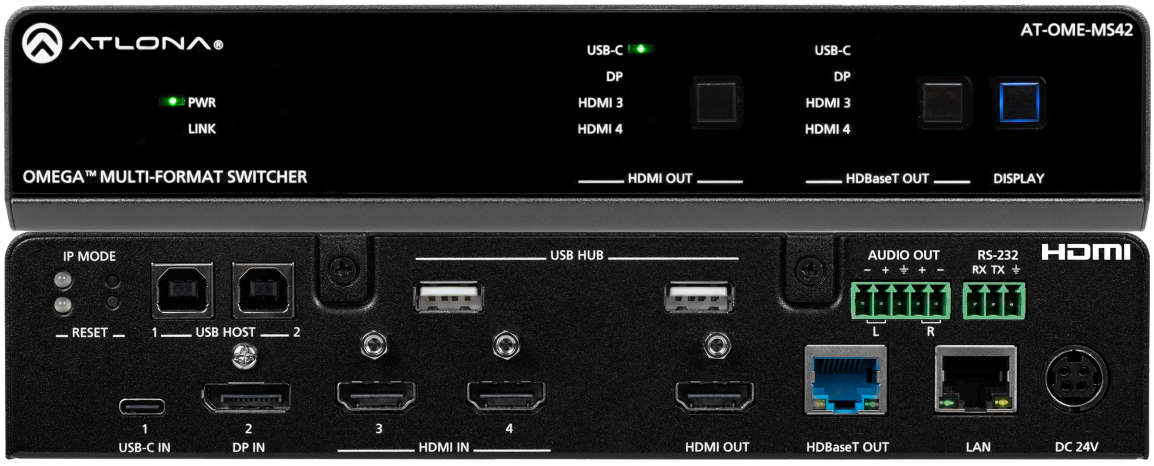
ATLONA
a PANDUIT company

# OMEGA™

## 4K / UHD

## Multi-format 4x2 Matrix Switcher

## with HDMI, USB-C, and DisplayPort inputs plus HDMI and HDBaseT outputs



# Version Information

| Version | Release Date | Notes |
|---|---|---|
| 1 | Sep 2019 | Initial release |
| 2 | Jul 2020 | Updated to reflect firmware version 1.1.0 |
| 3 | May 2021 | Added firmware update procedure using USB. Refer to Updating the Firmware (page 79) for more information. |
| 4 | May 2022 | **Firmware 1.1.2**<br>- Added compatibility with AT-OCS-900N. Refer to Integration with the AT-OCS-900N (page 77) for more information. |

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# Operating Notes

**IMPORTANT:** Visit https://atlona.com/product/ome-ms42/ 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.

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# Introduction

The Atlona **AT-OME-MS42** is a 4x2 matrix switcher with HDMI, USB-C, and DisplayPort inputs, plus HDMI and HDBaseT outputs. Part of the Omega™ Series of integration products for modern AV communications and collaboration, the OME-MS42 is HDCP 2.2 compliant and features HDBaseT extension for video up to 4K/60 4:2:0, plus embedded audio, control, Ethernet, and USB over distances up to 330 feet (100 meters). All inputs and the local HDMI output support 4K HDR and 4K/60 4:4:4 at HDMI data rates up to 18 Gbps. Additionally, 4K downscaling to 1080p @ 60, 30, or 24 Hz is available for the HDMI output when connected to an HD sink. The integrated USB extension addresses the challenge of connecting between USB devices at remote locations, and is ideal for software video conferencing and touch or interactive displays. The OME-MS42 includes USB 2.0 and USB-C interfaces for three host PCs, plus two peripheral devices such as a camera, microphone, speakerphone, or keyboard and mouse. It is ideal for video conferencing and many other 4K presentation applications with the OME-EX-RX receiver and OME-SR21 scaling receiver.

# Features

- 4×2 AV matrix switcher with HDMI, DisplayPort, and USB-C inputs
- USB-C input for AV, data, and device charging(1)
- HDBaseT and HDMI outputs with selectable AV switching modes
- Supports TCP Proxy for IP to RS-232 conversion, enabling RS-232 control from a TCP/IP control system.
- USB 2.0 interfacing and extension(2) over HDBaseT
- Selectable 4K to 1080p downscaling
- Remote powering using HDBaseT or local powering
- Audio de-embedding
- Automatic display control
- Award-winning 10 year limited product warranty

# Package Contents

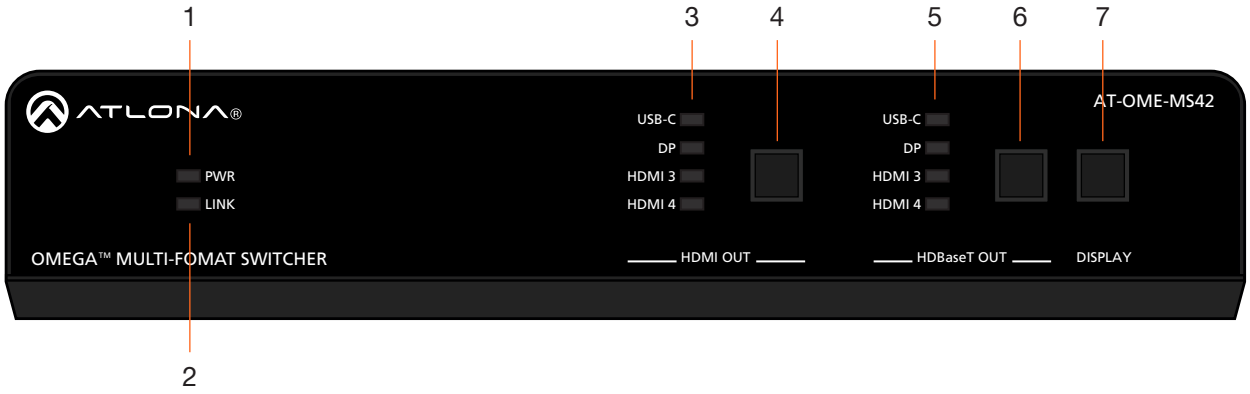
1 x AT-OME-MS42
1 x Captive screw connector, 5-pin
1 x Captive screw connector, 3-pin
1 x USB-C cable
2 x Mounting plate
4 x Mounting screw
1 x Long rack ear
1 x Short rack ear
4 x Feet w/rubber grips
1 x 24 V DC power supply
1 x IEC power cord
1 x Installation Guide

(1) Device charging available when used with included AT-PS-245-D4 power supply.

(2) Maximum 120 Mbps data rate supported over HDBaseT.

# Panel Description

## Front Panel




1 **PWR**
This LED indicator glows solid green when the unit is powered.

2 **LINK**
This LED indicator glows solid yellow when an HDBaseT link is established, between the AT-OME-MS42 and a receiver.

3 **HDMI OUT: Input LED Indicators**
These LED indicators display which input is routed to the **HDMI OUT** port. A solid blue indicator represents the active input being used.

4 **HDMI OUT: Input Selection**
Press and release this button to change the input.

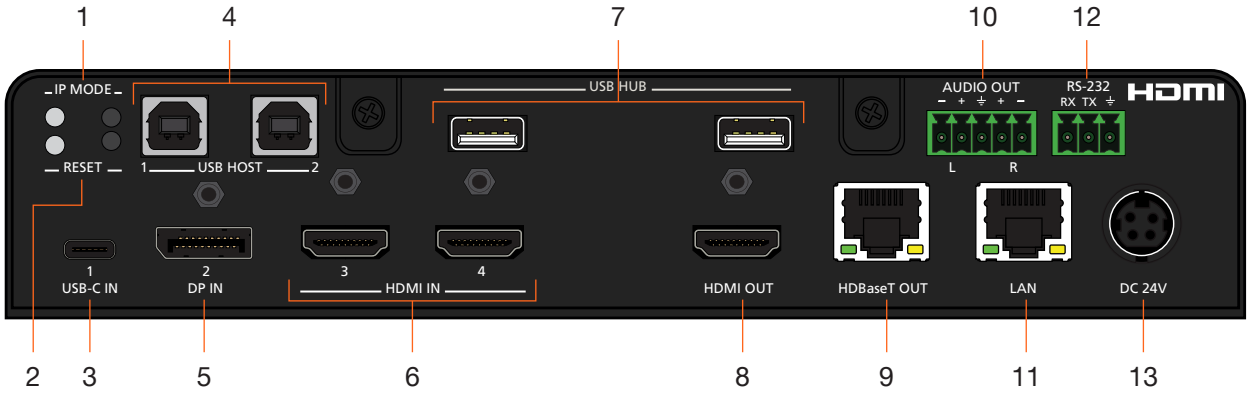
5 **HDBaseT OUT: Input LED Indicators**
These LED indicators display which input is routed to the **HDBaseT OUT** port. A solid blue indicator represents the active input being used.

6 **HDBaseT OUT: Input Selection**
Press and release this button to change the input.

7 **DISPLAY**
Press this button to toggle the power state of the desired display. Refer to Display Control (page 64) for more information.

# Panel Description

## Rear Panel




**1 IP MODE**
Press and release this button to set the IP mode or display the current IP address on the display connected to the **HDMI OUT** port. Refer to IP Configuration (page 13) for more information.

**2 RESET**
Press and release this button to reset the unit to factory-default settings. Refer to Resetting to Factory-Default Settings (page 49) for more information.

**3 USB-C IN**
Connect a USB-C cable between from this port to a USB-C source.

**4 USB HOST**
Connect a USB cable from each of these ports to USB host devices.

**5 DP IN**
Connect a DisplayPort cable from this port to a DisplayPort source.

**6 HDMI IN**
Connect an HDMI cable from each of these ports to HDMI sources.

**7 USB HUB**
Connect USB devices to these USB ports.

**8 HDMI OUT**
Connect an HDMI cable from this port to a display or other sink device.

**9 HDBaseT OUT**
Connect a category cable from this port to a compatible receiver unit. Recommended receivers are the AT-OME-SR21 or AT-OME-EX-RX.

**10 AUDIO OUT**
Connect an audio output device to this port using the included captive screw block. Refer to Audio (page 10) for information on wiring.

**11 LAN**
Connect an Ethernet cable from this port to the Local Area Network (LAN). The AT-OME-MS42 includes a built-in web server, which can be used to manage and configure the product.

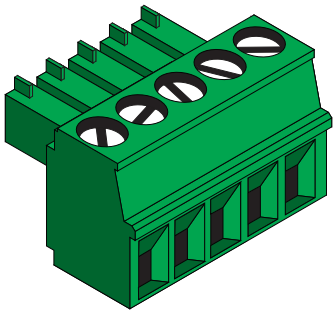
**12 RS-232**
Connect the included 3-pin captive screw connector block to this port.

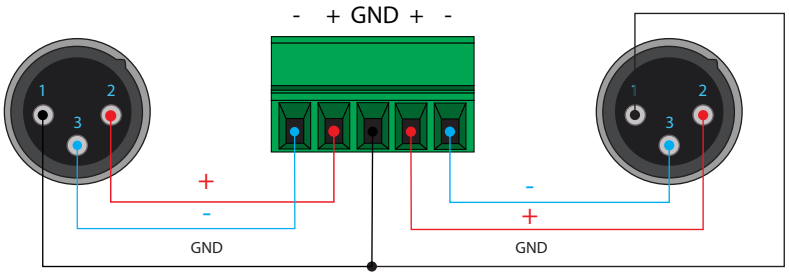
**13 DC 24V**
Connect the included 24 V DC power supply from this power receptacle to an available AC electrical outlet.

# Installation

## Audio

The **AUDIO OUT** connector on the AT-OME-MS42 provides a separate output for balanced audio using XLR connectors. Use the included 5-pin captive-screw terminal block. Balanced audio connections use two signal wires and a ground to minimize interference in audio signals. Unbalanced output audio is not recommended and may require additional equipment.

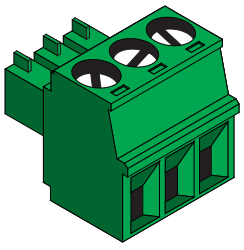


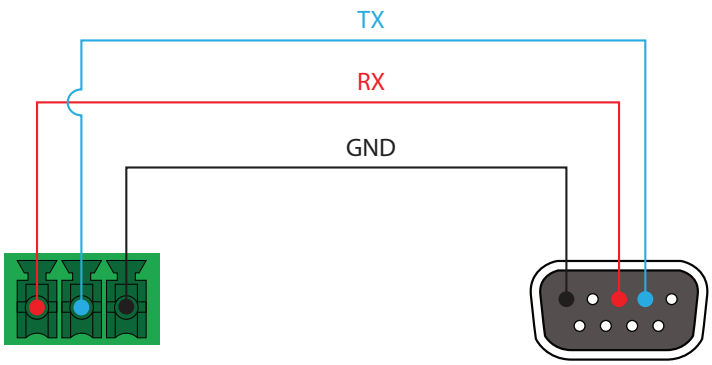



## RS-232

The AT-OME-MS42 provides an **RS-232** port which can be used to control a display connected to the HDMI output. Atlona recommends controlling the AT-OME-MS42 using IP and reserving the **RS-232** port for local display control.

1. Use wire strippers to remove a portion of the cable jacket.
2. Remove at least 3/16” (5 mm) of insulation from each of the wires.
3. Insert the wires into correct terminal using the included 3-pin captive screw connector.
4. Attach the 3-pin connector block to the **RS-232** port on the AT-OME-MS42.





## Connection Instructions

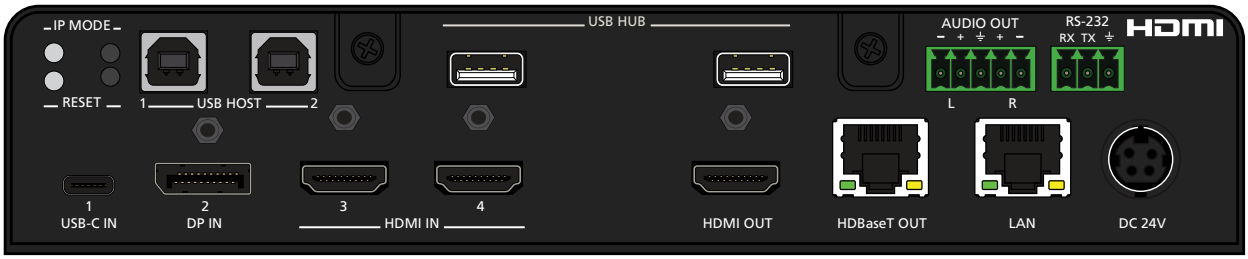
1. Connect a high-quality USB-C cable from a source to the **USB-C (1)** port.
2. Connect a DisplayPort cable from a source to the **DP IN (2)** port.
3. Connect up to two UHD/HD sources, using HDMI cables, to the **HDMI IN (3)** and **HDMI IN (4)** ports.
4. Connect an HDMI cable from the **HDMI OUT** port to a UHD/HD display.
5. Connect a category cable (CAT-5e or better) from the **HDBaseT OUT** port to a compatible receiver.

   Refer to the tables below for recommended cabling when using Altona products with HDBaseT technology. The green bars indicate the signal quality when using each type of cable. Higher-quality signals are represented by more bars. *These tables are for guidance, only. Performance may vary, based on environmental factors.*

| Core | Shielding | CAT5e | CAT6 | CAT6a | CAT7 |
|---|---|---|---|---|---|
| Solid | UTP (unshielded) | ■ | ■■■ | ■■■■ | N/A |
| | STP (shielded) | ■■ | ■■■■ | ■■■■■ | ■■■■■ |

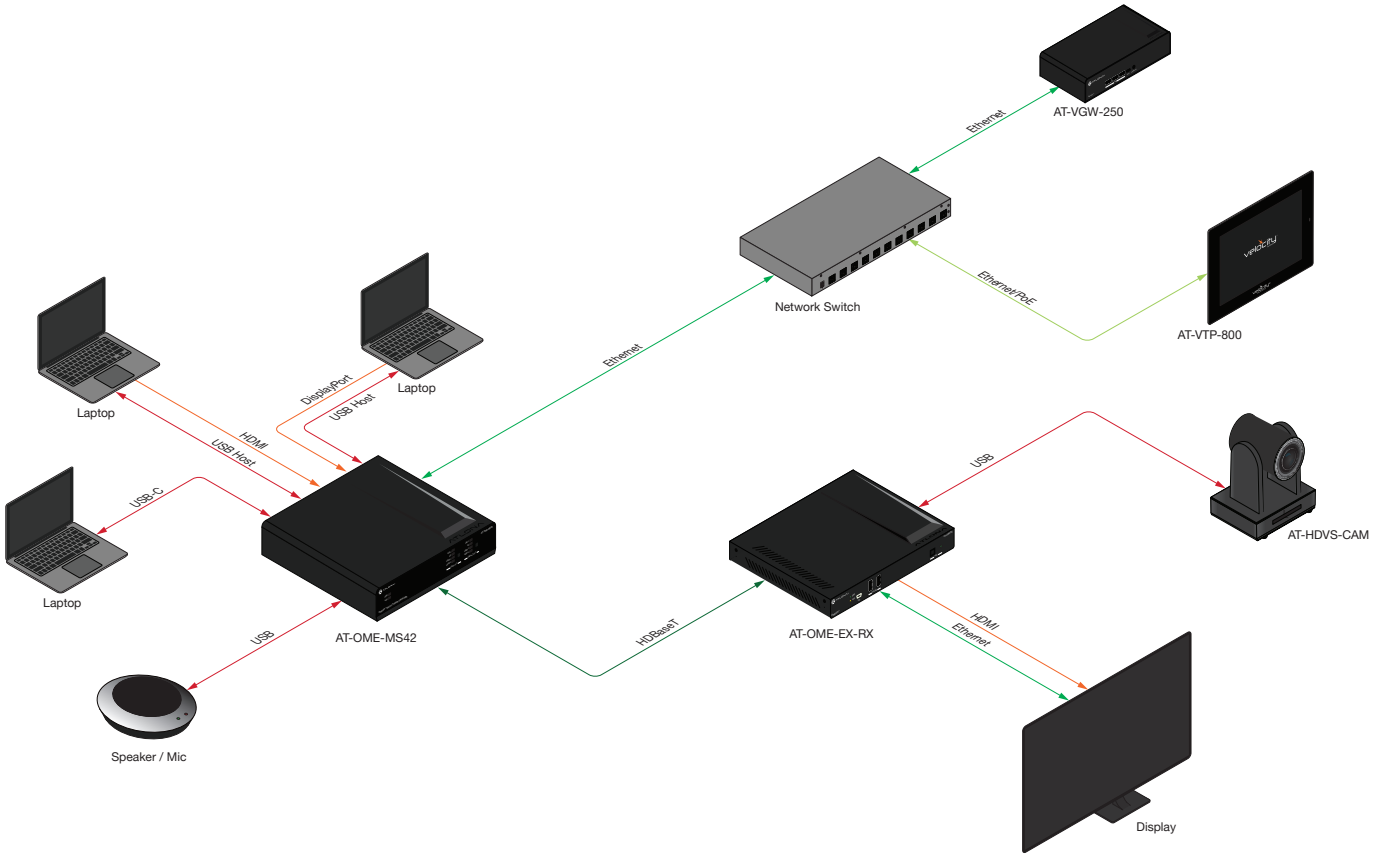
| Cable | Max. Distance @ 4K | Max. Distance @ 1080p |
|---|---|---|
| CAT5e | 295 feet (90 meters) | 330 feet (100 meters) |
| CAT6a / CAT6a / CAT7 | 330 feet (100 meters) | 330 feet (100 meters) |

**IMPORTANT:** Stranded or patch cable is not recommended due to performance issues. Sheilded cables are strongly recommended to minimize signal noise and interference.




6. Connect up to two USB host devices to the **USB HOST** ports. Refer to Connection Diagram (page 12) for an example application.
7. Connect USB devices to the **USB HUB** ports. Refer to Refer to Connection Diagram (page 12) for an example application for an example application.
8. Connect an Ethernet cable from the **LAN** port to the Local Area Network (LAN).
9. OPTIONAL: Connect the included 5-pin captive screw connector to the **AUDIO OUT** connector.
10. OPTIONAL: Connect the included 3-pin captive screw block to the RS-232 port. Refer to Solution Setup and Configuration Guide (page 64) for information.
11. Connect the included power supply to the **DC 24V** connector and connect the power cord to an available electrical outlet.

## Connection Diagram



# IP Configuration

The AT-OME-MS42 is shipped with DHCP enabled. Once connected to a network, the DHCP server (if available), will automatically assign an IP address to the unit. If the AT-OME-MS42 is unable to detect a DHCP server within 15 seconds, then the unit will use a self-assigned IP address within the range of 169.254.xxx.xxx.

Use an IP scanner, along with the MAC address on the bottom of the unit, to identify the unit on the network. If a static IP address is desired, the unit can be switched to static IP mode. The default static IP address is 192.168.1.254.

## Switching the IP Mode Using the Front Panel

1. Make sure the AT-OME-MS42 is powered by connecting the included power supply.
2. Press and hold the **IP MODE** button, on the rear of the unit.
3. Release the button once the LED indicator, next to the **IP MODE** button, begins to flash green. The number of flashes will indicate the currently selected IP mode.

| PWR LED flashes | Description |
|---|---|
| Four | DHCP mode |
| Two | Factory Static IP mode (IP address set to 192.168.1.254) |

## Setting the IP Address using the Web Server

Refer to the Changing the Network IP Mode (page 41) in the built-in web server, to set the AT-OME-MS42 to either DHCP or static IP mode. In order to access the web server, the IP address of the AT-OME-MS42 must be known. By default, the AT-OME-MS42 is set to DHCP mode and will automatically be assigned an IP address by a DHCP server.

## Displaying the IP Address

Press and release the **IP MODE** button to display the IP address of the AT-OME-MS42 on the display connected to the **HDMI OUT** port. The IP address will be displayed in the upper-left corner of the display.

# Control

## CEC

CEC is available for trigger through RS-232, TCP/IP, and built-in web server. The trigger commands for RS-232 and TCP/IP can be found within the API at https://atlona.com/pdf/AT-OME-MS42_API.pdf.

## RS-232

RS-232 control for connected devices and the unit are available through the RS-232 captive screw connection. The commands can be found within the API at https://atlona.com/pdf/AT-OME-MS42_API.pdf.

## TCP Proxy

This unit has the ability to translate IP data to RS-232 through ports 9000+. This enables control of devices through TCP/IP that only have RS-232 ports. The unit will take the commands sent to port 9000, 9001, and 9002 and send them to the corresponding ports. More information and commands can be found within the API at https://atlona.com/pdf/AT-OME-MS42_API.pdf.

## TCP/IP

TCP/IP control for connected devices and the unit are available through the LAN connection. The commands can be found within the API at https://atlona.com/pdf/AT-OME-MS42_API.pdf.

## Web Server

The unit has a built in web server that will allow for unit configuration and device control.  Refer to the web server section for more information.

# Device Operation

## LED Indicators

The LED indicators on both the front and rear of the unit provide basic information on the current status of the AT-OME-MS42.

| LED | | Description |
|---|---|---|
| PWR | Solid green | • Unit is powered using the included 24 V DC power supply. |
| | Off | • Unit is not powered. |
| LINK | Solid yellow | • An HDBaseT link is established between the transmitter and the receiver. |
| | Off | • The link integrity between the AT-OME-MS42 and the HDBaseT receiver is compromised.<br>• Check the HDBaseT connections and/or try a different cable. |
| USB-C<br>DP<br>HDMI 3<br>HDMI 4 | Solid green | • The input is the currently selected (active) input. |
| | Off | • The input is not active. |
| IP MODE | Flash green (4x) | • Flashes four times to indicate that the unit is being set to DHCP mode. Refer to IP Configuration (page 13) for more information. |
| | Flash green (2x) | • Flashes twice to indicate that the unit is being set to static IP mode and will be assigned the IP address of `192.168.1.254`. |
| | Off | • Normal operating mode. |
| RESET | Flash green (3x) | • Unit is being set to factory-default settings. Refer to Resetting to Factory-Default Settings (page 49) for more information. |
| | Off | • Normal operating mode. |

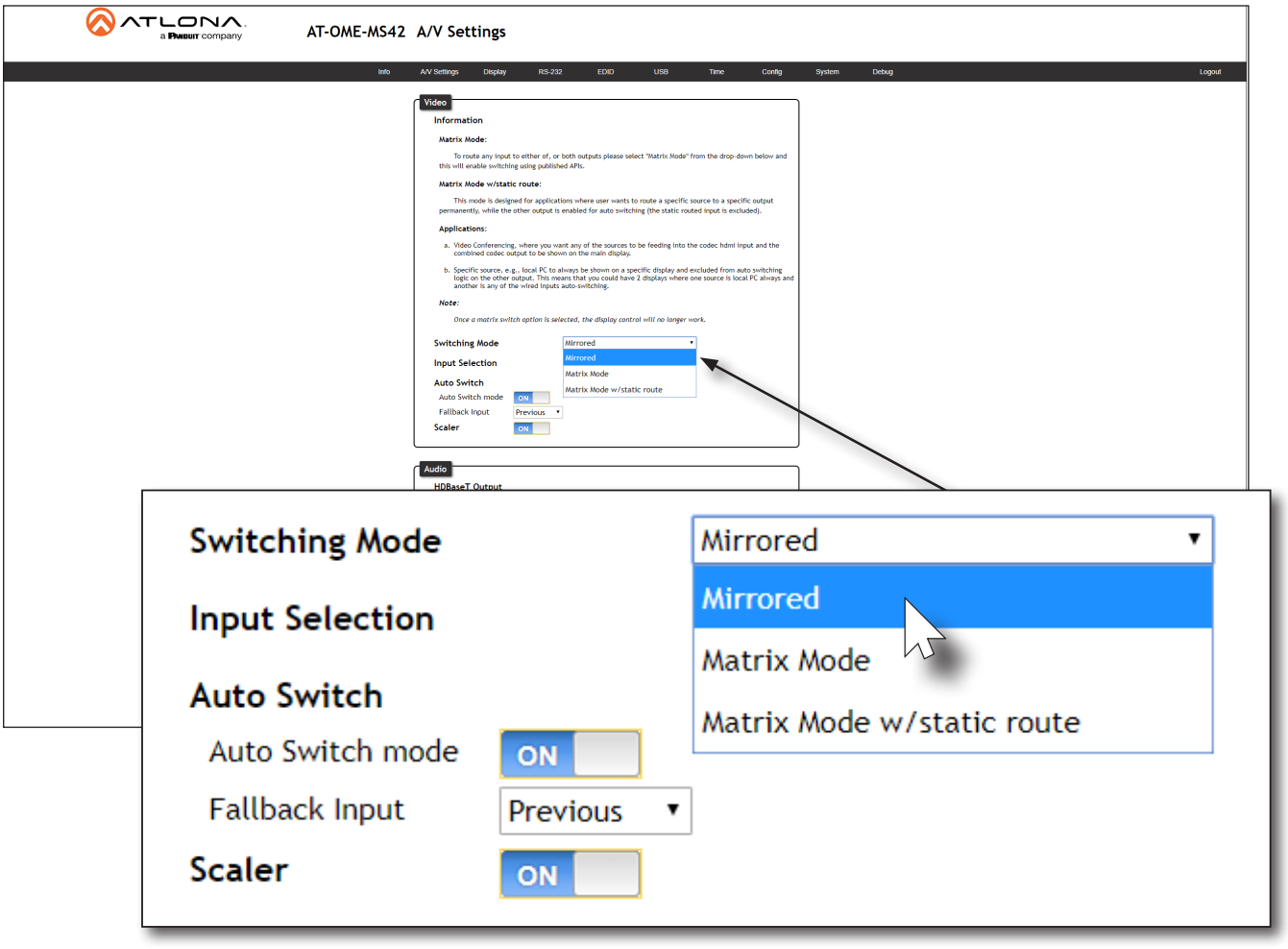
## Switching Modes

The AT-OME-MS42 features three switching modes: Mirrored, Matrix Mode, and Matrix Mode with static route. Each of these modes will be covered in the following section. Switching modes can be configured using the built-in web server.

### Mirrored Mode

This is the default mode. Once video is detected on any of the input ports, the output signal will be displayed on *both* the **HDMI OUT** and **HDBaseT OUT** ports. The active input will be identified on the front panel HDMI LED input indicators. An active input will be displayed as a solid green LED. Auto-Switching (page 21) can also be enabled, if desired, to allow the AT-OME-MS42 to automatically switch between inputs, if a new source is connected or an existing source is disconnected.

1. Login to the web server. Refer to Introduction to the Web Server (page 50) for more information.
2. Click **A/V Settings** in the menu bar.
3. Click the **Switching Mode** drop-down list and select **Mirrored**.



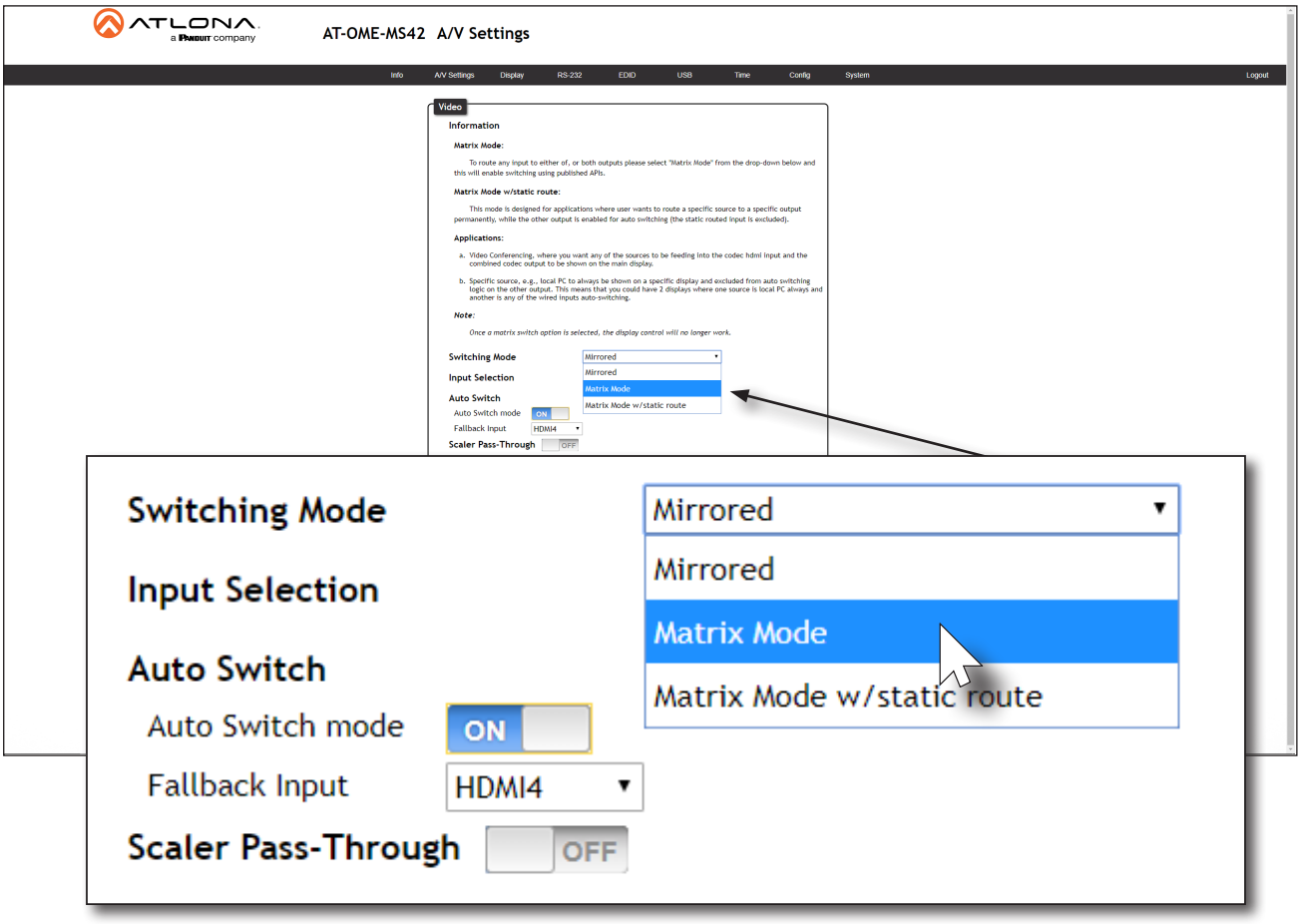

4. Mirrored configuration is complete.

## Matrix Mode

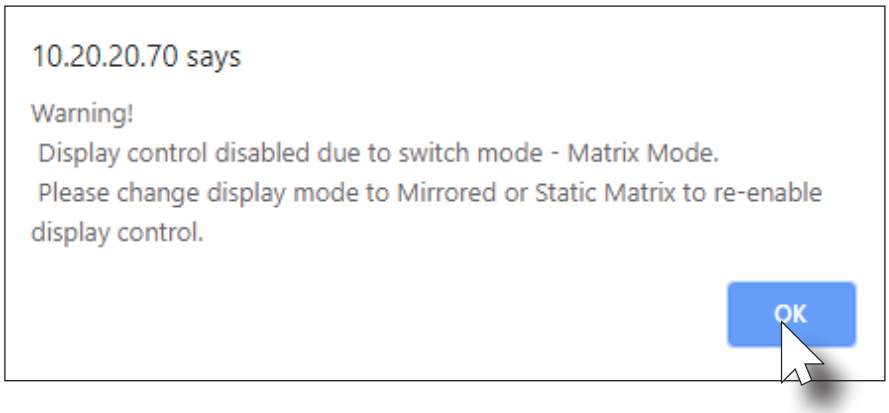
This mode allows the AT-OME-MS42 to independently switch between any input to any output. Auto-switching is disabled in Matrix Mode.

1. Login to the web server. Refer to Introduction to the Web Server (page 50) for more information.
2. Click **A/V Settings** in the menu bar.
3. Click the **Switching Mode** drop-down list and select **Matrix Mode**.

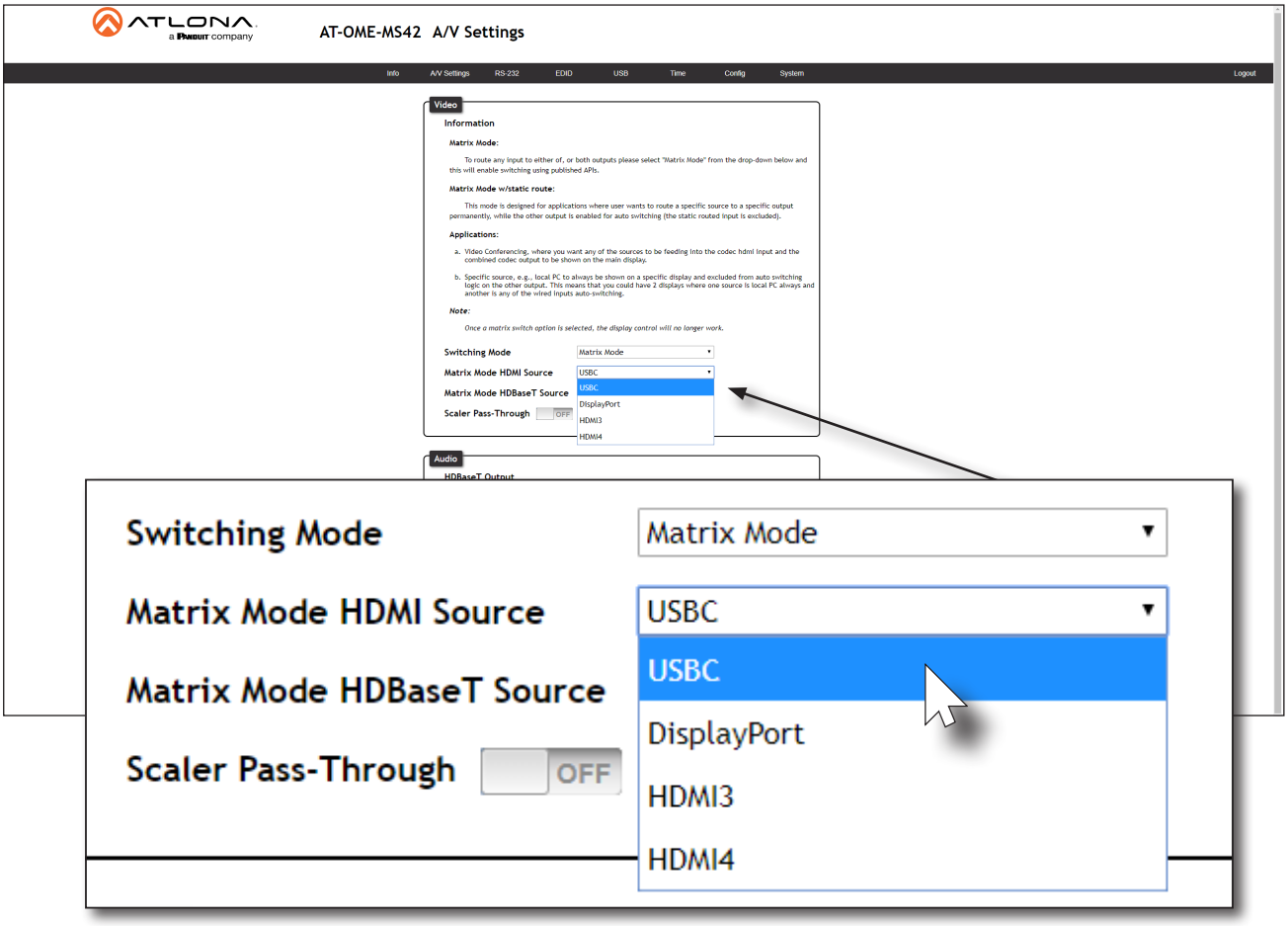
**IMPORTANT:** When the AT-OME-MS42 is set to Matrix Mode, both auto-switching and display control will be disabled.




