

Q7X-151

Qseven 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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About this Manual

This manual can be downloaded from the website, or acquired as an electronic file included in the optional CD/DVD. The manual is subject to change and update without notice, and may be based on editions that do not resemble your actual products. Please visit our website or contact our sales representatives for the latest editions.

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.

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 Q7X-151 board
- One Serial ATA data with power cable
- One I/O shield
- One QR (Quick Reference)

Optional Items

- USB port cable
- I/O shield
- Power adapter (100W, 12V)

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.

- A CPU
- Memory module
- Storage devices such as hard disk drive, CD-ROM, 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

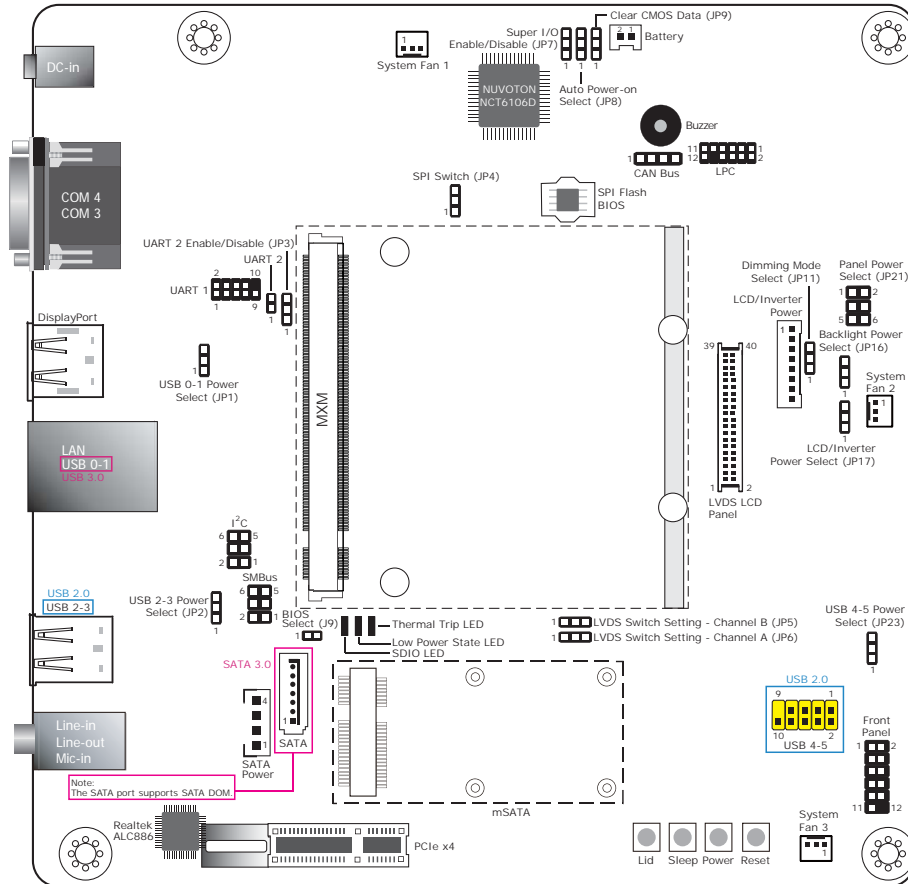
Specifications (For BT700/BT701 Only)

| | |
|----------------------------|---|
| Graphics | <ul style="list-style-type: none"> • Display ports <ul style="list-style-type: none"> - 1 dual channel LVDS - 1 DP port |
| Audio | <ul style="list-style-type: none"> • Realtek ALC886 5.1-channel High Definition Audio • Audio outputs: Mic-in/Center+Subwoofer, Line-in/Surround and Line-out |
| USB | <ul style="list-style-type: none"> • 1 USB 3.0 and 6 USB 2.0 ports |
| Storage | <ul style="list-style-type: none"> • 1 SATA 3.0 port with data transfer rate up to 6Gb/s <ul style="list-style-type: none"> - SATA port provides adequate space for SATA DOM • 1 mSATA port |
| Rear Panel IO Ports | <ul style="list-style-type: none"> • 1 12V DC-in jack • 2 DB-9 RS232 serial ports • 1 DP port • 1 RJ45 LAN port • 1 USB 3.0 port • 2 USB 2.0 type A ports • Mic-in/Center+Subwoofer, Line-in/Surround and Line-out jacks |
| I/O Connectors | <ul style="list-style-type: none"> • 1 connector for 2 external USB 2.0/1.1 ports • 2 UART ports <ul style="list-style-type: none"> - 1 supports TX/RX signal only (UART 2) • 1 LVDS LCD panel connector • 1 LCD/inverter power connector • 1 Serial ATA connector • 1 Serial ATA power connector • 1 mSATA port • 1 LPC connector • 1 I²C connector • 1 SMBus connector • 1 CAN-bus connector • 1 front panel connector • 3 fan connectors |

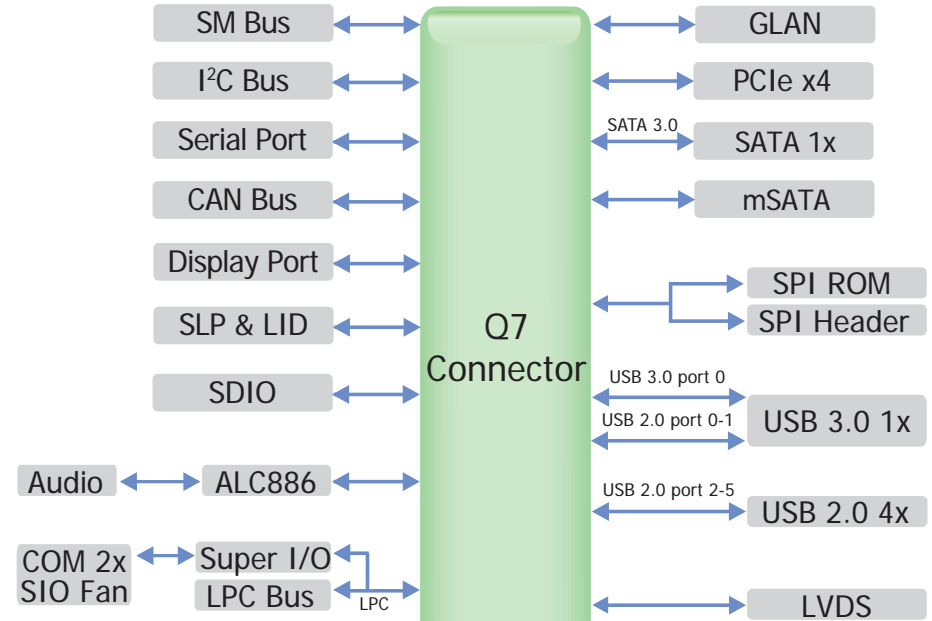
| | |
|---------------------------------|---|
| Expansion Slots | <ul style="list-style-type: none"> • 1 PCIe x4 slot • 1 SDIO socket |
| WatchDog Timer | <ul style="list-style-type: none"> • Watchdog timeout programmable via software from 1 to 255 seconds |
| Damage Free Intelligence | <ul style="list-style-type: none"> • Monitors system temperature and overheat alarm • Monitors system fan speed and failure alarm |
| ROM Interface | <ul style="list-style-type: none"> • 1 SPI interface <ul style="list-style-type: none"> - Supports up to 64Mbit |
| Temperature | <ul style="list-style-type: none"> • Operating: 0°C to 60°C • Storage: -20°C to 85°C |
| Humidity | <ul style="list-style-type: none"> • 5% to 90% |
| Board to Board Connector | <ul style="list-style-type: none"> • One MXM connector |
| Dimensions | <ul style="list-style-type: none"> • Mini-ITX form factor • 170mm (6.7") x 170mm (6.7") |

