

ERS-CDVE

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

Quick Reference Guide

3rd Ed –08 November 2013

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FCC Statement



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

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- (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.

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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 ERS-CDVE 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:
 - 44-Pin Multiple Function Cable
 - Wall Mount Bracket
 - Adapter
 - Power Cord
 - Screw kit for Wall Mount/Mini Card/2.5" Drive Bay



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

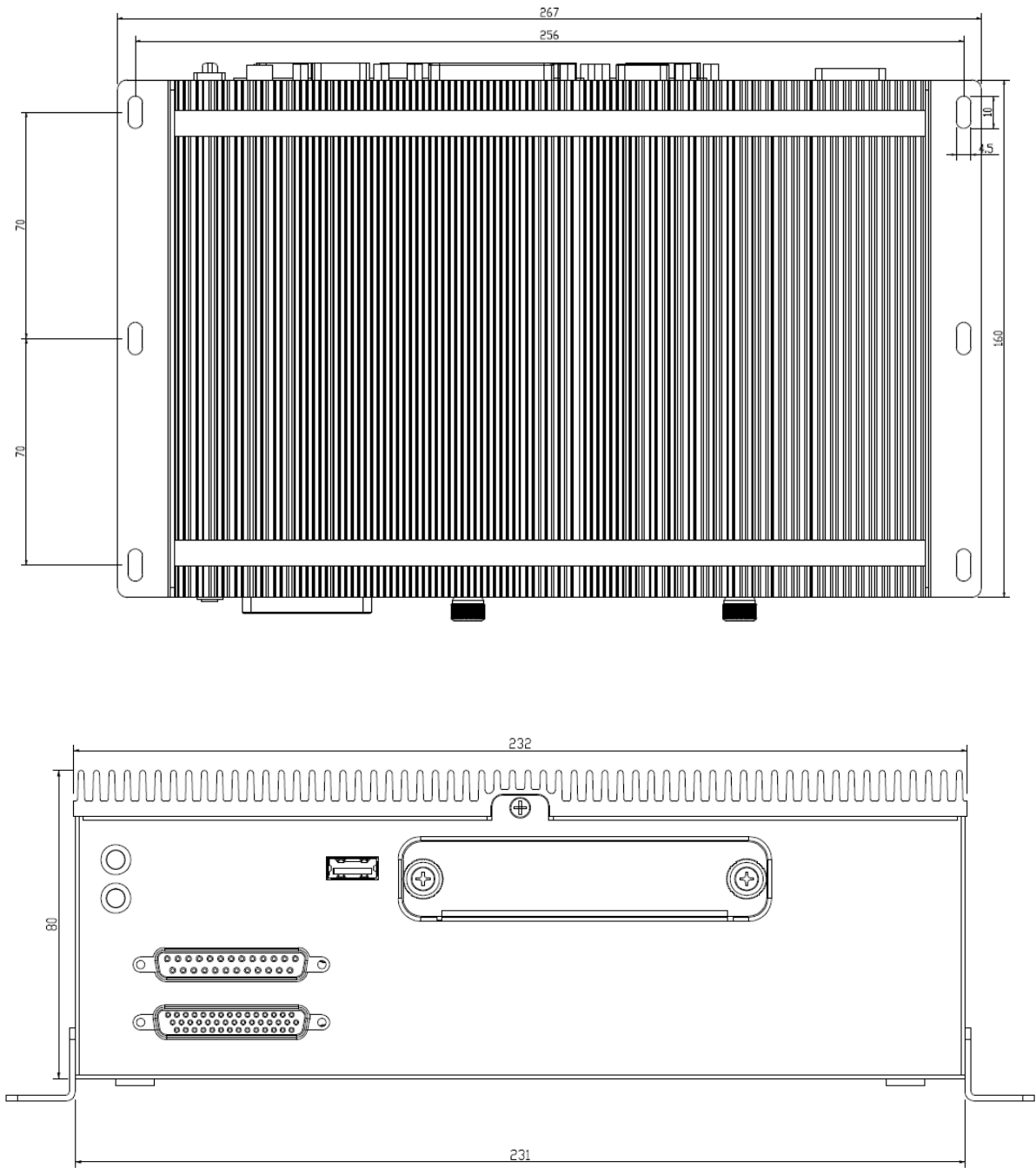
1.3 System Specifications

System	
Board	EBM-CDVS + AUX-M03
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. ~ 65535sec./min. and 1sec. or 1min./step
H/W Status Monitor	- Monitoring System Temperature and Voltage with - Auto Throttling Control
Expansion Interface	2 x Mini PCIe Socket (mSATA on 1st, SIM Card Slot on 2nd)
External I/O	
COM	10 x RS-232 (COM1 ~ COM4 Can be Set as 422/485 by BIOS); COM3 ~ COM10 Supports Isolation Protection
LAN	1 x RJ-45
Antenna	2 Knockouts for Antenna Mounting (Options to Add WiFi & 3G)
VGA	1 x VGA
Audio Port	Mic-in, Line-in, Line-out
GPIO	6-bit GPI and 6-bit GPO
USB Port	5 x USB 2.0 (Front 1; Rear 4)
PS/2	2 x PS/2 for KB & MS
SIM	1 x SIM Card Slot
SMBUS	1 x SMBUS
DC Output	2-Pin Phoenix (Voltage is Identical with DC-Input)
LPT	1 x DB-25
LVDS	1 x single channel 18/ 24-bits LVDS
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

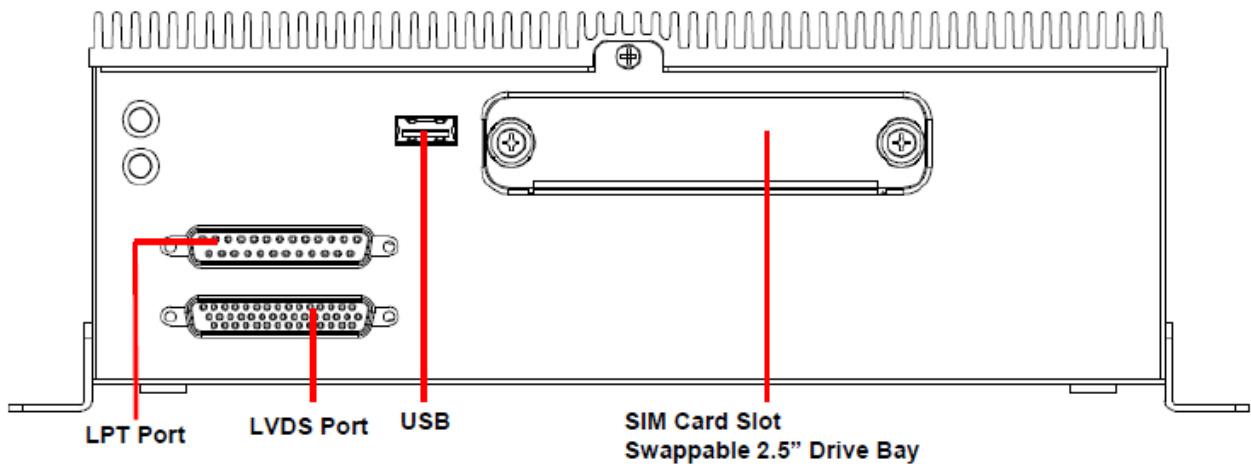
Ethernet	
LAN Chip	1 x Intel® 82574L Gigabit Ethernet
Ethernet Interface	10/ 100/ 1000 Base-Tx Gigabit Ethernet Compatible
Environment & Mechanical	
Power Requirement	+12 ~ +26Vdc (Lockable DC Jack)
ACPI	- Single Power ATX Support S0, S3, S4, S5 - ACPI 3.0 Compliant
Power Mode	AT/ ATX (ATX is The Default 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)	231mm x 160mm x 80mm
Weight	7.7lbs (3.5Kgs)

