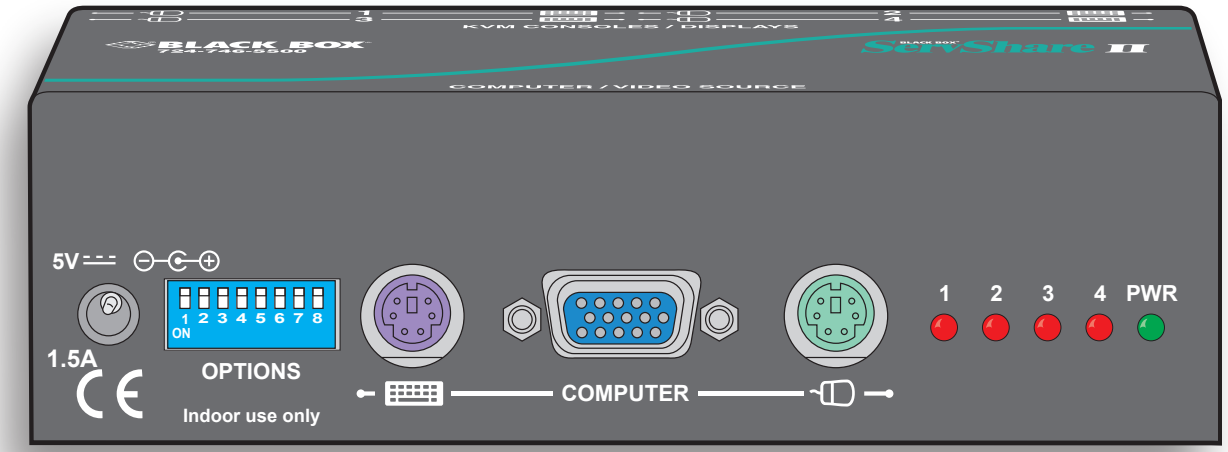
BLACK BOX®
NETWORK SERVICES

AUGUST 2004
KV221A
KV421A

ServShare II

USER GUIDE



CUSTOMER SUPPORT INFORMATION

Order **toll-free** in the U.S.: Call **877-877-BBOX** (outside U.S. call **724-746-5500**)
FREE technical support 24 hours a day, 7 days a week: Call **724-746-5500** or fax **724-746-0746**
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Web site: **www.blackbox.com** • E-mail: **info@blackbox.com**

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Welcome

Introduction

The Black Box ServShare II provides a flexible method for allowing two or more users to share resources. Depending how it is connected, the ServShare II can be used to drive up to four video displays (video splitting), allow up to four users to access a KVM switch (resource sharing) or, in conjunction with other similar units and KVM switches, provide the opportunity for many users to connect with many different systems (square matrix).

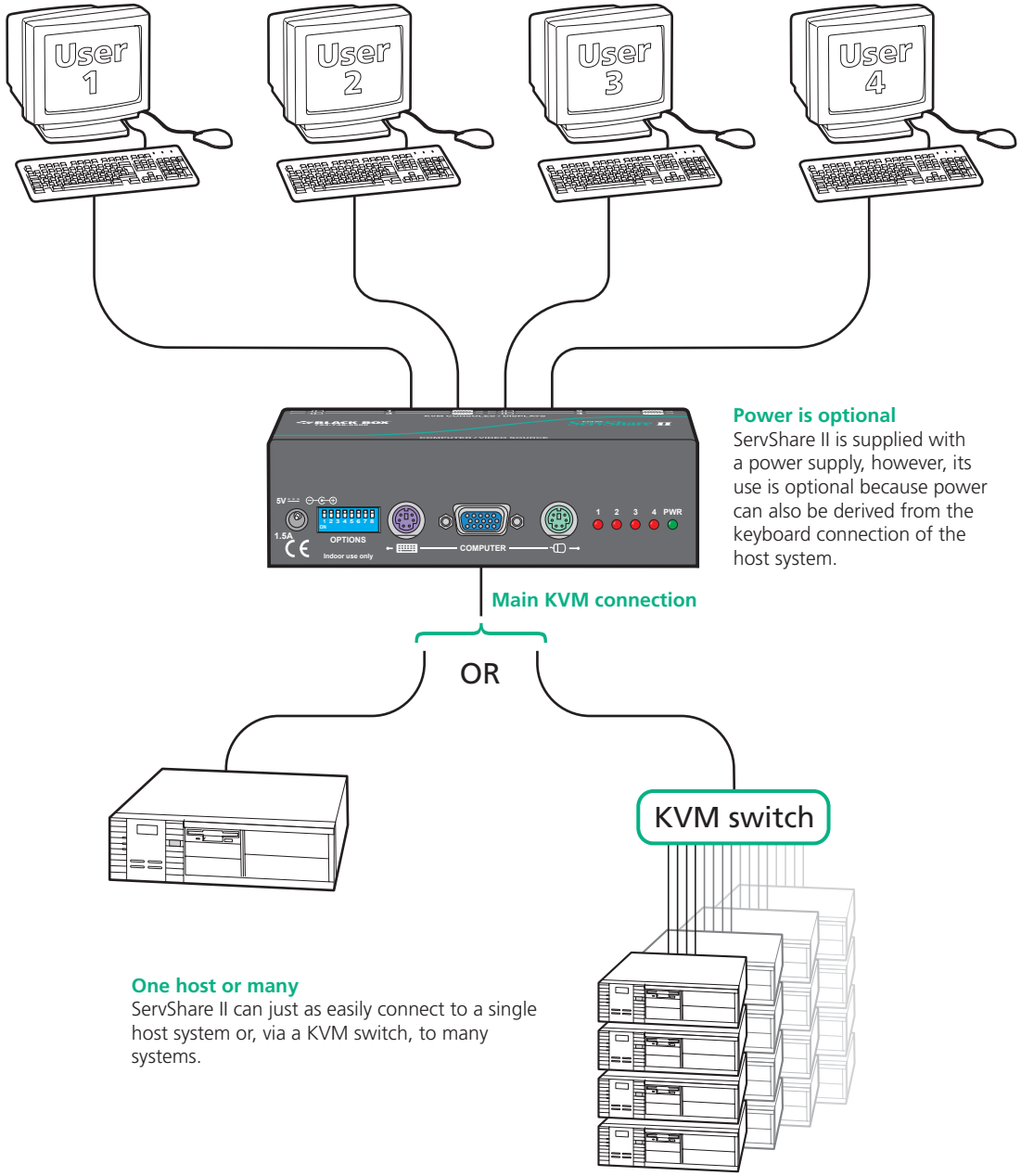
ServShare II supports a wide 280MHz bandwidth that can support very high screen resolutions of 1600 x 1280 and even 1900 x 1440 (with standard cables). When long cable runs (of up to 30m) are required, ServShare II features a video boost option to ensure that picture quality remains crisp.

