



Simply Better Connections

CE824

USB HDMI Dual View HDBaseT 2.0
KVM Extender
User Manual

Compliance Statements

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.

Suggestion

Shield 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.

Industry Canada Statement

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

CAN ICES (A) / NMB (A)

HDMI Trademark Statement

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



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
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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.

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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Package Contents

Check to make sure that all the components are in working order. If you encounter any problem, please contact your dealer.

- ◆ 1 CE824L USB HDMI Dual View HDBaseT 2.0 KVM Extender (Local Unit)
- ◆ 1 CE824R USB HDMI Dual View HDBaseT 2.0 KVM Extender (Remote Unit)
- ◆ 2 HDMI cables
- ◆ 1 pink audio jack cable sets
- ◆ 1 green audio jack cable sets
- ◆ 1 USB Type-A to USB Type-B cable
- ◆ 2 power adapters
- ◆ 1 foot pad set (8 pcs)
- ◆ 2 mounting kits
- ◆ 1 user instructions

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About this Manual

This User Manual is provided to help you get the most from your CE824 USB HDMI Dual View HDBaseT 2.0 KVM Extender. 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 CE824 units. Their purposes, features, and benefits are presented, and the functions of their panel components are described.

Chapter 2, *Hardware Setup*, describes the steps that are necessary to quickly and safely set up your CE824 units.

Chapter 3, *Operation*, explains the fundamental concepts involved in operating the CE824 units.


Appendix, provides specifications and other technical information regarding the CE824 units.

Note:

- ◆ Read this manual thoroughly and follow the installation and operation procedures carefully to prevent any damage to the unit or any connected devices.
 - ◆ The product may be updated, with features and functions added, improved or removed since the release of this manual. For an up-to-date user manual, visit <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 **Enter** key. If keys need to be chorded, they appear together in the same bracket with a plus sign between them: [Ctrl+Alt].
1. Numbered lists represent procedures with sequential steps.
- ◆ Bullet lists provide information, but do not involve sequential steps.
- > Indicates selecting the option (on a menu or dialog box, for example), that comes next. For example, Start > Run means to open the *Start* menu, and then select *Run*.
-  Indicates critical information.

Chapter 1

Introduction

Overview

ATEN CE824 adopts HDBaseT 2.0 technology to transmit uncompressed HDMI video, stereo audio, USB, and RS-232 signals while supporting up to 4096 x 2160 @ 30Hz (4:4:4) on a single display / 1080p on dual displays across 100 m over a single Cat 6 / 6A cable (ATEN 2L-29330 recommended), allowing access to a distant computer for KVM control from the remote console. With Long Reach Mode enabled, the CE824 can extend 1080p HDMI source along with other signals up to 150 m.* The ease of cabling installation plus the rack mount compatibility assure a more efficient system setup. The CE824 serves as an ideal solution for applications that require high-quality multi-signal extension and KVM control across long distances – such as control centers, hospitality facilities, industrial warehouses, and extended workstations.

Note: 1080p @ 150 m can only be achieved via single display installation.

Features

- ◆ Allows HDMI dual view access to a distant computer for KVM control from remote console
- ◆ Transmits uncompressed HDMI video / stereo audio / USB / RS-232 signals via one single Cat 6 / 6A / ATEN 2L-29330 cable over long distances:
 - ◆ Standard mode supports single view at up to 4K or dual-view up to 1080p over 100 m
 - ◆ Long Reach mode supports single view at up to 1080p or dual-view up to 720p over 150 m*
- ◆ 4 x USB 2.0 Type-A ports on the remote unit for connection to multiple USB peripherals
- ◆ Supports 2-channel stereo audio
- ◆ EDID buffer for smooth power-up and the highest quality display
- ◆ PC wakeup function enabled via a pushbutton through RS-232
- ◆ HDCP compatible
- ◆ Built-in 8KV / 15KV ESD protection (Contact voltage 8KV; Air voltage 15KV)
- ◆ DC Jack with screw-lock ensures stable and secure connection
- ◆ Rack mountable

Note: 1080p @ 150 m can only be achieved via single display installation.