1.4 System Overview

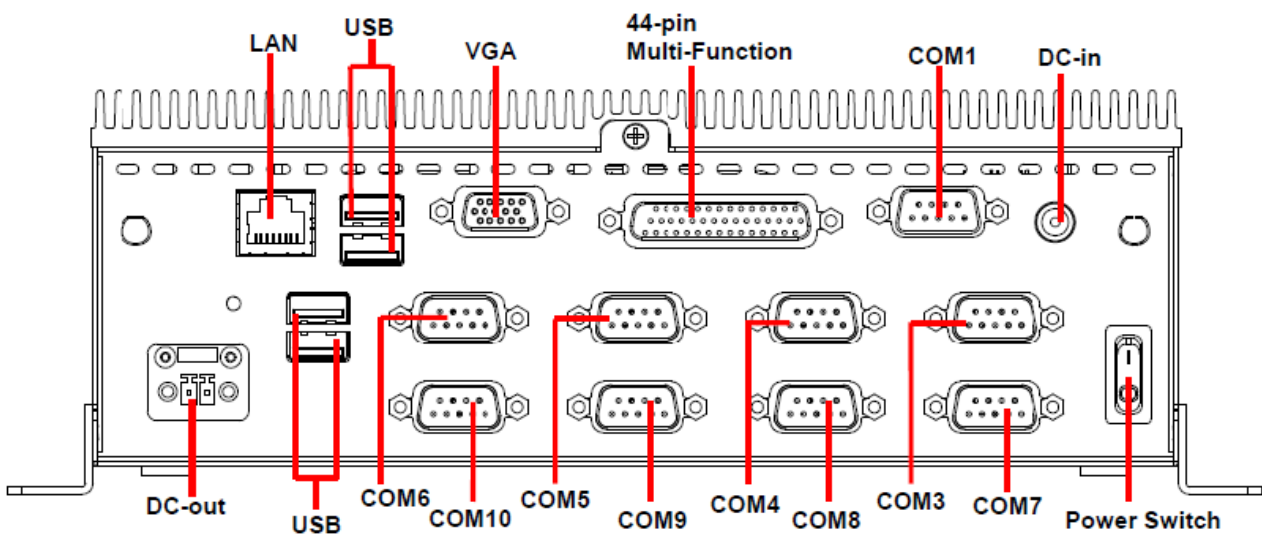
1.4.1 Front & Top View



1.4.2 Front View



1.4.3 Rear View



Connectors

Label	Function	Note
COM1	Serial port connector 1	
COM3~10	Serial port connector 3~10	
DC-IN	DC power-in connector	
DC-OUT	DC power-out connector	
LAN	RJ-45 Ethernet	
44-pin Multi-function	Multi-Function Port combined COM2, 2 PS/2, Audio, GPIO and SMBus	
USB	USB connector	
VGA	VGA connector	
Swappable Drawer	2.5" Driver Bay and SIM Card	
LPT Port	LPT connector	
LVDS Port	LVDS connector	
Power Switch	Power-in connector	

2. Hardware Configuration

Jumper and Connector Setting, Driver and BIOS Installing

For advanced information, please refer to:

- 1- EBM-CDVS and AUX-M03 included in this manual.

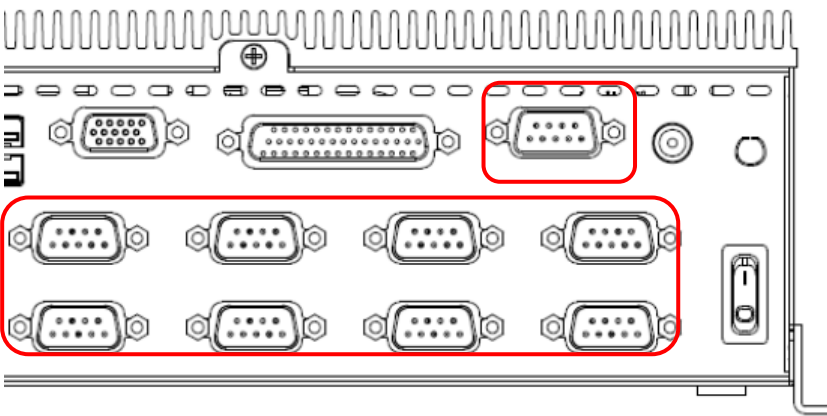


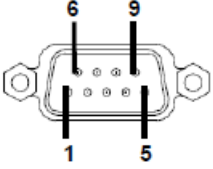
Note: If you need more information, please visit our website:

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

2.1 ERS-CDVE connector mapping

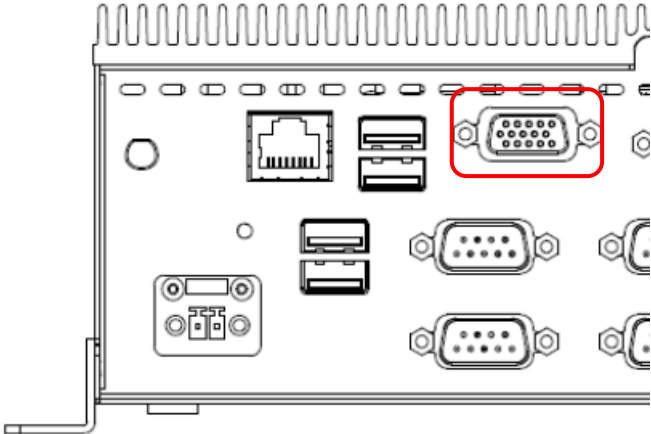
2.1.1 External Serial Port 1/3/4/5/6/7/8/9/10 connector (COM1/3/4/5/6/7/8/9/10)

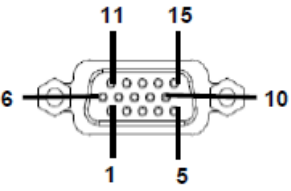




Pin	RS-232	RS-485	RS-422
1	DCD	Data-	TXD-
2	RXD	Data+	TXD+
3	TXD		RXD+
4	DTR		RXD-
5	GND	GND	GND
6	DSR		
7	RTS		
8	CTS		
9	RI		

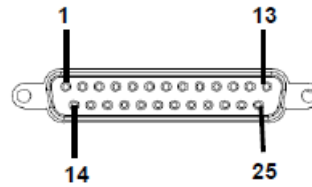
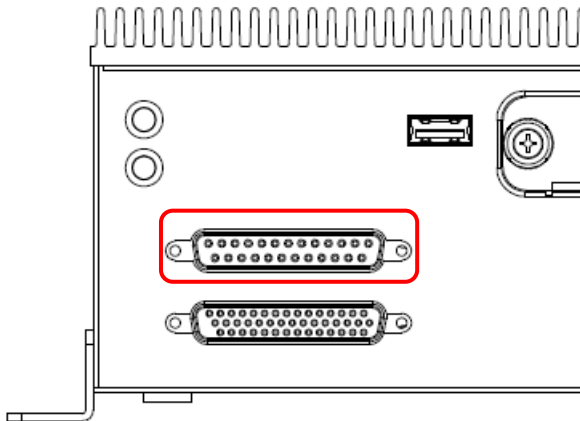
2.1.2 VGA connector (VGA)





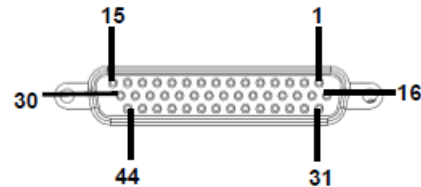
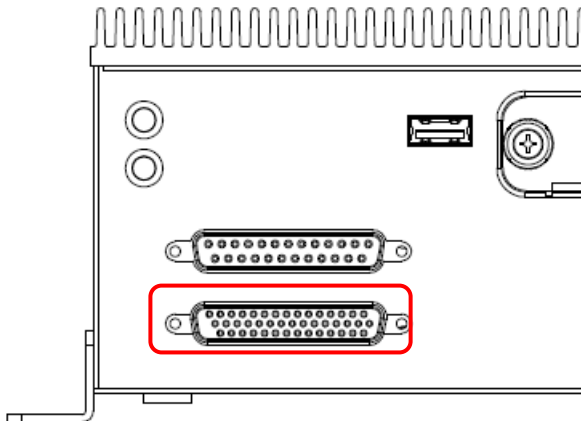
PIN	Signal	PIN	Signal	PIN	Signal
1	RED	6	GND	11	NC
2	GREEN	7	GND	12	SDT_DDC
3	BLUE	8	GND	13	VGA_HS
4	NC	9	+5V	14	VGA_VS
5	GND	10	GND	15	SCK_DDC

