

## USB HDMI HDBaseT 2.0 KVM Extender CE820

## **User Manual**





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### **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.

Suggestion: Shielded twisted pair (STP) cables must be used with the unit to ensure compliance with FCC & CE standards.

#### 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**

## **CE820 Package Contents**

- 1 CE820L USB HDMI HDBaseT 2.0 KVM Extender (Local Unit)
- 1 CE820R USB HDMI HDBaseT 2.0 KVM Extender (Remote Unit)
- 1 HDMI KVM Cable Set
- 2 Power Adapters
- 2 Mounting Kits
- 8 Foot Pads
- ◆ 1 User Instructions\*

## **CE820L Package Contents**

- 1 CE820L USB HDMI HDBaseT 2.0 KVM Extender (Local Unit)
- 1 HDMI KVM Cable Set
- 1 Power Adapter
- 1 Mounting Kit
- 4 Foot Pads
- 1 User Instructions\*

## **CE820R Package Contents**

- 1 CE820R USB HDMI HDBaseT 2.0 KVM Extender (Remote Unit)
- 1 Power Adapter
- 1 Mounting Kit
- 4 Foot Pads
- ◆ 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.

<sup>\*</sup> Features may have been added to the CE820 since this manual was published. Please visit our website to download the most up-to-date version of the manual.

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## **About this Manual**

This User Manual is provided to help you get the most from your 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 CE820 system. Its purpose, features and benefits are presented, and its front and back panel components are described.

**Chapter 2, Hardware Setup,** describes the steps that are necessary to quickly and safely set up your installation.

**Chapter 3, Operation,** explains the fundamental concepts involved in operating the CE820.

**An Appendix,** provides specifications and other technical information regarding the CE820.

### 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].
- 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
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# Chapter 1 Introduction

## Overview

The CE820 USB HDMI HDBaseT 2.0 KVM Extender can extend HDMI, Serial, Ethernet, and USB 2.0 signals up to 100 meters from the source using a single Cat 5e/6/6a/ATEN 2L-2910 cable and HDBaseT technology. The CE820 is equipped with USB connectors which allow you to extend any USB device between the units. The USB functionality provides support for peripheral sharing, touch panel control and file transfers. The CE820 ensures superior video quality with 4096 x 2160 resolutions so that you get the most out of your HDMI displays.

HDBaseT 2.0 technologies include: Long Reach mode to extend the KVM installation up to 150 meters @ 1080p; signal detection LED to indicate the HDBaseT connection status on the remote unit; and transmission of uncompressed 2-channel stereo audio.

The CE820 allows access to a computer system from a remote console (USB keyboard, monitor, and mouse). It is perfect for use in any type of installation where you need to place the console where it is conveniently accessible, but you want the system equipment to reside in a safe location – away from the dust and dirt of the factory floor, or the harsh environmental influence of a construction site, for example. This allows users to deploy system equipment over large distances.

The CE820 is useful for control and security purposes, where you can have the system in a secure area with the console in the most convenient location for user access. This is ideal for managing highly confidential data systems.

The CE820 is ideal for transportation centers, medical facilities, and shopping malls, industrial kiosks and for syncing files and folders between computers. Setup is as easy as can be – simply connect the computer; run the Cat 5e/6/6a ATEN 2L-2910 cable up to 100 meters to the Remote Unit; and plug the remote console into the Remote Unit.

1

#### **Features**

- Supports HDBaseT<sup>TM</sup> 2.0 technology
  - Extends video, audio, USB, RS-232, and Ethernet signals via a single Cat6 / 6a cable / 2L-2910 Cat 6 cable
  - Enhanced bit error detection and correction to resist signal interference during high-quality video transmissions
  - Status detection and LED indication for HDBaseT<sup>TM</sup> signal transmission on remote unit
- EDID Buffer for smooth power-up and the highest quality display
- HDMI (3D, Deep Color, 1080P, 4K); HDCP 2.2 Compatible
- Long distance with superior video quality
  - HDBaseT<sup>TM</sup> Standard mode up to 4K @ 100 m (Cat 6/6a/ATEN 2L-2910 Cat 6 cable)
  - HDBaseT<sup>TM</sup> Long-reach mode up to 1080P @ 150 m
- ◆ Long Reach mode switch switches between HDBaseT<sup>TM</sup> Standard and Long Reach modes in a snap
- Supports individual 2-channel stereo audio for high-quality audio applications
- USB 2.0 full speed ports ensures fast transmission speeds for peripherals
- Supports PC wakeup function via single pushbutton
- Easy Installation Rack Mounting Kit
- Built-in 8KV / 15KV ESD protection (Contact voltage 8KV; Air voltage 15KV)
- Firmware upgradeable