Requirements

Local and Remote Consoles

- ◆ Two HDMI monitors 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:

- ◆ Two HDMI ports
- ◆ One USB port for the mouse and keyboard
- ◆ RS-232 serial port (optional)
- ◆ Microphone and speaker ports (optional)

Cables

- ◆ For optimal signal integrity, and reducing layout complexity, we strongly recommend that you use the high quality custom cables provided in the package.
- ◆ For better quality over longer distances, we suggest using an HDBaseT certified cable (e.g. ATEN's tailor-made HDBaseT cable*) for the unit to unit connection. For more information about suitable Cat 6/6a cables and setting up HDBaseT devices, refer to the *ATEN HDBaseT Installation Guide*.

Note: Please refer to the Compatible Cables section on the product page.

Maximum Cable Distances

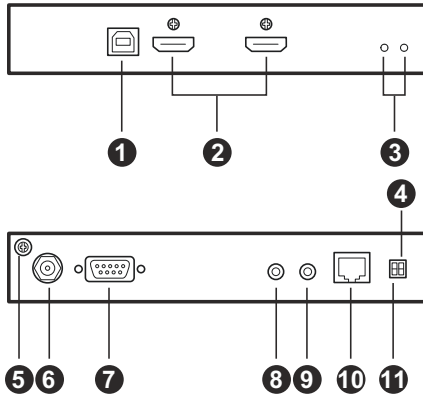
Connection	Distance
Computer to Local Unit (CE824L)	1.8 m
Local unit (CE824L) to remote unit (CE824R)	100 m
Remote Unit (CE824R) to monitor	1.8 m

Maximum Resolution with Cable Distances

Model	Input Port / Output Port	Single View Distance	Dual View Distance
CE824	HDMI Port 1	4Kx2K @ 100 M	1080p @ 100 m
	HDMI Port 2	N/A	1080p @ 100 m

Components

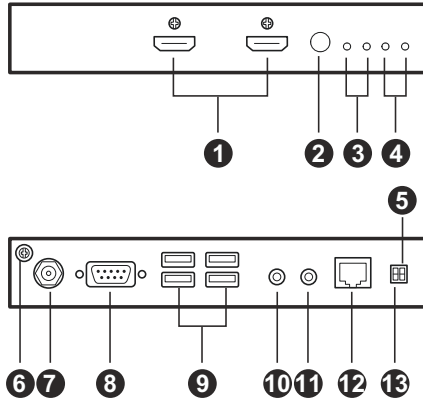
CE824L Front and Rear View



No.	Component	Description
1	USB Type-B port	The USB cable from your computer or USB hub plugs in here.
2	HDMI input ports	Connects two HDMI cables from a computer to these two HDMI ports.
3	status LEDs (link / power)	<ul style="list-style-type: none"> ◆ link LED: Indicates the transmission from local and remote units is stable, see page 15 for more information. ◆ power LED: indicates the unit is receiving power, see page 15 for more information.
4	firmware upgrade switch	Put the switch to ON to enable the firmware upgrade mode. Note: The firmware upgrade mode is reserved for technical support. To upgrade the device's firmware, please contact ATEN customer support.
5	grounding terminal	Grounds the unit to prevent damage from power surges or static electricity.
6	power jack	The cable from the power adapter connects here.
7	RS-232 serial port	This RS-232 serial port is for connecting to a serial terminal for configuration.
8	audio input port	These mini stereo ports connect to the speaker (green) and microphone (pink) ports on the computer.
9	audio output port	
10	HDBaseT output port	The Cat 6/6a or ATEN's tailor-made HDBaseT cable* that connects the local and remote units plugs in here. Note: Please refer to the Compatible Cables section on the product page.

No.	Component	Description
11	long reach mode switch	Put the switch to ON to enable the long reach mode, see <i>Long Reach Mode</i> , page 15.

