LevelOne

KVM-0407

4-Port USB KVM Switch

with USB Hub

User's Guide

Version 1.0-0602

Index

1. Introduction

Thank you for purchasing **KVM-0407 4-Port USB KVM Switch Hub**! You now have a high quality and durability system that can give you the control over multiple computers/servers from one console (PS2/USB Mouse, Keyboard and Monitor).

1.1 Features

1. Controls 4 computers from a single console (Keyboard/Mouse) over USB connection using standard USB cables.
2. Supports PS/2 and USB Keyboard/Mouse (Hot-Key function supports only on PS/2 Keyboard).
3. Fully compliant with the USB 1.1 specification.
4. Supports Windows, Linux, Mac OS9/OSX, SunMicro Solaris 8 (For Sun Micro users, the external power adaptor is necessary when using the KVM Switch).
5. Supports 3 USB downstream ports.
6. 4 computers can share 3 USB Downstream ports.
7. Supports 3 types of switching: hardware push button, Hot-Keys on PS/2 keyboard, and On-Screen-Display (OSD) utility software (for Windows only).
8. OSD and LED display for easy status monitoring.
9. OSD utility indicates:
    1. Power status of connected computer(s).
    2. Active host computer.
10. Provide HUB switching in independent method or combination with the host switching(AutoSwitch mode).
11. Auto-Scan function (Time interval can be adjusted between 5-20 seconds when the Auto-Scan function is enable).
12. Supports VGA resolutions up to 2048x1536 @ 85HZ.
13. Plug and Play (Windows 98/SE users might need your Windows CD to install the HID driver for USB Keyboard/Mouse).

1.2 Physical Diagram

Host LED

HUB LED

Push Button

AutoScan Button

Hub AutoSwitch LED

AutoScan LED
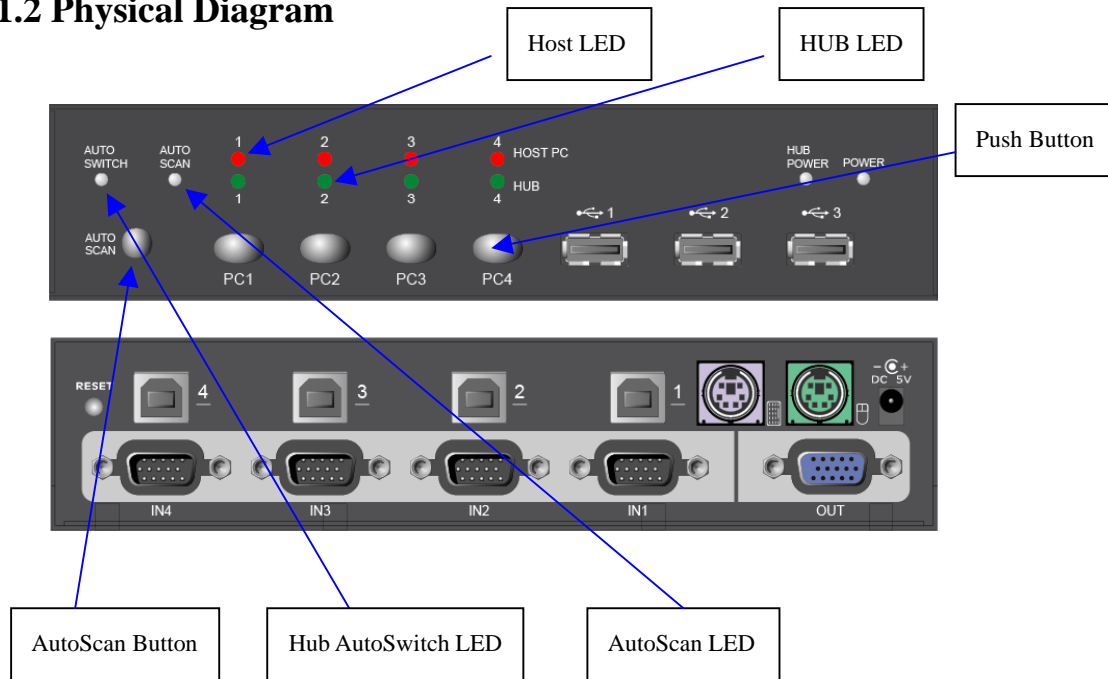
1.3 Package Contents

The product you purchased should contain the equipment and accessories shown as follows:

1. A KVM-0407 4-Port USB KVM Switch Hub.
2. CD with users manual, On-Screen-Display(OSD) utility.
3. Four sets of USB+VGA cables.

