

ERS-BYTE

Intel® Celeron® SoC Processor J1900 Fanless Rugged
Embedded System with 8 COM Isolations

Quick Reference Guide

1st Ed –23 March 2015

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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.

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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-BYTE Intel® Celeron® SoC Processor J1900 Fanless Rugged Embedded System with 8 COM Isolations
- 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-BYTS + AUX-M03
CPU	Intel® Celeron® J1900 2.0GHz Processor
BIOS	AMI uEFI BIOS, 64Mbit SPI Flash ROM
I/O Chip	EC ITE IT8528E
System Memory	1 x 204-Pin DDR3L 1333MHz SO-DIMM Socket Up to 8GB
Watchdog Timer	H/W Reset, 1sec. ~ 65535sec.
H/W Status Monitor	Monitoring CPU & System Temperature and Voltage
Storage	
Solid State Drive	1 x 2.5" Drive Bay, 1 x mSATA
External I/O	
COM Port	10 x RS-232 (COM1~COM4 can be set as 422/485 by BIOS); COM3~COM10 supported 2.5KV Isolation
USB Port	5 x USB
Video Port	1 x VGA, 1 x LVDS
Audio Port	1 x Mic-In, 1 x Line-Out, 1 x Line-In
LAN Port	1 x RJ45
GPIO	6-bit GPI & 6-Bit GPO
Switch	1 x Power on/off
Indicator Light	1 x Power on/off LED 1 x Storage LED
Expansion Slots	2 x Mini PCIe (1 x mSATA supported)
Display	
Chipset	Intel® Valleyview SoC integrated Graphics
Multiple Display	VGA
Resolution	VGA Mode: 2560 x 1080 @ 60Hz
Audio	
HD Code	Realtek ALC892
Audio Interface	Mic-in, Line-in, Line-out
Ethernet	
Chipset	Intel® I211AT Gigabit Ethernet Controller
Ethernet Interface	10/100/1000 Base-Tx Gigabit Ethernet Compatible
Environment & Mechanical	
Power Type	+12 ~ +26Vdc (Lockable DC Jack)
ACPI	- Single Power ATX Support S0, S3, S4, S5 - ACPI 5.0 Compliant

Quick Reference Guide

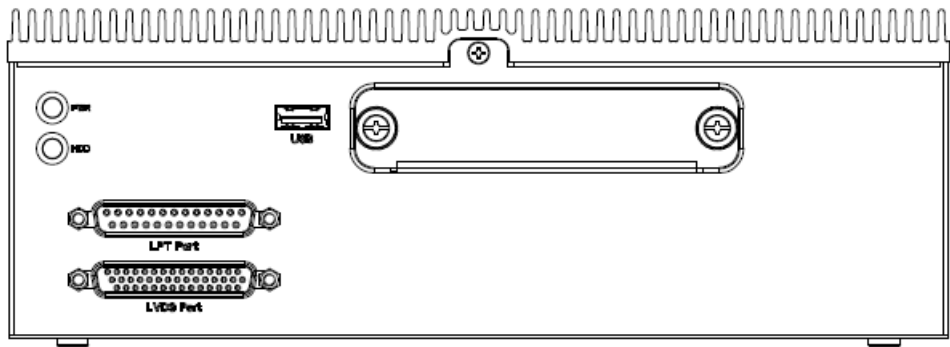
Power Mode	• AT/ ATX (ATX is The Default Setting)
Operating Temperature	• -15°C ~ 60°C (5°F ~ 140°F) (w/CF & SSD), Ambient w/Air Flow
Storage Temperature	• -40 ~ 75°C (-40 ~ 167°F)
Relative Humidity	• 0% ~ 90% Relative Humidity, Non-condensing
Vibration Protection	• With CF/SSD: 5Grms, IEC 60068-2-64, Random, 10 ~ 500Hz, 1hr/axis
Shock Protection	• With CF/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	• 3.5Kgs
Color	• Silver & Black
Fanless	• Yes
Reliability	
IP Rating	• IP 30



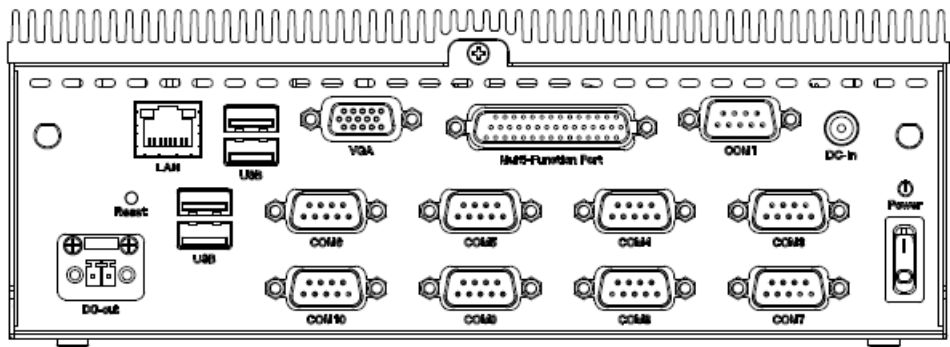
Note: Specifications are subject to change without notice.

