

EMX-PNV

Intel® Atom™ PNV-D525 Mini ITX Motherboard with Intel® ICH8-M Chipset

Quick Installation Guide

1st Ed –27 June , 2011

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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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

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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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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 surge. 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 could damage to the motherboard. We suggest not to, in any circumstance remove the heatsink without the correct instructions. If you really have to do it, please contact us for further support.

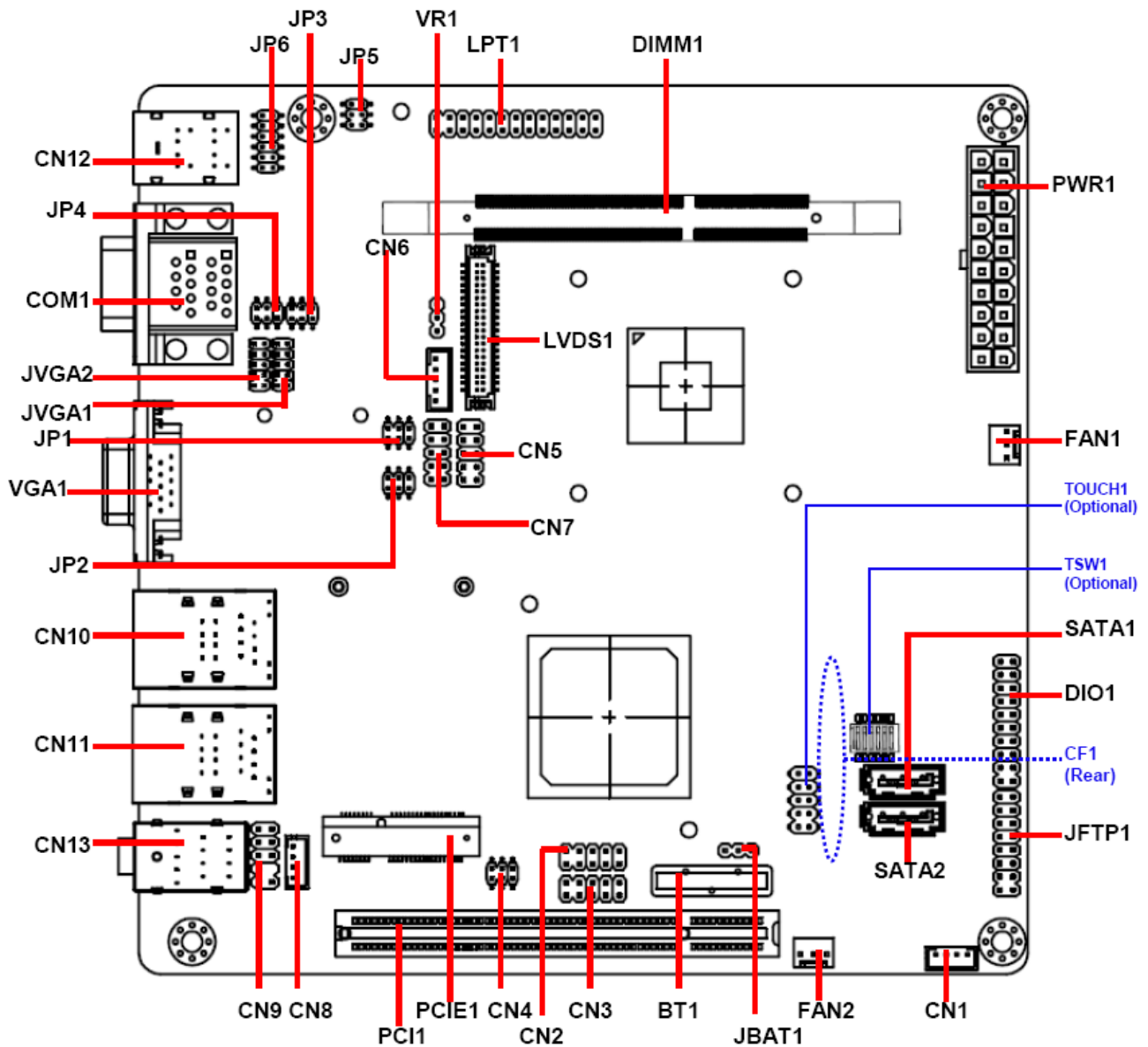
1.2 Packing List

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

- 1 x EMX-PNV Mini ITX Main Board
- 1 x DVD-ROM contains the following:
 - User's manual in PDF file
 - Drivers and utilities
- 2 x SATA & power cable

2. Hardware Configuration

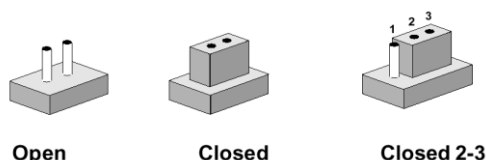
2.1 Product Overview



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.



