



Altos BrainSphere™ R385 F5

User Guide

Revision 1.0

System setup

System notes

Thank you for purchasing your Altos server. This user guide is intended as a reference for experienced server technicians and helps detail many of the features available in Altos servers. 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.

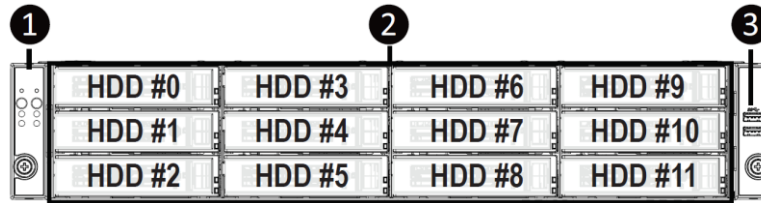
Specification

CPU	Processor type	<ul style="list-style-type: none"> • AMD EPYC™ 7002 and 7001 series processor • Up to 64-core, 128 threads per processor; TDP up to 225W
	Number of processors	2
On-board Devices	Chipset	System on Chip
	IPMI	ASPEED AST2500
	Graphics	ASPEED AST2500 BMC
	Network controller	<ul style="list-style-type: none"> • Dual 1GbE LAN ports with Intel® I350-AM2 • One 10/100/1000 management LAN port
Memory	Memory slot	32 DIMM slots
	Memory type	8-Channel (per processor), DDR4 RDIMM / LRDIMM
Expansion slots	LFF SKU / SFF SKU	<ul style="list-style-type: none"> • 2 x PCIe x16 slot (Gen4 x16), Full-height half-length • 4 x PCIe x8 slot (Gen4 x8), Full-height half-length • 2 x PCIe x8 slot (Gen4 x8), Low-profile half-length • 1 x OCP 3.0 mezzanine slot with PCIe Gen4 x16 • 1 x OCP 2.0 mezzanine slot with PCIe Gen3 x8 • 1 x M.2 slot (M-key, w/PCIe Gen 3 x4, supports 2242 / 2260 / 2280 / 22110 cards)
	GPU SKU	<ul style="list-style-type: none"> • 5 x PCIe x16 slot (Gen4 x16), Full-height full-length [Supports up to 3 x double slot GPU cards] • 1 x OCP 3.0 mezzanine slot with PCIe Gen4 x16 • 1 x OCP 2.0 mezzanine slot with PCIe Gen3 x8 • 1 x M.2 slot (M-key, w/PCIe Gen 3 x4, supports 2242 / 2260 / 2280 / 22110 cards)
I/O ports	Front I/O ports	<ul style="list-style-type: none"> • 2 x USB 3.0 ports
	Rear I/O ports	<ul style="list-style-type: none"> • 1 x VGA port • 2 x RJ45 LAN ports • 2 x USB 3.0 ports • 1 x RJ45 management LAN port
Management & Security	Server Management	<ul style="list-style-type: none"> • IPMI2.0, KVM with dedicated LAN • Altos Smart Server Manager • Smart Console remote monitoring
	System Security	<ul style="list-style-type: none"> • 1 x TPM Header for Optional TPM 2.0 module
Software/Utility		Altos BrainSphere™ AI Development Platform API
Drive Bays	LFF SKU	<ul style="list-style-type: none"> • 12 x 3.5" and rear 2 x 2.5" SAS/SATA hot-swappable bays for HDD/SSD
	SFF SKU	<ul style="list-style-type: none"> • 24 x 2.5" and rear 2 x 2.5" SAS/SATA hot-swappable bays for HDD/SSD
	GPU SKU	<ul style="list-style-type: none"> • 12 x 3.5" SAS/SATA hot-swappable bays for HDD/SSD
Power supply	LFF SKU / SFF SKU	<ul style="list-style-type: none"> • 2 x 1600W (1+1) redundant power supply, 80 PLUS Platinum
	GPU SKU	<ul style="list-style-type: none"> • 2 x 2000W (1+1) redundant power supply, 80 PLUS Platinum
Form factor	Form factor	2U, Rackmount
	Dimensions (D x W x H)	730 x 438 x 87 mm approximately

