



**USB DVI Dual Link KVMP™ Switch
CS1782A / CS1784A
User Manual**



EMC Information

FEDERAL COMMUNICATIONS COMMISSION INTERFERENCE

STATEMENT: This equipment has been tested and found to comply with the limits for a Class B digital service, 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. If not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this 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 to which the receiver is connected.
- ◆ Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

KCC Statement

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이 기기는 가정용 (B 급) 전자파적합기기로서 주로 가정에서 사용하는 것을 목적으로 하며, 모든 지역에서 사용할 수 있습니다.



RoHS

This product is RoHS compliant.

User Information

Online Registration

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

International	http://eservice.aten.com
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Telephone Support

For telephone support, call this number:

International	886-2-8692-6959
China	86-400-810-0-810
Japan	81-3-5615-5811
Korea	82-2-467-6789
North America	1-888-999-ATEN ext 4988 1-949-428-1111

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 CS1782A / CS1784A package consists of:

- ◆ 1 CS1782A / CS1784A USB DVI Dual Link KVMP™ Switch
- ◆ 2 Custom DVI-D KVM Cable Sets (CS1782A)
- ◆ 4 Custom DVI-D KVM Cable Sets (CS1784A)
- ◆ 2 Custom 7.1 Channel Surround Sound Cable Sets (CS1782A)
- ◆ 1 Power Adapter
- ◆ 1 User Instructions*

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 device since this manual was printed. Please visit our website to download the most up-to-date version of the manual.

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About this Manual

This User Manual is provided to help you get the most from your CS1782A / CS1784A. 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 CS1782A / CS1784A 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. The necessary steps are provided.

Chapter 3, Basic Operation, explains the fundamental concepts involved in operating the CS1782A / CS1784A.

Chapter 4, Hotkey Operation, details all of the concepts and procedures involved in the Hotkey operation of your CS1782A / CS1784A 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 upgrade the CS1782A / CS1784A's firmware with the latest available versions.

An Appendix, provides specifications and other technical information regarding the CS1782A / CS1784A.

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	http://www.aten-usa.com

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Chapter 1

Introduction

Overview

The CS1782A / CS1784A USB DVI Dual Link KVM[™] Switch charts a revolutionary new direction in KVM (Keyboard, Video, Mouse) switch functionality by combining a 2/4 port KVM switch with a 2 port USB hub at the same time as providing an interface for a Digital Visual Interface (DVI) monitor. In addition, the CS1782A / CS1784A comes with ATEN's new Video DynaSync[™] technology, which eliminates boot-up display problems and optimizes resolution, and power on detection, which means if one computer is powered off, the CS1782A / CS1784A will automatically switch to the next powered-on computer. Further innovations include the latest in mouse port-switching – simply double-click on the scroll wheel of a USB mouse to change ports – and gaming keyboard support, making the CS1782A / CS1784A the new standard for desktop KVM switches.

As a KVM switch, the CS1782A / CS1784A allows users to access two or four computers from a single USB keyboard, USB mouse, and monitor console. As a USB 2.0 hub, it permits each computer to access any peripherals connected to the hub on a one-computer-at-a-time basis.

The unit's independent 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.

The CS1782A / CS1784A further improves on previous designs with DVI 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). The CS1782A / CS1784A also breaks into the computer gaming environment as it supports gaming keyboard functions. It allows users to enjoy and control their game applications with familiar keyboard inputs without having to change to a compatible keyboard.

The CS1782A / CS1784A is audio enabled, with the CS1782A supporting 7.1 channel surround sound audio and the CS1784A supporting 2.1 channel surround sound audio. You can listen to the audio output of each computer on

two sets of speakers on a one-computer-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 CS1782A / CS1784A intercepts keyboard input directly, it will work on multiple computing platforms (PC (x86/x64), Macintosh PowerPC, and Sun Microsystems Sparc).

There are three convenient methods to access the computers: port selection pushbuttons located on the unit's front panel; hotkey combinations entered from the keyboard; and via mouse – simply double-click on the scroll wheel of a USB mouse to change ports.

There is no better way to save time and money than with a CS1782A / CS1784A installation. Since a single console manages all of the computers, the CS1782A / CS1784A setup: eliminates the expense of having to purchase separate console components for each computer; saves all the space those extra components would take up; saves on energy costs; and eliminates the inconvenience and wasted effort involved in constantly moving from one computer to another.

Features

- ◆ 2-port DVI KVMP Switch with USB 2.0 and 7.1 Surround Sound Audio (CS1782A)
- ◆ 4-port DVI KVMP Switch with USB 2.0 and 2.1 Surround Sound Audio (CS1784A)
- ◆ One USB console controls two/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 7.1 channel surround sound systems (CS1782A)
- ◆ Full bass response provides a rich experience for 2.1 channel surround sound systems (CS1784A)
- ◆ Computer selection via front panel pushbuttons, hotkeys, and mouse
- ◆ Multiplatform support – Windows 2000/XP/Vista/7, Linux, Mac, and Sun*
- ◆ Independent switching of KVM, USB hub, and Audio focus
- ◆ DVI digital and analog monitor support – fully compliant with the DVI-I specifications (custom DVI-I cable needed for analog output support)
- ◆ Superior video quality:
 - ◆ 1920 x 1200 @ 60Hz (Single Link)
 - ◆ 2560 x 1600 @ 60Hz (Dual Link)
- ◆ Supports widescreen resolutions
- ◆ Video DynaSync™ – Exclusive ATEN technology eliminates boot-up display problems and optimizes resolution when switching between ports
- ◆ Power on detection – if one of the computers is powered off, the switch will automatically switch to the next powered-on computer
- ◆ Console mouse port emulation/bypass feature supports most mouse drivers and multifunction mice
- ◆ Console keyboard port emulation/bypass feature supports most gaming / multimedia keyboards
- ◆ Complete keyboard emulation for error-free booting
- ◆ Mac/Sun keyboard support and emulation*

