

EBM-PNV

Intel® Atom™ Dual-Core 5.25" Mini Module with Intel®
ICH8-M Chipset

Quick Installation Guide

1st Ed – 28 July 2011

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

Before you begin installing your single board, please make sure that the following materials have been shipped:

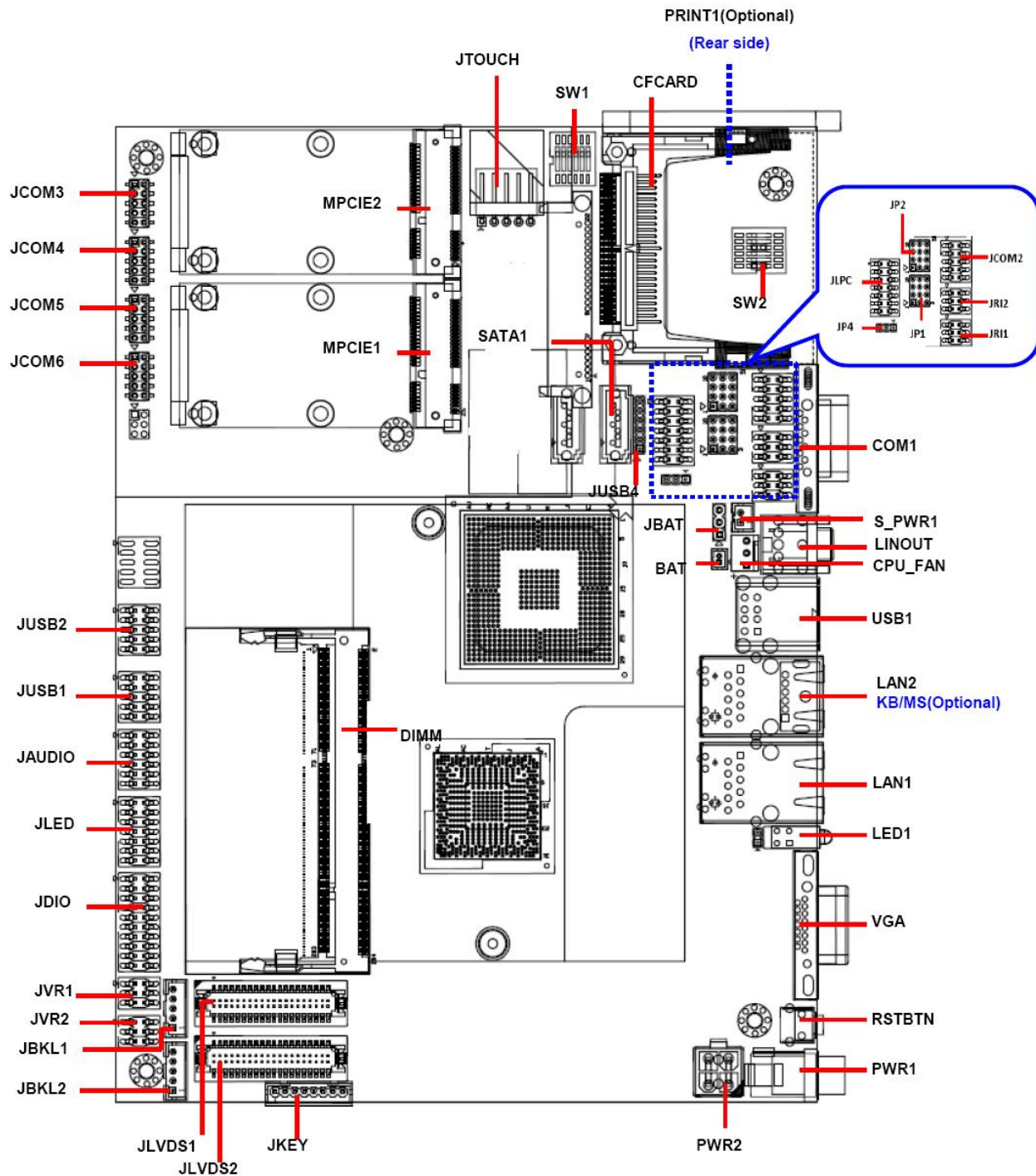
- 1 x EBM-PNV with Intel® Atom™ Dual Core & DDR3 SDRAM Mini Module
- 1 x DVD-ROM or CD-ROM contains the followings:
 - User's Manual (this manual in PDF file)
 - Ethernet driver and utilities
 - VGA drivers and utilities
 - Audio drivers and utilities



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

2. Hardware Configuration

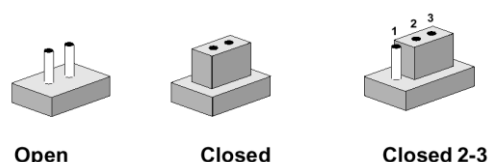
2.1 Product Overview



2.2 Jumper and Connector List

You can configure your board to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch.

It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” a jumper you connect the pins with the clip. To “open” a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case, you would connect either two pins.



The jumper settings are schematically depicted in this manual as follows:



A pair of needle-nose pliers may be helpful when working with jumpers.

Connectors on the board are linked to external devices such as hard disk drives, a keyboard, or floppy drives. In addition, the board has a number of jumpers that allow you to configure your system to suit your application.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

The following tables list the function of each of the board’s jumpers and connectors.

Jumpers

Label	Function	Note
JBAT	Clear CMOS	3 x 1 header, pitch 2.54mm
JP1	Serial port 1 – RS232/ 422/ 485 mode select	4 x 3 header, pitch 2.0mm
JP2	Serial port 2 – RS232/ 422/ 485 mode select	4 x 3 header, pitch 2.0mm
JP4	SATA DOM Pin 7 Power mode selector	3 x 1 header, pitch 2.0mm
JRI1	Serial port 1 pin9 signal select	3 x 2 header, pitch 2.0mm
JRI2	Serial port 2 pin9 signal select	3 x 2 header, pitch 2.0mm
JVR1	LCD backlight brightness adjustment	3 x 2 header, pitch 2.0mm
JVR2	LCD backlight brightness adjustment	3 x 2 header, pitch 2.0mm
SW1	Multi-function select	DIP switch 6pin
SW2	Serial port 1/ 2 – RS232/ 422/ 485 mode select	DIP switch 6pin

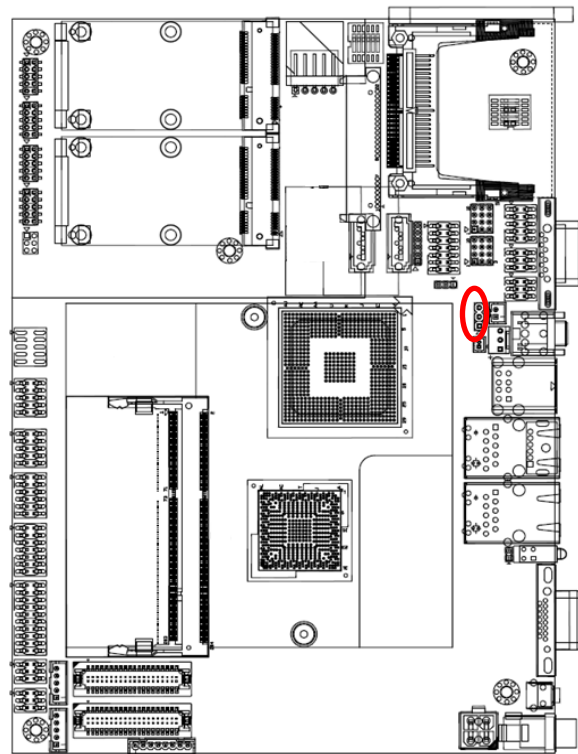
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Connectors

