

Intel® Express Redundant Power Supply

User Guide



intel®

Year 2000 Capable

An Intel product, when used in accordance with its associated documentation, is “Year 2000 Capable” when, upon installation, it accurately stores, displays, processes, provides, and/or receives date data from, into, and between the twentieth and twenty-first centuries, including leap year calculations, provided that all other technology used in combination with said product properly exchanges date data with it.

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First edition June 1998

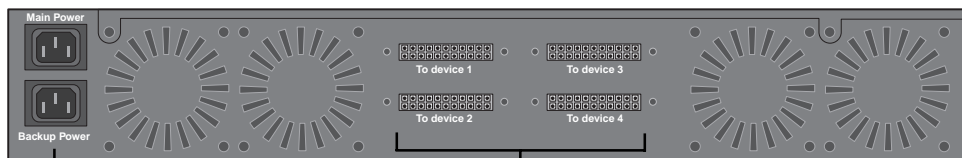
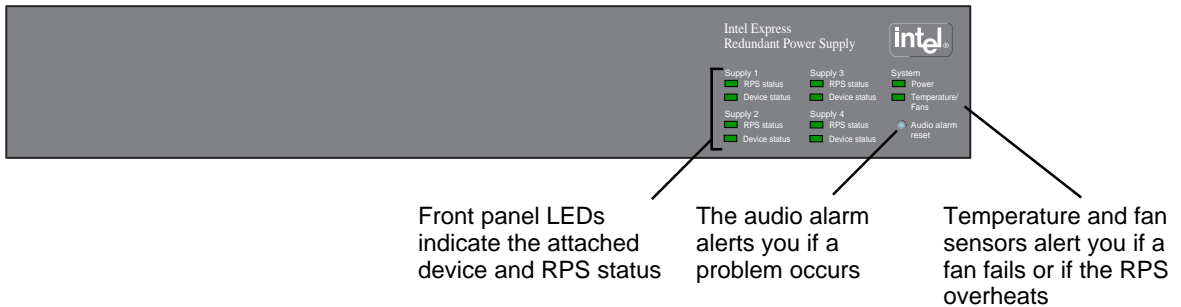
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Overview

The Intel® Express Redundant Power Supply (RPS) provides a back-up power source to Intel network devices such as an Intel hub or switch. This ensures that your devices will receive uninterrupted power and zero packet loss should the device's internal power supply fail. For a complete list of supported devices, see the Intel Web site at <http://support.intel.com/support/express/rps>.

Features

For more information on the features below and installation instructions, read the rest of this guide.

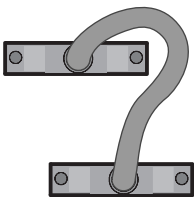


The backup AC power connector provides an extra level of redundancy should the main power fail

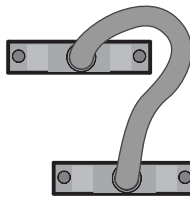
DC power connectors provide support for up to four Intel networking devices

DC connector cables (sold separately)

You need one of the two types of cables below to connect devices to the RPS.



Product code ES500RPS1CAB:
DC connector cable for all supported Intel devices *except* Express 220T Stackable Hubs. This cable has a gray sticker on the device end.



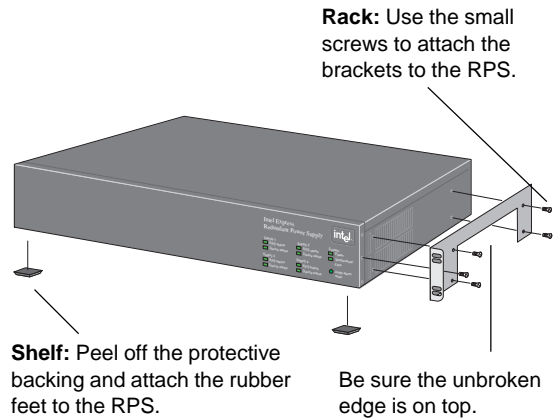
Product code EE200RPS1CAB:
DC connector cable for Intel Express 220T Stackable Hubs. This cable has a blue sticker on the device end.

