ECM-PNV (for Rev. A1 – Signal 18bit LVDS)

Intel® Atom™ D510 Dual-Core 3.5" Micro Module with Intel® ICH8-M Chipset

Quick Installation Guide

1st Ed – 8 June 2010

Part No. E2017383000R

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 UNDESIRED 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.

Copyright Notice

A Message to the Customer

Avalue Customer Services

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/

If you still cannot find the answer, gather all the information or questions that apply to your problem, and with the product close at hand, call your dealer. Our dealers are well trained and ready to give you the support you need to get the most from your Avalue's products. In fact, most problems reported are minor and are able to be easily solved over the phone.
In addition, free technical support is available from Avalue's engineers every business day. We are always ready to give advice on application requirements or specific information on the installation and operation of any of our products. Please do not hesitate to call or e-mail us.

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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.

Always note that improper disassembling action could cause damage to the motherboard. We suggest not removing the heatsink without correct instructions in any circumstance. If you really have to do this, please contact us for further support.

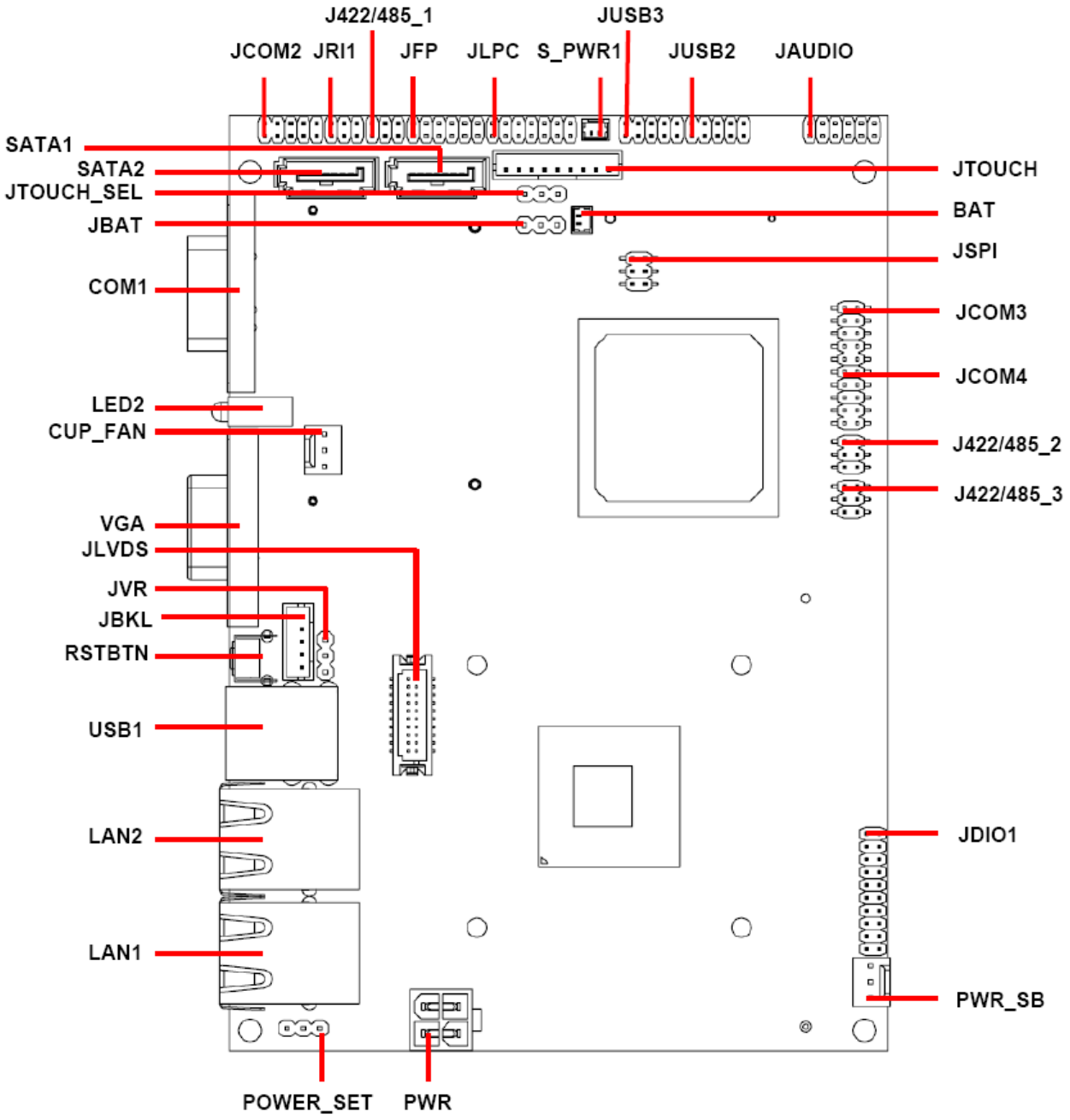
1.2 Packing List

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

- 1 x 3.5” ECM-PNV Micro Module
- 1 x Quick Installation Guide for ECM-PNV
- 1 x AUX-032 daughter board
- 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
- 1 x Cable set contains the followings:
  - 1 x Audio cable (12pin, 2.0mm pitch)
  - 2 x USB cable (10P/2.54mm-10P/2.0mm)
  - 1 x Serial ATA cable (7-pin, standard)
  - 1 x Serial ATA cable (15-pin, 2P/2.0mm)
- 1 x CPU & North Bridge Cooler