Thanks to smart power control, the use of the supplied external power supply is optional for most applications. This can be handy when spare power sockets are not close at hand.

ServShare II uses standard connectors throughout for quick and easy connection to host systems and peripherals alike.

Up to four users served on a first come basis

Up to four users can simultaneously view the output from the host system. Any of the users can take control of the host, providing it is not being used by one of the others. A user relinquishes control two seconds after their last key push or mouse movement.



Power is optional

ServShare II is supplied with a power supply, however, its use is optional because power can also be derived from the keyboard connection of the host system.

One host or many

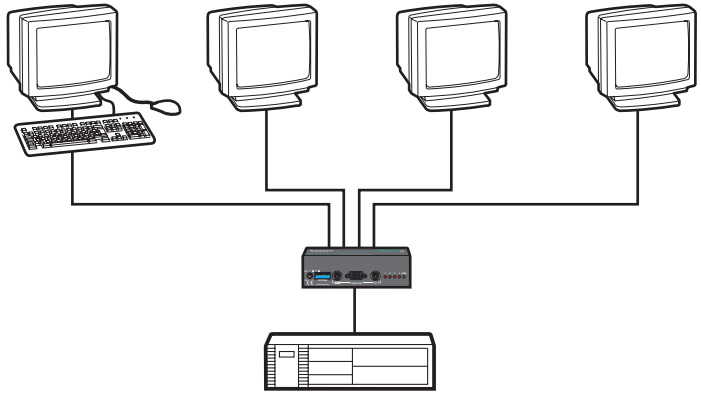
ServShare II can just as easily connect to a single host system or, via a KVM switch, to many systems.

Typical ServShare II applications

The flexibility and adaptability of the ServShare II becomes clear when you see some of its typical uses.

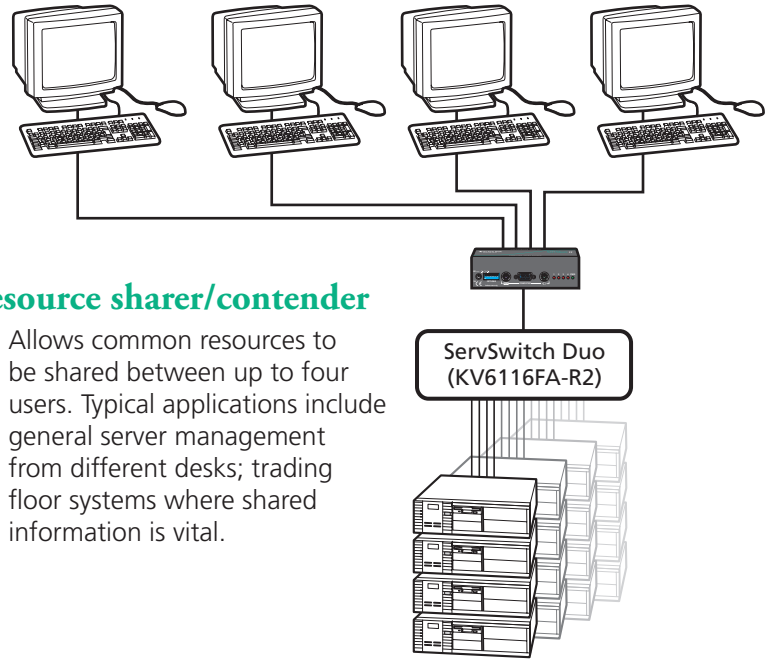
Video splitter

A quick and easy way to distribute high quality video to multiple locations. The internal video boost feature assists when making long cable runs to remote monitors.



Resource sharer/contender

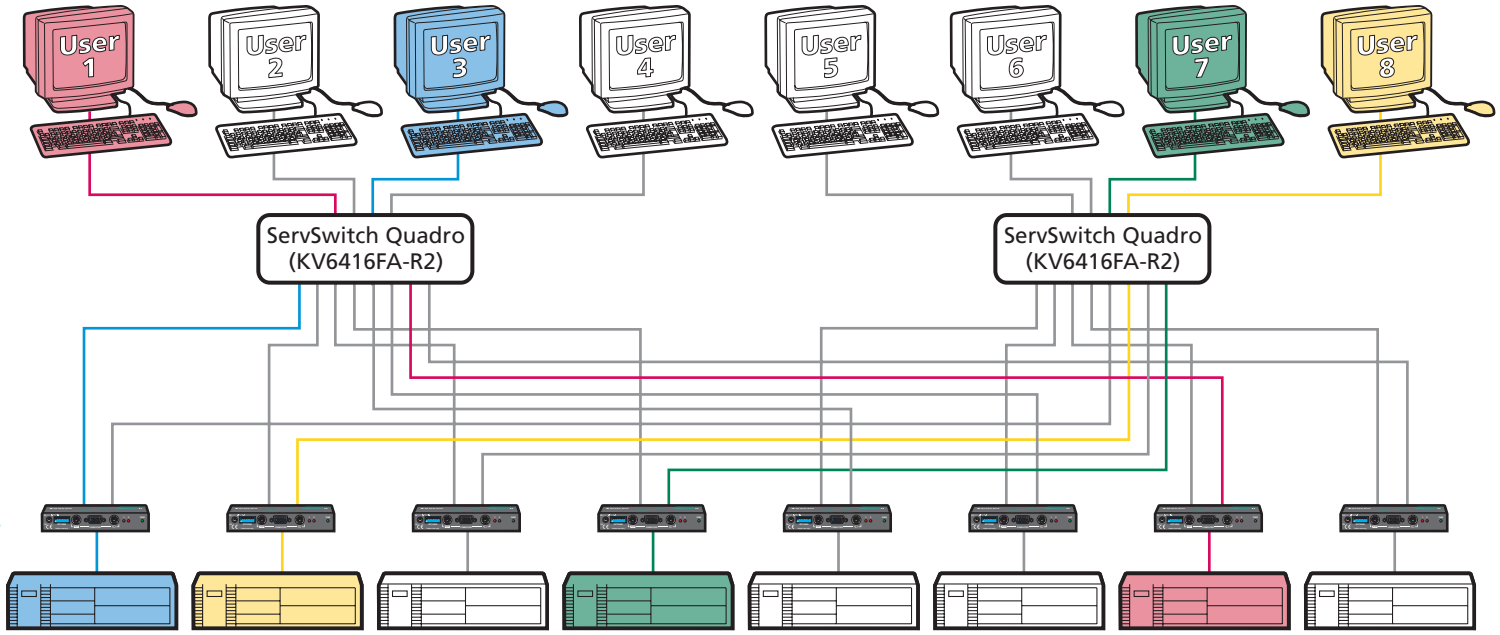
Allows common resources to be shared between up to four users. Typical applications include general server management from different desks; trading floor systems where shared information is vital.