2. Specifications

2.1 General

Specification	
Operating Temperature	5~ 40°C
Humidity	0%~80%RH
Cables Included	4
Cable Length	1.8M
Dimensions (LxWxH)	200 x 82 x 44mm
Unit Weight	721g
Number Of Computer Controlled	4
PS/2 Keyboard & Mouse Support	Yes
Keyboard Hot-Key Switching Supported	Yes (By PS/2 Keyboard only)
USB Downstream ports	3
Compliant with USB Version	USB1.0 / USB1.1
Compliant with HID Version	USB HID 1.1
Over-Current protection design for USB Downstream ports	Yes
Power	By Host or External Adaptor (Optional)
Basic Power Consumption	DC 5V
Bus-Power limit current protection	500mA (When external adaptor applied)
Output Voltage	5V
Output Current	2A
OSD (On Screen Display)	Yes (Application Program, Windows only)
DDC, DDC2 monitor	Yes (Max. Resolution: 2048x1536)
Hot Pluggable	Yes (USB & PS/2)
Auto-Scan function	Yes (5 ~20 seconds)
Support Sun Micro Serious	Yes
Support Mac Serous	Yes
Support Linux Serious	Yes
Device driver	No

2.2 LED Indicators

● **Power status LED indicator:**
 On (Green): The power is connected and the device is ready to work.
 Off: No power is connected.

● **HUB POWER LED Indicator:**
 ON (Green): USB ports are ready to work.
 Off: USB ports are in over-current condition or are not ready to work.

 Note:
 If over-current situation happens for certain USB downstream ports, the corresponding USB indicator will turn **OFF** to indicate that these ports is not working now. When over-current situation is solved, the USB indicator will turn **ON** again.

● **Auto-Switch LED Indicator:**
 ON: Auto Switch mode is on.
 Off(Green): Auto Switch mode is off.

● **Auto-Scan LED Indicator:**
 Off: Auto Scan mode is off.
 ON (Green): Auto Scan mode is on.

● **Host PC LED Indicator (Red):**
 ON: Indicates which Host PC is selected.

● **HUB LED Indicator (Green):**
 ON: Indicates which Host connect with the three USB downstream HUB ports.

3. Installing KVM-0407

3.1 System Requirements

A PC with 1 spare USB port and 1 VGA port.

Windows 98 or later, Mac OS9/OSX, Solaris 8 (SUN BLADE 100), Linux Kernel 2.3 or later.

3.2 Hardware Installation

1. Make sure that the USB port of host PC is enabled and working properly.
2. Connect the USB cable Type-A end to the USB port of host PC, and the USB cable Type-B end to the any available upstream on KVM-0407.
3. Connect the VGA male-to-female cable between the video port of host PC and video port that corresponds to the USB port you selected in step 2.
4. Repeat steps 1-3 for any other computers you are connecting up and up to 4 computers can be connected at the same time.
5. Plug the power adaptor cable into KVM-0407.

3.3 Notice for Sun Micro System user

Since some Sun Micro system will detect the monitor information, if system fail to get information from the Monitor, then you won't get any screen came out. So for safety, "YOU MUST SWITCH KVM-0407 TO THE SUN MICRO SYSTEM" before you power on the Sun Micro System. After you seeing the screen from the Sun Micro System, then you can switch to any other Host. If you have multiple Sun Micro systems, then you have to repeat this procedure one by one.

3.4 Powering up KVM-0407

KVM-0407 supports USB plug & play technology. All the components can be added and removed at any time without the need to shut the unit down.

3.5 Driver Installation (Windows 98/SE only)

After you connect KVM-0407 to your PC, Win 98 will automatically detect the device and prompt for the driver installation. Please install KVM-0407 by following the instruction from **Step A-E**. Please have your Windows 98 CD ready.

Add New Hardware Wizard

This wizard searches for new drivers for:

USB Human Interface Device

A device driver is a software program that makes a hardware device work.