2. Hardware Configuration

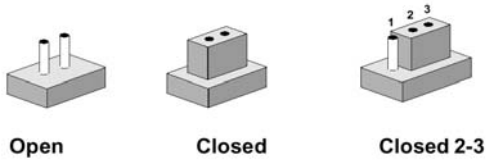
2.1 Product Overview



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

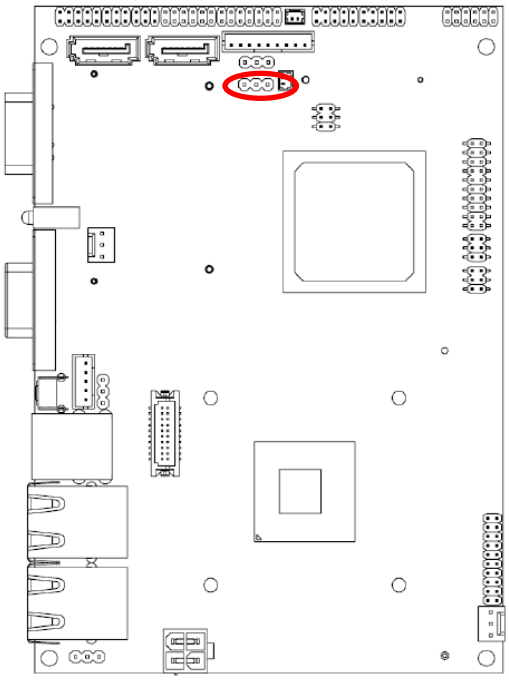
Label	Function	Note
JBAT	Clear CMOS	3 x 1 header, pitch 2.54 mm
JFP	Miscellaneous setting connector	6 x 2 header, pitch 2.0 mm
JRI1	Serial port 1 pin 9 signal select	3 x 2 header, pitch 2.0 mm
JTOUCH_SEL	Touch panel mode select	3 x 1 header, pitch 2.54 mm
POWER_SET	Input power select	3 x 1 header, pitch 2.54 mm

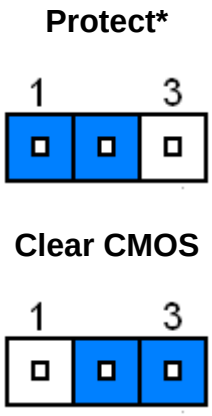
Connectors

Label	Function	Note
BAT	Battery connector	2 x 1 wafer, pitch 1.25 mm
COM1	Serial port 1 connector	D-sub 9-pin, male
CPU_FAN	CPU fan connector	3 x 1 wafer, pitch 2.54 mm
J422/485_1	Serial port 1 in RS-422/485 mode	3 x 2 header, pitch 2.0 mm
J422/485_2	Serial port 2 in RS-422/485 mode	3 x 2 header, pitch 2.0 mm
J422/485_3	Serial port 3 in RS-422/485 mode	3 x 2 header, pitch 2.0 mm
JTOUCH	Touch panel connector	9 x 1 header, pitch 2.0 mm
JAUDIO	Audio connector	6 x 2 header, pitch 2.0 mm
JCOM2	Serial port 2 connector	5 x 2 header, pitch 2.0 mm
JCOM3	Serial port 3 connector	5 x 2 header, pitch 2.0 mm
JCOM4	Serial port 4 connector	5 x 2 header, pitch 2.0 mm
JDIO	General purpose I/O connector	10 x 2 header, pitch 2.0 mm
JLPC	(Reserved for debug)	7 x 2 header, pitch 2.0 mm
JSPI	SPI connector	3 x 2 header, pitch 2.0 mm
JUSB2	USB connector 2 & 3	5 x 2 header, pitch 2.0 mm
JUSB3	USB connector 6 & 7	5 x 2 header, pitch 2.0 mm
JLVDS	LVDS connector	2 x 10 header, pitch 1.25mm
JVR	LCD backlight brightness adjustment	3 x 1 header, pitch 2.54mm
JBKL	LCD inverter connector	5 x 1 wafer, pitch 2.0mm
LAN1	RJ-45 Ethernet connector	
LAN2	RJ-45 Ethernet connector	
LED2	LED connector	
PWR	Power connector	2 x 2 wafer, pitch 4.2 mm
PWR_SB	5VSB connector in ATX	3 x 1 wafer, pitch 2.54 mm
S_PWR1	SATA power connector	2 x 1 wafer, pitch 2.0 mm
SATA1	Serial ATA connector 1	
SATA2	Serial ATA connector 2	
RSTBTN	Reset button	
USB1	USB connector 0 & 1	Double Deck
VGA	VGA connector	D-sub 15-pin, female

2.3 Setting Jumpers & Connectors

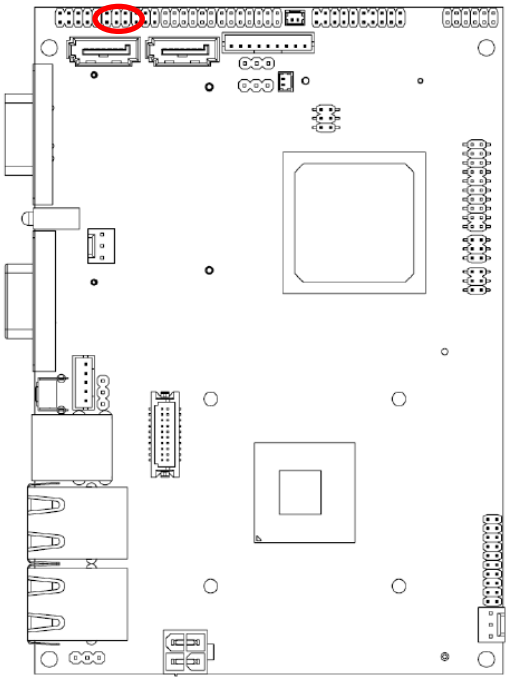
2.3.1 Clear CMOS (JBAT)