Square matrix

This application permits multiple users simultaneous access to any systems. A clever arrangement of ServShare II and suitable KVM switches, such as the ServSwitch Quadro, ensures sufficient redundancy that everyone can access a system of their choice. The ServShare II units communicate with the ServSwitch Quadro boxes to indicate clearly to a user when a particular system is already in use.

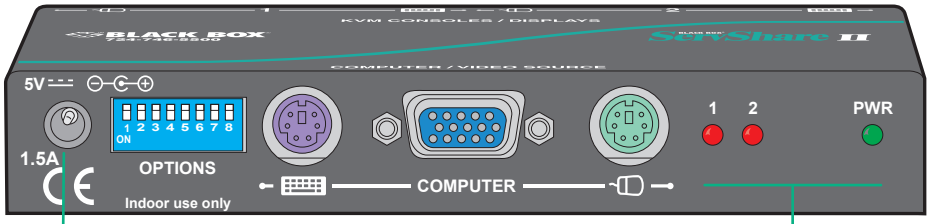
Each ServShare II connects to both ServSwitch Quadro units



ServShare II features - front and rear

ServShare II is available in two port and four port versions. Both versions offer compact casings, straightforward connections and reliable operation.

Front view - 2 port version (KV221A)



Power supply socket

Configuration switches

Connections to host system or KVM switch

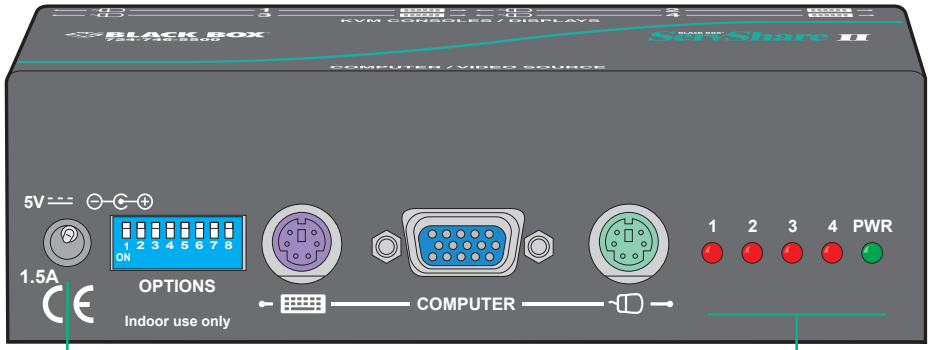
Channel and power supply indicators

Rear view - 2 port version (KV221A)

Connections to second user console

Connections to first user console

Front view - 4 port version (KV421A)



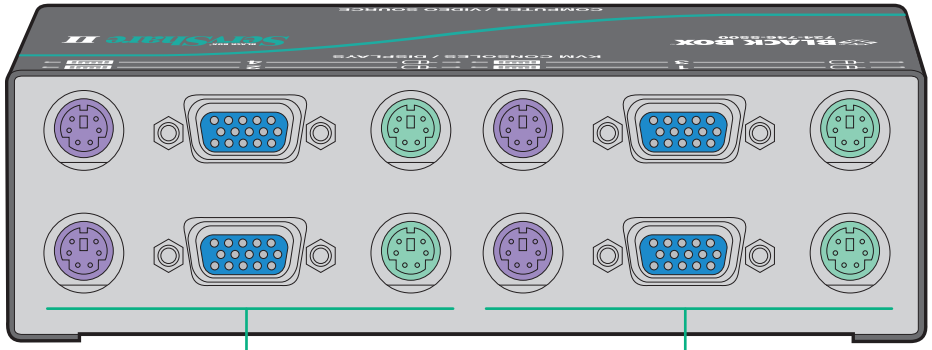
Power supply socket

Configuration switches

Connections to host system or KVM switch

Channel and power supply indicators

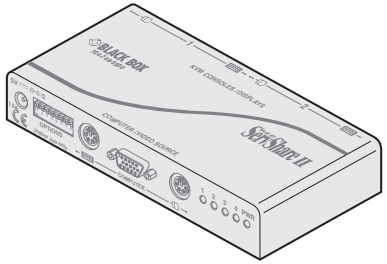
Rear view - 4 port version (KV421A)



Connections to second (lower) and fourth (upper) user consoles

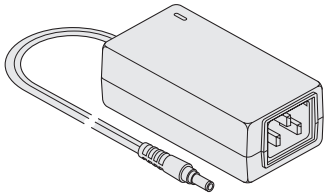
Connections to first (lower) and third (upper) user consoles

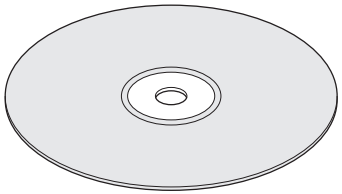
What's in the box



ServShare II unit:
< 2 port (KV221A)
or
4 port (KV421A) >

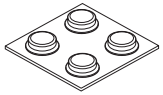
Power supply
(PS649-R2)
plus appropriate
power cord



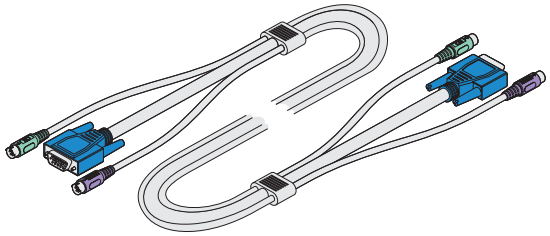


CD-ROM &
safety leaflet

Four Self-adhesive
rubber feet



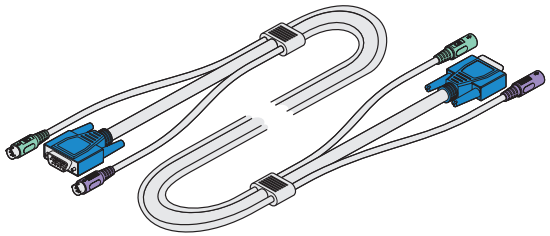
What you may additionally need



PS/2 cables
One set per connected computer.

