

EMX-PNVB

**Intel® Atom™ D525 Processor with ICH8M Chipset
Mini ITX Motherboard**

Quick Installation Guide



1st Ed – 11 September 2013

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.

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/>

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.

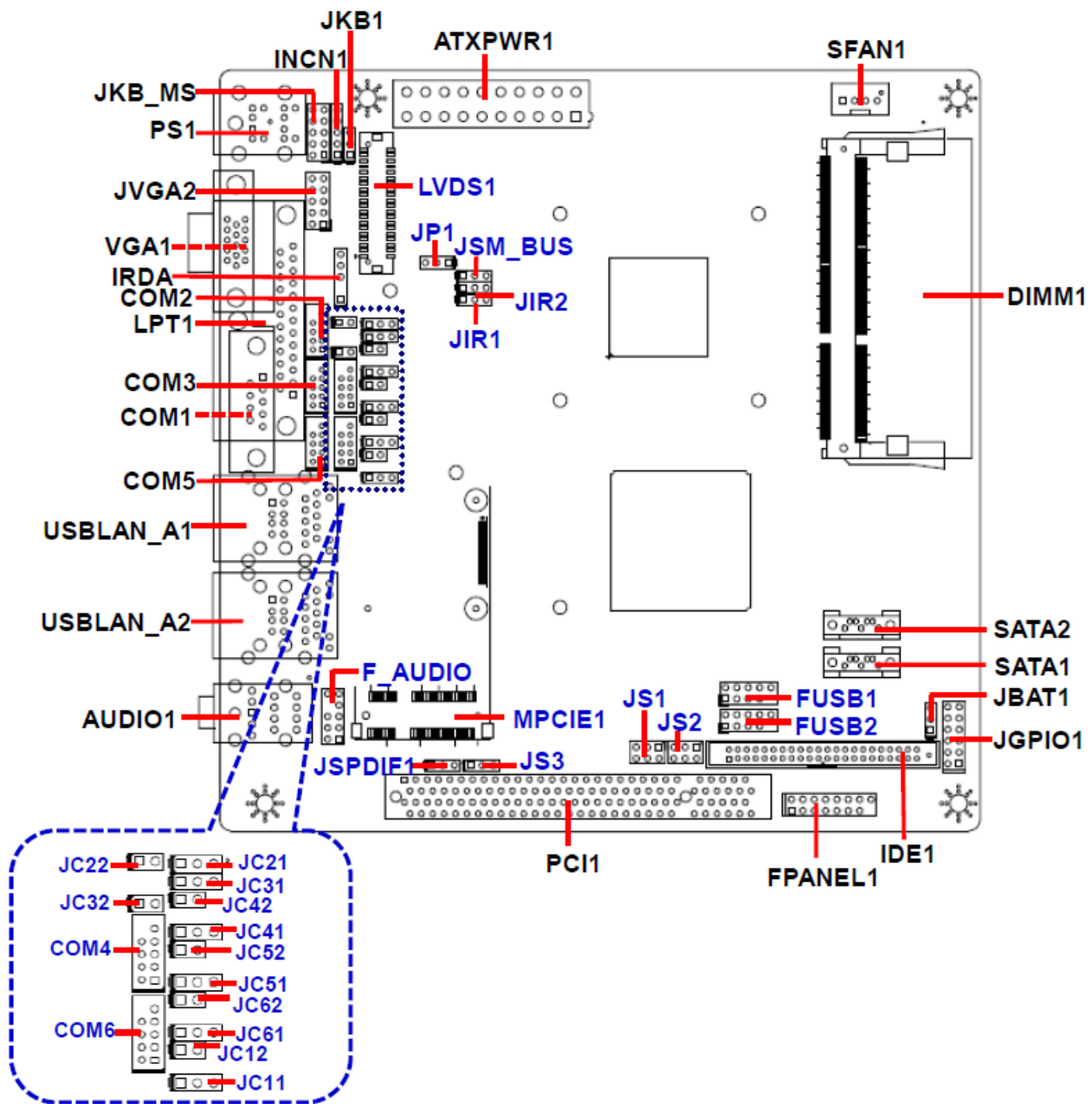
1.2 Packing List

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

- Quick Installation Guide X 1
- Driver/Utility CD X 1
- Serial ATA Signal Cable X 1
- COM Port X 1
- Screw X 2
- Motherboard X 1
- Front Audio cable X 1
- IO Shield X 1

2. Hardware Configuration

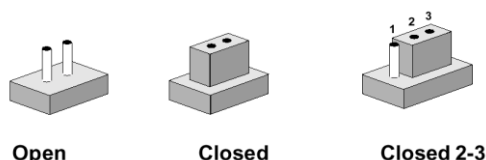
2.1 Product Overview



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
JP1	Jumper for LVDS PWR selection	1 x 3 header, pitch 2.54 mm
JKB1	Keyboard power select jumper	1 x 3 header, pitch 2.54 mm
JIR1~2	Jumper for COM2 or IR selection. The IR function can’t be used.	1 x 3 header, pitch 2.54 mm
JC12/22/32/42/52/62	Serial port 1~6 or RI, USE JC11/21/31/41/51/61 PIN 9 selector	1 x 2 header, pitch 2.54 mm
JBAT1	Clear CMOS	1 x 3 header, pitch2.54 mm
JS1~2	Jumper for MPCIE & MSATA selection	2 x 3 header, pitch 2.54 mm
JS3	Jumper for MPCIE PWR selection	1 x 3 header, pitch 2.54 mm

