# ATEN

**CS1964**

**4-Port USB3.0**

**4K DisplayPort Triple Display**

**KVMP™ Switch**

**User Manual**

# EMC Information

FEDERAL COMMUNICATIONS COMMISSION INTERFERENCE STATEMENT: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

The 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.

**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.

**Warning**: Operation of this equipment in a residential environment could cause radio interference.

**KCC Statement**

유선 제품용 / A 급 기기 ( 업무용 방송 통신 기기 )

이 기기는 업무용 (A 급 ) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며 , 가정 외의 지역에서 사용하는 것을 목적으로 합니다 .

# 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 |
| --- | --- |

## 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 package consists of:

- 1 4-Port USB3.0 4K DisplayPort Triple Display KVMP™ Switch
- 6 DisplayPort 1.2 Cables[1] (Certified)
- 2 USB 3.0 A-to-B Cables
- 2 Speaker Cables
- 2 Microphone Cables
- 1 Power Adapter
- 1 User Instructions[2]


Check to make sure that all the components are present and that nothing was 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.

**Note:** 1. 4K video resolution needs the high quality DisplayPort Cable.

2. Features may have been added to the CS1964 since this manual was printed. Please visit our website to download the most up-to-date version of the manual.

# Contents

# About this Manual

This User Manual is provided to help you get the most from your CS1964 unit. It covers all aspects of installation, configuration and operation. An overview of the information found in the manual is provided below.

**Introduction,** introduces you to the CS1964. Its purpose, features and benefits are presented, and its front, side, and back panel components are described.

**Hardware Setup,** describes how to set up your installation. The necessary steps are provided.

**Basic Operation,** explains the fundamental concepts involved in operating the CS1964.

**Hotkey Operation,** details all of the concepts and procedures involved in the Hotkey operation of your CS1964 installation.

**Keyboard Emulation,** provides tables that list the PC to Mac keyboard emulation mappings.

**The Firmware Upgrade Utility,** explains how to use the CS1964's firmware with the latest available versions.

**An Appendix,** which provides specifications and other technical information regarding the CS1964.

# 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 |
|---|---|

# Chapter 1
# Introduction

## Overview

The CS1964 4-Port USB3.0 4K DisplayPort Triple Display KVMP™ Switch combines Triple Display KVM switch with DisplayPort video interface, 2-port USB 3.1 Gen 1 hub and 2.1 channel audio support for rich bass surround sound. DisplayPort technology provides 4K UHD @ 60 Hz and 4K DCI @ 60Hz resolution that displays the most vivid high-definition images available while pumping out premium sound for music, movies, and games.

The CS1964 allows users to access four DisplayPort computers from a single USB keyboard, USB mouse and three HDMI monitors. In addition to the front panel pushbuttons, Hotkeys, and the mouse port-switching functionality, the CS1964 offers serial commands to help switch ports and configure device settings. A Power On Detection feature also ensures that if one computer is powered off, the CS1964 will automatically switch ports to the next powered-on computer.

With a built-in USB 3.1 Gen 1 hub, the CS1964 provides SuperSpeed 5 Gbps transfer rates to all connected USB peripherals. The unit's independent (asynchronous) switching feature, allows the KVM focus to be on one computer while the USB peripheral focus is on another computer. This eliminates the need to purchase a separate USB hub or stand-alone peripheral sharer – such as a print server, modem splitter, etc.

Featuring an unbeatable combination of ultra high 4K resolutions, a next generation USB 3.1 Gen 1 hub and enhanced, user-friendly operations, the CS1964 delivers the latest innovations in desktop KVM switching technology.

# Features

- One USB keyboard/mouse and three HDMI monitors control four DisplayPort computers

- Supports six displays by connecting two triple display KVM switches

- Supports N-key Rollover[1] (NKRO) – Permits collision-free keying

- Video DynaSync™ – An exclusive ATEN technology that eliminates boot-up display problems and optimizes the resolution when switching among different sources

- Supports superior video quality – 4K UHD (3840 x 2160 @ 60 Hz) and 4K DCI (4096 x 2160 @ 60Hz)

- Computer selection via pushbuttons, hotkeys, mouse[2], and RS-232 Commands[3]

- Built-in 2- Port USB 3.1 Gen 1 hub with SuperSpeed 5 Gbps data transfer rates

- Supports Console keyboard emulation/bypass feature

- Supports Console mouse emulation/bypass feature

- Independent switching of KVM, USB peripheral, and audio focus[4]

- Multilingual keyboard mapping - supports English, Japanese, French, and German keyboards

- DisplayPort 1.2 compliant, HDMI 2.0 compliant, HDCP 2.2 compliant

- Supports HD Audio[4]