1.4 System Overview

1.4.1 Front View



1.4.2 Rear View

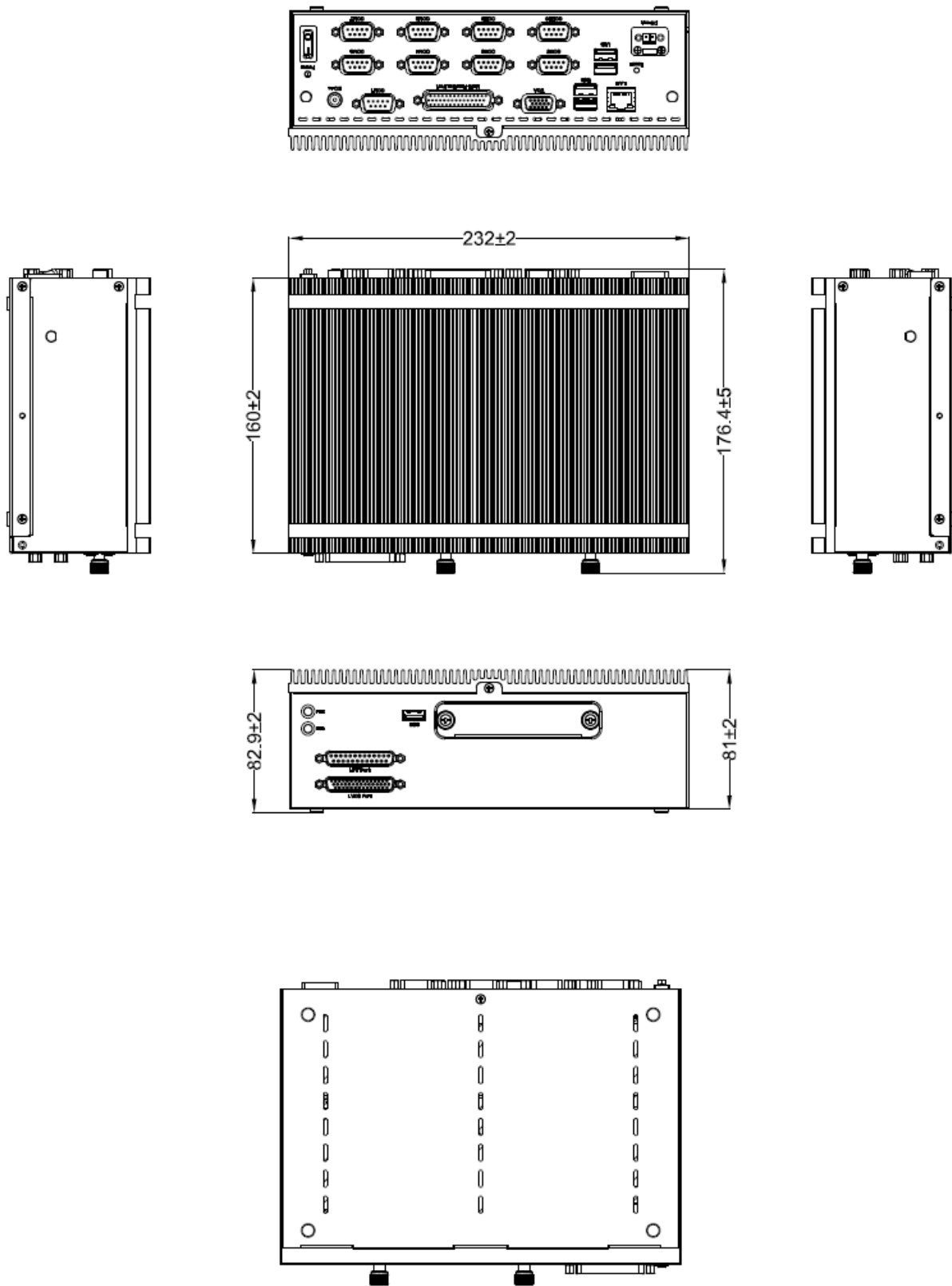


Connectors

Label	Function	Note
LPT Port	LPT connector	
LVDS Port	LVDS connector	
PWR	Power connector	
HDD	HDD Indicator	
USB	5 X USB connector	
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	
Multi-Function Port	Multi-Function Port combined COM2, 2 PS/2, Audio, GPIO and SMBus	
VGA	VGA connector	

Reset	Reset button
Power	Power-in connector

1.5 System Dimensions



(Unit: mm)

2. Hardware Configuration

Jumper and Connector Setting, Driver and BIOS Installing

For advanced information, please refer to:

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

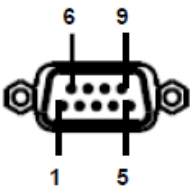
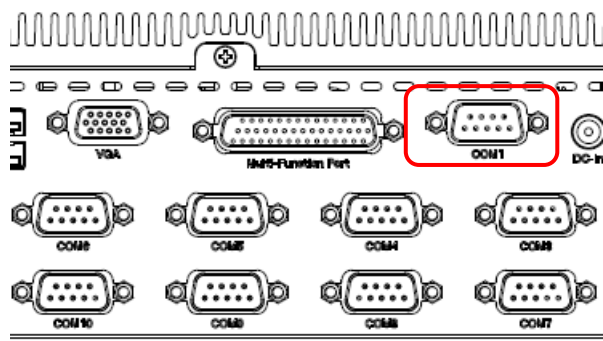


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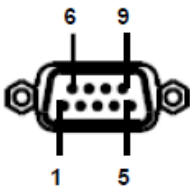
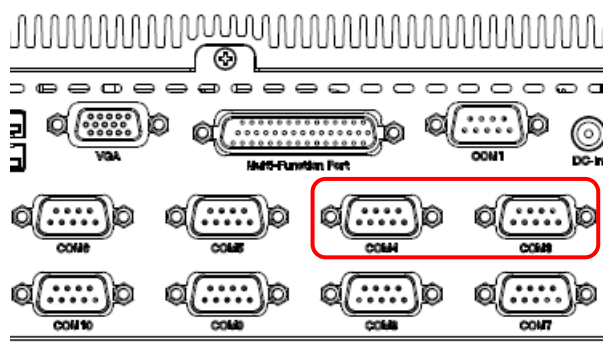
2.1 ERS-BYTE connector mapping

2.1.1 External Serial Port 1 connector (COM1)



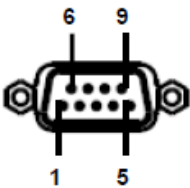
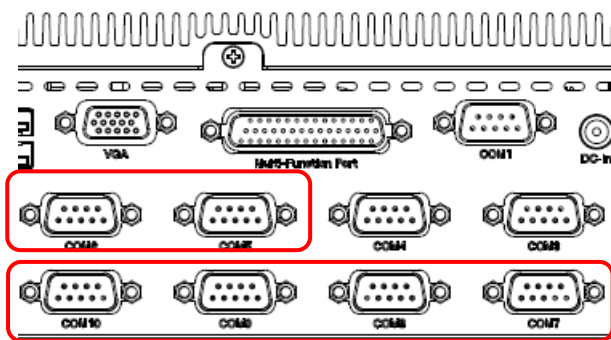
Pin	RS-232	RS-485	RS-422
1	DCD	TXD-/RXD-	TXD-
2	RXD	TXD+/RXD+	TXD+
3	TXD		RXD+
4	DTR		RXD-
5	GND	GND	GND
6	DSR		
7	RTS		
8	CTS		
9	RI		

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



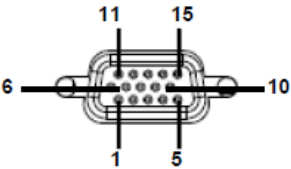
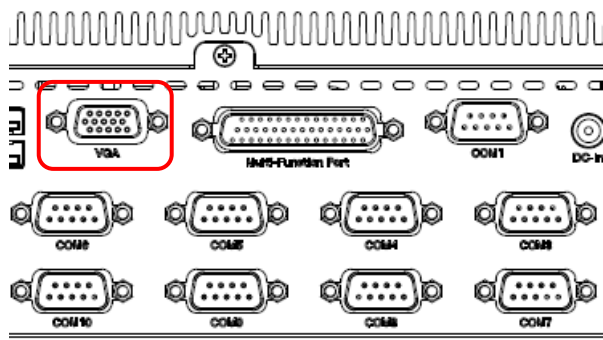
Pin	RS-232	RS-485	RS-422
1	DCD	TXD-/RXD-	TXD-
2	RXD	TXD+/RXD+	TXD+
3	TXD		RXD+
4	DTR		RXD-
5	GND	GND	GND
6	DSR		
7	RTS		
8	CTS		
9	RI		

2.1.3 External Serial Port 5/6/7/8/9/10 connector (COM5/6/7/8/9/10)



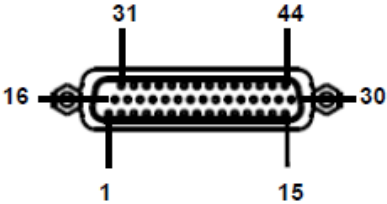
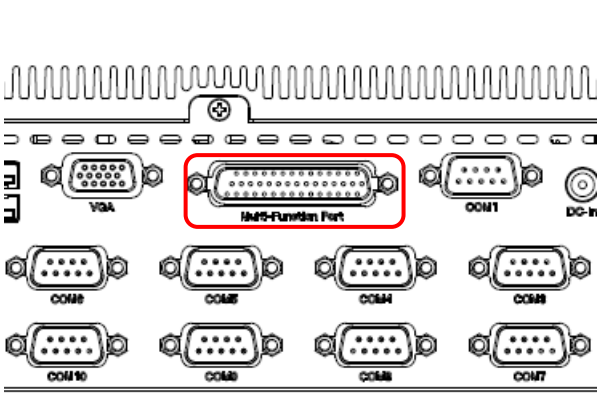
Signal	PIN	PIN	Signal
DCD	1	6	DSR
RXD	2	7	RTS
TXD	3	8	CTS
DTR	4	9	RI
GND	5		