System component identification

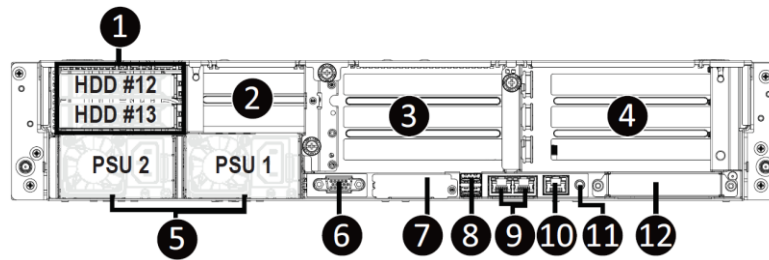
Altos BrainSphere™ R385 F5 (LFF SKU):

Front View:



No.	Description
1	Front Panel LEDs and Buttons
2	3.5" HDD Bays
3	Front USB 3.0 Port x 2

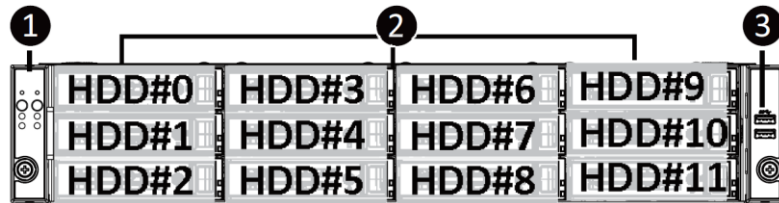
Rear View:



No.	Description	No.	Description
1	2.5" HDD Bays	7	Mezzanine Slot (for optional OCP 2.0 card)
2	Low-profile PCIe Card Slots	8	USB 3.0 port x 2
3	Full-height PCIe Card Slots	9	1GbE LAN Ports (RJ45)
4	Full-height PCIe Card Slots	10	Server Management LAN Port (RJ45)
5	Power Supply Modules	11	ID Button with LED
6	VGA Port	12	Mezzanine Slot (for optional OCP 3.0 SFF Type card)

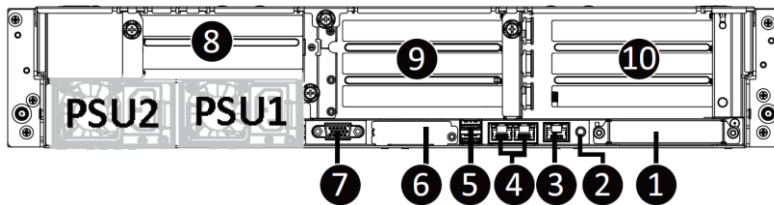
Altos BrainSphere™ R385 F5 (GPU SKU):

Front View:



No.	Description
1	Front Panel LEDs and Buttons
2	3.5" HDD Bays
3	Front USB 3.0 Port x 2

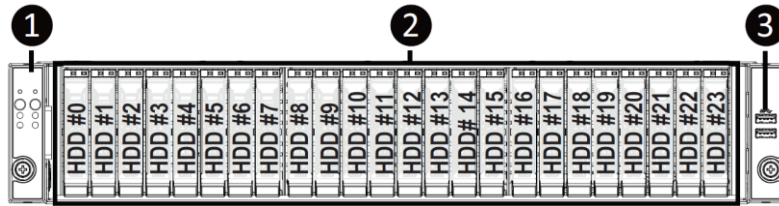
Rear View:



No.	Description	No.	Description
1	Mezzanine Slot (for optional OCP 3.0 SFF Type card)	6	Mezzanine Slot (for optional OCP 2.0 card)
2	ID Button with LED	7	VGA Port
3	Server Management LAN Port (RJ45)	8	Full-height GPU Card Slot
4	1GbE LAN Port (RJ45) x 2	9	Full-height GPU Card Slot
5	USB 3.0 port x 2	10	Full-height GPU Card Slot

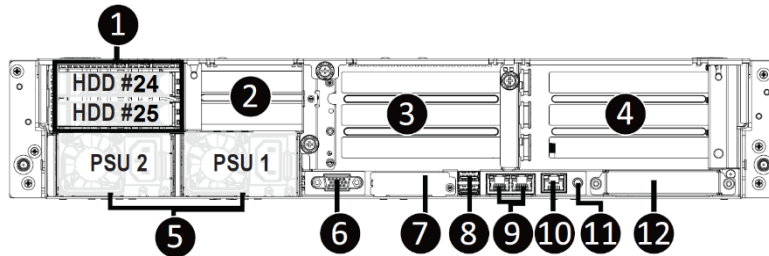
Altos BrainSphere™ R385 F5 (SFF SKU):