CE824R Front and Rear View



No.	Component	Description
1	HDMI output port	Connect an HDMI monitor to each of these HDMI ports.
2	wake up 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	video out LEDs	Indicates the video output activity and status between the units, see page 15 for more information.
4	status LEDs (link / power)	<ul style="list-style-type: none"> ◆ link LED: Indicates the transmission from remote and local units is stable, see page 15 for more information. ◆ power LED: indicates the unit is receiving power, see page 15 for more information.
5	firmware upgrade switch	Put the switch to ON to enable the firmware upgrade mode. Note: The firmware upgrade mode is reserved for technical support. To upgrade the device's firmware, please contact ATEN customer support.
6	grounding terminal	Grounds the unit to prevent damage from power surges or static electricity.
7	power jack	The cable from the power adapter connects here.
8	RS-232 serial port	This RS-232 serial port is for connecting to a serial terminal for configuration.
9	USB Type-A ports (keyboard / mouse / USB peripheral)	Plug the remote console's keyboard and mouse or your USB 2.0 devices into these four USB ports.
10	audio input port	These mini stereo ports are for the speaker (green) and microphone (pink).
11	audio output port	

No.	Component	Description
12	HDBaseT input port	The Cat 6/6a or ATEN's tailor-made HDBaseT cable* that connects the remote and local units plugs in here. Note: Please refer to the Compatible Cables section on the product page.
13	long reach mode switch	Put the switch to ON to enable the long reach mode, see <i>Long Reach Mode</i> , page 15.

Chapter 2

Hardware Setup

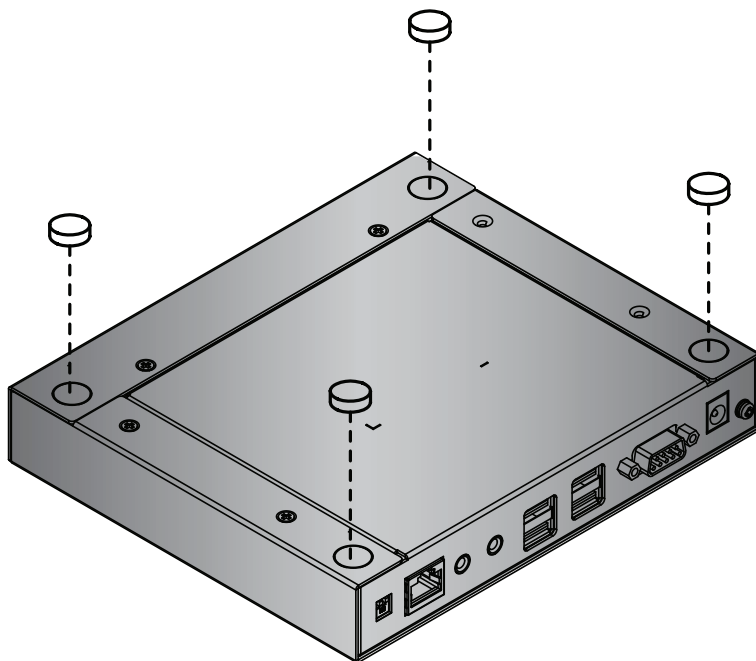


1. Important safety information regarding the placement of this device is provided on page 17. Please review it before proceeding.
2. Make sure that the power to all devices connected to the installation are turned off. You must unplug the power cords of any computers that have the Keyboard Power On function.

Stacking and Rack Mounting

Stacking

The CE824 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 CE824, 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:

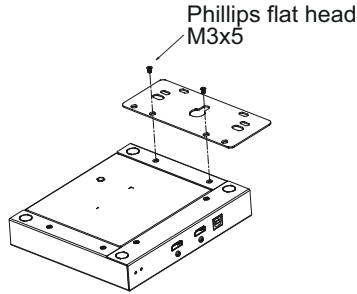


Rack Mounting

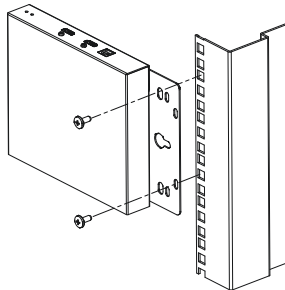
Use the VE-RMK 1U Rack Mount Kit to rack-mount the CE824. For more information about this accessory, go to <http://www.aten.com/global/en/>

For convenience and flexibility, the CE824 can be mounted on system racks. To rack mount a unit, do the following:

1. Using the screws from the supplied mounting kits, secure the mounting bracket to the top or bottom of the CE824 as shown in the diagram below.