2.1.4 VGA connector (VGA)

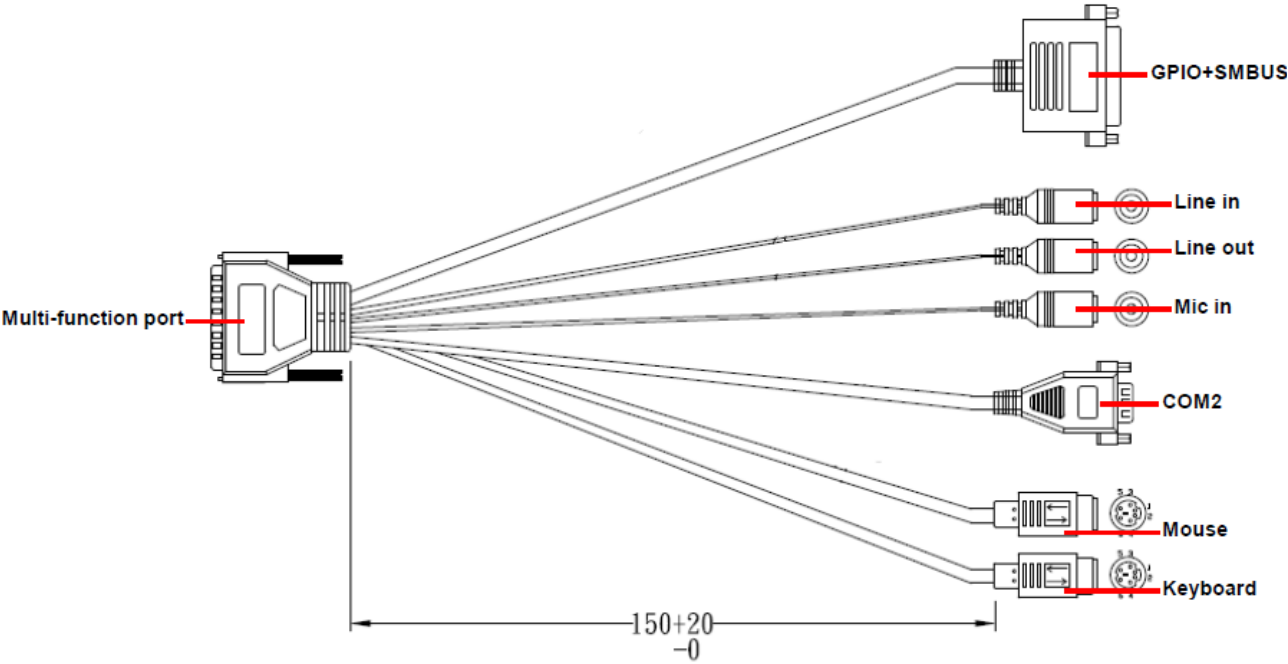


PIN	Signal	PIN	Signal	PIN	Signal
1	RED	6	GND	11	NC
2	GREEN	7	GND	12	DDCDAT
3	BLUE	8	GND	13	HSYNC
4	NC	9	+5V	14	VSYSN
5	GND	10	GND	15	DDCCLK

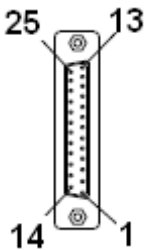
2.1.5 Multi-Function Port combined COM2, 2 PS/2, Audio, GPIO and SMBus
(Multi-function port)



