



# COM332-B(R.A)

## COM Express Carrier Board User's Manual

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## Trademarks

Product names or trademarks appearing in this manual are for identification purpose only and are the properties of the respective owners.

## FCC and DOC Statement on Class B

This equipment has been tested and found to comply with the limits for a Class B 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 residential installation. 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. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio TV technician for help.

## Notice:

1. The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
2. Shielded interface cables must be used in order to comply with the emission limits.

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## Warranty

1. Warranty does not cover damages or failures that arised from misuse of the product, inability to use the product, unauthorized replacement or alteration of components and product specifications.
2. The warranty is void if the product has been subjected to physical abuse, improper installation, modification, accidents or unauthorized repair of the product.
3. Unless otherwise instructed in this user's manual, the user may not, under any circumstances, attempt to perform service, adjustments or repairs on the product, whether in or out of warranty. It must be returned to the purchase point, factory or authorized service agency for all such work.
4. We will not be liable for any indirect, special, incidental or consequential damages to the product that has been modified or altered.

## Static Electricity Precautions

It is quite easy to inadvertently damage your PC, system board, components or devices even before installing them in your system unit. Static electrical discharge can damage computer components without causing any signs of physical damage. You must take extra care in handling them to ensure against electrostatic build-up.

1. To prevent electrostatic build-up, leave the system board in its anti-static bag until you are ready to install it.
2. Wear an antistatic wrist strap.
3. Do all preparation work on a static-free surface.
4. Hold the device only by its edges. Be careful not to touch any of the components, contacts or connections.
5. Avoid touching the pins or contacts on all modules and connectors. Hold modules or connectors by their ends.



### Important:

Electrostatic discharge (ESD) can damage your processor, disk drive and other components. Perform the upgrade instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.

## Safety Measures

To avoid damage to the system:

- Use the correct AC input voltage range.

To reduce the risk of electric shock:

- Unplug the power cord before removing the system chassis cover for installation or servicing. After installation or servicing, cover the system chassis before plugging the power cord.

Battery:

- Danger of explosion if battery incorrectly replaced.
- Replace only with the same or equivalent type recommend by the manufacturer.
- Dispose of used batteries according to local ordinance.

## About the Package

The package contains the following items. If any of these items are missing or damaged, please contact your dealer or sales representative for assistance.

- One COM332-B(R.A) board
- One Serial ATA data cable (Length: 500mm)
- One VGA cable

## Optional Items

- Serial ATA data cable (Length: 500mm)
- LPC EXT-RS232 module (4 x RS232 ports)
- LPC EXT-RS485 module (4 x RS485 ports)
- I/O shield

The board and accessories in the package may not come similar to the information listed above. This may differ in accordance with the sales region or models in which it was sold. For more information about the standard package in your region, please contact your dealer or sales representative.

## Before Using the System Board

Before using the system board, prepare basic system components.

If you are installing the system board in a new system, you will need at least the following internal components.

- Memory module
- Storage devices such as hard disk drive, etc.

You will also need external system peripherals you intend to use which will normally include at least a keyboard, a mouse and a video display monitor.

## Chapter 1 - Introduction

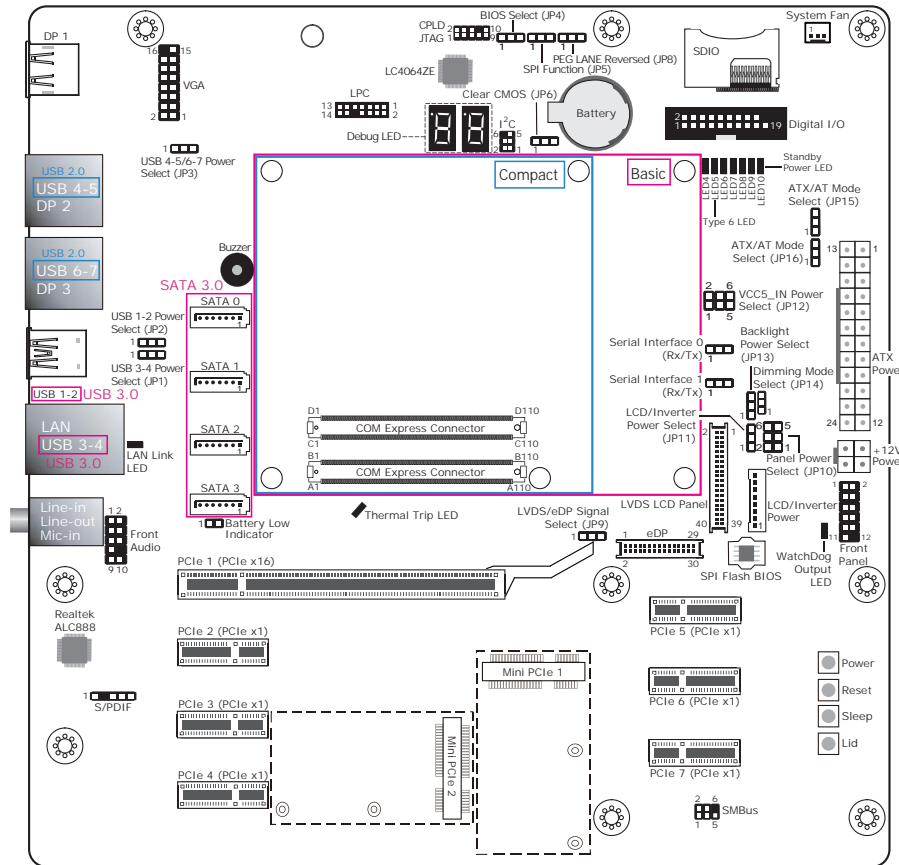
### Specifications

<b>GRAPHICS</b>	Display	1 x VGA 1 x LVDS/eDP (eDP available upon request) 3 x DP 1 x eDP/LVDS (LVDS available upon request)	
<b>EXPANSION</b>	Interface	1 x PCIe x16 6 x PCIe x1 2 x Full-size Mini PCIe 1 x SDIO	
<b>AUDIO</b>	Audio Codec	Realtek ALC888S-VD2-GR	
<b>REAR I/O</b>	Ethernet	1 x GbE (RJ-45)	
	USB	4 x USB 3.0 4 x USB 2.0	
	Display	3 x DP	
	Audio	1 x Line-in 1 x Line-out 1 x Mic-in	
	Serial	2 x Serial Interface Connectors (TX/RX)	
<b>INTERNAL I/O</b>	Display	1 x VGA (2.54mm) 1 x LVDS LCD Panel Connector 1 x LCD/Inverter Power 1 x eDP LCD Panel Connector	
	Audio	1 x Audio (Line-out/Mic-in) 1 x S/PDIF	
	SATA	4 x SATA 3.0 (up to 6Gb/s)	
	DIO	1 x 8-bit DIO	
	LPC	1 x LPC	
	SMBus	1 x SMBus	
	<b>POWER</b>	Type	12V, 5VSB, VCC_RTC (ATX mode) 12V, VCC_RTC (AT mode)
		Connector	4-pin ATX 12V power 24-pin ATX power
RTC Battery		CR2032 Coin Cell	

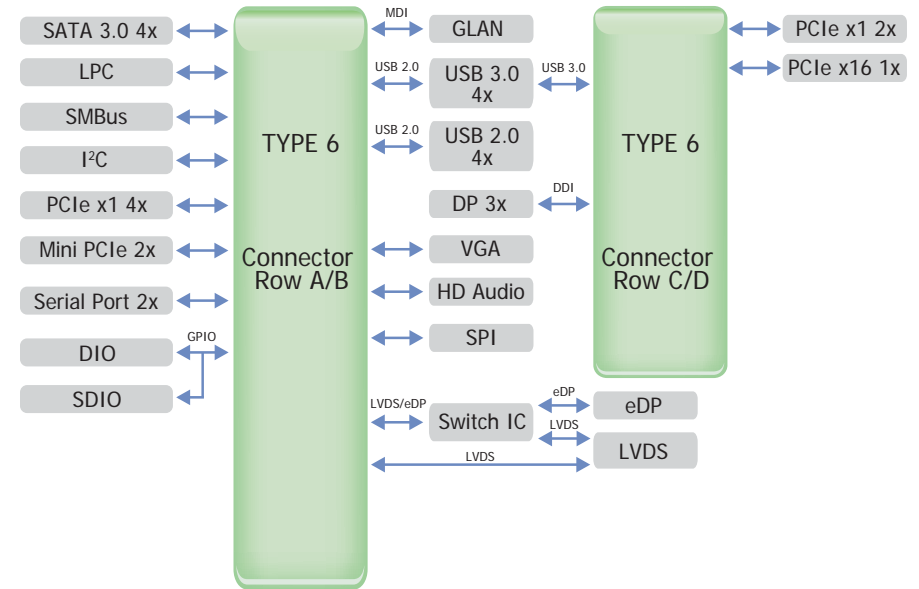
<b>ENVIRONMENT</b>	Temperature	Operating: 0 to 60°C Storage: -40 to 85°C
	Humidity	Operating: 5 to 90% RH Storage: 5 to 90% RH
	MTBF	488,117 hrs @ 25°C; 253,684 hrs @ 45°C; 136,621 hrs @ 60°C Calculation Model: Telcordia Issue 2, Method Case 3 Environment: GB, GC – Ground Benign, Controlled
<b>MECHANICAL</b>	Dimensions	microATX Form Factor 244mm (9.6") x 244mm (9.6")
	Compliance	PICMG COM Express® R2.1, Type 6 Basic, Compact Modules