- ◆ Multilingual keyboard mapping – supports English, Japanese, and French keyboards
- ◆ Auto Scan Mode for monitoring all computers
- ◆ Firmware upgradable

Note: 1. PC keyboard combinations emulate Mac/Sun keyboards
2. Mac/Sun keyboard work only with their own computers

Hardware Requirements

Console

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

Computers

The following equipment must be available on each computer:

- ◆ A DVI port

Note: The video quality of the display is affected by the performance of the graphics card. For best results, we recommend you upgrade to a more powerful discrete graphics card.

- ◆ Type A USB port
- ◆ Audio ports (optional)

Cables

Only DVI-D KVM cable sets, which are specifically designed to work with this switch, may be used to link to the computers. Two (CS1782A) or four (CS1784A) cable sets are provided with this package.

Note: The video quality of the display is affected by the quality and length of the cables. If you need additional cable sets, please contact your dealer to purchase the appropriate ones for your switch.

Type	Length	Part Number
USB DVI-D Dual Link Cables	1.8 m	2L-7D02UD
	3.0 m	2L-7D03UD
	5.0 m	2L-7D05UD

Operating Systems

Supported operating systems are shown in the table, below:

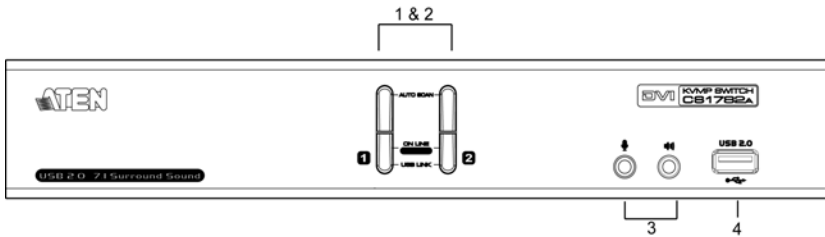
OS		Version
Windows		2000 / XP / 2003 / 2008 / Vista / 7
Linux	RedHat	9.0 and higher
	SuSE	10 / 11.1 and higher
	Debian	3.1 / 4.0
	Ubuntu	7.04 / 7.10
UNIX	AIX	4.3 and higher
	FreeBSD	5.5 and higher
	Sun	Solaris 8 and higher
Novell	Netware	6.0 and higher
Mac		OS 9 to 10.6 (Snow Leopard)

Note: 1. Supports Linux Kernel 2.6 and higher.

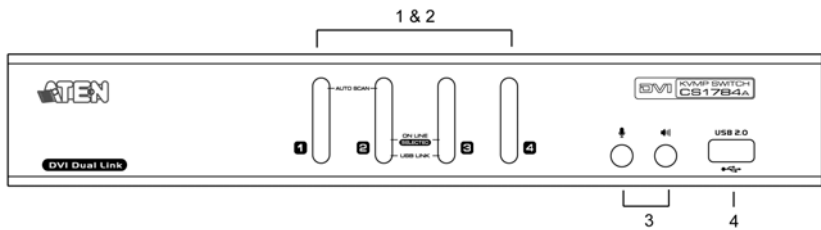
2. The CS1782A / CS1784A has a built-in USB 2.0 hub, so does not support PCs or OS that do not support USB 2.0.

Components

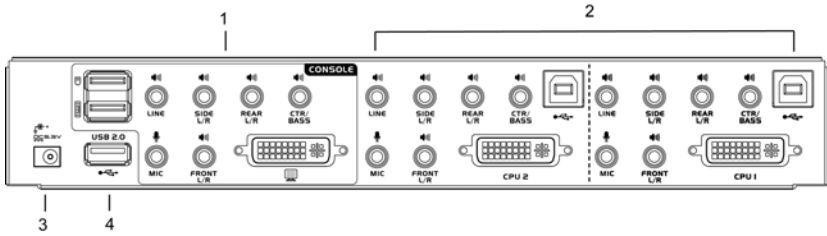
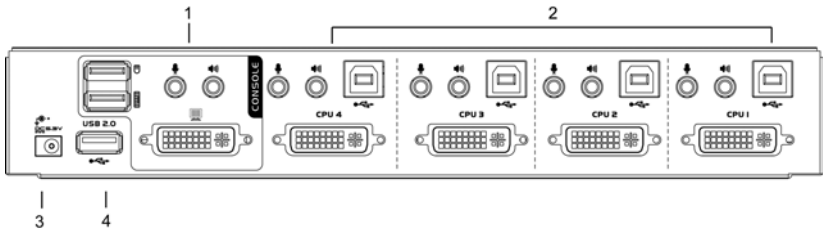
CS1782A Front View