4. The following message will appear near the top of the screen. Click the **OK** button to dismiss the message.

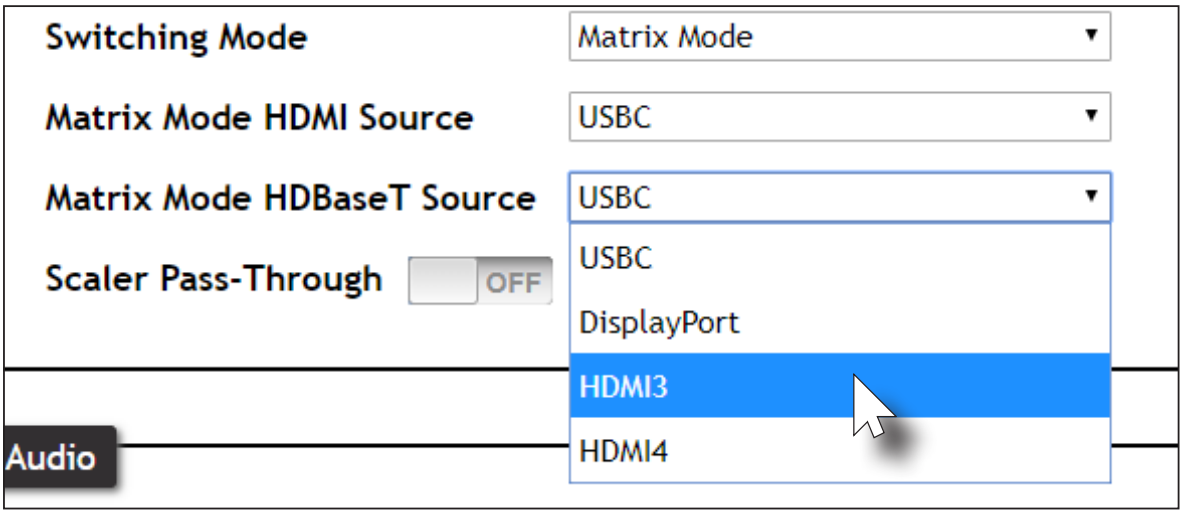


5. Click the **Matrix Mode HDMI Source** drop-down list and select the input to be routed to the **HDMI OUT** port.




6. Click the **Matrix Mode HDBaseT Source** drop-down list and select the input to be routed to the **HDBaseT OUT** port.

7. Matrix Mode configuration is complete.

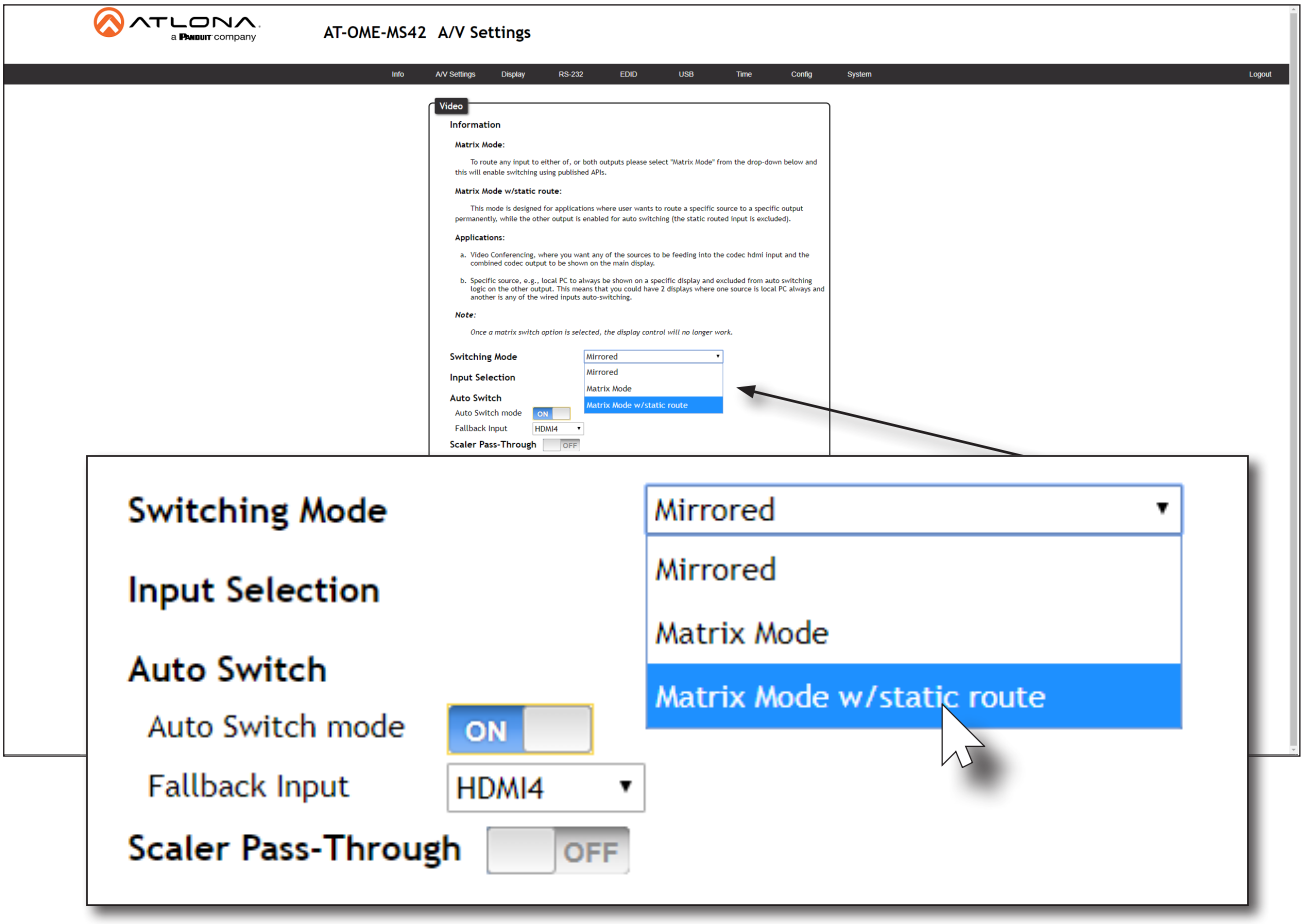



**NOTE:** If the input (source) for the HDBaseT output is not selected, then the input that was selected for the **Matrix Mode HDMI Source** will be also output on the **HDBaseT OUT** port.

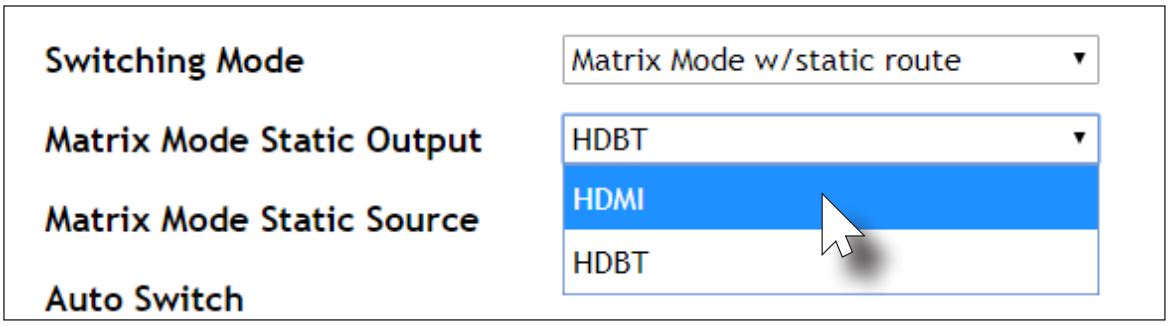
## Matrix Mode w/ Static Route

This mode is desirable when integrating the AT-OME-MS42 with a video conference system. In this mode, both static input and output routing are specified. Auto-Switching (page 21) must be enabled. However, the specified static input will be removed from the auto-switching pool. For example, if the **HDMI IN 3** port is specified as a static input, then auto-switching will "skip" this port when auto-switching.

1. Login to the web server. Refer to Introduction to the Web Server (page 50).
2. Click **A/V Settings** in the menu bar.
3. Click the **Switching Mode** drop-down list and select **Matrix Mode w/ static route**.

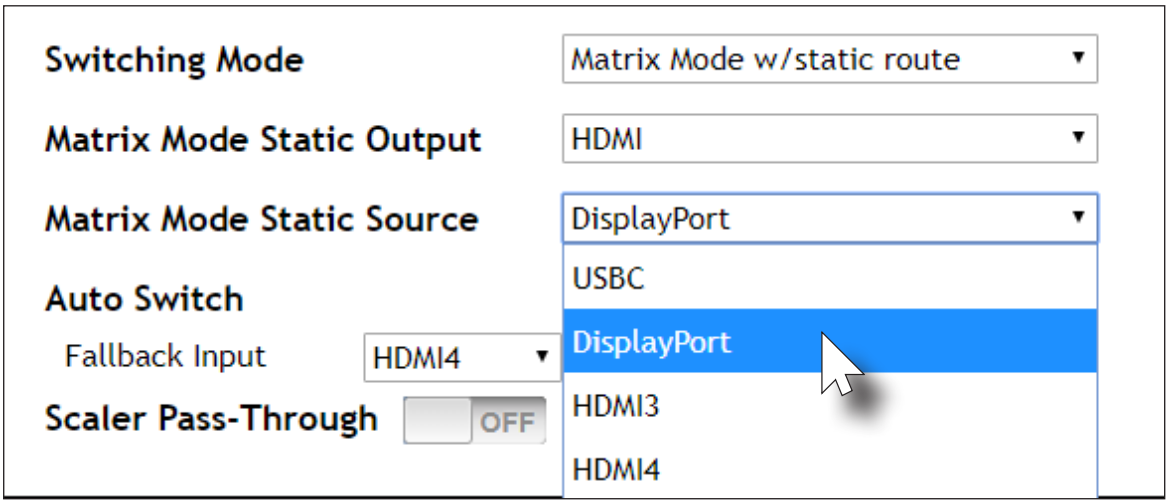



4. Click the **Matrix Mode Static Output** drop-down list and select the output that will be "static". This is the output that will not change.

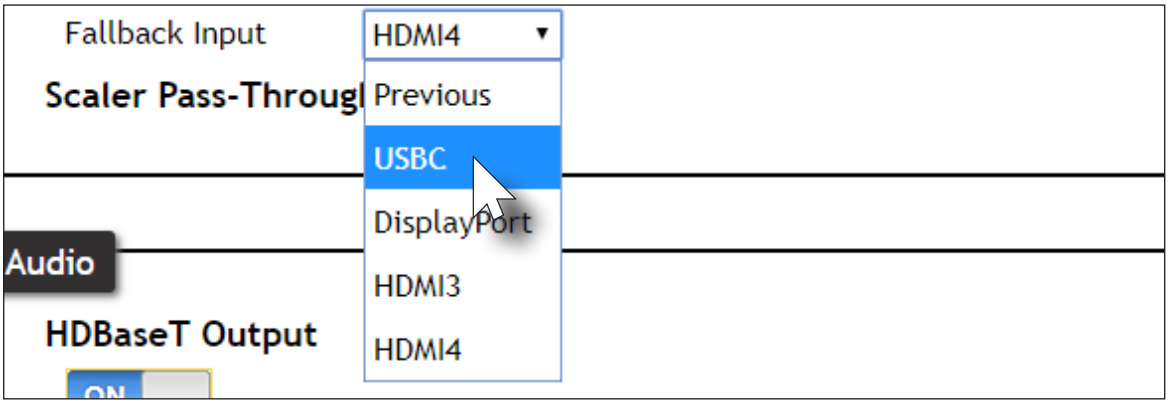


5. Click the **Matrix Mode Static Source** drop-down to select the source that will be assigned as a “static” source. This source will be routed to the output selected in the **Matrix Mode Static Output** drop-down list.

   In this example, the source connected to the DisplayPort input (**DP IN**), will be output to the **HDMI OUT** port. The **DP IN** port is the static source and the **HDMI OUT** port is the static output. This particular configuration will allow the **USB-C** and both **HDMI IN** ports to be routed to the HDBaseT OUT port, as needed.




6. Click the **Fallback Input** drop-down list and select the desired fallback port, if desired. The default setting is **Previous**.




7. Matrix with static route configuration is complete.

# Auto-Switching

The AT-OME-MS42 provides auto-switching capability, which is enabled by default. This feature will automatically switch the input to the most recently-connected source. If a source is disconnected, then the input will automatically be switched to the previously-connected source. If no sources are found, the AT-OME-MS42 will initiate a five-minute countdown timer. If no activity takes place within this time interval, the unit will automatically power-off.

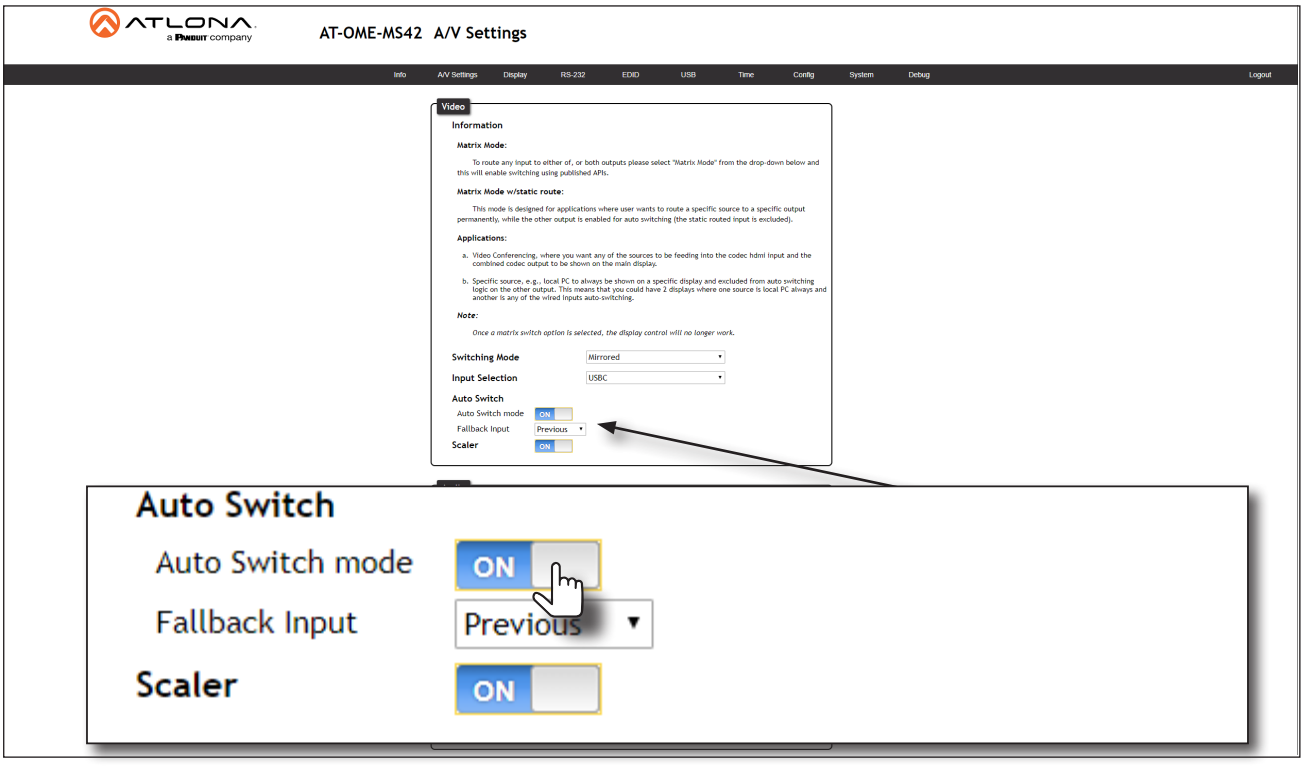
**IMPORTANT:** The auto-switching feature is only available when the **Switching Mode** is set to **Mirrored** or **Matrix mode with static route**. Refer to Switching Modes (page 16) for more information.

## Enabling / Disabling Auto Switching

By default, auto-switching is enabled on the AT-OME-MS42, allowing the unit to automatically switch between inputs when sources are connected or disconnected. Auto-switching is enabled when set to **Matrix mode with static route** and cannot be disabled.

1. Login to the web server. Refer to Introduction to the Web Server (page 50).
2. Click **A/V Settings** in the menu bar.
3. Verify that the **Switching Mode** is set to **Mirrored**.
4. Click the **Auto Switch mode** toggle switch to the **ON** position to enable auto-switching. This is the default setting. If auto-switching is not desired, click this toggle switch to the **OFF** position. Note that if the previously active input is no longer available that it will fallback to any available input.

**NOTE:** The AT-OME-MS42 retains the currently selected input, even after the unit is powered-off then powered-on. The system should re-evaluate the auto switching logic after power on and select an input.




5. Auto switching configuration is complete.

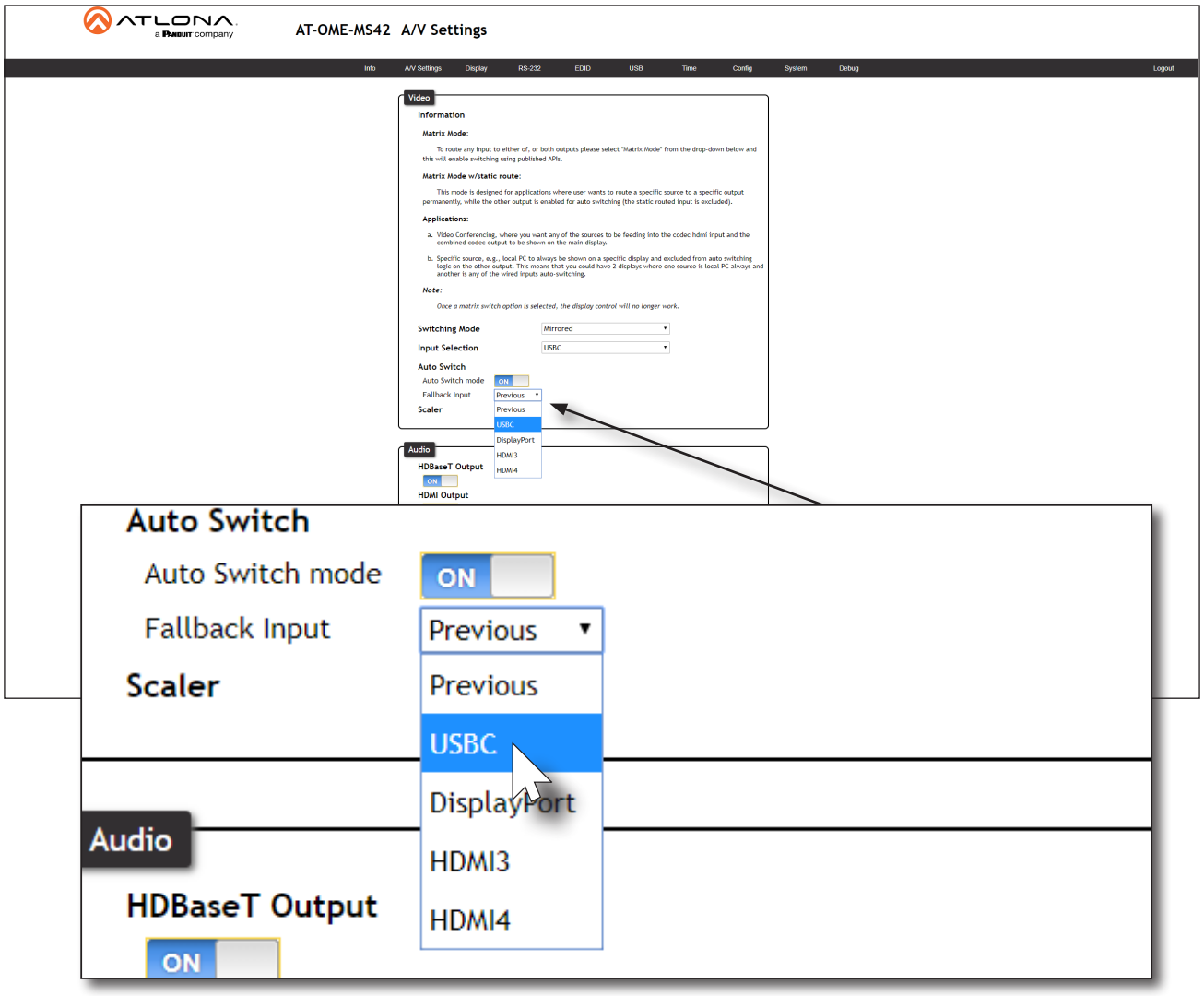
## Setting the Fallback Input

The default fallback port is set to **Previous**. This means if multiple sources are connected, then disconnected, the AT-OME-MS42 will automatically return to last-connected port. If desired, the fallback port can be set to another input.

**IMPORTANT:** The fallback feature is only available when the **Switching Mode** is set to either **Mirrored** or **Matrix Mode w/ static route**. Refer to Switching Modes (page 16) for more information.

1. Login to the web server. Refer to Introduction to the Web Server (page 50).
2. Click **A/V Settings** in the menu bar.
3. Verify that the **Switching Mode** is set to either **Mirrored** or **Matrix Mode w/ static route**.
4. Click the **Fallback Input** drop-down list to select the desired fallback input. The default fallback input is **Previous**.

   If **Previous** is selected, then the switcher will return to the last-connected input. If no input is found, then it will attempt to switch to any available input.



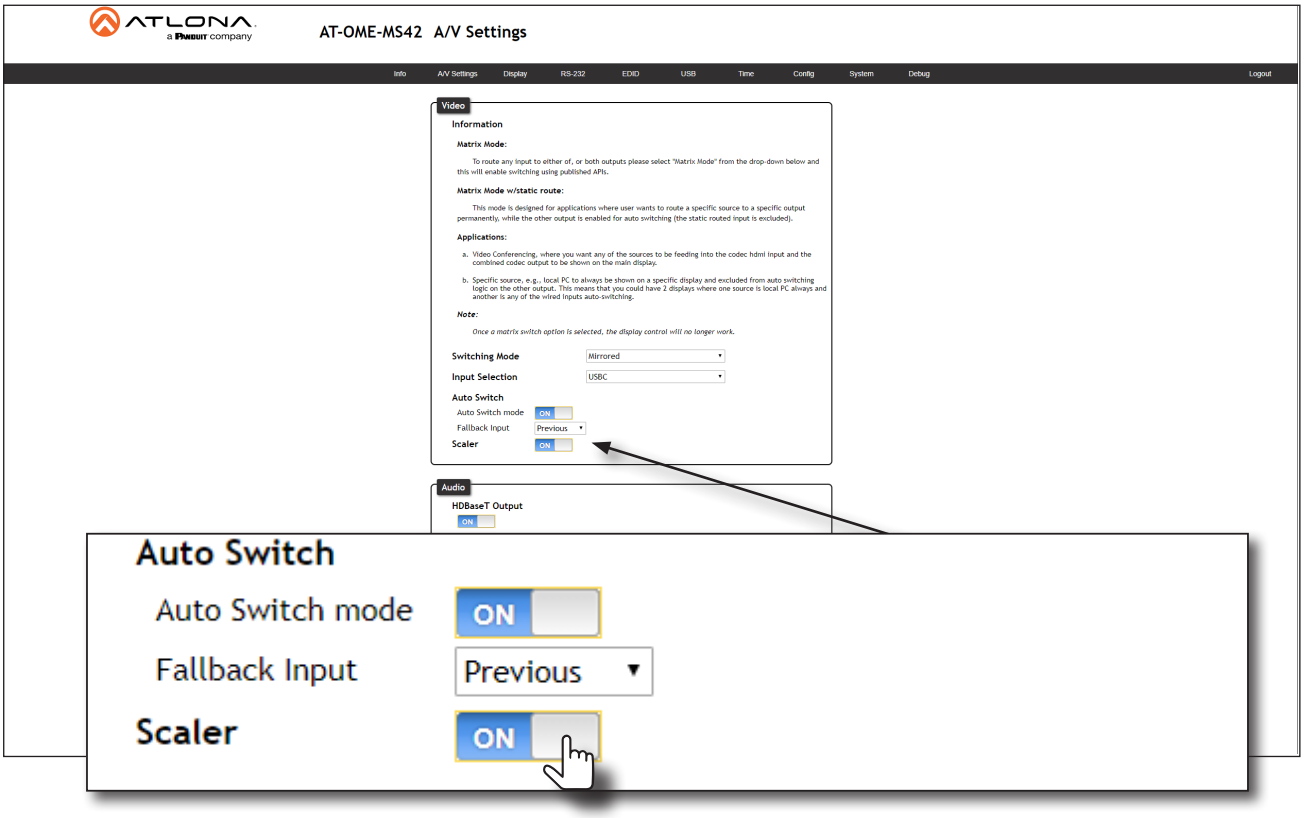

5. Fallback port configuration is complete.

## Scaler Pass-Through

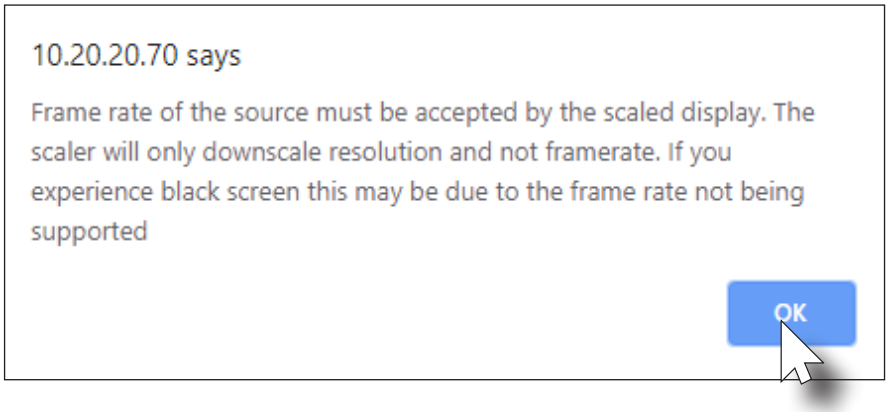
Click this toggle switch to enable or disable the scaler pass-through feature. When set to the **ON** position, 4K content will be down-scaled to 1080p. When set to the **OFF** position, the output resolution / timing will be the same as the input source. The default setting is **ON**.

**IMPORTANT:** The scaler will only downscale the image resolution and does not support frame rate scaling/conversion such as 60 Hz to 30 Hz. The frame rate of the source must be supported by the display device.

1. Login to the web server. Refer to Introduction to the Web Server (page 50).
2. Click **A/V Settings** in the menu bar.
3. Click the **Scaler** toggle switch.




4. The following message box will be displayed. Click **OK** to dismiss the message box.
5. The **Scaler** toggle switch will be set to the **ON** state.
6. Click the toggle switch again, to return the **Scaler** toggle to the **ON** (default) position.



## Notes on Scaling

The following section provides important information about how the AT-OME-MS42 processes 4K (UHD) video signals.

- The HDMI **OUTPUT** port supports up to 4K @ 60 Hz, 12-bit, with HDR.
- If the source is 4K, and the HDMI **OUTPUT** port is connected to a 1080p (not 4K-capable) display, then the output will be down-scaled as follows:

| Input | Output |
|---|---|
| 4K @ 24 Hz | 1080p @ 24 Hz |
| 4K @ 30 Hz | 1080p @ 30 Hz |
| 4K @ 60 Hz, 4:2:0 | 1080p @ 60 Hz, YUV/RGB 4:4:4 |

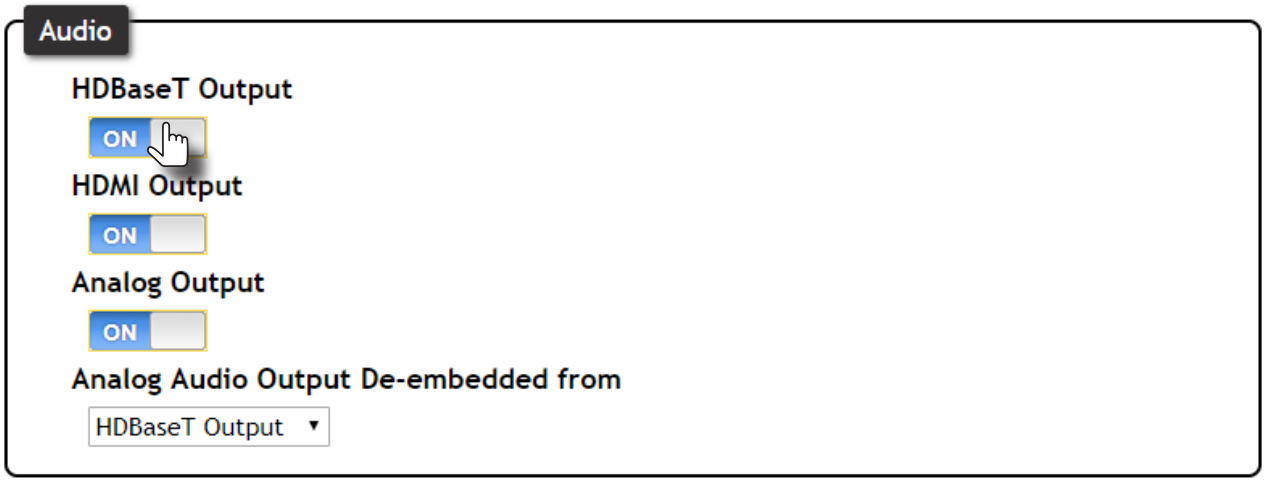
- HDR / Dolby Vision / HLG formats cannot be down-scaled to 1080p.
- The internal scaler will be bypassed if the connected display supports the resolution and timing information from the source device.
- The HDBaseT **OUTPUT** port supports up to 4K @ 60 Hz.  However, HDR is only supported at lower resolutions.
- The HDBaseT **OUTPUT** port will down-sample to 4:2:0, if the source is 4K @ 60 Hz, 4:4:4, 8-bit.  However, the HDMI **OUTPUT** will remain at 4K @ 60 Hz, 4:4:4, 8-bit, if the output is connected to a 4K-capable display.

# Audio Management

The AT-OME-MS42 provides control over audio muting on **HDMI OUT**, **HDBaseT OUT**, and **ANALOG OUT** outputs.

## Audio Output Muting

1. Login to the web server. Refer to Introduction to the Web Server (page 50).
2. Click **A/V Settings** in the menu bar.
3. Locate the **Audio** section.
4. Click the toggle switch for the desired output. For example, to mute the audio output on the **HDBaseT Output**, click this toggle switch to the **OFF** position. To re-enable the audio for that output, set the toggle switch to the **ON** position.




## De-embedding Audio

Audio can be de-embedded from the **HDMI OUT** or **HDBaseT OUT** ports and output to the **AUDIO OUT** port. De-embedded audio is limited to PCM two-channel audio. Lossy and lossless audio formats such as Dolby Digital, Dolby True HD, DTS, and DTS-HD Master Audio formats cannot be de-embedded.

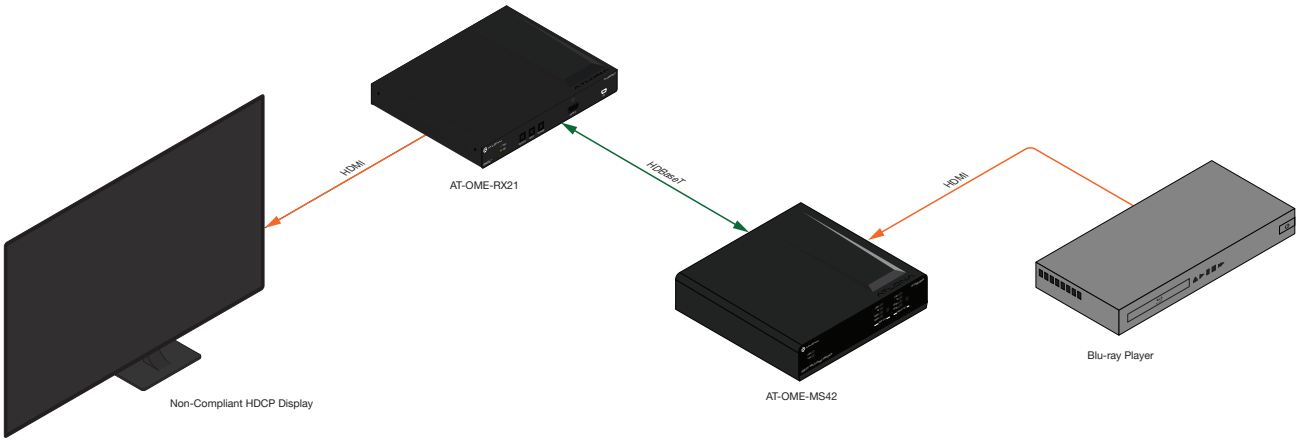
1. Login to the web server. Refer to Introduction to the Web Server (page 50).
2. Click **A/V Settings** in the menu bar.
3. Locate the **Audio** section.
4. Click the **Analog Audio Output De-embedded from** drop-down list to select the desired output.

| Settings | Description |
|---|---|
| HDBaseT Output | De-embeds audio from the HDBaseT output |
| HDMI Output | De-embeds audio from the HDMI output |

## HDCP Content

Normally, if a source is transmitting HDCP content to a display that is not HDCP-compatible, then the resulting image on the display can be “snow”, image flickering, or no picture. For example, in the illustration below, a laptop source is connected to the AT-OME-MS42. A non-compliant display is connected to a receiver, which is connected to the AT-OME-RX21 using HDBaseT.

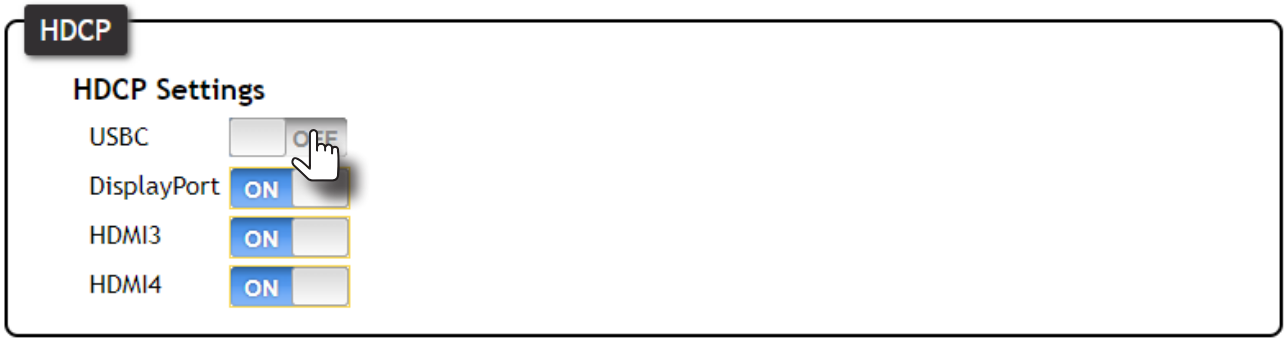
**IMPORTANT:** Not all source devices are capable of transmitting non-HDCP content. For example, Sony PlayStation® gaming consoles and Mac® computers always transmit HDCP-encrypted content.




By default, the laptop may transmit HDCP content. However, when connected to a display that does not support HDCP, the laptop must be instructed to send non-HDCP content, in order for the content to be displayed.

