EBS-I300 Series

Embedded Computer

User Manual

HIGH-DEFINITION MULTIMEDIA INTERFACE

E23575
First Edition
October 2024

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Contents

Appendix

About this manual

This manual provides information about the hardware and software features of your Embedded Computer, organized through the following chapters:

Chapter 1: Getting to know your Embedded Computer

This chapter details the hardware components of your Embedded Computer.

Chapter 2: Using your Embedded Computer

This chapter provides you with information on using your Embedded Computer.

Chapter 3: Upgrading your Embedded Computer

This chapter provides you with information on how to upgrade the memory modules, wireless modules, and hard disk drive / solid state drive of your Embedded Computer.

Chapter 4: Using the software

This chapter provides you with information on how to install the ASUS IEC Vision software and also provides a brief summary of the software layout.

Appendix

This section includes notices and safety statements for your Embedded Computer.

Conventions used in this manual

To highlight key information in this manual, some text are presented as follows:

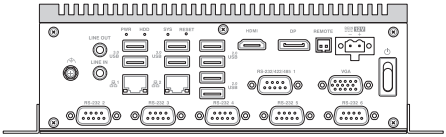
IMPORTANT! This message contains vital information that must be followed to complete a task.

NOTE: This message contains additional information and tips that can help complete tasks.

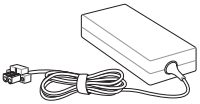
WARNING! This message contains important information that must be followed to keep you safe while performing certain tasks and prevent damage to your Embedded Computer's data and components.

Package contents

Your Embedded Computer package contains the following items:

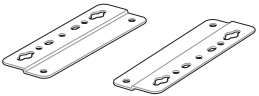


EBS-I300 Series

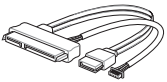


AC power adapter* (optional)

Power cord* (optional)



Wall mount kit



SATA and power cable

HDD screws pack

NOTE:

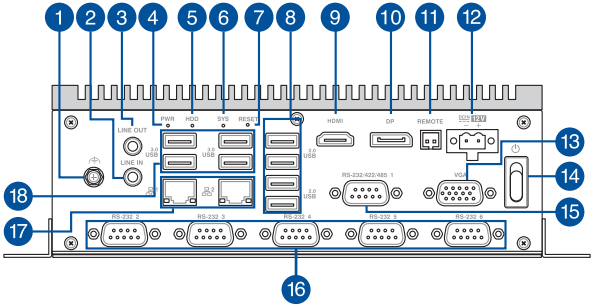
- *The bundled power adapter and power cord may vary depending on model and country (or region) of sale.
- Some bundled accessories may vary depending on model. For details on these accessories, refer to their respective user manuals.
- The device illustration is for reference only. Actual product specifications may vary depending on model.
- If the device or its components fail or malfunction during normal and proper use within the warranty period, bring the warranty card to the ASUS Service Center for replacement of the defective components.

1

Getting to know your Embedded Computer

1.1 Features

1.1.1 Front view



1 **Functional Earth Ground (on selected models)**

The Functional Earth Ground provides you with a grounding point.

2 **Line In port**

This port connects to a tape, CD, DVD player, or other audio sources.

3 **Headphone jack**

This port allows you to connect amplified speakers or headphones.

4 **Power indicator**

The power indicator lights up when your Embedded Computer is turned on and blinks slowly when in sleep mode.

5 **Drive activity indicator**

This indicator lights up when your Embedded Computer is accessing the internal storage drive.

6 **VSB indicator**

This indicator lights up when the standby voltage is provided by the power supply unit.

7 **System reset pinhole**

The hard reset pinhole allows you to reboot your Embedded Computer.

8 **USB 2.0 port**

The USB (Universal Serial Bus) port is compatible with USB 2.0 and USB 1.1 devices, such as keyboards, pointing devices, flash disk drives, external HDDs, speakers, cameras, and printers.

9 **HDMI™ port**

The HDMI (High Definition Multimedia Interface) port supports a Full-HD device, such as an LCD TV or monitor, to allow viewing on a larger external display.

10 **Dual-mode DisplayPort**

This port allows you to connect your Embedded Computer to an external display and supports DVI or HDMI™ adapters.

11 **Remote port**

This port is for remote power control.

12 Power input

The supplied terminal block power adapter converts AC power to DC power for use with this jack. Power supplied through this jack supplies power to the Embedded Computer.

> **WARNING!** The power adapter may become warm to hot when in use. Do not cover the adapter and keep it away from your body.

13 VGA port

This port is for VGA-compatible devices such as a VGA monitor.

14 Power button

The power button allows you to turn the Embedded Computer on or off. You can use the power button to put your Embedded Computer to sleep mode or press it for four (4) seconds to force shutdown your Embedded Computer.

15 Serial (COM) connector

The 9-pin RS-232/RS-422/RS-485 serial (COM) connector allows you to connect devices that have serial ports, such as bar code scanners, modems, and printers.

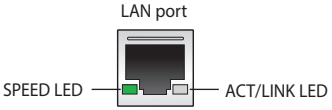
16 Serial (COM) connector

The 9-pin RS-232 serial (COM) connector allows you to connect devices that have serial ports, such as bar code scanners, modems, and printers.

17 LAN port

The 8-pin RJ-45 LAN port supports a standard Ethernet cable for 10/100/1000 Mbps connection to a local network.

LAN port LED indications



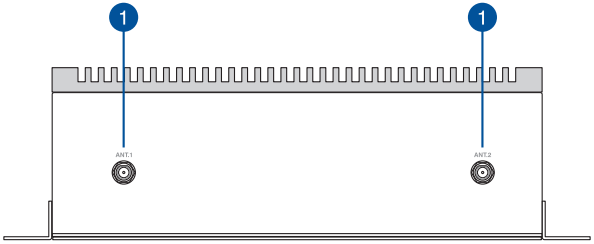
Activity Link LED	
Status	**Description**
Off	No link
Yellow	Linked
Yellow (blinking)	Data activity
Yellow (blinking then steady)	Ready to wake up from suspend mode

Speed LED	
Status	**Description**
Off	10 Mbps connection
Orange	100 Mbps connection
Green	1 Gbps connection

18 USB 3.2 Gen 1 port

The USB 3.2 Gen 1 (Universal Serial Bus) port provides a transfer rate up to 5 Gbit/s.