Front View:



No.	Description
1	Front Panel LEDs and Buttons
2	2.5" HDD Bays
3	Front USB 3.0 Port x 2

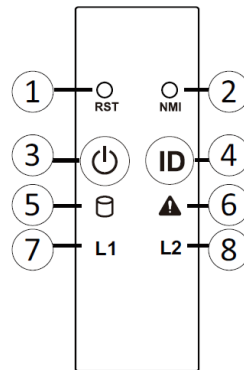
Rear View:



No.	Description	No.	Description
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System controls and indicators

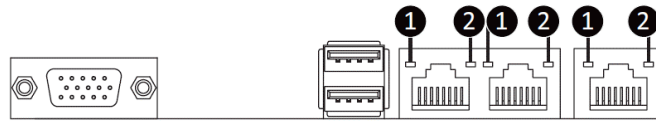
Front panel LEDs and Buttons:



No.	Name	Color	Status	Description
1	Reset Button	--	--	Press this button to reset the system.
2	NMI Button	--	--	Press this button for the server to generate a NMI to the processor. If multiple-bit ECC errors occur, the server will effectively be halted.
3	Power Button with LED	Green	On	Indicates the system is powered on
		Green	Blink	System is in ACPI S1 state (sleep mode).
		N/A	Off	<ul style="list-style-type: none"> System is not powered on or in ACPI S5 state (power off) System is in ACPI S4 state (hibernate mode)
4	ID Button with LED	Blue	On	Indicates the system identification is active.
		N/A	Off	Indicates the system identification is disabled.
5	HDD Status LED	Green	On	Indicates locating the HDD.
			Blink	Indicates accessing the HDD.
		Amber	On	Indicates HDD error.
		Green/Amber	Blink	Indicates HDD rebuilding.
		N/A	Off	Indicates no HDD access or no HDD error.
6	System Status LED	Green	On	Indicates system is operating normally.

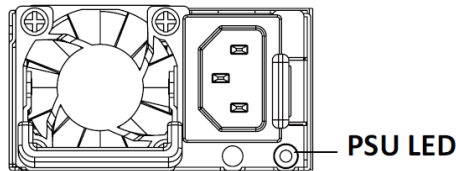
No.	Name	Color	Status	Description
		Amber	On	Indicates a critical condition, may include: <ul style="list-style-type: none"> • System fan failure • System temperature
			Blink	Indicates non-critical condition, may include: <ul style="list-style-type: none"> • Redundant power module failure • Temperature and voltage issue • Chassis intrusion
		N/A	Off	Indicates system is not ready, may include: <ul style="list-style-type: none"> • POST error • NMI error • Processor or terminator is missing
7	LAN1 Activity LED	Green	On	Indicates a link between the system and the network or no access.
		Green	Blink	Indicates data transmission or receiving is occurring.
		N/A	Off	Indicates no data transmission or receiving is occurring.
8	LAN2 Activity LED	Green	On	Indicates a link between the system and the network or no access.
		Green	Blink	Indicates data transmission or receiving is occurring.
		N/A	Off	Indicates no data transmission or receiving is occurring.

Rear System LAN LEDs:



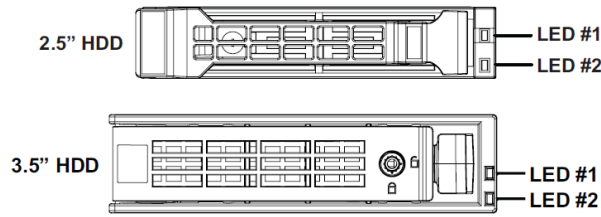
No.	Name	Color	Status	Description
1	1GbE Speed LED	Yellow	On	1 Gbps data rate
		Green	On	100 Mbps data rate
		N/A	Off	10 Mbps data rate
2	1GbE Link/Activity LED	Yellow	On	Link between system and network or no access
		Green	On	Data transmission or receiving is occurring
		N/A	Off	No data transmission or receiving is occurring.