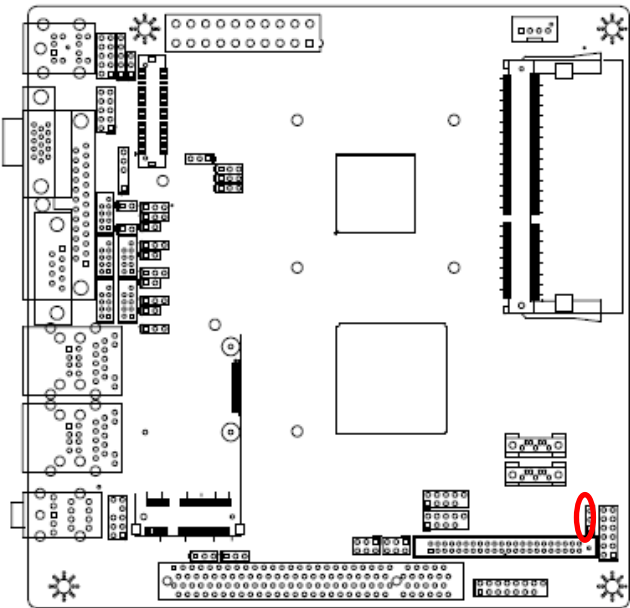
EMX-PNVB Quick Installation Guide

Connectors		
Label	Function	Note
FPANEL1	Front Panel Switches	2 x 8 header, pitch 2.54 mm
MPCIE1	PCIe signal selector	
PCI1	PCI slot	
COM1	Serial port 1 connector	
COM2~6	Serial port 2~6 connector	2 x 5 header, pitch 2.00 mm
JGPIO1	General Purpose I/O	2 x 6 header, pitch 2.54 mm
LVDS1	LVDS connector	2 x 20 wafer, pitch 1.25 mm
SATA1~2	Serial ATA connector 1~2	
USB LAN_A1~2	USB & LAN port 1~2	
F_USB1~2	USB connector 1~2	2 x 5 header, pitch 2.54 mm
SFAN1	System Fan connector	1 x 4 wafer, pitch 2.54 mm
LPT1	Printer	
DIMM1	DDR3 SODIMM socket	
VGA1	VGA connector	
JVGA2	VGA connector	2 x 5 header, pitch 2.54 mm
PS1	PS/2 Keyboard & Mouse connector	
F_AUDIO	Front Panel Audio Connection Header	2 x 5 header, pitch 2.54 mm
JSPDIF1	Sony/Philips Digital Interface	1 x 3 header, pitch 2.54 mm
IRDA	IRDA connector (not supported)	1 x 5 header, pitch 2.54 mm
IDE1	IDE connector	2 x 22 header, pitch 2.00 mm
ATXPWR1	ATX Power connector	2 x 10 wafer, pitch 4.20 mm
INCN1	Inverter connector	1 x 5 header, pitch 2.54 mm
JSM_BUS	System Management Bus controller	1 x 3 header, pitch 2.54 mm
JC11/21/31/41/51/61	Jumper for Serial port 1~6 pin9 power selection	1 x 3 header, pitch 2.54 mm
JKB_MS	Keyboard & Mouse connector	2 x 5 header, pitch 2.54 mm
AUDIO1	Line-Out & Mic-In connector	

