USB 2.0 DVI KVMP Switch

CS1784

User Manual

www.aten.com

FCC Information

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna;
- Increase the separation between the equipment and receiver;
- Connect the equipment into an outlet on a circuit different from that which the receiver is connected;
- Consult the dealer/an experienced radio/television technician for help.

RoHS

This product is RoHS compliant.

SJ/T 11364-2006

The following contains information that relates to China.

部件名称	有毒有害物质或元素					
	铅	汞	镉	六价铬	多溴联苯	多溴二苯醚
电器部件	●	○	○	○	○	○
机构部件	○	○	○	○	○	○

○: 表示该有毒有害物质在该部件所有均质材料中的含量均在SJ/T 11363-2006规定的限量要求之下。

●: 表示符合欧盟的豁免条款，但该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T 11363-2006的限量要求。

×: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出SJ/T 11363-2006的限量要求。

User Information

Online Registration

Be sure to register your product at our online support center:

International		http://support.aten.com
North America	ATEN TECH	http://www.aten-usa.com/product_registration
	ATEN NJ	http://support.aten.com

Telephone Support

For telephone support, call this number:

International		886-2-8692-6959
North America	ATEN TECH	1-888-999-ATEN
	ATEN NJ	1-732-356-1703

User Notice

All information, documentation, and specifications contained in this manual are subject to change without prior notification by the manufacturer. The manufacturer makes no representations or warranties, either expressed or implied, with respect to the contents hereof and specifically disclaims any warranties as to merchantability or fitness for any particular purpose. Any of the manufacturer's software described in this manual is sold or licensed *as is*. Should the programs prove defective following their purchase, the buyer (and not the manufacturer, its distributor, or its dealer), assumes the entire cost of all necessary servicing, repair and any incidental or consequential damages resulting from any defect in the software.

The manufacturer of this system is not responsible for any radio and/or TV interference caused by unauthorized modifications to this device. It is the responsibility of the user to correct such interference.

The manufacturer is not responsible for any damage incurred in the operation of this system if the correct operational voltage setting was not selected prior to operation. PLEASE VERIFY THAT THE VOLTAGE SETTING IS CORRECT BEFORE USE.

Package Contents

The CS1784 package consists of:

- 1 CS1784 USB 2.0 DVI KVMP Switch
- 4 Custom DVI Dual Link 1.8 m Cable Sets
- 1 USB-to-PS/2 Converter
- 1 Firmware Upgrade Cable
- 1 Power Adapter
- 1 User Manual*
- 1 Quick Start Guide

Check to make sure that all the components are present and that nothing got damaged in shipping. If you encounter a problem, contact your dealer.

Read this manual thoroughly and follow the installation and operation procedures carefully to prevent any damage to the unit, and/or any of the devices connected to it.

* Features may have been added to the CS1784 since this manual was printed. Please visit our website to download the most up-to-date version of the manual.

Manual Part No. PAPE-0285-100G
Manual Date: 2008-09-05

Contents

About this Manual

This User Manual is provided to help you get the most from your system. It covers all aspects of installation, configuration and operation. An overview of the information found in the manual is provided below.

Chapter 1, Introduction, introduces you to the CS1784 system. Its purpose, features and benefits are presented, and its front and back panel components are described.

Chapter 2, Hardware Setup, describes how to set up your installation. Diagrams showing the necessary steps are provided.

Chapter 3, Basic Operation, explains the fundamental concepts involved in operating the CS1784.

Chapter 4, Keyboard Port Operation, details all of the concepts and procedures involved in the keyboard hotkey operation of your CS1784 installation.

Chapter 5, Keyboard Emulation, provides tables that list the PC to Mac and PC to Sun keyboard emulation mappings.

Chapter 6, The Firmware Upgrade Utility, explains how to use this utility to upgrade the CS1784's firmware with the latest available versions.

An Appendix, provides specifications and other technical information regarding the CS1784.

Conventions

This manual uses the following conventions:

Monospaced	Indicates text that you should key in.
[ ]	Indicates keys you should press. For example, [Enter] means to press the **Enter** key. If keys need to be chorded, they appear together in the same bracket with a plus sign between them: [Ctrl+Alt].
1.	Numbered lists represent procedures with sequential steps.
♦	Bullet lists provide information, but do not involve sequential steps.
→	Indicates selecting the option (on a menu or dialog box, for example), that comes next. For example, Start → Run means to open the *Start* menu, and then select *Run*.
⚠	Indicates critical information.

Product Information

For information about all ATEN products and how they can help you connect without limits, visit ATEN on the Web or contact an ATEN Authorized Reseller. Visit ATEN on the Web for a list of locations and telephone numbers:

International		http://www.aten.com
North America	ATEN TECH	http://www.aten-usa.com
	ATEN NJ	http://www.aten.com

Chapter 1
Introduction

Overview

The CS1784 USB 2.0 DVI KVMP Switch charts a revolutionary new direction in KVM (Keyboard, Video, Mouse) switch functionality by combining a 4-port KVM switch with a 2-port USB 2.0 hub at the same time as providing an interface for a DVI monitor. The CS1784 also supports 2.1 channel surround sound to give a theater digital audio experience that enlivens video playback.

As a KVM switch, it allows users to access four computers from a single USB keyboard, USB mouse, and monitor console. As a USB hub, it permits each computer to access any peripherals connected to the hub on a "one computer at a time" basis.

The CS1784's independent (asynchronous) switching feature allows the KVM focus to be on one computer while the USB peripheral focus is on another. This eliminates the need to purchase a separate USB hub as well as the need to purchase separate stand-alone peripheral sharers – such as print servers, modem splitters, etc.

The CS1784 further improves on previous designs with DVI (Digital Visual Interface) connectors, and the transfer of keyboard and mouse data to the computers via a fast, reliable USB connection. DVI supports both digital video input (flat panel displays, data projectors, plasma displays, digital TVs and set-top boxes) and analog video input (traditional monitors and TVs).