2.1.3 LPT connector (LPT Port)



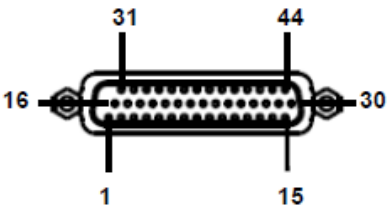
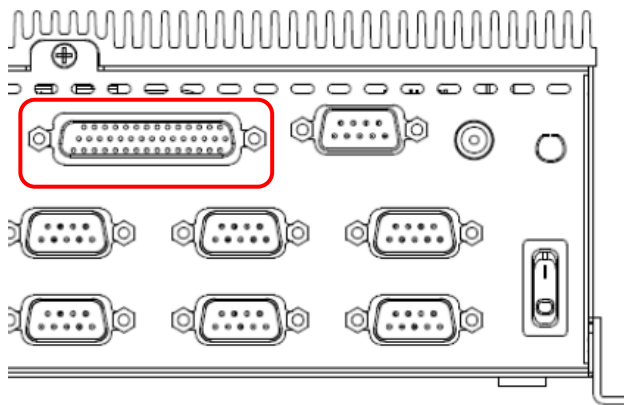
Signal	PIN	PIN	Signal
STB-	1	14	LPT_AFD#
PD0	2	15	LPT_ERR#
PD1	3	16	LPT_INIT#
PD2	4	17	LPT_SLIN#
PD3	5	18	GND
PD4	6	19	GND
PD5	7	20	GND
PD6	8	21	GND
PD7	9	22	GND
LPT_ACK#	10	23	GND
LPT_BUSY	11	24	GND
LPT_PE	12	25	GND
LPT_SLCT	13		

2.1.4 LVDS connector (LVDS Port)



PIN	Signal	PIN	Signal	PIN	Signal
1	3.3V	16	LVDS_DATA2_P	31	NC
2	3.3V	17	LVDS_DATA2_N	32	NC
3	GND	18	GND	33	GND
4	LVDS_DDC_DATA	19	LVDS_DATA3_P	34	LVDS_CLKP
5	LVDS_DDC_CLK	20	LVDS_DATA3_N	35	LVDS_CLKN
6	GND	21	GND	36	GND
7	LVDS_DATA0_P	22	NC	37	NC
8	LVDS_DATA0_N	23	NC	38	NC
9	GND	24	GND	39	GND
10	LVDS_DATA1_P	25	NC	40	BKL1_5V
11	LVDS_DATA1_N	26	NC	41	BKL1_Bright
12	GND	27	GND	42	BKL1_BKLTEN
13	12V	28	NC	43	BKL1_GND
14	5V	29	NC	44	BKL1_12V
15	5V	30	GND		

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

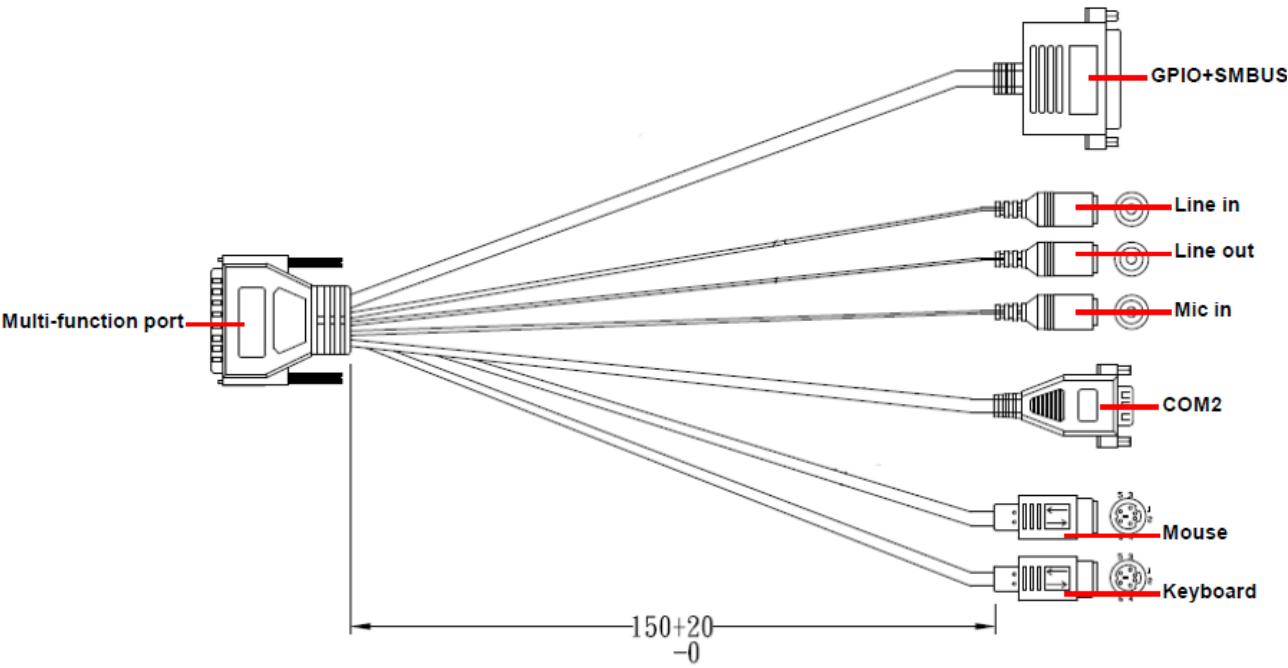


PIN	Signal	PIN	Signal	PIN	Signal
1	LINE1_JD	16	FRONT_JD	31	LINE1_RIN
2	MIC1_JD	17	LINEOUT_R	32	GND
3	MIC_RIN	18	GND	33	LINE1_LIN
4	GND	19	LINEOUT_L	34	+5V
5	MIC_LIN	20	GND	35	DO3
6	DO5	21	DO4	36	DO0
7	DO2	22	DO1	37	DI3
8	DI5	23	DI4	38	DI0
9	DI2	24	DI1	39	SMB_CLK
10	MSCK	25	SMB_DATA	40	NRIB#
11	GND	26	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		

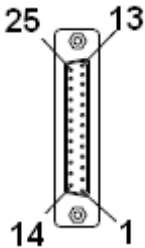
Note:

Pin27~30 & Pin40~44 Signal

Pin	RS-232	RS-485	RS-422
44	DCD	Data-	TXD-
30	RXD	Data+	TXD+
43	TXD		RXD+
29	DTR		RXD-
42	GND	GND	GND
28	DSR		
41	RTS		
27	CTS		
40	RI		