- Full bass response for high-quality 2.1 channel surround sound systems

- Power on detection – if a computer is powered off, the CS1964 automatically switches to the next powered-on computer

- Hot pluggable – add or remove computers without powering down the switch

- Mac keyboard support and emulation[5]

- Auto Scan Mode for monitoring all computers

- Firmware upgradeable

**Note:** 1. N-key Rollover supports up to 15 simultaneous keystrokes.

2. Mouse port switching is only supported under mouse emulation mode with a USB 3-button mouse wheel.

3. Slide the DCC switch to the *s* position to allow the KVM switch to receive RS-232 commands via an RJ-45-to-DB9 cable. Please refer to the CS1964 RS-232 Commands document.

4. HD audio through DisplayPort-HDMI cannot be switched independently.

5. PC keyboard combinations emulate Mac keyboards. Mac keyboards only work with their own operating system.

# Requirements

## Console

- Three HDMI monitors capable of the highest possible resolution
- A USB mouse
- A USB keyboard
- Microphone and speakers

## Computers

The following equipment must be available on each computer:

- Three DisplayPort ports
- Six DisplayPort ports for Hex-Display (DCC mode)
- A USB Type A port
- Audio ports

## Cables

To guarantee video quality, we recommend using only ATEN DisplayPort KVM cables which are certified by the VESA Compliance Program.

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**Note:** 1. The quality of the display is affected by the quality of the cables. We recommend the total length from the source to the monitor to not exceed 3.3 meters (1.5 meters between the PC and the KVM switch. 1.8 meters between the KVM switch and the monitor). If you need additional cables, please contact your dealer to purchase ATEN approved cables.

2. If you are using DisplayPort cables that are only DP 1.1 compliant, make sure the DisplayPort EQ setting of the monitor is set to auto or DP 1.1.

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## Operating Systems

- Windows
- Mac
- Linux

# Components

## CS1964 Front View



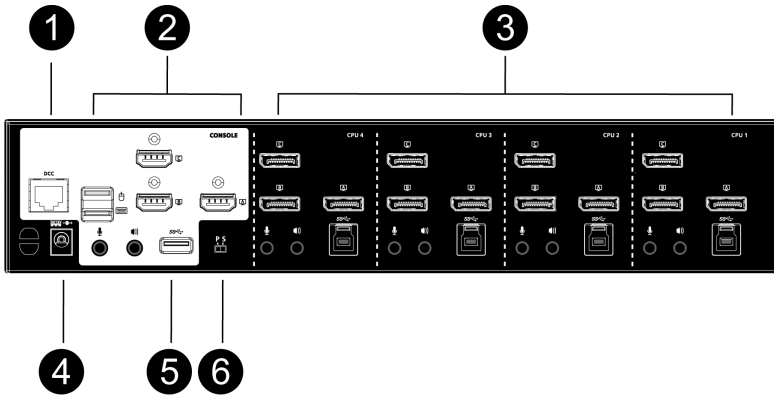| No. | Component | Description |
|---|---|---|
| 1 | LED Status Panel | This panel contains LED icons that light to indicate mode and port status. The Mode and Port Selection Pushbuttons have three corresponding LED icons that light to indicate status – **KVM**, **Audio**, and **USB**. Refer to *LED Status Panel* on page 7 for more info. |
| 2 | Port Selection Pushbuttons | For manual port selection (see *Port Switching*, page 17): <br> ◆ Press a switch for less than two seconds to bring the KVM, USB hub, and audio focus to the computer attached to its corresponding port. <br> ◆ Press a port selection pushbutton twice to bring the audio focus to the computer attached to its corresponding port. <br> ◆ Press a port selection pushbutton for longer than two seconds to bring only the KVM focus to the computer attached to its corresponding port. <br> ◆ Press switches 1 and 2 simultaneously for 2 seconds to start Auto Scan Mode (see *Auto Scanning*, page 23). |
| 3 | Mode Selection Pushbutton | ◆ This pushbutton allows you to cycle through the four focus modes – complete, KVM, audio, and USB. <br> ◆ Press and hold Mode Selection Pushbutton before powering on and to enter Firmware Upgrade Mode. |
| 4 | Console Audio Ports | Your console speakers and microphone plug in here. |
| 5 | USB 3.1 Gen 1 Peripheral Port | USB peripherals (printers, scanners, drives etc.) plug into this port. This USB 3.1 Gen 1 port features 5 Gbps data transfer rates for compatible USB peripherals. |