1.1.2 Rear view



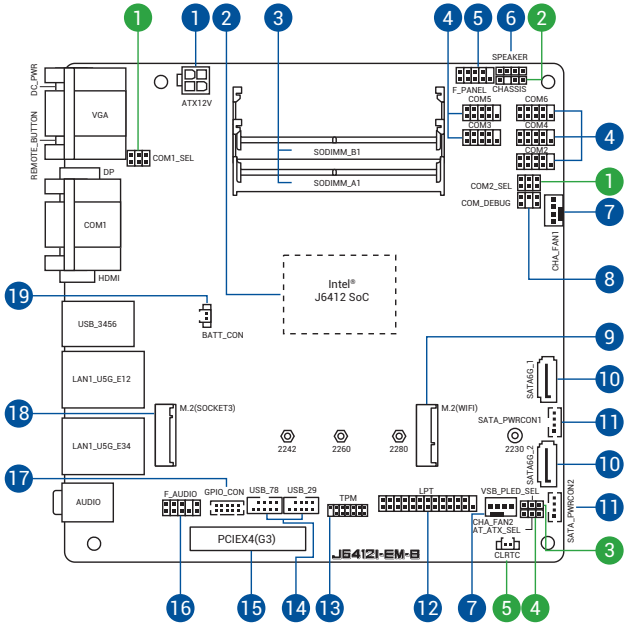
1 **Antenna hole**

The antenna hole allows you to connect a wireless antenna to enhance wireless signal reception.

1.2 Motherboard Overview

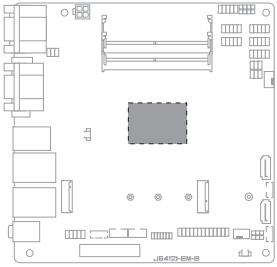
1.2.1 Motherboard layout

The EBS-I300 Series features a motherboard with dimensions of 6.7″x 6.7″ (17.0cm x 17.0cm).



1.2.2 Central Processing Unit (CPU)

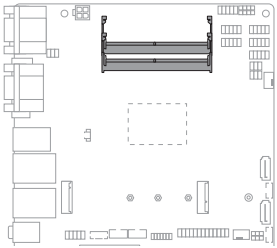
The motherboard comes with an onboard Intel® processor J6412.

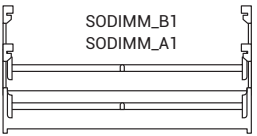


Intel®
J6412 SoC
(Bottom)

1.2.3 System memory

The motherboard comes with a Small Outline Dual Inline Memory Module (SODIMM) slot designed for DDR4 (Double Data Rate 4) memory modules.

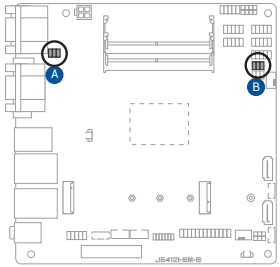


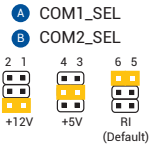


1.2.4 Onboard jumpers

1. COM RING/+5V/+12V Selection jumper

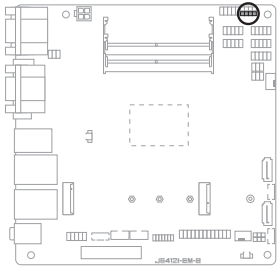
The COM RING/+5V/+12V Selection jumper allows you to select either the Ring Indicator signal or a specific voltage (+5V or +12V) for the COM1 and COM2 ports.

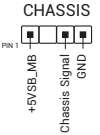




2. Chassis Intrusion jumper

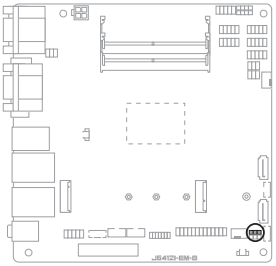
This jumper is for a chassis-mounted intrusion detection sensor or switch. Connect one end of the chassis intrusion sensor or switch cable to this jumper. The chassis intrusion sensor or switch sends a low-level signal to this jumper when a chassis component is installed. The signal is then generated as a chassis intrusion event.





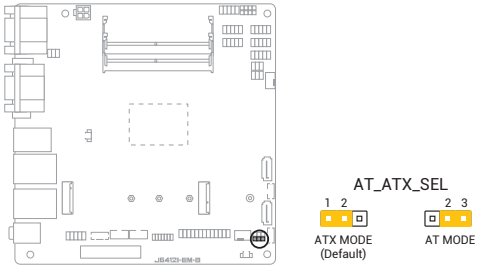
3. VSB PLED Selection jumper

The VSB PLED Selection jumper allows you to control the power supply to the VSB_PLED light.



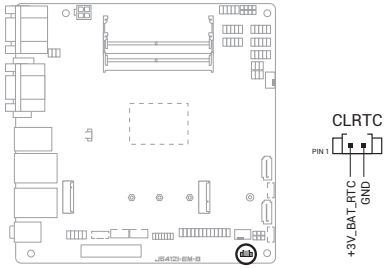
4. AT/ATX Mode Configuration jumper

The AT/ATX Mode Configuration jumper allows you to switch between AT and ATX modes. The default setting for this jumper is set to ATX mode with a jumper cap attached.



5. Clear RTC RAM jumper

The Clear RTC RAM jumper allows you to clear the Real Time Clock (RTC) RAM in the CMOS, which contains the date, time, system passwords, and system setup parameters.