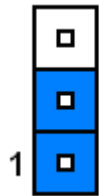
Label	Function	Note
BAT	Battery connector	2 x 1 wafer, pitch 1.25mm
CFCARD	Compact Flash card connector	
COM1	Serial Port 1 connector	D-sub 9 pin, male
CPU_FAN	CPU fan connector	3 x 1 wafer, pitch 2.54mm
DIMM	204-pin DDR3 SODIMM socket	
JAUDIO	Audio connector	6 x 2 header, pitch 2.0mm
JBKL1	LCD Inverter connector	5 x 1 wafer, pitch 2.0mm
JBKL2	LCD Inverter connector	5 x 1 wafer, pitch 2.0mm
JCOM2	Serial Port 2 connector	5 x 2 header, pitch 2.0mm
JCOM3	Serial Port 3 connector	5 x 2 header, pitch 2.0mm
JCOM4	Serial Port 4 connector	5 x 2 header, pitch 2.0mm
JCOM5	Serial Port 5 connector	5 x 2 header, pitch 2.0mm
JCOM6	Serial Port 6 connector	5 x 2 header, pitch 2.0mm
JDIO	General purpose I/O connector	10 x 2 header, pitch 2.0mm
JLED	LED indicator connector	7 x 2 header, pitch 2.0mm
JLVDS1	LVDS Connector	DIN 40-pin wafer, pitch 1.25mm
JLVDS2	LVDS Connector	DIN 40-pin wafer, pitch 1.25mm
JTOUCH	Touch panel connector	5 x 1 header, pitch 2.54mm
JUSB1	USB connector 4&5	5 x 2 header, pitch 2.0mm
JUSB2	USB connector 2&3	5 x 2 header, pitch 2.0mm
JUSB4	USB connector 9	6 x 1 header, pitch 2.0mm
JKEY	OSD for front panel key	8 x 1 wafer, pitch 2.0mm
LAN1	RJ-45 Ethernet 1	
LAN2	RJ-45 Ethernet 1(KB/MS-Optional)	
LED	LED indicator connector	
LINOUT	Audio line-out connector	
MPCIE1	Mini-PCI connector 1	
MPCIE2	Mini-PCI connector 2	
PRINT	Optional LPT Connector	
PWR1	Power connector	
PWR2	Power connector	2 x 2 wafer, pitch 2.0mm
RSBTN	Reset button	
S_PWR1	Serial ATA power connector	2 x 1 wafer, pitch 2.0mm
SATA1	Serial ATA connector 1	
SATA2	Serial ATA connector 2	
USB1	USB connector 0&1	
VGA	VGA connector	D-sub 15-pin, female

2.3 Setting Jumpers & Connectors

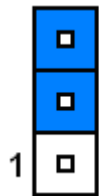
2.3.1 Clear CMOS (JBAT)



Protect*

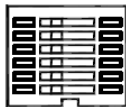
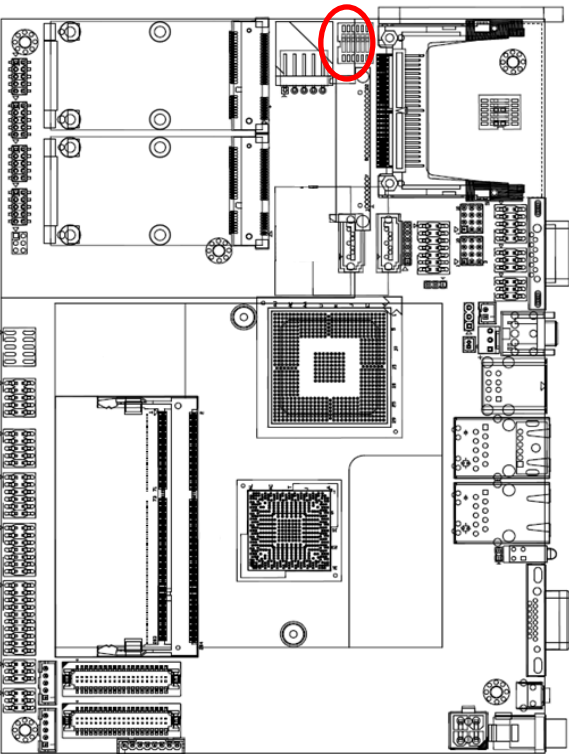


Clear CMOS



* Default

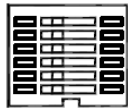
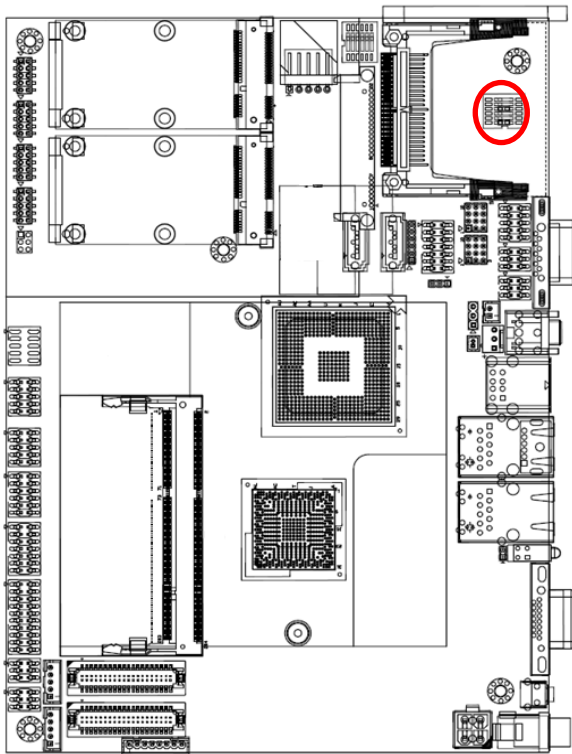
2.3.2 Multi-function select (SW1)



	ON	OFF
1	AT SEL	ATX SEL
2	CF Master	CF Slave
3	Touch off	Touch on
4	Touch: 4W	Touch: 5W
5	GPIO32:L	GPIO32:H
6	GPIO33:L	GPIO33:H

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2.3.3 Serial port 1/ 2 - RS-232/ 422/ 485 mode select (SW2)



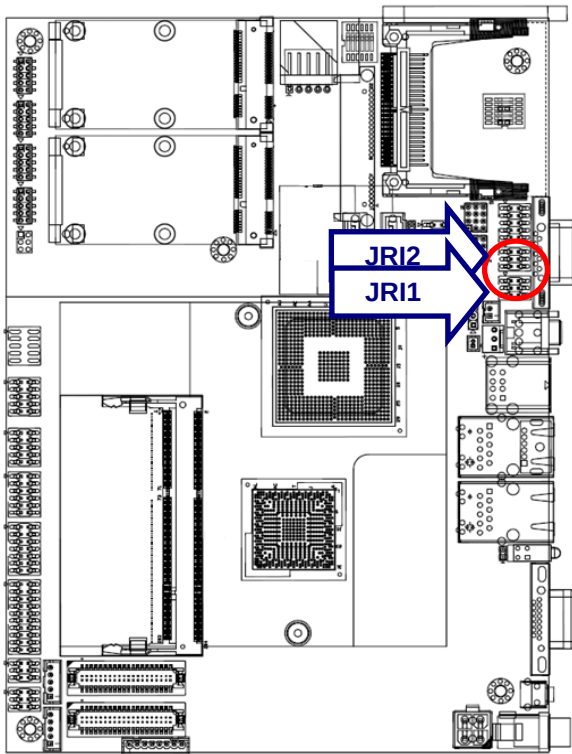
In Serial Port 1 mode

	RS-232	RS-422	RS-485
1	ON	OFF	OFF
2	OFF	ON	OFF
3	OFF	OFF	ON

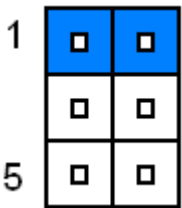
In Serial Port 2 mode

	RS-232	RS-422	RS-485
4	ON	OFF	OFF
5	OFF	ON	OFF
6	OFF	OFF	ON

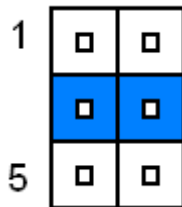
2.3.4 Serial port 1/ 2 pin9 signal select (JRI1/ JRI2)