# Chapter 2 - Hardware Installation

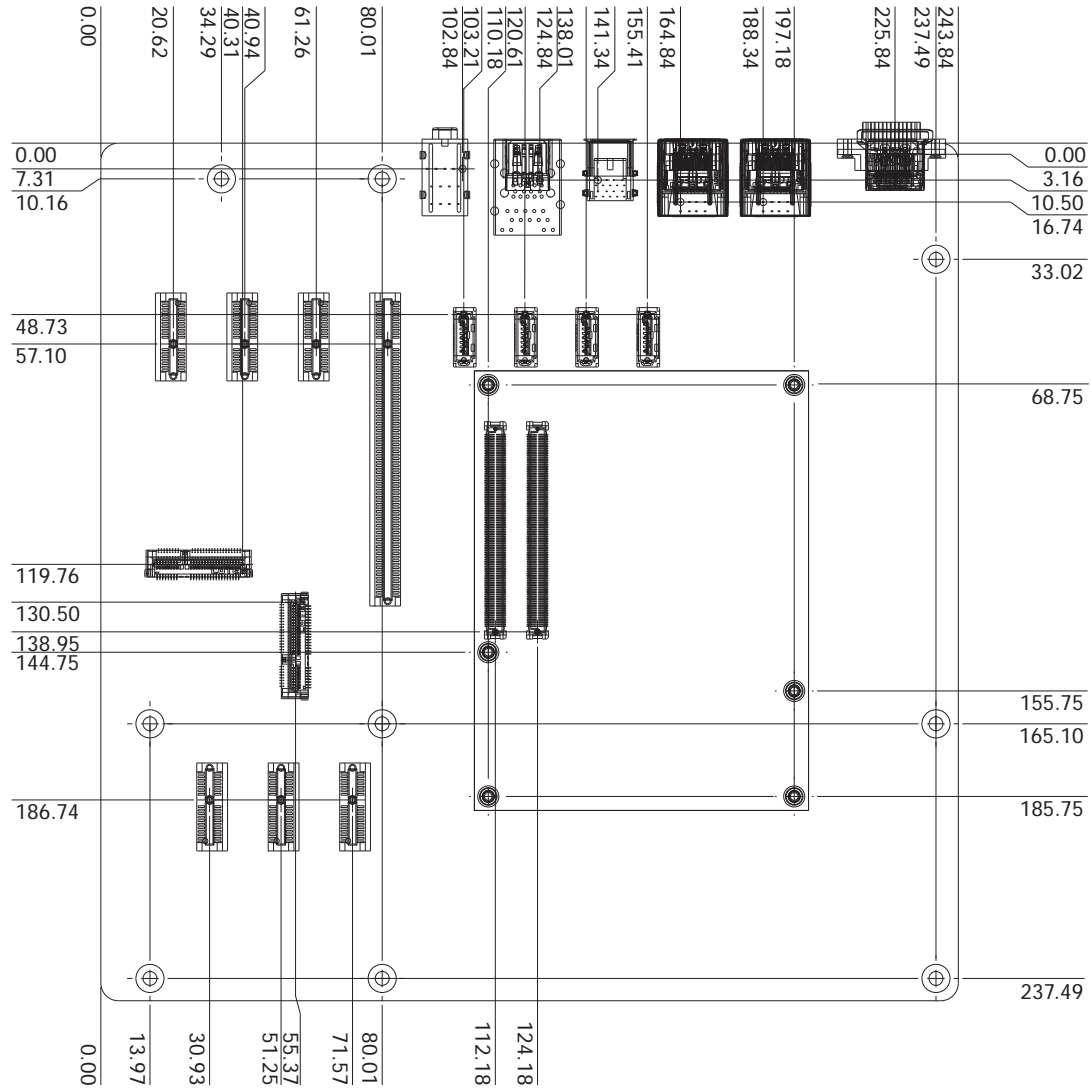
## Board Layout



## Block Diagram



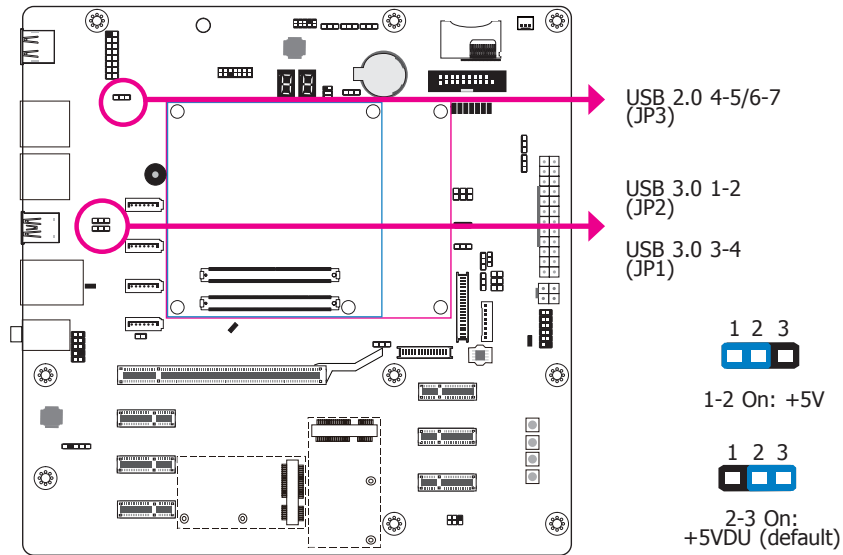
Mechanical Diagram





## Jumper Settings

### USB Power Select



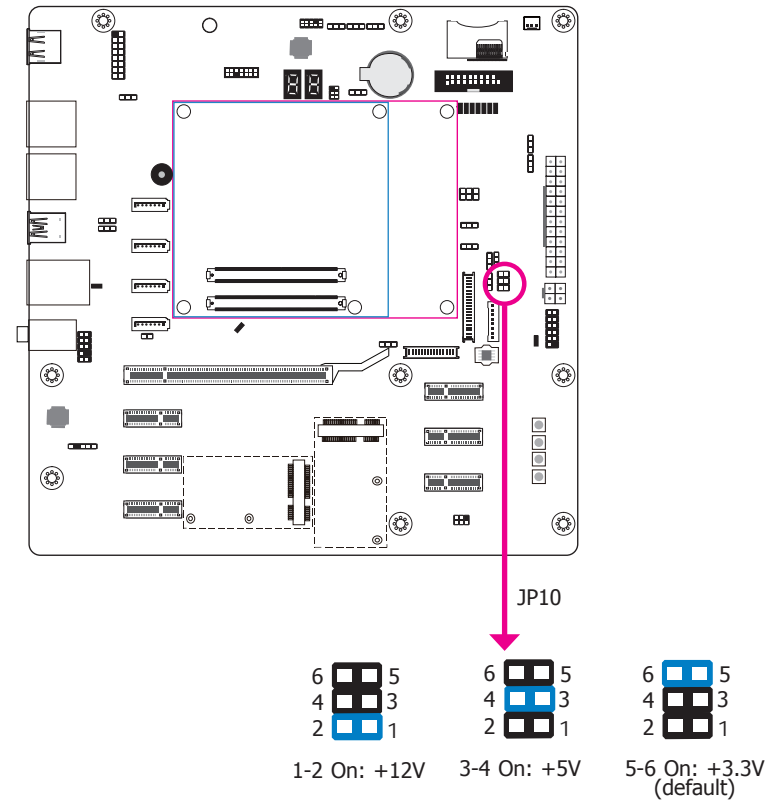
JP3 (for USB 2.0 4-5/6-7), JP2 (for USB 3.0 1-2), and JP1 (for USB 3.0 3-4) are used to select the power of USB ports. Selecting +5VDU will allow you to use a USB keyboard to wake up the system.



**Important:**

If you are using the Wake-On-USB Keyboard/Mouse function for 2 USB ports, the +5V\_standby power source of your power supply must support  $\geq 1.5A$ . For 3 or more USB ports, the +5V\_standby power source of your power supply must support  $\geq 2A$ .

### Panel Power Select



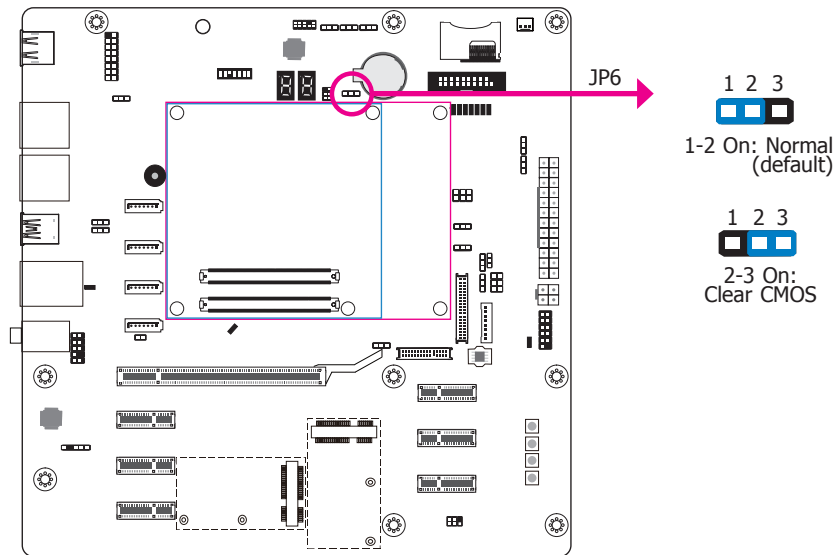
The JP10 is used to select the power supplied to the LCD panel.



**Important:**

Before powering-on the system, make sure JP10's setting matches the LCD panel's specification. Selecting the incorrect voltage will seriously damage the LCD panel.

## Clear CMOS



If you encounter the following situations,

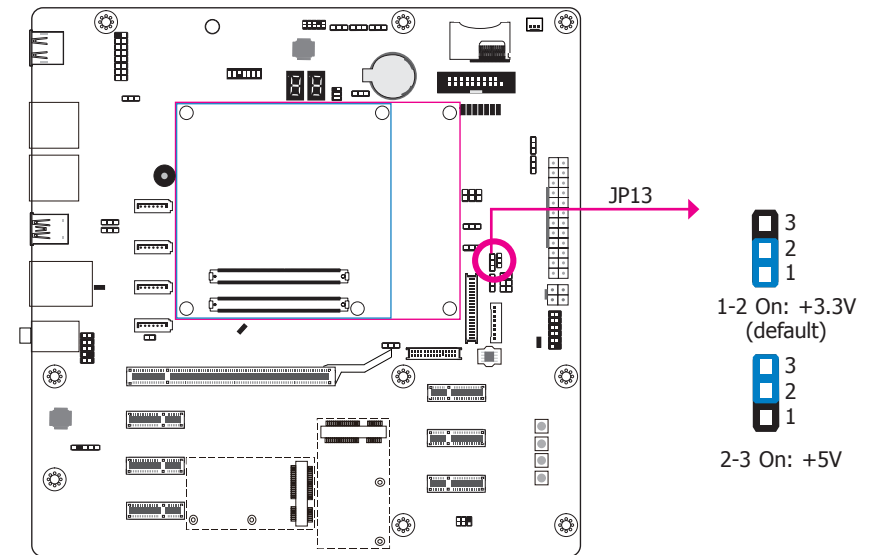
- CMOS data becomes corrupted.
- You forgot the supervisor or user password.

you can reconfigure the system with the default values stored in the ROM BIOS.

To load the default values stored in the ROM BIOS, please follow the steps below:

- Power-off the system and unplug the power cord.
- Set JP6 pins 2 and 3 to On. Wait for a few seconds and set JP6 back to its default setting, pins 1 and 2 On.
- Now plug the power cord and power-on the system.

## Backlight Power Select

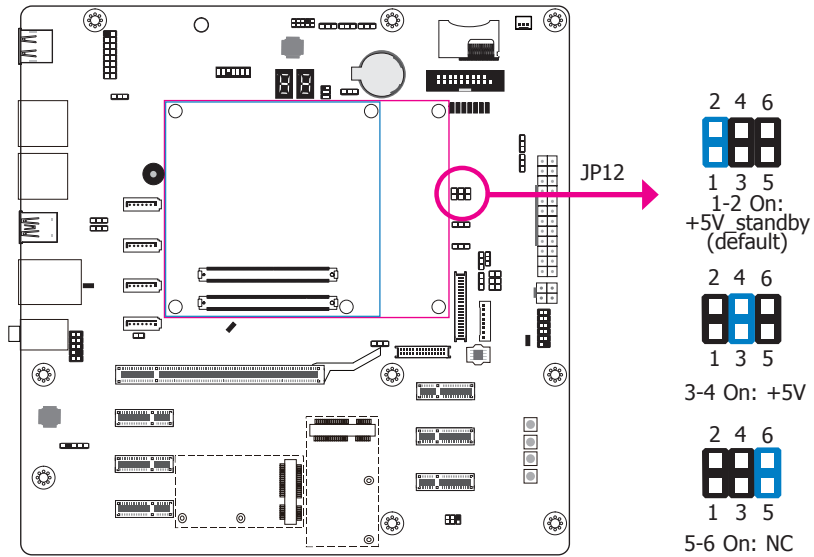


The JP13 is used to select the power level of backlight brightness control.

**Important:**

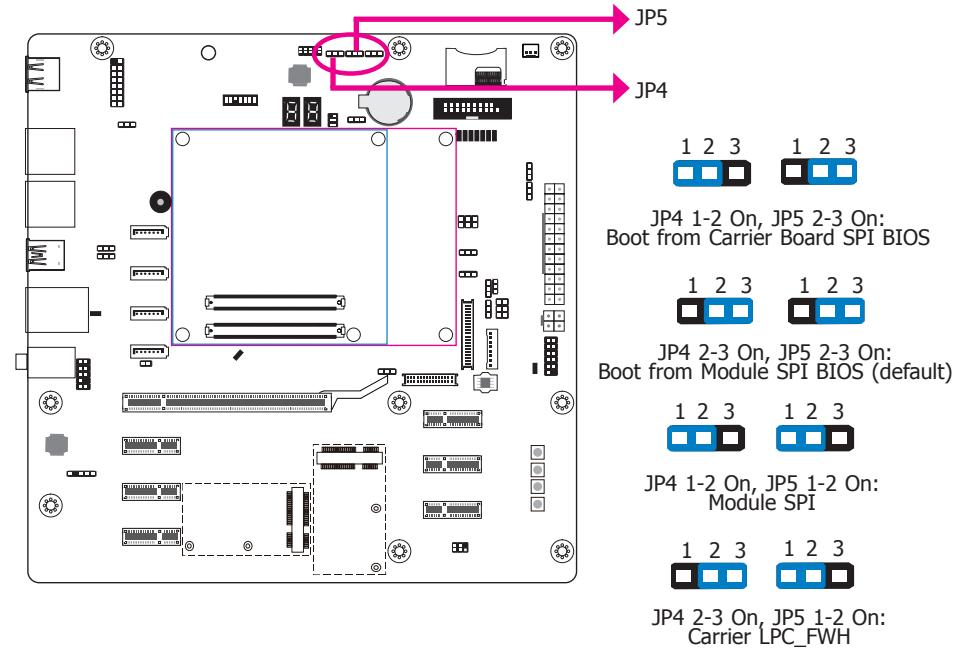
Before powering-on the system, make sure that the power settings of JP13 match the power specification of backlight control. Selecting the incorrect voltage will seriously damage the backlight.

