CE980 / CE990

USB True 4K DisplayPort / HDMI
Optical 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, 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

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

Package Contents

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

- 1 CE980 / CE990 USB True 4K DisplayPort / HDMI Optical KVM Extender (Local Unit)
- 1 CE980 / CE990 USB True 4K DisplayPort / HDMI Optical KVM Extender (Remote Unit)
- 1 DisplayPort cable
- 1 HDMI cable
- 1 microphone cable
- 1 speaker cable
- 1 USB Type-A to USB Type-B cable
- 2 SFP modules
- 2 mounting kits
- 1 foot pad set (8 pcs)
- 2 power adapters and power cords
- 3 HDMI combo port cable locks
- 1 user instructions

Contents

About this Manual

This User Manual is provided to help you get the most from your CE980 / CE990 USB True 4K DisplayPort / HDMI Optical KVM Extender. It covers all aspects of installation, configuration, and operation. An overview of the information found in the manual is provided below.

Introduction, introduces you to the CE980 / CE990 units. Their purposes, features, and benefits are presented, and the functions of their panel components are described.

Hardware Setup, describes the steps that are necessary to quickly and safely set up your CE980 / CE990 units.

Operation, explains the fundamental concepts involved in operating the CE980 / CE990 units.

Appendix, provides specifications and other technical information regarding the CE980 / CE990 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

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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

The ATEN CE980 / CE990 USB True 4K DisplayPort/HDMI Optical KVM Extenders ensure transmission of True 4K video, KVM and control signals over a single fiber optic cable, extending up to 10 km (CE990) / 300 m (CE980). Both models support HDR10 to deliver unparalleled True 4K video quality (3840 x 2160 @ 60 Hz, 4:4:4 / 4096 x 2160 @ 60 Hz, 4:4:4) with full color accuracy.

Thanks to a built-in DisplayPort / HDMI combo connector, the CE980 / CE990 allows for either HDMI or DisplayPort connection on both local and remote consoles, with video input and output selectable for flexible installation and mixed / matched display configurations between both ends. The CE980 / CE990 also extends keyboard / mouse control, RS-232, USB 2.0 data, and both stereo and embedded audio, including LPCM 7.1CH, Dolby TrueHD, Dolby Digital Plus, and DTS-HD Master Audio, over fiber optic cabling. The privilege control function enables easy access management between local and remote consoles through an Auto/Local or Auto/Remote pushbutton, allowing flexible control switching based on operational requirements.

The CE980 / CE990 is perfect for applications that require high-quality, long-distance KVM operation extension, such as healthcare facilities, post-production, manufacturing, and more.

Features

- DisplayPort/HDMI combo connector supports both DisplayPort and HDMI video interfaces

- Extends DisplayPort/HDMI video, keyboard/mouse control, stereo/ embedded audio, RS-232 control, and USB 2.0 signals over fiber optic cabling

- Ultra-long distance transmission up to 300m (CE980) or 10km (CE990)

- Supports True 4K video up to 4096 x 2160 / 3840 x 2160 @ 60 Hz (4:4:4) with HDCP 2.2/2.3 compliance

- Supports HDR10 for enhanced video quality

- Dual console operation – supports local and remote system control with configurable privilege modes (Auto/Local and Auto/Remote) for streamlined access management and operational efficiency

- USB 2.0 Hub – supports 2 ports for USB KB/MS and 2 ports for other USB peripherals

- Easily switch EDID priority between Local and Remote via hotkey

- Supports wide screen format

- Supports dual independent stereo audio – mic and speaker

- Supports lossless digital audio formats such as LPCM 7.1CH, Dolby TrueHD, Dolby Digital Plus, and DTS-HD Master Audio

- Versatile SFP Modules – 2A-141G (300 m, multi-mode for CE980) and 2A-142G (10 km, single-mode for CE990) offer 10Gbps transmission via a single fiber cable

- 2X-EA17 HDMI Lock Pro for combo connector to secure HDMI cables to selected devices and prevent signal loss caused by the connector detaching

- PC wakeup function via a single pushbutton through RS-232 channel

- Plug-and-play operation with no software or driver required

- DC Jack with screw-lock ensures stable and secure connection

- Built-in 8KV/15KV ESD protection

- Rack-mountable

- Firmware upgradeable

Requirements

Local and Remote Consoles

- A DisplayPort or an HDMI monitor capable of the highest resolution you will be using on any computer in the installation.
- A USB keyboard
- A USB mouse
- RS-232 serial port (optional)
- Microphone and speaker ports (optional)

Computers

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

- A DisplayPort or 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 reducing layout complexity, we strongly recommend that you use the high quality custom cables provided in the package.
- Optical fiber cable (LC, Multi Mode) to connect the transmitter and receiver CE980 units.

