



Simply Better Connections

# CS18208 / CS18216

8/16-Port USB 3.0

4K HDMI KVM Switch

User Manual

## Compliance Statements

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### 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.

### Achtung

Der Gebrauch dieses Geräts in Wohnumgebung kann Funkstörungen verursachen.



### KCC Statement

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**Industry Canada Statement**

This Class A digital apparatus complies with Canadian ICES-003.

**CAN ICES-003 (A) / NMB-003 (A)****HDMI Trademark Statement**

The terms HDMI, HDMI High-Definition Multimedia Interface, and the HDMI Logo are trademarks or registered trademarks of HDMI Licensing Administrator, Inc.

**RoHS**

This product is RoHS compliant.

## About this Manual

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This User Manual is provided to help you get the most from your CS18208 / CS18216 system. It covers all aspects of installation, configuration and operation. An overview of the information found in the manual is provided below.

**Chapter 1, Introduction**, introduces you to the CS18208 / CS18216 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 for a basic single stage hookup, three-stage cascade, and multi-display installation are provided.

**Chapter 3, Basic Operation**, explains the fundamental concepts involved in operating the CS18208 / CS18216.

**Chapter 4, OSD Operation**, provides a complete description of the CS18208 / CS18216's OSD (On Screen Display), and how to work with it.

**Chapter 5, Hotkey Operation**, details all of the concepts and procedures involved in the Hotkey operation of your CS18208 / CS18216 installation.

**Chapter 6, Keyboard Emulation**, provides tables that list the PC to Mac and PC to Sun keyboard emulation mappings.


**Chapter 7, RS-232 Operation**, provides details on the functions and RS-232 commands that you can use to control the CS18208 / CS18216 using a serial controller.

**Chapter 8, The Firmware Management Utility**, explains how to use this utility to upgrade the CS18208 / CS18216's firmware with the latest available versions and perform an OSD configuration backup/restore.

**Appendix**, provides specifications and other technical information regarding the CS18208 / CS18216.

## **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 <b>Enter</b> 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 <i>Start</i> menu, and then select <i>Run</i> .
	Indicates critical information.

## Package Contents

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- ◆ 1 CS18208 / CS18216 8/16-Port USB 3.0 4K HDMI KVM Switch with Rack Mounting Kit
- ◆ 2 HDMI cables
- ◆ 2 USB 3.0 cables
- ◆ 2 audio cables
- ◆ 1 firmware upgrade cable
- ◆ 1 foot pad set (4 pcs)
- ◆ 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.

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**Note:** Features may have been added to the CS18208 / CS18216 since this manual was published. Please visit our website to download the most up-to-date version.

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## Product Information

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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	<a href="http://www.aten.com">http://www.aten.com</a>
North America	<a href="http://www.aten-usa.com">http://www.aten-usa.com</a>

## User Information

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### Online Registration

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

International	<a href="http://eservice.aten.com">http://eservice.aten.com</a>
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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.



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# Chapter 1

## Introduction

### Overview

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The ATEN CS18208 / CS18216 8/16-Port USB 3.0 4K HDMI KVM Switch can effectively access and control up to 8/16 HDMI computers from a single USB keyboard, USB mouse, and HDMI monitor console. The CS18208 / CS18216 supports high video quality up to 4K DCI (4096 x 2160 @ 60Hz), presenting crystal-clear visuals.

To meet the needs of easy expansion and flexibility, the CS18208 / CS18216 can control up to 512/256 computers by cascading to three/two levels for a single console. Furthermore, the CS18208 / CS18216 supports multi-display function by stacking up to eight CS18208 / CS18216 units to compare and analyze information on 8 monitors at most, which substantially streamlines the working environment.

With two patented ATEN technology – Video DynaSync™ and EDID Expert™, the CS18208 / CS18216 can optimize display resolution, accelerate switching between ports and power up smoothly while eliminating boot-up display problems.

Besides, the CS18208 / CS18216 comes with a built-in USB 3.1 Gen 1 hub delivering data transfer rates up to 5 Gbps, allowing users to speed up operations and share USB peripherals instantly. For user-friendly port selection methods, the CS18208 / CS18216 offers pushbuttons, hotkeys, RS-232 commands, and OSD with newly-designed UI, bringing effortless and intuitive operations.

To eliminate security concern, a two-level password authorization is available to enhance security protection for accessing and controlling computers. Consolidating these advantageous functionalities, the CS18208 / CS18216 is ideal for server room/computer room management applied in industries with requirements for high-quality images and multitasking, such as enterprise, government, production, telecom, finance, media, content provider, video surveillance, etc.

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#### Note:

- ♦ The CS18208 / CS18216 offers two types of installation – 1) standalone/cascade; and 2) multi-display – that require different cabling setups. Therefore, the functions of both types are not available in one installation.

