

Altos
BrainSphere P150 F8
User Guide



ALTOS

an Acer Group Company

System setup

System notes

Thank you for purchasing your Altos Workstation. This user guide is intended as a reference for experienced Workstation technicians and helps detail many of the features available in Altos Workstations. For more detailed information about any particular component or software solution, you may consult the technical specifications or the user manual for that application.



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Note: Before opening or removing any components please contact your local certified Altos service representative



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Warning: Any parts or components damaged during replacement by a non-certified technician are not covered by the warranty. For details, please consult the warranty guide from your system.

Notice :

Rated Electrical Specifications:

- 1200W Power Supply(FSP1200-50ADB): 100-240Vac, 16A-8A, 50-60Hz
- 750W Power Supply (FSP750-50ABA): 100-240Vac, 10A-5A, 50-60Hz

System component identification

Altos BrainSphere™ P150 F8 Front configuration:

38L ATX Chassis



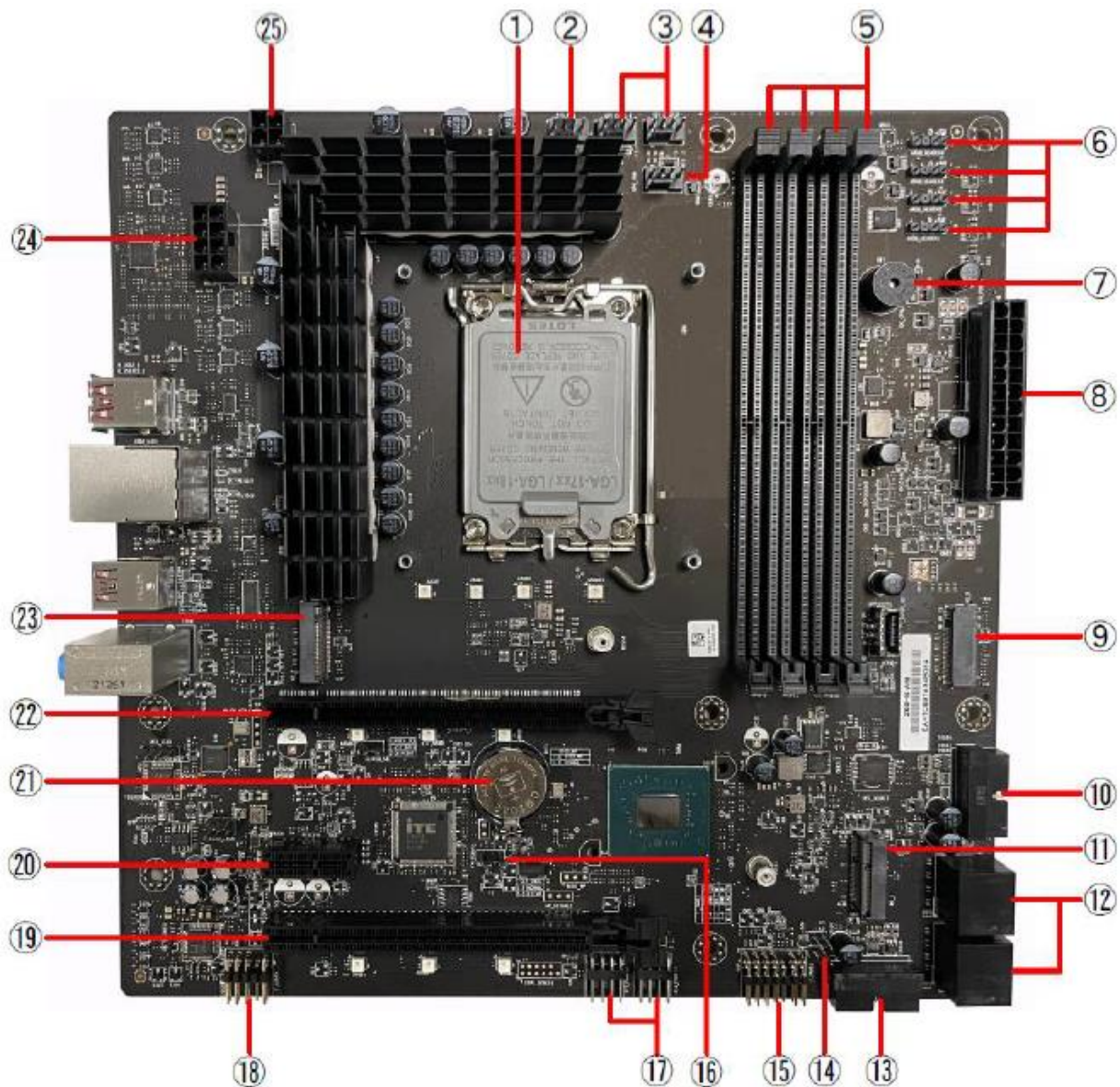
| 編號 | 說明 |
|----|----------------------------|
| 1 | USB 3.2 Gen 1 Port x 2 |
| 2 | USB 3.2 Gen 1 Port x 2 |
| 3 | Audio jacks (Mic In/Out) |
| 4 | USB 3.2 Gen2 Port (Type C) |
| 5 | Power Button |

Specification introduction

| | | | | |
|-----------------------|------------------------|--|---|---------------|
| CPU | Processor type | Intel 12 th Core™ i7/i9 series, TDP up to 125W | | |
| | Number of processors | 1 | | |
| On-board Devices | Chipset | Intel® Z690 Chipset | | |
| | SATA | 4 SATA3 (6 Gb/s) ports | | |
| | SATA RAID | Intel onboard software RAID 0, 1, 5, 10 (only supports Windows OS) ¹ | | |
| | Graphics | Intel® UHD Graphics 700 series | | |
| | Network controller | 2.5 Gb/s (10/100/1000) BASE-T LAN Port (Killer™ E3100G) | | |
| | Audio controller | 5.1 CH HD Audio (Realtek® ALC897) | | |
| Memory | Memory slot | 4 DIMM slots (Dual channel) | | |
| | Memory type | Up to 128GB, Non-ECC DDR5 4800 MHz UDIMM | | |
| Expansion slots | PCIe / PCI | <ul style="list-style-type: none"> • 1 PCI-E 5.0 x16 slot • 1 PCI-E 4.0 x16 slot (x4 Lanes) • 1 PCI-E 4.0 x1 slot | | |
| | M.2 | <ul style="list-style-type: none"> • 2 M.2 2280 PCI-E 4.0 slot (For SSD) • 1 M.2 2230 PCI-E 3.0, E Key for Wi-Fi & Bluetooth | | |
| I/O ports | Front I/O Port | <ul style="list-style-type: none"> • 4 x USB3.2 Gen1 Type-A Ports • 2 x Combo Jacks (Line In/Out) | <ul style="list-style-type: none"> • 1 x USB3.2 Gen2 Type-C Port | |
| | Rear I/O Port | <ul style="list-style-type: none"> • 3 x USB 3.2 GEN2 Type-A Ports • 1 x USB 3.2 GEN2 Type-C Port • 1 x RJ45 Port | <ul style="list-style-type: none"> • 2 x USB 2.0 Ports • 3 x Audio jacks (In/Out/MIC) | |
| Drive Bays | Media bay | <ul style="list-style-type: none"> • 1 x 3.5" slots • 3 x 5.25" slots | | |
| | Storage bay | <ul style="list-style-type: none"> • 4 x 3.25" slots : For hard disks² | | |
| Power supply | | 1200W Multiple output 24 pins, 80PLUS® Gold PSU | | |
| | | 750W Multiple output 24 pins, 80PLUS® Gold PSU | | |
| Form factor | Form factor | Tower | | |
| | Dimensions (D x W x H) | 483 (D) x 190 (W) x 416 (H) mm | | |
| OS | | <ul style="list-style-type: none"> • Microsoft® Windows 11 Pro 64-bit • Red Hat Linux 8.6 | | |
| System Authentication | | EnergyStar 8.0 | | |
| Regulatory | EMC | CE | FCC | BSMI(Class B) |
| Compliance | Safety | CB | MET | |

1. Integrated SATA RAID supports RAID 0, 1, 5, 10 on Windows® OS only.
2. P150 F8 depend on configuration maximum support 4 hard disk.
3. Extended warranty services may vary by country. Please contact Altos for more information

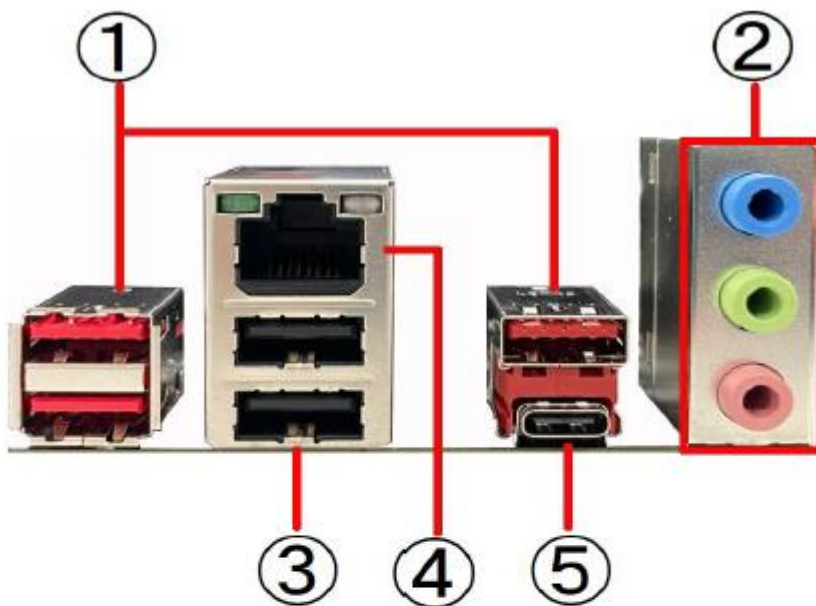
Motherboard Layout



| No | Label | Component |
|----|----------------|--|
| 1 | CPU | Supports the LGA1700 socket for Intel® ADL-S Processor |
| 2 | SYS_FAN | Rear System cooling fan connector |
| 3 | SYS_FAN2_1~2 | CPU water cooling fan connectors |
| 4 | CPU_FAN | CPU cooling fan/water pump connector |
| 5 | DIMM1~4 | 288-Pin DDR5 DIMM slots |
| 6 | ARGB_HEADER1~4 | 4-pin 5V LED headers for ARGB light effect control |
| 7 | BZ1 | Buzzer |
| 8 | ATX_POWER | 24-pin ATX power connector |
| 9 | M2_3 | M.2 (2280) slot for SSD with PCIe Gen4 signal |
| 10 | USB3F2 | 10-pin front header box for 4*USB3.2 Gen1 ports |
| 11 | M2_1 | M.2 (2230) slot combine with PCIE and USB2.0 and CNVi for WLAN |
| 12 | SATA1~4 | Serial ATA 6Gb/s connectors |
| 13 | USB3F1 | 10-pin front header box for 4*USB3.2 Gen1 ports |
| 14 | A1~2 | 2-pin GPIO headers |
| 15 | F_PANEL | Front panel switch/LED header |