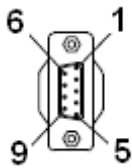


2.1.5.1 GPIO+SMBUS



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

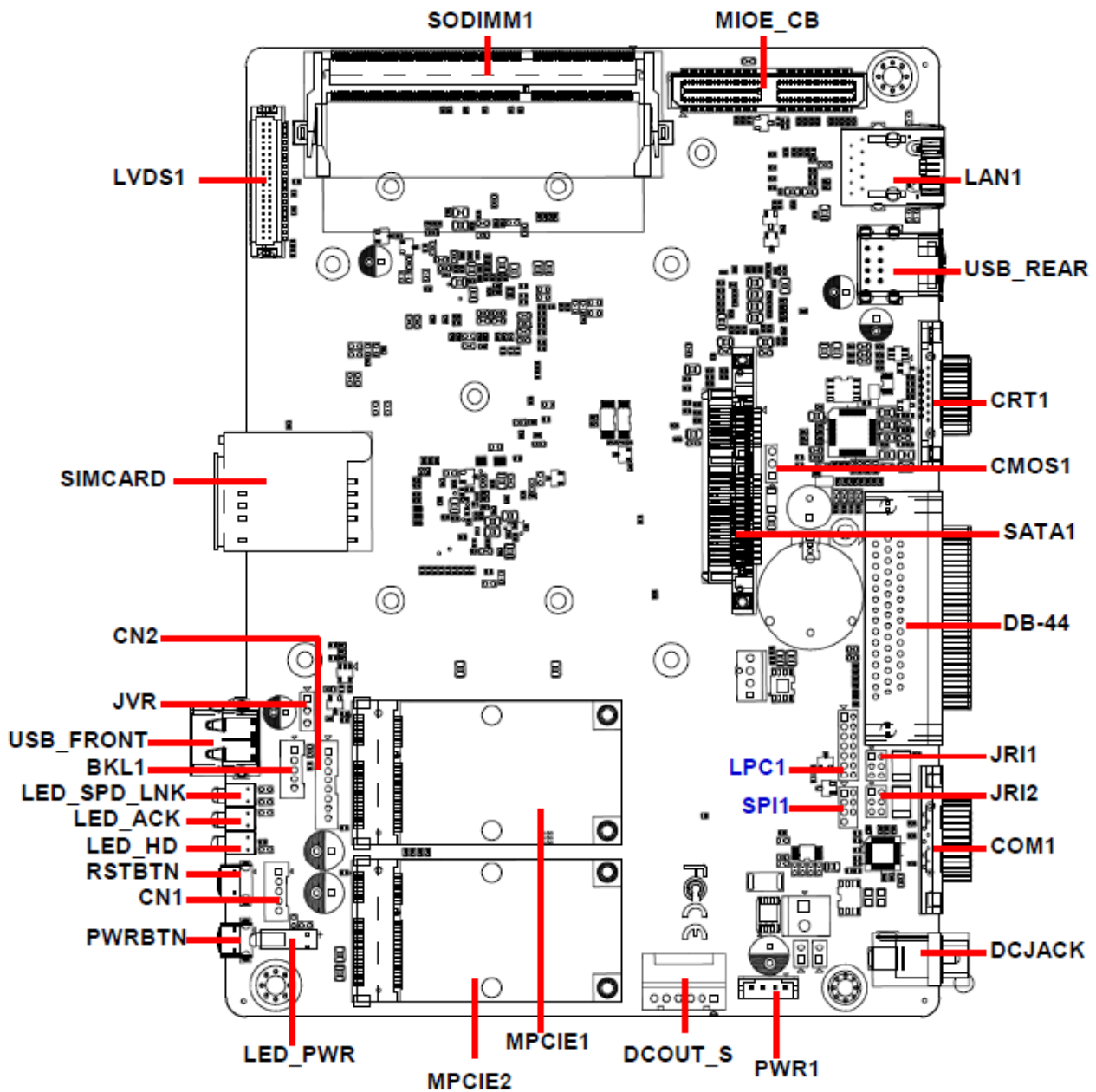
2.1.5.2 COM2

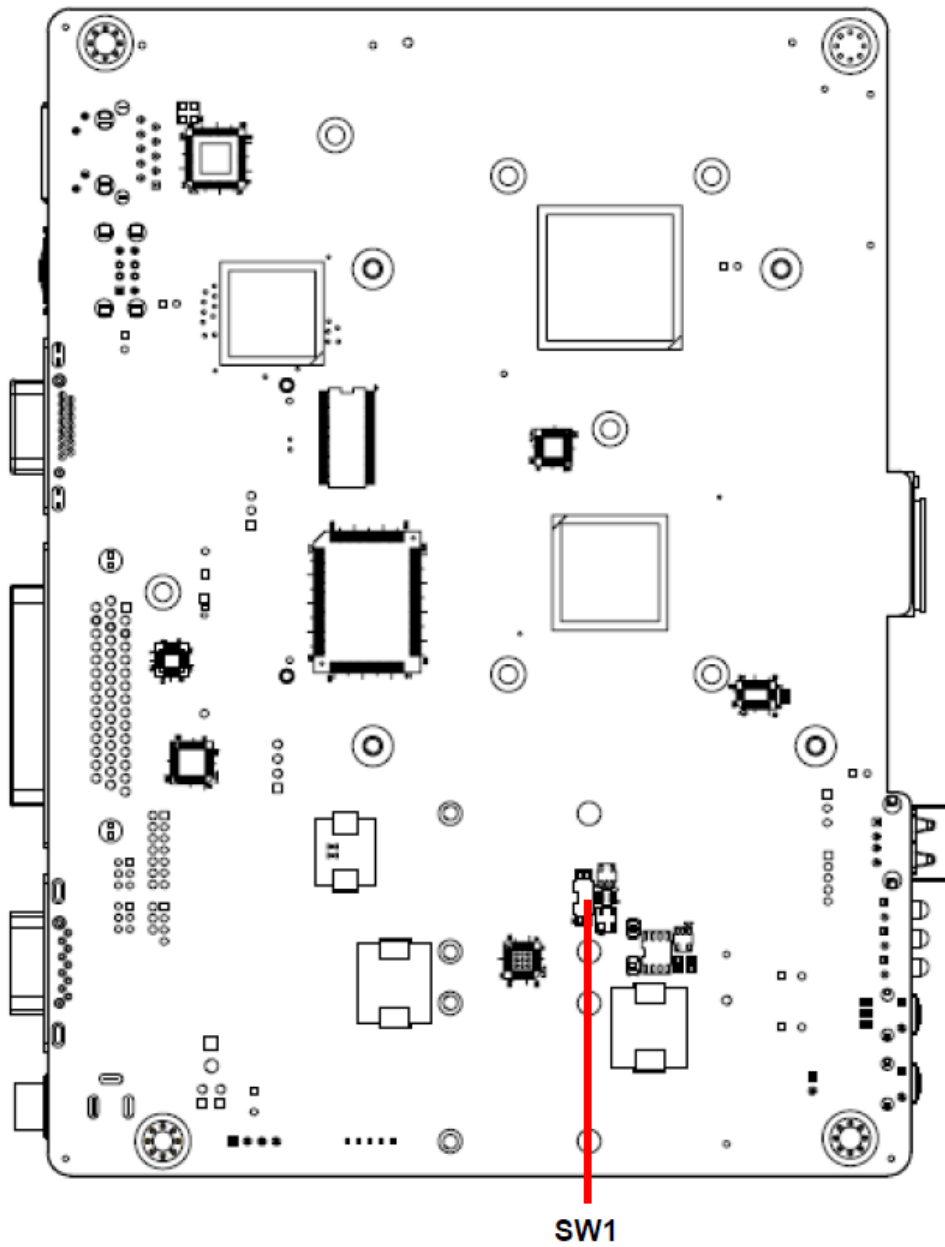


Pin	RS-232	RS-485	RS-422
1	DCD	Data-	TXD-
2	RXD	Data+	TXD+
3	TXD		RXD+
4	DTR		RXD-
5	GND	GND	GND
6	DSR		
7	RTS		
8	CTS		
9	RI		