- ◆ For PC compatible computers. Mac and Sun computers must use the USB cable connections (see *Cables*, page 5).
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## Features

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- ◆ One USB console controls up to eight (CS18208) or sixteen (CS18216) HDMI interface computers and two additional USB 3.0 peripheral devices
- ◆ Cascadable to three levels – controls up to 512 computers (CS18208)<sup>1</sup>; or to two levels – up to 256 computers (CS18216)
- ◆ Multi-Display feature – stack up to eight CS18208 / CS18216 units and display video from up to 8 monitors (dual display / triple display / quad display / multi-display)
- ◆ Video DynaSync™ – an exclusive ATEN technology that eliminates boot-up display problems and optimizes the resolution when switching among different sources
- ◆ EDID Expert™ – selects optimum EDID mode for smooth power-up and highest quality display
- ◆ Superior video quality – up to 4K DCI (4096 x 2160 @ 60Hz)
- ◆ Built-in 2-port USB 3.1 Gen 1 hub with SuperSpeed 5 Gbps data transfer rates
- ◆ Audio enabled – full bass response provides a rich experience for 2.1 channel stereo sound
- ◆ Supports HD audio<sup>2</sup>
- ◆ Computer selection via pushbuttons, hotkeys, OSD, and RS-232 commands
- ◆ Independent switching of KVM and USB peripheral focus<sup>3</sup>
- ◆ Two-level (administrator/user) password authorization for enhanced security protection
- ◆ Broadcast mode – operations can be simultaneously performed on all selected computers, such as software installation and upgrading, system-wide shutdown, etc.
- ◆ Auto Scan Mode for monitoring all computers
- ◆ Console mouse port emulation/bypass feature supports most mouse drivers and multifunction mice

- ♦ Multilingual keyboard mapping – supports English (US), English (UK), German (GER.), German (SWISS), French, Hungarian, Italian, Japanese, Korean, Russian, Spanish, Swedish, Traditional Chinese, and Simplified Chinese
- ♦ Mac/Sun keyboard support and emulation<sup>4</sup>
- ♦ Supports hot-plugging
- ♦ HDMI compliant; HDCP 2.2 compliant
- ♦ Multiplatform support – Windows, Linux, Mac, and Sun
- ♦ Firmware upgradable
- ♦ Supports multimedia, wireless keyboards and mouse

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**Note:** 1. CS18208 can only be cascaded with another CS18208 units.

2. HD audio through HDMI and DisplayPort channel cannot be switched independently.

3. Independent switching is only supported under mouse emulation mode.

4. PC keyboard combinations emulate Mac/Sun keyboards; Mac/Sun keyboards work only with their own computers.

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## Requirements

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### Console

- ◆ An HDMI compatible monitor capable of the highest possible resolution that you will be using on any computer in the installation

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**Note:** For multi-display installations, multiple monitors are required. See *Multi-display Installation*, page 24, for details.

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- ◆ A USB mouse
- ◆ A USB keyboard
- ◆ Speakers (optional)

### Computers

The following equipment must be available on each computer:

- ◆ A HDMI card

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**Note:**

- ◆ The quality of the display is affected by the quality of the HDMI display card. For best results, we recommend you purchase a high quality product.
  - ◆ For multi-display installations, the computers require multiple HDMI cards. See *Multi-display Installation Diagram*, page 25, for details.
- 

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



## Cables

- Only custom USB HDMI KVM cable sets, which are specifically designed to work with this switch, may be used to link to the computers. Two cable sets are provided with this package.

**Note:** The 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 HDMI KVM Cable Kit	1.8 m	2L-7D02UHX3

- For multi-display installations, standard USB Type-A to USB Type-B cables and standard HDMI cables are also required.

**Note:** The CS18208 / CS18216 supports speaker ports only. Do not connect the microphone connector from the KVM cable sets.

## Operating Systems

OS		Version
Windows		Windows Server 2012, 2016, 2019 / Windows 7 SP1 / Windows 8 / Windows 8.1 / Windows 10
Linux	CentOS	7 and higher
	OpenSUSE Leap 15.1 Snapshot8	10.26 and higher
	Ubuntu	16.0.4 and higher
	NeoKylin	v7.0
SUN	Sun Solaris	11.3 and higher
Mac		10.6 and higher

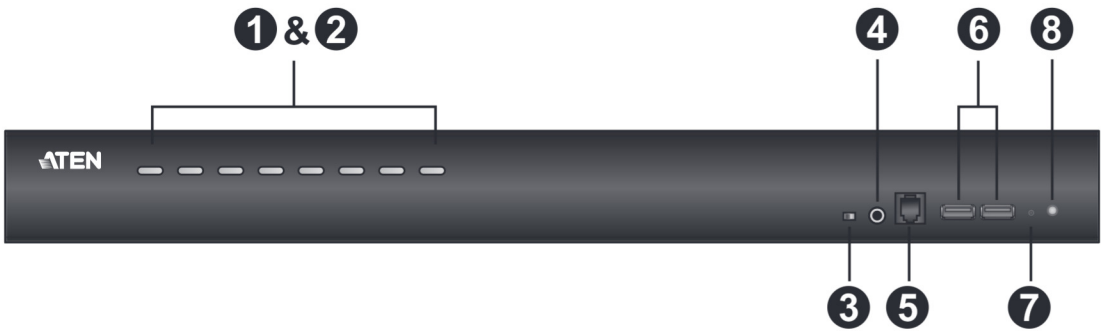
**Note:**

- Supports Linux Kernel 2.6 and higher.
- The CS18208 / CS18216 has a built-in USB3.1 hub, and does not support PCs or operating systems that do not support USB3.1.