2. Using two M5 Phillips recessed screws (not provided), secure the mounting bracket to a preferred location on the rack. You can rack mount the CE824 with either the front or rear towards the mounting rail.

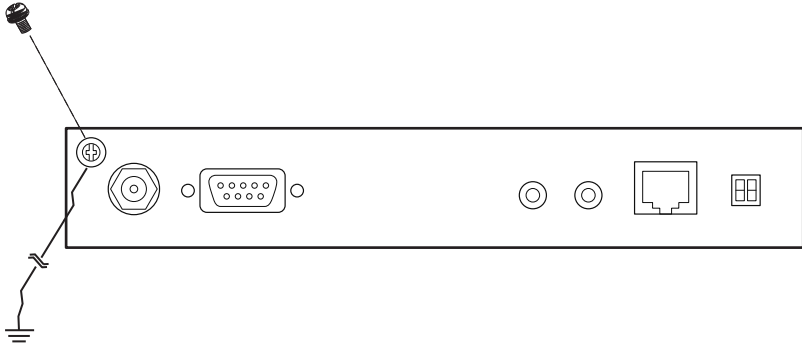


Installation

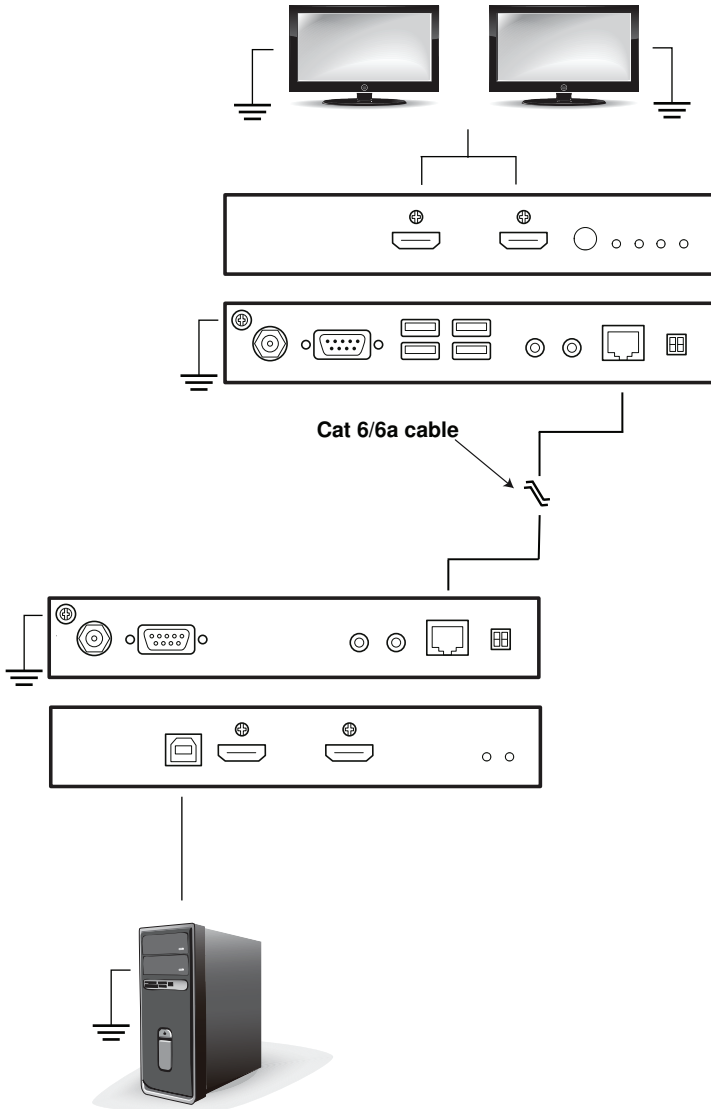
Grounding

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.