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

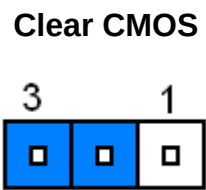
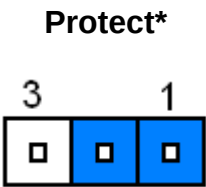
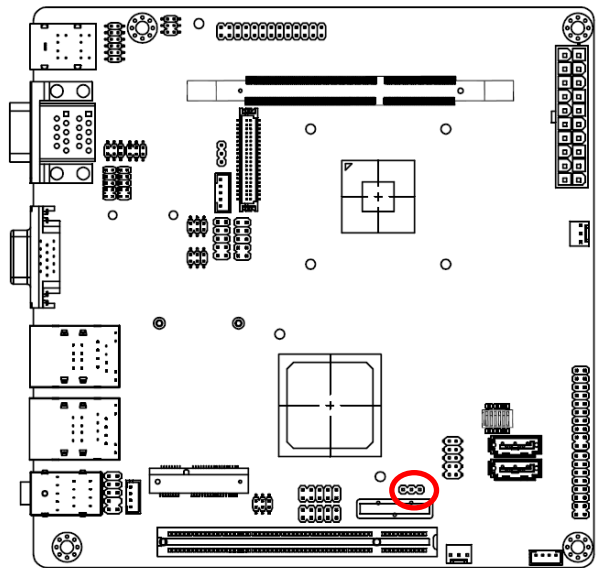
Label	Function	Note
JBAT1	Clear CMOS	3 x 1 header
JFTP1	Miscellaneous setting connector	8 x 2 header, pitch 2.54 mm
JP1	Serial port 3 pin 9 signal select – Ring, +5V, +12V power select	3 x 2 header, pitch 2.0 mm
JP2	Serial port 4 pin 9 signal select – Ring, +5V, +12V power select	3 x 2 header, pitch 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
JP5	Serial port 2 in RS232/422/485	3 x 2 header, pitch 2.0 mm
JP6	Serial port 2 in RS232/422/485	6 x 2 header, pitch 2.0 mm

Connectors

Label	Function	Note
BT1	Battery slot connector	
CF1	CF card slot connector	
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 connector	
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

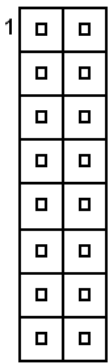
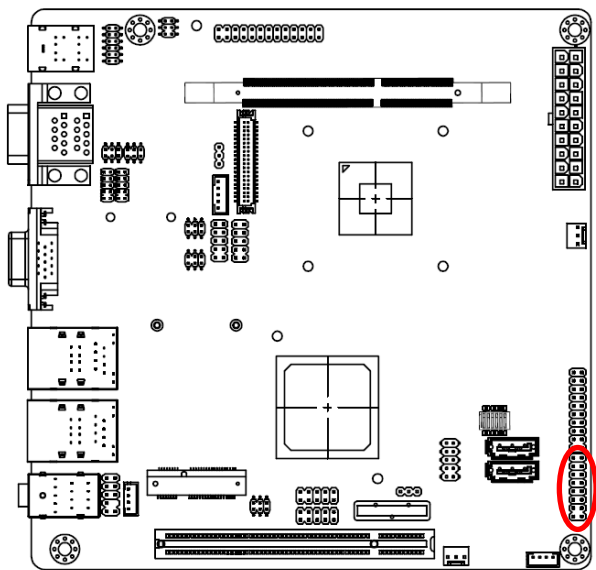
2.3 Setting Jumpers & Connectors