In addition to the CS1784's 2.1 channel surround sound functionality, a single microphone can provide audio input to each of the computers, and you can listen to the audio output of each computer on a single set of speakers (on a one-at-a-time basis). As with the USB peripherals, the audio focus can be independent of the KVM focus.

Setup is fast and easy; simply plug cables into their appropriate ports. There is no software to configure, no installation routines, and no incompatibility problems. Since the CS1784 intercepts keyboard input directly, it will work on multiple computing platforms (PC (x86/x64), Macintosh PowerPC, and Sun Microsystems Sparc). There are two convenient methods to access the computers: port selection pushbuttons located on the unit's front panel; and hotkey combinations entered from the keyboard.

Features

- 4-port DVI KVMP switch with USB 2.0 support and 2.1 channel surround sound audio
- One USB console controls four computers and two additional USB devices
- 2-port USB 2.0 hub built in
- Fully compliant with the USB 2.0 specification
- Full bass response provides a rich experience for 2.1 channel surround sound systems
- Independent switching of KVM, USB, and Audio focus
- DVI digital and analog monitor support – fully compliant with the DVI specifications; also HDCP compliant
- Superior video quality:
  - DVI-D:
    - 1920 x 1200 @ 60Hz (Single Link)
    - 2560 x 1600 @ 60Hz (Dual Link)
    - Supports Apple 20”, 23”, 30” Cinema Display
    - Supports ViewSonic 22” LCD monitor VP2290b up to 3840 x 2400 @ 13Hz (Single Link)
  - DVI-A:
    - 2048 x 1536; DDC2B
- Supports widescreen resolutions
- Computer selection via front panel pushbuttons and hotkeys
- Multiplatform support – Windows 2000/XP/Vista, Linux*, Mac, and Sun
- Console mouse port emulation / bypass feature supports full mouse driver and multifunction mice
- Display Emulation Technology – reads and remembers the monitor’s brand and display information
- Complete keyboard emulation for error-free booting
- Sun/Mac keyboard support and emulation
- Auto Scan Mode for monitoring all computers
- Firmware upgradable

***** Supports Linux Kernel 2.6 and higher. The CS1784 has a built-in USB 2.0 hub, so will not support PCs or OS that do not support USB 2.0.

Requirements

Console

- A DVI compatible monitor capable of the highest possible resolution
- A USB mouse
- A USB keyboard
- Microphone and speakers

Note: A PS/2 keyboard and mouse can be used by using the converter included in the CS1784 package.

Computer

The following equipment must be available on each computer:

- A DVI port

Note: The quality of the display is affected by the quality of the DVI display cards. For best results, we recommend you purchase a high quality product.

- USB Type A port
- Audio ports (optional)

Cables

Four 1.8 m DVI-D KVM custom cable sets are provided in the CS1784 package, which incorporate cables for microphones (pink) and 2.1 channel surround sound speakers (green).

Operating Systems

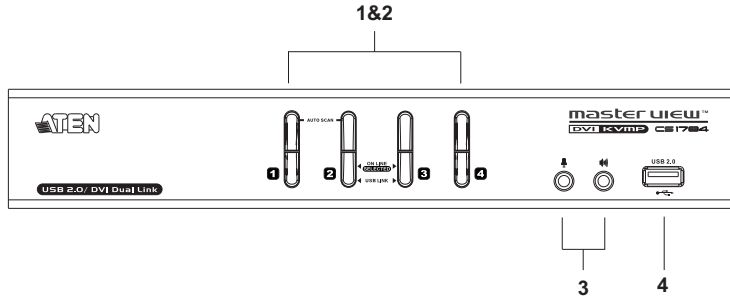
Supported operating systems are shown in the table, below:

OS		Version
Windows		2000 and higher
Linux	RedHat	9.0 and higher; Fedora Core 4 and higher
	SuSE	9.0 and higher
UNIX	AIX	4.3 and higher
	FreeBSD	4.2 and higher
	Sun	Solaris 9 and higher
Novell	Netware	6.0 and higher
Mac		OS 9 and higher
DOS		6.22 and higher

Note: Supports Linux Kernel 2.6 and higher.

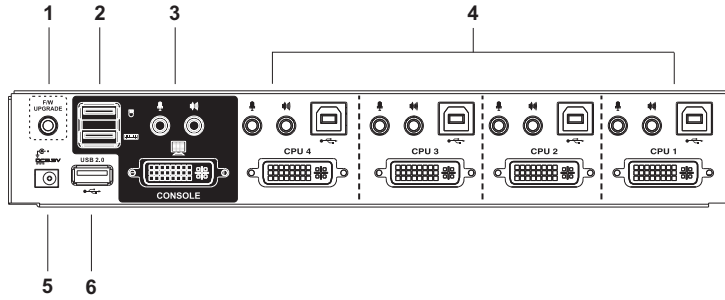
Components

CS1784 Front View



No.	Component	Description
1	Port Selection Pushbuttons	Press a pushbutton for longer than two seconds to bring the KVM, USB, and audio focus to the computer attached to its corresponding port. Press a pushbutton for less than two seconds to bring only the KVM focus to the computer attached to its corresponding port. Press pushbuttons 1 and 2 simultaneously for 2 seconds to start Auto Scan Mode. See *Auto Scanning*, page 13.
2	Port LEDs	The Port LEDs are built into the Port Selection Pushbuttons. The upper ones are the KVM Port LEDs; the lower ones are the USB LEDs: **KVM** Lights DIM ORANGE to indicate that the computer attached to the corresponding port is up and running (On Line). Changes to BRIGHT ORANGE to indicate that the computer attached to its corresponding port is the one that has the KVM focus (Selected). Flashes to indicate that the computer attached to its corresponding port is being accessed under Auto Scan mode. **USB** Lights BRIGHT GREEN to indicate that the computer attached to its corresponding port is the one that has access to the USB peripherals.
3	Console Ports (Audio)	Your speakers and microphone plug in here.
4	USB 2.0 Peripheral Port	USB 2.0 peripherals (printers, scanners, etc.) can plug into this port.