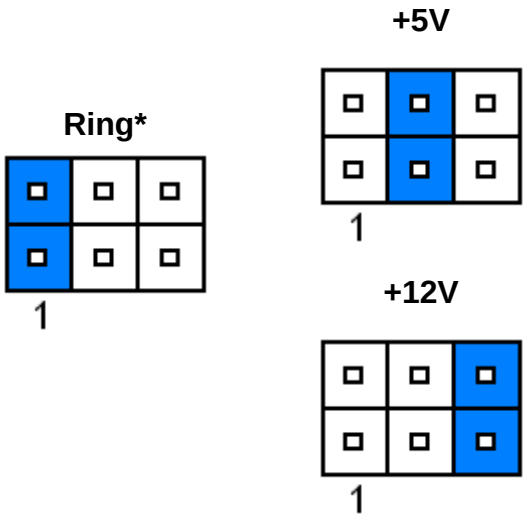




*** Default**

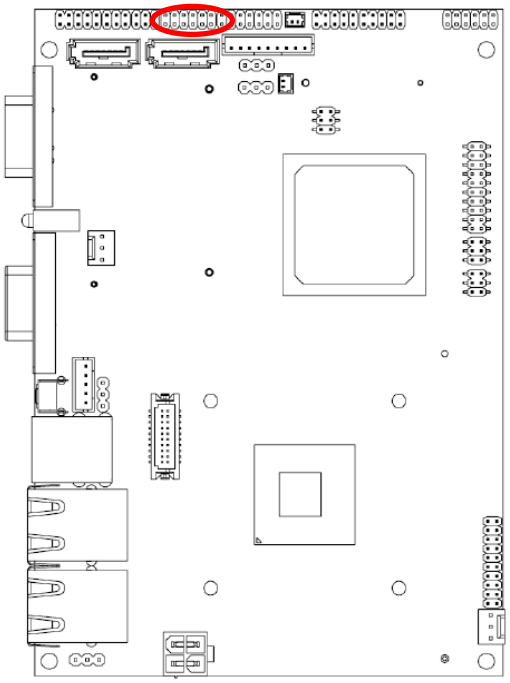
2.3.2 Serial port 1 pin 9 signal select (JRI1)





*** Default**

2.3.3 Miscellaneous setting connector (JFP)



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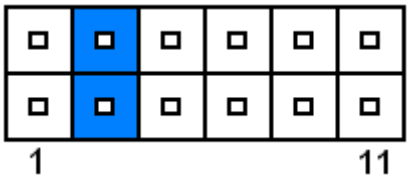
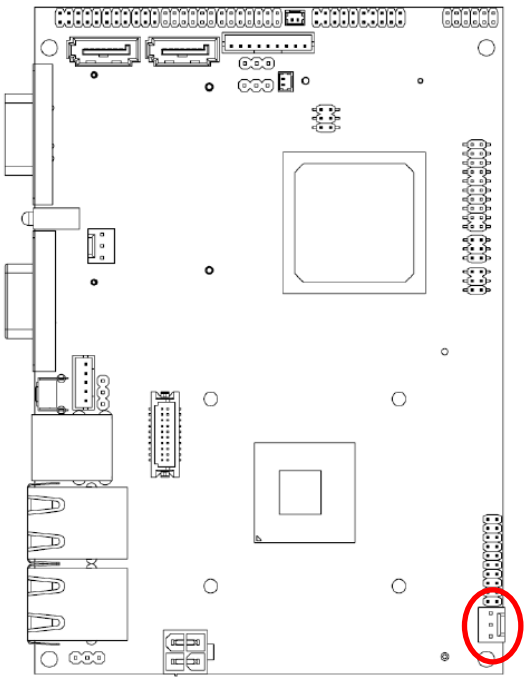
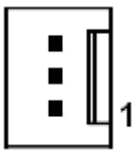


Signal		PIN
PWBT		1
		2
PWR MSEL		3
		4
PWR-LED	+	5
	-	6
HDD-LED	-	7
	+	8
CF SEL Short Slave		9
		10
COPEN#		11
		12

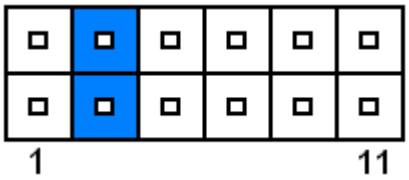
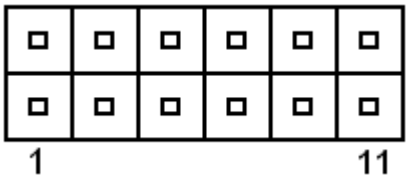
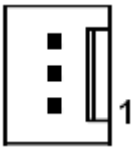
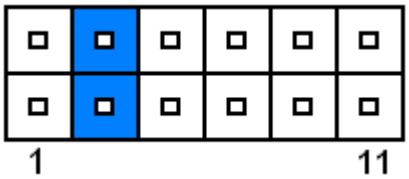
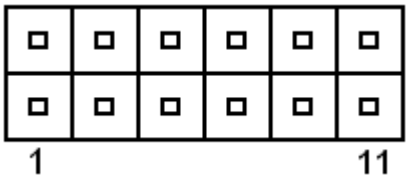
2.3.4 5VSB connector in ATX (PWR_SB)



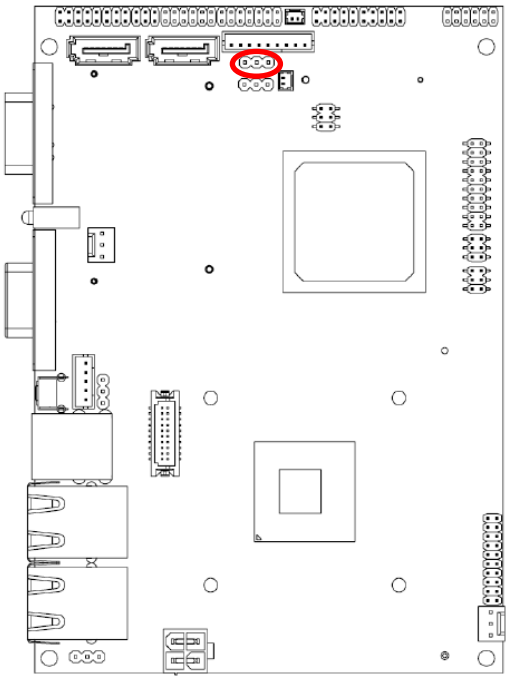


Signal	PIN
ATX5VSB	3
GND	2
PSON	1

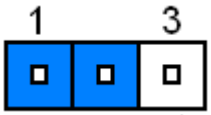
2.3.4.1 Signal Description –AT/ATX mode & Input power type

<table>
<tr><th>Input power type</th><th>Power-ON Mode</th><th>Description</th></tr>
<tr><td rowspan="2">AT Type</td><td>AT Mode
(PWR MSEL)
 
</td><td>Use AT type power input, and set the board in AT mode.</td></tr>
<tr><td>ATX Mode
(PWR MSEL)
 
</td><td>Use AT type power input, and set the board in ATX mode.</td></tr>
<tr><td rowspan="2">ATX Type
(PWR_SB)
 
</td><td>AT Mode
(PWR MSEL)
 