| No | Label | Component |
|----|--------------|---|
| 16 | SYS_FAN1_1~2 | Front system cooling fan connectors |
| 17 | CLR_CMOS | Clear CMOS header with jumper |
| 18 | F_AUDIO | 5 pin Front audio panel header |
| 19 | PCIE16X_2 | PCI Express x16 slot |
| 20 | PCIE1X1 | PCI Express x1 slot |
| 21 | BAT1 | Battery |
| 22 | PCIE16X_1 | PCI Express x16 slot |
| 23 | M2_2 | M.2(2280&2242) slot combine with 4 PCIe Gen4 for PCIe/SSD & Intel optane memory |
| 24 | ATX_12V1 | Auxiliary 8-pin power connector |
| 25 | ATX_12V2 | Auxiliary 4-pin power connector |

I/O Port Introduction



| No | Component | Description |
|----|---------------------------------|---|
| 1 | USB 3.2 Gen2x1 Type-A Ports | Use this port to connect USB3.2 Gen2x1 Type A device. |
| 2 | Line-in / Line-out / Microphone | Use the three audio ports to connect audio devices. The first jack is for stereo line-in signal. The second jack is for stereo line-out signal. The third jack is for microphone. |
| 3 | USB 2.0 Ports | Use the USB 2.0 ports to connect USB 2.0 devices. |
| 4 | LAN Port | Connect an RJ-45 jack to the LAN port to connect your computer to the Network. |
| 5 | USB 3.2 Gen2x2 Type-C Ports | Use this port to connect USB3.2 Gen2x2 Type C device. |

Hardware Specifications and Configurations

Processor

| Item | Specification |
|--------|------------------------------------|
| Type | Intel® ADL-S CPU |
| Socket | Intel LGA1700 socket |
| Speed | Depends on CPU which is configured |

BIOS

| Item | Specification |
|--------------------------|---|
| BIOS code programmer | AMI |
| BIOS version | R01-A2 or newer |
| BIOS ROM type | SPI-ROM |
| BIOS ROM size | 32 MB Bytes |
| BIOS ROM package | 8-pin SMD package |
| Support protocol | Supports Plug and Play, STR (S3) / STD (S4) , Hardware monitor, ACPI & DMI, Audio, LAN, can be disabled in BIOS |
| Boot from CD-ROM feature | Yes |

NOTE: The BIOS can be overwritten/ upgraded by using the flash utility.

BIOS Hotkey List

| Item | Specification | Specification |
|--------|--------------------------|--|
| Delete | Enter BIOS Setup Utility | Press while the system is booting to enter BIOS setup Utility. |
| F12 | Enter Boot Menu | Press while the system is booting to enter Boot Menu. |

Main Board Major Chips

| Item | Specification |
|----------------------|---------------------------------------|
| Chipset | Intel® Z690 Chipset |
| AGP controller | Intel® ADL-S CPU |
| Super I/O controller | ITE8733 |
| Audio controller | Realtek ALC1150 7.1-Ch HD audio CODEC |
| LAN controller | Killer LAN E3100G |
| HDD controller | Intel® Z690 Chipset |
| Keyboard controller | ITE8733 |

System Memory

| Item | Specification |
|--------------------------------|---|
| Memory slot number | 4 slots(2 Channels) |
| Support memory size per socket | 4GB / 8GB / 16GB |
| Support maximum memory size | 64 GB |
| Support memory type | DDR5 SDRAM |
| Support memory interface | DDR5 4400 MHz |
| Support memory module package | 288-pin DIMM |
| Support parity check feature | Yes |
| Memory module combinations | You can install memory modules in any combination as long as they match the specifications. |

NOTE: Dual channel should be enabled always when plug-in 2or4 same memory size DDR5 memory module.

Cache Memory

| Item | Specification |
|--|---|
| First-Level Cache Configurations | |
| Cache function control | Always enabled |
| Second-Level Cache Configurations | |
| L2 Cache RAM size | Up to 2MB per core (exclusive) |
| L2 Cache RAM speed | One-half the processor core clock frequency |
| Third-Level Cache Configurations | |
| L3 Cache RAM size | Up to 12MB per core (exclusive) |
| L3 Cache RAM speed | One-half the processor core clock frequency |

Video Interface

| Item | Specification |
|-------------------------------|---------------|
| Video controller | Intel Z690 |
| Video controller resident bus | PCI |
| Video Interface | PCI-E x16 |

SATA Interface

| Item | Specification |
|------------------------------|---------------|
| SATA controller | Intel Z690 |
| SATA controller resident bus | PCI bus |
| Number of SATA connector | 4 |
| Support bootable CD-ROM | Yes |

Audio Interface

| Item | Specification |
|------------------------|---|
| Audio controller | Realtek |
| Audio controller Type | High Definition, ALC1150 |
| Audio Channel | 7.1-Ch HD audio CODEC |
| Audio function control | Enable/Disabled by BIOS Setup |
| Mono or stereo | Supports mono and stereo digital microphone interface |
| Sampling rate | All DACs/ADCs supports 44.1k/48k/96k/192kHz sample rate |
| VREFOUT | Software selectable 1.8V/2.5V/3.0V VREFOUT |
| Power Support | Digital 3.3V; Analog 5V/3.3V |
| Microphone jack | Supported |

USB Port

| Item | Specification |
|---------------|---|
| Universal HCI | USB 2.0 |
| USB Class | Support legacy and UEFI keyboard for legacy and UEFI mode |
| USB Number | support up to 2 ports |
| Universal HCI | USB 3.2(Type C) |
| USB Class | Support legacy and UEFI keyboard for legacy and UEFI mode |
| USB Number | support up to 1 ports |
| Universal HCI | USB 3.2(Type A) |
| USB Class | Support legacy and UEFI keyboard for legacy and UEFI mode |
| USB Number | support up to 3 ports |
| Universal HCI | USB 3.2 Gen2x2 (Type C) |
| USB Class | Support legacy and UEFI keyboard for legacy and UEFI mode |
| USB Number | support up to 1 ports |
| Universal HCI | USB 3.2 Gen2x2 (Type A) |
| USB Class | Support legacy and UEFI keyboard for legacy and UEFI mode |
| USB Number | support up to 3 ports |

Environment

Temperature:

- Operating: 0°C to 40°C (32°F to 104°F)
- Non-operating: -20°C to 65°C (-4°F to 149°F)

Humidity (non-condensing)

- Operating: 20% to 80%
- Non-operating: 20% to 80%

Power Management Function (ACPI support function)

Device Standby Mode

- Independent power management timer for hard disk drive devices
- (0-15 minutes, time step=1 minute).
- Hard disk drive goes into Standby mode (for ATA standard interface).
- Disable V-sync to control the VESA DPMS monitor.
- Resume method: device activated (Keyboard for DOS, keyboard & mouse for Windows).
- Resume recovery time: 3-5 sec.

Global Standby Mode

- Global power management timer (2-120 minutes, time step=10 minute).
- Hard disk drive goes into Standby mode (for ATA standard interface).
- Disable H-sync and V-sync signals to control the VESA DPMS monitor.
- Resume method: Return to original state by pushing external switch button, modem ring in, keyboard and mouse for APM mode.
- Resume recovery time: 7-10 sec.

Suspend Mode

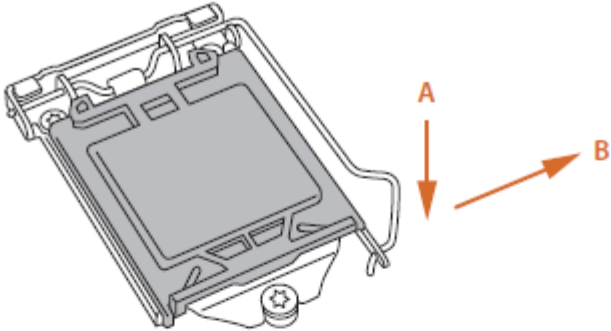
- Independent power management timer (2-120 minutes, time step=10 minutes) or pushing external
- switch button.
- CPU goes into SMM.
- CPU asserts STPCLK# and goes into the Stop Grant State.
- LED on the panel turns amber color.
- Hard disk drive goes into SLEEP mode (for ATA standard interface).
- Disable H-sync and V-sync signals to control the VESA DPMS monitor.
- Ultra I/O and VGA chip go into power saving mode.
- Resume method: Return to original state by pushing external switch button, modem ring in, keyboard and mouse for APM mode.
- Return to original state by pushing external switch button, modem ring in and USB keyboard for ACPI mode.

ACPI

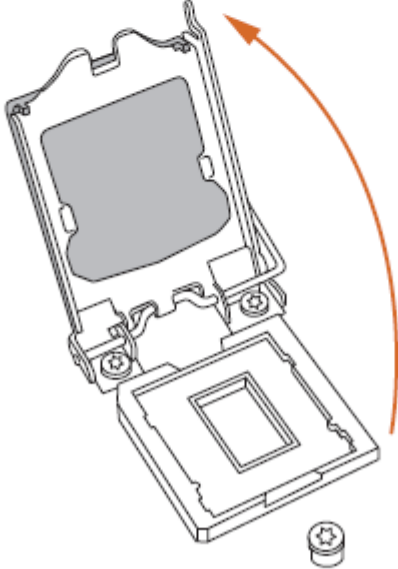
- ACPI specification 2.0.
- S0, S1, S3 and S5 sleep state support.
- On board device power management support.
- On board device configuration support.