Part numbers:

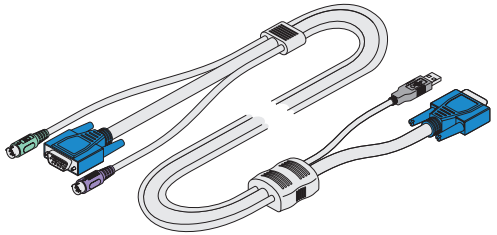
EHN408-0005	*5 feet in length*
EHN408-0010	*10 feet in length*
EHN408-0020	*20 feet in length*



Extension cables
One set per connected KVM console when they are placed some distance from the ServShare II.

Part numbers:

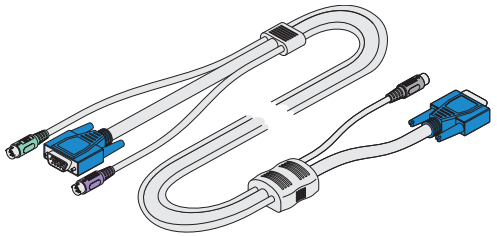
EHN409-0005	*5 feet in length*
EHN409-0010	*10 feet in length*
EHN409-0020	*20 feet in length*



PS/2 to USB flash cables
Required to connect with computers that use a USB port to connect their keyboard and mouse.

Part numbers:

EHN428-0006	*6 feet in length*
EHN428-0016	*16 feet in length*
EHN428-0035	*35 feet in length*



PS/2 to Sun flash cables
Required to connect Sun computers that use a mini-DIN port to connect their keyboard and mouse.

Part numbers:

EHN429-0006	*6 feet in length*
EHN429-0016	*16 feet in length*
EHN429-0035	*35 feet in length*

PS/2 to AT-style keyboard converter
(part number: FA212)

Rack mount unit
Rack mount options are available to fit up to sixteen KV221A or up to eight KV421A units in a 19 inch rack - please contact Black Box technical support for details.

Installation and Operation

Mounting

ServShare II offers two main mounting methods:

- Supplied four self-adhesive rubber feet
- Optional rack mount assembly to hold up to eight 4-port ServShare II units or up to sixteen 2-port ServShare II units.

Connections

Installation of the ServShare II involves a number of basic connections to some or all of the following items:

- Host computer or KVM switch
- Keyboards, video monitors and mice
- Power supply (use is optional)

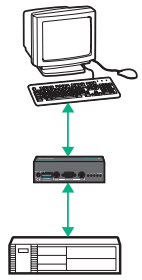
Cable lengths

The ServShare II uses high quality powered circuitry to prevent signal degradation. When used in conjunction with the accompanying power supply, this means that you can use relatively long cable links between the ServShare II, the system and the user console or KVM switch. The lengths of cables that can be used for given situations are summarized below.

Video resolutions of up to 1600 x 1280 are supported on longer cable lengths while higher resolutions of up to 1900 x 1440 may be used with shorter links.

The ServShare II also features a video boost feature to ensure that picture quality remains sharp over longer distances. See Configuration switches - Video signal boost (switch 2) for more information.

Cable position	Used without power supply	Used with power supply
ServShare II to Console	6.5ft (2m)*	32ft (10m)**
ServShare II to System	6.5ft (2m)	65ft (20m)**



Note: The total cable length (from system through to console) should not exceed 98ft (30m).

* Cable lengths can be increased to 16ft (5m) when used in square matrix formation (in conjunction with KVM switches).

** For video only applications (i.e. without keyboard or mouse), any 'video only' link cable may be up to 98ft (30m) long provided the overall cable run (i.e. including the cable on the other side of the ServShare II) does not exceed 105ft (32m).

Host computer or KVM switch

The ServShare II can either connect directly to a single host computer or to range of hosts via one or more KVM switches.

To connect a host computer or KVM switch

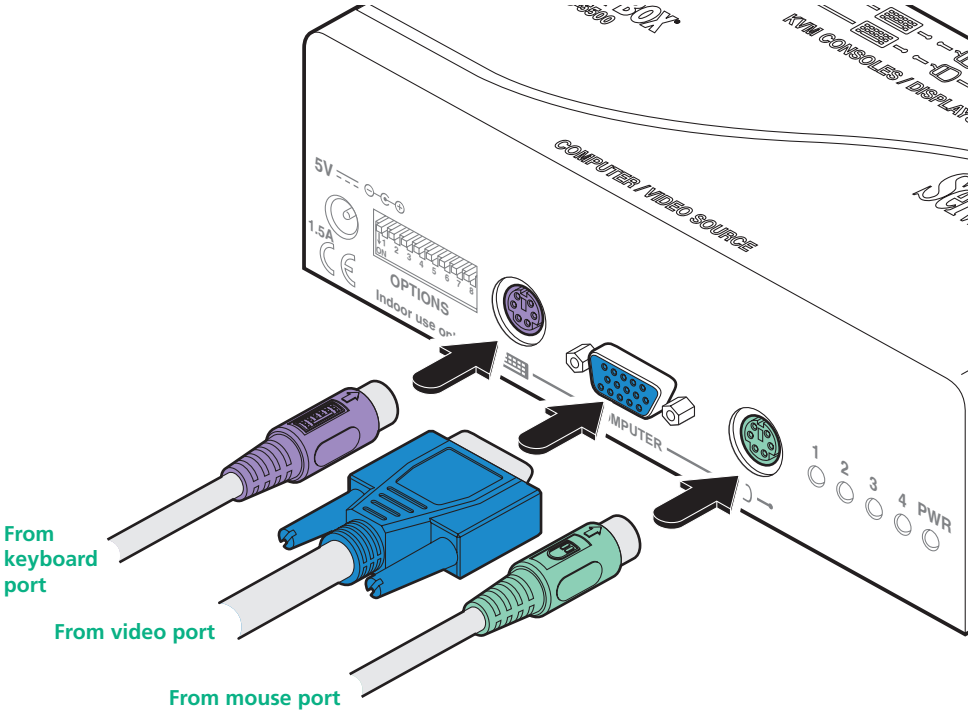
1 Ensure that power is disconnected from the computer or KVM switch to be connected.

(Note: If it is not possible to switch off devices prior to connection, then a 'Hot plug' procedure is available – see the Hot plugging and mouse restoration section for more details).

2 Connect the plugs at one end of a PS/2 cable set to the keyboard, video and mouse sockets of the computer or KVM switch.