EMX-PNVB Quick Installation Guide

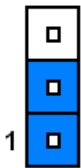
2.3 Setting Jumpers & Connectors

2.3.1 Clear CMOS (JBAT1)

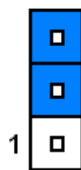


* Default

Normal*

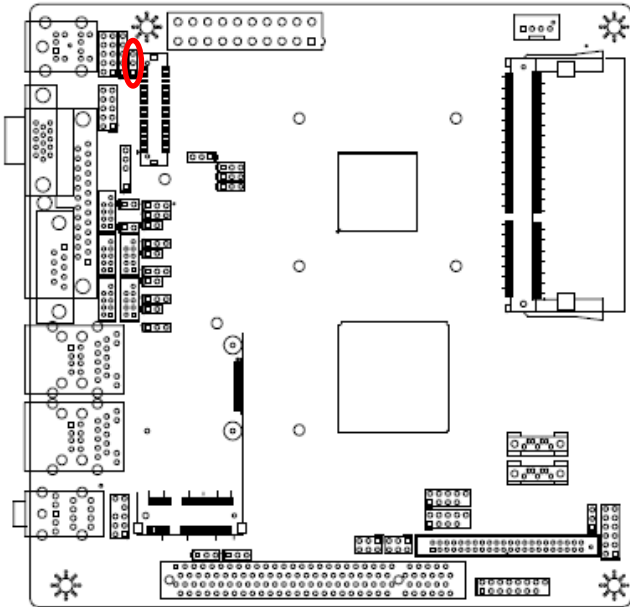


Clear CMOS



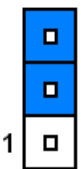
Pin	Define
1-2	Normal
2-3	Clear CMOS

2.3.2 Keyboard power select jumper (JKB1)

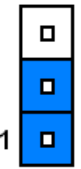


* Default

Disabled*



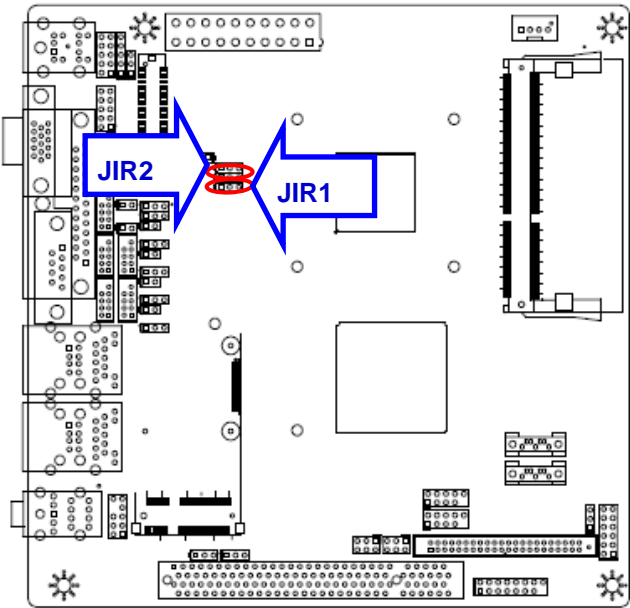
Enabled



Pin	Define
1-2	Disabled
2-3	Enabled

EMX-PNVB Quick Installation Guide

2.3.3 Jumper for COM2 or IR selection (JIR1~2)

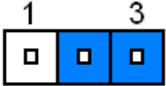


* Default

COM2*



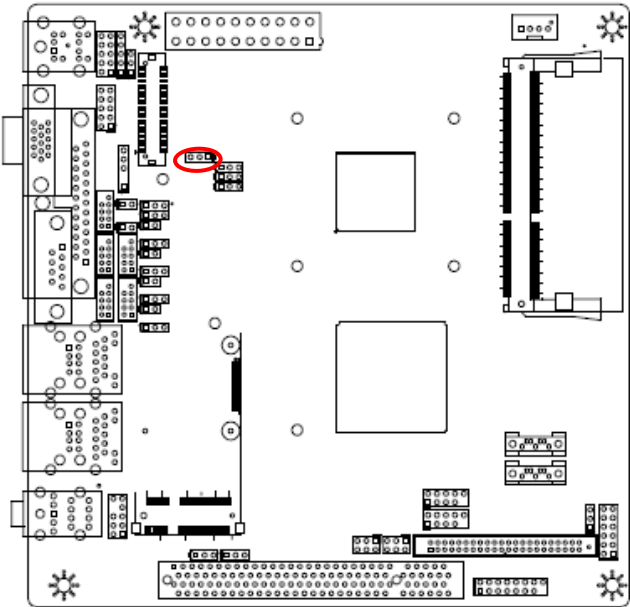
IR



Pin	Define
1-2	COM2
2-3	IR

Note: IR is not functional.