Installing the CPU

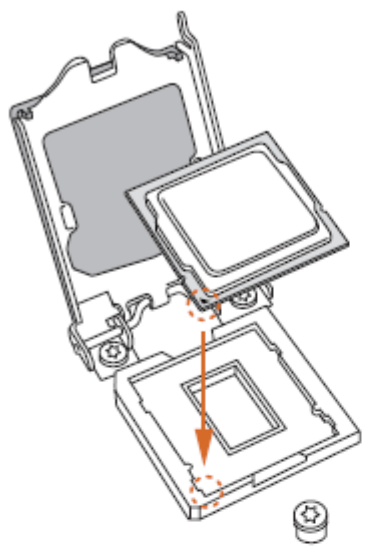
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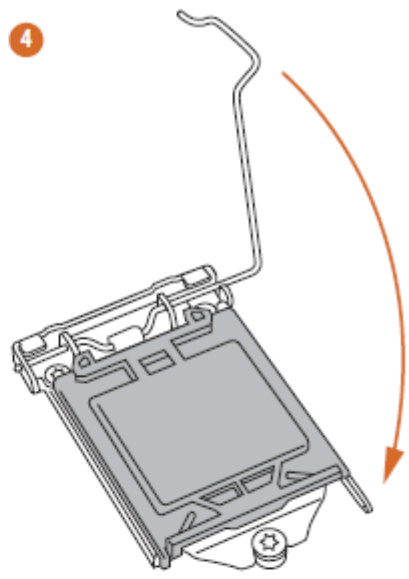
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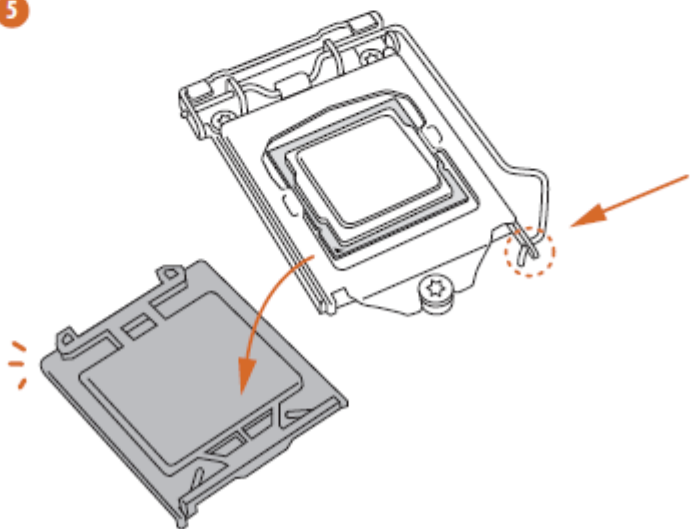
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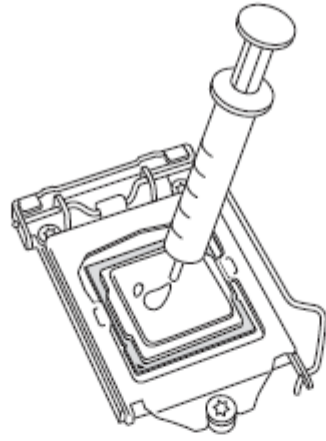


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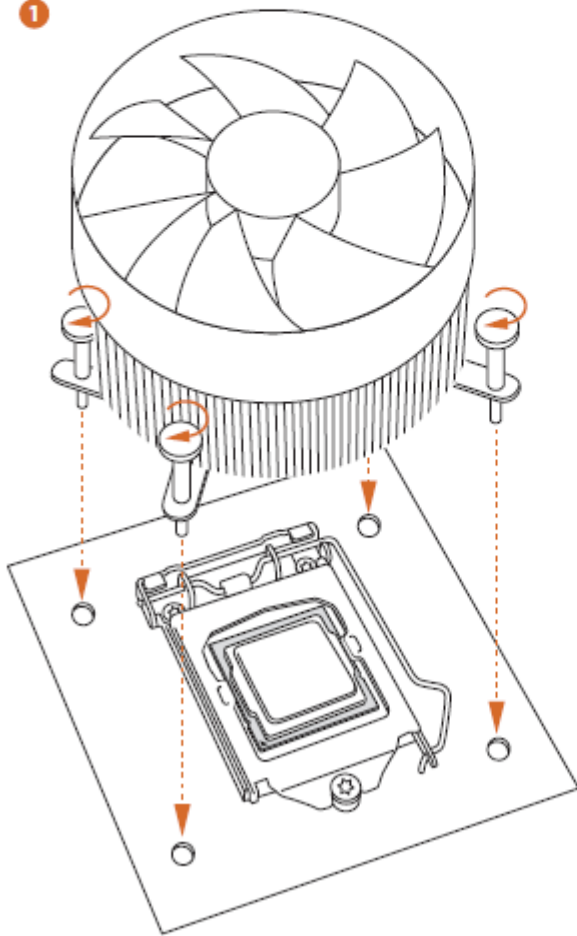


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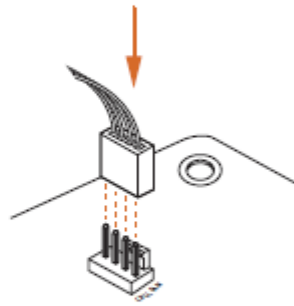




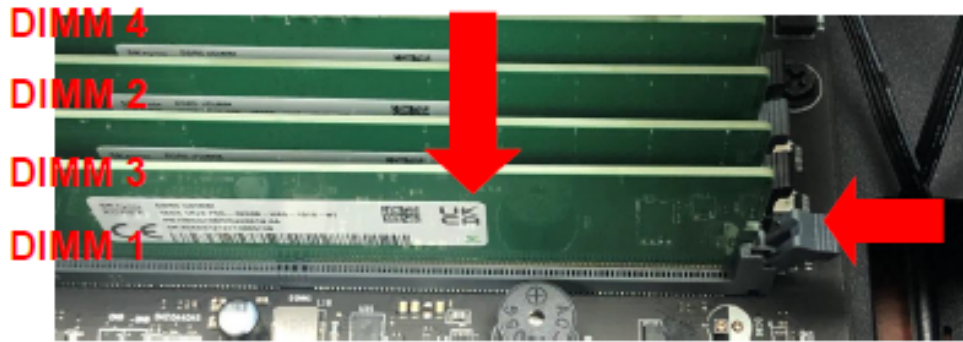
1



2



Installing Memory Modules (DIMM)



| Rule | DIMM1 | DIMM3 | DIMM2 | DIMM4 |
|--|-------|-------|-------|-------|
| Memory A>B (Different capacity value) | A | / | / | / |
| | A | / | A | / |
| | A | / | B | / |
| | A | A | A | / |
| | A | B | A | / |
| | A | A | A | A |
| | A | B | A | B |

| Total Memory | DIMM1 | DIMM3 | DIMM2 | DIMM4 |
|--------------|-------|-------|-------|-------|
| 8GB | 8GB | N/A | N/A | N/A |
| 16GB | 16GB | N/A | N/A | N/A |
| 16GB | 8GB | N/A | 8GB | N/A |
| 32GB | 16GB | N/A | 16GB | N/A |
| 24GB | 8GB | 8GB | 8GB | N/A |
| 48GB | 16GB | 16GB | 16GB | N/A |
| 32GB | 8GB | 8GB | 8GB | 8GB |
| 64GB | 16GB | 16GB | 16GB | 16GB |

Note:

1. " * " : Support Dual Channel.
2. you can install memory modules in any combination as long as they match the specifications about memory information please reference the latest AVLc list.
3. In case of different size Memory, must put the big size on the top.
4. Not recommend more than 2 (including the same capacity conditions) Memory combination.

M.2_SSD Module Installation Guide

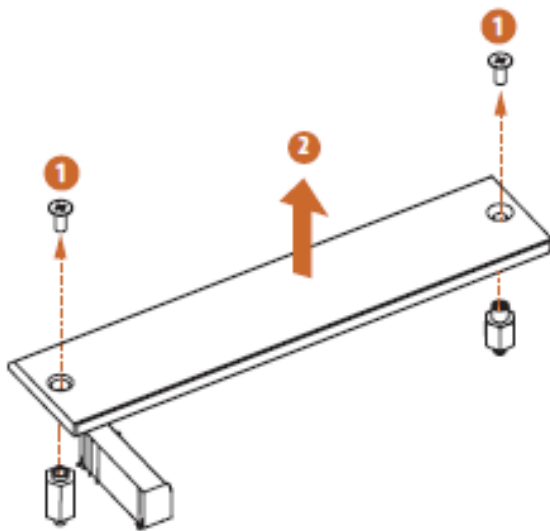
The M.2, also known as the Next Generation Form Factor (NGFF), is a small size and versatile card edge connector that aims to replace mPCIe and mSATA. The Hyper M.2 Socket (M2_1) supports M Key type 2280 M.2 PCI Express module up to Gen4x4 (64 Gb/s) (Only supported with 11th Gen Intel® Core™ Processors).

Installing the M.2_SSD (NGFF) Module



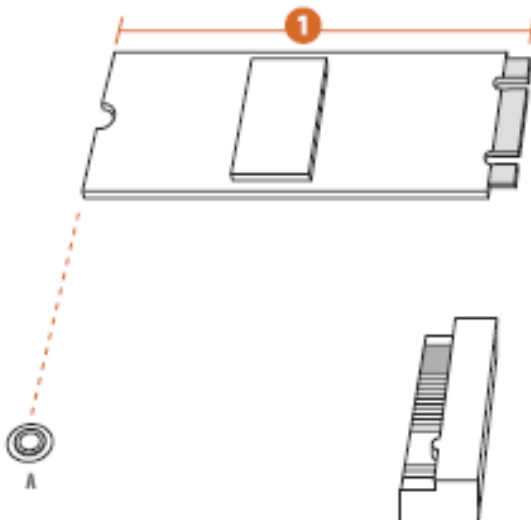
Step 1

Prepare a M.2_SSD (NGFF) module and the screw.



