



## 8-Port True 4K HDMI Splitter VS0108HB User Manual



**HDMI™**  
HIGH-DEFINITION MULTIMEDIA INTERFACE

[www.aten.com](http://www.aten.com)

# Preface

## EMC Information

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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.

**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.

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

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.

## RoHS

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This product is RoHS compliant.



## 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	86-10-82961301 or 86-10-82961302
Japan	81-3-5615-5811
Korea	82-2-467-6789
North America	1-888-999-ATEN ext 4988
United Kingdom	44-8-4481-58923

### 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

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- ◆ 1 VS0108HB 8-Port True 4K HDMI Splitter
- ◆ 1 Power Adapter
- ◆ 1 Rack Mount Kit
- ◆ 1 User Instructions

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**Note:** Make sure that all of the components are present and in good order. If anything is missing or was damaged in shipping, contact your dealer.

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Manual Date: 2018-03-26

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## About this Manual

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This user manual is provided to help you get the most from the VS0108HB. 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 8-Port True 4K HDMI Splitter. Its purpose, features, and installation considerations are described and discussed.

Chapter 2, *Hardware Setup* describes the panel components and the steps to quickly and safely set up the VS0108HB.

Chapter 3, *Operation* provides details on how to operate and configure the VS0108HB using the panel pushbuttons and RS-232 commands.

*Appendix* provides a list of safety instructions and precautions, contact information for ATEN technical support, product specifications, and other technical information.

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### Note:

- ◆ Read this manual thoroughly and follow the installation and operation procedures carefully to prevent any damage to the unit or any connected devices.
  - ◆ ATEN regularly updates its product documentation for new features and fixes. For an up-to-date VS0108HB documentation, visit <http://www.aten.com/global/en/>
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## Conventions

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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.  |

## 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>



# Chapter 1

## Introduction

### Overview

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The ATEN VS0108HB is designed for applications that require routing one source of high definition digital video to 8 HDMI display devices at the same time. It supports Dolby True HD and DTS HD Master Audio, video signals up to True 4K (4096 x 2160 @ 60Hz 4:4:4), data rates up to 18 Gbps, 3D, Deep Color, and HD lossless audio formats. Featuring ATEN EDID technology, the VS0108HB guarantees continuous EDID communication with connected devices and ensures that the HDMI sources power-up properly and maintain correct video outputs.

Engineered to meet today's demand of True 4K signal transmission and user-oriented design, the ATEN VS0108HB is a powerful solution for a wide range of settings, such as home theater, educational centers, trade shows, shopping centers, meeting rooms, or wherever needed to meet application requirements.

## Features

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- ◆ Allows one HDMI source to be connected to up to 8 HDMI displays
- ◆ HDMI 2.0 (3D, Deep Color, 4K); HDCP 2.2 compliant
- ◆ Superior video quality – up to True 4K resolutions (4096 x 2160 @ 60Hz 4:4:4)
- ◆ Long distance transmission from source to output – up to 6 m
- ◆ Built-in bi-directional RS-232 serial port for high-end system control
- ◆ Supports Dolby True HD and DTS HD Master Audio
- ◆ Clear LED indication of device status
- ◆ EDID Expert™ – Selects optimum EDID settings for smooth power-up, high quality display, and use of the best resolution across different screens
- ◆ Plug-and-play
- ◆ Rack-mountable (1U design)

## **Planning the Installation**

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### **Required Equipment**

- ◆ 1 source device equipped with an HDMI Type-A connector
- ◆ 1 ~ 8 display devices equipped with an HDMI Type-A connector
- ◆ 1 HDMI cable (not exceeding 3 m) to connect the VS0108HB to source device
- ◆ 1 ~ 8 HDMI cables (each not exceeding 3 m) to connect the VS0108HB to the display devices

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### **Note:**

- ◆ You can connect a DVI source to the VS0108HB via a DVI to HDMI adapter.
  - ◆ ATEN strongly recommends that you use high-quality HDMI cables of appropriate length since this will affect the quality of the audio and video output. Contact your dealer to purchase the correct table sets.
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### **Optional Equipment**

