ATLONA®
a **PANDUIT** company

4K / UHD
HDMI to HDBaseT™ Distribution Amplifier

AT-UHD-CAT-8 | Atlona Manuals
Distribution Amplifiers

Version Information

Version	Release Date	Notes
1	Mar 2019	New format
2	Mar 2021	Included instructions for Updating the Valens Firmware (page 39).
3	Apr 2022	Corrected wiring instructions for IR control of source and sink devices.

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Operating Notes

⚠️ **IMPORTANT:** Visit http://www.atlona.com/product/AT-UHD-CAT-8 for the latest firmware updates and User Manual.

Warranty

To view the product warranty, use the following link or QR code:

https://atlona.com/warranty/

Safety and Certification

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCT THE RISK OF
ELECTRIC SHOCK
DO NOT OPEN ENCLOSURE OR EXPOSE
TO RAIN OR MOISTURE.
NO USER-SERVICEABLE PARTS
INSIDE REFER SERVICING TO
QUALIFIED SERVICE PERSONNEL.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance instructions in the literature accompanying the product.

The information bubble is intended to alert the user to helpful or optional operational instructions in the literature accompanying the product.

1. Read these instructions.

2. Keep these instructions.

3. Heed all warnings.

4. Follow all instructions.

5. Do not use this product near water.

6. Clean only with a dry cloth.

7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.

8. Do not install or place this product near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.

9. Do not defeat the safety purpose of a polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the product.

11. Only use attachments/accessories specified by Atlona.

12. To reduce the risk of electric shock and/or damage to this product, never handle or touch this unit or power cord if your hands are wet or damp. Do not expose this product to rain or moisture.

13. Unplug this product during lightning storms or when unused for long periods of time.

14. Refer all servicing to qualified service personnel. Servicing is required when the product has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the product, the product has been exposed to rain or moisture, does not operate normally, or has been dropped.

FCC Compliance

FCC Compliance and Advisory Statement: This hardware 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. 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 in a commercial installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed or used in accordance with the instructions, may cause harmful interference to radio communications. However there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: 1) reorient or relocate the receiving antenna; 2) increase the separation between the equipment and the receiver; 3) connect the equipment to an outlet on a circuit different from that to which the receiver is connected; 4) consult the dealer or an experienced radio/TV technician for help. Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. Where shielded interface cables have been provided with the product or specified additional components or accessories elsewhere defined to be used with the installation of the product, they must be used in order to ensure compliance with FCC regulations.

Copyright, Trademark, and Registration

Table of Contents

Introduction

The Atlona **AT-UHD-CAT-8** is a 4K/UHD HDMI to HDBaseT distribution amplifier featuring pass-through HDMI input connections, eight HDBaseT outputs and display control capability. Each output transmits AV and control signals up to 230 ft. (70 m) @ 1080p and 130 ft. (40 m) @ 4K/UHD. Features include 4K/UHD @ 60 Hz with 4:2:0 color subsampling, HDCP 2.2 compliance, EDID management, and PoE for powering remote receivers. A wide variety of consumer displays may be controlled by the UHD-CAT-8 using CEC*. Designed for commercial distribution applications, the UHD-CAT-8 is control system-friendly and integrates with any TCP/IP, RS-232, or IR control system and features a 1U, full-rack width enclosure with external, international power supply. Compatible Atlona receiver: AT-UHD-EX-70C-RX.

Features

- HDMI distribution amplifier with built-in HDBaseT transmission
- Eight HDBaseT outputs for transmission of HDMI, power, and control up to 230 feet (70 meters)
- 4K/UHD capability with HDCP 2.2 copy protection
- Power over Ethernet (PoE) for HDBaseT receivers
- CEC display control
- Multi-channel audio compliant
- EDID management
- Intuitive GUI-based configuration using integrated web server
- TCP/IP, RS-232, and IR control
- Easy to configure and manage with AMS (Atlona Management System)
- Field-updatable firmware
- Front panel power and signal status LEDs
- Rack-mountable 1U, half rack width enclosure
- Award-winning 10 year limited product warranty

Package Contents

1 x AT-UHD-CAT-8
1 x IR emitter (AT-IR-CS-TX)
3 x 5-pin captive screw connector
1 x Rack Ear (short)
4 x Screws (MAS-MJ05+10D for Rack Ear)
1 x 48 V / 3.12 A power supply
1 x AC cord
1 x Installation guide

*Consumer Electronics Control (CEC): Atlona has confirmed proper CEC functionality with several current models of Samsung, Panasonic, and Sony displays. However, it is not guaranteed that CEC will work with all displays. Many manufacturers do not support the CEC "off" command, and older displays use proprietary commands. Atlona only supports displays that use the CEC command structure defined in HDMI 1.2a. It is recommended that dealers request an evaluation product from Atlona, before designing a system using the CEC protocol. If this is not possible, then other control methods will need to be considered, in order to control displays using Atlona products.

Panel Description

1. **HDMI Indicators**
   Displays the status of the **HDMI IN** and **HDMI OUT** ports. When connected to a source or display (sink) device, respectively, the LED indicator will be blue.

2. **HDBaseT Indicators**
   Displays the status of the HDBaseT OUT ports. When connected to an HDBaseT receiver, the LED indicator will be blue.

3. **LOCK**
   This LED will be blue when the unit is locked.

4. **POWER**
   Press this button to power-on or place the unit into standby mode.

5. **INT**
   This LED indicator will be blue when the unit is using an internal EDID.

6. **EDID**
   Press this button to switch between the internal (INT) and learned (LEARN) EDID modes.

7. **LEARN**
   This LED indicator will flash when a downstream EDID is being read into memory.

8. **FW**
   Connect a mini USB-to-USB cable from this port, to a computer, to update the firmware of the AT-UHD-CAT-8.

9. **RS-232 / IR (MASTER)**
   Connect a control system to this port to control the AT-UHD-CAT-8.

10. **LAN**
    Connect an Ethernet cable from this port to the network.

11. **HDMI IN**
    Connect an HDMI cable from this port to a source device.

12. **HDMI OUT**
    Connect an HDMI cable from this port to a confidence monitor.

13. **RS-232/IR 1 - 8**
    Connect a control system or other DTE device to these ports for pass-through zone control. Each of these ports uses the associated HDBaseT OUT port. This allows RS-232 command data to be sent to a display (sink) device connected to a PoE-comptible receiver.

14. **HDBaseT OUT 1 - 8**
    Connect Ethernet cables from these ports to PoE-compatible receivers.

15. **DC 48V**
    Connect the included power supply to this power receptacle.

Installation

Connection Instructions

1. Connect an HDMI cable from a UHD/HD source to the **HDMI IN** port.

2. Connect an HDMI cable from the **HDMI OUT** port to a display (sink) device.

3. Connect up to eight Ethernet cables from the **HDBaseT OUT** ports to compatible PoE-capable receivers. Refer to the table below for information on maximum cable length and supported resolutions.
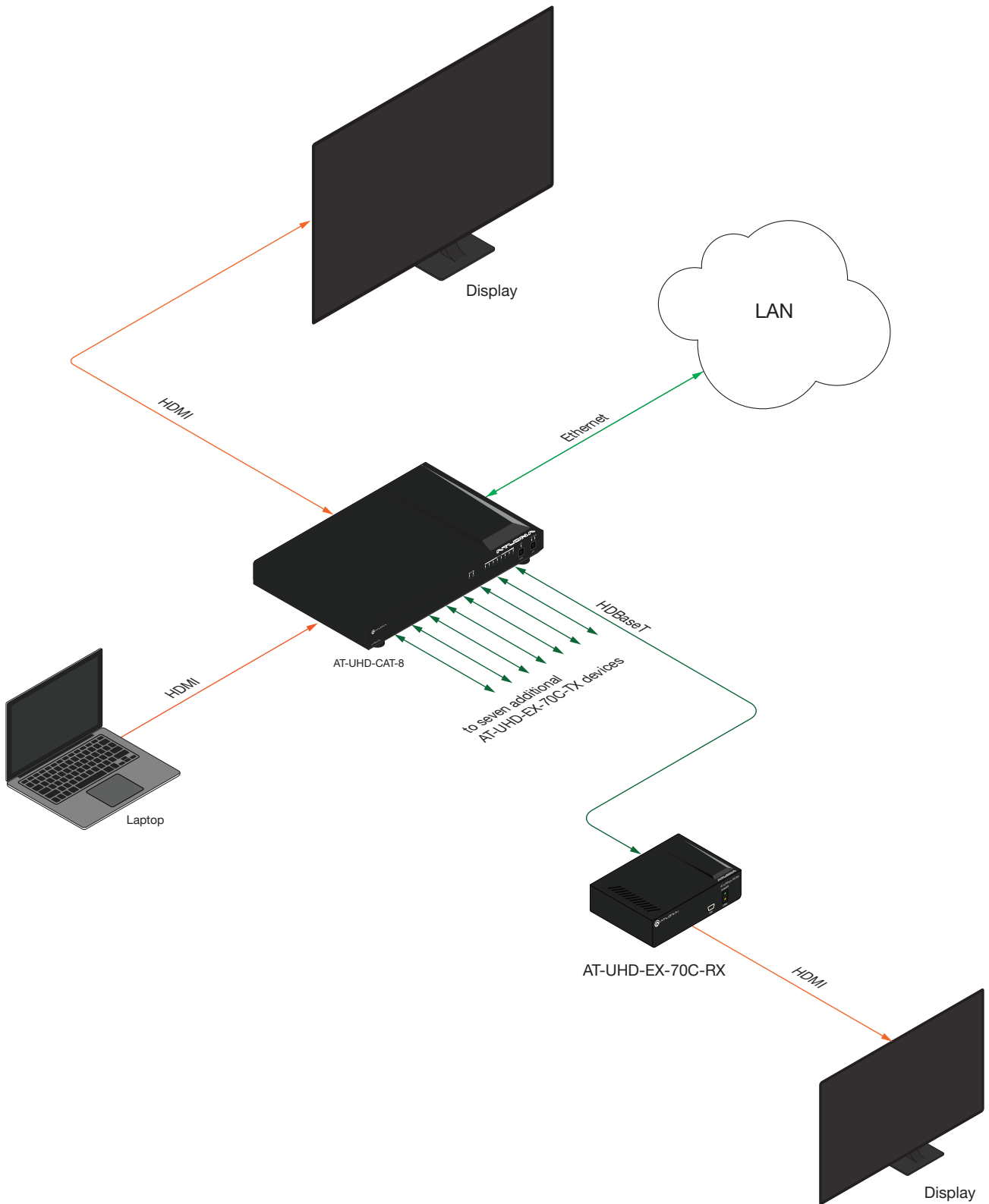
    ⚠️ **IMPORTANT:** Stranded or patch cable is not recommended due to performance issues. Sheilded cables are strongly recommended to minimize signal noise and interference.

Cable	4K/UHD - Feet / Meters		1080p - Feet / Meters	
HDMI	15	5	30	10
CAT5e/6	115	35	200	60
CAT6a/7	130	40	230	70

4. Connect an Ethernet cable from the **LAN** port to the Local Area Network (LAN). This step will be required in order to access the built-in web server.

5. Connect the included power supply to the **DC 48V** connector and connect the power cord to an available electrical outlet.

6. Connect an RS-232 or IR cable from the control system to the RS-232/IR ports. Refer to RS-232 Control (page 19) and IR Control (page 23) for more information.

    *   **MASTER RS-232/IR**
        Connecting to this port will provide direct control of the AT-UHD-CAT-8 using a control system. Control can be performed using either RS-232 or electrical IR.

    *   **RS-232/IR 1** through **RS-232/IR 8**
        Each of these ports is associated to the respective **HDBaseT OUT** port. This allows RS-232 pass-through zone control of a display (sink) device that is connected to a PoE-compatible receiver. Control can be performed using RS-232 or electrical IR.

Connection Diagram

Display

LAN

HDMI

Ethernet

HDBaseT

AT-UHD-CAT-8

to seven additional
AT-UHD-EX-70C-TX devices

HDMI

Laptop

AT-UHD-EX-70C-RX

HDMI

Display

IP Configuration

The AT-UHD-CAT-8 is shipped with DHCP enabled. Once connected to a network, the DHCP server (if available), will automatically assign an IP address to the unit. Use an IP scanner, along with the MAC address on the back of the unit, to identify both the unit and its IP address on the network. If a static IP address is desired, the unit can be switched to static IP mode. Use one of the following procedures to switch between DHCP and static IP mode. The default static IP address of the AT-UHD-CAT-8 is 192.168.1.254.

If the AT-UHD-CAT-8 is unable to detect a DHCP server within 15 seconds, then the unit will set all IP settings to zero.

⚠️ **IMPORTANT:** If the AT-UHD-CAT-8 is receiving a DHCP IP address, and the IP mode is changed to static, then Telnet and web server communication will be lost.

Setting the IP Mode

1. Make sure the AT-UHD-CAT-8 is powered.

2. Connect an Ethernet cable between the **LAN** port of the AT-UHD-CAT-8 and the Local Area Network (LAN).

3. Press and hold the **POWER** button for approximately 15 seconds. Release the **POWER** button once the **LOCK** LED indicator begins to flash. The number of flashes will indicate the currently selected IP mode.

LOCK LED indicator
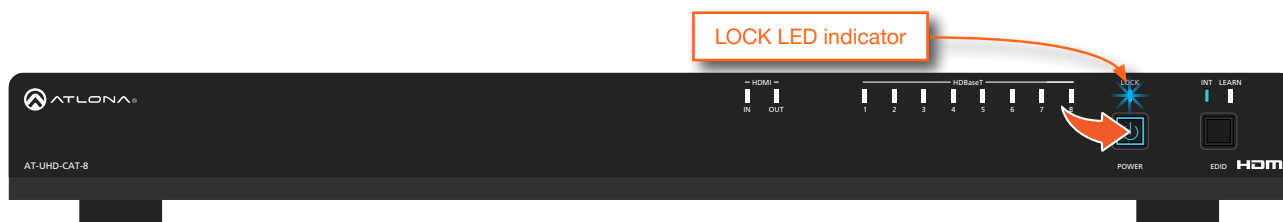
POWER button flashes	Description	
Two	Static IP mode	IP address: 192.168.1.254 Netmask: 255.255.0.0 Gateway: 192.168.1.1
Four	DHCP mode	

Setting the IP Address Using Commands

Use the IPStatic and IPDHCP commands to switch between DHCP and IP mode through RS-232 or Telnet. Refer to API documentation for more information. All commands and their arguments are case-sensitive.

⚠️ **IMPORTANT:** Note that when switching between DHCP and static modes, within a Telnet session, the connection will be terminated once the IPDHCP command is executed.

- **Setting static IP mode**

  1. Connect to the AT-UHD-CAT-8 using RS-232 or Telnet.

  2. At the command line, execute the IPDHCP command using the off argument, as shown.

     IPDHCP off

3. Execute the IPStatic command. This command requires three arguments: the desired IP address of the AT-UHD-CAT-8, the subnet mask, and the gateway address. All arguments must be entered in dot-decimal notation. The following is an example:

```
IPStatic 192.168.1.112 255.255.255.0 192.168.1.1
```
              IP address   Subnet mask   Gateway

- **Setting DHCP mode**

  1. Connect to the AT-UHD-CAT-8 using RS-232 or Telnet.

  2. At the command line, execute the IPDHCP command using the on argument, as shown. All characters are case-sensitive.

     ```
     IPDHCP on
     ```

     Once DHCP is enabled, the unit will be assigned an IP address by the DHCP server (if present).

Setting the IP Address using the Web Server

The System page (page 35), in the web server, allows the AT-UHD-CAT-8 to use either DHCP or static IP mode. In order to access the web server, the IP address of the AT-UHD-CAT-8 must be known. Refer to Introduction to the Web Server (page 29).