Monitor (video)				Blue
Keyboard				Purple
Mouse		or		Mid green

3 Connect the plugs at the other end of the PS/2 cable set to the corresponding sockets, collectively labelled as 'COMPUTER', on the front panel of the ServShare II.



Keyboards, video monitors and mice

The rear panel provides sets of ports (either two or four, depending on the ServShare II model) and each accommodates a keyboard, video monitor and mouse connection.

The ports can be connected and used in any order (see note 2 below), and not all connectors of each port need to be used. For instance, when ServShare II is used as a video splitter, usually only the video connections are utilized.

Where a user will be situated close to the ServShare II, the keyboard, video monitor and mouse can be connected directly. When a user will be placed some distance away, then an extender cable should be used. See What you may additionally need for part numbers.

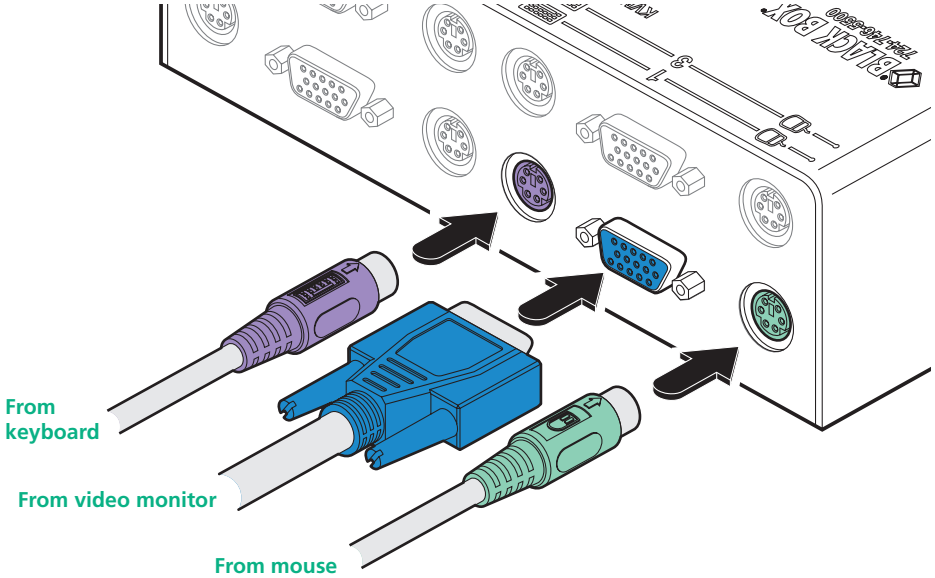
Note 1: In square matrix configurations, these rear panel ports would be connected to the CPU/computer ports of suitable KVM switches.

Note 2: At power on, ServShare II attempts to gain information about the capabilities of connected monitors (using the Display Data Channel [DDC] format) by interrogating the monitor at port 1. If you are using a mixture of monitors, it is advantageous to place one that supports DDC at port 1.

To connect a keyboard, video monitor and mouse

1 Position a suitable keyboard, video monitor and mouse in the required location. Where the distance to the ServShare II is greater than the cable lengths use suitable extender cables (see What you may additionally need).

2 Connect the keyboard, video monitor and mouse plugs to the sockets of one of the ports (labelled between 1 and 4) at the rear panel of the ServShare II.



Power supply (use is optional)

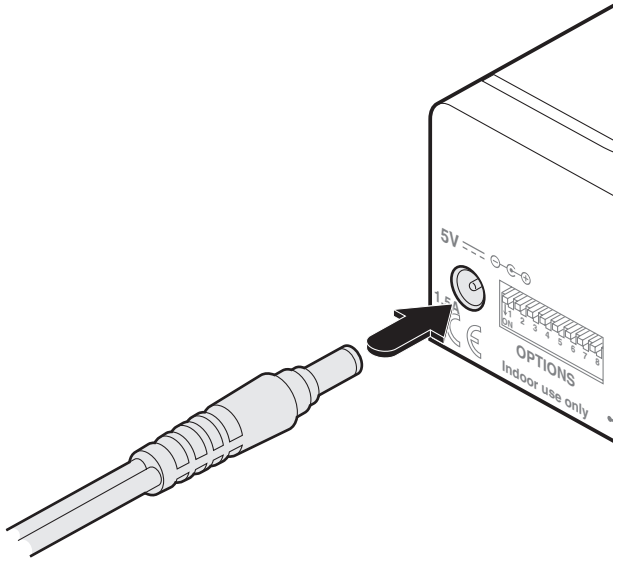
The ServShare II is supplied with a power supply and an appropriate country-specific IEC power cord. There is no on/off switch so operation begins as soon as the power supply is connected.

The use of the power supply is optional because the ServShare II can also derive its power from the keyboard port of the host system or KVM switch. Where up to four standard keyboards and mice are connected to the ServShare II (and standard length cables are used), it is usually possible to power the ServShare II purely from the host system or KVM switch. See opposite for more information.

IMPORTANT: If the power supply will NOT be used, click switch 1 on the front panel down to its ON position. See Configuration switches - Power source selection (switch 1) for more information).

To connect the power supply

1 Connect the low voltage output connector from the power supply unit to the power socket on the front panel of the ServShare II.



2 Connect the IEC connector of the supplied country-specific power cord to the socket of the power supply.

3 Connect the power cord to a nearby main supply socket.

Do I need to use the power supply?

Thanks to smart power control, the use of the supplied external power supply is optional for most applications because the ServShare II can be configured to derive its power from the host system.

The following two main factors will determine whether you can use the ServShare II with, or without the power supply:

1: Lengths of cables to host computer and to consoles

A	All cables 6.5ft (2m) or less	Power supply not required
B	Any cables 7ft (2.2m) or more	Power supply required

2: Power required by all connected keyboards and mice

A	Total requirement is 400mA or less*	Power supply not required
B	Total requirement is 420mA or more*	Power supply required

If *either* of the above factors meet the **B** scenario, then you need to use the power supply.

* How to check power requirements

You can determine the overall power required by the connected keyboard and mice by consulting their product labels. On the underside of almost all keyboard and mice will be a label stating their power requirements.

This figure is usually represented as a voltage (e.g. 5V) and a current (e.g. 20mA).

- Most standard keyboards require around 50mA
- Most standard mice require around 20 - 25mA.

