

EAX-785E

AMD Turion /Athlon II Neo Processor

User's Manual



1st Ed – March 11th 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 easily find answers in your product documentation. These answers are normally a lot more

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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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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 EAX-785E ATX Main Board
- 2 x SATA cable kit(SATA/power)
- 1 x COM 9P Cable W/O Bracket PH:2.00mm
- 1 x DRIVER CD (CD-R) without printed LOGO
- 1 x AMI BIOS label
- 1 x I/O Shield

1.3 Document Amendment History

Revision	Date	Comment
1 st	March 2011	Initial Release

1.4 Manual Objectives

This manual describes in detail the Avalue Technology EAX-785E Motherboard Board.

We have tried to include as much information as possible but we have not duplicated information that is provided in the standard IBM Technical References, unless it proved to be necessary to aid in the understanding of this board.

We strongly recommend that you study this manual carefully before attempting to interface with EAX-785E series or change the standard configurations. Whilst all the necessary information is available in this manual we would recommend that unless you are confident, you contact your supplier for guidance.

Please be aware that it is possible to create configurations within the CMOS RAM that make booting impossible. If this should happen, clear the CMOS settings, (see the description of the Jumper Settings for details).

If you have any suggestions or find any errors concerning this manual and want to inform us of these, please contact our Customer Service department with the relevant details.

1.5 System Specifications

System	
CPU	AMD AM3 CPU Phenom II X6 1055T: 95W AMD AM3 CPU Phenom II X4 820:95W AMD AM3 CPU Phenom II X4 Q54L:65W AMD AM3 CPU Phenom II X4 910e:65W AMD AM3 Phenom II X2 B55 :80W AMD AM3 Athlon II X4 640:95W
System Bus	4.4GT/s. HyperTransport 3.0
BIOS	AMI 8Mb SPI BIOS
System Chipset	AMD RS785E + SB850
I/O Chip	NuvoTon W83627DHG-P & F81216AD
System Memory	4 x 240-pin DDR3 DIMM, max. up to 8GB DDR3 800/1066/1333 with ECC support
CF CONN	-----
Watchdog Timer	Reset: 1 sec.~255 min. and 1 sec. or 1 min./step
H/W Status Monitor	Monitoring CPU temperature and cooling fan status. Auto throttling control when CPU overheats
Expansion	2 x PCI-E x16 (Supports PCIe x8) 4 x PCI-E x1 1 x PCI
DIO	8Bit (4in/4out)
S3/S4	Yes (S1/S3/S4/S5)
I/O	
MIO	5 x SATA 1 x K/B 1 x Mouse 4 x RS-232 port (COM 1 as double deck D-Sub connectors with VGA on the rear I/O and COM2 & COM 3 & COM 4 as 2x5-pin pitch2.54 box-header w/z pin-9 with powered) 1 x eSATA
USB	8 x USB 2.0 (4 x rear I/O, 4x pitch2.54 pin-header)
IrDA	N/A
DIO	8Bit (4in/4out)
External I/O Connector	1 x KB/MS 1 x VGA 1 x RS-232 (powered, 5V/12V selectable) 4 x USB 2.0/1.1

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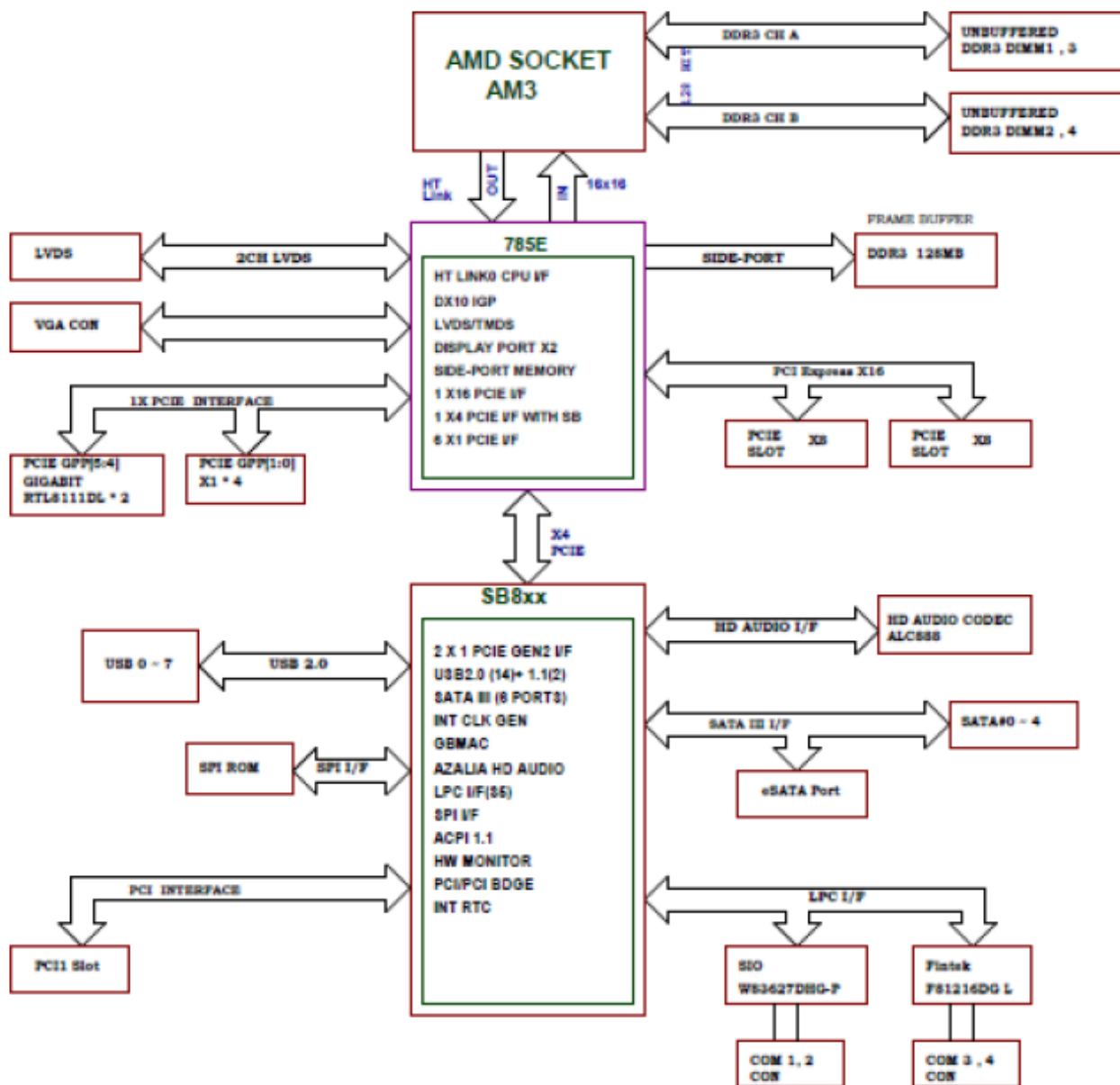
	<p>2 x RJ45 Port</p> <p>1 x eSATA</p> <p>1 x Audio I/O with 2 Jacks(MIC-in, Lin-out)</p>
Internal I/O Connector	<p>2 x USB connectors support additional 4 USB ports (2x5, pitch 2.54mm)</p> <p>1 x 20+4-pin ATX Power connector</p> <p>3 x COM port (2x5, pitch 2.54mm as COM2/3/4 pin-9 with 5V/12V powered)</p> <p>5 x SATA 2.0 connectors</p> <p>1 x Front panel audio connector(2x5, pitch 2.54mm)</p> <p>1 x Audio amplifier connector (1x4, pitch 2.54mm)</p> <p>1 x CPU Fan connector (4-pin)</p> <p>1 x System Fan connector (3-pin)</p> <p>1 x Digital IO header (2x5, pitch 2.54mm)</p> <p>1 x LVDS connector</p> <p>1 x Invertor connector</p>
Display	
Chipset	<p>RS785E Integrated : ATI Radeon HD4200.</p> <p>Support DX 10.1 & Dual Display</p> <p>Support UVD 2 for hardware decode of H.264 and VC-1 video codec standards</p>
Display Memory	DR3 128MB (Side-Port memory)
Max Resolution Dual Display	<p>CRT:</p> <ul style="list-style-type: none"> • 2048x1536 @85Hz (pixel clock at 388.5MHz) for 4:3 format • 2560x1440 @75Hz (pixel clock at 397.25MHz) for 16:9 format • 2456x1536 @60Hz (pixel clock at 320MHz) for 16:10 format
	VGA+LVDS
VGA	Yes
LVDS	Dual channel 24bit LVDS
LVDS Backlight power connector	Yes , through internal LVDS backlight connector
Audio	
Audio Codec	Realtek ALC888 HD audio CODEC
Audio Interface	Mic in, Line out
Audio Amplifer	TPA3005D2 Stereo 6Watt per channel
Ethernet	
LAN 1	Intel® 82577-LM PCI-E Gigabit LAN support iAMT 6.0
LAN 2	Realtek RTL8111C PCI-E GbLAN
Ethernet Interface	1000 Base-Tx Gigabit Ethernet compatible