2.3.4 Jumper for LVDS PWR selection (JP1)

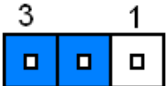


* Default

3.3V*



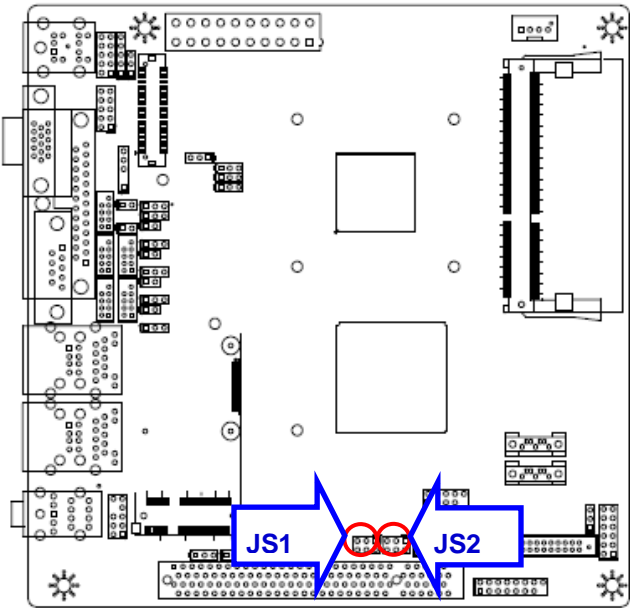
5V



Pin	Define	Max current
1-2	3.3V	1A
2-3	5V	1A

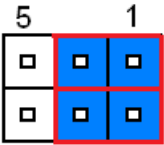
EMX-PNVB Quick Installation Guide

2.3.5 Jumper for MPCIE selection (JS1~2)

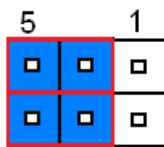


* Default

M-SATA*

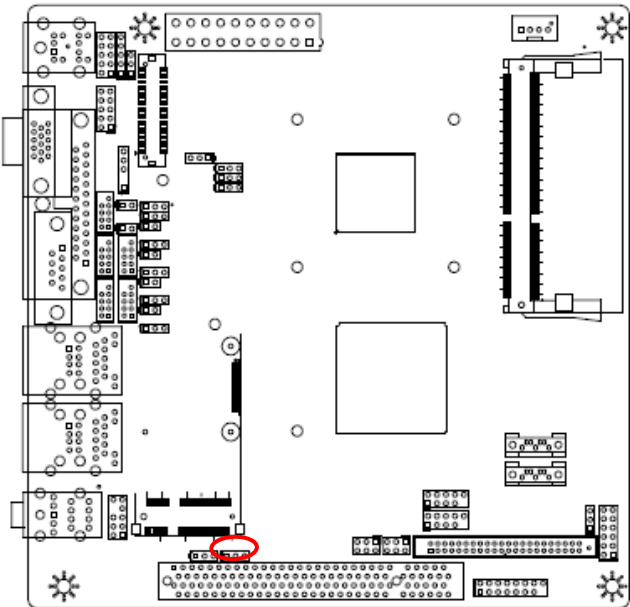


MINIPCIE



Pin	Pin	Define
1-3	2-4	M-SATA
3-5	4-6	MINIPCIE

2.3.6 Jumper for MPCIE PWR selection (JS3)

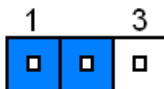


* Default

3.3V*



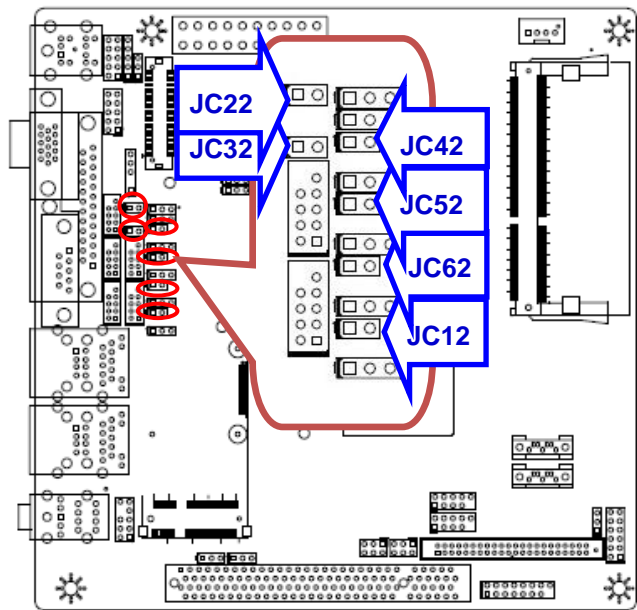
GND



Pin	Define	Max current
2-3	GND	
1-2	3.3V	1A

EMX-PNVB Quick Installation Guide

2.3.7 Serial port 1~6 or RI, USE JC11/21/31/41/51/61 PIN 9 selector
(JC12/22/32/42/52/62)



* Default

RI*

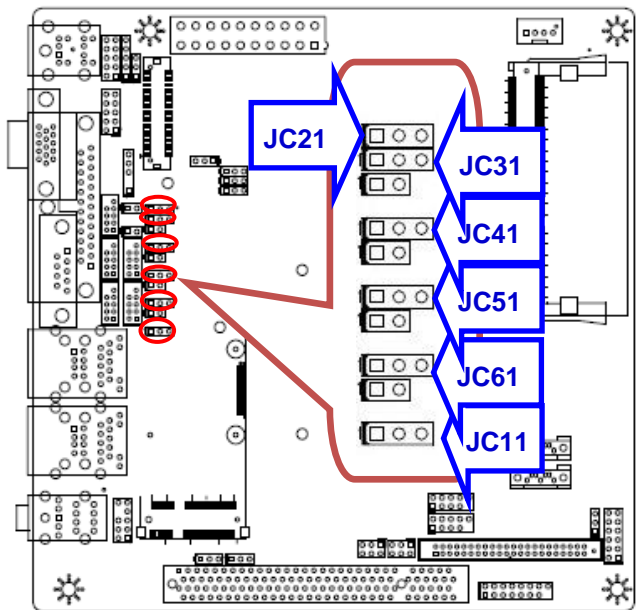


USE JC11_JC61



PIN Option	Define
CLOSE	RI
OPEN	USE JC11_JC61

2.3.8 Jumper for Serial port 1~6 pin9 power selection (JC11/21/31/41/51/61)



+5V



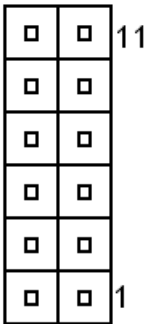
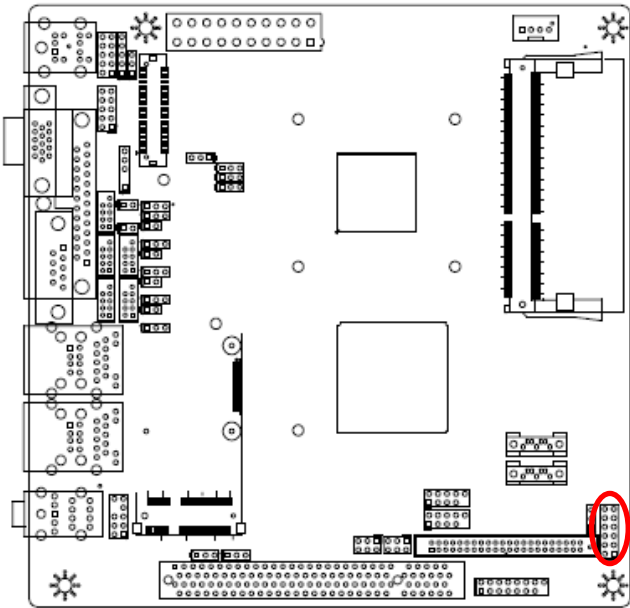
+12V



PIN	Define	Max current
1-2	+5V	1A
2-3	+12V	1A

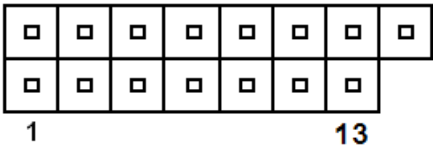
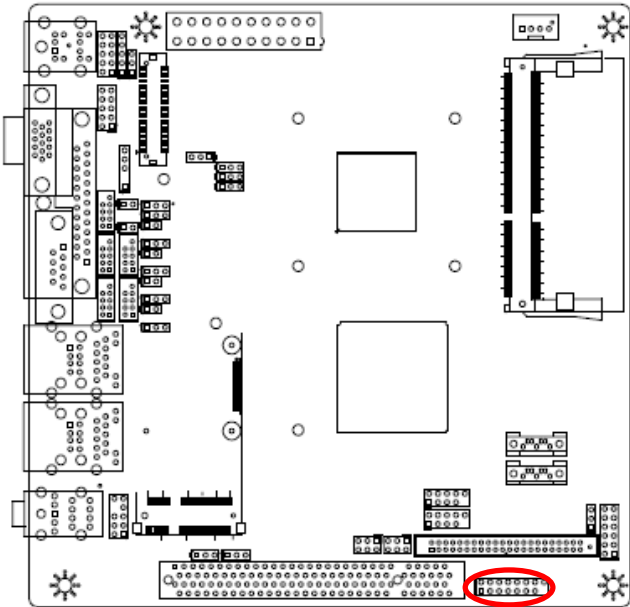
EMX-PNVB Quick Installation Guide