Step 2

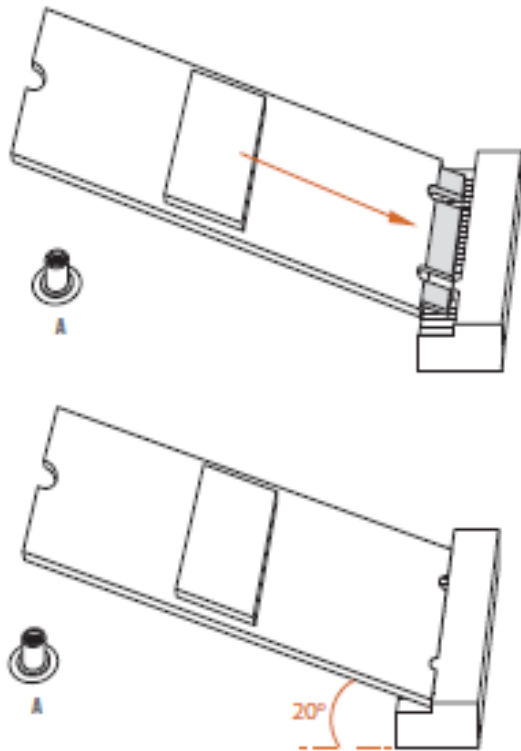
Before installing a M.2 (NGFF) SSD module, please loosen the screws to remove the M.2 heatsink.



Step 3

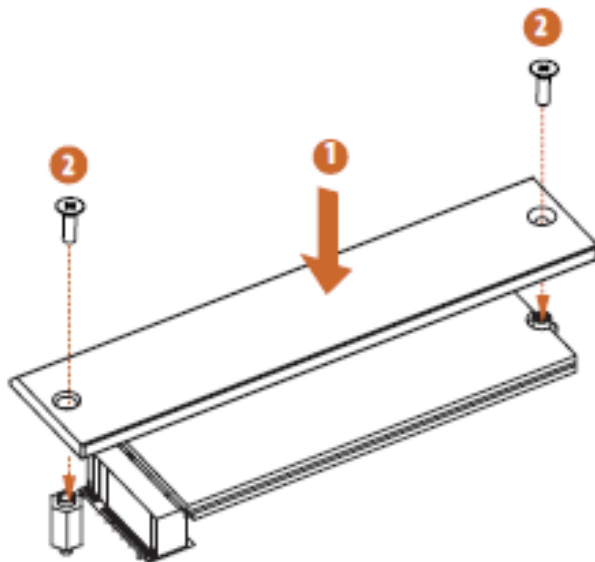
Depending on the PCB type and length of your M.2_SSD (NGFF) module, find the corresponding nut location to be used.

| | |
|--------------|----------|
| No. | 1 |
| Nut Location | A |
| PCB Length | 8cm |
| Module Type | Type2280 |



Step 4

Align and gently insert the M.2 (NGFF) SSD module into the M.2 slot. Please be aware that the M.2 (NGFF) SSD module only fits in one orientation.

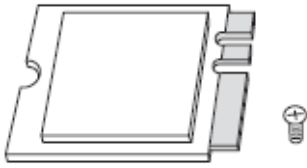


Step 5

Tighten the screw with a screwdriver to secure the module and M.2 heatsink into place. Please do not overtighten the screw as this might damage the module and M.2 heatsink.

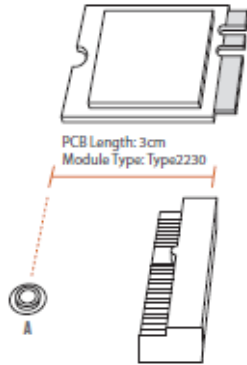
M.2 WiFi/BT Module and Intel® CNVi (Integrated WiFi/BT) Installation Guide

Installing the WiFi/BT module



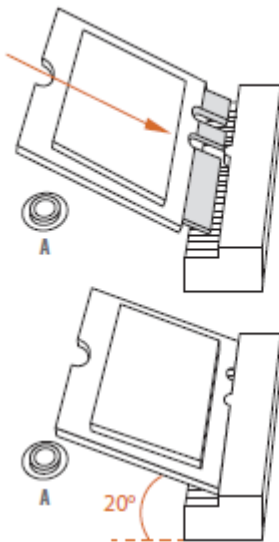
Step 1

Prepare a type 2230 WiFi/BT module or Intel® CNVi (Integrated WiFi/BT) and the screw.



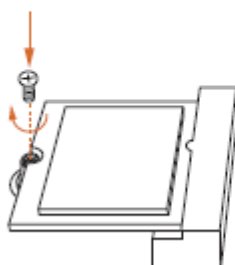
Step 2

Find the nut location to be used.



Step 3

Gently insert the WiFi/BT module or Intel® CNVi (Integrated WiFi/BT) into the M.2 slot. Please be aware that the module only fits in one orientation.

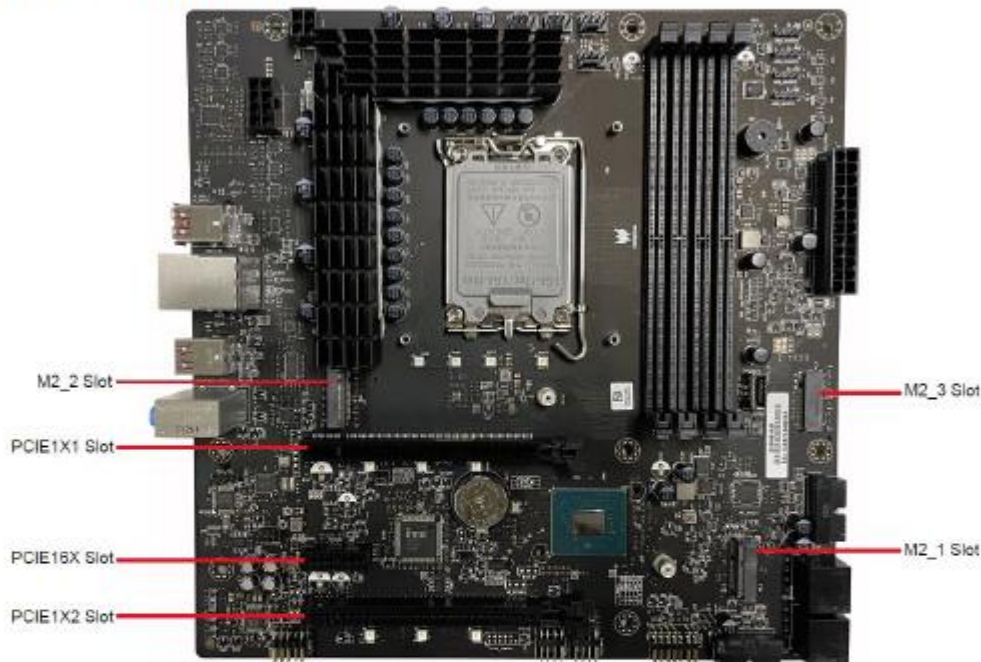


Step 4

Tighten the screw with a screwdriver to secure the module into place. Please do not overtighten the screw as this might damage the module.

Installing Add-on Cards

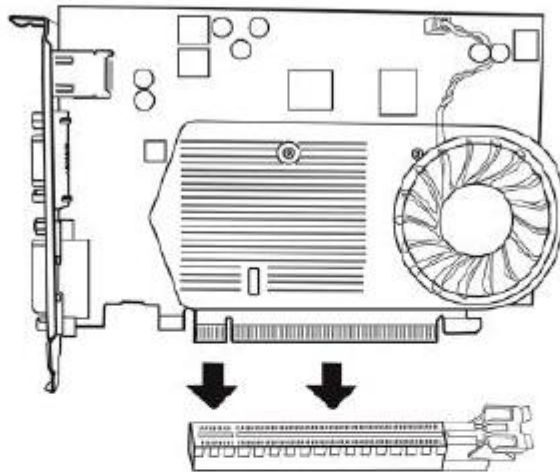
The slots on this motherboard are designed to hold expansion cards and connect them to the system bus. Expansion slots are a means of adding or enhancing the motherboard's features and capabilities. With these efficient facilities, you can increase the motherboard's capabilities by adding hardware that performs tasks that are not part of the basic system.



- M2_1 slot** The M.2 (Key E, 2230) slot combine with PCIE and USB2.0 and CNVi for the WLAN module
- PCIE16X_1~2 Slots** The PCI Express x16 slots are used to install an external PCI Express graphics card. One PCI Express x16 slot for Graphic interface (Gen5 X16 Function),another PCI Express x16 slot for Gen 4X4 Function.
- M2_2 slot** The M.2 (Key M, 2280/2242) slot is for PCIe, SSD and Intel Optane memory.
- M2_3 slot** The M.2 (Key M, 2280) slot is for SSD with PCIe Gen4 signal.
- PCIE1X Slots** The PCI Express x1 slot is fully compliant to the PCI Express Base Specification revision 4.0..

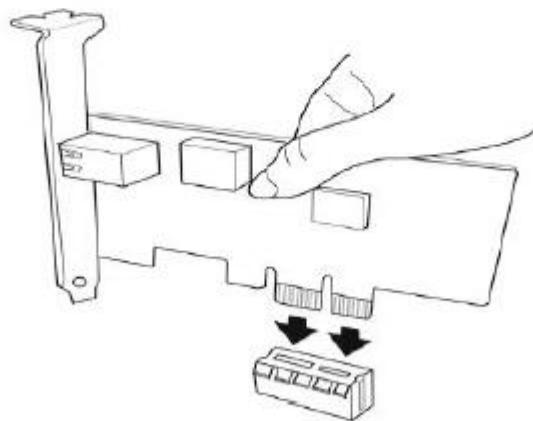
Follow these instructions to install an add-on card:

- 1 Remove a blanking plate from the system case corresponding to the slot you are going to use.
- 2 Install the edge connector of the add-on card into the expansion slot. Ensure that the edge connector is correctly seated in the slot.
- 3 Secure the metal bracket of the card to the system case with a screw.



**For reference only*

Install the VGA Card in the PCIEX16 slot



**For reference only*

Install the LAN Card in the PCIE 1X slot



For some add-on cards, for example graphics adapters and network adapters, you have to install drivers and software before you can begin using the add-on card.