2.3.1 Clear CMOS (JBAT1)



* Default

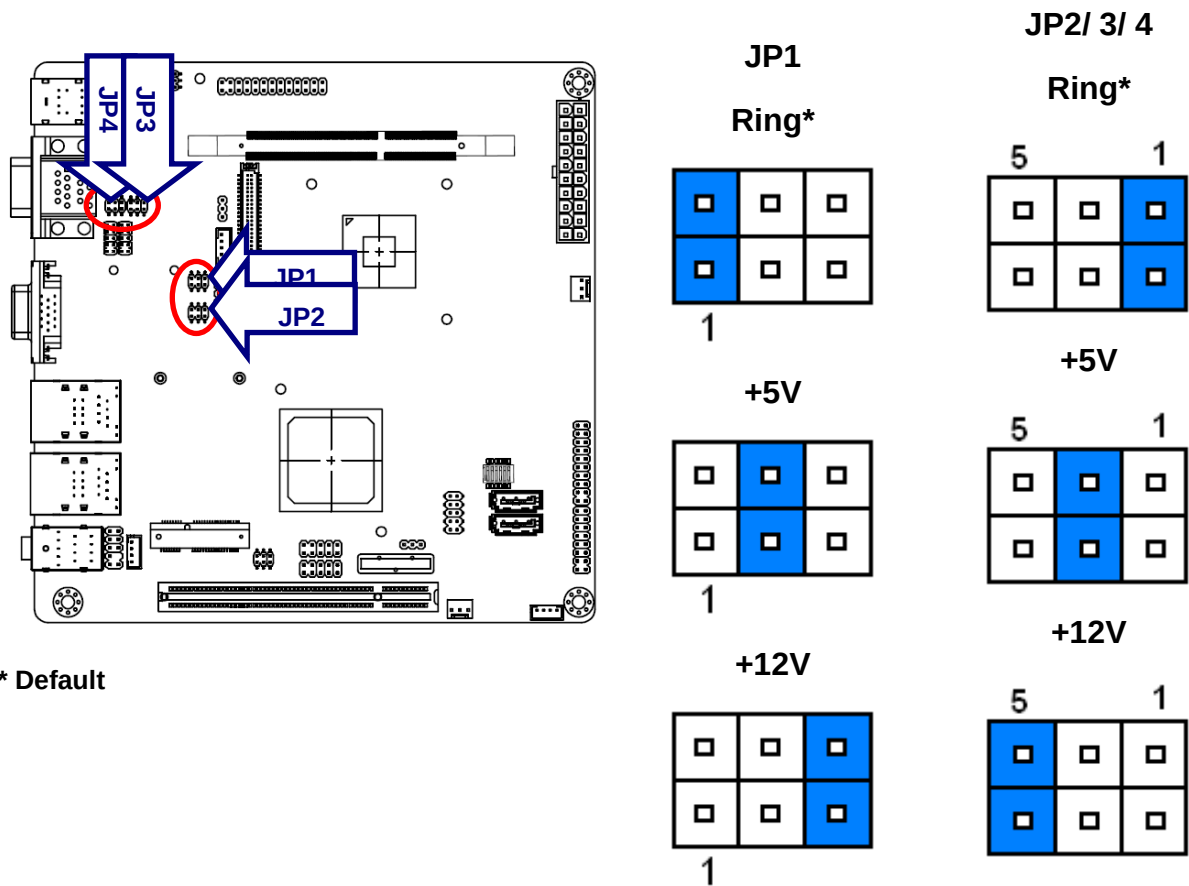
2.3.2 Multi-purpose connector (JFTP1)



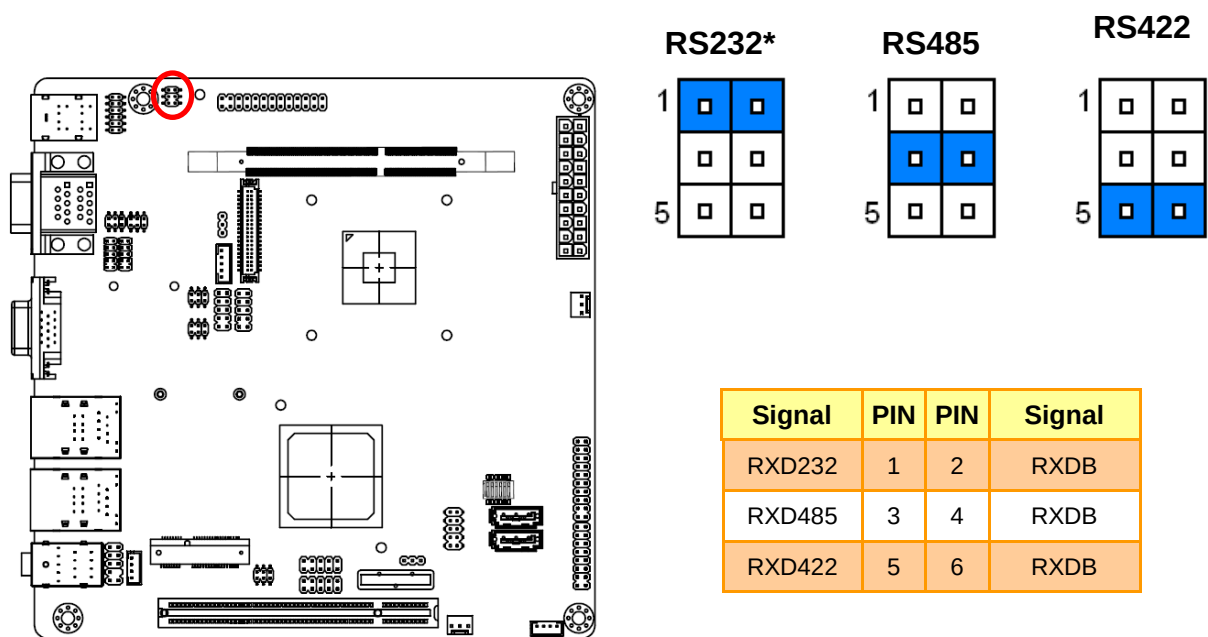
Signal	PIN	PIN	Signal
AUX TIN	1	2	SB_LED+
	3	4	GND
+3.3V	5	6	BUZZER
HDD_LED	7	8	
RESET	9	10	PWR_LED+
	11	12	GND
PWRBTN	13	14	Open: AT
	15	16	Short: ATX