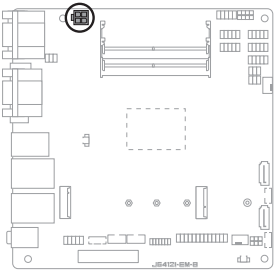
To erase the RTC RAM:

1. Turn OFF the computer and unplug the power cord.
2. Short-circuit pin 1-2 with a metal object or jumper cap for about 5-10 seconds.
3. Plug the power cord and turn ON the computer.
4. Hold down the <Del> key during the boot process and enter BIOS setup to re-enter data.

1.2.4 Internal connectors

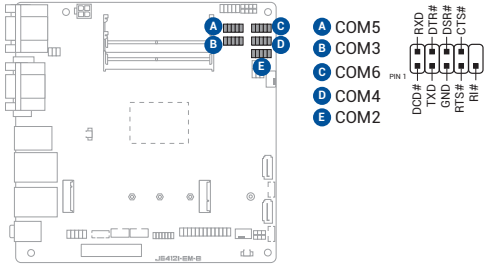
1. ATX Power connector

Correctly orient the ATX power supply plug into this connector and push down firmly until the connector completely fits.



2. COM Port connector

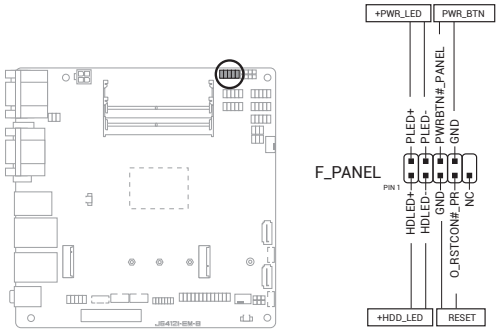
These headers are for serial (COM) ports. Connect the serial port cables to these headers, then install the module to a slot opening at the back of the system chassis.



Connector type	Header 2x5p, K10, 2.54mm pitch

3. System Panel connector

This header supports several chassis-mounted functions.



Connector type	Header 2x5p, K10, 2.54mm pitch

- **System power LED (2-pin +PWR_LED)**

  This 2-pin header is for the system power LED. Connect the chassis power LED cable to this header. The system power LED lights up when you turn on the system power, and blinks when the system is in sleep mode.

- **Hard disk drive activity LED (2-pin +HDD_LED)**

  This 2-pin header is for the HDD Activity LED. Connect the HDD Activity LED cable to this header. The IDE LED lights up or flashes when data is read from or written to the HDD.

- **ATX power button/soft-off button (2-pin PWR_BTN)**

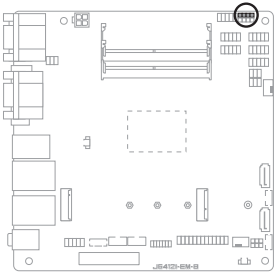
  This 2-pin header is for the system power button.

- **Reset button (2-pin RESET)**

  This 2-pin header is for the chassis-mounted reset button for system reboot without turning off the system power.

4. Speaker connector

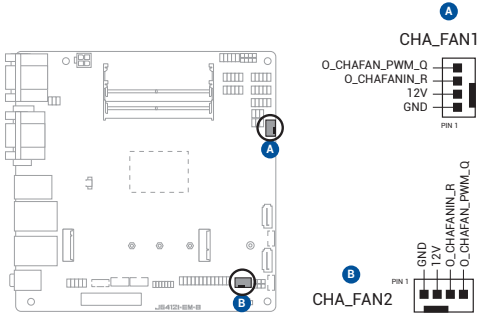
The 4-pin header is for the chassis-mounted system warning speaker. The speaker allows you to hear system beeps and warnings.



Connector type	Header 1x4p, 2.54mm pitch, S/T

5. Chassis Fan connector

Connect the fan cables to the fan headers on the motherboard, ensuring that the black wire of each cable matches the ground pin of the headers.

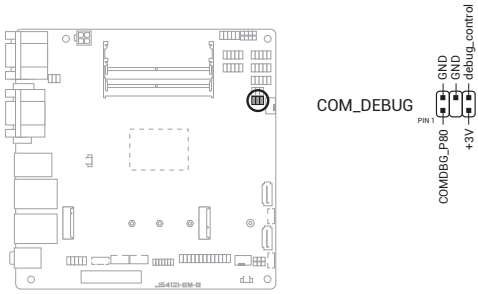


Connector type	Wafer HD 4p, 2.54mm pitch, S/T

WARNING! Do not forget to connect the fan cables to the fan headers. Insufficient air flow inside the system may damage the motherboard components. These are not jumpers! Do not place jumper caps on the fan headers!

6. COM Debug connector

This header allows connection to a COM Debug card.

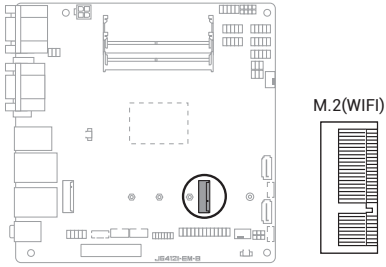


Connector type	Header 2x3p, K3, 2.54mm pitch

NOTE: The COM Debug card is purchased separately.

7. M.2 (E-key) Wi-Fi slot

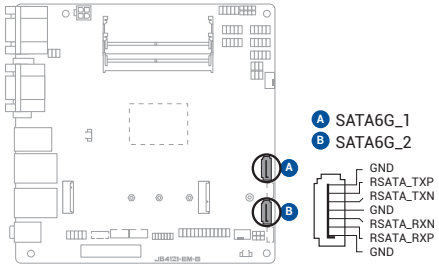
The M.2 Wi-Fi slot allows you to install an M.2 Wi-Fi module (E-key, type 2230).



