



***AXIOMTEK***

**CEB94011**

**COM Express™ Type 6  
Development Baseboard**

**User's Manual**



## **Disclaimers**

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## **CAUTION**

If you replace wrong batteries, it causes the danger of explosion. It is recommended by the manufacturer that you follow the manufacturer's instructions to only replace the same or equivalent type of battery, and dispose of used ones.

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## **ESD Precautions**

Computer boards have integrated circuits sensitive to static electricity. To prevent chipsets from electrostatic discharge damage, please take care of the following jobs with precautions:

- Do not remove boards or integrated circuits from their anti-static packaging until you are ready to install them.
- Before holding the board or integrated circuit, touch an unpainted portion of the system unit chassis for a few seconds. It discharges static electricity from your body.
- Wear a wrist-grounding strap, available from most electronic component stores, when handling boards and components.

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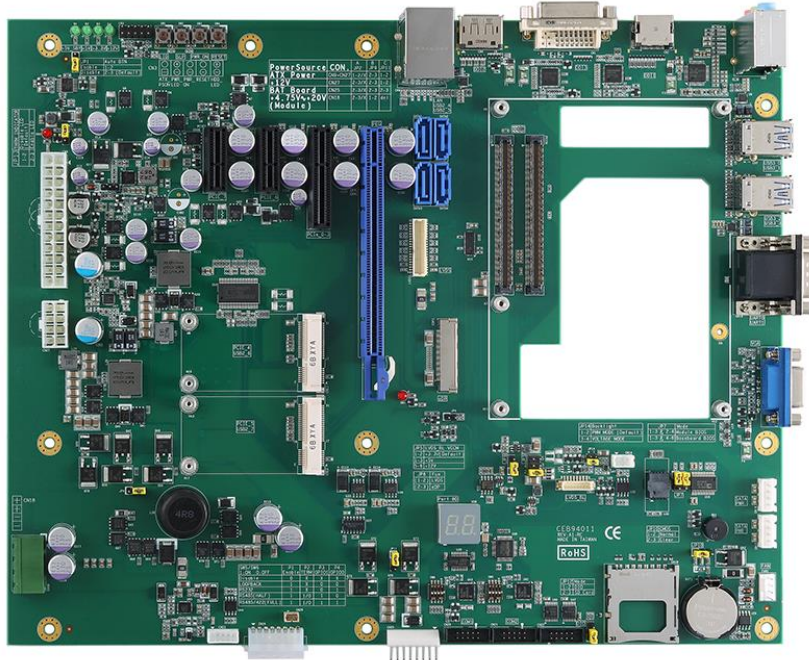
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# Chapter 1

## Introduction



The CEB94011 is a new COM Express™ type 6 development baseboard equipped with an embedded COM Express™ CPU type 6 module and fully compliant with the PCI Industrial Computer Manufacturers PICMG COM Express™ standard. The COM Express™ is an open industry standard for Computer-on-Modules, designed to be future proof and to provide a smooth transition path from legacy parallel interfaces to LVDS/eDP interfaces. In addition to the standard output signals for converting, CEB94011 provides one PCI Express x16 slot for graphics, one PCI Express x4 slot, two PCI Express x1 slots and two PCI-Express Mini Card sockets for expansion purposes.

This board supports various I/O features: display interfaces (VGA, LVDS/eDP, DisplayPort, HDMI and DVI-D), Gigabit/Fast Ethernet, HD audio codec, four SATA-600 interfaces, six USB ports (2 USB 2.0 and 4 USB 3.0 ports), digital I/O or SD card slot, two RS-232 ports and two RS-232/422/485 ports.

With CEB94011, customers can develop their own applications and upgrade the system configuration in advance to meet faster time-to-market.

### 1.1 Features

- COM Express™ type 6 baseboard for evaluation purpose
- USB 3.0 supported
- Port 80 display for debugging
- Switch button for PWRBTN, RESET, SLEEP, LID

## 1.2 Specifications

- **CPU**
  - COM Express™ type 6 module.
- **System Chipset**
  - On the COM Express™ module.
- **BIOS**
  - On the COM Express™ module.
- **System Memory**
  - On the COM Express™ module.
- **Onboard Multi I/O**
  - Two RS-232 TX/RX ports.
  - Two RS-232/422/485 ports.
- **Serial ATA**
  - Four SATA-600 connectors.
- **Ethernet**
  - One RJ-45 interface for 1000/100/10Mbps.
- **Audio**
  - HD audio with line-in/line-out and MIC-in audio jack.
- **USB Interface**
  - Two USB ports with fuse protection and comply with USB Spec. Rev. 2.0.
  - Four USB ports comply with USB Spec. Rev. 3.0.
- **SPI**
  - Supported.
- **SMBus**
  - Supported.
- **SD card slot**
  - One SD card slot
- **Digital I/O**
  - Four input channels and four output channels.
- **Port 80 Display**
  - Dual 7 segments Port 80 display for convenient debugging purpose through LPC interface.
- **Display**
  - One 40-pin connector for 18/24-bit single/dual channel LVDS and one 8-pin inverter connector.
  - One eDP connector.
  - One 15-pin D-Sub connector as VGA connector.
  - One Display Port.
  - One HDMI.
  - One DVI-D.



- **Expansion Interface**
  - One PCIe x16 slot.
  - One PCIe x4 slot.
  - Two PCI-Express Mini Card socket which complies with PCI-Express Mini Card Spec. V1.2.
  - Two PCIe x1 slots.
- **Battery**
  - Lithium 3V/220mAH.
- **Size**
  - 244 x 291mm.
- **Board Thickness**
  - 1.6mm.
- **Operation Temperature**
  - -40°C ~ +85°C (-104°F ~ 185°F).
- **Operation Humidity**
  - 10% ~ 95% relative humidity, non-condensing.



Note

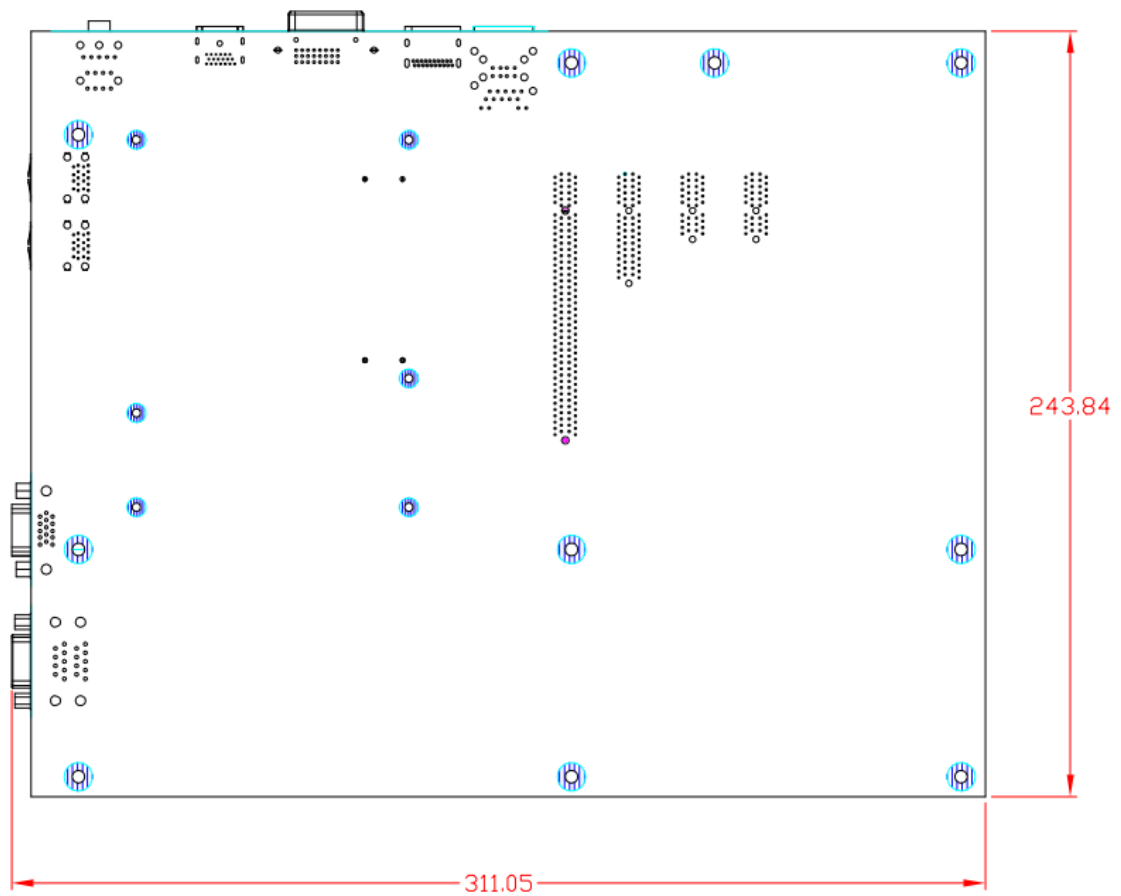
*All specifications and images are subject to change without notice.*