1. Open the desired web browser and enter the IP address of the AT-UHD-CAT-8.

2. Log in using the required credentials. The factory-default username and password are listed below:

   Username: root
   Password: Atlona

3. Click **System** in the menu bar.

4. Click the **IP Mode** toggle to switch between the **DHCP** and **STATIC IP** setting. When set to **STATIC IP**, the **IP**, **Netmask**, and **Gateway** fields can be modified.

5. Click the **Save** button to save the changes.

Device Operation

LED Indicators

The LED indicators on both the front of the unit provide basic information on the current status of the AT-UHD-CAT-8.

| LED			Description
POWER	Blue		Unit is powered and in normal operating mode.
	Red		Unit is in standby mode. • Press the **POWER** button to place the unit in normal operating mode.
	Off		Unit is not powered. • Check the power supply and make sure it is securely fastened to the locking connector on the rear of the unit. • Make sure that the power supply is connected to an available electrical outlet and that the outlet is "live" (some outlets are controlled by a wall switch).
HDMI IN / OUT	Blue		IN: Source is connected to the **HDMI IN** port. OUT: Sink device is connected to the **HDMI OUT** port.
	Off		IN: No source device connected to the **HDMI IN** port. OUT: No sink device is connected to the **HDMI OUT** port. • Check the integrity of the HDMI cable; make sure a secure connection exists between the HDMI port on the AT-UHD-CAT-8 and the source/display device. • Try a different HDMI cable.
HDBaseT 1 - 8	Blue		Normal operation. Signal integrity between the AT-UHD-CAT-8 and the connected receiver is good.
	Off		No connection between the HDBaseT port on the AT-UHD-CAT-8 and the receiver unit. • Check the Ethernet cable for a secure connection. • Possible bad cable; try a different Ethernet cable.
LOCK	Blue		Front-panel buttons on the AT-UHD-CAT-8 are locked. Refer to the API or Locking the Front Panel (page 13) for more information.
	Flashing Blue		The number of flashes indicate whether the unit is in DHCP or static IP mode. Refer to IP Configuration (page 10) for more information.
	Off		Front-panel buttons on the AT-UHD-CAT-8 are unlocked.
INT	Blue		AT-UHD-CAT-8 is using the internal EDID. Refer to EDID Management (page 14) for more information on INT EDID mode.
	Off		AT-UHD-CAT-8 is set LEARN EDID mode.
LEARN	Blue		AT-UHD-CAT-8 is in "learn" mode. Refer to EDID Management (page 14) for more information on LEARN EDID mode.
	Flashing Blue		AT-UHD-CAT-8 is in the process of learning the downstream EDID.
	Off		AT-UHD-CAT-8 is set to INT (internal EDID) mode.

Locking the Front Panel

The buttons on the front panel can be locked or unlocked. Locking the front-panel buttons prevents accidental pressing of the buttons, which may occur when the unit is mounted in a rack environment. Locking and unlocking of the front-panel buttons is managed through the web server or by executing the Lock and Unlock API commands. Refer to the API documentation for more information.

> **NOTE:** Locking the front-panel buttons will also lock the EDID, preventing the EDID mode from being switched between **INT** and **LEARN** modes.

Using the Front Panel

1. Make sure the unit is powered.

2. Press and hold the **POWER** button for five seconds.

3. Release the **POWER** button. The **LOCK** LED indicator on the front panel will glow solid blue. The front panel buttons are now locked.

4. To unlock the front-panel buttons, press and hold the **POWER** button for five seconds, then release. The **LOCK** LED indicator will no longer be illuminated.

LOCK LED indicator

POWER button
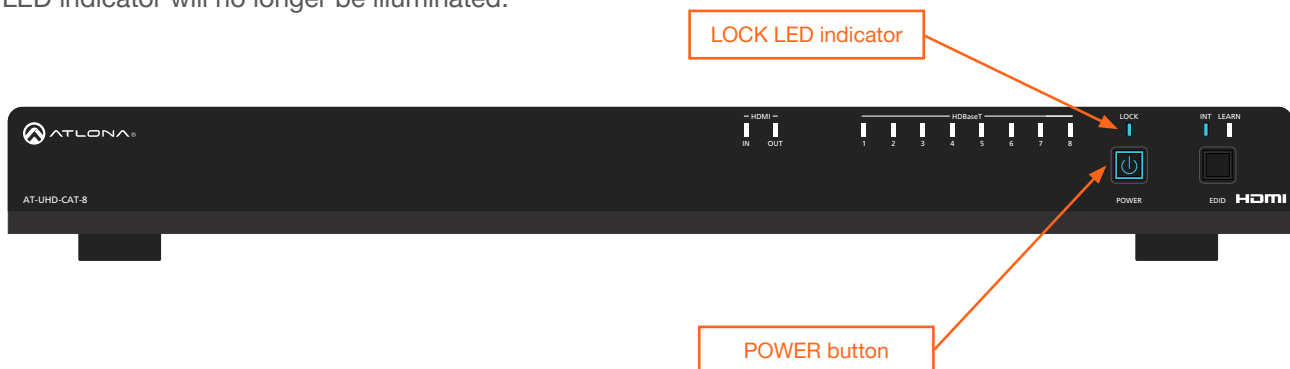
Using the Web Server

1. Login to the web server. Refer to Introduction to the Web Server (page 29) for more information.

2. Click **System** in the menu bar.

3. Locate the **System** section and click the **Lock** toggle button to switch between **LOCK** and **UNLOCK** states.
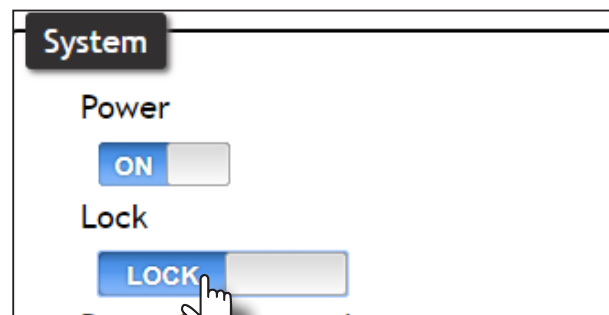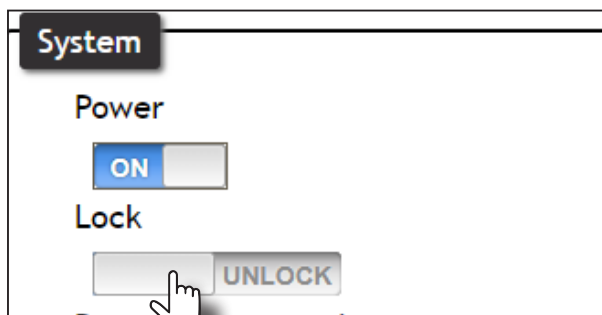
4. The **LOCK** LED indicator, on the front panel, will reflect the current state. When the front-panel buttons are locked, the **LOCK** LED indicator will glow solid blue.

EDID Management

The AT-UHD-CAT-8 provides two EDID modes: **INT** and **LEARN**. The default EDID mode is **INT** mode. In this mode, the AT-UHD-CAT-8 will automatically create an EDID based on the capabilities of all connected displays. **INT** mode is recommended for the best results when the capabilities of all connected displays are unknown. **INT** mode can also be used to select any of 16 EDID presets. Refer to Selecting EDID Presets (page 16) for more information on this topic. **LEARN** mode can be used to capture an EDID from any sink device. Once the EDID is learned, it will be used by the connected source device to determine what video and audio formats can be sent to the sink device.

Learning an EDID using the Front Panel

1. Power the AT-UHD-CAT-8.

2. Connect an Ethernet cable from the **HDBaseT OUT 1** port on the AT-UHD-CAT-8 to a receiver (e.g. AT-UHD-EX-70C-RX).

3. Connect an HDMI cable from the receiver to the display (sink) device. Make sure that the sink device is powered.

AT-UHD-CAT-8

HDBaseT OUT 1

AT-UHD-EX-70C-RX

HDMI

Display
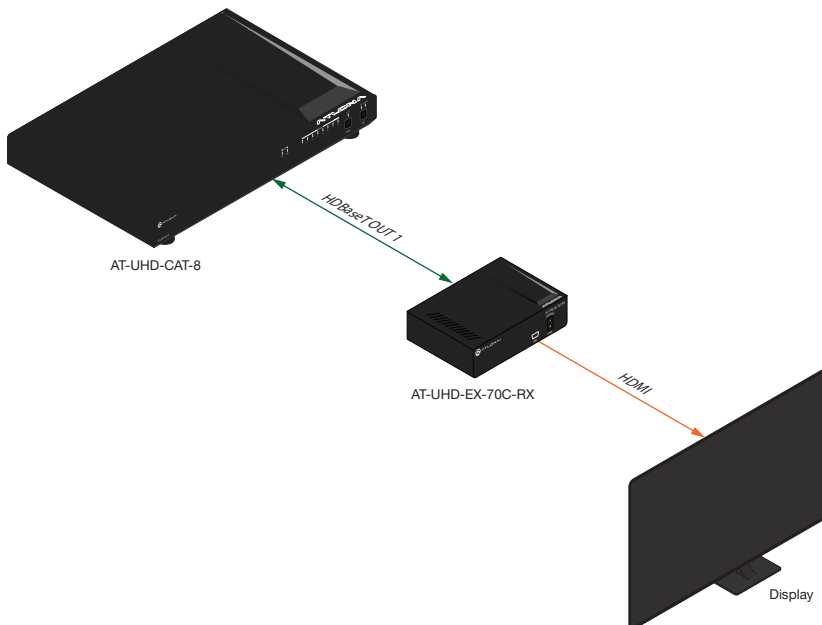
4. Press and hold the **EDID** button on the AT-UHD-CAT-8. Release the **EDID** button once the **LEARN** LED indicator begins to flash rapidly.
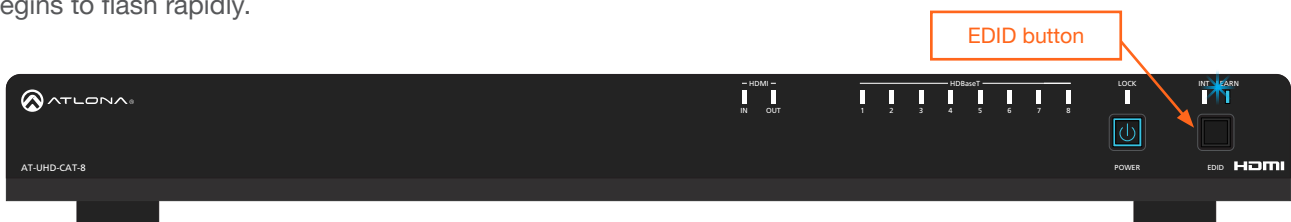
EDID button

Once the EDID is learned, it will be used by the connected source device to determine what video and audio formats can be sent to the sink device(s). To switch back to **INT** mode, quickly press and release the **EDID** button.

NOTE: If the AT-UHD-CAT-8 is accidentally switched to **INT** mode, quickly press and release the **EDID** button to switch back to **LEARN** mode. Switching back and forth between **INT** and **LEARN** mode will not erase the "learned" EDID.

Learning the EDID using the Web Server

1. Follow steps 1 through 3 under Learning an EDID using the Front Panel (page 14).

2. Login to the web server. Refer to Introduction to the Web Server (page 29) for more information.

3. Click **EDID** in the menu bar.
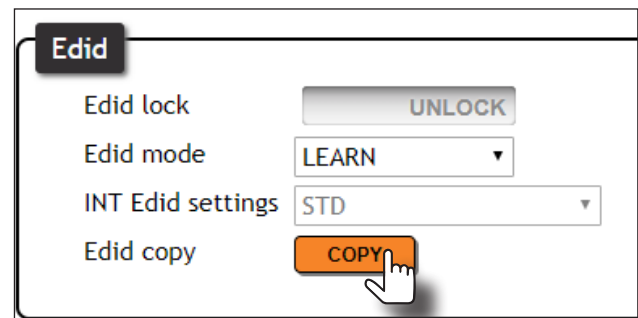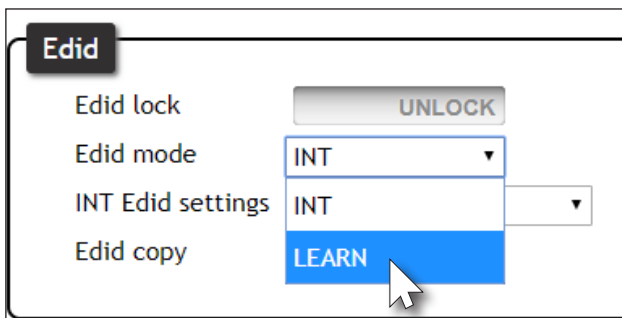
4. Click the **EDID mode** drop-down list and select **LEARN**.

5. Click the **COPY** button to copy the downstream EDID to memory.

    The AT-UHD-CAT-8 will now use the EDID of the downstream sink. To switch back to the **INT** mode, click the **EDID mode** drop-down list and select **INT**.

Locking the EDID

To prevent accidental switching between **INT** and **LEARN** modes, the EDID can be locked.

> **NOTE:** Locking the EDID will also lock all front-panel buttons.

1. Login to the web server. Refer to Introduction to the Web Server (page 29) for more information.

2. Click **EDID** in the menu bar.

3. Click the **EDID lock** toggle button to switch between **LOCK** and **UNLOCK** states.
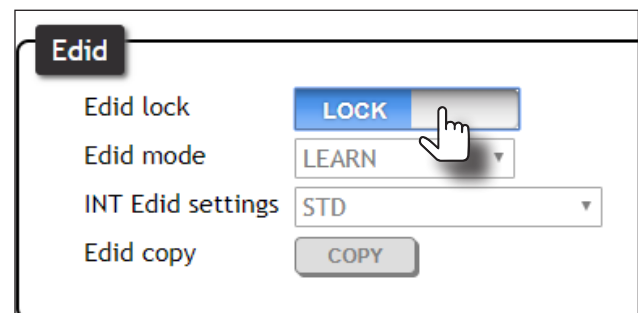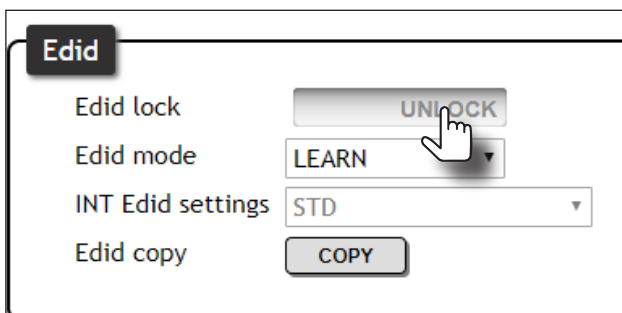
4. The **LOCK** LED indicator, on the front panel, will reflect the current state. When the EDID is locked, the **LOCK** LED indicator will glow solid blue. This also serves to indicate that all front-panel buttons are locked.

Selecting EDID Presets

The AT-UHD-CAT-8 comes with a default EDID plus 16 pre-programmed EDID selections. When selecting the default or one of the pre-programmed EDID selections, the EDID mode must be set to **INT** (internal) mode.
Available EDID selections are presented in the table below.