NOTE: The M.2 Wi-Fi module is purchased separately.

8. SATA 6.0 Gb/s port

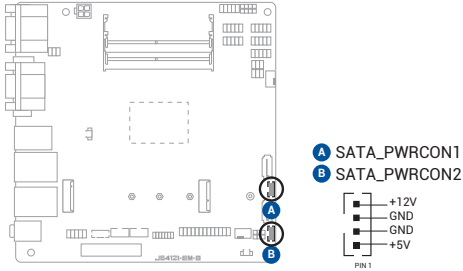
These ports connect to SATA 6.0 Gb/s hard disk drives or optical drives via SATA 6.0 Gb/s signal cables.



Connector type	Wafer HD 7p, 1.27mm pitch

9. SATA Power connector

These connectors are for the SATA power cables. The power cable plugs are designed to fit these connectors in only one orientation. Find the proper orientation and push down firmly until the connectors completely fit.

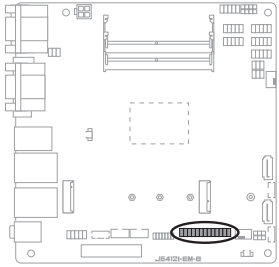


Connector type	Wafer HD 4p, 2.0mm pitch

IMPORTANT! The SATA power connectors support 1A current to the maximum.

10. LPT connector

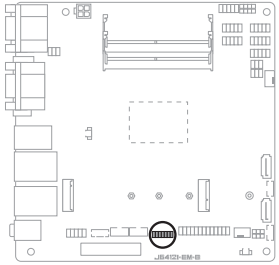
The LPT (Line Printing Terminal) header supports devices such as a printer. LPT is standardized as IEEE 1284, which is the parallel port interface on IBM PC-compatible computers.

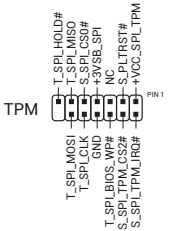


Connector type	Header 2x13p, K26, 2.54mm pitch, S/T

11. TPM connector

The TPM connector supports a Trusted Platform Module (TPM) system, which can securely store keys, digital certificates, passwords, and data. A TPM system also helps enhance network security, protects digital identities, and ensures platform integrity.

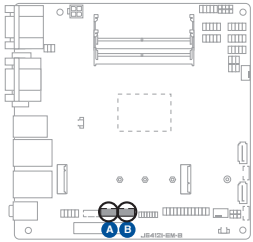


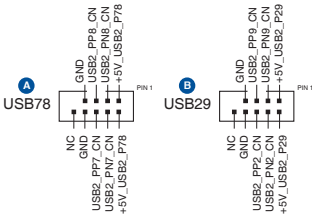


Connector type	Header 2x7p, K14, 2.0mm pitch

12. USB 2.0 connector

This header is for USB 2.0 ports. Connect a USB cable to this header. This USB header complies with USB 2.0 specification that supports up to 480 Mbps connection speed.





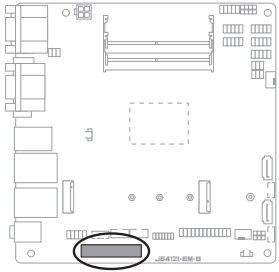
Connector type	Box header 2x5p, K9, 2.00mm pitch

WARNING! Never connect a 1394 cable to the USB header. Doing so will damage the motherboard.

NOTE: The USB cable is purchased separately.

13. PCIe 3.0/2.0 x4 slot

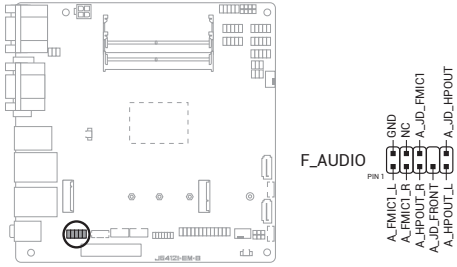
This slot supports a PCIe 3.0/2.0 x4 graphics card that complies with the PCI Express specification.



NOTE: The PCIe peripheral device is purchased separately.

14. Front Panel Audio connector

This header is for a chassis-mounted front panel audio I/O module that supports HD Audio standard. Connect one end of the front panel audio I/O module cable to this header.



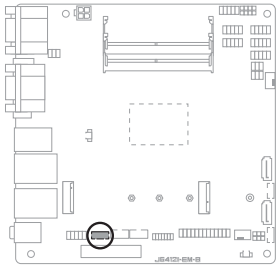
Connector type	Header 2x5p, K8, 2.54mm pitch

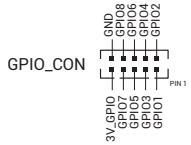
IMPORTANT!

- We recommend that you connect a high-definition front panel audio module to this header to avail of the motherboard's high-definition audio capability.
- If you want to connect a high-definition front panel audio module to this header, set the HD Audio Controller item in the BIOS setup to [Enabled].

15. GPIO connector

The GPIO connector allows you to connect a general purpose input/ output module to customize digital signal input/output.

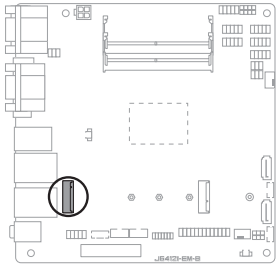


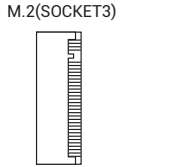


Connector type	Wafer HD 2x5p, 2.0mm pitch, S/T

16. M.2 (M-key) slot

The M.2 slot allows you to install 2242/2260/2280 M.2 devices, such as 2242/2260/2280 M.2 SSD modules.

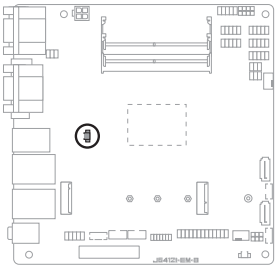




NOTE: The M.2 SSD module is purchased separately.