< Back   Next >   Cancel

Fig. A

A. Press "Next" to Continue.
(Ref. Fig. A)

Add New Hardware Wizard

What do you want Windows to do?

○ Search for the best driver for your device. (Recommended).

○ Display a list of all the drivers in a specific location, so you can select the driver you want.

< Back   Next >   Cancel
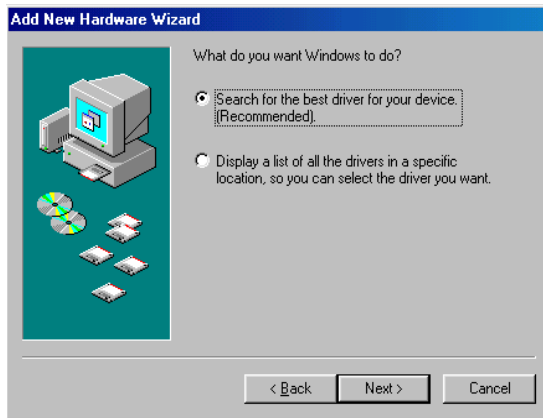
Fig. B

B. Tick "Search for the best driver for your device" and press "Next" to continue. (Ref. Fig. B).

Add New Hardware Wizard

Windows will search for new drivers in its driver database on your hard drive, and in any of the following selected locations. Click Next to start the search.

☐ Floppy disk drives

☑ CD-ROM drive

☐ Microsoft Windows Update

☐ Specify a location:
A:\

Browse...

< Back   Next >   Cancel

Fig. C

C. Please insert the "Windows 98" CD into your CD-ROM drive. Tick "CD-Rom drive" and press "Next" to continue. (Ref. Fig. C)

Fig. D

D. Press "Next" to start the installation process.
(Ref. Fig. D)
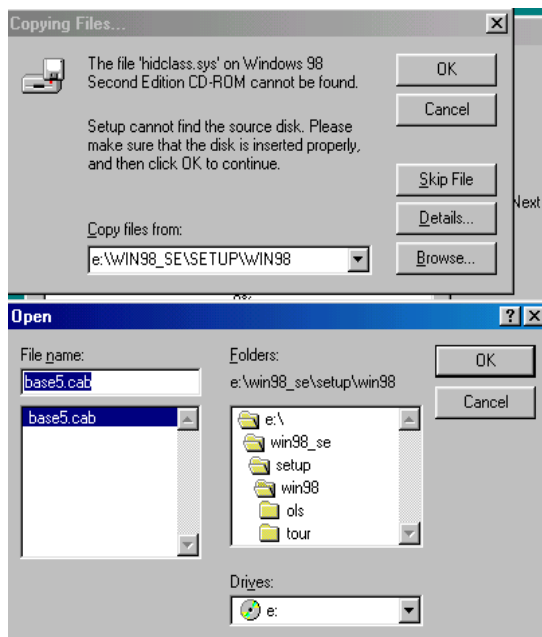
Fig. D1

D1. Sometimes Windows cannot locate the necessary driver automatically. So you need to choose "Browse" to specify the location of the driver on your "Windows 98" CD manually. *
(Ref. Fig. D1)

* The driver might be located in a different directory from the figure above.
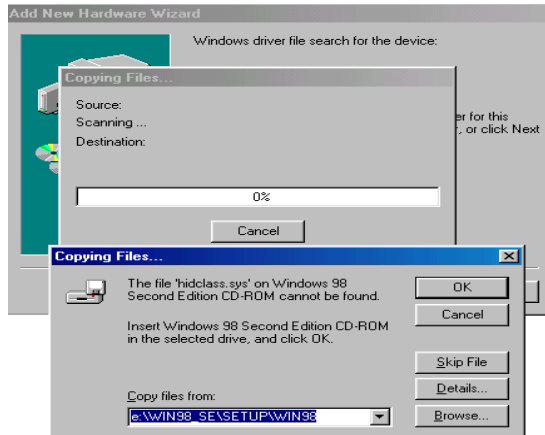
D2. Press "OK" to continue
(Ref. Fig. D2)