1. Login to the web server. Refer to Introduction to the Web Server (page 50).
2. Click **A/V Settings** in the menu bar.
3. Locate the **HDCP** section.
4. Click the toggle switch next to the desired input. In this example, clicking the **USBC** toggle switch and setting it to the **OFF** position will instruct the source device to send non-HDCP content, if possible. If the display is unable to receive HDCP content, then a green splash screen will appear on the connected display, with the following message:

   **HDCP INCOMPATIBILITY**



# EDID Management

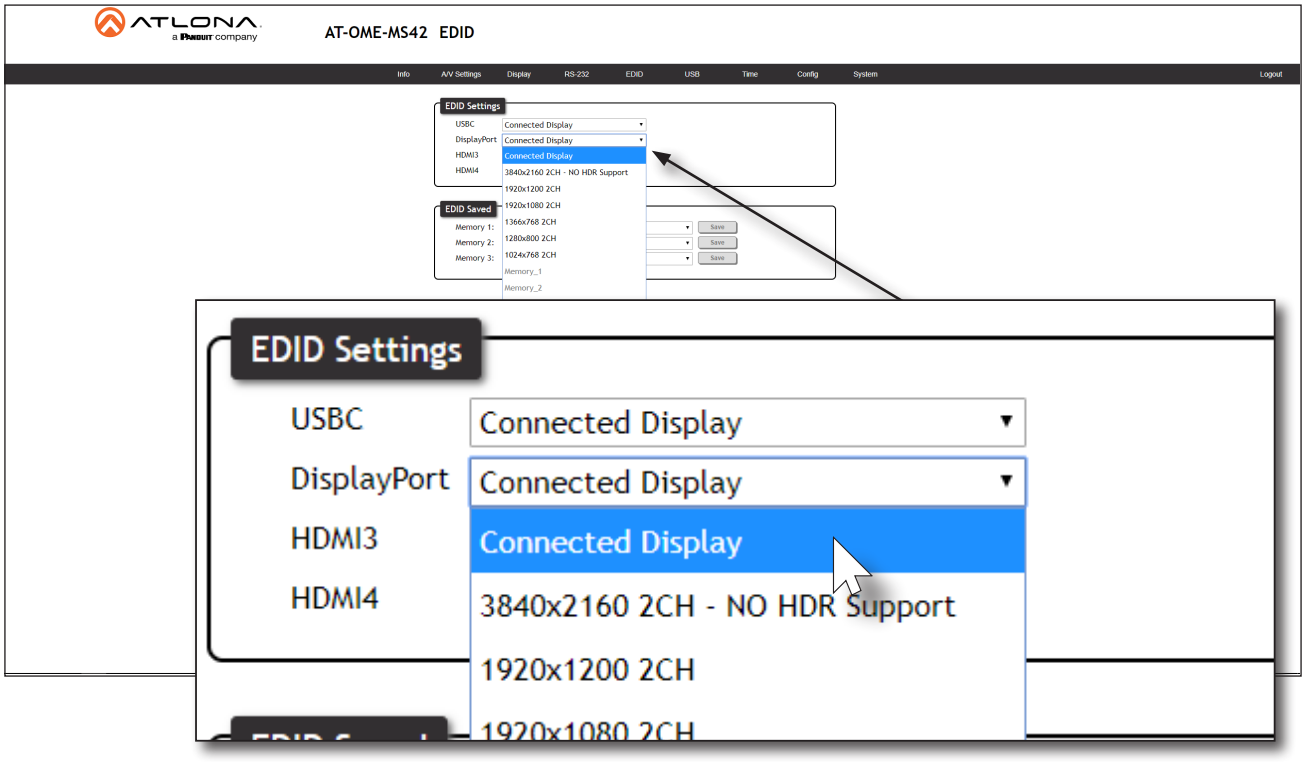
Before a source can send picture and sound to a display device, the source reads the EDID (Extended Display Identification Data) stored in the display. The EDID contains information about what type of video and audio formats are supported by the display. The AT-OME-MS42 can use either the downstream EDID (from the display/sink) or use a built-in EDID preset. EDID data can also be stored in any of three EDID presets. This section will cover each of the following topics:

- Using the Downstream EDID
- EDID Presets
- Storing EDID Data

## Using the Downstream EDID

By default, the AT-OME-MS42 will read the EDID from the display device. The term “downstream” is used to describe any device that receives a signal from another device. For example, if a Blu-ray player is connected to a display, the display is said to be “downstream” of the Blu-ray player.

1. Login to the web server. Refer to Introduction to the Web Server (page 50).
2. Click **EDID** in the menu bar.
3. Locate the **EDID Settings** section.
4. Click the drop-down list, next to the output that is connected to the display device, and select **Connected Display**. For example, if the **DP IN** port is connected to a display, click the **DisplayPort** drop-down list.




5. Downstream EDID configuration is complete.

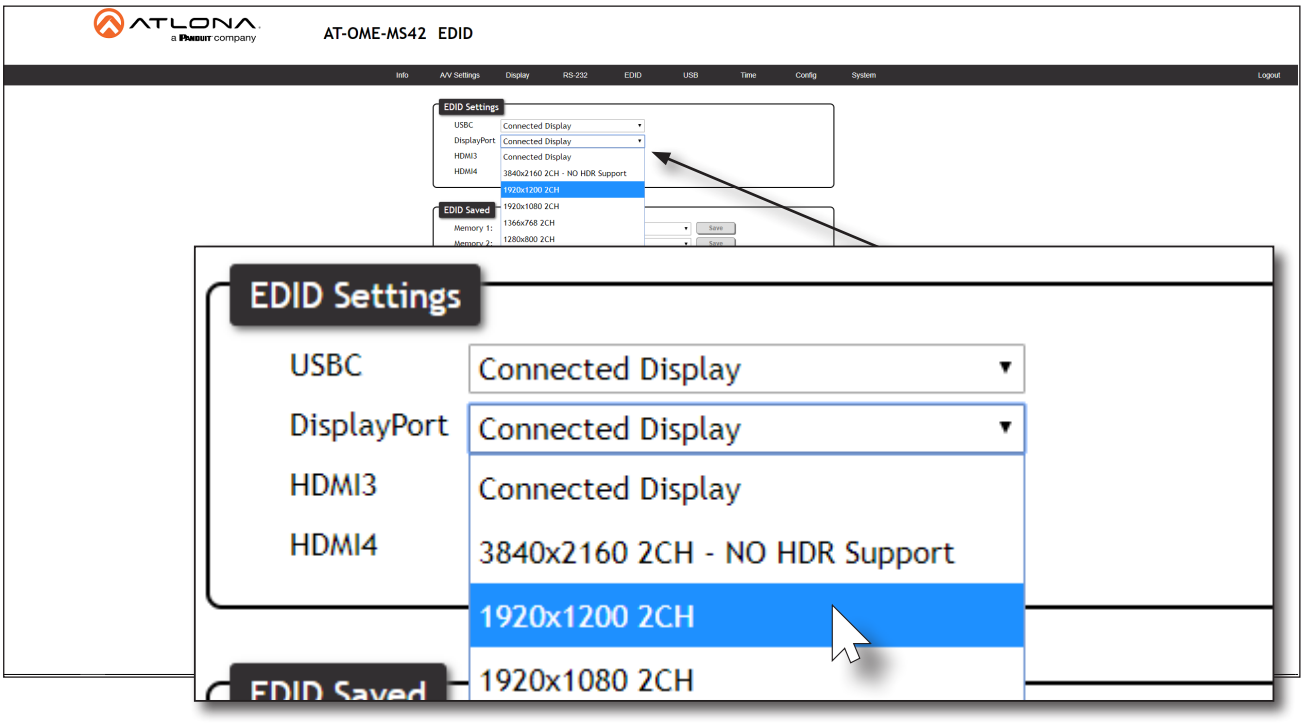
## EDID Presets

The AT-OME-MS42 provides the option of selecting a preset EDID. The following presets are available. For information on **Memory_1**, **Memory_2**, and **Memory_3** settings, refer to Storing EDID Data (page 29).

**IMPORTANT:** If problems are encountered when using an EDID preset, try using the default setting of **Connected Display**.

| EDID Preset | |
|---|---|
| Connected Display | The default setting. Refer to the previous page details. |
| 3840x2160 2CH - NO HDR Support | 3840 x 2160 @ 60 Hz with two-channel audio support. |
| 1920x1200 2CH | 1920 x 1200 @ 60 Hz with two-channel audio support. |
| 1920x1080 2CH | 1920 x 1080 @ 60 Hz with two-channel audio support. |
| 1366x768 2CH | 1366 x 768 @ 60 Hz with two-channel audio support. |
| 1280x800 2CH | 1280 x 800 @ 60 Hz with two-channel audio support. |
| 1024x768 2CH | 1024 x 768 @ 60 Hz with two-channel audio support. |
| Memory_1 | EDID memory storage 1. |
| Memory_2 | EDID memory storage 2. |
| Memory_3 | EDID memory storage 3. |

1. Login to the web server. Refer to Introduction to the Web Server (page 50).
2. Click **EDID** in the menu bar.
3. Locate the **EDID Settings** section.
4. Click the drop-down list, next to the port that is connected to the display device, and select the desired EDID preset. For example, if the **DP IN** port is connected to a display, click the **DisplayPort** drop-down list.

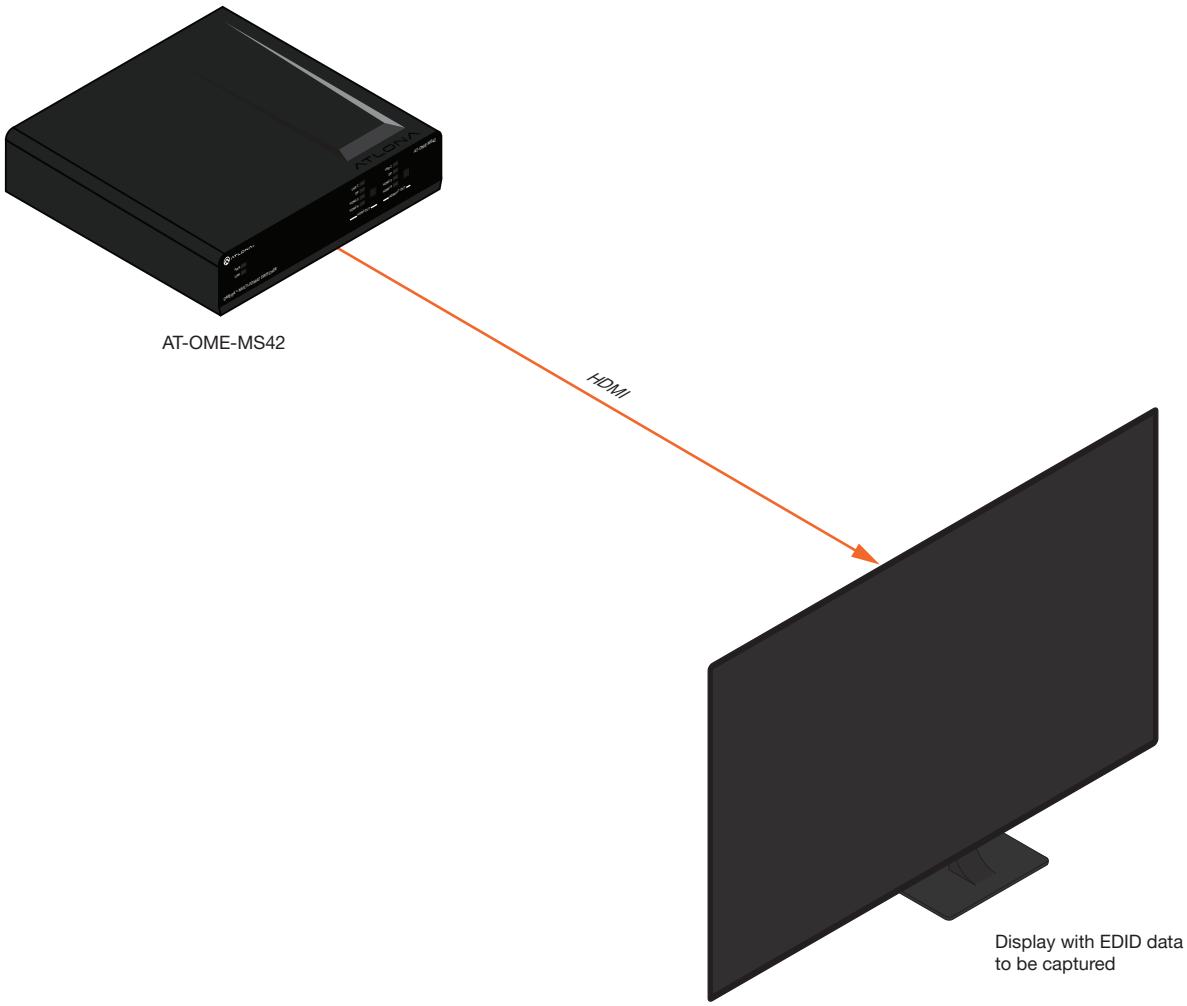



5. EDID preset selection is complete.

## Storing EDID Data

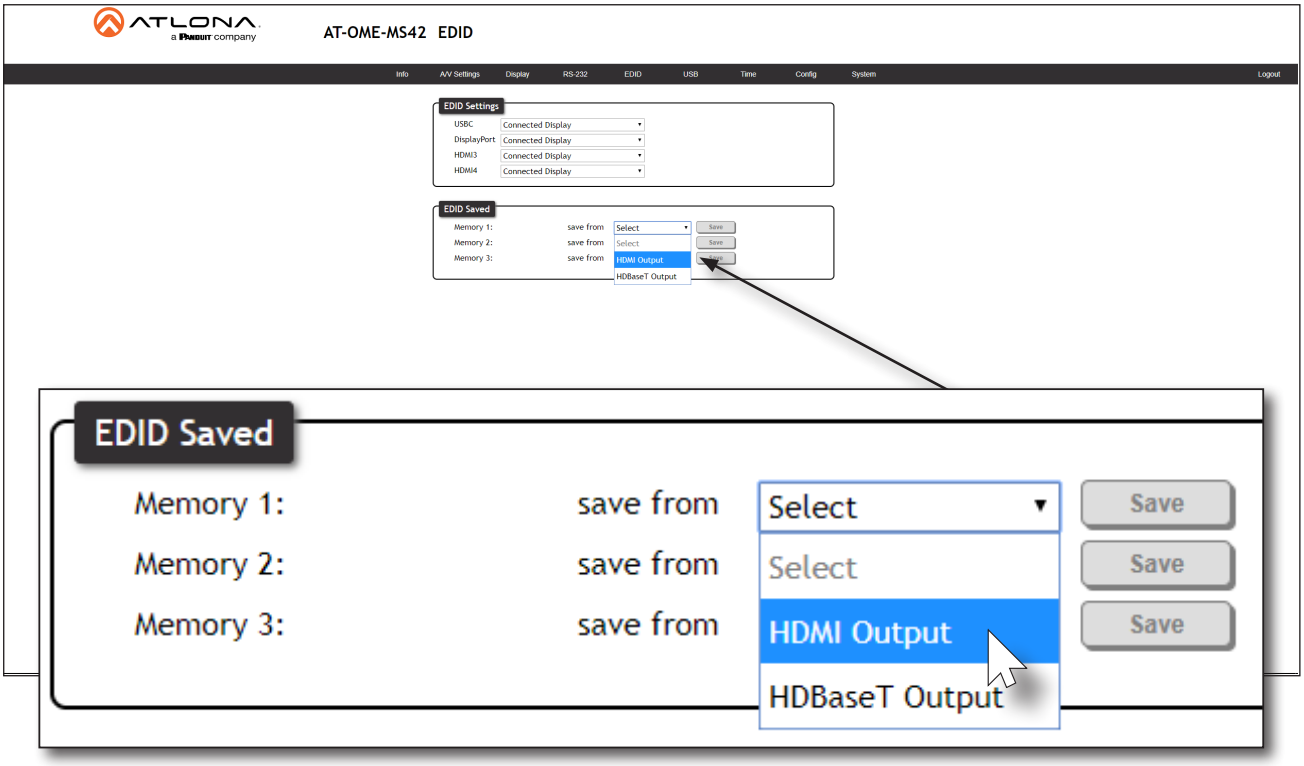
The AT-OME-MS42 provide three memory locations which can be used to store EDID data. Any downstream EDID can be captured and stored in these locations. Each memory location is non-volatile and captured EDID data is stored after power is disconnected from the unit.

1. Connect an HDMI cable from the **HDMI OUT** port on the AT-OME-MS42 to the HDMI input on the display, containing the EDID to be stored.
2. Login to the web server. Refer to Introduction to the Web Server (page 50).

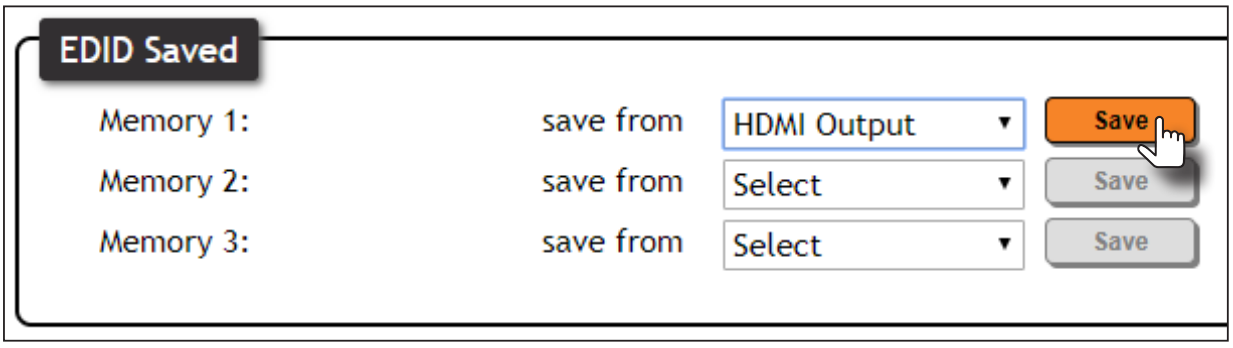



3. Click **EDID** in the menu bar.
4. Locate the **EDID Saved** section.
5. Click the drop-down list, next to the memory location to be used, and select the output which will be used to fetch the EDID. Refer to the next page for more information.

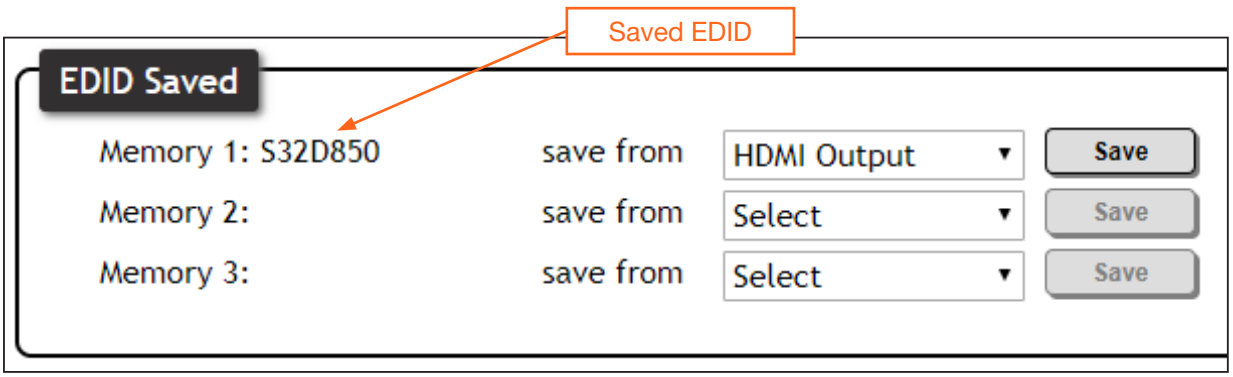
In this example, since the display is connected to the **HDMI OUT** port on the AT-OME-MS42, the **HDMI Output** option is selected. Here, the EDID will be stored in **Memory 1**.



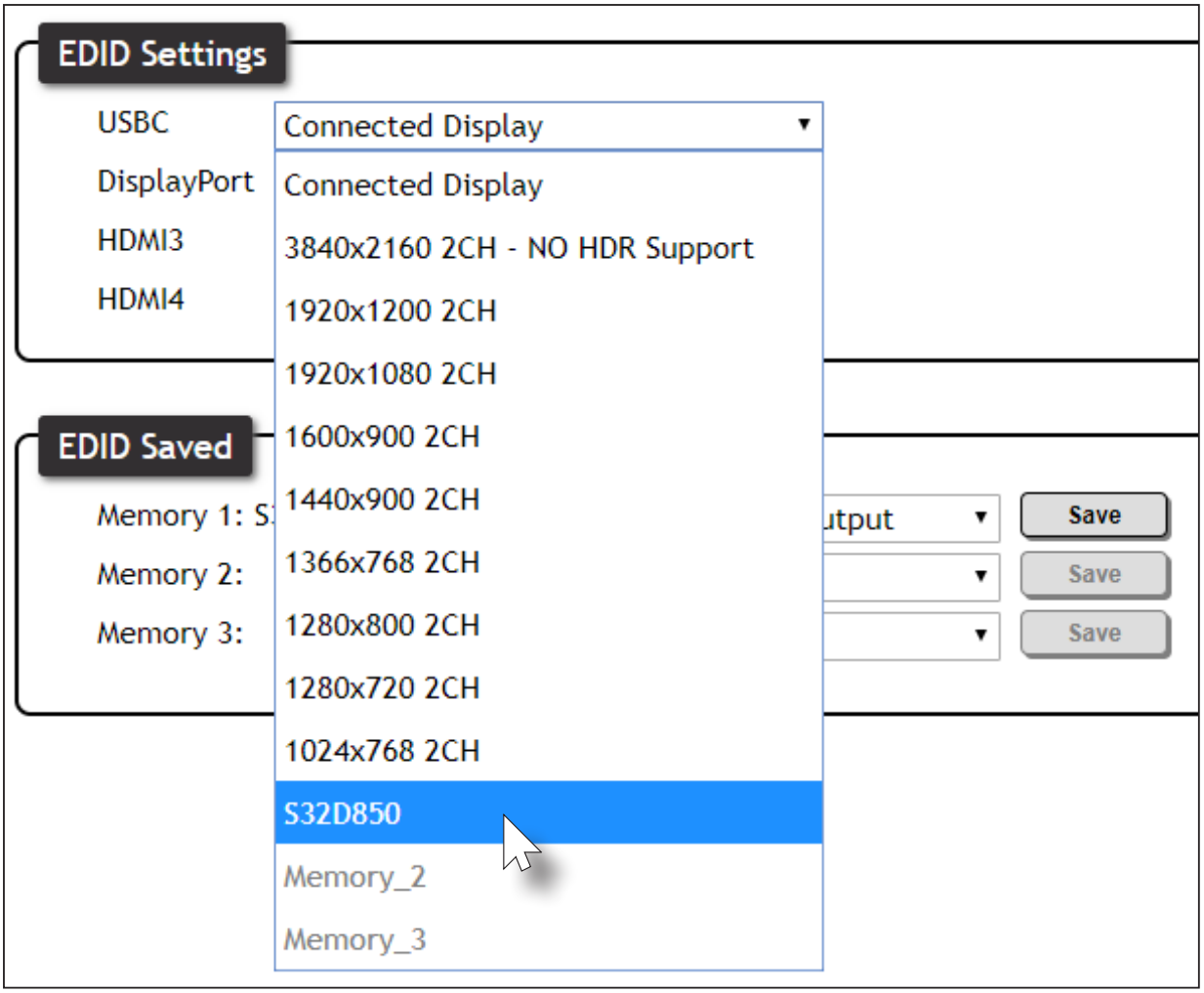

6. Click the **Save** button next to the drop-down list for the memory location.




7. The saved EDID will appear next to the memory location, as shown below.



8. Click any of the input drop-down list boxes. Note that the stored EDID appears as an available EDID preset for each available input on the AT-OME-MS42.




9. The EDID storing procedure is completed.

**NOTE:** Once an EDID is written to a memory location, it can be overwritten with a different EDID, when desired. To overwrite an EDID with a different EDID, repeat steps 5 through 7, above.

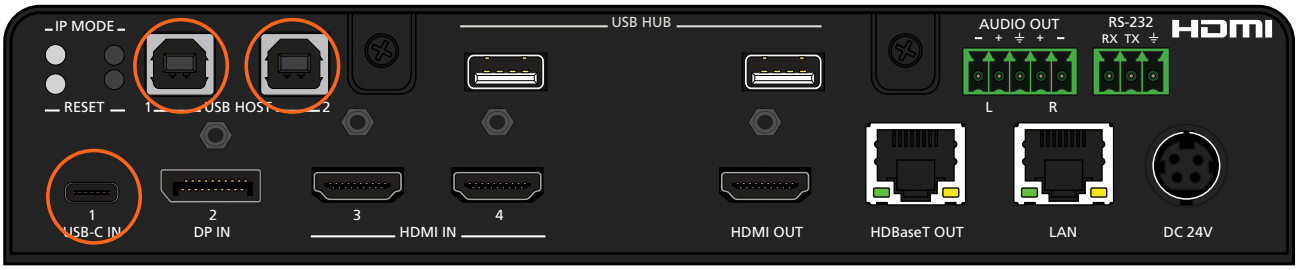
# USB Modes

The AT-OME-MS42 provides three different USB modes: **Follow USB**, **Manual**, and **Follow Video**. Each mode provides different method of controlling USB, based on how the system is connected. All three modes will be covered in this section.

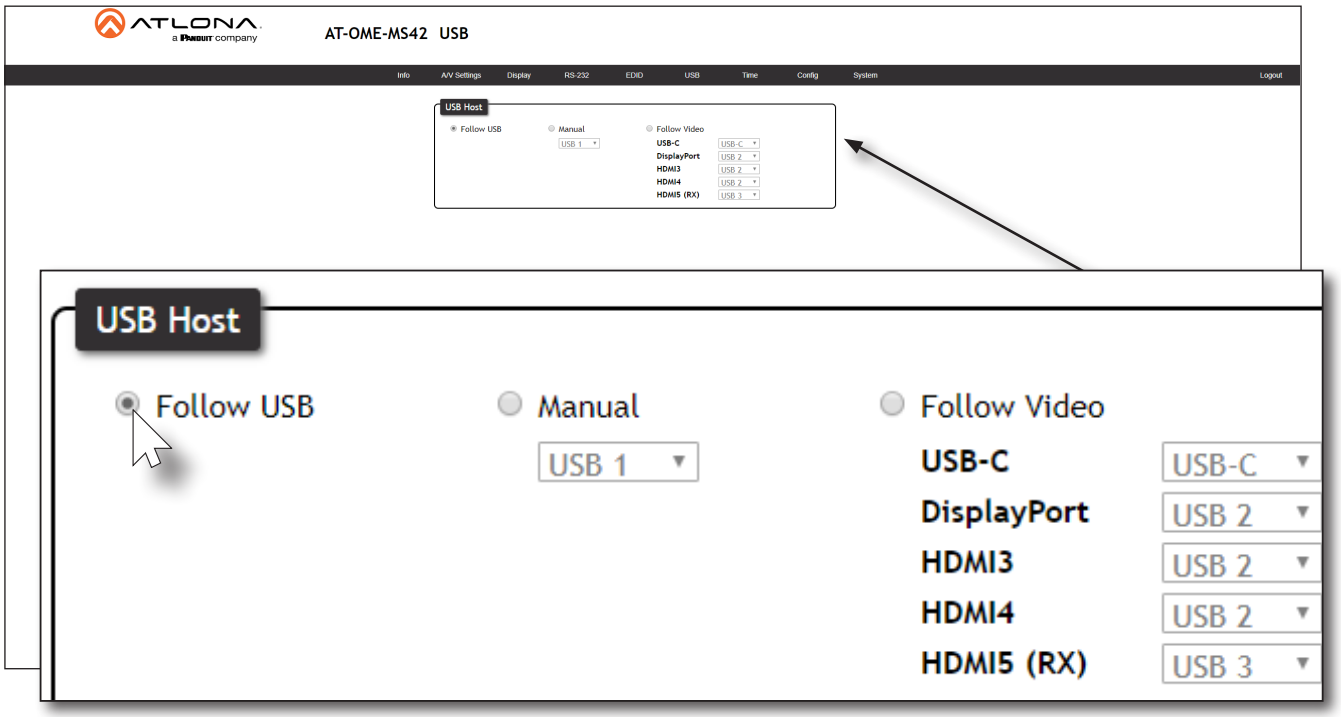
## Follow USB

This is the default mode and functions similar to auto-switching for video. In this mode, the AT-OME-MS42 will detect which USB ports are connected to a host device. If both USB host ports are connected to host devices, then the AT-OME-MS42 will set the last-connected USB host device as the "active" USB host. Use the procedure below to enable Follow USB mode.

1. Connect the host computers to the USB host ports, as desired. Note that it is not required that both USB host ports be connected to host devices.




2. Login to the web server. Refer to Introduction to the Web Server (page 50).
3. Click **USB** in the menu bar.
4. The **Follow USB** radio button should already be enabled. If not, click this radio button to enable **Follow Video** mode.



Once set to **Follow USB** mode, the AT-OME-MS42 will exhibit the following behavior:

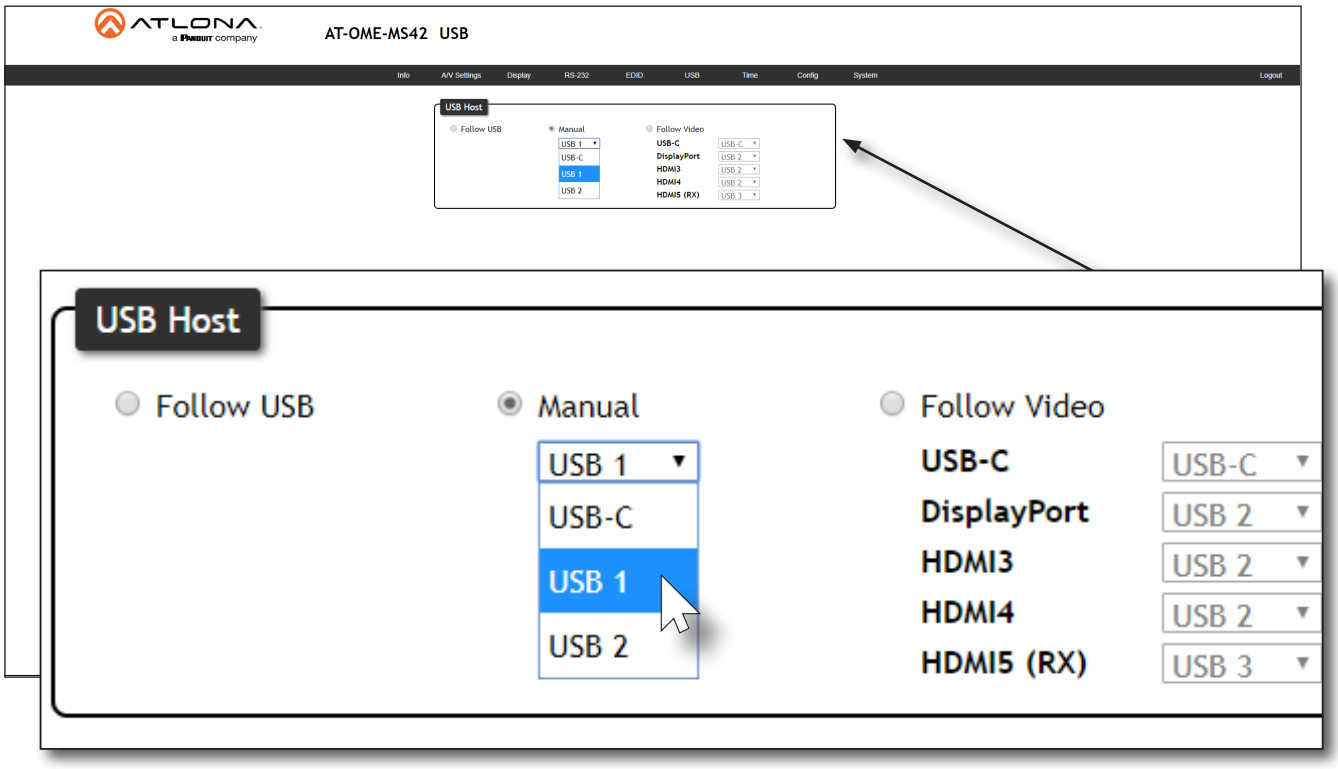
- If only one USB host port is connected, then the AT-OME-MS42 will use the USB host device connected to that port.
- If an another USB host device is connected to the vacant USB host port, then the AT-OME-MS42 will automatically switch to that USB host device.
- If *both* **USB 1** and **USB 2** host ports are connected, then the AT-OME-MS42 will switch to the USB port that was connected *last*.
- If *both* **USB 1** and **USB 2** host ports are connected, and one USB host port is disconnected, then the AT-OME-MS42 will automatically switch to the opposite USB host port.

5. Follow USB configuration is complete.

### Manual

This mode provides manual selection of the USB host port to be used.

1. Connect the host computers to the USB host ports, as desired. Note that it is not required that both USB host ports be connected to host devices.
2. Login to the web server. Refer to Introduction to the Web Server (page 50).
3. Click **USB** in the menu bar.
4. Click the **Manual** radio button.
5. Click the drop-down list, under the Manual radio button, to select the desired USB port.
6. Manual USB configuration is complete.



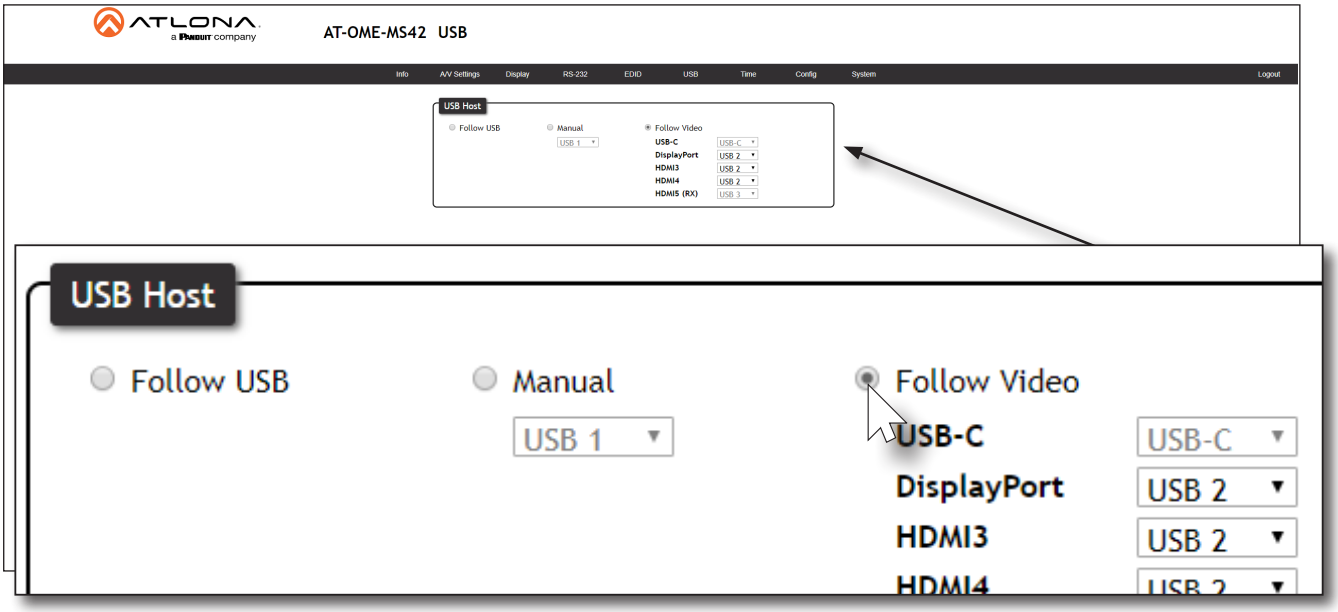
## Follow Video

In this mode, each video input can be assigned to either **USB 1** or **USB 2** host ports. This mode locks the USB host device to the desired video input. Each host device will have access to the same USB devices, when video switching occurs.

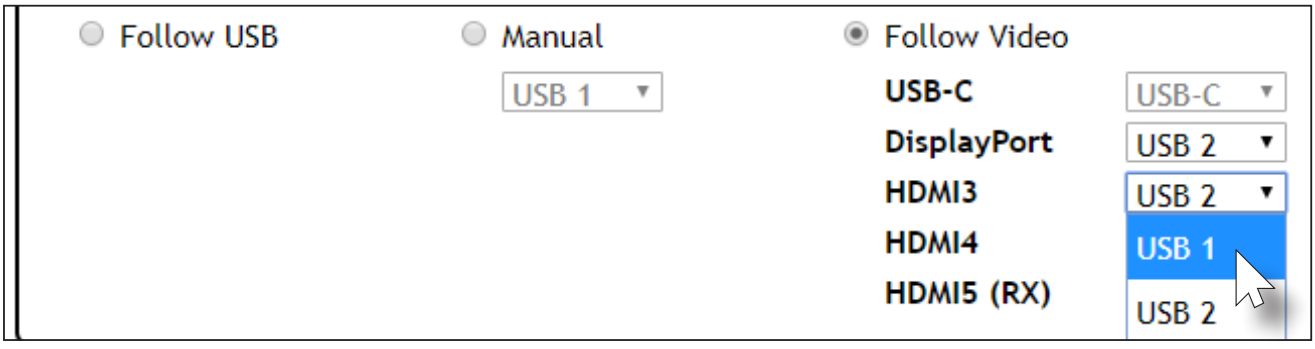
**IMPORTANT:** Follow Video mode is not available when the AT-OME-MS42 is set to either Matrix Mode or Matrix Mode w/ Static Route. Refer to Matrix Mode (page 17) or Matrix Mode w/ Static Route (page 19) for more information.