Chapter 2 - Hardware Installation

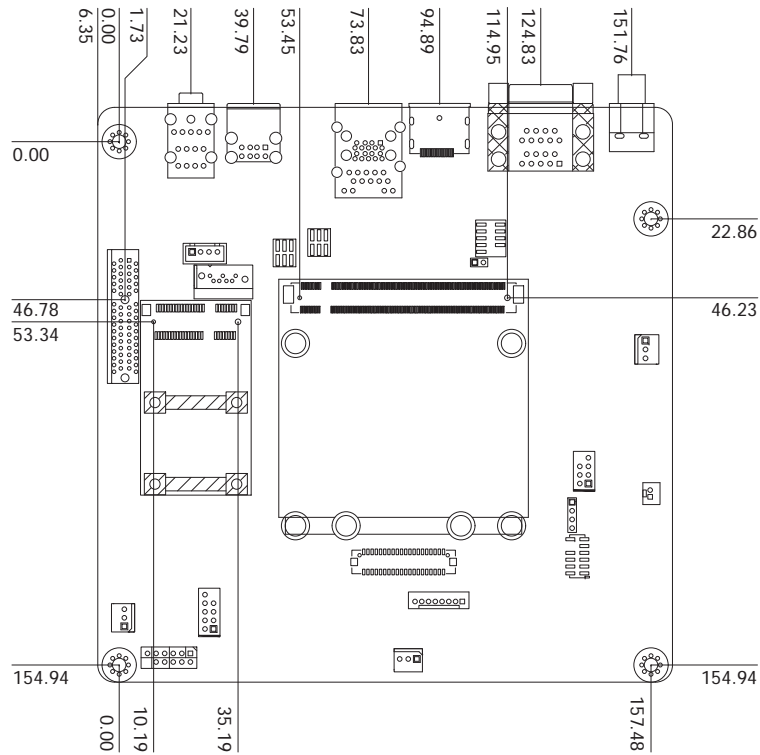
Board Layout



Block Diagram

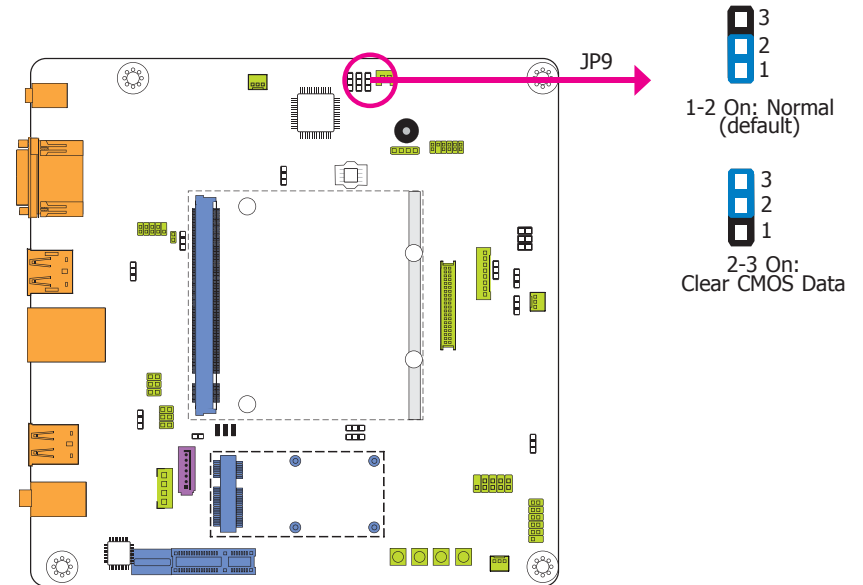


Mechanical Diagram



Jumper Settings

Clear CMOS Data



If you encounter the following situations,

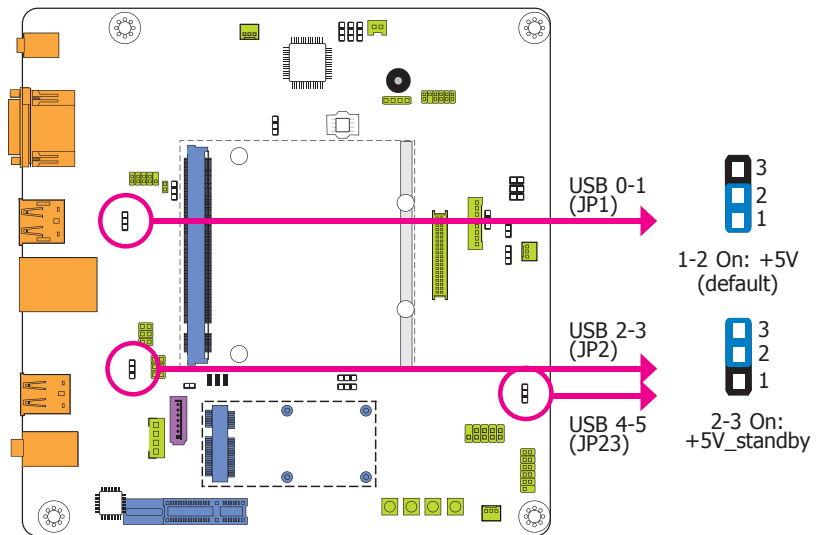
- CMOS data becomes corrupted.
- You forgot the supervisor or user password.

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 JP9 pins 2 and 3 to On. Wait for a few seconds and set JP9 back to its default setting, pins 1 and 2 On.
- Now plug the power cord and power-on the system.

USB Power Select

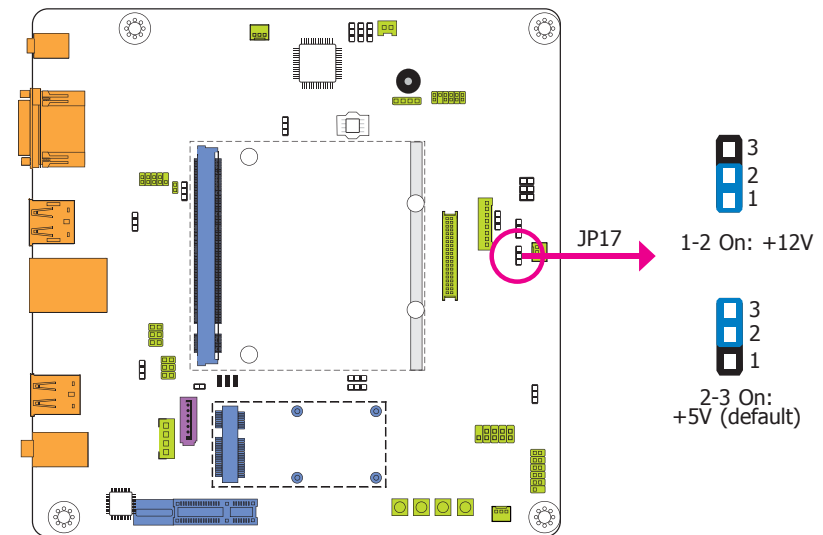


JP1 (for USB 0-1), JP2 (for USB 2-3) and JP23 (for USB 4-5) are used to select the power of USB ports. Selecting +5V_standby will allow you to use a USB keyboard to wake up the system.

**Important:**

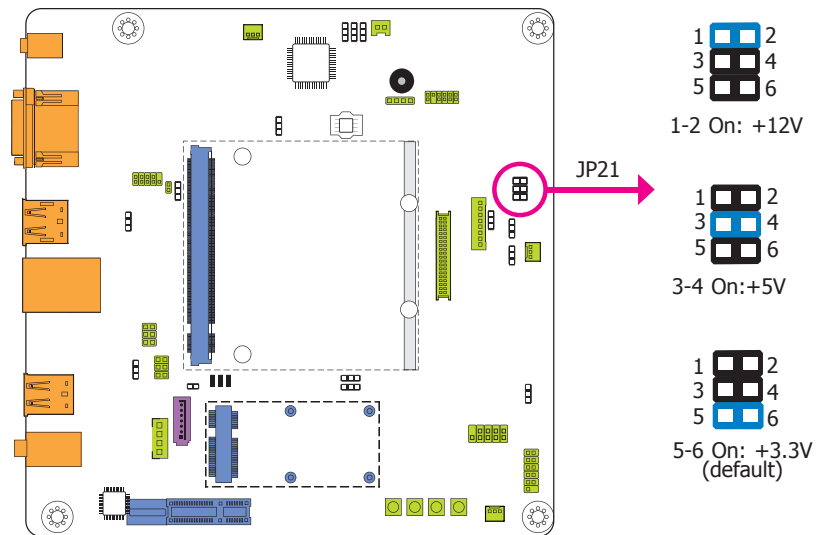
If you are using the Wake-On-USB Keyboard/Mouse function for 2 USB ports, the +5V_standby power source of your power supply must support $\geq 1.5A$. For 3 or more USB ports, the +5V_standby power source of your power supply must support $\geq 2A$.

LCD/Inverter Power Select



JP17 is designed to select the power level of the LCD/Inverter power connector.

Panel Power Select

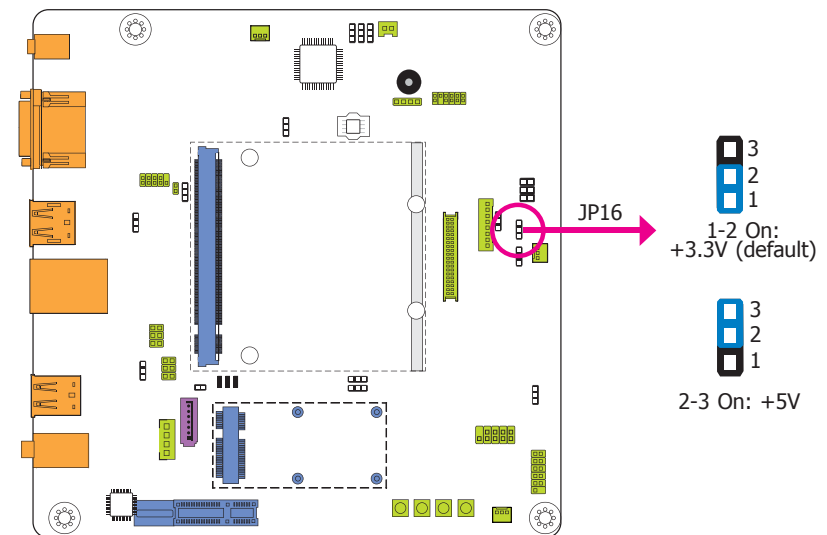


JP21 is used to select the power supplied with the LCD panel.

**Important:**

Before powering-on the system, make sure that the power settings of JP21 match the LCD panel's specification. Selecting the incorrect voltage will seriously damage the LCD panel.

Backlight Power Select

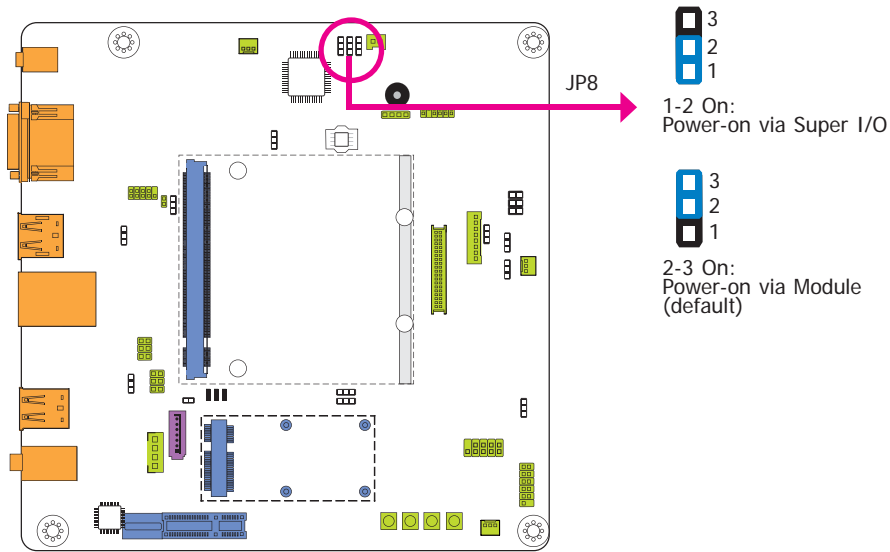


JP16 is used to select the backlight power control: +5V or +3.3V.

**Important:**

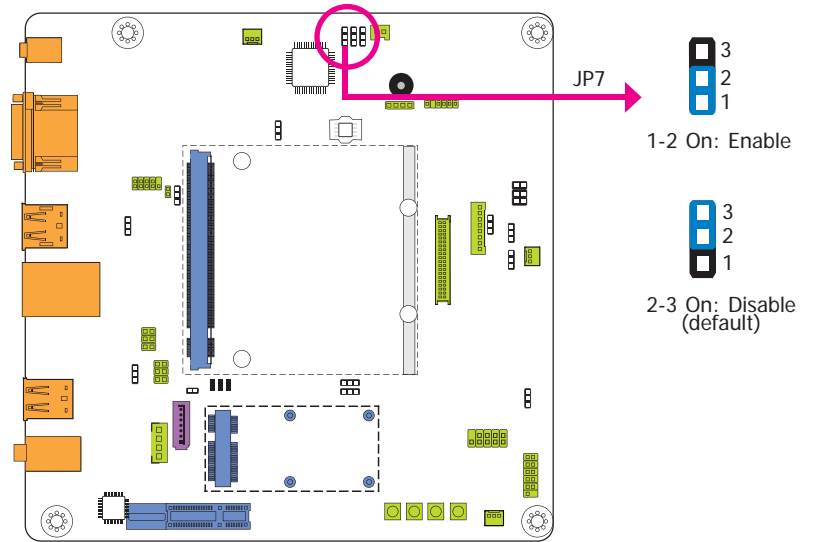
Before powering-on the system, make sure that the power settings of JP16 match the power specification of backlight control. Selecting the incorrect voltage will seriously damage the backlight.