2.3.9 General Purpose I/O (JGPIO1)



Signal	PIN	PIN	Signal
GND	12	11	GND
GPIO	10	9	GPIO
GPIO	8	7	GPIO
GPIO	6	5	GPIO
GPIO	4	3	GPIO
+12V	2	1	+5V

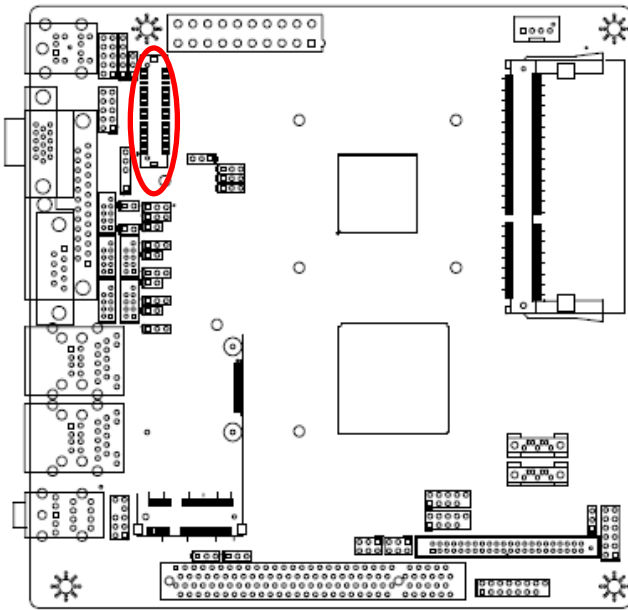
2.3.10 Front Panel Switches (FPANEL1)



Signal	PIN	PIN	Signal
5VSB	1	2	+HD_LED
+P_LED	3	4	-HD_LED
-P_LED	5	6	PS_ON
+SPEAK	7	8	-PS_ON
NC	9	10	RESET
NC	11	12	-RESET
-SPEAK	13	14	+SLPLED
		16	-SLPLED

EMX-PNVB Quick Installation Guide

2.3.11 LVDS connector (LVDS1)



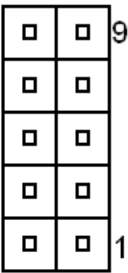
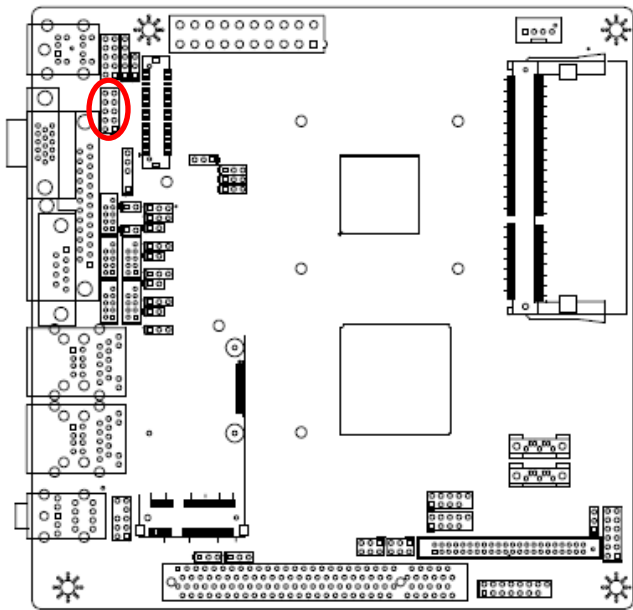
Note: Mapping connector DF13-40DS-1.25C (1.0mm).



Signal	PIN	PIN	Signal
NC	39	40	LVDS_VCON
NC	37	38	NC
NC	35	36	NC
GND	33	34	GND
LVDS_DDCPCLK	31	32	LVDS_DDCPDATA
GND	29	30	GND
NC	27	28	LVDS0_CLKP
NC	25	26	LVDS0_CLKN
GND	23	24	GND
NC	21	22	LVDS0_P2
NC	19	20	LVDS0_N2
GND	17	18	GND
NC	15	16	LVDS0_P1
NC	13	14	LVDS0_N1
GND	11	12	GND
NC	9	10	LVDS0_P0
NC	7	8	LVDS0_N0
VDDSAFE	5	6	VDDSAFE
GND	3	4	GND
VDDSAFE	1	2	VDDSAFE

EMX-PNVB Quick Installation Guide

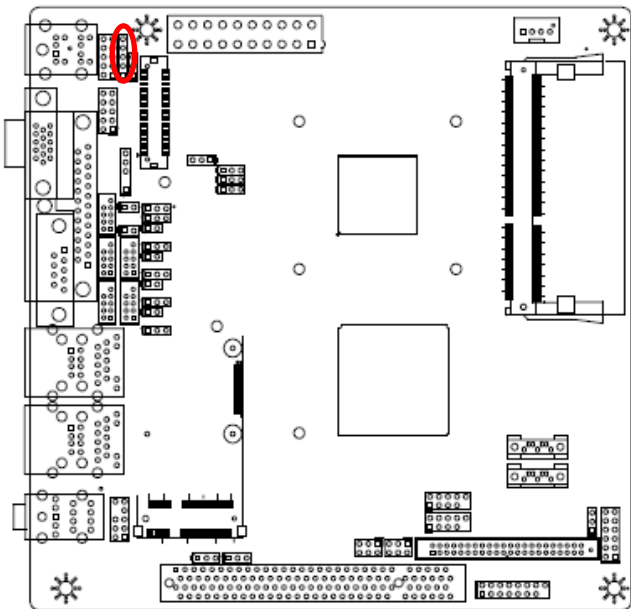
2.3.12 VGA connector (JVGA2)



