



## HDMI HDBaseT Extender with Dual Output VE814A User Manual



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

## 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.

**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.

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

## RoHS

---

This product is RoHS compliant.



---

## User Information

---

### 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>
---------------	---

---

### 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**

---

### **VE814A Package Contents**

- 1 VE814AT Transmitter
- 1 VE814AR Receiver
- 1 IR Transmitter
- 1 IR Receiver
- 2 RS-232 Terminal Blocks
- 2 Power Adapters
- 1 User Instructions

### **VE814AT Package Contents**

- 1 VE814AT Transmitter
- 1 RS-232 Terminal Blocks
- 1 Power Adapters
- 1 User Instructions

### **VE814AR Package Contents**

- 1 VE814AR Transmitter
- 1 RS-232 Terminal Blocks
- 1 Power Adapters
- 1 User Instructions

---

#### **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.
  - ◆ The included IR cables supports frequencies from 30 kHz to 56 kHz.
-

# Table of Contents

---

User Information .....	iii
Package Contents .....	iv
About this Manual .....	vi
Conventions .....	vii
Product Information .....	viii

## 1. Introduction

Overview .....	1
Features .....	2
Planning the Installation .....	3
Requirements .....	3
Considerations .....	3

## 2. Hardware Setup

Components .....	5
VE814AT Front View .....	5
VE814AT Rear View .....	6
VE814AR Front View .....	6
VE814AR Rear View .....	7
LED Display .....	8
Mounting the VE814A Unit .....	9
Wall Mount .....	9
Rack Mount .....	9
Connecting the VE814A Unit .....	10
RS-232 Channel Transmission .....	12

## 3. Operation

Long Reach Mode .....	13
-----------------------	----

## Appendix

Safety Instructions .....	15
General .....	15
Rack Mounting .....	17
Technical Support .....	18
Specifications .....	19
Limited Warranty .....	21

## About this Manual

---

This user manual is provided to help you get the most from the VE814A unit. 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 HDMI HDBaseT Extender with Dual Output. Its purpose, features, and installation considerations are described and discussed.

**Chapter 2, *Hardware Setup*** introduces the panel components and describes the steps to quickly and safely install the product.

**Chapter 3, *Operation*** explains the Long Reach Mode, its concept, requirements, and limitations.

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

---


### 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 VE814A documentation, visit [www.aten.com/global/en](http://www.aten.com/global/en)
-

## 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.  |

## 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	<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

---

ATEN VE814A is an HDBaseT Video Extender that is capable of sending HDMI signals up to 100 m over a single Cat 5e/6/6a or ATEN 2L-2910 Cat 6 cable. Featuring dual synchronous outputs, the VE814A can transmit identical outputs to two remote displays and one display at the local side. This HDCP 2.2-compliant extender meets the HDMI Specification, including 3D, Deep Color, the maximum data rate of 10.2 Gbps, and transmission of 4K videos up to 100 m.

Supporting bi-directional RS-232 and full-range IR signaling pass-through, the VE814A allows you to control an HDMI source device from the remote unit (VE814AR) while granting access to the HDMI display device from the local unit (VE814AT). In addition, it supports Long Reach Mode that extends HDMI signals up to 150 m, 1080p, via a single Cat 5e/6 cable.

The VE814A is a powerful solution for where digital signage is required, such as bars, educational spaces, and public transportation stations, allowing display of identical contents at different spots.

## Features

---

- ◆ Extends HDMI signals to one local and two remote displays up to 100 m over a single Cat 5e/6/6a or ATEN 2L-2910 Cat 6 cable
- ◆ HDMI (3D, Deep Color, 4K); HDCP 2.2 compatible
- ◆ Superior video quality
  - ◆ 4K up to 100 m
  - ◆ 1080p up to 150 m when in HDBaseT Long Reach Mode
- ◆ Supports HDBaseT Long Reach Mode – extends signals up to 150 m, 1080p, via a single Cat 5e/6 cable
- ◆ Extends Ethernet communication using the Ethernet pass-through port
- ◆ Supports two IR channels for simultaneous IR signal transmissions, ranged from 30 kHz to 56 kHz
- ◆ EDID Expert™ – selects optimum EDID settings for high-quality display and use of optimum video resolution
- ◆ RS-232 channel – allows you to connect to serial terminals or serial devices, such as touch screens and barcode scanners
- ◆ Supports wide screen format
- ◆ Built-in 8 kV/15 kV ESD protection
- ◆ Plug-and-play
- ◆ Rack-mountable

## Planning the Installation

### Requirements

Prepare the following before installing the VE814A unit:

Required Equipment	Details
Display device	<ul style="list-style-type: none"> <li>1 HDMI display capable of the highest required resolution.</li> </ul>
Source device	<ul style="list-style-type: none"> <li>1 source device with an HDMI port.</li> </ul>
Cables	<ul style="list-style-type: none"> <li>1 Cat 5e/6/6a cable for connecting the VE814AT and VE814AR.</li> </ul> <p><b>Note:</b> For best video quality, we strongly recommend using the ATEN 2L-2910 Cat 6 cable to connect the VE814AT and VE814AR.</p>

### Considerations

Note that the maximum transmission distance varies at different parts of the transmission depending on the transmission interface:

Connection	Interface	Distance
Computer to the VE814AT	HDMI	1.8 m
VE814AT to VE814AR	Cat 5e/6/6a 2L-2910	100 m*
VE814AR to the display	HDMI	5 m

**Note:** The maximum transmission distance using a Cat 5e/6/6a or an ATEN 2L-2910 cable can go up to 150 m when Long Reach mode is enabled.

This Page Intentionally Left Blank

# Chapter 2

## Hardware Setup

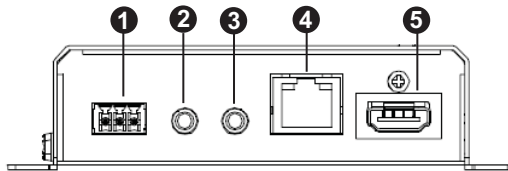


1. Please review the safety information regarding the placement of this device in *Safety Instructions*, page 15.
2. Do not power on the VE814A until all the necessary hardware is connected.

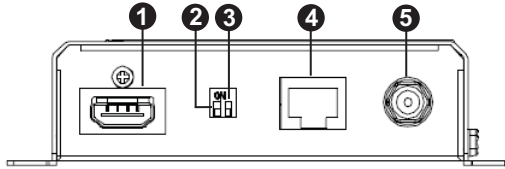
### Components

---

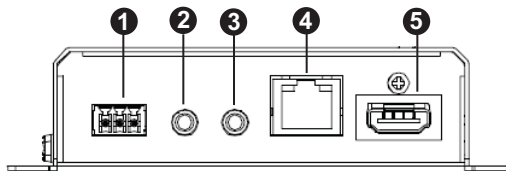
#### VE814AT Front View



No.	Component	Description
1	RS-232 Port	Connects to a computer or control system.
2	IR Out	Connects to an IR Transmitter.
3	IR In	Connects to an IR Receiver.
4	Ethernet Port	Connects to a network device via an RJ-45 cable to allow for network connectivity.
5	HDMI In	Connects to the HDMI Out port on the source device.

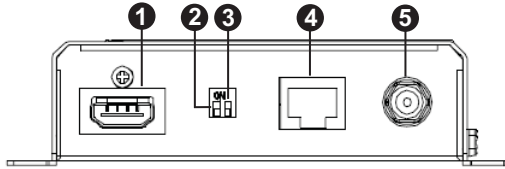
**VE814AT Rear View**

No.	Component	Description
1	HDMI Out	Connects to the HDMI In port on the display device.
2	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 <i>Long Reach Mode</i> , page 13.
3	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.
4	HDBaseT Out	Connects to the HDBaseT In port on a VE814AR.
5	Power Jack	Connects to the Power Adapter.

**VE814AR Front View**

No.	Component	Description
1	RS-232 Port	Connects to a computer or control system.
2	IR Out	Connects to an IR Transmitter.
3	IR In	Connects to an IR Receiver.
4	Ethernet Port	Connects to a network device via an RJ-45 cable to allow for network connectivity.
5	HDMI Out 2	Connects to the HDMI In port on the display device.

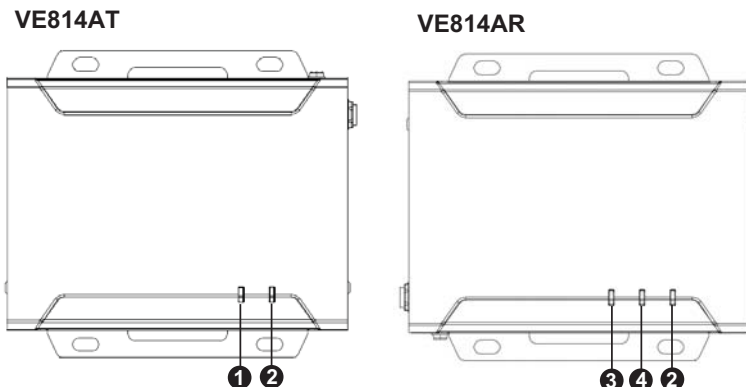
## VE814AR Rear View



No.	Component	Description
1	HDMI Out 1	Connects to the HDMI In port on the display device.
2	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 <i>Long Reach Mode</i> , page 13.
3	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.
4	HDBaseT In	Connects to the HDBaseT Out port on a VE814AT.
5	Power Jack	Connects to the Power Adapter.