Auto Power-on Select



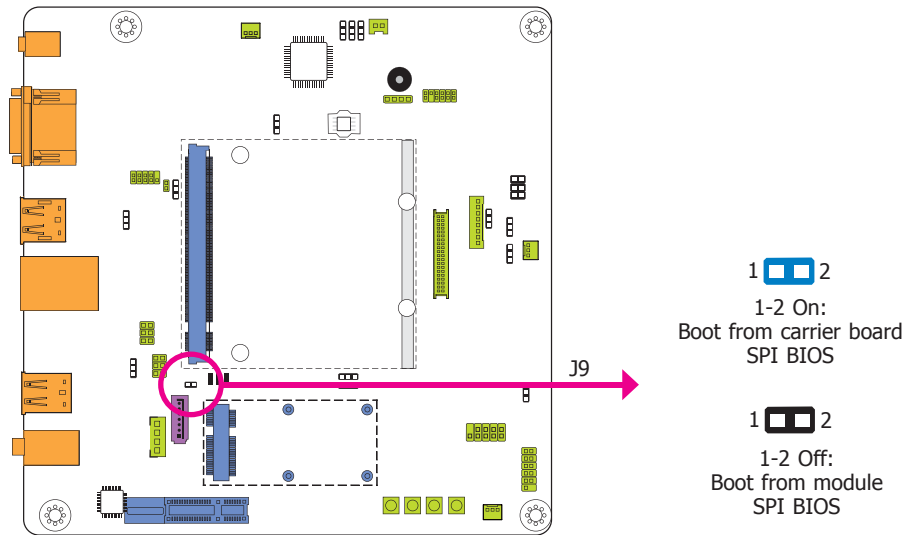
JP8 is used to select the method of powering on the system.

Super I/O Enable/Disable



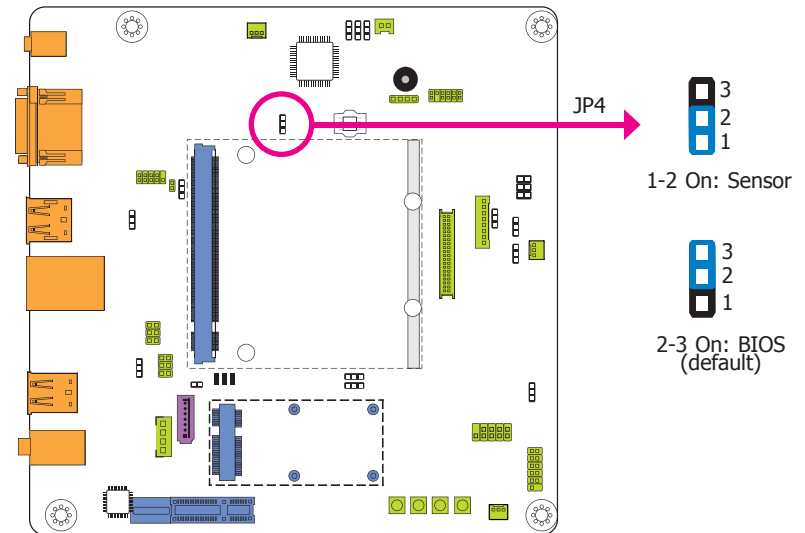
JP7 is used to enable or disable the super IO chip.

BIOS Select



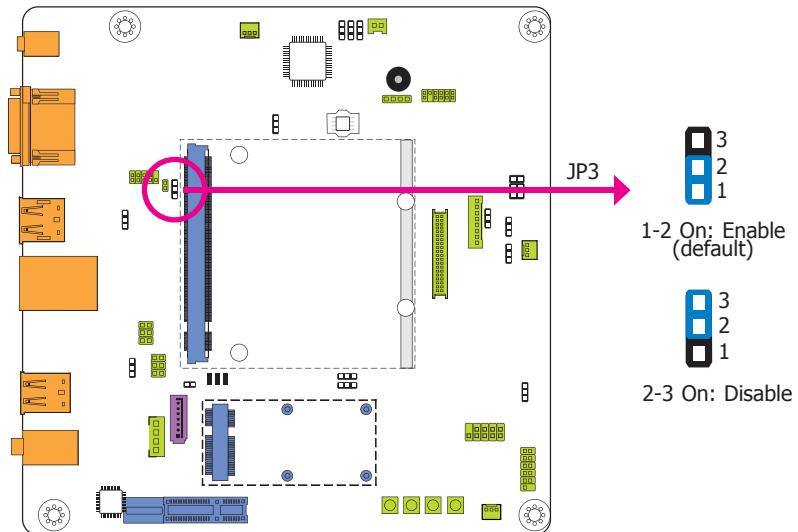
J9 is used to determine the BIOS boot device.

SPI Switch



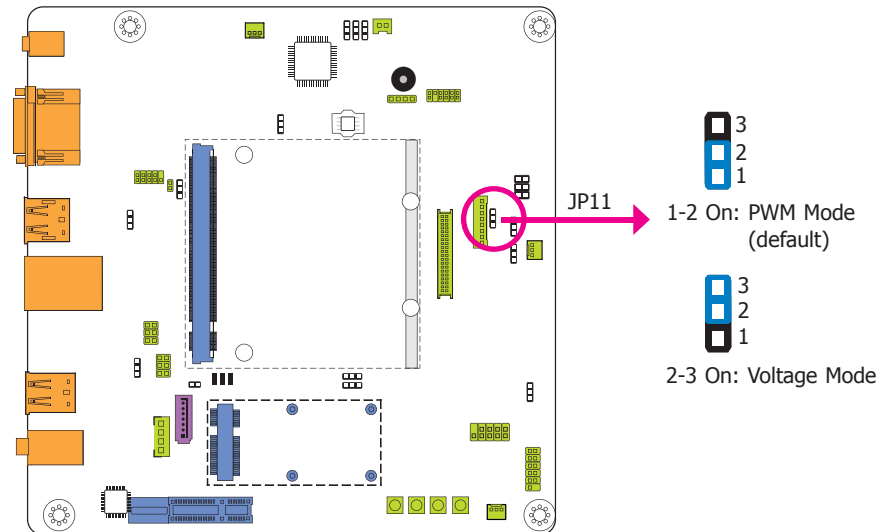
JP4 allows you to select the SPI signal from the carrier board SPI BIOS.

UART 2 Enable/Disable



JP3 is used to enable or disable the UART 2 port.

Dimming Mode Select

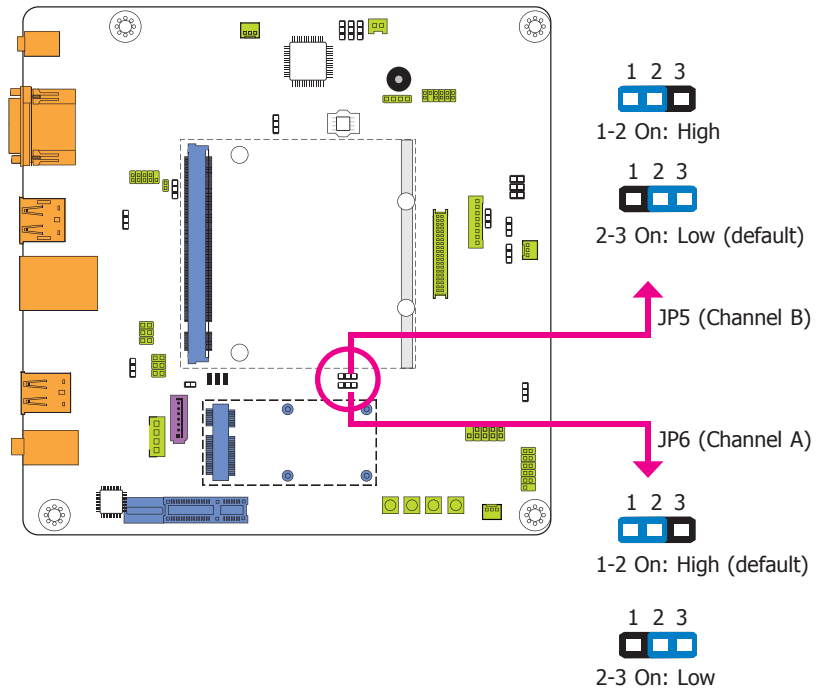


JP11 allows you to select the mode for the lightness control of the LVDS panel.

**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.

LVDS Switch Setting

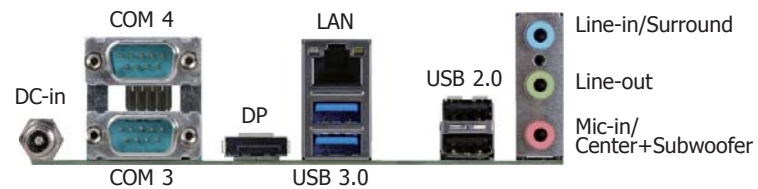


JP5 and JP6 are designed to select the signal for the LVDS panel.



Important:
You need to set JP5 and JP6 simultaneously.

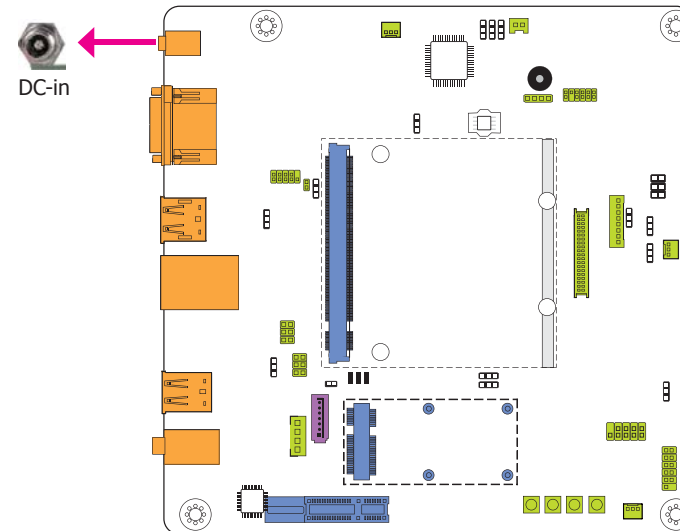
Rear Panel I/O Ports



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

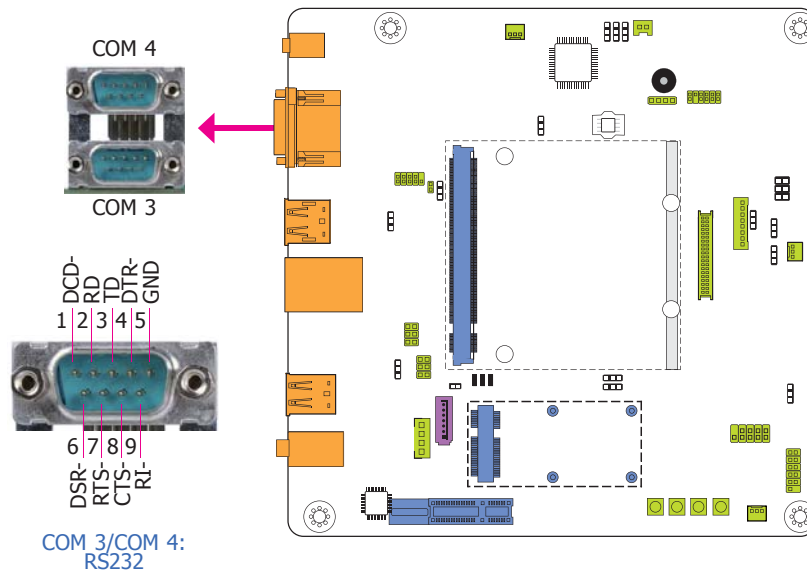
- 1 12V DC-in jack
- 2 Serial (COM) ports
- 1 DP port
- 1 RJ45 LAN port
- 2 USB 3.0 ports
- 2 USB 2.0 type A ports
- Line-in/Surround jack
- Line-out jack
- Mic-in/Center+Subwoofer jack

12V DC-in



This jack provides maximum of 100W power and is considered a low power solution. Connect a DC power cord to this jack. Use a power adapter with 12V DC output voltage. Using a voltage higher than the recommended one may fail to boot the system or cause damage to the system board.