## CS1964 Rear View



| No. | Component | Description |
|-----|-----------|-------------|
| 1 | DCC Port (Daisy Chain Control) | This RJ-45 port is used to connect two units together when setting up DCC mode for a Hex-Display mode. See *Hex-Display (DCC Mode)*, page 14 for instructions. |
| 2 | Console Ports Section | The cables from your keyboard, mouse, monitors, microphone, and speakers plug in here. Each connector is marked with an appropriate icon to indicate itself. |
| 3 | KVM Ports 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, USB Type B socket and three DisplayPort connectors |
| 4 | Power Jack | The power adapter cable plugs into this jack. |
| 5 | USB 3.1 Gen 1 Peripheral Port | USB peripherals (printers, scanners, drives etc.) plug into this port. This USB 3.1 Gen 1 port features 5 Gbps data transfer rates for compatible USB peripherals. |
| 6 | DCC Switch | This switch is used to specify the *Host* and *Client* when setting up two units in Hex-Display DCC mode. See *Hex-Display (DCC Mode)*, page 14 for instructions. Slide the DCC switch to the s position to allow the KVM switch to receive RS-232 commands via an RJ-45-to-DB9 cable. Please refer to the CS1964 RS-232 Commands document. |

## LED Status Panel

The LED status panel is located above the pushbuttons. The LED columns respectively correspond to the pushbuttons below.

| No. | Component |
|-----|-----------|
| 1 | Mode Selection LED |
| 2 | Port LED |
| 3 | KVM Icon LED |
| 4 | Audio Icon LED |
| 5 | USB Link Icon LED |

### Port LED Behavior

The LEDs of currently focused connectors (KVM, audio, USB link) will be fully-lit.

The LED(s) of KVM connectors not currently focused but connected will be half-lit.

The LED(s) of audio and USB link connectors not currently focused will be dimmed.

## Mode Selection Pushbutton and Mode LED Behavior

Pressing the Mode Selection Pushbutton different number of times will light up different Mode LED, which allows for the follow-up action shown in the table. For more information on the follow-up actions, please refer to *Manual Switching* on page 17.

| Button Press | Mode LED that Lights up | Follow-Up Action |
|:---:|:---:|:---|
| Once | KVM, Audio, USB | Press any of the Port Pushbutton to select focus for **all connectors** |
| Twice | KVM | Press any of the Port Pushbutton to select focus for **KVM connector** |
| Three times | Audio | Press any of the Port Pushbutton to select focus for **audio connectors** |
| Four times | USB | Press any of the Port Pushbutton to select focus for **USB link** |

# Buzzer Behavior

| Sound | Description |
|-------|-------------|
| 1 beep | ◆ Changing port<br>◆ Activating auto-scan mode<br>◆ Pausing/resuming auto-scan |
| 1 long beep | ◆ Powering on the unit<br>◆ Resetting the unit |
| 2 beeps | ◆ Interrupting auto-scan<br>◆ Entering keyboard emulation off mode<br>◆ Finishing USB synchronization |

Refer to *Buzzer Control* on page 27 if you wish to turn the buzzer on or off.

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# 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. 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 installation, refer to the installation diagram on the following page (the numbers in the diagram on page 13 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 monitor(s) into the HDMI console ports located on the unit's rear panel and power on the monitors.

3. Plug your microphone and speakers into the console microphone and speaker jacks located on the unit's front panel. Audio cables are required on the CPU side for this connection to work.

4. Plug your microphone and speakers into the audio console ports located on the unit's rear panel. The microphone and speakers plugged into the front panel have priority over those plugged into the rear panel.

5. Using the DisplayPort cable, plug the DisplayPort connector into an available DisplayPort A socket on the KVM port section of the switch (CPU 1, CPU 2, etc.), then plug the USB 3.0 cable, microphone/speaker cables into their corresponding sockets. Using another DisplayPort cable, plug the DisplayPort cable connector into the DisplayPort socket B in the same KVM port section of the switch. Repeat for DisplayPort socket C.

6. At the other end of the cables from step 5, plug the microphone/speaker cables into their respective ports on the computer.

7. At the other end of the DisplayPort cable and USB 3.0 cable from step 5, plug the DisplayPort cable into its respective port on the computer. Repeat steps 5, 6, and 7 for each triple-screen PC system you are installing.

8. (Optional) Plug your USB peripherals into the front or rear USB peripheral ports.

9. 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.

10. Power on the computers.

**Note:**

◆ By default, the switch links to the first computer that is powered on.

◆ The total cable length from the PC to monitor (including KVM) cannot exceed 3.3 meters.

◆ Choosing high quality cables helps to ensure that 4K UHD (3840x2160 @ 60 Hz) or 4K DCI (4096x2160 @ 60 Hz) resolutions can be reached.