1. Connect the host computers to the USB host ports. Note that it is not required that both USB host ports be connected to host devices.
2. Login to the web server. Refer to Introduction to the Web Server (page 50).
3. Click **USB** in the menu bar.
4. Click the **Follow Video** radio button. The factory-default **USB Host** assignments for Input 1 through Input 4 are shown in the illustration below.

**NOTE:** Refer to the HDMI5 (RX) port, in the dialog box, below. Although the AT-OME-MS42 has four physical video inputs, a receiver with an HDMI input is considered a fifth input. Also note the presence of a third USB port.




5. Click the drop-down list, next to the input, to assign the desired USB host port to the input. In the example below, HDMI IN (3) is being assigned to USB 1. HDMI IN (4) will be assigned to USB 2.



6. Press the **HDMI OUT** input selection button on the front panel and select **HDMI 3**.

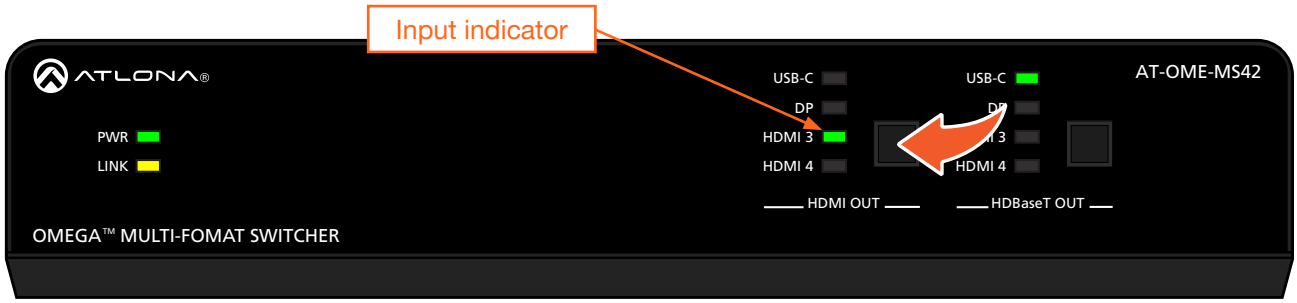
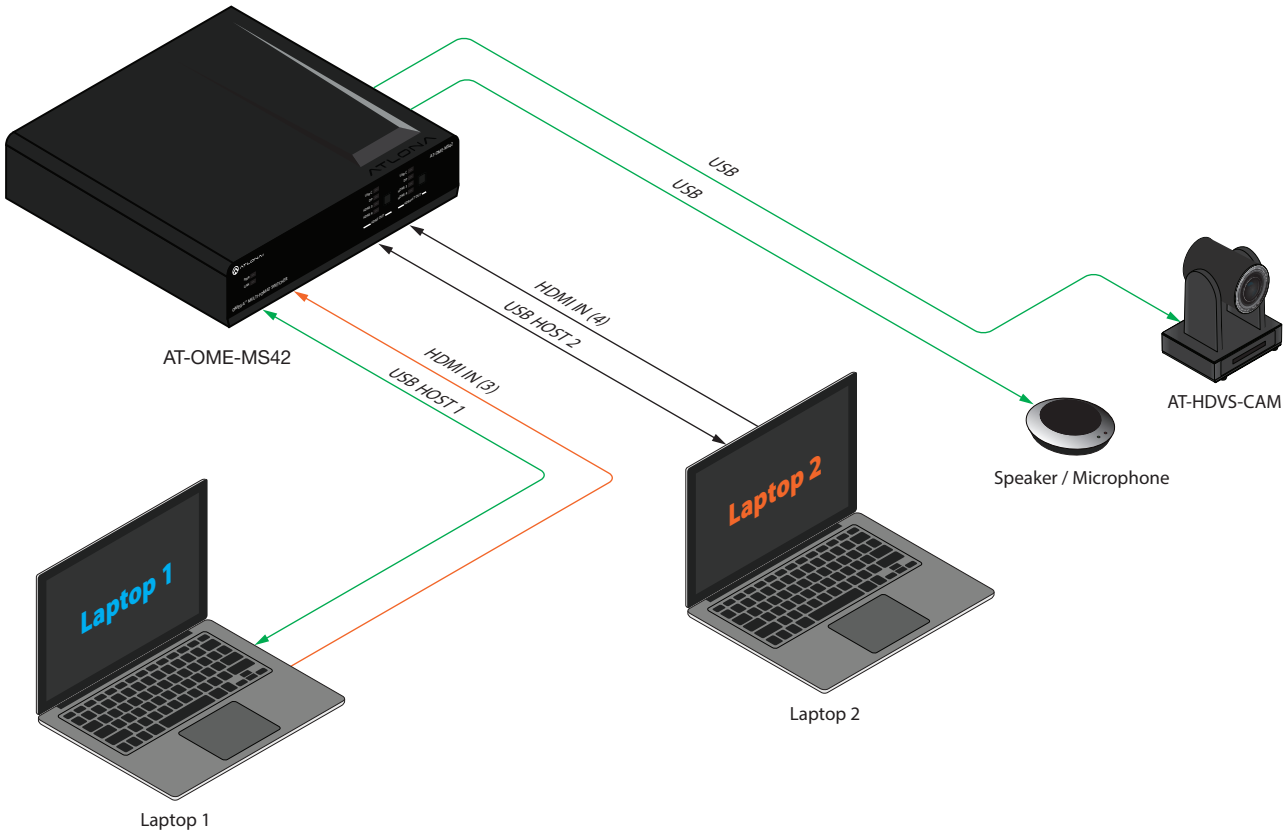
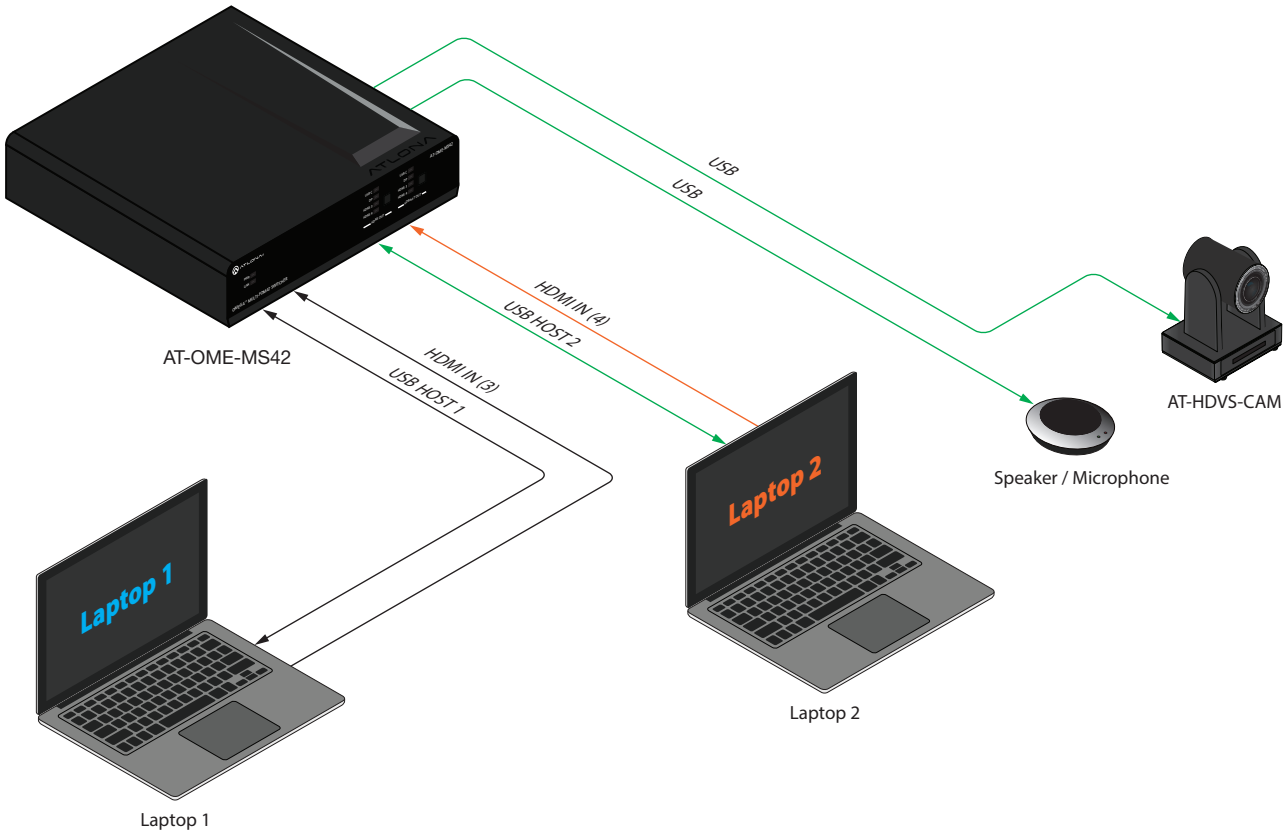



*Figure 1.1 - HDMI 3 is selected as the active video input and Laptop 1 has access to the speaker/mic and the AT-HDVS-CAM. Black signal lines indicate that the AT-OME-MS42 is not switched to that input.*



7. Press the **HDMI OUT** input selection button on the front panel and select **HDMI 4**.

*Figure 1.2 - In step 5, HDMI 4 was assigned to USB host port 2. HDMI 4 is now the active video input and Laptop 2 has access to the speaker/mic and the AT-HDVS-CAM. Black signal lines indicate that the AT-OME-MS42 is not switched to that input.*

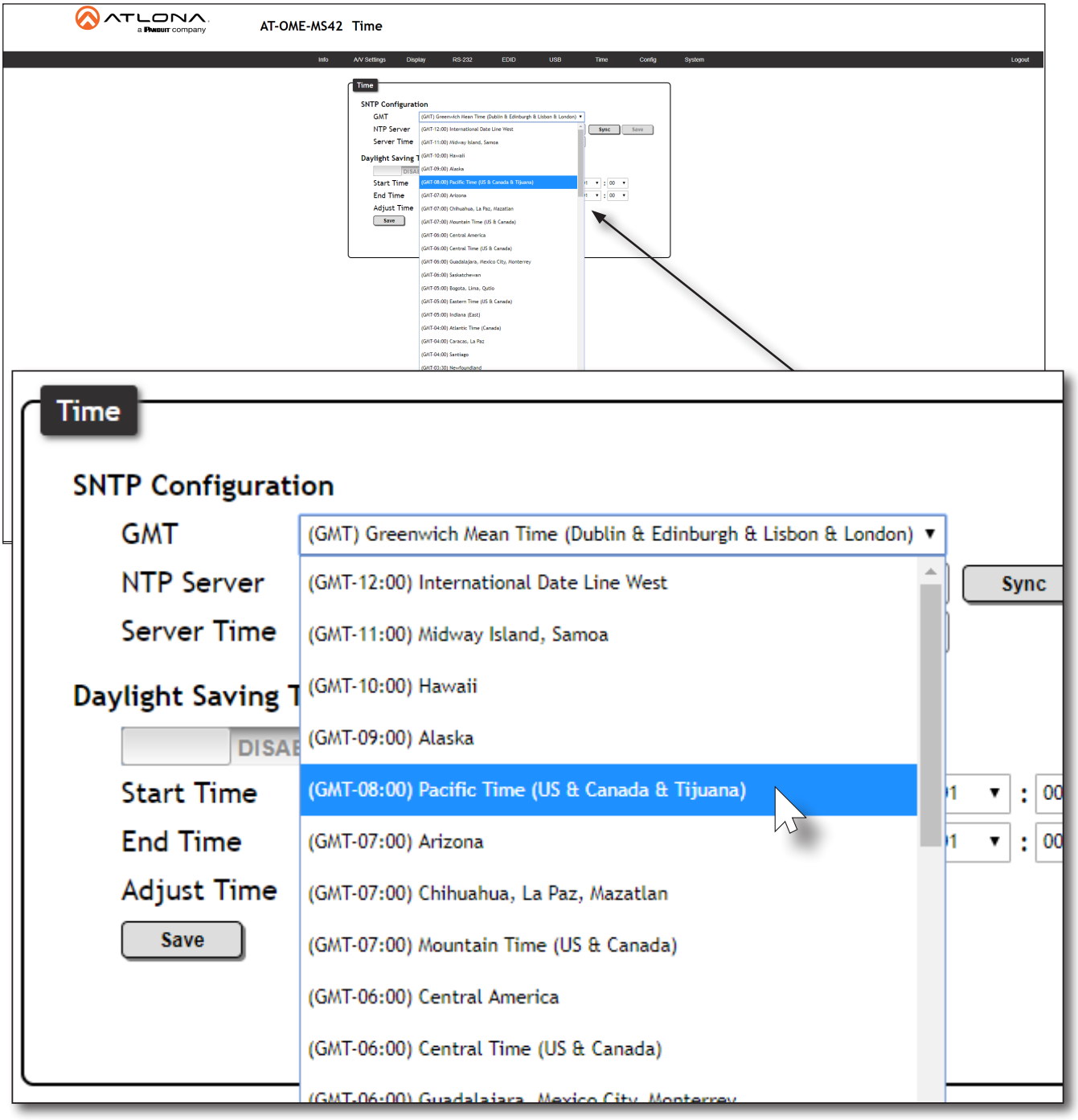


# Setting the System Date and Time

The AT-OME-MS42 uses the internal clock to store the current date and time. Time can be set using either local time or by assigning a Network Time Protocol (NTP) server.

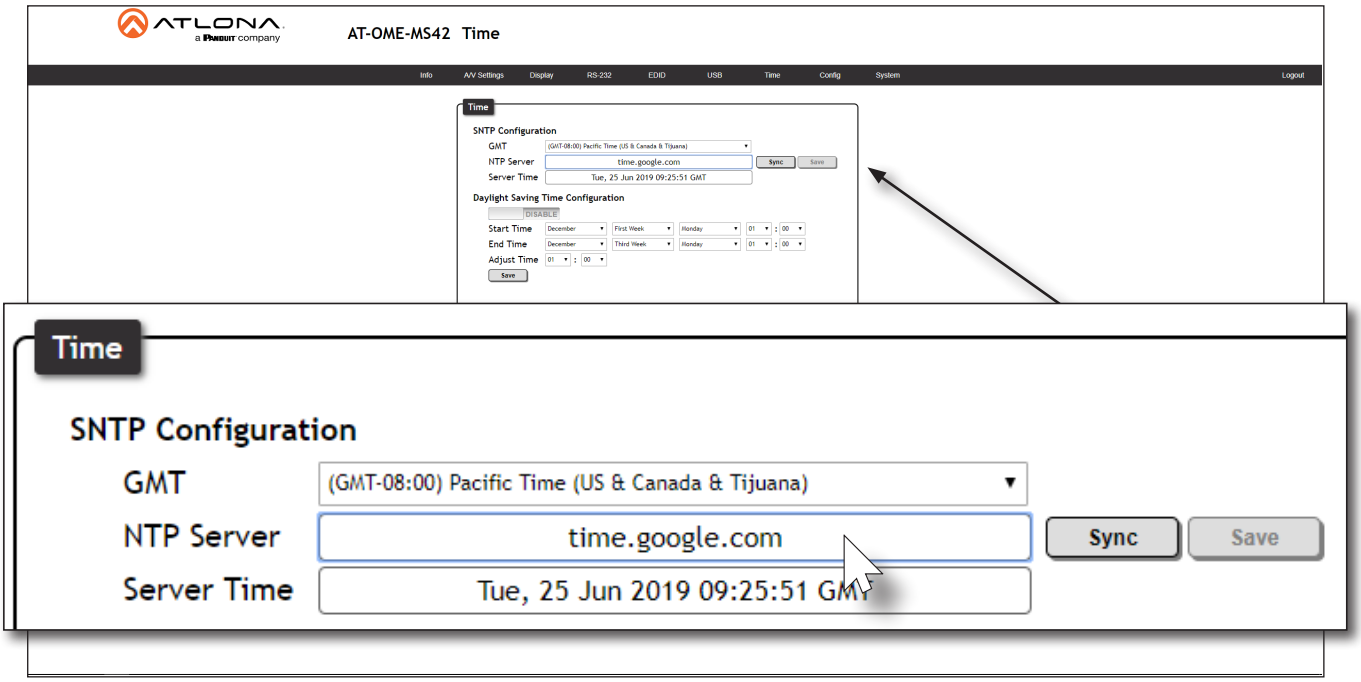
## Setting Local Time

1. Login to the web server. Refer to Introduction to the Web Server (page 50).
2. Click **Time** in the menu bar.
3. Click the **GMT** drop-down list and select the time for the current region.



## Using an NTP Server

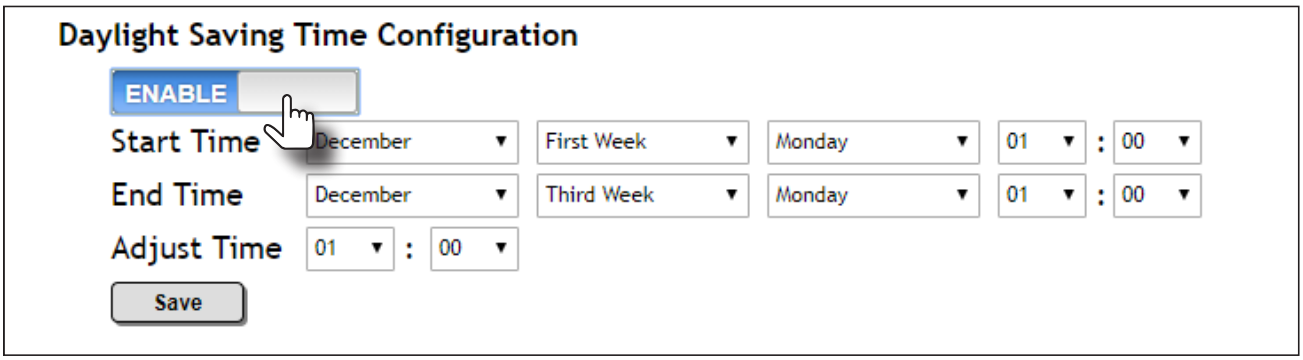
1. Login to the web server. Refer to Introduction to the Web Server (page 50).
2. Click **Time** in the menu bar.
3. Click the **NTP Server** field. The default NTP server is set to time.google.com.
4. Delete the contents of this field and enter the desired NTP server.
5. Click the **Sync** button to synchronize the AT-OME-MS42 clock with the NTP server time.
6. Click the **Save** button to commit changes.



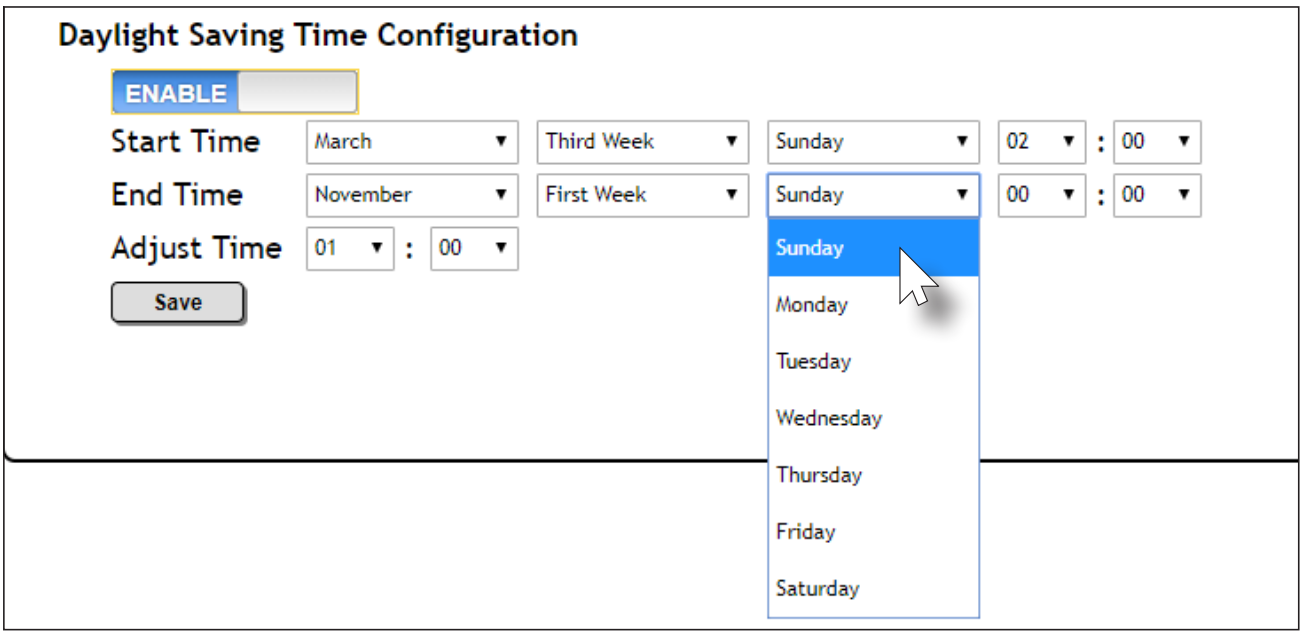

## Daylight Saving Time (DST)

The AT-OME-MS42 provides the option to adjust the internal clock to compensate for Daylight Saving Time, depending on the region. Daylight Saving Time is disabled, by default.

1. Login to the web server. Refer to Introduction to the Web Server (page 50).
2. Click **Time** in the menu bar.
3. Under **Daylight Saving Time Configuration**, click the toggle switch to the **ENABLE** position.



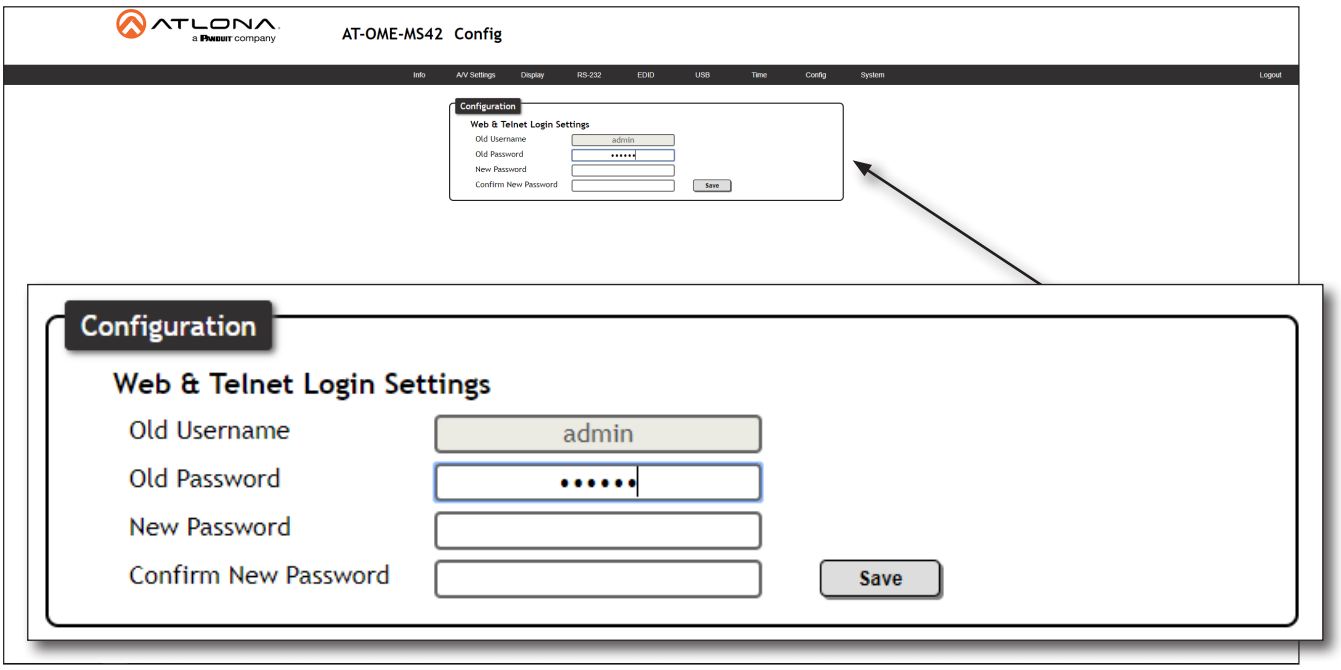
4. In the **Start Time** row, set the DST starting time by clicking the drop-down lists for month, week, day, hour, and minute.
5. Repeat the same procedure for the **End Time** row.
6. In the **Adjust Time** row, set the offset time. This time is the number of hours which Daylight Saving Time affects the local time.
7. Click the **Save** button to commit changes.



## Password Management

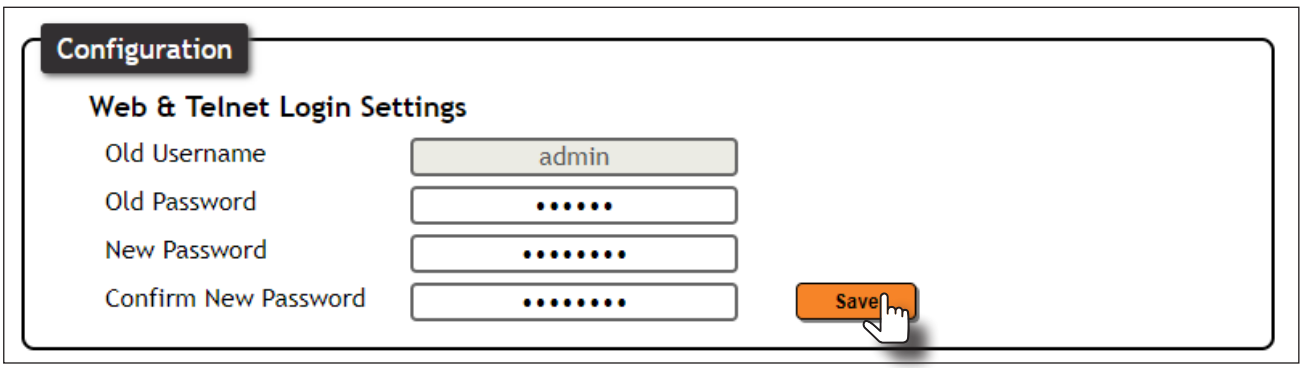
The AT-OME-MS42 allows the administrator password to be changed. The password applies to both the web server and Telnet sessions. Note that the Username cannot be changed.

1. Login to the web server. Refer to Introduction to the Web Server (page 50).
2. Click **Config** in the menu bar.
3. Click the **Old Password** field and enter the current password.




4. Enter the new password in the **New Password** field.
5. Retype the new password in the **Confirm New Password** field.
6. Click the **Save** button to commit changes. To login with the new username, click **Logout** in the upper-right corner of the screen, then enter the new password on the **Login** page.

**NOTE:** Password fields will always be masked for security purposes.

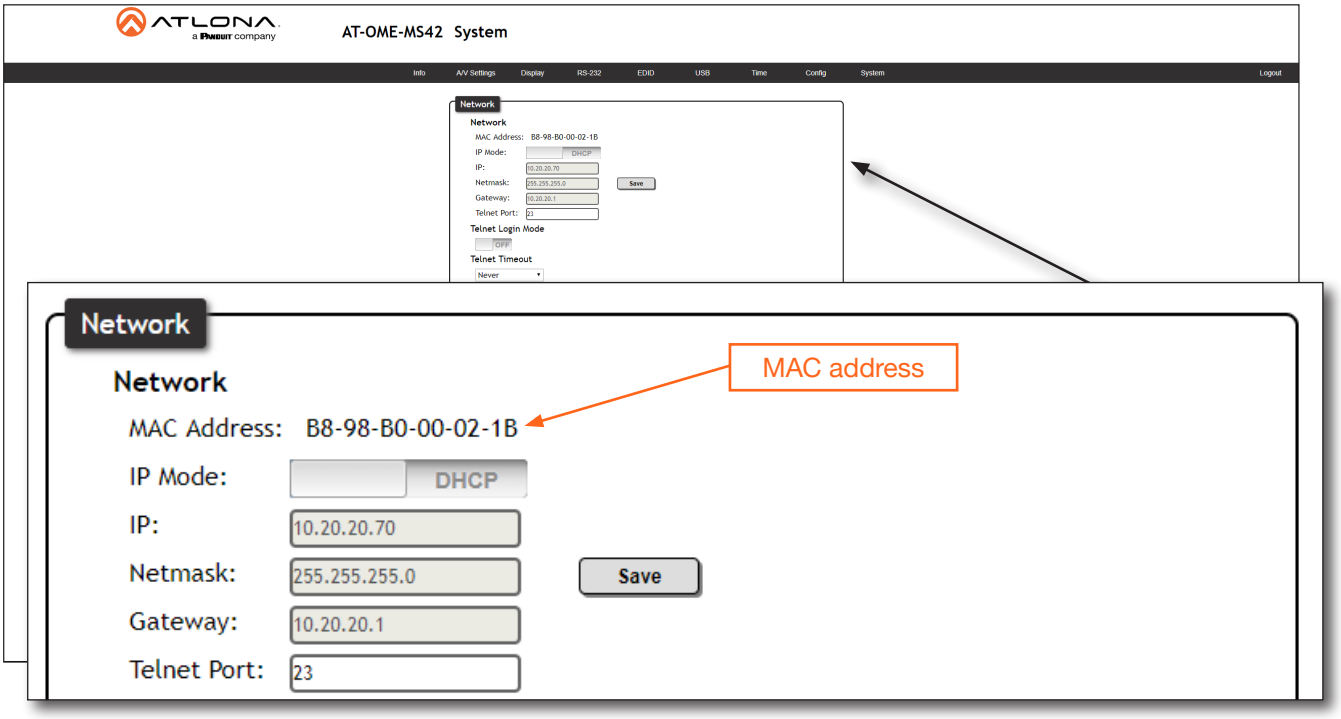


# System Configuration

The AT-OME-MS42 provides easy access to system configuration through the built-in web server, and is the recommended method to adjust network settings.

## Getting the MAC Address

1. Login to the web server. Refer to Introduction to the Web Server (page 50).
2. Click **System** in the menu bar.
3. Locate the MAC address field, as shown below. This is the hardware address of the AT-OME-MS42.



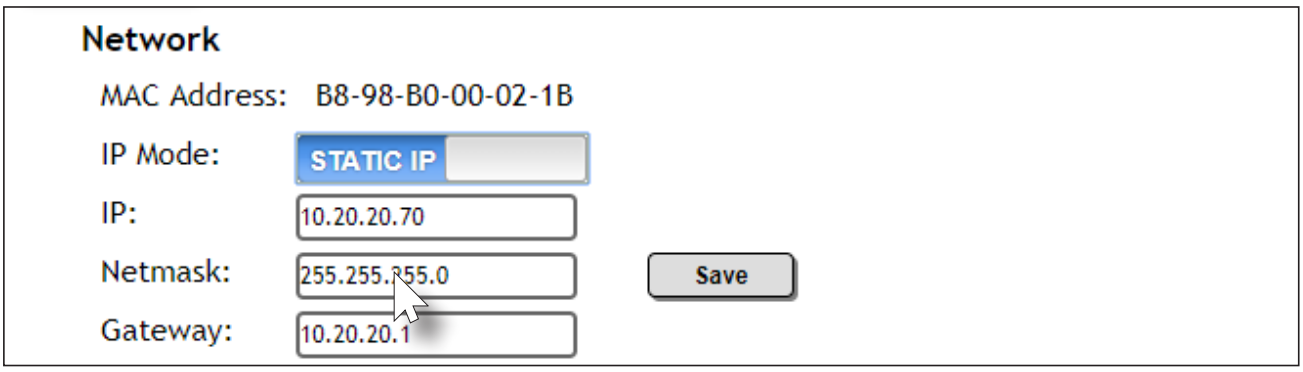

## Changing the Network IP Mode

By default, the AT-OME-MS42 is set to DHCP mode. Once connected to a network, and if a DHCP server is found (or available), the AT-OME-MS42 will be assigned an IP address on the network, and no further network configuration is required. However, if the AT-OME-MS42 is unable to detect a DHCP server within 15 seconds, then the unit will use a self-assigned IP address within the range of `169.254.xxx.xxx`. The instructions below will focus on setting the AT-OME-MS42 to static IP mode.

**IMPORTANT:** Before assigning a static IP address to the AT-OME-MS42, it is recommended to consult with the network or system administrator and obtain a available IP address. If the AT-OME-MS42 is assigned an IP address which is already in use by another device, it may cause either network issues and/or the AT-OME-MS42 will be not accessible.

1. Login to the web server. Refer to Introduction to the Web Server (page 50).
2. Click **System** in the menu bar.

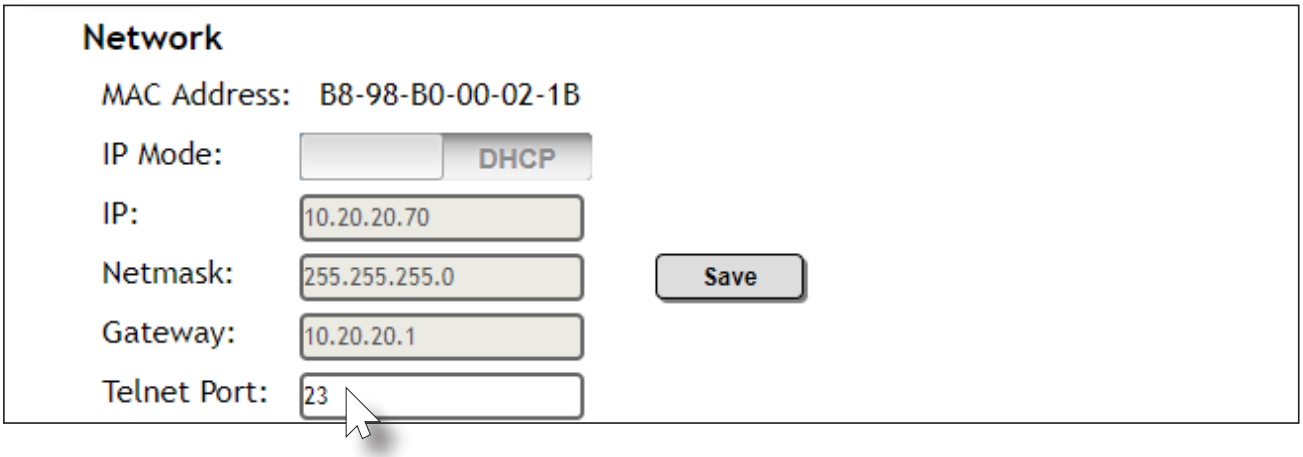
3. Locate the **IP Mode** toggle switch. The default setting of this toggle switch is **DHCP**.
4. Click this toggle switch to set it to **STATIC IP**.
5. Enter the desired IP address for the AT-OME-MS42 in the **IP** field.
6. Enter the subnet mask and gateway address in the **Netmask** and **Gateway** fields, respectively.
7. Click the **Save** button to commit changes. Changes will take effect immediately.




### Changing the Telnet Port

Typically, the Telnet service is assigned to TCP port 23. This is the default setting for the AT-OME-MS42. However, depending upon the network environment, the default Telnet port can be changed.

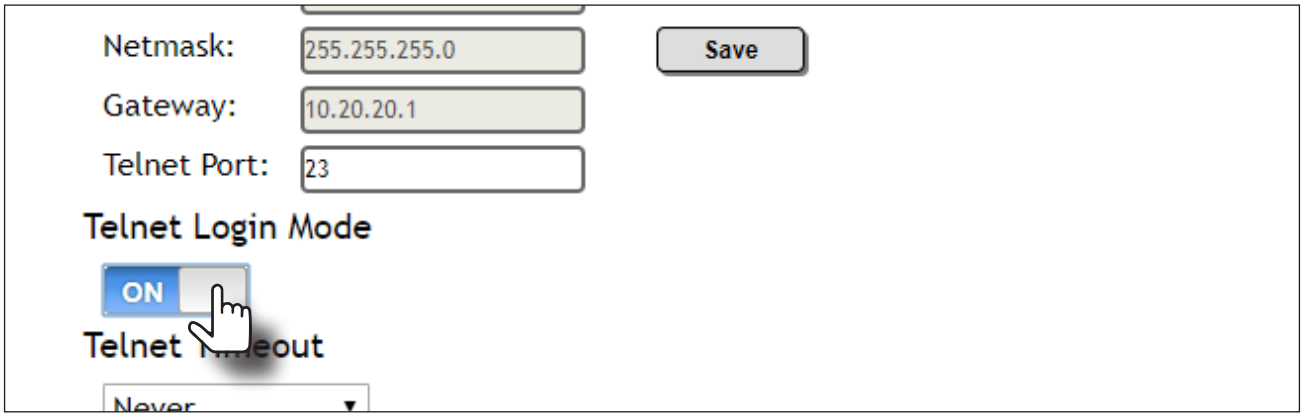
1. Login to the web server. Refer to Introduction to the Web Server (page 50).
2. Click **System** in the menu bar.
3. Locate the **Telnet Port** field and enter the desired port in the field.
4. Click **Save** to commit changes.



