EMX-PNV

Intel® Atom™ PNV-M/ PNV-D Mini ITX Motherboard with Intel® ICH8-M Chipset

Quick Installation Guide

1st Ed – September 1st 2010

Part No. E2017XPNV00R

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

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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:
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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.
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Headquarters and Branch

Avalue Technology Inc.

7F, 228, Lian-cheng Road, Chung Ho City, Taipei, Taiwan

Tel: +886-2-8226-2345 Fax: +886-2-8226-2777

Information: sales@avalue.com.tw Service: service@avalue.com.tw

Avalue USA

Avalue Technology Inc.

200 Tornillo Way, Suite 210, Tinton Falls,

NJ 07712

Tel: +1-732-578-0200

Fax: +1-732-578-0250

Information: sales@avalue-usa.com

Service: support@avalue-usa.com

Avalue Europe

Avalue Europe A/S

Moelledalen 22C, 3140

Aalsgaarde, Denmark

Tel: +45-7025-0310

Fax:+45-4975-5026

Information: sales.europe@avalue.com.tw

Service: service.europe@avalue.com.tw

BCM Advanced Research

BCM Advanced Research

an Avalue Company

7 Marconi, Irvine, CA92618

Tel: +1-949-470-1888

Fax: +1-949-470-0971

Information: BCMSales@bcmcom.com

Web: www.bcmcom.com

Avalue China

Avalue Technology Inc.

Room 805, Building 9,No.99 Tianzhou Rd.,

Caohejing Development Area,

Xuhui District, Shanghai

Tel: +86-21-5169-3609

Fax:+86-21-5445-3266

Information: sales.china@avalue.com.cn

Service: service@avalue.com.tw

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.

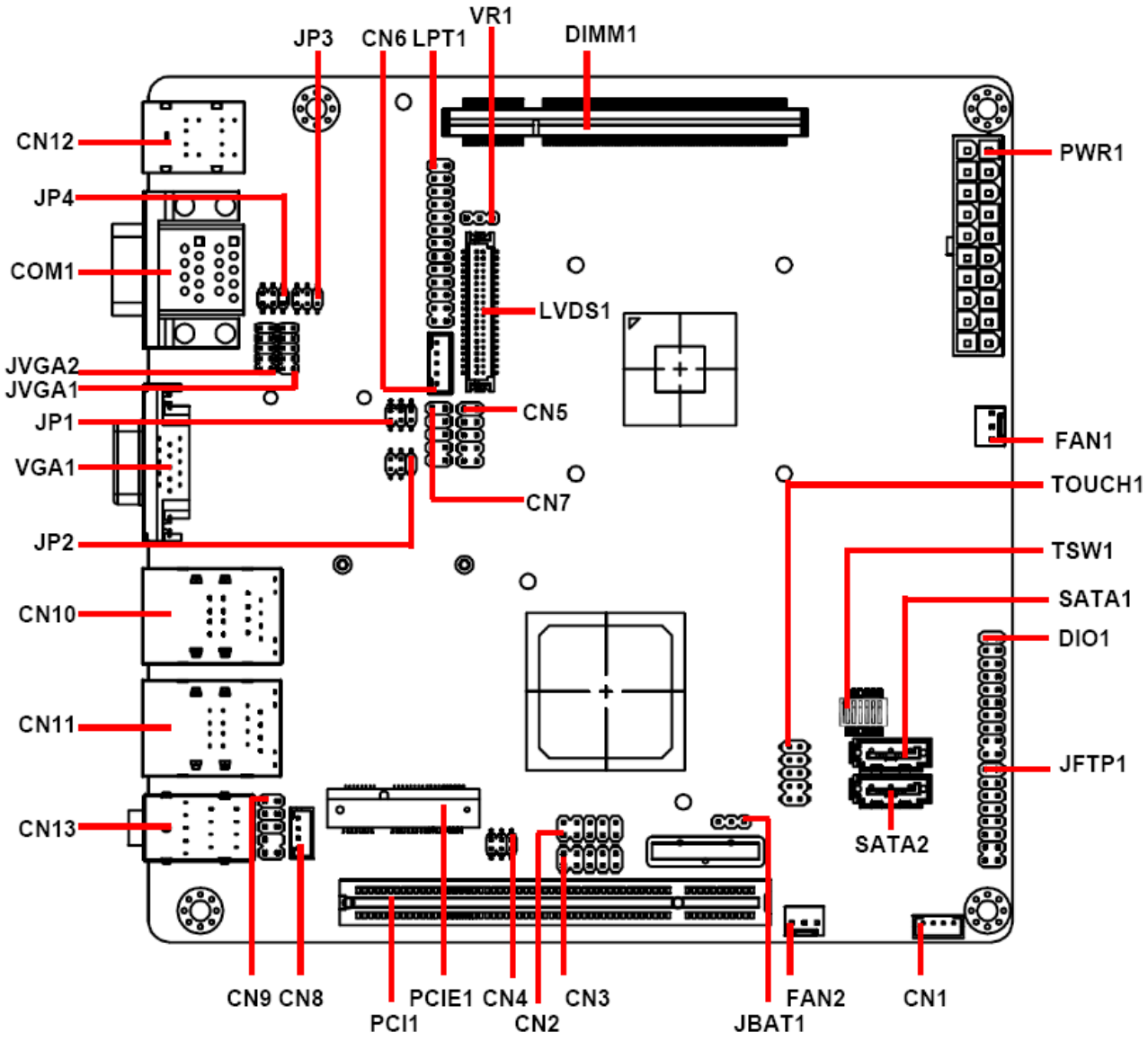
1.2 Packing List

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

- 1 x EMX-PNV Mini ITX Main Board
- 1 x DVD-ROM contains the followings:
  - User's manual in pdf file
  - Driver
- 2 x SATA & power cable

2. Hardware Configuration

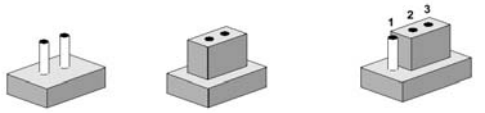
2.1 Product Overview



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.