Signal	PIN	PIN	Signal
DDC_CLK	10	9	DDC_DATA
VSYNC	8	7	HSYNC
BLUE	6	5	GND
GREEN	4	3	GND
RED	2	1	GND

Note: It can only use either D-SUB connector or Pin Header

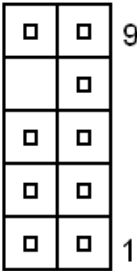
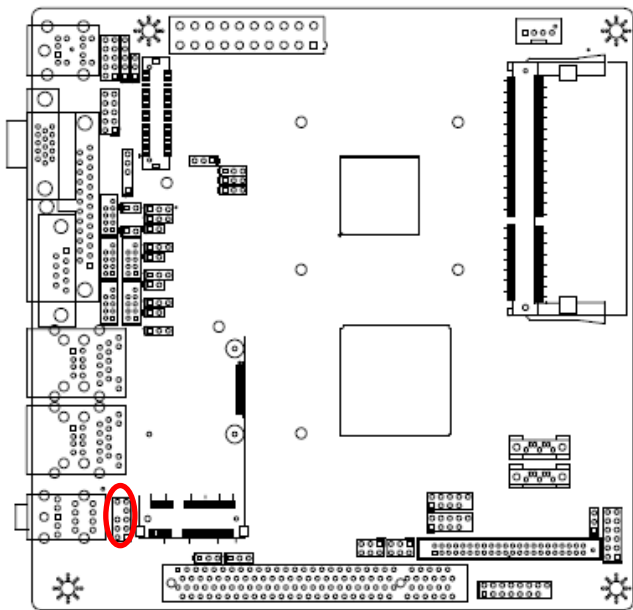
2.3.13 Inverter connector (INCN1)



PIN	Signal	Max current
5	5V	1A
4	0V	
3	BLFN	
2	GND	
1	12V	1A

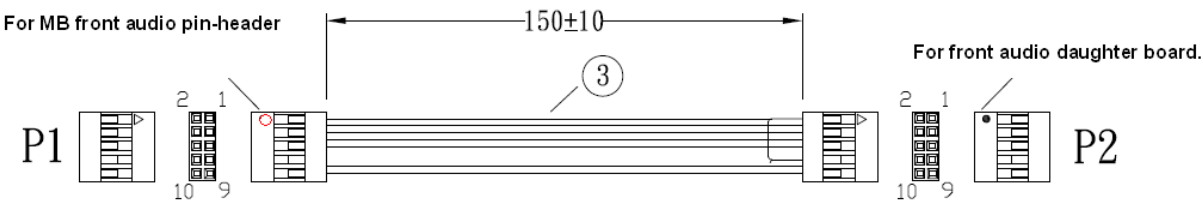
EMX-PNVB Quick Installation Guide

2.3.14 Front Panel Audio Connection Header (F_AUDIO)



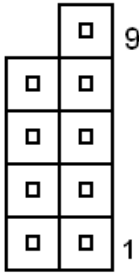
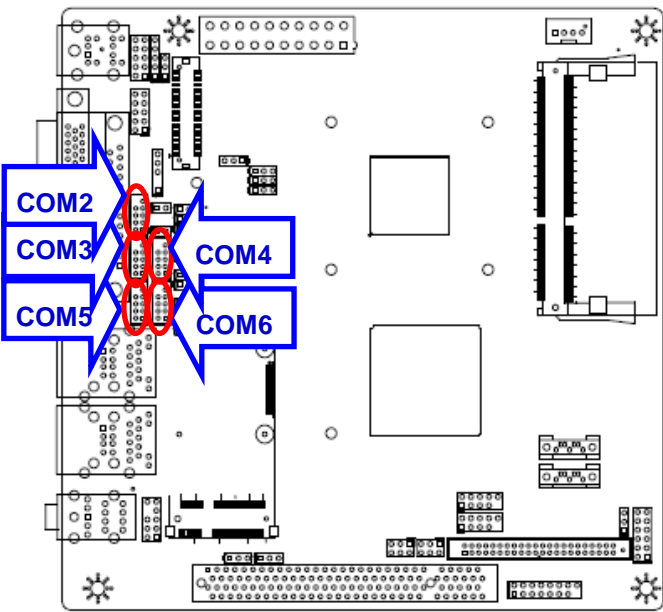
Signal	PIN	PIN	Signal
AUD_RET_L	10	9	FRONT_OUT_L
		7	NC
AUD_RET_R	6	5	FRONT_OUT_R
5V	4	3	VREF_OUT
GND	2	1	FRONT_MIC

Note: Please use the attached audio cable for front audio daughter board.



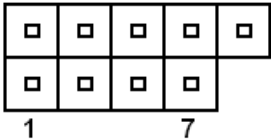
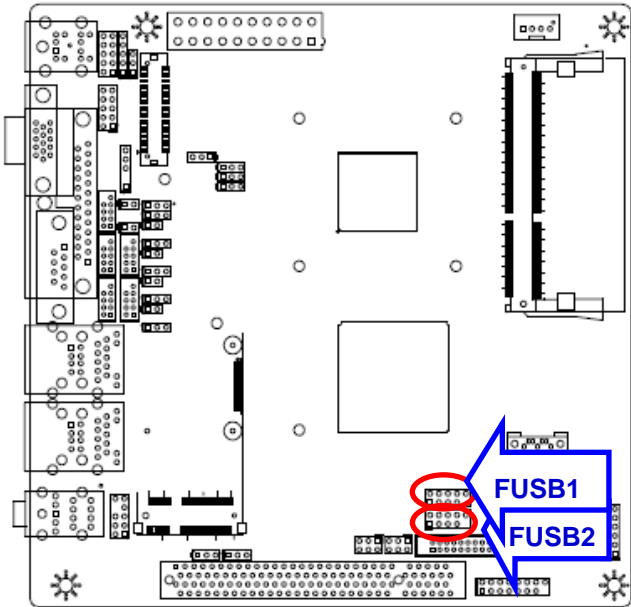
EMX-PNVB Quick Installation Guide