## 1.3 Utilities Supported

- Audio driver

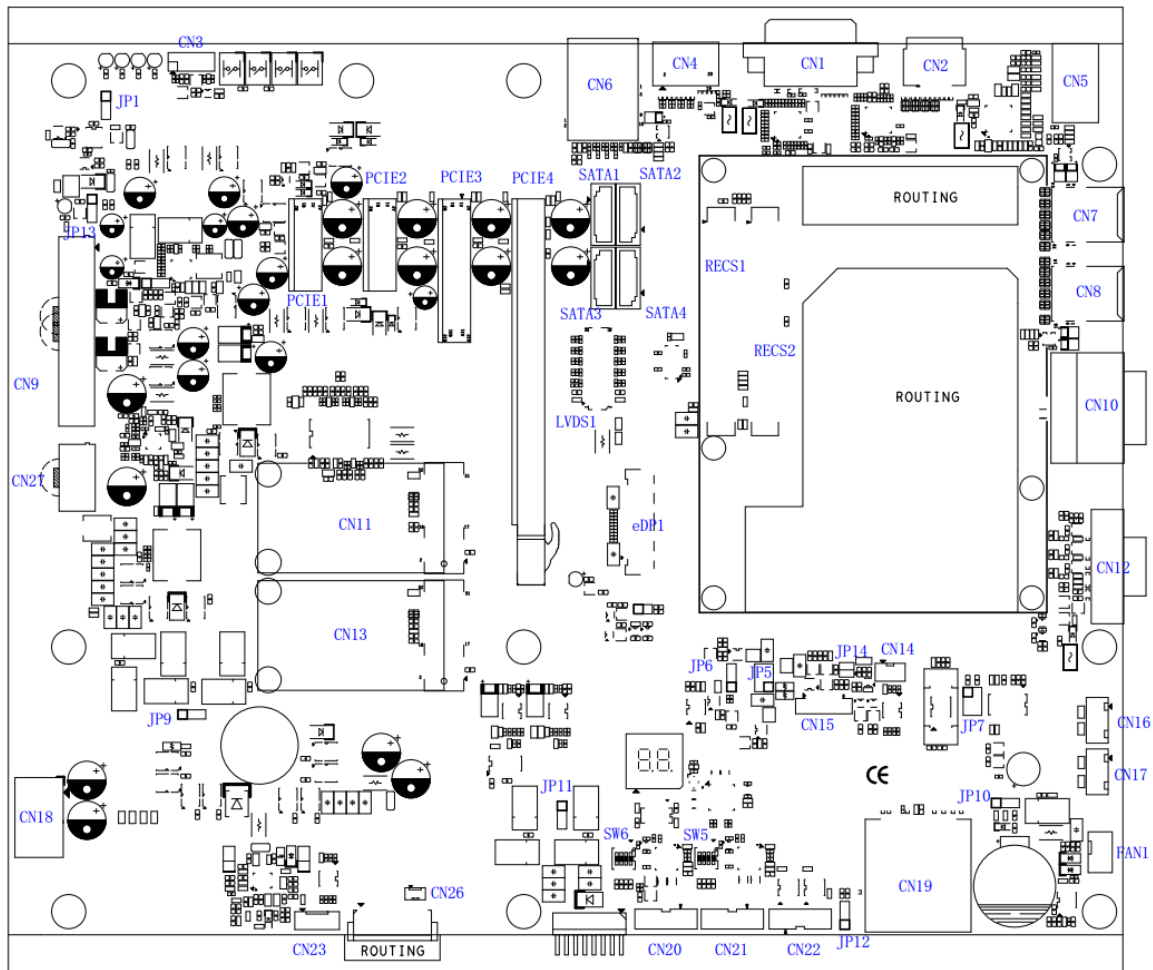
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**Bottom Side**

## 2.2 Board Layout

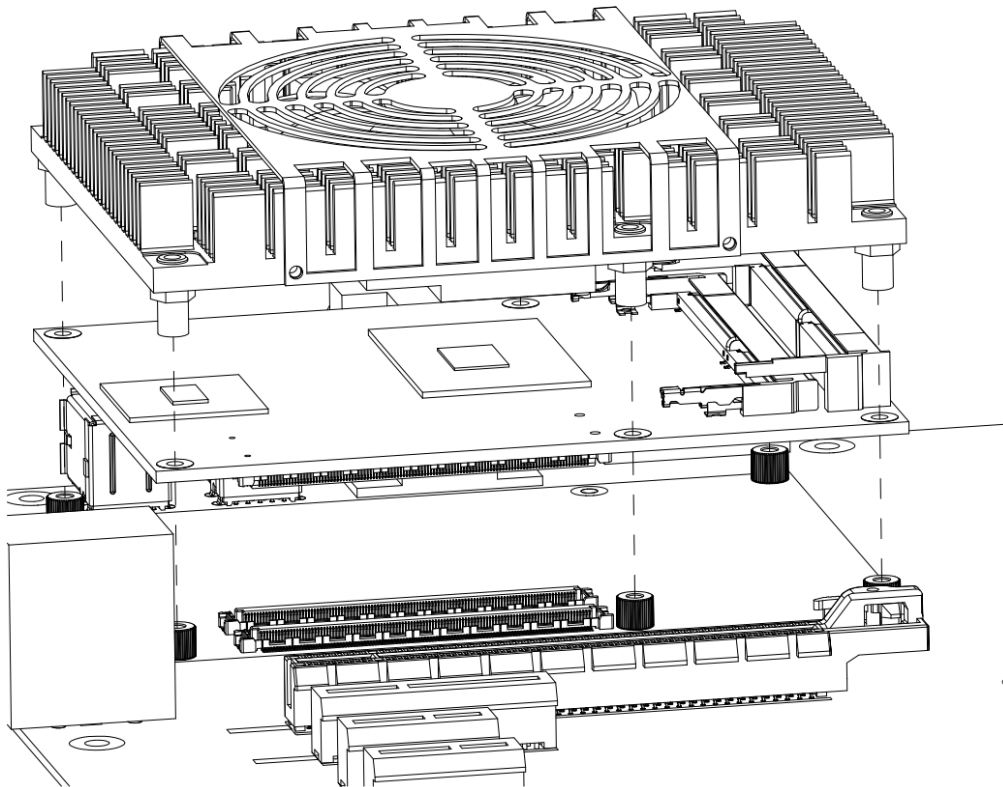


Top Side

## 2.3 Installing CEM Module and Heatsink

For thermal dissipation, a heatsink enables the components on the CEM module to dissipate heat efficiently. All heat generating components are thermally conducted to the heatsink in order to avoid hot spots. Below images illustrate how to install the heatsink.