Fig. D2
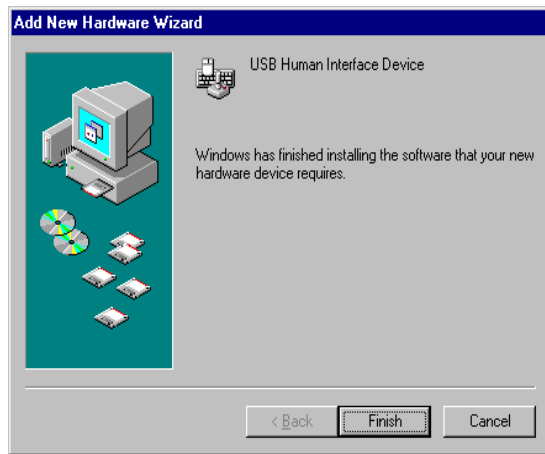
E. Press "Finish" and
Windows has finished
installing the USB Human
Interface Device driver for
PS/2 keyboard & mouse.
(Ref. Fig. E)

Fig. E

3.6 Using the OSD program
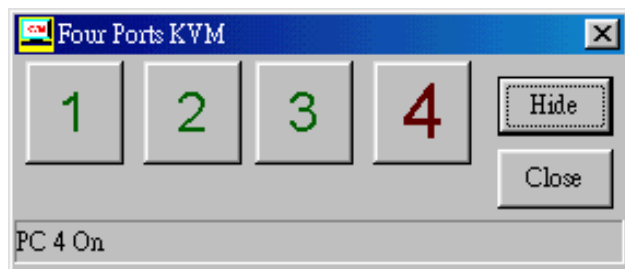
Fig. F

There are four different statuses:

a. "No PCs Found" means that KVM-0407 cannot acquire the PC status. This is either the PC did not connect or is powered off. (Ref. Fig. G)

Fig. G

The "Large RED colour 4" and "Small GREEN colour 2" means that 2 PCs are connected to Port 1 and Port 4 of your KVM-0407 respectively, and you have switched to Port 4 already. So the OSD program displayed a "PC 4 On" underneath. You can click "Small GREEN colour 2" to switch to this available host. (Ref. Fig. H)
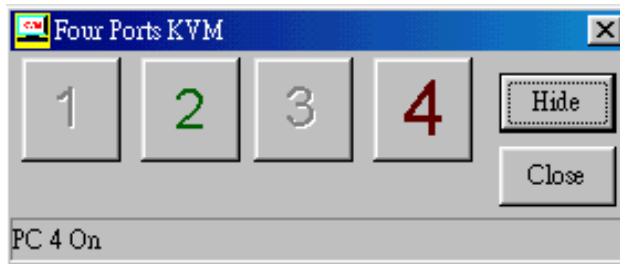
Fig. H