Open Closed Closed 2-3

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

Open Closed Closed 2-3

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

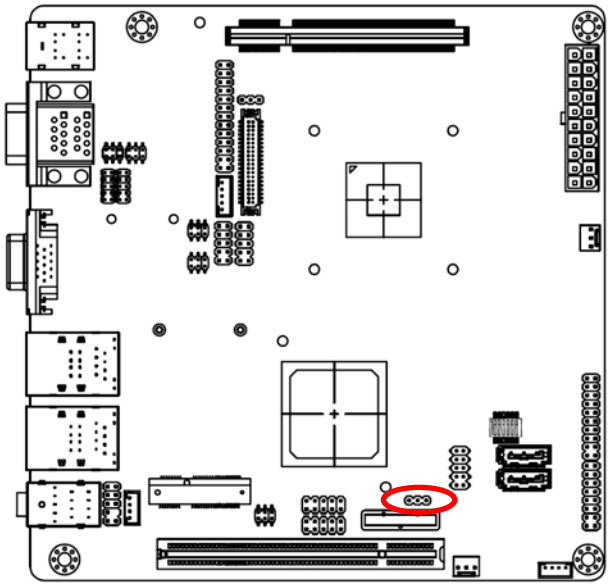
Label	Function	Note
JBAT1	Clear CMOS	3 x 1 header, pitch 2.54 mm
JFTP1	Miscellaneous setting connector	8 x 2 header, pitch 2.54 mm
JP1	Serial port 3 pin 9 signal select – Ring, +5V, +12V power select	3 x 2 header, pitch 2.0 mm
JP2	Serial port 4 pin 9 signal select – Ring, +5V, +12V power select	3 x 2 header, pitch 2.0 mm
JP3	Serial port 2 pin 9 signal select – Ring, +5V, +12V power select	3 x 2 header, pitch 2.0 mm
JP4	Serial port 1 pin 9 signal select – Ring, +5V, +12V power select	3 x 2 header, pitch 2.0 mm

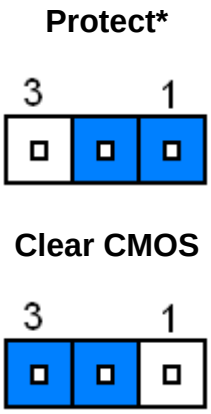
Connectors

Label	Function	Note
CN1	Speaker out connector	4 x 1 wafer, pitch 2.0mm
CN2	USB connector 4 & 5	5 x 2 header, pitch 2.54 mm
CN3	USB connector 6 & 7	5 x 2 header, pitch 2.54 mm
CN4	SPI connector	3 x 2 header, pitch 2.0 mm
CN5	Serial port 4 connector	5 x 2 header, pitch 2.54 mm
CN6	LCD inverter connector	5 x 1 wafer, pitch 2.0mm
CN7	Serial port 3 connector	5 x 2 header, pitch 2.54 mm
CN8	CD-ROM Audio connector	4 x 1 wafer, pitch 2.0mm
CN9	Front audio connector	5 x 2 header, pitch 2.54 mm
CN10	USB connector 0 & 1 (Co-lay with LAN1)	
CN11	USB connector 2 & 3 (Co-lay with LAN2)	
CN12	PS/2 keyboard & mouse connector	
CN13	Audio connecter	
COM1	Serial port 1/ 2 connector	D-sub 9-pin, male
DIMM1	DIMM slot	
DIO1	General purpose I/O connector	10 x 2 header, pitch 2.54 mm
FAN1	CPU fan connector	3 x 1 wafer, pitch 2.54mm
FAN2	System fan connector	3 x 1 wafer, pitch 2.54mm
JVGA1	VGA power connector	5 x 2 header, pitch 2.0 mm
JVGA2	VGA connector	5 x 2 header, pitch 2.0 mm
LPT1	Print port connector	13 x 2 header, pitch 2.54mm
LVDS1	LVDS connector	20 x 2 header, pitch 1.25mm
PCI1	PCI slot	
PCIE1	PCIE slot	
PWR1	ATX power connector	10 x 2 wafer, pitch 2.54mm
SATA1	Serial ATA connector 1	
SATA2	Serial ATA connector 2	
TOUCH1	Touch panel connector	5 x 2 header, pitch 2.54 mm
TSW1	4W/ 5W/ 8W power mode select	DIP-SW, 6P
VGA1	VGA connector	D-sub 15-pin, female
VR1	LCD backlight brightness adjustment	3 x 1 header, pitch 2.54mm