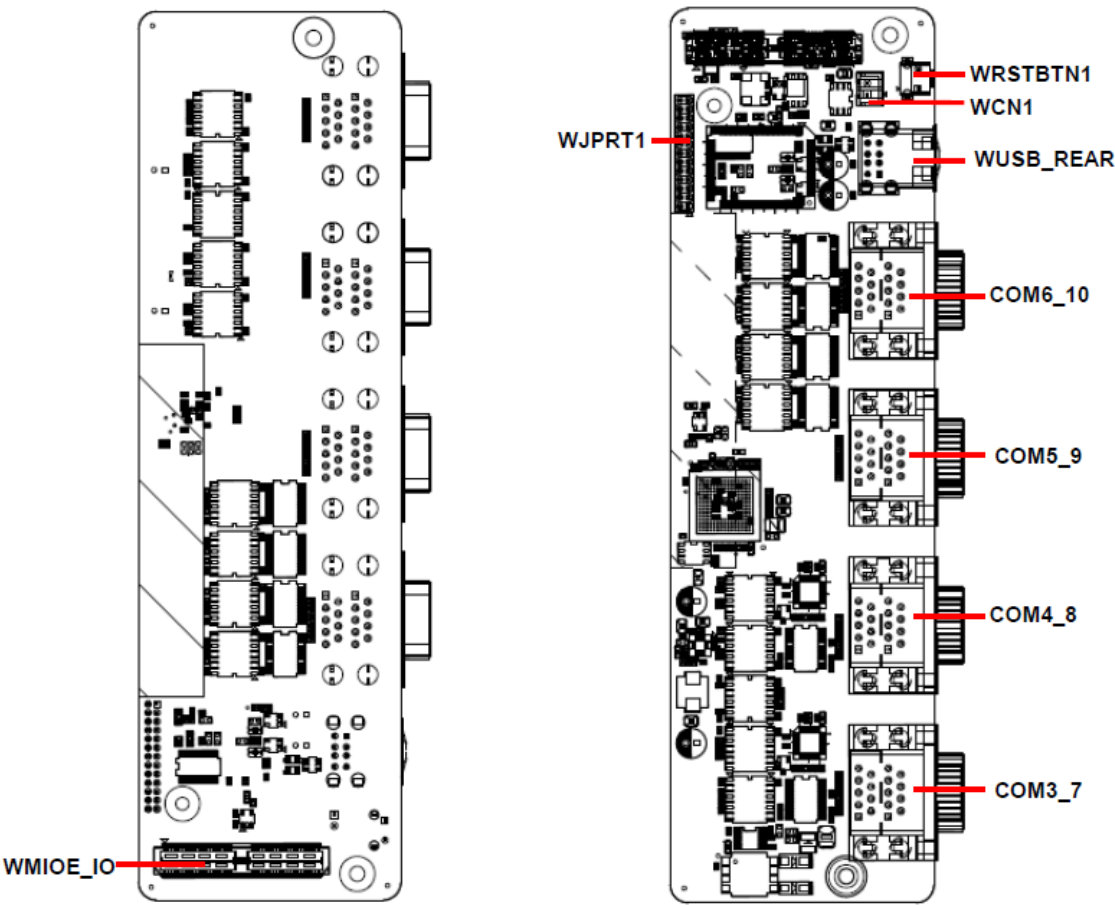
2.2 EBM-CDVS and AUX-M03 Overviews

2.2.1 EBM-CDVS





2.2.2 AUX-M03



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	

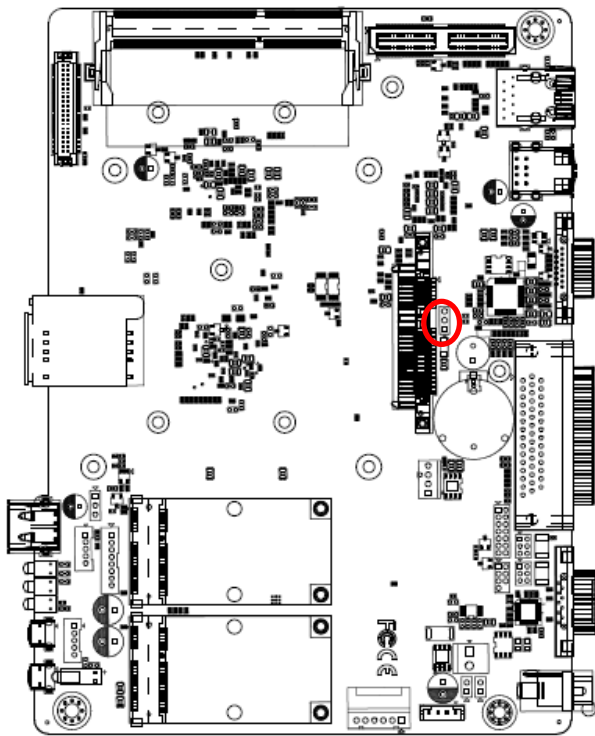
2.4 AUX-M03 Connector list

Connectors

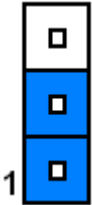
Label	Function	Note
WRSTBTN1	Reset button	
WJPRT1	LPT Port	13 x 2 header, pitch 2.00mm
WCN1	System reset	2 x 1 wafer, pitch 2.50mm
WUSB_REAR	USB connector	
COM3_7	Serial port connector 3 & 7	
COM4_8	Serial port connector 4 & 8	
COM5_9	Serial port connector 5 & 9	
COM6_10	Serial port connector 6 & 10	
WMIOE_IO	IET Expansion slot	

2.5 EBM-CDVS Jumpers & Connectors settings

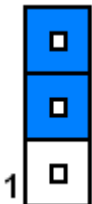
2.5.1 Clear CMOS (CMOS1)



Protect*

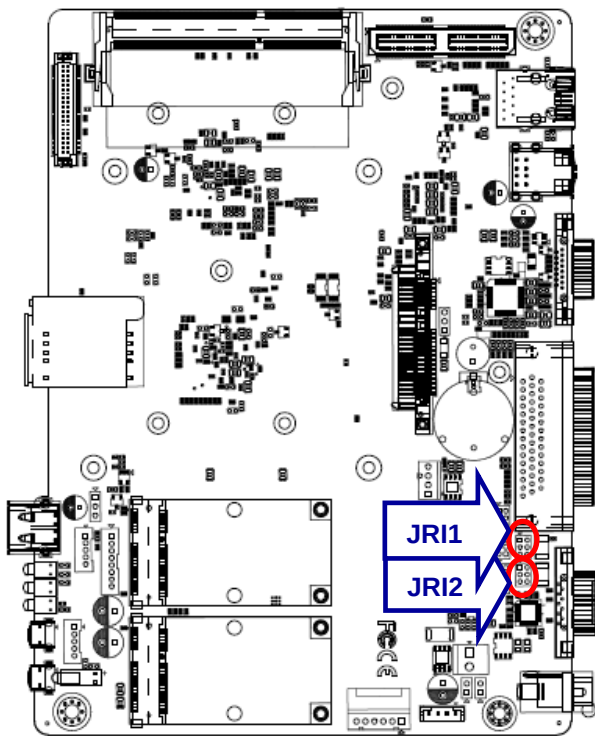


Clear CMOS

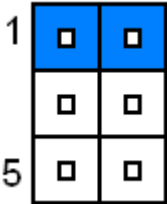


*Default

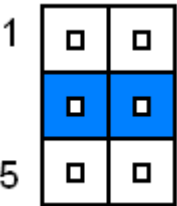
2.5.2 COM 1/2 pin 9 signal select (JRI1/2)



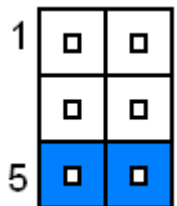
Ring*



+5V

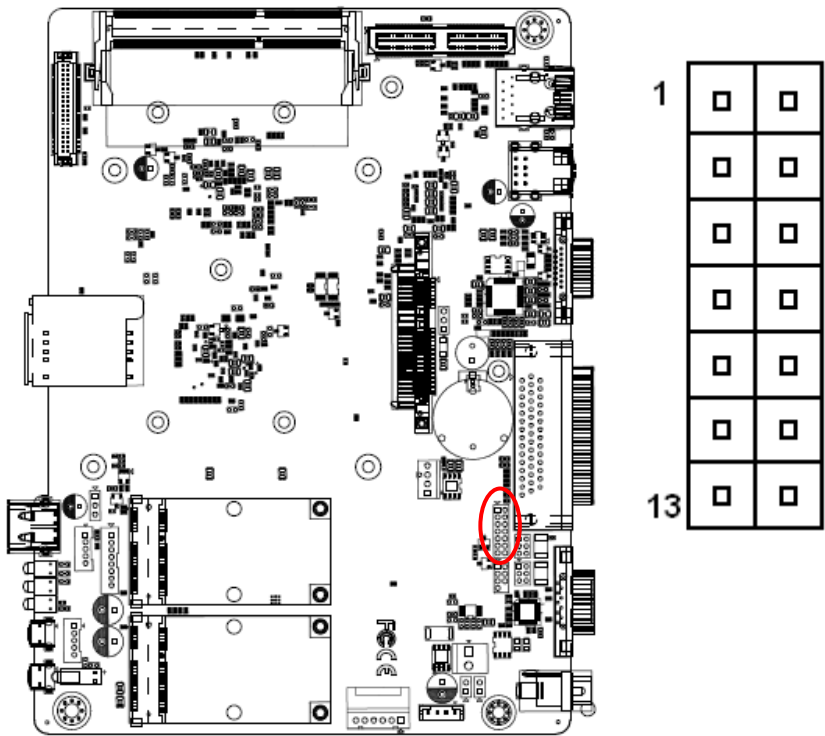


+12V



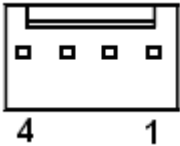
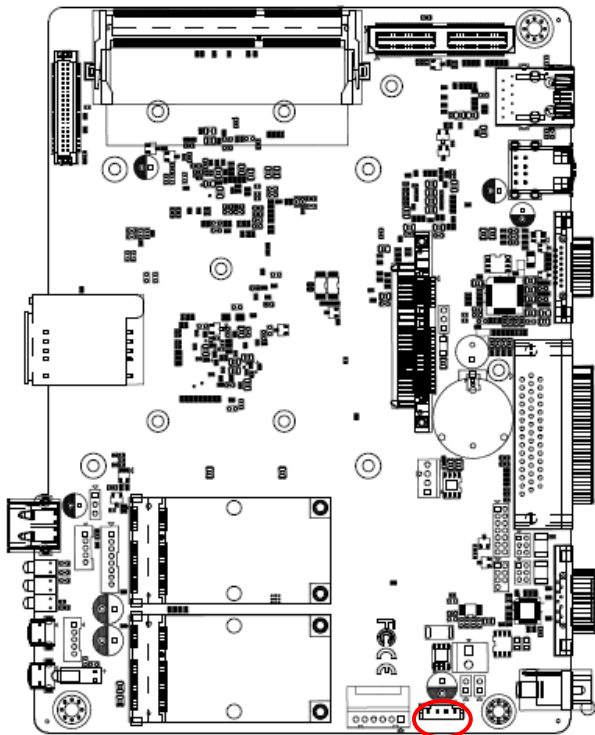
* Default