EDID	
STD	ATL 1280x800 RGB 2CH
ATL 1080P 2CH	ATL 1366x768 RGB 2CH
ATL 1080P Multi CH	ATL 1080P DVI
ATL 1080P DD	ATL 1280x800 RGB DVI
ATL 1080P 3D 2CH	ATL 3840x2160@30 2CH
ATL 1080P 3D Multi CH	ATL 3840x2160@30 Multi CH
ATL 1080P 3D DD	ATL 3840x2160@60 2CH
ATL 720P 2CH	ATL 3840x2160@60 Multi CH
ATL 720P DD	

NOTE: If the resolution and timing limitations of all displays, connected to the **HDBaseT OUT** ports, are unknown, then select the **STD** EDID for the best compatibility. The **STD** EDID will automatically build an EDID based on the capabilities of all connected displays. When selecting an EDID, make sure all connected displays can support the resolution and timing information. Otherwise, loss of picture and/or audio may result.

1. Login to the web server. Refer to for more information.

2. Click **EDID** in the menu bar.

3. Make sure the **EDID lock** toggle switch is set to **UNLOCK**.

4. Click the **EDID mode** drop-down list and select **INT**.

5. Select the desired EDID from the **INT EDID settings** drop-down list.
    The selected EDID will be used by the source, before sending A/V data to the display (sink) device.
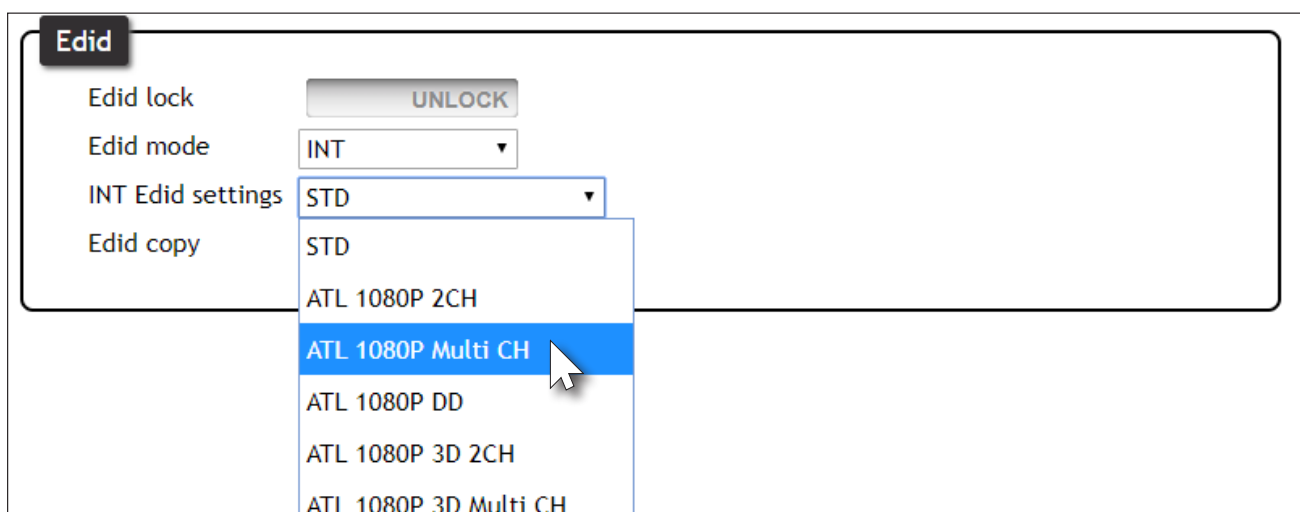
Managing Users
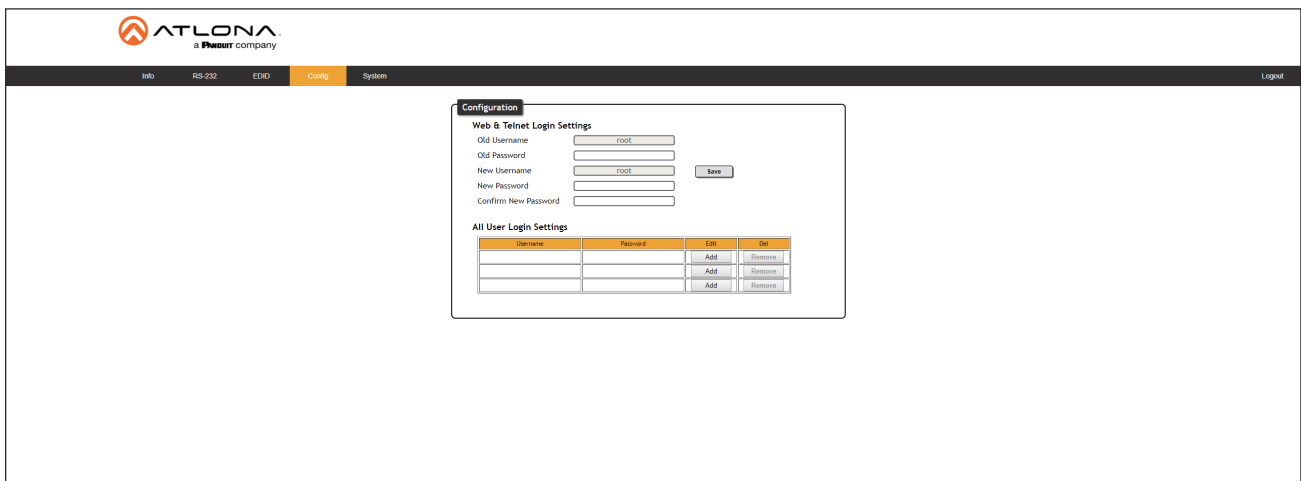
The AT-UHD-CAT-8 allows the admin user to create, edit, and remove additional TCP/IP users. All users have the same level of access to control the AT-UHD-CAT-8. However, only the admin user is allowed to manage other users. Up to three additional users can be created.

Adding Users

1.   Open the desired web browser and enter the IP address of the AT-UHD-CAT-8.

2.   Log in as the **admin** user with the required credentials. The factory-default username and password for the admin user are listed below:
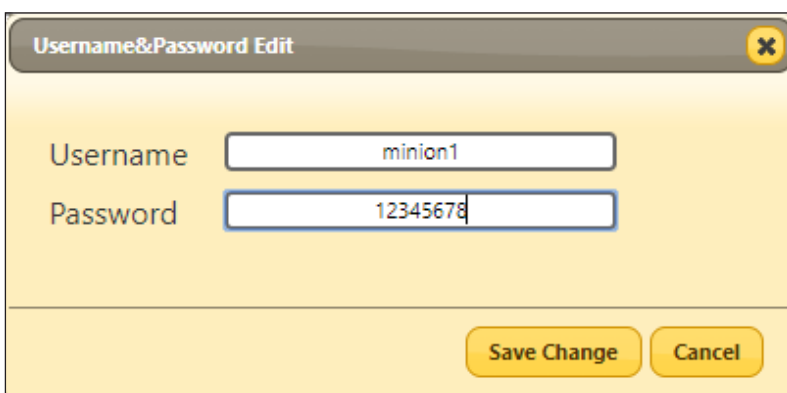
Username: root
Password: Atlona

3.   Click the **Config** tab.

4.   Click the **Add** button, under the **Edit** column.

5.   Enter the desired username and password in the **Username&Password Edit** dialog box.

6.   Click the **Save Change** button to commit changes or click the **Cancel** button to return to the **Config** page without adding the user.

Once created, the new user and the associated password will appear under the **All User Login Settings** section. To login with the new username, click **Logout** in the upper-right corner of the screen, then enter the login credentials for the user on the **Login** page.
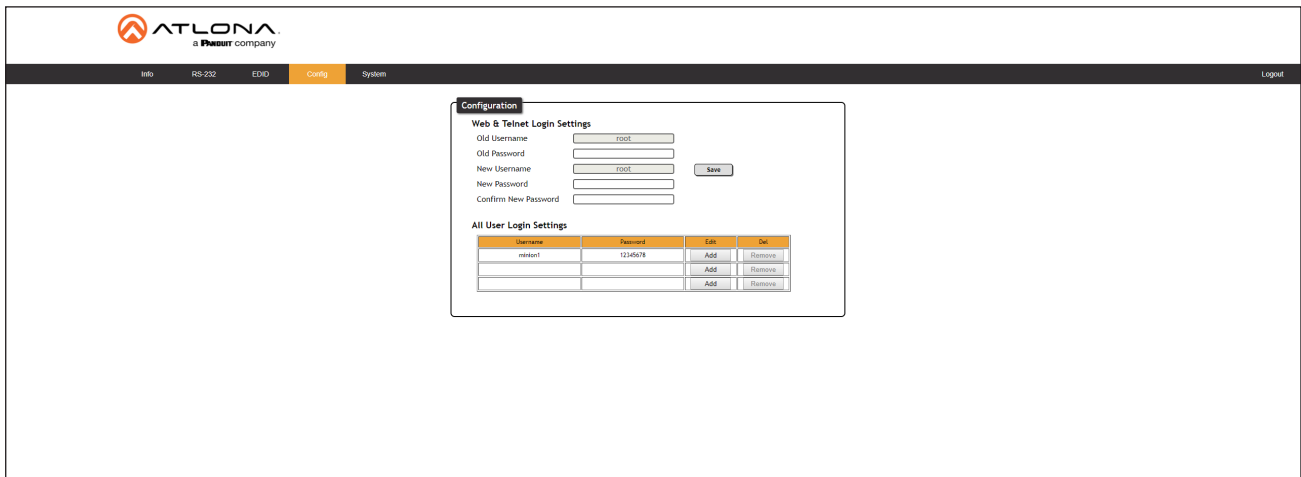
Editing / Deleting Users

The username and password of a user can be changed using this method.

1. Open the desired web browser and enter the IP address of the AT-UHD-CAT-8.

2. Log in as the **admin** user with the required credentials. The factory-default username and password for the admin user are listed below:

   Username: root
   Password: Atlona

Editing Users

    a. Click **Config** in the menu bar.

    b. Click the **Edit** button next to the user to be changed.

    c. Enter the new information for the user in the **Username&Password Edit** dialog box.

    d. Click the **Save Change** button to commit changes or click the **Cancel** button to return to the **Config** page without making changes.

Deleting Users

    a. Click the **Remove** button next to the user to be deleted.

RS-232 Control

The AT-UHD-CAT-8 provides two methods of RS-232 control: Pass-through mode and control mode. The master RS-232 / IR port, allows the unit to be directly controlled using a control system. In addition eight pass-through RS-232 / IR ports allow sink devices, at the viewing location, to be controlled using a control system.

RS-232 is serial data protocol that allows Data Terminal Equipment (DTE) devices, such a computer or control system, to communicate with Data Communication Equipment (DCE) devices, such as the AT-UHD-CAT-8 or a display. Although IP control is available, RS-232 still plays an integral part of many control systems.
The 25-pin D-type connector (DB-25) was defined as the RS-232 standard, but is now commonly implemented in a nine-pin (DE-9) connector package. Each pin is numbered, as shown below.

DE-9 (male)

1 2 3 4 5

6 7 8 9

DE-9 (female)

5 4 3 2 1

9 8 7 6

DTE Pin Descriptions

Pin	Signal	Description
1	DCD	Data Carrier Detect
2	RxD	Receive Data
3	TxD	Transmit Data
4	DTR	Data Terminal Ready
5	GND	Ground (Signal)
6	DSR	Data Set Ready
7	RTS	Request to Send
8	CTS	Clear to Send
9	RI	Ring Indicator

DCE Pin Descriptions

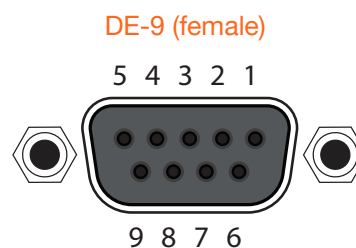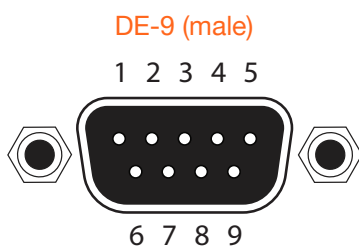| Pin	Signal	Description
1	DCD	Data Carrier Detect
2	TxD	Transmit Data
3	RxD	Receive Data
4	DSR	Data Set Ready
5	GND	Ground (Signal)
6	DTR	Data Terminal Ready
7	CTS	Clear to Send
8	RTS	Ready to Send
9	RI	Ring Indicator

Determining the Port Type

Most DTE devices provide a male connector, while DCE devices have a female connector. However, this is not always the case. If the port type is unknown, then a multimeter can be used to determine whether the port is DTE or DCE:

1. Turn on the multimeter and set it to measure DC voltage.

2. Connect the positive and negative leads to pins 3 and 5, respectively.

3. Check the voltage reading:

    If the voltage is between -3 V DC and -15 V DC, then the device is DTE.
    Otherwise, it is DCE.

    Voltage levels between -3 V and -15 V DC represent a logic "1".
    Voltage levels between +3 V and +15 V DC represent a logic "0".

-12 V

COM

Multimeter

1 2 3 4 5

6 7 8 9
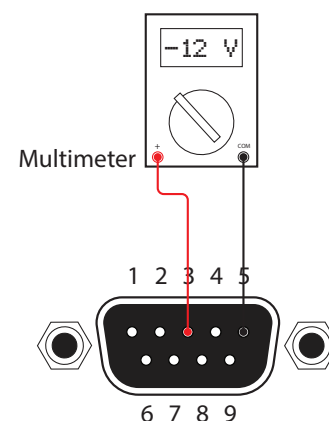
Cable Assembly

When connecting a DTE device to a DCE device, a *straight-through* cable should be used. A straight-through cable is wired in such a way that the pins on one side of the cable are connected to the corresponding pins on the opposite side of the cable, as shown in the table below. However, the AT-UHD-CAT-8 will use only TxD, RxD, and GND signals when communicating with a control system or computer.

Straight-Through Cable

Pin	Signal		Signal	Pin
1	DCD	←――――――→	DCD	1
2	RxD	←――――――→	TxD	2
3	TxD	←――――――→	RxD	3
4	DTR	←――――――→	DSR	4
5	GND	←――――――→	GND	5
6	DSR	←――――――→	DTR	6
7	RTS	←――――――→	CTS	7
8	CTS	←――――――→	RTS	8
9	RI	←――――――→	RI	9

1. Identify the DE-9 connector that will be attached to the control system or computer (DCE) equipment.

2. Remove the DE-9 connector at the opposite end of the cable with wire cutters.

3. Remove at least 1" of the cable insulation to expose each of the nine wires.

4. Locate a multimeter and set it to the "continuity" function.

5. Attach one of the leads from the multimeter to pin 2 on the DE-9 connector.

6. Take the other lead and probe each of the wires on the opposite end of the cable. When the wire connected to that pin is detected, the multimeter will emit an audible tone. Once this occurs, identify the current wire, and move it to the side.

7. Repeat step 6 for pin 3 and pin 5 on the DE-9 connector.

8. Group the remaining wires and pull them aside. Electrical tape can be use to secure the wires to the outside of the RS-232 cable.

9. Remove at least 3/16" (5 mm) of insulation from the TxD, RxD, and GND wires.
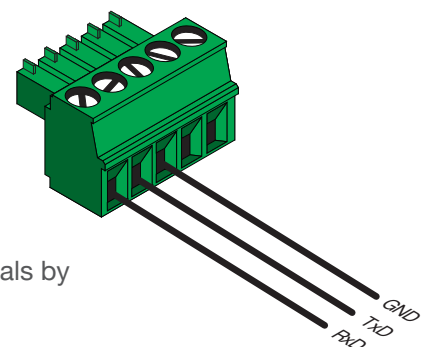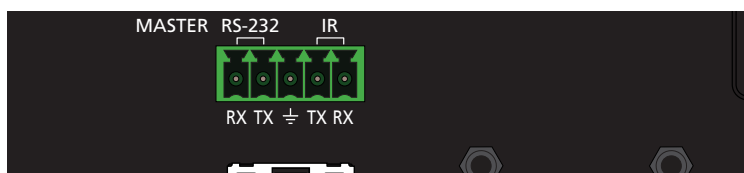

10. Locate the included 5-pin captive screw block and open each of the terminals by turning the screws counter-clockwise, using a small regular screwdriver.