17. Battery connector

The Battery connector allows you to connect a lithium CMOS battery.



2

Using your Embedded Computer

2.1 Getting started

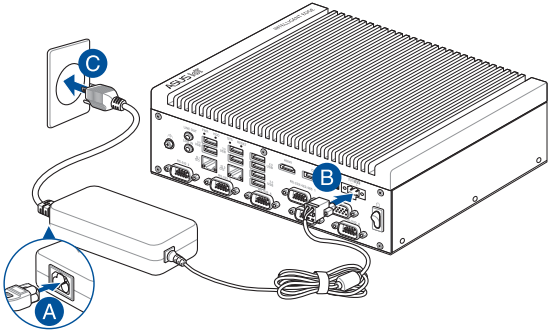
2.1.1 Connect the AC power adapter to your Embedded Computer

To connect the AC power adapter to your Embedded Computer:

A. Connect the power cord to the AC power adapter.

B. Connect the DC power connector to your Embedded Computer's power (DC) input.

C. Plug the AC power adapter into a 100 V~240 V power source.



NOTE:

The power adapter may vary in appearance, depending on model and country (or region) of sale. Refer to the following for more information on the different power adapters, as well as the system:

65W Power adapter

- Input voltage: 100-240 Vac
- Input frequency: 50-60 Hz
- Rated output current: 5.417 A max (65.0 W)
- Rated output voltage: 12.0 Vdc

System

- Input voltage: 100-240 Vac
- Input frequency: 50-60 Hz
- Rated input current: 5.417 A max (65.0 W)
- Rated input voltage: 12.0 Vdc

IMPORTANT!

- We strongly recommend that you use only the AC power adapter and cable that came with your Embedded Computer.
- We strongly recommend that you use a grounded wall socket while using your Embedded Computer.
- The socket outlet must be easily accessible and near your Embedded Computer.
- To disconnect your Embedded Computer from its main power supply, unplug your Embedded Computer from the power socket.

WARNING!

- Do not use power adapters or batteries from other devices to reduce the risk of injury to persons due to fire or explosion. Use only UL certified power adapters or batteries supplied by the manufacturer or authorized retailers.
- Do not disable or remove the power cord grounding plug, the grounding is an important safety feature.
- Ensure to plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.

2.1.2 Connect a display panel to your Embedded Computer

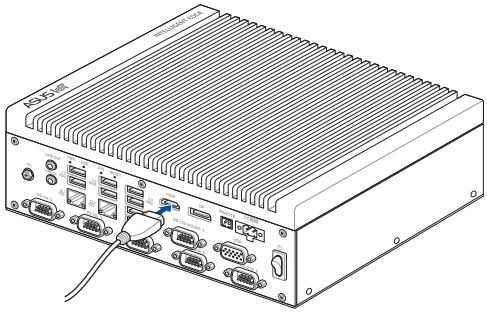
You can connect a display panel or projector to your Embedded Computer that has the following connectors:

- HDMI™ connector
- DisplayPort

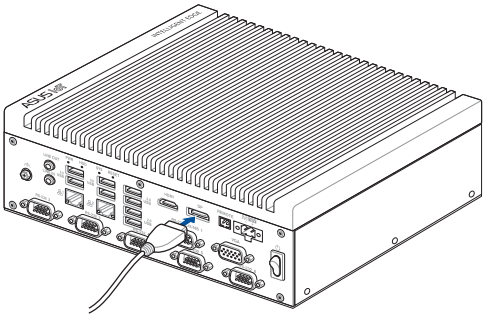
To connect a display panel to your Embedded Computer:

Connect one end of an HDMI™, or a DisplayPort cable to an external display, and the other end of the cable to your Embedded Computer's HDMI™ port, or DisplayPort.

Connect display via HDMI™ port



Connect display via DisplayPort



2.1.3 Connect the USB cable from keyboard or mouse

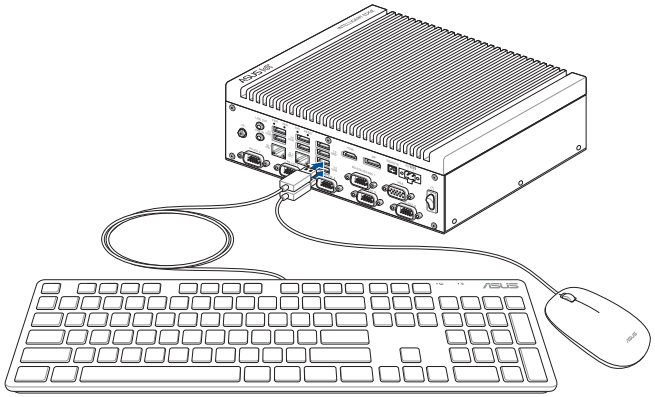
You can connect generally any USB keyboard and mouse to your Embedded Computer. You can also connect a USB dongle for a wireless keyboard and mouse set.

To connect a keyboard and mouse to your Embedded Computer:

Connect the USB cable from your keyboard and mouse to any of the USB ports of your Embedded Computer.

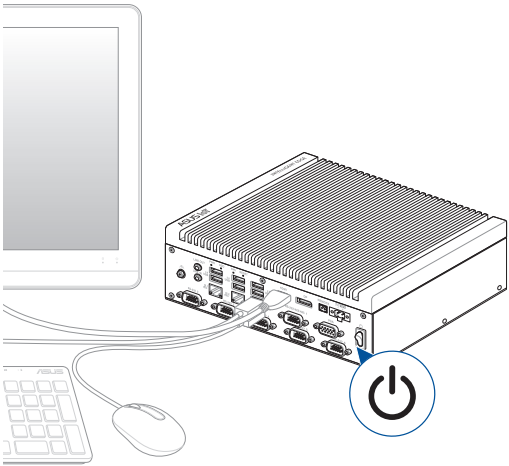
NOTE:

- The keyboard varies with country or region.
- The keyboard and mouse are purchased separately.