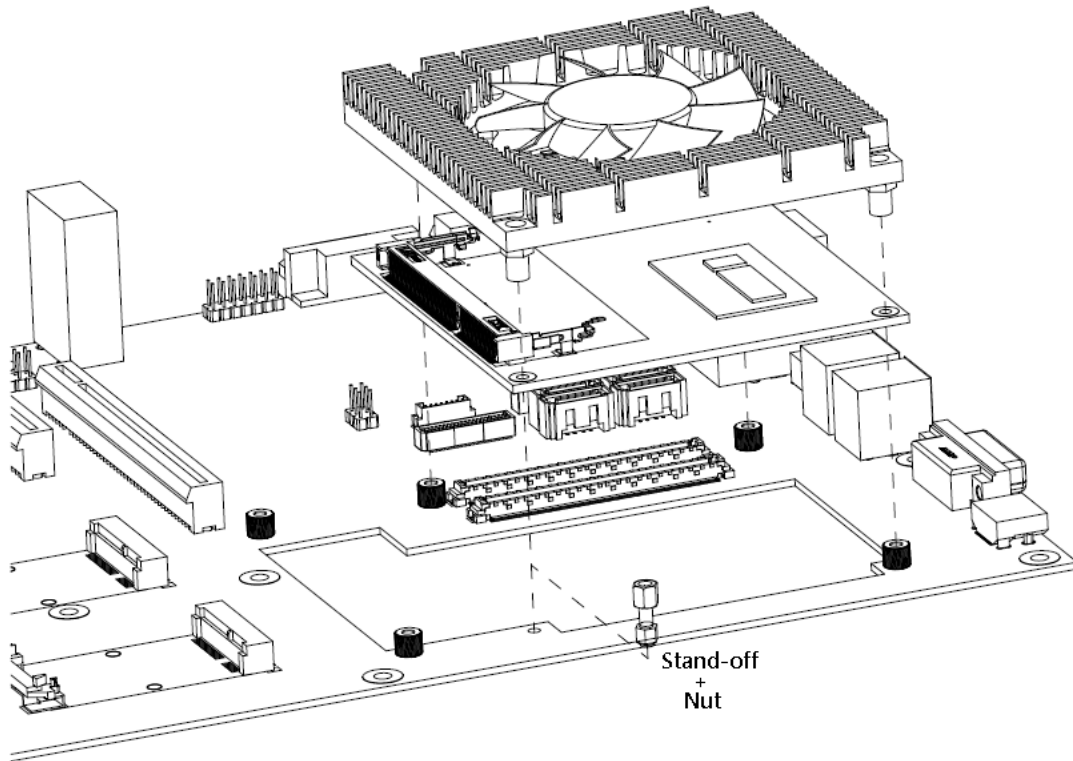
1. There is a protective plastic covering on the thermal pads. This must be removed before the heatsink can be mounted.
2. Each heatsink is designed for a specific CEM module. The thermal pads on the heatsink are designed to make contact with the necessary components on the CEM module. When mounting the heatsink you must make sure that the thermal pads on the heatsink make complete contact (no space between thermal pad and component) with the corresponding components on the CEM module. This is especially critical for CEM modules that have higher CPU speeds (for example 1.0GHz or more) to ensure that the heatsink acts as a proper thermal interface for cooling solutions.
3. This CPU module has six assembly holes for installing heatsink plate. Use the six screws to secure the heatsink plate to the CEM module. Be careful not to over-tighten the screws.





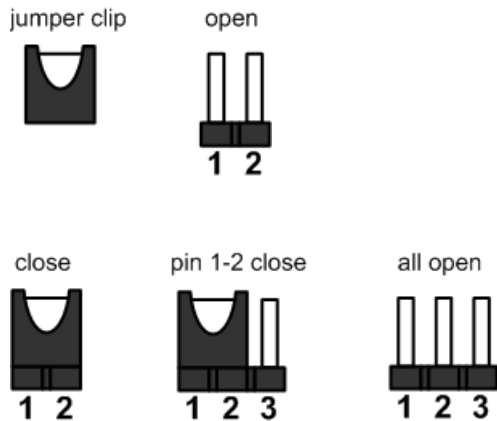
Note

**When installing the compact size CEM module on CEB94011, please add stand-off and secure with nut. Then, use the screws to secure the heatsink plate to the CEM module.**



## 2.4 Jumper Settings

Jumper is a small component consisting of jumper clip and jumper pins. Install jumper clip on 2 jumper pins to close. And remove jumper clip from 2 jumper pins to open. Below illustration shows how to set up jumper.



Properly configure jumper settings on the CEB94011 to meet your application purpose. Below you can find a summary table of all jumpers and onboard default settings.



Note

**Once the default jumper setting needs to be changed, please do it under power-off condition.**

Jumper	Description	Setting
JP1	Auto Power On Default: Disable	2-3 Close
JP5	LVDS Voltage Selection Default: +3.3V	1-2 Close
JP6	LVDS/eDP Function Selection Default: LVDS	1-2 Close
JP7	Boot BIOS Selection Default: Boot from Module BIOS	1-3, 2-4 Close
JP9	Power Input Mode Selection Default: ATX/AT mode	2-3 Close
JP11		1-2 Close
JP10	Restore BIOS Optimal Defaults Default: Normal Operation	1-2 Close
JP12	DIO/SD Card Function Selection Default: DIO	1-2 Close
JP13	Thermal Trip Indicator Default: Disable LED	1-2 Close
JP14	LVDS Brightness Control Mode Setting Default: PWM mode	1-2 Close



### 2.4.1 Auto Power On (JP1)

If JP1 is enabled for power input, the system will be automatically power on without pressing soft power button. If JP1 is disabled for power input, it is necessary to manually press soft power button to power on the system.

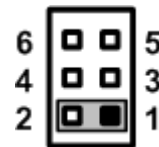
Function	Setting
Enable auto power on	1-2 close
Disable auto power on (Default)	2-3 close



### 2.4.2 LVDS Voltage Selection (JP5)

The board supports voltage selection for flat panel displays. Use this jumper to set LVDS connector (LVDS1) pin 1~6 VCCM to +3.3V, +5V or +12V. To prevent hardware damage, before connecting please make sure that the input voltage of flat panel is correct.

Function	Setting
+3.3V (Default)	1-2 close
+5V	1-3 close
+12V	5-6 close



### 2.4.3 LVDS/eDP Function Selection (JP6)

The JP6 is for LVDS or eDP function selection.

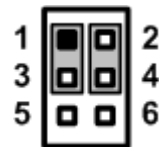
Function	Setting
LVDS (Default)	1-2 close
eDP	2-3 close



### 2.4.4 Boot BIOS Selection (JP7)

Use JP7 to select system to boot from module BIOS or baseboard BIOS.

Function	Setting
Module BIOS (Default)	1-3, 2-4 close
Baseboard BIOS	1-3, 4-6 close



### 2.4.5 Power Input Mode Selection (JP9 and JP11)

Use the JP9 and JP11 to select ATX/AT or wide range power input mode.

Function	Setting
ATX/AT mode (Default)	JP9: 2-3 close JP11: 1-2 close
+5V ~ 20V for wide range power input module use	JP9: 1-2 close JP11: open



### 2.4.6 Restore BIOS Optimal Defaults (JP10)

Put jumper clip to pin 2-3 for a few seconds then move it back to pin 1-2. Doing this procedure can restore BIOS optimal defaults.

