4K/UHD 5 Input HDMI Switcher

AT-UHD-SW-51

User Manual

Please check http://www.atlona.com/UHD-SW-51.html
for the most recent **firmware update** or **manual**.

atlona.com

Toll free: 1-877-536-3976
Local: 1-408-962-0515

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Introduction

The 4K/UHD 5 input HDMI switcher is an affordable 5-input, 1-output switcher with 4K pass-through, IR, RS-232, and TCP/IP control, EDID and HDCP management, and ARC. The UHD-SW-51 provides an easy to install solution for home and small offices.

Package Content

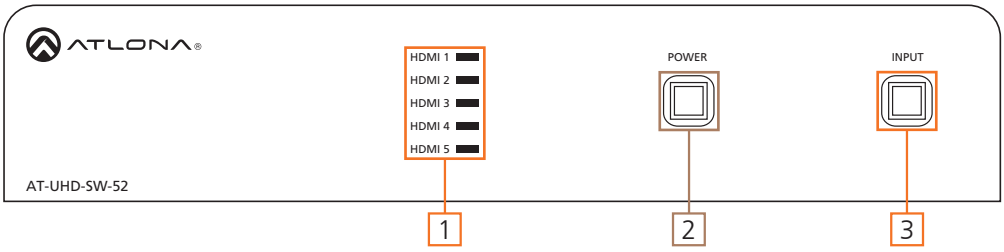
- 1 x UHD-SW-51
- 1 x 5V DC power supply
- 2 x Female captive screw connector (3 pin: RS-232, 2 pin: power)
- 1 x Remote control
- 1 x User Manual

Features

- Five HDMI inputs
- Smart switching with auto-detect (5V detect) for inputs (activated through RS-232 or TCP/IP)
- HDMI Audio Return Channel compatible
- HDCP management
- Supports 4K pass through @ 60Hz 4:2:0 chroma sub-sampling
- Supports Dolby® TrueHD and DTS-HD Master Audio™ pass-through ability when using an HDMI cable
- Digital audio de-embedding through the S/PDIF output for up to DTS 5.1™ and Dolby® Digital
- Two channel PCM and LPCM de-embedding through analog output
- EDID management
- Easy to use webGUI through TCP/IP connection
- Half-rack size with optional rack mount ears

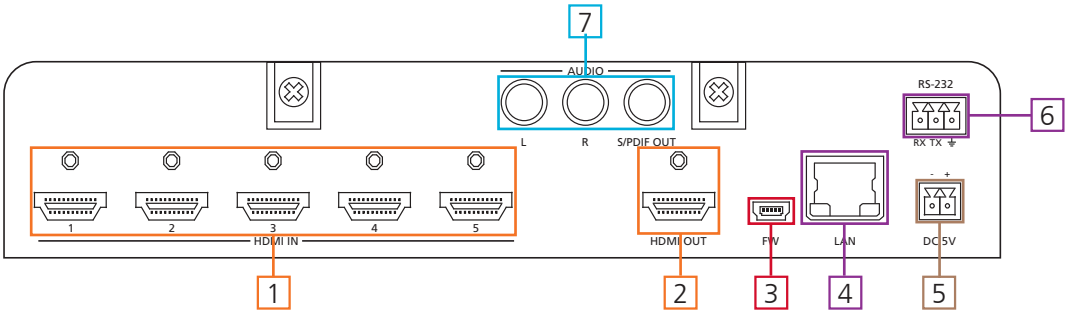
Panel Descriptions

Front Panel



1. HDMI LEDs - Illuminates to indicate the selected source
2. Power Button - Turns switcher on or places it in standby mode
3. Input Button - Switches between HDMI inputs

Back Panel

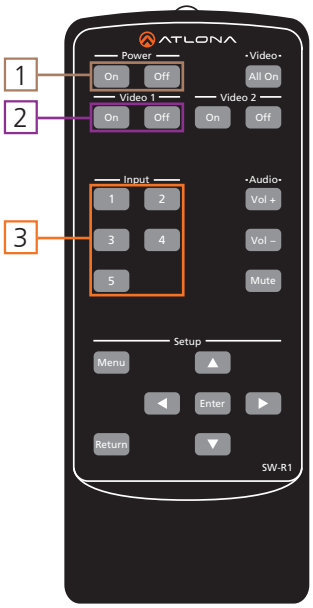


1. HDMI IN - Connect sources here
2. HDMI OUT - Connect to an HDMI display, extender, or switcher
3. Mini USB port: Firmware update port, connect a Mini USB to USB A cable to a computer
4. LAN port - Connect network switch or router to this port for TCP/IP or webGUI control
5. DC 5V: Connect included locking, 5V DC power supply here
6. RS-232 port - Connect control system to RS-232 port
7. Audio output - Connect to an amplifier, audio receiver, or other audio device