</td><td>Use ATX type power input, and set the board in AT mode.</td></tr>
<tr><td>ATX Mode
(PWR MSEL)
 
</td><td>Use ATX type power input, and set the board in ATX mode.</td></tr>
</table>

2.3.5 Touch panel mode select (JTOUCH_SEL)



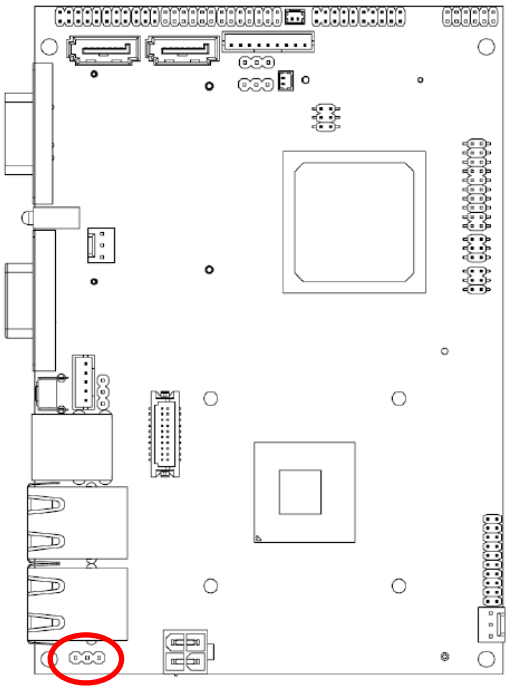
4/ 8W



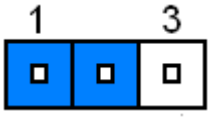
5W*

*** Default**

2.3.6 Input power select (POWER_SET)



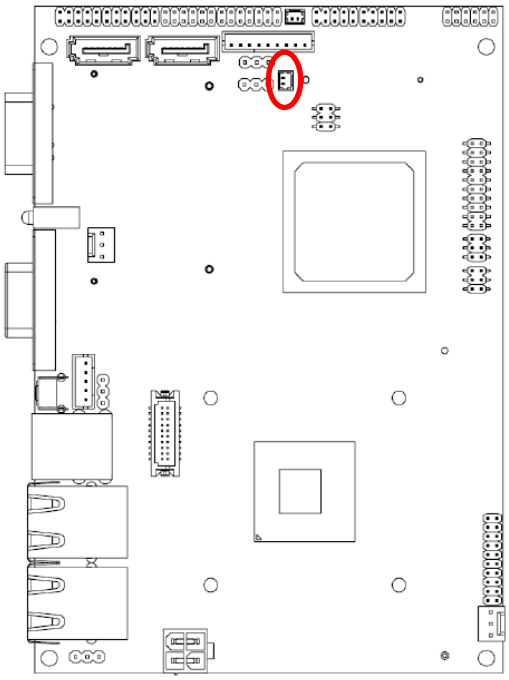
15V~24V Input

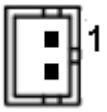


14V~12V Input*

*** Default**

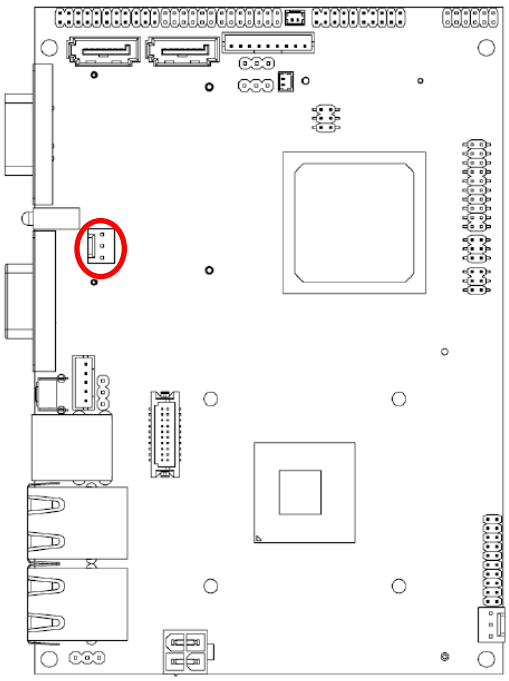
2.3.7 Battery connector (BAT)

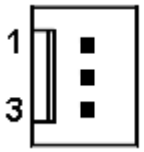




Signal	PIN
BAT	1
GND	2

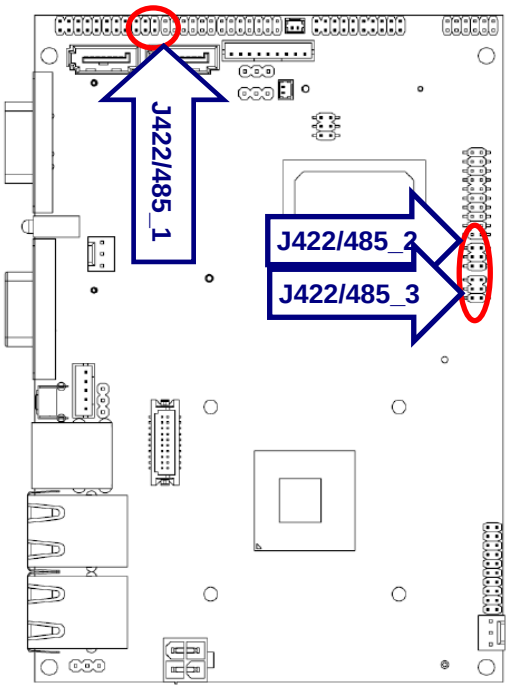
2.3.8 CPU fan connector (CPU_FAN)