2.3.15 Serial port 2~6 connector (COM2~6)



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

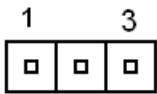
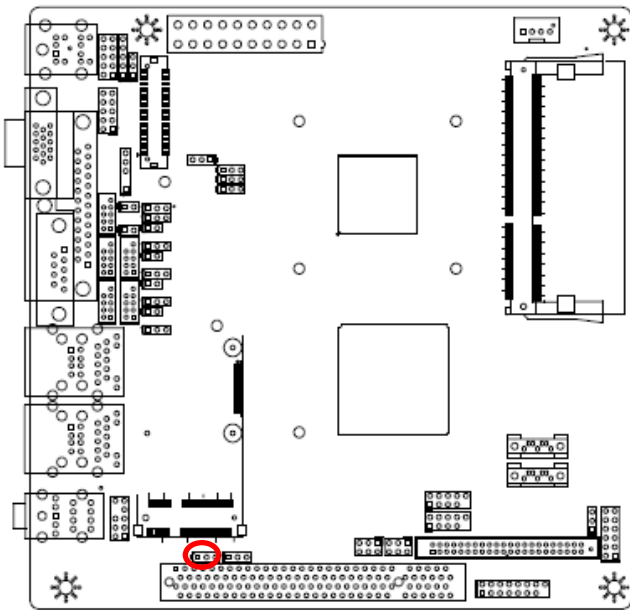
2.3.16 USB connector 1~2 (FUSB1~2)



Signal	PIN	PIN	Signal
VCC	1	2	VCC
Data 0-	3	4	Data 1
Data 0+	5	6	Data 1
GND	7	8	GND
		10	GND

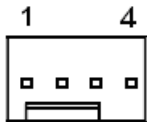
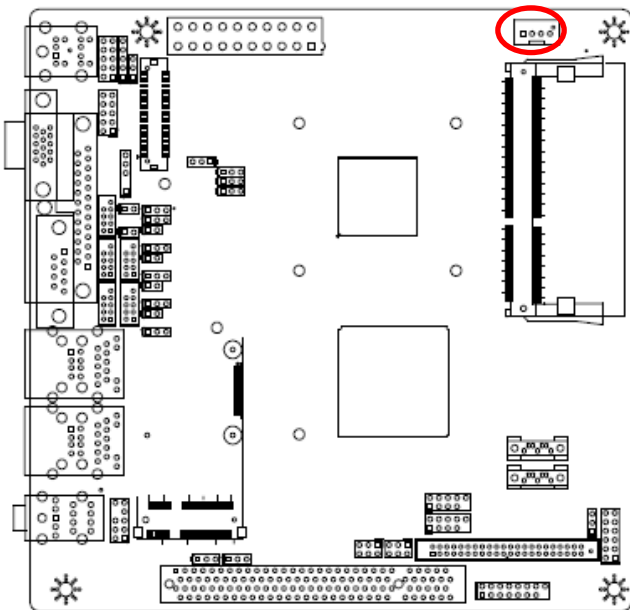
EMX-PNVB Quick Installation Guide

2.3.17 Sony/Philips Digital Interface (JSPDIF1)



PIN	Signal
1	NC
2	GND
3	OUT

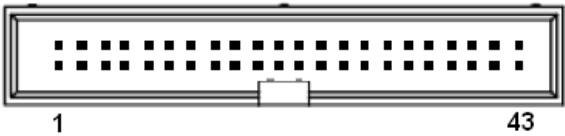
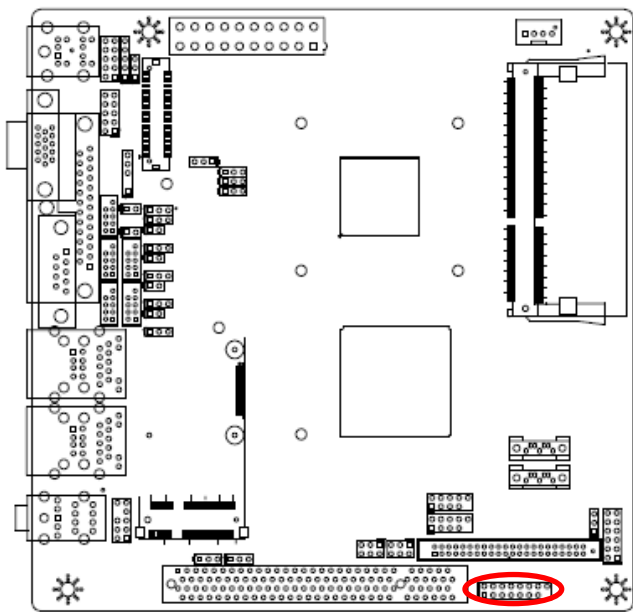
2.3.18 System Fan connector (SFAN1)