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		

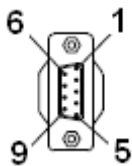


2.1.5.1 GPIO+SMBUS



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

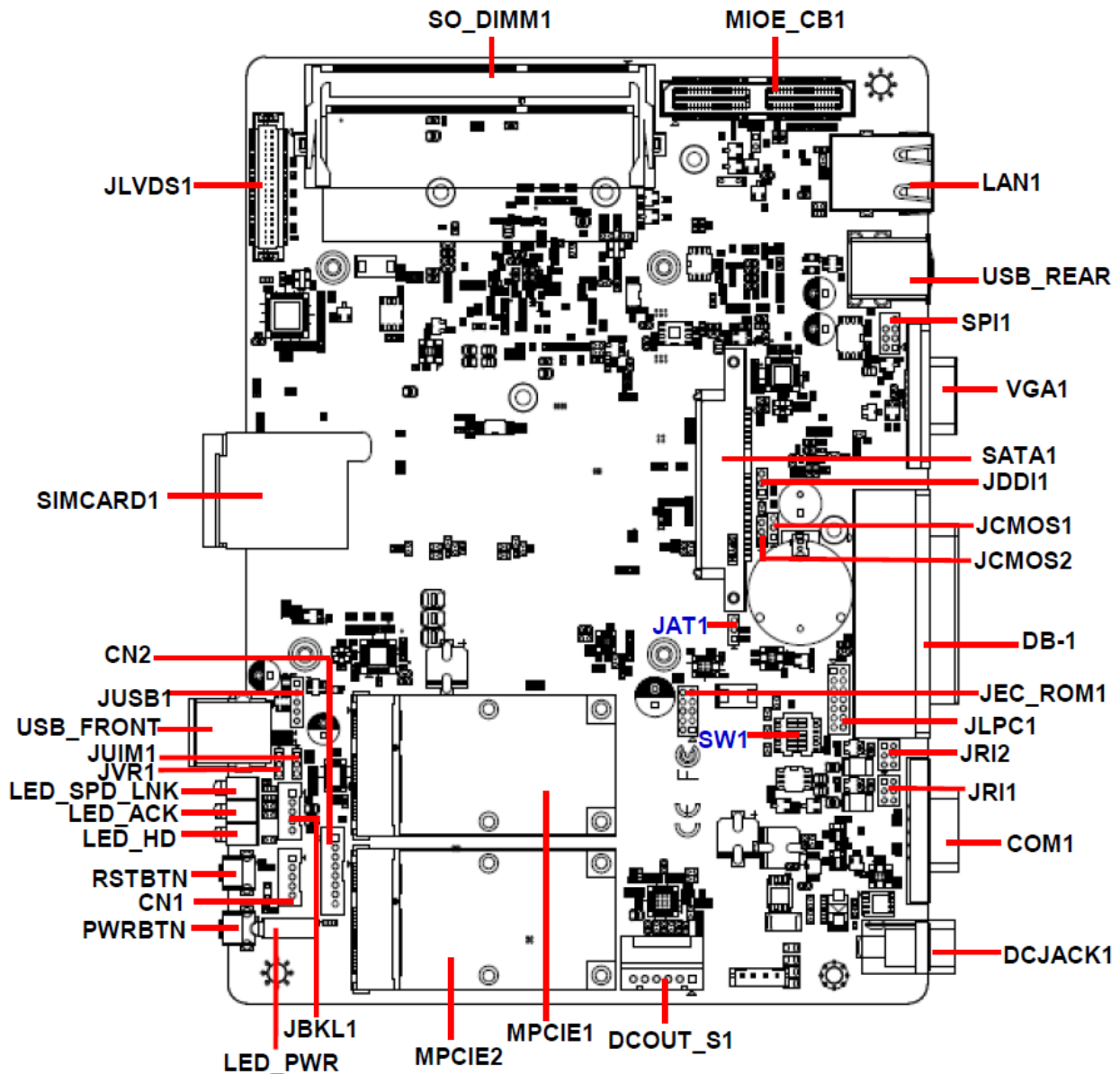
2.1.5.2 COM2



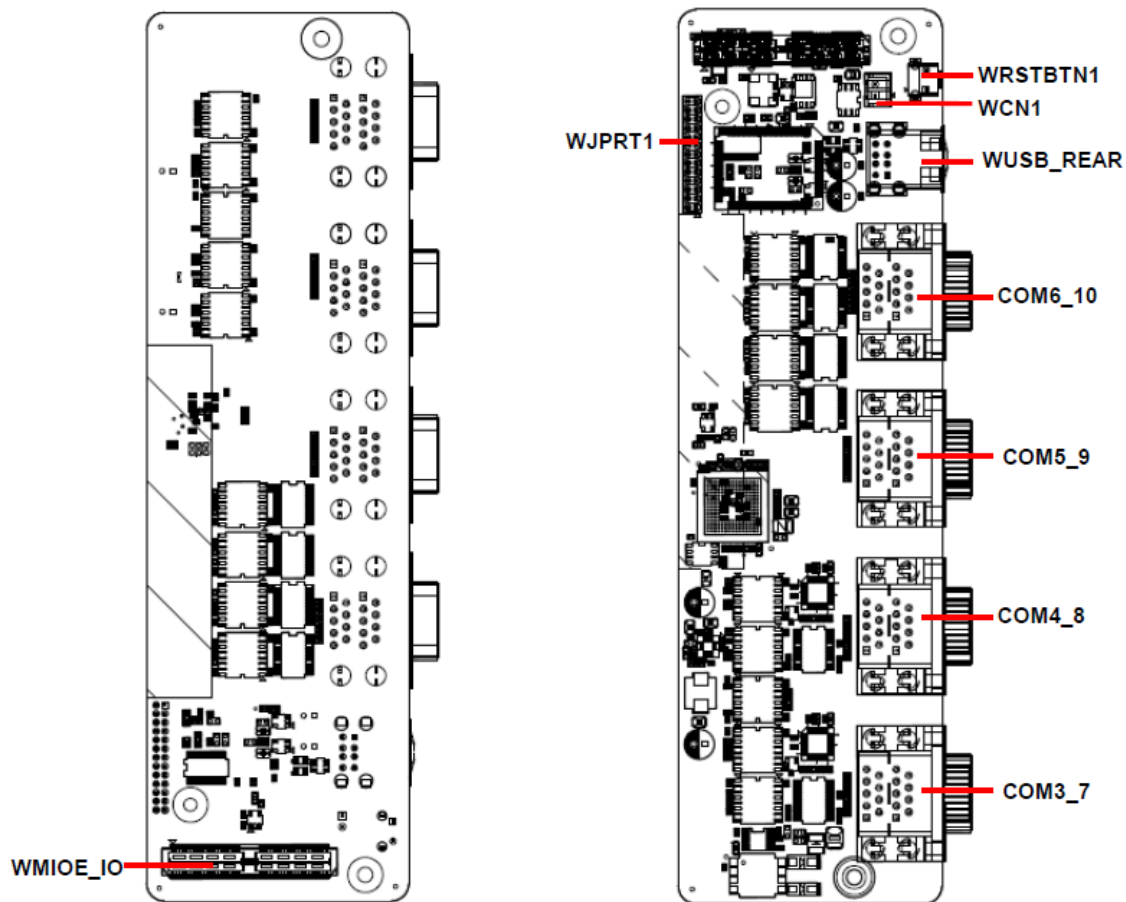
Pin	RS-232	RS-485	RS-422
1	DCD	TXD-/RXD-	TXD-
2	RXD	TXD+/RXD+	TXD+
3	TXD		RXD+
4	DTR		RXD-
5	GND	GND	GND
6	DSR		
7	RTS		
8	CTS		
9	RI		

2.2 EBM-BYTS and AUX-M03 Overviews

2.2.1 EBM-BYTS



2.2.2 AUX-M03



2.3 EBM-BYTS Jumper & Connector list

Jumpers

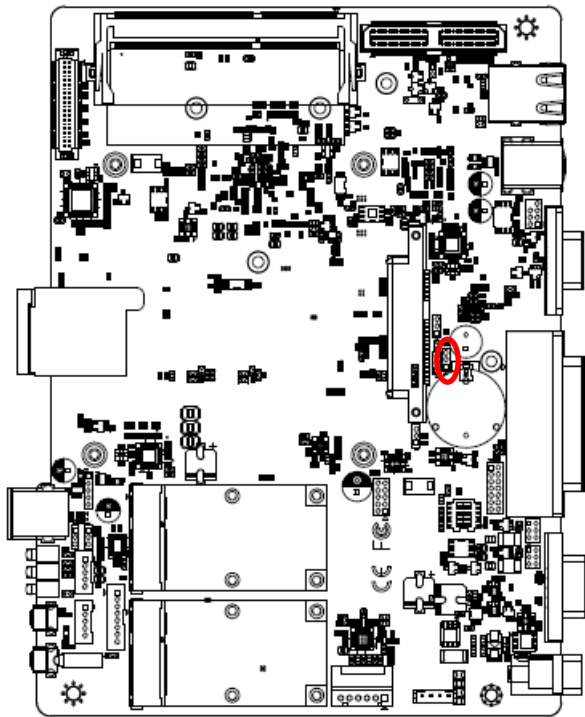
Label	Function	Note
JCMOS1	Clear CMOS	3 x 1 header, pitch 2.54mm
JCMOS2	Clear CMOS (Reserved)	3 x 1 header, pitch 2.54 mm
JRI1/2	COM 1/2 pin 9 signal select	3 x 2 header, pitch 2.00 mm
JAT1	AT/ ATX Input power select	3 x 1 header, pitch 2.00 mm
SW1	Serial port 1/ 2 – RS485 mode select DIP switch 6pin	
JUIM1	UIM Switch select	3 x 1 header, pitch 2.00 mm
JVR1	LCD backlight brightness adjustment	3 x 1 header, pitch 2.00 mm
JDDI1	IET interface DP mode select	3 x 1 header, pitch 2.00 mm

Connectors

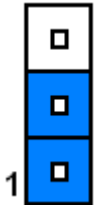
Label	Function	Note
USB_REAR	USB connector	
USB_FRONT	USB connector	
JUSB1	On-board header for USB2.0	5 x 1 header, pitch 2.00 mm
LAN1	LAN connector	
VGA1	VGA connector	
DB-1	Multi-function port	1. COM2 2. Audio(line-in, line-out, mic-in) 3. 2 x PS/2 for KB/MS 4. 12 bit GPIO/SMBUS
COM1	Serial port connector 1	
DCJACK1	DC-IN connector	
MPCIE1/2	Mini PCI Express connector 1/2	52 pin
PWRBTN	Power button	
RSTBTN	Reset button	
LED_PWR	LED Power	
LED_HD	LED HDD	
LED_ACK	LED LAN	
LED_SPD_LNK	LED LAN	
SIMCARD1	SIM card slot	
JLVDS1	LVDS connector	20 x 2 wafer, pitch 1.25 mm
SO_DIMM1	DDR3 SODIMM connector	
MIOE_CB1	IET Expansion slot	
JLPC1	LPC port connector	7 x 2 header, pitch 2.00 mm
SPI1	SPI connector	4 x 2 header, pitch 2.00 mm
JBKL1	LCD inverter connector	5 x 1 wafer, pitch 2.00 mm
SATA1	Serial ATA connector 1	
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_S1	DC Output connector	6 x 1 wafer, pitch 2.00 mm
JEC_ROM1	EC Debug connector	5 x 2 header, pitch 2.00 mm

2.4 EBM-BYTS Jumpers & Connectors settings

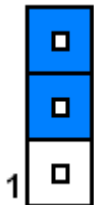
2.4.1 Clear CMOS (JCMOS1)



Protect*

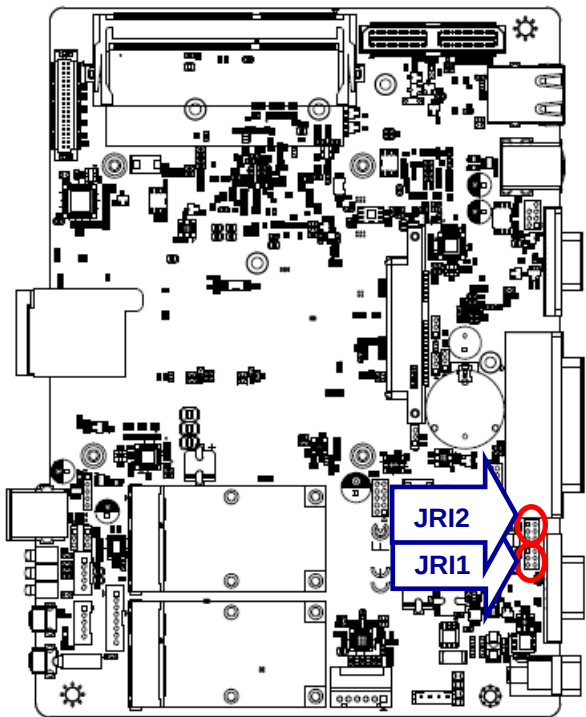


Clear CMOS

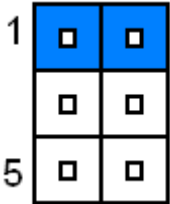


*Default

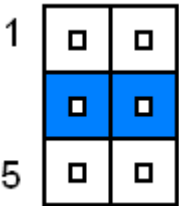
2.4.2 COM 1/2 pin 9 signal select (JRI1/2)