Warning: Do not use any other type of DC connector cable with the Intel Express Redundant Power Supply. The cables listed above are the only cables tested for safety under fault conditions.

Installation

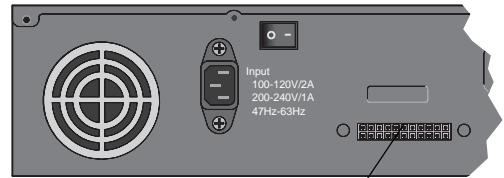
1 Install the RPS

- Remove the RPS and parts from the box.
- Use the enclosed brackets if you plan to mount the RPS in a rack.
- Use the rubber feet if you plan to mount the RPS on a shelf.



2 Remove the cover plate from the device (Intel hub or switch)

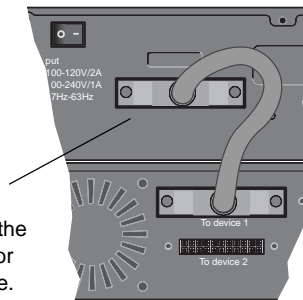
- The term *device* generically refers to an Intel hub or switch.
- Remove the RPS cover plate from the device to expose the connector underneath.



3 Connect the device to the RPS

CAUTION: Be sure the RPS is powered **OFF** before you connect it to the device.

Make sure you use the correct DC connector cable for your device. See the previous page.

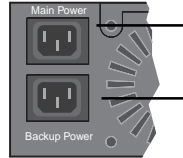


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Connect the AC power cords to the RPS

- The RPS will use the Main Power by default.
- Both the Main and Backup Power will automatically detect whether the power source is 110 or 230VAC.

Note: If you don't connect *both* AC power cords, the audio alarm sounds when you first power-on the RPS. This is normal. Press the Audio alarm reset button to reset it.



Connect the Main Power to your primary power grid.

Connect the Backup Power to a secondary power grid or an Uninterruptible Power Supply (UPS)

Tip: Intel recommends that you connect the Main and Backup Power connectors to different power sources to ensure maximum redundancy. See the next page for levels of redundancy.

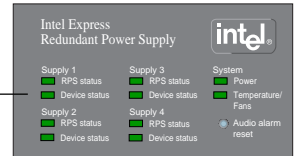
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Check the LEDs

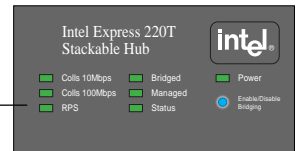
- The RPS status LED on the RPS should be solid green for all supplies.
- The Device status LED on the RPS should be solid green for each connected device.
- The RPS LED on the device should be solid green.
- The Power LED on the RPS should be solid green if you connected to *both* the Main and Backup Power. If you connected to the Main only, the LED remains red.

Note: The RPS is meant to function as a backup power source. Do not power the device using the RPS unless the device's power supply fails.

The Device status LED should be solid green on the RPS.



The RPS LED should be solid green on the attached device.



Using the RPS

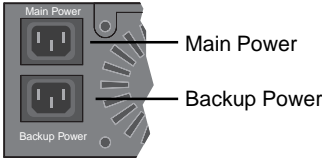
Levels of redundancy

The RPS has three levels of redundancy:

Low: You'll have a low level of redundancy when you connect only the Main Power on the RPS. You'll be protected against a device's internal power supply failing, but not against an electrical outage.

Medium: You'll have a medium level of redundancy when you connect the Main Power to one power grid and the Backup Power to a separate power grid. You'll be protected against a power grid failure, but not against a full electrical outage.

High: You'll have the highest level of redundancy when you connect the Main Power to one power grid and the Backup Power to a battery source, such as an Uninterruptable Power Supply (UPS). This ensures your devices will stay powered even during a full electrical outage. See page 7 for minimum UPS requirements.



Note

In general, if you see a red LED anywhere on the RPS, you have a problem.

The exception is the Power LED. If you connected to only the Main Power, the LED remains red.