CS1784 Rear View



No.	Component	Description
1	Firmware Upgrade Port	The Firmware Upgrade Cable that transfers the firmware upgrade data from the administrator's computer to the CS1784 plugs into this connector. See *The Firmware Upgrade Utility*, page 23, for details.
2	USB Console Ports	Your USB keyboard and USB mouse plug in here.
3	Console Port Section	The cables from your monitor, microphone, and speakers plug in here. Each connector is marked with an appropriate icon to indicate itself.
4	CPU Port Section	The cables that link the switch to your computers plug in here. Each CPU port is comprised of a microphone jack, speaker jack, USB type B socket and a DVI-I connector
5	Power Jack	The power adapter cable plugs into this jack.
6	USB 2.0 Peripheral Port	USB 2.0 peripherals (printers, scanners, etc.) can plug into this port.

Chapter 2
Hardware Setup

1. Important safety information regarding the placement of this device is provided on page 29. Please review it before proceeding.
2. Make sure that power to all devices that you will be installing has been turned off. You must unplug the power cords of any computers that have the Keyboard Power On function.

Cable Connection

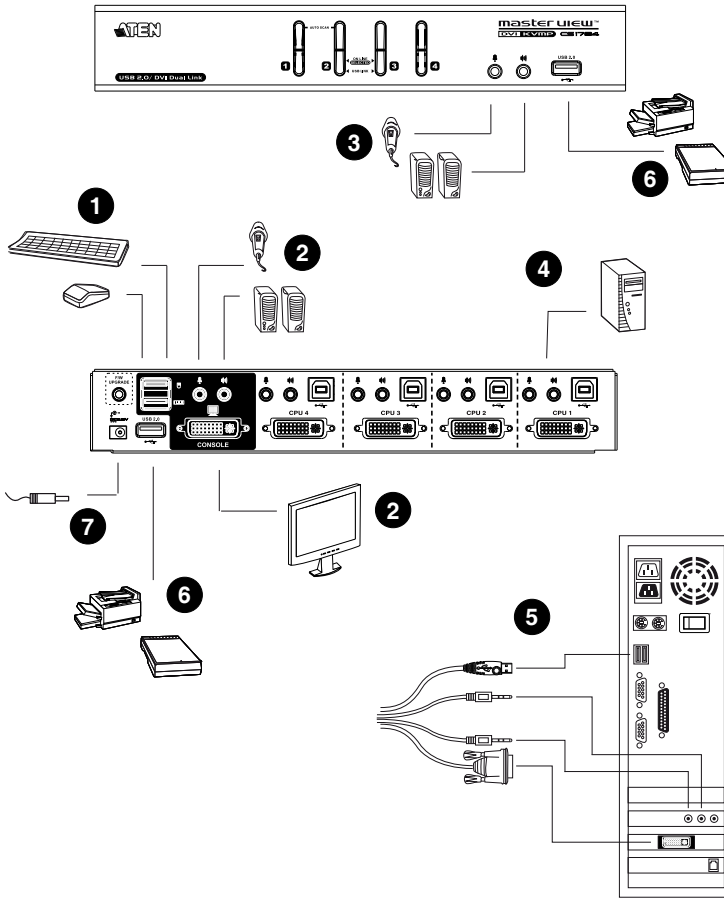
To set up your CS1784 installation, refer to the installation diagrams on the following pages (the numbers in the diagrams correspond to the steps, below), and do the following:

1. Plug your USB keyboard and USB mouse into the USB Console Ports located on the unit's rear panel.
2. Plug your secondary microphone, speakers, and monitor into the Console ports located on the unit's rear panel and power on the monitor.
3. Plug your main microphone and speakers into the Console microphone and 2.1 surround sound speaker jacks located on the unit's front panel. The microphone and speakers plugged into this panel have priority over those plugged into the rear panel.
4. Using the KVM cable set, plug the DVI connector into any available DVI socket in the KVM Port section of the switch, then plug the accompanying USB, microphone and speaker connectors into their corresponding USB, microphone, and speaker sockets.

   Note: Verify that all the plugs are in the same KVM Port sockets (all in Port 1, all in Port 2, etc.). Each each socket is marked with an appropriate icon.

5. At the other end of the cable, plug the USB, video, microphone, and speaker cables into their respective ports on the computer.

6. Plug your USB peripherals into the type A sockets (one is located on the front, the second is located on the rear).
7. Plug the power adapter that came with your switch into an AC power source, then plug power adapter cable into the switch's Power Jack.
8. Power on the computers.



Chapter 3
Basic Operation

Manual Switching

There are two convenient methods to access the computers: Manual – which involves pressing the port selection pushbuttons located on the unit's front panel; and Hotkey – which involves entering combinations from the keyboard. Hotkey port selection is discussed in the next chapter.

For manual port selection:

- Press and release a port selection pushbutton to bring the KVM focus to the computer attached to its corresponding port. The USB and Audio focus do not change – they stay with the port that they are already on.
- Press a port selection pushbutton *twice* to bring the audio focus to the computer attached to its corresponding port.
- Press and hold a port selection pushbutton for *more than 2 seconds* to bring the KVM focus plus the USB and Audio focus to the computer attached to its corresponding port.
- Press and hold port selection pushbuttons 1 and 2 simultaneously for *2 seconds* to start Auto Scan Mode. See page 13, for details.

Note: Press and release either port selection pushbutton to stop Auto Scan Mode. The KVM focus goes to the computer attached to the corresponding port of the pushbutton you pressed.

Hot Plugging

The CS1784 supports USB hot plugging – components can be removed and added back into the installation by unplugging their cables from the USB hub ports without the need to shut the unit down.