Power Supply Unit LED:



State	Description
OFF	No AC power to all power supplies
0.5Hz Green Blinking	AC present / only standby on / Cold redundant mode
2Hz Green Blinking	Power supply firmware updating mode
Amber	AC cord unplugged or AC power lost; with a second power supply in parallel still with AC input power
	Power supply critical event causing shut down: failure, OCP, OVP, fan failure and UVP
0.5Hz Amber Blinking	Power supply warning events where the power supply continues to operate: high temp, high power, high current and slow fan

Hard Disk Drive LEDs:



No RAID configuration (via HBA):

SKU	LED #1	Locate	HDD Fault	Rebuilding	HDD Access	HDD Present (No Access)
Disk LED (LED on Back Panel)	Green	ON (*1)	OFF		BLINK (*2)	OFF
	Amber	OFF	OFF		OFF	OFF
Removed HDD Slot (LED on Back Panel)	Green	ON (*1)	OFF		--	--
	Amber	OFF	OFF		--	--

RAID configuration (via HW RAID Card or SW RAID Card)

SKU	LED #1	Locate	HDD Fault	Rebuilding	HDD Access	HDD Present (No Access)
Disk LED	Green	ON	OFF		BLINK (*2)	OFF
	Amber	OFF	ON	BLINK (2Hz)	OFF	OFF
Removed HDD Slot	Green	ON (*1)	OFF	(*3)	--	--
	Amber	OFF	ON	(*3)	--	--

LED #2	HDD Present	No HDD
Green	ON	OFF

NOTE:

*1: Depends on HBA/Utility Spec.

*2: Blink cycle depends on HDD's activity signal.

*3: If HDD is pulled out during rebuilding, the disk status of this HDD is regarded as faulty.

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 server—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 server via software, press the power button for at least four seconds. Quickly pressing the button may put the server in a Suspend mode only.

Environmental Temperature Specifications

System inlet temperature	Operating	10° to 35° C
	Non-operating	-40° to 60° C
Relative humidity	Operating	8 to 80 % (non-condensing)
	Non-operating	20 to 95 % (non-condensing)

System troubleshooting

Resetting the system

Before going through in-depth troubleshooting, attempt first to reset the system using one of the methods below.

Perform	Purpose	To do this
Soft boot	To clear the system memory and reload the operating system.	Press <Ctrl> + <Alt> +
Cold boot	To clear the system memory, restart POST, and reload the operating system. This will halt power to all peripherals.	Turn the system off and then on again.

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 server 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 server, 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.

如果控制面板上的電源指示燈不亮，請參閱「電源指示燈不亮」。

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), DVD-ROM drive, 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 server 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 server and their possible solutions

Specific problems and corrective actions

Listed below are specific problems that may arise during the use of your server 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.

HDD activity indicator does not light.

Do the following:

- Make sure the drive is not disabled in the BIOS Setup Utility.
- Make sure the drive is compatible
- Make sure you have not exceeded the power budget for the server.

- Check that relevant switches and jumpers on the hard drive and on the backplane board are set correctly.

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 server 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...



Regulations and safety notices

Laser compliance statement

The CD or DVD drive used with this computer is a laser product.

The CD or DVD drive's classification label (shown below) is located on the drive.

CLASS 1 LASER PRODUCT

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

Appareil à laser de classe 1

Attention : Radiation laser visible et invisible en cas d'ouverture. Éviter toute exposition aux rayons.

Laserprodukt der Klasse 1

Achtung: Beim Öffnen werden unsichtbare Laserstrahlen freigelegt. Setzen Sie sich diesen Strahlen nicht aus.

Prodotto laser di classe 1

Attenzione: Radiazioni laser invisibili in caso di apertura. Evitare l'esposizione ai raggi.

Producto láser de Clase 1

Precaución: Cuando está abierta, hay radiación láser. Evite una exposición al haz de luz.

Produto Laser de Classe 1

Precaução: Radiação laser invisível quando aberto. Evite exposição ao feixe.

Laserproduct klasse 1

Voorzichtig: Onzichtbare laserstraling indien geopend. Voorkom blootstelling aan straal.

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.



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.

Remarque à l'intention des utilisateurs canadiens

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.