### Telnet Login Mode

When a Telnet session is request, the AT-OME-MS42 provides the option to prompt for user credentials or bypass authentication before the Telnet session begins. This credentials prompt option can enabled or disabled. When prompting for user credentials, use the same login information required by the built-in web server.

1. Login to the web server. Refer to Introduction to the Web Server (page 50).
2. Click **System** in the menu bar.
3. Click the **Telnet Login Mode** toggle switch.
   - Set this toggle switch to **ON** to prompt for user credentials.
   - Set this toggle switch to **OFF** to bypass user credentials request.
4. Click **Save** to commit changes.



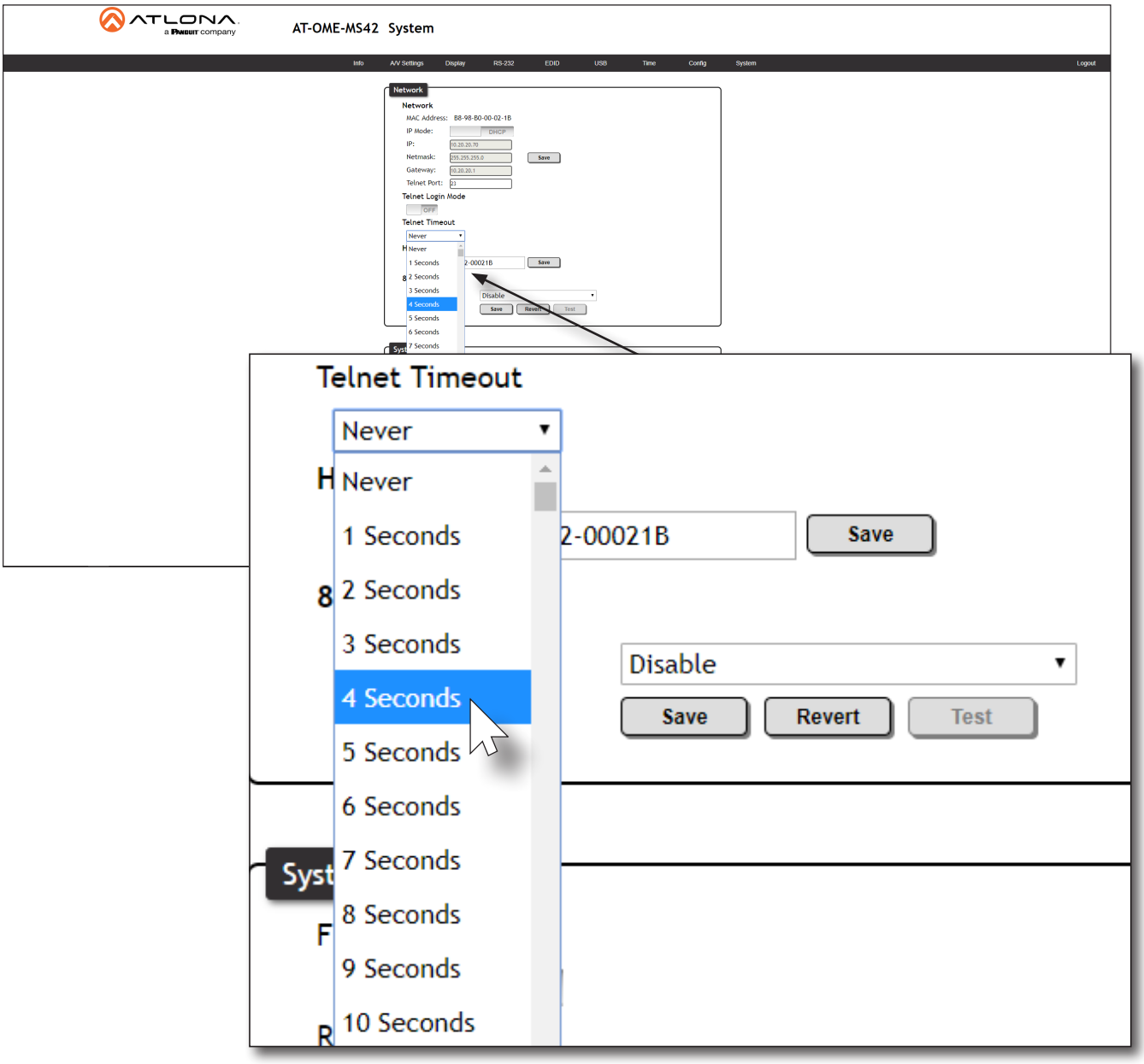
## Adjusting Telnet Timeout

When a Telnet session is active, the AT-OME-MS42 can be set to monitor Telnet activity. If there is no activity within the specified time interval, the Telnet session will automatically be terminated, adding a measure of security.

1. Login to the web server. Refer to Introduction to the Web Server (page 50).
2. Click **System** in the menu bar.
3. Click the **Telnet Timeout** drop-down list and select the desired time-out interval. Values from 1 to 10000 seconds (~166 minutes / 2.76 hours) can be selected.

   **IMPORTANT:** If **Never** is selected, then the Telnet port will stay open until the Telnet session is manually terminated.

4. Click **Save** to commit changes.



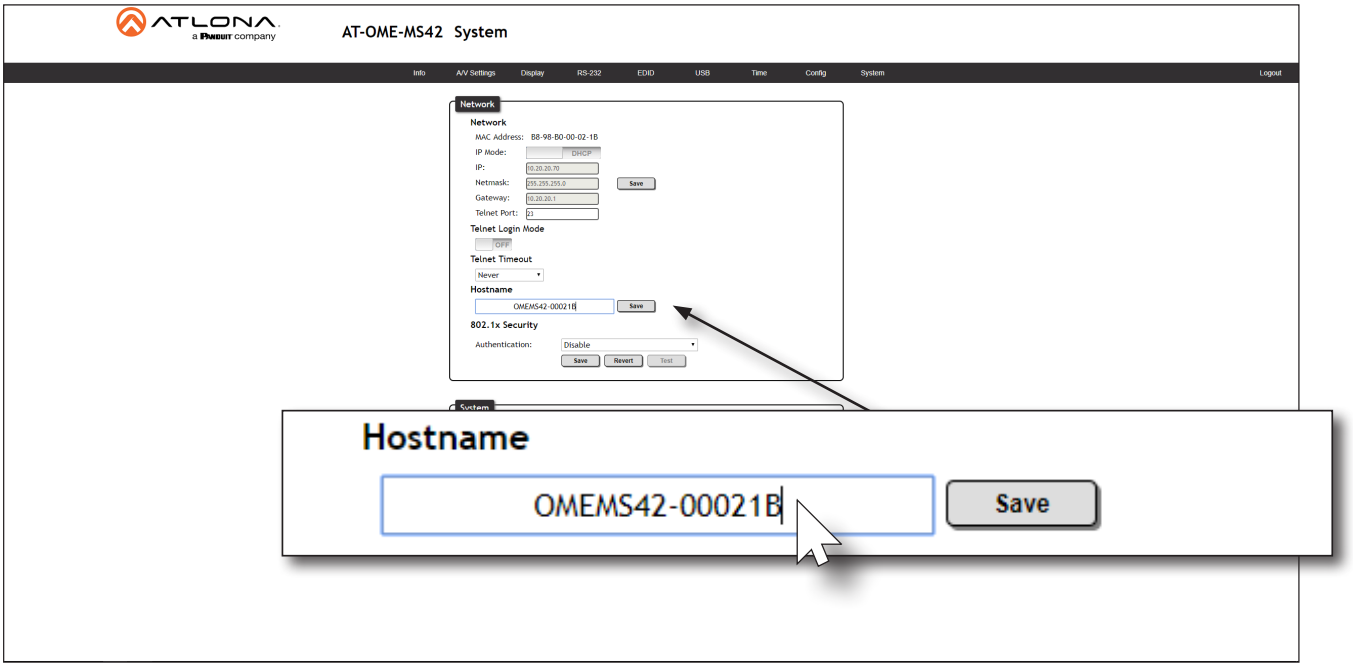
## Setting the Host Name

By default, the AT-OME-MS42 is assgned a hostname, which is constructed as follows:

OMEMS42-[last six digits of MAC address]

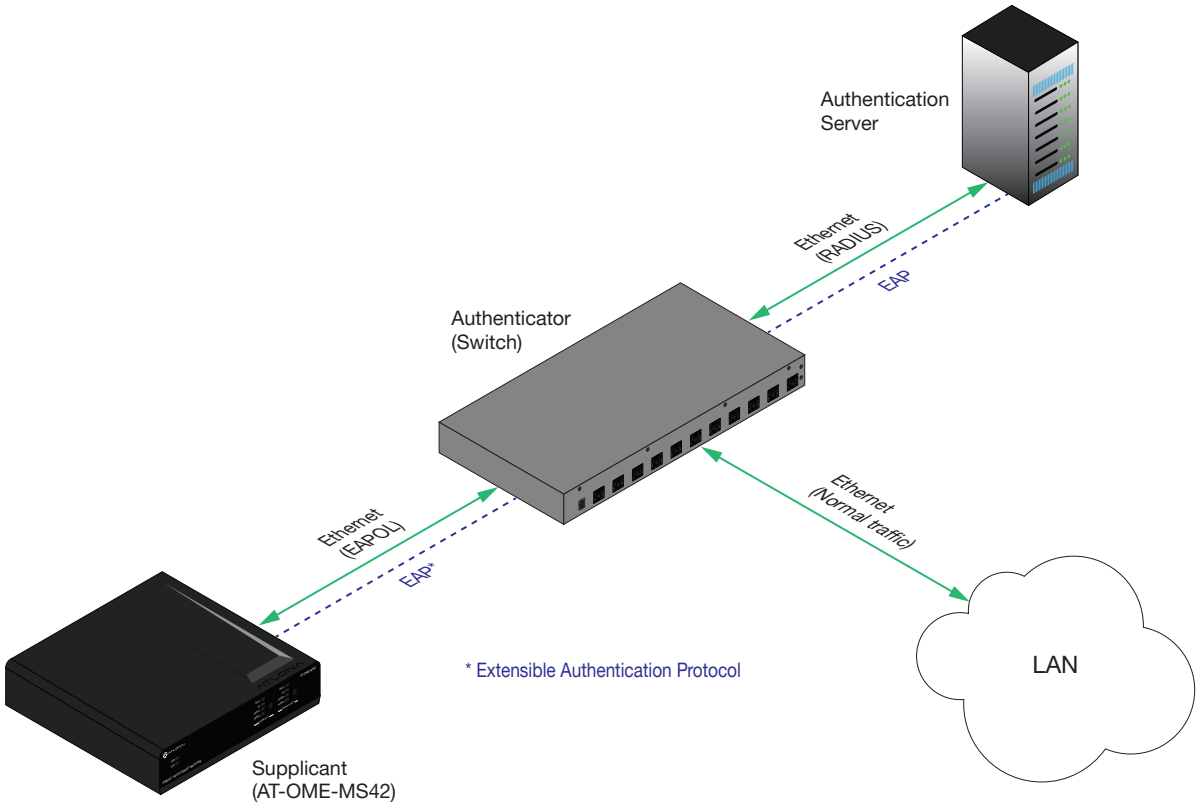
For example, a default hostname might look like this: OMEMS42-00021B. This value can be changed to easily identify the AT-OME-MS42 within the Atlona Management System (AMS) or a network. If using a custom hostname, it must meet the hostname standards, defined here: https://tools.ietf.org/html/rfc1123

1. Login to the web server. Refer to Introduction to the Web Server (page 50).
2. Click **System** in the menu bar.
3. Click the **Hostname** field and enter the desired name.
4. Click **Save** to commit changes.

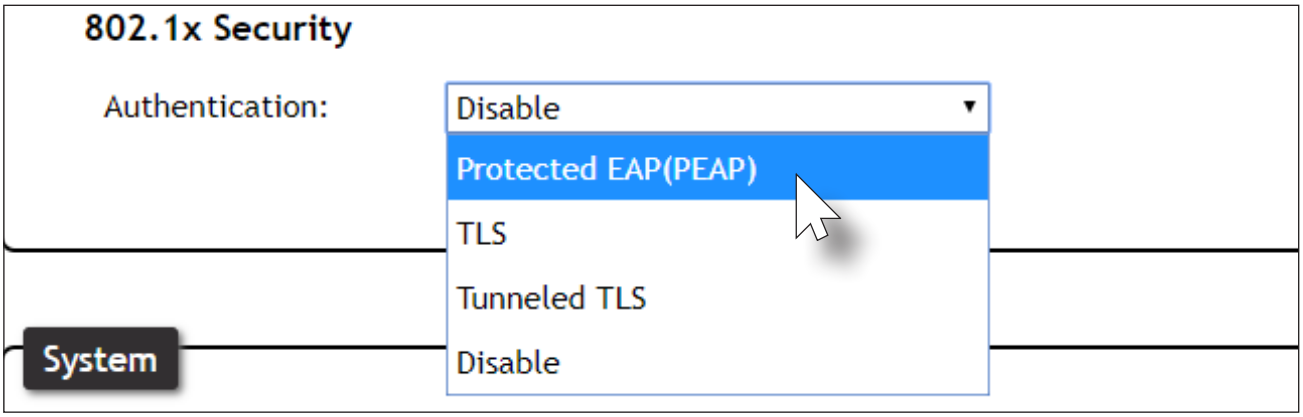


## 802.1X Security

802.1X is a server-based port authentication protocol which restricts unauthorized (rogue) clients from connecting to a Local Area Network through a public port. In its simplest form, 802.1X usually involves three parties: supplicant (client device), authenticator (Ethernet switch), and an authentication server. Before the device is permitted on the network, port communication is restricted to Extensible Authentication Protocol over LAN (EAPOL) traffic.
If the device passes the authentication process, then the authentication server notifies the switch, allowing the client to access the LAN. A full explanation of the 802.1X protocol is beyond the scope of this manual. However, the illustration below shows the basic architecture.

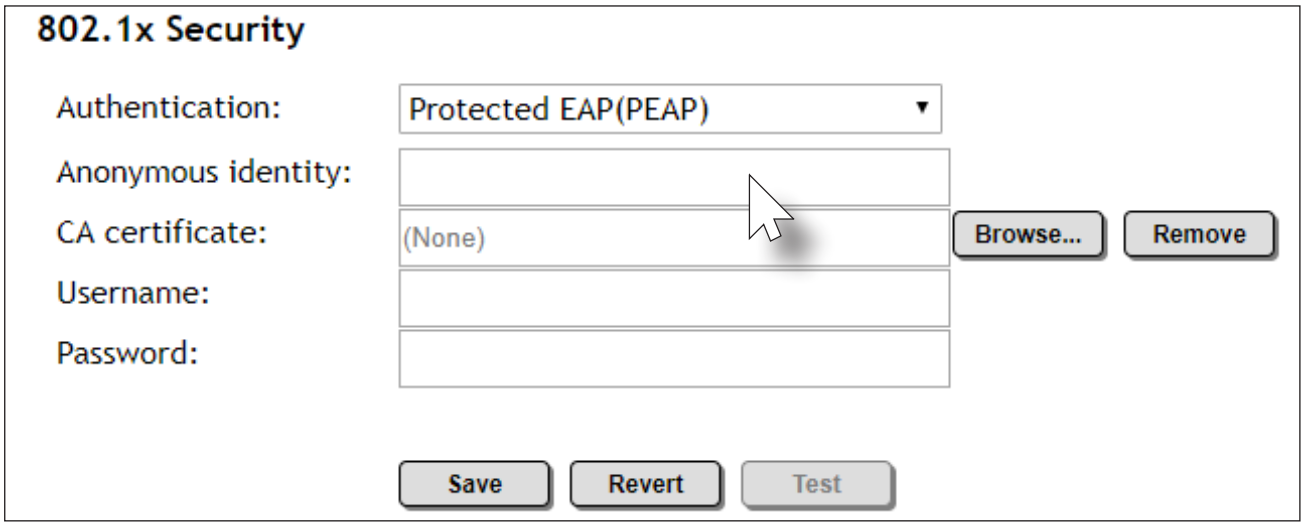



1. Login to the web server. Refer to Introduction to the Web Server (page 50).
2. Click **System** in the menu bar.
3. Under **802.x1 Security**, click the **Authentication** drop-down list and select the desired authentication method. In the example below, **Protected EAP (PEAP)** is selected.



4. Once a method is selected, the required fields for that method will be displayed. Enter the required information in each field. For the Protected EAP (PEAP) option, the fields are described as follows:

   - **Anonymous identity**
     Enter the identity of the authentication server in this field. EAP uses this field to identify the correct authentication server which will process the credentials. For example, if foo@authserv.com is entered, then this identifies AUTHSERV as the RADIUS (authentication) server.
   - **CA certificate**
     Click the **Browse...** button to select the certification authority (CA) certificate. To remove a certificate, click the **Remove** button.
   - **Username**
     Enter the username in this field
   - **Password**
     Enter the password in this field.




5. Click **Save** to commit changes. Click **Test** to verify the authentication process with the RADIUS server.

6. Refer to the table below for a list of available authentication methods. An orange dot indicates that this field will be displayed as part of the method.

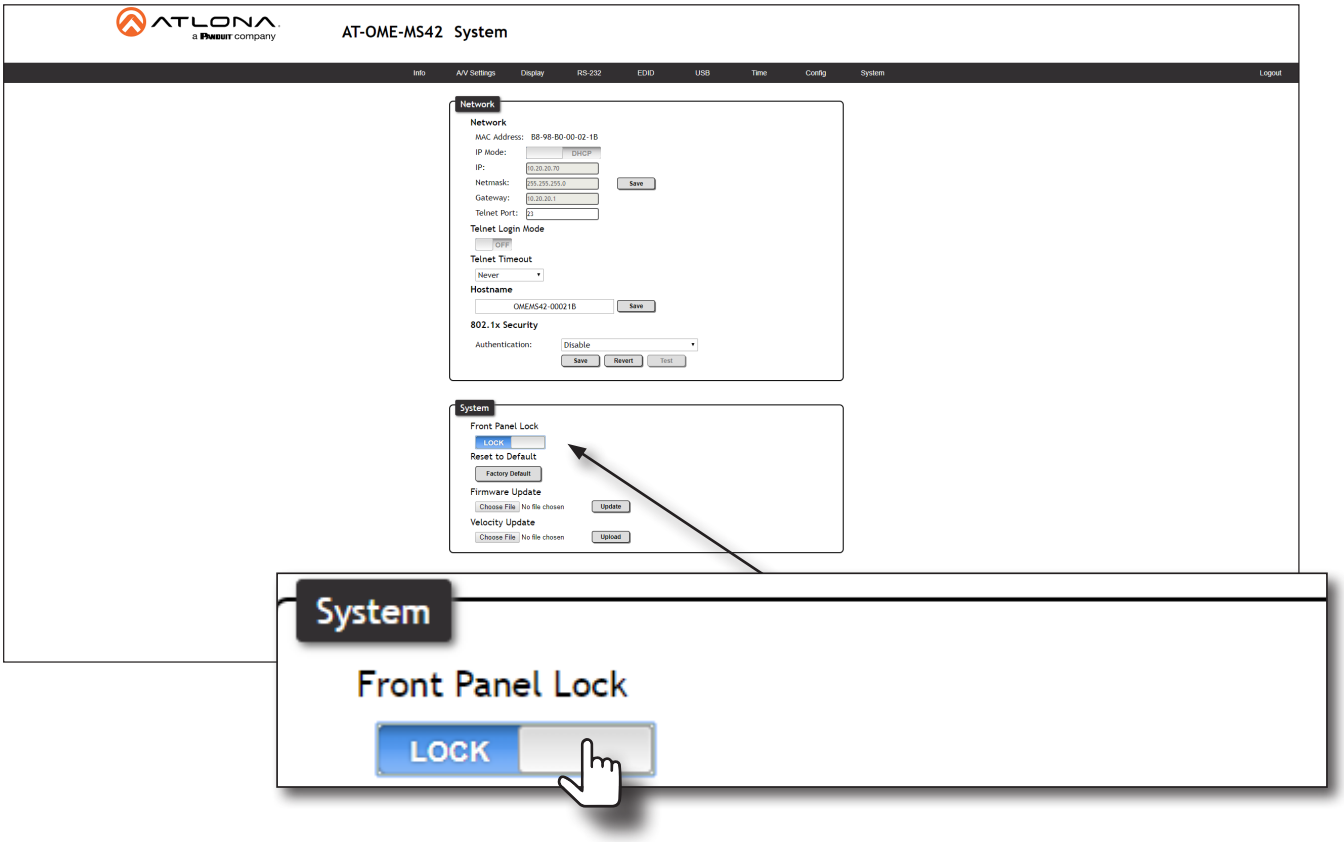
| Auth. Method | Identity | User Certificate | Anonymous Identity | CA Certificate | Username | Password | Private Key | Private Password |
|---|---|---|---|---|---|---|---|---|
| Protected EAP (PEAP) | | | ● | ● | ● | ● | | |
| TLS | ● | ● | | ● | | | ● | ● |
| Tunneled TLS | | | ● | ● | ● | ● | | |

7. To disable 802.1x authentication, click the **Authentication** drop-down list and select **Disable**.

## Locking / Unlocking the Front Panel

To prevent accidental pressing of the front panel buttons, the front panel buttons can be locked. This may be desirable if, for example, the AT-OME-MS42 is installed in a rack environment. By default, the front panel buttons are unlocked.

1. Login to the web server. Refer to Introduction to the Web Server (page 50).
2. Click **System** in the menu bar.
3. Click the **Front Panel Lock** toggle switch to lock the buttons on the front panel. When the front panel is locked, the toggle switch will display the **LOCK** setting.

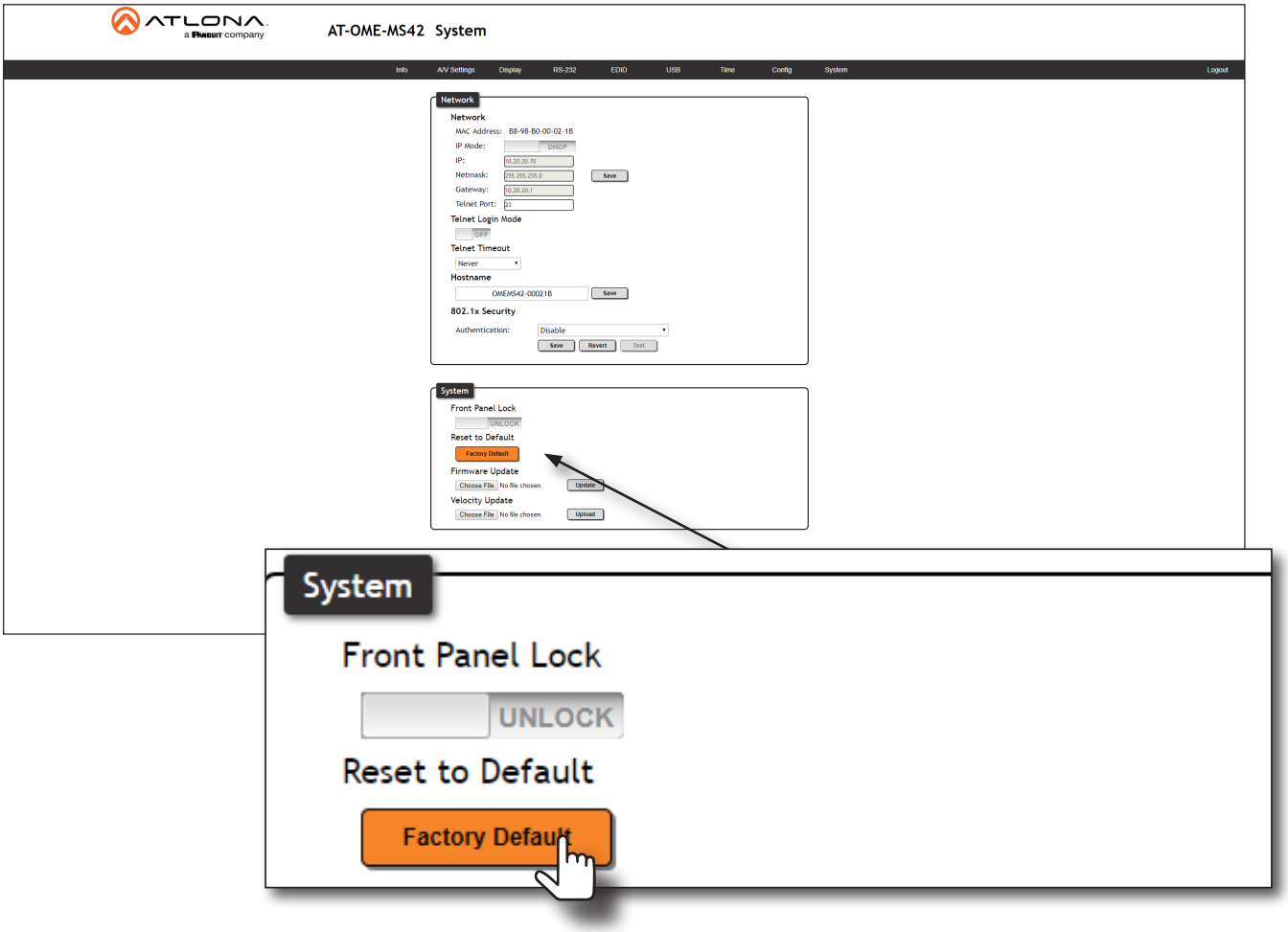



4. To unlock the front panel, click the **Front Panel Lock** toggle switch again to set it to **UNLOCK**.

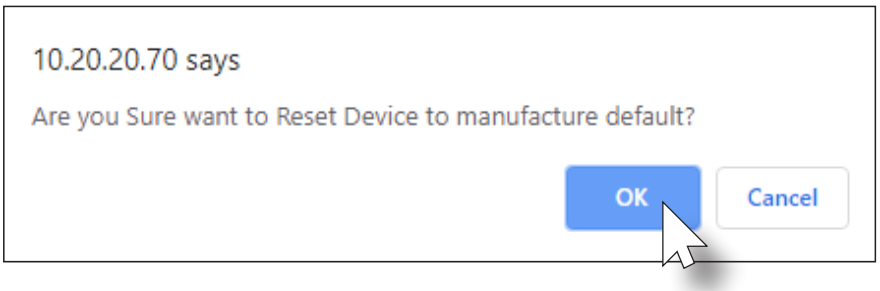
## Resetting to Factory-Default Settings

The following procedure will reset the AT-OME-MS42 to factory-default settings. The network IP mode will be set to DHCP mode.

1. Login to the web server. Refer to Introduction to the Web Server (page 50).
2. Click **System** in the menu bar.
3. Click the **Factory Default** button.




4. The following message will be displayed at the top of the screen. Click **OK** to continue with the factory-default reset procedure. Click **Cancel** to abort the process.



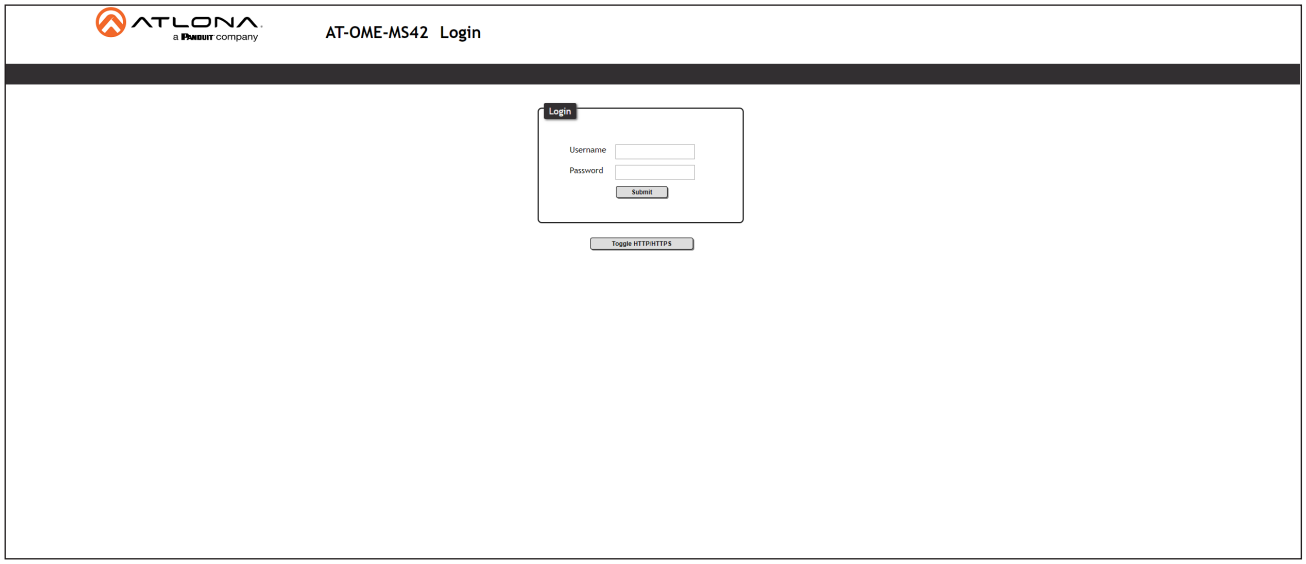

5. Once the factory-default process is complete, the web server **Login** screen will be displayed.
6. The reset process is complete.

# Configuration and Management Interfaces

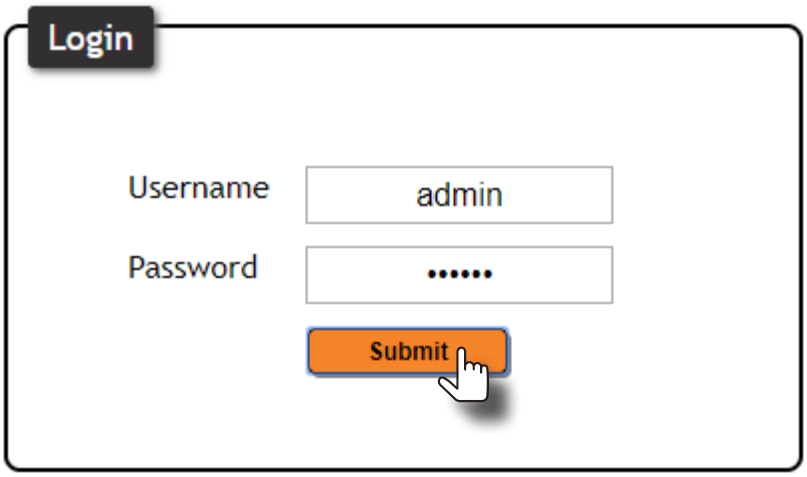
## Introduction to the Web Server

The AT-OME-MS42 includes a built-in web server. Atlona recommends that the web server be used to set up the AT-OME-MS42, as it provides intuitive management of all features. Follow the instructions below to access the webGUI.

1. Make sure that an Ethernet cable is connected between the LAN port on the AT-OME-MS42 and the network.
2. Launch a web browser and enter the IP address of the unit. If the default static IP address is being used, enter `192.168.1.254`.
3. The AT-OME-MS42 **Login** page will be displayed.




4. Type admin, 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.
6. Click the **Submit** button or press the ENTER key on the keyboard.



## Info Page

The **Info** page provides various information about the AT-OME-MS42, including software version and video information.

### System Info

**Model Name**
The model SKU of this product.

**Software Version**
The version of firmware that the AT-OME-MS42 is running. Always make sure to check the AT-OME-MS42 product page, on the Atlona web site, for the latest version of firmware.

**Valens Version**
The version of firmware used by the Valens chipset. Always make sure to check the AT-OME-MS42 product page, on the Atlona web site, for the latest version of firmware.

**On-Time(d-h:m:s)**
Displays how long the system has been powered since the last reboot/reset.

**Rx Type**
If a receiver is connected to the AT-OME-MS42, then it will be displayed in this field. Otherwise, "Unknown" will be displayed if no receiver is connected.

### Video Info

**Active Input**
The currently selected (active) input.

**Signal Type**
The type of input signal.

**Video Format**
The input resolution of the source device.

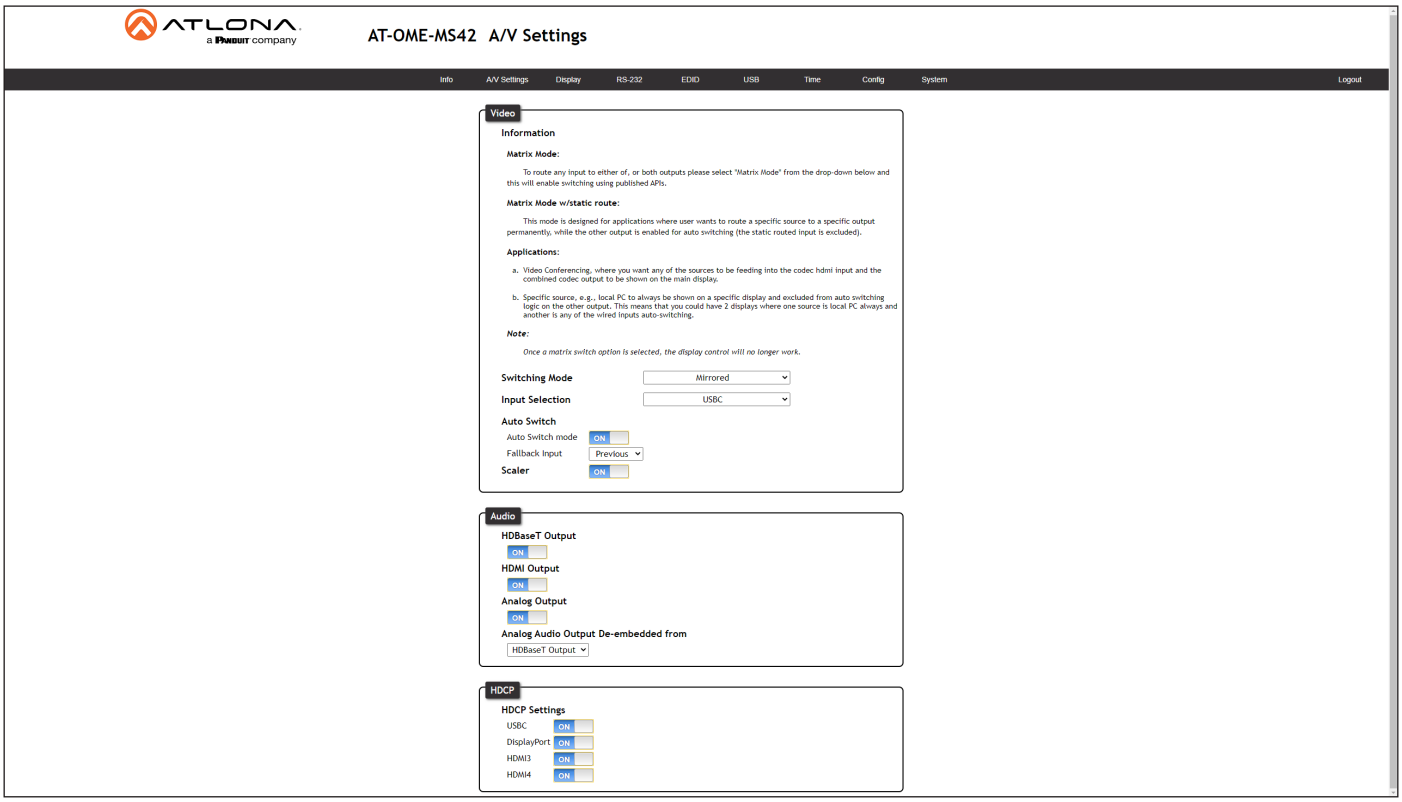
**Aspect**
Aspect ratio of the input signal.