Powering Off and Restarting

If it becomes necessary to Power Off the unit, before starting it back up you must do the following:

1. Shut down all the computers that are attached to the switch.
2. Unplug the switch's power adapter cable.
3. Wait 10 seconds, then plug the switch's power adapter cable back in.
4. After the switch is up, Power On the computers.

Port ID Numbering

Each KVM port on the CS1784 switch is assigned a port number (1, 2, 3, or 4). The port numbers are marked on the rear panel of the switch (see *CS1784 Rear View*, page 6, for details).

The Port ID of a computer is derived from the KVM port number it is connected to. For example, a computer connected to KVM port 2 has a Port ID of 2.

The Port ID is used to specify which computer gets the KVM USB peripheral, and audio focus with the Hotkey port selection method (see *Port Switching*, page 11, for details).

Alternative Manual Port Selection Settings

When Hotkey Setting Mode has been activated, pressing [S] will invoke the alternative front panel pushbutton manual port selection functions as follows (see *Alternative Manual Port Selection Settings*, page 18):

- Press a port selection pushbutton *once* to bring the KVM, audio and USB focus to the computer attached to its corresponding port.
- Press a port selection pushbutton *twice* to bring the audio focus to the computer attached to its corresponding port.
- Press and hold a port selection pushbutton for *more than 2 seconds* to bring only the KVM focus to the computer attached to its corresponding port.
- Press and hold port selection pushbuttons 1 and 2 simultaneously for *2 seconds* to start Auto Scan Mode. See page 13, for details.

Chapter 4
Keyboard Port Operation

The CS1784 provides an extensive, easy-to-use, hotkey function that makes it convenient to control and configure your KVM installation from the keyboard. Hotkeys provide asynchronous (independent) switching of the KVM, USB hub and audio focus. If you wish, you can give one computer the KVM console focus, another the USB hub focus and the other two the audio focus.

Port Switching

All port switches begin with tapping the **Scroll Lock** key twice. The tables below describe the actions that each combination performs.

Note: If using the Scroll Lock key conflicts with other programs running on the computer, the **Ctrl** key can be used, instead. See *Alternate Port Switching Keys*, page 15, for details.

Cycling Through the Ports

Hotkey	Action
[Scroll Lock] [Scroll Lock] [Enter]	Brings the **KVM**, **USB hub**, and **audio** focus from the port that currently has the KVM focus to the next port on the installation (1 to 2; 2 to 3; 3 to 4; 4 to 1 for the CS1784).
[Scroll Lock] [Scroll Lock] [K] [Enter]	Brings only the **KVM** focus from the port that currently has it to the next port on the installation. The USB and audio focus remain where they are.
[Scroll Lock] [Scroll Lock] [U] [Enter]	Brings only the **USB hub** focus from the port that currently has it to the next port on the installation. The KVM and audio focus remain where they are.
[Scroll Lock] [Scroll Lock] [S] [Enter]	Brings only the **audio** focus from the port that currently has it to the next port on the installation. The KVM and USB hub focus remain where they are.

Going Directly to a Port

Hotkey	Action
[Scroll Lock] [Scroll Lock] [n] [Enter]	Brings the **KVM**, **USB hub**, and **audio** focus to the computer attached to the port corresponding to the specified Port ID.
[Scroll Lock] [Scroll Lock] [n] [K] [Enter]	Brings only the **KVM** focus to the computer attached to the specified port. The USB hub and audio focus remain where they are.
[Scroll Lock] [Scroll Lock] [n] [U] [Enter]	Brings only the **USB hub** focus to the computer attached to the specified port. The KVM and audio focus remain where they are.
[Scroll Lock] [Scroll Lock] [n] [S] [Enter]	Brings only the **audio** focus to the computer attached to the specified port. The KVM and USB hub focus remain where they are.
[Scroll Lock] [Scroll Lock] [n] [K] [U] [Enter]	Brings the **KVM** and **USB hub** focus to the computer attached to the specified port. The audio focus remains where it is.
[Scroll Lock] [Scroll Lock] [n] [K] [S] [Enter]	Brings the **KVM** and **audio** focus to the computer attached to the specified port. The USB hub focus remains where it is.
[Scroll Lock] [Scroll Lock] [n] [U] [S] [Enter]	Brings the **USB hub** and **audio** focus to the computer attached to the specified port. The KVM focus remains where it is.
[Scroll Lock] [Scroll Lock] [n] [K] [S] [U] [Enter]	Brings the **KVM**, **USB hub** and **audio** focus to the computer attached to the specified port. **Note:** This is the same action as [Num Lock] [-] [n] [Enter]

Note: The **n** stands for the computer's Port ID number (1, 2, 3, or 4). See *Port ID Numbering*, page 10, for details. Replace the **n** with the appropriate Port ID when entering hotkey combinations.

Auto Scanning

The CS1784's Auto Scan feature automatically cycles the KVM focus through the computer ports at regular intervals. This allows you to monitor the computer activity without having to take the trouble of switching from port to port manually. See the table below for details.

Hotkey	Action
[Scroll Lock] [Scroll Lock] [A] [Enter]	Invokes Auto Scan. The KVM focus cycles from port to port at **5 second intervals**. Five second intervals is the Default setting.
[Scroll Lock] [Scroll Lock] [A] [n] [Enter]	The KVM focus cycles from port to port at **n** second intervals.

Note: 1. The **n** stands for the number of seconds that the CS1784 should dwell on a port before moving on to the next. Replace the **n** with a number between 1 and 99 when entering this hotkey combination.

2. While Auto Scan Mode is in effect, ordinary keyboard and mouse functions are suspended – only Auto Scan Mode compliant keystrokes and mouse clicks can be input. You must exit Auto Scan Mode in order to regain normal control of the console.

3. Although the video focus switches from port to port, the keyboard, mouse, and USB focus do not switch. They stay at the port they were on when Auto Scanning started.

4. To exit Auto Scan Mode, press the **Esc** key, or the **Spacebar**.

Hotkey Setting Mode

Hotkey Setting Mode is used to set up your CS1784 switch configuration. All operations begin with invoking Hotkey Setting Mode (HSM).