Function	Setting
Normal (Default)	1-2 close
Restore BIOS optimal defaults	2-3 close



### 2.4.7 DIO/SD Card Function Selection (JP12)

The JP12 is for Digital I/O or SD card function selection.

Function	Setting
DIO (Default)	1-2 close
SD card	2-3 close



### 2.4.8 Thermal Trip Indicator (JP13)

Use JP13 to enable or disable thermal trip LED indicator.

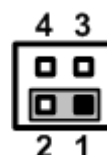
Function	Setting
Disable LED (Default)	1-2 close
Enable LED	2-3 close



### 2.4.9 LVDS Brightness Control Mode Setting (JP14)

The JP14 enables you to select PWM or voltage control mode for inverter connector (CN15). These two control modes are for adjusting the brightness of LVDS panel.

Function	Setting
PWM mode(Default)	1-2 close
Voltage mode	2-3 close



## 2.5 Connectors

Signals go to other parts of the system through connectors. Loose or improper connection might cause problems, please make sure all connectors are properly and firmly connected. Here is a summary table which shows all connectors on the hardware.

Connector	Description
CN1	DVI-D Connector
CN2	HDMI Connector
CN3	Front Panel Connector
CN4	DisplayPort Connector
CN5	Audio Jack
CN6	Ethernet, USB 2.0 Port 4 and 5 Stack
CN7	USB 3.0 Port 0 and 1 Stack
CN8	USB 3.0 Port 2 and 3 Stack
CN9	24-pin ATX Power Connector
CN10	COM D-Sub Connector
CN11, CN13	PCI-Express Mini Card Connectors
CN12	VGA Connector
CN14, CN26	I2C Connectors
CN15	Inverter Connector
CN16~ CN17	SATA Power Connectors
CN18	Wide Range Power Input Connector
CN19	SD Card Slot
CN20~CN21	COM1 and COM2 Connectors
CN22	Digital I/O Connector
CN23	SMBus Connector
CN27	8-pin +12V ATX Power Connector
eDP1	eDP Connector
LVDS1	LVDS Connector
FAN1	CPU Fan Connector
PCIE1~PCIE2	PCIe x1 Slots
PCIE3	PCIe x4 Slot
PCIE4	PCIe x16 Slot
SATA1~SATA4	SATA Connectors
RECS1~ RECS2	COM Express™ Connectors



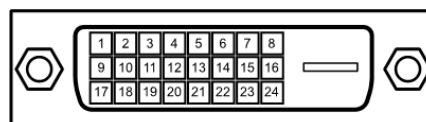
### Note

*The module design defines whether or not the system supports USB 3.0 and SATA 3.0.*

### 2.5.1 DVI-D Connector (CN1)

DVI-D (Digital Video Interface – Digital only) provides transmission of fast and high quality digital video between source device and display device.

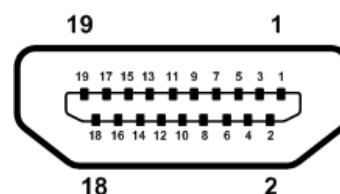
Pin	Signal	Pin	Signal
1	DVI_DATA2-	2	DVI_DATA2+
3	GND	4	N.C.
5	N.C.	6	DVI_SPC
7	DVI_SPD	8	N.C.
9	DVI_DATA1-	10	DVI_DATA1+
11	GND	12	N.C.
13	N.C.	14	+5V
15	GND	16	DVI_HTPLG
17	DVI_DATA0-	18	DVI_DATA0+
19	GND	20	N.C.
21	N.C.	22	GND
23	DVI_CLK+	24	DVI_CLK-



### 2.5.2 HDMI Connector (CN2)

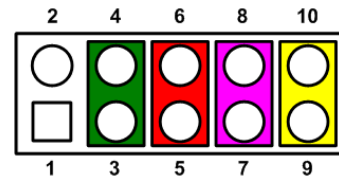
The HDMI (High-Definition Multimedia Interface) is a compact digital interface which is capable of transmitting high-definition video and high-resolution audio over a single cable. Its interface is available through connector CN2.

Pin	Signal	Pin	Signal
1	HDMI OUT_DATA2+	2	GND
3	HDMI OUT_DATA2-	4	HDMI OUT_DATA1+
5	GND	6	HDMI OUT_DATA1-
7	HDMI OUT_DATA0+	8	GND
9	HDMI OUT_DATA0-	10	HDMI OUT Clock+
11	GND	12	HDMI OUT Clock-
13	N.C.	14	N.C.
15	HDMI OUT_SCL	16	HDMI OUT_SDA
17	GND	18	+5V
19	HDMI_HTPLG		



### 2.5.3 Front Panel Connector (CN3)

Pin	Signal	Pin	Signal
1	GND	2	ATX_PSON-
3	GND	4	PWR LED
5	GND	6	PWR ON
7	GND	8	RESET
9	HDD Activity LED-	10	HDD Activity LED+



#### ATX Power Supply ON

Pin 1 and Pin 2 connect to switch button. If switch button turn on, it means ATX power supply forcing to turn on state. Otherwise, system will control ATX power supply state.

#### Power LED

Pin 4 connects anode(+) of LED and pin 3 connects cathode(-) of LED. The power LED lights up when the system is powered on.

#### Power On/Off Button

Pin 5 and 6 connect the power button on front panel to the CPU board, which allows users to turn on or off power supply.

#### System Reset Switch

Pin 7 and 8 connect the case-mounted reset switch that reboots your computer without turning off the power switch. It is a better way to reboot your system for a longer life of system power supply.

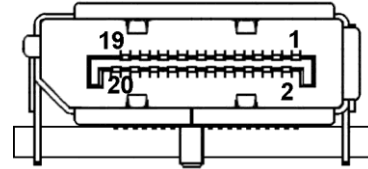
#### HDD Activity LED

This connection is linked to hard drive activity LED on the control panel. LED flashes when HDD is being accessed. Pin 9 and 10 connect the hard disk drive to the front panel HDD LED, pin 9 is assigned as cathode(-) and pin 10 is assigned as anode(+).

### 2.5.4 DisplayPort Connector (CN4)

The DisplayPort interface is available through connector CN4.

Pin	Signal
1	DDSP_TX_0_DP
2	GND
3	DDSP_TX_0_DN
4	DDSP_TX_1_DP
5	GND
6	DDSP_TX_1_DN
7	DDSP_TX_2_DP
8	GND
9	DDSP_TX_2_DN
10	DDSP_TX_3_DP
11	GND
12	DDSP_TX_3_DN
13	DP3_AUX_SEL
14	GND
15	DP3_AUX+
16	GND
17	DP3_AUX-
18	DP3_HPD
19	GND
20	+3.3V



### 2.5.5 Audio Jack (CN5)

Install audio driver, then attach audio devices to CN5.

Pin Color	Signal
Blue	LINE IN
Green	LINE OUT
Pink	MIC

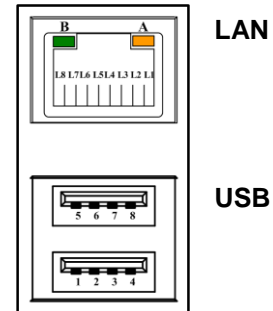


## 2.5.6 Ethernet and USB 2.0 Port Stack (CN6)

The board is equipped with high performance plug and play Ethernet interface fully compliant with the IEEE 802.3 standard. The Ethernet port uses RJ-45 connector. Connection can be established by plugging one end of the Ethernet cable into this RJ-45 connector and the other end to a 1000/100/10-Base-T hub.