* Default

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

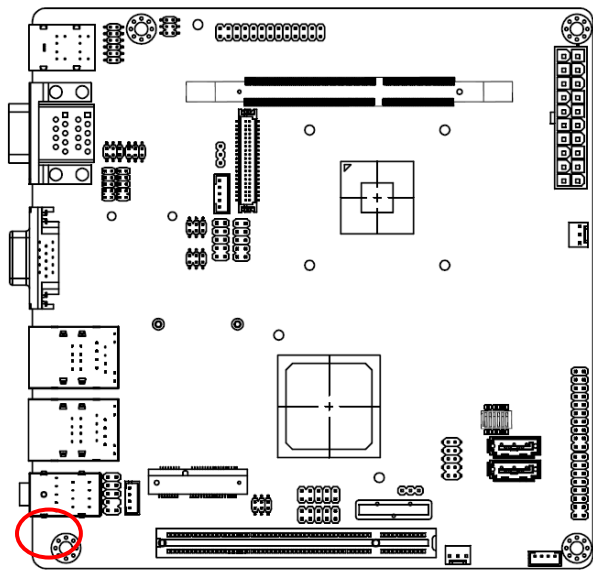


2.3.4 Serial Port 2 Connector in RS232/422/485 (JP5)



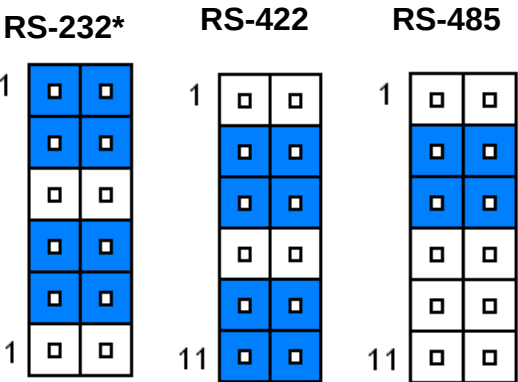
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2.3.5 Serial Port 2 Connector in RS232/422/485 (JP6)



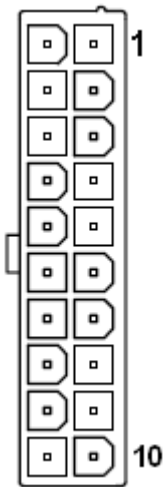
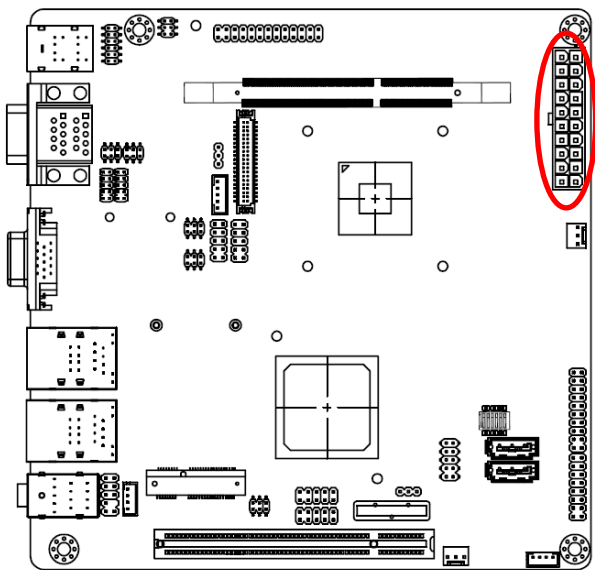
***Default**

Note: COM2 is available in RS-232 mode by default setting. For using COM2 in 422/485 Mode, please adjust both JP5 and JP6 with corresponding Jumper settings.



Signal	PIN	PIN	Signal
DCD#B	1	2	RXDB
CM2-1	3	4	CM2-2
485TX-	5	6	422RX+
TXDB	7	8	DTR#B
CM2-3	9	10	CM2-4
485TX+	11	12	422RX-

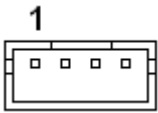
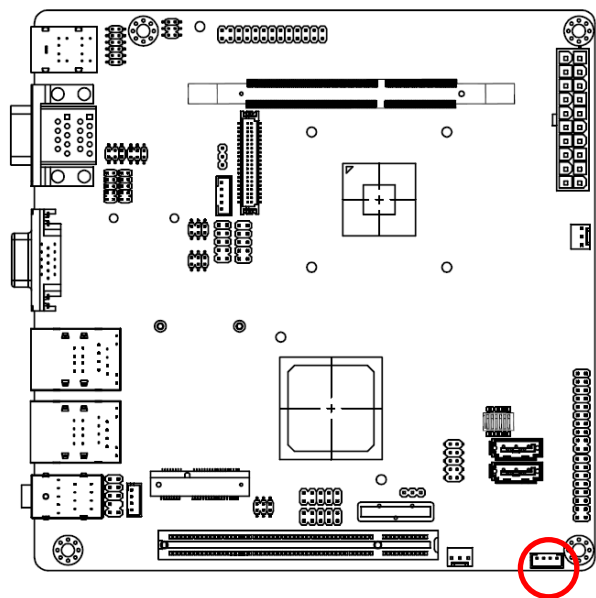
2.3.6 ATX power connector (PWR1)