Serial (COM) Ports



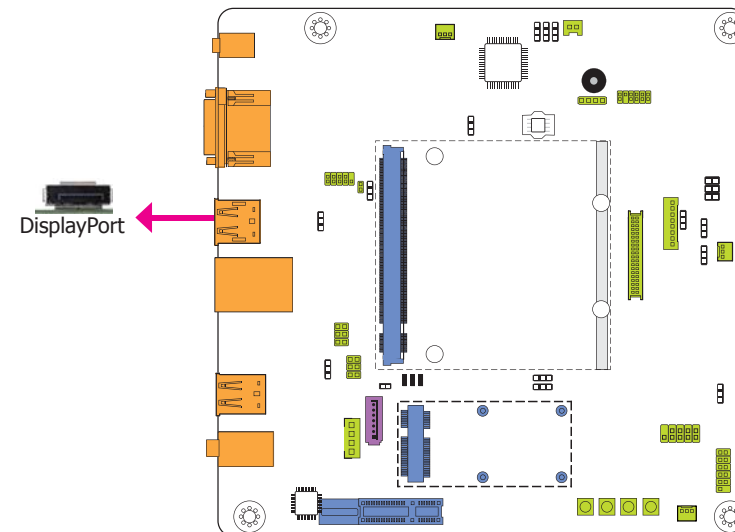
COM 3 and COM 4 are fixed at RS232.

The serial ports are asynchronous communication ports with 16C550A-compatible UARTs that can be used with modems, serial printers, remote display terminals, and other serial devices.

Connecting External Serial Ports

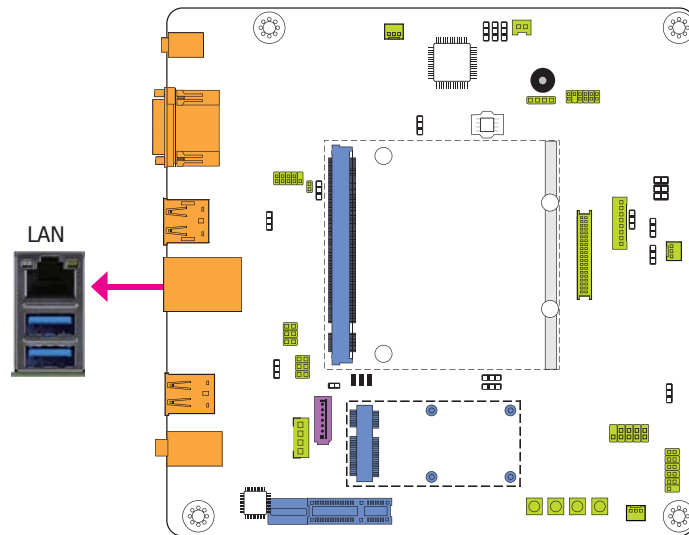
Your COM port may come mounted on a card-edge bracket. Install the card-edge bracket to an available slot at the rear of the system chassis then insert the serial port cable to the COM connector. Make sure the colored stripe on the ribbon cable is aligned with pin 1 of the COM connector.

DisplayPort



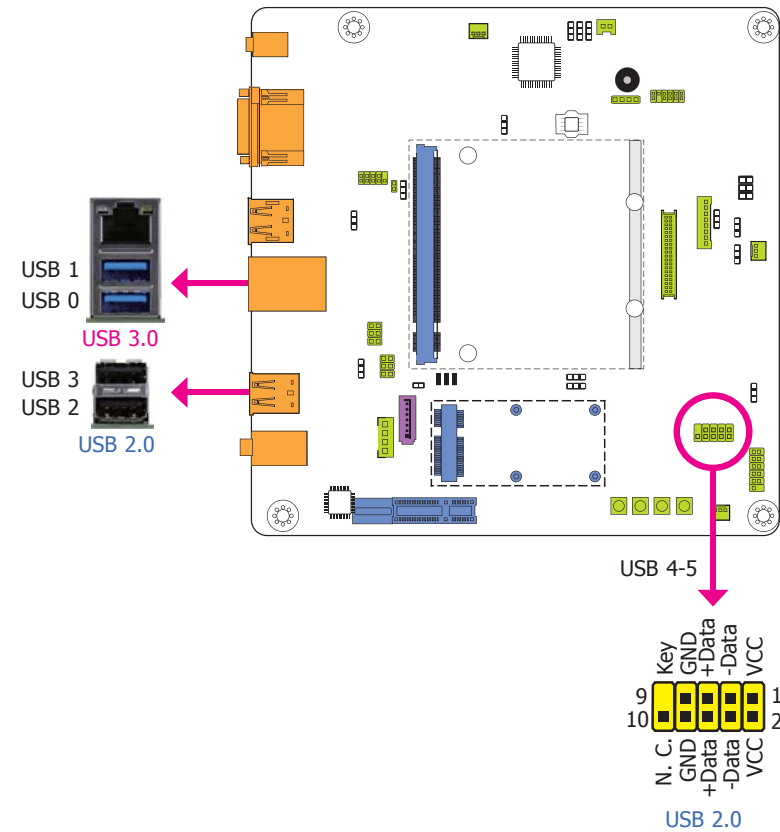
DisplayPort is a digital display interface used to connect a display device such as a computer monitor. It is used to transmit audio and video simultaneously. The interface, which is developed by VESA, delivers higher performance features than any other digital interface.

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



The USB device allows data exchange between your computer and a wide range of simultaneously accessible external Plug and Play peripherals.

The system board is equipped with two onboard USB 3.0 ports (USB 0-1) and two onboard USB 2.0 type A ports (USB 2-3). The 10-pin connector allows you to connect 2 additional USB 2.0/1.1 ports (USB 4-5). The additional USB port may be mounted on a card-edge bracket. Install the card-edge bracket to an available slot at the rear of the system chassis and then insert the USB port cables to a connector.

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**

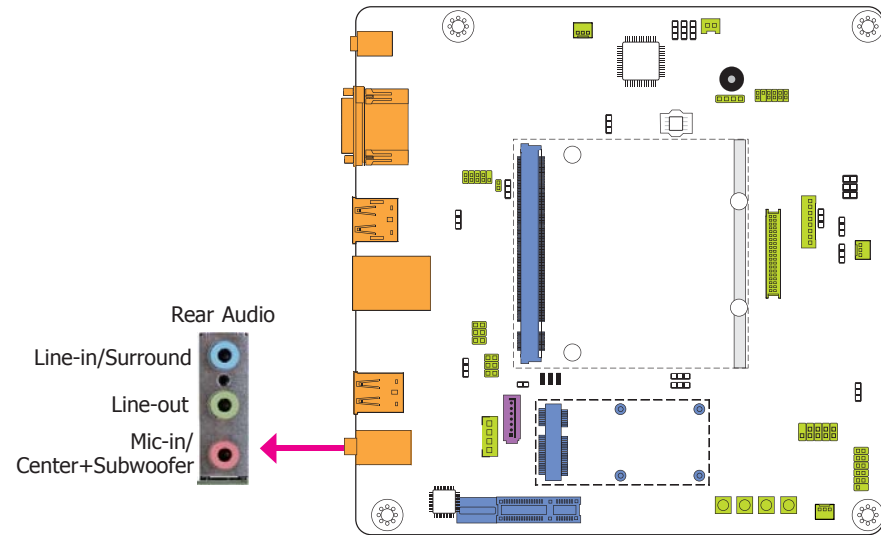
JP1 (for USB 0-1), JP2 (for USB 2-3) and JP23 (for USB 4-5) must be set to "2-3 On: +5V_standby". Refer to "USB Power Select" in this chapter for more information.



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 3 audio jacks. A jack is a one-hole connecting interface for inserting a plug.

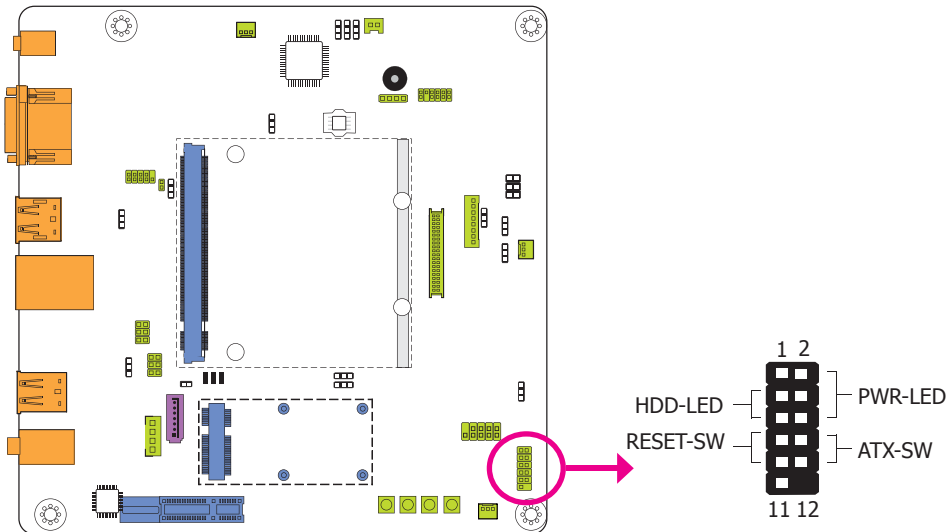
- **Line-in/Surround Jack (Light Blue)**
This jack is used to connect any audio devices such as Hi-fi set, CD player, tape player, AM/FM radio tuner, synthesizer, etc.
- **Line-out Jack (Lime)**
This jack is used to connect a headphone or external speakers.
- **Mic-in/Center+Subwoofer (Pink)**
This jack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

BIOS Setting

Refer to the module's BIOS for more information.

I/O Connectors

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 | ATX-SW | 8 | Signal |
| | 9 | RST Signal | | 10 | Ground |
| N.C. | 11 | N.C. | Key | 12 | Key |

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.