Remote Control

1. Power On/Off: Turn switcher power on and off
2. Video On/Off: Turns HDMI video off
3. Input selection: Selects source

Note: On/off video 2, audio, and setup buttons are not functional for the UHD-SW-51 switcher

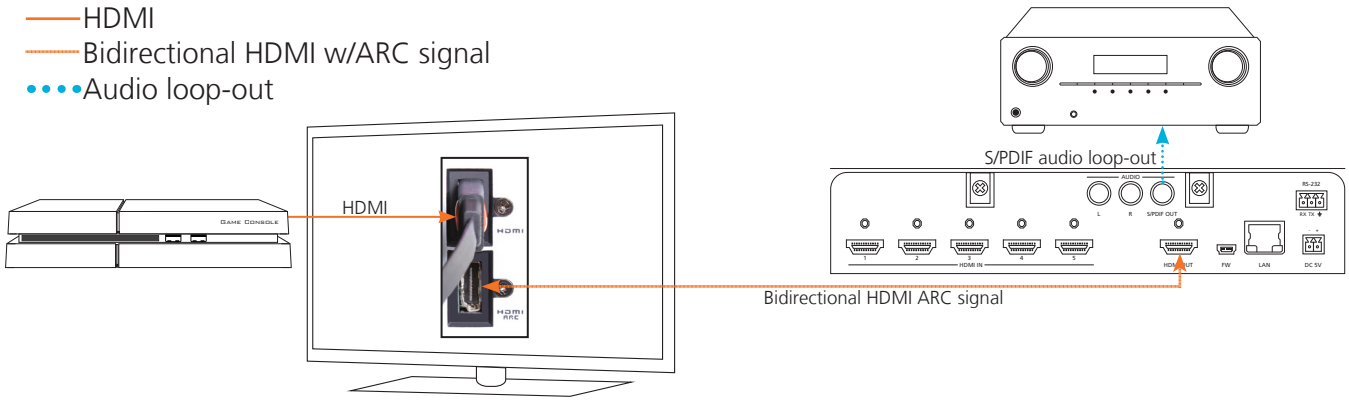


Audio Return Channel (ARC)

ARC enables a source connected to a display to route audio back to the switcher and send the de-embedded audio out the S/PDIF output.

Steps

1. Check to be sure the display supports ARC
2. Enable ARC on the HDMI output of the switcher through RS-232 (command ARC on), TCP/IP, or webGUI
3. Connect the HDMI output port of the switcher to the ARC labeled input port on the display
   NOTE: The switcher must be connected to the display's HDMI ARC input
   Note: Works well with audio from ARC enabled "Smart" televisions
4. Connect the source to a non ARC HDMI input port on the display
5. Connect the S/PDIF port to an AVR or Zone Amp



Captive Screw

Captive screw connectors are an added feature on the UHD-SW. The Captive screw connectors allow you to cut cables down to a suitable length, reducing cable clutter while providing a more reliable connection.

Connecting

When connecting the cables to the female captive screw connector it is important that the wires be terminated correctly. The female captive screw connector has a contact plate at the top and must have the wires touching it for signal to pass. When wired correctly (see picture A) the signal will pass, incorrectly (see picture B) no signal will pass.

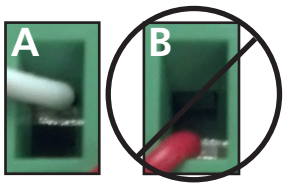
The captive screw connectors have a contact bar that is adjusted to compress the wire against the top contact plate. Use the screws at the top of the connector to compress the wire against the contact plate.

Clockwise

Turn the screws clockwise to raise the contact bar to the upper contact plate and hold the wires in place.

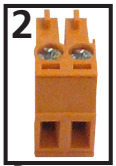
Counter Clockwise

Turn the screws counter clockwise to lower the contact bar to release the wires.



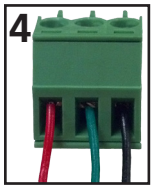
The power cable (picture 1) will have exposed wires. Each wire is encased in a different colored cover. Female captive screw connectors are included: Power (see picture 2) and RS-232 (see picture 3).