CS1784A Front View



No.	Component	Description
1	Port Selection Pushbuttons	<p>For manual port selection (see <i>Overview</i>, page 15, also):</p> <ul style="list-style-type: none"> ◆ Press a port selection pushbutton for less than two seconds to bring the KVM, USB hub, and audio 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 a port selection pushbutton for longer than two seconds to bring only the KVM focus to the computer attached to its corresponding port. ◆ Press switches 1 and 2 simultaneously for 2 seconds to start Auto Scan Mode, see <i>Auto Scanning</i>, page 21 for details.
2	Port LEDs	<p>The Port LEDs are built into the Port Selection Switches. The upper ones are the KVM Port LEDs; the lower ones are the USB LEDs:</p> <p>KVM</p> <ul style="list-style-type: none"> ◆ Lights DIM ORANGE to indicate that the computer attached to the corresponding port is up and running (On Line). ◆ Flashes to indicate that Firmware Upgrade mode is in effect. ◆ Lights BRIGHT ORANGE to indicate that the computer attached to the corresponding port is the KVM focus (Selected). ◆ Flashes to indicate that the computer attached to the corresponding port is being accessed under Auto Scan mode. <p>USB</p> <ul style="list-style-type: none"> ◆ Lights GREEN to indicate that the computer attached to its corresponding port is the one that has access to the USB peripherals.
3	Audio Ports	<p>The cables from your main speakers and main microphone plug in here. The speakers and microphone plugged in here have priority over those in the rear panel.</p>
4	USB 2.0 Hub	<p>USB 2.0 peripherals (printers, scanners, etc.) can plug into this port (this may require an extra power adapter).</p>

CS1782A Rear View**CS1784A Rear View**

No.	Component	Description
1	Console Port Section	The cables from your DVI monitor, USB keyboard, USB mouse, speakers, and microphone plug in here. Each connector is marked with an appropriate icon to indicate itself.
2	KVM Port Section	The cables that link the switch to your computers plug in here. Each KVM port section is comprised of a microphone jack, speaker jack(s), USB type B socket and a DVI connector.
3	Power Jack	The power adapter cable plugs into this jack.
4	USB 2.0 Hub	USB 2.0 peripherals (printers, scanners, etc.) can plug into this port (this may require an extra power adapter).

Chapter 2

Hardware Setup



1. Important safety information regarding the placement of this device is provided on page 39. Please review it before proceeding.
2. To prevent damage to your installation from power surges or static electricity. It is important that all connected devices are properly grounded.
3. Make sure that power to all the devices 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 Connections

To set up your CS1782A / CS1784A installation, refer to the installation diagram on the following page (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 console monitor into the DVI console port located in the unit's rear panel and power on the monitor.
3. Plug your main microphone and speakers into the console microphone and speaker jacks located on the unit's front panel. The microphone and speakers plugged into this panel have priority over those in the rear panel.
4. Plug your secondary microphone and 2.1 / 7.1 speakers into the console audio ports located on the unit's rear panel.
 - 4a. Plug one end of the 7.1 surround sound cable provided with the package into the 7.1 channel audio ports on the CS1782A
 - 4b. Plug the other end of the 7.1 surround sound cable into the 7.1 channel audio ports on your computer.
5. Using a KVM cable set (provided with this package), 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

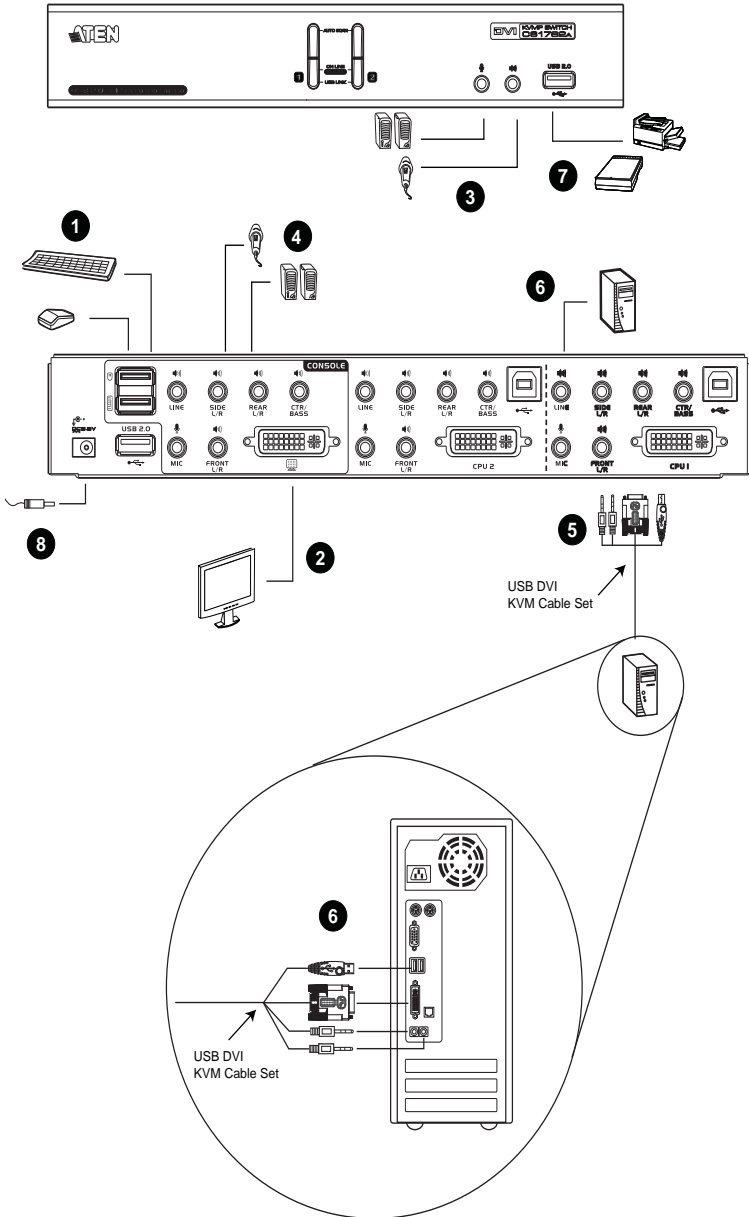
connectors into their corresponding USB, microphone, and speaker sockets.