The "Large RED colour 4" and "Small GREEN colour 1, 2, 3" means that four PCs are connected to Port 1 to Port 4 of your KVM-0407 respectively, and you have switched to Port 4 already. So the OSD program displayed a "PC 4 On" underneath. You can click "Small GREEN colour 1, 2 or 3" to switch to a certain available host. (Ref. Fig. I)
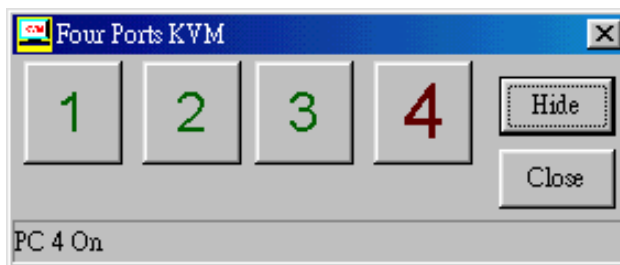
Fig. I
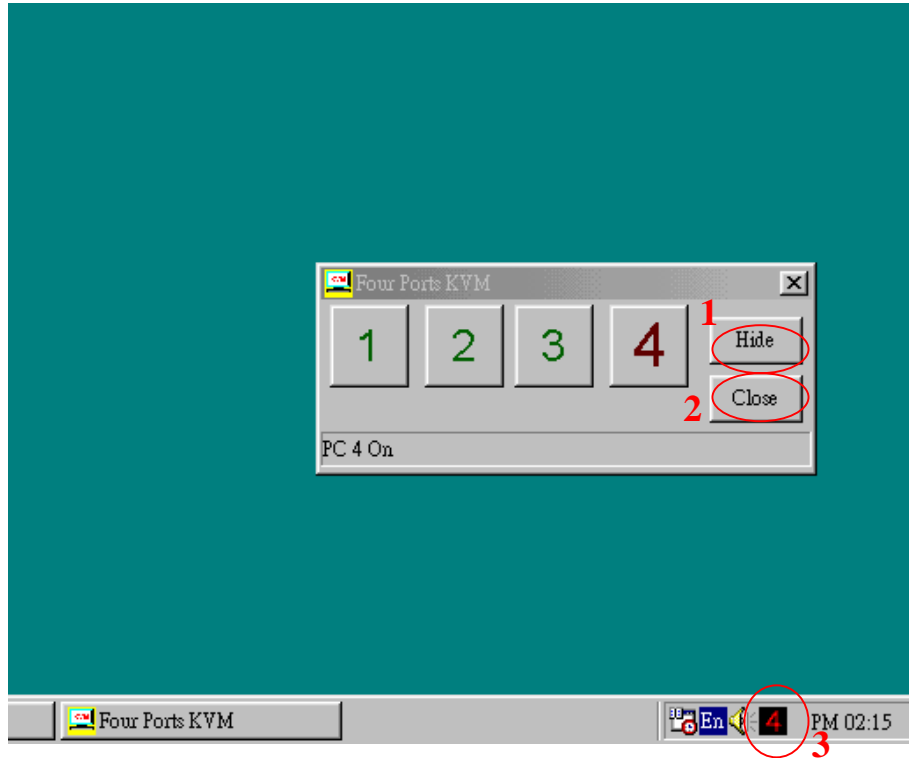
Fig. J

1. When user click "Hide" button, OSD program window will hide in Taskbar.
2. When user click "Close" button, OSD program will exit.
3. If OSD program hide in Taskbar, user can use mouse right button to show or exit program.

4. Switching KVM-0407

KVM-0407 supports 3 methods to switch between computers: **Push button**, **Hot Keys** and **OSD**. Due to refresh of the video and re-synchronization of the mouse and keyboard signal, it will take 1-3 seconds configure time after each switching. This is the normal operation that ensures the proper synchronization is established.

Note:

The drivers for most USB devices (Mass Storage device, CCD Cameras, Scanners, Card Reader, Printers, e.g.) are required to be shut down or follow the "**Safely Remove**" command provided in Windows before you disconnect the device, or else the system might be hanged. When you switch computers with the Port Selection Switch, it is the equivalent of disconnecting the device. Therefore, if you have peripheral devices (other than a second keyboard and mouse) connected to these ports, you must **be sure to shut down or safely remove the USB driver for them before switching computers**.

1. Manual Switch by push button:

You can switch to any other available active USB host connection by simply push the appropriate switch button on KVM-0407. The LED will be lit to indicate which port is currently selected.

2. Two Steps Hot Key Switch by keyboard:

You can switch to any available active USB host connection by using the three steps Hot Key directly, instead of manually select by pushbutton. To send commands to KVM-0407, $\boxed{\text{Scroll}}$ must be pressed twice (Step1). Then you can press [1] to [4] (Step 2) to switch between ports. **(Support PS/2 Keyboard only)**

*After invoking the Hot Key function with the [Scroll] [Scroll] **you must key in the corresponding active key (Step 2) within 3 seconds for each key press.**

(The Scroll LED will start blinking and wait for the Step 2 hotkey, after pressing any key or over 3 seconds, the keyboard LED will back to the original status.)

Three Steps Hot Key definition table

Step 1		Step2	Action
Scroll	Scroll	H	**USB HUB Auto-Switch mode**
Scroll	Scroll	1	**Switches access to the computer which connecting to host1**
Scroll	Scroll	2	**Switches access to the computer which connecting to host2**
Scroll	Scroll	3	**Switches access to the computer which connecting to host3**
Scroll	Scroll	4	**Switches access to the computer which connecting to host4**
Scroll	Scroll	Q	**Switch the HUB to host 1**
Scroll	Scroll	W	**Switch the HUB to host 2**
Scroll	Scroll	E	**Switch the HUB to host 3**
Scroll	Scroll	R	**Switch the HUB to host 4**
No Scroll Key Need		*1	**AutoScan time interval is 5 seconds (Available only when Auto-Scan function is ON)**
		*2	**AutoScan time interval is 10 seconds (Available only when Auto-Scan function is ON)**
		*3	**AutoScan time interval is 15 seconds (Available only when Auto-Scan function is ON)**
		*4	**AutoScan time interval is 20 seconds (Available only when Auto-Scan function is ON)**

* Notice : To adjust the interval time for AutoScan, you do not need to press the SCROLL key, and this can be used only by normal number key.