11. Insert the TxD, RxD, and GND wires into correct terminal, as shown, and tighten the screws to secure each wire. Do not overtighten.

Pass-through mode

In pass-through mode, RS-232 commands are passed-through the AT-UHD-CAT-8, transmitted over HDBaseT to a receiver unit, and then to the display (sink) device. Note that each **RS-232 / IR** port is assigned to an **HDBaseT OUT** port. This assignment is fixed and cannot be changed, as shown in the table below.

RS-232 / IR Port		HDBaseT Port	RS-232 / IR Port		HDBaseT Port
RS-232 / IR 1	→	HDBaseT OUT 1	RS-232 / IR 5	→	HDBaseT OUT 5
RS-232 / IR 2	→	HDBaseT OUT 2	RS-232 / IR 6	→	HDBaseT OUT 6
RS-232 / IR 3	→	HDBaseT OUT 3	RS-232 / IR 7	→	HDBaseT OUT 7
RS-232 / IR 4	→	HDBaseT OUT 4	RS-232 / IR 8	→	HDBaseT OUT 8

1. Connect the RS-232 cable from the control system to the desired **RS-232 / IR** port on the AT-UHD-CAT-8. Refer to Cable Assembly (page 20) for instructions on preparing the cable.

2. Connect an Ethernet cable from the desired **HDBaseT OUT** port to a receiver. In this example, the HDBaseT cable is connected from **HDBaseT OUT 2** to an AT-UHD-EX-70C-RX receiver (the RS-232 cable is connected from the control system to the **RS-232 / IR 2** port).

3. Connect an RS-232 cable between the display (sink) and the receiver.

4. Adjust the RS-232 settings on the control system to match the requirements of the sink device. For example, if the RS-232 settings for the display device are 9600, N, 8, 1, then set the control system to the same settings. If the control system and sink device settings do not match, then RS-232 control will not function.

Control System

RS-232 (RS-232 / IR 2)

AT-UHD-CAT-8

HDBaseT (HDBaseT OUT 2)

AT-UHD-EX-70C-RX

RS-232

Display
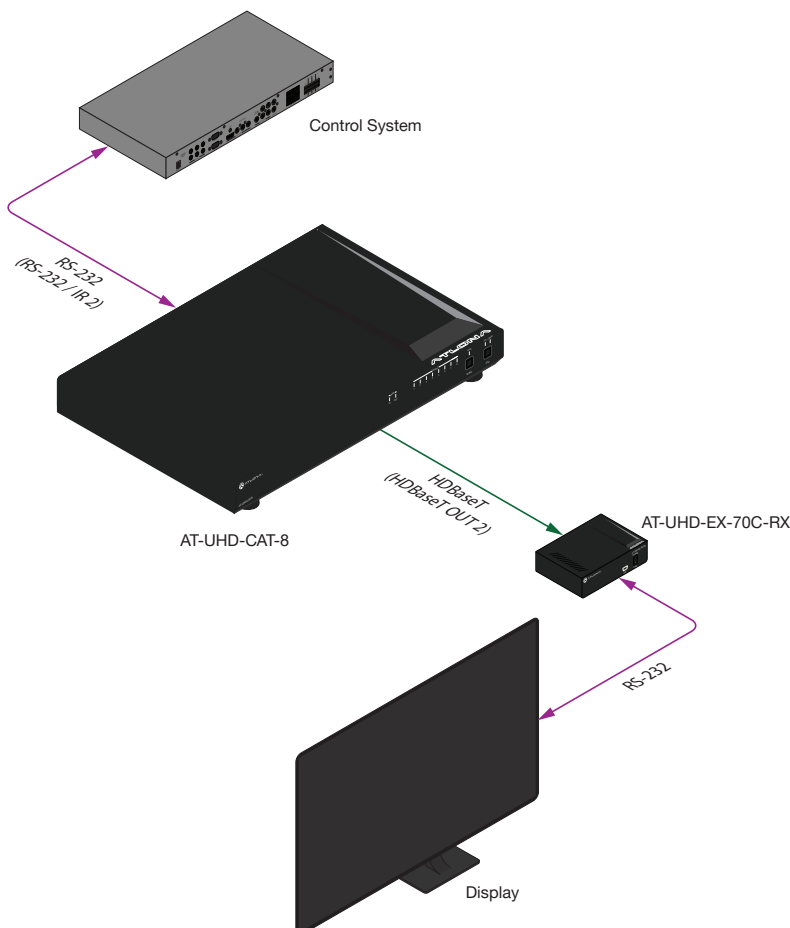
Control mode

In control mode, the **MASTER RS-232 / IR** port is used to directly control the AT-UHD-CAT-8 using a control system.

1. Launch a web browser and login to the web server. Refer to Introduction to the Web Server (page 29) for more information. The factory-default username and password are listed below:

   Username: root
   Password: Atlona

2. Connect the RS-232 cable between the control system and the **MASTER RS-232 / IR** port on the AT-UHD-CAT-8. Refer to Cable Assembly (page 20) for instructions on preparing the cable.

Control System

RS-232

AT-UHD-CAT-8
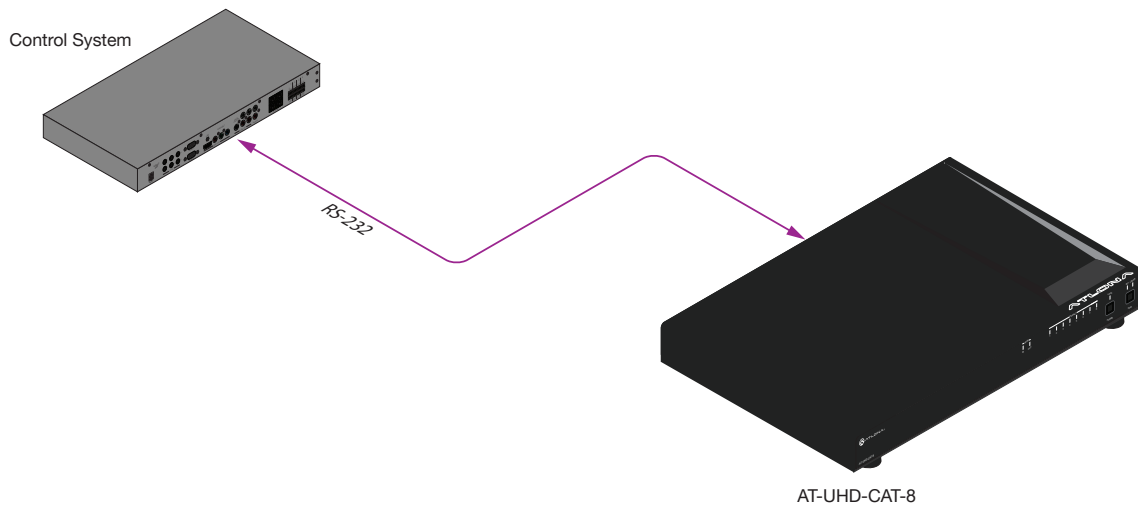
3. Click **RS-232** in the menu bar.

4. Select the proper baud rate, data bit, parity, and stop bit settings. These settings must correspond with the control system RS-232 settings.
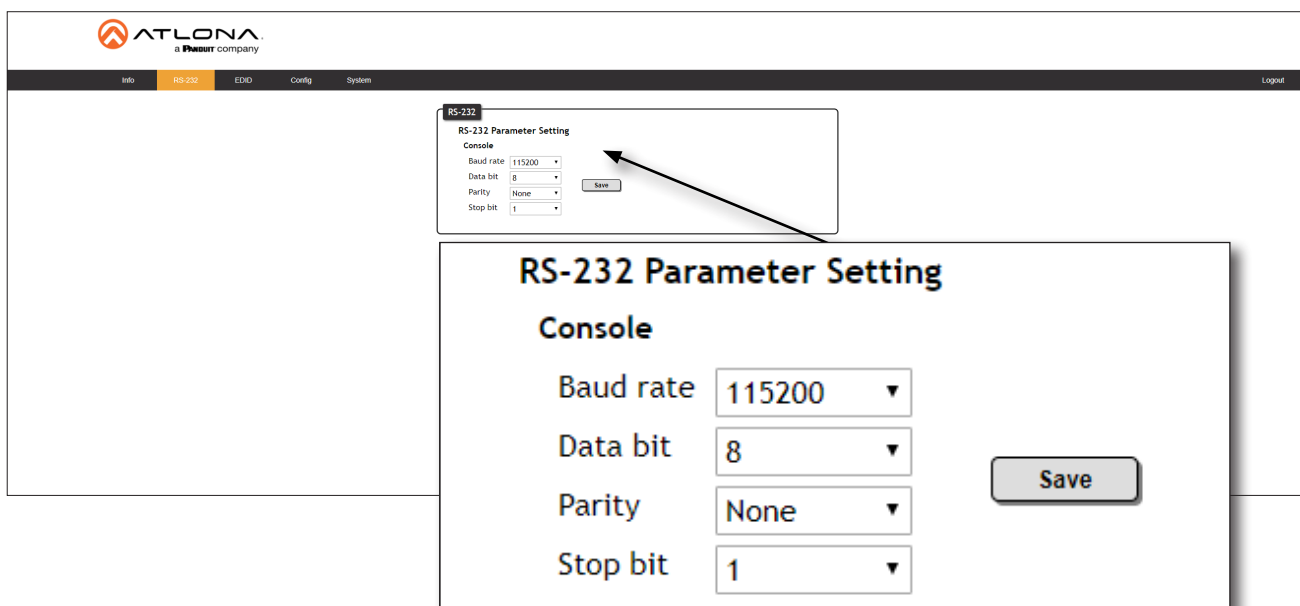
5. Click the **Save** button to commit changes.

IR Control

IR can be used to control either source devices at the headend or devices connected to the receiver endpoint, such as a display. Note that the **MASTER RS-232 / IR** port does *not* support IR control. Note that each **RS-232 / IR** port is assigned to an **HDBaseT OUT** port. This assignment is fixed and cannot be changed, as shown in the table below. IR is compatible with frequencies from 30 kHz to 60 kHz.

| RS-232 / IR Port		HDBaseT Port	RS-232 / IR Port		HDBaseT Port
RS-232 / IR 1	→	HDBaseT OUT 1	RS-232 / IR 5	→	HDBaseT OUT 5
RS-232 / IR 2	→	HDBaseT OUT 2	RS-232 / IR 6	→	HDBaseT OUT 6
RS-232 / IR 3	→	HDBaseT OUT 3	RS-232 / IR 7	→	HDBaseT OUT 7
RS-232 / IR 4	→	HDBaseT OUT 4	RS-232 / IR 8	→	HDBaseT OUT 8

Controlling Display Devices

1. Remove at least 3/16" (5 mm) of insulation from the TX and GND wires.

2. Locate the included 5-pin captive screw block and open each of the terminals by turning the screws counter-clockwise, using a small regular screwdriver.

3. Insert the TX and GND wires into correct terminal, as shown, and tighten the screws to secure each wire. Do not overtighten.

4. Connect the captive screw connector to the **RS-232 / IR IN** port of the zone to be controlled.

5. Connect the RX terminal, from the AT-UHD-CAT-8, to the TX terminal on the control system.

6. Connect the GND terminal, from the AT-UHD-CAT-8, to the GND terminal on the control system.
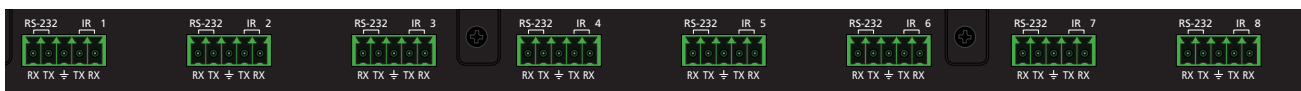
7. Connect the IR emitter to the receiver and place the emitter next to the display (sink) device, as shown in the illustrator below.

Controlling Source Devices

1. Remove at least 3/16" (5 mm) of insulation from the RX and GND wires of the emitter.

2. Locate the included 5-pin captive screw block and open each of the terminals by turning the screws counter-clockwise, using a small regular screwdriver.

3. Insert the S (signal) lead of the IR emitter to the TX terminal on the AT-UHD-CAT-8 captive screw connector. Tighten the screw to secure the wire but do not overtighten.

4. Insert the GND lead of the IR emitter to the GND terminal on the AT-UHD-CAT-8 captive screw connector. Tighten the screw to secure the wire but do not overtighten.

5. Connect the captive screw connector to the **RS-232 / IR IN** port of the zone to be controlled.
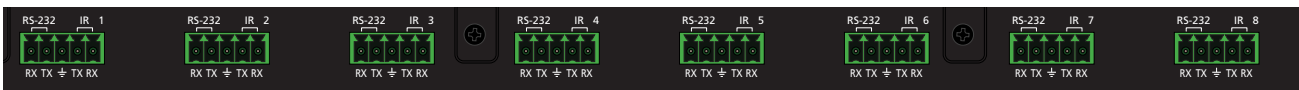
6. Place the IR emitter next to the source device, as shown in the illustration below.
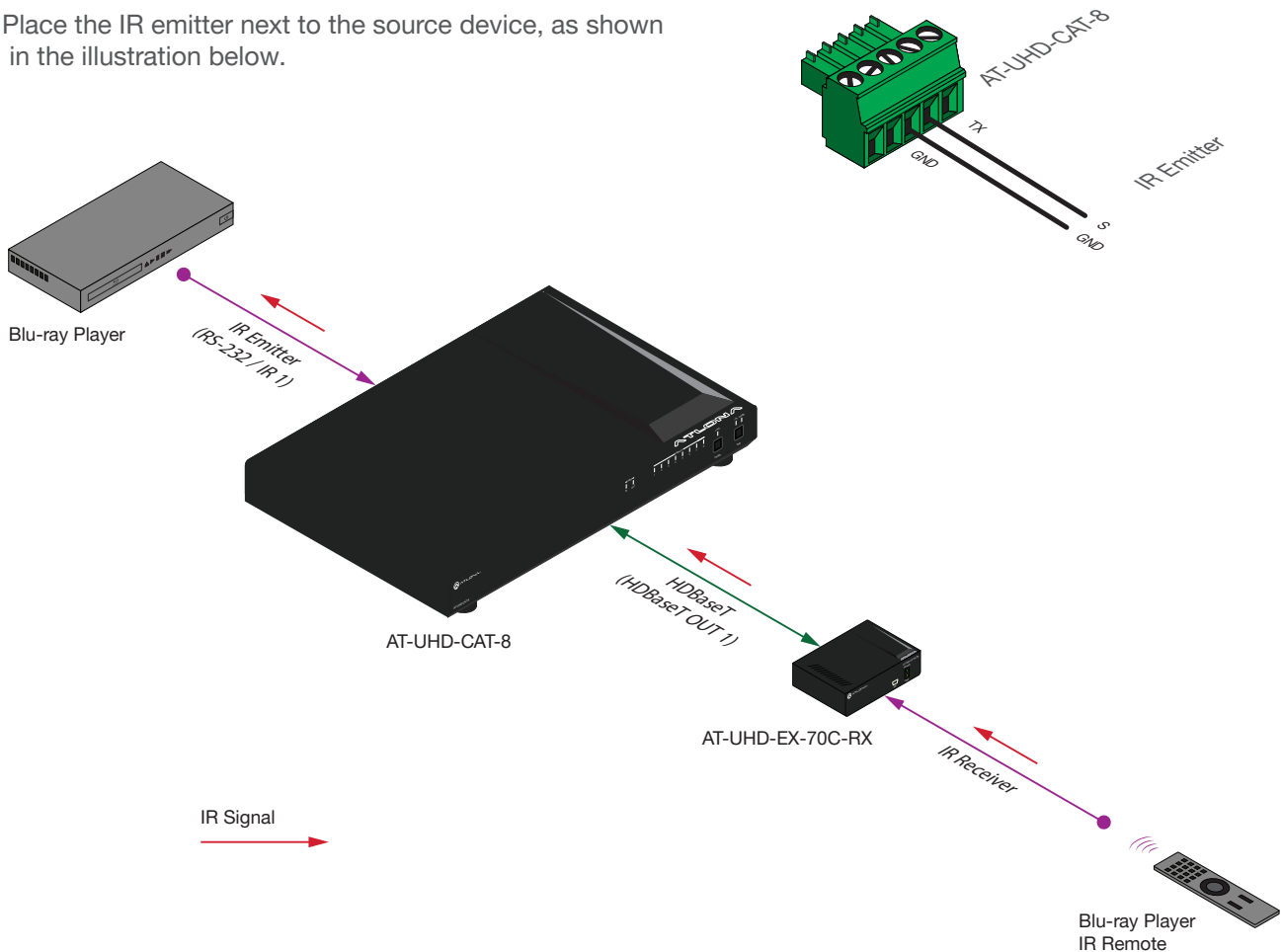
Power Button Modes