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

6. At the other end of the cable, plug the USB, video, microphone, and speaker cables into their respective ports on the computer.
7. Plug your USB peripherals into the type A sockets in the USB hub section.
8. 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.
9. Power on the computers.

Note: Make sure the computers and devices that the CS1782A / CS1784A connects to are also properly grounded.

Installation Diagram



Chapter 3

Basic Operation

Overview

There are three convenient methods to access the computers: Manual – which involves pressing the port selection pushbuttons located on the unit’s front panel; Mouse – which involves clicking the scroll wheel of the mouse; and Hotkey – which involves entering combinations from the keyboard. Hotkey port selection is discussed in the next chapter.

Manual Switching

For manual port selection:

- ◆ Press and hold a port selection pushbutton for more than 2 seconds to bring the KVM focus to the computer attached to its corresponding port. The USB and Audio focus does 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 release a port selection pushbutton to bring the KVM focus, plus the USB and Audio focus to the computer attached to its corresponding port.
- ◆ Press and hold port selection pushbutton 1 and 2 for more than 2 seconds to start Auto Scan Mode, see page 21 for details.
- ◆ 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 switch you pressed.

Mouse Port Switching

The CS1782A / CS1784A supports the very latest in mouse port-switching – simply double-click the scroll wheel of your USB mouse to cycle through the ports.

-
- Note:**
1. This feature is only supported by USB 3-key scroll wheel mice.
 2. The default setting is disabled.
 3. This feature is only supported when Mouse Emulation is enabled. See *Mouse Emulation Control*, page 27, for details.
-

Hot Plugging

The CS1782A / CS1784A 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 CS1782A / CS1784A 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 section on the CS1782A / CS1784A switch is assigned a port number. (1 or 2 for the CS1782A; 1 to 4 for the CS1784A). The port numbers are marked on the rear panel of the switch (see page 9 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 page 20 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 page 26, also):

- ◆ Press and hold a port selection pushbutton for more than 2 seconds 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 a port selection pushbutton once to bring only the KVM focus to the computer attached to its corresponding port.
- ◆ Press and hold port selection pushbuttons 1 and 2 for more than 2 seconds to start Auto Scan Mode, see page 21 for details.

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Chapter 4

Hotkey Operation

The CS1782A / CS1784A provides an extensive, easy-to-use, hotkey function that makes it convenient to control and configure your KVM installation from the keyboard. Hotkeys provide independent switching of the KVM, USB hub, and audio focus. Therefore, you can give one computer the KVM focus, another the USB hub focus, while a third has 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 23 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 1 for the CS1782A; 1 to 2; 2 to 3; 3 to 4; 4 to 1 for the CS1784A). Note: The KVM, USB hub, and audio focus all go to this port even if they were on different ports to begin with.
[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. Note: The KVM, USB hub, and audio focus all go to this port even if they were on different ports to begin with.
[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.

Note: The **n** stands for the computer's Port ID number (1, 2, 3, or 4). See [?\\$paratext>?](#) on page 17. Replace the **n** with the appropriate Port ID when entering hotkey combinations.

Auto Scanning

The CS1782A / CS1784A'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. Although the video focus switches from port to port, the keyboard, mouse, and USB focus doesn't switch. They stay at the port they were on when Auto Scanning started. 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: The n stands for the number of seconds that the CS1782A / CS1784A 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

- Note:**
1. 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 (press the **Esc** key or the **Spacebar**) in order to regain normal control of the console.
 2. Although the video focus switches from port to port, the keyboard and mouse do not switch. They stay at the port they were on when Auto Scanning started.
 3. To exit Auto Scan Mode, press the **ESC** key or the **Spacebar**.