PIN	Signal
1	Ground
2	+12V
3	RPM
4	Control

EMX-PNVB Quick Installation Guide

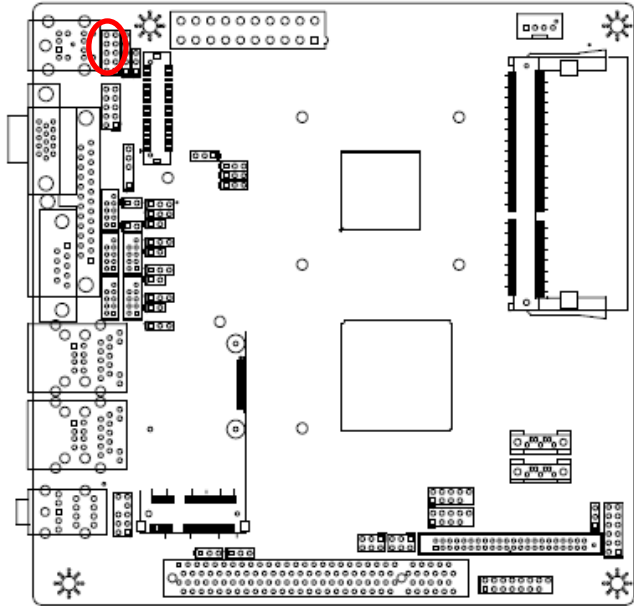
2.3.19 IDE connector (IDE1)

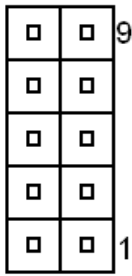


Signal	PIN	PIN	Signal
IDE RESET	1	2	GND
DATA 7	3	4	DATA 8
DATA 6	5	6	DATA 9
DATA 5	7	8	DATA 10
DATA 4	9	10	DATA 11
DATA 3	11	12	DATA 12
DATA 2	13	14	DATA 13
DATA 1	15	16	DATA 14
DATA 0	17	18	DATA 15
GND	19	20	NC
DRQ	21	22	GND
IO WRITE	23	24	GND
IO READ	25	26	GND
HD READY	27	28	NC
HDACK 0	29	30	GND
IDE IRQ	31	32	IOCS16
ADDR 1	33	34	NC
ADDR 0	35	36	ADDR 2
HARD DISK SELECT0	37	38	HARD DISK SELECT 1*
IDE ACTIVE	39	40	GND
VCC	41	42	VCC
GND	43	44	NC

EMX-PNVB Quick Installation Guide

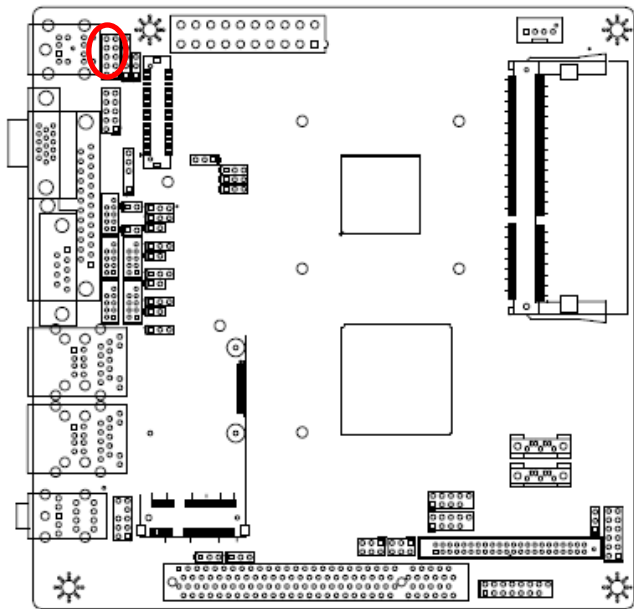
2.3.20 Keyboard & Mouse connector (JKB_MS)

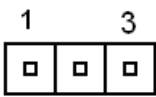




Signal	PIN	PIN	Signal
EMSDT	10	9	EMSCL
MSDT	8	7	MSCK
EKBDT	6	5	EKBCK
KBDT	4	3	KBCK
GAD	2	1	KB_5V

2.3.21 System Management Bus controller (JSM_BUS)

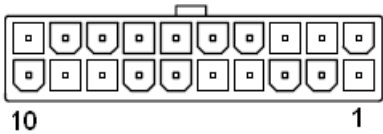
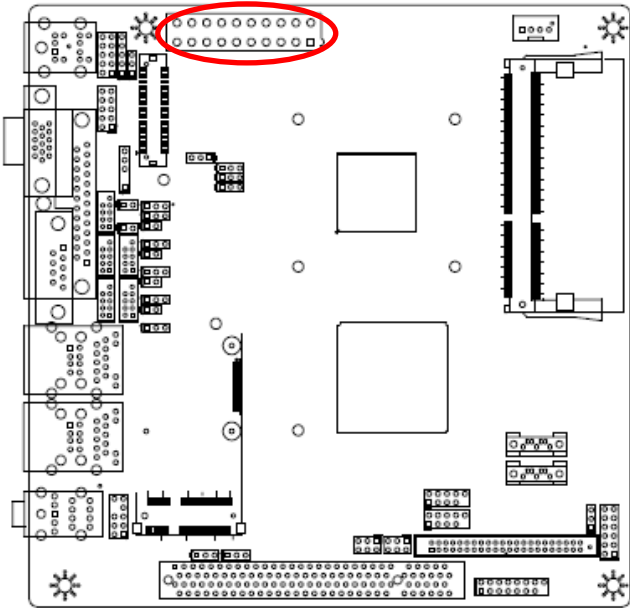




PIN	Signal
1	SMB_CLK_S
2	SMB_DATA_S
3	GND

EMX-PNVB Quick Installation Guide

2.3.22 ATX Power connector (ATXPWR1)



Signal	PIN	PIN	Signal
+3.3V	1	11	+3.3V
+3.3V	2	12	-12V
GND	3	13	GND
+5V	4	14	PS-ON
GND	5	15	GND
+5V	6	16	GND
GND	7	17	GND
PWR OK	8	18	-5V
+5VSB	9	19	+5V
+12V	10	20	+5V