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Mechanical & Environmental	
Power Requirement	CPU maximum supports to TDP 95W
Power Type	20pin ATX interface+ 4 pin CPU power connector
Operating Temperature	0~60°C (32~140°F)
Operating Humidity	0%~90% relative humidity, non-condensing
Size (L x W)	12" x 9.6" (308mm x 244mm)
Weight	1.32lbs(0.6Kg)

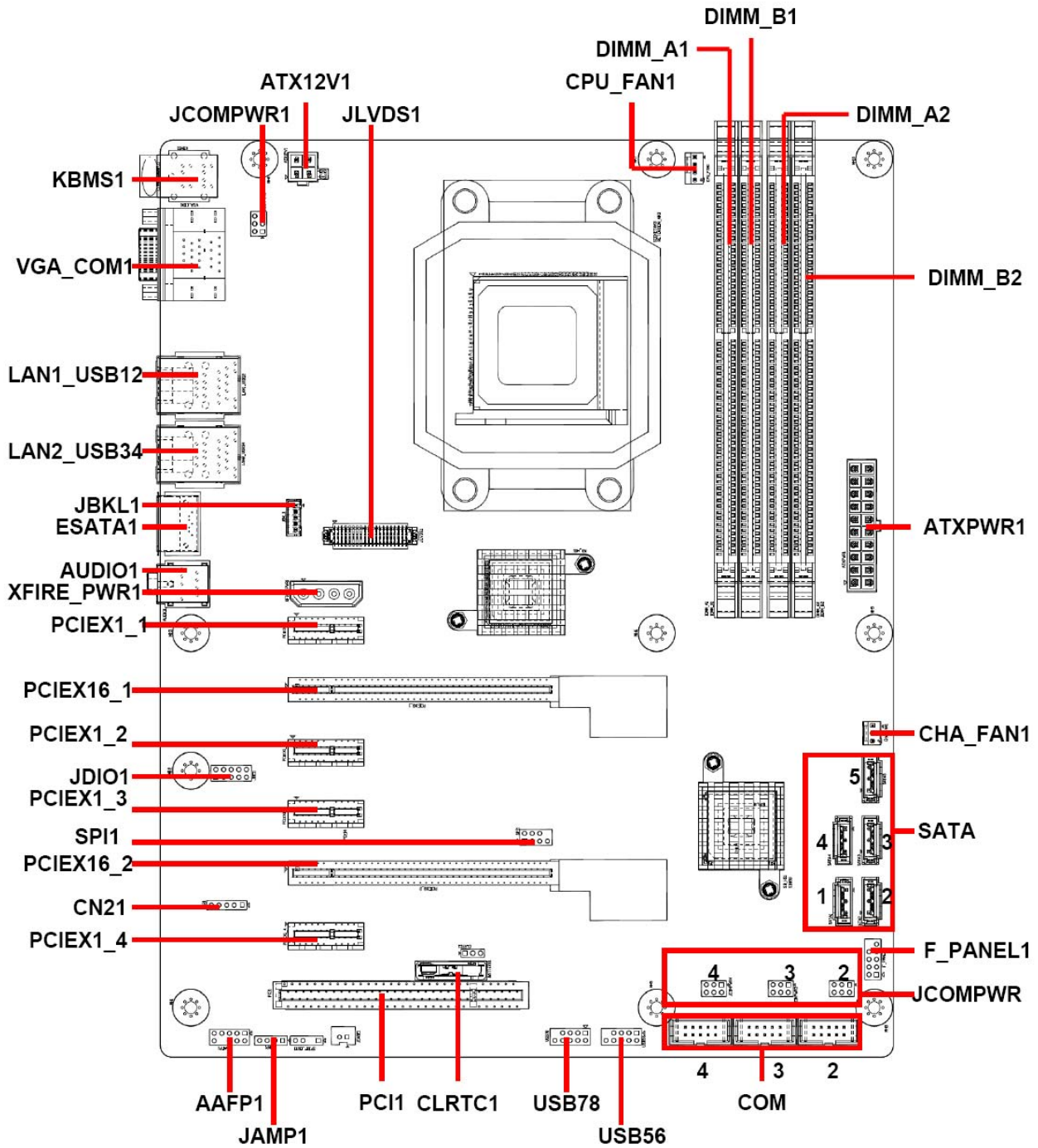
1.6 Architecture Overview – Block Diagram

The following block diagram shows the architecture and main components of EAX-785E.