3. On-Screen-Display (OSD) Switch (Windows only):

You may also use the OSD utility software from the enclosed CD to switch between computers.

* Auto-Switch Function:

When Auto-Switch mode is ON:

When you enable the AutoSwitch mode will cause KVM-0407 to switch the HUB with the host together when you switch the host, that means host and HUB will switch together, it could be by hotkey, push button. This is convenient for you to let the USB device always follow the host.

There are two ways to turn the HUB Auto-Switch mode ON :
A). By hot key [Scroll+Scroll][H] : please be reference the hotkey table in page 14.
B). Press any host push button continually for 2 seconds when the Auto-Switch mode is OFF. (The Auto-Switch LED will be ON).

When Auto-Switch mode is OFF:

You must switch the hub to the new target host by hotkey.

There are two ways to turn the HUB Auto-Switch mode OFF :
A). By hot key [Scroll+Scroll][H] : please reference the hotkey table in page 14.
B). Press any host push button continually for 2 seconds when the Auto-Switch mode in ON. (The AutoSwitch LED will be OFF)..

* Auto-Scan Function:

When you press the Auto-Scan button, KVM-0407 switches cycles through all the ports and displays them on the monitor. Each port is displayed for 5,10,15,20 seconds before switching to the next. You can press the normal numeric key 1,2,3,4 to adjust the interval time(Please reference the hotkey table in page 14). If you press the Auto-Scan button again, the monitor screen will jump back to the port that it was started.

Note:
The mouse and keyboard will have no effect in this mode. This is necessary to prevent errors such as erratic movement and wrong characters to display when using the mouse or keyboard in accident.

Auto-Scan Interval timer

[n]   *(Available only when Auto-Scan function is ON)

You can change the Auto-Scan interval by pressing the appropriate number key or the number pad keys.

n	Scan Interval
[1]	5 sec.
[2]	10 sec.
[3]	15 sec.
[4]	20sec.
[5]	25sec.
[6]	30sec.
[7]	35sec.
[8]	40sec.
[9]	45sec.
[0]	50sec.

* Sun Micro System Function Key Emulation:

There are 16 special functions on the Sun Micro system keyboard, KVM-0407 can emulate these function keys via the PS/2 keyboard (it won't work on the USB keyboard). Here is the mapping table for these functions operation. To active these emulation on the PS/2 keyboard, you have to press the LEFT Window KEY first (this key usually is located between the left [Ctrl] and left [Alt]), then choice the second relative key.

Sun Micro System Function Key	PS/2 Keyboard
Stop	L_Win & L_Alt
Props	L_Win & L_Ctrl
Compose	L_Win & L_Shift
Front	L_Win & F1
Open	L_Win & F2
Find	L_Win & F3
Again	L_Win & F4
Undo	L_Win & F5
Copy	L_Win & F6
Paste	L_Win & F7
Cut	L_Win & F8
Help	L_Win & F11
Power	L_Win & F12
Mute	L_Win & 1
Volume Down	L_Win & 2
Volume UP	L_Win & 3

* Troubleshooting

If your USB keyboard and mouse connected on KVM-0407 could not work at the Windows login screen, it may be caused because the HID driver has not been installed, please follow these steps to solve this problem:

1. Shut down the host PC.
2. Connect PS/2 Keyboard to the host PC and turn it on.
3. Log in Windows system, and it will install the HID driver.
4. KVM-0407 should work properly.

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This device generates and uses radio frequency and may cause interference to radio and television reception if not installed and used properly. This has been tested and found to comply with the limits of a Class B computing device in accordance with the specifications in Part 15 of the FCC Rules. These specifications are designed to provide reasonable protection against such interference in a residential installation. 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 plugging the device in and out, the user can 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 computer into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.