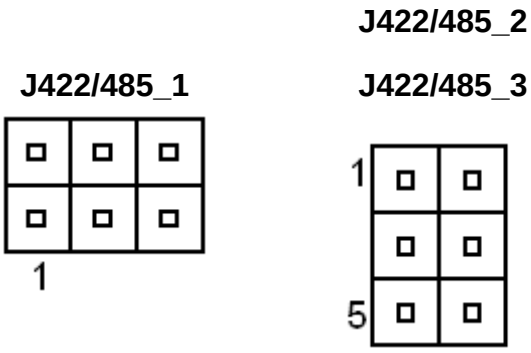




Signal	PIN
GND	1
+12V	2
FAN_TAC1	3

2.3.9 Serial port 1/ 2/ 3 in RS-422/485 mode (J422/485_1/ J422/485_2/ J422/485_3)

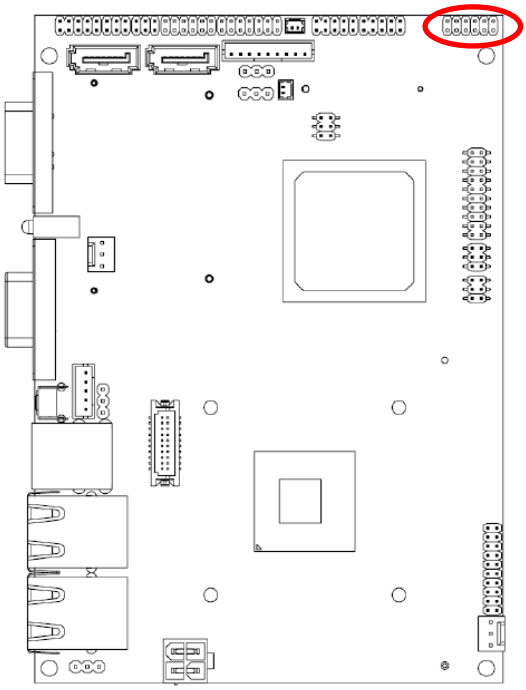


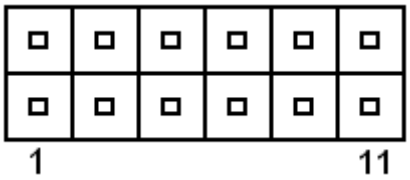


Signal	PIN	PIN	Signal
TX-	1	2	RX-
TX+	3	4	RX+
+5V	5	6	GND

Note:
J422/485 is available after modifying the mode of COM2 in BIOS setting.

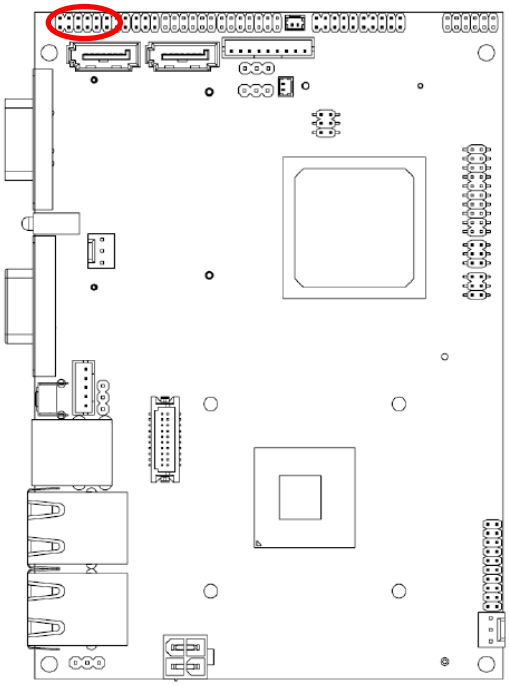
2.3.10 Audio connector (JAUDIO)

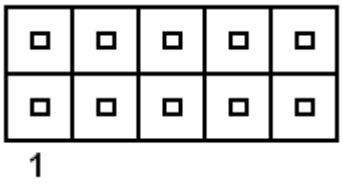




Signal	PIN	PIN	Signal
LINEOUT_R	1	2	LINEOUT_L
GND	3	4	GND
LINEIN_R	5	6	LINEIN_L
MIC-R	7	8	MIC-L
FRONT-JD	9	10	LINE1-JD
MIC1-JD	11	12	GND

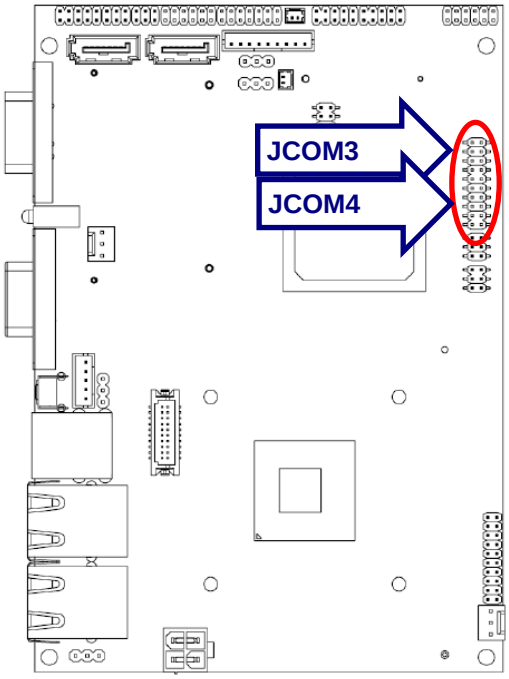
2.3.11 Serial port 2 connector (JCOM2)

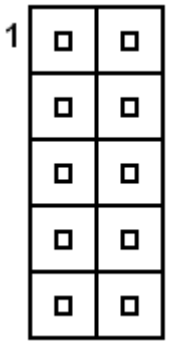




Signal	PIN	PIN	Signal
DCD	1	2	RxD
TxD	3	4	DTR
GND	5	6	DSR
RTS	7	8	CTS
RI	9	10	NC

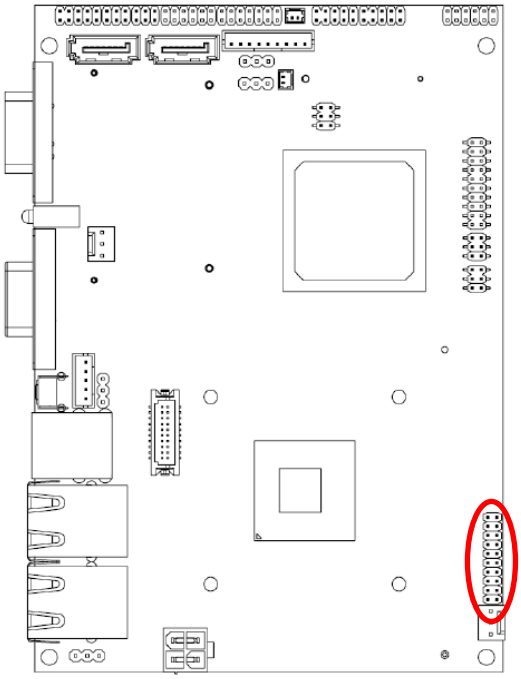
2.3.12 Serial port 3/ 4 connector (JCOM3/ JCOM4)