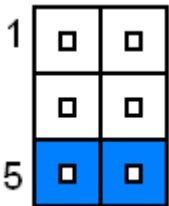
Ring*



+5V



+12V



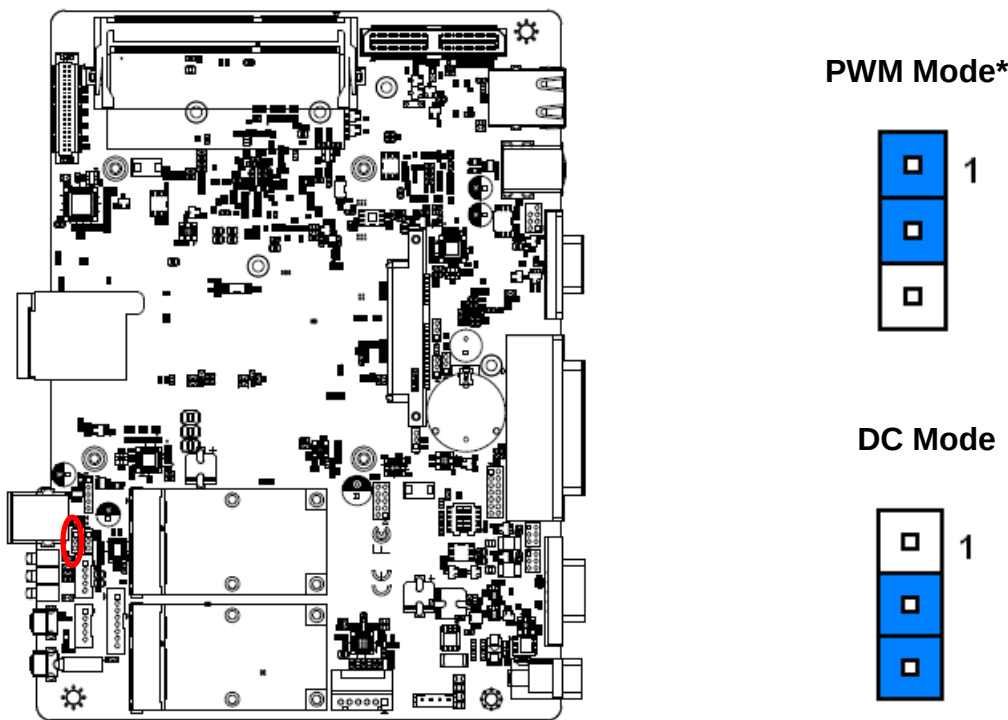
* Default

2.4.3 AT/ ATX Input power select (JAT1)



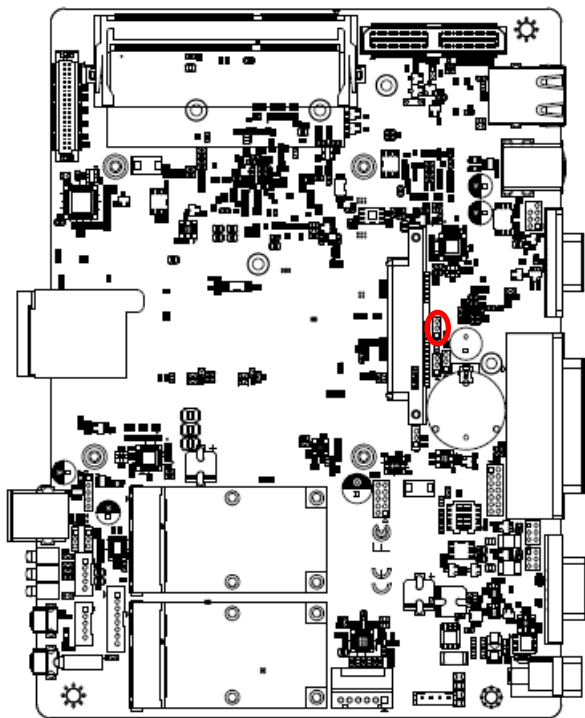
*Default

2.4.4 LCD backlight brightness adjustment (JVR1)

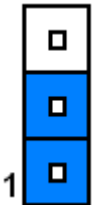


* Default

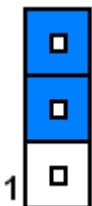
2.4.5 IET interface DP mode select (JDDI1)



HDMI/DVI

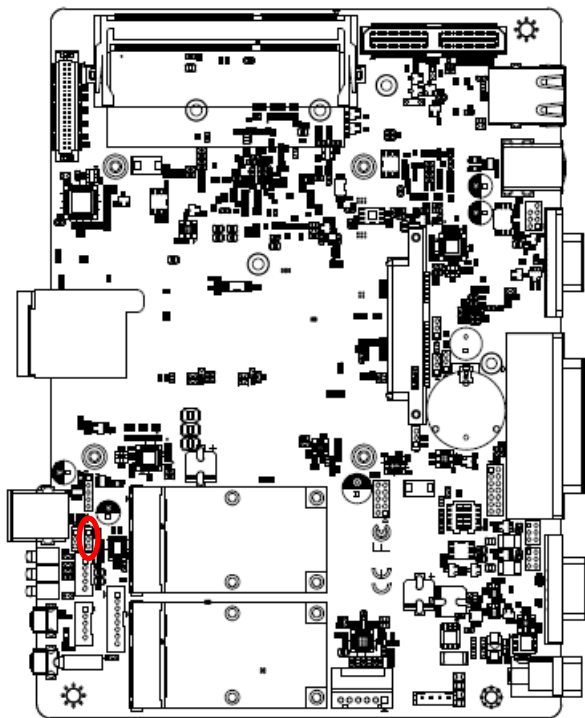


Display Port*

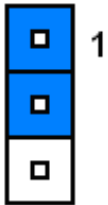


*Default

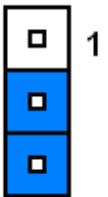
2.4.6 UIM Switch select (JUIM1)



UIM on MPCIE1

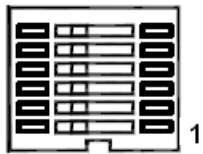
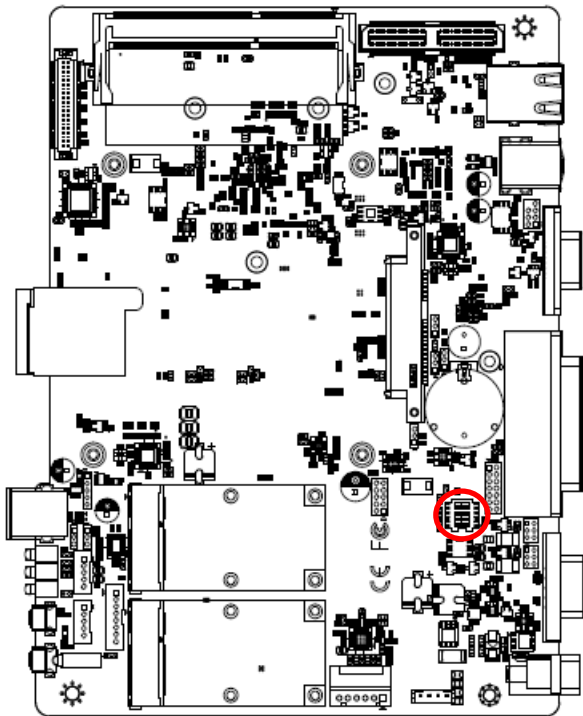