**Color Space**
Displays the color space and chroma sub-sampling of the input signal.

**Color Depth**
The color depth of the input signal.

## A/V Settings Page

The **A/V Settings** page is divided into three sections: **Video**, **Audio**, and **HDCP**. The **Video** section provides controls for switching modes and input selection. The **Audio** section provides options to control the output audio volume and de-embedding. The **HDCP** section controls whether or not HDCP content is allowed to pass.




### Video

#### Switching Mode

Click this drop-down list to manually select the switching mode. Refer to Switching Modes (page 16) for more information.

| Modes | Description |
|---|---|
| Mirrored | This is the default switching mode. Once video is detected on any of the input ports, the output signal will be displayed on *both* the **HDMI OUT** and **HDBaseT OUT** ports. |
| Matrix Mode | This mode allows the AT-OME-MS42 to independently switch between any input to any output. |
| Matrix Mode w/ Static Route | Use this mode when integrating the AT-OME-MS42 with a video conference system. |

#### Input Selection

Click this drop-down list to manually select the desired input.

| Input | Description |
|---|---|
| USBC | Sets **USBC** as the active input. |
| DisplayPort | Sets **DP IN** as the active input. |
| HDMI3 | Sets **HDMI IN 4** as the active input. |
| HDMI4 | Sets **HDMI IN 4** as the active input. |

### Auto Switch

Three controls are available under the **Auto Switch** feature.

**NOTE:** Auto-switching is only available when the **Switching Mode** is set to **Mirrored** or **Matrix Mode w/ static route**. The **Fallback Input** option is only available when the **Switching Mode** is set to **Mirrored** or **Matrix Mode w/ static route**.

- **Auto Switch**
  Click this toggle switch to enable or disable auto-switching. When enabled, the AT-OME-MS42 will automatically switch to the another input, if the signal is disrupted on the currently active input. The port to be switched to, is defined in the **Fallback Input** drop-down list. The default fallback port is **Previous**.

- **Fallback Input**
  Click this drop-down list to select the fallback input. If the source is disconnected from the active input, then the switcher can be configured to automatically switch to the desired port.

| Input | Description |
|---|---|
| Previous | Automatically switches to the input that was connected last. |
| USBC | Switches to **USB-C IN**. |
| DisplayPort | Switches to **DP IN**. |
| HDMI3 | Switches to **HDMI IN 3**. |
| HDMI4 | Switches to **HDMI IN 4**. |

### Scaler

Click this toggle switch to enable or disable the scaler pass-through feature. When set to the **ON** position, 4K content will be down-scaled to 1080p. When set to the **OFF** position, the output resolution / timing will be the same as the input source. The default setting is **ON**.

## Audio

Manages audio settings for inputs and outputs

- **HDBaseT Output**
  Set this toggle to the **OFF** position to mute the audio on the **HDBaseT OUTPUT** port. The default setting is **ON**.

- **HDMI Output**
  Set this toggle to the **OFF** position to mute the audio on the **HDMI OUTPUT** port. The default setting is **ON**.

- **Analog Output**
  Set this toggle to the **OFF** position to mute analog on the **AUDIO OUT** port. The default settings is **ON**.

- **Analog Audio Output De-embedded from**
  Click this drop-down list to select the output from which audio will be de-embedded and output to the **AUDIO OUT** port. Available options are **HDMI Output** or **HDBaseT Output**. The default setting is **HDBaseT Output**.

### HDCP

Each input provides control of how HDCP content is handled. Some source devices will send HDCP content if an HDCP-compliant display (sink) is detected. However, there may be applications where sending HDCP content is not desired. Setting the port to the **OFF** position, will instruct the source to send non-HDCP content to the display. Note that not all sources have this capability.

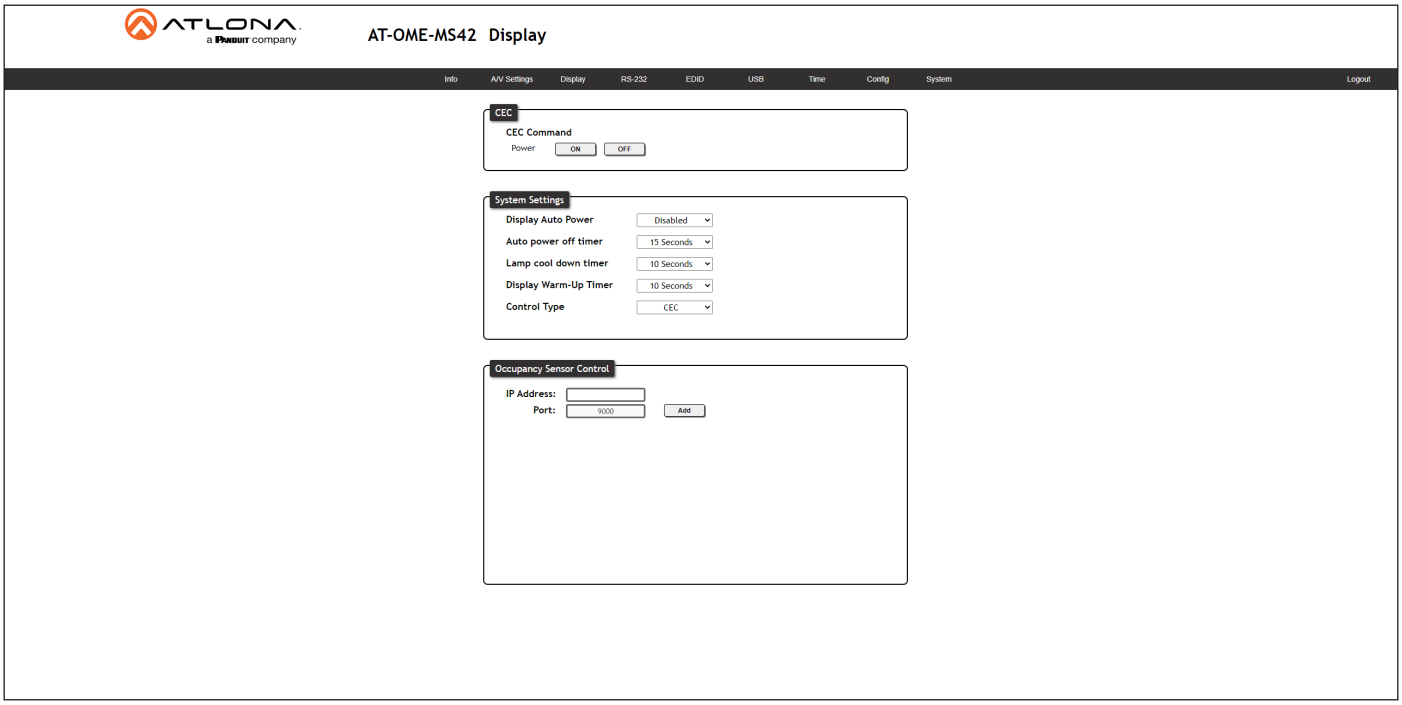
**NOTE:** Setting this feature to **OFF**, for any source, does *not* provide decryption of HDCP content to non-HDCP compliant sink devices. Sources such as Mac® computers and the Sony PlayStation® will *always* transmit HDCP content.

- **ON**
  When set to **ON**, the source will have the ability to transmit HDCP content to the AT-OME-MS42.
- **OFF**
  When set to **OFF**, non-HDCP content will be transmitted (if possible) to the AT-OME-MS42.

## Display Page

This page provides controls for CEC, device timers, and configuration for controlling external devices.

**NOTE:** This page is not available when **Switching Mode** is set to **Matrix Mode**. Display control is disabled when matrix mode is active.




### CEC

#### CEC Command

Click the ON button to send the power-on command to the display device. Click the **OFF** button to toggle the power state to off.

*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.*

### System Settings

#### Display Auto Power On

Select **ENABLED** from this drop-down list to allow the AT-OME-MS42 to send the power-on command to the display when an A/V signal is detected. When the AV signal is no longer present, the AT-OME-MS42 will send the power-off command to the display. If this feature is not desired, then set to **DISABLED**. This feature is **DISABLED** by default.

#### Auto power off timer

Sets the time interval before the command to power-off the display is sent, when an A/V signal is no longer present. The default value is 15 seconds. Available values are 15 seconds to 15 minutes.

#### Lamp cool down timer

Sets the projector lamp cool-down timer, in seconds. This value specifies the time interval that must elapse, after the display control "off" command is sent, before the display "power on" command can be sent. This feature is used to prevent the projector from missing a "power on" command while the lamps are cooling. Available values are 10 seconds to 15 minutes. The default setting is 10 seconds.

**Display Warm-Up Timer**
Sets the projector lamp warm-up timer, in seconds. During the warm-up interval, the AT-OME-MS42 will not start the auto power-off timer. This value specifies the time interval that must elapse, after the display control "on" command is sent, before the display "power off" command can be sent. This feature is used to prevent a "power off" command from being sent while the lamps are warming up. Available values are 10 seconds to 300 seconds. The default value is 10 seconds.

**Control Type**
Sets the control protocol for the connected display. Click this drop-down to select the control type. Available settings are **CEC**, **IP**, and **RS-232**. By default, CEC is selected for control of the display. IP and RS-232 can also be selected. When IP or RS-232 are selected, more fields are available. Refer to Solution Setup and Configuration Guide (page 64) for more information.

## Occupancy Sensor Control

The AT-OME-MS42 supports the AT-OCS-900N occupancy sensor. This feature is supported on firmware version 1.1.2 and greater. Refer to Integration with the AT-OCS-900N (page 77) for instructions on connecting to the occupancy sensor.

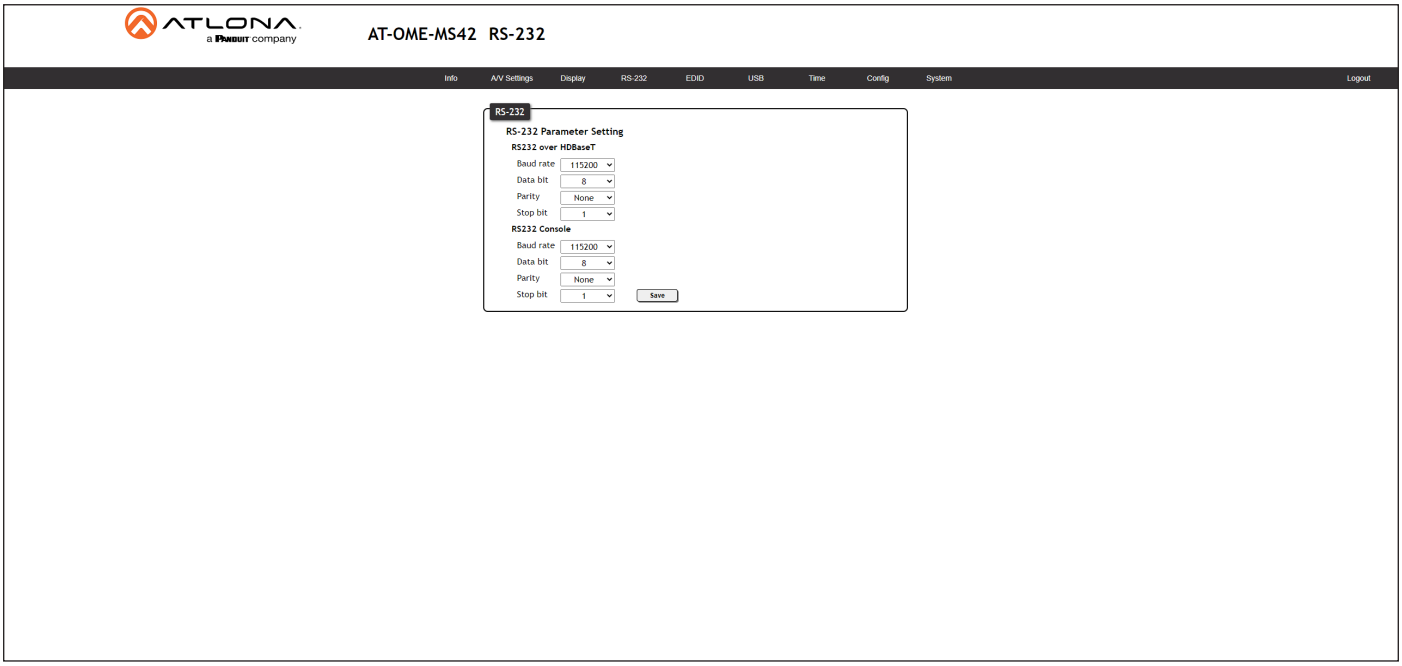
**IP Address**
Enter the IP address of the AT-OCS-900N in this field.

**Port**
The port number used to communicate with the AT-OCS-900N.

**Add**
Click this button to add the AT-OCS-900N to the AT-OME-MS42. Up to three occupancy sensors are supported.

## RS-232 Page

This page provides settings for both local and HDBaseT RS-232 control.




### RS-232

**RS-232 Parameter Setting**
RS-232 settings for local or HDBaseT RS-232 control.

- **RS232 over HDBaseT**
  If the AT-OME-MS42 is connected to a device such as the AT-OME-EX-RX, the drop-down list boxes will be disabled and the HDBaseT baud rate will be locked at 115200. If the AT-OME-MS42 is connected to another HDBaseT device, such as the AT-UHD-CLSO-824, each of these drop-down list boxes can be set to the baud rate of the HDBaseT RS-232 settings on the corresponding device. Refer to Solution Setup and Configuration Guide (page 64) for more information.

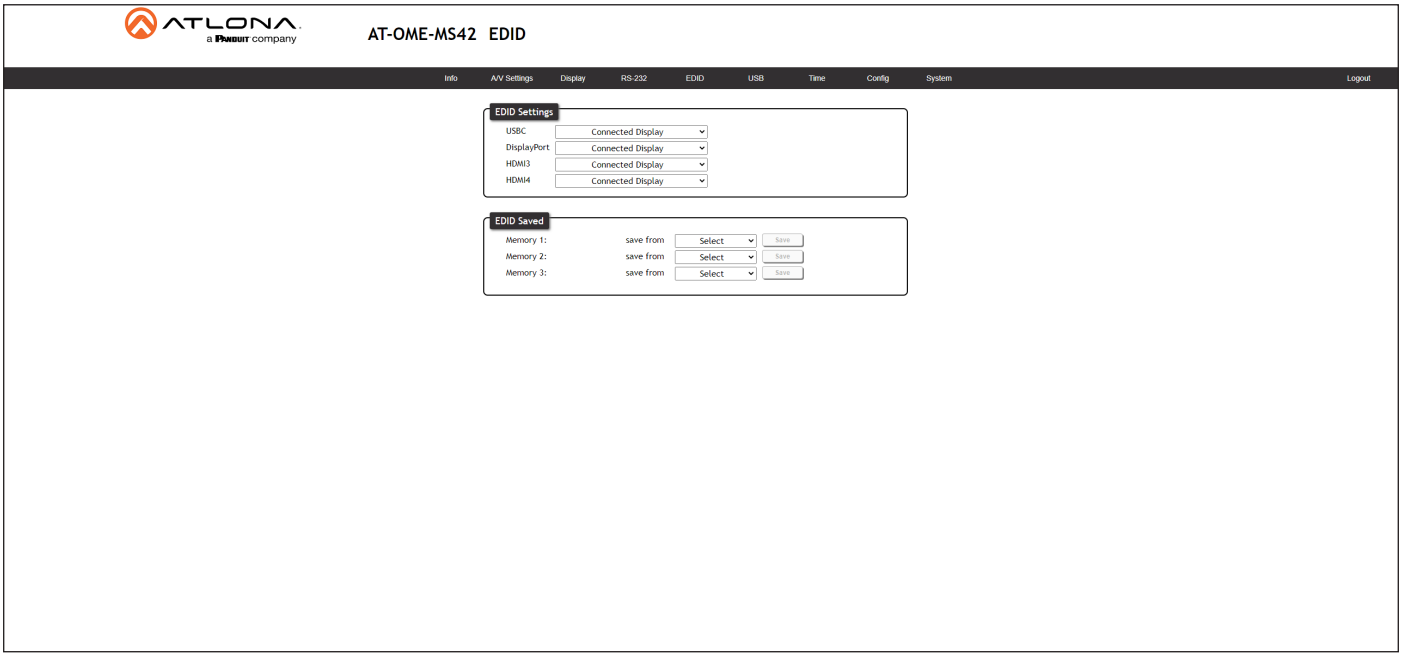
- **RS232 Console**
  Sets the RS-232 port settings used for local control by a third-party control system.

| 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. |

- **Save**
  Click this button to commit all changes.

## EDID Page

This page provides controls for selecting and storing EDID data. Refer to EDID Management (page 27) for more information.




### EDID Settings

Click these drop-down lists to select the desired EDID to be used for each input. The following EDID presets are available. When selecting an EDID, make sure that the display/sink device is capable of supporting the resolution/timing. If the sink device is not able to support a feature, then the source will not be displayed. Selecting the **Connected Display** EDID will provide the most compatible settings for most displays. In addition, three memory locations are available for storing captured EDID data. If an EDID is stored in a memory location, it will also be added to the list available EDID selections.

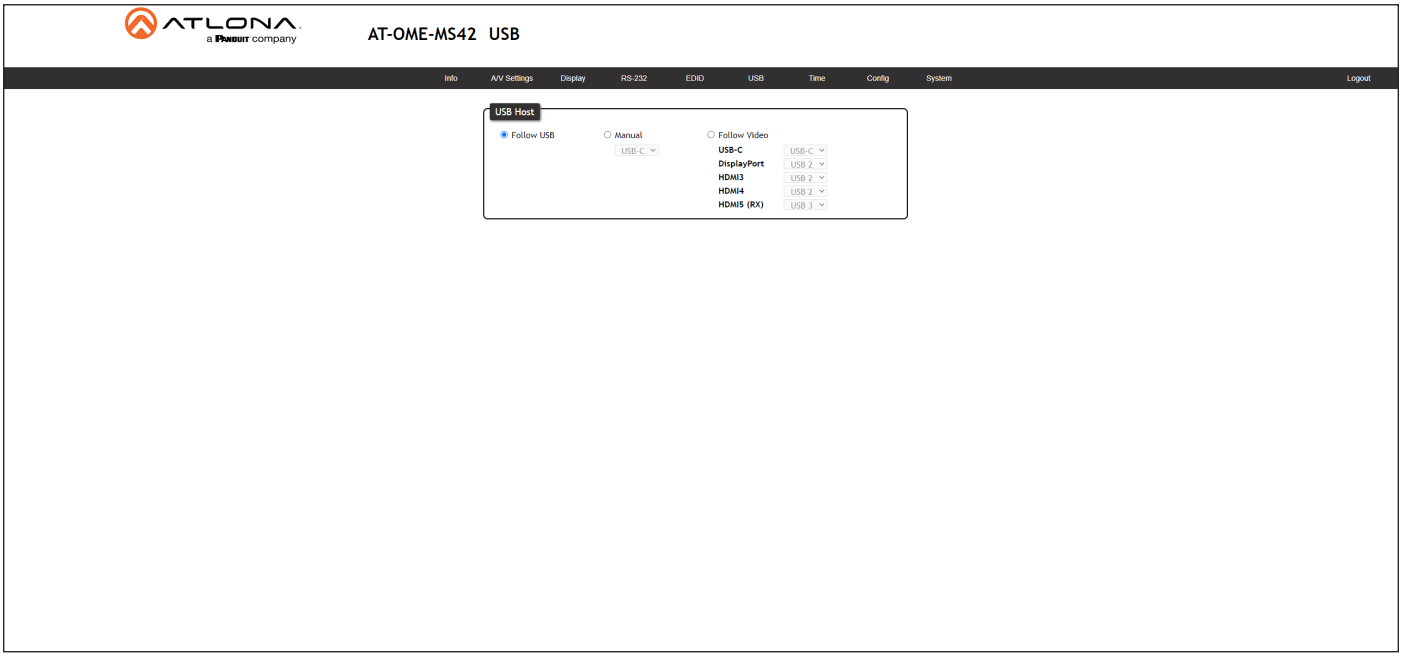
| EDID listing | |
|---|---|
| Connected Display | 1280x800 2CH |
| 3840x2160 2CH - NO HDR Support | 1024x768 2CH |
| 1920x1200 2CH | Memory_1 |
| 1920x1080 2CH | Memory_2 |
| 1366x768 2CH | Memory_3 |

### EDID Saved

The AT-OME-MS42 provides three memory locations used for storing captured EDID data. Click these drop-down lists to select and store the external EDID.

## USB Page

This page provides controls for setting the behavior of USB host switching. Refer to USB Modes (page 32) for more information.




### USB Host

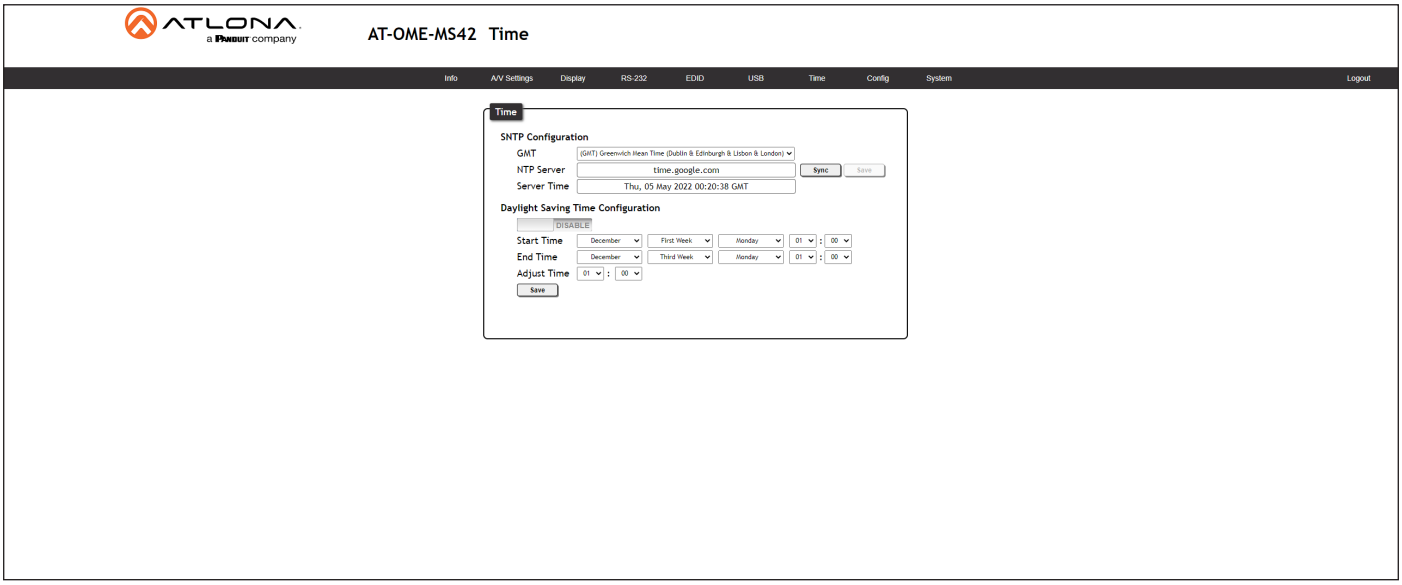
**Follow USB**
This is the default mode and functions similar to auto-switching for video. In this mode, the AT-OME-MS42 will detect which USB ports are connected to a host device. If both USB host ports are connected to host devices, then the AT-OME-MS42 will set the last-connected USB host device as the "active" USB host.

**Manual**
This mode provides manual selection of the USB host port to be used.

**Follow Video**
In this mode, each video input can be assigned to either **USB 1** or **USB 2** host ports. This mode locks the USB host device to the desired video input. Each host device will have access to the same USB devices, when video switching occurs.

## Time Page

This page provides controls for setting the internal clock of the AT-OME-MS42. Refer to Setting the System Date and Time (page 37) for more information.




### Time

**SNTP Configuration**
Simple Network Time Protocol (SNTP) is a simplified version of the Network Time Protocol (NTP), and can be used to set the time for the unit. SNTP is used to receive time services from other servers. However, it cannot be used to provide time servers to other systems.

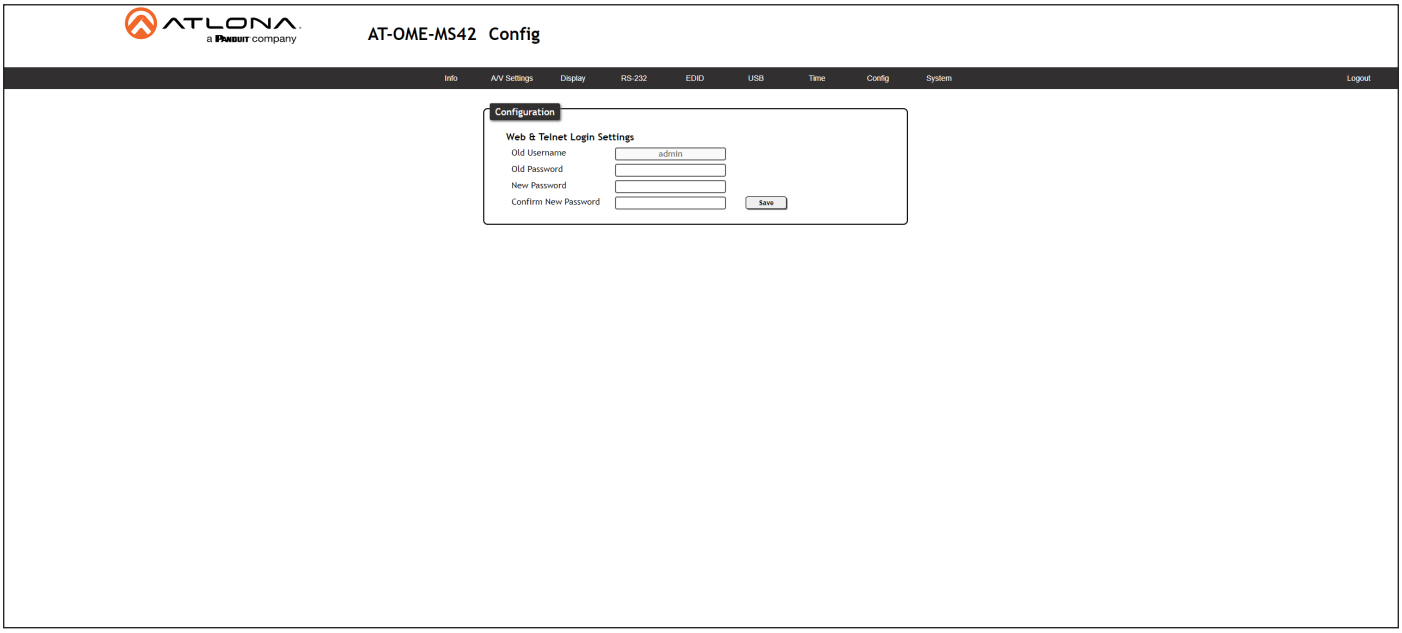
- **GMT**
  Click this drop-down list to select the Greenwich Mean Time (GMT) for the current location.
- **NTP Server**
  Enter the desired NTP server address in this field. After entering the NTP server address, click the **Sync** button.
- **Sync button**
  Click this button to sync with the server, after entering the desired NTP server address.
- **Save button**
  Click this button to commit changes to the NTP Server field. If a save is not performed, then the NTP server address will not be saved.
- **Server Time**
  This field will display the current time.

**Daylight Saving Time Configuration**
Click the toggle switch button to **ENABLE** or **DISABLE** Daylight Saving Time (DST). This feature is disabled by default.

- **Start Time**
  Click each of these drop-down lists to select the month, week, day, and time (HH:MM) when DST begins.
- **End Time**
  Click each of these drop-down lists to select the month, week, day, and time (HH:MM) when DST ends.
- **Adjust Time**
  Click these drop-down lists to set the hour and minute to adjust the clock for DST.
- **Save**
  Click this button to commit all changes.

## Config Page

The **Config** page provides management of the administrator password. The administrator username ("admin") cannot be changed. Refer to Password Management (page 40) for more information.




### Configuration

**Old Username**
This field cannot be changed. "admin" is the administrator user.

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

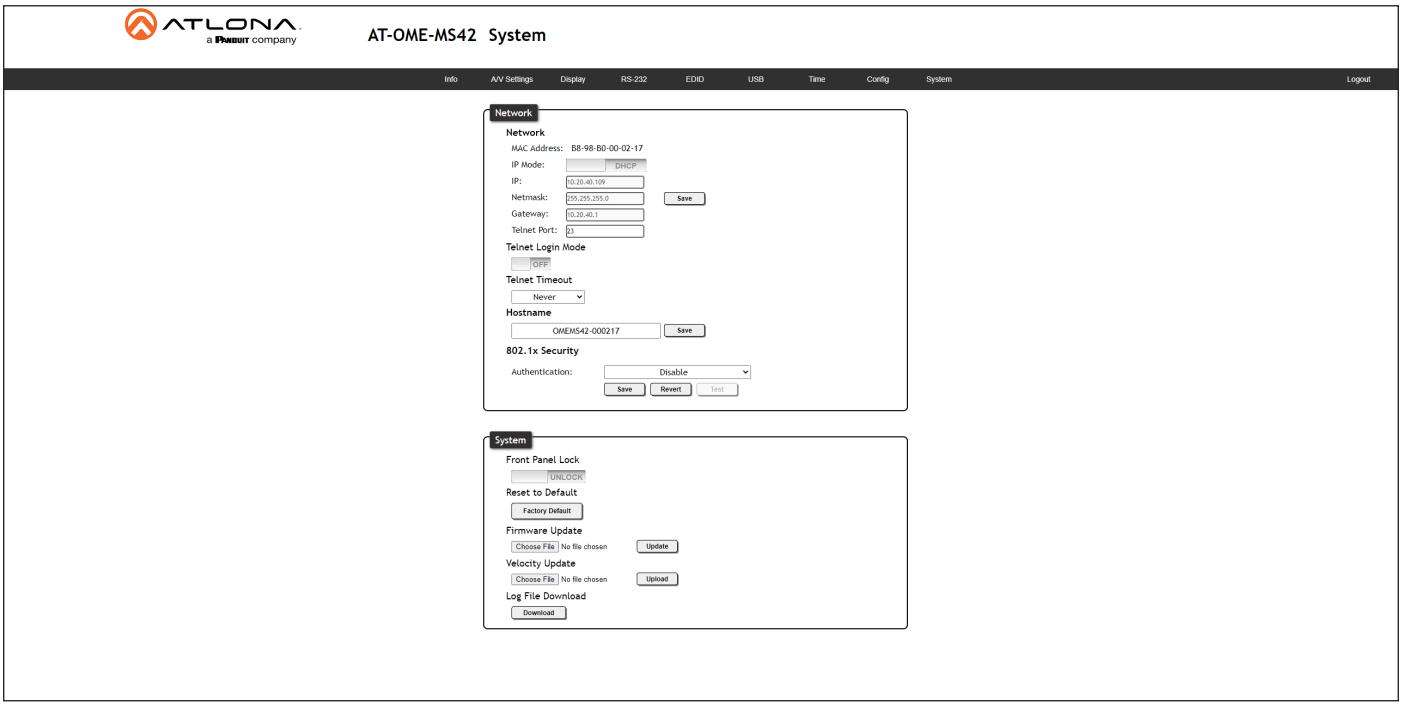
**New Password**
Enter the new password for the "admin" username in this field.

**Confirm New Password**
Verify the new password by retyping it in this field.

**Save**
Click this button to commit all changes.

## System Page

The **System** page is divided into two sections: **Network** and **System**. The **Network** section allows configuration of the IP settings of the AT-OME-MS42. The **System** section provides controls for resetting the AT-OME-MS42 to factory-default settings and updating the firmware.




### Network

**MAC Address**
This field displays the MAC address of the AT-OME-MS42.

**IP Mode**
Click this toggle switch to set the AT-OME-MS42 to **DHCP** or **STATIC IP** mode. The default setting is **DHCP** mode. Refer to Changing the Network IP Mode (page 41) for more information.

- **IP**
  Enter the IP address of the AT-OME-MS42 in this field. This field will only be available when **IP Mode** is set to **STATIC IP**. The default static IP address of the AT-OME-MS42 is `192.168.1.254`.

- **Netmask**
  Enter the subnet mask of the AT-OME-MS42 in this field. This field will only be available when **IP Mode** is set to **STATIC IP**.

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

- **Telnet Port**
  Enter the desired Telnet port (for Telnet sessions) in this field. The default port is 23. Refer to Changing the Telnet Port (page 42) for more information.

**Telnet Login Mode**
Click this toggle switch to set the Telnet Login Mode to **ON** or **OFF**. If set to **ON**, then login credentials (same as web server) will be required when starting a Telnet session.

**Telnet Timeout**
Click this drop-down list to select the timeout interval, in seconds. Range is: 1 to 10000 seconds, or Never. Refer to Adjusting Telnet Timeout (page 44) for more information.

**Hostname**
Displays the hostname of the AT-OME-MS42, as it would appear on a network. To change the hostname, type the new hostname in this field and click the **Save** button. Refer to Setting the Host Name (page 45) for more information.

**Authentication**
Click this drop-down list to select the authentication method when using the 802.1x security protocol. Refer to 802.1X Security (page 46) for more information.

## System

**Front Panel Lock**
Click this toggle switch to **LOCK** or **UNLOCK** the AT-OME-MS42. Refer to Locking / Unlocking the Front Panel (page 48) for more information.

**Reset to Default**
Click the **Factory Default** button to reset the AT-OME-MS42 to factory-default settings. Refer to Resetting to Factory-Default Settings (page 49) for more information.

**Firmware Update**
Click the **Choose File** button to begin the firmware update procedure. Refer to Updating the Firmware (page 79) for more information.

**Velocity Update**
Click the **Choose File** button to upgrade the Velocity database in the AT-OME-MS42.

**Log File Download**
Click the Download button to download the log to the local computer. This log can be used by technical support engineers to assist in troubleshooting any issues.

# Solution Setup and Configuration Guide

The following sections provide step-by-step instructions for the following topics:

- Display Control
- Control Mode

## Display Control

The AT-OME-MS42 provides various methods for display control: CEC, IP, and RS-232. No external control system is required. Each of these methods will be covered in this section.

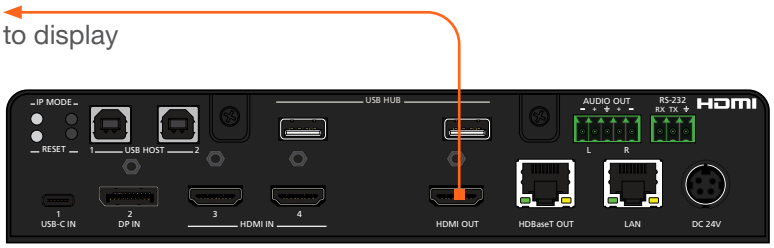
**IMPORTANT:** The AT-OME-MS42 **Switching Mode** must be set to either **Mirrored** or **Matrix Mode w/ static route**. Display control is not supported under **Matrix Mode**. Refer to Switching Modes (page 16) for more information.

### CEC Control

Consumer Electronics Control (CEC) is the simplest method when working with a display. The **DISPLAY** button, on the front panel of the AT-OME-MS42, can be programmed to toggle power on the display, allowing for convenient remote control of the display device. Note that the display must have CEC enabled to receive CEC messages.