Follow these instructions to install the M.2 SSD card:

1. Demount the screw not used according to the length of your M.2 SSD card.



2. Insert the M.2 SSD card into NGFF slot in the fool-proof way.



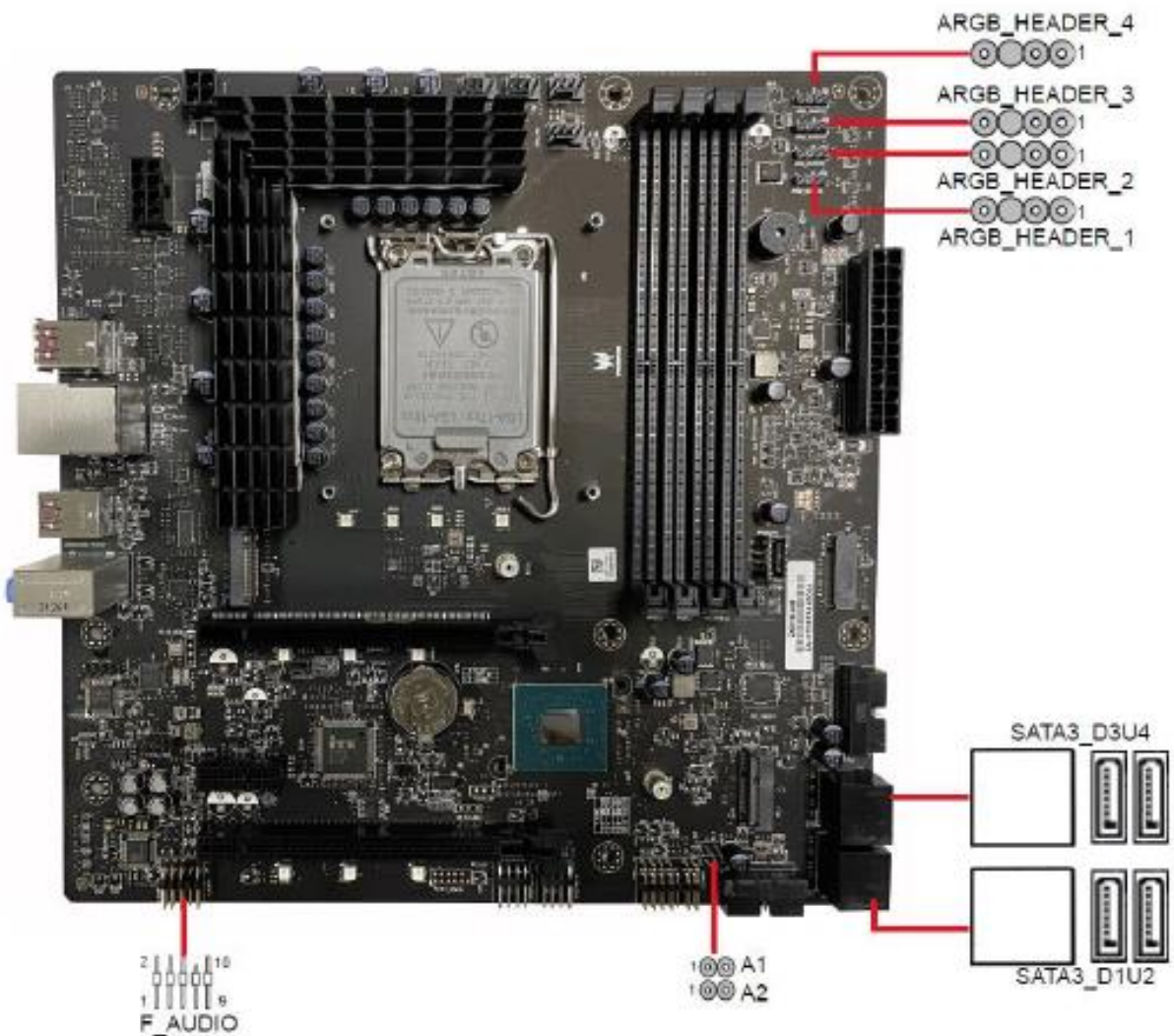
3. Lock the screw as the following picture shows to make sure the M.2 SSD card is installed in place.



For some add-on cards, for example graphics adapters and network adapters, you have to install drivers and software before you can begin using the add-on card.

Connecting Optional Devices

Refer to the following for information on connecting the motherboard's optional devices:



SATA 1~4: Serial ATA Connectors

SATA1~4 connectors are used to support the Serial ATA 6Gb/s devices, simpler disk drive cabling and easier PC assembly.

| Pin | Signal Name | Pin | Signal Name |
|-----|-------------|-----|-------------|
| 1 | Ground | 2 | TX+ |
| 3 | TX- | 4 | Ground |
| 5 | RX- | 6 | RX+ |
| 7 | Ground | - | - |

A1~2: 2-pin GPIO Headers

| Pin | Signal Name |
|-----|-------------|
| 1 | GPIO |
| 2 | GND |

ARGB_HEADER1~4: 4-pin LED pin Connectors

4-pin LED pin Connectors

| Pin | Signal Name | Pin | Signal Name |
|-----|-------------|-----|-------------|
| 1 | +5V | 3 | DATA |
| 2 | Key | 4 | GEN |

F_AUDIO: Front Panel Audio header

This header allows the user to install auxiliary front-oriented microphone and line- out ports for easier access.

| Pin | Signal Name | Pin | Signal Name |
|-----|-------------------|-----|-------------|
| 1 | MIC_L | 2 | GND |
| 3 | MIC_R | 4 | HD PRESENCE |
| 5 | HP_R | 6 | MIC_JD |
| 7 | Receive(HP_SENSE) | 8 | No pin |
| 9 | HP_L | 10 | HP_JD |

Jumper and Connector Information

Safety Precautions

- Follow these safety precautions when installing the motherboard
- Wear a grounding strap attached to a grounded device to avoid damage from static electricity
- Discharge static electricity by touching the metal case of a safely grounded object before working on the motherboard
- Leave components in the static-proof bags they came in
- Hold all circuit boards by the edges. Do not bend circuit boards

Choosing a Computer Case

There are many types of computer cases on the market. The motherboard complies with the specifications for the ATX system case. Some features on the motherboard are implemented by cabling connectors on the motherboard to indicators and switches on the system case. Make sure that your case supports all the features required.

Most cases have a choice of I/O templates in the rear panel. Make sure that the I/O template in the case matches the I/O ports installed on the rear edge of the motherboard.

This motherboard carries an ATX form factor of 305 x 272 mm. Choose a case that accommodates this form factor.

Installing the Motherboard in a Case

Refer to the following illustration and instructions for installing the motherboard in a case.

Most system cases have mounting brackets installed in the case, which correspond the holes in the motherboard. Place the motherboard over the mounting brackets and secure the motherboard onto the mounting brackets with screws.

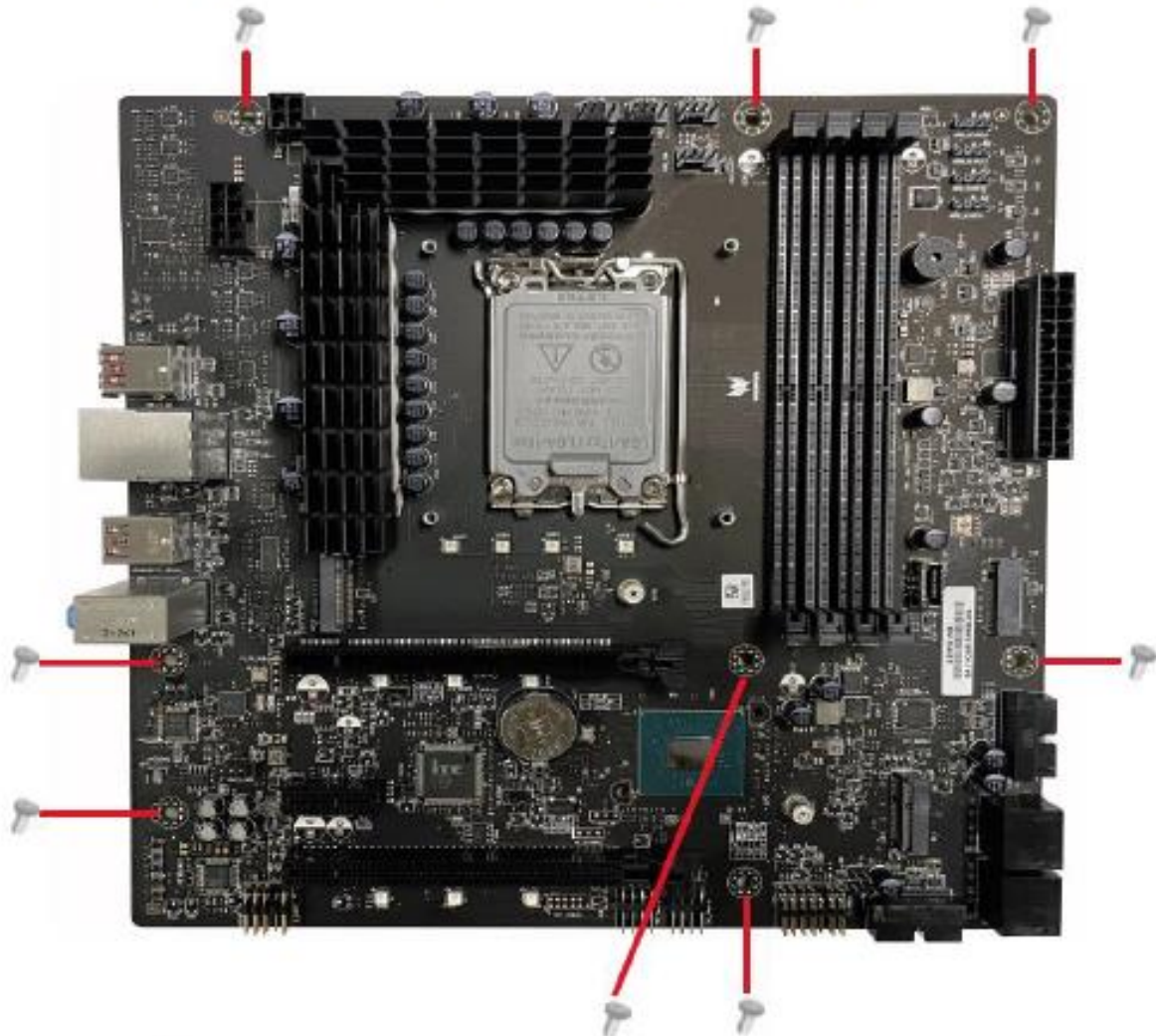
Ensure that your case has an I/O template that supports the I/O ports and expansion slots on your motherboard.