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

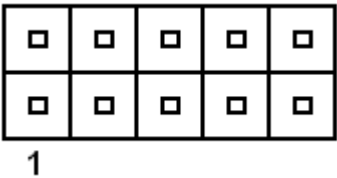
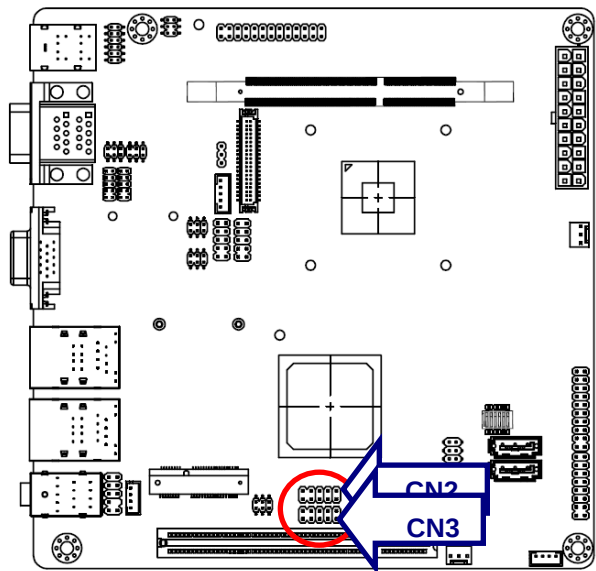
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2.3.7 Speaker out connector (CN1)



Signal	PIN
AMP_OUT_LP	1
AMP_OUT_LN	2
AMP_OUT_RN	3
AMP_OUT_RP	4

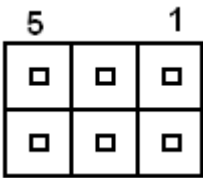
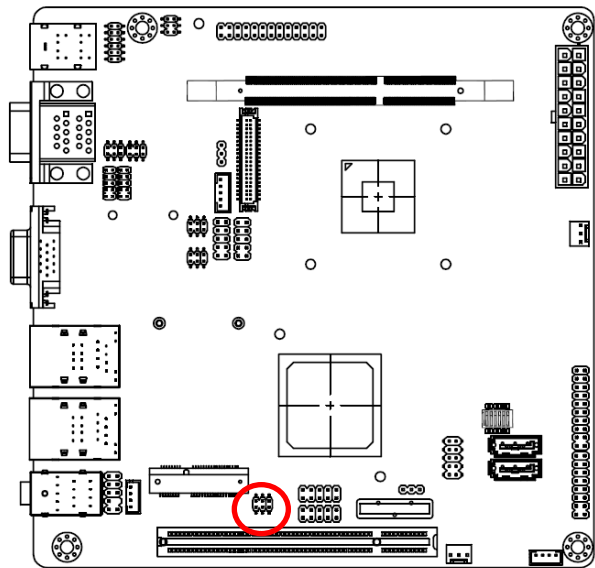
2.3.8 USB connector 4 & 5/ 6 & 7 (CN2/ CN3)



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

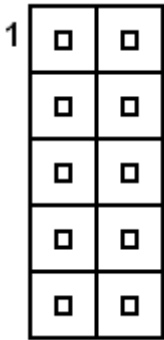
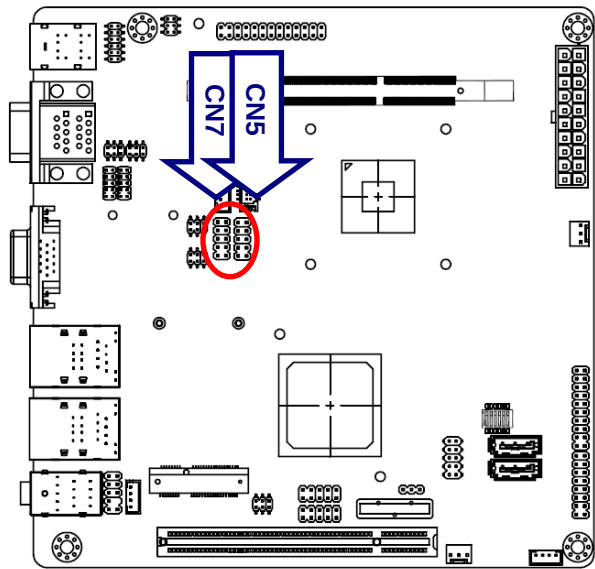
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2.3.9 SPI connector (CN4)