The lower double-deck USB connector is USB 2.0 compliant (480Mbps) that can be connected to any USB peripheral, such as keyboard, mouse or scanner.

Pin	LAN Signal	Pin	LAN Signal
L1	MDI0+	L5	MDI2+
L2	MDI0-	L6	MDI2-
L3	MDI1+	L7	MDI3+
L4	MDI1-	L8	MDI3-
A	Activity link LED OFF: No link Blinking: Link established; data activity detected		
B	Speed LED Orange: 1Gbps data rate Green: 100Mbps data rate OFF: 10Mbps data rate		



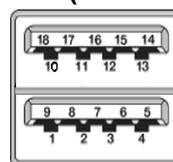
Pin	USB Port 4	Pin	USB Port 5
1	USB_PWR45 (+5V level)	5	USB_PWR45 (+5V level)
2	USB_DATA4-	6	USB_DATA5-
3	USB_DATA4+	7	USB_DATA5+
4	GND	8	GND

## 2.5.7 USB 3.0 Stacks (CN7 and CN8)

This Universal Serial Bus 3.0 (USB 3.0) connector on this board is for installing versatile USB interface peripherals. It is an 18-pin standard USB connector which is also compatible with USB 2.0 device.

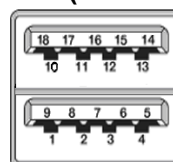
Pin	Signal	Pin	Signal
1	USB_PWR01	10	USB_PWR01
2	USB_Data0-	11	USB_Data1-
3	USB_Data0+	12	USB_Data1+
4	GND	13	GND
5	SSRX0-	14	SSRX1-
6	SSRX0+	15	SSRX1+
7	GND Drain	16	GND Drain
8	SSTX0-	17	SSTX1-
9	SSTX0+	18	SSTX1+

**CN7 (for USB 3.0 port 0 and 1)**



Pin	Signal	Pin	Signal
1	USB_PWR23	10	USB_PWR23
2	USB_Data2-	11	USB_Data3-
3	USB_Data2+	12	USB_Data3+
4	GND	13	GND
5	SSRX2-	14	SSRX3-
6	SSRX2+	15	SSRX3+
7	GND Drain	16	GND Drain
8	SSTX2-	17	SSTX3-
9	SSTX2+	18	SSTX3+

**CN8 (for USB 3.0 port 2 and 3)**





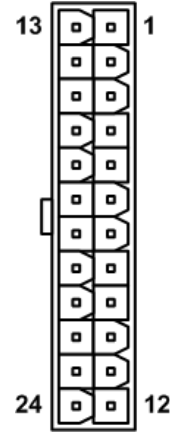
### 2.5.8 ATX Power Connectors (CN9 and CN27)

Steady and sufficient power can be supplied to all components on the board by connecting power connector. Please make sure all components and devices are properly installed before connecting the power connector.

External power supply plug fits into this connector in only one orientation. Properly press down power supply plug until it completely and firmly fits into this connector. Loose connection may cause system instability.

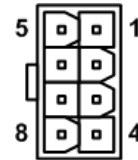
The CN9 is a 24-pin ATX power connector.

Pin	Signal	Pin	Signal
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	GND	15	GND
4	+5V	16	PS_ON#
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	PWR_ON	20	N.C.
9	+5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	GND



The CN27 is an 8-pin +12V ATX power connector.

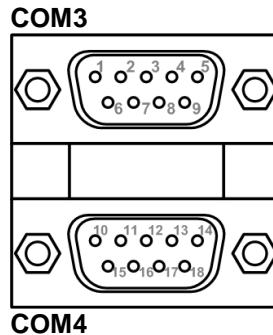
Pin	Signal	Pin	Signal
1	GND	5	+12V
2	GND	6	+12V
3	GND	7	+12V
4	GND	8	+12V



### 2.5.9 COM D-Sub Connector (CN10)

The CN10 is a double-deck 9-pin D-Sub connector for RS-232 carrying only TXD and RXD signals from COM Express™ module.

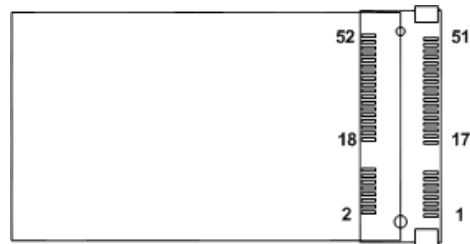
Pin	Pin	Signal
1	10	NC
2	11	Receive Data (RXD)
3	12	Transmit Data (TXD)
4	13	NC
5	14	Ground (GND)
6	15	NC
7	16	NC
8	17	NC
9	18	NC



### 2.5.10 PCI-Express Mini Card Connectors (CN11 and CN13)

CN11 and CN13 are PCI-Express Mini Card connectors which support a PCI-Express x1 link and a USB 2.0 link. The PCI-Express Mini Card can be applied to either PCI-Express or USB 2.0.

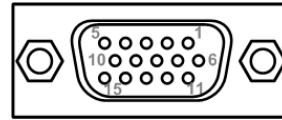
Pin	Signal	Pin	Signal
1	WAKE#	2	+3.3VSB
3	No use	4	GND
5	No use	6	+1.5V
7	CLKREQ#	8	No use
9	GND	10	No use
11	REFCLK-	12	No use
13	REFCLK+	14	No use
15	GND	16	No use
17	No use	18	GND
19	No use	20	No use
21	GND	22	PERST#
23	PCIE_RX4-	24	+3.3VSB
25	PCIE_RX4+	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLK
31	PCIE_TX4-	32	SMB_DATA
33	PCIE_TX4+	34	GND
35	GND	36	C_USB_PN6
37	GND	38	C_USB_PP6
39	No use	40	GND
41	No use	42	No use
43	No use	44	No use
45	No use	46	No use
47	No use	48	+1.5V
49	No use	50	GND
51	No use	52	+3.3VSB



### 2.5.11 VGA Connector (CN12)

The CN12 is a standard 15-pin D-Sub connector which is commonly used for VGA monitor. This VGA interface configuration can be configured via software utility.

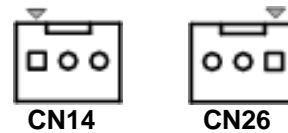
Pin	Signal	Pin	Signal
1	Red	2	Green
3	Blue	4	N/A
5	GND	6	AGND
7	AGND	8	AGND
9	N.C.	10	GND
11	N.C.	12	DDC DATA
13	Horizontal Sync	14	Vertical Sync
15	DDC CLK		



### 2.5.12 I2C Connectors (CN14 and CN26)

The I2C interfaces are available through CN14 and CN26. The I2C is a simple bus for the purpose of lightweight communication.

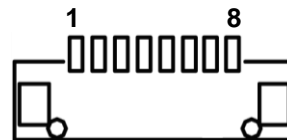
Pin	Signal
1	I2C_CLK
2	I2C_DATA
3	GND



### 2.5.13 Inverter Connector (CN15)

The CN15 is an 8-pin connector for LVDS inverter interface. We strongly recommend you to use the matching DF13-8S-1.25C connector to avoid malfunction.

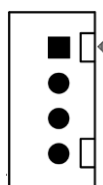
Pin	Signal
1	VCCM12 (+12V level)
2	VCCM12 (+12V level)
3	+5V (+5V level)
4	L_BLKEN
5	GND
6	GND
7	GND
8	LVDS_BKLT_C (Brightness Control)



### 2.5.14 SATA Power Connectors (CN16 and CN17)

These two connectors are for SATA (Serial ATA) power input.

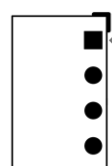
Pin	Signal
1	+12V
2	GND
3	GND
4	+5V



### 2.5.15 Wide Range Power Input Connectors (CN18)

The wide range power input supports 5V to 20V.