2.3 Setting Jumpers & Connectors

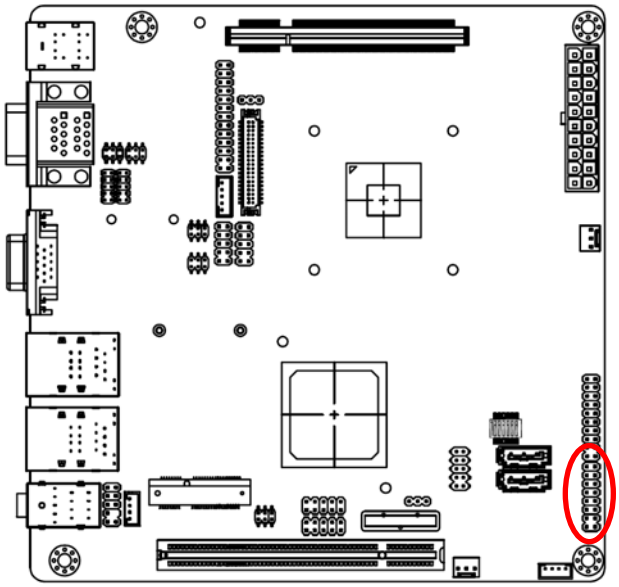
2.3.1 Clear CMOS (JBAT1)





*** Default**

2.3.2 Miscellaneous setting connector (JFTP1)



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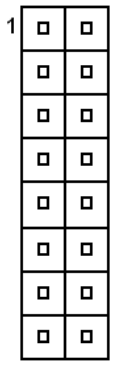
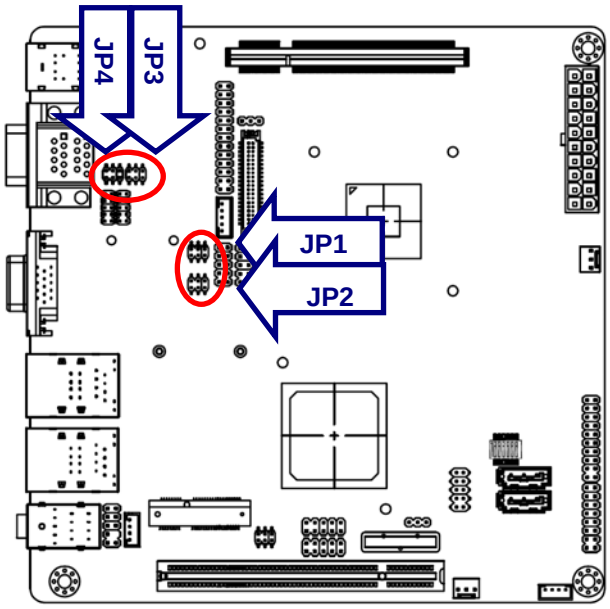


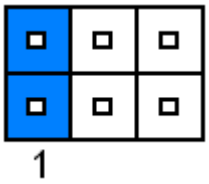
Signal	PIN	PIN	Signal
AUX TIN	1	2	SB_LED+
	3	4	GND
+3.3V	5	6	BUZZER
HDD_LED	7	8	
RESET	9	10	PWR_LED+
	11	12	GND
PWRBTN	13	14	Open: AT
	15	16	Short: ATX

2.3.3 Serial port 3/ 4/ 2/ 1 pin 9 signal select (JP1/ JP2/ JP3/ JP4)

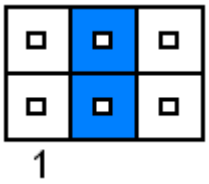


JP1

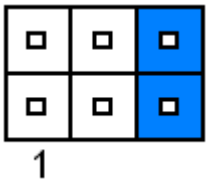
Ring*



+5V

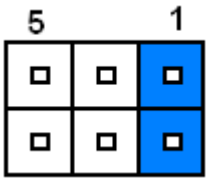


+12V

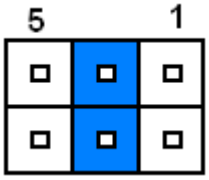


JP2/ 3/ 4

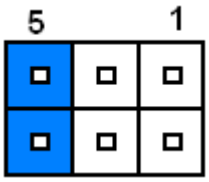
Ring*



+5V

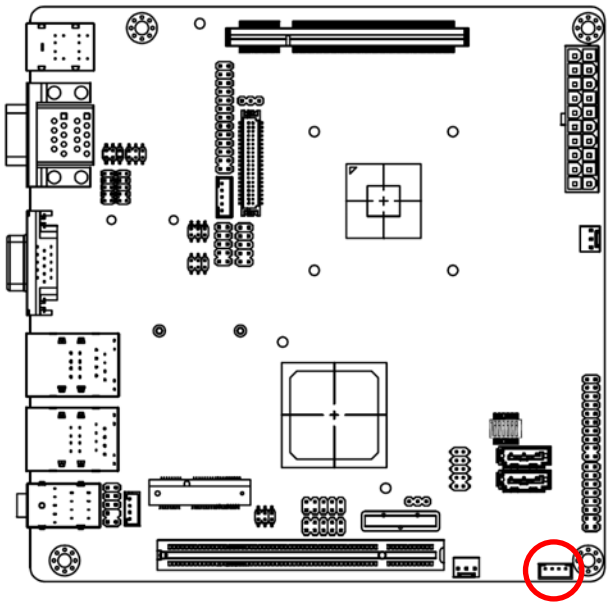


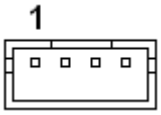
+12V



*** Default**

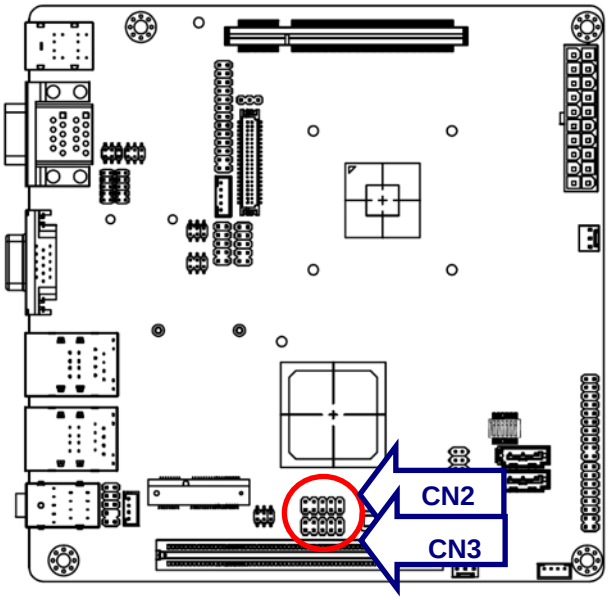
2.3.4 Speaker out connector (CN1)