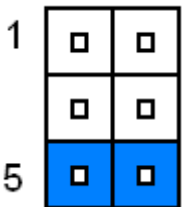
Ring*



+5V

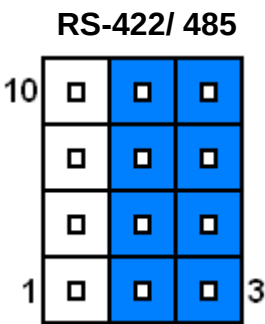
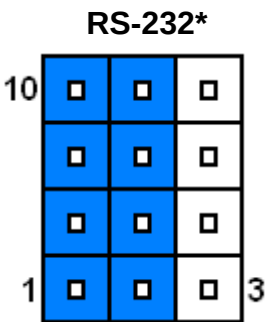
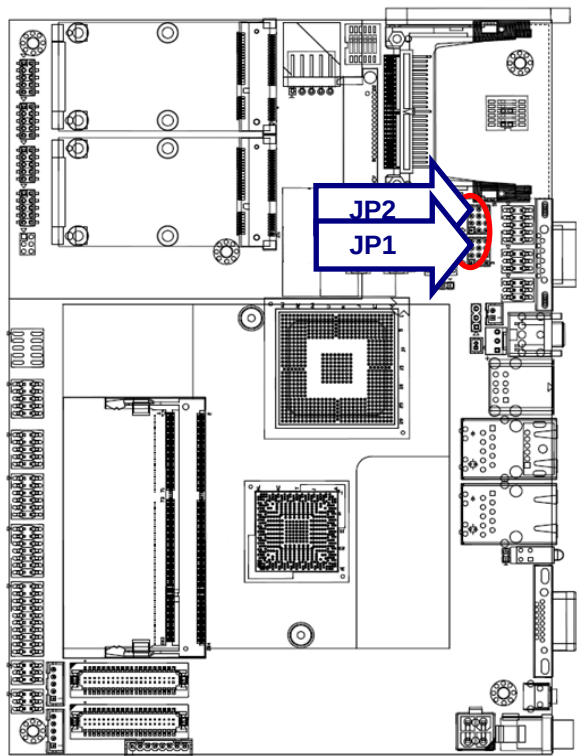


+12V



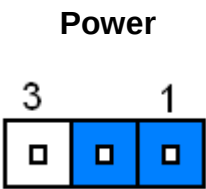
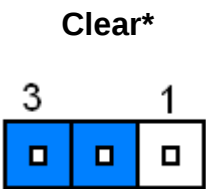
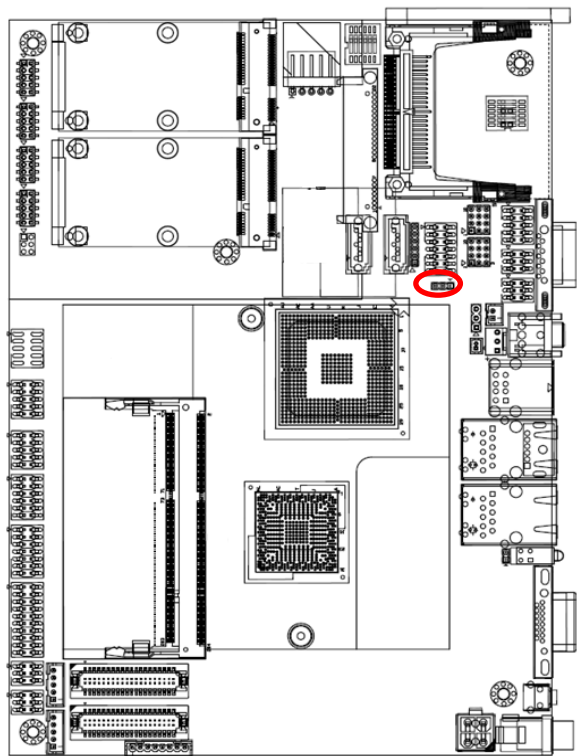
* Default

2.3.5 Serial port 1/ 2 RS-232/ 422/ 485 mode select (JP1/ JP2)



* Default

2.3.6 SATA DOM Pin 7 Power mode selector (JP4)

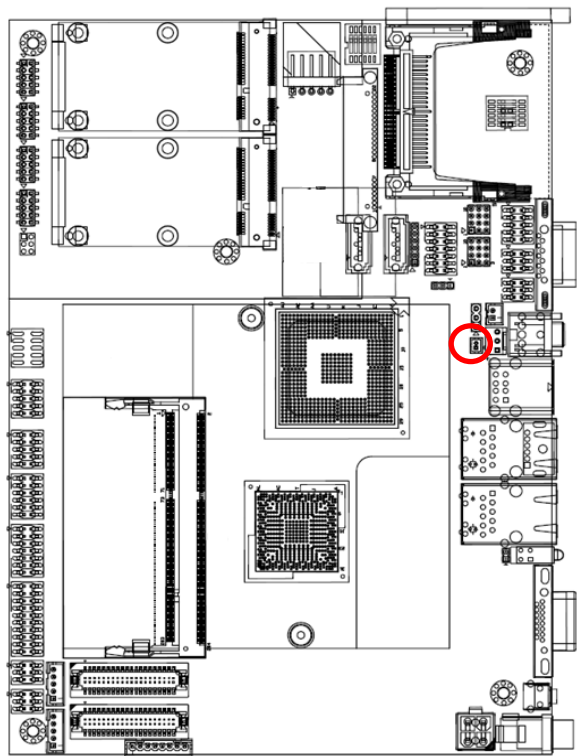


Signal	PIN
SATA_PWR	1
GND#7_1	2
GND	3

* Default

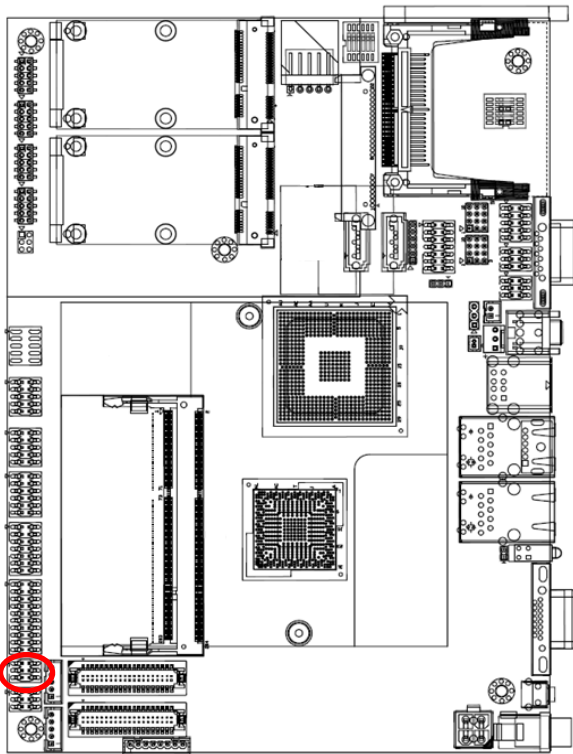
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2.3.7 Battery connector (BAT)