The main function of the **POWER** button on the front panel is to toggle the AT-UHD-CAT-8 between standby and normal operating mode. This is the default mode. However, this button can also be defined to send CEC power-on and power-off commands, over HDBaseT, to the display (sink) devices. It can also be defined to simultaneously power-on or power-off the AT-UHD-CAT-8 and any connected displays.
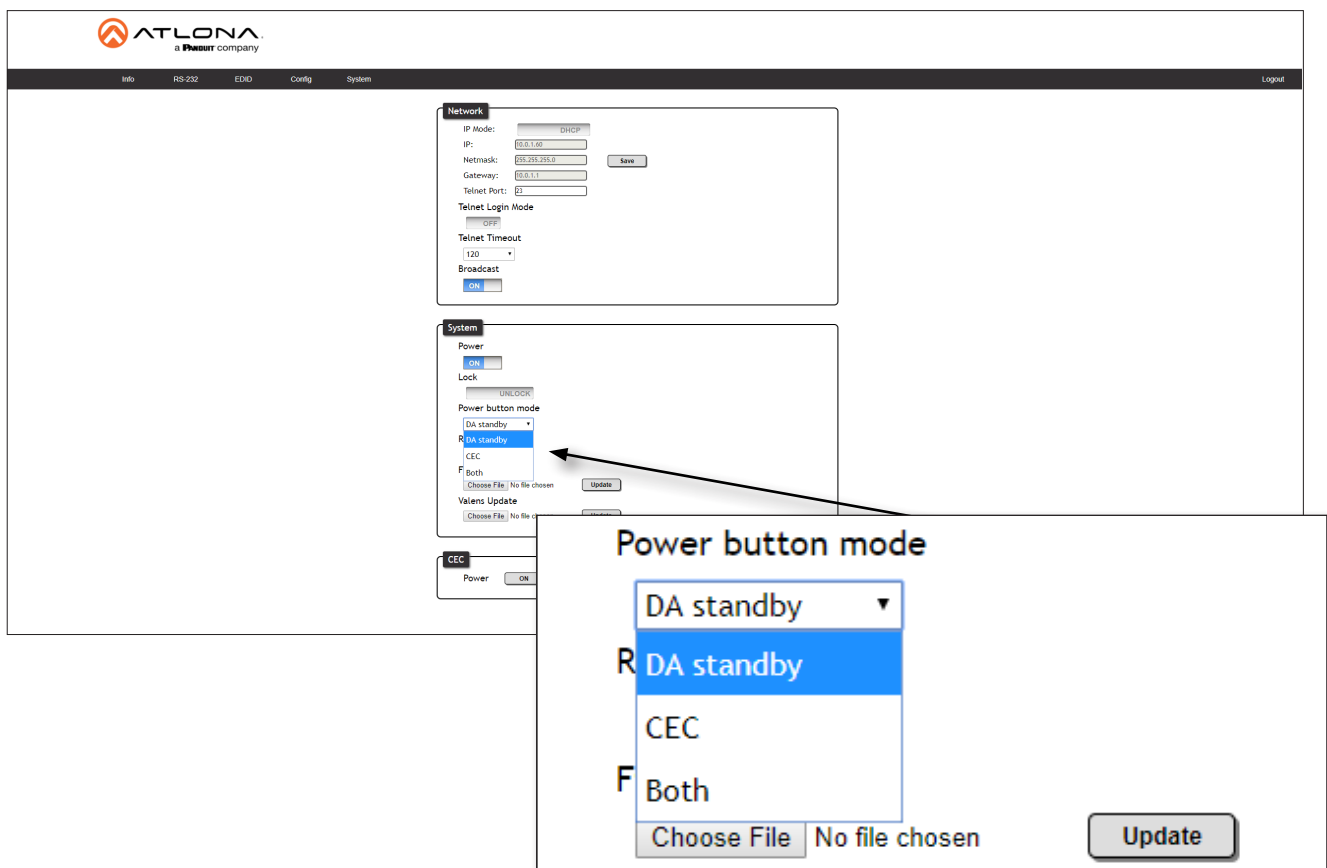
Normal Operation

By default, pressing the **POWER** button will toggle the power state of the AT-UHD-CAT-8. When the unit is in normal operating mode, the **POWER** button will be blue. Pressing the **POWER** button again, will place the unit into standby mode, and the **POWER** button will be red. In standby mode, no video signal will pass to the display (sink) device. However, TCP/IP access to the unit will be maintained, allowing access to the web server and Telnet sessions.

1. Launch a web browser and login to the web server. Refer to Introduction to the Web Server (page 29) for more information. The factory-default username and password are listed below:

   Username: root
   Password: Atlona

2. Click **System** in the menu bar.

3. Click the **Power button mode** drop-down list and select **DA standby**. Pressing the **POWER** button on the front panel will toggle between power-on and standby modes on the AT-UHD-CAT-8. Connected display (sink) devices will not receive CEC power-on / power-off messages.

Powering Sink Devices

This section provides information on how to power-on / power-off the display (sink) device, using the **POWER** button. CEC* power-on / power-off commands are transmitted over all **HDBaseT OUT** ports, as well as the pass-through **HDMI OUT** port.

1. Connect Ethernet cables from the **HDBaseT OUT** ports to receiver (e.g. AT-UHD-EX-70C-RX).

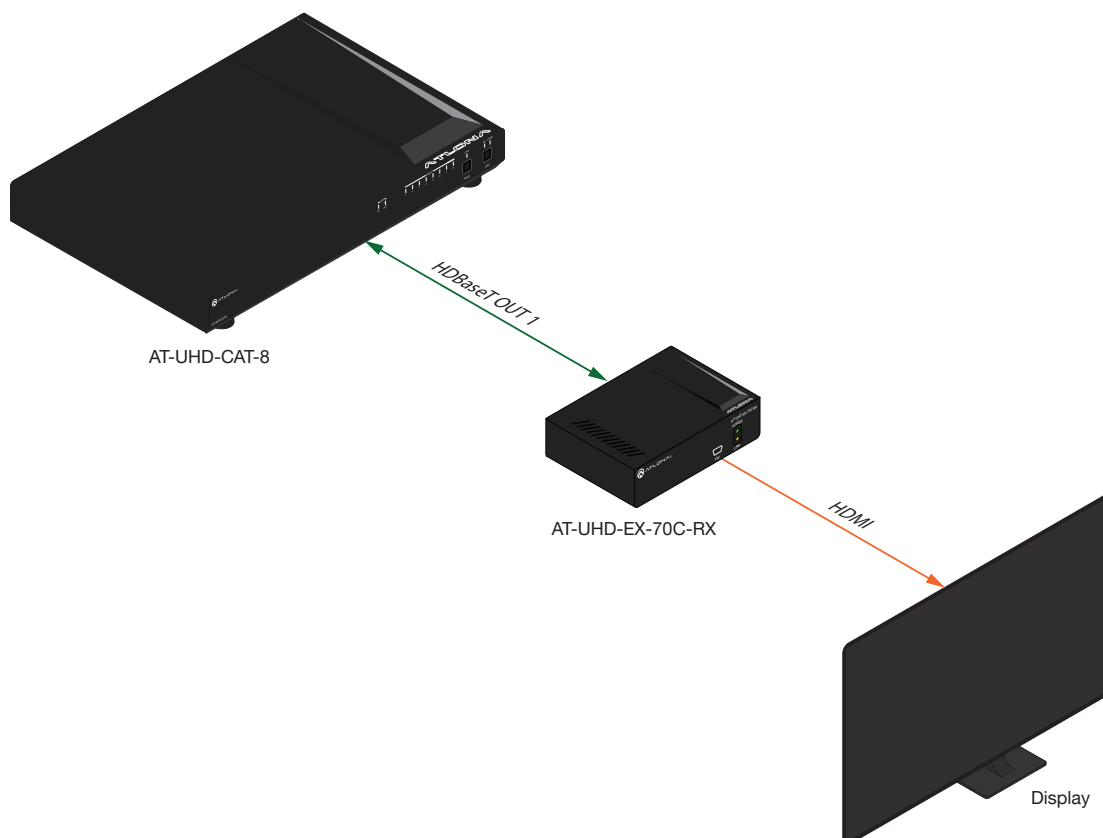2. Connect an HDMI cable from the receiver to the display (sink) device. Make sure that the sink device is powered.

AT-UHD-CAT-8

HDBaseT OUT 1

AT-UHD-EX-70C-RX

HDMI

Display
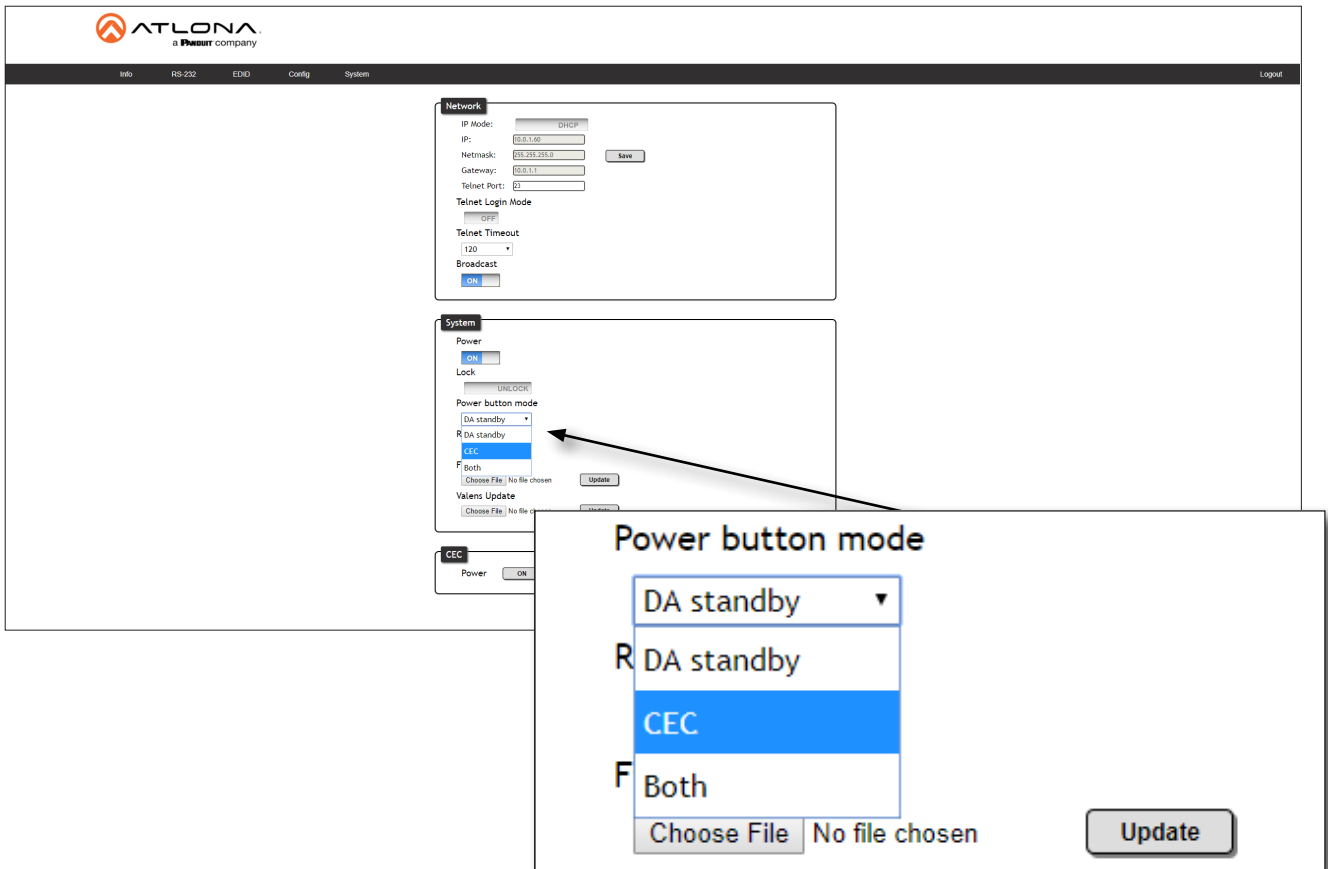
3. Launch a web browser and login to the web server. Refer to for more information. The factory-default username and password are listed below:

    Username: root
    Password: Atlona

4. Click **System** in the menu bar.

5. Click the **Power button mode** drop-down list and select **CEC**. Refer to the illustration on the next page for reference.

Consumer Electronics Control (CEC): Atlona has confirmed proper CEC functionality with several current models of Samsung, Panasonic, and Sony displays. However, it is not guaranteed that CEC will work with all displays. Many manufacturers do not support the CEC "off" command, and older displays use proprietary commands. Atlona only supports displays that use the CEC command structure defined in HDMI 1.2a. It is recommended that dealers request an evaluation product from Atlona, before designing a system using the CEC protocol. If this is not possible, then other control methods will need to be considered, in order to control displays using Atlona products.

6. Test the CEC power-on and power-off commands by pressing the **ON** and **OFF** buttons, near the bottom of the page.

7. Press the **POWER** button on the front panel to power-on or power-off the display. Note that the power state of the AT-UHD-CAT-8 will be unaffected.

Powering Sinks and the AT-UHD-CAT-8

In this mode, the **POWER** button will power-on / power-off the unit and the connected displays. CEC* power-on / power-off commands are transmitted over all **HDBaseT OUT** ports.