Invoking HSM

To invoke HSM do the following:

1. Press and hold down **[Num Lock]**.
2. Press and release **[-]**.
3. Release **[Num Lock]**.

> **Note:** There is an alternate key combination to invoke HSM. See below for details.

When HSM is active, the Caps Lock, and Scroll Lock LEDs flash in succession to indicate that HSM is in effect. They stop flashing and revert to normal status when you exit HSM.

Ordinary keyboard and mouse functions are suspended – only Hotkey compliant keystrokes and mouse clicks (described in the sections that follow), can be input.

At the conclusion of some hotkey operations, you automatically exit hotkey mode. With some operations, you must exit manually. To exit HSM manually, press the **Esc** key, or the **Spacebar**.

Alternate HSM Invocation Keys

An alternate set of HSM invocation keys is provided in case the default set conflicts with programs running on the computers.

To switch to the alternate HSM invocation set, do the following:

1. Invoke HSM (see page 14).
2. Press and release **[H]**.

   The HSM invocation keys become the Ctrl key (instead of Num Lock) and the F12 key (instead of minus).

Note: This procedure is a toggle between the two methods. To revert back to the original HSM invocation keys, invoke HSM, then press and release the **H** key again.

Alternate Port Switching Keys

The port switching activation keys can be changed from tapping the Scroll Lock key twice ([Scroll Lock] [Scroll Lock]) to tapping the Ctrl key twice. To change the port switching activation keys, do the following:

1. Invoke HSM (see page 14).
2. Press and release **[T]**.

Note: This procedure is a toggle between the two methods. To revert back to the original [Scroll Lock] [Scroll Lock] method, invoke HSM, then press and release the **T** key again.

Keyboard Operating Platform

The CS1784's default port configuration is for a PC compatible keyboard operating platform. If your console uses a PC compatible keyboard and you have a Mac or Sun attached to a port, for example, you can change the port's keyboard operating platform configuration so that the PC compatible keyboard emulates the Mac or Sun keyboard. The procedure is as follows:

1. Bring the KVM focus to the port you want to set.
2. Invoke HSM (see page 14).
3. Press and release the appropriate Function key (see table below). After completing this procedure, you automatically exit HSM.

Function Key	Operation
[F2]	Enables Mac keyboard emulation, see *Mac Keyboard Emulation*, page 27, for details.
[F3]	Enables Sun keyboard emulation, see *Sun Keyboard Emulation*, page 28, details.
[F10]	Auto detects the keyboard operating platform (for PC compatible systems). Activates Pass Through keyboard mode (keystrokes are sent directly to the computer instead of through the Mac or Sun emulator).

List Hotkey Settings

To see a listing of the current hotkey settings, do the following:

1. Open a text editor or word processor and use its *Paste* function to display the settings.
2. Invoke HSM (see page 14).
3. Press and release **[F4]**.

USB Reset

If the USB loses focus and needs to be reset, do the following:

1. Invoke HSM (see page 14).
2. Press and release **[F5]**

Hotkey Beeper Control

The Beeper can be hotkey toggled On and Off. To toggle the Beeper, do the following:

1. Invoke HSM (see page 14).
2. Press and release **[B].**

The Beeper toggles On or Off.

Disable Port Switching Keys

To disable the Port Switching Keys ([Scroll Lock] [Scroll Lock] / [Ctrl] [Ctrl]), do the following:

1. Invoke HSM (see page 14).
2. Press **[X] [Enter]**.

Note: This procedure is a toggle. To enable the Port Switching keys repeat steps 1 and 2.

Firmware Upgrade Mode

To set the CS1784 to Firmware Upgrade Mode, do the following:

1. Invoke HSM (see page 14).
2. Key in: upgrade
3. Press **[Enter]**.

   The front panel LEDs flash to indicate Firmware Upgrade Mode is in effect.

Note: To exit Firmware Upgrade Mode, you must power off the switch.

Restore Default Settings

To reset the CS1784 to its default hotkey settings, do the following:

1. Invoke HSM (see page 14).
2. Press **[R] [Enter]**.

All hotkey settings return to the factory default settings.

Display Emulation Technology

To invoke Display Emulation Technology so the CS1784 reads and remembers the brand and display information of the monitor attached to the corresponding port, do the following:

1. Invoke HSM (see page 14)
2. Press **[D]**

Alternative Manual Port Selection Settings

To toggle between the default and the alternative front panel pushbutton manual port selection settings, do the following:

1. Invoke HSM (see page 14)
2. Press **[S]**

See *Alternative Manual Port Selection Settings*, page 10, for full details of the alternative front panel pushbutton manual port selection settings.

Mouse Emulation Control

To toggle between mouse emulation enabled and disabled, do the following:

1. Invoke HSM (see page 14).
2. Press **[M]**.

Other OS Mode

To reset keyboards and mice under some special OS that do not support USB 2.0, do the following:

1. Invoke HSM (see page 14).
2. Press **[F1]**.

HSM Summary Table

After invoking HSM (see page 14), key in one of the following keys to perform the corresponding function:

Key	Function
[H]	Toggles between the default and alternate HSM invocation keys.
[T]	Toggles between the default and alternate Port Switching keys.
[F2]	Enables Mac keyboard emulation.
[F3]	Enables Sun keyboard emulation
[F10]	Removes keyboard emulation mappings. Key press data is passed straight through.
[F4]	Lists the current hotkey settings via the *Paste* function of a text editor.
[F5]	Performs a USB keyboard and mouse reset.
[B]	Toggles the beeper On and Off.
[X] [Enter]	Enables/Disables the Port Switching keys.
[R] [Enter]	Resets the hotkey settings to their default status.
[upgrade] [Enter]	Invokes Firmware Upgrade Mode.
[D]	Invokes the read-and-remember function for the EDID of the computer display attached to the corresponding port
[S]	Toggles between default and alternative button operation settings
[M]	Toggles between mouse emulation enable and disable.
[F1]	Resets keyboard and mouse under some special OS.