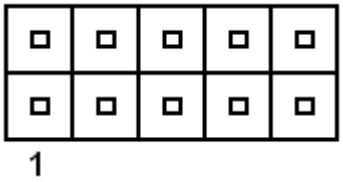




Signal	PIN
AMP_OUT_LP	1
AMP_OUT_LN	2
AMP_OUT_RN	3
AMP_OUT_RP	4

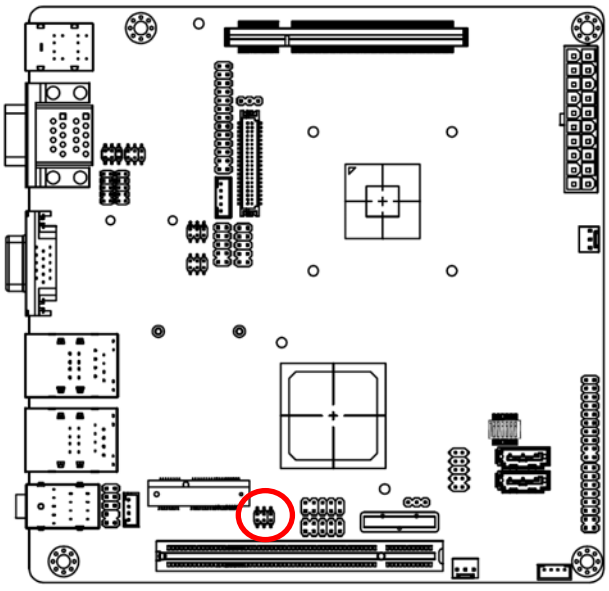
2.3.5 USB connector 4 & 5/ 6 & 7 (CN2/ CN3)

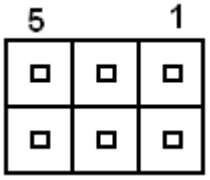




Signal	PIN	PIN	Signal
+5V	1	2	GND
P4-/P6-	3	4	GND
P4+/P6+	5	6	P5+/P7+
GND	7	8	P5-/P7-
GND	9	10	+5V

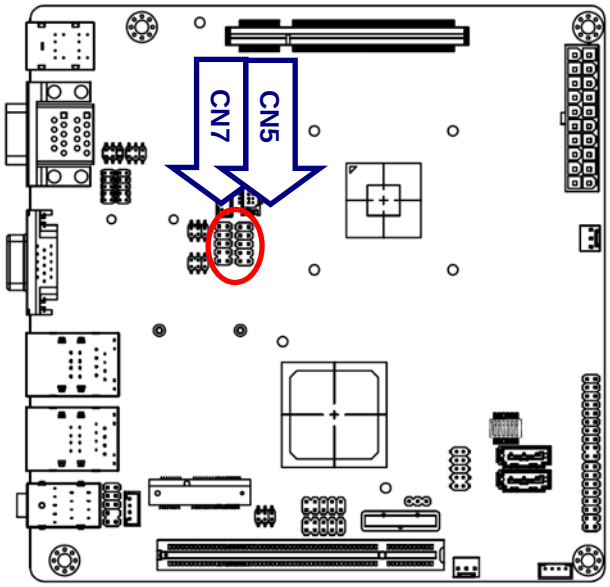
2.3.6 SPI connector (CN4)

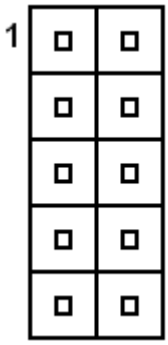




Signal	PIN	PIN	Signal
+3.3V	1	2	GND
SPI_CS0#	3	4	SPI_CLK
SPI_SO	5	6	SPI_SI

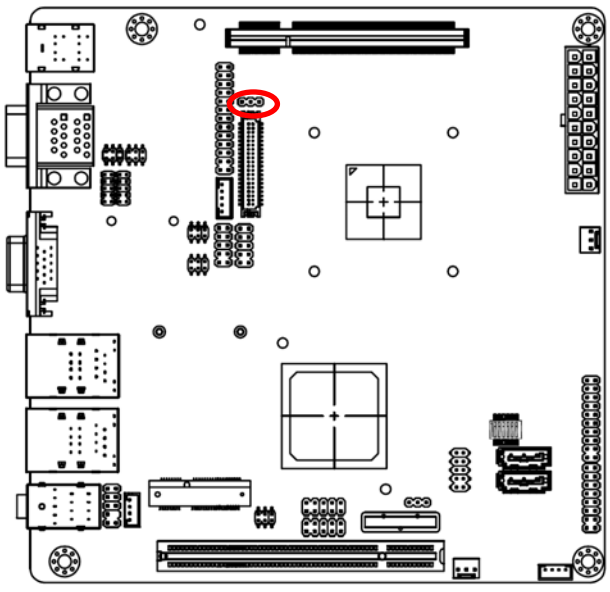
2.3.7 Serial port 4/ 3 connector (CN5/ CN7)