1. Make the proper connections by following steps 1 through 4, under Powering Sink Devices (page 26).

2. Click the **Power button mode** drop-down list and select **Both**.
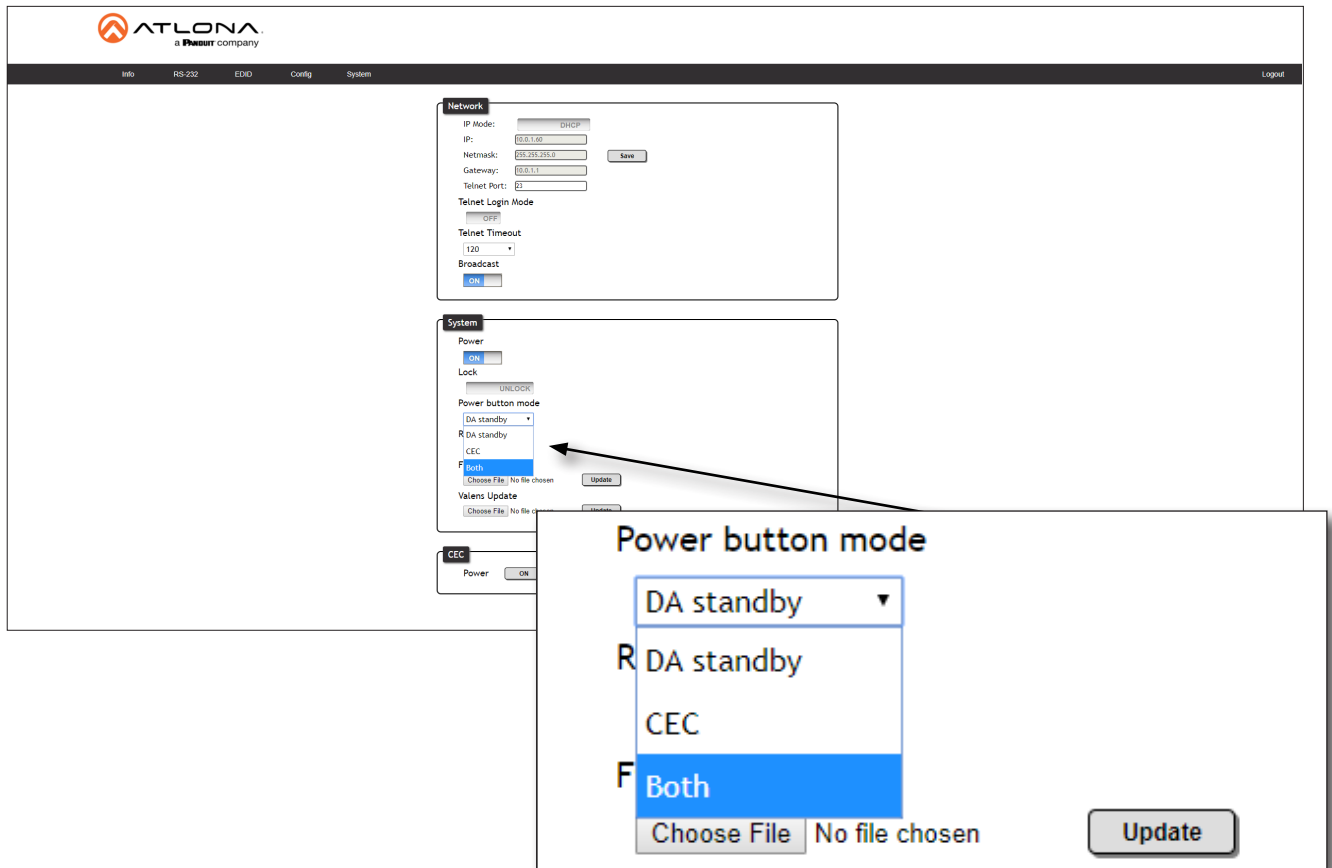
3. Test the CEC power-on and power-off commands for the display (sink) device by pressing the **ON** and **OFF** buttons, near the bottom of the page.
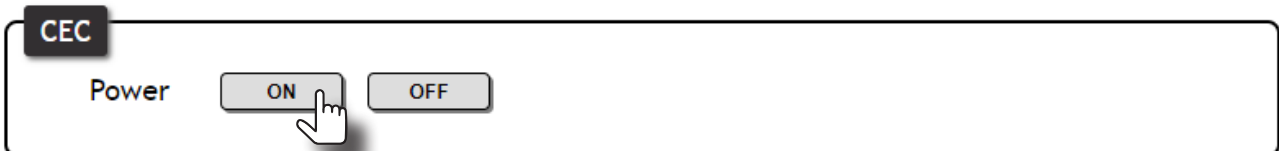
4. Press the **POWER** button on the front panel to power-on or power-off both the display and AT-UHD-CAT-8.

*Consumer Electronics Control (CEC): Atlona has confirmed proper CEC functionality with several current models of Samsung, Panasonic, and Sony displays. However, it is not guaranteed that CEC will work with all displays. Many manufacturers do not support the CEC "off" command, and older displays use proprietary commands. Atlona only supports displays that use the CEC command structure defined in HDMI 1.2a. It is recommended that dealers request an evaluation product from Atlona, before designing a system using the CEC protocol. If this is not possible, then other control methods will need to be considered, in order to control displays using Atlona products.
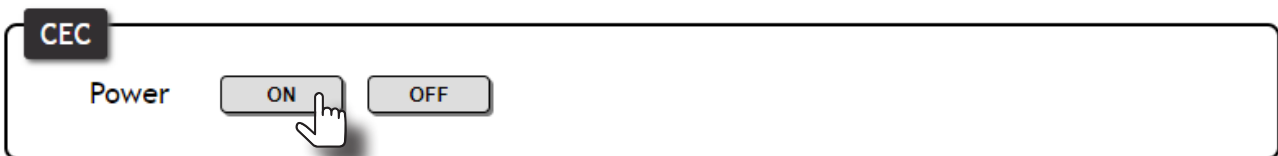
The Web Server

Introduction to the Web Server

The AT-UHD-CAT-8 includes a built-in web server. Atlona recommends that the web server be used to set up the AT-UHD-CAT-8, as it provides intuitive management of all features.

The AT-UHD-CAT-8 is shipped with DHCP enabled. Once connected to a network, the DHCP server will automatically assign an IP address to the unit. Use an IP scanner to determine the IP address of the AT-UHD-CAT-8. If a static IP address is desired, refer to IP Configuration (page 10). The default static IP address of the AT-UHD-CAT-8 is 192.168.1.254.

1. Launch a web browser.

2. In the address bar, type the IP address of the AT-UHD-CAT-8.

3. The **Login** page will be displayed.
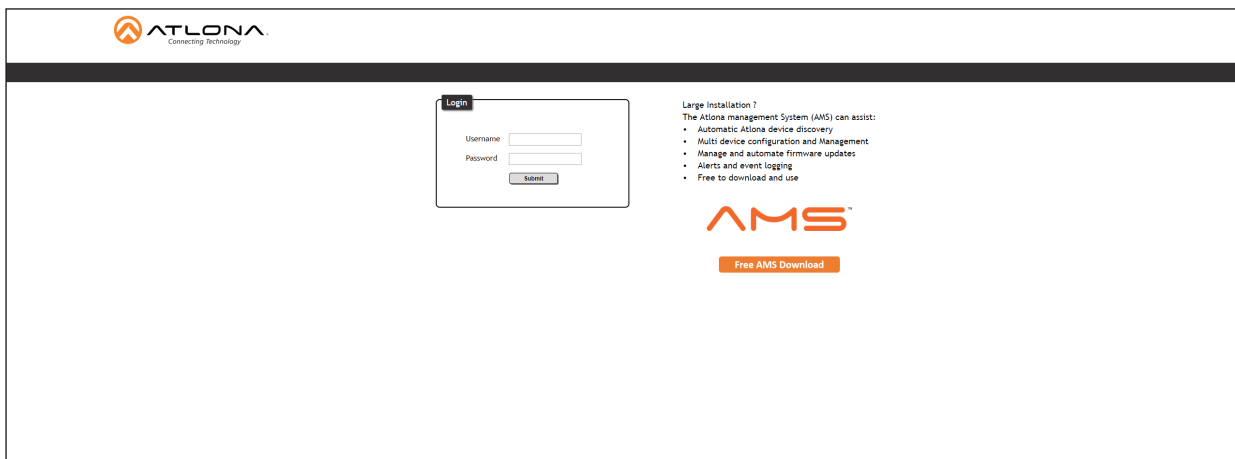
4. Type root, using lower-case characters, in the **Username** field.

5. Type Atlona in the **Password** field. This is the default password. The password field is case-sensitive. When the password is entered, it will be masked. The password can be changed, if desired. Refer to the Config page (page 34) for more information.

6. Click the **Submit** button or press the ENTER key on the keyboard.
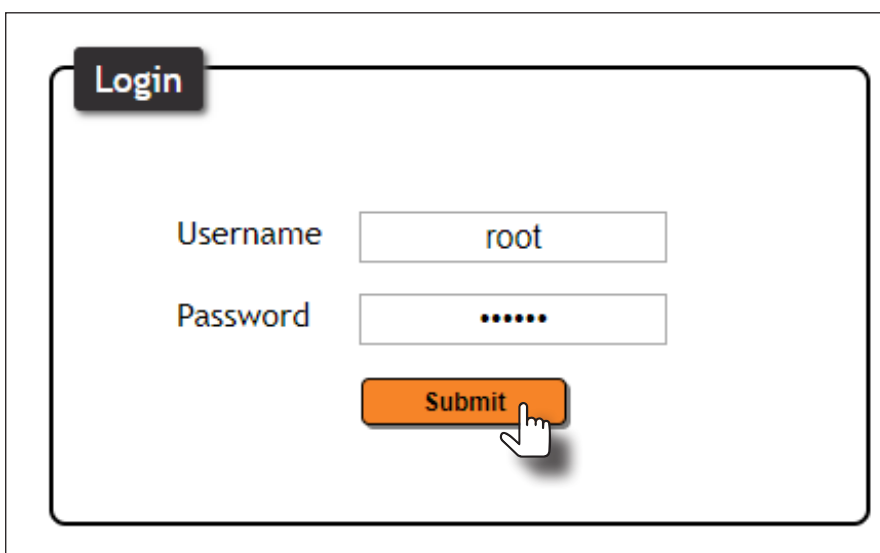
7. The **Info** page will be displayed.
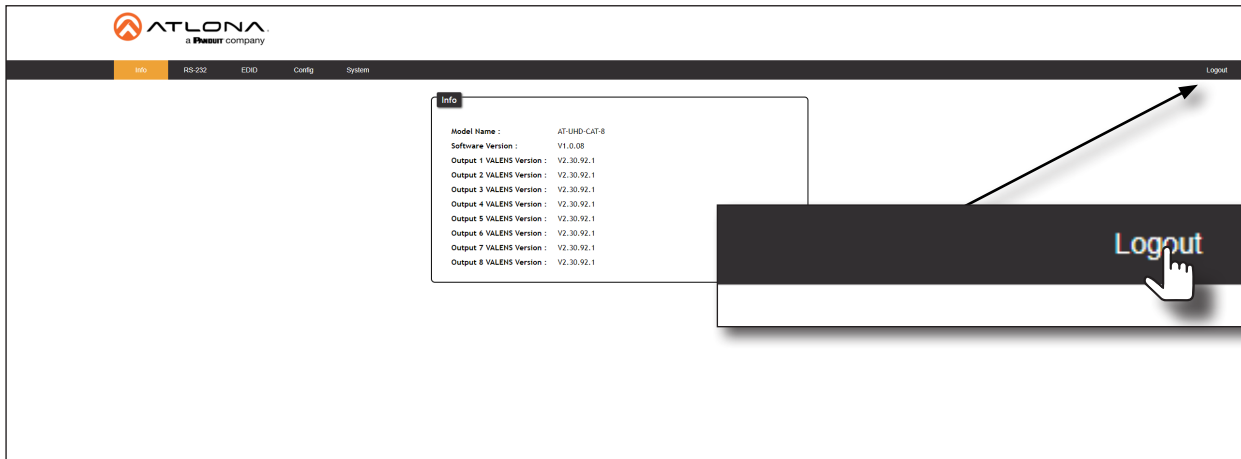
8. Click **Logout**, on the far-right side of the menu bar, to log out of the web server and return to the **Login** page.

Info page
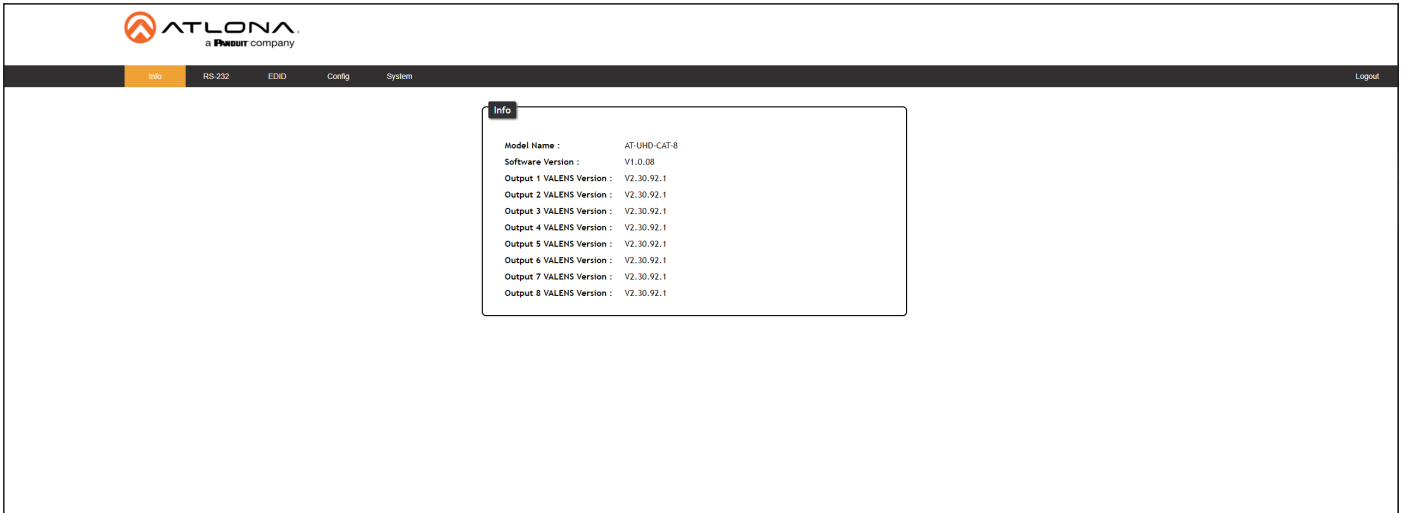
Model Name
The model SKU of this product.

Software Version
The version of firmware that the AT-UHD-CAT-8 is running. Always make sure to check the AT-UHD-CAT-8 product page, on the Atlona web site, for the latest version of firmware.

Output 1 VALENS Version - Output 8 VALENS Version
The version of firmware on the HDBaseT chip for each **HDBaseT OUT** port.

RS-232 page
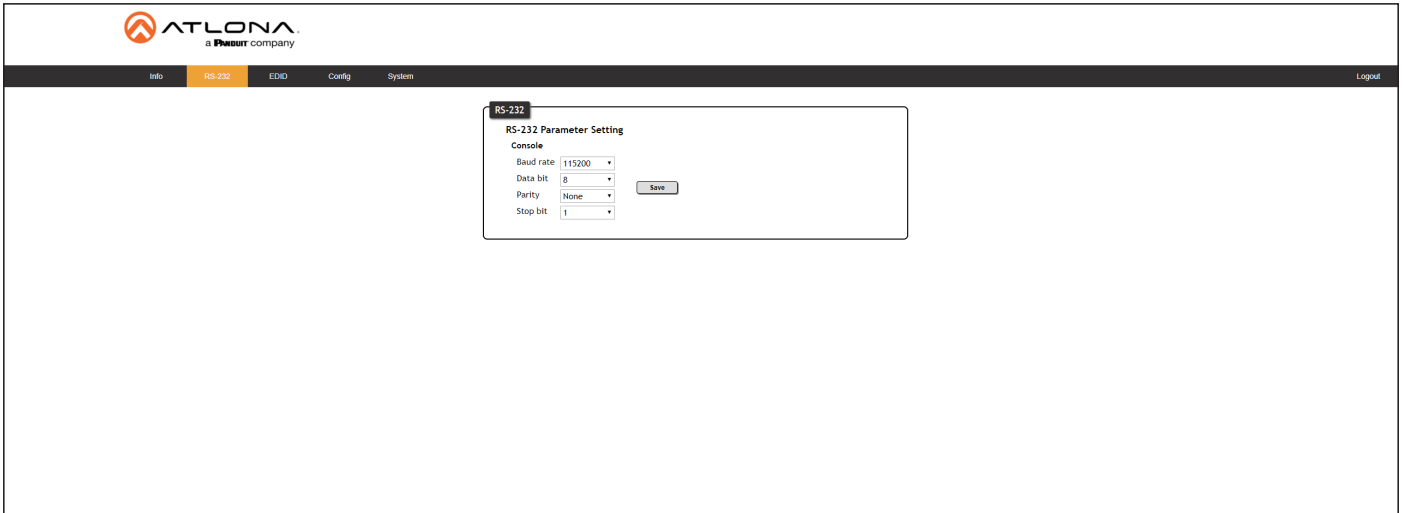
RS-232 Parameter Setting
Click each of these drop-down boxes to select the desired baud rate, data bits, parity bit, and stop bit for the
MASTER RS-232 / IR port.