2.1.4 Turn on your Embedded Computer

Press the power button to turn on your Embedded Computer.



2.2 Turning off your Embedded Computer

If your Embedded Computer is unresponsive, press and hold the power button for at least four (4) seconds until your Embedded Computer turns off.

2.3 Putting your Embedded Computer to sleep

To put your Embedded Computer on Sleep mode, press the Power button once.

2.4 Entering the BIOS Setup

BIOS (Basic Input and Output System) stores system hardware settings that are needed for system startup in the Embedded Computer.

In normal circumstances, the default BIOS settings apply to most conditions to ensure optimal performance. Do not change the default BIOS settings except in the following circumstances:

- An error message appears on the screen during the system bootup and requests you to run the BIOS Setup.
- You have installed a new system component that requires further BIOS settings or update.

WARNING! Inappropriate BIOS settings may result to instability or boot failure. We strongly recommend that you change the BIOS settings only with the help of a trained service personnel.

2.4.1 Load default BIOS settings

To load the default values for each of the parameters in your BIOS:

1. Enter the BIOS by pressing <F2> or <DEL> on the POST screen.

   NOTE: POST (Power-On Self Test) is a series of software controlled diagnostic tests that run when you turn on your Embedded Computer.

2. Navigate to the **Exit** menu.
3. Select the **Load Optimized Defaults** option, or you may press <F5>.
4. Select **OK** to load the default BIOS values.

3

Upgrading your Embedded Computer

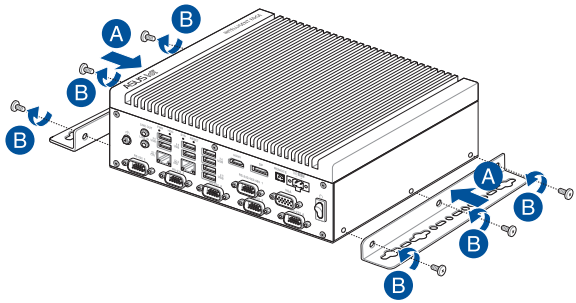
IMPORTANT!

- Ensure that your hands are dry before proceeding with the rest of the installation process. Before installing any of the features in this guide, use a grounded wrist strap or touch a safely grounded object or metal object to avoid damaging them due to static electricity.
- Turn off the power of your Embedded Computer, and allow it to cool for at least 10 minutes before performing any installation/ uninstallation process.

NOTE: The illustrations in this section are for reference only. The slots may vary depending on model.

3.1 Installing wall mount brackets (optional)

Align the wall mount with the screw holes (A), and then secure the wall mount brackets to your Embedded Computer using the screws (B).



4

Watchdog Timer

4.1 Watchdog Timer implementation

There are two watchdog timer implementations designed on this product, the HW and POST watchdog timers. The watchdog timer circuit is in SuperIO and can be controlled by a hardware jumper and BIOS setup menu through the system BIOS for different boot phases.

Please refer to the table below for the different implementations of the Watchdog Timer.

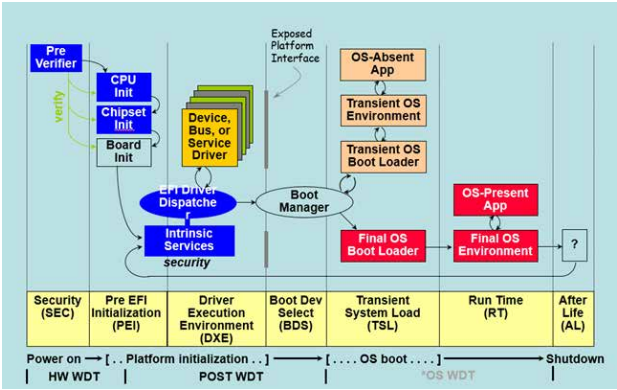
Watchdog timer	Implementation	Default Timeout
HW Watchdog Timer	This Watchdog Timer can prevent the system from failing before BIOS takeover. After the system is powered on, the watchdog timer will start automatically through the jumper setting. **NOTE:** • Refer to the HW WDT enable jumper in the section **Motherboard Overview** for more information. • The default setting for this jumper is set to **HW WDT enabled** with a jumper cap attached.	6 seconds.

(continued on the next page)

Watchdog timer	Implementation	Default Timeout
POST Watchdog Timer	This Watchdog Timer is for recovering the system from crashes during BIOS takeover to OS. After system BIOS takeover, the BIOS will stop the HW watchdog timer and start the POST watchdog timer on the same hardware watchdog circuit. **NOTE:** The default setting for the BIOS item is set to enabled.	The timeout value is determined by the BIOS settings.
*OS Watchdog Timer	No implementation. User needs to write software in OS to keep updating the watchdog timer to prevent it from timing out. The application is executed on payload. **NOTE:** Please refer to the section **Watchdog Timer Programming** for more information.	N/A

4.2 Watchdog Timer flowchart

Please refer to the Watchdog Timer initialization flowchart below:



4.3 Watchdog Timer Programming

Please refer to the pseudo code for the NCT6116D watchdog timer programming below:

SIO_INDEX_PORT is 0x2E

SIO_DATA_PORT is 0x2F

1. Set WDT Time Unit

```
Outportb(SIO_INDEX_PORT, 0x87); // Unlock SIO
Outportb(SIO_INDEX_PORT, 0x87); // Unlock SIO

Outportb(SIO_INDEX_PORT, 0x07);
Outportb(SIO_DATA_PORT, 0x08);
Outportb(SIO_INDEX_PORT, 0xF0);
val = Inportb(SIO_DATA_PORT) // Read current WDT setting

val = val | 0x08; // minute mode, val = val & 0xF7 if second mode
Outportb(SIO_INDEX_PORT, 0xF0);
Outportb(SIO_DATA_PORT, val); // Write back WDT setting

Outportb(SIO_INDEX_PORT, 0xAA); // Lock SIO
```