Checking for problems

- 1 View the Power and Temperature/Fans LEDs on the RPS. These two LEDs should always be green when the RPS is powered ON. If either LED is red, there is a problem with the RPS unit.
- 2 View the four RPS status LEDs on the RPS. All should always be green when the RPS is powered ON. If any LED is red, there is a problem with the RPS unit.
- 3 View the Device status LEDs. These LEDs correspond to the hub or switch connected to the back of the RPS. When a device is properly connected and under its own power, the LED is solid green. When a device's power supply fails and the RPS is powering the device, the LED is solid red. Follow the steps on page 5 to replace the device.

Resetting the audio alarm

The audio alarm sounds if:

- Only one AC power cord is connected to the RPS.
- You do not connect power cords to *both* the Main and Backup Power within five seconds.
- A device's power supply fails.
- An RPS's internal power supply fails.
- An RPS's fan fails or the RPS unit overheats.

To reset the alarm

- 1 Press the Audio alarm reset button on the front panel of the RPS.
- 2 The alarm will sound again if another error event occurs.

Note

Anytime you remove an AC power cable from the RPS, the audio alarm will sound. Press the Audio alarm reset button to reset it.

Replacing a faulty device

- 1 Unplug the RPS's AC power cords.
- 2 Unplug the device's AC power cord.
- 3 Remove the DC connector cable from the back of the device.
- 4 Install the replacement device, then connect it to the RPS. See pages 2-3 for installation instructions.
- 5 Plug the RPS's AC power cords back in.

Note

Be sure you use the correct DC connector cable when moving a cable from one device to another. See page 1 for more information.

Moving a cable from one device to another

- 1 Unplug the RPS's AC power cords.
- 2 Unplug the DC connector cable from the device. You don't need to unplug the device's AC power cord before removing the connector cable.
- 3 Plug the DC connector cable into the other device. Again, you don't need to unplug the device's AC power cord.
- 4 Plug the RPS's AC power cords back in.

Troubleshooting

The audio alert sounded when I plugged in the power cord.

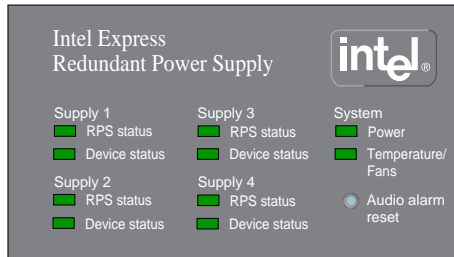
Press the Audio alert reset button to turn it off. You must plug in AC power cords to both the Main and Backup power supplies within 5 seconds to prevent the audio alert from sounding. However, you can use the RPS with only one AC power cord (but the Power LED will remain red). See page 4 for information on levels of redundancy.

When I connected a device to the RPS, the device shut down.

The RPS was ON when you connected it to the device or you used the wrong DC connector cable (see page 1 for connector cable information).

To correct the problem, unplug the RPS. Then unplug the power cord on the device and plug it back in. Finally, plug the power cord back into the RPS.

Understanding LEDs



LED	Status	Meaning
RPS status	Solid green	DC power supply is working normally. These LEDs should always be solid green.
	Solid red	DC power supply has failed.
	Off	No power to entire unit. Should never be off while RPS is ON.
Device status	Solid green	Switch or hub is connected and being backed up by the RPS.
	Solid red	Switch or hub's internal supply has failed.
	Off	Device is not properly connected to RPS.
Power	Solid green	Main and Backup AC power supplies are OK.
	Solid red	Main or Backup AC power supply has failed.
	Off	No power to entire unit. Should never be off while RPS is plugged in.
Temperature/Fans	Solid green	Temperature is OK and fans are operational.
	Solid red	Temperature inside the RPS has exceeded 50° C or a fan has failed.
	Off	No power to entire unit. Should never be off while RPS is plugged in.
Audio alarm reset button	Resets the audio alarm after an error event occurs. The alarm shuts off automatically after 85 hours.	

Indicates that the audio alarm will sound.

Note

The Power LED remains red if you connected to only the Main Power.