## LED Display

You can find the unit's LEDs on the top and front panel as illustrated below. See the table below for details on LED indication.



No.	LED	Indication	Description
1	HDMI Out LED (VE814AT)	Lights green	The HDMI out signals are stable.
		Blinks green	The VE814AT is being upgraded for firmware.
2	Power / Link LED	Blinks green	The unit is receiving power with no data flow.
		Lights green	The connection between the VE814AT and VE814AR is stable
3	HDMI 1 Out LED (VE814AR)	Lights green	The HDMI out signals are stable.
4	HDMI 2 Out LED (VE814AR)	Lights green	The HDMI out signals are stable.
		Blinks green	The VE814AR is being upgraded for firmware.



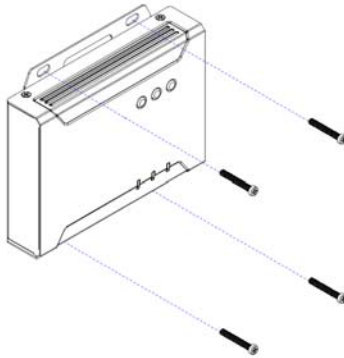
---

## Mounting the VE814A Unit

---

### Wall Mount

Secure or hang the VE814A unit to the wall using the built-in mounting brackets.

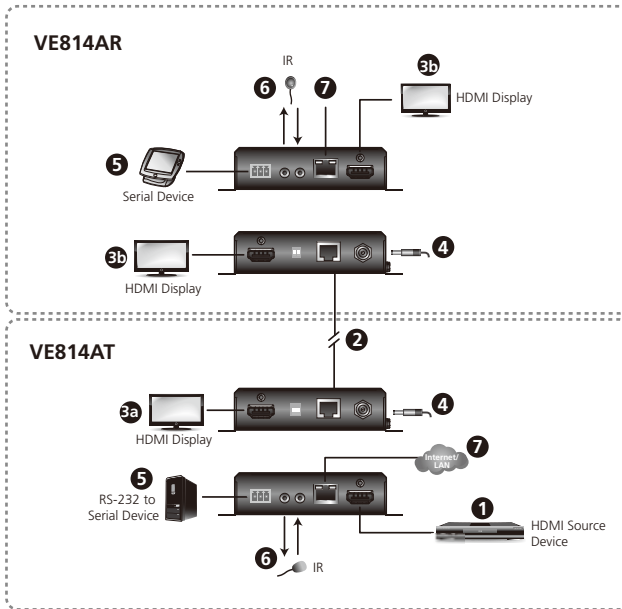


### Rack Mount

Use the VE-RMK1U Rack Mount Kit to rack-mount the VE814A. For more information about this accessory, go to [www.aten.com/download](http://www.aten.com/download)

## Connecting the VE814A Unit

Follow the steps below to connect the VE814A to a source and other devices as required.



1. Use an HDMI cable to connect the HDMI Out port on your source device to the HDMI In port on the VE814AT.
2. Use an RJ-45 cable to connect the HDBaseT Out port on the VE814AT to the HDBaseT In port on the VE814AR.
3. Depending on your preferred location of display, connect a display device to the VE814AT or VE814AR using an HDMI cable.

**Note:** When displays are connected to the VE814A transmitter and VE814A receiver, the VE814A system adopts the EDID values of the display connected to the transmitter's side.

4. Plug the Power Adapter Cables into the Power Jack on the VE814AT and VE814AR.
5. (Optional) To send RS-232 serial commands, connect a computer or control system to the RS-232 Port on the VE814AT or VE814AR.

6. (Optional) For IR control, depending on your preferred location of control, connect the IR Transmitter to the IR Out port at the VE814AT or VE814AR, and then connect the IR Receiver to the IR In port at the corresponding VE814AR or VE814AT.

---

**Note:** For IR control from both the VE814AT or VE814AR side, purchase another pair of ATEN IR Transmitter and IR Receiver and install them to the VE814AT and VE814AR.