### VCC5\_IN Power Select



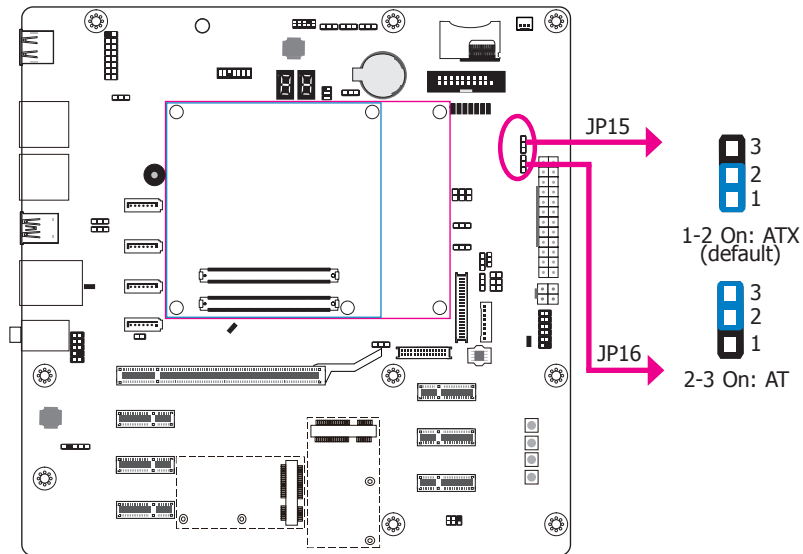
The JP12 is used to select the power of the COM Express connector.

### BIOS Select



JP4 and JP5 are used to determine the BIOS boot device.

## ATX/AT Mode Select



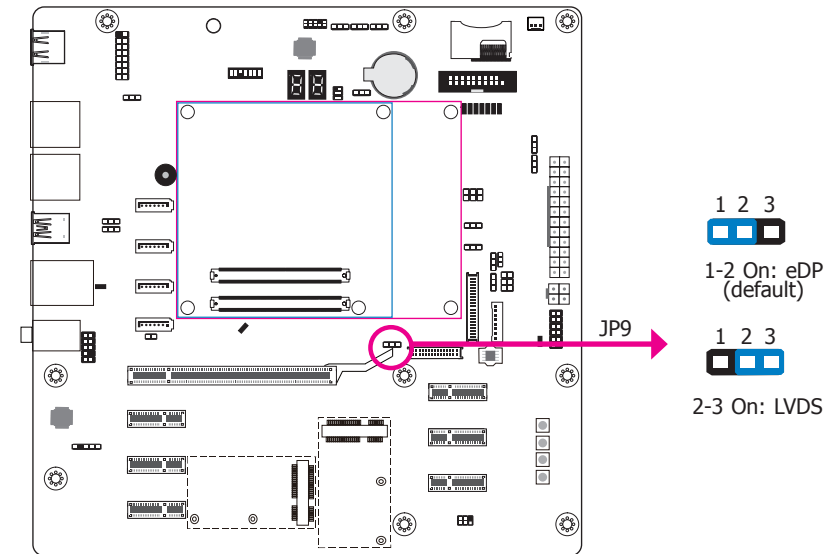
The JP15 allows you to select the ATX or AT power supply mode (Power\_OK state).

The JP16 allows you to select the ATX or AT power supply mode (STR - Suspend to RAM state).

**Note:**

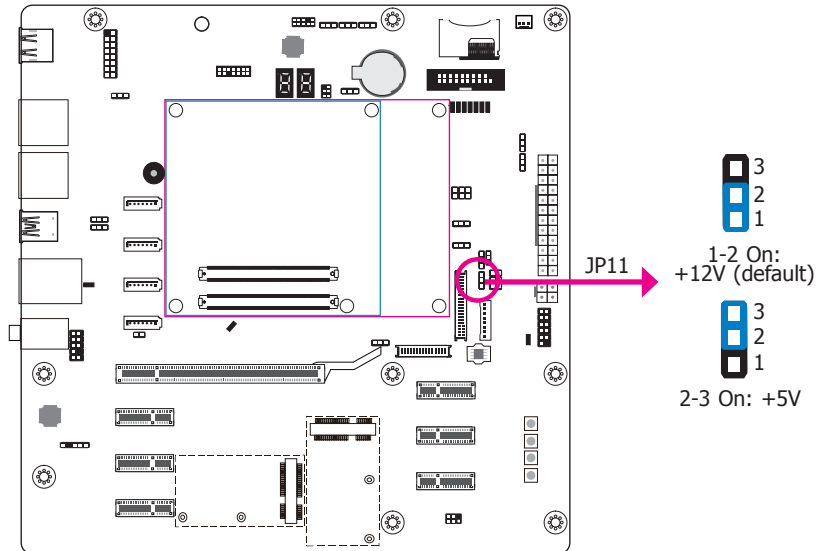
JP15 and JP16 need to be set simultaneously.

## LVDS/eDP Signal Select



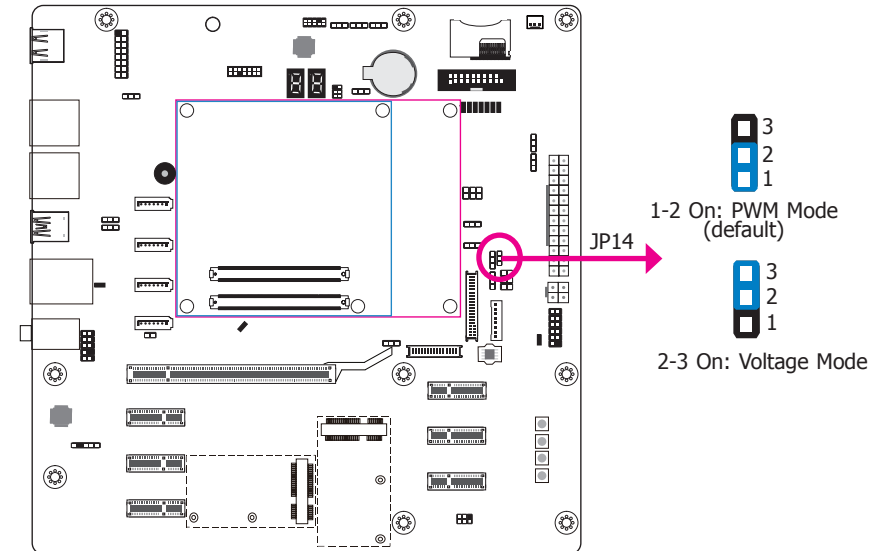
The JP9 is used to select the display connector type: Embedded DisplayPort (eDP) or LVDS.

## LCD/Inverter Power Select



The JP11 is used to select the power level of LCD inverter connector.

## Dimming Mode Select

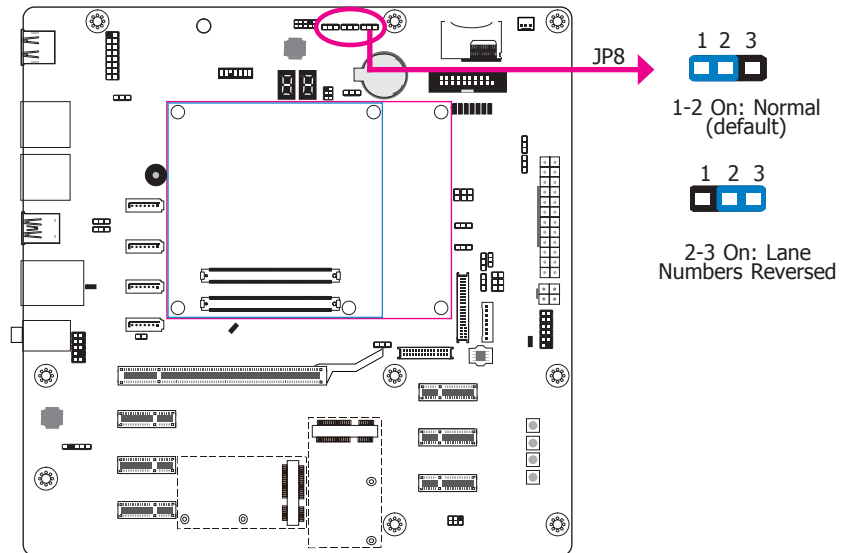


The JP14 allows you to select the mode for the lightness control of the LVDS panel.

**Important:**

You need to refer to your panel's user guide to determine the type of mode (PWM or Voltage) most appropriate for your panel.

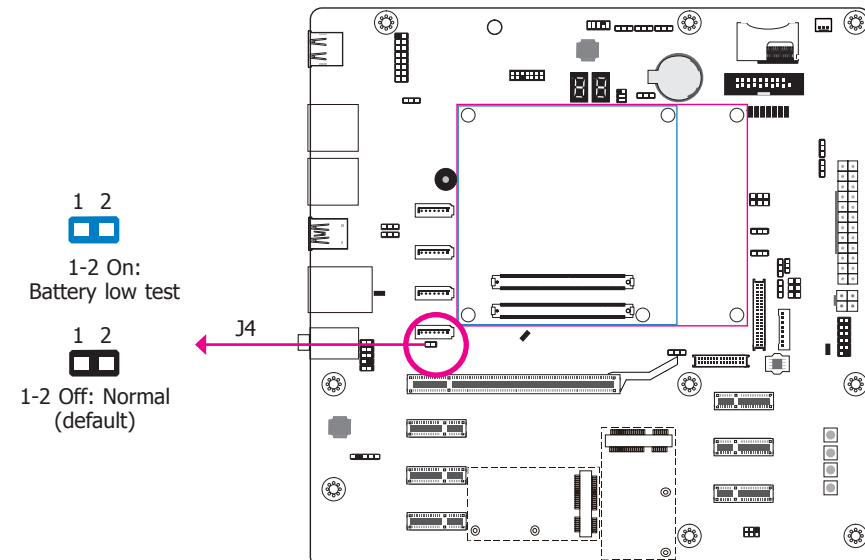
## PEG Lane Reversed



The JP8 is used to activate or deactivate the lane reversal mode for the PEG port.

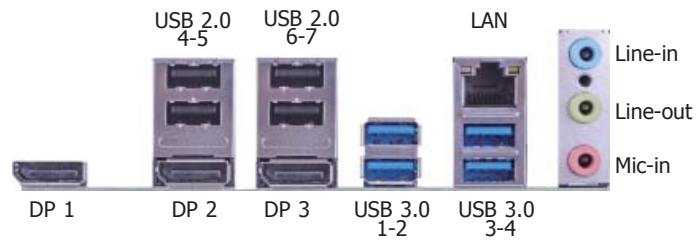
## Function Test Jumper

## Battery Low Indicator



This jumper is used to simulate the signal status that indicates the external battery is low. By setting J4 pins 1 and 2 to On, it sends a battery low signal to the module.

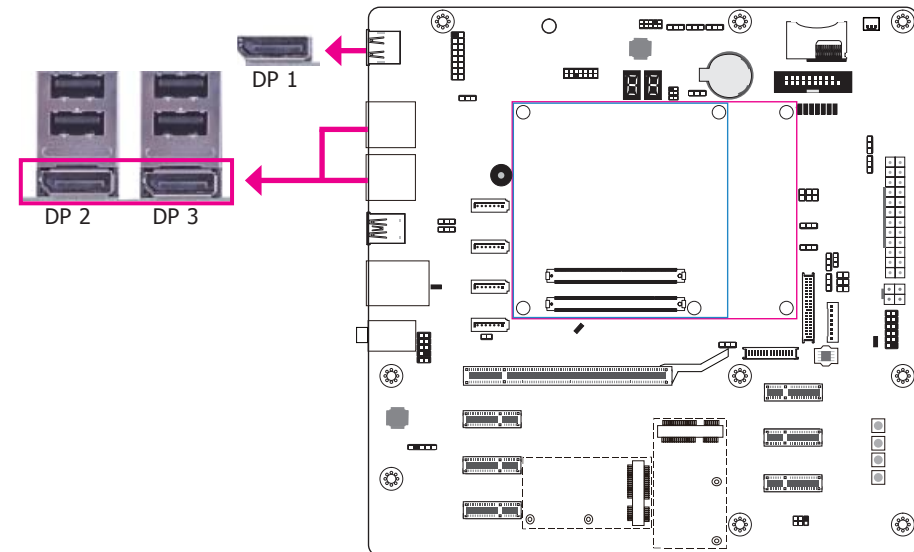
## Rear Panel I/O Ports



The rear panel I/O ports consist of the following:

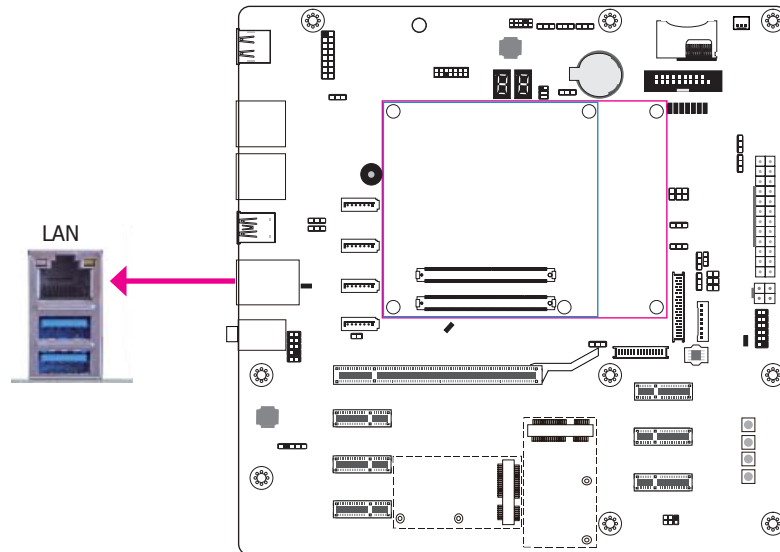
- 3 DP ports
- 4 USB 2.0 ports
- 4 USB 3.0 ports
- 1 LAN port
- 1 Line-in/Surround jack
- 1 Line-out jack
- 1 Mic-in/Center+Subwoofer jack

## DP Ports



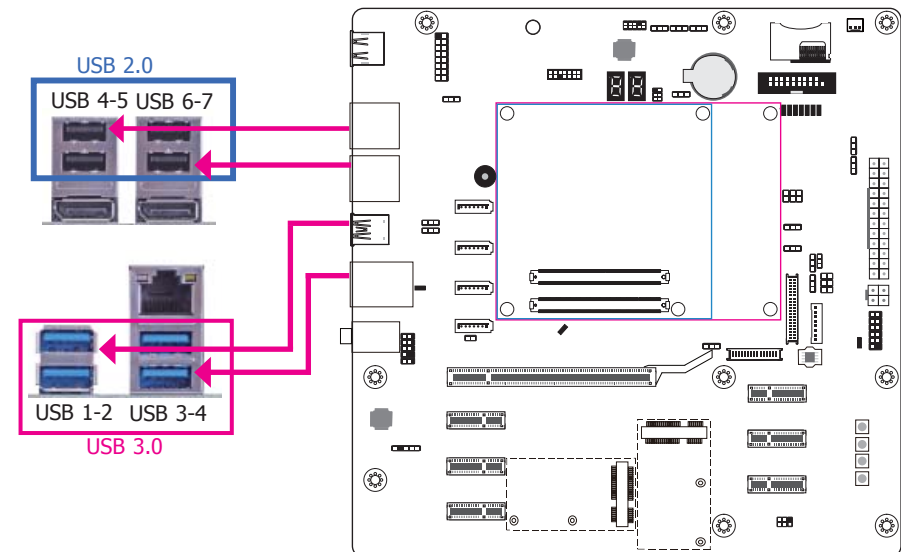
DisplayPort (DP) is a digital display interface used to connect a display device such as a computer monitor. It is used to transmit audio and video simultaneously. The interface, which is developed by VESA, delivers higher performance features than any other digital interface.

## RJ45 LAN Port



The onboard RJ45 LAN port allows the system board to connect to a local area network by means of a network hub.

## USB Ports



USB allows data exchange between your computer and a wide range of simultaneously accessible external plug-and-play peripherals.

The system board is equipped with four onboard USB 3.0/2.0/1.1 ports (USB 1-2/3-4) and four onboard USB 2.0/1.1 ports (USB 4-5/6-7).

### Driver Installation

You may need to install the proper drivers in your operating system to use the USB device. Refer to your operating system's manual or documentation for more information.



## Wake-On-USB Keyboard/Mouse

The Wake-On-USB Keyboard/Mouse function allows you to use a USB keyboard or USB mouse to wake up a system from the S3 (STR - Suspend To RAM) state. To use this function:

### • Jumper Setting

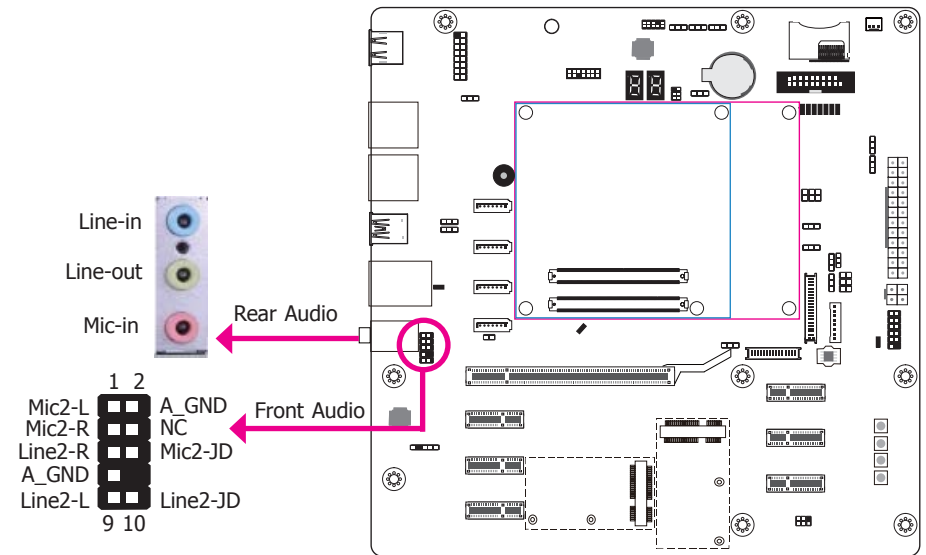
JP3 (for USB 2.0 4-5/6-7), JP2 (for USB 3.0 1-2), and JP1 (for USB 3.0 3-4) must be set to "2-3 On: +5VDU". Refer to "USB Power Select" in this chapter for more information.



### Important:

If you are using the Wake-On-USB Keyboard/Mouse function for 2 USB ports, the +5V\_standby power source of your power supply must support  $\geq 1.5A$ . For 3 or more USB ports, the +5V\_standby power source of your power supply must support  $\geq 2A$ .

## Audio



### Rear Audio

The system board is equipped with three audio jacks. A jack is a one-hole connecting interface for inserting a plug.

- Line-in/Surround Jack (Light Blue)  
This jack is used to connect any audio devices such as Hi-fi set, CD player, tape player, AM/FM radio tuner, synthesizer, etc.
- Line-out Jack (Lime)  
This jack is used to connect a headphone or external speakers.
- Mic-in/Center+Subwoofer (Pink)  
This jack is used to connect to the center and subwoofer speakers of the audio system.

### Front Audio

The front audio connector allows you to connect to the second line-out and mic-in jacks that are at the front panel of your system.

### BIOS Setting

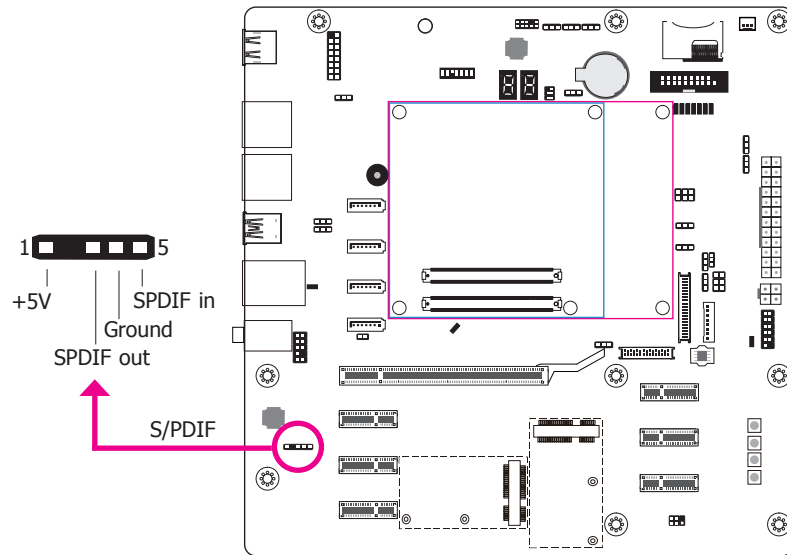
Refer to the module's BIOS for more information.

### Driver Installation

Install the audio driver. Refer to chapter 3 for more information.

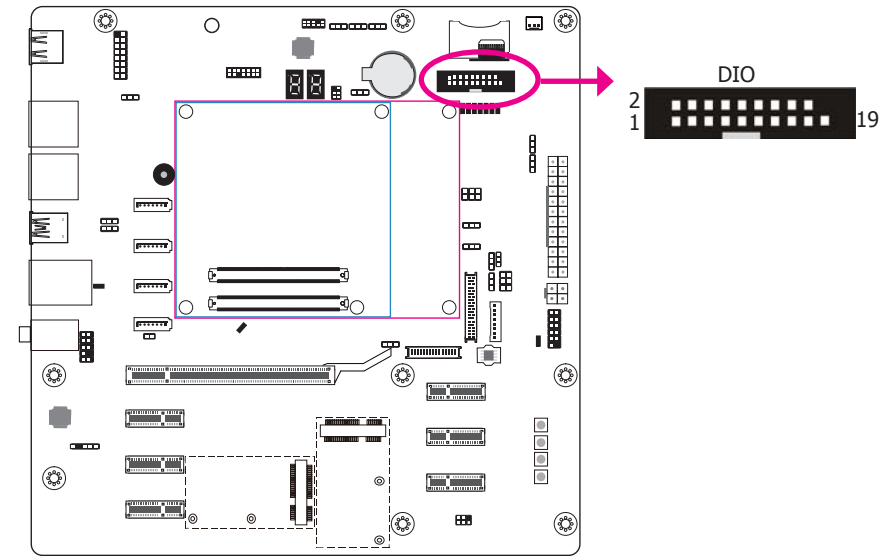
## I/O Connectors

### S/PDIF Connector



The S/PDIF connector is used to connect external S/PDIF ports. Your S/PDIF ports may be mounted on a card-edge bracket. Install the card-edge bracket to an available slot at the rear of the system chassis then connect the audio cable to the S/PDIF connector. Make sure pin 1 of the audio cable is aligned with pin 1 of the connector.

### Digital I/O Connector

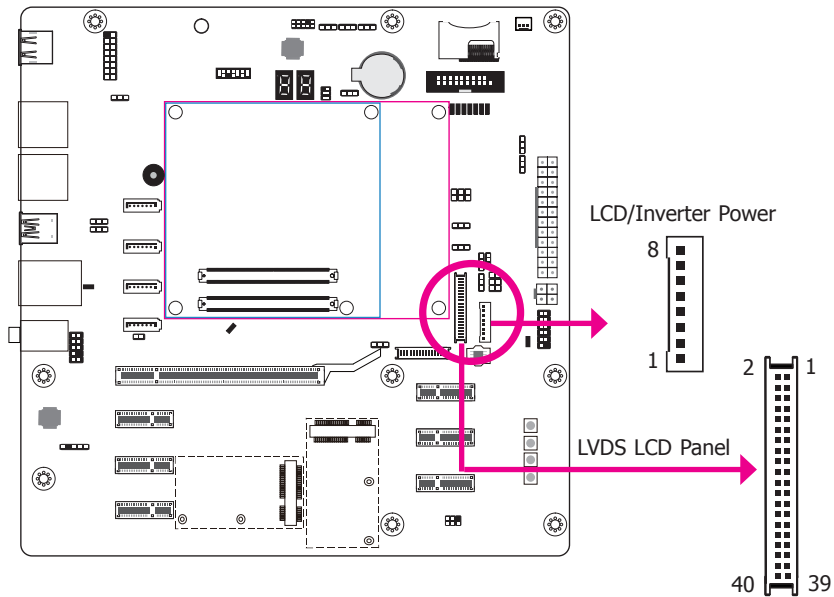


The 8-bit Digital I/O connector (4-bit GPI and 4-bit GPO) provides powering-on and control functions to the connected external devices. The pin functions of these connectors are listed as the followings:

Pin	Pin Assignment	Pin	Pin Assignment
1	GND	2	+12V
3	DIO7 (GPO3)	4	+12V
5	DIO6 (GPO2)	6	GND
7	DIO5 (GPO1)	8	+5V
9	DIO4 (GPO0)	10	+5V
11	DIO3 (GPI3)	12	GND
13	DIO2 (GPI2)	14	+5V_Standby
15	DIO1 (GPI1)	16	+5V_Standby
17	DIO0 (GPI0)	18	GND
19	GND		

## LVDS LCD Panel Connector

## LCD/Inverter Power Connector



The system board allows you to connect a LCD Display Panel by means of the LVDS LCD panel connector and the LCD/Inverter power connector. These connectors transmit video signals and power from the system board to the LCD Display Panel.