  Note: It is recommended that you use Multi Mode fibers that conforms to IEC 11801 (OM3) specifications.

- Optical fiber cable (LC, Single Mode) to connect the transmitter and receiver CE990 units.

  Note: It is recommended that you use Single Mode fibers that conforms to IEC 60793-2-50 B1.1 or ITU-T G.652.B specifications.
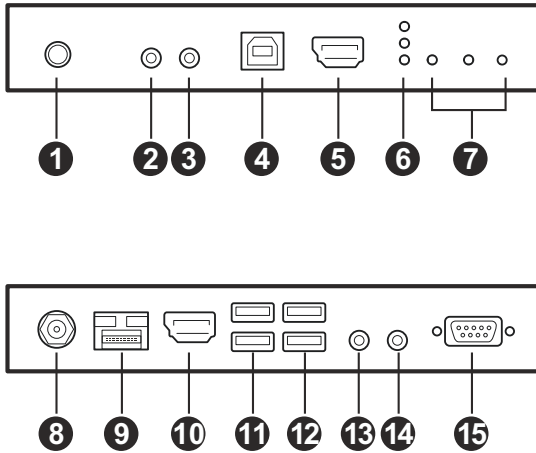
- If you wish to utilize the CE980 / CE990's high-end serial controller function, you need to purchase an appropriate RS-232 serial cable.

◆ Maximum Cable Distances

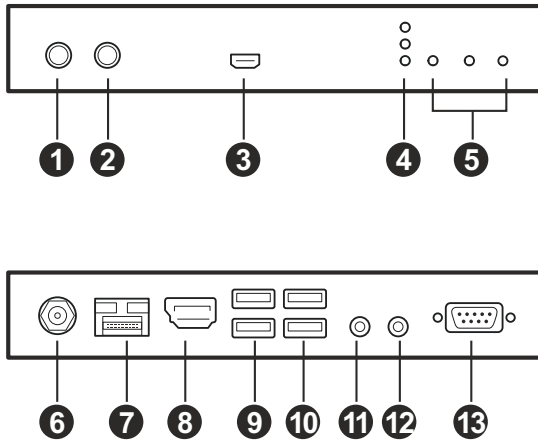| Connection	Distance
Computer to Local Unit (CE980L / CE990L)	5 m
Local unit (CE980L / CE990L) to remote unit (CE980R / CE990R)	300 m (CE980) 10 km (CE990)
Remote Unit (CE980R / CE990R) to monitor	5 m

Components

CE980L / CE990L Front and Rear View

No.	Component	Description
1	auto / local pushbutton (USB control mode)	Press to switch the USB control modes. See *USB Control Modes*, page 16.
2	audio input port	Receives the microphone connector from the supplied microphone cable which connects to a local computer.
3	audio output port	Receives the speaker connector from the supplied speaker cable which connects to a local computer.
4	USB Type-B port	Receives the USB Type-B connector from the supplied USB Type-A to USB Type-B cable which connects to a local computer.
5	DisplayPort/HDMI input port	Receives the HDMI connector from the supplied HDMI cable which connects to a local computer.
6	USB control mode LEDs	Indicates the auto, local, and remote USB control modes status of the CE980L / CE990L. For more details, see *USB Control Modes*, page 16.
7	status LEDs (DisplayPort/ HDMI in / link / power)	Indicates the DisplayPort/HDMI, link, and power status of the CE980L / CE990L. For more details, see *LED Display*, page 15.
8	power jack	Receives the supplied power adapter.

No.	Component	Description
9	optical output port	◆ Connects the supplied SF module. ◆ Receives an optical fiber cable which connects to the CE980R / CE990R unit.
10	DisplayPort/HDMI output port	Receives a DisplayPort or an HDMI cable which connects to the DisplayPort or HDMI monitor.
11	USB Type-A ports (USB peripheral)	Receive up to two USB 2.0 devices. **Note:** The USB control on the USB Type-A ports (USB peripheral) will not be switched when you change the USB control modes.
12	USB Type-A ports (keyboard / mouse)	Receive the console keyboard and mouse. **Note:** Make sure to connect the console keyboard and mouse here, if you connect the console keyboard and mouse to the USB Type-A ports (USB peripherals), the USB control will not be switched when you change the USB control modes.
13	audio input port	Receives cable from the microphone (pink).
14	audio output port	Receives cable from the speaker (green).
15	RS-232 serial port	Receives an RS-232 serial cable which connects to a local computer.