◆ It is highly recommended that the CS1964 is kept powered on at all times.

## Installation Diagram



CS1964 Front View

CS1964 Rear View

DisplayPort Cable
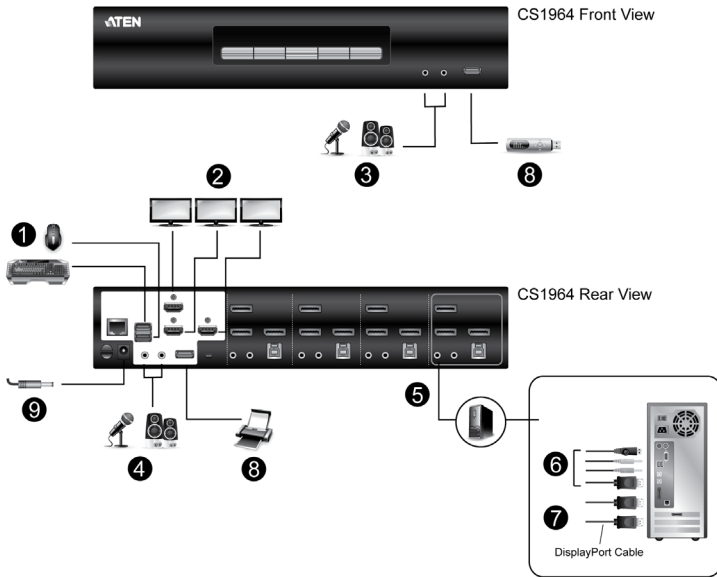
# Hex-Display (DCC Mode)

To expand your installation to a Hex-Display display, you can use DCC Mode to connect two CS1964 units together, and use six displays in unison.

To set up DCC mode, power off all devices, refer to the installation diagram on the next page (the numbers in the diagram correspond to the steps, below), and do the following:

1. Connect all the computers to the *Host* as described in Hardware Setup, *Cable Connections*, page 11.

2. On the *Client*, plug DisplayPort connectors of DisplayPort cables into the DisplayPort sockets A, B and C in the same KVM port section of the switch.

3. Plug the other end of the DisplayPort cables into the DisplayPort sockets on the computer.

4. Repeat steps 2 and 3 for all computers.

5. Plug the console monitors into the HDMI console ports located on the *Host's* and *Client's* rear panel.

6. Connect the DCC port of the *Host* to the DCC port of the *Client* using an RJ-45 cable.

7. On the rear of the *Client* set the DCC switch to **Secondary**.*

8. On the rear of the *Host* set the DCC switch to **Primary**.

9. Power up the installation: plug in the power cord for the *Host* and *Client*, then power on both. After both units are up, power on the computer/video source devices.

**Note:**

- P means Primary, and S means Secondary.
- In DCC mode, the *Client's* front panel pushbuttons are disabled, and it takes all commands directly from the *Host*.
- Setting the DCC switch to the *S* position will disable all front panel pushbuttons on that switch.

## Hex-Display Installation
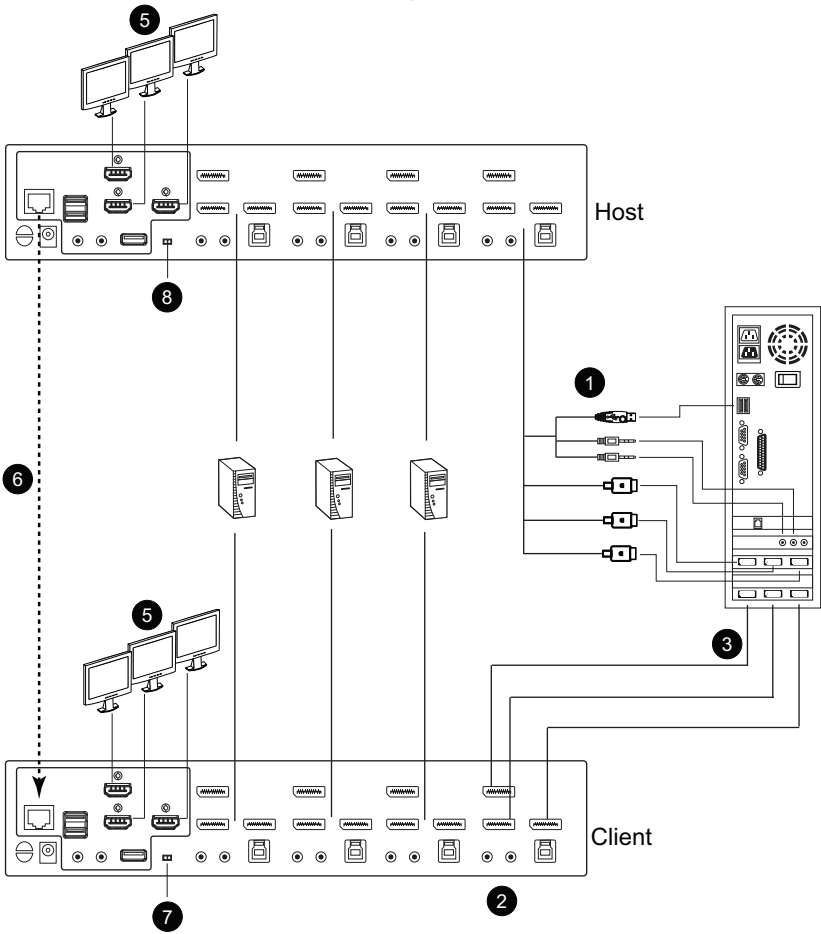
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# Chapter 3
# Basic Operation