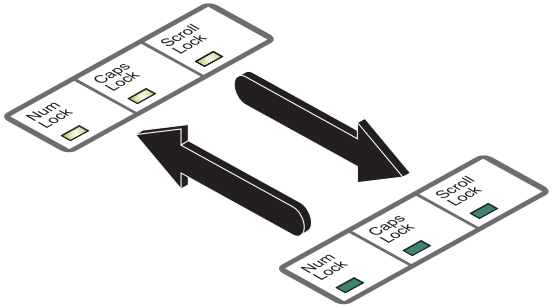
Add up the total current requirements for all connected devices. If the total value is 400mA or less then you do not need to use the power supply (subject to the cable lengths being 6.5ft (2m) or shorter).

Operation

User arbitration and keyboard indicators

During operation, all of the connected video monitors continuously receive the output from the host system (or KVM switch). Control of the host system is arbitrated by the ServShare II on a first come, first served basis. In the idle state, control is available to all users and their keyboard indicators all show the current Num Lock, etc. conditions of the host system.

At the moment that a key is pressed or a mouse is moved, the keyboards and mice of the other users are temporarily locked-out (the video images remain). The keyboard indicators of the locked-out users then begin to flash to confirm their status:

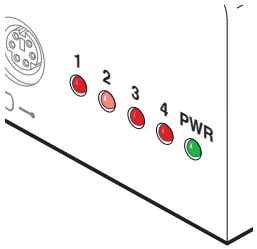


After two seconds of inactivity from the user currently in control, the ServShare II returns to its idle condition and the re-instates the keyboard indicators of the locked-out users.

ServShare II indicators

The red indicators on the front panel of the ServShare II illuminate to show which user currently has control.

The green indicator illuminates when the power supply is connected and switched on.



Video boost feature

The ServShare II offers a video boost feature which provides amplification to compensate for losses introduced by long video cables. The effect of this is to ensure that the video images remain sharp even at high resolutions over relatively long distances.

To enable video boost

- Click switch 2 (ServShare II may be powered on or off) down into its ON position.

Resetting ServShare II

In rare situations where ServShare II may produce erratic or incorrect operation, a reset option is provided.

To reset the ServShare II

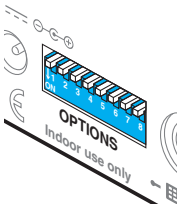
- Momentarily click switch 3 down into its ON position and then back up to its OFF state.

Special configuration

For many installations, no further configuration will be required once the host system and user consoles are connected. This chapter covers the various special configuration options that may be required in certain cases.

Configuration switches

The ServShare II front panel features a set of eight mini switches which are used to determine a number of options:



Action	Switch
Power source selection	1
Video signal boost	2
Reset ServShare II	3
Enter configuration mode	6
Enter upgrade mode at power on	7

Note 1: Switches 4, 5 and 8 are reserved for future use.

Note 2: When changing switch positions the ServShare II can be powered on or off.

Power source selection (switch 1)

This switch determines how the ServShare II derives its power.

OFF Draw power only from the power adaptor.

ON Draw power from power adaptor, if present, or alternatively use power from the host system keyboard port.

Note 3: The ServShare II is fitted with an auto-resettable fuse rated at 500mA. If the total power drawn by the connected keyboards and mice is approaching, or exceeds 400mA, then the power adaptor must be used.

Note 4: The power adaptor must be used if the ServShare II is to be cascaded with other similar units or interface-powered KVM switches or extenders.

Video signal boost (switch 2)

This switch selects video boost mode which gently amplifies the video signal and is particularly useful for improving picture quality when long video cable lengths are used.

OFF No video boost

ON Apply video boost

Reset ServShare II (switch 3)

Use this option if ServShare II operation ceases or becomes erratic/unpredictable. Change the switch to the ON position momentarily and then OFF again to achieve the reset.

OFF Normal operation.

ON Reset ServShare II (change back to OFF position to complete the reset).

Enter configuration mode (switch 6)

Allows you to alter key aspects of ServShare II operation. Within configuration mode you can use any connected keyboard to enter specific key combinations. See Using configuration options for a full list of key combinations.

OFF Normal operation.

ON Enter configuration mode (change back to OFF once configuration options have been entered).

Enter upgrade mode at power on (switch 7)

Places the ServShare II into a special state whereby you can rewrite its internal operating software. After placing this switch into its ON position, you need to cycle the power input or briefly use switch 3 to reset the ServShare II. See ServShare II software upgrade for full details about the upgrade procedure.

OFF Normal operation.

ON Enter upgrade mode following the next reset or power on.

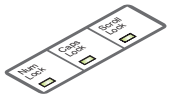
Using configuration options

Configuration mode allows you to alter key aspects of ServShare II operation. Within configuration mode you can use any connected keyboard to enter specific key combinations to bring about the required change in operation. Configuration mode is instigated by changing switch 6 to its ON position, the required configuration option is then selected by entering a particular combination of letter and number.

To use configuration options (a quick summary):

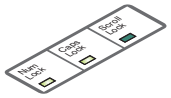
1 Enter configuration mode (click switch 6 down into its ON position).

All of the ServShare II front panel indicators will light as well as all three of the keyboard indicators ('Num Lock', 'Caps Lock' and 'Scroll Lock'). Your ServShare II is now ready to accept new configuration options.



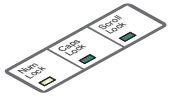
2 Type the letter of the required option, (e.g. H).

On your keyboard, the 'Scroll Lock' indicator will darken, leaving the 'Num Lock' and 'Caps Lock' indicators lit – this indicates that a configuration option number is now required.



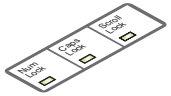
3 Type the number of the required option, (e.g. 3).

On your keyboard, the 'Caps Lock' indicator will darken, leaving only the 'Num Lock' indicator lit – this indicates that you need to confirm the configuration option that you just typed.



4 Press ↵.

All three of the keyboard indicators will re-light.



5 Enter another option or exit from configuration mode (return switch 6 to its OFF position).

All indicators will return to their original conditions.

Hotkey combinations

Hotkeys signal to the ServShare II that you wish to talk to it (using the keyboard) rather than the computer. However, you may find that the standard hotkeys interfere with other devices or software. In such cases, you can change the hotkeys to a different combination of two keys. These configuration options allow you to determine which keyboard keys are used as the hotkeys. See Hot plugging and mouse restoration for details about using hotkeys to restore mouse operation.

- H1 Hotkey combination is LEFT ALT + RIGHT ALT + command key (default setting).
- H2 Hotkey combination is CTRL + SHIFT + command key.
- H3 Hotkey combination is ALT + SHIFT + command key.
- H4 Hotkey combination is RIGHT ALT + command key.
- H5 Hotkey combination is CTRL + ALT + command key.
- H6 Hotkey combination is LEFT CTRL + LEFT ALT + command key.
- H7 Hotkey combination is RIGHT CTRL + RIGHT ALT + command key.