*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.*

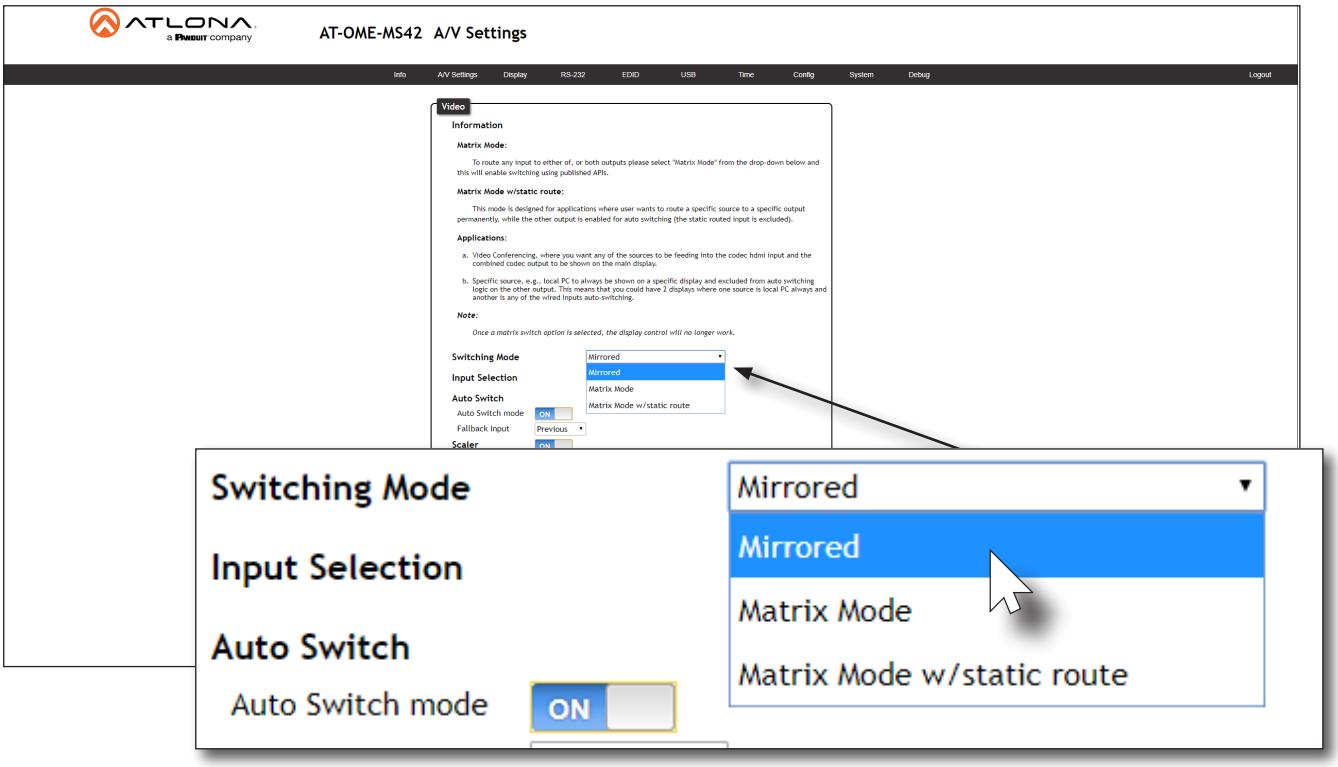
1. Connect an HDMI cable from the **HDMI OUT** port on the AT-OME-MS42 to an HDMI input on the display device.



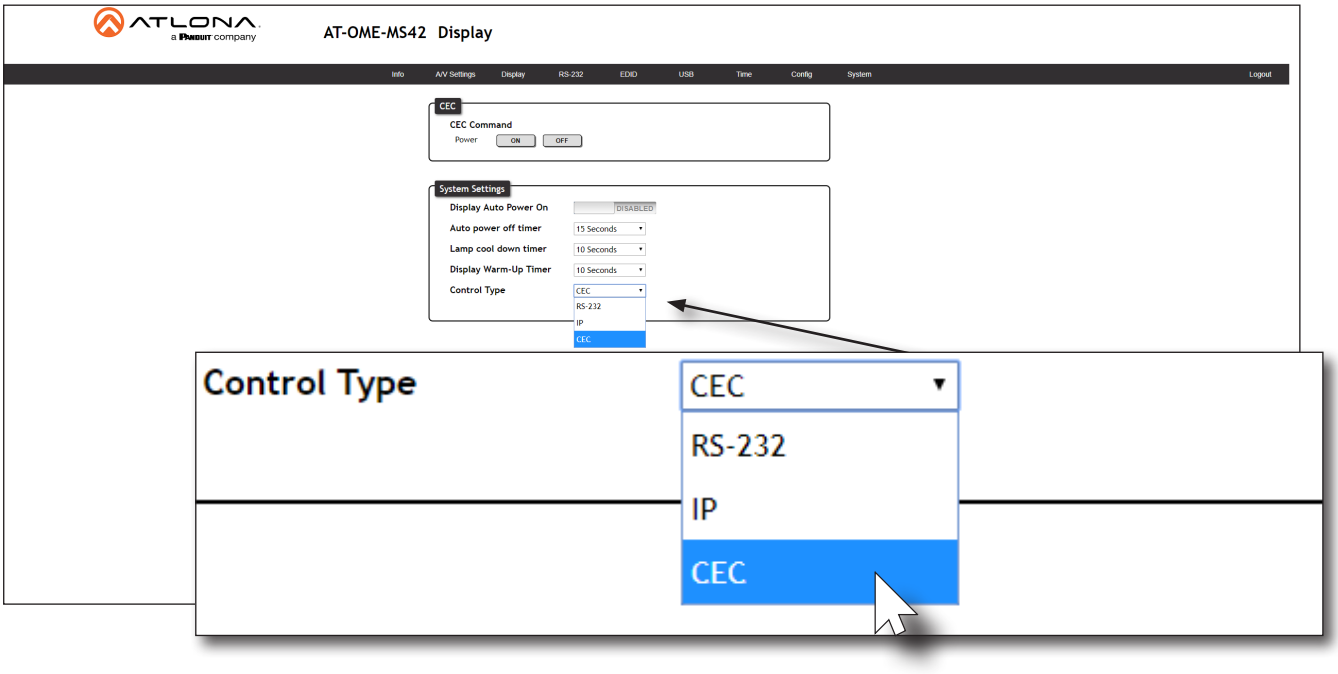

2. Enable CEC on the display device. Refer to the documentation for the display device. It should be noted that different manufacturers will identify CEC with their own brand name. Refer to the table below.

| Manufacturer | CEC Designation |
|---|---|
| Hitachi | HDMI-CEC |
| LG | SIMPLINK |
| Philips | EasyLink |
| Samsung | AnyNet+ |
| Sony | BRAVIA Sync |
| Toshiba | CE Link / REGZA Link |
| Visio | HDMI-CEC |

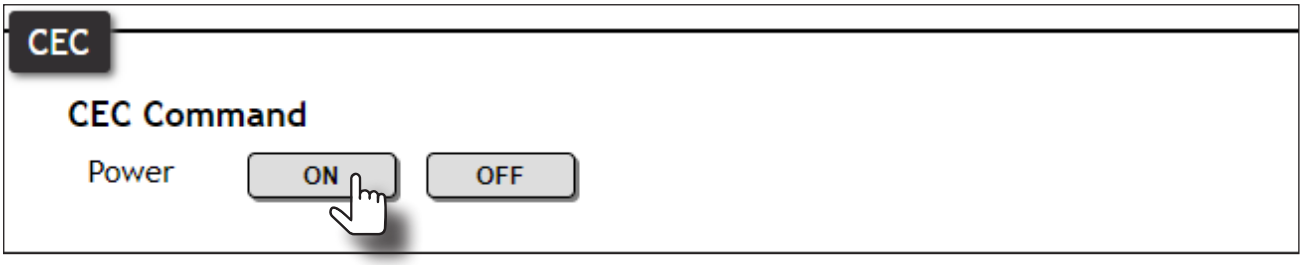
3. Login to the web server. Refer to Introduction to the Web Server (page 50).
4. Click **A/V Settings** in the menu bar.
5. Verify that the **Switching Mode** is set to **Mirrored**. Display control is *not* supported under **Matrix Mode**.




6. Click **Display** in the menu bar.
7. Under **System Settings**, click the **Control Type** drop-down list and select **CEC**. This is the default control method.



8. Under the **CEC** section, near the top of the page, test the power-on and power-off commands by clicking the **ON** and **OFF** buttons, respectively. The display should power-on and power-off when clicking these buttons.

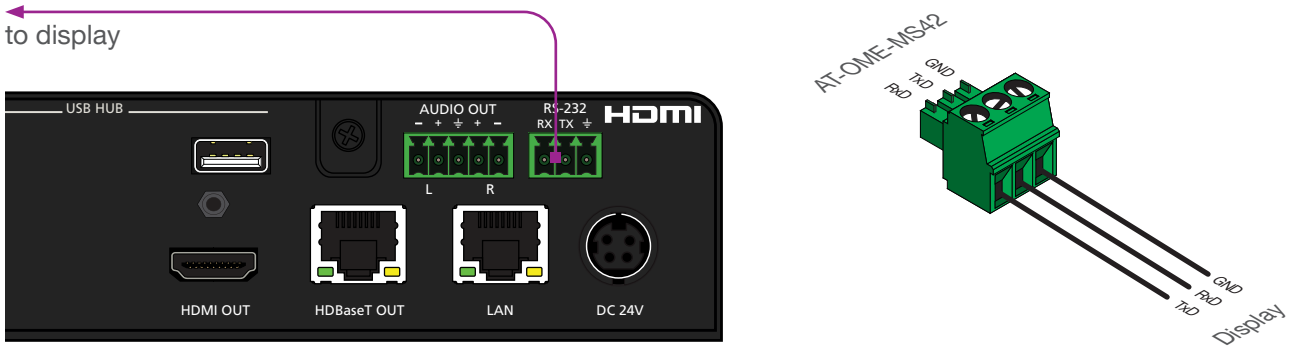



If the display does not respond, check the following:

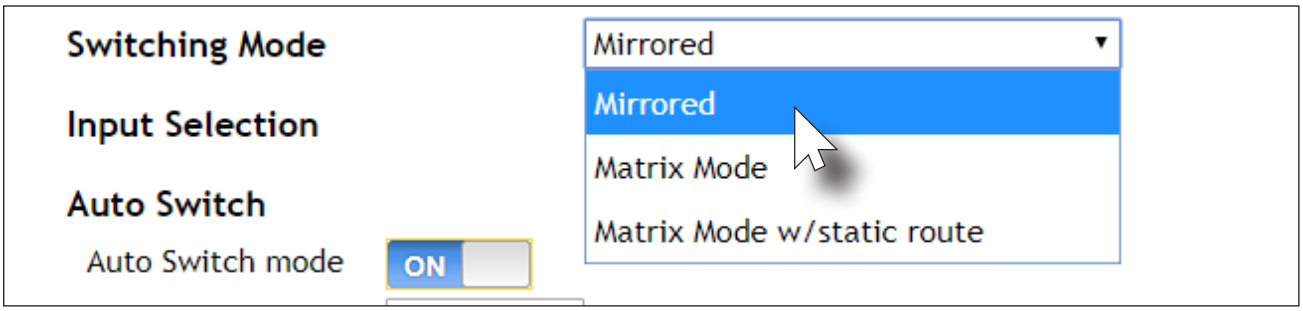
- Verify that CEC is enabled on the display device.
- Verify the integrity of the HDMI cable. Try connecting a different HDMI cable between the AT-OME-MS42 and the display device.
- Try connecting the HDMI cable to a different HDMI input on the display device.

## Using RS-232

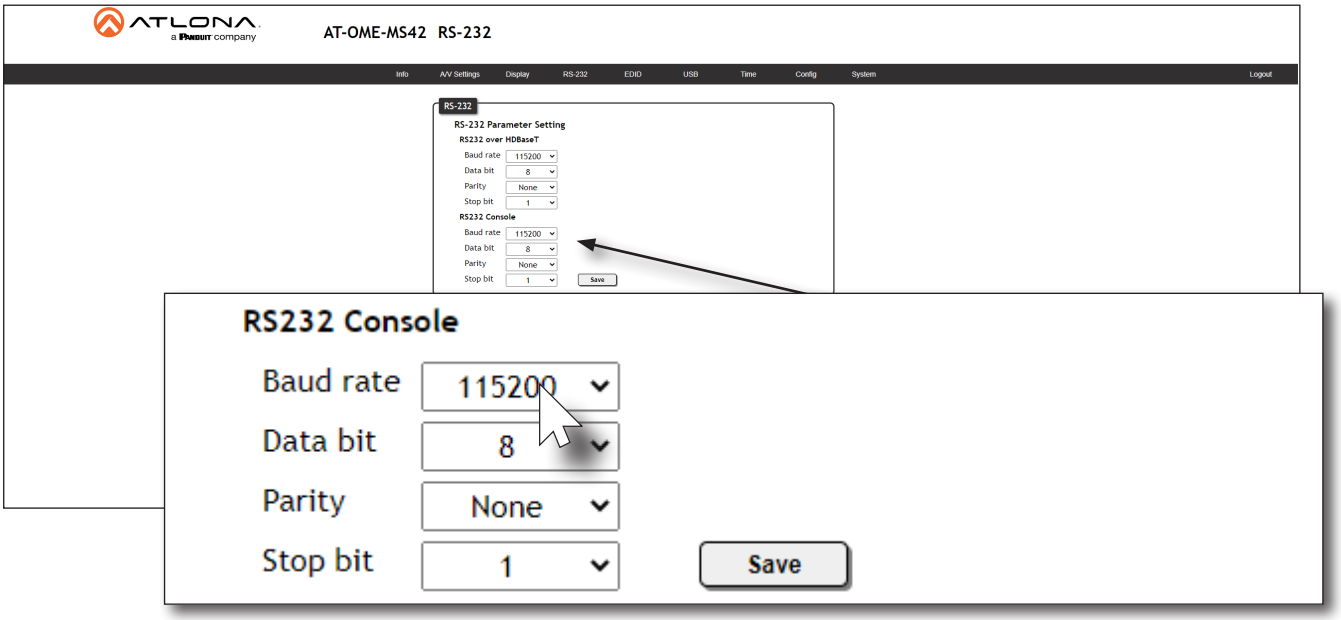
1. Connect a serial cable from the **RS-232** port on the AT-OME-MS42, to the RS-232 port on the display. The included 3-pin captive screw connector should be wired as shown.



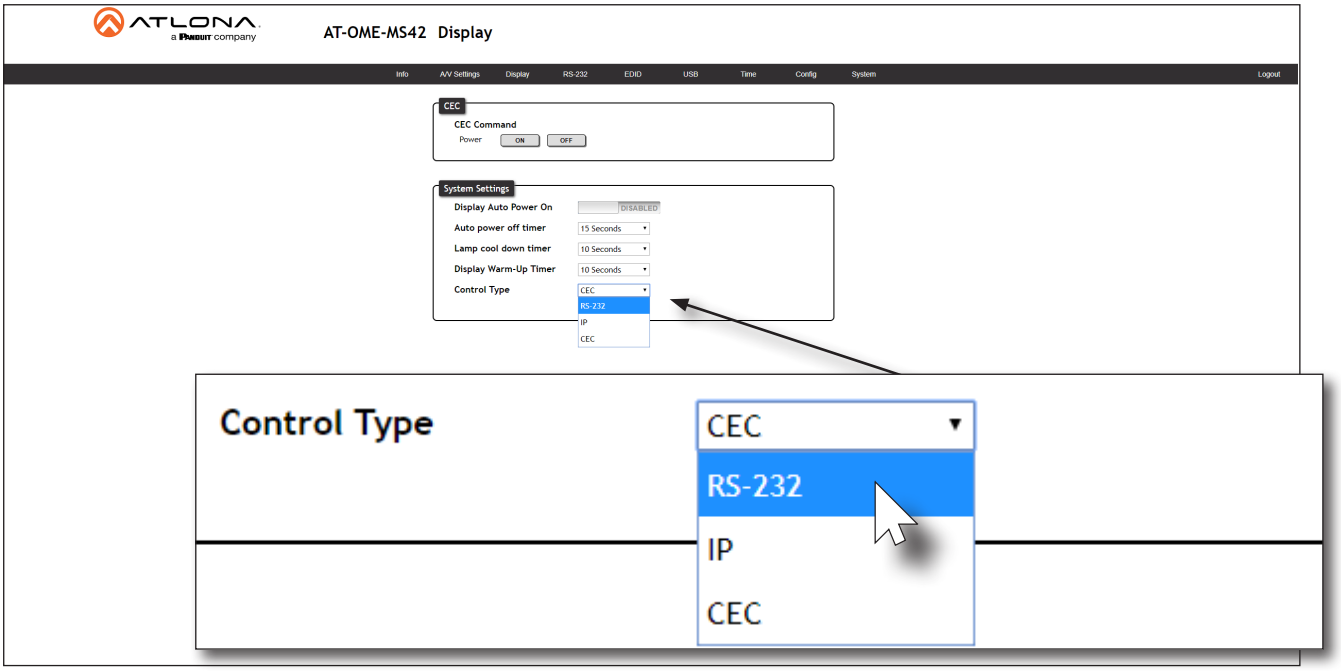

2. Login to the web server. Refer to Introduction to the Web Server (page 50).
3. Click **A/V Settings** in the menu bar.
4. Verify that the **Switching Mode** is set to **Mirrored**. Display control is *not* supported under **Matrix Mode**.



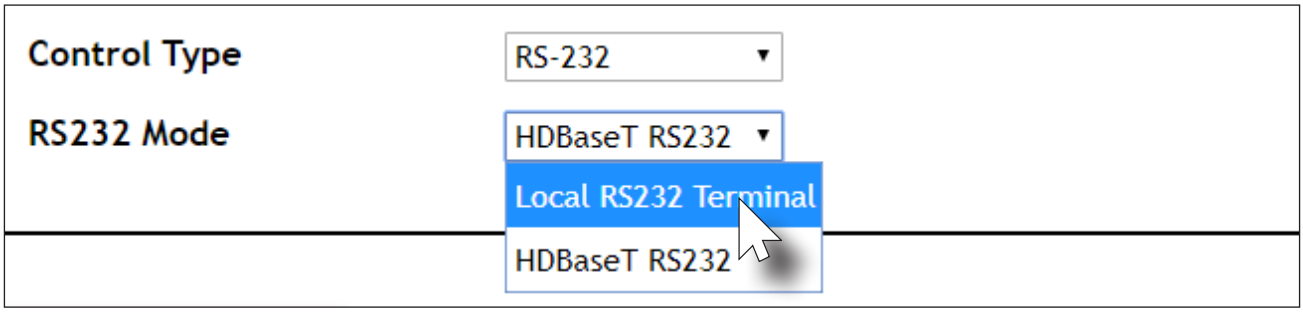

5. Click **RS-232** in the menu bar.
6. Set the RS-232 settings for the display (sink) device, under the **RS232 Console** section. These settings must match the device settings for the display. Refer to the User Manual of the display device for more information.



7. Click **Display** in the menu bar.
8. Click the **Control Type** drop-down list and select **RS-232**.




9. Click the **RS232 Mode** drop-down list and select **Local RS232 Terminal**.




10. Scroll down to the bottom of the page and locate the **RS-232 / IP commands** section.
11. Click the **Manufacturer** drop-down list and select the manufacturer of the device that is being controlled. In the example below, **Samsung** is selected.

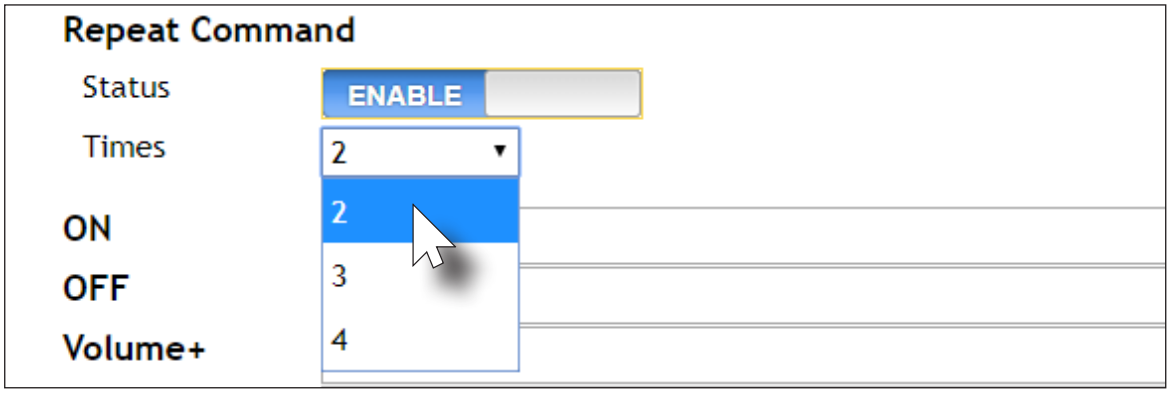
**NOTE:** If the manufacturer is not listed in the drop-down list, then select **Generic**. When Generic is selected, the **Products** and **Model** drop-down lists will only list **Generic**.

12. Continue fine-tuning the device selection by clicking the **Products** and **Model** drop-down lists. Once all fields have been set to the proper values, the AT-OME-MS42 will populate the command fields with the proper values, based on the selected device.

13. Some devices may require that the command be sent multiple times before an acknowledge message is sent back to the AT-OME-MS42. Refer to the User Manual for the display device for more information. If the command must be repeated, continue with the following steps. Otherwise, skip to step 14.

    a. Under **Repeat Command**, click the **Status** toggle switch to the **ENABLE** position.

    b. Click the **Times** drop-down list and select the number of times which the command must be sent to the device, before an acknowledge message is returned. The available values are 2, 3, and 4.




14. If **Generic** was selected as the manufacturer, in step 11, then manually enter the required strings for each operation. Refer to the following for information on formatting command strings.

### HEX Command Strings

a. Enter the hexadecimal command string is the correct field. An example *power-on* command for a display might be:

\xBE\xEF\x03\x06\x00\xBA\xD2\x01\x00\x00\x60\x01\x00\x0D

This command would be entered under the **Set command** field, under **ON**. Consult the documentation for the display for the correct command strings.

b. Make sure the command string is terminated correctly. In most cases, a CR (carriage return) should be specified. In the example above, "\x0D" is the hexadecimal value for a carriage return.

### ASCII Command Strings

a. Enter the ASCII command string is the correct field. An example *power-on* command for a display might be:

PWON

This command would be entered under the **Set command** field, under **ON**. Consult the documentation for the display for the correct command strings.

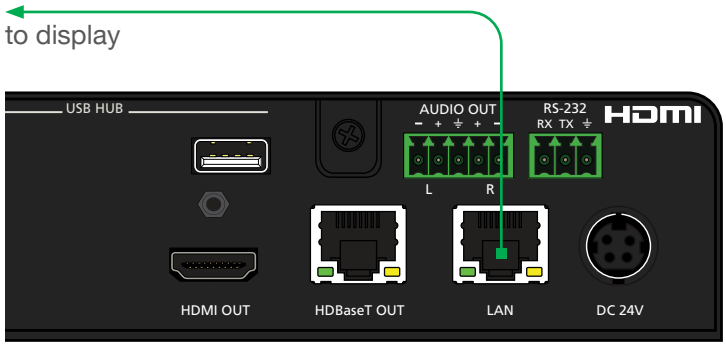
15. Click the **Send** button to verify that each command works properly. If not, check the values entered for each command.

16. Click the **Save** button to commit all changes.

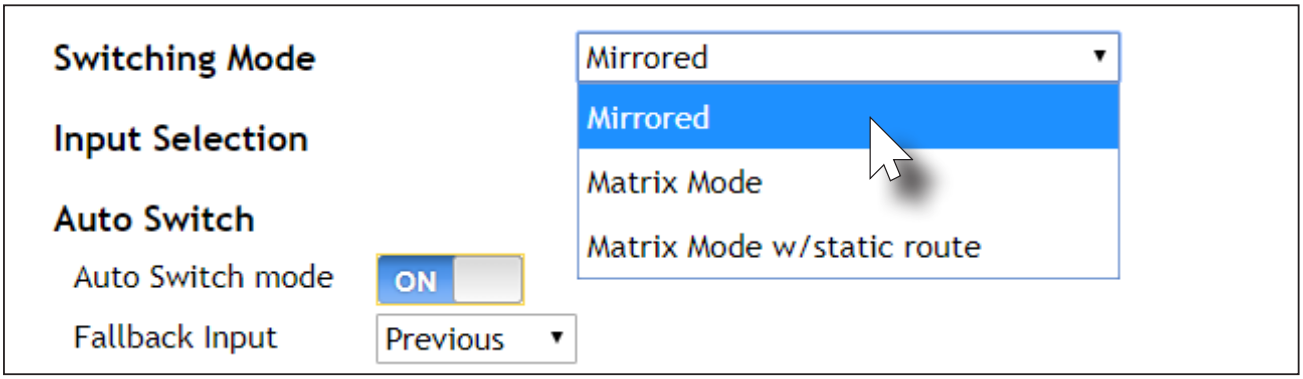
## Using IP

Instead of using a serial cable to send commands, this method uses an Ethernet cable to send commands from the AT-OME-MS42 to the display device over IP network.

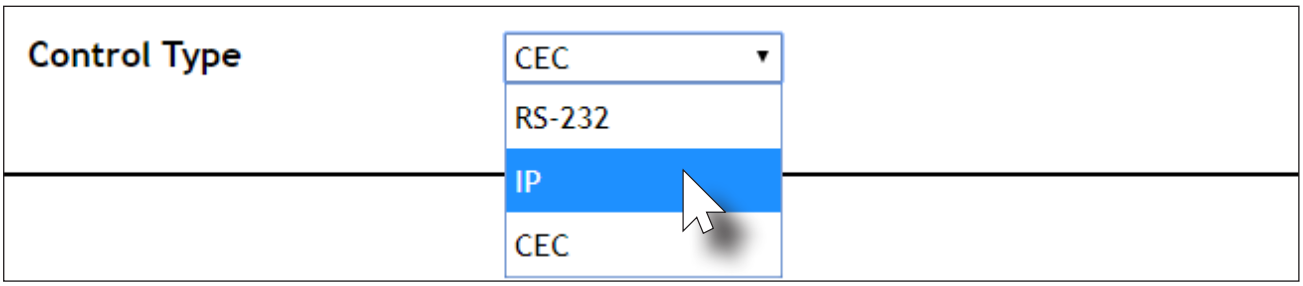
1. Connect an Ethernet cable from the **LAN** port on the AT-OME-MS42, to the LAN port on the display.




2. Login to the web server. Refer to Introduction to the Web Server (page 50).
3. Click **A/V Settings** in the menu bar.
4. Verify that the **Switching Mode** is set to **Mirrored**. Display control is *not* supported under **Matrix Mode**.




5. Click **Display** in the menu bar.
6. Under **System Settings**, click the **Control Type** drop-down list and select **IP**.



7. Click the **IP Mode** drop-down list to select the login mode for the display device.
   - If set to **Login**, then a username and password will be required to access the Telnet session.
   - If set to **Non-Login**, then no credentials will be required for the Telnet session.

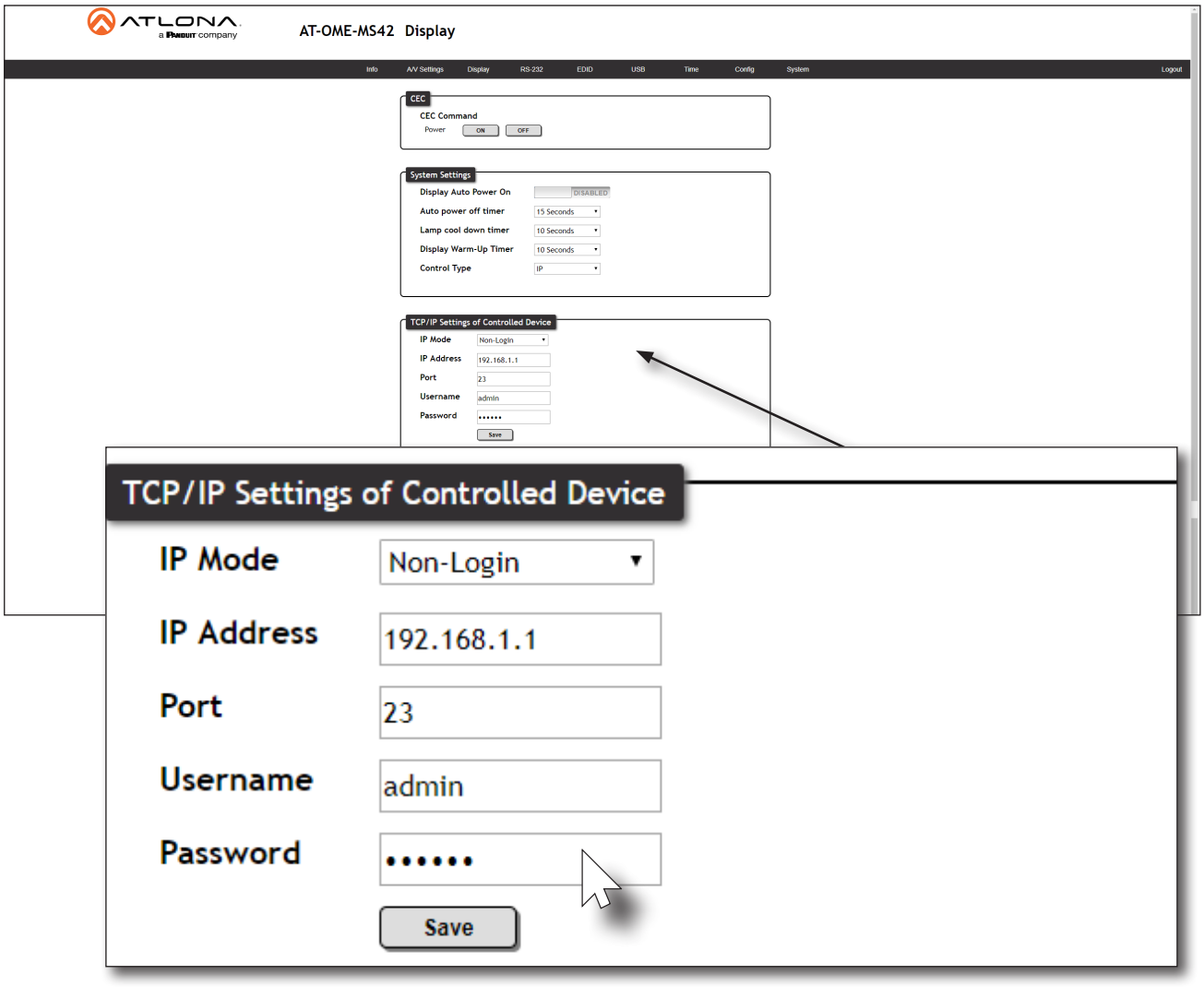
8. Locate the **TCP/IP Settings of Controlled Device** section and enter the following information:

   **a. IP Address**
   Enter the IP address of the device to be controlled.

   **b. Port**
   Enter the port in this field.

   **c. Username**
   This field is only required if **IP Mode** is set to **Login**. Enter the username in this field.

   **d. Password**
   This field is only required if **IP Mode** is set to **Login**. Enter the required password in this field.



9. Scroll down to the bottom of the page and locate the **RS-232 / IP commands** section.

10. Click the **Manufacturer** drop-down list and select the manufacturer of the device that is being controlled. In the example below, **Samsung** is selected.

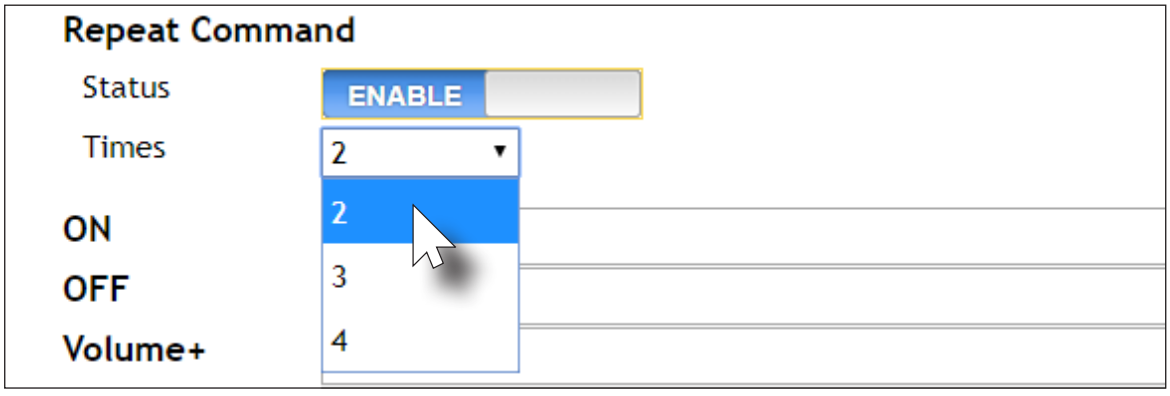
**NOTE:** If the manufacturer is not listed in the drop-down list, then select **Generic**. When Generic is selected, the **Products** and **Model** drop-down lists will only list **Generic**.

11. Continue fine-tuning the device selection by clicking the **Products** and **Model** drop-down lists. Once all fields have been set to the proper values, the AT-OME-MS42 will populate the command fields with the proper values, based on the selected device.

12. Some devices may require that the command be sent multiple times before an acknowledge message is sent back to the AT-OME-MS42. Refer to the User Manual for the display device for more information. If the command must be repeated, continue with the following steps. Otherwise, skip to step 13.

    a. Under **Repeat Command**, click the **Status** toggle switch to the **ENABLE** position.

    b. Click the **Times** drop-down list and select the number of times which the command must be sent to the device, before an acknowledge message is returned. The available values are 2, 3, and 4.




13. If **Generic** was selected as the manufacture, in step 10, then manually enter the required strings for each operation. Refer to the following for information on formatting command strings on the next page.

### HEX Command Strings

a. Enter the hexadecimal command string is the correct field. An example *power-on* command for a display might be:

```
\xBE\xEF\x03\x06\x00\xBA\xD2\x01\x00\x00\x60\x01\x00\x0D
```

This command would be entered under the **Set command** field, under **ON**. Consult the documentation for the display for the correct command strings.

b. Make sure the command string is terminated correctly. In most cases, a CR (carriage return) should be specified. In the example above, `\x0D` is the hexadecimal value for a carriage return.

### ASCII Command Strings

a. Enter the ASCII command string is the correct field. An example *power-on* command for a display might be:

```
PWON
```

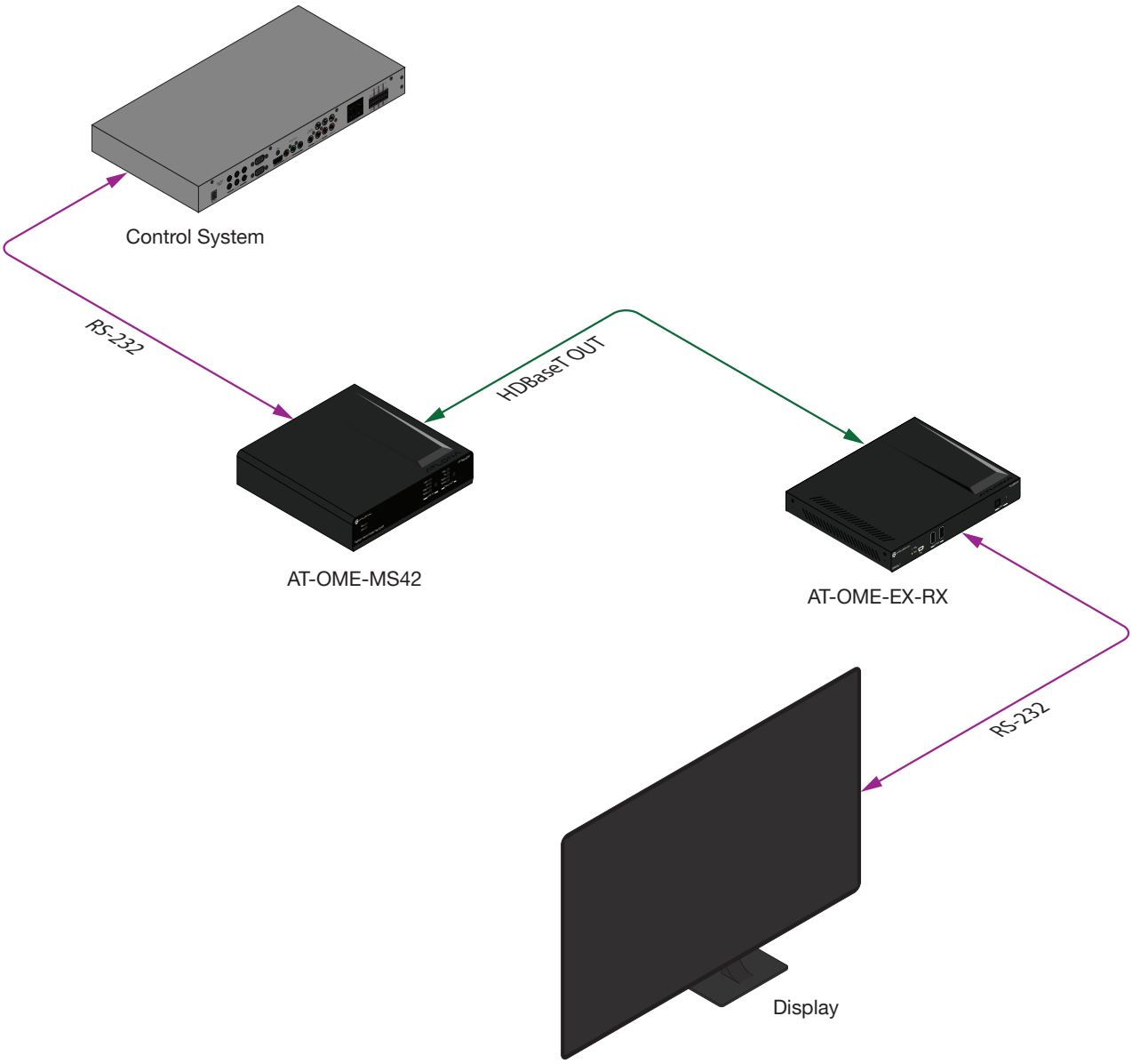
This command would be entered under the **Set command** field, under **ON**. Consult the documentation for the display for the correct command strings.