CE980R / CE990R Front and Rear View

No.	Component	Description
1	auto / remote pushbutton (USB control mode)	Press to switch the USB control modes. See *USB Control Modes*, page 16.
2	wake up PC pushbutton	Press this button to remotely wake up the computer on the local side.
3	USB Micro-B port (firmware upgrade)	Receives a USB Micro-B cable to perform a firmware upgrade. This function is reserved for ATEN Technical Support. If you would like to do a firmware upgrade yourself, please contact your dealer.
4	USB control mode LEDs	Indicates the auto, remote, and locked USB control modes status of the CE980R / CE990R. For more details, see *USB Control Modes*, page 16.
5	status LEDs (DisplayPort/HDMI out / link / power)	Indicates the DisplayPort/HDMI, link, and power status of the CE980R / CE990R. For more details, see *LED Display*, page 15.
6	power jack	Receives the supplied power adapter.
7	Optical input port	◆ Connects the supplied SF module. ◆ Receives an optical fiber cable which connects to the CE980L / CE990L unit.
8	DisplayPort/HDMI output port	Receives a DisplayPort or an HDMI cable which connects to the DisplayPort or HDMI monitor.
9	USB Type-A ports (USB peripheral)	Receive up to two USB 2.0 devices. **Note:** The USB control on the USB Type-A ports (USB peripheral) will not be switched when you change the USB control modes.

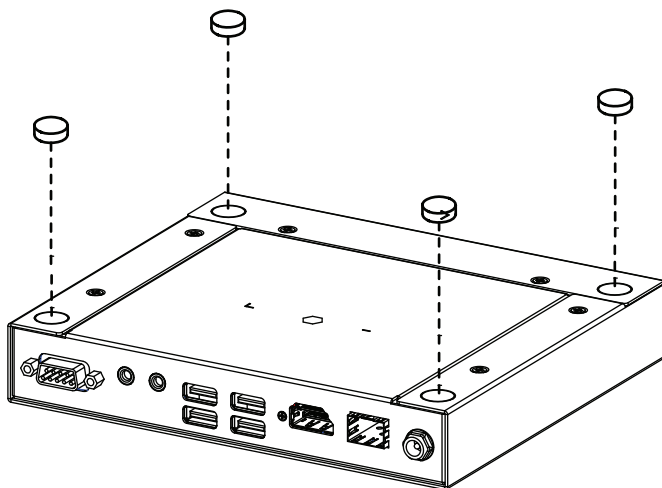| No.	Component	Description
10	USB Type-A ports (keyboard / mouse)	Receive the console keyboard and mouse.
		Note: Make sure to connect the console keyboard and mouse here, if you connect the console keyboard and mouse to the USB Type-A ports (USB peripherals), the USB control will not be switched when you change the USB control modes.
11	audio input port	Receives cables from the microphone (pink).
12	audio output port	Receives cables from the speaker (green).
13	RS-232 serial port	Receives an RS-232 serial cable which connects to a hardware/software serial control device.

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.
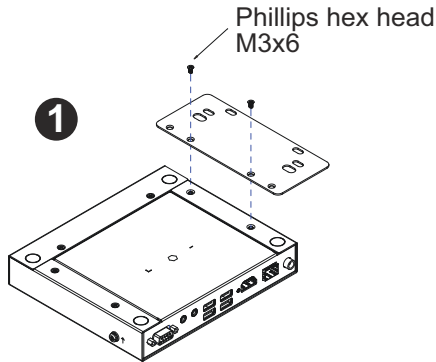
Stacking and Rack Mounting

Stacking

The CE980 / CE990 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 CE980 / CE990, 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:
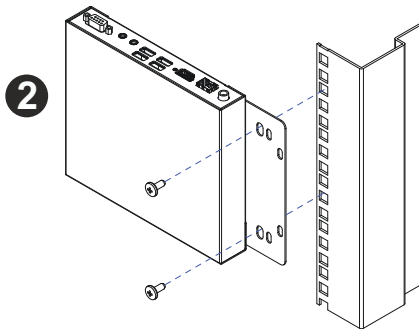
Rack Mounting

For convenience and flexibility, the CE980 / CE990 can be mounted on system racks. To rack mount a unit, do the following:

1. Using the screws from the supplied mounting kit, secure the mounting bracket to the top or bottom of the CE980 / CE990 as shown in the diagram below.