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Chapter 5
Keyboard Emulation

Mac Keyboard

The PC compatible (101/104 key) keyboard can emulate the functions of the Mac keyboard. The emulation mappings are listed in the table below.

PC Keyboard	Mac Keyboard
[Shift]	Shift
[Ctrl]	Ctrl
	
[Ctrl] [1]	
[Ctrl] [2]	
[Ctrl] [3]	
[Ctrl] [4]	
[Alt]	Alt
[Print Screen]	F13
[Scroll Lock]	F14
	=
[Enter]	Return
[Backspace]	Delete
[Insert]	Help
[Ctrl] 	F15

Note: When using key combinations, press and release the first key (Ctrl), then press and release the activation key.

Sun Keyboard

The PC compatible (101/104 key) keyboard can emulate the functions of the Sun keyboard when the Control key [Ctrl] is used in conjunction with other keys. The corresponding functions are shown in the table below.

PC Keyboard	Sun Keyboard
[Ctrl] [T]	Stop
[Ctrl] [F2]	Again
[Ctrl] [F3]	Props
[Ctrl] [F4]	Undo
[Ctrl] [F5]	Front
[Ctrl] [F6]	Copy
[Ctrl] [F7]	Open
[Ctrl] [F8]	Paste
[Ctrl] [F9]	Find
[Ctrl] [F10]	Cut
[Ctrl] [1]	
[Ctrl] [2]	
[Ctrl] [3]	
[Ctrl] [4]	
[Ctrl] [H]	Help
	Compose
	◆

Note: When using key combinations, press and release the first key (Ctrl), then press and release the activation key.

Chapter 6
The Firmware Upgrade Utility

The Windows-based Firmware Upgrade Utility (FWUpgrade.exe) provides a smooth, automated process for upgrading the KVM switch's firmware.

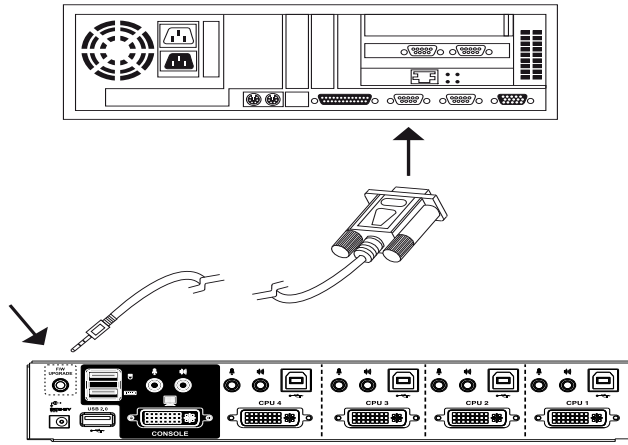
The Utility comes as part of a Firmware Upgrade Package that is specific for each device. New firmware upgrade packages are posted on our Website as new firmware revisions become available. Check the web site regularly to find the latest packages and information relating to them:

```
http://www.aten.com
```

Before you Begin

To prepare for the firmware upgrade, do the following:

1. From a computer that is not part of your KVM installation go to our Internet support site and choose the model name that relates to your device (CS1784) to get a list of available Firmware Upgrade Packages.
2. Choose the Firmware Upgrade Package you want to install (usually the most recent), and download it to your computer.
3. Use the *Firmware Upgrade Cable* provided with this unit, to connect a COM port on your computer to the *Firmware Upgrade Port* of your switch.



4. Shut down the computers on your CS1784 installation.

5. Invoke Firmware Upgrade Mode (see *Firmware Upgrade Mode*, page 17).

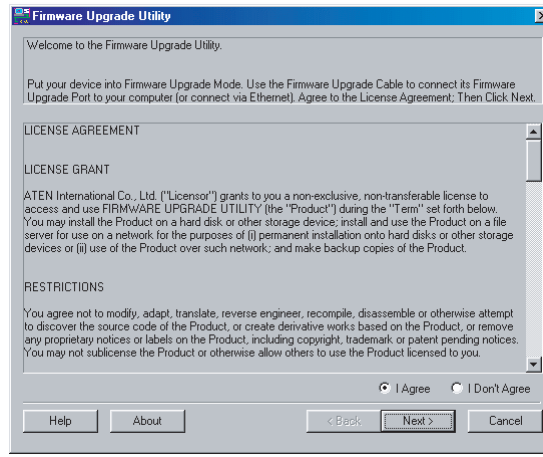
   The front panel LEDs flash together to indicate Firmware Upgrade Mode is in effect.

Starting the Upgrade

To upgrade your firmware:

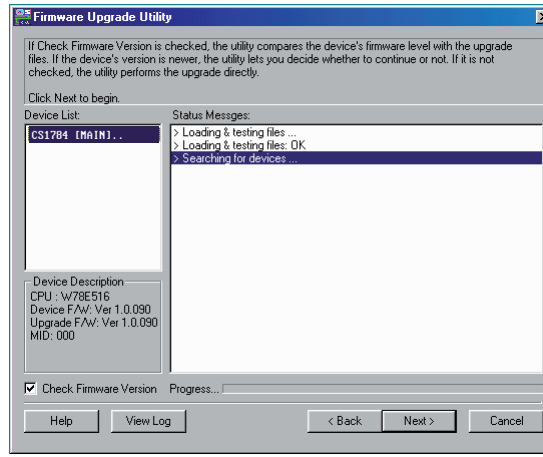
1. Run the downloaded Firmware Upgrade Package file – either by double clicking the file icon, or by opening a command line and entering the full path to it.