Refer to the right side for the pin functions of these connectors.

## Jumper Settings

Refer to the "Jumper Settings" section in this chapter for settings relevant to the LCD panel.

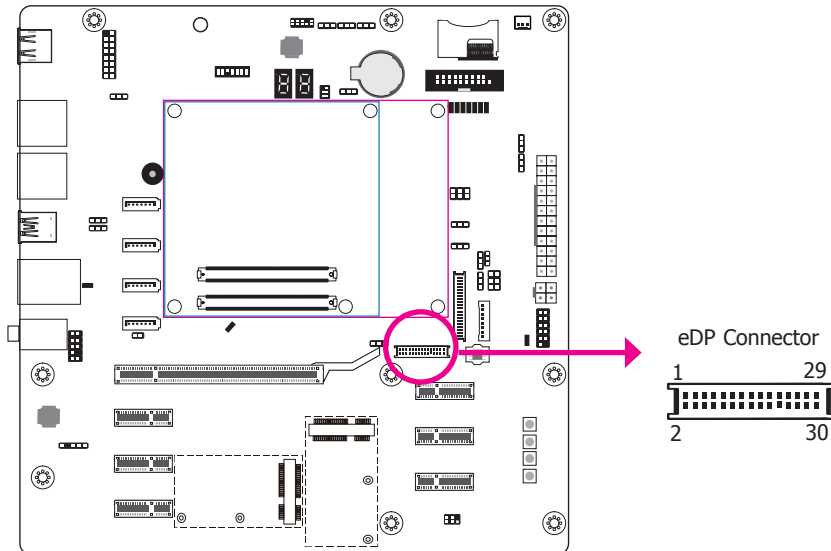
## LVDS LCD Panel Connector

Pin	Function	Pin	Function
1	GND	2	GND
3	LVDSA_Out3+	4	LVDSB_Out3+
5	LVDSA_Out3-	6	LVDSB_Out3-
7	GND	8	GND
9	LVDSA_Out2+	10	LVDSB_Out2+
11	LVDSA_Out2-	12	LVDSB_Out2-
13	GND	14	GND
15	LVDSA_Out1+	16	LVDSB_Out1+
17	LVDSA_Out1-	18	LVDSB_Out1-
19	GND	20	GND
21	LVDSA_Out0+	22	LVDSB_Out0+
23	LVDSA_Out0-	24	LVDSB_Out0-
25	GND	26	GND
27	LVDSA_CLK+	28	LVDSB_CLK+
29	LVDSA_CLK-	30	LVDSB_CLK-
31	GND	32	GND
33	LVDS_DDCCLK	34	N.C.
35	LVDS_DDCDATA	36	N.C.
37	Panel Power	38	Panel Power
39	Panel Power	40	Panel Power

## LCD/Inverter Power Connector

Pin	Function
1	GND
2	GND
3	Panel Inverter Brightness Voltage Control
4	Panel Power
5	+3.3V
6	Panel Backlight On/Off Control
7	LCD/Inverter Power
8	LCD/Inverter Power

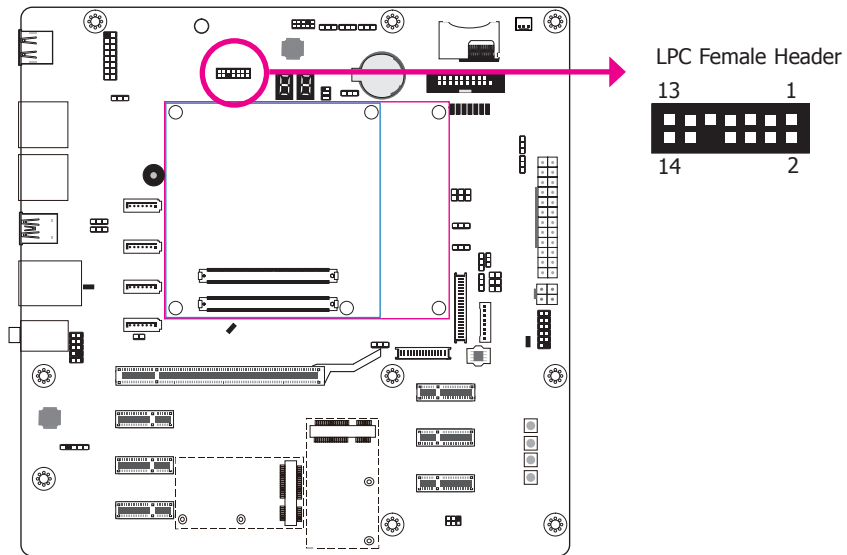
## eDP Connector



The eDP connector is an embedded displayport which has advanced power-saving features to connect a display device to transmit digital communication of audio and video signals. The table on the right indicates the pin functions of the eDP connector.

Pin	Function	Pin	Function
1	GND	2	GND
3	eDP_Lane 0-	4	eDP_Lane 3-
5	eDP_Lane 0+	6	eDP_Lane 3+
7	GND	8	N.C.
9	eDP_Lane 1-	10	GND
11	eDP_Lane 1+	12	AUX-
13	GND	14	AUX+
15	eDP_Lane 2-	16	GND
17	eDP_Lane 2+	18	Hot Plug
19	+V_LCD	20	+V_LCD
21	GND	22	GND
23	Panel Backlight On/Off Control	24	Panel Inverter Brightness Voltage Control
25	Inverter GND	26	Inverter GND
27	3V3	28	Inverter PWR
29	Inverter PWR	30	Inverter PWR

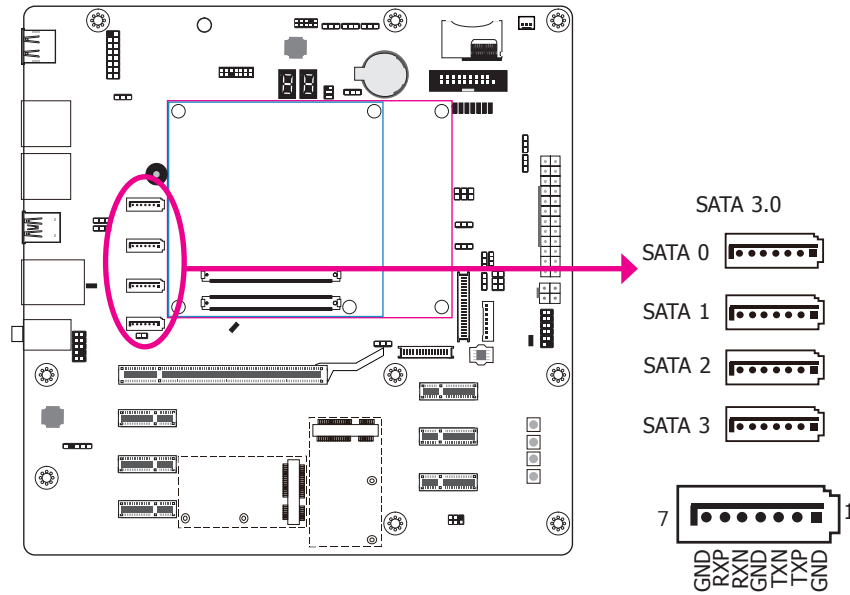
## LPC Female Header



Pin	Function	Pin	Function
1	L_CLK	2	L_AD1
3	L_RST#	4	L_AD0
5	L_FRAME#	6	3V3
7	L_AD3	8	GND
9	L_AD2	10	---
11	L_SERIRQ	12	GND
13	5VSB	14	5V

The Low Pin Count Interface was defined by Intel® Corporation to facilitate the industry's transition towards legacy free systems. It allows the integration of low-bandwidth legacy I/O components within the system, which are typically provided by a Super I/O controller. Furthermore, it can be used to interface firmware hubs, Trusted Platform Module (TPM) devices and embedded controller solutions. Data transfer on the LPC bus is implemented over a 4 bit serialized data interface, which uses a 33MHz LPC bus clock. For more information about LPC bus refer to the Intel® Low Pin Count Interface Specification Revision 1.1'. The table on the right indicates the pin functions of the LPC connector.

## SATA (Serial ATA) Connectors



### Features

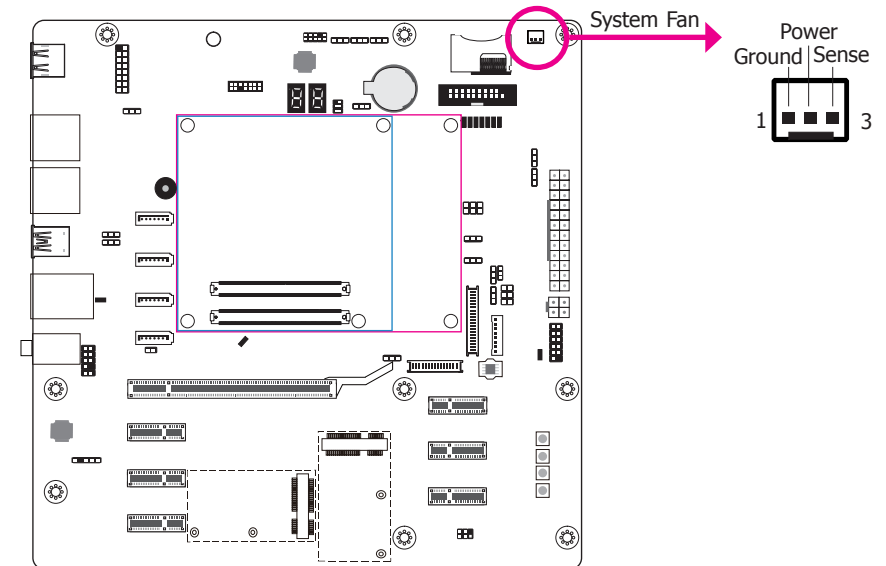
- Four Serial ATA 3.0 ports with data transfer rate up to 6Gb/s
- Integrated Advanced Host Controller Interface (AHCI) controller

The Serial ATA connectors are used to connect Serial ATA devices. Connect one end of the Serial ATA cable to a SATA connector and the other end to your Serial ATA device.

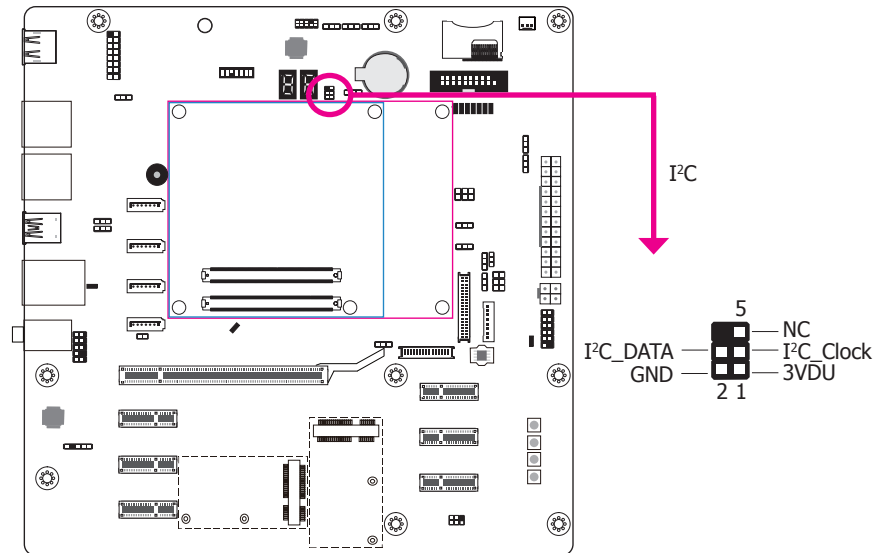
### BIOS Settings

Refer to the module's BIOS for more information.