The images of the motherboard in this chapter are for reference only, please take the actual motherboard for detailed parts.

Checking Jumper Settings



This section explains how to set jumpers for correct configuration of the motherboard.



Do not over-tighten the screws as this can stress the motherboard.

Setting Jumpers

Use the motherboard jumpers to set system configuration options. Jumpers with more than one pin are numbered. When setting the jumpers, ensure that the jumper caps are placed on the correct pins.


| Description | illustration |
|---|---|
| <p>The illustrations show a 2-pin jumper. When the jumper cap is placed on both pins, the jumper is SHORT. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is OPEN.</p> |  <p data-bbox="906 1733 999 1765">SHORT</p> <p data-bbox="1110 1733 1190 1765">OPEN</p> |
| <p>This illustration shows a 3-pin jumper. Pins 1 and 2 are SHORT</p> |  |

Checking Jumper Settings

The following illustration shows the location of the motherboard jumpers. Pin 1 is labeled.



Jumper Settings

| Jumper | Type | Description | Setting (Default) | Illustration |
|----------|-------|-------------|--|--|
| CLR_CMOS | 3-pin | CLEAR CMOS | 1-2: NORMAL. 2-3: CLEAR Before clearing the CMOS, make sure to turn the system off |  1 CLR_CMOS |



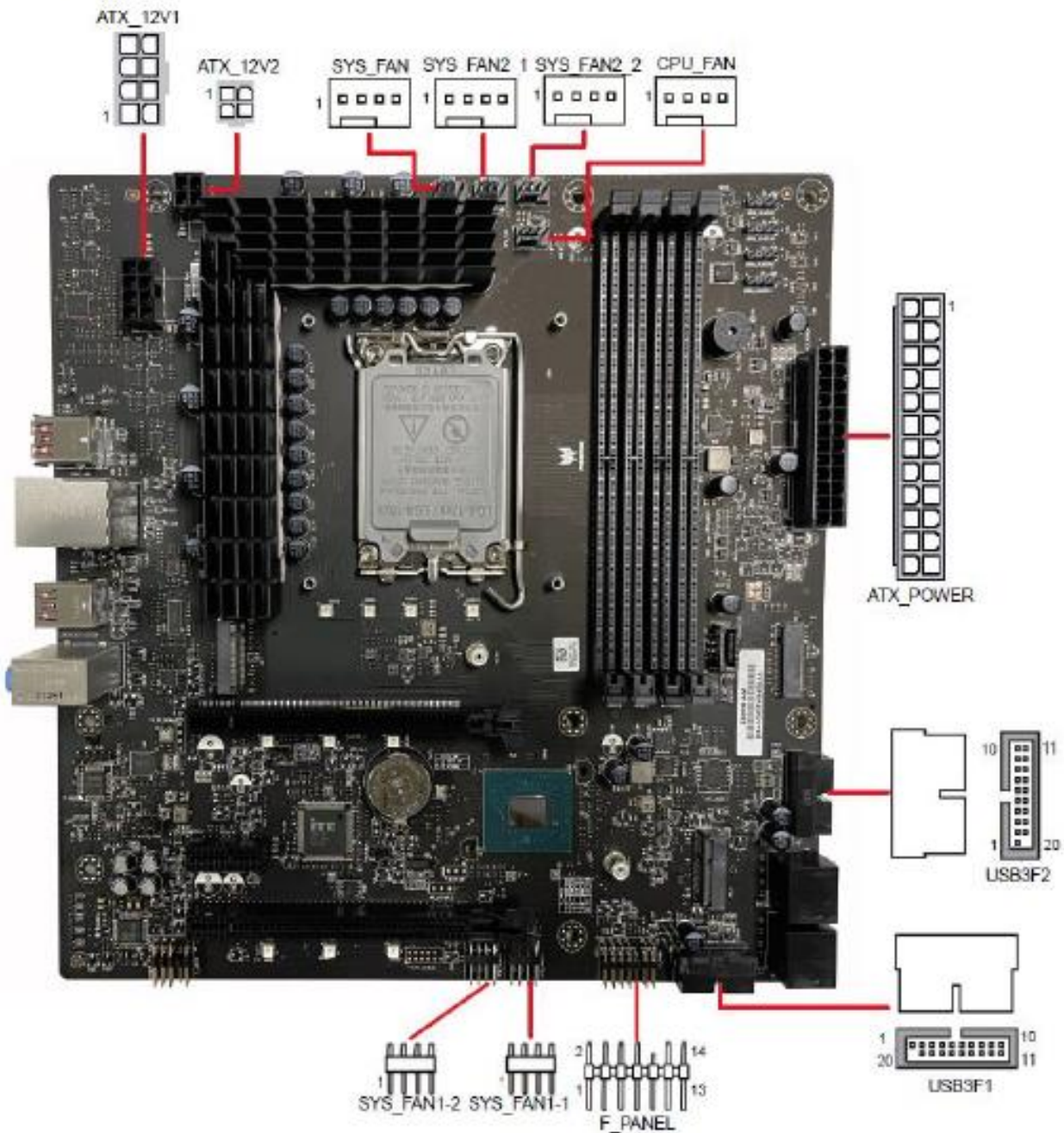
To avoid the system instability after clearing CMOS, we recommend users to enter the main BIOS setting page to "Load Default Settings" and then "Save and Exit Setup"

Connecting Case Components

After you have installed the motherboard into a case, you can begin connecting the motherboard components.

Refer to the following:

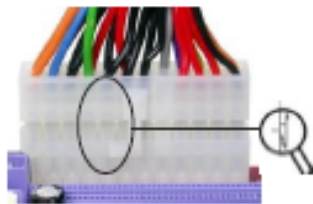
1. Connect the Rear system cooling fan connector to **SYS_FAN**.
2. Connect the Front system cooling fan connector to **SYS_FAN1_1~2**.
3. Connect the CPU cooling fan cable or water pump to **CPU_FAN**.
4. Connect the standard power supply connector to **ATX_POWER**.
5. Connect the case switches and indicator LEDs to the **F_PANEL**.
6. Connect the CPU water cooling fan connector to the **SYS_FAN2_1~2**.
7. Connect the auxiliary case power supply connector to **ATX_12V1~2**.
8. Connect the USB3.0 header housing connector to **USB3F1~2**.





Connecting 24-pin power cable

The ATX 24-pin connector allows you to connect to ATX v2.x power supply.



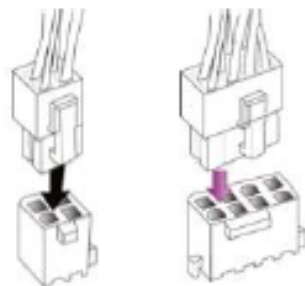
24-pin power cable

With ATX v2.x power supply, users please note that when installing 24-pin power cable, the latches of power cable and the ATX_POWER match perfectly.



Connecting 8-pin or 4-pin power cable

The ATX_12V 4-pin or 8-pin power connector is used to provide power to the CPU.



4-pin or 8-pin power cable

When installing 8-pin power cable, the latches of power cable and the ATX_12V1 connector match perfectly.

CPU_FAN: CPU cooling Fan Connector

| Pin | Signal Name | Function |
|-----|-------------|---------------|
| 1 | GND | System Ground |
| 2 | +12V | Power +12V |
| 3 | Sense | Sensor |
| 4 | CONTROL | CONTROL |



Users please note that the fan connector supports the CPU cooling fan of 1.1A ~ 2.2A (26.4W max) at +12V

SYS_FAN, SYS_FAN1_1~2, SYS_FAN2_1~2: System Cooling Fan Connector

| Pin | Signal Name | Function |
|-----|-------------|---------------|
| 1 | GND | System Ground |
| 2 | +12V | Power +12V |
| 3 | Sense | Sensor |
| 4 | CONTROL | CONTROL |

ATX_12V1: ATX 12V Power Connector

| Pin | Signal Name | Pin | Signal Name |
|-----|-------------|-----|-------------|
| 1 | Ground | 5 | +12V |
| 2 | Ground | 6 | +12V |
| 3 | GND | 7 | +12V |
| 4 | N/A | 8 | +12V |

ATX_12V2: ATX 12V Power Connector

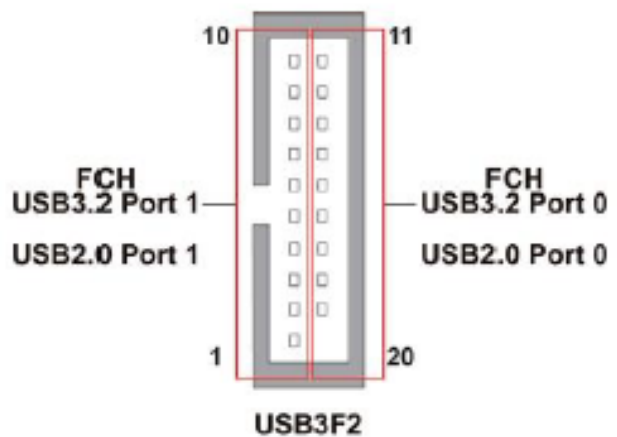
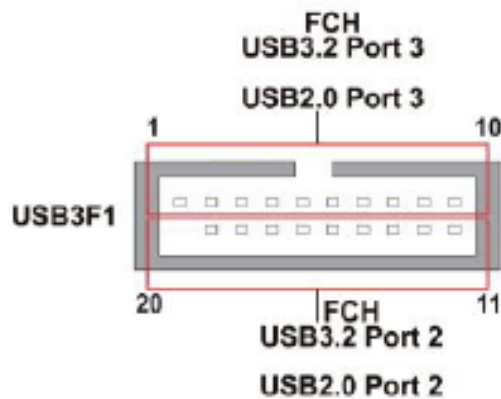
| Pin | Signal Name | Pin | Signal Name |
|-----|-------------|-----|-------------|
| 1 | Ground | 2 | Ground |
| 3 | +12V | 4 | +12V |