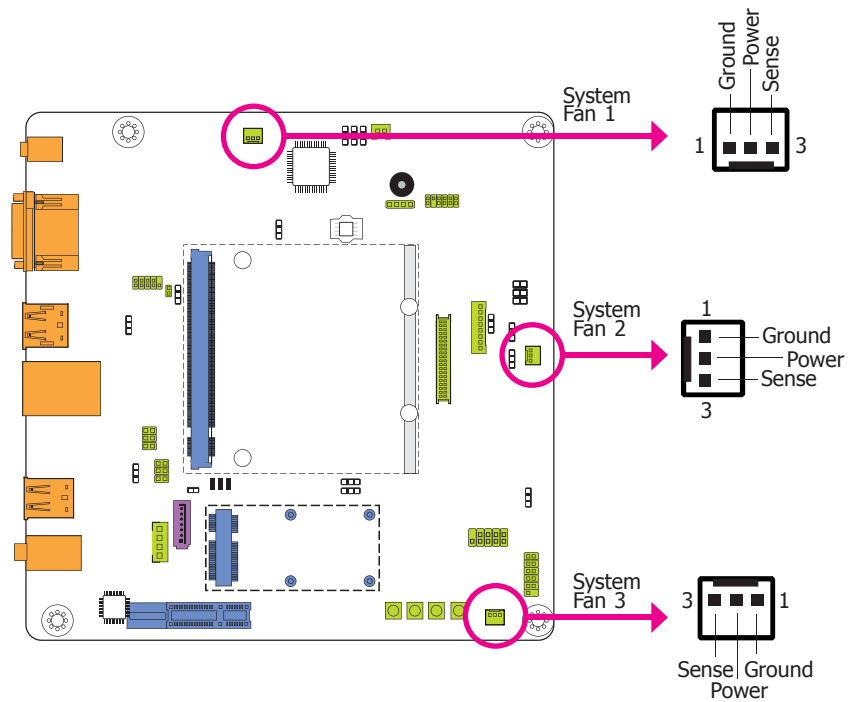
ATX-SW - ATX Power Switch

This switch is used to power on or off the system.

PWR-LED - Power/Standby LED

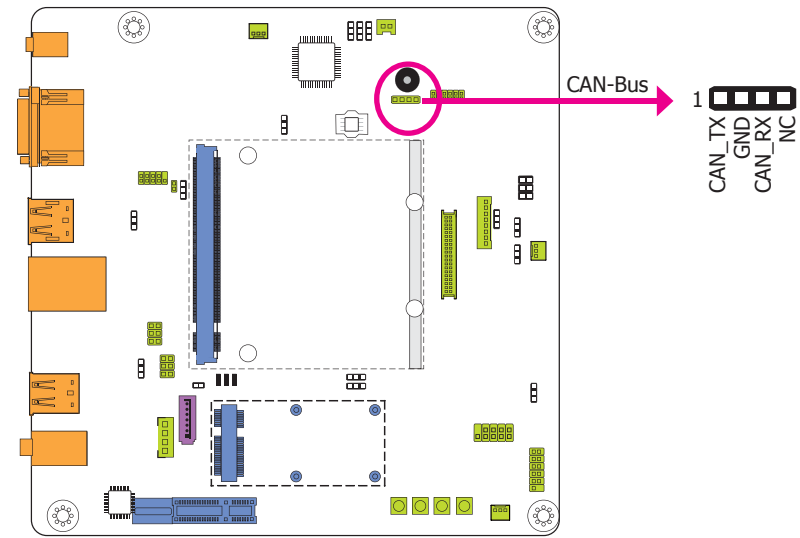
When the system's power is on, this LED will light. When the system is in the S1 (POS - Power On Suspend) state, it will blink every second. When the system is in the S3 (STR - Suspend To RAM) state, it will blink every 4 seconds.

Cooling Fan Connectors



These fan connectors are used to connect a cooling fan. The cooling fan will provide adequate airflow throughout the chassis to prevent overheating the system board components.

CAN-Bus Connector

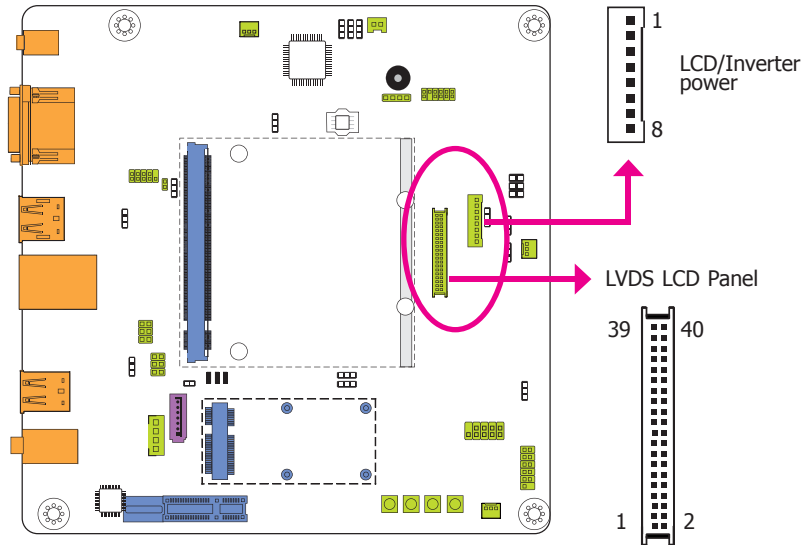


The CAN controller performs communication in accordance with the BOSCH CAN Protocol Version 2.0B Active1 (standard format and extended format). The bit rate can be programmed to a maximum of 1Mbit/s. To connect the CAN controller module to the CAN bus, it is necessary to add transceiver hardware.

When communicating in a CAN network, individual message objects are configured. The message objects and the identifier masks for the receive filter for the received messages are stored in the message RAM.

Controller Area Network (CAN or CAN-bus) is a message based protocol designed specifically for automotive applications but now is also used in other areas such as industrial automation and medical equipment.

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.



Note:

DFI board's LVDS connector: Hirose DF13-40DP-1.25V(91)/40P/1.25mm; cable side connector: Hirose DF13-40DS-1.25C.

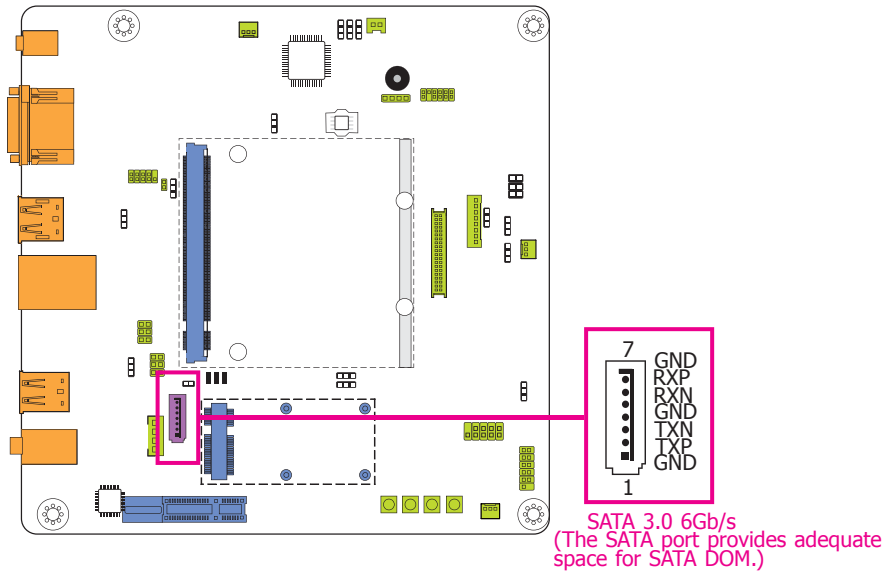
LVDS LCD Panel Connector

| Pins | Function | Pins | Function |
|------|-------------|------|-------------|
| 1 | GND | 2 | GND |
| 3 | LVDS_Out3+ | 4 | LVDS_Out7+ |
| 5 | LVDS_Out3- | 6 | LVDS_Out7- |
| 7 | GND | 8 | GND |
| 9 | LVDS_Out2+ | 10 | LVDS_Out6+ |
| 11 | LVDS_Out2- | 12 | LVDS_Out6- |
| 13 | GND | 14 | GND |
| 15 | LVDS_Out1+ | 16 | LVDS_Out5+ |
| 17 | LVDS_Out1- | 18 | LVDS_Out5- |
| 19 | GND | 20 | GND |
| 21 | LVDS_Out0+ | 22 | LVDS_Out4+ |
| 23 | LVDS_Out0- | 24 | LVDS_Out4- |
| 25 | GND | 26 | GND |
| 27 | LVDS_CLK1+ | 28 | LVDS_CLK2+ |
| 29 | LVDS_CLK1- | 30 | LVDS_CLK2- |
| 31 | GND | 32 | GND |
| 33 | LVDS_DDCCLK | 34 | N.C. |
| 35 | LVDS_DDCDAA | 36 | +3.3V |
| 37 | Panel Power | 38 | Panel Power |
| 39 | Panel Power | 40 | Panel Power |

LCD/Inverter Power Connector

| Pins | 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 |

SATA (Serial ATA) Connector

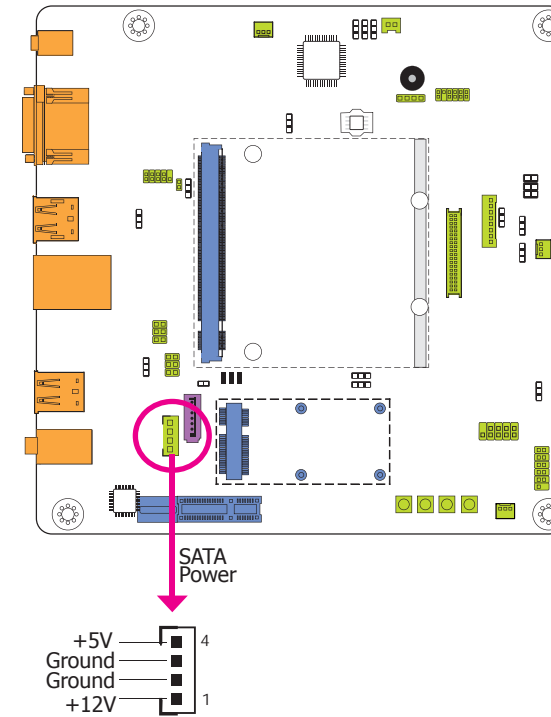


The Serial ATA connector is used to connect the Serial ATA device. Connect one end of the Serial ATA cable to a SATA connector and the other end to your Serial ATA device.

BIOS Setting

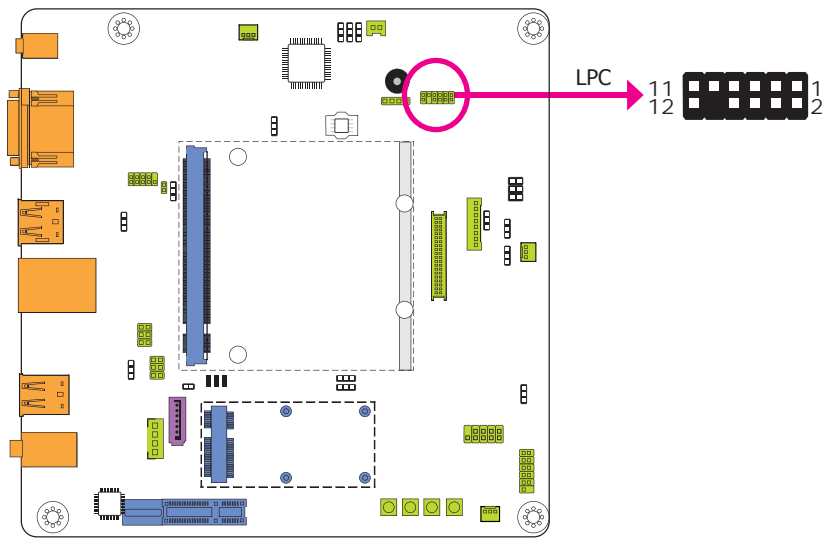
Refer to the module's BIOS for more information.

