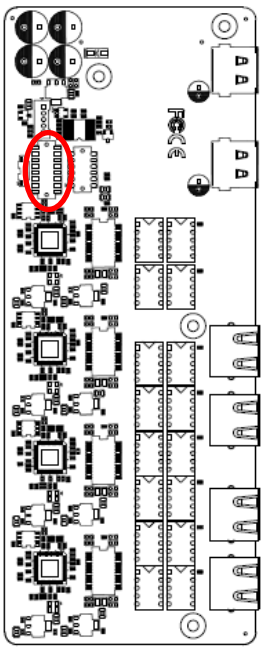


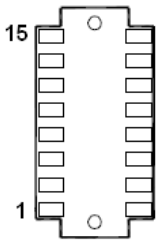


Signal	PIN
GND	5
GND	4
PUSBP3	3
PUSBN3	2
PV5A_USB3	1

2.8 AUX-M02 Connectors settings

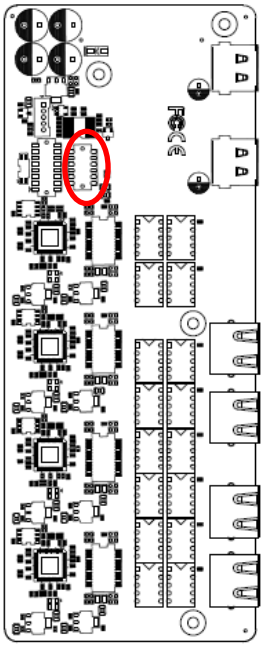
2.8.1 LAN ACT/LNK/SPD LED (JLANLED)

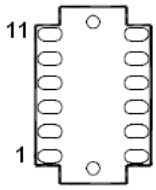




Signal	PIN	PIN	Signal
LAN3_LNK1000	15	16	LAN5_LNK1000
LAN3_LNK100	13	14	LAN5_LNK100
LAN3_ACT-	11	12	LAN5_ACT-
LAN3_ACT+	9	10	LAN5_ACT+
LAN2_LNK1000	7	8	LAN4_LNK1000
LAN2_LNK100	5	6	LAN4_LNK100
LAN2_ACT-	3	4	LAN4_ACT-
LAN2_ACT+	1	2	LAN4_ACT+

2.8.2 Normal/Bypass mode LED (JLANMODE)

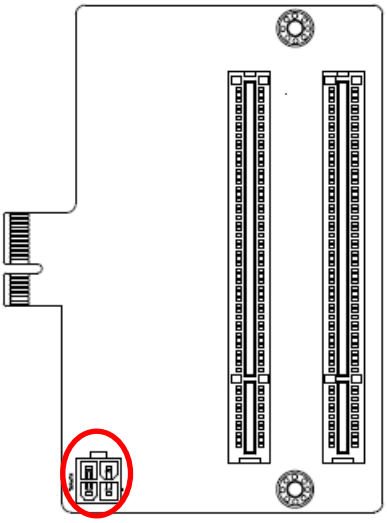


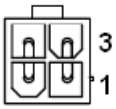


Signal	PIN	PIN	Signal
LAN23_WDT-	11	12	LAN45_WDT-
LAN23_WDT+	9	10	LAN45_WDT+
LAN23_BYPASS-	7	8	LAN45_BYPASS-
LAN23_BYPASS+	5	6	LAN45_BYPASS+
LAN23_NORMAL-	3	4	LAN45_NORMAL-
LAN23_NORMAL+	1	2	LAN45_NORMAL+

2.9 AUX-M06 Connectors settings

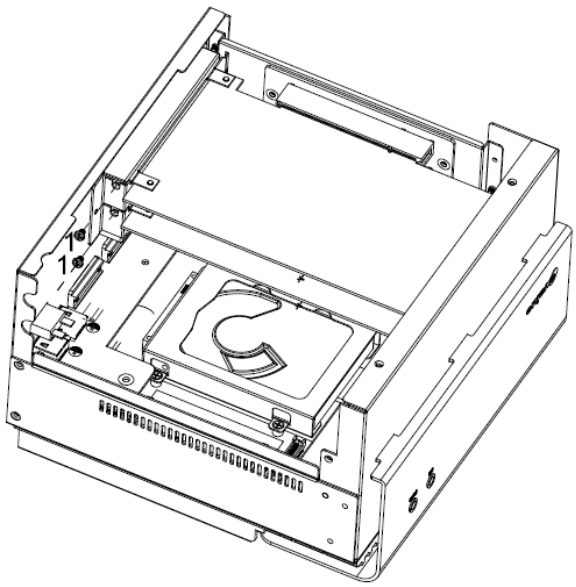
2.9.1 Power connector (NJPWR1)