## Cooling Fan Connector

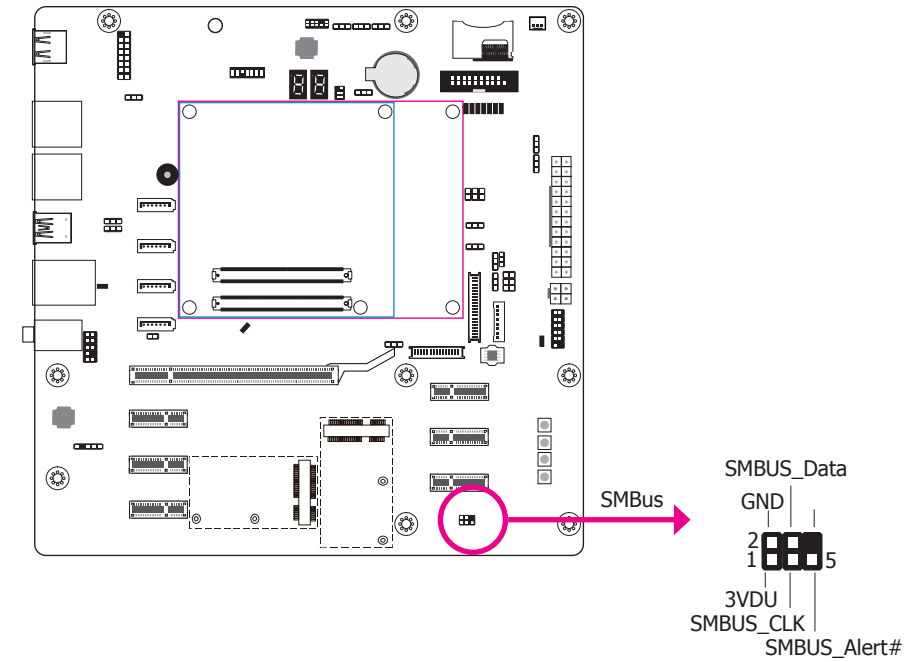


The fan connector is used to connect cooling fan. The cooling fan will provide adequate airflow throughout the chassis to prevent overheating the CPU and system board components.

I<sup>2</sup>C Connector

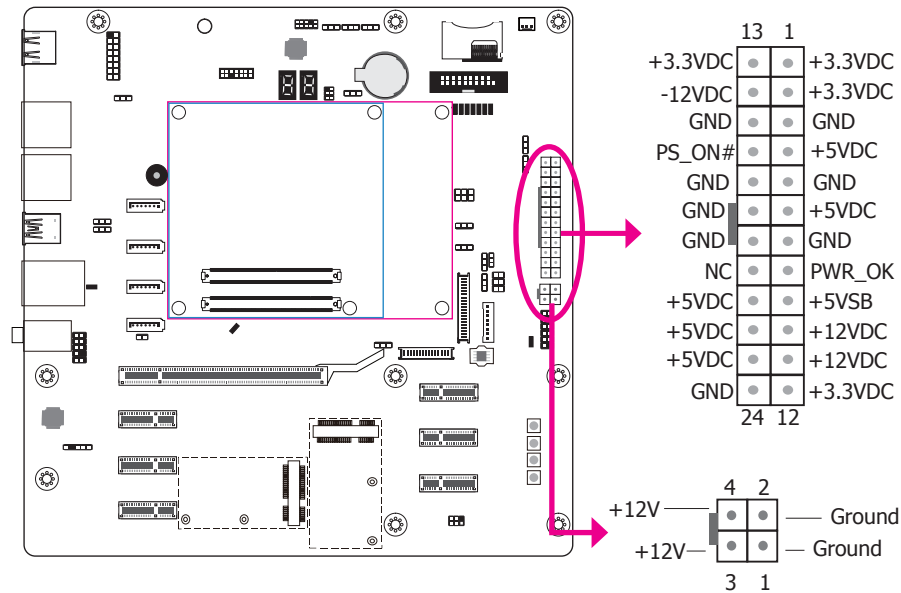
The 1-channel I<sup>2</sup>C bus interface conforms to the version 2.1 I<sup>2</sup>C bus specification. It operates as a master or slave device and supports a multi-master bus.

## SMBus Connector



The SMBus (System Management Bus) connectors are used to connect the SMBus device. It is a multiple device bus that allows multiple chips to connect to the same bus and enable each one to act as a master by initiating data transfer.

## Power Connectors



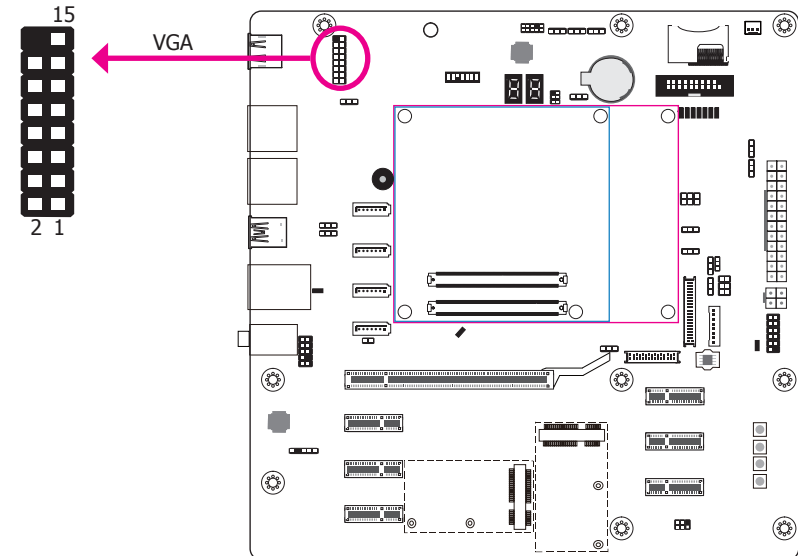
Use a power supply that complies with the ATX12V Power Supply Design Guide Version 1.1. An ATX12V power supply unit has a standard 24-pin ATX main power connector that must be inserted into the 24-pin connector. The 4-pin +12V power connector enables the delivery of more +12VDC current to the COM express module board and carrier board's PCIe device.

The power connectors from the power supply unit are designed to fit the 24-pin and 4-pin connectors in only one orientation. Make sure to find the proper orientation before plugging the connectors.

**Important:**

The system board consumes a minimal amount of power. Due to its low power consumption, you only need a 120W to 150W power supply. Every power supply has its minimum load of power. If you use a greater than 150W power supply, the power consumed by the system board may not attain its minimum load causing instability to the entire system.

## VGA Connector

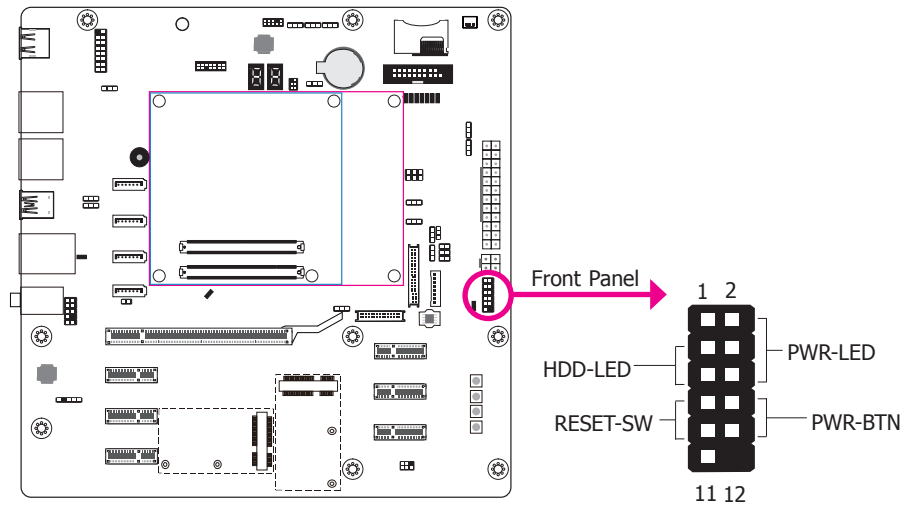


The VGA port is used for connecting a VGA monitor. Connect the monitor's 15-pin D-shell cable connector to the VGA port. After you plug the monitor's cable connector into the VGA port, gently tighten the cable screws to hold the connector in place. The table below indicates the pin functions of the VGA connector.

Pin	Pin Assignment	Pin	Pin Assignment
1	VGA_RED_C	2	VGA_GRE_C
3	VGA_BLE_C	4	N.C.
5	GND	6	CRT_DET
7	GND	8	GND
9	+5V	10	GND
11	N.C.	12	DDCSDA_5V-R
13	HSYNC_C	14	VSYNC_C
15	DDCSCL_5V-R		



## Front Panel Connector



	Pin	Pin Assignment		Pin	Pin Assignment
N.C.	1	N.C.	PWR-LED	2	LED Power
HDD-LED	3	HDD Power		4	LED Power
	5	Signal	6	Signal	
RESET-SW	7	Ground	PWR-BTN	8	Ground
	9	RST Signal		10	Signal
N.C.	11	N.C.			

### HDD-LED - HDD LED

This LED will light when the hard drive is being accessed.

### RESET-SW - Reset Switch

This switch allows you to reboot without having to power off the system.

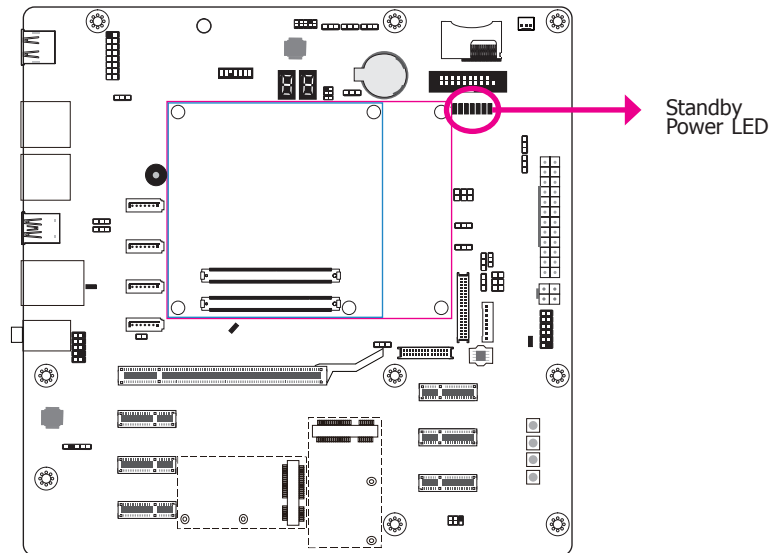
### PWR-LED - Power/Standby LED

When the system's power is on, this LED will light. When the system is in the S1 (POS - Power On Suspend) state, it will blink every second. When the system is in the S3 (STR - Suspend To RAM) state, it will blink every 4 seconds.

### PWR-BTN - ATX Power Switch

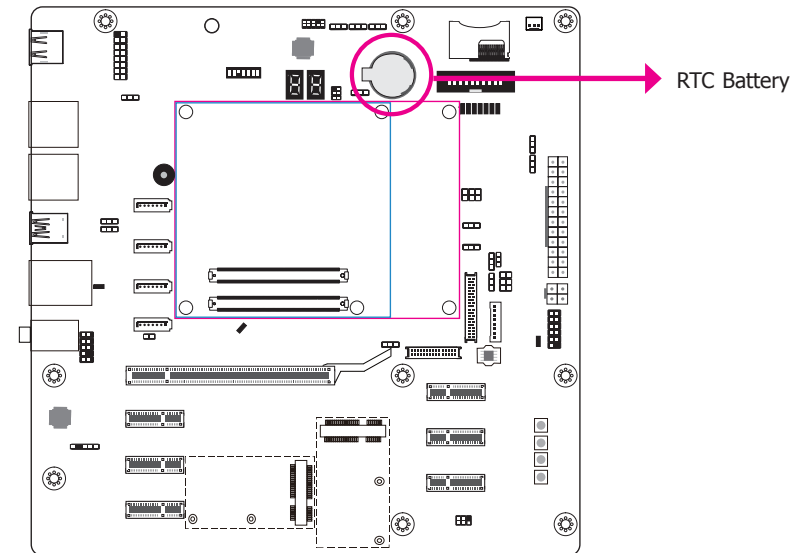
Depending on the setting in the BIOS setup, this switch is a "dual function power button" that will allow your system to enter the Soft-Off or Suspend mode.

## Standby Power LED



This LED will lit red when the system is in the standby mode. It indicates that there is power on the system board. Power-off the PC then unplug the power cord prior to installing any devices. Failure to do so will cause severe damage to the motherboard and components.