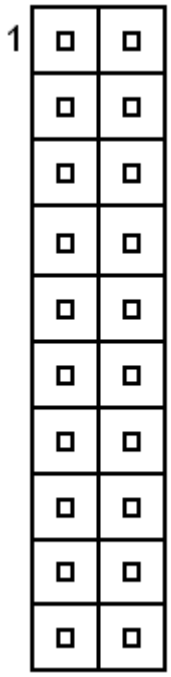




Signal	PIN	PIN	Signal
DCD	1	2	RxD
TxD	3	4	DTR
GND	5	6	DSR
RTS	7	8	CTS
RI	9	10	NC

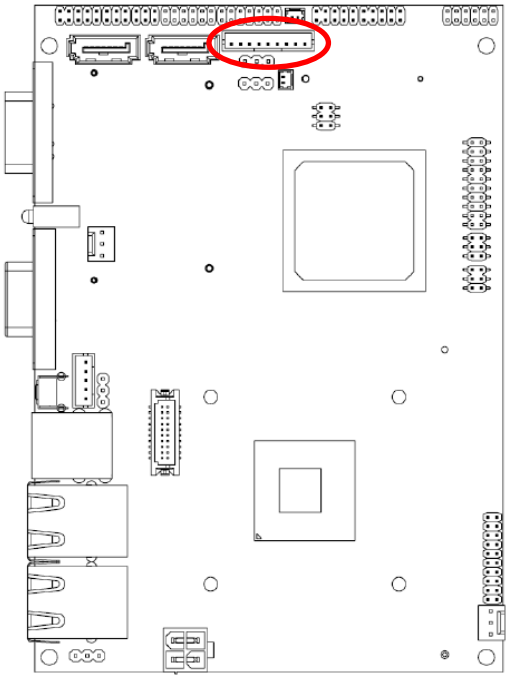
2.3.13 General purpose I/O connector (JDIO)

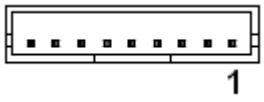




Signal	PIN	PIN	Signal
DIO0	1	2	DIO10
DIO1	3	4	DIO11
DIO2	5	6	DIO12
DIO3	7	8	DIO13
DIO4	9	10	DIO14
DIO5	11	12	DIO15
DIO6	13	14	DIO16
DIO7	15	16	DIO17
SMB_CLK	17	18	SMB_DATA
GND	19	20	+5V

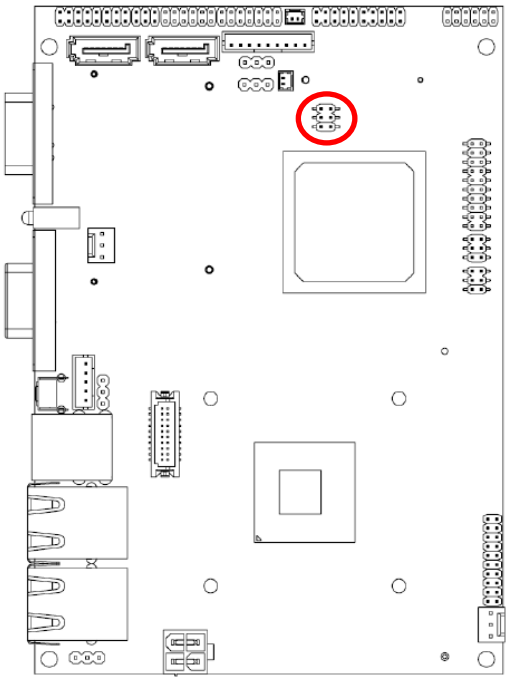
2.3.14 Touch panel connector (JTOUCH)

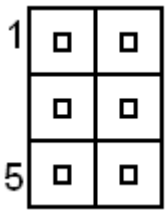




PIN	4-WIRE	5-WIRE	8-WIRE
1	N/A	N/A	Right Sense
2	N/A	N/A	Left Sense
3	N/A	N/A	Bottom Sense
4	N/A	Sense	Top Sense
5	Right	LR	Right Excite
6	Left	LL	Left Excite
7	Bottom	UR	Bottom Excite
8	Top	UL	Top Excite
9	GND	GND	GND

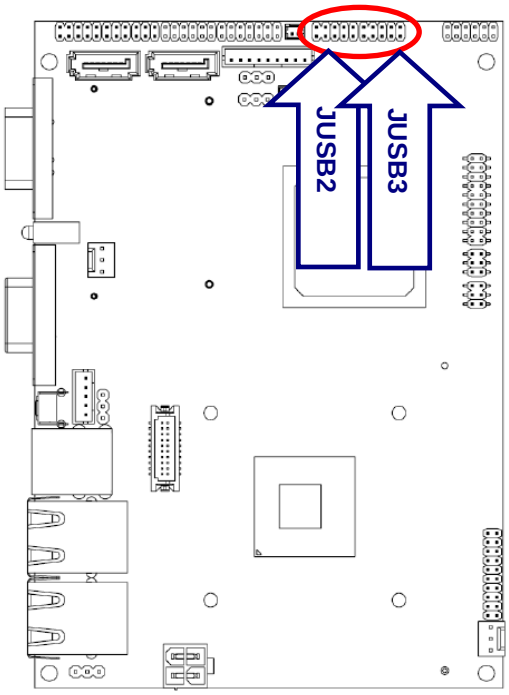
2.3.15 SPI connector (JSPI)