2. Use self-prepared M5 Phillips recessed screws, secure the mounting bracket to a preferred location on the rack. You can rack mount the CE980 / CE990 with either the front or rear facing upwards.
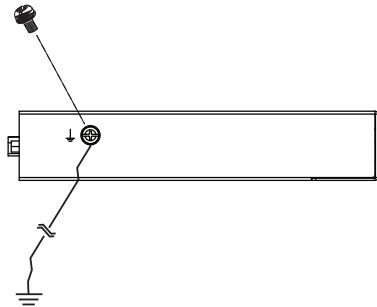

Optional Rack Mounting

The CE980 / CE990 can be mounted on 1U system racks using an optional rack mounting kit (VE-RMK1U). For detailed setup instruction, see *VE-RMK1U Installation Guide*.

Installation

Grounding

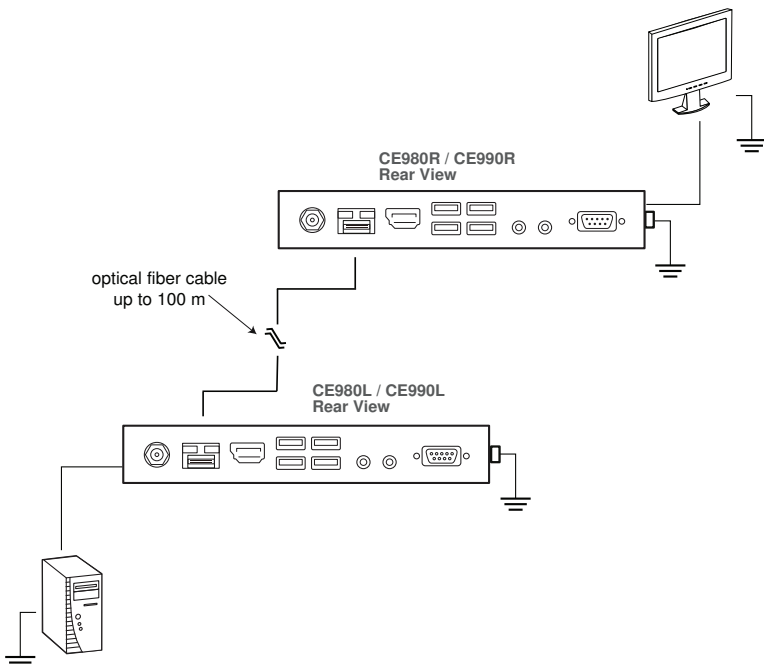To prevent damage to your installation it is important that all devices are properly grounded.

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.
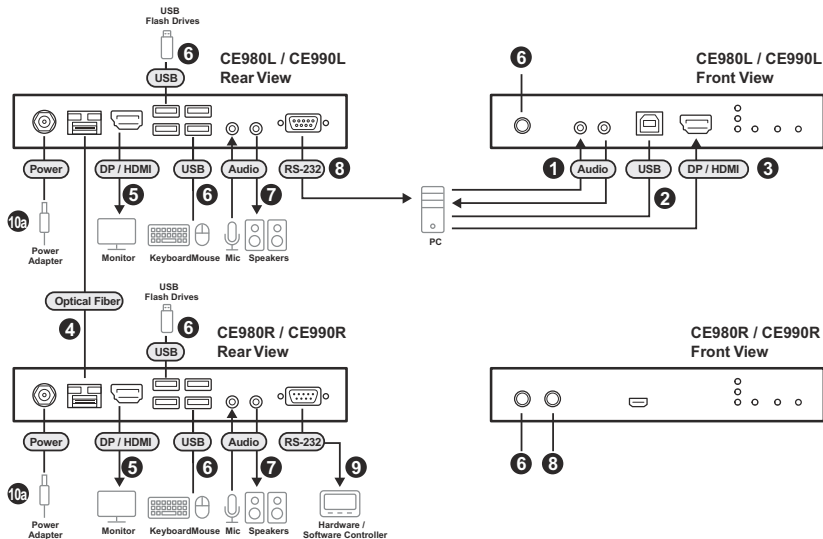

2. Make sure that the computer that connects to the local unit and the monitor that connects to the remote unit are also grounded.