2.5.3 LPC port connector (LPC1)



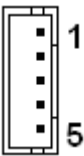
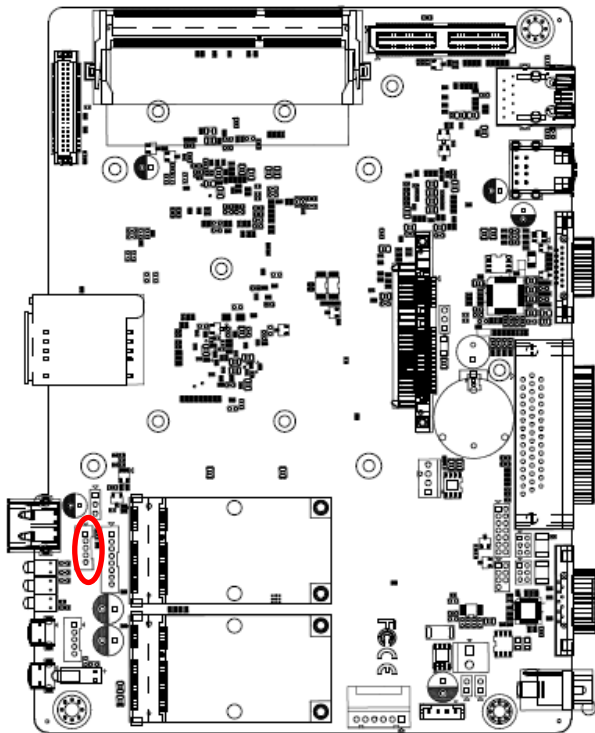
Signal	PIN	PIN	Signal
LPC_AD0	1	2	+3V
LPC_AD1	3	4	PLTRST#
LPC_AD2	5	6	LPC_LFRAME#
LPC_AD3	7	8	LPC1_PCI_CLK
SERIRQ	9	10	GND
+5V	11	12	GND
+5V	13	14	LPC_LDRQ1#

2.5.4 Power connector (PWR1)



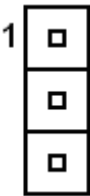
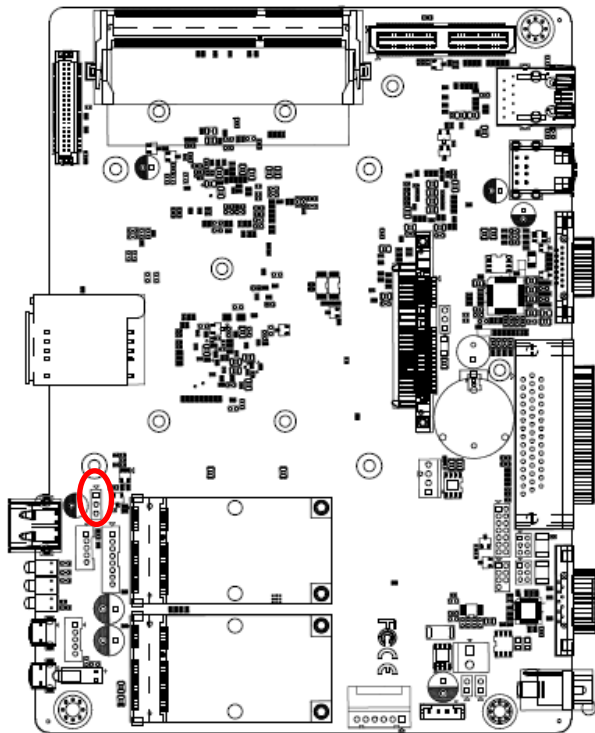
Signal	PIN
+5V	1
GND	2
GND	3
+12V	4

2.5.5 LCD inverter connector (BKL1)

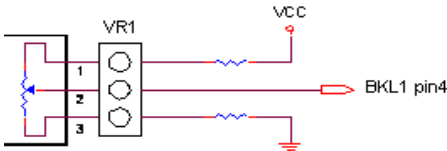


Signal	PIN
+12V	1
GND	2
LVDS_BKLTEN	3
BRIGHT	4
+5V	5

2.5.6 LCD backlight brightness adjustment (JVR)



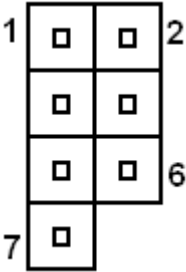
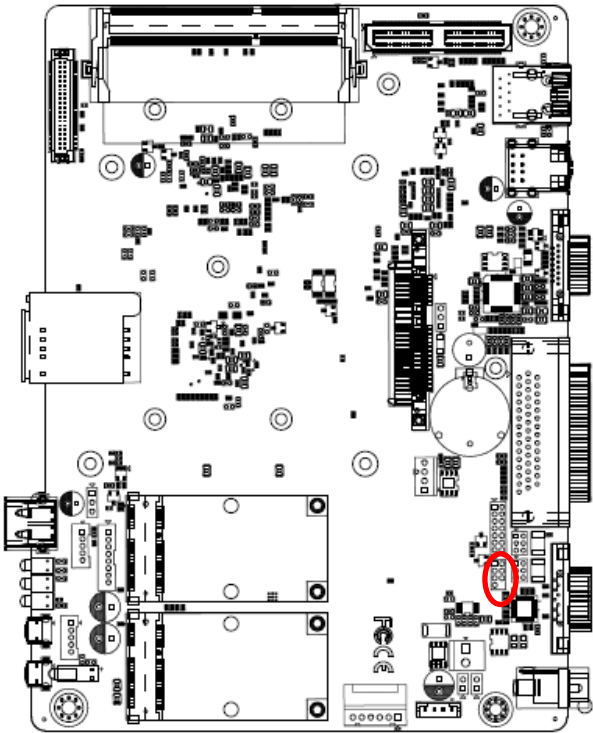
Signal	PIN
+5V	1
BRIGHT	2
GND	3



Variation Resistor

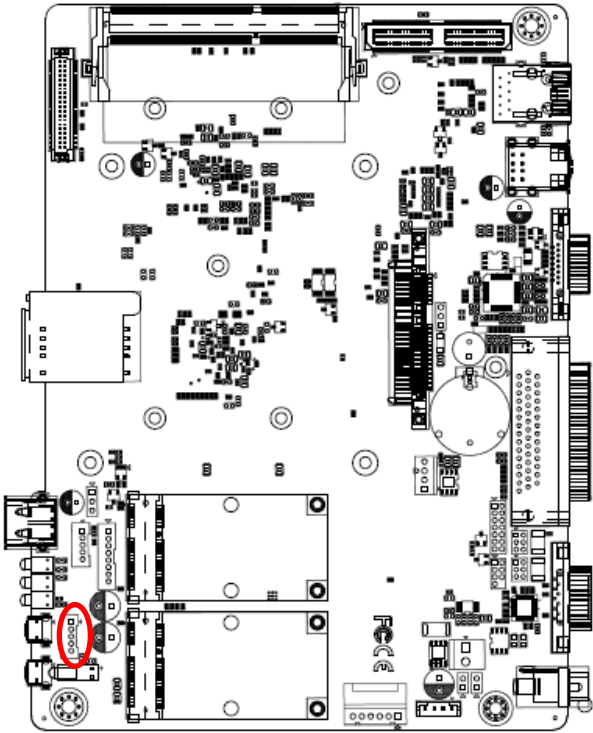
(Recommended: 4.7KΩ, >1/16W)