ATX_POWER: ATX 24-pin Power Connector

| Pin | Signal Name | Pin | Signal Name |
|-----|-------------|-----|-------------|
| 1 | +3.3V | 13 | +3.3V |
| 2 | +3.3V | 14 | PWRON |
| 3 | Ground | 15 | PWROK |
| 4 | +5V | 16 | +5VSB |
| 5 | Ground | 17 | Ground |
| 6 | +5V | 18 | Ground |
| 7 | Ground | 19 | Ground |
| 8 | PWRGD | 20 | -5V |
| 9 | +5VSB | 21 | +5V |
| 10 | +12V | 22 | +5V |
| 11 | +12V | 23 | +5V |
| 12 | +3.3V | 24 | Ground |

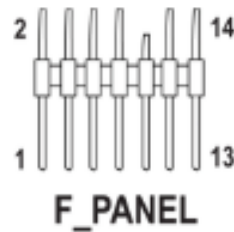
USB3F1~2: Front panel USB3.0 header connectors

| Pin | Signal Name | Pin | Signal Name |
|-----|-------------|-----|-------------|
| 1 | USB POWER | 2 | SSRX0- |
| 3 | SSRX0+ | 4 | GND |
| 5 | SSTX0- | 6 | SSTX0- |
| 7 | GND | 8 | D0- |
| 9 | D0+ | 10 | NC |
| 11 | D1+ | 12 | D1- |
| 13 | GND | 14 | SSTX1+ |
| 15 | SSTX1_ | 16 | GND |
| 17 | SSRX1_ | 18 | SSRX1- |
| 19 | USB POWER | 20 | KEY |



Front Panel Header

The front panel header (F_PANEL) provides a standard set of switch and LED headers commonly found on ATX or Micro ATX cases. Refer to the table below for information:



| Pin | Signal | Function | Pin | Signal | Function |
|-----|---------|---------------|-----|---------|---------------|
| 1 | HDD_LED | HDD LED Power | 2 | GLED0 | MSG LED |
| 3 | HDD_LED | Hard disk LED | 4 | GLED1 | MSG LED |
| 5 | GND | Ground | 6 | PWRSW | POWER SWITCH |
| 7 | HWRST_L | Reset | 8 | GND | GROUND |
| 9 | NC | Reserved | 10 | KEY | NO PIN |
| 11 | +5VSB | 5V | 12 | LAN_LED | LAN LED Power |
| 13 | NC | Reserved | 14 | LAN_LED | LAN_LED |

*.MSG LED (dual color or single color)

Hard Drive Activity LED

Connecting pins 1 and 3 to a front panel mounted LED provides visual indication that data is being read from or written to the hard drive. For the LED to function properly, an IDE drive should be connected to the onboard IDE interface. The LED will also show activity for devices connected to the SCSI (hard drive activity LED) connector.

Power/Sleep/Message waiting LED

Connecting pins 2 and 4 to a single or dual-color, front panel mounted LED provides power on/off, sleep, and message waiting indication.

Reset Switch

Supporting the reset function requires connecting pin 5 and 7 to a momentary-contact switch that is normally open. When the switch is closed, the board resets and runs POST.

Power Switch

Supporting the power on/off function requires connecting pins 6 and 8 to a momentary-contact switch that is normally open. The switch should maintain contact for at least 50 ms to signal the power supply to switch on or off. The time requirement is due to internal de-bounce circuitry. After receiving a power on/off signal, at least two seconds elapses before the power supply recognizes another on/off signal.

LAN LED

Connecting pins 12 and 14 to a LAN LED provides visual indication that data is being read from or written to the LAN drive.

Setting up the system

Pre-installation requirements

Selecting a site

Before unpacking and installing the system, select a suitable site for the system for maximum efficiency. Consider the following factors when choosing a site for the system:

- Near a grounded power outlet.
- Clean and dust-free
- Stable surface free from vibration.
- Well-ventilated and away from sources of heat.
- Secluded from electromagnetic fields produced by electrical devices such as air conditioners, radio and TV transmitters, etc.

Checking the package contents

Check the following items from the package:

- System unit
- Accessory box

If any of the above items is damaged or missing, contact your dealer immediately.

Save the boxes and packing materials for future use.

Turning on the system

After making sure that you have properly set up the system, applied power and connected all the necessary peripherals, you can now power on the system. Follow the procedure below.

Press the power button .

The system starts up and displays a welcome message on the monitor. After that, a series of power-on self-test (POST) messages appears. The POST messages indicate if the system is running well or not.



Note: If the system does not turn on or boot after pressing the power button, go to the next section for the possible causes of the boot failure

Aside from the POST messages, you can determine if the system is in good condition by checking if the following occurred.

- The power status indicator on the front panel lights up blue.
- The Num Lock, Caps Lock and Scroll Lock indicators on the keyboard light up.

Power-on problems

If the system fails to boot after you have applied power, check the following factors that might have caused the boot failure.

- The external power cord may be loosely connected.
- Check the power cord connection from the power outlet to the power cord socket on the rear panel. Make sure that the cord is properly connected to the power outlet and to the power cord socket.

No power comes from the grounded power outlet. Have an electrician check your power outlet.

- Loose or improperly connected internal power cables.
Check the internal cable connections. If you are not confident to perform this step, ask a qualified technician to assist you.



Warning! Make sure all power cords are disconnected from the electrical outlet before performing this task.



Note: If you have gone through the preceding actions and the system still fails to boot, ask your dealer or a qualified technician for assistance.

Turning off the system

There are two ways to turn off the Workstation—via software or via hardware. The software procedure below applies to a system running on a Windows OS. For other shutdown procedures, refer to the related user documentation.

To turn off the system via software:

1. Press <Ctrl> + <Alt> + <Delete> on the attached keyboard or click **Start** on the Windows taskbar.
2. Select **Shut Down**.
3. Select Shut Down from the drop-down menu, then click **OK**.

To turn off the system via hardware

If you cannot shut down the Workstation via software, press the power button for at least four seconds. Quickly pressing the button may put the Workstation in a Suspend mode only.

System troubleshooting

Start up problems during assembly

After assembling the PC for the first time you may experience some start up problems. Before calling for technical support or returning for warranty, this chapter may help to address some of the common questions using some basic troubleshooting tips.

a) System does not power up and the fans are not running.

1. Disassemble the PC to remove the VGA adaptor card, DDR memory, LAN, USB and other peripherals including keyboard and mouse. Leave only the motherboard, CPU with CPU cooler and power supply connected. Turn on again to see if the CPU and power supply fans are running.
2. Make sure to remove any unused screws or other metal objects such as screwdrivers from the inside PC case. This is to prevent damage from short circuit.
3. Check the CPU FAN connector is connected to the motherboard.
4. Check the 12V power connector is connected to the motherboard.
5. Check that the 12V power & ATX connectors are fully inserted into the motherboard connectors. Make sure the latches of the cable and connector are locked into place.

b) Power is on, fans are running but there is no display

1. Make sure the monitor is turned on and the monitor cable is properly connected to the PC.
2. Check the VGA adapter card (if applicable) is inserted properly.
3. Listen for beep sounds. If you are using internal PC speaker make sure it is connected.
 - a. continuous beeping : memory not detected
 - b. 1 long beep and 2 short beeps looping : VGA not detected

c) The PC suddenly shuts down while booting up.

1. The CPU may experience overheating so it will shutdown to protect itself. Ensure the CPU fan is working properly.
2. From the BIOS setting, try to disable the Smart fan function to let the fan run at default speed. Doing a Load Optimised Default will also disable the Smart fan.

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| Error Symptom | Action/FRU |
|---|--|
| Executing software shutdown from Windows98 Start menu does not turn off the system. (Only pressing power switch can turn off the system). | <ol style="list-style-type: none">1. Load default settings.2. Reload software from Recovery CD. |
| No system power, or power supply fan is not running. | <ol style="list-style-type: none">1. Power Supply2. Main board |
| Other Problems | |
| Any other problems. | <ol style="list-style-type: none">1. Undetermined Problems |

Initial system startup problems

Problems that occur at initial system startup are usually caused by an incorrect installation or configuration. Hardware failure is a less possible cause. If the problem you are experiencing is with a specific application.

Initial troubleshooting checklist

- AC power is available at the wall outlet?
- Is the power supply module properly installed?
- Is the system power cord properly plugged into the power supply module socket? and connected to a NEMA 5-15R outlet for 100-120 V or a NEMA 6-15R outlet for 200-240 V?
- Are all peripheral cables correctly connected and secured?
- Did you press the system power button to turn the Workstation on (power on indicator should be lit green)?
- Are all device drivers properly installed?
- Are hard disk drive(s) properly formatted and configured?
- Are the BIOS configuration settings in the BIOS Setup Utility correct?
- Is the operating system properly loaded?
Refer to the operating system documentation.
- Are all hardware components compliant with the tested components lists?
- Are all internal cables correctly connected and secured?
- Is the processor properly seated in its mainboard socket?
- Are all standoffs in the proper location and not touching any components, causing a potential short?
- Are all add-in expansion cards fully seated in their mainboard slots?
- Are all system jumpers correctly set?
- Are all switch settings on add-in boards and peripheral devices correct?

To check these settings, refer to the manufacturer's documentation that comes with them. If applicable, ensure that there are no conflicts (e.g., two add-in boards sharing the same interrupt).

Hardware diagnostic testing

This section provides a detailed approach to identifying a hardware problem and its cause.

Checking the boot-up status



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Caution: Before disconnecting any peripheral cables from the Workstation, turn off the system and any peripheral devices. Failure to do so can cause permanent damage to the system and/or the peripheral device.