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. Connect one end of the supplied microphone cable to the audio input jack located on the front of the CE980L / CE990L, and the other end to a local computer. Do the same using the supplied speaker cable for the audio output jack.

2. Connect the supplied USB cable to the USB Type-B port on the CE980L / CE990L, and the other end to a USB Type-A port on the local computer.

3. Connect the supplied DisplayPort/HDMI cable to the DisplayPort/HDMI input port on the CE980L / CE990L, and the other end to a local computer.

4. Before connecting the optical fiber, it is required to install the supplied SFP module to the optical input and output ports. Connect one end of an optical fiber cable to the optical output port on the CE980L / CE990L, and the other end to the optical input port on the CE980R / CE990R.

5. Connect up to two DisplayPort and/or HDMI-enabled monitors to the DisplayPort/HDMI output ports on the CE980L / CE990L and CE980R / CE990R via DisplayPort and/or HDMI cable(s).

6. Connect USB peripherals (mouse, keyboard, flash drive, etc.) into their respective USB Type-A ports on the CE980L / CE990L and CE980R /

CE990R. To switch to a different control mode for USB keyboard / mouse ports, use the auto / local pushbutton (CE980L / CE990L) and auto / remote pushbutton (CE980R / CE990R). For more information, see *USB Control Modes*, page 16.

7. Connect the microphone and speakers into their respective audio jacks on the CE980L / CE990L and CE980R / CE990R.

8. To use the wake up PC pushbutton, use an RS-232 serial cable to connect the RS-232 serial port on the CE980L / CE990L to the local computer.

9. To control a local computer with a serial device, connect the RS-232 serial port on the CE980L / CE990L to the local computer as illustrated in step 8, and then connect a hardware / software controller to the RS-232 serial port on the CE980R / CE990R.

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

10. (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 CE980L / CE990L.

(b) Connect the second power adapter into a power source, and then connect the adapter's power cable to the power jack on the CE980R / CE990R.

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Operation

Overview

This chapter provides information on LED indicators.

LED Display

The local and remote units of CE980 / CE990 have front panel LEDs to indicate their operating status, as shown in the table below:

LED	Indication	Description
Power	Lights green	The system is receiving power.
Link	Lights orange	The connection between the local and remote CE980 / CE990 is stable.
	Off	The system detects a connection issue between the local and remote CE980 / CE990.
	Flashes orange	The optical fiber signal transmission is unstable.
HDMI Out (CE980R / CE990R only)	Lights orange	The video display is normal and secured with HDCP.
	Flashes orange	The video display is normal but not secured with HDCP.
	Off	There is no video activity.
DisplayPort/ HDMI In (CE980L / CE990L only)	Lights orange	The video display is normal and secured with HDCP.
	Flashes orange	The video display is normal but not secured with HDCP.
	Off	There is no video activity.

USB Control Modes

To switch the USB control to a different mode for USB keyboard / mouse ports, use the auto / local pushbutton for auto and local USB control mode switch (CE980L / CE990L, see *auto / local pushbutton (USB control mode)*, page 5) and auto / remote pushbutton for auto and remote USB control mode switch (CE980R / CE990R, see *auto / remote pushbutton (USB control mode)*, page 7). The LEDs status and the mode behaviors are explained in the table below.

Note: Only the USB control on the USB Type-A ports (keyboard / mouse) will be switched when you change the USB control modes.

USB Control Modes	Description
Auto	Lights orange to indicate the unit is in **auto** mode. The unit owns the USB control in a first come first served order. If both the local and remote units are operating the keyboard and mouse at the same time, the local unit has higher priority and owns the USB control.
Local (CE980 / CE990L only)	Lights orange to indicate the unit is in **local** mode. Only the CE980L / CE990L owns the USB control. Under this mode, the remote unit is locked and has no USB control, and the Locked LED lights orange.
Remote	Lights orange to indicate the unit is in **remote** mode. Only the CE980R / CE990R owns the USB control. Under this mode, even though the remote unit owns the USB control, the local unit can still force to take over the USB control by pressing the auto / local pushbutton.
Locked (CE980R / CE990R only)	Lights orange to indicate the unit is in **locked** mode. The CE980R / CE990R has no USB control. Under this mode, the local unit owns the USB control, and the USB control cannot be overturned by the remote unit.