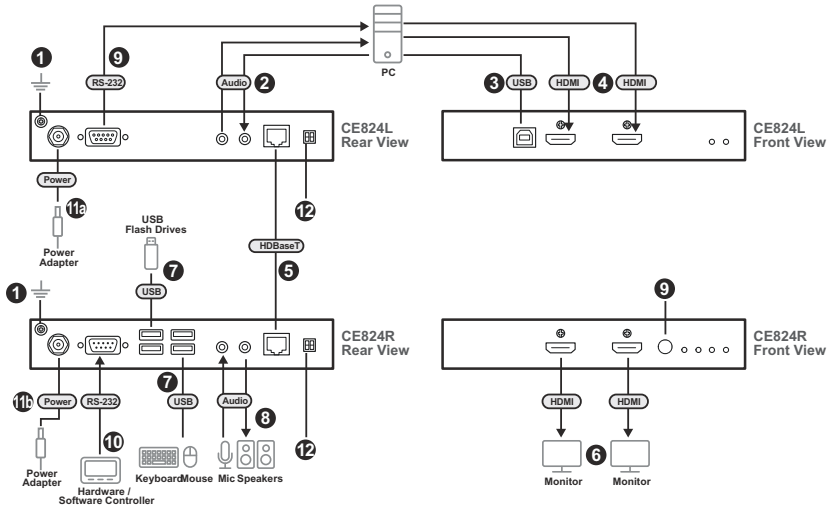


2. Make sure that the computer that connects to the local unit and the monitor that connects to the remote unit are also grounded.



Connecting the Device

Before you proceed with the setup, make sure that all the equipment to be connected is powered off and then follow the procedure below to safely install your devices.



1. Ground the CE824 by connecting one end of a grounding wire to the grounding terminal and the other end to a suitable grounded object.

Note: Do not omit this step. Proper grounding helps to prevent damage to the unit from power surges or static electricity.

2. Connect the audio connectors of the supplied pink and green audio jack cable sets to the audio input and output ports located on the CE824L rear panel and then connect the other end of the cables into the microphone / speaker ports on the local computer.
3. Connect the supplied USB cable to the USB Type-B port on the CE824L, and the other end to a USB Type-A port on the local computer.
4. Connect the supplied HDMI cables to the HDMI input ports on the CE824L, and the other ends to a local computer.
5. Connect one end of a Cat 6/6a cable to the HDBaseT output port on the CE824L, and the other end to the HDBaseT input port on the CE824R.

Note: We recommend to adopt ATEN's tailor-made HDBaseT cable for HDBaseT connection.

6. Connect to two HDMI-enabled monitors to the HDMI output ports on the CE824R via HDMI cables.
7. Connect USB peripherals (mouse, keyboard, flash drive, etc.) into their respective USB Type-A ports on the CE824R.
8. Connect the microphone and speakers into their respective audio input and output ports on the CE824R.
9. To use the wake up PC pushbutton, use an RS-232 serial cable to connect the RS-232 serial port on the CE824L to the local computer.
10. To control a local computer with a serial device, connect the RS-232 serial port on the CE824L to the local computer as illustrated in step 9, and then connect a hardware / software controller to the RS-232 serial port on the CE824R.

Note: The RS-232 serial port supports bi-directional transmission.

11. (a) Connect one of the supplied power adapters into a power source, and then connect the adapter's power cable to the power jack on the CE824L.
(b) Connect the second power adapter into a power source, and then connect the adapter's power cable to the power jack on the CE824R.
12. To extend video, RS-232, and USB signals up to 150 m with a resolution of 1080p, set the long reach mode switch located to the CE824L / CE824R's rear panel to **ON** (single view).

Chapter 3 Operation

Overview

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

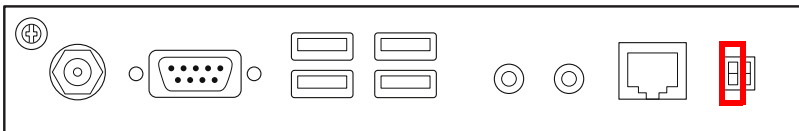
LED Display

The CE824 local and remote units have front panel LEDs to indicate their operating status, as shown in the table below:

LED	Indication
Power	Lights (green) steadily to indicate that the unit is receiving power.
Link	<ul style="list-style-type: none">◆ Lights (orange) to indicate that the connection at the Local and Remote units are OK.◆ OFF when there is a problem with the connection.◆ Flashing (orange) indicates the HDBaseT transmission signal is unstable.
Video Out 1/2 (CE824R only)	<ul style="list-style-type: none">◆ Flashes (orange) to indicate normal video output without HDCP.◆ Static (orange) light indicates normal video output with HDCP.◆ OFF indicates that there is no video activity.