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

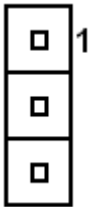
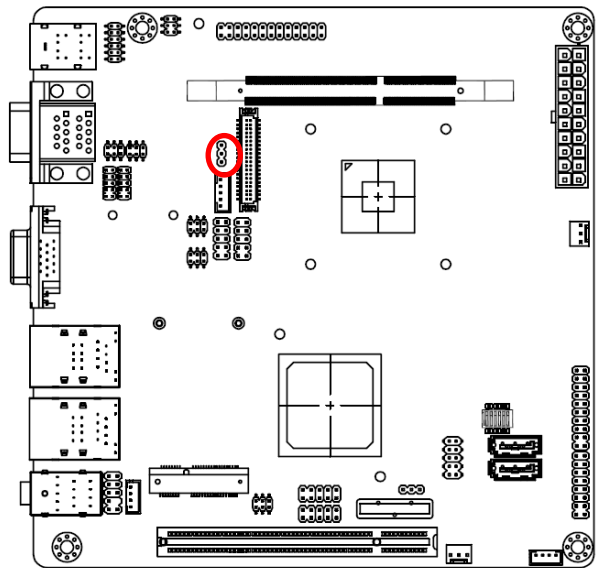
2.3.10 Serial port 4/ 3 connector (CN5/ CN7)



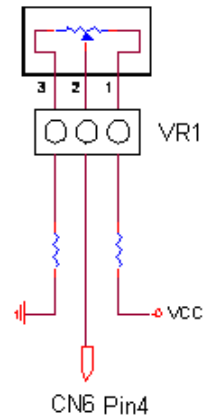
Signal	PIN	PIN	Signal
DCD	1	2	RxD
TxD	3	4	DTR
GND	5	6	DSR
RTS	7	8	CTS
RI	9	10	NC

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2.3.11 LCD backlight brightness adjustment (VR1)

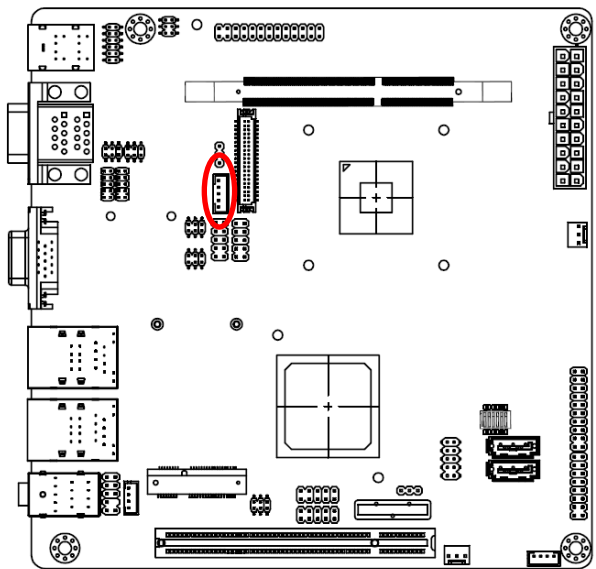


Signal	PIN
+5V	1
BRIGHT	2
GND	3



(Recommended: 4.7KΩ,
>1/16W)

2.3.12 LCD Inverter Connector (CN6)



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



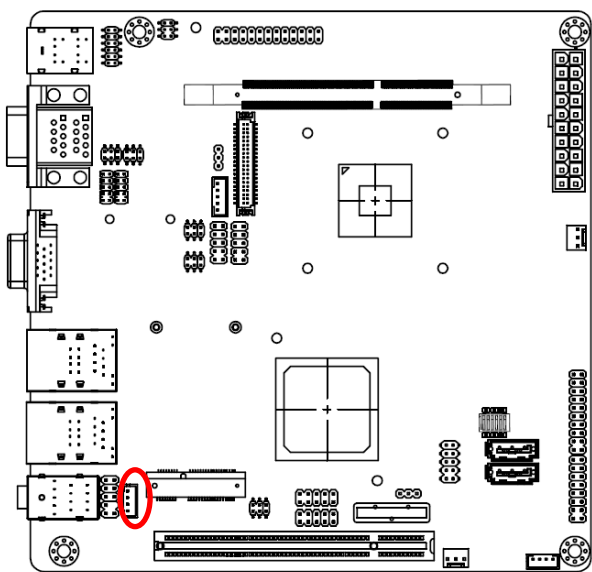
Note:
For inverters with adjustable Backlight function, it is possible to control the LCD brightness through the VR signal controlled by **VR1**. Please see the **VR1** section for detailed circuitry information.

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2.3.12.1 Signal Description – LCD Inverter Connector (CN6)

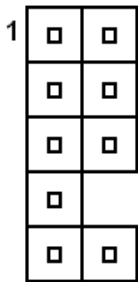
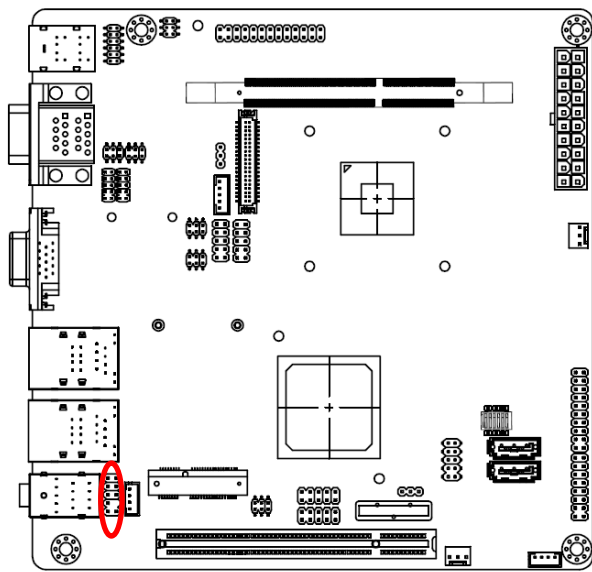
Signal	Signal Description
BRIGHT	Vadj = 0.75V ~ 4.25V (Recommended: 4.7KΩ, >1/16W)
LBKLT_EN	LCD backlight ON/OFF control signal