## Port Switching

There are four convenient methods to switch between the computers: Manual – by pressing the port selection pushbuttons on the front panel, Mouse – by clicking the scroll wheel of the mouse, Hotkey – by entering combinations on the keyboard, and RS-232 Commands – by entering the correct command and control.

### Manual Switching

For manual port selection:

◆ To bring complete focus (**audio, KVM, and USB**) to a computer, *either*, a) press the port selection pushbutton that corresponds to that computer; *or* b) press the Mode pushbutton **once** (the Mode pushbutton's three icons light up) and then press the port selection pushbutton that corresponds to that computer. All three port icons light up.

◆ To bring only the **KVM** focus to a computer, press the Mode pushbutton **twice** (the Mode pushbutton's KVM icon lights up), and then press the port selection pushbutton that corresponds to that computer. The port's KVM icon (the port number) lights up.

◆ To bring only the **audio** focus to a computer, press the Mode pushbutton **three times** (the Mode pushbutton's audio icon lights up), and then press the port selection pushbutton that corresponds to that computer. The port's audio icon lights up.

◆ To bring only the **USB** focus to a computer, press the Mode pushbutton **four times** (the Mode pushbutton's USB icon lights up), and then press the port selection pushbutton that corresponds to that computer. The port's USB icon lights up.

◆ Press and hold port selection pushbuttons 1 and 2 simultaneously for two seconds to start Auto Scan mode.

> **Note:** 1. 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.
>
> 2. If a port is not selected within five seconds of pushing the Mode pushbutton, the Mode pushbutton will power off.

## Mouse Switching

For mouse port selection: Double-click the scroll wheel of your USB mouse to cycle through the ports.

**Note:** 1. Mouse switching is only supported by USB 3-key scroll wheel mice.

2. Mouse switching is disabled by default. See *Hotkey Setting Mode (HSM)*, page 24, to enable mouse switching.

3. Mouse switching is only supported when Mouse Emulation is enabled.

## Hotkey Switching

For Hotkey port selection: All port switches from the keyboard begin by pressing the Scroll Lock key twice. Regarding details of the Hotkey parameters, see *Hotkey Operation*, page 21.

### RS-232 Commands

For RS-232 port selection: Enter the correct command and control to switch port. Regarding details of the RS-232 command and control, please refer to the *CS1964 RS-232 Command User Manual*.

# Hot Plugging

The CS1964 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 CS1964 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. Once the switch is powered up, power on the computers.

# Port ID Numbering

Each KVM port section on the CS1964 switch is assigned a port number (1 to 4). The port numbers are marked on the rear panel of the switch (see 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 page 22 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 explained below:

◆ Press a port selection pushbutton once to bring only the KVM 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 the KVM, audio and USB 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 23 for details.

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# Chapter 4
# Hotkey Operation

The CS1964 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.

## Hotkey 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 25, 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). |
| [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 [Scroll Lock] [Scroll Lock] [n] [Enter] |

**Note:** The **n** stands for the computer's Port ID number (1, 2, 3, or 4). See *Port ID Numbering*, page 19 for details. Replace the **n** with the appropriate Port ID when entering Hotkey combinations.

## Auto Scanning

The CS1964'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 CS1964 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 audio 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 (HSM)

Hotkey Setting Mode (HSM) is used to set up your CS1964 switch configuration. All operations begin with invoking Hotkey Setting Mode.

## 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 24).

2. Press and release **[H]**.

   The HSM invocation keys become the **[Ctrl]** key (instead of **[Num Lock]**) and the **[F12]** key (instead of **[-]**).