1. Turn off the system and all external peripheral devices.
2. Disconnect all peripheral devices from the system, except for the keyboard and the display monitor.
3. Make sure the system power cord is plugged into a properly grounded AC outlet and in the power supply module cord socket.
4. Make sure the display monitor and keyboard are correctly connected to the system.
5. Turn on the display monitor.
6. Set the display brightness and contrast controls to at least two thirds of their maximum range.
Refer the documentation that came with your display monitor.
7. If the operating system normally loads from the hard drive, make sure there is no diskette in floppy drive and no disc in the optical drive.
8. If the power indicator is lit, attempt to boot from a disc.
9. Turn on the system.

Verifying the condition of the storage devices

As POST determines the system configuration, it tests for the presence of each mass storage device installed in the system. As each device is checked, its activity indicator should turn blue briefly. Check the activity indicators for the hard drive(s), and any other 5.25" device you may have installed.

If any of these indicators fail to light up, refer to related problems listed in the Specific problems and corrective actions section.

Specific problems and corrective actions

Listed below are specific problems that may arise during the use of your Workstation and their possible solutions

Confirming loading of the operating system

Once the system boots up, the operating system prompt appears on the screen. The prompt varies according to the operating system. If the operating system prompt does not appear.

Specific problems and corrective actions

Listed below are specific problems that may arise during the use of your Workstation and their possible solutions

Specific problems and corrective actions

Listed below are specific problems that may arise during the use of your Workstation and their possible solutions.

Power indicator does not light.

Do the following:

- Make sure the power supply module is properly installed.
- Make sure the power cord is connected correctly.
- Make sure that the wall outlet has power. Test it by plugging in another device.
- Make sure the power indicator on the front panel is lit up.
- Remove all add-in cards and see if the system boots.
If reboot is successful, install the cards back in one at a time with a reboot between each addition to determine if one of them is causing the problem.
- Make sure that you have properly installed system compliant memory modules, and that they are populated according to the system guidelines.
- Make sure that you have installed system compliant processors, and that they are populated according to the system guidelines.

Optical drive activity indicator does not light

Do the following:

- Make sure the SATA and power cables are properly connected.
- Check that relevant switches and jumpers on the drive are set correctly.
- Check that the drive is properly configured.

Optical drive tray cannot be ejected

Insert the tip of a paperclip into the small hole on the optical drive. Slowly pull the tray out from the drive until the tray is fully extended.

Optical drive cannot read a disc

Do the following:

- Make sure you are using the correct type of disc.
- Make sure the disc is properly seated in the drive.
- Make sure the disc is unscratched.
- Make sure the drive's cables are properly connected.

Newly installed memory modules are not detected.

Do the following:

- Make sure the memory modules specifications comply with the system requirements.
- Make sure the memory modules have been populated according to the system guidelines.
- Make sure the memory modules are properly installed on their mainboard slots.

Network activity indicators do not light.

Do the following:

- Make sure the correct network drivers are loaded on the system.
- Network might be idle.

Peripheral device connected to a USB port does not work.

Do the following:

- Reduce the number of external devices connected to a USB hub.
- Refer to the documentation that came with the device

There is problem with the software program.

Do the following:

- Verify that the software is properly configured for the system.
- Refer to the software installation and operation documentation for instructions on setting up and using the software. Try a different version of the software to see if the problem is with the copy you are using. If the other version runs correctly on the system, contact your vendor about the defective software.

No characters appear on the display monitor.

Do the following:

- Is the keyboard functioning? Test it by turning the Num Lock function on and off to check if the Num Lock indicator lights up.
- Is the display monitor plugged in and turned on? If you are using a switch box, is it switched to the correct system?
- Are the brightness and contrast controls on the video monitor properly adjusted?
- Is the display monitor signal cable properly connected?
- Does this display monitor work correctly if plugged into a different system?
- Remove all add-in cards and see if the system boots.
If reboot is successful, install the cards back in one at a time with a reboot between each addition to determine if one of them is causing the problem.
- Make sure that you have properly installed system-compliant memory modules, and that they are populated according to the system guidelines.
- Make sure that you have installed system compliant processors, and that they are populated according to the system guidelines.

If you are using an add-in video controller card, do the following:

1. Verify that the display monitor works using the onboard video controller.
2. Verify that the add-in video controller card is fully seated in its slot.
3. Reboot the system for the changes to take effect.
4. If there are still no characters on the screen after you reboot the system, reboot it again.

Take note of the beep codes emitted during POST. This information may be required if you seek technical assistance.

If POST does not emit any beep code and characters still do not appear, the display monitor or the video controller may be defective. Contact your local Altos representative or authorized dealer for technical assistance.



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Notices

Information for your safety and comfort

Safety instructions

Read these instructions carefully. Keep this document for future reference. Follow all warnings and instructions marked on the product.

Turning the product off before cleaning

Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

CAUTION for plug as disconnecting device

Observe the following guidelines when connecting and disconnecting power to the power supply unit:

- Install the power supply unit before connecting the power cord to the AC power outlet.
- Unplug the power cord before removing the power supply unit from the computer.
- If the system has multiple sources of power, disconnect power from the system by unplugging all power cords from the power supplies.

CAUTION for accessibility

Be sure that the power outlet you plug the power cord into is easily accessible and located as close to the equipment operator as possible. When you need to disconnect power to the equipment, be sure to unplug the power cord from the electrical outlet.

Warnings

- Do not use this product near water.
- Do not place this product on an unstable cart, stand or table. If the product falls, it could be seriously damaged.
- Slots and openings are provided for ventilation to ensure reliable operation of the product and to protect it from overheating. These openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug or other similar surface. This product should never be placed near or over a radiator or heat register, or in a built-in installation unless proper ventilation is

provided.

- Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind onto or into the product.
- To avoid damage of internal components and to prevent battery leakage, do not place the product on a vibrating surface.
- Never use it under sporting, exercising, or any vibrating environment which will probably cause unexpected short current or damage rotor devices, HDD, Optical drive, and even exposure risk from lithium battery pack.
- This product is not suitable for use with visual display workplace devices according to §2 of the German Ordinance for Work with Visual Display Units.

Using electrical power

- This product should be operated from the type of power indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
- Do not allow anything to rest on the power cord. Do not locate this product where people will walk on the cord.
- If an extension cord is used with this product, make sure that the total ampere rating of the equipment plugged into the extension cord does not exceed the extension cord ampere rating. Also, make sure that the total rating of all products plugged into the wall outlet does not exceed the fuse rating.
- Do not overload a power outlet, strip or receptacle by plugging in too many devices. The overall system load must not exceed 80% of the branch circuit rating. If power strips are used, the load should not exceed 80% of the power strip's input rating.
- This product's power supply is equipped with a three-wire grounded plug. The plug only fits in a grounded power outlet. Make sure the power outlet is properly grounded before inserting the power supply plug. Do not insert the plug into a non-grounded power outlet. Contact your electrician for details.



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Warning ! The grounding pin is a safety feature.
Using a power outlet that is not properly grounded
may result in electric shock and/or injury.



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Note: The grounding pin also provides good
protection from unexpected noise produced by
other nearby electrical devices that may interfere

with the performance of this product.

- Use the product only with the supplied power supply cord set. If you need to replace the power cord set, make sure that the new power cord meets the following requirements: detachable type, UL listed/CSA certified, VDE approved or its equivalent, 4.6 meters (15 feet) maximum length.

Product servicing

Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous voltage points or other risks. Refer all servicing to qualified service personnel.

Unplug this product from the wall outlet and refer servicing to qualified service personnel when:

- the power cord or plug is damaged, cut or frayed
- liquid was spilled into the product
- the product was exposed to rain or water
- the product has been dropped or the case has been damaged
- the product exhibits a distinct change in performance, indicating a need for service
- the product does not operate normally after following the operating instructions



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Notes : Adjust only those controls that are covered by the operating instructions, since improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal condition.

This Workstation should be located in a restricted access location or an area with similar instruction.



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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.

Disposal instructions

Do not throw this electronic device into the trash when discarding. To minimize pollution and ensure utmost protection of the global environment, please recycle.



ENERGY STAR



Altos's ENERGY STAR qualified products save your money by reducing energy cost and protecting the environment without sacrificing features or performance. Altos is proud to offer our customers products with the ENERGY STAR mark. What is ENERGY STAR? Products that are ENERGY STAR qualified use less energy and prevent greenhouse gas emissions by meeting strict energy efficiency guidelines set by the U.S. Environmental Protection Agency. Altos is committed to offering products and services

worldwide that help customers save money, conserve energy and improve the quality of our environment. The more energy we can save through higher energy efficiency, the more we reduce greenhouse gases and the risks of climate change. More information refers to www.energystar.gov or www.energystar.gov/powermanagement.

Altos ENERGY STAR qualified products:

- Produce less heat and reduce cooling loads, and warmer climates.
- Automatically go into "display sleep" and "computer sleep" within 10 and 30 minutes of inactivity respectively (Refer to the settings in Power Management).
- Wake the computer from sleep mode by pushing keyboard or moving mouse.
- Computers will save more than 80% energy at "sleep" mode.

ENERGY STAR and the ENERGY STAR mark are registered U.S. marks

Regulations and safety notices

CLASS 1 LASER PRODUCT

CAUTION: INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM.

Declaration of Conformity for EU countries

Hereby, Altos, declares that this system is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

List of applicable countries

This device must be used in strict accordance with the regulations and constraints in the country of use. For further information, please contact local office in the country of use. Please see <http://ec.europa.eu/enterprise/rtte/implem.htm> or the latest country list.



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Note: The following sections are applicable only to Class A systems

FCC notice Class A

This device 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 in a residential installation. This device generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this device does cause harmful interference to radio or television reception, which can be determined by turning the device 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 device and receiver.
- Connect the device into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/television technician for help

Notice: Shielded cables

All connections to other computing devices must be made using shielded cables to maintain compliance with FCC regulations. In compliance with FCC regulations, use shielded cables to connect to other computing devices.

Notice: Peripheral devices

Only peripherals (input/output devices, terminals, printers, etc.) certified to comply with the Class A limits may be attached to this equipment. Operation with non-certified peripherals is likely to result in interference to radio and TV reception.

Caution

Changes or modifications not expressly approved by the manufacture could void the user's authority, which is granted by the Federal Communications Commission, to operate this computer.

Operation conditions

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Notice: Canadian users

This Class A digital apparatus complies with Canadian ICES-003.