14. Click the **Send** button to verify that each command works properly. If not, check the values entered for each command.
15. Click the **Save** button to commit all changes.

## Pass-through mode

In pass-through mode, RS-232 commands are sent to the AT-OME-MS42 from a control system, transmitted over HDBaseT to the receiver unit, and then to the display (sink) device.

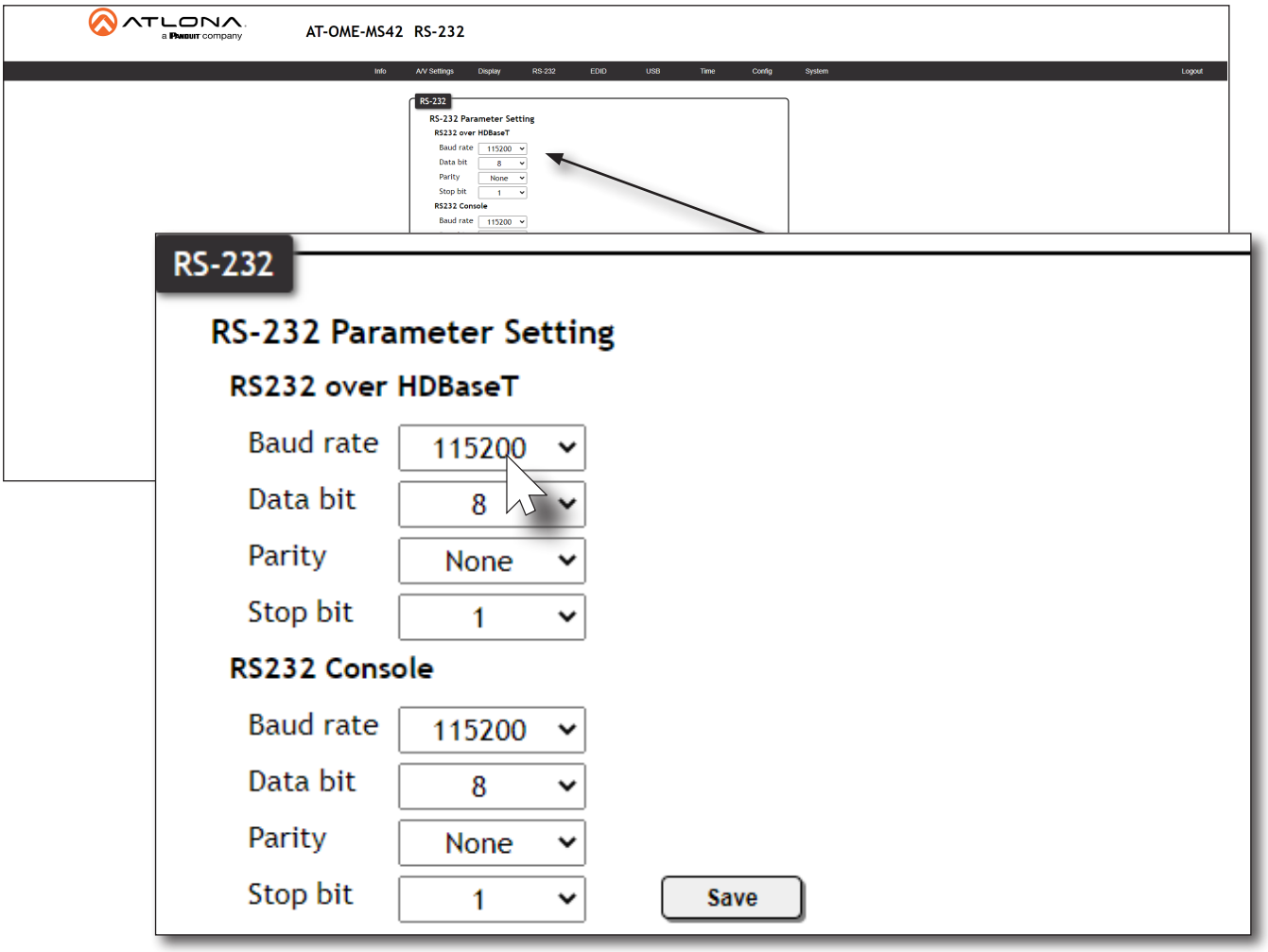
1. Connect the RS-232 cable between the control system and the AT-OME-MS42.
2. Connect an Ethernet cable from the **HDBaseT OUT** port to a receiver.
3. Connect an RS-232 cable between the display (sink) and the receiver.
4. Refer to the *AT-OME-MS42 Applications Programming Interface* for a list of available commands.



5. Login to the web server. Refer to Introduction to the Web Server (page 50).

6. Click **RS-232** in the menu bar.

7. Set the RS-232 settings for the display (sink) device, under the **RS232 over HDBaseT** section. These settings must match the device settings for the display. Refer to the User Manual of the display device for more information.




8. Click the **Save** button to commit changes.

9. RS-232 pass-through configuration is complete. The control system can now be used to send commands to the connected display device. Use the following API command to send a command to the display (sink) device, where display_command is the command data to send:

   RS232Zone[display_command\x0d]

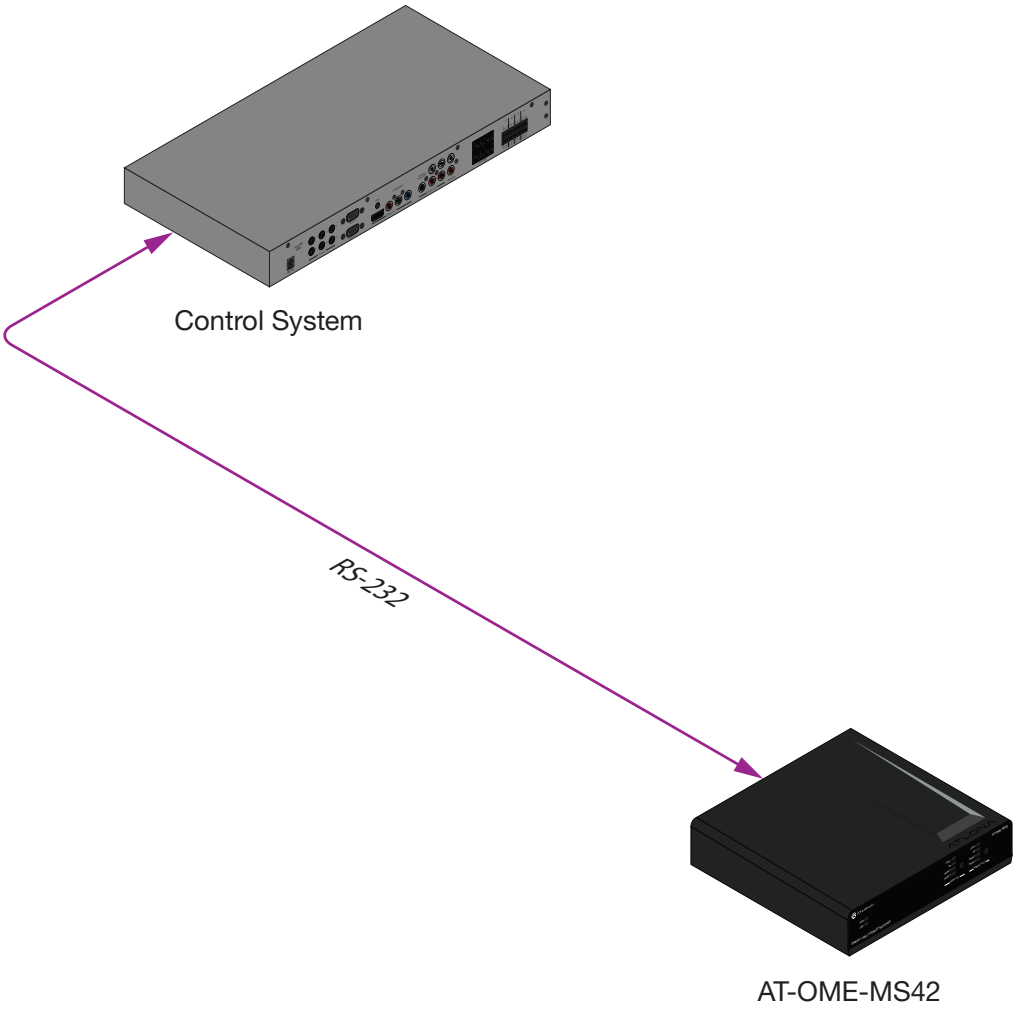
   \x0d (carriage return) should only be added to end of the string if the sink device is expecting this character.

## Control mode

In control mode, RS-232 commands are sent from a computer or control system (DTE) to the AT-OME-MS42 (DCE). This method allows direct control of the switch for routing, IP configuration, powering-on / powering-off and other functions.

**IMPORTANT:** Both the **RS-232** port on the AT-OME-MS42 and on the control system must be set to the same baud rate, in order to communicate properly.

1. Connect the RS-232 cable between the control system and the AT-OME-MS42.
2. Set the baud rate of the computer/control system to the same baud rate. If the AT-OME-MS42 and the control system are not set to the same baud rate, then the AT-OME-MS42 will not respond to RS-232 commands.
3. Refer to the *AT-OME-MS42 Applications Programming Interface* for a list of available commands.



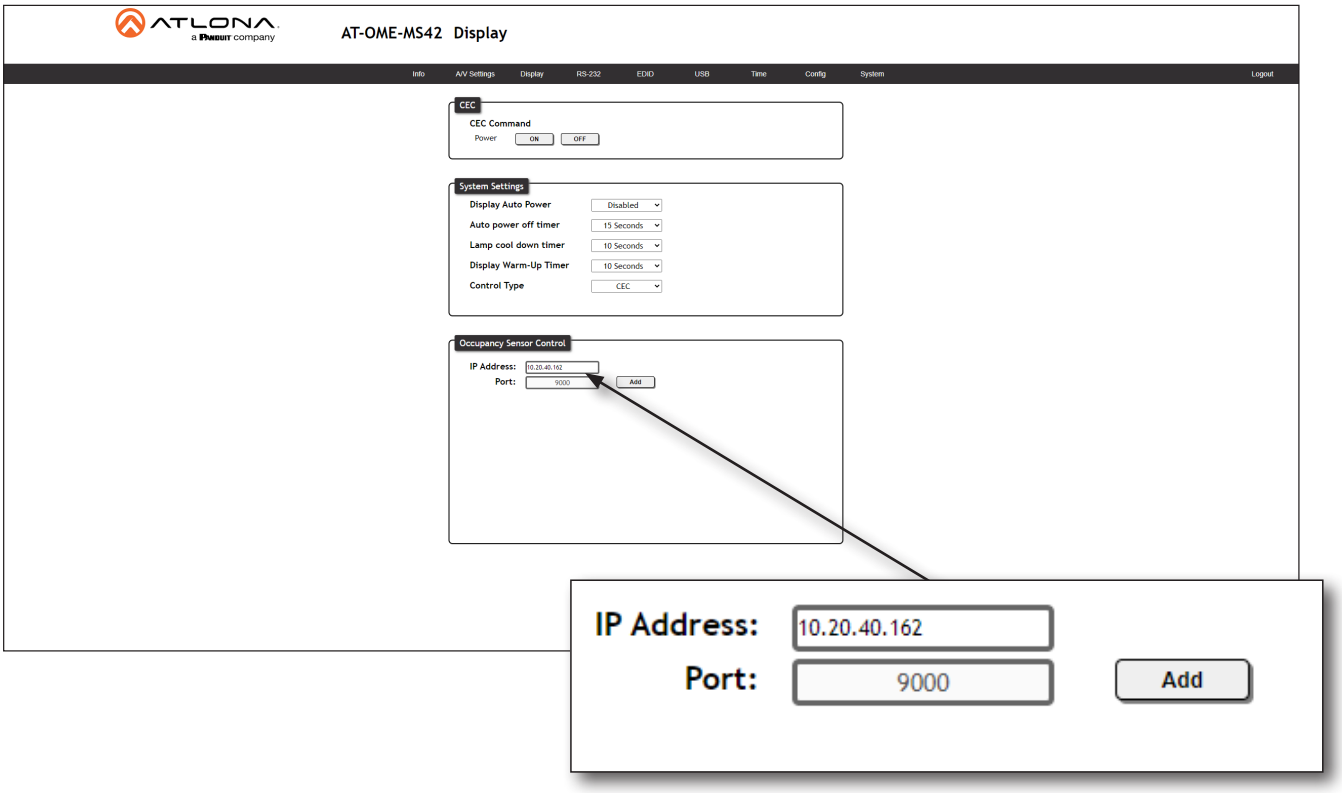
## Integration with the AT-OCS-900N

**NOTE:** The AT-OME-MS42 supports a maximum of three AT-OCS-900N devices.

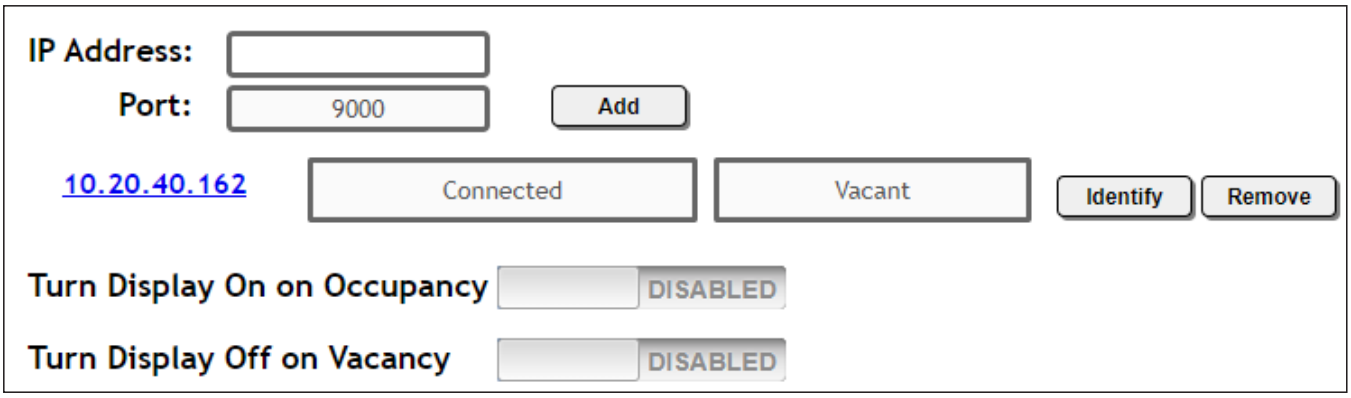
The following provides instructions on adding the AT-OCS-900N occupancy sensor as a device. The **AutoSwitch** feature on the AT-OME-MS42 does not need to be enabled for this to work.

**IMPORTANT:** A username and password must be configured on the AT-OCS-900N before using the device with the AT-OME-MS42.

1. Connect the AT-OCS-900N to the same network as the AT-OME-MS42. Refer to the AT-OCS-900N User Manual for more information.
2. Login to the web server of the AT-OME-MS42.
3. Click **Display** in the top menu bar.
4. Under the **Occupancy Sensor Control** section, enter the IP address of the AT-OCS-900N in the **IP Address** field.




5. Click the **Add** button. If the correct IP address was entered and the AT-OCS-900N is found, additional information will be displayed under the Occupancy Sensor Control section, as shown on the next page.




6. Click the **Turn Display On on Occupancy** toggle to enable or disable this feature. When enabled, the toggle switch will display as **ENABLED** and the occupancy sensor will power-on the display when the room is occupied.
7. Click the **Turn Display Off on Vacancy** toggle to enable or disable this feature. When enabled, the toggle will display as **ENABLED** and the occupancy sensor will power-off the display when the room is no longer occupied.
8. Click the **Identify** button to identify the occupancy sensor. This feature is useful when multiple sensors are connected.

**IMPORTANT:** When adding an occupancy sensor, it is recommended that a static IP address is assigned to the occupancy sensor. DHCP is not recommended.

9. Click the **Remove** button to delete a sensor from the **Sensors** list.
10. Setup is complete.

# Appendix

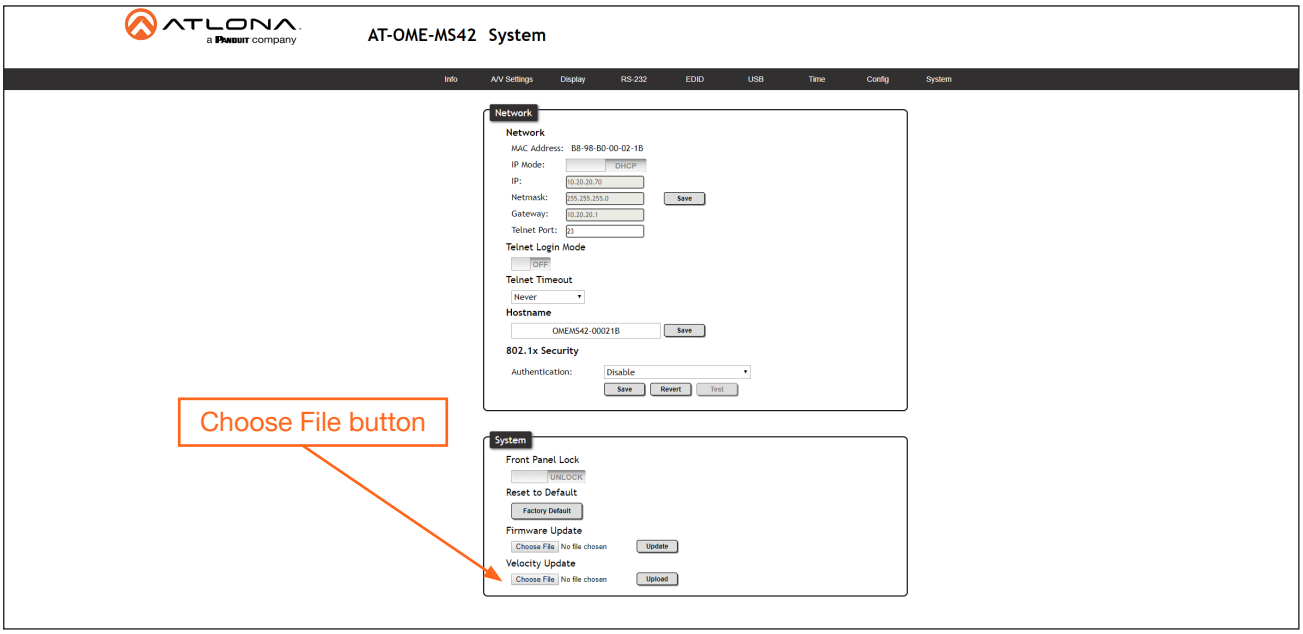
## Updating the Firmware

### Using the Web Server

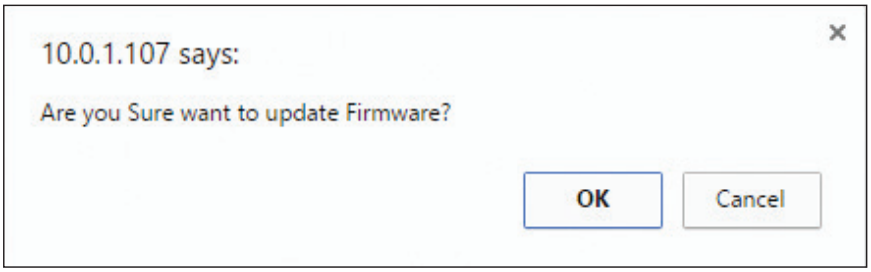
Requirements:

- AT-OME-MS42
- Firmware file
- Computer on the same network as the AT-OME-MS42

1. Download the firmware file from atlona.com and extract the contents of the .zip file to a folder on the computer desktop.
2. Connect an Ethernet cable from the computer, containing the firmware, to the same network where the AT-OME-MS42 is connected.
3. Login to the web server. Refer to Introduction to the Web Server (page 50).
4. Click **System** in the menu bar.




5. Click the **Choose File** button, under the **Firmware Update** section.
6. Browse to the location of the firmware file, select it, and click the **Open** button.
7. Click the **Update** button, under the **Firmware Update** section. The following message box will be displayed.



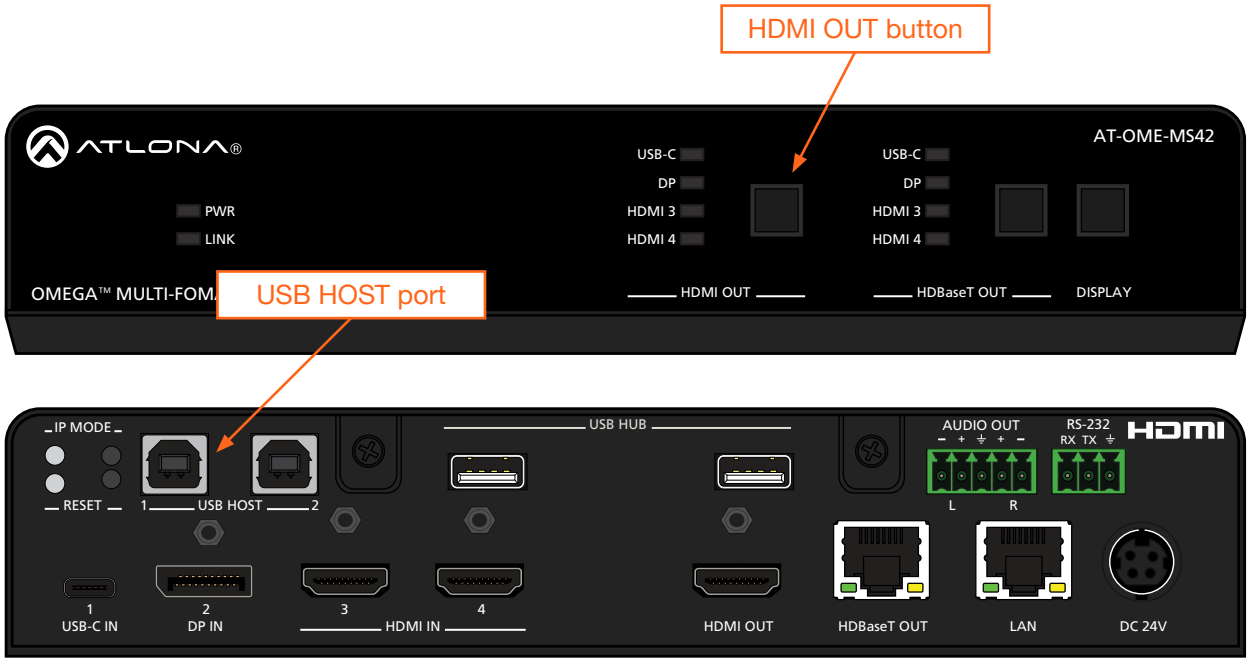
8. Click the **OK** button to begin the firmware update process. Click the **Cancel** button to cancel the process.
9. After the firmware update process is complete, the **Login** screen will be displayed.

## Using USB

Requirements:

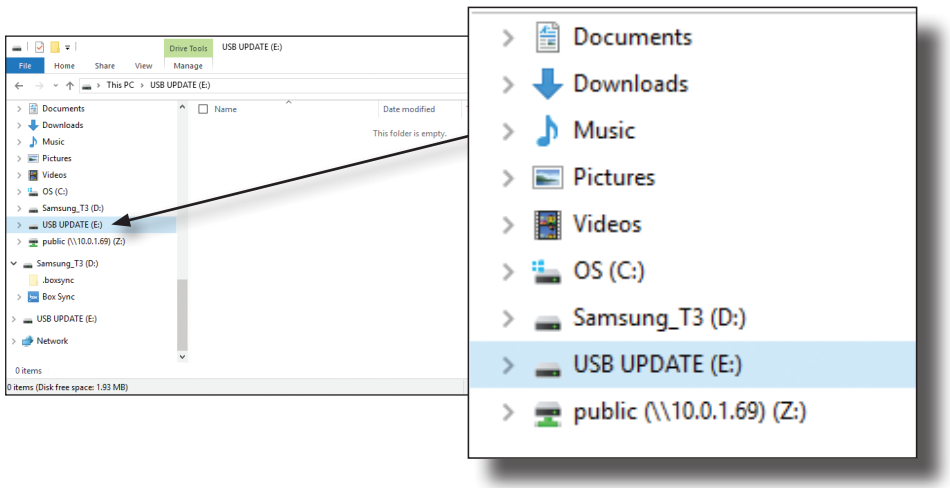
- AT-OME-MS42
- Firmware file
- USB-A to USB-B cable

1. Download the firmware file from atlona.com and extract the contents of the .zip file to a folder on the computer desktop.
2. Power on the AT-OME-MS42.
3. Connect a USB-A to USB-B cable to the PC that contains the firmware file.
4. Press and hold the **HDMI OUT** button while connecting the USB cable from the PC, to the **USB HOST** port on the AT-OME-MS42.

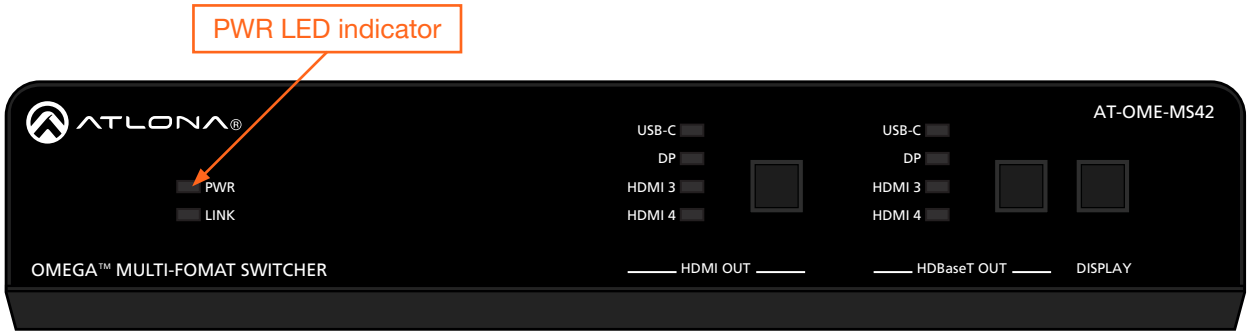



5. Release the **HDMI OUT** button when the USB UPDATE folder is displayed on the PC.

   If this folder is not displayed, automatically, select the USB UPDATE drive from Windows Explorer.



6. Delete all files from the USB UPDATE drive, if any are present, then drag-and-drop the firmware file to the drive. During the firmware update process, the **PWR** LED indicator on the front panel of the AT-OME-MS42 will flash green.




7. Once the firmware update process has completed, the AT-OME-MS42 will automatically reboot.

## Mounting Instructions

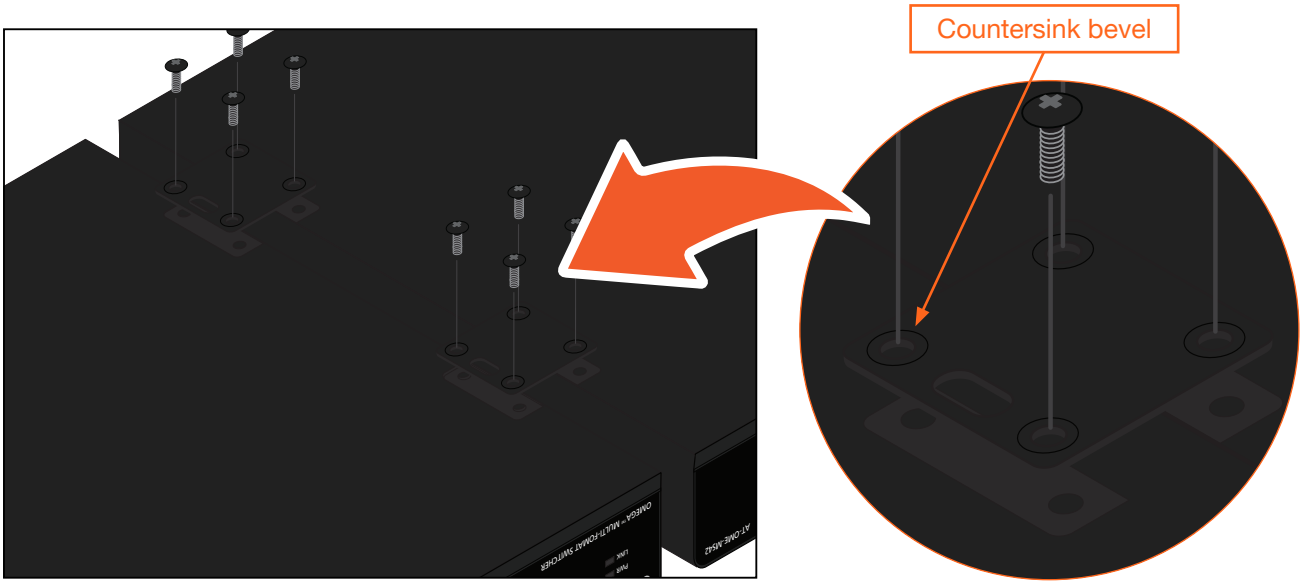
The AT-OME-MS42 includes two mounting brackets, which can be used to attach the unit to any flat surface. Use the two enclosure screws, on the sides of the unit to attach the mounting brackets.

### Single Unit Rack Installation

1. Attach the included small rack ear to one side of the AT-OME-MS42, using the included screws.
2. Attach the included longer rack ear to the opposite side of the AT-OME-MS42 using the included screws.

## Dual Unit Rack Installation

1. Turn both units upside-down on a flat surface, next to each other, as shown.
2. Position the included mounting plate over the pre-drilled holes on the bottom of the enclosure. When attaching the mounting plate, the countersink bevels on the mounting plate should face upward.




3. Turn the attached units over and install the rack ears (sold separately) to one side of each enclosure using the included screws.

Flat Surface

1. Turn the unit upside down, on a flat surface.
2. Position the included mounting plates over the pre-drilled holes on the bottom of the enclosure. When attaching mounting plates, the countersink bevels on the mounting plates should face upward.

3. Mount the unit using the circular holes, on each mounting plate. If using a drywall surface, a #6 drywall screw is recommended. Mounting screws are not included.

**NOTE:** The unit can also be mounted under a flat surface, such as a table, by turning the unit upside down.

# Specifications

| Video | | |
|---|---|---|
| HDMI | 2.0 (1.4 when downscaled) | |
| HDCP | 2.2 (will downscale reporting to match connected devices – does not downscale HDCP signal) | |
| UHD/HD | 4096×2160 @ 60[1]/50/30/25/24 Hz<br>3840×2160 @60[1]/50/30/25/24 Hz<br>1920x1080p @ 60/59.9/50/30/29.97/25/24/23.98 Hz<br>1920x1080i @ 30/29.97/25Hz | 1280x720p @ 60/59.94/50Hz<br>720x576p @ 50 Hz<br>720x576i @ 50 Hz<br>640x480p @ 60/59.96 Hz<br>640x480i @ 30 Hz |
| VESA | 2560×1600 @ 60 Hz<br>2048×1536 @ 60 Hz<br>1920×1200 @ 60 Hz<br>1680×1050 @ 60 Hz<br>1600×1200 @ 60 Hz<br>1440×900 @ 60 Hz<br>1400×1050 @ 60 Hz<br>1280×1024 @ 60 Hz | 1280×800 @ 60 Hz<br>1366×768 @ 60 Hz<br>1360×768 @ 60 Hz<br>1152×864 @ 60 Hz<br>1024×768 @ 60 Hz<br>800×600 @ 60 Hz<br>640×480 @ 60 Hz |
| Scaler[2] | IN | OUT |
| | 4K @ 24 Hz<br>4K @ 30 Hz<br>4K @ 60 Hz, 4:2:0 | 1080p @ 24 Hz<br>1080p @ 30 Hz<br>1080p @ 60 Hz (YUV/RGB, 4:4:4) |
| USB-C | Up to 4K/UHD @ 60Hz | |
| Color Space | YUV, RGB | |
| Chroma Subsampling | 4:4:4, 4:2:2, 4:2:0 | |
| Color Depth | 8-bit, 10-bit, 12-bit | |
| HDR[3] | HDR10, Hybrid-Log Gamma (HLG), and Dolby® Vision™ @ 60Hz | |

| Audio | | | |
|---|---|---|---|
| HDMI / HDBaseT Pass-Through Formats | LPCM 2.0<br>LPCM 5.1<br>LPCM 7.1 | Dolby Digital,<br>Dolby Digital Plus™<br>Dolby TrueHD<br>Dolby Atmos® | DTS® Digital Surround™<br>DTS-HD Master Audio™<br>DTS:X® |
| Bit Rate | 24 Mbits/s max | | |
| **Analog Audio** | | | |
| Format | 2-channel stereo | | |
| Balanced Output | +4 dBu, nominal gain; +20 dBu headroom | | |
| Frequency Response | 20 Hz to 20 kHz, ±0.5 dB | | |
| THD + N | < 0.004% @ 20 Hz to 20 kHz | | |
| SNR | > 105 dB @ 1 kHz, zero clipping @ 0 dBFS, unweighted | | |
| Sample Rate | 32 kHz, 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz, 192 kHz | | |

| Protocols | |
|---|---|
| Addressing | DHCP, static |
| Management | HTTPS, HTTP, Telnet, SSH, mDNS |
| Authentication | IEEE 802.1x:  PEAP/MSCHAPv2 or EAP-TLS |

# Appendix

| USB | |
|---|---|
| Signal | 2.0 |
| Maximum Data Rate | 120 Mbps |
| USB-C | Supports Audio, Video, device and host data, and up to 60W power charging |

| Control | | |
|---|---|---|
| RS-232 | Device control and configuration<br>Bidirectional pass-through from control system over HDBaseT<br>Supported baud rates: 2400, 4800, 9600, 19200, 38400, 57600, 115200 | |
| IP | Protocols: HTTP, HTTPS, Telnet, SSH<br>Modes: DHCP, Static – selectable through front panel and webGUI | |
| CEC | Yes | |

| Resolution / Distance | 4K/UHD - Feet / Meters | | 1080p - Feet / Meters | |
|---|---|---|---|---|
| HDMI IN/OUT | 15 | 5 | 30 | 10 |
| CAT5e/6 | 295 | 90 | 330 | 100 |
| CAT6a/7 | 330 | 100 | 330 | 100 |

| Connectors, Controls, and Indicators | |
|---|---|
| HDMI IN | 2 – Type A, 19-pin female |
| DP IN | 1 – DisplayPort, female |
| USB-C IN | 1 – USB Type-C v3.1, 24-pin female, AV input (Alternate Mode) |
| HDMI OUT | 1 – RJ45, female |
| HDBaseT OUT | 2 - USB Type B, 4-pin, female |
| USB HUB 2 | 2 – Type A, 4-pin female |
| USB HOST | 2 – Type B, female |
| AUDIO OUT | 1 – 5-pin captive screw, balanced / unbalanced 2-channel |
| RS-232 | 1 – 3-pin captive screw (bidirectional) |
| LAN | 1 – RJ45, 100Base-T |
| PWR | 1 - 4-pin DIN, locking |
| **Control Buttons:**<br>HDMI OUT, HDBaseT OUT,<br>DISPLAY<br>IP MODE, RESET | <br>3 – momentary, tact-type<br>2 – momentary, recessed |
| **Function Indicators:**<br>INPUT<br>PWR, LINK, IP MODE, RESET | <br>8 – LED, blue<br>4 – LED, blue |

| Temperature | Fahrenheit | Celsius |
|---|---|---|
| Operating | 32 to 113 | 0 to 45 |
| Storage Temperature | -4 to 140 | -20 to 60 |
| Operating Humidity (RH) | 20% to 90%, non-condensing | |

| Power | | |
|---|---|---|
| Consumption | Unit only: 8.6 W<br>Full load: 104 W (while powering USB-C device up to 60 W, HDBaseT PoE devices up to 30 W each, and USB type A devices up to 2.5 W each) | |
| External Power Supply | 100 - 240 V AC, 50/60 Hz<br>Output: 24 V / 5 A DC | |

| Dimensions | Inches | Millimeters |
|---|---|---|
| Device (H x W x D) | 1.73 x 8.64 x 10 | 44 x 219.5 x 254 |

| Weight | Pounds | Kilograms |
|---|---|---|
| Device | 3.46 | 1.57 |

| Compliance | |
|---|---|
| NDAA-899 | Yes |

| Warranty | |
|---|---|
| Device | 3-year limited |

(1) 4K/UHD p60 4:4:4 supported on input/output HDMI and USB-C input ports, 4K/UHD p60 4:2:0 is supported on HDBaseT output.
(2) Scaler does not support frame rate conversion.
(3) HDR support is restricted to HDMI, USB-C, and DisplayPort.  HDBaseT does not support HDR formats.