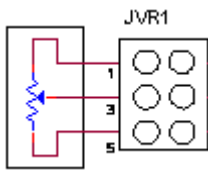
Signal	PIN
GND	2
BAT	1

2.3.8 LCD backlight brightness adjustment (JVR1)



* Default

Signal	PIN	PIN	Signal
+5V	1	2	DC
VR	3	4	VR
GND	5	6	PWM



Variation Resistor

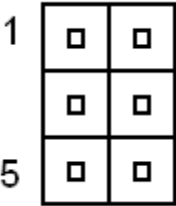
(Recommended: 4.7KΩ, >1/16W)



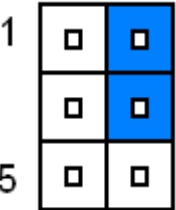
Note:

For inverters with adjustable Backlight function, it is possible to control the LCD brightness through the VR signal controlled by JVKL1. Please see the JVKL1 section for detailed circuitry information.

Mode1: VR type

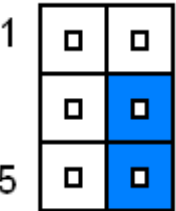


Mode 2: DC type*



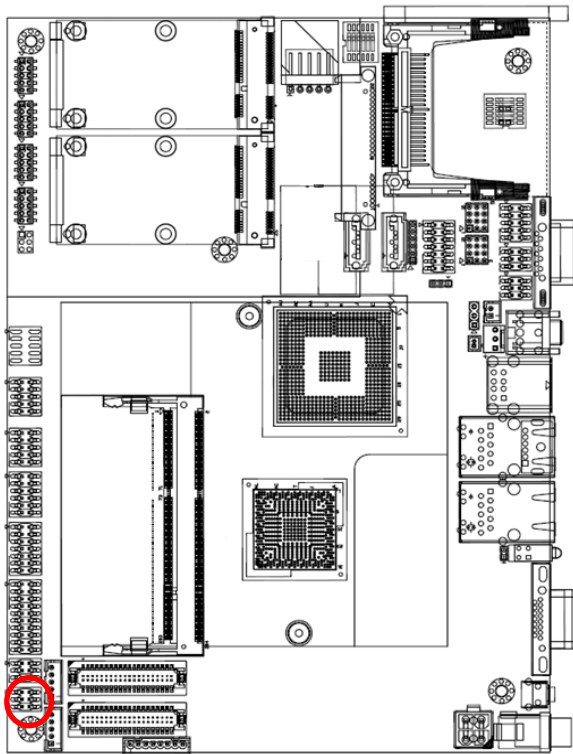
Note: DC: 0V ~5V

Mode 3: Pulse-Width Modulated type



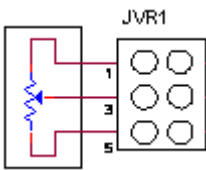
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2.3.9 LCD backlight brightness adjustment (JVR2)



* Default

Signal	PIN	PIN	Signal
+5V	1	2	DC2
VR	3	4	VR
GND	5	6	PWM2



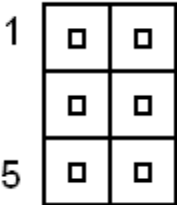
Variation Resistor

(Recommended: 4.7KΩ, >1/16W)

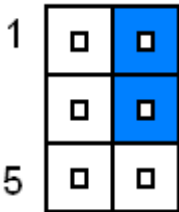


Note:
For inverters with adjustable Backlight function, it is possible to control the LCD brightness through the VR signal controlled by JBKL2. Please see the JBKL2 section for detailed circuitry information.

Mode1: VR type

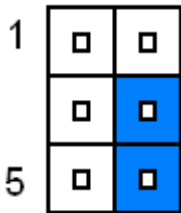


Mode 2: DC type*

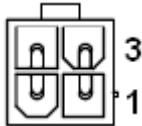
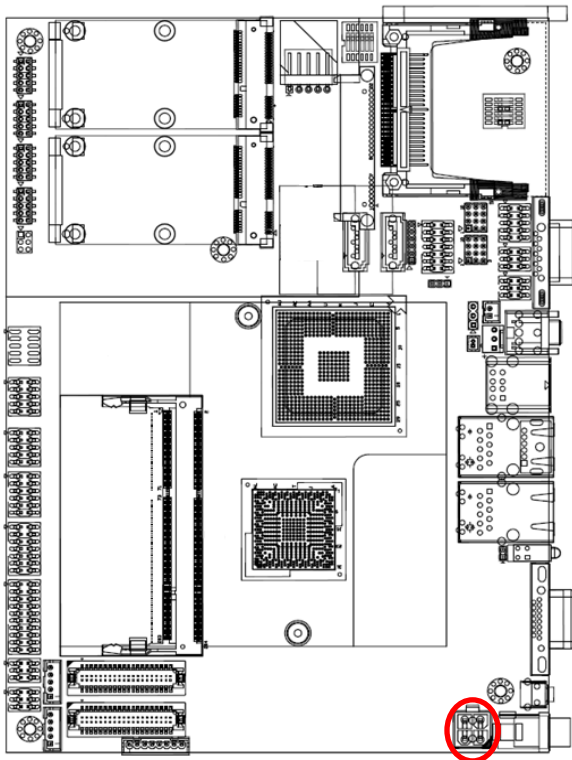