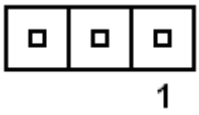




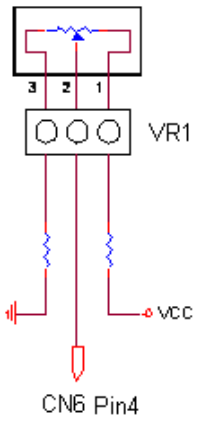
Signal	PIN	PIN	Signal
DCD	1	2	RxD
TxD	3	4	DTR
GND	5	6	DSR
RTS	7	8	CTS
RI	9	10	NC

2.3.8 LCD backlight brightness adjustment (VR1)





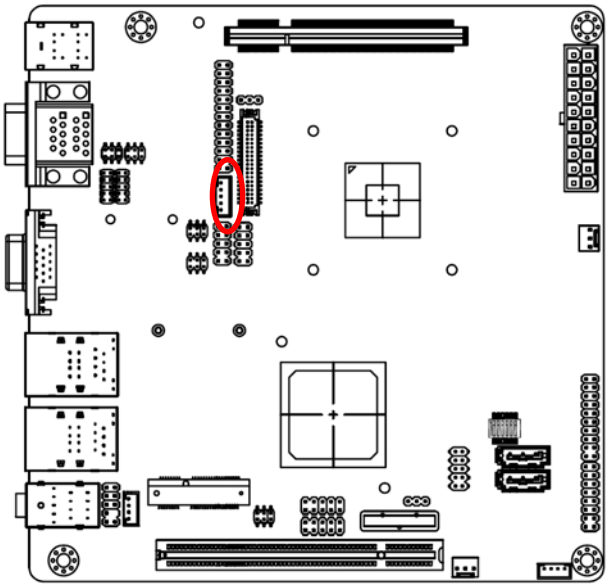
Signal	PIN
+5V	1
BRIGHT	2
GND	3



Variation Resistor

(Recommended: 4.7KΩ, >1/16W)

2.3.9 LCD Inverter Connector (CN6)



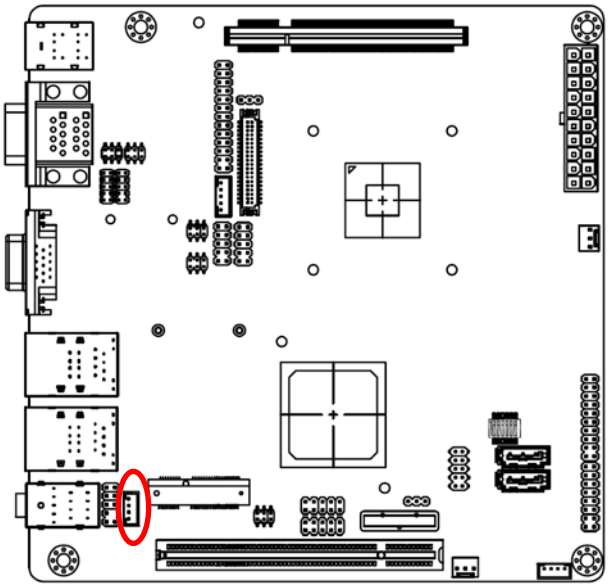
Signal	PIN
+5V	5
BRIGHT	4
LBKLT_EN	3
GND	2
+12V	1

Note:
For inverters with adjustable Backlight function, it is possible to control the LCD brightness through the VR signal controlled by **VR1**. Please see the **VR1** section for detailed circuitry information.

2.3.9.1 Signal Description – LCD Inverter Connector (CN6)

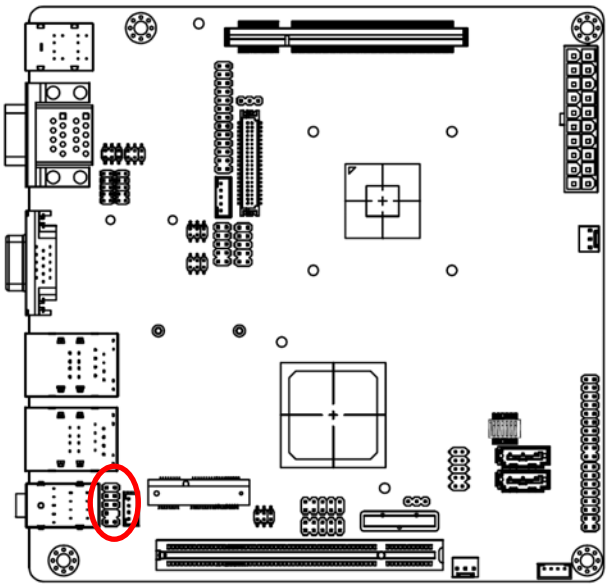
Signal	Signal Description
BRIGHT	Vadj = 0.75V ~ 4.25V (Recommended: 4.7KΩ, >1/16W)
LBKLT_EN	LCD backlight ON/OFF control signal

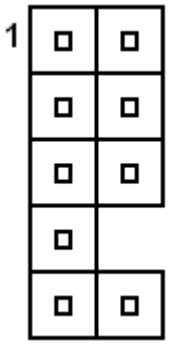
2.3.10 CD-ROM Audio Connector (CN8)