2. Set WDT Time

```
Outportb(SIO_INDEX_PORT, 0x87); // Unlock SIO
Outportb(SIO_INDEX_PORT, 0x87); // Unlock SIO

Outportb(SIO_INDEX_PORT, 0x07);
Outportb(SIO_DATA_PORT, 0x08);
Outportb(SIO_INDEX_PORT, 0xF1);
Outportb(SIO_DATA_PORT, Time); // Write WDT time, value 1 to 255

Outportb(SIO_INDEX_PORT, 0xAA); // Lock SIO
```

3. Enable WDT

```
Outportb(SIO_INDEX_PORT, 0x87); // Unlock SIO
Outportb(SIO_INDEX_PORT, 0x87); // Unlock SIO

Outportb(SIO_INDEX_PORT, 0x07);
Outportb(SIO_DATA_PORT, 0x08);
Outportb(SIO_INDEX_PORT, 0x30);
val = Inportb(SIO_DATA_PORT) // Read current WDT status

val = val | 0x01; // Enable WDT Timer
Outportb(SIO_INDEX_PORT, 0x30);
Outportb(SIO_DATA_PORT, val); // Write back WDT status

Outportb(SIO_INDEX_PORT, 0xAA); // Lock SIO
```

4. Disable WDT

```
Outportb(SIO_INDEX_PORT, 0x87); // Unlock SIO
Outportb(SIO_INDEX_PORT, 0x87); // Unlock SIO

Outportb(SIO_INDEX_PORT, 0x07);

Outportb(SIO_DATA_PORT, 0x08);

Outportb(SIO_INDEX_PORT, 0xF1);

Outportb(SIO_DATA_PORT, 0x00); // Clear WDT time, it means WDT Time-
    Out disable

Outportb(SIO_INDEX_PORT, 0x30);

val = Inportb(SIO_DATA_PORT) // Read current WDT status

val = val & 0xFE; // Disable WDT Timer

Outportb(SIO_INDEX_PORT, 0x30);

Outportb(SIO_DATA_PORT, val); // Write back WDT status

Outportb(SIO_INDEX_PORT, 0xAA); // Lock SIO
```

Appendix

Safety information

Your Embedded Computer is designed and tested to meet the latest standards of safety for information technology equipment. However, to ensure your safety, it is important that you read the following safety instructions.

Setting up your system

- Read and follow all instructions in the documentation before you operate your system.
- Do not use this product near water or a heated source.
- Set up the system on a stable surface.
- Peripherals with extended tolerance (such as industrial grade mSATA and micro SD card) will allow this product to be used in environments with ambient temperatures between 0˚C and 40˚C with 0.1 m/s air flow.
- The product should be used in environments with an ambient temperature of 40˚C when using the 65 W power adapter.
- If you use an extension cord, make sure that the total ampere rating of the devices plugged into the extension cord does not exceed its ampere rating.
- This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body.
- Restricted Access Location:

  The equipment should only be installed in a Restricted Access Area where both these conditions apply:

  – access can only be gained by USERS who have been instructed about the reasons for the restrictions applied to the location and about any precautions that shall be taken; and

  – access is through the use of a TOOL or lock and key, or other means of security, and is controlled by the authority responsible for the location.
- This device shall not be connected to an Ethernet network with outside plant routing.

Care during use

- Do not walk on the power cord or allow anything to rest on it.
- Do not spill water or any other liquids on your system.
- When the system is turned off, a small amount of electrical current still flows. Always unplug the power cord from the power outlets before cleaning the system.
- If you encounter the following technical problems with the product, unplug the power cord and contact a qualified service technician or your retailer.
  - The power cord or plug is damaged.
  - Liquid has been spilled into the system.
  - The system does not function properly even if you follow the operating instructions.
  - The system was dropped or the cabinet is damaged.
  - The system performance changes.

Safety Precautions

Accessories that came with this product have been designed and verified for the use in connection with this product. Never use accessories for other products to prevent the risk of electric shock or fire.

Lithium-Metal Battery Warning

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

NO DISASSEMBLY

The warranty does not apply to the products that have been disassembled by users

Regulatory notices

COATING NOTICE

IMPORTANT! To provide electrical insulation and maintain electrical safety, a coating is applied to insulate the device except on the areas where the I/O ports are located.

Federal Communications Commission Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

IMPORTANT! Outdoor operations in the 5.15~5.25 GHz band is prohibited. This device has no Ad-hoc capability for 5250~5350 and 5470~5725 MHz.

CAUTION! Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC RF Exposure Information

This device meets the government's requirements for exposure to radio waves. This device is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission of the U.S. Government. The exposure standard employs a unit of measurement known as the Specific Absorption Rate, or SAR. The SAR limit set by the FCC is 1.6 W/kg. Tests for SAR are conducted using standard operating positions accepted by the FCC with the EUT transmitting at the specified power level in different channels. The FCC has granted an Equipment Authorization for this device with all reported SAR levels evaluated as in compliance with the FCC RF exposure guidelines. SAR information on this device is on file with the FCC and can be found under the Display Grant section of www.fcc.gov/oet/ea/fccid.

End Product Labeling

This transmitter module is authorized only for use in device where the antenna may be installed such that 20cm may be maintained between the antenna and users.

ISED Radiation Exposure Statement for Canada

This equipment complies with ISED radiation exposure limits set forth for an uncontrolled environment. To maintain compliance with ISED RF exposure compliance requirements, please avoid direct contact to the transmitting antenna during transmitting. End users must follow the specific operating instructions for satisfying RF exposure compliance.

Operation is subject to the following two conditions:

- This device may not cause interference and
- This device must accept any interference, including interference that may cause undesired operation of the device.