To control the VS0108HB using RS-232 serial commands, prepare the following equipment:

- ◆ 1 RS-232 controller, e.g. a PC
- ◆ 1 serial cable with a 9-pin male connector

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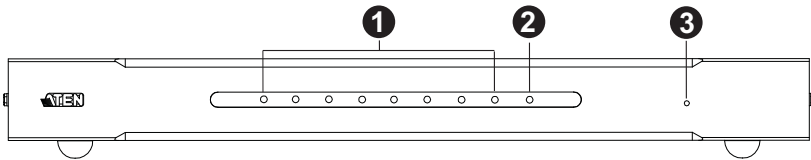
# Chapter 2

## Hardware Setup

### Components

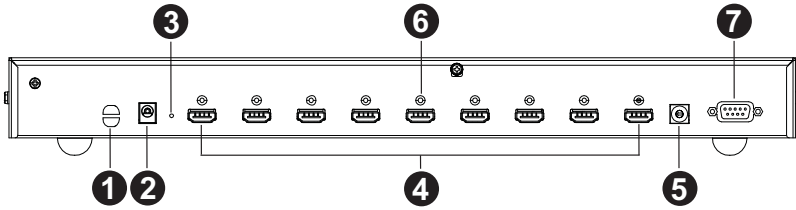
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#### Front View



No.	Component	Description
1	Output Port LEDs (1~8)	Lights to indicate there is a working connection to the display device(s) connected to the output port(s).
2	Input Port LED	Lights to indicate that there is a working connection to the source device (i.e., computer).
3	Power LED	Lights to indicate that the VS0108HB is receiving power and is up and running.

## Rear View

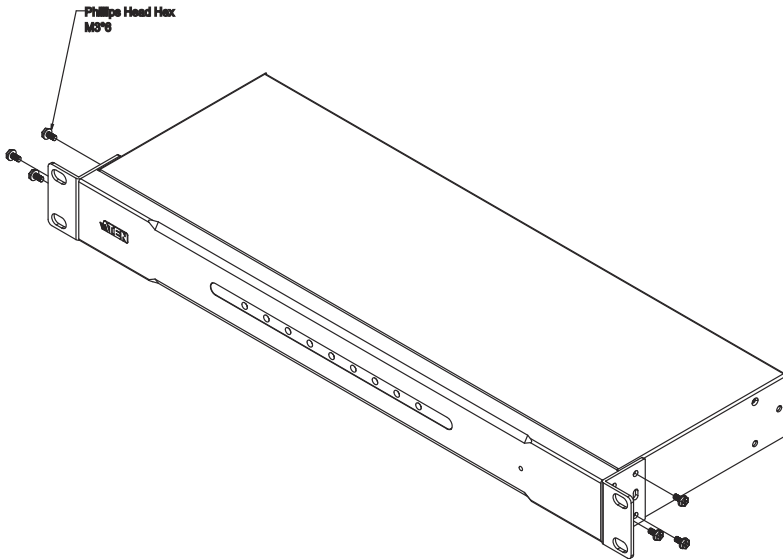


No.	Component	Description
1	Cable Tie Slot	If you are using a cable tie to gather the cables together, run it through this slot to attach it to the unit.
2	Power Jack	The power adapter cable plugs in here.
3	Firmware Upgrade button	Press this to have the VS0108HB enter Firmware Upgrade Mode. When the upgrade is done, press it again to exit the mode.
4	HDMI Output Port section	The cables from your HDMI display devices plug into these ports.
5	EDID Mode Switch	Turn this switch to select the EDID mode (0~7). See "EDID Mode Selection" on page 10.
6	HDMI Input Port	The cable from your HDMI source device plugs in here.
7	RS-232 Serial Port	This is the serial remote port for output source selection and high-end system control, as well as for upgrading the device firmware.