Signal	PIN
R	4
GND	3
L	2
GND	1

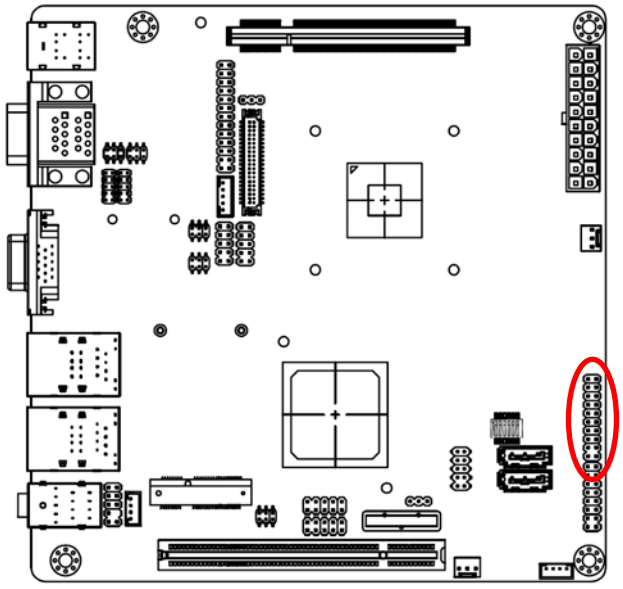
2.3.11 Front audio connector (CN9)

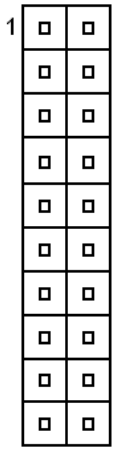




Signal	PIN	PIN	Signal
MIC2_L	1	2	GND
MIC2_R	3	4	+3.3V
LINE2_R	5	6	MIC2_JD
SENSE_B	7		
LINE2_L	9	10	LINE2_JD

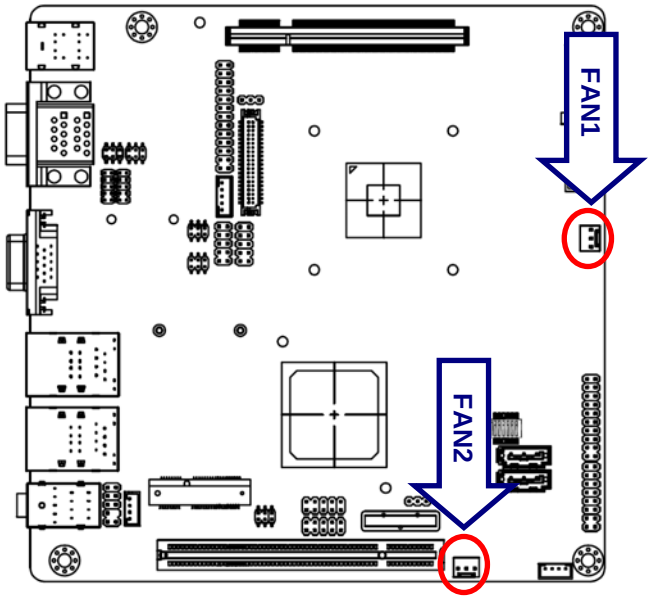
2.3.12 General purpose I/O connector (DIO1)

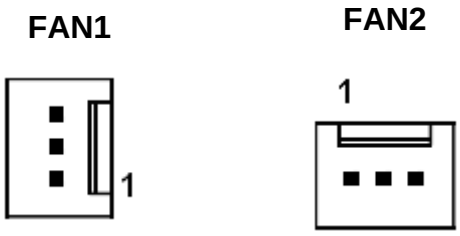




Signal	PIN	PIN	Signal
DI0	1	2	DO0
DI1	3	4	DO1
DI2	5	6	DO2
DI3	7	8	DO3
DI4	9	10	DO4
DI5	11	12	DO5
DI6	13	14	DO6
DI7	15	16	DO7
SMB_CLK	17	18	SMB_DAT
GND	19	20	+5V

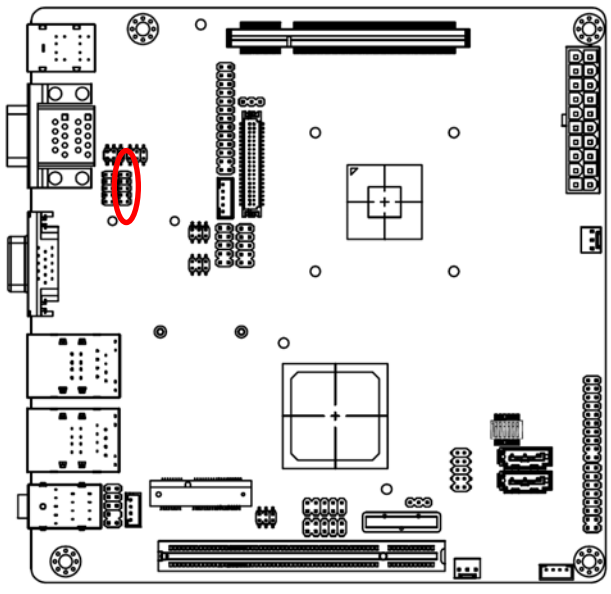
2.3.13 CPU fan connector (CPU_FAN)