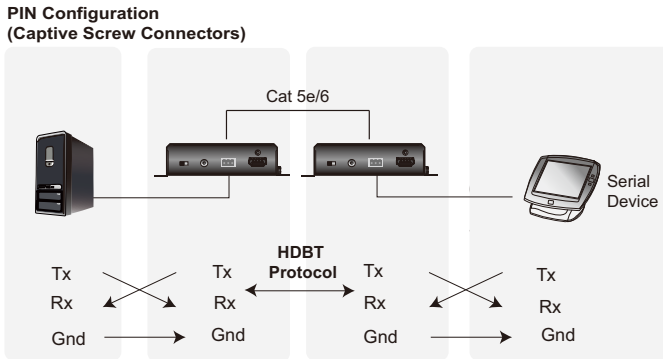
---

7. (Optional) For Internet connectivity, connect the Ethernet Port on the VE814AT/VE814AR to the network using an RJ-45 cable.

## RS-232 Channel Transmission

---

You can manage the VE814A via RS-232 serial devices, such as computers or bar code scanners. The RS-232 signal transmission flow can be illustrated as follows:



# Chapter 3

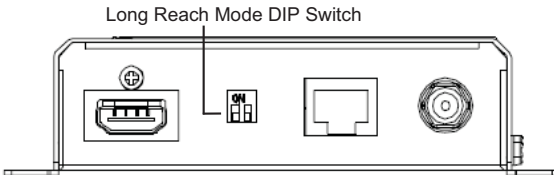
## Operation

### Long Reach Mode

---

Long Reach Mode is a modulation that extends the transmission distance up to 150 m while compromising the maximum frame rate to 1080p, 60 Hz, 24 bpp. To enable the Long Reach Mode, make sure to do the following:

- ◆ Use a Cat 5e/6/6a or ATEN 2L-2910 cable to connect the VE814AT and the VE814AR
- ◆ Put the HDBaseT Long Reach Mode Switch to **ON** at either the VE814A transmitter or the VE814A receiver.



---

**Note:** When enabled with Long Reach Mode, the VE814AT and VE814AR will not be able to transmit 4K signals, in which case, the output display will be blank.

---

This Page Intentionally Left Blank

## Safety Instructions

---

### 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

---

### International

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

### North America

Email Support		support@aten-usa.com
Online Technical Support	Troubleshooting Documentation Software Updates	<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	VE814AR	VE814AT
<b>Video Input</b>		
Interfaces	N/A	1 x HDMI Type A Female (Black)
Impedance	N/A	100 $\Omega$
Max. Distance	N/A	1.8 m
<b>Video Output</b>		
Interfaces	2 x HDMI Type A Female (Black)	1 x HDMI Type A Female (Black)
Impedance	100 $\Omega$	
<b>Video</b>		
Max. Data Rate	10.2 Gbps (3.4 Gbps per lane)	
Max. Pixel Clock	340 MHz	
Compliance	HDMI (3D, Deep Color, 4K)	
	HDCP Compatible	
	Consumer Electronics Control (CEC)	
Max. Resolutions / Distances	Up to 4K@70m (Cat 5e/6) / 100m (Cat 6a/ATEN 2L-2910 Cat 6); Up to 1080p@100m (Cat 5e/6/6a)  4K supported: 4096 x 2160 / 3840 x 2160 @ 60 Hz (4:2:0); 4096 x 2160 / 3840 x 2160 @ 30 Hz (4:4:4);	
<b>Audio</b>		
Input	N/A	1 x HDMI Type A Female (Black)
Output	2 x HDMI Type A Female (Black)	1 x HDMI Type A Female (Black)
<b>Connectors</b>		
Unit to Unit	1 x RJ-45 Female	
<b>Control</b>		
RS-232	Connectors	1 x Terminal Block, 3 x Pole
	Baud Rate	115200 bps
	Data Bits	8
	Stop Bits	1, no parity and flow control
IR	2 x Mini Stereo Jack Female (Black)	
Ethernet	1 x RJ-45 Female	1 x RJ-45 Female
<b>Switches</b>		
Long Reach Mode	1 x Slide Switch (ON/OFF)	
Firmware Upgrade	1 x Slide Switch (ON/OFF)	

Function	VE814AR	VE814AT
<b>Power</b>		
Connectors	1 x DC Jack (Black) with locking	
Consumption	DC 5V, 7.9W	DC 5V, 5.1W
<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	0.47 Kg (1.01 lb)	0.45 Kg (0.99 lb)
Dimensions (L x W x H) with Bracket	14.02 x 12.30 x 3.00 cm (5.52 x 4.84 x 1.18 in.)	
Dimensions (L x W x H) without Bracket	13.60 x 10.10 x 2.90 cm (5.35 x 3.98 x 1.14 in.)	

## Limited Warranty

---

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

### **What is covered by the Limited Hardware Warranty**

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

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

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