2. Hardware Configuration

2.1 Product Overview



2.2 Installation Procedure

This chapter explains you the instructions of how to setup your system.

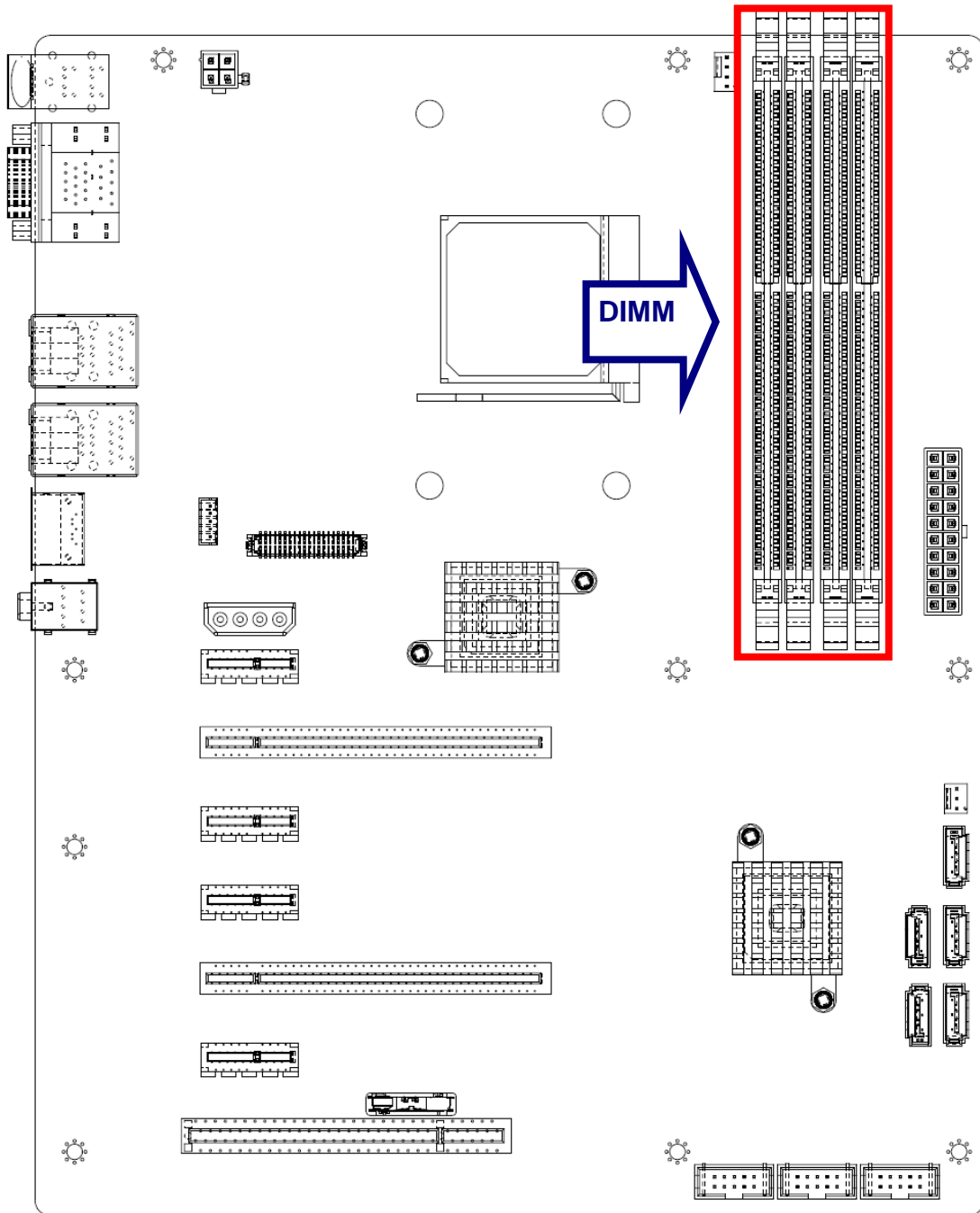
1. Turn off the power supply.
2. Insert the DIMM module (be careful with the orientation).
3. Insert all external cables for hard disk, floppy, keyboard, mouse, USB etc. except for flat panel. A CRT monitor must be connected in order to change CMOS settings to support flat panel.
4. Connect power supply to the board via the ATXPWR.
5. Turn on the power.
6. Enter the BIOS setup by pressing the delete key during boot up. Use the "LOAD BIOS DEFAULTS" feature. The **Integrated Peripheral Setup** and the **Standard CMOS Setup** Window must be entered and configured correctly to match the particular system configuration.
7. If TFT panel display is to be utilized, make sure the panel voltage is correctly set before connecting the display cable and turning on the power.



Note: Make sure the heat sink and the CPU top surface are in total contact to avoid CPU overheating problem that would cause the system to hang or unstable

2.2.1 Main Memory

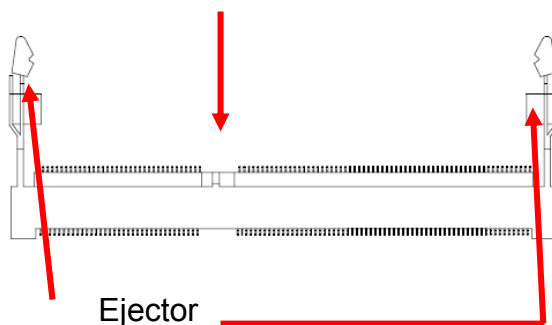
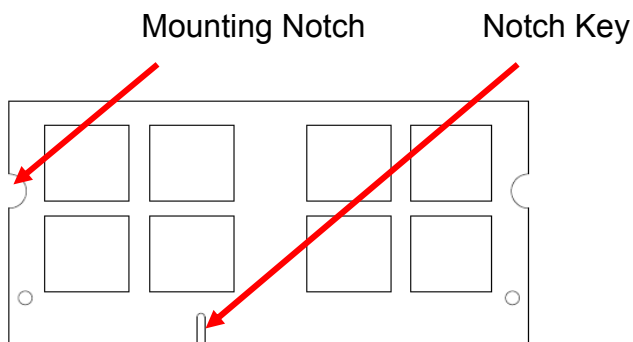
EAX-785E provides 4 x 240-pin DDR3 DIMM, max. up to 8GB DDR3 800/1066/1333 with ECC support.



Make sure to unplug the power supply before adding or removing DIMMs or other system components. Failure to do so may cause severe damage to both the board and the components.