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.
- 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.

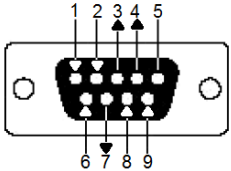 Any other information you feel may be of help.

Specifications

Function	CE980L / CE990L	CE980R / CE990R
Connectors		
Console Ports	1 x DisplayPort/HDMI Female (Black) 4 x USB Type-A Female (White)* 1 x Mini Stereo Jack Female (Green) 1 x Mini Stereo Jack Female (Pink) **Note:** 2 x USB Type-A ports for keyboard & mouse use, 2 x USB Type-A ports for other USB 2.0 peripherals.	1 x DisplayPort/HDMI Female (Black) 4 x USB Type-A Female (White)* 1 x Mini Stereo Jack Female (Green) 1 x Mini Stereo Jack Female (Pink) **Note:** 2 x USB Type-A ports for keyboard & mouse use, 2 x USB Type-A ports for other USB 2.0 peripherals.
KVM Ports	1 x DisplayPort/HDMI Female (Black) 1 x USB Type-B Female (White) 1 x Mini Stereo Jack Female (Green) 1 x Mini Stereo Jack Female (Pink)	N/A
RS-232	1 x DB-9 Female (Black)	1 x DB-9 Male (Black)
Power	1 x DC Jack (Black)	
Unit to Unit	1 x bi-directional SFP+ (LC)	
LEDs		
Console Status	3 (Green)	3 (Green)
Video Input	1 (Orange)	N/A
Video Output	N/A	1 (Orange)
Link	1 (Orange)	
Power	1 (Green)	
Switches		
Operating Mode Selection	1 x Pushbutton	
Wakeup PC	N/A	1 x Pushbutton
Fiber Optics		

Function	CE980L / CE990L	CE980R / CE990R
Operating Distance	CE980L / CE980R: 300 m with Multi Mode (MM) Fiber **Note:** 1. Operating distance is approximate. A typical maximum distance may vary depending on factors such as fiber type, bandwidth, connector splicing, losses, modal or chromatic dispersion, environmental factors, and kinks. 2. It is recommended that you use Multi Mode fibers that conforms to IEC 11801 (OM3) specifications. 3. The Device is class 1 laser product. It meet the safety regulations of IEC-60825, FDA 21 CFR 1040.10, and FDA 21 CFR 1040.11. CE990L / CE990R: 10 km with Single Mode (SM) Fiber **Note:** 1. Operating distance is approximate. A typical maximum distance may vary depending on factors such as fiber type, bandwidth, connector splicing, losses, modal or chromatic dispersion, environmental factors, and kinks. 2. It is recommended that you use Single Mode fibers that conforms to IEC 60793-2-50 B1.1 or ITU-T G.652.B specifications. 3. The Device is class 1 laser product. It meet the safety regulations of IEC-60825, FDA 21 CFR 1040.10, and FDA 21 CFR 1040.11.	
Data Rate	Single Fiber: 10 Gbps	
Power Consumption	DC12V:11.89W:86BTU/h	DC12V:9.49W:81BTU/h
	Note: ♦ 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.	
Environmental		
Operating Temp	0–40º C	
Storage Temp.	-20–60º C	
Humidity	0–80% RH, Non-condensing	
Physical Properties		
Housing	Metal	
Weight	0.84 kg (1.85 lb)	0.85 kg (1.87 lb)
Dimensions (L x W x H)	17.82 x 15.62 x 2.88 cm (7.02 x 6.15 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:

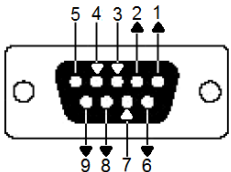| Pin		Assignment	
1	CD	Carrier Detect	
2	RXD	Receive Data	
3	TXD	Transmit Data	
4	DTR	Data Terminal Ready	
5	GND	Signal Ground	
6	DSR	Data Set Ready	
7	RTS	Request to Sent	
8	CTS	Clear to Sent	
9	RI	Ring Indicator	

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	Carrier Detect	
2	TXD	Transmit Data	
3	RXD	Receive Data	
4	DTR	Data Terminal Ready	
5	GND	Signal Ground	
6	DSR	Data Set Ready	
7	CTS	Clear to Sent	
8	RTS	Request to Sent	
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.