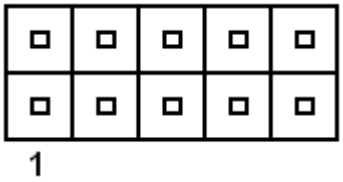




Signal	PIN	PIN	Signal
VSPI	1	2	GND
SPICE#	3	4	SPISCK
SPISO	5	6	SPISI

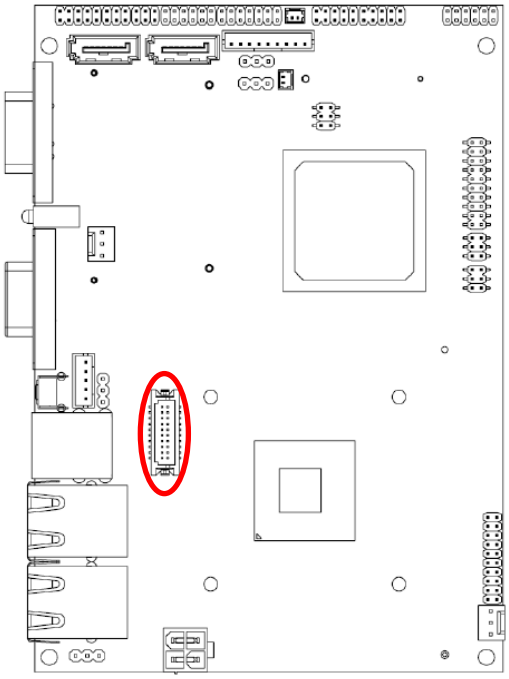
2.3.16 USB connector 2 & 3/ 6 & 7 (JUSB2/ JUSB3)

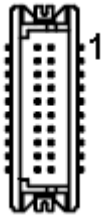




Signal	PIN	PIN	Signal
+5V	1	2	GND
N3/ N7	3	4	GND
P3/ P7	5	6	P2/ P6
GND	7	8	N2/ N6
GND	9	10	+5V

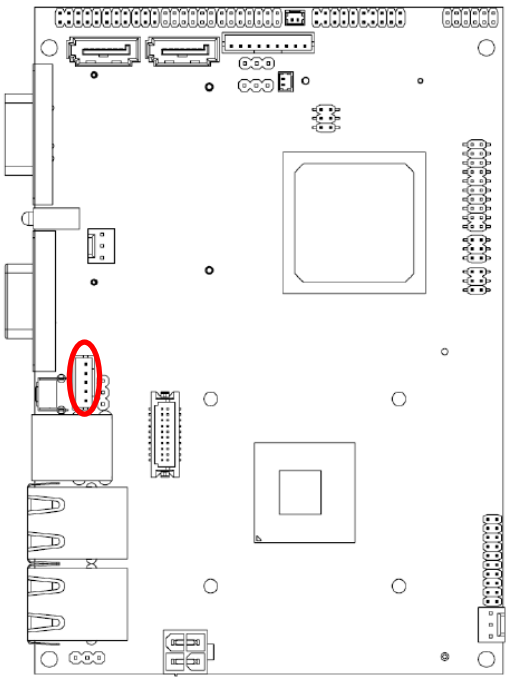
2.3.17 LVDS connector (JLVDS)





Signal	PIN	PIN	Signal
GND	2	1	GND
LVDS_0-	4	3	LVDS_0+
LVDS_1-	6	5	LVDS_1+
LVDS_2-	8	7	LVDS_2+
NC	10	9	NC
LVDS_CLK-	12	11	LVDS_CLK+
GND	14	13	GND
I_SCL	16	15	I_SDA
+5V	18	17	+3.3V
+5V	20	19	+3.3V

2.3.18 LCD Inverter Connector (JBKL)



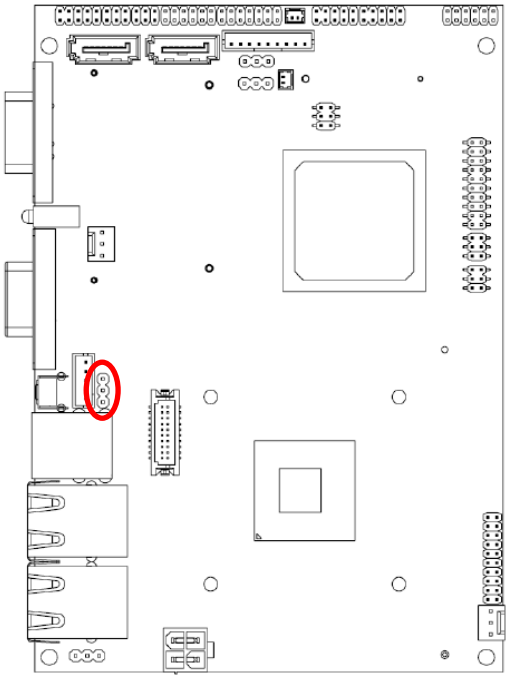
Signal	PIN
+12V	1
GND	2
BLK_ON	3
BRIGHT	4
+5V	5

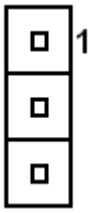
Note:
For inverters with adjustable Backlight function, it is possible to control the LCD brightness through the VR signal controlled by **JVR**. Please see the **JVR** section for detailed circuitry information.

2.3.18.1 Signal Description – LCD Inverter Connector (JBKL)

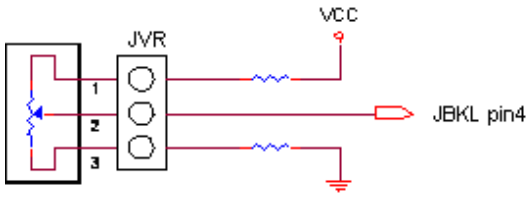
Signal	Signal Description
BRIGHT	Vadj = 0.75V ~ 4.25V (Recommended: 4.7KΩ, >1/16W)
BKL_ON	LCD backlight ON/OFF control signal