   The *Firmware Upgrade Utility* Welcome screen appears:



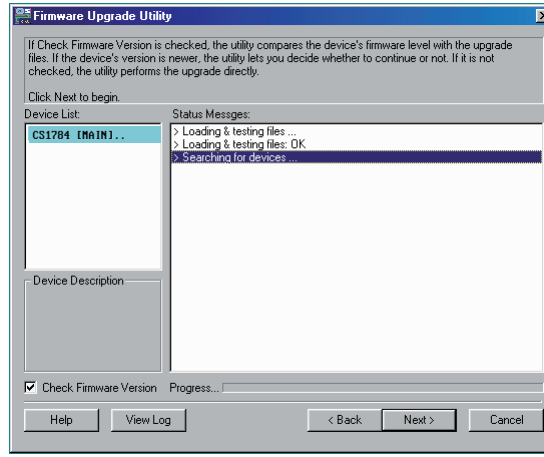
> **Note:** The screens shown in this section are for reference only. The wording and layout of the actual screens put up by the Firmware Upgrade Utility may vary slightly from these examples.

2. Read the License Agreement (enable the *I Agree* radio button).
3. Click **Next** to continue. The Firmware Upgrade Utility main screen appears:

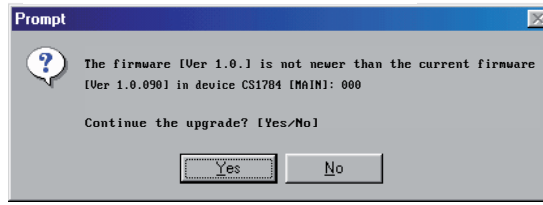


The Utility inspects your installation. All the devices capable of being upgraded by the package are listed in the *Device List* panel.

4. As you select a device in the list, its description appears in the Device Description panel.



5. After you have made your device selection(s), Click **Next** to perform the upgrade.



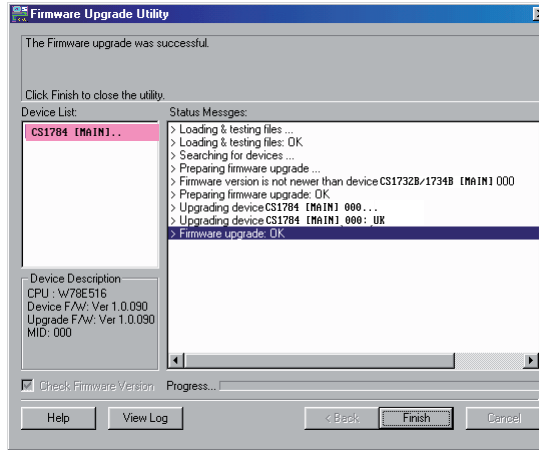
If you enabled Check Firmware Version, the Utility compares the device's firmware level with that of the upgrade files. If it finds that the device's version is higher than the upgrade version, it brings up a dialog box informing you of the situation and gives you the option to Continue or Cancel.

If you didn't enable *Check Firmware Version*, the Utility installs the upgrade files without checking whether they are a higher level, or not.

As the Upgrade proceeds, status messages appear in the Status Messages panel, and the progress toward completion is shown on the *Progress* bar.

Upgrade Succeeded

After the upgrade has completed, a screen appears to inform you that the procedure was successful:



Click **Finish** to close the Firmware Upgrade Utility.

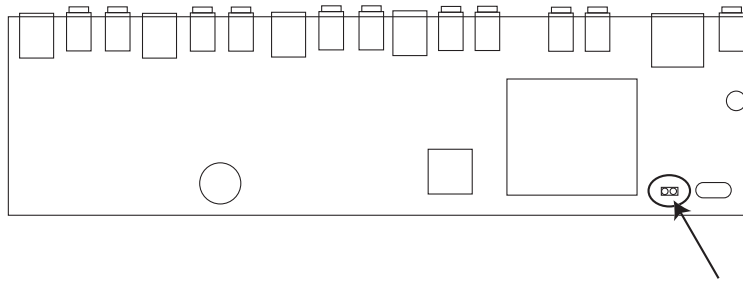
After a successful completion, the switches exit Firmware Upgrade Mode, and reset themselves.

Upgrade Failed

Shorting the Mainboard Jumper

If the *Upgrade Succeeded* screen doesn't appear, it means that the upgrade failed to complete successfully, in which case you should do the following:

1. Power off the CS1784 and remove its housing.
2. Using a jumper cap, short the jumper on the mainboard labeled J17. The diagram below indicates the jumper location on the CS1784 board:



3. Power on the CS1784. It will now work with the factory default firmware.
4. Do the firmware upgrade procedure again.
5. After the upgrade procedure completes, power off the switch, remove the jumper cap from J17, close the housing, and power the CS1784 on again.

Appendix

Safety Instructions

- Read all of these instructions. Save them for future reference.
- Follow all warnings and instructions marked on the device.
- To prevent damage to your installation it is important that all devices are properly grounded.
- Do not place the device on any unstable surface (cart, stand, table, etc.). If the device falls, serious damage will result.
- Do not use the device near water.
- Do not place the device near, or over, radiators or heat registers.
- The device cabinet is provided with slots and openings to allow for adequate ventilation. To ensure reliable operation, and to protect against overheating, these openings must never be blocked or covered.
- The device should never be placed on a soft surface (bed, sofa, rug, etc.) as this will block its ventilation openings. Likewise, the device should not be placed in a built-in enclosure unless adequate ventilation has been provided.
- Never spill liquid of any kind on the device.
- Unplug the device from the wall outlet before cleaning. Do not use liquid or aerosol cleaners. Use a damp cloth for cleaning.
- The device should be operated from the type of power source indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.
- The device is designed for IT power distribution systems with 230V phase-to-phase voltage.
- To prevent damage to your installation, it is important that all devices are properly grounded.
- The device is equipped with a 3-wire grounding type plug. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not attempt to defeat the purpose of the grounding-type plug. Always follow your local/national wiring codes.
- Do not allow anything to rest on the power cord or cables. Route the power cord and cables so that they cannot be stepped on or tripped over.