Technical Information

Humidity (non-condensing)

operating: 10% minimum, 85% maximum

non-operating: 10% minimum, 85% maximum

Temperature

operating: 0° C minimum, 40° C maximum

non-operating: -20° C minimum, 65° C maximum

Dimensions

width: 17.35 inches (44.06 cm)

height: 2.625 inches (6.66 cm)

depth: 13 inches (33.02 cm)

weight: approximately 25 lbs (11.34 kg)

Altitude

operating: 10,000 feet (3,000 m) maximum

non-operating: 50,000 feet (15,000 m) maximum

Power input (Main and Backup Power)

voltage: 90 – 264 VAC

frequency: 47 – 63 Hz

Power output to devices (DC supplies 1-4)

+5.1 V@17.0 A = 86.7 W

+12.0 V@.5 A = 6.0 W

maximum power per supply: 92.7 W

maximum power per RPS: 371 W

Uninterruptable Power Supply (UPS) minimum requirements

input voltage: same as power input above

output voltage: 115 – 230 VAC

output frequency: 47 – 63 Hz

output power: 1000 W minimum

output hold up time: 5 minutes minimum

Safety

UL1950/CSA C22.2-950, IEC950 (CB), EN60950 (CE), AS/NZ 3260 compliant

Emissions

FCC Part 15 Class A, VCCI Class A, EN55022 Class A (CE), CISPR22 Class A, C-Tick compliant (DOC), CNS-13438 Class A (Taiwan)

Susceptibility

(CE) EN50082-1, IEC1000-4-2, IEC1000-4-3, IEC1000-4-4

Limited Warranty

Limited Hardware Warranty

Intel warrants to the original owner that the hardware product delivered in this package will be free from defects in material and workmanship for one (1) year following the latter of: (i) the date of purchase only if you register by returning the registration card as indicated thereon with proof of purchase; or (ii) the date of manufacture; or (iii) the registration date if by electronic means provided such registration occurs within thirty (30) days from purchase. This warranty does not cover the product if it is damaged in the process of being installed. Intel recommends that you have the company from whom you purchased this product install the product.

INTEL RESERVES THE RIGHT TO FILL YOUR ORDER WITH A PRODUCT CONTAINING NEW OR REMANUFACTURED COMPONENTS. THE ABOVE WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, WHETHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTY OF NONINFRINGEMENT OF INTELLECTUAL PROPERTY, MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ANY WARRANTY ARISING OUT OF ANY PROPOSAL, SPECIFICATION, SAMPLE OR OTHERWISE.

This warranty does not cover replacement of products damaged by abuse, accident, misuse, neglect, alteration, repair, disaster, improper installation or improper testing. If the product is found to be otherwise defective, Intel, at its option, will replace or repair the product at no charge except as set forth below, provided that you deliver the product along with a return material authorization (RMA) number either to the company from whom you purchased it or to Intel (North America only). If you ship the product, you must assume the risk of damage or loss in transit. You must use the original container (or the equivalent) and pay the shipping charge. Intel may replace or repair the product with either new or remanufactured product or parts, and the returned product becomes Intel's property. Intel warrants the repaired or replaced product to be free from defects in material and workmanship for a period of the greater of: (i) ninety (90) days from the return shipping date; or (ii) the period of time remaining on the original one (1) year warranty.

This warranty gives you specific legal rights and you may have other rights which vary from state to state. All parts or components contained in this product are covered by Intel's limited warranty for this product; the product may contain fully tested, recycled parts, warranted as if new. For warranty information call one of the numbers below.

Returning a Defective Product (RMA)

Before returning any product, contact an Intel Customer Support Group and obtain an RMA number by calling:

North America only:	(916) 377-7000
Other locations:	Return the product to the place of purchase.

If the Customer Support Group verifies that the product is defective, they will have the Return Material Authorization Department issue you an RMA number to place on the outer package of the product. Intel cannot accept any product without an RMA number on the package.