SATA (Serial ATA) Power Connector



The SATA power connector supplies power to the SATA drive. Connect one end of the provided power cable to the SATA power connector and the other end to your storage device.

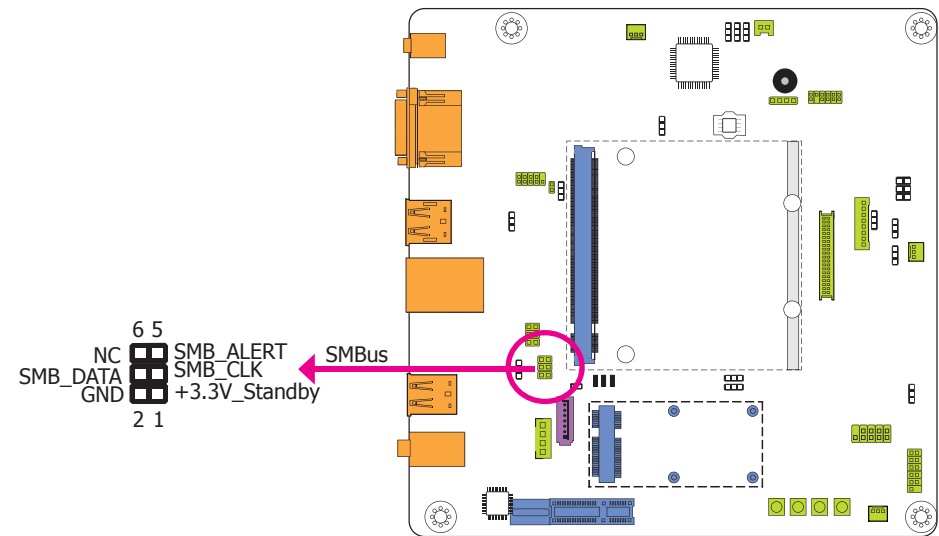
LPC Debug connector



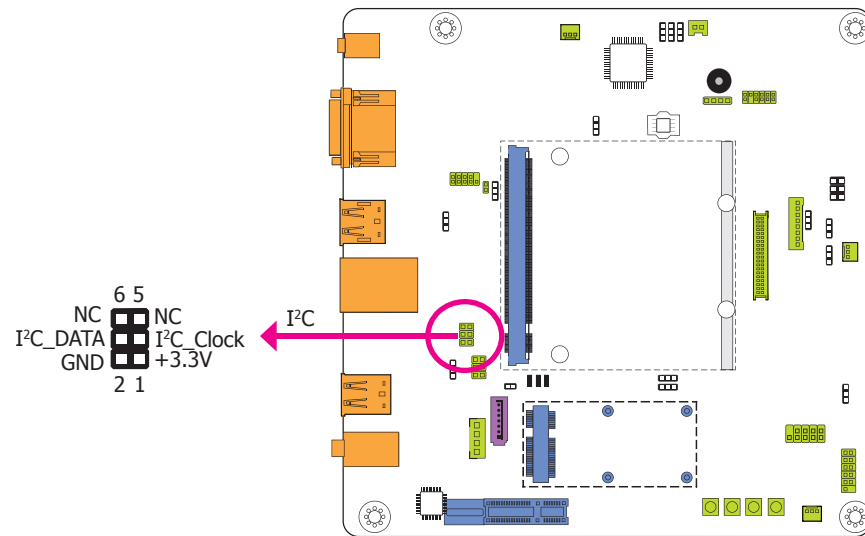
The LPC connector is used for the debug function and its pin functions are listed below.

| Pins | Pin Assignment | Pins | Pin Assignment |
|------|----------------|------|----------------|
| 1 | CLK | 2 | LAD1 |
| 3 | RST# | 4 | LAD0 |
| 5 | FRAME# | 6 | VCC_+3V |
| 7 | LAD3 | 8 | GND |
| 9 | LAD2 | 10 | NC |
| 11 | SERIRQ | 12 | CLK_48MHz |

SMBus Connector

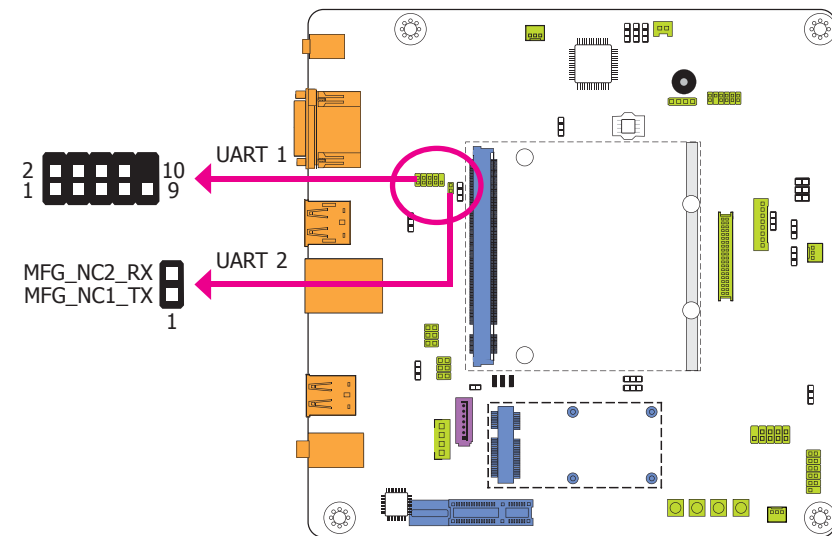


The SMBus (System Management Bus) connectors are used to connect the SMBus device. It is a multiple device bus that allows multiple chips to connect to the same bus and enable each one to act as a master by initiating data transfer.

I²C Connector

The 1-channel I²C bus interface conforms to the version 2.1 I²C bus specification. It operates as a master or slave device and supports a multi-master bus.

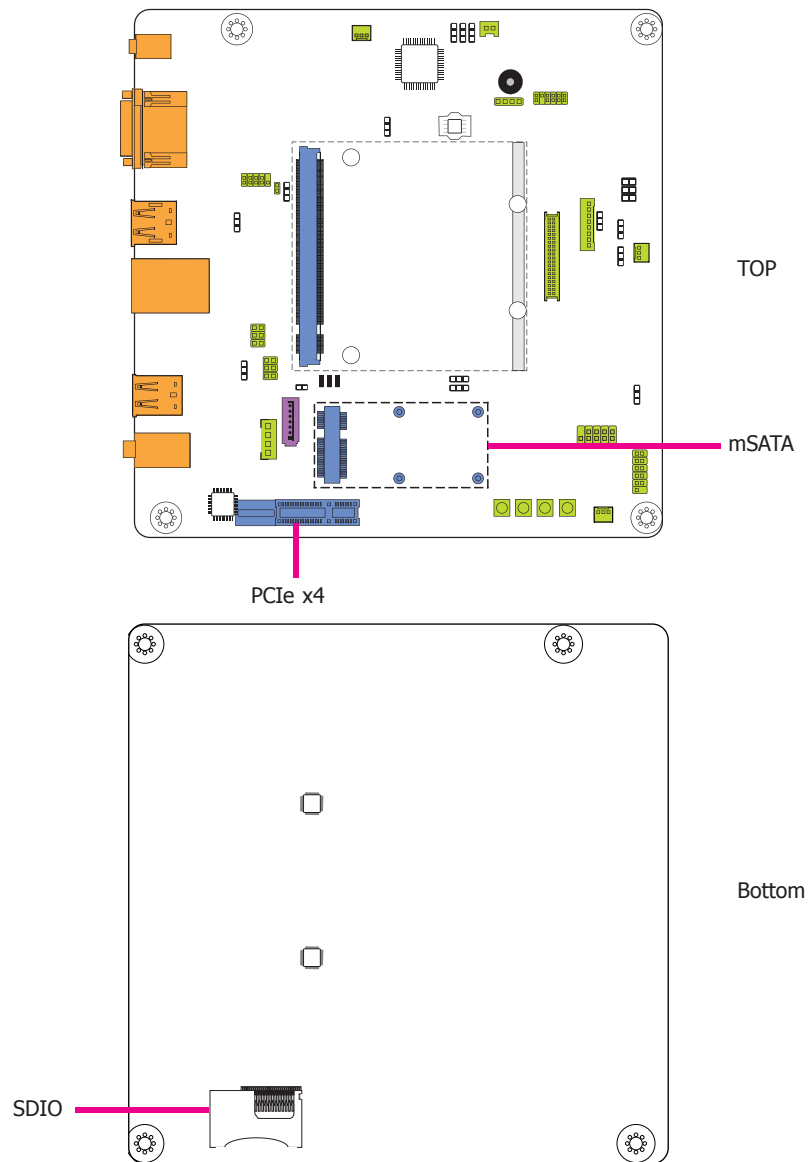
UART Ports



The UART (Universal Asynchronous Receiver/Transmitter) port is the hardware component that transmits and receives the data of the serial communications. UART 2 port is the serial interface supporting TX/RX signal only to connect a simple UART for firmware and boot loader implementations.

| UART 1 | | | |
|--------|----------------|------|----------------|
| Pins | Pin Assignment | Pins | Pin Assignment |
| 1 | NC | 2 | UART_RX |
| 3 | UART0_TX | 4 | NC |
| 5 | GND | 6 | NC |
| 7 | UART0_RTS- | 8 | UART0_CTS- |
| 9 | NC | | |

Expansion Slots



mSATA Port

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.

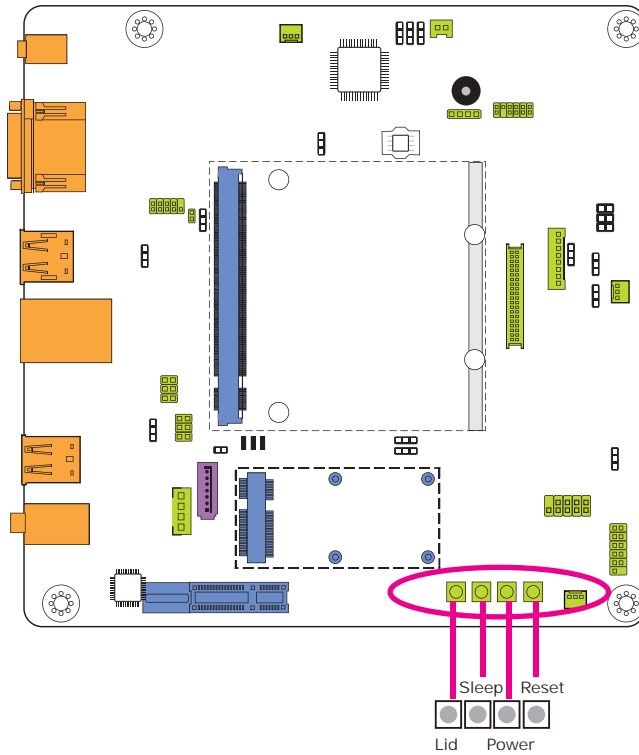
PCI Express x4 Slot

Install PCI Express cards such as network cards or other cards that comply to the PCI Express specifications into the PCI Express x4 slot.

SDIO Slot

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.