Hotkey Setting Mode

Hotkey Setting Mode is used to set up your CS1782A / CS1784A 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:** 1. There is an alternate key combination to invoke HSM. See page 23 for details.
2. The minus key must be released within one half second, otherwise Hotkey invocation is canceled.
-

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 22)
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 ([Ctrl] [Ctrl]). To change the port switching activation keys, do the following:

1. Invoke HSM (see page 22)
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 CS1782A / CS1784A'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 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 keyboard. The procedure is as follows:

1. Bring the KVM focus to the port you want to set.
2. Invoke HSM (see page 22)
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 <i>Mac Keyboard</i> , page 31 for details.
[F3]	Enables Sun keyboard emulation, see <i>Sun Keyboard</i> , page 32 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).

Note: To set the keyboard language, see *Keyboard Language*, page 25.

List Switch Settings

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

1. Open a text editor or word processor and place the cursor in the page window.
2. Invoke HSM (see page 22).
3. Press and release **[F4]** to display the settings.

USB Reset

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

1. Invoke HSM (see page 22).
2. Press and release **[F5]**.

Keyboard Language

To change the keyboard language, do the following:

1. Invoke HSM (see page 22).
2. Press **[F6]** *[nn]* **[Enter]**.

Note: *nn* is a two-digit number that represents the keyboard language code (US English: 33; French: 08; Japanese: 15).

Hotkey Buzzer Control

The Buzzer can be enabled or disabled. The default setting is enabled. To disable the Buzzer, do the following:

1. Invoke HSM (see page 22).
2. Press and release **[B]**.

This procedure is a toggle. Repeat to enable.

Port Switching Keys

The Port Switching Keys (**[Scroll Lock]** **[Scroll Lock]** / **[Ctrl]** **[Ctrl]**) can be enabled or disabled. The default setting is enabled. To disable, do the following:

1. Invoke HSM (see page 22).
2. Press **[X]** **[Enter]**.

This procedure is a toggle. Repeat to enable.

Firmware Upgrade Mode

To set the CS1782A / CS1784A to Firmware Upgrade Mode, do the following:

1. Invoke HSM (see page 22).
2. Key in: upgrade
3. Press [**Enter**]. The orange front panel LEDs flash to indicate Firmware Upgrade Mode is in effect.

Note: To exit Firmware Upgrade Mode, you must power off the switch.
See *The Firmware Upgrade Utility*, page 33, for details.

Restore Default Settings

To reset the CS1782A / CS1784A to its default hotkey settings, do the following:

1. Invoke HSM (see page 22).
2. Press [**R**] [**Enter**].

See *Hotkey Default Settings*, page 46

Video DynaSync

Video DynaSync is ATEN's exclusive technology that eliminates boot-up display problems and optimizes resolution when switching between ports. To invoke Video DynaSync, do the following:

1. Invoke HSM (see page 22)
2. Press [**D**].

Note: If the monitor is disconnected and reconnected, the CS1782A / CS1784A re-executes Video DynaSync.

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 22)
2. Press [**S**].

See *Alternative Manual Port Selection Settings*, page 17, for full details.

Mouse Emulation Control

The default setting is enabled. To disable, do the following:

1. Invoke HSM (see page 22).
2. Press **[M]**.

This procedure is a toggle. Repeat to enable.

Mouse Port-switching

The Mouse Port-switching function can be enabled or disabled. The default setting is disabled. To enable, do the following:

1. Invoke HSM (see page 22).
2. Press **[W]**.

This procedure is a toggle. Repeat to disable.

Note: This feature is only supported by USB 3-key scroll wheel mice. The default setting is OFF. This feature is only supported when mouse emulation is also enabled. See *Mouse Emulation Control*, above.

Keyboard Emulation Control

Console keyboard port emulation/bypass feature supports most gaming/multimedia keyboards. The default setting is enabled. To disable, do the following:

1. Invoke HSM (see page 22).
2. Press **[N]**.
3. This procedure is a toggle. Repeat to enable.

Note: When keyboard emulation is disabled, the **[M]**, **[W]**, **[F2]**, **[F3]**, **[F4]**, **[F5]**, **[F6]**, and **[F10]** are disabled. See page 29, for details.

SPC Mode

To set the keyboard/mouse to use SPC mode so that it can work under special operating systems as a standard (104 key) keyboard/mouse, do the following:

1. Invoke HSM (see page 22).
2. Press **[F1]**.

Power on Detection

With Power on Detection if the focus computer is powered off, the switch will automatically switch to the next powered-on computer. Power on Detection can be enabled or disabled. The default setting is enabled. To disable Power on Detection, do the following:

1. Invoke HSM (see page 22).
2. Press and release [E].

This setting is a toggle. Repeat to enable.