LIMITATION OF LIABILITY AND REMEDIES

INTEL SHALL HAVE NO LIABILITY FOR ANY INDIRECT OR SPECULATIVE DAMAGES (INCLUDING, WITHOUT LIMITING THE FOREGOING, CONSEQUENTIAL, INCIDENTAL AND SPECIAL DAMAGES) ARISING FROM THE USE OF OR INABILITY TO USE THIS PRODUCT, WHETHER ARISING OUT OF CONTRACT, NEGLIGENCE, TORT, OR UNDER ANY WARRANTY, IRRESPECTIVE OF WHETHER INTEL HAS ADVANCE NOTICE OF THE POSSIBILITY OF ANY SUCH DAMAGES, INCLUDING, BUT NOT LIMITED TO LOSS OF USE, INFRINGEMENT OF INTELLECTUAL PROPERTY, BUSINESS INTERRUPTIONS, AND LOSS OF PROFITS, NOTWITHSTANDING THE FOREGOING, INTEL'S TOTAL LIABILITY FOR ALL CLAIMS UNDER THIS AGREEMENT SHALL NOT EXCEED THE PRICE PAID FOR THE PRODUCT. THESE LIMITATIONS ON POTENTIAL LIABILITIES WERE AN ESSENTIAL ELEMENT IN SETTING THE PRODUCT PRICE. INTEL NEITHER ASSUMES NOR AUTHORIZES ANYONE TO ASSUME FOR IT ANY OTHER LIABILITIES.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

Software provided with the hardware product is not covered under the hardware warranty described above. See the applicable software license agreement which shipped with the hardware product for details on any software warranty.

Limited Hardware Warranty (Europe only)

Intel warrants to the original owner that the hardware product delivered in this package will be free from defects in material and workmanship for one (1) year following the latter of: (i) the date of purchase only if you register by returning the registration card as indicated thereon with proof of purchase; or (ii) the date of manufacture; or (iii) the registration date if by electronic means provided such registration occurs within thirty (30) days from purchase. This warranty does not cover the product if it is damaged in the process of being installed. Intel recommends that you have the company from whom you purchased this product install the product.

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This warranty does not cover replacement of products damaged by abuse, accident, misuse, neglect, alteration, repair, disaster, improper installation or improper testing. If the product is found to be otherwise defective, Intel, at its option, will replace or repair the product at no charge except as set forth below, provided that you deliver the product along with a return material authorization (RMA) number either to (a) the company from whom you purchased it or (b) to Intel, North America only (if purchased in Europe you must deliver the product to "(a)"). If you ship the product, you must assume the risk of damage or loss in transit. You must use the original container (or the equivalent) and pay the shipping charge. Intel may replace or repair the product with either new or remanufactured product or parts, and the returned product becomes Intel's property. Intel warrants the repaired or replaced product to be free from defects in material and workmanship for a period of the greater of: (i) ninety (90) days from the return shipping date; or (ii) the period of time remaining on the original one (1) year warranty.

This warranty gives you specific legal rights and you may have other rights which vary from state to state. All parts or components contained in this product are covered by Intel's limited warranty for this product; the product may contain fully tested, recycled parts, warranted as if new. For warranty information call one of the numbers below.

Returning a Defective Product (RMA)

Before returning any product, contact an Intel Customer Support Group and obtain an RMA number by calling:

Country	Number	Language
France	+44 1793 404988	French
Germany	+44 1793 404777	German
Italy	+44 1793 404141	Italian
UK	+44 1793 404900	English

If the Customer Support Group verifies that the product is defective, they will have the Return Material Authorization Department issue you an RMA number to place on the outer package of the product. Intel cannot accept any product without an RMA number on the package.

LIMITATION OF LIABILITY AND REMEDIES

INTEL SHALL HAVE NO LIABILITY FOR ANY INDIRECT OR SPECULATIVE DAMAGES (INCLUDING, WITHOUT LIMITING THE FOREGOING, CONSEQUENTIAL, INCIDENTAL AND SPECIAL DAMAGES) ARISING FROM THE USE OF OR INABILITY TO USE THIS PRODUCT, WHETHER ARISING OUT OF CONTRACT, NEGLIGENCE, TORT, OR UNDER ANY WARRANTY, IRRESPECTIVE OF WHETHER INTEL HAS ADVANCE NOTICE OF THE POSSIBILITY OF ANY SUCH DAMAGES, INCLUDING, BUT NOT LIMITED TO LOSS OF USE, INFRINGEMENT OF INTELLECTUAL PROPERTY, BUSINESS INTERRUPTIONS, AND LOSS OF PROFITS, NOTWITHSTANDING THE FOREGOING, INTEL'S TOTAL LIABILITY FOR ALL CLAIMS UNDER THIS AGREEMENT SHALL NOT EXCEED THE PRICE PAID FOR THE PRODUCT. THESE LIMITATIONS ON POTENTIAL LIABILITIES WERE AN ESSENTIAL ELEMENT IN SETTING THE PRODUCT PRICE. INTEL NEITHER ASSUMES NOR AUTHORIZES ANYONE TO ASSUME FOR IT ANY OTHER LIABILITIES.