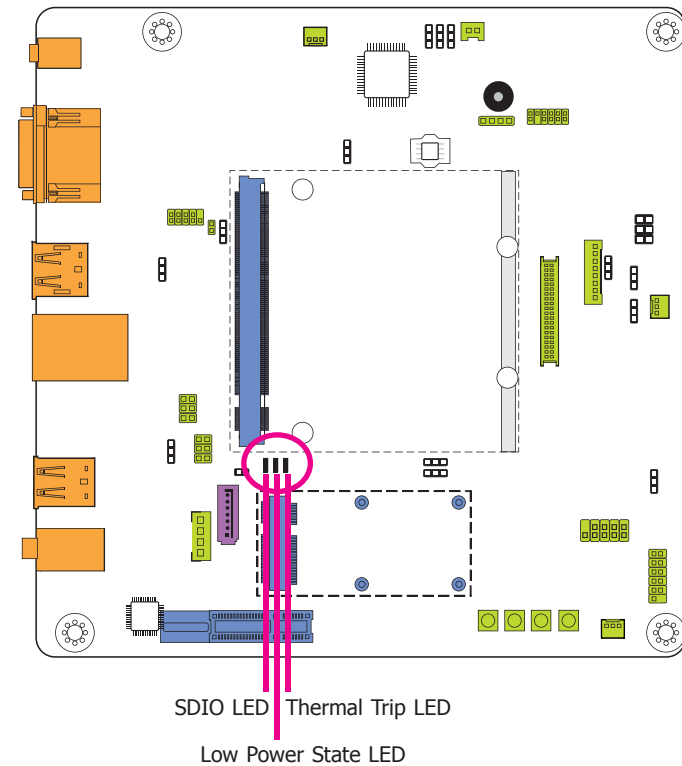
Switches

**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.

LEDs

**Thermal Trip LED**

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

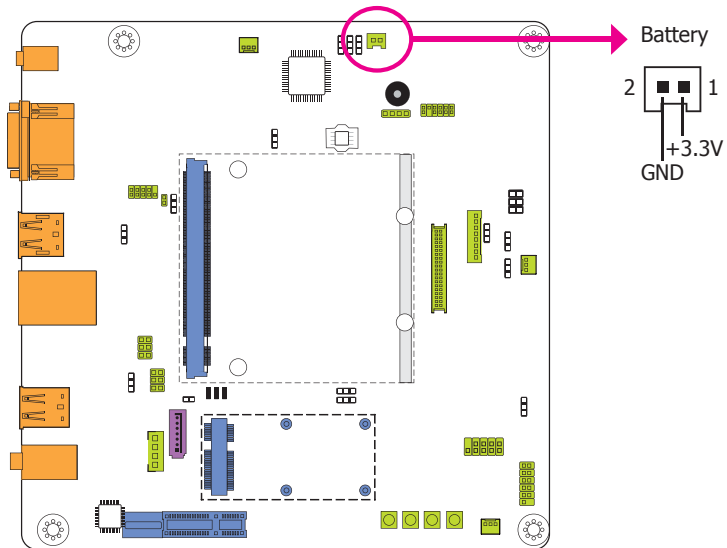
Low Power State LED

This LED will light red when the system is in the standby mode. It indicates that the system will be entering a low power state soon.

SDIO LED

This LED will light when the SIOD card is installed into the SDIO slot.

Battery



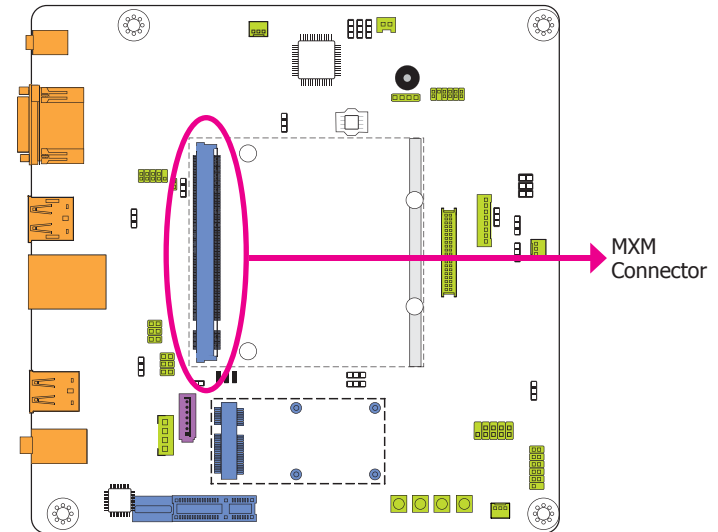
Connect to the
battery connector

The lithium ion battery 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 recommend by the manufacturer.
- Dispose of used batteries according to local ordinance.

MXM Connector



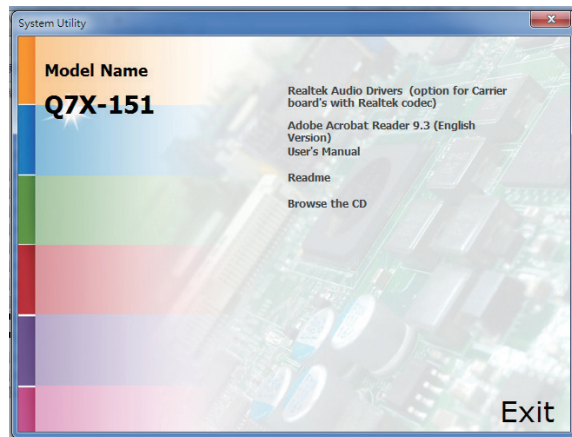
The MXM connector is used to interface the carrier board with a Qseven board. Refer to the tables in the following page for the pin functions of the MXM connector.

| Pin | Q7 R2.0 Signal | BT700 Signal | Pin | Q7 R2.0 Signal | BT700 Signal |
|-----|---------------------------|---------------|-----|-----------------------|---------------|
| 1 | GND | GND | 2 | GND | GND |
| 3 | GBE_MDI3- | GBE_MDI3- | 4 | GBE_MDI2- | GBE_MDI2- |
| 5 | GBE_MDI3+ | GBE_MDI3+ | 6 | GBE_MDI2+ | GBE_MDI2+ |
| 7 | GBE_LINK100# | GBE_LINK100# | 8 | GBE_LINK1000# | GBE_LINK1000# |
| 9 | GBE_MDI1- | GBE_MDI1- | 10 | GBE_MDI0- | GBE_MDI0- |
| 11 | GBE_MDI1+ | GBE_MDI1+ | 12 | GBE_MDI0+ | GBE_MDI0+ |
| 13 | GBE_LINK# | NC | 14 | GBE_ACT# | GBE_ACT# |
| 15 | GBE_CTREF | NC | 16 | SUS_S5# | SUS_S4# |
| 17 | WAKE# | WAKE# | 18 | SUS_S3# | SUS_S3# |
| 19 | SUS_STAT# | SUS_STAT# | 20 | PWRBTN# | PWRBTN# |
| 21 | SLP_BTN# | SLP_BTN# | 22 | LID_BTN# | LID_BTN# |
| 23 | GND | GND | 24 | GND | GND |
| | KEY | KEY | | KEY | KEY |
| 25 | GND | GND | 26 | PWGIN | PWGIN |
| 27 | BATLOW# | BATLOW# | 28 | RSTBTN# | RSTBTN# |
| 29 | SATA0_TX+ | SATA0_TX+ | 30 | SATA1_TX+ | SATA1_TX+ |
| 31 | SATA0_TX- | SATA0_TX- | 32 | SATA1_TX- | SATA1_TX- |
| 33 | SATA_ACT# | SATA_ACT# | 34 | GND | GND |
| 35 | SATA0_RX+ | SATA0_RX+ | 36 | SATA1_RX+ | SATA1_RX+ |
| 37 | SATA0_RX- | SATA0_RX- | 38 | SATA1_RX- | SATA1_RX- |
| 39 | GND | GND | 40 | GND | GND |
| 41 | BIOS_DISABLE# / BOOT_ALT# | BIOS_DISABLE# | 42 | SDIO_CLK# | SDIO_CLK# |
| 43 | SDIO_CD# | SDIO_CD# | 44 | SDIO_LED | NC |
| 45 | SDIO_CMD | SDIO_CMD | 46 | SDIO_WP | SDIO_WP |
| 47 | SDIO_PWR# | SDIO_PWR# | 48 | SDIO_DAT1 | SDIO_DAT1 |
| 49 | SDIO_DAT0 | SDIO_DAT0 | 50 | SDIO_DAT3 | SDIO_DAT3 |
| 51 | SDIO_DAT2 | SDIO_DAT2 | 52 | SDIO_DAT5 | NC |
| 53 | SDIO_DAT4 | NC | 54 | SDIO_DAT7 | NC |
| 55 | SDIO_DAT6 | NC | 56 | RSVD | NC |
| 57 | GND | GND | 58 | GND | GND |
| 59 | HDA_SYNC / I2S_WS | HDA_SYNC | 60 | SMB_CLK / GP1_I2C_CLK | SMB_CLK |
| 61 | HDA_RST# / I2S_RST# | HDA_RST# | 62 | SMB_DAT / GP1_I2C_DAT | SMB_DAT |
| 63 | HDA_BITCLK / I2S_CLK | HDA_BITCLK | 64 | SMB_ALERT# | SMB_ALERT# |
| 65 | HDA_SDI / I2S_SDI | HDA_SDI | 66 | GP0_I2C_CLK | GP0_I2C_CLK |
| 67 | HDA_SDO / I2S_SDO | HDA_SDO | 68 | GP0_I2C_DAT | GP0_I2C_DAT |
| 69 | THRM# | THRM# | 70 | WDTRIG# | WDTRIG# |
| 71 | THRMTRIP# | THRMTRIP# | 72 | WDOUT | WDOUT |
| 73 | GND | GND | 74 | GND | GND |
| 75 | USB_P7- / USB_SSTX0- | USB_SSTX0- | 76 | USB_P6- / USB_SSRX0- | USB_SSRX0- |
| 77 | USB_P7+ / USB_SSTX0+ | USB_SSTX0+ | 78 | USB_P6+ / USB_SSRX0+ | USB_SSRX0+ |
| 79 | USB_6_7_OC# | USB_6_7_OC# | 80 | USB_4_5_OC# | USB_4_5_OC# |
| 81 | USB_P5- / USB_SSTX1- | USB_P5- | 82 | USB_P4- / USB_SSRX1- | USB_P4- |
| 83 | USB_P5+ / USB_SSTX1+ | USB_P5+ | 84 | USB_P4+ / USB_SSRX1+ | USB_P4+ |
| 85 | USB_2_3_OC# | USB_2_3_OC# | 86 | USB_0_1_OC# | USB_0_1_OC# |
| 87 | USB_P3- | USB_P3- | 88 | USB_P2- | USB_P2- |
| 89 | USB_P3+ | USB_P3+ | 90 | USB_P2+ | USB_P2+ |
| 91 | USB_CC | NC | 92 | USB_ID | NC |
| 93 | USB_P1- | USB_P1- | 94 | USB_P0- | USB_P0- |
| 95 | USB_P1+ | USB_P1+ | 96 | USB_P0+ | USB_P0+ |
| 97 | GND | GND | 98 | GND | GND |
| 99 | eDP0_TX0+ / LVDS_A0+ | LVDS_A0+ | 100 | eDP1_TX0+ / LVDS_B0+ | LVDS_B0+ |
| 101 | eDP0_TX0- / LVDS_A0- | LVDS_A0- | 102 | eDP1_TX0- / LVDS_B0- | LVDS_B0- |
| 103 | eDP0_TX1+ / LVDS_A1+ | LVDS_A1+ | 104 | eDP1_TX1+ / LVDS_B1+ | LVDS_B1+ |
| 105 | eDP0_TX1- / LVDS_A1- | LVDS_A1- | 106 | eDP1_TX1- / LVDS_B1- | LVDS_B1- |
| 107 | eDP0_TX2+ / LVDS_A2+ | LVDS_A2+ | 108 | eDP1_TX2+ / LVDS_B2+ | LVDS_B2+ |
| 109 | eDP0_TX2- / LVDS_A2- | LVDS_A2- | 110 | eDP1_TX2- / LVDS_B2- | LVDS_B2- |
| 111 | LVDS_PPEN | LVDS_PPEN | 112 | LVDS_BLEN | LVDS_BLEN |
| 113 | eDP0_TX3+ / LVDS_A3+ | LVDS_A3+ | 114 | eDP1_TX3+ / LVDS_B3+ | LVDS_B3+ |
| 115 | eDP0_TX3- / LVDS_A3- | LVDS_A3- | 116 | eDP1_TX3- / LVDS_B3- | LVDS_B3- |