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- Locate the SODIMM socket on the board.
- Hold two edges of the SODIMM module carefully. Keep away of touching its connectors.
- Align the notch key on the module with the rib on the slot.
- Firmly press the module into the socket which automatically snaps into the mounting notch. Do not force the SODIMM module in with extra force as the SODIMM module only fits in one direction.



204-pin DDR3 SODIMM

- To remove the SODIMM modules, push the two ejector tabs on the slot outward simultaneously, and then pull out the SODIMM module.



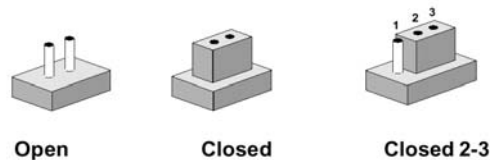
Note:

- (1) Please do not change any DDR3 SDRAM parameter in BIOS setup to increase your system's performance without acquiring technical information in advance.
- (2) Static electricity can damage the electronic components of the computer or optional boards. Before starting these procedures, ensure that you are discharged of static electricity by briefly touching a grounded metal object.

2.3 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

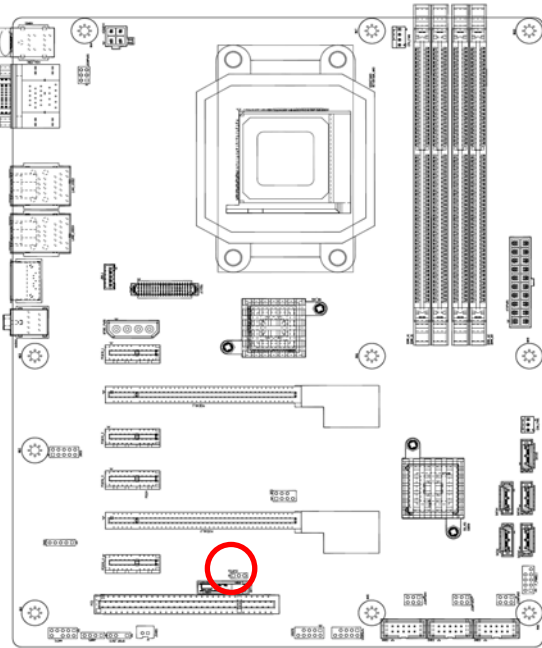
Label	Function	Note
CLRTC1	Clear CMOS	3 x 1 header, pitch 2.54 mm
CN21	Amplifier controller	5 x 1 header, pitch 2.54 mm
JCOMPWR1/2/3/4	Power Selector Ring /+5V/+12V	3 x 2 header, pitch 2.54 mm

Connectors

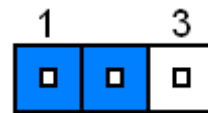
Label	Function	Note
AAFP1	Azalia Front audio connector	5 x 2 header, pitch 2.54 mm
AUDIO1	Rear Audio Jack	Audio Jack
ATXPWR1	ATX power connector	10 x 2 wafer, pitch 4.2 mm
ATX12V1	AT power connector	2 x 2 wafer, pitch 4.2 mm
CHA_FAN1	Chassis Fan Connector	3 x 1 wafer, pitch 2.54 mm
COM 2/3/4	Serial Port connector 2,3,4	5 x 2 header, pitch 2.54 mm
CPU_FAN1	CPU Fan Connector	4 x 1 wafer, pitch 2.54 mm
DIMM_A1	240-pin DIMM slot 1	
DIMM_A2	240-pin DIMM slot 2	
DIMM_B1	240-pin DIMM slot 3	
DIMM_B2	240-pin DIMM slot 4	
ESATA1	External SATA connector	
F_PANEL1	System Panel Connector	5 x 2 header, pitch 2.54mm
JAMP1	Amplifier Connector	4 x 1 header, pitch 2.54mm
JBKL1	LCD Inverter Connector	5 x 1 wafer, pitch 2.0 mm
JDIO1	General Purpose I/O Connector	10 x 2 header, pitch 2.54mm
JLVDS1	LVDS connector	20 x 2 header, pitch 2.0 mm
KBMS1	PS/2 keyboard and mouse	6-pin Mini-Din
LAN1_USB12	RJ-45 Ethernet Connector x 1 USB Connector 1/2	
LAN2_USB34	RJ-45 Ethernet Connector x 1 USB Connector 3/4	
PCI1	PCI slot	
PCIEX1_1/2/3/4	PCI express x1 slot 1/2/3/4	
PCIEX16_1/2	PCI express x16 slot 1/2	
VGA_COM1	VGA & Serial port 1 connector	D-sub 15-pin, female D-sub 9-pin, male
XFIRE_PWR1	Cross fire Power connector	4 x 1 wafer, pitch 5.08 mm
SATA1/2/3/4/5	Serial ATA connector 1/2/3/4	
SPI1	SPI programming connector	3 x 2 header, pitch 2.54 mm
USB56/78	USB connector 56 & 78	5 x 2 header, pitch 2.54 mm

2.4 Setting Jumpers & Connectors

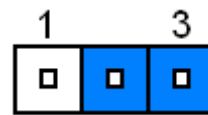
2.4.1 Clear CMOS (CLRTC1)