Signal	PIN	PIN	Signal
+12V-28V	4	3	+12V-28V
GND	2	1	GND

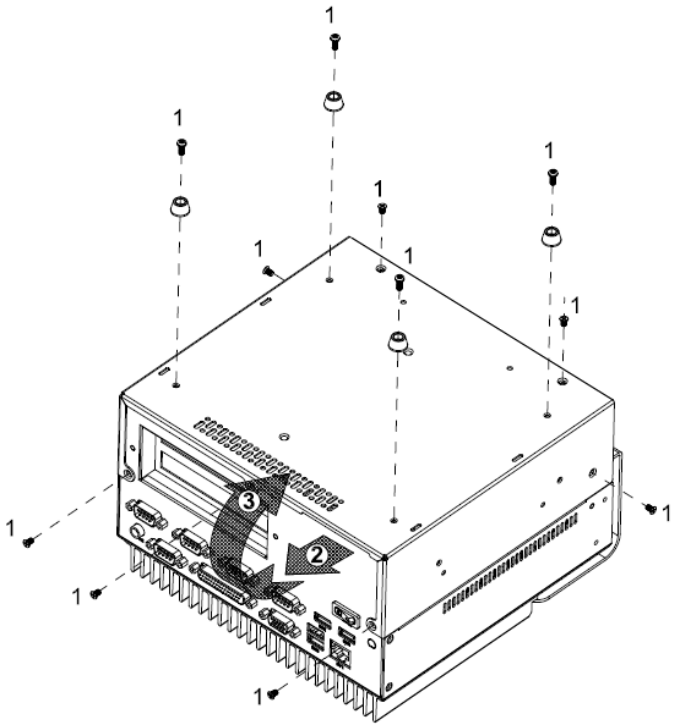
2.10 Installing PCI devices (EPS-CDV)



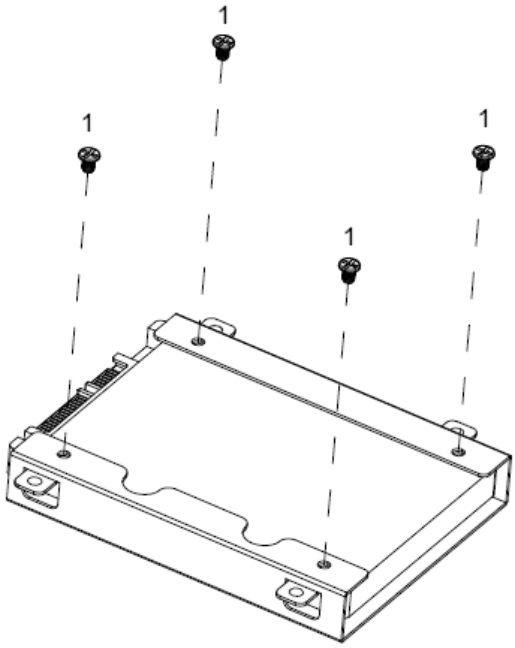
Step1. Remove 2 screws to release the retention clip.

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

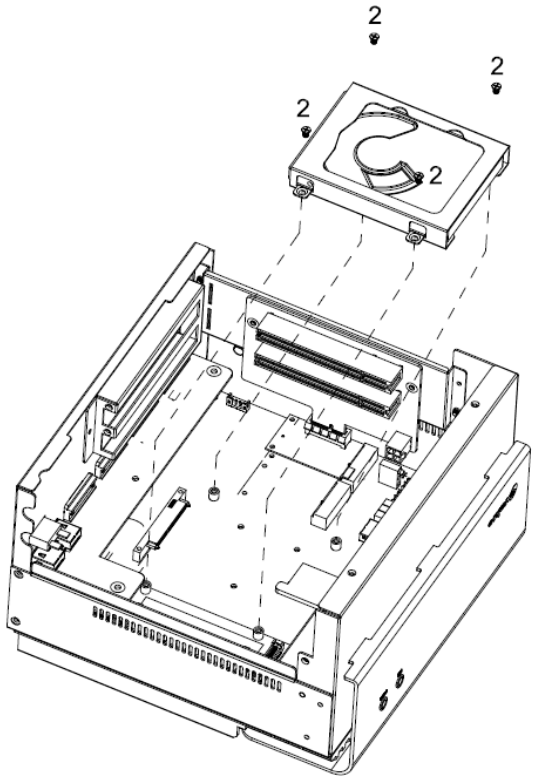
2.11 Installing Hard Disk & Memory (EPS-CDV)