2.3.13 CD-ROM Audio Connector (CN8)



Signal	PIN
R	4
GND	3
L	2
GND	1

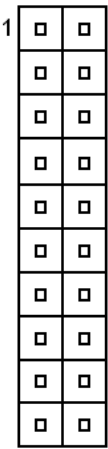
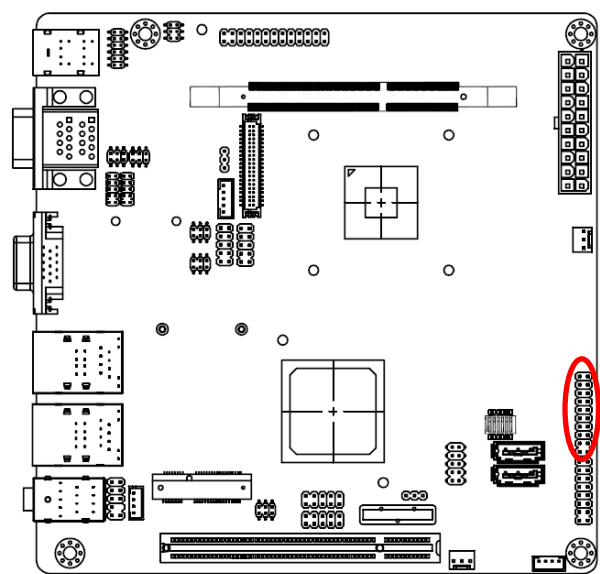
2.3.14 Front audio connector (CN9)



Signal	PIN	PIN	Signa
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

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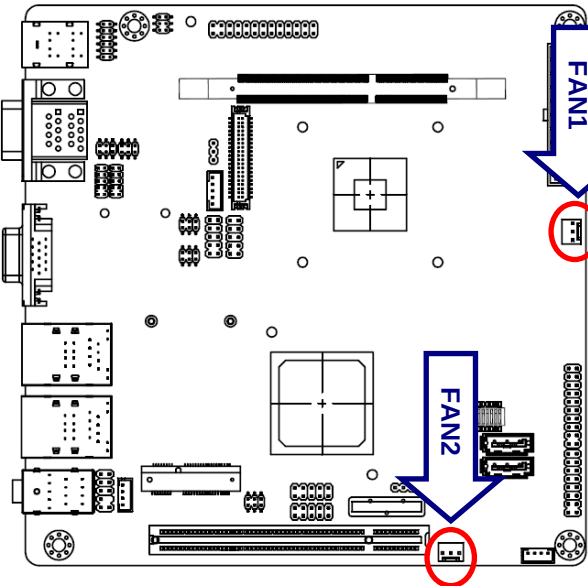
2.3.15 General purpose I/O connector (DIO1)



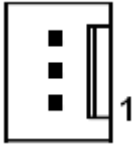
Signal	PIN	PIN	Signal
DI0	1	2	DO0
DI1	3	4	DO1
DI2	5	6	DO2
DI3	7	8	DO3
DI4	9	10	DO4
DI5	11	12	DO5
DI6	13	14	DO6
DI7	15	16	DO7
SMB_CLK	17	18	SMB_DAT
GND	19	20	+5V

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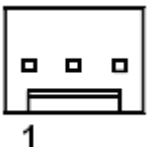
2.3.16 CPU/System fan connector (FAN1/FAN2)



FAN1 (CPU_FAN)

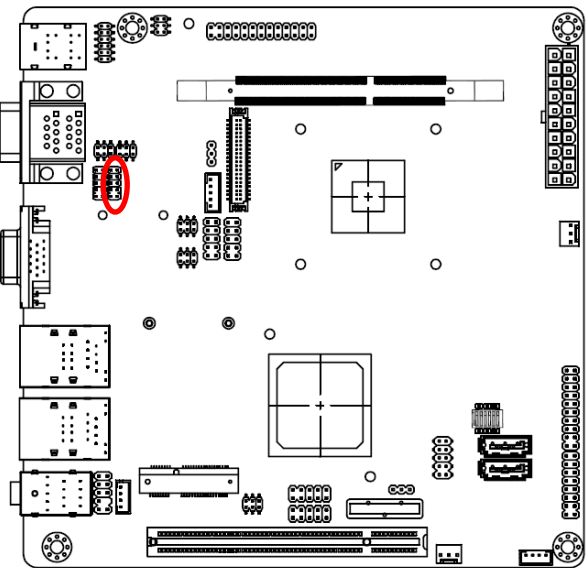


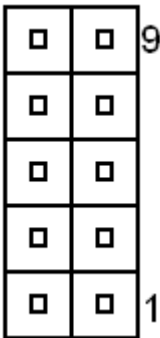
FAN2 (SYS_FAN)