HSM Summary Table

After invoking HSM (see page 22), key in one of the following keys to perform the corresponding function:

Key	Function
[H]	Toggles between the default ([Num Lock] [-]) and alternate ([Ctrl] [F12]) HSM invocation keys.
[T]	Toggles between the default ([Scroll Lock] [Scroll Lock]) and alternate ([Ctrl] [Ctrl]) Port Switching keys.
[F2]	Enables Mac keyboard emulation.
[F3]	Enables Sun keyboard emulation.
[F10]	Automatically detects and sets the keyboard operating platform.
[F4]	Lists the current switch settings via the paste function of a text editor.
[F5]	Performs a reset on all USB devices.
[F6] [nn] [Enter]	Sets the keyboard language. Note: <i>nn</i> is a two-digit number that represents one of the following keyboard language code: US English: 33; French: 08; Japanese: 15.
[B]	Enables/Disables the buzzer.
[X] [Enter]	Enables/Disables the port switching keys.
[R] [Enter]	Resets the hotkey settings to their default status.
[u] [p] [g] [r] [a] [d] [e] [Enter]	Invokes Firmware Upgrade Mode. See <i>The Firmware Upgrade Utility</i> , page 33, for full details.
[D]	Invokes Video DynaSync, ATEN's exclusive technology that eliminates boot-up display problems and optimizes resolution when switching between ports.
[E]	Enables/Disables the Power on Detection feature. See <i>Power on Detection</i> , page 28 for details.
[S]	Toggles between the default and alternate manual port selection pushbutton settings.
[N]	Enables/Disables keyboard emulation.
[M]	Enables/Disables mouse emulation.
[W]	Enables/Disables mouse port-switching.









Key	Function
[F1]	Sets the SPC mode so that it can work under special operating systems as a standard (104 key) keyboard/mouse.

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

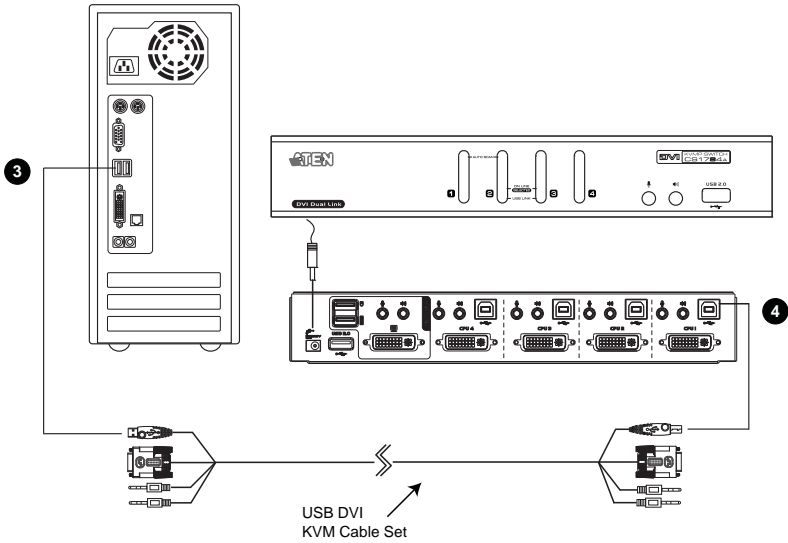
The Windows-based Firmware Upgrade Utility (FWUpgrade.exe) provides a smooth, automated process for upgrading the KVM switch's firmware. The Utility comes as part of a Firmware Upgrade Package that is specific for each device. Check the web site regularly to find the latest packages and information relating to them: <http://www.aten.com>

Before you Begin

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 (CS1782A / CS1784A) 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. Power off the switch. Unplug the KVM cables from the back of the switch. If you are using a power adapter, unplug it and remove its connector from the switch's power jack. Connect one of the USB DVI KVM cable set's Type A USB connectors to a USB hub port on your computer.
4. At the other end of the USB DVI KVM cable set, connect the USB Type B connector to the Type A USB port in the Port 1 KVM section.

Note: The USB DVI KVM cable set's USB Type B connector can be connected to any USB Type KVM port section, but the Port Selection pushbutton in Step 5, below, must be Port 1.

5. Invoke Firmware Upgrade Mode (see *Firmware Upgrade Mode*, page 26). The front panel orange LEDs flash to indicate that Firmware Upgrade Mode is in effect.

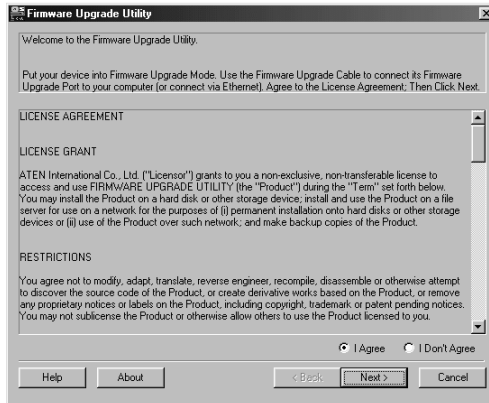


Starting the Upgrade

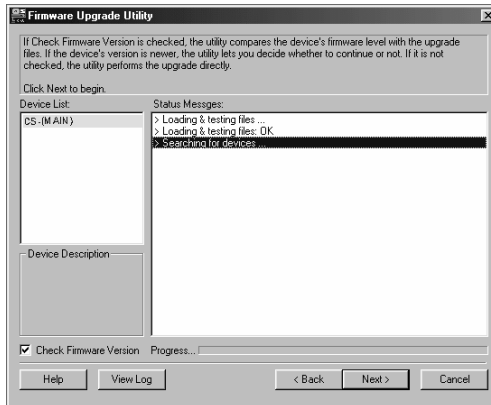
1. Run the downloaded Firmware Upgrade Package file – either by double clicking the file icon, or using a command line to enter the full path.