Long Reach Mode

The long reach mode switch on the rear panel of the CE824 provides long-reach connectivity – up to 150 m – with resolutions up to 1080p single view or 720p dual view. To use this feature, on the rear of the local or remote unit, set either one of the long reach switch to **ON**.



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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.
- ◆ To prevent damage to your installation, it is important that all devices are properly grounded.
- ◆ 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.
- ◆ 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, see *Telephone Support*, page iv.

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.

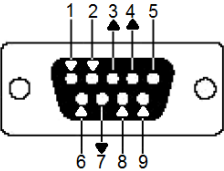
Specifications

Function		CE824L	CE824R
Connectors	HDMI In	2 x HDMI Female (Black)	N/A
	HDMI Out	N/A	2 x HDMI Female (Black)
	USB	1 x USB Type-B Female (White)	4 x USB Type A Female (White)
	Power	1 x DC Jack (Black)	
	Speakers	1 x Mini Stereo Jack Female (Green)	
	Mic	1 x Mini Stereo Jack Female (Pink)	
	Unit to Unit	1 x RJ-45 Female (Black)	
	RS-232	1 x DB-9 Female (Black)	1 x DB-9 Male (Black)
LEDs	Power	1 (Green)	
	Link	1 (Orange)	
	Video Output	N/A	2 (Orange)
Switches	Long Reach Mode Switch	1 x Slide Switch	
	Firmware Upgrade Switch	1 x Slide Switch	
Pushbuttons	Wakeup Button	N/A	1 x Pushbutton
Video		Single-view: Up to 4K @ 100 m (Cat 6/6a/ATEN 2L-29330 Cat 6A) 1080p @ 150 m (Cat 6/6a/ATEN 2L-29330 Cat 6A) with Long Reach Mode enabled Dual-view: Up to 1080p @ 100 m (Cat 6/6a/ATEN 2L-29330 Cat 6A) 4K supported: 4096 x 2160 @ 60 Hz (4:2:0), 4096 x 2160 / 3840 x 2160 @ 30Hz (4:4:4)	
Power Consumption		DC12V:5.98W;28BTU/h	DV12V:10.32W;57BTU/h
		Note: <ul style="list-style-type: none"> ◆ The measurement in Watts indicates the typical power consumption of the device with no external loading. ◆ The measurement in BTU/h indicates the power consumption of the device when it is fully loaded. 	
Environment	Operating Temp.	0–40° C	
	Storage Temp	-20–60° C	
	Humidity	0–80% RH, Non-condensing	
Physical Properties	Housing	Metal	
	Weight	0.79 kg (1.74 lb)	0.82 kg (1.81 lb)
	Dimensions (L x W x H)	17.42 x 15.59 x 2.88 cm (6.86 x 6.14 x 1.13 in)	

RS-232 Pin Assignments

Pin assignments for the Transmitter and Receiver's rear RS-232 port that is used for connecting to a serial terminal are given in the table, below:

Pin	Assignment	
1	CD	N/A
2	RXD	Receive Data
3	TXD	Transmit Data
4	DTR	N/A
5	GND	Signal Ground
6	DSR	N/A
7	RTS	N/A
8	CTS	N/A
9	RI	Ring Indicator

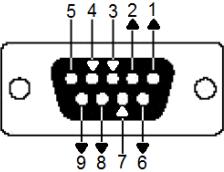


DB9 Male

Transmitter Front RS-232 Port

Pin assignments for the Transmitter's front RS-232 port that is used for connecting to a computer for serial control are given in the table, below:

Pin	Assignment	
1	CD	N/A
2	TXD	Transmit Data
3	RXD	Receive Data
4	DTR	N/A
5	GND	Signal Ground
6	DSR	N/A
7	CTS	N/A
8	RTS	N/A
9	RI	Ring Indicator



DB9 Female

ATEN Warranty Policy

The warranty policy may vary by product category and region of purchase. For details, please visit ATEN's official website, select your purchase counties/regions and then go to the Support Center, or contact your local ATEN sales representative for further assistance.

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Released: 2025-11-10

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