Mouse speed timing adjustment

These configuration options allow you to overcome a rare timing problem caused by certain mouse, computer and switch combinations. The problem can occur when the mouse driver software and computer are over-sensitive to timing changes within the information from the mouse. Adding a switch, such as the ServShare II, can cause slight timing changes that result in the on-screen mouse pointer responding very slowly. Choosing the L6 option helps to counteract the rare problem that is known to occur in combinations such as an HP Vectra running later versions of Windows NT, using a Logitech mouse driver and a Logitech mouse.

- L5 Do not adjust mouse speed timings (default setting).
- L6 Adjust mouse speed timings to solve response problems.

Miscellaneous functions

Note: These functions use the letter 'F'. As with all of the other configuration options, press the letter and then the number, i.e. F and then 1 – not the 'F1' function key.

- F1 Declare the ServShare II firmware version. When selected, the version number will be sent to the currently selected computer – ensure that a suitable application is running (such as a notepad or word processor) so that the version number may be displayed on screen.
- F8 RESET all configuration options to the default settings.

Hot plugging and mouse restoration

It is strongly recommended that you switch off the host system or KVM switch before attempting to connect your ServShare II. However, if this is not possible then you need to 'hot plug' your ServShare II while power is still applied to the system. There is not normally a danger of damage to the system, however, when mouse communications are interrupted, often they fail to reinitialize when reconnected. Your ServShare II provides a feature to reinstate mouse communications once the necessary connections have been made.

There are two main types of data formats used by current PC mice, these are the older 'PS/2' format and the more recent 'IntelliMouse®' format introduced by Microsoft. These use slightly different data arrangements and it is important to know which type was being used before you hot-plugged the ServShare II. The previous setting depends both on the type of mouse and the type of driver as various combinations of PS/2 and Intellimouse are possible. Using the incorrect restore function may produce unpredictable results and require the system to be rebooted.

Which restore setting do I use?

The general rule is that unless both the mouse *and* the driver are *both* Intellimouse compatible then you need to restore the mouse as 'PS/2'.

Recognizing an Intellimouse-style mouse

The Intellimouse format was introduced to support, among other features, the scroll wheel function. If your mouse has a scroll wheel, then it is likely to support the Intellimouse format. If you have a Microsoft mouse, then it will usually state that it is an Intellimouse on its underside label.

Note: Where a mixture of different mice are connected to the ServShare II, only one of the connected mice needs to be Intellimouse-style in order to consider using the Intellimouse restore command.

Recognizing an Intellimouse driver

Before hot plugging your ServShare II (or afterwards using only keyboard control), access the Windows Control Panel and select either the *Mouse* option (on Windows NT, 2000 and XP) or the *System* option (on Windows 95, 98, ME). Look for the name of the driver, which will usually include the words *PS/2* or *Intellimouse*.

To restore mouse operation when hot plugging:

1. Carefully connect your ServShare II to the host system (or KVM switch) and to the keyboards, video monitors and mice.
2. Using any of the connected keyboards (it is only necessary to perform this operation once), enter the appropriate restore function code:
   - *PS/2* – press Alt Alt Gr 1
   - *IntelliMouse* – press Alt Alt Gr 2

   (Note: Alt Alt Gr are the standard hotkeys which can be changed - see Using configuration options for details).
3. To exit configuration mode, press ↵.
4. Move the mouse a short distance and check for appropriate onscreen cursor movement. If the mouse cursor darts erratically around the screen, then cease moving the mouse. This is an indication that the chosen restore function is incorrect. Try again using the other restore function.

   Note: The restore functions predict the likely mouse resolution settings but may not restore the exact speed or sensitivity settings that were originally set.

ServShare II software upgrade

The internal software of your ServShare II can be upgraded to utilize the latest ServShare II features and functionality.

To perform a software upgrade, you need to carry out the following stages:

- *Stage A* Download the upgrade file.
- *Stage B* Create a startup diskette and copy the files to it.
- *Stage C* Place the ServShare II in upgrade mode and reboot.

Stage A - Download the upgrade file

To download the files

1 Contact Black Box technical support (see front cover) for details about how to locate and download the appropriate upgrade file.

2 Decompress the downloaded file. There should be the following files:

- AUTOEXEC.BAT – directs the computer to run the driver update and firmware upgrade programs.
- SSxxx.EXE – this is the upgrade program that causes upgrade data to be sent to the ServShare II from your PC.
- SSxxx.HEX – this file contains the code to be downloaded into the ServShare II by the SSxxx.exe program.

  Where xxx is the upgrade version number.

Now please follow Stage B.

Stage B - Create a startup diskette and copy files to it

For this stage you will need a 3½ floppy diskette that is either blank or has existing contents that are no longer required. The write protect tab must be moved to the 'unprotected' position. Depending on your operating system, use one of the following to create a startup disk:

To create a startup disk in Windows XP

1 Insert a diskette into the floppy disk drive.
2 Select 'Start' and then 'My Computer'.
3 Right mouse click on the '3½ Floppy (A:)' icon and select 'Format'.
4 Check the 'Create an MS-DOS startup disk' box and select 'Start'.

To create a startup disk in Windows 95/98/Me

1 Insert a formatted diskette into the floppy disk drive.
2 Select 'Start', then 'Settings' and then 'Control Panel'.
3 Double click on the 'Add/Remove Programs' icon.
4 Select the 'Startup Disk' tab.
5 Click 'Create Disk' and follow the instructions.

To create a startup disk in Windows 95/98 (alternative method)

1 Insert a diskette into the floppy disk drive.
2 Right mouse click on the '3½ Floppy (A:)' icon and select 'Format'.
3 Select the 'Full format' option and ensure that the 'Copy system files' box is checked.
4 Select 'Start' to format the disk.

To create a startup disk from MS-DOS or a DOS window within Windows 95/98

1 Insert a diskette into the floppy disk drive and check that the drive is configured as drive A (it usually is).
2 At the DOS prompt (C:\>) type:

```
FORMAT A: /S
```

and follow the instructions given by DOS.

Copy the upgrade files to the new startup diskette

- Using Windows Explorer or the My Computer option, copy the downloaded and decompressed files from your computer to the floppy diskette.

Now please follow Stage C.

Stage C - Place the ServShare II in upgrade mode and reboot

1 On the ServShare II front panel, click switch 7 down into its ON position to select upgrade mode at its next power on.
2 Restart the ServShare in one of two ways, either:
   - Remove and replace the power supply connection, or
   - Briefly click ServShare II switch 3 down into its ON position and then back up to its OFF position.