   **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

An alternate way of activating port switching is by pressing the **[Ctrl]** key twice. To use the alternate port switching hotkeys, do the following:

1. Invoke HSM (see page 24).

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, go through the steps above.

## Keyboard Operating Platform

The CS1964'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 24).

3. Press and release the appropriate Function key (see table below). After completing this procedure, you automatically exit HSM.

| Function Key | Operation |
|---|---|
| [F1] | Sets the SPC mode so that it can work under special operating systems as a standard (104 key) keyboard. |
| [F2] | Enables Mac keyboard emulation, see page 31, for details. |
| [F10] | Enables Windows keyboard emulation. |

## 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 24).

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 24).

2. Press and release **[F5]**

## Buzzer Control

The buzzer can be turned on or off. To turn the buzzer on/off, do the following:

1. Invoke HSM (see page 24).

2. Press and release **[B].**

## Hotkey Port Switching

To enable/disable hotkey port switching, do the following:

1. Invoke HSM (see page 24).

2. Press **[X] [Enter]**.

When disabled, port switching hotkeys **[Scroll Lock] [Scroll Lock]** (and the alternative **[Ctrl] [Ctrl]**) will not work.

## Firmware Upgrade Mode

To enter Firmware Upgrade Mode, do the following:

1. Invoke HSM (see page 24).

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 CS1964 to its default Hotkey settings, do the following:

1. Invoke HSM (see page 24).

2. Press **[R] [Enter]**.

All Hotkey settings return to the factory default settings.

## Keyboard Emulation Control

To enable/disable keyboard emulation, do the following:

1.  Invoke HSM (see page 24).

2.  Press **[N]**.

## Mouse Emulation Control

To enable/disable mouse emulation, do the following:

1.  Invoke HSM (see page 24).

2.  Press **[M]**.

## Mouse Port Switching

Mouse Port Switching allows you to switch ports using mouse wheel button (clicked twice). For Mouse Port Switching to work, Mouse Emulation must be enabled. To enable/disable mouse port switching, do the following:

1.  Invoke HSM (see page 24).

2.  Press **[W]**.

## N-Key Rollover Keyboard Supporting Function

To enable/disable N-key rollover keyboard supporting function, do the following:

1.  Invoke HSM (see page 24).

2.  Press **[K] [Enter]**.

## HSM Summary Table

After invoking HSM (see page 24), key in one of the following keys to perform the corresponding function:

| Key | Function |
|---|---|
| [F1] | Sets the keyboard and mouse to SPC mode so that it can work under special operating systems as a standard (104 key) keyboard and mouse. |
| [F2] | Enables Mac keyboard emulation. |
| [F4] | Print the switch's current settings via a text editor or word processor. |
| [F5] | Performs a USB keyboard and mouse reset. |
| [F6] [n][n] [Enter] | Sets the keyboard language layout. Where nn is a two digit number that represents the keyboard language code (US English: 33, French: 08, German: 09, Japanese: 15). |
| [F10] | Enables Windows keyboard emulation. |
| [B] | Enables/disables the buzzer. |
| [E] | Turns the Power-on-Detection function on/off. |
| [H] | Toggles between the default and alternate HSM invocation keys. |
| [K] [Enter] | Enables/disables N-key rollover keyboard supporting function. |
| [M] | Enables/disables mouse emulation. |
| [N] | Enables/disables keyboard emulation. |
| [R] [Enter] | Resets the Hotkey settings to their default status. |
| [T] | Toggles between the default and alternate Port Switching keys. |
| [u] [p] [g] [r] [a] [d] [e] [Enter] | Invokes Firmware Upgrade Mode. |
| [W] | Enables/disables Mouse Port Switching. When enabled, click the mouse wheel twice to switch ports. Mouse emulation must be enabled. |
| [X] [Enter] | Enables/disables Hotkey Port Switching. |
| [Esc] or [Spacebar] | Quits setting mode. |
| [S] | Alternative Manual Port Selection Settings |

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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.

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# Chapter 6
# The Firmware Upgrade Utility

The Windows-based Firmware Upgrade Utility (FWUpgrade.exe) provides a smooth, automated process for upgrading the CS1964'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 website regularly to find the latest packages and information relating to them:

http://www.aten.com/global/en/support-and-downloads/downloads/

## 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 the ATEN Support & Download site and choose the model name that relates to your device (CS1964) 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. Disconnect the CS1964 from your KVM installation and power it off. Connect the USB cable's Type A USB connector to a USB port on your computer.