## **Rack Mounting**

The VS0108HB can be mounted in a 19" (1U) system rack. For the most convenient front panel pushbutton configuration and operation at the local site, mount the unit at the front of the rack, as follows:

1. Use the M3 x 6 Phillips head hex screws supplied with the Mounting Kit to screw the rack mounting brackets onto the front of the unit.



2. Screw the mounting brackets to the rack.

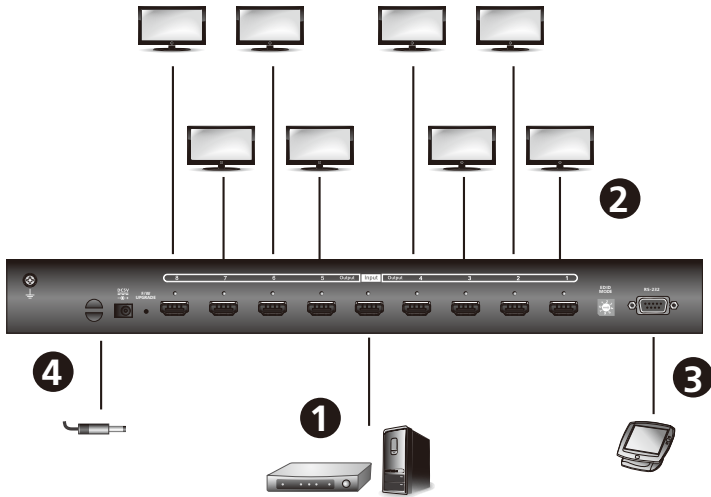
## Installation

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1. Please review the safety information regarding the placement of this device in *Safety Instructions*, page 15.
2. Do not power on the VS0108HB and the connected devices until all the necessary hardware is connected.

Follow the steps below to safely connect the required devices to the VS0108HB.



1. Use an HDMI male-to-male cable to connect your computer or an HDMI source device to the input port on the VS0108HB.
2. Use HDMI male-to-male cables to connect up to 8 display devices to the output ports on the VS0108HB.
3. (Optional) To configure the VS0108HB settings through the RS-232 port, connect a hardware/software controller to the VS0108HB.
4. Plug the supplied power adapter into an AC power source, then plug the power adapter cable into the splitter's Power Jack.

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**Note:** To ensure the output quality, make sure the HDMI cables used in this setup do not exceed 3 m.

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# Chapter 3

## Operation

### Overview

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You can operate the VS0108HB using the panel pushbuttons or an RS-232 serial controller. The availability of actions with the two methods is summarized in the table below.

Action	Operation Methods	
	Panel Pushbuttons	Serial Controller
<b>Switch Port</b>		
Switch on/of one or all output port		✓
<b>EDID</b>		
Select an EDID Mode	✓	✓
Select the ATEN default EDID configuration		✓
<b>Baud Rate</b>		
Set the baud rate		✓
<b>Read Information</b>		
Read and display information from the VS0108HB		✓
<b>Reset</b>		
Reset the VS0108HB to default factory settings		✓
<b>Firmware Upgrade</b>	✓	

### Switching On/Off the Port

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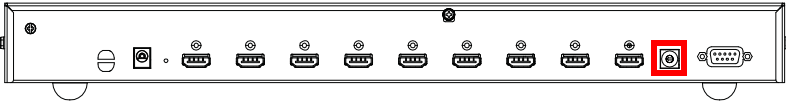
You can switch on/off one or all output ports using the RS-232 command (see *RS-232 Commands*, page 12).

## EDID

EDID is a data format that contains a display's basic information and is used to communicate with the video source/system. The VS0108HB lets users select a preset video configuration or EDID Mode, which utilizes the best resolution across different screens.

### EDID Mode Selection

The EDID Mode can be selected using the EDID Mode Switch located at the VS0108HB unit's rear panel or via an RS-232 serial controller.