## Battery

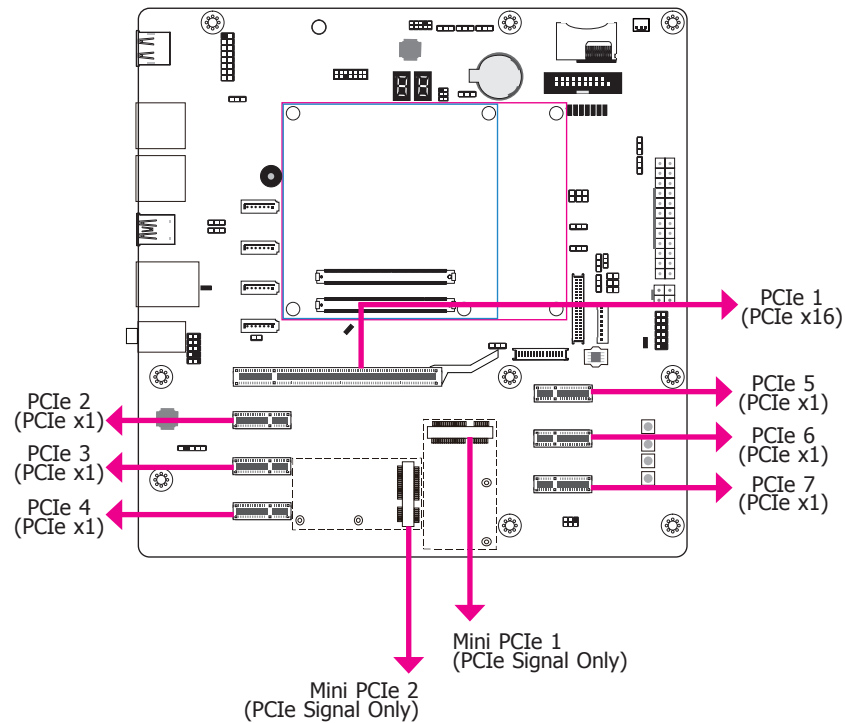


The lithium ion battery (CR2032 coin cell) powers the real-time clock and CMOS memory. It is an auxiliary source of power when the main power is shut off.

## Safety Measures

- Danger of explosion if battery incorrectly replaced.
- Replace only with the same or equivalent type recommended by the manufacturer.
- Dispose of used batteries according to local ordinance.

## Expansion Slots



### Mini PCIe Slot

The Mini PCIe socket is used to install a Mini PCIe card. Mini PCIe card is a small form factor PCI card with the same signal protocol, electrical definitions, and configuration definitions as the conventional PCI.

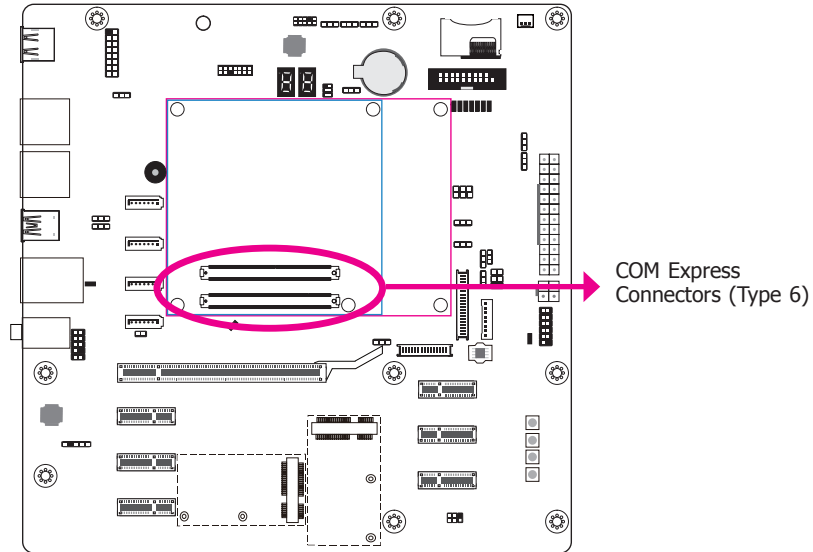
### PCI Express x1 Slot

Install PCI Express cards such as network cards or other cards that comply to the PCI Express specifications into the PCI Express x1 slot.

### PCI Express x16 Slot

Install PCI Express x16 graphics card, that comply to the PCI Express specifications, into the PCI Express x16 slot. To install a graphics card into the x16 slot, align the graphics card above the slot then press it down firmly until it is completely seated in the slot. The retaining clip of the slot will automatically hold the graphics card in place.

## COM Express Connectors



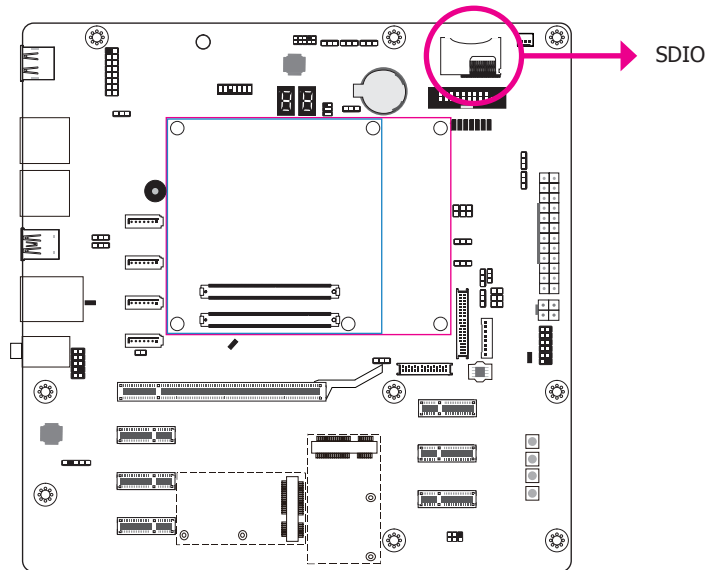
The COM Express connectors are used to interface the carrier board with a COM Express board. Refer to the following pages for the pin functions of these connectors.

Pin	Row A	Row B	Row C	Row D
1	GND(FIXED)	GND(FIXED)	GND(FIXED)	GND(FIXED)
2	GBE0 MDI3-	GBE0 ACT#	GND	GND
3	GBE0 MDI3+	LPC FRAME#	USB_SSRX0-	USB_SSTX0-
4	GBE0 LINK100#	LPC AD0	USB_SSRX0+	USB_SSTX0+
5	GBE0_LINK1000#	LPC_AD1	GND	GND
6	GBE0 MDI2-	LPC AD2	USB_SSRX1-	USB_SSTX1-
7	GBE0 MDI2+	LPC AD3	USB_SSRX1+	USB_SSTX1+
8	GBE0 LINK#	LPC DRQ0#	GND	GND
9	GBE0 MDI1-	LPC DRQ1#	USB_SSRX2-	USB_SSTX2-
10	GBE0 MDI1+	LPC CLK	USB_SSRX2+	USB_SSTX2+
11	GND(FIXED)	GND(FIXED)	GND(FIXED)	GND(FIXED)
12	GBE0 MDI0-	PWRBTN#	USB_SSRX3-	USB_SSTX3-
13	GBE0 MDI0+	SMB_CK	USB_SSRX3+	USB_SSTX3+
14	GBE0_CTREF	SMB_DAT	GND	GND
15	SUS_S3#	SMB_ALERT#	DDI1_PAIR6+	DDI1_CTRLCLK_AUX+
16	SATA0_TX+	SATA1_TX+	DDI1_PAIR6-	DDI1_CTRLDATA_AUX-
17	SATA0_TX-	SATA1_TX-	RSVD <sup>19</sup>	RSVD <sup>19</sup>
18	SUS_S4#	SUS_STAT#	RSVD <sup>19</sup>	RSVD <sup>19</sup>
19	SATA0_RX+	SATA1_RX+	PCIE_RX6+	PCIE_TX6+
20	SATA0_RX-	SATA1_RX-	PCIE_RX6-	PCIE_TX6-
21	GND(FIXED)	GND(FIXED)	GND(FIXED)	GND(FIXED)
22	SATA2_TX+	SATA3_TX+	PCIE_RX7+	PCIE_TX7+
23	SATA2_TX-	SATA3_TX-	PCIE_RX7-	PCIE_TX7-
24	SUS_S5#	PWR_OK	DDI1_HPDP	RSVD <sup>19</sup>
25	SATA2_RX+	SATA3_RX+	DDI1_PAIR4+	RSVD <sup>19</sup>
26	SATA2_RX-	SATA3_RX-	DDI1_PAIR4-	DDI1_PAIR0+
27	BATLOW#	WDT	RSVD <sup>19</sup>	DDI1_PAIR0-
28	(S)ATA_ACT#	AC/HDA_SDIN2	RSVD <sup>19</sup>	RSVD <sup>19</sup>
29	AC/HDA_SYNC	AC/HDA_SDIN1	DDI1_PAIR5+	DDI1_PAIR1+
30	AC/HDA_RST#	AC/HDA_SDIN0	DDI1_PAIR5-	DDI1_PAIR1-
31	GND(FIXED)	GND(FIXED)	GND(FIXED)	GND(FIXED)
32	AC/HDA_BITCLK	SPKR	DDI2_CTRLCLK_AUX+	DDI1_PAIR2+
33	AC/HDA_SDOUT	I2C_CK	DDI2_CTRLDATA_AUX-	DDI1_PAIR2-
34	BIOS_DIS0#	I2C_DAT	DDI2_DDC_AUX_SEL	DDI1_DDC_AUX_SEL
35	THRMTRIP#	THRM#	RSVD <sup>19</sup>	RSVD <sup>19</sup>
36	USB6-	USB7-	DDI3_CTRLCLK_AUX+	DDI1_PAIR3+
37	USB6+	USB7+	DDI3_CTRLDATA_AUX-	DDI1_PAIR3-
38	USB_6_7_OC#	USB_4_5_OC#	DDI3_DDC_AUX_SEL	RSVD <sup>19</sup>
39	USB4-	USB5-	DDI3_PAIR0+	DDI2_PAIR0+
40	USB4+	USB5+	DDI3_PAIR0-	DDI2_PAIR0-
41	GND(FIXED)	GND(FIXED)	GND(FIXED)	GND(FIXED)

Pin	Row A	Row B	Row C	Row D
42	USB2-	USB3-	DDI3_PAIR1+	DDI2_PAIR1+
43	USB2+	USB3+	DDI3_PAIR1-	DDI2_PAIR1-
44	USB 2 3 OC#	USB 0 1 OC#	DDI3_HPDP	DDI2_HPDP
45	USB0-	USB1-	RSVD <sup>19</sup>	RSVD <sup>19</sup>
46	USB0+	USB1+	DDI3_PAIR2+	DDI2_PAIR2+
47	VCC_RTC	EXCD1_PERST#	DDI3_PAIR2-	DDI2_PAIR2-
48	EXCD0_PERST#	EXCD1_CPPE#	RSVD <sup>19</sup>	RSVD <sup>19</sup>
49	EXCD0_CPPE#	SYS_RESET#	DDI3_PAIR3+	DDI2_PAIR3+
50	LPC_SERIRQ	CB_RESET#	DDI3_PAIR3-	DDI2_PAIR3-
51	GND(FIXED)	GND(FIXED)	GND(FIXED)	GND(FIXED)
52	PCIE_TX5+	PCIE_RX5+	PEG_RX0+	PEG_TX0+
53	PCIE_TX5-	PCIE_RX5-	PEG_RX0-	PEG_TX0-
54	GPIO	GPO1	TYPE0#	PEG_LANE RV#
55	PCIE_TX4+	PCIE_RX4+	PEG_RX1+	PEG_TX1+
56	PCIE_TX4-	PCIE_RX4-	PEG_RX1-	PEG_TX1-
57	GND	GPO2	TYPE1#	TYPE2#
58	PCIE_TX3+	PCIE_RX3+	PEG_RX2+	PEG_TX2+
59	PCIE_TX3-	PCIE_RX3-	PEG_RX2-	PEG_TX2-
60	GND(FIXED)	GND(FIXED)	GND(FIXED)	GND(FIXED)
61	PCIE_TX2+	PCIE_RX2+	PEG_RX3+	PEG_TX3+
62	PCIE_TX2-	PCIE_RX2-	PEG_RX3-	PEG_TX3-
63	GP11	GPO3	RSVD <sup>19</sup>	RSVD <sup>19</sup>
64	PCIE_TX1+	PCIE_RX1+	RSVD <sup>19</sup>	RSVD <sup>19</sup>
65	PCIE_TX1-	PCIE_RX1-	PEG_RX4+	PEG_TX4+
66	GND	WAKE0#	PEG_RX4-	PEG_TX4-
67	GP12	WAKE1#	RSVD <sup>19</sup>	GND
68	PCIE_TX0+	PCIE_RX0+	PEG_RX5+	PEG_TX5+
69	PCIE_TX0-	PCIE_RX0-	PEG_RX5-	PEG_TX5-
70	GND(FIXED)	GND(FIXED)	GND(FIXED)	GND(FIXED)
71	LVDS_A0+	LVDS_B0+	PEG_RX6+	PEG_TX6+
72	LVDS_A0-	LVDS_B0-	PEG_RX6-	PEG_TX6-
73	LVDS_A1+	LVDS_B1+	GND	GND
74	LVDS_A1-	LVDS_B1-	PEG_RX7+	PEG_TX7+
75	LVDS_A2+	LVDS_B2+	PEG_RX7-	PEG_TX7-
76	LVDS_A2-	LVDS_B2-	GND	GND
77	LVDS_VDD_EN	LVDS_B3+	RSVD <sup>19</sup>	RSVD <sup>19</sup>
78	LVDS_A3+	LVDS_B3-	PEG_RX8+	PEG_TX8+
79	LVDS_A3-	LVDS_BKLT_EN	PEG_RX8-	PEG_TX8-
80	GND(FIXED)	GND(FIXED)	GND(FIXED)	GND(FIXED)
81	LVDS_A_CK+	LVDS_B_CK+	PEG_RX9+	PEG_TX9+
82	LVDS_A_CK-	LVDS_B_CK-	PEG_RX9-	PEG_TX9-
83	LVDS_I2C_CK	LVDS_BKLT_CTRL	RSVD <sup>19</sup>	RSVD <sup>19</sup>
84	LVDS_I2C_DAT	VCC_5V_SBY	GND	GND
85	GP13	VCC_5V_SBY	PEG_RX10+	PEG_TX10+
86	RSVD <sup>19</sup>	VCC_5V_SBY	PEG_RX10-	PEG_TX10-
87	eDP_HPDP	VCC_5V_SBY	GND	GND
88	PCIE_CLK_REF+	BIOS_DIS1#	PEG_RX11+	PEG_TX11+
89	PCIE_CLK_REF-	VGA_RED	PEG_RX11-	PEG_TX11-
90	GND(FIXED)	GND(FIXED)	GND(FIXED)	GND(FIXED)