4. At the other end of the USB cable, connect the USB Type B connector to the Type B USB port in the Port 1 KVM section.

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

5. Press and hold the Mode pushbutton. While holding the button, connect the power adapter to the CS1964 to enter Firmware Upgrade Mode. 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:
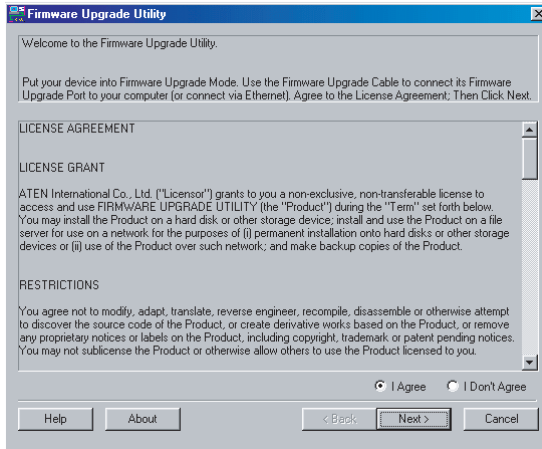


**Note:** The screens shown in this section are for reference only. The wording and layout of the actual screens put up by the Firmware Upgrade Utility may vary slightly from these examples.
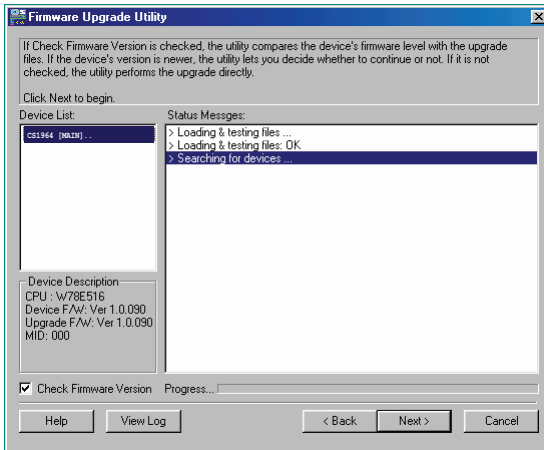
2. Read the License Agreement (enable the *I Agree* radio button).

3.  Click **Next** to continue. The Firmware Upgrade Utility main screen appears:
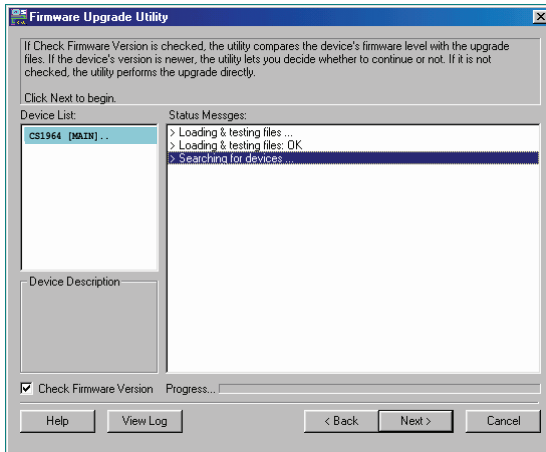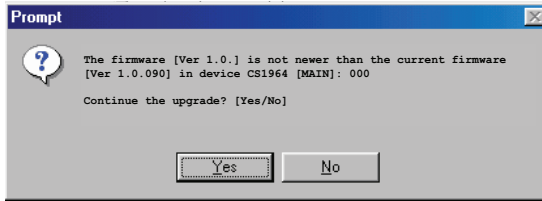


The Utility inspects your installation. All the devices capable of being upgraded by the package are listed in the *Device List* panel.

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:
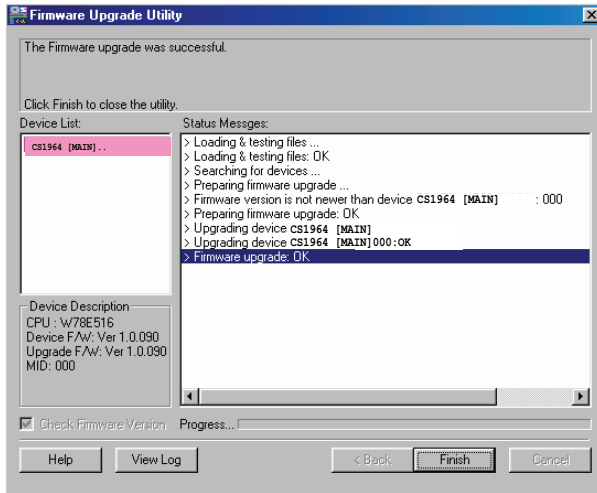


Click **Finish** to close the Firmware Upgrade Utility.