To select an EDID Mode, turn the EDID Mode Switch to toggle between the Modes (0~7) as follows:

- ◆ **0 (Port 1)** - Implements the EDID of the connected display to Port 1, and passes it to the video source. The VS0108HB is able to copy the EDID of any connected display to the input source.
- ◆ **1 (ATEN Default)** - EDID is set to the ATEN default configuration. Users can further choose between 11 ATEN default EDID settings available via the RS-232 command (see *RS-232 Commands*, page 12).
- ◆ **2 (Auto)** - Implements the EDID of all connected displays. The VS0108HB uses the best resolution for all displays.
- ◆ **3 (SW)** - Uses the EDID configuration defined through the RS-232 command (see *RS-232 Commands*, page 12).
- ◆ **4 ~ 7** - EDID is set to the ATEN default configuration. Users can further choose between 11 ATEN default EDID settings available via the RS-232 command (see *RS-232 Commands*, page 12).

### ATEN Default EDID

You can use one of the 11 available ATEN default EDID configurations using the RS-232 command (see *RS-232 Commands*, page 12). The 11 ATEN default EDID lists as follows:

Default EDID No.	Description
00	720p video, 2 ch audio
01	1080p video, 2 ch audio (default)

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Default EDID No.	Description
02	1080p video, 5.1 ch audio
03	1080p video, 7.1 ch audio
04	1080i video, 2 ch audio
05	1024 x 768 DVI format
06	1280 x 1024 DVI format
07	1920 x 1080 DVI format
08	1920 x 1200 DVI format
09	3840 x 2160 @ 30 Hz, 2 ch audio
10	3840 x 2160 @ 60 Hz, 2 ch audio

## **Serial Control Protocol Commands**

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The VS0108HB's built-in bi-directional RS-232 serial interface allows system control through a high-end controller or PC.

### **Configuring the Serial Port**

The controller's serial port should be configured as follows:

Baud Rate	19200
Data Bits	8
Parity	None
Stop Bits	1
Flow Control	None

## RS-232 Commands

Task	RS-232 Command	Description
<b>Switch Port</b>		
Switch output port(s) on	sw o<output_number> on	Switch on one or all output ports. For example, to turn output port 02, type <b>sw o02 on</b> output_number: 01-08, * (all output ports)
Switch output port(s) off	sw o<output_number> off	Switch off one or all output ports. For example, to turn off all output ports, type: <b>sw o* off</b> output_number: 01-08, * (all output ports)
<b>EDID</b>		
Implement the display's EDID	edid portyy	Implement the EDID of the connected display to Port yy, and pass it to the video source. yy: 01-08
Implement auto EDID	edid auto	Implement the EDID of all connected displays. The VS0108HB uses the best resolution for all displays.
Implement ATEN default EDID	edid defaultyy	Implements the specified ATEN default EDID configuration. yy: 00-13, default is 00 (see <i>ATEN Default EDID</i> , page 10)
<b>Baud Rate Setting</b>		
Set up the baud rate	baud <baud_rate_value>	For example, to set the baud rate to 9600, type: <b>baud 9600</b> baud_rate_value: 9600, 19200 (default), 38400, 57600
<b>Read Information</b>		
Read (display) the VS0108HB's settings	read	Reads and displays information from the VS0108HB.
<b>Reset</b>		
Reset the VS0108HB to default factory settings	reset	-

**Note:**Each command string can be separated with a space.

## Verification

After entering a command, a verification message appears at the end of the command line as follows:

- ◆ Command OK - indicates that the command is correct and successfully performed by the splitter.
- ◆ Command incorrect - indicates that the command has the wrong format and/or values.

## Firmware Upgrade

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Go to ATEN's website and choose the model name of your device (VS0108HB) to get the Firmware Upgrade Packages, and then do the following steps:

1. Power off your VS0108HB by unplugging the power adapter.
2. Use a Serial RS-232 cable to connect a COM port on your computer to the VS0108HB RS-232 port.
3. Push and hold the Firmware Upgrade pushbutton on the unit's rear panel, and power on the VS0108HB unit to enter the firmware upgrade mode.
4. Follow the step-by-step procedure displayed on your screen.