UIM on MPCIE2*



* Default

2.4.7 Serial port 1/ 2 – RS485 mode select (SW1)



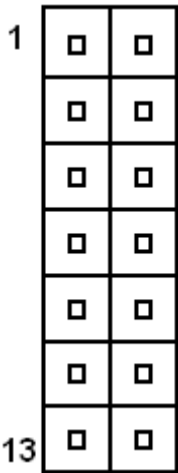
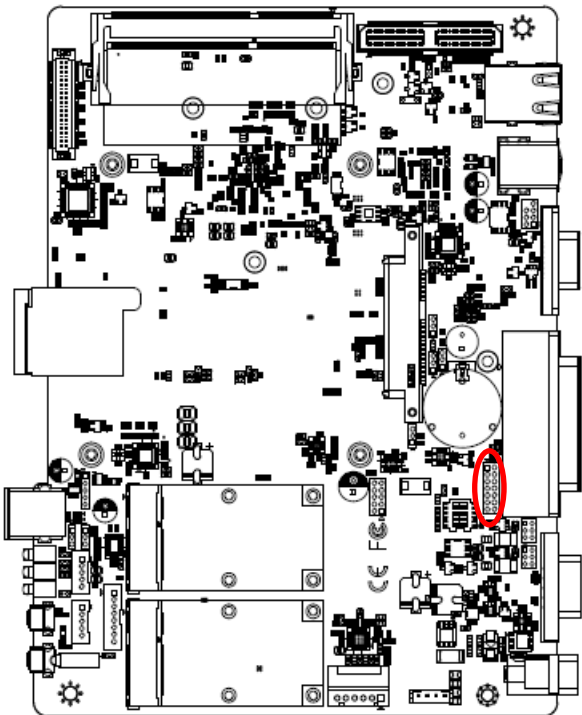
In Serial Port 1 mode

	ON	OFF
1	Auto Direction	RTS# Control*
2	485TXP external biasing resistor	OPEN*
3	485TXN external biasing resistor	OPEN*

In Serial Port 2 mode

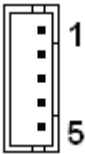
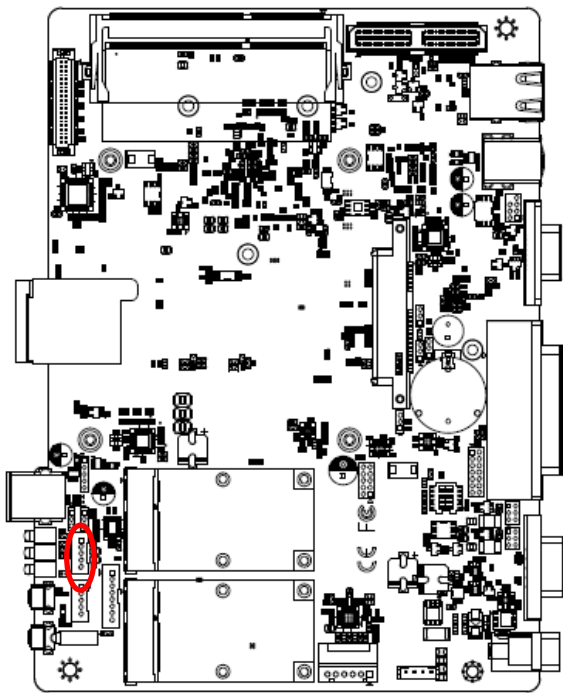
	ON	OFF
4	Auto Direction	RTS# Control*
5	485TXP external biasing resistor	OPEN*
6	485TXN external biasing resistor	OPEN*

2.4.8 LPC port connector (JLPC1)



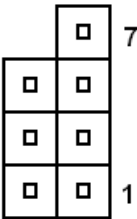
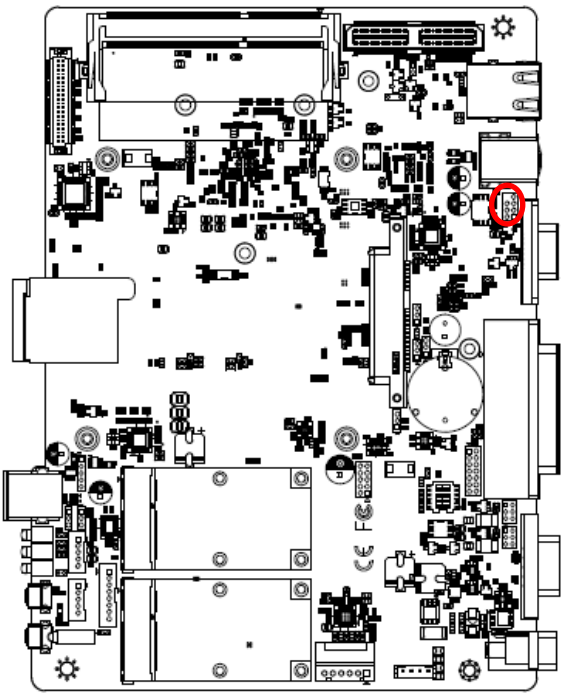
Signal	PIN	PIN	Signal
LPC_AD0	1	2	+3.3V
LPC_AD1	3	4	LPC_PORT80_RST#
LPC_AD2	5	6	LPC_FRAME#
LPC_AD3	7	8	LPC1_PORT80_CLK
SERIRQ	9	10	GND
+5V	11	12	GND
+5VSB	13	14	NC

2.4.9 LCD inverter connector (JBKL1)



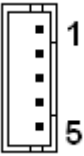
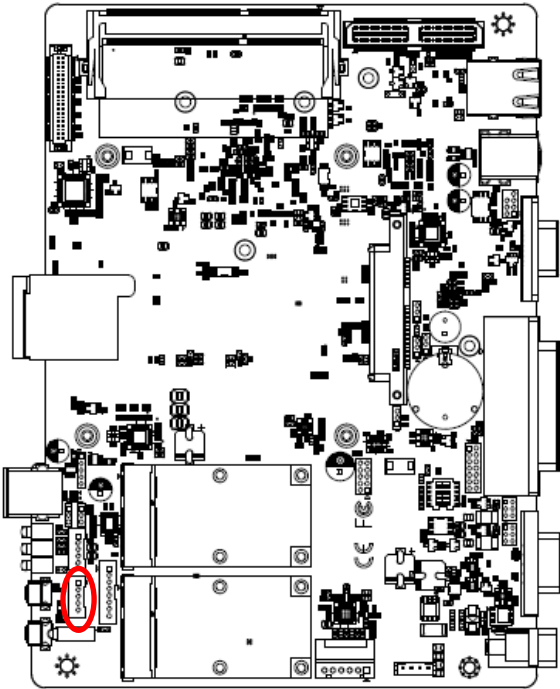
Signal	PIN
+12V	1
GND	2
BKLEN	3
VBRIGHT	4
+5V	5

2.4.10 SPI connector (SPI1)



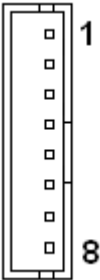
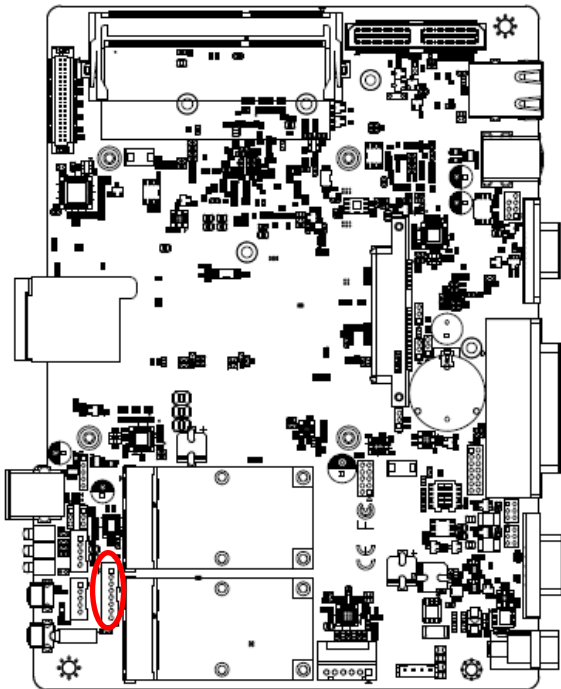
Signal	PIN	PIN	Signal
		7	SPI_HOLD#
SPI_ROM_MOSI	6	5	SPI_ROM_MISO_R
SPI_ROM_CLK	4	3	SPI_ROM_CS#
GND	2	1	+VSPI_BIOS