2.3.19 LCD backlight brightness adjustment (JVR)





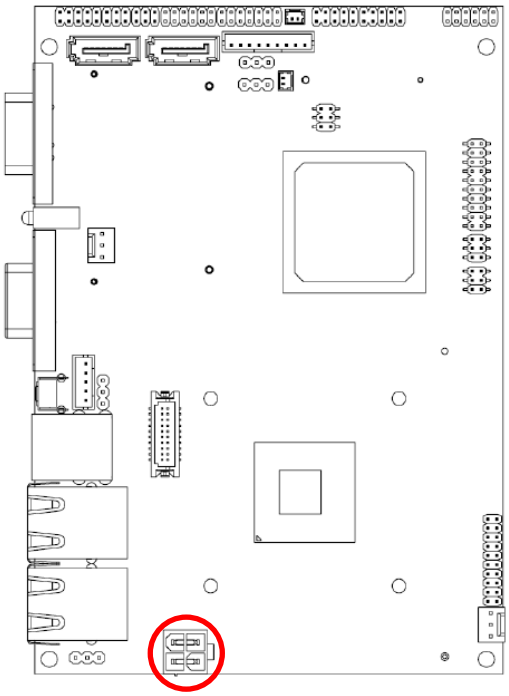
Signal	PIN
+5V	1
BRIGHT	2
GND	3

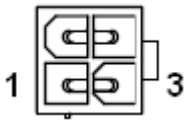


Variation Resistor

(Recommended: 4.7KΩ, >1/16W)

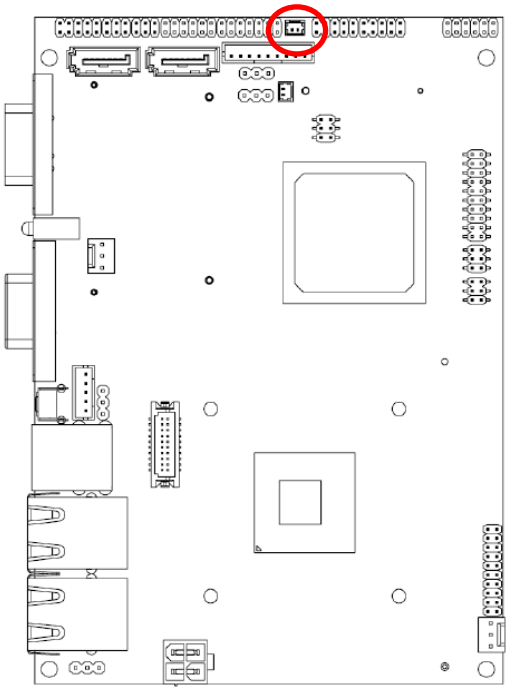
2.3.20 Power connector (PWR)

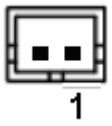




Signal	PIN	PIN	Signal
GND	2	4	VIN
GND	1	3	VIN

2.3.21 SATA power connector (S_PWR1)

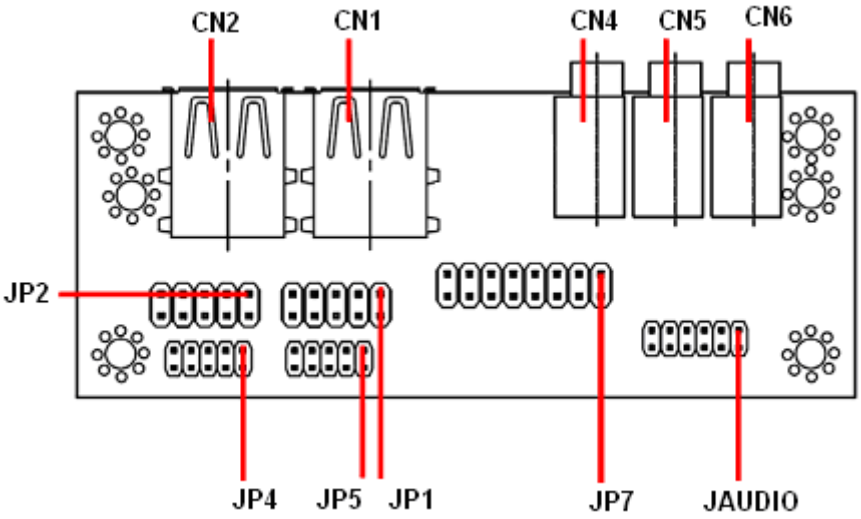




Signal	PIN
SATA_PWR	2
GND	1

2.4 Audio / USB Daughter Board User's Guide

2.4.1 Jumper and Connector Layout



2.4.2 Jumper and Connector List

Connectors

Label	Function	Note
CN1, CN2	USB connector	
CN4	Line out connector	Phone Jack
CN5	Line in connector	Phone Jack
CN6	Mic in connector	Phone Jack
JAUDIO	Audio connector	6 x 2 header, pitch 2.0mm
JP1	2.54mm USB connector	5 x 2 header, pitch 2.54mm
JP2	2.54mm USB connector	5 x 2 header, pitch 2.54mm
JP4	2.0mm USB connector	5 x 2 header, pitch 2.0mm
JP5	2.0mm USB connector	5 x 2 header, pitch 2.0mm
JP7	TV / Audio connector	8 x 2 header, pitch 2.54mm

2.4.3 Setting Jumper and Connector

Audio Connector (JAUDIO)

Signal	PIN	PIN	Signal
OUTR	1	2	OUTL
GND	3	4	GND
INR1	5	6	INL1
MICIN1	7	8	AREF
FRONT-JD1	9	10	LINE1-JD1
MIC1-JD1	11	12	GND

2.54mm USB Connector (JP1)

Signal	PIN	PIN	Signal
+5V	1	2	GND
D1-	3	4	GND
D1+	5	6	D2+
GND	7	8	D2-
GND	9	10	+5V

Note: Wrong USB cable configuration with your USB devices might cause your USB devices damaged.

2.54mm USB Connector (JP2)

Signal	PIN	PIN	Signal
+5V	1	2	GND
D3-	3	4	GND
D3+	5	6	D4+
GND	7	8	D4-
GND	9	10	+5V

TV / Audio Connector (JP7)

Signal	PIN	PIN	Signal
Mic In	1	2	Mic Bais
GND	3	4	GND
Line out L	5	6	Line out R
SPK L	7	8	SPK R
Line in L	9	10	Line in R
GND	11	12	NC
TVGND	13	14	NC
TVGND	15	16	COMP

2.0mm USB Connector (JP4)

Signal	PIN	PIN	Signal
+5V	1	2	GND
D3-	3	4	GND
D3+	5	6	D4+
GND	7	8	D4-
GND	9	10	+5V

2.0mm USB Connector (JP5)

Signal	PIN	PIN	Signal
+5V	1	2	GND
D1-	3	4	GND
D1+	5	6	D2+
GND	7	8	D2-
GND	9	10	+5V