- If an extension cord is used with this device make sure that the total of the ampere ratings of all products used on this cord does not exceed the extension cord ampere rating. Make sure that the total of all products plugged into the wall outlet does not exceed 15 amperes.
- To help protect your system from sudden, transient increases and decreases in electrical power, use a surge suppressor, line conditioner, or un-interruptible power supply (UPS).
- Position system cables and power cables carefully; Be sure that nothing rests on any cables.
- Never push objects of any kind into or through cabinet slots. They may touch dangerous voltage points or short out parts resulting in a risk of fire or electrical shock.
- Do not attempt to service the device yourself. Refer all servicing to qualified service personnel.
- If the following conditions occur, unplug the device from the wall outlet and bring it to qualified service personnel for repair.
  - The power cord or plug has become damaged or frayed.
  - Liquid has been spilled into the device.
  - The device has been exposed to rain or water.
  - The device has been dropped, or the cabinet has been damaged.
  - The device exhibits a distinct change in performance, indicating a need for service.
  - The device does not operate normally when the operating instructions are followed.
- Only adjust those controls that are covered in the operating instructions. Improper adjustment of other controls may result in damage that will require extensive work by a qualified technician to repair.

Technical Support

Technical support is available both by email and online (with a browser over the web):

International

Email Support		support@aten.com
Online Support	Technical Support	http://support.aten.com
	Troubleshooting Documentation Software Updates	http://www.aten.com
Telephone Support		886-2-8692-6959

North America

Email Support		ATEN TECH	support@aten-usa.com
		ATEN NJ	sales@aten.com
Online Support	Technical Support	ATEN TECH	http://www.aten-usa.com/support
		ATEN NJ	http://support.aten.com
	Troubleshooting Documentation Software Updates	ATEN TECH	http://www.aten-usa.com
		ATEN NJ	http://www.aten.com
Telephone Support		ATEN TECH	1-888-999-ATEN
		ATEN NJ	1-732-356-1703

When you contact us, please have the following information ready beforehand:

- Product model number, serial number, and date of purchase.
- Your computer configuration, including operating system, revision level, expansion cards, and software.
- Any error messages displayed at the time the error occurred.
- The sequence of operations that led up to the error.
- Any other information you feel may be of help.

Specifications

Function		CS1784	
Computer Connections		4	
Port Selection		Front Panel Pushbuttons; Hotkey	
Console Connectors	Keyboard	1 x USB Type A F (black, rear panel)	
	Mouse	1 x USB Type A F (black, rear panel)	
	Video	1 x DVI-I F (white)	
	Speaker	2 x Mini Stereo Jack F (Green, 1 x front panel, 1 x rear panel)	
	Microphone	2 x Mini Stereo Jack F (Pink, 1 x front panel, 1 x rear panel)	
Computer Connectors	KB / Mouse	4 x USB Type B F (white)	
	Video	4 x DVI-I F (white)	
	Audio	Speaker	4 x Mini Stereo Jack F (Green)
		Microphone	4 x Mini Stereo Jack F (Pink)
	F/W Upgrade	1 x 4-conductor 3.5 mm Jack	
	Power	1 x DC 5.3V Jack	
	USB 2.0 Hub	2 x USB Type A F (white; 1 x front panel; 1 x rear panel)	
Switches	Selected	4 x Pushbutton	
LEDs	On Line	4 (Orange)	
	USB LInk	4 (Green)	
Power Consumption		DC 5.3V, 9W, 1.7A	
Scan Interval		1–99 secs. (5 secs. default)	
KB / Mouse Emulation		USB	
Video		DVI-D: 2560 x 1600 @ 60Hz (Dual Link) 1920 x 1200 @ 60Hz (Single Link) 3840 x 2400 @ 13Hz (Single Link) DVI-A: 2048 x 1536; DDC2B	
Environment	Operating Temp.	0–50ºC	
	Storage Temp.	-20–60ºC	
	Humidity	0–80% RH, Non-condensing	
Housing		Metal	
Weight		0.94 kg	
Dimensions (L x W x H)		27.00 x 8.70 x 5.50 cm	

Troubleshooting

Overview

Operation problems can be due to a variety of causes. The first step in solving them is to make sure that all cables are securely attached and seated completely in their sockets.

In addition, updating the product's firmware may solve problems that have been discovered and resolved since the prior version was released. If your product is not running the latest firmware version, we strongly recommend that you upgrade. See Chapter 6, *The Firmware Upgrade Utility*, for upgrade details.

Symptom	Possible Cause	Action
Mouse and/or Keyboard not responding.	Improper mouse and/or keyboard reset.	Unplug the cable(s) from the console port(s), then plug it/them back in.
	KVM switch needs to be reset.	Power off all devices on the installation (see safety note, top of page 7); power off the KVM switch; wait five seconds; then power up
USB devices not responding.	USB ports need to reset.	Unplug the device's USB cable from the USB port on the switch's rear panel, then plug it back in.
	PC or OS does not support USB 2.0.	The CS1784 has a built-in USB 2.0 hub, so will not support PCs or OS that do not support USB 2.0.
		For OS that do not support USB 2.0, keyboard and mouse functions can be reset using the [F1] hotkey function. See *Other OS Mode*, page 18.
Device not recognized (Windows).	Windows timing problem.	1. Unplug the KVM cable from the computer's USB port. 2. Go into Windows' *System Settings* and remove the *Unknown Device* entry. 3. Plug the KVM cable back in. Windows will now recognize the device.

Limited Warranty

IN NO EVENT SHALL THE DIRECT VENDOR'S LIABILITY EXCEED THE PRICE PAID FOR THE PRODUCT FROM DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THE PRODUCT, DISK, OR ITS DOCUMENTATION.

The direct vendor makes no warranty or representation, expressed, implied, or statutory with respect to the contents or use of this documentation, and especially disclaims its quality, performance, merchantability, or fitness for any particular purpose.

The direct vendor also reserves the right to revise or update the device or documentation without obligation to notify any individual or entity of such revisions, or update. For further inquiries, please contact your direct vendor.