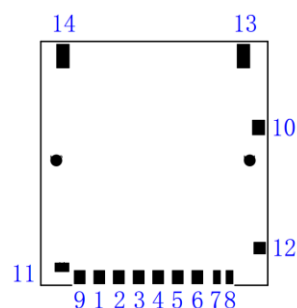
Pin	Signal
1	Positive electrode input
2	Positive electrode input
3	GND input
4	GND input



### 2.5.16 SD Card Slot (CN19)

The CN19 is a standard type SD card slot for user development. Use JP12 to select DIO or SD card function, see section 2.4.7.

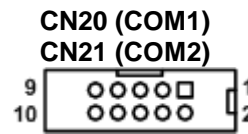
Pin	Signal
1	DATA3
2	CMD
3	GND
4	VDD(3V)
5	CLK
6	GND
7	DATA0
8	DATA1
9	DATA2
10	WP
11	CDN
12	GND
13	SHILD(GND)
14	SHILD(GND)



### 2.5.17 COM1 and COM2 Connectors (CN20 and CN21)

The board has two RS-232/422/485 ports for user development.

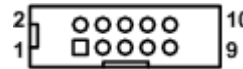
Pin	RS-232	RS-422	RS-485
1	DCD	TX-	D-
2	RX	TX+	D+
3	TX	RX+	No use
4	DTR	RX-	No use
5	GND	GND	GND
6	DSR	No use	No use
7	RTS	No use	No use
8	CTS	No use	No use
9	RI	No use	No use
10	NC	No use	No use



### 2.5.18 Digital I/O Port Connector (CN22)

The board has an 8-channel (4 inputs and 4 outputs) digital I/O that meets requirements for a system customary automation control. The digital I/O can be configured to control cash drawers and sense warning signals from an Uninterrupted Power System (UPS), or perform store security control. You may use software programming to control these digital signals.

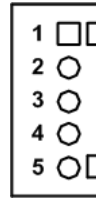
Pin	Signal	Pin	Signal
1	GPI0	2	GPO0
3	GPI1	4	GPO1
5	GPI2	6	GPO2
7	GPI3	8	GPO3
9	+5V	10	GND



### 2.5.19 SMBus Connector (CN23)

The SMBus interface is available through CN23. The SMBus (System Management Bus) is a simple bus for the purpose of lightweight communication.

Pin	Signal
1	+3.3V
2	SMB_CLK_S
3	SMB_DATA_S
4	SMB_ALERT
5	GND



### 2.5.20 eDP Connector (eDP1)

The eDP interface is available through 40-pin connector (eDP1). The eDP is a design to replace internal digital LVDS links in computer monitor panels and TV panels. You can select LVDS or eDP function with JP6, see section 2.4.3.

Pin	Signal
1	VCC
2	VCC
3	VCC
4	VCC
5	NC
6	VSS
7	VSS_TX_2_DP
8	VSS
9	VSS
10	HPD
11	GND
12	TX3N
13	TX3P
14	GND
15	TX2N
16	TX2P
17	GND
18	TX1N
19	TX1P
20	GND
21	TX0N
22	TX0P
23	GND
24	AUXP
25	AUXN
26	GND
27	VSS_BKLT
28	VSS_BKLT
29	VSS_BKLT
30	VSS_BKLT
31	NC
32	BKLT_CTRL
33	BKLT_EN
34	NC
35	NC
36	VCC_EDP
37	VCC_EDP
38	VCC_EDP
39	VCC_EDP
40	NC

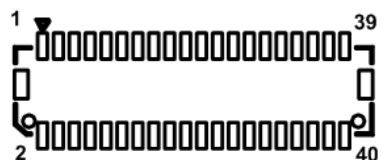


### 2.5.21 LVDS Connector (LVDS1)

This board has a 2x20-pin connector for LVDS LCD interface. It is strongly recommended to use the matching JST SHDR-40VS-B connector for LVDS interface. Pin 1~6 VCCM can be set to +3.3V, +5V or +12V by setting JP5 (see section 2.4.2).

#### 18-bit single channel

Pin	Signal	Pin	Signal
1	VCCM	2	VCCM
3	VCCM	4	VCCM
5	VCCM	6	VCCM
7	N.C	8	N.C
9	GND	10	GND
11	N.C	12	N.C
13	N.C	14	N.C
15	GND	16	GND
17	N.C	18	N.C
19	N.C	20	N.C
21	GND	22	GND
23	Channel A D0-	24	N.C
25	Channel A D0+	26	N.C
27	GND	28	GND
29	Channel A D1-	30	N.C
31	Channel A D1+	32	N.C
33	GND	34	GND
35	Channel A D2-	36	Channel A CLK-
37	Channel A D2+	38	Channel A CLK+
39	GND	40	GND





**24-bit single channel**

Pin	Signal	Pin	Signal
1	VCCM	2	VCCM
3	VCCM	4	VCCM
5	VCCM	6	VCCM
7	N.C	8	N.C
9	GND	10	GND
11	N.C	12	N.C
13	N.C	14	N.C
15	GND	16	GND
17	N.C	18	N.C
19	N.C	20	N.C
21	GND	22	GND
23	Channel A D0-	24	N.C
25	Channel A D0+	26	N.C
27	GND	28	GND
29	Channel A D1-	30	Channel A D3-
31	Channel A D1+	32	Channel A D3+
33	GND	34	GND
35	Channel A D2-	36	Channel A CLK-
37	Channel A D2+	38	Channel A CLK+
39	GND	40	GND

**18-bit dual channel**

Pin	Signal	Pin	Signal
1	VCCM	2	VCCM
3	VCCM	4	VCCM
5	VCCM	6	VCCM
7	N.C	8	N.C
9	GND	10	GND
11	N.C	12	Channel B D0-
13	N.C	14	Channel B D0+
15	GND	16	GND
17	Channel B CLK-	18	Channel B D1-
19	Channel B CLK+	20	Channel B D1+
21	GND	22	GND
23	Channel A D0-	24	Channel B D2-
25	Channel A D0+	26	Channel B D2+
27	GND	28	GND
29	Channel A D1-	30	N.C
31	Channel A D1+	32	N.C
33	GND	34	GND
35	Channel A D2-	36	Channel A CLK-
37	Channel A D2+	38	Channel A CLK+
39	GND	40	GND

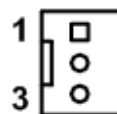
**24-bit dual channel**

Pin	Signal	Pin	Signal
1	VCCM	2	VCCM
3	VCCM	4	VCCM
5	VCCM	6	VCCM
7	N.C	8	N.C
9	GND	10	GND
11	Channel B D3-	12	Channel B D0-
13	Channel B D3+	14	Channel B D0+
15	GND	16	GND
17	Channel B CLK-	18	Channel B D1-
19	Channel B CLK+	20	Channel B D1+
21	GND	22	GND
23	Channel A D0-	24	Channel B D2-
25	Channel A D0+	26	Channel B D2+
27	GND	28	GND
29	Channel A D1-	30	Channel A D3-
31	Channel A D1+	32	Channel A D3+
33	GND	34	GND
35	Channel A D2-	36	Channel A CLK-
37	Channel A D2+	38	Channel A CLK+
39	GND	40	GND

### 2.5.22 CPU Fan Connector (FAN1)

Fan is needed for cooling down CPU temperature. The CPU fan interface is available through FAN1.