Software provided with the hardware product is not covered under the hardware warranty described above. See the applicable software license agreement which shipped with the hardware product for details on any software warranty.

This limited hardware warranty shall be governed by and construed in accordance with the laws of England and Wales. The courts of England shall have exclusive jurisdiction regarding any claim brought under this warranty.

Regulatory Information and Warnings

Federal Communications Commission (FCC) Statement

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.

The user is cautioned that changes and modifications made to the equipment without approval of the manufacturer could void the user's authority to operate this equipment.

Manufacturer Declaration

This certifies that the Intel Redundant Power Supply complies with the EU Directive 89/336/EEC, using the EMC standards EN55022 (Class A) and EN50082-1. These products also meet or exceed EN 60950 (safety) requirements. These products have been tested and verified to meet CISPR 22 Class A requirements.

VCCI Statement

Class A ITE

この装置は、情報処理装置等電波障害自主規制協議会（VCCI）の基準に基づくクラスA情報技術装置です。この装置を家庭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。

This is a Class A product based on the standard of the Voluntary Control Council for Interference by Information Technology Equipment (VCCI). If this equipment is used in a domestic environment, radio disturbance may arise. When such trouble occurs, the user may be required to take corrective actions.

WARNING

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

WARNING

The system is designed to operate in a typical office environment. Choose a site that is:

- Clean and free of airborne particles (other than normal room dust).
- Well ventilated and away from sources of heat including direct sunlight.
- Away from sources of vibration or physical shock.
- Isolated from strong electromagnetic fields produced by electrical devices.
- In regions that are susceptible to electrical storms, we recommend you plug your system into a surge suppressor and disconnect telecommunication lines to your modem during an electrical storm.
- Provided with a properly grounded wall outlet.

Do not attempt to modify or use the supplied AC power cord if it is not the exact type required.

Ensure that the system is disconnected from its power source and from all telecommunications links, networks, or modems lines whenever the chassis cover is to be removed. Do not operate the system with the cover removed.

AVERTISSEMENT

Le système a été conçu pour fonctionner dans un cadre de travail normal. L'emplacement choisi doit être:

- Propre et dépourvu de poussière en suspension (sauf la poussière normale).
- Bien aéré et loin des sources de chaleur, y compris du soleil direct.
- A l'abri des chocs et des sources de vibrations.
- Isolé de forts champs magnétiques générés par des appareils électriques.
- Dans les régions sujettes aux orages magnétiques il est recommandé de brancher votre système à un supresseur de surtension, et de débrancher toutes les lignes de télécommunications de votre modem durant un orage.
- Muni d'une prise murale correctement mise à la terre.

Ne pas utiliser ni modifier le câble d'alimentation C. A. fourni, s'il ne correspond pas exactement au type requis.

Assurez vous que le système soit débranché de son alimentation ainsi que de toutes les liaisons de télécommunication, des réseaux, et des lignes de modem avant d'enlever le capot. Ne pas utiliser le système quand le capot est enlevé.

WARNUNG

Das System wurde für den Betrieb in einer normalen Büroumgebung entwickelt. Der Standort sollte:

- sauber und staubfrei sein (Hausstaub ausgenommen);
- gut gelüftet und keinen Heizquellen ausgesetzt sein (einschließlich direkter Sonneneinstrahlung);
- keinen Erschütterungen ausgesetzt sein;
- keine starken, von elektrischen Geräten erzeugten elektromagnetischen Felder aufweisen;
- in Regionen, in denen elektrische Stürme auftreten, mit einem Überspannungsschutzgerät verbunden sein; während eines elektrischen Sturms sollte keine Verbindung der Telekommunikationsleitungen mit dem Modem bestehen;
- mit einer geerdeten Wechselstromsteckdose ausgerüstet sein.