Normal *

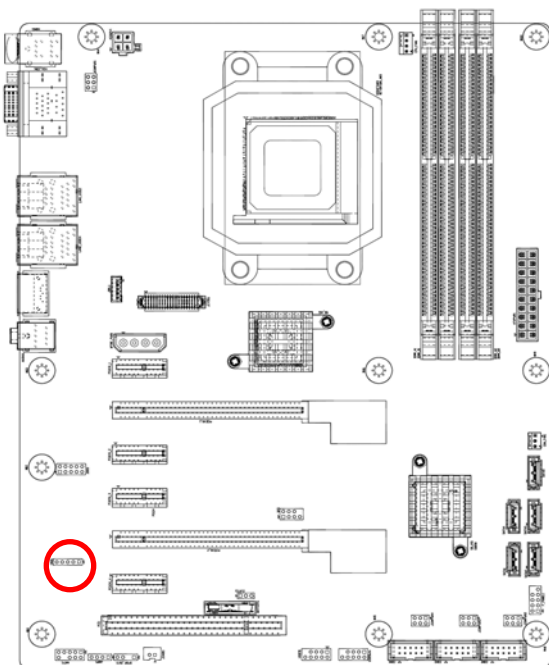


Clear

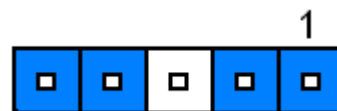


* Default

2.4.2 Amplifier Controller (CN21)



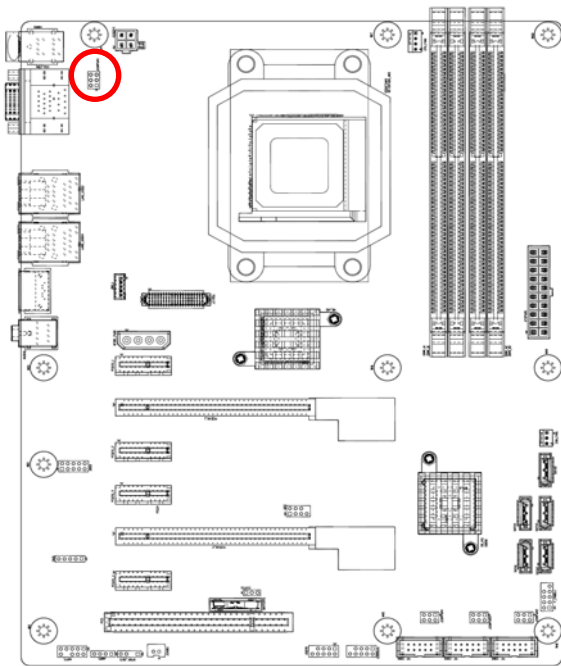
VR connection*



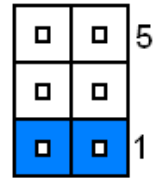
Signal	PIN
PORT_A_R	1
LOUT_RR	2
GND	3
PORT_A_L	4
LOUT_LL	5

* Default

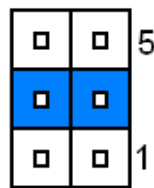
2.4.3 Power selector Ring/+5V/+12V (JCOMPWR1)



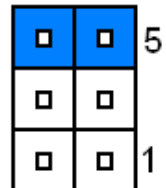
Ring *



+5V

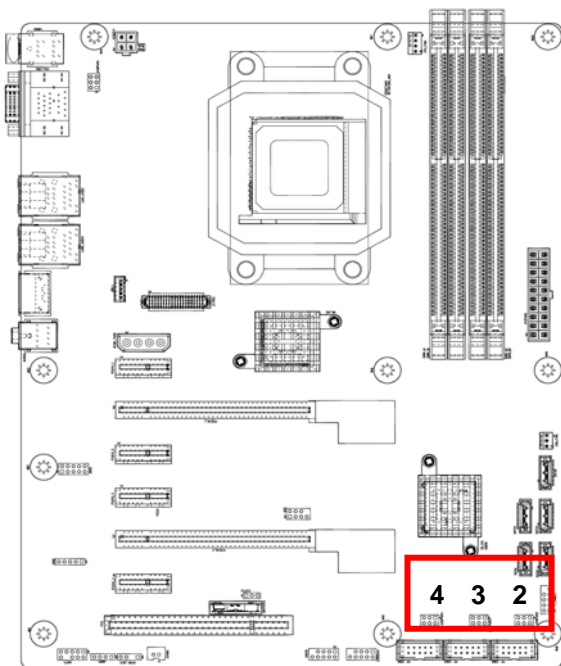


+12V

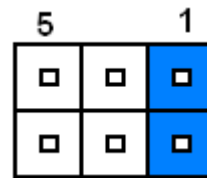


* Default

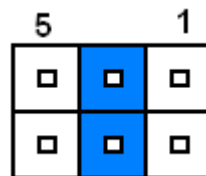
2.4.4 Power selector Ring/+5V/+12V (JCOMPWR2/3/4)



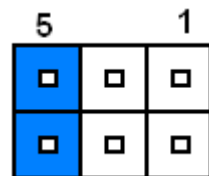
Ring *



+5V

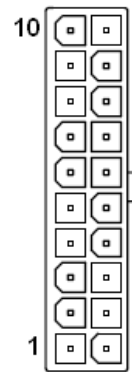
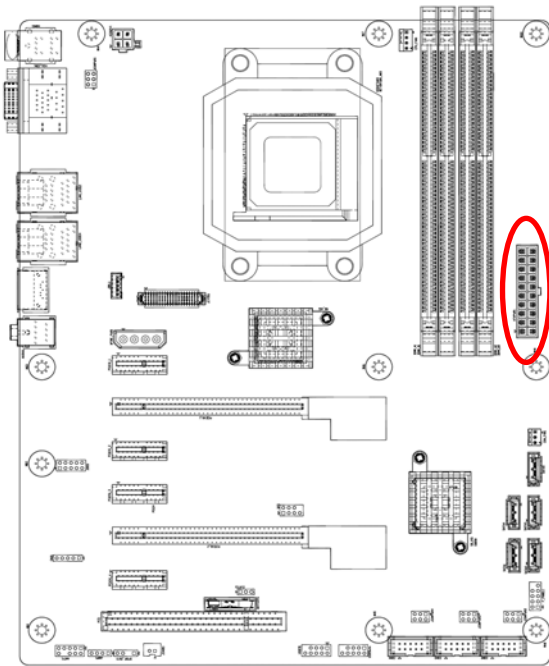


+12V



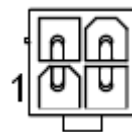
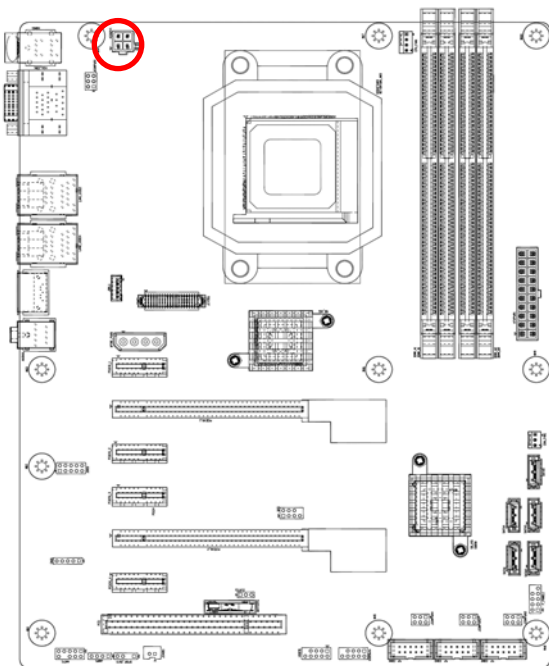
* Default