2.5.7 SPI connector (SPI1)



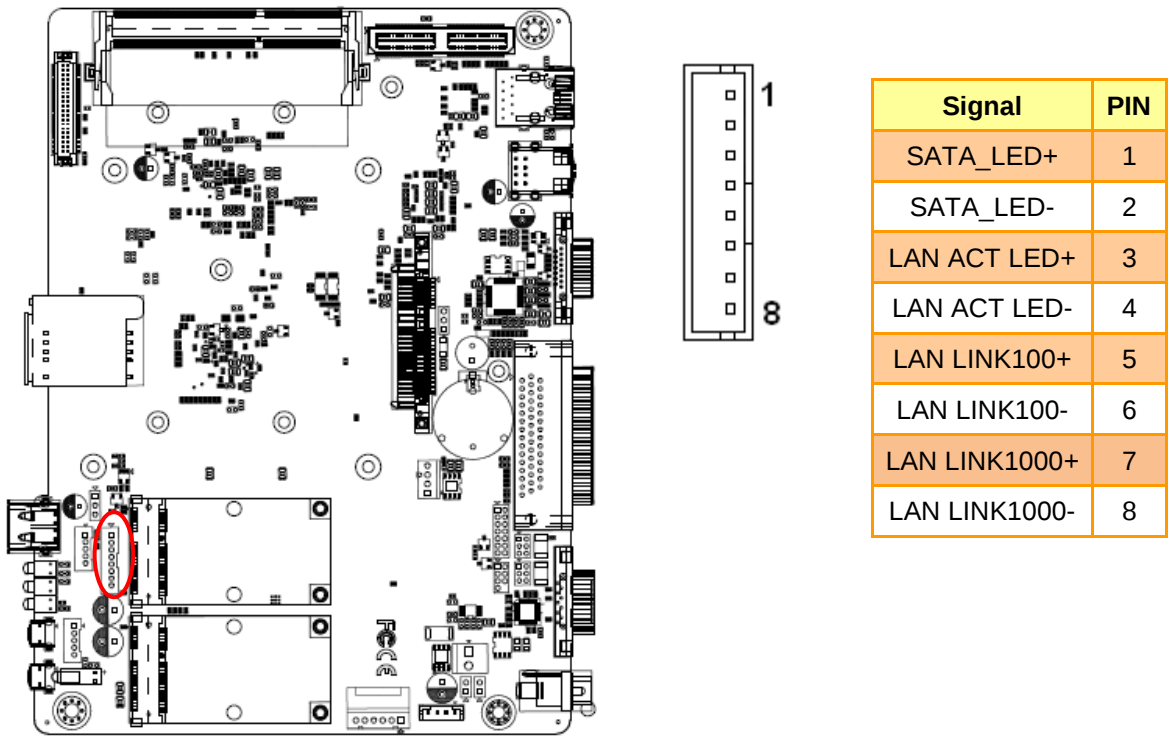
Signal	PIN	PIN	Signal
+3V	1	2	GND
SPI_CS#	3	4	SPI_CLK
SPI_SO	5	6	SPI_SI
SPI_HOLD#	7		

2.5.8 Front Panel Connector 1 (CN1)

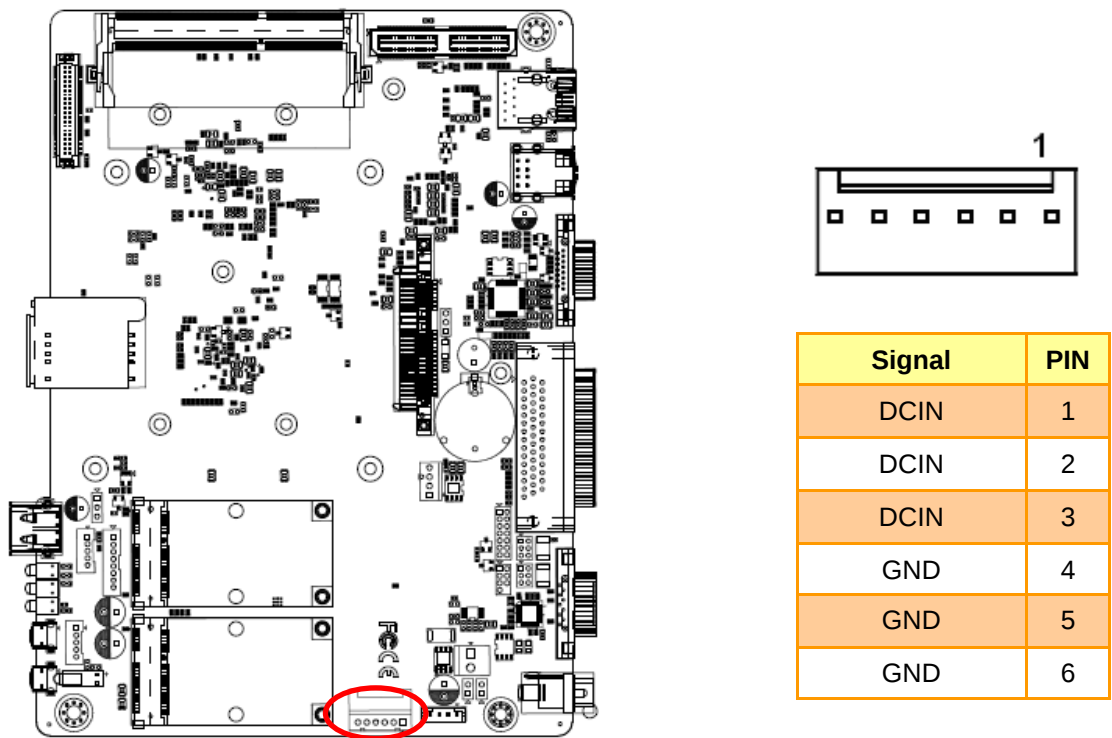


Signal	PIN
PWRBTN#	1
RESET#	2
GND	3
POWER LED+	4
POWER LED-	5

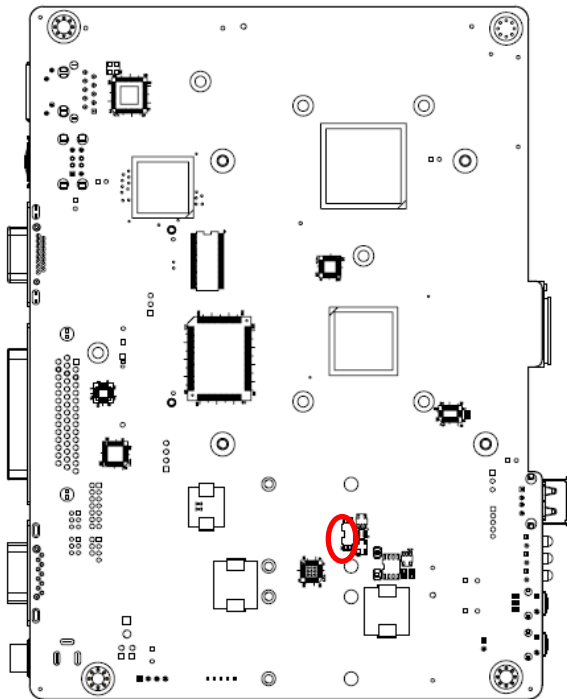
2.5.9 Front Panel Connector 2 (CN2)



2.5.10 DC Output connector (DCOUT_S)



2.5.11 AT/ATX mode selector (SW1)



*Default

AT/ATX mode



AT mode

ON	
↑	
1	2
OFF	

ATX mode*

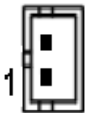
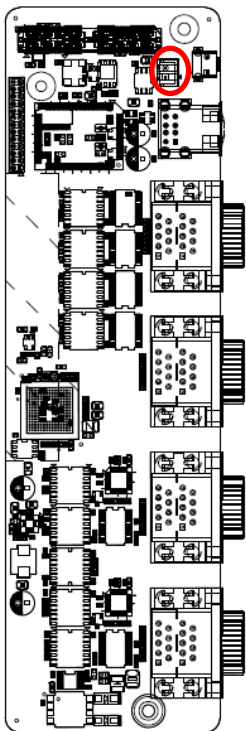
ON	
↓	
1	2
OFF	

2.5.11.1 Signal Description –AT/ATX mode selection

AT/ATX mode	Description
AT mode on 12	This Mode supports AT power supply, no need to press Power button to enable power on/off
ATX mode on 12	This Mode supports ATX power supply. Press the ATX power button to enable power on/off