## Requirements

#### **Consoles**

- An HDMI monitor capable of the highest resolution you will be using on any computer in the installation.
- A USB keyboard
- A USB mouse

## Computers

The following equipment must be installed on each computer that is to be connected to the system:

- An HDMI port
- A USB port for the keyboard/mouse
- RS-232 Serial port (optional)
- Microphone and speaker ports (optional)

#### **Cables**

 For optimal signal integrity, and to simplify the layout, we strongly recommend that you use the high quality custom HDMI KVM Cable that is provided with this package.

For more information about using the correct Cat 5e/6/6a/ATEN 2L-2910 cable and setting up HDBaseT devices, you can download the ATEN HDBaseT Installation Guide:

 $http://assets.aten.com/resource/epublication/ATEN\_HDBaseT\_InstallationGuide.pdf$ 

#### **Maximum Cable Distances**

Connection	Distance
Computer to Local Unit (CE820L)	1.8 m
Local Unit (CE820L) to Remote Unit (CE820R)	100 m*
Remote Unit (CE820R) to monitor	5 m

**Note:** The maximum transmission distance using a Cat 5e/6/6a/ATEN 2L-2910 cable is 100m and 150m when Long Reach Mode is enabled.

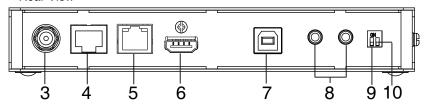
## **Components**

## CE820L (Local Unit) Front and Rear View

### Front View



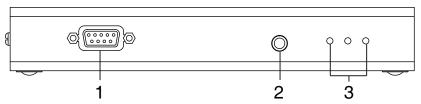
### Rear View



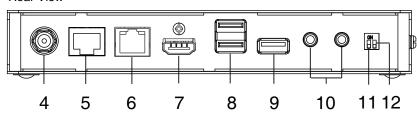
No.	Component	Description	
1	RS-232 Port	Connect an RS-232 cable from the target computer to this port.	
2	LEDs	The CE820L has two LEDs to indicate operating status Link and Power (see page 13 for more information).	
3	Power Jack	The cable from the power adapter connects here.	
4	HDBaseT Out Port	The Cat 5e/6/6a/ATEN 2L-2910 cable that connects the Local and Remote Units plugs in here.	
5	Ethernet Port	Connect a Cat 5e/6/6a/ATEN 2L-2910 cable from the computer to this port.	
6	HDMI Input Port	Connect the HDMI connector of the supplied KVM cable from the computer to this port.	
7	USB Type B Port	Connect a USB connector of the supplied KVM cable from the computer to this port.	
8	Audio Ports	Connect audio connectors of the supplied KVM cable from the computer to the mini stereo ports.	
9	HDBaseT Long Reach Mode Switch	Put the switch to <b>ON</b> to enable the Long Reach Mode to transmit HDMI signals up to 150m, at 1080p. For details, see Long Reach Mode, page 14.	
10	Firmware Upgrade Switch	This function is reserved for ATEN Technical Support. If you would like to do a firmware upgrade yourself, please contact your dealer.	

## **CE820R (Remote Unit) Front and Rear View**

### Front View



### Rear View



-		5 1.11	
No.	Component	Description	
1	RS-232 Port	This RS-232 serial port is for connecting to a serial terminal for configuration.	
2	Wakeup PC Pushbutton	Press this button if you are at the remote console's location and you want to wake the computer on the local side.	
3	LEDs	The CE820R has three LEDs to indicate operating status – Video Out, Link, and Power (see page 13 for more information).	
4	Power Jack	The cable from the power adapter connects here.	
5	HDBaseT In Port	The Cat 5e/6/6a/ATEN 2L-2910 cable that connects the Local and Remote Units plugs in here.	
6	Ethernet Port	Connect a Cat 5e/6/6a/ATEN 2L-2910 cable from an Ethernet switch to this port to gain network access.	
7	HDMI Output Port	Connect an HDMI monitor to this port.	
8	Console Ports	Plug the remote console's keyboard and mouse into these two USB ports.	
9	USB Type A Ports	Connect USB 2.0 devices to this port.	
10	Audio Ports	These mini stereo ports are for the speakers (green) and microphone (pink).	