The *Firmware Upgrade Utility* Welcome screen appears:

2. Read the License Agreement (enable the *I Agree* radio button).



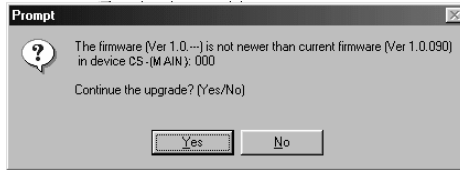
3. Click **Next**. The Firmware Upgrade Utility main screen appears. The Utility inspects your installation. All the devices capable of being upgraded by the package are listed in the *Device List* panel.



(Continues on next page.)

- As you select a device in the list, its description appears in the Device Description panel. After you have made your device selection(s), Click **Next** to perform the upgrade.

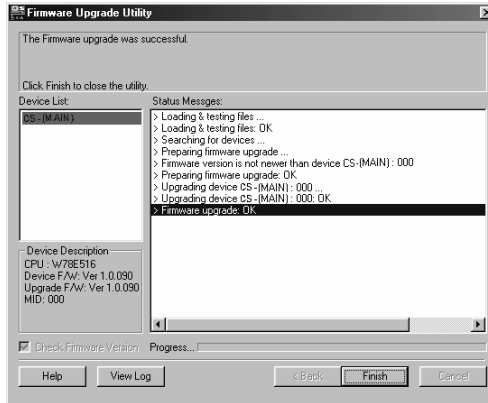
If you enabled *Check Firmware Version*, the Utility compares the device's firmware level with that of the upgrade files. If the device's version is higher than the upgrade version, a dialog box gives you the option to Continue or Cancel.



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

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 CS1782A / CS1784A exits Firmware Upgrade Mode, and resets itself.

Upgrade Failed

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 CS1782A / CS1784A by removing the power jack.
2. Invoke Firmware Upgrade Mode by holding down the Port 1 pushbutton in the front panel (see *Components*, page 7) and power on the CS1782A / CS1784A. The orange LEDs flash together.
3. Do the firmware upgrade procedure again.

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Safety Instructions

- ◆ This product is for indoor use only.
- ◆ Read all of these instructions. Save them for future reference.
- ◆ Follow all warnings and instructions marked on the device.
- ◆ 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

International

- ◆ For online technical support – including troubleshooting, documentation, and software updates: **<http://eservice.aten.com>**
- ◆ For telephone support, see *Telephone Support*, page iv.

North America

Email Support		support@aten-usa.com
Online Technical Support	Troubleshooting Documentation Software Updates	http://www.aten-usa.com/support
Telephone Support		1-888-999-ATEN ext 4988 1-949-428-1111

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		CS1782A			
Computer Connections		2			
Port Selection		Front Panel Pushbuttons, Hotkeys, Mouse			
Connectors	Console Ports	Keyboard		1 x USB Type A Female (Black; rear panel)	
		Video		1 x DVI-I Female (white)	
		Mouse		1 x USB Type A Female (Black; rear panel)	
		Audio	Line out	2 x Mini Stereo Jack Female (Green; 1 x front panel, 1 x rear panel)	
			Line In	1 x Mini Stereo Jack Female (Blue)	
			Side Speaker out	1 x Mini Stereo Jack Female (Gray)	
			Rear Speaker out	1 x Mini Stereo Jack Female (Black)	
			Center/Subwoofer	1 x Mini Stereo Jack Female (Orange)	
			Microphone	2 x Mini Stereo Jack F (Pink; 1 x front panel, 1 x rear panel)	
	KVM Ports	Keyboard/Mouse		2 x USB Type B Female (White)	
		Video		2 x DVI-I F (White)	
		Audio	Line out	2 x Mini Stereo Jack Female (Green)	
			Line In	2 x Mini Stereo Jack Female (Blue)	
			Side Speaker out	2 x Mini Stereo Jack Female (Gray)	
			Rear Speaker out	2 x Mini Stereo Jack Female (Black)	
			Center/Subwoofer	2 x Mini Stereo Jack Female (Orange)	
			Microphone	2 x Mini Stereo Jack Female (Pink)	
Power		1 x DC Jack			
USB 2.0 Hub		2 x USB Type A Female (White; 1 x front panel, 1 x rear panel)			
Switches	Selected	2 x Pushbutton			
LEDs	On Line / Selected		2 (Orange)		
	USB Link		2 (Green)		
Emulation	Keyboard / Mouse		USB		
Video		Dual Link DVI: 2560 x 1600 Single Link DVI: 1920 x 1200			
Scan Interval		1–99 secs. (5 secs. default)			
Power Consumption		DC 5.3V, 3.3W			
Environment	Operating Temp.		0–50°C		
	Storage Temp.		-20–60°C		
	Humidity		0–80% RH, Non-condensing		
Physical Properties	Housing		Metal		
	Weight		0.90 kg		
	Dimensions (L x W x H)		27.00 x 8.80 x 5.55 cm		