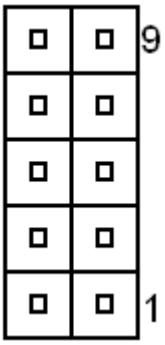




Signal	PIN
GND	1
+12V	2
FAN_TAC1	3

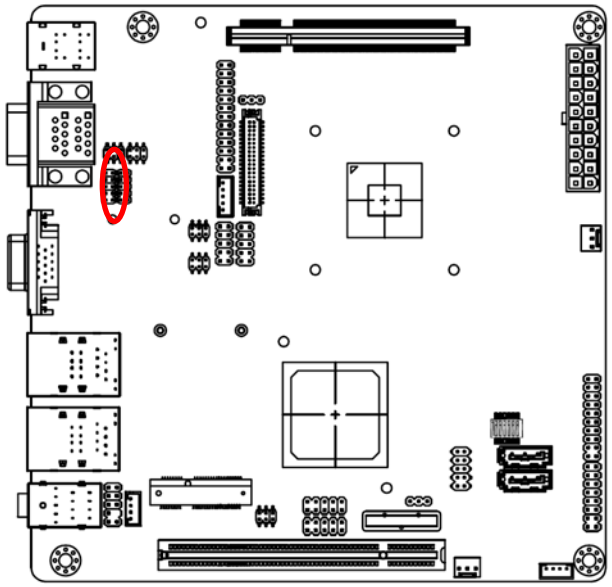
2.3.14 VGA power connector (JVGA1)

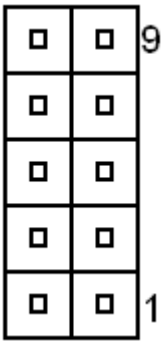




Signal	PIN	PIN	Signal
GND	10	9	GND
+12V	8	7	+12V
+12V	6	5	+12V
+3.3V	4	3	+3.3V
+5V	2	1	+5V

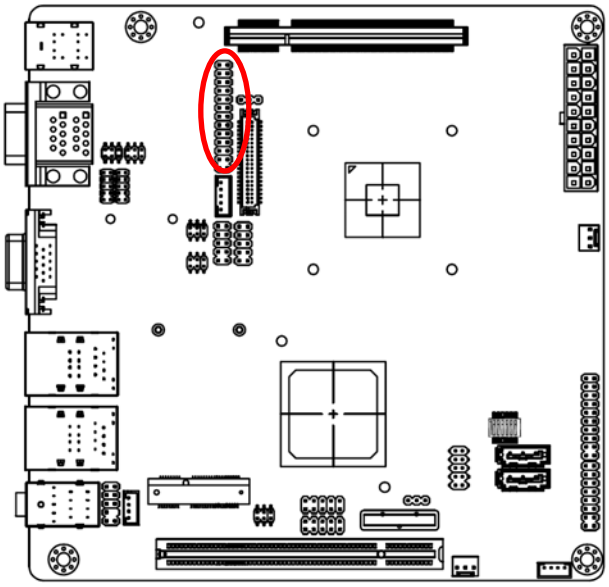
2.3.15 VGA connector (JVGA2)

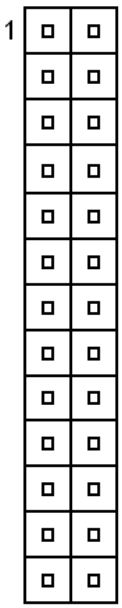




Signal	PIN	PIN	Signal
HS	10	9	VS
DAT	8	7	GND
DCK	6	5	B
GND	4	3	G
+5V	2	1	R

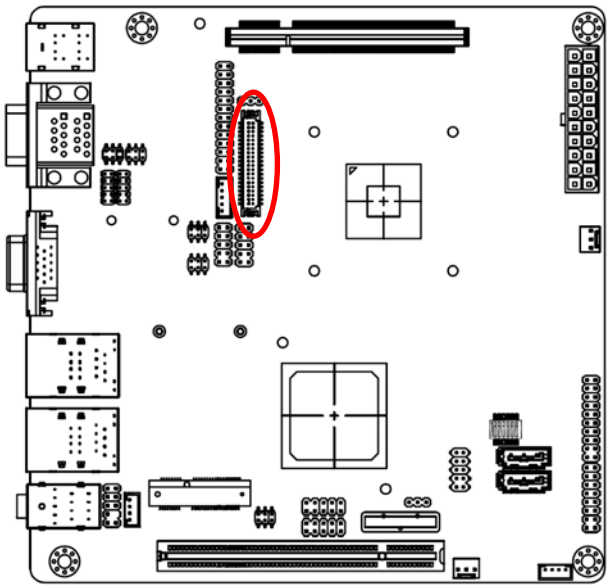
2.3.16 Print port connector (LPT1)

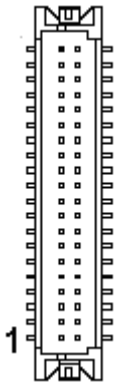




Signal	PIN	PIN	Signal
P_-STB	1	2	P_AFD#
PD0	3	4	P_ERR#
PD1	5	6	P_INIT#
PD2	7	8	P_SLIN#
PD3	9	10	GND
PD4	11	12	GND
PD5	13	14	GND
PD6	15	16	GND
PD7	17	18	GND
P_ACK#	19	20	GND
P_BUSY	21	22	GND
P_PE	23	24	GND
P_SLCT	25	26	GND

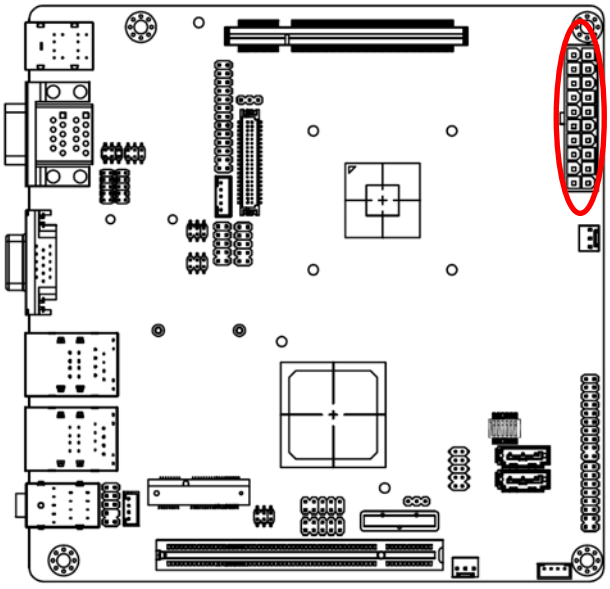
2.3.17 LVDS connector (LVDS1)