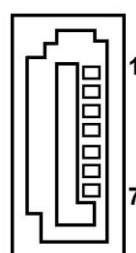
Pin	Signal
1	GND
2	VIN
3	FAN_TACHIN



### 2.5.23 SATA Connectors (SATA1~SATA4)

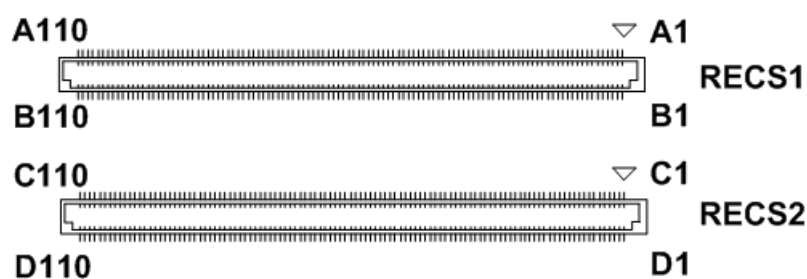
The Serial Advanced Technology Attachment (Serial ATA or SATA) connector is computer bus interface for connecting to devices such as hard disk drive.

Pin	Signal
1	GND
2	SATA_TX+
3	SATA_TX-
4	GND
5	SATA_RX-
6	SATA_RX+
7	GND



### 2.5.24 COM Express™ Connectors (RECS1 and RECS2)

The RECS1 and RECS2 are 220-pin connectors for connecting COM Express™ module and COM Express™ baseboard. The pin assignments are as follows.



**CEB94011 COM Express™ Type 6 Development Baseboard**

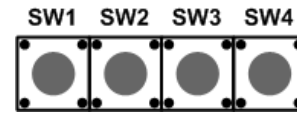
Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
A1	GND (FIXED)	B1	GND (FIXED)	C1	GND (FIXED)	D1	GND (FIXED)
A2	GBE0_MDI3-	B2	GBE0_ACT#	C2	GND (FIXED)	D2	GND (FIXED)
A3	GBE0_MDI3+	B3	LPC_FRAME#	C3	USB_SSRX0-	D3	USB_SSTX0-
A4	GBE0_LINK100#	B4	LPC_AD0	C4	USB_SSRX0+	D4	USB_SSTX0+
A5	GBE0_LINK1000#	B5	LPC_AD1	C5	GND (FIXED)	D5	GND (FIXED)
A6	GBE0_MDI2-	B6	LPC_AD2	C6	USB_SSRX1-	D6	USB_SSTX1-
A7	GBE0_MDI2+	B7	LPC_AD3	C7	USB_SSRX1+	D7	USB_SSTX1+
A8	GBE0_LINK#	B8	LPC_DRQ0#	C8	GND (FIXED)	D8	GND (FIXED)
A9	GBE0_MDI1-	B9	LPC_DRQ1#(N.C)	C9	USB_SSRX2-	D9	USB_SSTX2-
A10	GBE0_MDI1+	B10	LPC_CLK	C10	USB_SSRX2+	D10	USB_SSTX2+
A11	GND (FIXED)	B11	GND (FIXED)	C11	GND (FIXED)	D11	GND (FIXED)
A12	GBE0_MDI0-	B12	PWRBTN#	C12	USB_SSRX3-	D12	USB_SSTX3-
A13	GBE0_MDI0+	B13	SMB_CK	C13	USB_SSRX3+	D13	USB_SSTX3+
A14	GBE0_CTREF	B14	SMB_DAT	C14	GND (FIXED)	D14	GND (FIXED)
A15	SUS_S3#	B15	SMB_ALERT#	C15	DDI1_PAIR6+(N.C)	D15	DDI1_CTRLCLK_AUX+
A16	SATA0_TX+	B16	SATA1_TX+	C16	DDI1_PAIR6-(N.C)	D16	DDI1_CTRLDATA_AUX-
A17	SATA0_TX-	B17	SATA1_TX-	C17	N.C.	D17	N.C.
A18	SUS_S4#(N.C)	B18	SUS_STAT#(N.C)	C18	N.C.	D18	N.C.
A19	SATA0_RX+	B19	SATA1_RX+	C19	PCIE_RX6+	D19	PCIE_TX6+
A20	SATA0_RX-	B20	SATA1_RX-	C20	PCIE_RX6-	D20	PCIE_TX6-
A21	GND (FIXED)	B21	GND (FIXED)	C21	GND (FIXED)	D21	GND (FIXED)
A22	SATA2_TX+	B22	SATA3_TX+	C22	PCIE_RX7+	D22	PCIE_TX7+
A23	SATA2_TX-	B23	SATA3_TX-	C23	PCIE_RX7-	D23	PCIE_TX7-
A24	N.C.	B24	PWR_OK	C24	DDI1_HPD	D24	N.C.
A25	SATA2_RX+	B25	SATA3_RX+	C25	DDI1_PAIR4+(N.C)	D25	N.C.
A26	SATA2_RX-	B26	SATA3_RX-	C26	DDI1_PAIR4-(N.C)	D26	DDI1_PAIR0+
A27	BATLOW#(N.C)	B27	WDT	C27	N.C.	D27	DDI1_PAIR0-
A28	(S)ATA_ACT#	B28	AC/HDA_SDIN2(N.C)	C28	N.C.	D28	N.C.
A29	AC/HDA_SYNC	B29	AC/HDA_SDIN1(N.C)	C29	DDI1_PAIR5+(N.C)	D29	DDI1_PAIR1+
A30	AC/HDA_RST#	B30	AC/HDA_SDIN0	C30	DDI1_PAIR5-(N.C)	D30	DDI1_PAIR1-
A31	GND (FIXED)	B31	GND (FIXED)	C31	GND (FIXED)	D31	GND (FIXED)
A32	AC/HDA_BITCLK	B32	SPKR	C32	DDI2_CTRLCLK_AUX+	D32	DDI1_PAIR2+
A33	AC/HDA_SDOOUT	B33	I2C_CK	C33	DDI2_CTRLDATA_AUX-	D33	DDI1_PAIR2-
A34	BIOS_DIS0#	B34	I2C_DAT	C34	DDI2_DDC_AUX_SEL	D34	DDI1_DDC_AUX_SEL
A35	THRMTRIP#	B35	THRM#(N.C)	C35	N.C.	D35	N.C.
A36	USB6-	B36	USB7-	C36	DDI3_CTRLCLK_AUX+	D36	DDI1_PAIR3+
A37	USB6+	B37	USB7+	C37	DDI3_CTRLDATA_AUX-	D37	DDI1_PAIR3-
A38	USB_6_7_OC#	B38	USB_4_5_OC#	C38	DDI3_DDC_AUX_SEL	D38	N.C.
A39	USB4-	B39	USB5-	C39	DDI3_PAIR0+	D39	DDI2_PAIR0+
A40	USB4+	B40	USB5+	C40	DDI3_PAIR0-	D40	DDI2_PAIR0-
A41	GND (FIXED)	B41	GND (FIXED)	C41	GND (FIXED)	D41	GND (FIXED)
A42	USB2-	B42	USB3-	C42	DDI3_PAIR1+	D42	DDI2_PAIR1+
A43	USB2+	B43	USB3+	C43	DDI3_PAIR1-	D43	DDI2_PAIR1-
A44	USB_2_3_OC#	B44	USB_0_1_OC#	C44	DDI3_HPD	D44	DDI2_HPD
A45	USB0-	B45	USB1-	C45	N.C.	D45	N.C.
A46	USB0+	B46	USB1+	C46	DDI3_PAIR2+	D46	DDI2_PAIR2+
A47	VCC_RTC	B47	EXCD1_PERST#(N.C)	C47	DDI3_PAIR2-	D47	DDI2_PAIR2-
A48	EXCD0_PERST#	B48	EXCD1_CPPE#(N.C)	C48	N.C.	D48	N.C.
A49	EXCD0_CPPE#	B49	SYS_RESET#	C49	DDI3_PAIR3+	D49	DDI2_PAIR3+
A50	LPC_SERIRQ	B50	CB_RESET#	C50	DDI3_PAIR3-	D50	DDI2_PAIR3-
A51	GND (FIXED)	B51	GND (FIXED)	C51	GND (FIXED)	D51	GND (FIXED)
A52	PCIE_TX5+	B52	PCIE_RX5+	C52	PEG_RX0+	D52	PEG_TX0+
A53	PCIE_TX5-	B53	PCIE_RX5-	C53	PEG_RX0-	D53	PEG_TX0-
A54	GPIO	B54	GPO1	C54	TYPE0#(N.C)	D54	PEG_LANE_RV#
A55	PCIE_TX4+	B55	PCIE_RX4+	C55	PEG_RX1+	D55	PEG_TX1+