## Restarting the VS0108HB

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Make sure to follow the steps below to safely restart the VS0108HB.

1. Power off the attached devices.
2. Unplug the power adapter cable from the VS0108HB.
3. Wait 10 seconds, and then replug the power adapter cable
4. After the VS0108HB is powered on, power on the attached devices.

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## Safety Instructions

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### General

- ◆ 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 uninterruptible 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.



## **Rack Mounting**

- ◆ Before working on the rack, make sure that the stabilizers are secured to the rack, extended to the floor, and that the full weight of the rack rests on the floor. Install front and side stabilizers on a single rack or front stabilizers for joined multiple racks before working on the rack.
- ◆ Always load the rack from the bottom up, and load the heaviest item in the rack first.
- ◆ Make sure that the rack is level and stable before extending a device from the rack.
- ◆ Use caution when pressing the device rail release latches and sliding a device into or out of a rack; the slide rails can pinch your fingers.
- ◆ After a device is inserted into the rack, carefully extend the rail into a locking position, and then slide the device into the rack.
- ◆ Do not overload the AC supply branch circuit that provides power to the rack. The total rack load should not exceed 80 percent of the branch circuit rating.
- ◆ Make sure that all equipment used on the rack – including power strips and other electrical connectors – is properly grounded.
- ◆ Ensure that proper airflow is provided to devices in the rack.
- ◆ Ensure that the operating ambient temperature of the rack environment does not exceed the maximum ambient temperature specified for the equipment by the manufacturer.
- ◆ Do not step on or stand on any device when servicing other devices in a rack.

## Technical Support

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### International

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

### North America

Email Support		support@aten-usa.com
Online Technical Support	Troubleshooting Documentation Software Updates	<a href="http://www.aten-usa.com/support">http://www.aten-usa.com/support</a>
Telephone Support		1-888-999-ATEN ext 4988

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	Specifications	
<b>Video Input</b>		
Interfaces	1 x HDMI Type A Female (Black)	
Impedance	100 $\Omega$	
Max. Distance	3 m / Source to VS0108HB at 4K@60Hz (4:4:4)	
<b>Video Output</b>		
Interfaces	8 x HDMI Type A Female (Black)	
Impedance	100 $\Omega$	
Max. Distance	3 m / VS0108HB to display at 4K@60Hz (4:4:4)	
<b>Video</b>		
Max. Data Rate	18 Gbps (6 Gbps per lane)	
Max. Pixel Clock	600 MHz	
Compliance	HDMI 2.0 (3D, Deep Color); HDCP 2.2	
Max. Resolutions	Up to 4096 x 2160 / 3840 x 2160 @ 60Hz (4:4:4)	
<b>Audio</b>		
Input	1 x HDMI Type A Female (Black)	
Output	8 x HDMI Type A Female (Black)	
<b>Control</b>		
RS-232	Connectors	1 x DB-9 Female (Black)
	Baud Rate	19200
	Data Bits	8
	Stop Bits	1
	Parity	No
	Flow Control	No
<b>EDID Settings</b>	EDID Mode: Port 1 / Default / Auto / Switch	
<b>Connectors</b>		
Power	1 x DC Jack	
<b>LEDs</b>		
Video Input	1 x LED (Green)	
Video Output	8 x LED (Green)	
Power	1 x LED (Green)	

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<b>Function</b>	<b>Specifications</b>
<b>Power Consumption</b>	5 VDC, 20W
<b>Environmental</b>	
Operating Temperature	0 - 40°C
Storage Temperature	-20 - 60°C
Humidity	0 x 80% RH, Non-Condensing
<b>Physical Properties</b>	
Housing	Metal
Weight	2.18 Kg
Dimensions (L x W x H)	43.72 x 15.78 x 4.40 cm

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## Limited Warranty

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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/>