Note: DC: 0V ~5V

Mode 3: Pulse-Width Modulated type

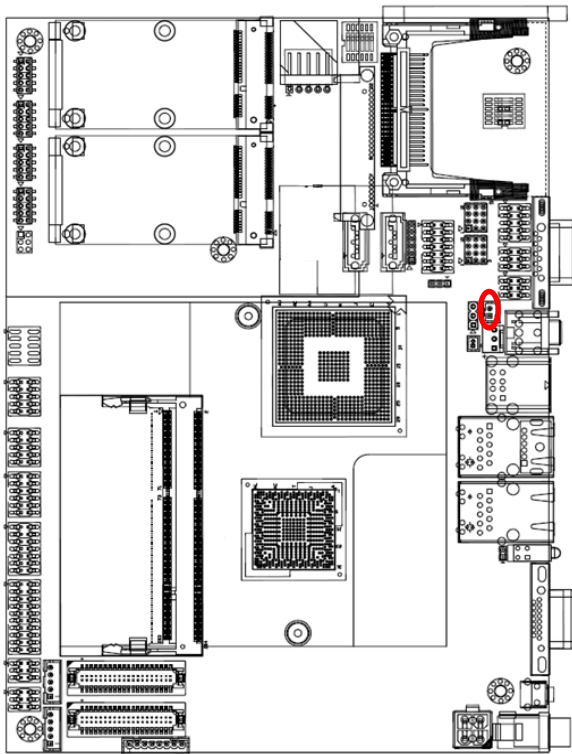


2.3.10 Power connector (PWR2)



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

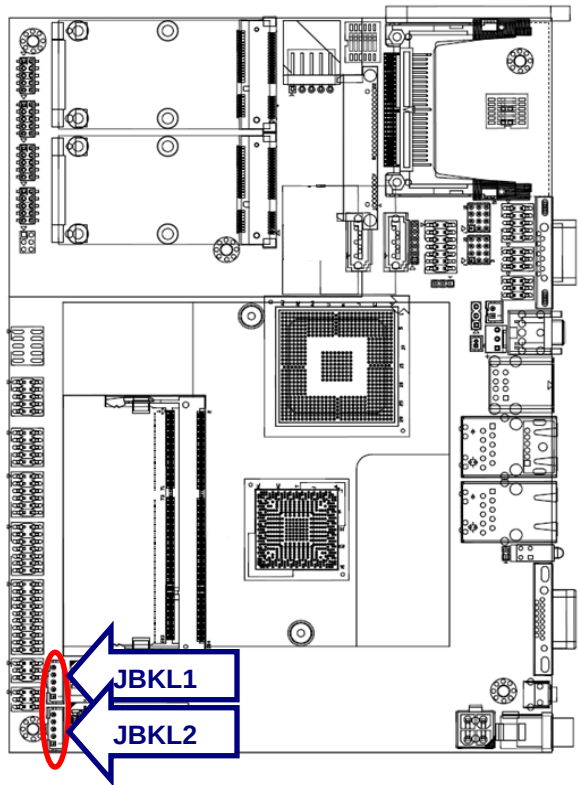
2.3.11 Serial ATA power connector (S_PWR1)



Signal	PIN
SATA_PWR	2
GND	1

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2.3.12 LCD Inverter connector (JBKL1/ JBKL2)



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

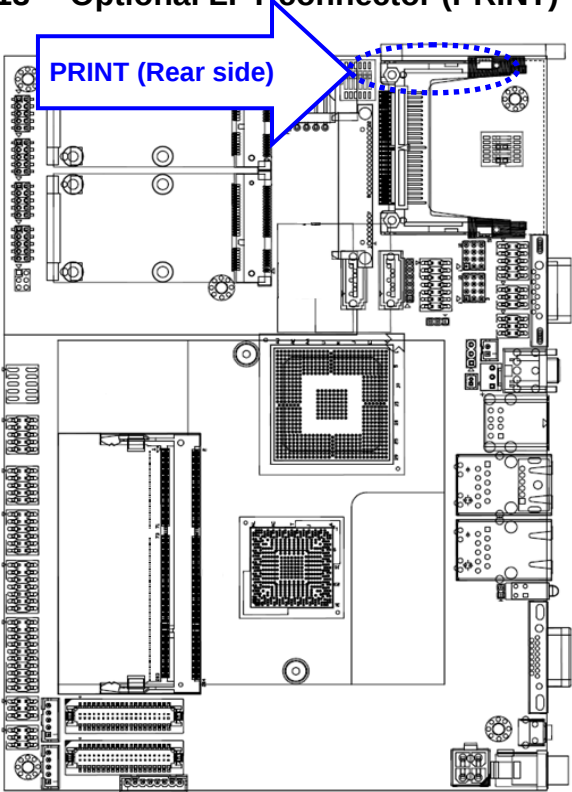


Note:
For inverters with adjustable Backlight function, it is possible to control the LCD brightness through the VR signal controlled by **JVR1/ JVR2**. Please see the **JVR1/ JVR2** section for detailed circuitry information.

2.3.12.1 Signal Description – LCD Inverter Connector (JBKL1/ JBKL2)

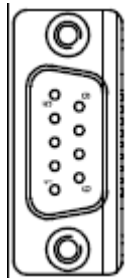
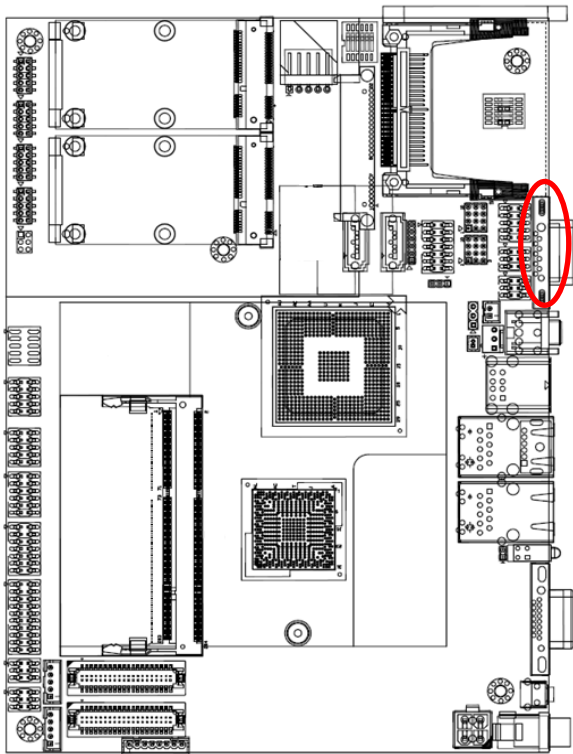
Signal	Signal Description
BRIGHT	Vadj = 0.75V ~ 4.25V (Recommended: 4.7KΩ, >1/16W)
BKL_ON	LCD backlight ON/OFF control signal

2.3.13 Optional LPT connector (PRINT)



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

2.3.14 Serial port 1 connector (COM1)



In RS-232 Mode

Signal	PIN	PIN	Signal
DCD1	1	2	RxD1
TxD1	3	4	DTR1
GND	5	6	DSR1
RTS1	7	8	CTS1
RI1	9		NC

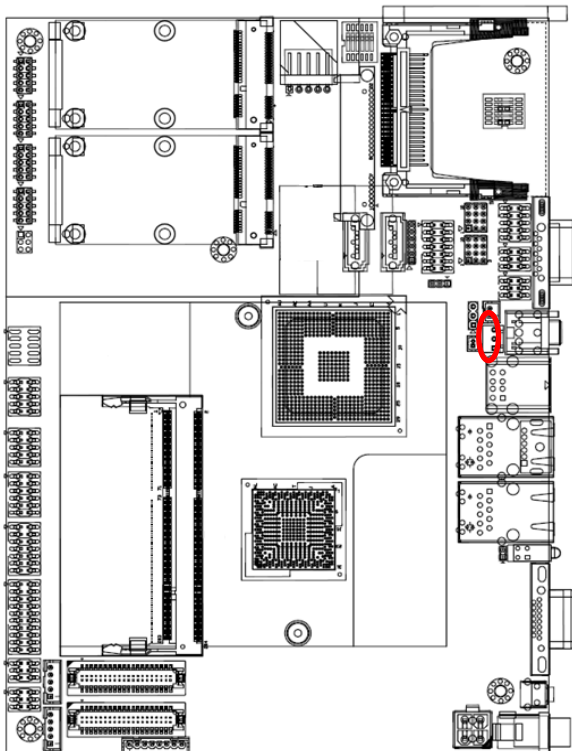
In RS-422 Mode

Signal	PIN	PIN	Signal
TxD1-	1	2	RxD1+
TxD1+	3	4	RxD1-
GND	5	6	NC
NC	7	8	NC
NC	9		NC