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

If you have a DCC mode installation be sure to reconnect the cable connected to the DCC port, and set the DCC switch back to *Client* on the appropriate switch (see *Hex-Display (DCC Mode)*, page 14).

# 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 CS1964 by removing the power jack.

2. Invoke Firmware Upgrade Mode by holding down the *Mode Selection* pushbutton on the front panel (seesee *Mode Selection Pushbutton*, page 5) and power on the CS1964. The orange LEDs flash together.

3. Do the firmware upgrade procedure again.

# Appendix

## Safety Instructions

- Read all of these instructions. Save them for future reference.

- This device is for indoor use only.

- 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.

- Avoid circuit overloads. Before connecting equipment to a circuit, know the power supply's limit and never exceed it. Always review the electrical specifications of a circuit to ensure that you are not creating a dangerous condition or that one doesn't already exist. Circuit overloads can cause a fire and destroy equipment.

- 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.

◆ Do not connect the RJ-11 connector marked "UPGRADE" to a public telecommunication network.

# Technical Support

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

## International

* For online technical support – including troubleshooting, documentation, and software updates: http://support.aten.com
* For telephone support, see *Telephone Support*, page iii:

## 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 | | | CS1964 |
|---|---|---|---|
| Computer Connections | Direct | | 4 |
| Port Selection | | | Pushbutton, Hotkey, RS-232 Commands, Mouse* |
| Connectors | Console Ports | Keyboard | 1 x USB Type A Female |
| | | Mouse | 1 x USB Type A Female |
| | | Video | 3 x HDMI Female (Black) |
| | | Speakers | 2 x 3.5mm Audio Jack Female (Green; 1 front, 1 rear) |
| | | Microphone | 2 x 3.5mm Audio Jack Female (Pink; 1 front, 1 rear) |
| | KVM Ports | KB / Mouse | 4 x USB 3.1 Gen 1 Type B Female (Blue) |
| | | Video | 12 x DisplayPort Female (Black) |
| | | Speakers | 4 x 3.5mm Audio Jack Female (Green) |
| | | Microphone | 4x 3.5mm Audio Jack Female (Pink) |
| | DCC port | | 1 x RJ-45 Female |
| | Power | | 1 x DC Jack |
| | USB Hub | | 2 x USB 3.1 Gen 1 Type A Female (Blue; 1 front, 1 rear) |
| Switches | Selected | | 5 x Pushbutton |
| | Station Selection | | 1 x Slide switch |
| LED | KVM | | 4 (Orange) |
| | Audio | | 4 (Green) |
| | USB Link | | 4 (Green) |
| | Mode | | 1 Orange (KVM), 2 Green (Audio & USB Link) |
| Emulation | KB / Mouse | | USB |
| Video | | | 4096 x 2160 @ 60 Hz |
| Scan Interval | | | 1 – 99 seconds (default 5 sec) |
| Power Consumption | | | DC 12V: 15.49W |
| Environment | Operating Temp. | | 0–50ºC |
| | Storage Temp. | | -20–60ºC |
| | Humidity | | 0–80% RH, Non-condensing |
| Physical Properties | Housing | | Metal |
| | Weight | | 1.93 kg |
| | Dimensions (L x W x H) | | 33.50 x 15.6 x 6.55 cm |

**\*** Port switching only works with 3-key USB mouse wheel in emulation mode.

# 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. |
| | CS1964 needs to be reset. | Power off all devices on the installation (see safety note, top of page 11); power off the CS1964; 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 CS1964's rear panel, then plug it back in. |
| | PC or OS does not support USB 2.0/3.0. | The CS1964 has a built-in USB 3.0 hub, so will not support PCs or OS that do not support USB 2.0/3.0. |
| | | For an OS that does not support USB 2.0, keyboard and mouse functions can be reset using the [F1] Hotkey function. See page 29. |
| 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. |
| Front Panel Pushbuttons not responding when pushed. | The daisy chain switch located on the back of the CS1964 is set to Client. | Make sure the daisy chain switch located on the rear of the switch is set to *Host*. |
| | | You should only set the daisy chain switch to *Client* when connecting two units in a Hex-Display installation, see *Hex-Display (DCC Mode)*, page 14. |

| Symptom | Possible Cause | Action |
|---|---|---|
| The Front Panel Pushbutton Combo key doesn't work after its set. | Some Hotkeys are not supported as front panel pushbutton combo keys. | The **[X] [Enter]**, **[R] [Enter]**. and **[upgrade] [Enter]** Hotkeys can not be set as a front panel pushbutton combo key. Select a different Hotkey to use. |

# 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 detective, 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/

# **MEMO**

# **<u>MEMO</u>**