2.4.5 ATX power connector (ATXPWR1)



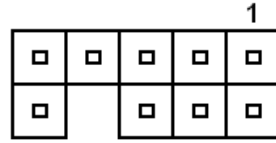
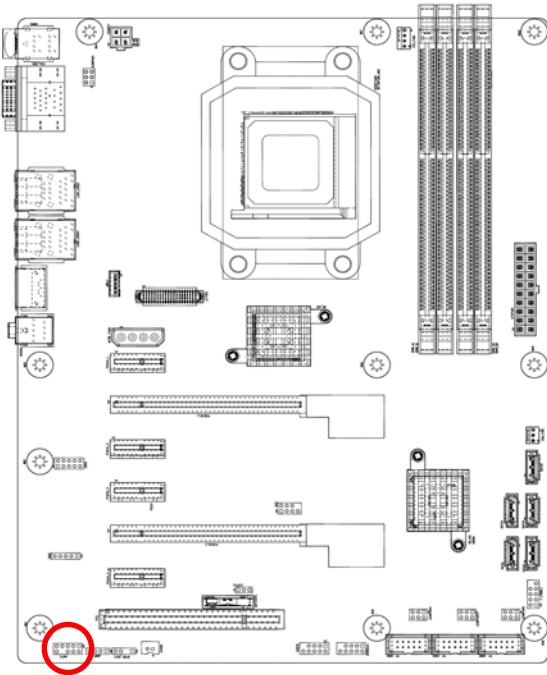
Signal	PIN	PIN	Signal
+12V	10	20	+5V
+5VSB	9	19	+5V
ATX_PWRGD	8	18	NC
GND	7	17	GND
+5V	6	16	GND
GND	5	15	GND
+5V	4	14	PSON#
GND	3	13	GND
+3.3V	2	12	-12V
+3.3V	1	11	+3.3V

2.4.6 AT Power connector (ATX12V1)



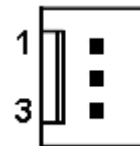
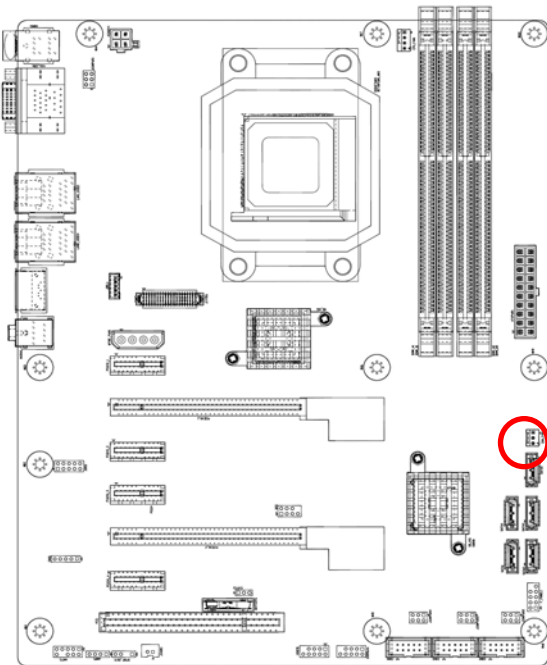
Signal	PIN	PIN	Signal
GND	2	4	GND
+12V_VCORE	1	3	+12V_VCORE

2.4.7 Azalia Front audio connector (AAFP1)



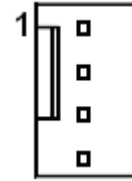
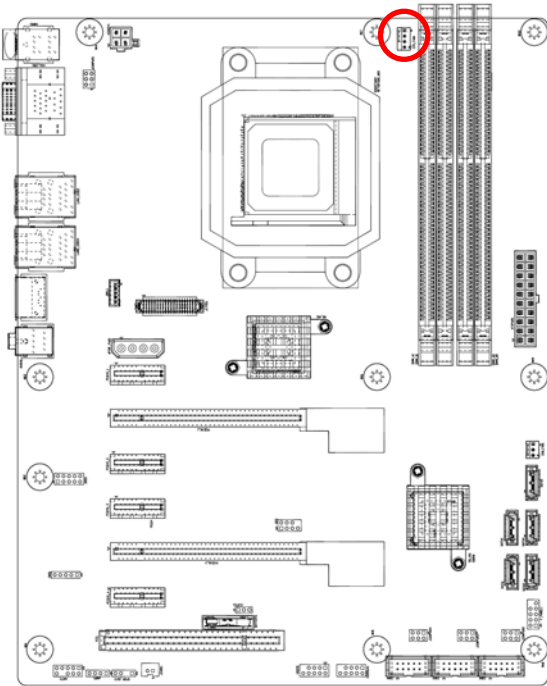
Signal	PIN	PIN	Signal
MIC2_L	1	2	GND
MIC2_R	3	4	FP_PRE#
LIN2_R	5	6	SRTN1
SENSE_B	7		
LIN2_L	9	10	SRTN2

2.4.8 Chassis Fan connector (CHA_FAN1)



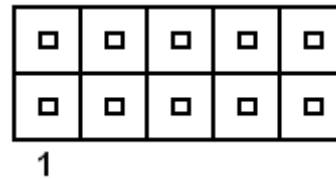
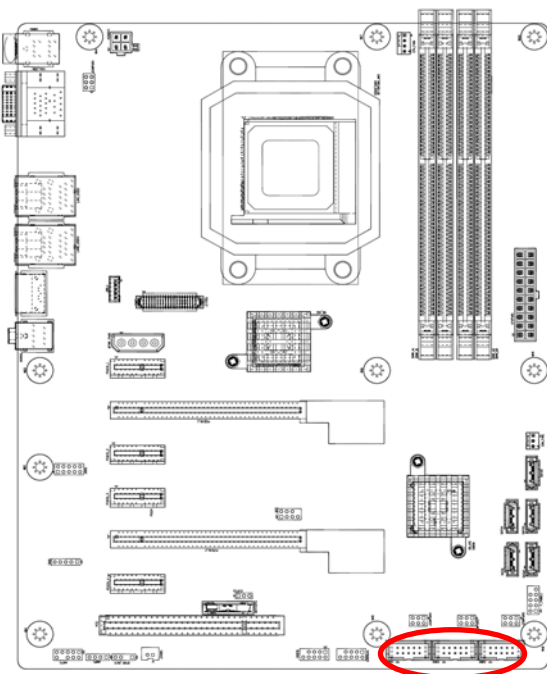
Signal	PIN
GND	1
+12V	2
SFAN_TACH	3