In RS-485 Mode

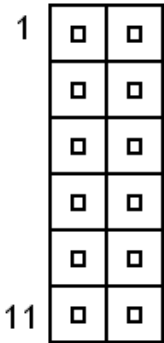
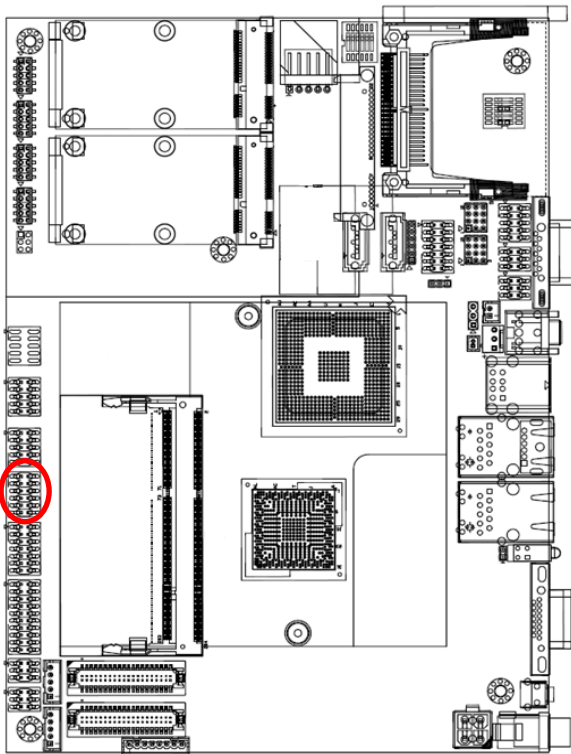
Signal	PIN	PIN	Signal
DATA1-	1	2	NC
DATA1+	3	4	NC
GND	5	6	NC
NC	7	8	NC
NC	9		NC

2.3.15 CPU fan connector (CPU_FAN)



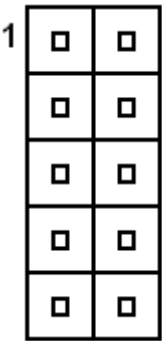
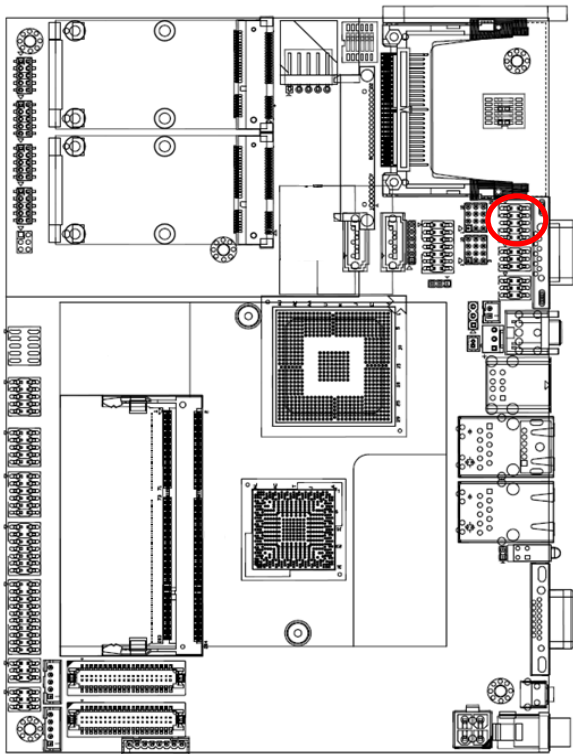
Signal	PIN
FAN_TAC1	3
+12V	2
GND	1

2.3.16 Audio connector (JAUDIO)



Signal	PIN	PIN	Signal
APM_LOUT_R	1	2	APM_LOUT_L
GND	3	4	GND
LINEIN_R	5	6	LINEIN_L
MIC-R	7	8	MIC-L
FRONT-JD	9	10	LINE1-JD
MIC1-JD	11	12	GND

2.3.17 Serial port 2 connector (JCOM2)



In RS-232 Mode

Signal	PIN	PIN	Signal
DCD2	1	2	RxD2
TxD2	3	4	DTR2
GND	5	6	DSR2
RTS2	7	8	CTS2
RI2	9	10	NC

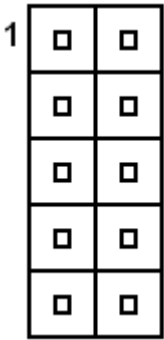
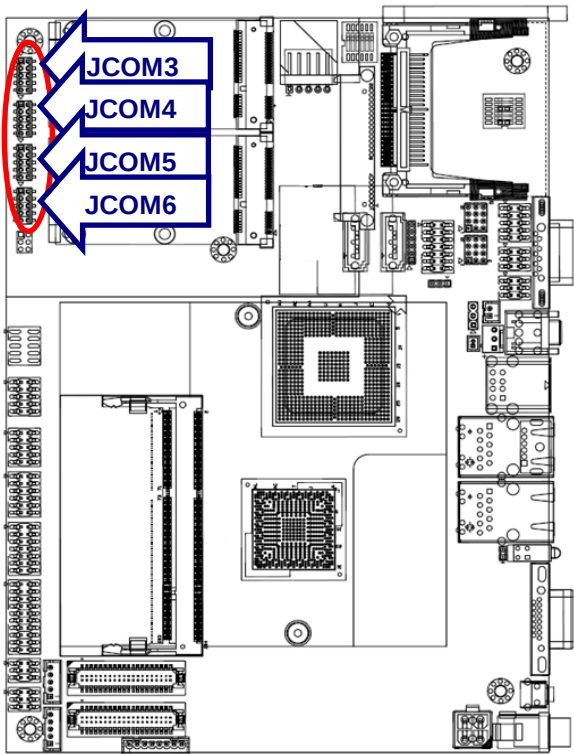
In RS-422 Mode

Signal	PIN	PIN	Signal
TxD2-	1	2	RxD2+
TxD2+	3	4	RxD2-
GND	5	6	NC
NC	7	8	NC
NC	9	10	NC

In RS-485 Mode

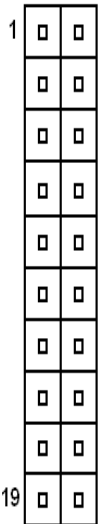
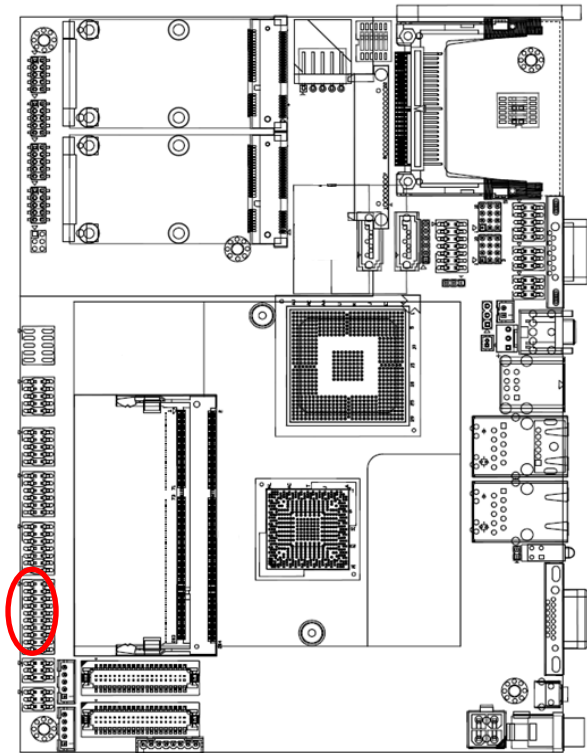
Signal	PIN	PIN	Signal
DATA2-	1	2	NC
DATA2+	3	4	NC
GND	5	6	NC
NC	7	8	NC
NC	9	10	NC