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
A56	PCIE_TX4-	B56	PCIE_RX4-	C56	PEG_RX1-	D56	PEG_TX1-
A57	GND	B57	GPO2	C57	TYPE1#	D57	TYPE2#
A58	PCIE_TX3+	B58	PCIE_RX3+	C58	PEG_RX2+	D58	PEG_TX2+
A59	PCIE_TX3-	B59	PCIE_RX3-	C59	PEG_RX2-	D59	PEG_TX2-
A60	GND (FIXED)	B60	GND (FIXED)	C60	GND (FIXED)	D60	GND (FIXED)
A61	PCIE_TX2+	B61	PCIE_RX2+	C61	PEG_RX3+	D61	PEG_TX3+
A62	PCIE_TX2-	B62	PCIE_RX2-	C62	PEG_RX3-	D62	PEG_TX3-
A63	GPI1	B63	GPO3	C63	RSVD	D63	RSVD
A64	PCIE_TX1+	B64	PCIE_RX1+	C64	RSVD	D64	RSVD
A65	PCIE_TX1-	B65	PCIE_RX1-	C65	PEG_RX4+	D65	PEG_TX4+
A66	GND	B66	WAKE0#	C66	PEG_RE4-	D66	PEG_TX4-
A67	GPI2	B67	WAKE1#	C67	RSVD	D67	GND
A68	PCIE_TX0+	B68	PCIE_RX0+	C68	PEG_RX5+	D68	PEG_TX5+
A69	PCIE_TX0-	B69	PCIE_RX0-	C69	PEG_RX5-	D69	PEG_TX5-
A70	GND(FIXED)	B70	GND(FIXED)	C70	GND(FIXED)	D70	GND(FIXED)
A71	LVDS_A0+	B71	LVDS_B0+	C71	PEG_RX6+	D71	PEG_TX6+
A72	LVDS_A0-	B72	LVDS_B0-	C72	PEG_RX6-	D72	PEG_TX6-
A73	LVDS_A1+	B73	LVDS_B1+	C73	GND(FIXED)	D73	SDVO_CLK
A74	LVDS_A1-	B74	LVDS_B1-	C74	PEG_RX7+	D74	PEG_TX7+
A75	LVDS_A2+	B75	LVDS_B2+	C75	PEG_RX7-	D75	PEG_TX7-
A76	LVDS_A2-	B76	LVDS_B2-	C76	GND	D76	GND
A77	LVDS_VDD_EN	B77	LVDS_B3+	C77	RSVD	D77	RSVD
A78	LVDS_A3+	B78	LVDS_B3-	C78	PEG_RX8+	D78	PEG_TX8+
A79	LVDS_A3-	B79	LVDS_BKLT_EN	C79	PEG_RX8-	D79	PEG_TX8-
A80	GND(FIXED)	B80	GND(FIXED)	C80	GND(FIXED)	D80	GND(FIXED)
A81	LVDS_A_CK+	B81	LVDS_B_CK+	C81	PEG_RX9+	D81	PEG_TX9+
A82	LVDS_A_CK-	B82	LVDS_B_CK-	C82	PEG_RX9-	D82	PEG_TX9-
A83	LVDS_I2C_CK	B83	LVDS_BKLT_CTRL	C83	RSVD	D83	RSVD
A84	LVDS_I2C_DAT	B84	VCC_5V_SBY	C84	GND	D84	GND
A85	GPI3	B85	VCC_5V_SBY	C85	PEG_RX10+	D85	PEG_TX10+
A86	N.C.	B86	VCC_5V_SBY	C86	PEG_RX10-	D86	PEG_TX10-
A87	eDP_HPD	B87	VCC_5V_SBY	C87	GND	D87	GND
A88	PCIE0_CK_REF+	B88	BIOS_DIS1#	C88	PEG_RX11+	D88	PEG_TX11+
A89	PCIE0_CK_REF-	B89	VGA_RED	C89	PEG_RX11-	D89	PEG_TX11-
A90	GND (FIXED)	B90	GND (FIXED)	C90	GND (FIXED)	D90	GND (FIXED)
A91	SPI_POWER	B91	VGA_GRN	C91	PEG_RX12+	D91	PEG_TX12+
A92	SPI_MISO	B92	VGA_BLU	C92	PEG_RX12-	D92	PEG_TX12-
A93	GPO0	B93	VGA_HSYNC	C93	GND	D93	GND
A94	SPI_CLK	B94	VGA_VSYNC	C94	PEG_RX13+	D94	PEG_TX13+
A95	SPI_MOSI	B95	VGA_I2C_CK	C95	PEG_RX13-	D95	PEG_TX13-
A96	TPM_PP	B96	VGA_I2C_DAT	C96	GND	D96	GND
A97	TYPE10#(N.C)	B97	SPI_CS#	C97	RSVD	D97	RSVD
A98	SER0_TX(N.C)	B98	N.C.	C98	PEG_RX14+	D98	PEG_TX14+
A99	SER0_RX(N.C)	B99	N.C.	C99	PEG_RX14-	D99	PEG_TX14-
A100	GND (FIXED)	B100	GND (FIXED)	C100	GND (FIXED)	D100	GND (FIXED)
A101	SER1_TX	B101	FAN_PWMOUT	C101	PEG_RX15+	D101	PEG_TX15+
A102	SER1_RX	B102	FAN_TACHIN	C102	PEG_RX15-	D102	PEG_TX15-
A103	LID#	B103	SLEEP#	C103	GND	D103	GND
A104	VCC_12V	B104	VCC_12V	C104	VCC_12V	D104	VCC_12V
A105	VCC_12V	B105	VCC_12V	C105	VCC_12V	D105	VCC_12V
A106	VCC_12V	B106	VCC_12V	C106	VCC_12V	D106	VCC_12V
A107	VCC_12V	B107	VCC_12V	C107	VCC_12V	D107	VCC_12V
A108	VCC_12V	B108	VCC_12V	C108	VCC_12V	D108	VCC_12V
A109	VCC_12V	B109	VCC_12V	C109	VCC_12V	D109	VCC_12V
A110	GND (FIXED)	B110	GND (FIXED)	C110	GND (FIXED)	D110	GND (FIXED)

## 2.6 Push Buttons

The board has four push buttons, see table below.

Push Button	Description
SW1	LID push button
SW2	Sleep push button
SW3	Power push button
SW4	Reset push button



## 2.7 LED Indicators

The board has six LEDs and one dual 7-segment LED display. See table below for detailed information.

LED	Description
Power LED	Power state LED indicators for +5V_SBY, +5V, +3.3V and +12V
Module Error LED	LED ON when module error detected
Thermal Trip Indicator LED	LED ON means thermal trip signal is low active. The default setting is Disable. You can change the setting with JP13, see section 2.4.8.
7-segment LED	Dual 7-segment LED. Displays BIOS codes pushed out to LPC Port 80 during boot up process; which is very handy for debugging.