2.4.9 CPU Fan connector (CPU_FAN1)



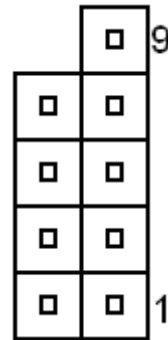
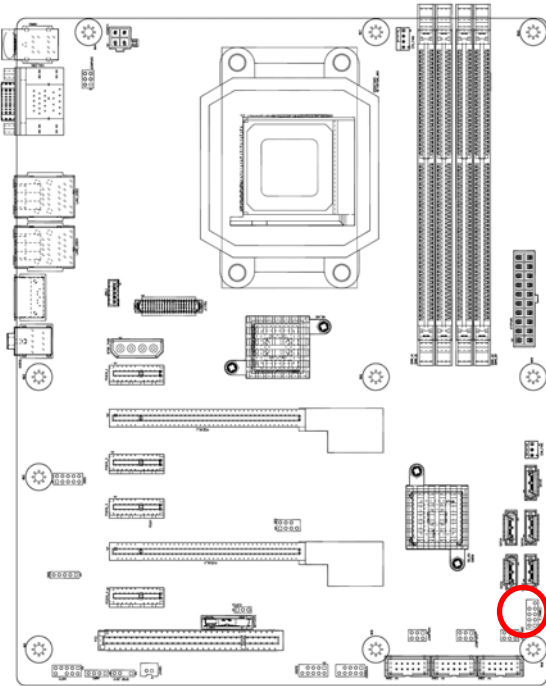
Signal	PIN
GND	1
+12V	2
CFAN_TACH	3
CFAN_PWM	4

2.4.10 Serial port 2/ 3/ 4 connector (COM 2/3/4)



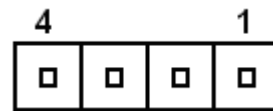
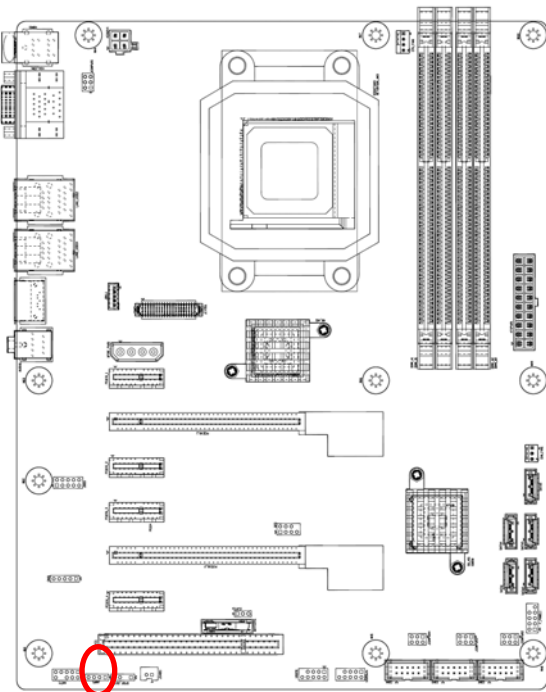
Signal	PIN	PIN	Signal
DDCD2#	1	2	RRXD2
TTXD2	3	4	DDTR2#
GND	5	6	DDSR2#
RRTS2#	7	8	CCTS2#
COM2P9SEL	9	10	NC

2.4.11 System Panel connector (F_PANEL1)



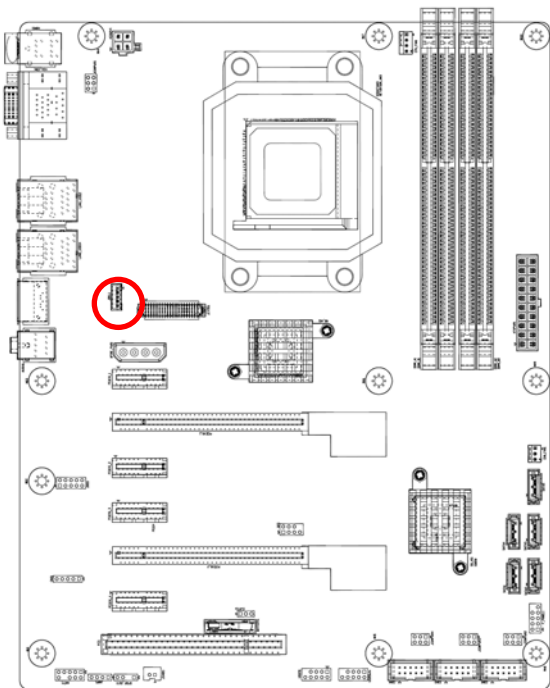
Signal	PIN	PIN	Signal
		9	NC
GND	8	7	SYS_RST#
PWRBTN#	6	5	GND
PLED-	4	3	HPLED-
PLED+	2	1	HDLED+

2.4.12 Amplifier connector (JAMP1)



Signal	PIN
L-	1
L+	2
R-	3
R+	4

2.4.13 LCD Inverter connector (JBKL1)



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



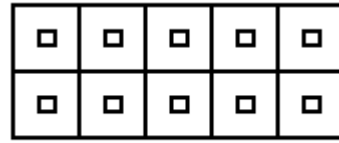
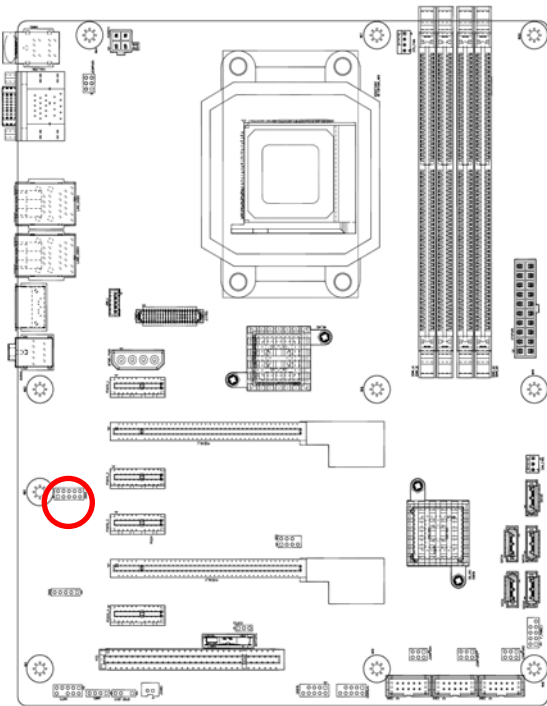
Note:

For inverters with adjustable Backlight function, it is possible to control the LCD brightness through the VR signal.