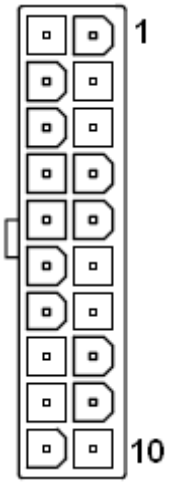




Signal	PIN	PIN	Signal
NC	39	40	NC
GND	37	38	GND
NC	35	36	LVDSA_CLK-
NC	33	34	LVDSA_CLK+
GND	31	32	GND
NC	29	30	NC
NC	27	28	NC
GND	25	26	GND
NC	23	24	NC
NC	21	22	NC
GND	19	20	GND
NC	17	18	LVDSA_D2-
NC	15	16	LVDSA_D2+
GND	13	14	GND
LVDSA_D1-	11	12	LVDSA_D0-
LVDSA_D1+	9	10	LVDSA_D0+
GND	7	8	GND
LCDSA_DDC_SC	5	6	LCDSA_DDC_SD
+3.3V	3	4	+5V
+3.3V	1	2	+5V

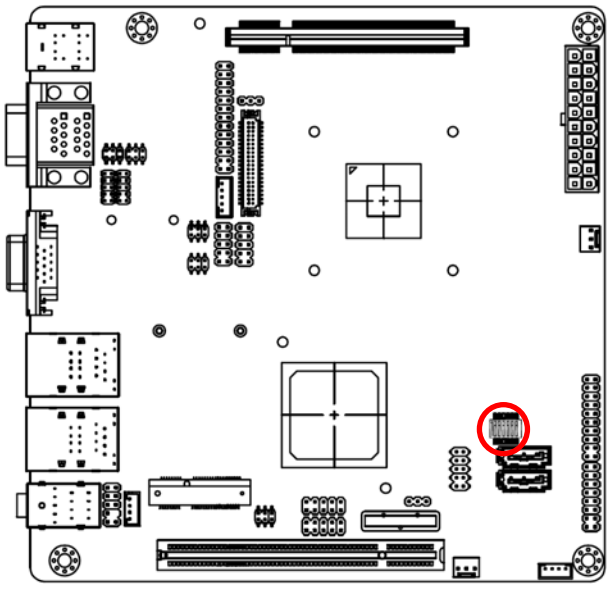
2.3.18 ATX power connector (PWR1)





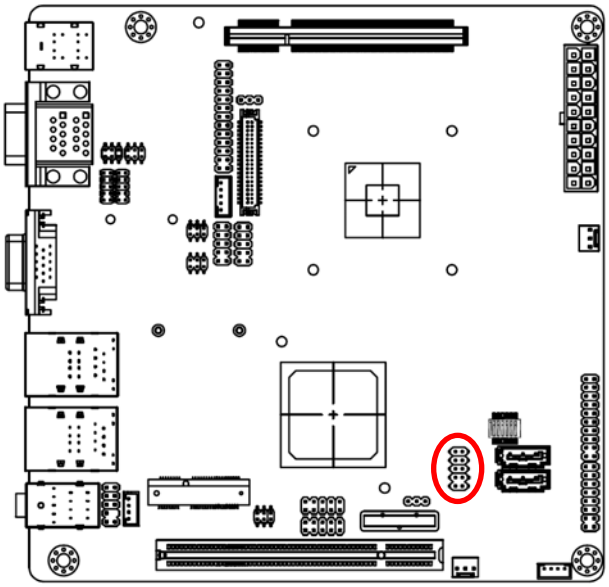
Signal	PIN	PIN	Signal
+3.3V	11	1	+3.3V
-12V	12	2	+3.3V
GND	13	3	GND
PS_ON#	14	4	+5V
GND	15	5	GND
GND	16	6	+5V
GND	17	7	GND
NC	18	8	NC
+5V	19	9	+5V
+5V	20	10	+12V

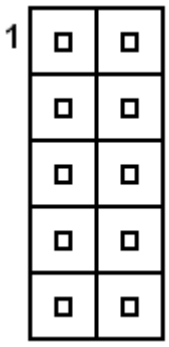
2.3.19 4W/ 5W/ 8W power mode select (JSW1)



TSW1	4-WIRE	5-WIRE	8-WIRE
1	ON	OFF	ON
2	ON	ON	OFF
3	ON	ON	OFF
4	ON	ON	OFF
5	ON	ON	OFF

2.3.20 Touch panel connector (TOUCH1)





Signal	PIN	PIN	Signal
X+2	1	2	X+
Y+2	3	4	Y+
GND	5	6	PROBE
X-2	7	8	X-
Y-2	9	10	Y-

Touch1	4-WIRE	5-WIRE	8-WIRE
1	N/A	N/A	Right Excite
2	Right	TR	Right Sense
3	N/A	N/A	Bottom Excite
4	Bottom	LR	Bottom Sense
5	GND	GND	GND
6	N/A	Sense	N/A
7	N/A	N/A	Left Excite
8	Left	TL	Left Sense
9	N/A	N/A	Top Excite
10	Top	LL	Top Sense