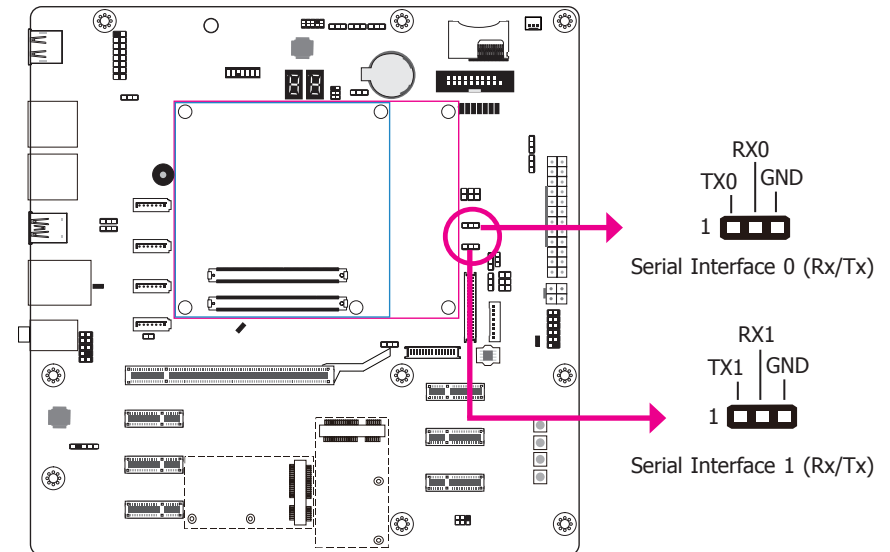
Pin	Row A	Row B	Row C	Row D
91	SPI_POWER	VGA_GRN	PEG_RX12+	PEG_TX12+
92	SPI_MISO	VGA_BLU	PEG_RX12-	PEG_TX12-
93	GPO0	VGA_HSYNC	GND	GND
94	SPI_CLK	VGA_VSYNC	PEG_RX13+	PEG_TX13+
95	SPI_MOSI	VGA_I2C_CK	PEG_RX13-	PEG_TX13-
96	TPM_PP	VGA_I2C_DAT	GND	GND
97	TYPE10#	SPI_CS#	RSVD <sup>19</sup>	RSVD <sup>19</sup>
98	SER0_TX	RSVD <sup>19</sup>	PEG_RX14+	PEG_TX14+
99	SER0_RX	RSVD <sup>19</sup>	PEG_RX14-	PEG_TX14-
100	GND(FIXED)	GND(FIXED)	GND(FIXED)	GND(FIXED)
101	SER1_TX	FAN_PWMOUT	PEG_RX15+	PEG_TX15+
102	SER1_RX	FAN_TACHIN	PEG_RX15-	PEG_TX15-
103	LID#	SLEEP#	GND	GND
104	VCC_12V	VCC_12V	VCC_12V	VCC_12V
105	VCC_12V	VCC_12V	VCC_12V	VCC_12V
106	VCC_12V	VCC_12V	VCC_12V	VCC_12V
107	VCC_12V	VCC_12V	VCC_12V	VCC_12V
108	VCC_12V	VCC_12V	VCC_12V	VCC_12V
109	VCC_12V	VCC_12V	VCC_12V	VCC_12V
110	GND(FIXED)	GND(FIXED)	GND(FIXED)	GND(FIXED)

## SDIO



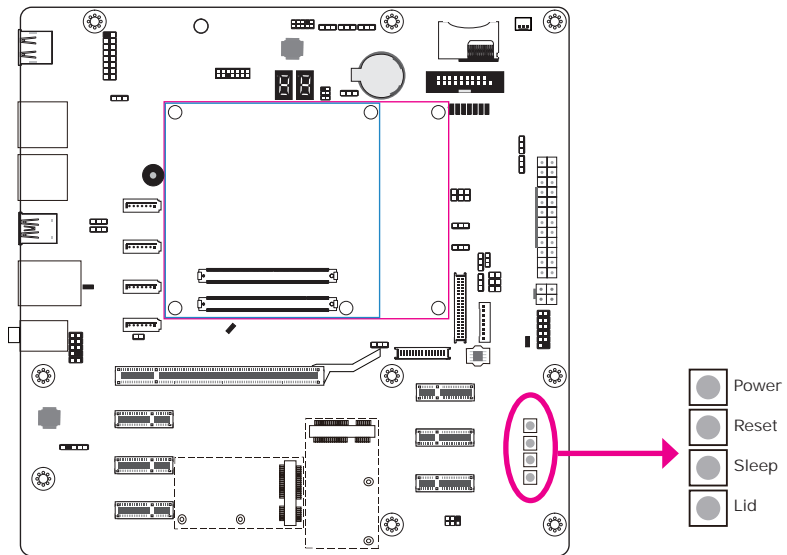
This expansion port is used to insert a Secure Digital Input/Output (SDIO) or Multimedia Card (MMC) device. Aside from storing data files, an SDIO card is also capable of storing powerful software applications.

## Serial Interface Connectors



This serial interface connectors are used to any device supported Tx and Rx signal.

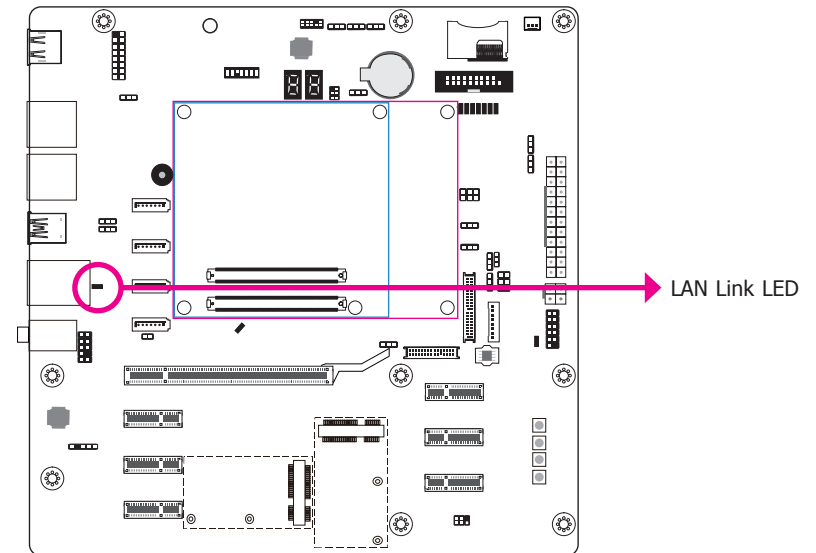
## Switches



**Note:**  
The Sleep and Lid functions are supported only when your operating system supports ACPI.

- Lid: It is used to turn the LVDS on or off.
- Sleep: It is used to set the system to “sleep” or “wake-up” mode.

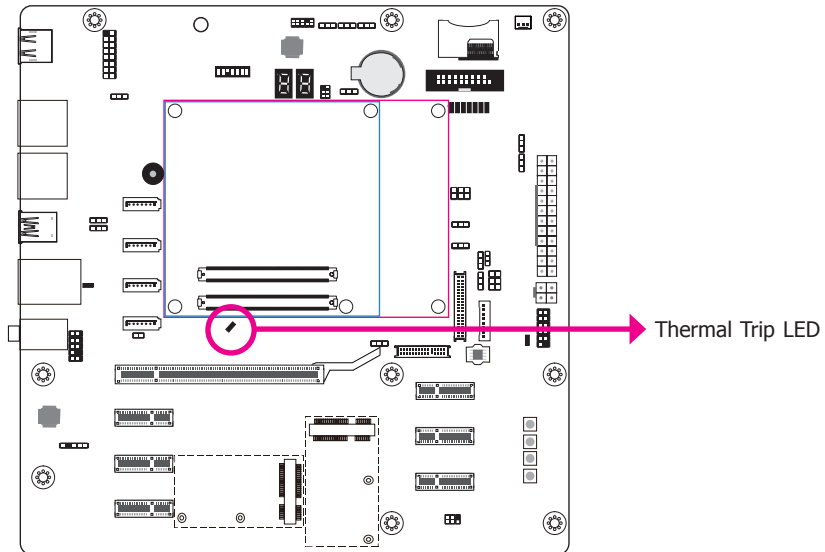
## LAN Link LED



The LAN link LED shows the status of internet connection. The table below indicates the LED definitions.

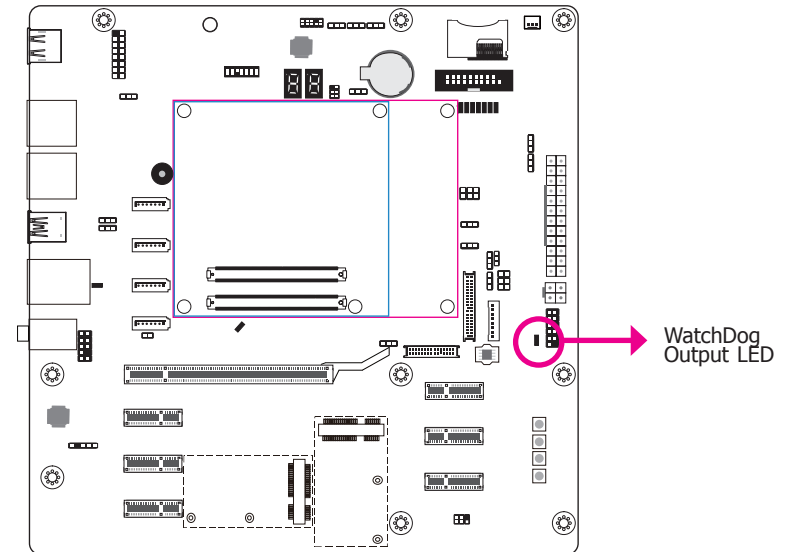
	Link/Act	Speed	
<b>Color</b>	Yellow	Amber	Green
<b>On</b>	Link-Up	1000Mbps	100Mbps
<b>Off</b>	Link-Down	100Mbps	
<b>Blink</b>	Transmitting Data	N/A	N/A

## Thermal Trip LED



This LED will light to indicate that the processor is on an overheating status.

## WatchDog Output LED



A watchdog timer is a hardware timer that automatically generates a system reset if there are any software anomalies. This LED will light when the watchdog timer is functioning.



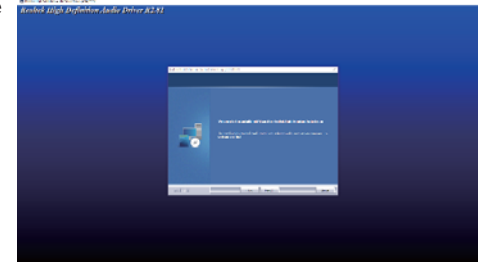
## Chapter 3 - Supported Software

Please download drivers, utilities and software applications required to enhance the performance of the system board at <https://www.dfi.com/DownloadCenter> .

### Audio Driver

To install the driver, download "COM332-B(R.A) Audio Driver" zip file at our website.

1. Setup is ready to install the driver. Click "Next".



2. Click "Yes, I want to restart my computer now" then click "Finish".

Restarting the system will allow the new software installation to take effect.