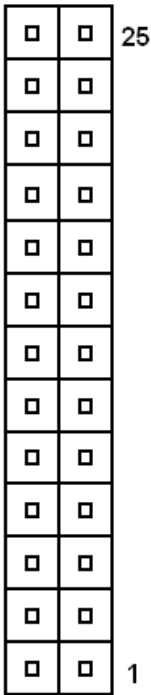
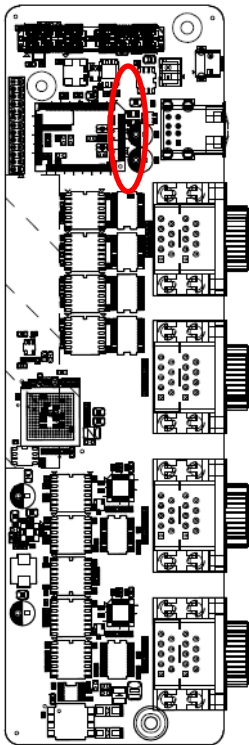
2.6 AUX-M03 Connectors settings

2.6.1 System reset (WCN1)



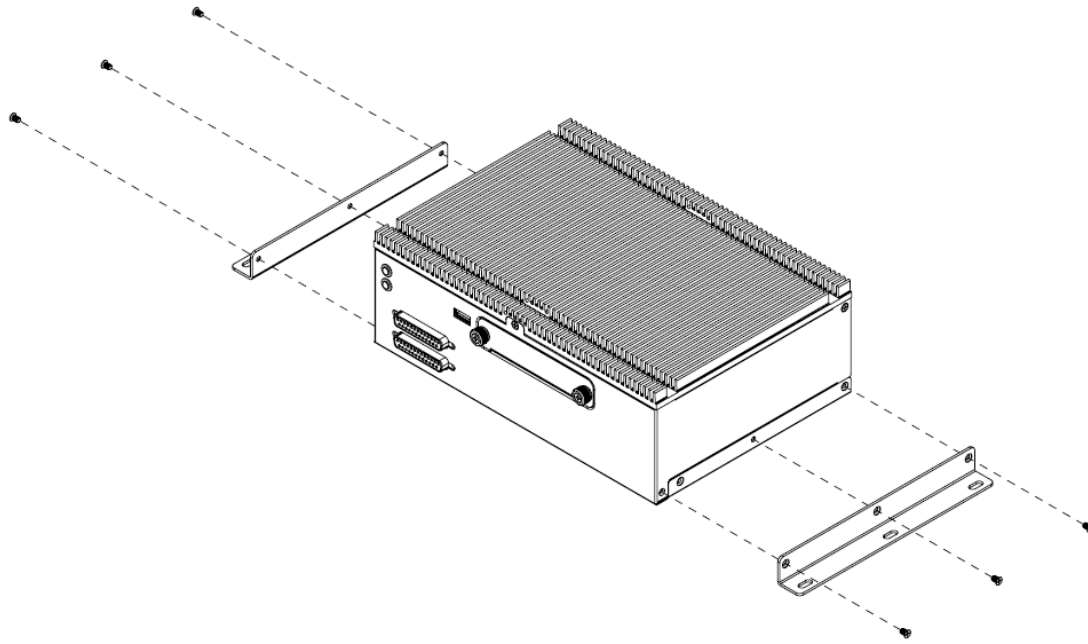
Signal	PIN
GND	2
WSYSRST#	1

2.6.2 LPT Port (WJPRT1)



Signal	PIN	PIN	Signal
GND	26	25	LPT_SLCT
GND	24	23	LPT_[E
GND	22	21	LPT_BUSY
GND	20	19	LPT_ACK#
GND	18	17	PD7
GND	16	15	PD6
GND	14	13	PD5
GND	12	11	PD4
GND	10	9	PD3
LPT_SLIN#	8	7	PD2
LPT_INIT#	6	5	PD1
LPT_ERR#	4	3	PD0
LPT_AFD#	2	1	STB-

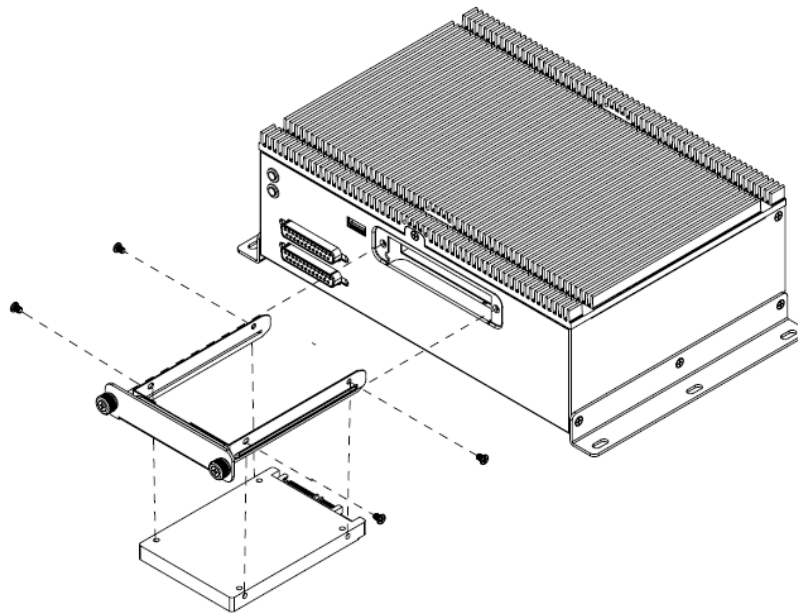
2.7 Installing Mounting Brackets (ERS-CDVE)



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

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

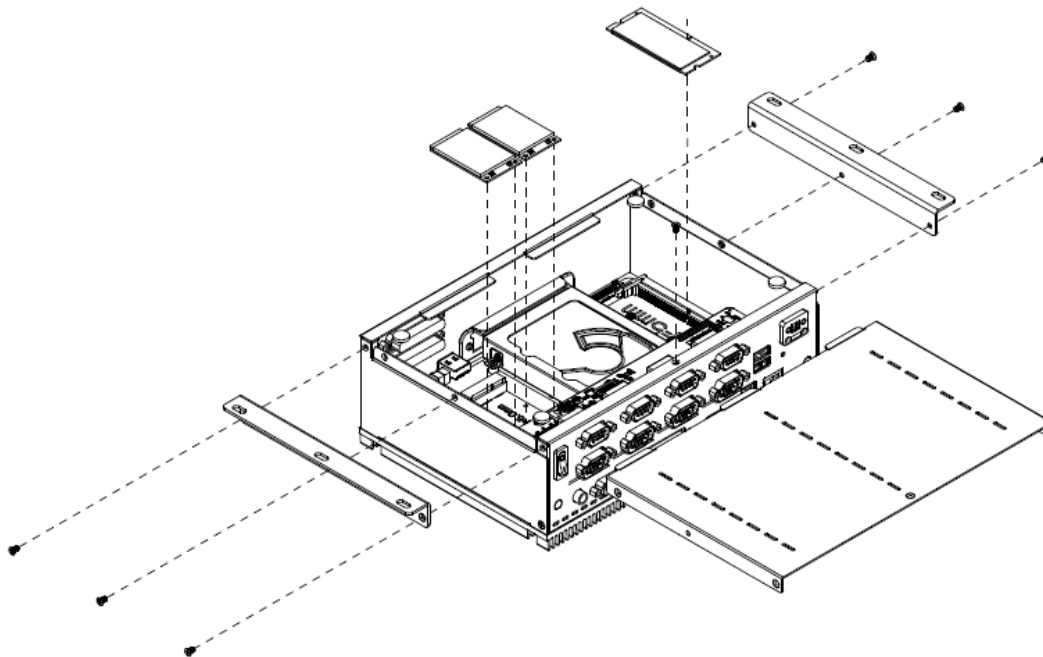
2.8 Installing Hard Disk & Memory, PCI devices (ERS-CDVE)



Step 1. Remove 4 screws to release the HDD bracket.

Step 2.1. Slide HDD into its bracket until properly seated.

Step 2.2. Secure HDD by means of 4 screws.



Step 3. Remove 3 screws on each side of the system to release Mounting brackets and chassis cover.

Step 4. Insert the DDR3 SODIMM into the memory socket and fasten with the screw to complete DDR3 SODIMM installation.

Step 5. Insert MPCIE cards into designated locations and fasten with 4 screws to complete MPCIE installation.