Versuchen Sie nicht, das mitgelieferte Netzkabel zu ändern oder zu verwenden, wenn es sich nicht um genau den erforderlichen Typ handelt.

Das System darf weder an eine Stromquelle angeschlossen sein noch eine Verbindung mit einer Telekommunikationseinrichtung, einem Netzwerk oder einer Modem-Leitung haben, wenn die Gehäuseabdeckung entfernt wird. Nehmen Sie das System nicht ohne die Abdeckung in Betrieb.

AVVERTENZA

Il sistema è progettato per funzionare in un ambiente di lavoro tipico. Scegliere una postazione che sia:

- Pulita e libera da particelle in sospensione (a parte la normale polvere presente nell'ambiente).
- Ben ventilata e lontana da fonti di calore, compresa la luce solare diretta.
- Al riparo da urti e lontana da fonti di vibrazione.
- Isolata dai forti campi magnetici prodotti da dispositivi elettrici.
- In aree soggette a temporali, è consigliabile collegare il sistema ad un limitatore di corrente. In caso di temporali, scollegare le linee di comunicazione dal modem.
- Dotata di una presa a muro correttamente installata.

Non modificare o utilizzare il cavo di alimentazione in c. a. fornito dal produttore, se non corrisponde esattamente al tipo richiesto.

Prima di rimuovere il coperchio del telaio, assicurarsi che il sistema sia scollegato dall'alimentazione, da tutti i collegamenti di comunicazione, reti o linee di modem. Non avviare il sistema senza aver prima messo a posto il coperchio.

ADVERTENCIAS

El sistema está diseñado para funcionar en un entorno de trabajo normal. Escoja un lugar:

- Limpio y libre de partículas en suspensión (salvo el polvo normal)
- Bien ventilado y alejado de fuentes de calor, incluida la luz solar directa.
- Alejado de fuentes de vibración.
- Aislado de campos electromagnéticos fuertes producidos por dispositivos eléctricos.
- En regiones con frecuentes tormentas eléctricas, se recomienda conectar su sistema a un eliminador de sobrevoltage y desconectar el módem de las líneas de telecomunicación durante las tormentas.
- Previsto de una toma de tierra correctamente instalada.

No intente modificar ni usar el cable de alimentación de corriente alterna, si no se corresponde exactamente con el tipo requerido.

Asegúrese de que cada vez que se quite la cubierta del chasis, el sistema haya sido desconectado de la red de alimentación y de todos los enlaces de telecomunicaciones, de red y de líneas de módem. No ponga en funcionamiento el sistema mientras la cubierta esté quitada.

Intel Customer Support

Automated Support

You can reach Intel's automated support services 24 hours a day, every day at no charge. The services contain the most up-to-date information about Intel products. You can access installation instructions, troubleshooting information, and general product information.

World Wide Web & Internet FTP

Access Intel's World Wide Web page or download information using anonymous FTP.

How to Access: WWW

Customer Support: <http://support.intel.com>

News: <news://cs.intel.com>

FTP

Host: <download.intel.com>

Customer Support Technicians

Free support for 90 days: You can speak with our technical support professionals free of charge for 90 days after your initial call.

North America only: (916) 377-7000

Other support services: You can purchase a range of support services, including 24 hour support, per incident support, on-site service, and software and hardware maintenance agreements. For details about the Intel Support Service options, go to our Web site at <http://support.intel.com/> services and choose your geography.

Worldwide access: Intel has technical support centers worldwide. Many of the centers are staffed by technicians who speak the local languages. Go to our Web site at <http://www.intel.com/intel/contact> to find the Intel support center for your geography.

Country	Number	Language
France	+44 1793 404988	French
Germany	+44 1793 404777	German
Italy	+44 1793 404141	Italian
UK	+44 1793 404900	English

If you don't have access to automated services, contact your local dealer or distributor. Or call +1-916-377-7000 from 07:00 to 17:00 Monday through Friday, U.S. Pacific Time.

04/20/98



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