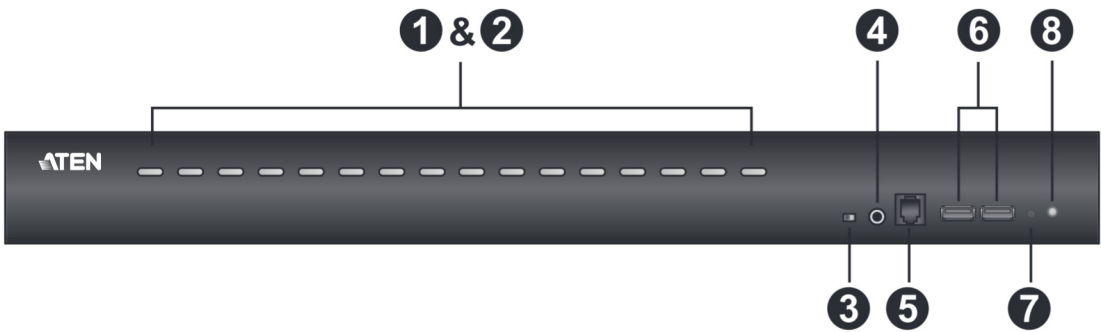
# Components

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## Front View CS18208



## Front View CS18216



No.	Component	Description
1	port selection pushbuttons	<p>For manual port selection (see <i>Port Selection</i>, page 28, also):</p> <ul style="list-style-type: none"> <li>◆ 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.</li> <li>◆ Press a pushbutton for longer than two seconds to bring the KVM and audio focus* to the computer attached to its corresponding port.</li> <li>◆ Press pushbuttons 1 and 2 simultaneously for 2 seconds to perform a keyboard and mouse reset start. See <i>Keyboard / Mouse Reset</i>, page 52, for details.</li> <li>◆ Press pushbuttons 7 and 8 simultaneously for 2 seconds to start Auto Scan Mode*. See <i>Auto Scan Mode</i>, page 50, also</li> </ul> <p><b>Note:</b> Enable mouse emulation for independent switching (see page 42).</p>
2	port LEDs	<p>The Port LEDs are built into the Port Selection Switches. The left ones are the KVM Port LEDs; the right ones are the USB LEDs:</p> <p><b>KVM</b></p> <ul style="list-style-type: none"> <li>◆ Lights DIM ORANGE to indicate that the computer attached to the corresponding port is up and running (On Line).</li> <li>◆ Flashes to indicate that Firmware Upgrade mode is in effect.</li> <li>◆ Changes to BRIGHT ORANGE to indicate that the computer attached to its corresponding port is the one that has the KVM focus (Selected).</li> <li>◆ Flashes to indicate that the computer attached to its corresponding port is being accessed under Auto Scan mode.</li> </ul> <p><b>USB</b></p> <ul style="list-style-type: none"> <li>◆ Lights GREEN to indicate that the computer attached to its corresponding port is the one that has access to the USB peripherals.</li> </ul>
3	firmware upgrade recovery switch	<p>During normal operation and while performing a firmware upgrade, this switch should be in the NORMAL position. If a firmware upgrade operation does not complete successfully, this switch is used to perform a firmware upgrade recovery. See <i>Firmware Upgrade Recovery</i>, page 85, for details.</p>
4	audio jack	<p>The cables from your main speakers plug in here.</p> <p><b>Note:</b> The speakers plugged in here have priority over those in the rear panel.</p>
5	firmware upgrade port	<p>The firmware upgrade cable that transfers the firmware upgrade data from the administrator's computer to the CS18208 / CS18216 plugs into this RJ-11 connector.</p>

No.	Component	Description
6	USB 3.1 Gen 1 peripheral hub section	USB 3.1 peripherals (printers, scanners, etc.) can plug into this port (this may require an extra power adapter). <b>Note:</b> The USB 3.1 hub cannot be accessed through the switch by computers on the second level of a cascaded installation.
7	reset button	Pressing this switch performs a system reset. When the system is reset, the switch beeps, and the port LEDs flash in succession until the reset is complete. After the reset is complete you can login again. <b>Note:</b> This switch is recessed and must be pushed with a small object, such as the end of a paper clip or a ballpoint pen.
8	power LED	Lights to indicate that the switch is powered up and ready to operate.