Signal	PIN
GND	1
+12V	2
FANIN	3

2.3.17 VGA power connector (JVGA1)

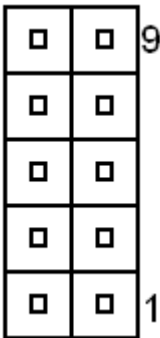
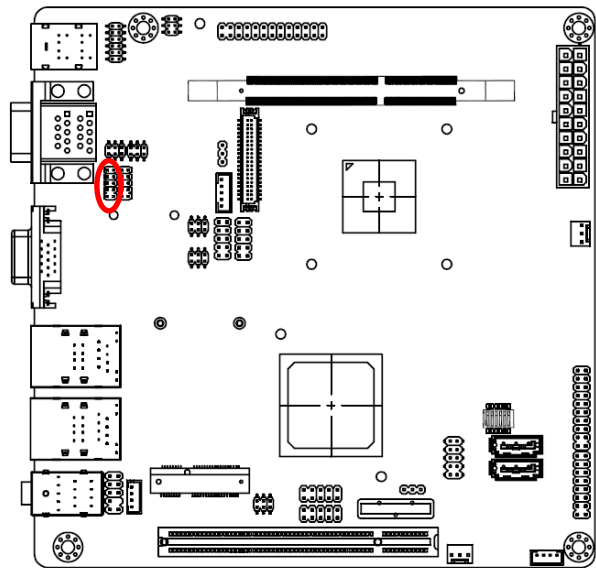




Signal	PIN	PIN	Signal
GND	10	9	GND
+12V	8	7	+12V
+12V	6	5	+12V
+3.3V	4	3	+3.3V
+5V	2	1	+5V

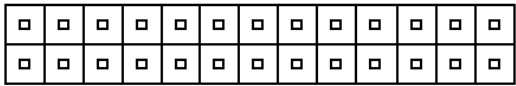
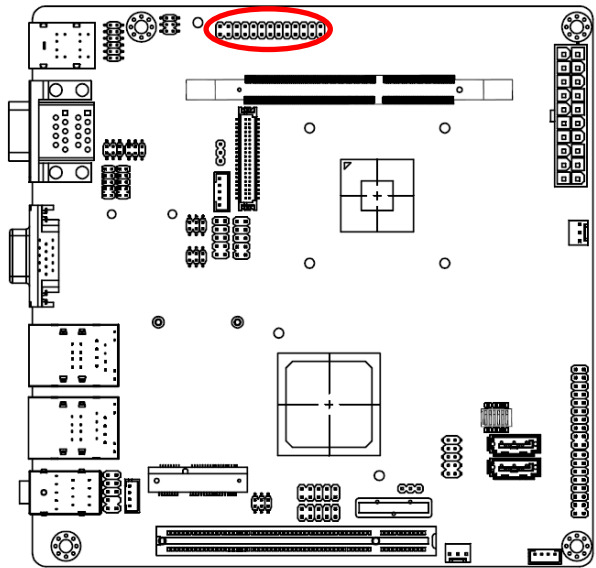
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2.3.18 VGA connector (JVGA2)



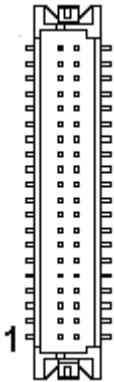
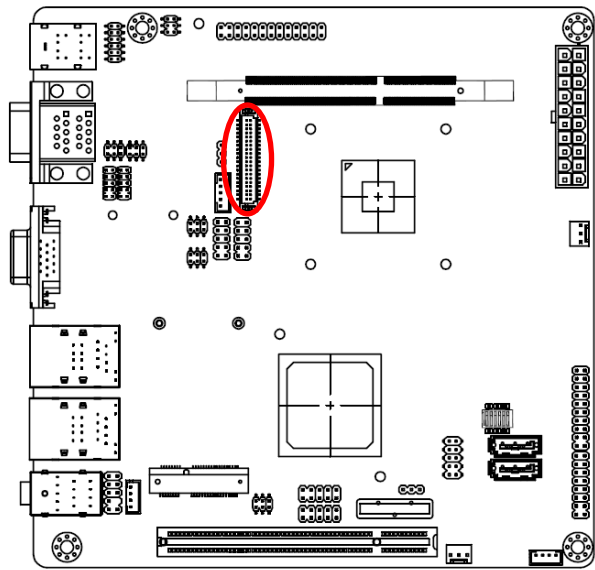
Signal	PIN	PIN	Signal
HS	10	9	VS
DAT	8	7	GND
CLK	6	5	B
GND	4	3	G
+5V	2	1	R

2.3.19 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

2.3.20 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