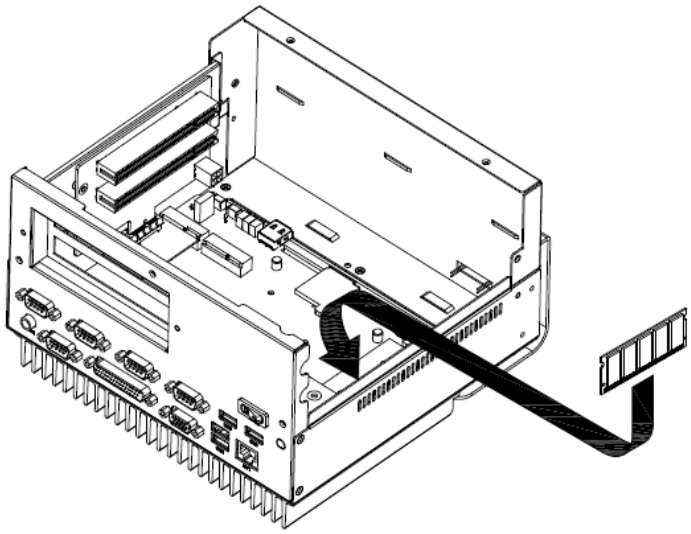
Step 1. Remove all screws maintaining bottom enclosure, slide enclosure inward (2) and pull upward (3) to complete disassembly.



Step 2. Secure HDD by means of 4 screws.

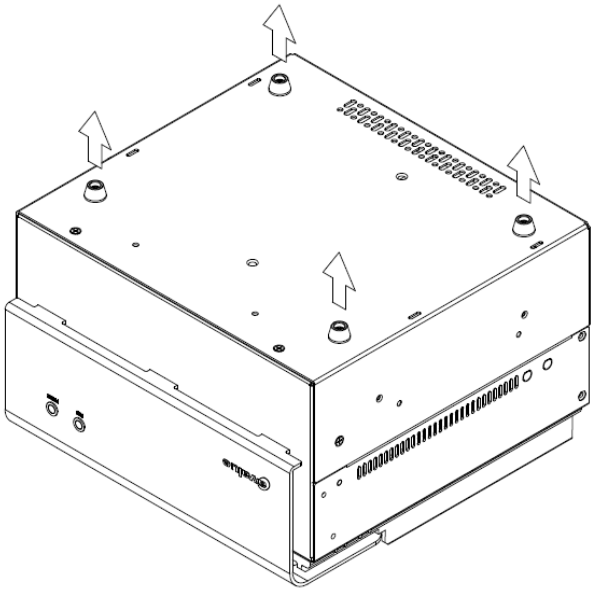


Step 3. Assemble HDD bracket by means of 4 screws as shown above.

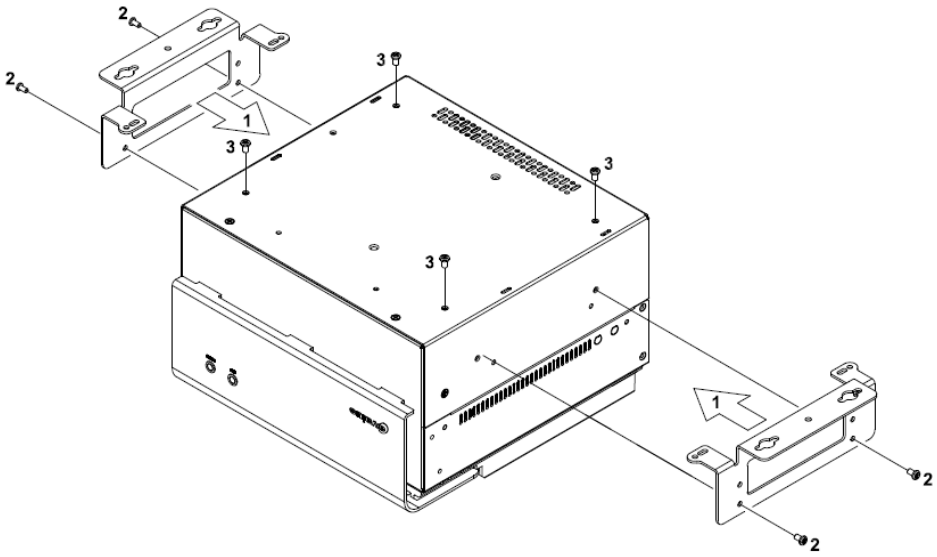


Step 4. Properly install the memory module and press until properly seated.

2.12 Installing Mounting Brackets (EPS-CDV)



Step 1. Remove 4 screws from the bottom of your system.



Step 2. Locate brackets on both sides, matching the holes on the system.

Step 3. Insert and fasten 2 screws on each side of the system to secure Mounting brackets.

Step 4. Reposition the 4 screws on the bottom of your system and fasten to complete assembly.