2.3.13.1 Signal Description – LCD Inverter Connector (JBKL1)

Signal	Signal Description
BRIGHT	$V_{adj} = 0.75V \sim 4.25V$ (Recommended: $4.7K\Omega, >1/16W$)
LBKLT_EN	LCD backlight ON/OFF control signal

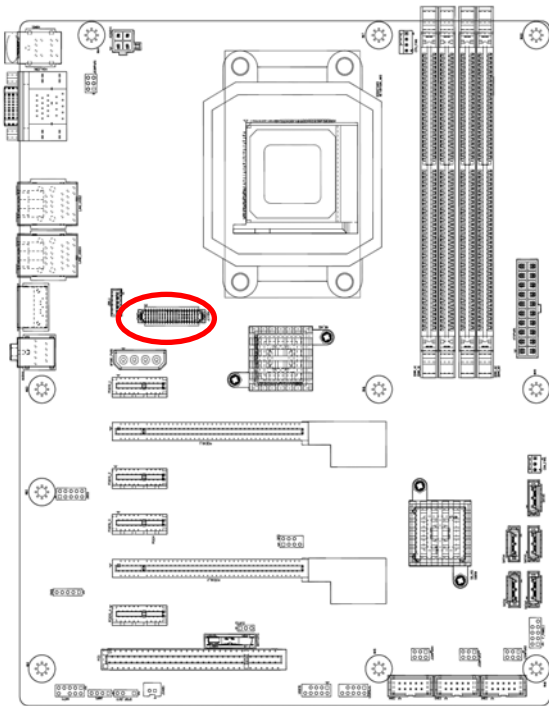
2.4.14 General Purpose I/O connector (JDIO1)



1

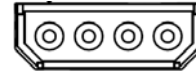
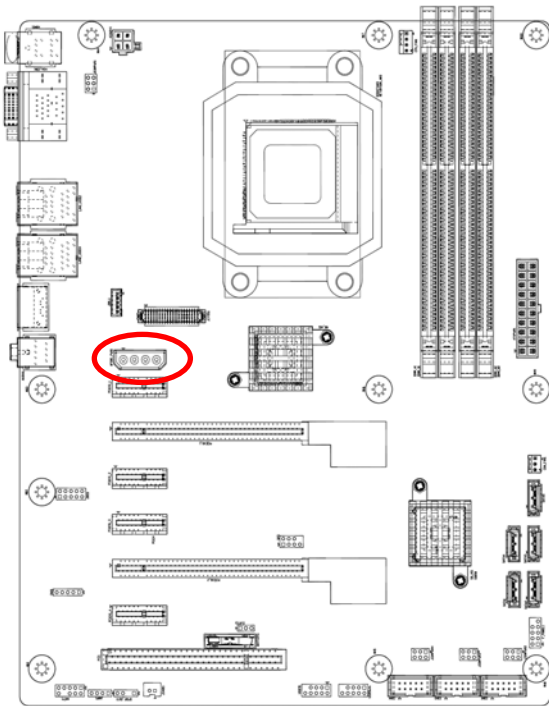
Signal	PIN	PIN	Signal
GPIO0	1	2	GPIO4
GPIO1	3	4	GPIO5
GPIO2	5	6	GPIO6
GPIO3	7	8	GPIO7
+5V_USB_R	9	10	GND

2.4.15 LVDS connector (JLVDS1)



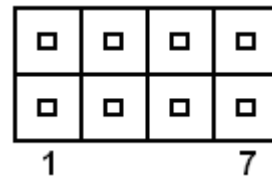
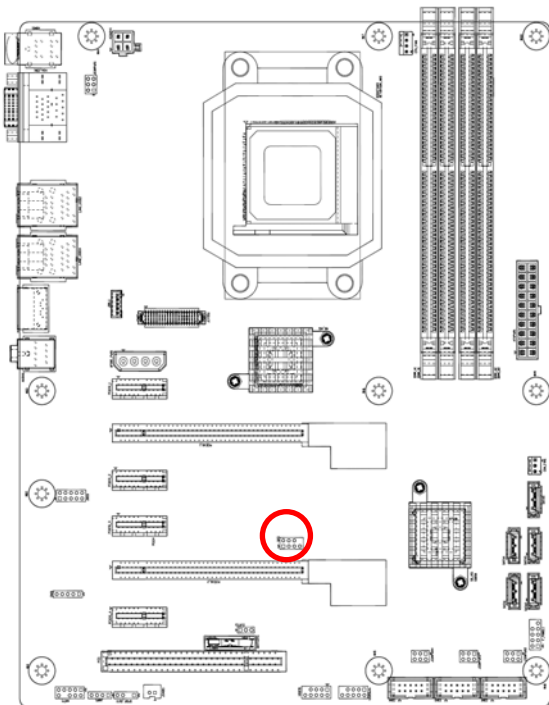
Signal	PIN	PIN	Signal
+3.3V	1	2	+5V
+3.3V	3	4	+5V
I2C_CLK	5	6	I2C_DATA
GND	7	8	GND
A1+	9	10	A0+
A1-	11	12	A0-
GND	13	14	GND
A3+	15	16	A2+
A3-	17	18	A2-
GND	19	20	GND
B1+	21	22	B0+
B1-	23	24	B0-
GND	25	26	GND
B3+	27	28	B2+
B3-	29	30	B2-
GND	31	32	GND
B_CK+	33	34	A_CK+
B_CK-	35	36	A_CK-
GND	37	38	GND
+12V	39	40	+12V

2.4.16 Cross fire Power connector (XFIRE_PWR1)



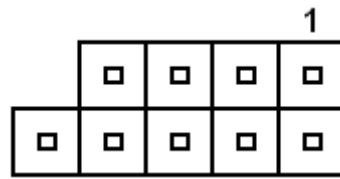
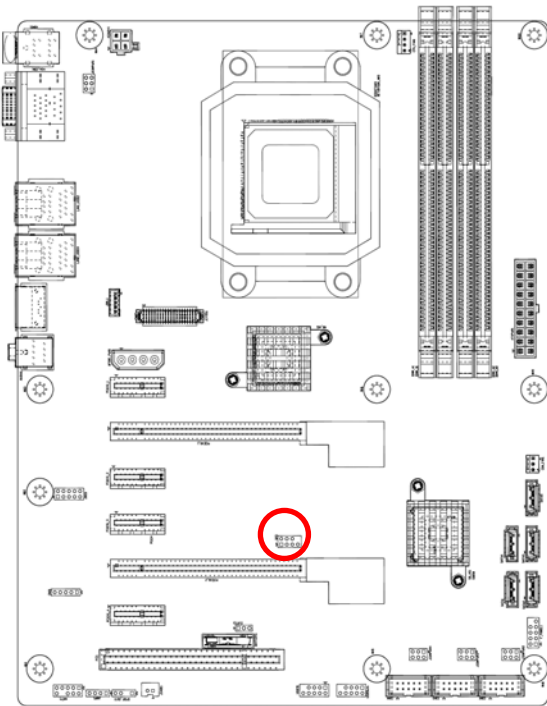
Signal	PIN
+12V	1
GND	2
GND	3
+5V	4

2.4.17 SPI programming connector (SPI1)



Signal	PIN	PIN	Signal
+3.3V	1	2	GND
CS#	3	4	CLK
DATAIN	5	6	DATAOUT
HOLD#	7		

2.4.18 USB connector 56 & 78 (USB56/78)



Signal	PIN	PIN	Signal
+USBV4567	1	2	+USBV4567
D4-	3	4	D5-
D4+	5	6	D5+
GND	7	8	GND
		10	NC

3. Mechanical Drawing