Setting	Description
Baud rate	Sets the baud rate. The following options are available: 2400, 9600, 19200, 38400, 56000, 57600, 115200.
Data bit	Sets the number of data bits used to represent each character of data. The following options are available: 7 or 8.
Parity	Sets the parity bit, which can be included with each character to detect errors during the transmission of data. The following options are available: None, Odd, or Even.
Stop bit	Sets the stop bit. Stop bits are sent at the end of each character, allowing the client to detect the end of a character stream. The following options are available: 1 or 2.

EDID page

EDID lock
Click this toggle to switch the EDID lock mode. When set to the **LOCK** position, the **LOCK** LED indicator on the front panel will glow solid blue. Note that in this mode, all front-panel buttons are locked.

EDID mode
Click this drop-down list to select the desired EDID mode.

EDID mode	Description
INT	**Internal mode. Uses the default internal EDID.**
LEARN	Learn mode. Reads the EDID of the sink device connected to the HDBaseT OUT 1 port. Once the EDID is learned, it will be used by the connected source device to determine what video and audio formats can be sent to each sink device. Refer to EDID Management (page 14) for more information.

INT EDID settings
Click this drop-down list to select the desired EDID.

EDID	
STD	ATL 1280x800 RGB 2CH
ATL 1080P 2CH	ATL 1366x768 RGB 2CH
ATL 1080P Multi CH	ATL 1080P DVI
ATL 1080P DD	ATL 1280x800 RGB DVI
ATL 1080P 3D 2CH	ATL 3840x2160@30 2CH
ATL 1080P 3D Multi CH	ATL 3840x2160@30 Multi CH
ATL 1080P 3D DD	ATL 3840x2160@60 2CH
ATL 720P 2CH	ATL 3840x2160@60 Multi CH
ATL 720P DD	

EDID copy
Click this button to copy the selected EDID to the **HDMI IN** port.

Config page
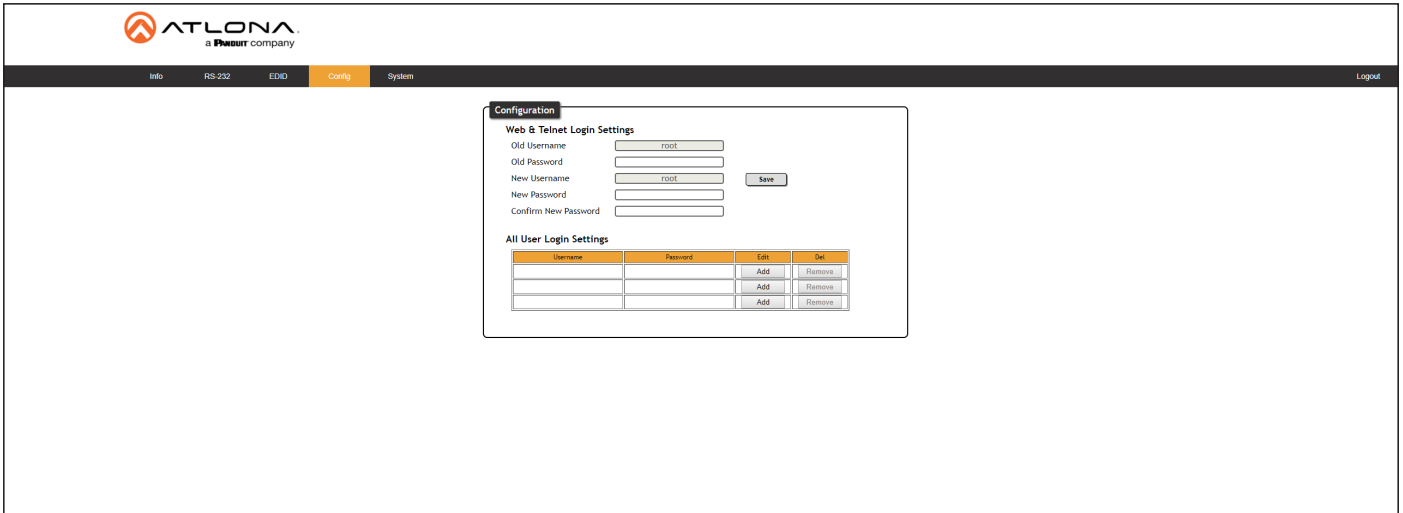
Old Username
This field cannot be changed. "root" is the administrator user.

Old Password
Enter the current password for the "root" username in this field. The default password is "Atlona".

New Username
This field cannot be changed.

Save
Click this button to save all changes.

New Password
Enter the new password for the "root" username in this field.
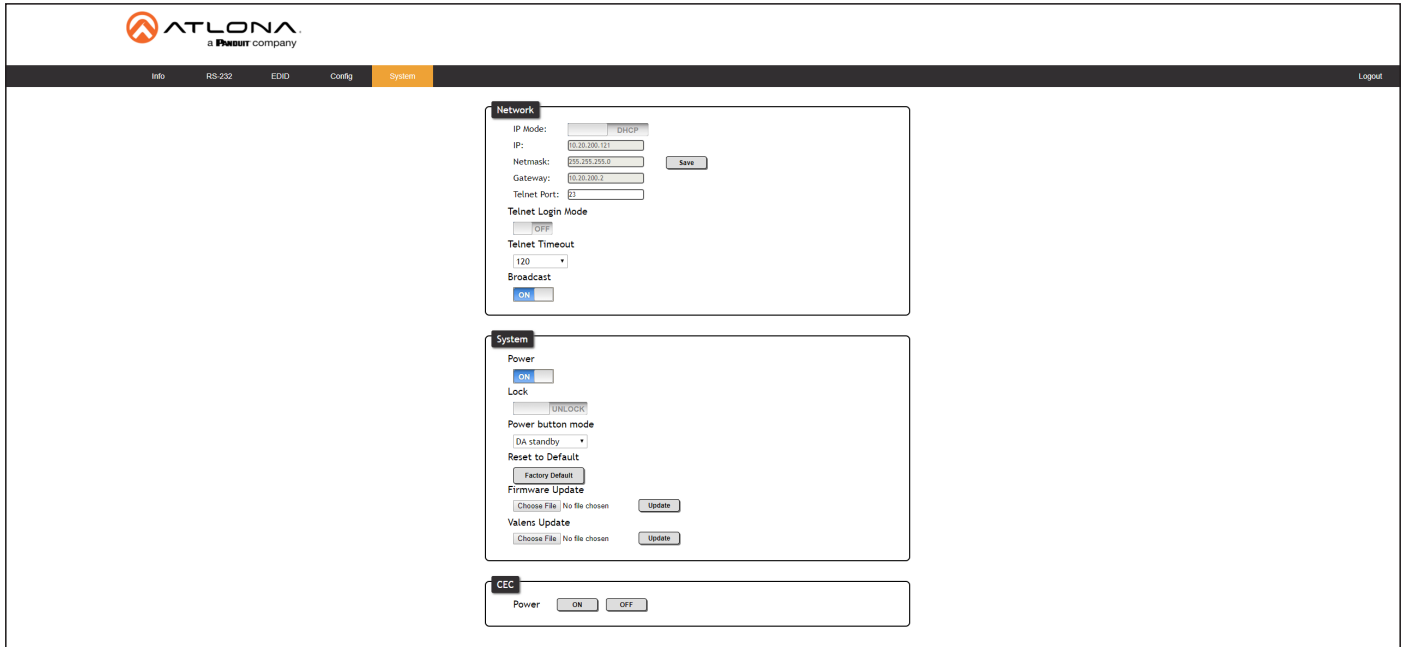
Confirm New Password
Verify the new password by retyping it in this field.

All User Login Settings

- **Username**
  Displays the username.

- **Password**
  Displays the password for the associated username.

- **Edit**
  Click the **Add** button, in this column, to edit the username and password in the row.

- **Del**
  Click the **Remove** button to delete the user in the row. This button will only be available if both a username and password have been created.

System page

IP Mode
Click this toggle to set the IP mode of the AT-UHD-CAT-8. The default setting is DHCP. Available settings: **STATIC IP**, **DHCP**.

IP
Enter the IP address of the AT-UHD-CAT-8 in this field. This field will only be available if **IP Mode** is set to **STATIC IP**. The default IP address is 192.168.1.254.

Netmask
Enter the subnet mask in this field. This field will only be available if **IP Mode** is set to **STATIC IP**.

Gateway
Enter the gateway (router) address in this field. This field will only be available if **IP Mode** is set to **STATIC IP**.

Telnet Port
Enter the Telnet listening port in this field.

Telnet Login Mode
Click this toggle to set the login mode to either **ON** or **OFF**. If this feature is set to **ON**, then the AT-UHD-CAT-8 will prompt for both the username and password at the start of a Telnet session. Use the same credentials as the web server.

Telnet Timeout
Click this drop-down list to select the timeout interval, in seconds, before the Telnet connection is automatically closed after no activity. Range: 1 to 3600 (seconds).

Broadcast
By default, broadcast mode is set to **ON**. When set to **ON**, any system changes will be announced over TCP/IP connections to any device that has a TCP/IP connection to the AT-UHD-CAT-8. When set to **OFF**, only the device that is sending the commands will receive feedback from the commands or any system changes. Read queries, such as IPCFG and Type commands, are not announced and will only return information to the requester.

Power
Under normal operation conditions, this toggle is set to **ON**. Click this toggle to **OFF**, to place the AT-UHD-CAT-8 in standby mode. The PWOFF and PWON commands can also be used to control the power state.

Lock
Click to lock or unlock the buttons on the front panel. Locking the front panel buttons is useful in preventing accidental button activation within rack environments.

Power button mode
Click this drop-down list to select the desired function of the power button. Refer to Power Button Modes (page 25) for more information.

Setting	Description
DA standby	Pressing the **POWER** button will toggle the AT-UHD-CAT-8 between standby mode and normal operating mode.
CEC*	When a sink device (display) is connected to the AT-UHD-CAT-8, pressing the **POWER** button will toggle the power state of the display using the CEC protocol. *The power state of the AT-UHD-CAT-8 is unaffected*. Power-on and power-off commands are sent over both the **HDBaseT OUT** and **HDMI OUT** ports
Both	Pressing the **POWER** button will toggle the power state of *both* the AT-UHD-CAT-8 and any sink devices that are connected to the AT-UHD-CAT-8, using the CEC protocol. Power-on and power-off commands are sent over both the **HDBaseT OUT** and **HDMI OUT** ports.

Reset to Default
Click the **Factory Default** button to set the AT-UHD-CAT-8 to factory-default settings.

Firmware Update
Click the **Choose File** button to select the firmware file, when upgrading the firmware on the AT-UHD-CAT-8. Once the firmware file is selected, click the **Update** button. Refer to Updating the MCU Firmware (page 37) for more information.

ON / OFF
Click these buttons to test CEC control between the AT-UHD-CAT-8 and the connected sink device. Click the **ON** button to power-on the device and **OFF** to power-off the device. Refer to Power Button Modes (page 25) for more information.

*Consumer Electronics Control (CEC): Atlona has confirmed proper CEC functionality with several current models of Samsung, Panasonic, and Sony displays. However, it is not guaranteed that CEC will work with all displays. Many manufacturers do not support the CEC "off" command, and older displays use proprietary commands. Atlona only supports displays that use the CEC command structure defined in HDMI 1.2a. It is recommended that dealers request an evaluation product from Atlona, before designing a system using the CEC protocol. If this is not possible, then other control methods will need to be considered, in order to control displays using Atlona products.

Appendix

Updating the MCU Firmware

Updating the MCU firmware can be completed using either the USB interface or the web server. Atlona recommends using the web server for updating the MCU firmware. However, if a network connection is not available, the AT-UHD-CAT-8 MCU firmware can be updated using a USB-A to USB mini-B cable.

Using the Web Server

Requirements:

- AT-UHD-CAT-8
- Firmware file
- Computer running Microsoft Windows

1. Connect an Ethernet cable from the computer, containing the firmware, to the same network where the AT-UHD-CAT-8 is connected.

2. Go to the System page (page 35) in the web server.

Choose File button

3. Click the **Choose File** button, under **Firmware Update**.

4. Browse to the location of the firmware file, select it, and click the **Open** button.

5. Click the **Update** button to begin the update process.

6. The following message box will be displayed.

10.0.1.107 says:

Are you Sure want to update Firmware?

OK   Cancel

7. Click the **OK** button to begin the firmware update process. Click the **Cancel** button to cancel the process.

8. After the firmware update process is complete, the **Login** screen will be displayed, indicating that the update process is complete.

Using USB

Required items:

- AT-UHD-CAT-8
- Computer containing the firmware file.
- USB-A to USB mini-B cable

1. Disconnect power from the AT-UHD-CAT-8.

2. Press and hold the **POWER** button while connecting power to the AT-UHD-CAT-8.

3. Release the **POWER** button. The **POWER** button will glow solid red, indicating that the AT-UHD-CAT-8 is in update mode.

4. Connect the USB-A to USB mini-B cable between the PC and the firmware port on the AT-UHD-CAT-8.

5. The USB UPDATE folder will be displayed.

    If this folder is not displayed, automatically, select the USB UPDATE drive from Windows Explorer.
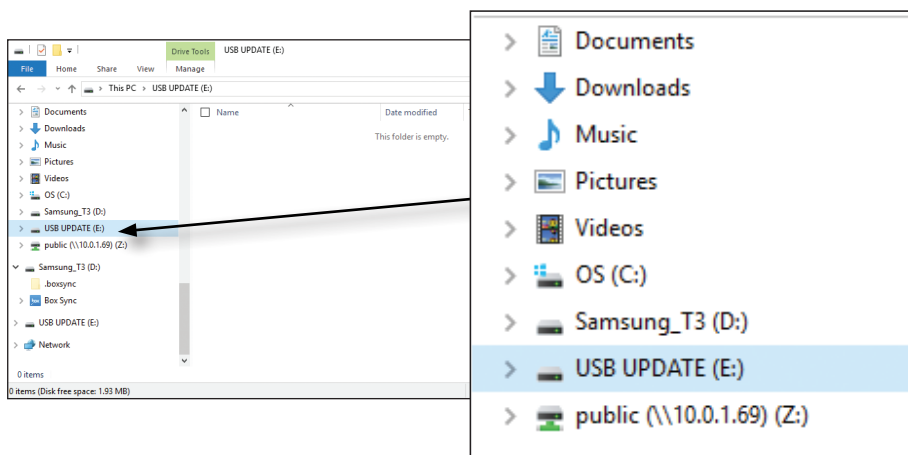
7. Delete all files from the USB UPDATE drive, if any are present.