Compliance Statement of Innovation, Science and Economic Development Canada (ISED)

This device complies with Innovation, Science and Economic Development Canada licence exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

CAN ICES-003(A)/NMB-003(A)

Déclaration de conformité de Innovation, Sciences et Développement économique Canada (ISED)

Le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

CAN ICES-003(A)/NMB-003(A)

Wireless Operation Channel for Different Domains

N. America	2.412-2.462 GHz	Ch01 through CH11
Japan	2.412-2.484 GHz	Ch01 through Ch14
Europe ETSI	2.412-2.472 GHz	Ch01 through Ch13

KC: Korea Warning Statement

Class A:

사용자 안내문

이 기기는 업무용 환경에서 사용할 목적으로 적합성평가를 받은 기기로서 가정용 환경에서 사용하는 경우 전파간섭의 우려가 있습니다.

VCCI: Japan Compliance Statement

Class A ITE

この装置は、クラスA機器です。この装置を住宅環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

VCCI ー A

Japan RF Equipment Statement

屋外での使用について

本製品は、5GHz帯域での通信に対応しています。電波法の定めにより5.2GHz、5.3GHz帯域の電波は屋外で使

用が禁じられています。

法律および規制遵守

本製品は電波法及びこれに基づく命令の定めるところに従い使用してください。日本国外では、その国の法律ま

たは規制により、本製品の使用ができないことがあります。このような国では、本製品を運用した結果、罰せられ

ることがありますが、当社は一切責任を負いかねますのでご了承ください。

HDMI Trademark Notice

The terms HDMI, HDMI High-Definition Multimedia Interface, HDMI Trade D ress and the HDMI Logos are trademarks or registered trademarks of HDMI Licensing Administrator, Inc.

Declaration of compliance for product environmental regulation

ASUS follows the green design concept to design and manufacture our products, and makes sure that each stage of the product life cycle of ASUS product is in line with global environmental regulations. In addition, ASUS disclose the relevant information based on regulation requirements.

Please refer to https://esg.asus.com/Compliance.htm for information disclosure based on regulation requirements ASUS is complied with:

EU REACH and Article 33

Complying with the REACH (Registration, Evaluation, Authorization, and Restriction of Chemicals) regulatory framework, we publish the chemical substances in our products at ASUS REACH website at https://esg.asus.com/Compliance.htm

EU RoHS

This product complies with the EU RoHS Directive. For more details, see https://esg.asus.com/Compliance.htm

Japan JIS-C-0950 Material Declarations

Information on Japan RoHS (JIS-C-0950) chemical disclosures is available on https://esg.asus.com/Compliance.htm

India RoHS

This product complies with the "India E-Waste (Management) Rules, 2016" and prohibits use of lead, mercury, hexavalent chromium, polybrominated biphenyls (PBBs) and polybrominated diphenyl ethers (PBDEs) in concentrations exceeding 0.1% by weight in homogenous materials and 0.01% by weight in homogenous materials for cadmium, except for the exemptions listed in Schedule II of the Rule.

Vietnam RoHS

ASUS products sold in Vietnam, on or after September 23, 2011,meet the requirements of the Vietnam Circular 30/2011/TT-BCT.

Các sản phẩm ASUS bán tại Việt Nam, vào ngày 23 tháng 9 năm2011 trở về sau, đều phải đáp ứng các yêu cầu của Thông tư 30/2011/TT-BCT của Việt Nam.

Türkiye RoHS
AEEE Yönetmeliğine Uygundur

ASUS Recycling/Takeback Services
ASUS recycling and takeback programs come from our commitment to the highest standards for protecting our environment. We believe in providing solutions for you to be able to responsibly recycle our products, batteries, other components as well as the packaging materials. Please go to https://esg.asus.com/en/Takeback.htm for detailed recycling information in different regions.

Ecodesign Directive
The European Union announced a framework for the setting of ecodesign requirements for energy-related products (2009/125/EC). Specific implementing measures are aimed at improving environmental performance of specific products or across multiple product types. ASUS provides product information at https://esg.asus.com/Compliance.htm.

低功率電波輻射性電機管理辦法
第十二條： 經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

第十四條： 低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。

Taiwan NCC Warning Statement
Article 12: Without permission, any company, firm or user shall not alter the frequency, increase the power, or change the characteristic and functions of the original design of the certified lower power frequency electric machinery.

Article 14: The application of lower power frequency electric machineries shall not affect the navigation safety nor interfere alegal communication, if an interference is found, the service will be suspended until improvement is made and theinterference no longer exists.

甲類警語

警告：為避免電磁干擾，本產品不應安裝或使用於住宅環境。

「產品之限用物質含有情況」之相關資訊，請參考下表：
Taiwan Declaration of Restricted Substances Marking

單元 (Unit)	限用物質及其化學符號 (Restricted substances and its chemical symbols)					
	鉛 Lead (Pb)	汞 Mercury (Hg)	鎘 Cadium (Cd)	六價鉻 Hexavalent chromium (Cr^{+6})	多溴聯苯 Polybrominated biphenyls (PBB)	多溴二苯醚 Polybrominated diphenyls ethers (PBDE)
印刷電路板及電子組件 PCB	—	○	○	○	○	○
外殼 Chassis	—	○	○	○	○	○
硬碟 Disk drive	—	○	○	○	○	○
散熱設備 Thermal solutions	—	○	○	○	○	○
其他及其配件（線材等） Accessories (e.g., cables)	—	○	○	○	○	○

備考 1. “○”係指該項限用物質之百分比含量未超出百分比含量基準值。

備考 2. “—”係指該項限用物質為排除項目。

Note 1 “○” indicates that the percentage content of the restricted substance does not exceed the percentage of reference value of presence.

Note 2 The “—” indicates that the restricted substance corresponds to the exemption.

Service and Support

Visit our multi-language website at https://www.asus.com/support/.