2.4.11 Front Panel Connector 1 (CN1)



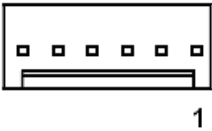
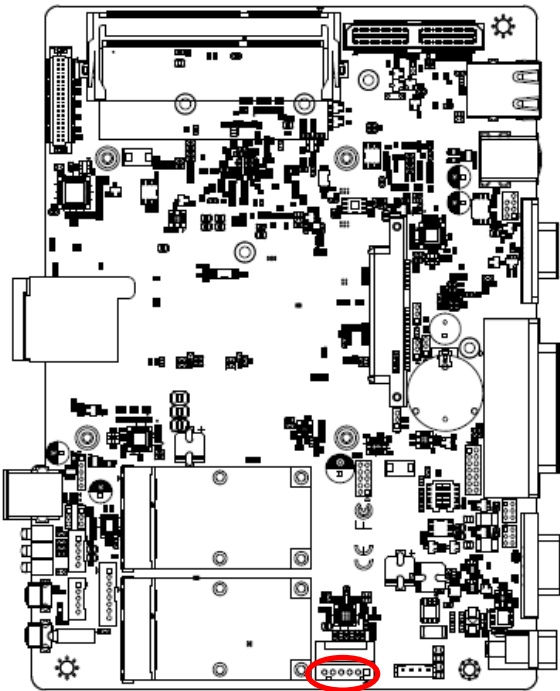
Signal	PIN
PWR_BTN_IN#	1
SYSRST#	2
GND	3
+5VSB	4
PWR_LED-	5

2.4.12 Front Panel Connector 2 (CN2)



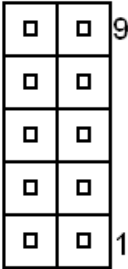
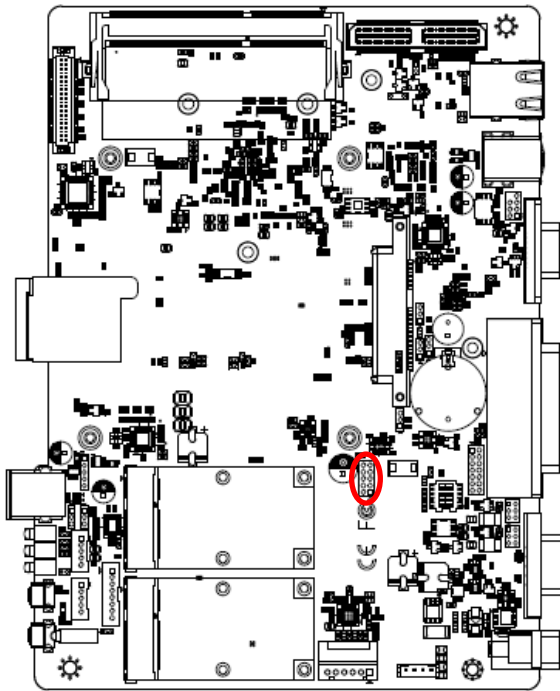
Signal	PIN
+3.3V	1
SATA_5V_LED#	2
+3.3VSB	3
LAN1_LED_ACT_n	4
+3.3VSB	5
LAN1_LED_100#_n	6
+3.3VSB	7
LAN1_LED_1000#_n	8

2.4.13 DC Output connector (DCOUT_S1)



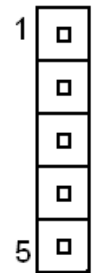
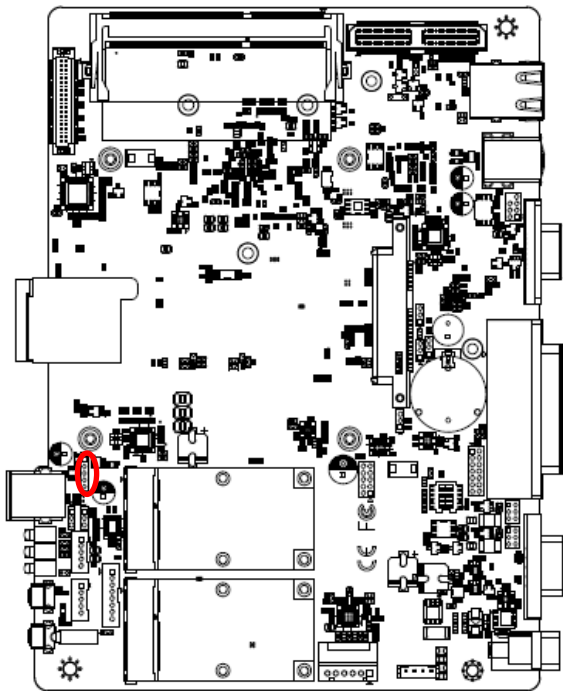
Signal	PIN
DC_OUT	1
DC_OUT	2
DC_OUT	3
GND	4
GND	5
GND	6

2.4.14 EC Debug connector (JEC_ROM1)



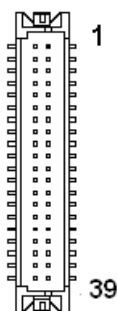
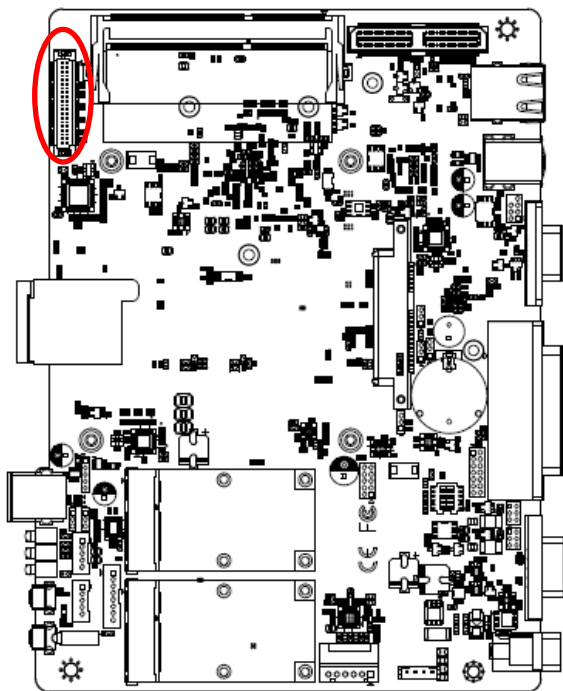
Signal	PIN	PIN	Signal
EC_SMDAT_DE BUG	10	9	EC_SMCLK_D EBUG
NC	8	7	EC_HOLD#
EC_FMOSI	6	5	EC_FMISO
EC_FSCK	4	3	EC_FSCE#
GND	2	1	+VSPI_EC

2.4.15 On-board header for USB2.0 (JUSB1)



Signal	PIN
USBVCC_HEADER	1
USB_HUB2_DN_1	2
USB_HUB2_DP_1	3
GND	4
GND	5

2.4.16 LVDS connector (JLVDS1)



Signal	PIN	PIN	Signal
+5V	2	1	+3.3V
+5V	4	3	+3.3V
NC	6	5	NC
GND	8	7	GND
LVDS_DATA0_P	10	9	LVDS_DATA1_P
LVDS_DATA0_N	12	11	LVDS_DATA1_N
GND	14	13	GND
LVDS_DATA2_P	16	15	LVDS_DATA3_P
LVDS_DATA2_N	18	17	LVDS_DATA3_N
GND	20	19	GND
LVDS_DATA4_P	22	21	LVDS_DATA5_P
LVDS_DATA4_N	24	23	LVDS_DATA5_N
GND	26	25	GND
LVDS_DATA6_P	28	27	LVDS_DATA7_P
LVDS_DATA6_N	30	29	LVDS_DATA7_N
GND	32	31	GND
LVDS_CLK1_P	34	33	LVDS_CLK2_P
LVDS_CLK1_N	36	35	LVDS_CLK2_N
GND	38	37	GND
+12V	40	39	+12V