Function		CS1784A		
Computer Connections		4		
Port Selection		Front Panel Pushbuttons, Hotkeys, Mouse		
Connectors	Console Ports	Keyboard		1 x USB Type A Female (Black; rear panel)
		Video		1 x DVI-I Female (white)
		Mouse		1 x USB Type A Female (Black; rear panel)
		Audio	Speaker	2 x Mini Stereo Jack Female (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)	
	KVM Ports	Keyboard/Mouse		4 x USB Type B Female (White)
		Video		4 x DVI-I F (White)
		Audio	Speaker	4 x Mini Stereo Jack Female (Green)
			Microphone	4 x Mini Stereo Jack Female (Pink)
	Power		1 x DC Jack	
USB 2.0 Hub		2 x USB Type A Female (White; 1 x front panel, 1 x rear panel)		
Switches	Selected		4 x Pushbutton	
LEDs	On Line / Selected		4 (Orange)	
	USB Link		4 (Green)	
Emulation	Keyboard / Mouse		USB	
Video		Dual Link DVI: 2560 x 1600 Single Link DVI: 1920 x 1200		
Scan Interval		1–99 secs. (5 secs. default)		
Power Consumption		DC 5.3V, 5.91W		
Environment	Operating Temp.		0–50°C	
	Storage Temp.		-20–60°C	
	Humidity		0–80% RH, Non-condensing	
Physical Properties	Housing		Metal	
	Weight		0.93 kg	
	Dimensions (L x W x H)		27.00 x 8.80 x 5.55 cm	

Troubleshooting

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 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, page 39); 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 unit has a built-in USB 2.0 hub, so does 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 <i>SPC Mode</i> , page 27.
Device not recognized (Windows).	Windows timing problem.	Unplug the KVM cable from the computer's USB port; go into <i>Windows' System Settings</i> and remove the <i>Unknown Device</i> entry; plug the KVM cable back in. Windows now recognizes the device.
Cannot switch ports by pressing [Scroll Lock] twice.	Keyboard is incompatible with Scroll Lock invocation.	Switch to the Alternate HSM invocation keys. See <i>Alternate HSM Invocation Keys</i> , page 23, for details.
Monitor does not display after KVM cable set is hot plugged.	Some HDMI/DVI graphics cards are incompatible with cable set hot plugging.	Power off all devices on the installation (see safety note, page 39); power off the CS1784A; confirm all KVM cables are properly connected; power on the CS1784A; power on the computers.

(Continues on next page.)

(Continued from previous page.)

Symptom	Possible Cause	Action
When switching to an HDMI computer, there is no display on the monitor.	Graphics card is DVI-I (Digital and Analog).	Adjust the graphics card settings to digital only.
		Replace graphics card with DVI-D or HDMI graphics card.
When switching ports, the monitor does not display.	Monitor is new or this is the first time installation.	Switch ports again and wait two or more seconds for the monitor's EDID to pass to the PC.
	The monitor's EDID has not passed through to the PC when switching ports.	Use the [d] hotkey to invoke Video DynaSync one more time or switch to another PC to reconnect the CS1784A. See <i>HSM Summary Table</i> , page 29.
Gaming keyboard connected to USB 2.0 peripheral port does not work properly.	KVM hotkeys are not supported.	Toggle the Keyboard Emulation hotkey [N] off and on again. See <i>Keyboard Emulation Control</i> , page 27. Keyboard emulation must be enabled to use all the keyboard's special keys.

Hotkey Default Settings

The hotkey factory default settings are as follows:

Setting	Hotkey	Default
Port Switching (Default / Alternative)	[T]	[Scroll Lock] [Scroll Lock]
Invoking HSM	[H]	[Number Lock] [-]
Auto Scan Interval	[Scroll Lock] [Scroll Lock] [A] [Enter]	5 seconds
Keyboard Operating Platform	[F10]	PC Compatible
Mouse Emulation	[M]	Enabled
Mouse Port-switching	[W]	Disabled
Keyboard Emulation	[N]	Enabled
Video DynaSync	[D]	Enabled
Port Switching Keys (On / Off)	[X] [Enter]	Enabled
Buzzer	[B]	Enabled
Power on Detection	[E]	Enabled
Keyboard Language	[F6] [nn] [Enter] Note: nn is the language number	English

Limited Warranty

ATEN warrants its hardware in the country of purchase against flaws in materials and workmanship for a Warranty Period of two [2] years (warranty period may vary in certain regions/countries) commencing on the date of original purchase. This warranty period includes the LCD panel of ATEN LCD KVM switches. Select products are warranted for an additional year (see *A+ Warranty* for further details). Cables and accessories are not covered by the Standard Warranty.

What is covered by the Limited Hardware Warranty

ATEN will provide a repair service, without charge, during the Warranty Period. If a product is defective, ATEN will, at its discretion, have the option to (1) repair said product with new or repaired components, or (2) replace the entire product with an identical product or with a similar product which fulfills the same function as the defective product. Replaced products assume the warranty of the original product for the remaining period or a period of 90 days, whichever is longer. When the products or components are replaced, the replacing articles shall become customer property and the replaced articles shall become the property of ATEN.

To learn more about our warranty policies, please visit our website:

<http://www.aten.com/global/en/legal/policies/warranty-policy/>

Manual Part No. PAPE-0283-AT5G



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