2.3.18 Serial port 3/ 4/ 5/ 6 connector (JCOM3/ JCOM4/ JCOM5/ JCOM6)



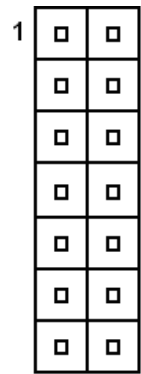
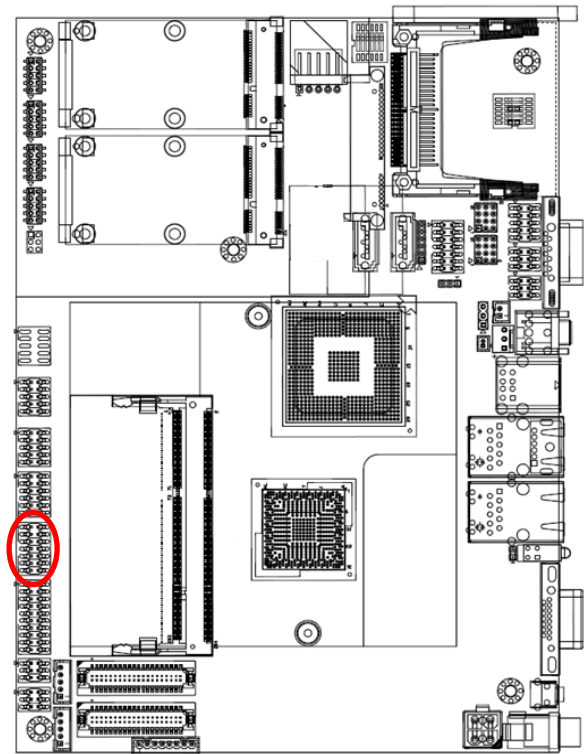
Signal	PIN	PIN	Signal
DCD	1	2	RxD
TxD	3	4	DTR
GND	5	6	DSR
RTS	7	8	CTS
RI	9	10	NC

2.3.19 General purpose I/O connector (JDIO)



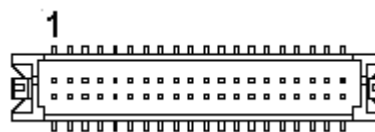
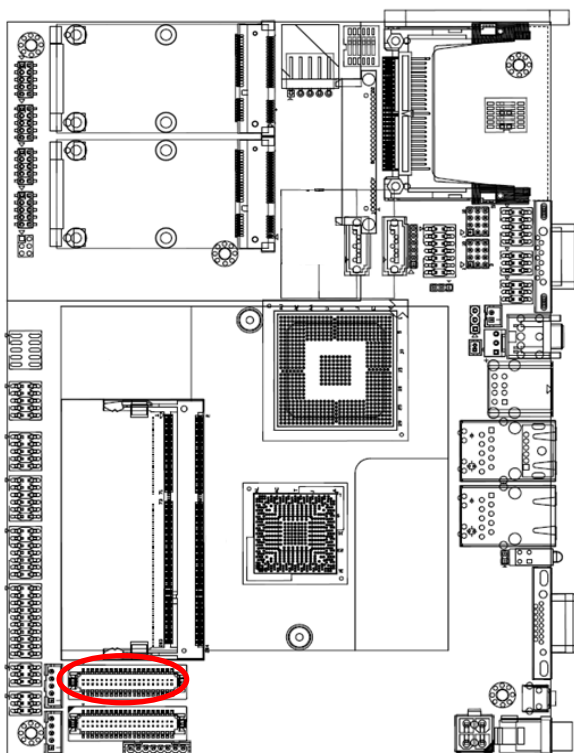
Signal	PIN	PIN	Signal
DIO0	1	2	DIO10
DIO1	3	4	DIO11
DIO2	5	6	DIO12
DIO3	7	8	DIO13
DIO4	9	10	DIO14
DIO5	11	12	DIO15
DIO6	13	14	DIO16
DIO7	15	16	DIO17
SMB_CLK_S	17	18	SMB_DATA_S
GND	19	20	+5V

2.3.20 LED indicator connector (JLED)



Signal	PIN	PIN	Signal
GND	1	2	+3.3V
HD_ACT#	3	4	+3.3V
LAN1_ACT	5	6	3.3V_SB
LAN2_ACT	7	8	3.3V_SB
ROUT-	9	10	ROUT+
LOUT-	11	12	LOUT+
PWRBTN#	13	14	GND

2.3.21 LVDS connector (JLVDS1)



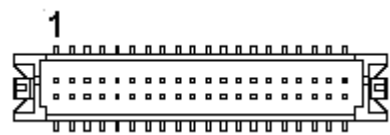
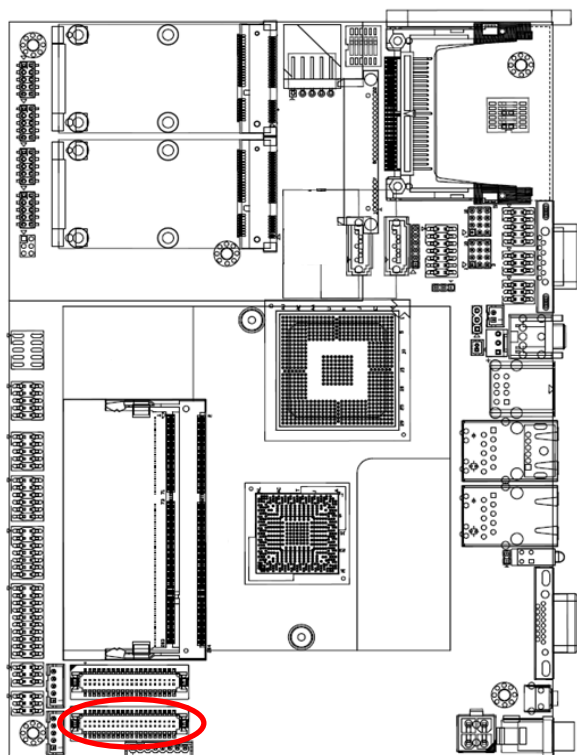
Signal	PIN	PIN	Signal
+5V	2	1	+3.3V
+5V	4	3	+3.3V
I ² C_DAT	6	5	I ² C_CLK
GND	8	7	GND
Txout0	10	9	Txout1
Txout0#	12	11	Txout1#
GND	14	13	GND
Txout2	16	15	NC
Txout2#	18	17	NC
GND	20	19	GND
NC	22	21	NC
NC	24	23	NC
GND	26	25	GND
NC	28	27	NC
NC	30	29	NC
GND	32	31	GND
Txclk	34	33	NC
Txclk#	36	35	NC
GND	38	37	GND
+12V	40	39	+12V

2.3.21.1 Signal Description – LVDS Connector (JLVDS)

Signal	Description
I ² C_DAT, I ² C_CLK	I ² C interface for panel parameter EEPROM. This EEPROM is mounted on the LVDS receiver. The data in the EEPROM allows the EXT module to automatically set the proper timing parameters for a specific LCD panel.