8. Drag-and-drop the firmware file to the drive. During the firmware update procedure, the **POWER** button will flash.

9. After the file has been copied, disconnect the USB cable from both the computer and the AT-UHD-CAT-8.

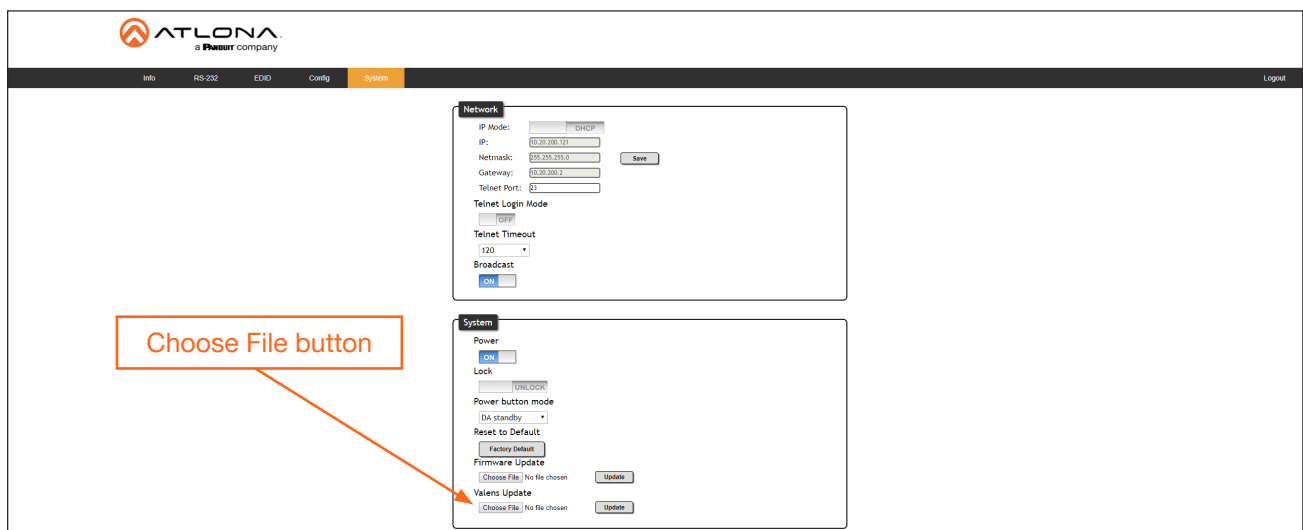10. The firmware update process is complete.

Updating the Valens Firmware

Updating the Valens firmware can be completed using either the USB interface or the web server. Atlona recommends using the web server for updating the Valens firmware. However, if a network connection is not available, the AT-UHD-CAT-8 Valens firmware can be updated using a USB-A to USB mini-B cable.
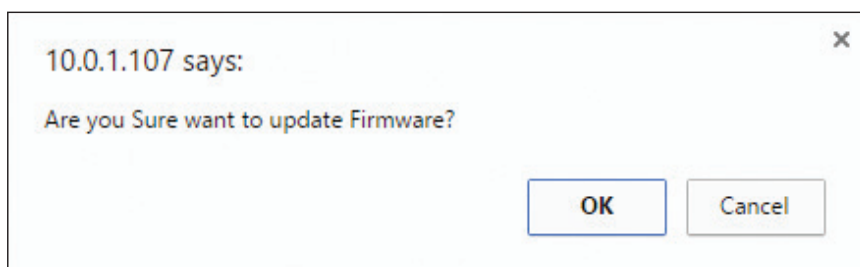
Using the Web Server

Requirements:

- AT-UHD-CAT-8
- Firmware file
- Computer running Microsoft Windows

1. Connect an Ethernet cable from the computer, containing the firmware, to the same network where the AT-UHD-CAT-8 is connected.

2. Go to the System page (page 35) in the web server.
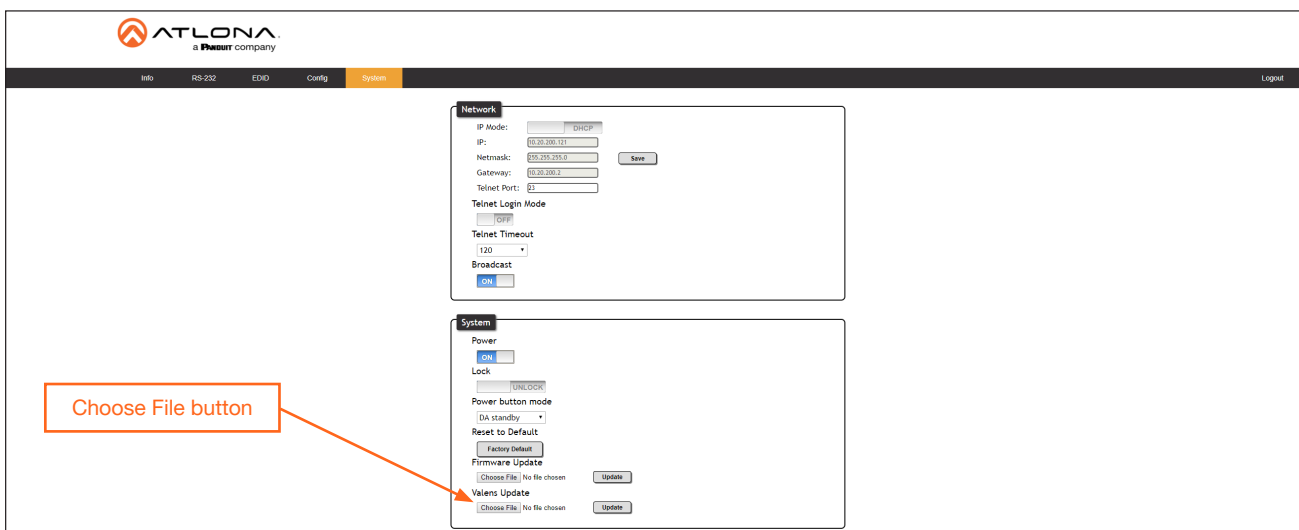
Choose File button

3. Click the **Choose File** button, under **Valens Update**.

4. Browse to the location of the firmware file, select it, and click the **Open** button.

5. Click the **Update** button to begin the update process.

6. The following message box will be displayed.

10.0.1.107 says:

Are you Sure want to update Firmware?

OK   Cancel

7. Click the **OK** button to begin the firmware update process. Click the **Cancel** button to cancel the process.

8. After the firmware update process is complete, the **Login** screen will be displayed, indicating that the update process is complete.

Using USB

Required items:

• AT-UHD-CAT-8
• Computer containing the firmware file.
• USB-A to USB mini-B cable

1. Disconnect power from the AT-UHD-CAT-8.

2. Press and hold the **EDID** button while connecting power to the AT-UHD-CAT-8.

3. Release the **EDID** button. The **POWER** button will glow solid red, indicating that the AT-UHD-CAT-8 is in update mode.

4. Connect the USB-A to USB mini-B cable between the PC and the firmware port on the AT-UHD-CAT-8.

5. The USB UPDATE folder will be displayed.

   If this folder is not displayed, automatically, select the USB UPDATE drive from Windows Explorer.
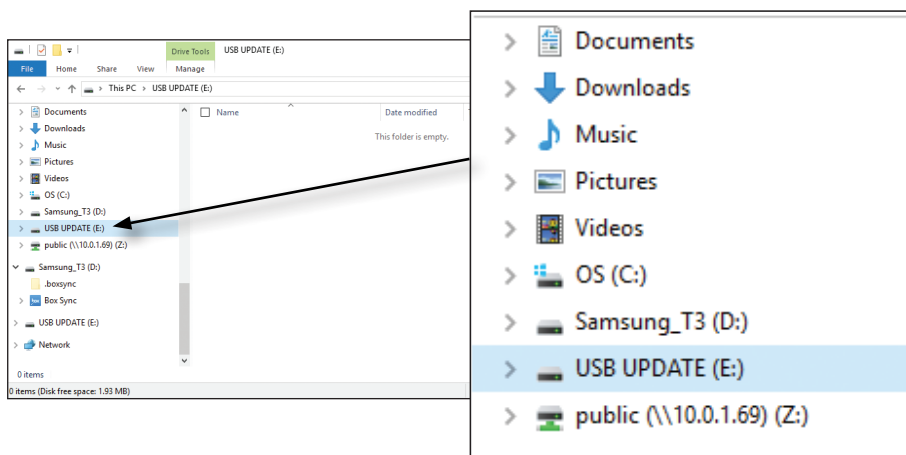
7. Delete all files from the USB UPDATE drive, if any are present.

8. Drag-and-drop the firmware file to the drive. During the firmware update procedure, the **POWER** button will flash.

9. After the file has been copied, disconnect the USB cable from both the computer and the AT-UHD-CAT-8.

10. The firmware update process is complete.

Cable Termination

Atlona recommends EIA/TIA-568-B termination. Connector type and size is very important to ensure extenders work correctly. Always use the matching cable type with the correct RJ45 connector.

- CAT5e cables should use only CAT5e RJ45 connectors
- CAT6 cables should use only CAT6 connectors
- CAT6a cables should use only CAT6a connectors
- CAT7 cables should use only CAT7 connectors

Using the wrong size connectors may result in interference causing loss of signal.

⚠️ **WARNING:** EZ RJ45 connectors are not recommended with HDBaseT extenders. Doing so may result in interference with audio and video transmission.

EIA/TIA 568-B Termination

1. White - Orange
2. Orange
3. White - Green
4. Blue
5. White - Blue
6. Green
7. White - Brown
8. Brown
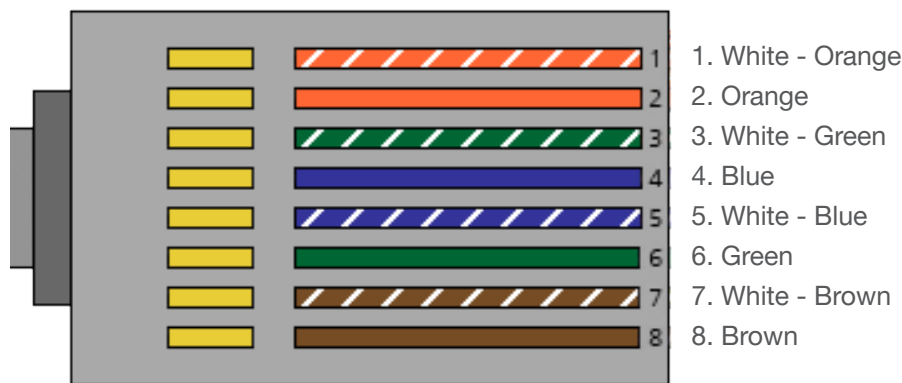
Refer to the tables below for recommended cabling when using Altona products with HDBaseT. The green bars indicate the signal quality when using each type of cable. Higher-quality signals are represented by more bars.

Core	Cable Type	CAT5e	CAT6	CAT6a	CAT7
Solid	Unshielded Twisted Pair (UTP)	▮▮	▮▮	N/A	N/A
	Shielded Twisted Pair (STP)	▮▮▮	▮▮▮	▮▮▮▮	▮▮▮▮

⚠️ **IMPORTANT:** Stranded or patch cables are not recommended due to performance issues.

Default Settings

The following tables list the factory-default settings for the AT-UHD-CAT-8.

Feature	Settings	
RS-232	Baud rate	115200
	Data bit	8
	Parity	None
	Stop bit	1
EDID	EDID lock	UNLOCK
	EDID mode	INT
	INT EDID settings	STD
Config	Username (default)	root
	Password (default)	Atlona
System	IP Mode	DHCP
	Static IP Address (default)	192.168.1.254
	Netmask	255.255.0.0
	Gateway	192.168.1.1
	Telnet Port	23
	Telnet Login Mode	OFF
	Telnet Timeout	120
	Broadcast	ON
	Power	ON
	Lock	UNLOCK
	Power button mode	DA standby

Specifications

Video			
Signal	Input - HDMI Output - HDMI / HDBaseT		
Copy Protection	2.2		
Pixel Clock	300 MHz		
UHD/HD/SD	4096x2160 (DCI) @ 24/25/30 Hz 3840x2160 (UHD) @ 24/25/30 Hz 1920x1080p @ 23.97/24/25/29.97/30/50 /59.94/60 Hz 1920x1080i[1] @ 50/59.94/60 Hz 1280x720p @ 30/50/60 Hz	720x576p @ 50 Hz 720x576i @ 50 Hz 720x480p @ 59.94/60 Hz 640x480p @ 60 Hz	
VESA All resolutions are 60Hz	2560×1600 @ 60 Hz (RB) 2048×1536 @ 60 Hz 2048×1200 @ 60 Hz 2048x1080 @ 60 Hz 1920x1200 @ 60 Hz (RB) 1920x1080 @ 60 Hz (RB) 1680×1050 @ 60 Hz 1600×1200 @ 60 Hz 1600×900 @ 60 Hz 1440×900 @ 60 Hz 1400×1050 @ 60 Hz	1366×768 @ 60 Hz 1360×768 @ 60 Hz 1280×1024 @ 60 Hz 1280×800 @ 60 Hz 1280×768 @ 60 Hz 1280x720 @ 60 Hz 1152×870 @ 75 Hz 1024×768 @ 60 Hz 848x480 @ 60 Hz 800×600 @ 60 Hz 640×480 @ 60 Hz	
Color Space	YUV, RGB		
Chroma Subsampling	4:4:4, 4:2:2, 4:2:0		
Color Depth	8-bit, 10-bit, 12-bit		

Audio			
HDMI / HDBaseT Pass-Through Formats	PCM 2.0 LPCM 5.1 LPCM 7.1	Dolby® Digital Dolby Digital Plus™ Dolby TrueHD Dolby Atmos®	DTS® Digital Surround™ DTS-HD Master Audio™ DTS:X®
Bit Depth	Up to 24 bits		
Sample Rate	32 kHz, 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz, 192 kHz		

Resolution / Distance	4K/UHD - Feet / Meters		1080p - Feet / Meters	
HDMI IN/OUT	15	5	30	10
CAT5e	115	35	200	60
CAT6/6a/7	130	40	230	70

Control	
RS-232	Device control and configuration Supported baud rates: 2400, 4800, 9600, 19200, 38400, 57600, 115200
IP	Protocols: HTTP, Telnet, mDNS Modes: DHCP, Static - selectable through web server
IR	Pass-through from control system to sink device Pass-through from viewing location to source
CEC Support	Yes

Buttons and Indicators	
Buttons: POWER, EDID	2 x momentary, tact-type
Indicators: HDMI IN/OUT, HDBaseT (1 - 8), LOCK, INT, LEARN	13 x LED, blue

Connectors	
HDMI IN	1 x Type A, 19-pin female
HDMI OUT	1 x Type A, 19-pin female
HDBaseT OUT	8 x RJ45
LAN	1 x RJ45
RS-232 / IR	9 x 5-pin captive screw
FW	1 x Mini USB
DC 48V	1 x 3-pin DIN

Environmental	Fahrenheit		Celsius	
Operating Temperature	+32 to +122		0 to +50	
Storage Temperature	-4 to +140		-20 to +60	
Operating Humidity (RH)	20% to 90%, non-condensing			

Power		
Consumption	85.70 W	
Idle Consumption	18.40 W	
External Power Supply	100 - 240 V AC, 50/60 Hz Output: 48 V / 3.12 A DC	

Dimensions (H x W x D)	Inches	Millimeters
Unit	1.73 x 17.24 x 10	44 x 438 x 254
Power Supply (AT-PS-48208-D3)	1.3 x 2.24 x 5.35	33 x 57 x 136

Weight	Pounds	Kilograms
Device	7.05	3.19

Certification		
Device	CE, RoHS, FCC	
Power Supply	CE, FCC, Level VI, RoHS, cULus, RCM, CCC	

Compliance	
NDAA-899	Yes

(1) 4096x2160 @ 50/60 Hz and 3840x2160 @ 50/60 Hz only supports 4:2:0 8-bit chroma subsampling.