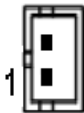
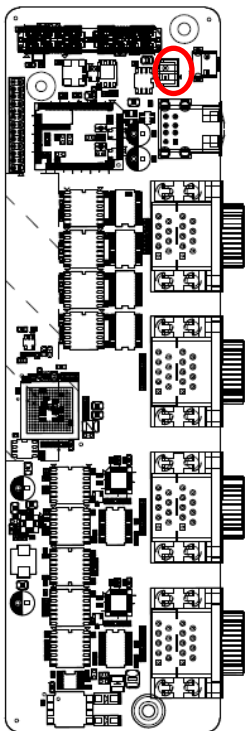
2.5 AUX-M03 Connector list

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	

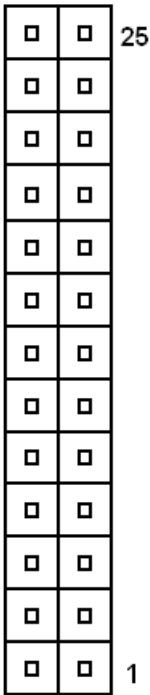
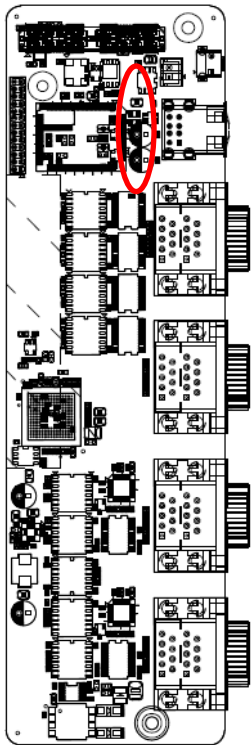
2.6 AUX-M03 Connectors settings

2.6.1 System reset (WCN1)



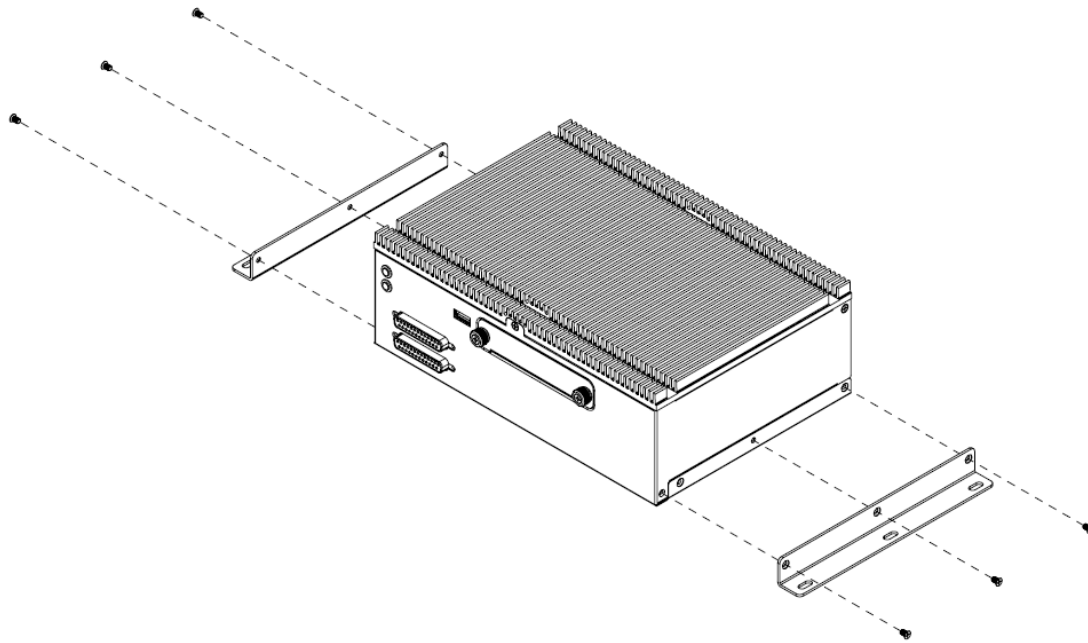
Signal	PIN
GND	2
WSYSRST#	1

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-

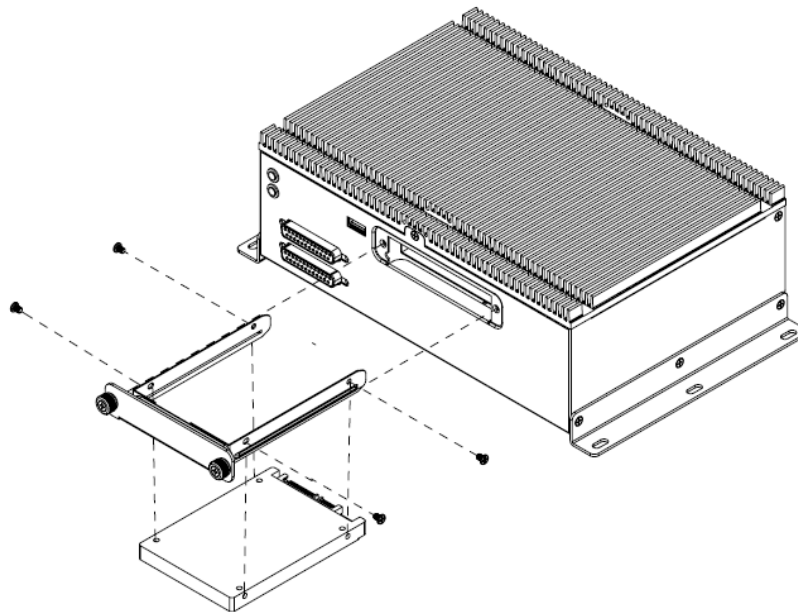
2.7 Installing Mounting Brackets (ERS-BYTE)



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.

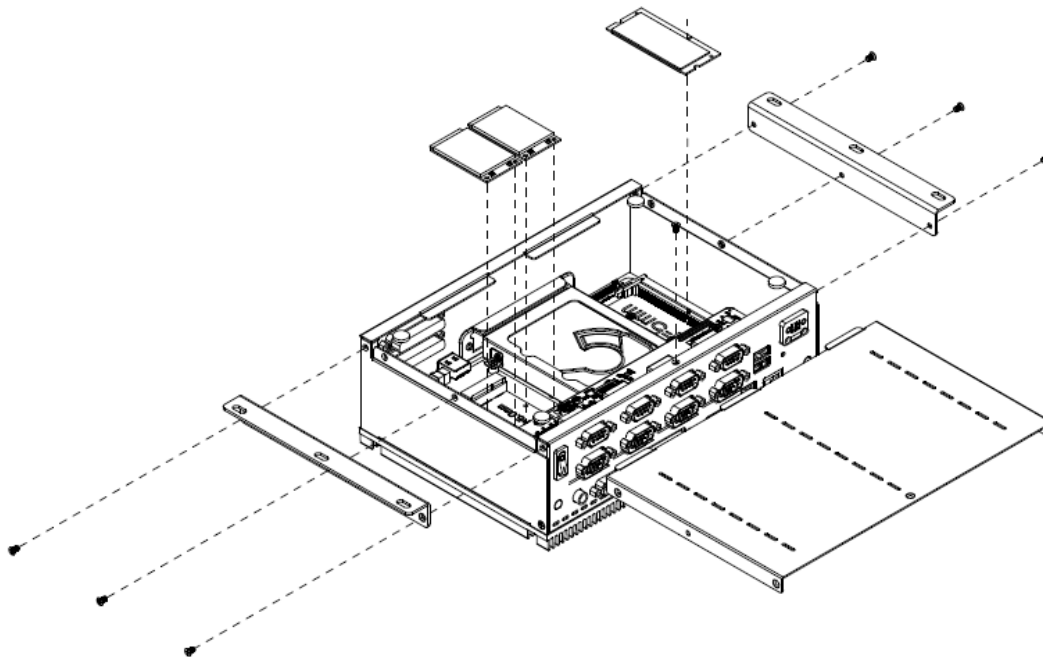
2.8 Installing Hard Disk & Memory, PCI devices (ERS-BYTE)



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.