EBM-PNV Quick Installation Guide

2.3.22 LVDS connector (JLVDS2)



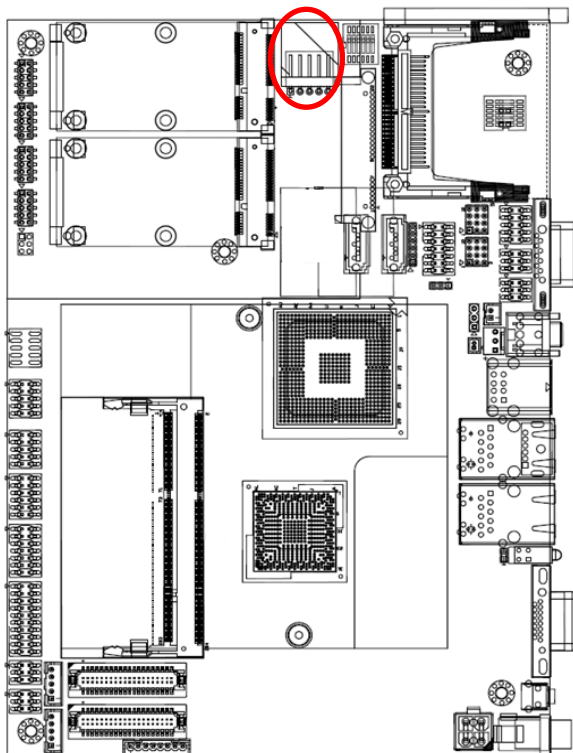
Signal	PIN	PIN	Signal
+5V	2	1	+3.3V
+5V	4	3	+3.3V
NC	6	5	NC
GND	8	7	GND
Txout0	10	9	Txout1
Txout0#	12	11	Txout1#
GND	14	13	GND
Txout2	16	15	Txout3
Txout2#	18	17	Txout3#
GND	20	19	GND
Txout4	22	21	Txout5
Txout4#	24	23	Txout5#
GND	26	25	GND
Txout6	28	27	Txout7
Txout6#	30	29	Txout7#
GND	32	31	GND
Txclk1	34	33	Txclk2
Txclk1#	36	35	Txclk2#
GND	38	37	GND
+12V	40	39	+12V



Note: Single/Dual 24-bit LVDS

1. CRT's resolution < LCD's resolution.
If we boot from CRT & LCD, the resolution is fixed by CRT's resolution.
If we boot from LCD only and plug the CRT in the OS, LCD works well but the CRT will have wrong resolution.
2. CRT's resolution > LCD's resolution.
Everything is fine.

2.3.23 Touch panel connector (JTOUCH)

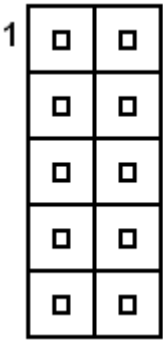
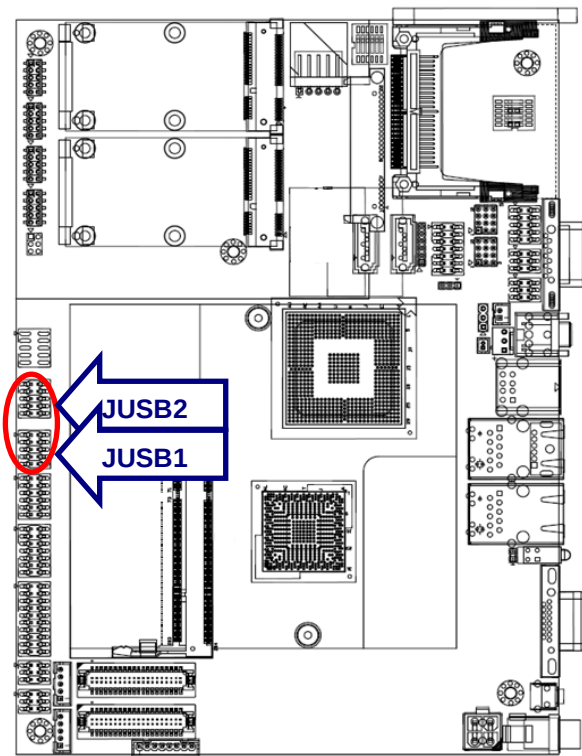


Signal	PIN
UL	1
UR	2
PROBE	3
LR	4
LL	5



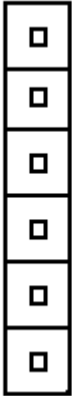
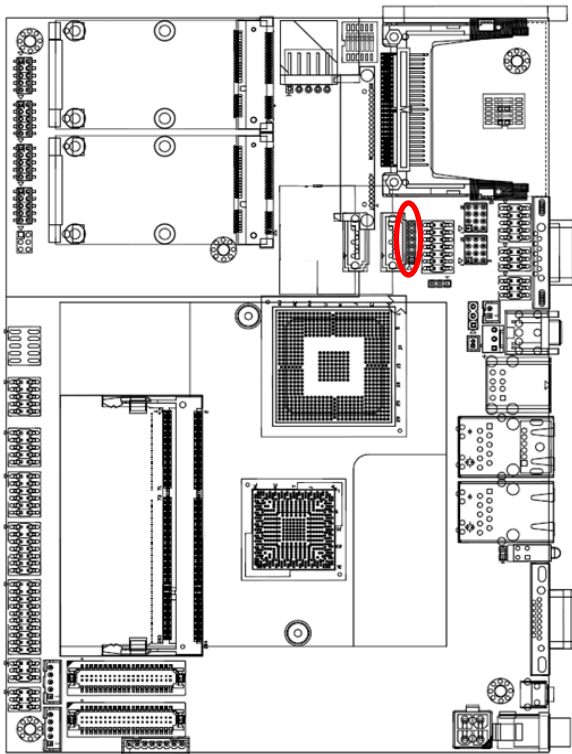
NOTE: Under 4W situation
UL=X+, UR=Y+, LR=Y-, LL=X-

2.3.24 USB connector 4&5, 2&3, 6&7 (JUSB1/ JUSB2)



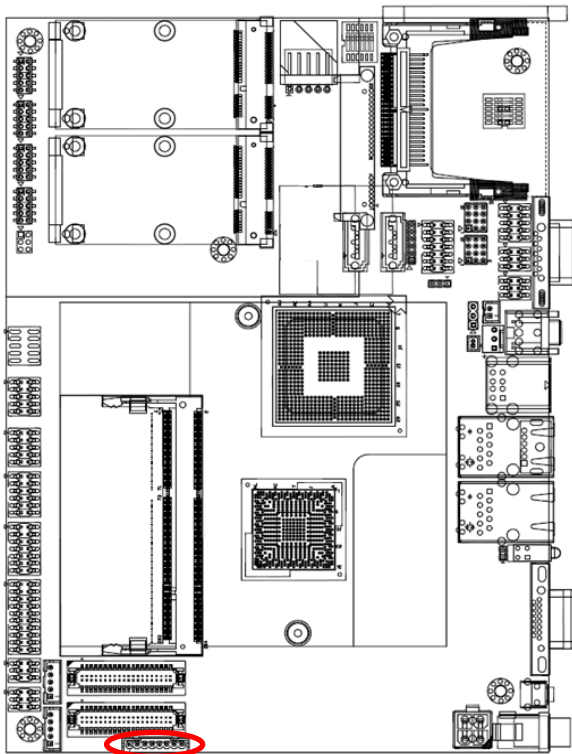
Signal	PIN	PIN	Signal
+5V	1	2	GND
D-	3	4	GND
D+	5	6	D+
GND	7	8	D-
GND	9	10	+5V

2.3.25 USB connector 9 (JUSB4)



Signal	PIN
+5V	1
D-	2
D+	3
GND	4
GND	5
+3.3V	6

2.3.26 OSD for front panel key (JKEY)



Signal	PIN
GND	1
K-LED_GREEN	2
K-LED_RED	3
K-POWER	4
K-AUTO	5
K-MENU	6
K-RIGHT	7
K-LEFT	8