No.	Component	Description
11	HDBaseT Long Reach Mode Switch	Put the switch to <b>ON</b> to enable the Long Reach Mode to transmit HDMI signals up to 150m, at 1080p. For details, see Long Reach Mode, page 14.
12	Firmware Upgrade Switch	This function is reserved for ATEN Technical Support. If you would like to do a firmware upgrade yourself, please contact your dealer.

# Chapter 2 Hardware Setup

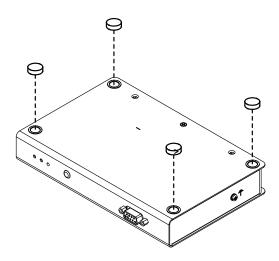


- 1. Important safety information regarding the placement of this device is provided on page 15. Please review it before proceeding.
- 2. Make sure that the power to all devices connected to the installation are turned off. You must unplug the power cords of any computers that have the Keyboard Power On function.

## **Stacking and Rack Mounting**

## **Stacking**

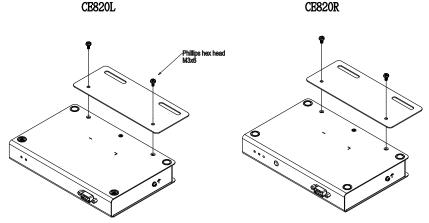
The CE820 can be placed on any appropriate level surface that can safely support its weight plus the weight of its attached cables. To place or stack the CE820, remove the backing material from the bottom of the rubber feet that came with this package, and stick them onto the switch's bottom panel at the corners, as shown in the diagram, below:



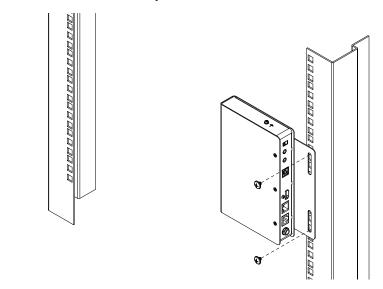
## **Rack Mounting**

For convenience and flexibility, the CE820 can be mounted on system racks. To rack mount a unit do the following:

1. Using the screws provided in the Mounting Kit, screw the mounting bracket into the top or bottom of the unit as show in the diagram below:



2. Screw the bracket into any convenient location on the rack.



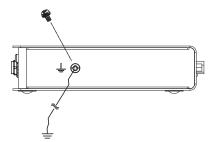
**Note:** These screws are not provided. We recommend that you use M5 x 12 Phillips Type I cross, recessed type screws.

## Installation

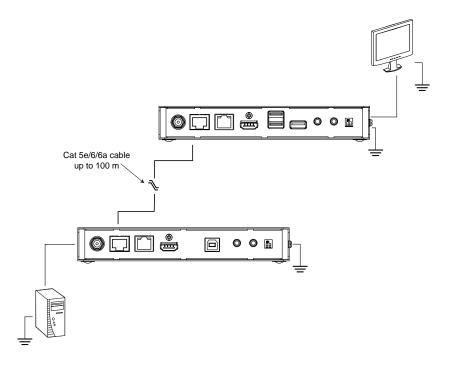
## Grounding

To prevent damage to your installation it is important that all devices are properly grounded.

1. Use a grounding wire to ground both units by connecting one end of the wire to the grounding terminal, and the other end of the wire to a suitable grounded object.



2. Make sure that the computer that connects to the Local Unit and the monitor that connects to the Remote Unit are properly grounded.



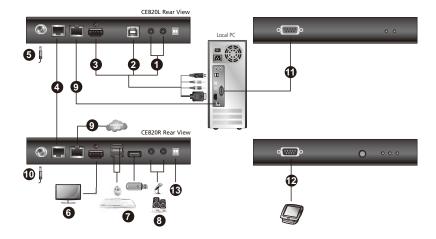
## **Setting Up**

Before you proceed with the setup, make sure that all the equipment to be connected is powered off; then refer to the installation diagram on the following page, and do the following:

- Connect the audio plugs of the supplied KVM cable set to the microphone and speaker ports on the CE820L. Plug the other end of the cable into the microphone and speaker ports on the local computer.
- Connect the USB connector of the supplied KVM cable set to the USB Type B Port on the CE820L. Plug the other end of the cable into a USB Type A port on the local computer.
- Connect the HDMI connector of the supplied KVM cable set to the HDMI Input Port on the CE820L. Plug the other end of the cable into the HDMI port on the local computer.
- Plug one end of a Cat 5e/6/6a/ATEN 2L-2910 cable into the HDBaseT Out Port on the CE820L, and the other end into the HDBaseT In Port on the CE820R.
- 5. Plug one of the supplied power adapters into a power source; then plug the adapter's power cable into the CE820L's Power Jack.
- 6. Use an HDMI cable to connect the HDMI Input Port on the CE820R to your monitor.
- 7. Plug the USB devices (mouse, keyboard, peripherals, etc.), into their respective USB Type A ports on the CE820R.
- Plug the microphone and speakers, into their respective audio ports on the CE820R.
- 9. To gain access to LAN or WAN, use an Ethernet cable to connect the Ethernet Port of the CE820L to the computer, and use another Ethernet cable to connect the Ethernet Port of the CE820R to an Ethernet switch.
- 10. Plug the second power adapter (supplied with this package) into a power source; then plug the adapter's power cable into the CE820R's Power Jack.
- 11. To use the Wake Up PC Pushbutton, connect the RS-232 Port on the CE820L to the local computer.
- 12. To control the local computer with a serial device, connect the RS-232 Port on the CE820L to the local computer, as illustrated in step 11, and connect a hardware/software controller to the RS-232 Port on the CE820R.

13. If you want to extend the video up to 150 m with 1080p resolution, put the LONG REACH switch to ON.

## **Installation Diagram**



# Chapter 3 Operation

## Overview

The *Operation* chapter describes how the LED indicators work and how to use HDBaseT Long Reach Mode.

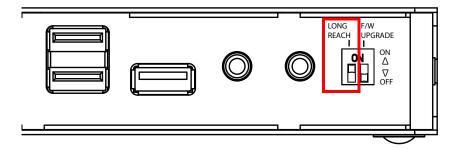
## **LED Display**

The CE820 local and remote Units have front panel LEDs to indicate their operating status, as shown in the tables, following:

LED	Indication	
Power	Lights (Green) steadily to indicate that the system is receiving power.	
Link	<ul> <li>Lights (Orange) steadily to indicate that the connection between the Local and Remote units is stable.</li> <li>OFF when there is a problem with the connection.</li> <li>Flashing (Orange) indicates the HDBaseT transmission signal is unstable.</li> </ul>	
Video Out (CE820R only)	<ul> <li>Lights (Orange) steadily to indicate that the video display is normal and secured with HDCP.</li> <li>Flashes (Orange) to indicate that the video display is normal but not secured with HDCP.</li> <li>OFF indicates that there is no video activity.</li> </ul>	

## **Long Reach Mode**

The Long Reach mode switch on the rear of the CE820 provides long-reach connectivity – up to 150 m – for resolutions up to 1080 p. To use this feature, on the rear of the local or remote unit, set the Long Reach switch to ON.



## **Appendix**

## Safety Instructions

#### General

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

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

## 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**

#### International

- For online technical support including troubleshooting, documentation, and software updates: http://eservice.aten.com
- For telephone support, 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

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	CE820L	CE820R		
Connectors				
Console Ports	N/A	1 x HDMI Female (Black) 3 x USB Type A Female 1 x Mini Stereo Jack Female (Green) 1 x Mini Stereo Jack Female (Pink) 1 x RJ-45 Female (Black)		
KVM Ports	1 x HDMI Female (Black) 1 x USB Type B Female (White) 1 x Mini Stereo Jack Female (Green) 1 x Mini Stereo Jack Female (Pink) 1 x RJ-45 Female (Black)	N/A		
RS-232	1 x DB-9 Female (Black)	1 x DB-9 Male (Black)		
Power	1 x DC Jack	with locking		
Unit to Unit	1 x RJ-45 Fe	emale (Black)		
LEDs				
Power	1 (G	reen)		
Link	1 (Ora	ange)		
Video Output	N/A	1 (Orange)		
Switches				
Long Reach Mode Switch	1 x Slide Switch			
Firmware Upgrade	1 x Slide Switch			
Pushbuttons				
Wakeup button	N/A	1 x Pushbutton		
Video	Up to 4K@90m (Cat 5e) / 100m (Cat 6/6a/ATEN 2L-2910 Cat6) 1080P@100m (Cat 5e/6/6a) *4K supported: 4096 x 2160 / 3840 x 2160 @ 60Hz (4:2:0); 4096 x 2160 / 3840 x 2160 @ 30Hz (4:4:4)			
Power Consumption	DC 5 V; 2.87 W	DC 5 V; 5.37 W		
Environmental				
Operating Temp	0–40° C			
Storage Temp.	-20-60° C			
Humidity	0–80% RH, Non-condensing			
Physical Propert	ties			
Housing	Me	etal		
Weight	0.63 kg	0.65 kg		
Dimensions	18.20 x 12.19 x 2.87 cm (L x W x H)			

## **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/