   The ServShare II will illuminate all of its front panel indicators to confirm that it is in upgrade mode.
3 On the computer that is connected to the ServShare II, ensure that its BIOS settings will allow it to boot from the floppy drive, rather than booting immediately from the hard drive.
4 Place the upgrade diskette installed in the floppy drive, switch off the computer and then power it up once again to allow it to boot from the floppy diskette and automatically perform the flash upgrade.

   The upgrade process should take no more than two to three minutes and a progress indicator will be displayed on screen.
5 Once the upgrade is complete, click ServShare II switch 7 back to its OFF position.

   The upgrade process is now complete. Do not forget to remove the floppy diskette from the computer's drive.

Further information

This chapter contains a variety of information, including the following:

- Getting assistance - see below
- Black Box subsidiary contact details
- Radio frequency energy statements
- Safety information
- Certification notice for equipment used in Canada
- Normas Oficiales Mexicanas (NOM) electrical safety statement

Getting assistance

If you are still experiencing problems after checking the list of solutions in the Troubleshooting section then we provide a number of other solutions:

- **Email** in the US: **techsupport@blackbox.com**
  in the UK: **techhelp@blackbox.co.uk**
- **Phone** in the US: **724-746-5500**
  in the UK: **+44 (0)118 965 6000**

For other countries, please see the list opposite:

Black Box subsidiary contact details

Country	Web Site/Email	Phone	Fax
United States	www.blackbox.com	724-746-5500	724-746-0746
Austria	www.black-box.at support@black-box.at	+43 1 256 98 56	+43 1 256 98 56
Belgium	www.blackbox.be support.nederlands@blackbox.be support.french@blackbox.be support.english@blackbox.be	+32 2 725 85 50	+32 2 725 92 12
Denmark	www.blackbox.dk blackbox@blackbox.dk	+32 2 725 85 50	+32 2 725 92 12
Finland	www.blackbox.fi tuki@blackbox.fi	+35 201 888 800	+35 201 888 808
France	www.blackbox.fr tech@blackbox.fr	+33 1 45 606 717	+33 1 45 606 747
Germany	www.black-box.de techsupp@black-box.de	+49 811 5541 110	+49 811 5541 499
Italy	www.blackbox.it supporto.tecnico@blackbox.it	+39 02 27 404 700	+39 02 27 400 219
Netherlands	www.blackbox.nl techsupport@blackbox.nl	+31 30 241 7799	+31 30 241 4746
Norway	www.blackboxnorge.no support@blackboxnorge.no	+47 55 300 710	+47 55 300 701
Spain	www.blackbox.es tecnico@blackbox.es	+34 9162590732	+34 916239784
Sweden	www.blackboxab.se support@blackboxab.se	+46 8 44 55 890	+46 08 38 04 30
Switzerland	www.black-box.ch support@black-box.ch	+41 55 451 70 71	+41 55 451 70 75
UK	www.blackbox.co.uk techhelp@blackbox.co.uk	+44 118 965 6000	+44 118 965 6001
Ireland	www.blackbox.co.uk techhelp@blackbox.co.uk	+353 1 662 2466	+353 1 662 2477

Radio Frequency Energy

All interface cables used with this equipment must be shielded in order to maintain compliance with radio frequency energy emission regulations and ensure a suitably high level of immunity to electromagnetic disturbances.

European EMC directive 89/336/EEC

This equipment has been tested and found to comply with the limits for a class A computing device in accordance with the specifications in the European standard EN55022. These limits are designed to provide reasonable protection against harmful interference. This equipment 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 or television reception. However, there is no guarantee that harmful interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment on and off, the user is encouraged to correct the interference with one or more of the following measures: (a) Reorient or relocate the receiving antenna. (b) Increase the separation between the equipment and the receiver. (c) Connect the equipment to an outlet on a circuit different from that to which the receiver is connected. (d) Consult the supplier or an experienced radio/TV technician for help.

Federal Communications Commission and Canadian Department of Communications radio frequency interference statements

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

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

This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par le ministère des Communications du Canada.

Safety information

- For use in dry, oil free indoor environments only.
- Warning - live parts contained within power adapter.
- No user serviceable parts within power adapter - do not dismantle.
- Plug the power adapter into a socket outlet close to the module that it is powering.
- Replace the power adapter with a manufacturer approved type only.
- Do not use the power adapter if the power adapter case becomes damaged, cracked or broken or if you suspect that it is not operating properly.
- If you use a power extension cord with the product, make sure the total ampere rating of the devices plugged into the extension cord does not exceed the cord's ampere rating. Also, make sure that the total ampere rating of all the devices plugged into the wall outlet does not exceed the wall outlet's ampere rating.
- Do not attempt to service the product yourself.

Certification notice for equipment used in Canada

The Canadian Department of Communications label identifies certified equipment. This certification means that the equipment meets certain telecommunications-network protective, operation, and safety requirements.

The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company.

The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single-line individual service may be extended by means of a certified connector assembly (extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility—in this case, your supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

CAUTION:

Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

The LOAD NUMBER (LN) assigned to each terminal device denotes the percentage of the total load to be connected to a telephone loop which is used by the device, to prevent overloading. The termination on a loop may consist of any combination of devices, subject only to the requirement that the total of the load numbers of all the devices does not exceed 100.

Normas Oficiales Mexicanas (NOM) electrical safety statement

Instrucciones de seguridad

1 Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.

2 Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.

3 Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.

4 Todas las instrucciones de operación y uso deben ser seguidas.

5 El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc.

6 El aparato eléctrico debe ser usado únicamente con carritos o pedestales que sean recomendados por el fabricante.

7 El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.

8 Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá a lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.

9 El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.

10 El equipo eléctrico deber ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.

11 El aparato eléctrico deberá ser connectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.

12 Precaución debe ser tomada de tal manera que la tierra fisica y la polarización del equipo no sea eliminada.

13 Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.

14 El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.

15 En caso de existir, una antena externa deberá ser localizada lejos de las lineas de energia.

16 El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.

17 Cuidado debe ser tomado de tal manera que objectos liquidos no sean derramados sobre la cubierta u orificios de ventilación.

18 Servicio por personal calificado deberá ser provisto cuando:

A: El cable de poder o el contacto ha sido dañado; u

B: Objectos han caído o líquido ha sido derramado dentro del aparato; o

C: El aparato ha sido expuesto a la lluvia; o

D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o

E: El aparato ha sido tirado o su cubierta ha sido dañada.

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