| Pin | Q7 R2.0 Signal | BT700 Signal | Pin | Q7 R2.0 Signal | BT700 Signal |
|-----|-----------------------------|---------------|-----|--------------------------|---------------|
| 117 | GND | GND | 118 | GND | GND |
| 119 | eDP0_AUX+ / LVDS_A_CLK+ | LVDS_A_CLK+ | 120 | eDP1_AUX+ / LVDS_B_CLK+ | LVDS_B_CLK+ |
| 121 | eDP0_AUX- / LVDS_A_CLK- | LVDS_A_CLK- | 122 | eDP1_AUX- / LVDS_B_CLK- | LVDS_B_CLK- |
| 123 | LVDS_BLT_CTRL / GP_PWM_OUT0 | LVDS_BLT_CTRL | 124 | GP_1-Wire_Bus | GP_1-Wire_Bus |
| 125 | GP2_I2C_DAT / LVDS_DID_DAT | LVDS_DID_DAT | 126 | eDP0_HPD# / LVDS_BLC_DAT | NC |
| 127 | GP2_I2C_CLK / LVDS_DID_CLK | LVDS_DID_CLK | 128 | eDP1_HPD# / LVDS_BLC_CLK | NC |
| 129 | CAN0_TX | NC | 130 | CAN0_RX | NC |
| 131 | DP_LANE3+ / TMDS_CLK+ | DP_LANE3+ | 132 | RSVD (Differential Pair) | NC |
| 133 | DP_LANE3- / TMDS_CLK- | DP_LANE3- | 134 | RSVD (Differential Pair) | NC |
| 135 | GND | GND | 136 | GND | GND |
| 137 | DP_LANE1+ / TMDS_LANE1+ | DP_LANE1+ | 138 | DP_AUX+ | DP_AUX+ |
| 139 | DP_LANE1- / TMDS_LANE1- | DP_LANE1- | 140 | DP_AUX- | DP_AUX- |
| 141 | GND | GND | 142 | GND | GND |
| 143 | DP_LANE2+ / TMDS_LANE0+ | DP_LANE2+ | 144 | RSVD (Differential Pair) | NC |
| 145 | DP_LANE2- / TMDS_LANE0- | DP_LANE2- | 146 | RSVD (Differential Pair) | NC |
| 147 | GND | GND | 148 | GND | GND |
| 149 | DP_LANE0+ / TMDS_LANE2+ | DP_LANE0+ | 150 | HDMI_CTRL_DAT | HDMI_CTRL_DAT |
| 151 | DP_LANE0- / TMDS_LANE2- | DP_LANE0- | 152 | HDMI_CTRL_CLK | HDMI_CTRL_CLK |
| 153 | DP_HDMI_HPD# | DP_HDMI_HPD# | 154 | RSVD | NC |
| 155 | PCIE_CLK_REF+ | PCIE_CLK_REF+ | 156 | PCIE_WAKE# | PCIE_WAKE# |
| 157 | PCIE_CLK_REF- | PCIE_CLK_REF- | 158 | PCIE_RST# | PCIE_RST# |
| 159 | GND | GND | 160 | GND | GND |
| 161 | PCIE3_TX+ | NC | 162 | PCIE3_RX+ | NC |
| 163 | PCIE3_TX- | NC | 164 | PCIE3_RX- | NC |
| 165 | GND | GND | 166 | GND | GND |
| 167 | PCIE2_TX+ | PCIE2_TX+ | 168 | PCIE2_RX+ | PCIE2_RX+ |
| 169 | PCIE2_TX- | PCIE2_TX- | 170 | PCIE2_RX- | PCIE2_RX- |
| 171 | UART0_TX | UART0_TX | 172 | UART0_RTS# | UART0_RTS# |
| 173 | PCIE1_TX+ | PCIE1_TX+ | 174 | PCIE1_RX+ | PCIE1_RX+ |
| 175 | PCIE1_TX- | PCIE1_TX- | 176 | PCIE1_RX- | PCIE1_RX- |
| 177 | UART0_RX | UART0_RX | 178 | UART0_CTS# | UART0_CTS# |
| 179 | PCIE0_TX+ | PCIE0_TX+ | 180 | PCIE0_RX+ | PCIE0_RX+ |
| 181 | PCIE0_TX- | PCIE0_TX- | 182 | PCIE0_RX- | PCIE0_RX- |
| 183 | GND | GND | 184 | GND | GND |
| 185 | LPC_AD0 / GPIO0 | LPC_AD0 | 186 | LPC_AD1 / GPIO1 | LPC_AD1 |
| 187 | LPC_AD2 / GPIO2 | LPC_AD2 | 188 | LPC_AD3 / GPIO3 | LPC_AD3 |
| 189 | LPC_CLK / GPIO4 | LPC_CLK | 190 | LPC_FRAME# / GPIO5 | LPC_FRAME# |
| 191 | SERIRQ / GPIO6 | SERIRQ | 192 | LPC_LDRQ# / GPIO7 | NC |
| 193 | VCC_RTC | VCC_RTC | 194 | SPKR / GP_PWM_OUT2 | SPKR |
| 195 | FAN_TACHOIN / GP_TIMER_IN | FAN_TACHOIN | 196 | FAN_PWMOUT / GP_PWM_OUT1 | FAN_PWMOUT |
| 197 | GND | GND | 198 | GND | GND |
| 199 | SPI_MOSI | SPI_MOSI | 200 | SPI_CS0# | SPI_CS0# |
| 201 | SPI_MISO | SPI_MISO | 202 | SPI_CS1# | NC |
| 203 | SPI_SCK | SPI_SCK | 204 | MFG_NC4 | NC |
| 205 | VCC_5V_SB | VCC_5V_SB | 206 | VCC_5V_SB | VCC_5V_SB |
| 207 | MFG_NC0 | NC | 208 | MFG_NC2 | UART1_RX |
| 209 | MFG_NC1 | UART1_TX | 210 | MFG_NC3 | NC |
| 211 | VCC | VCC | 212 | VCC | VCC |
| 213 | VCC | VCC | 214 | VCC | VCC |
| 215 | VCC | VCC | 216 | VCC | VCC |
| 217 | VCC | VCC | 218 | VCC | VCC |
| 219 | VCC | VCC | 220 | VCC | VCC |
| 221 | VCC | VCC | 222 | VCC | VCC |
| 223 | VCC | VCC | 224 | VCC | VCC |
| 225 | VCC | VCC | 226 | VCC | VCC |
| 227 | VCC | VCC | 228 | VCC | VCC |
| 229 | VCC | VCC | 230 | VCC | VCC |

Chapter 3 - Supported Software

Install drivers, utilities and software applications that are required to facilitate and enhance the performance of the system board. You may acquire the software from your sales representatives, from an optional DVD included in the shipment, or from the website download page at <https://www.dfi.com/DownloadCenter>.



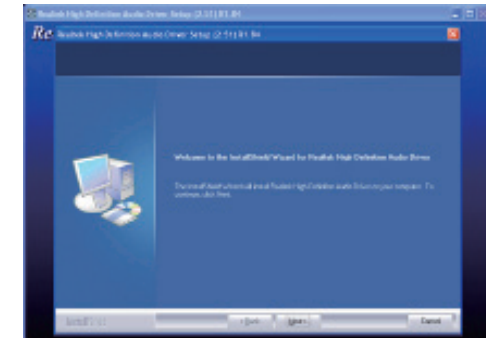
Note:

This step can be ignored if the applications are standalone files.

Realtek Audio Drivers

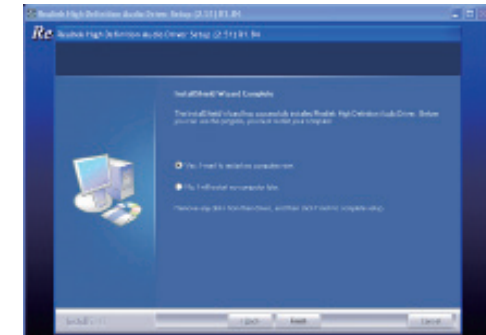
To install the driver, click "Realtek Audio Drivers" on the main menu.

1. Setup is now ready to install the audio driver. Click Next.
2. Follow the remainder of the steps on the screen; clicking "Next" each time you finish a step.



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

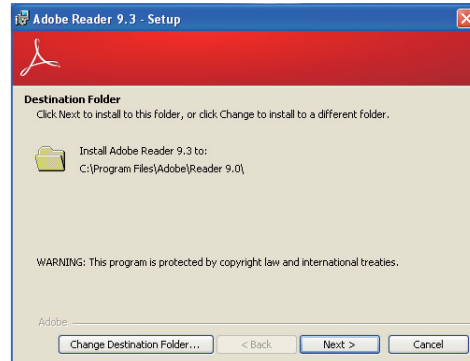
Restarting the system will allow the new software installation to take effect.



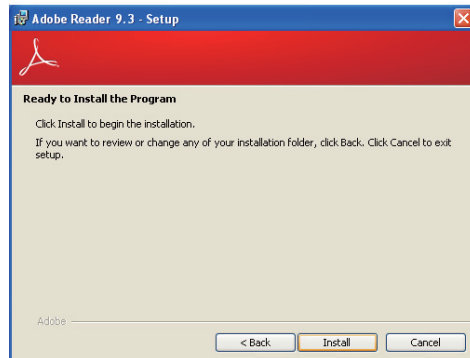
Adobe Acrobat Reader 9.3

To install the reader, click "Adobe Acrobat Reader 9.3" on the main menu.

1. Click Next to install or click Change Destination Folder to select another folder.



2. Click Install to begin installation.



3. Click Finish to exit installation.