Black: - **White**: +

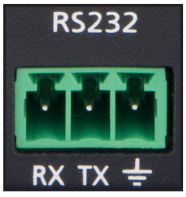


Power

RS-232



Pin out color will differ per RS-232 cable.



RS-232 pin out will be determined by the RS-232 cable and will connect as Rx (receiver), Tx (transmitter), and ⏚ (ground). (See picture 4)

TCP/IP

For convenience, the UHD-SW comes with DHCP on. This enables the switcher to be connected to a network without knowing available IP addresses. If your network does not allow dynamic IP addresses or if you are using the UHD-SW with a TCP/IP control system, this feature may be turned off and the IP address set using RS-232 commands or the webGUI.

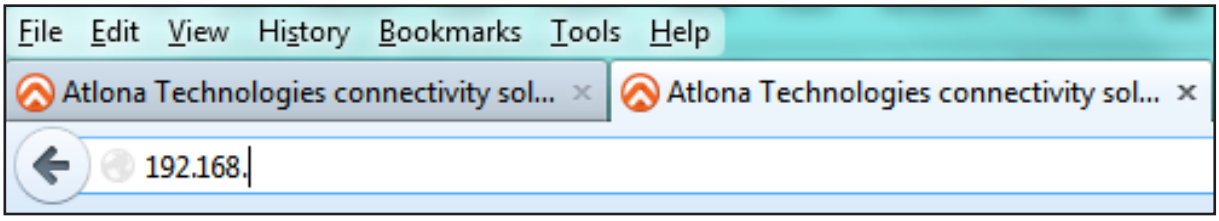
TCP/IP WebGUI

Atlona has created an easy to use WebGUI for initial setup and later changes to the configuration of the UHD-SW.

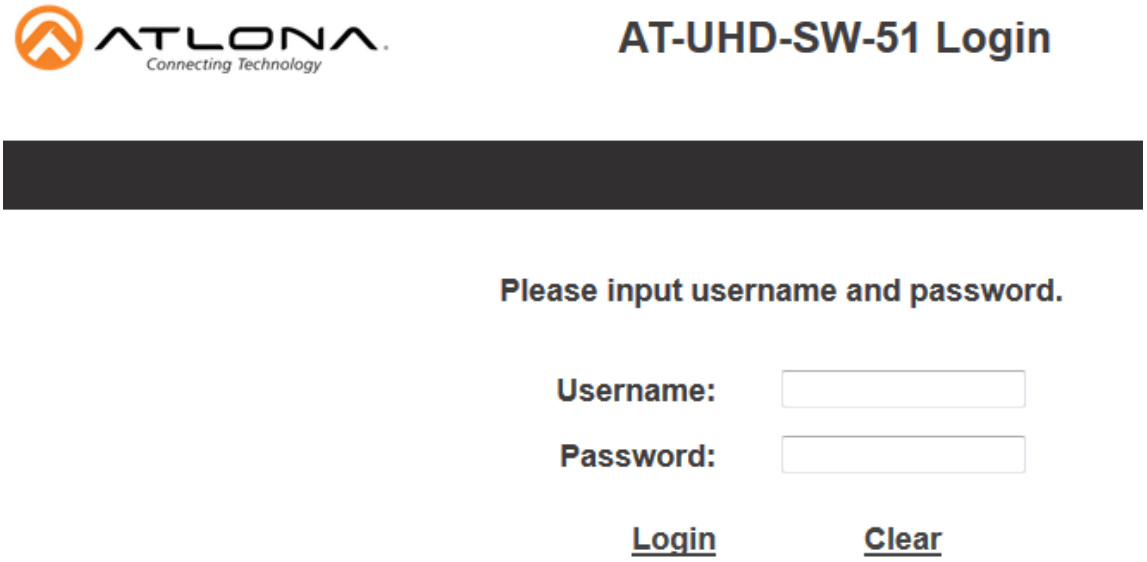
To begin, plug a LAN cable into the LAN port of the UHD-SW and your network, then type the IP address of the UHD-SW into a web browser of a PC connected to the same network (as seen below).

To find the switcher IP: use RS-232 command "IPCFG" or select "Network Status" within the OSD menu.

Note: IP addresses may also be found using common free IP scanner software such as "Advanced IP Scanner"

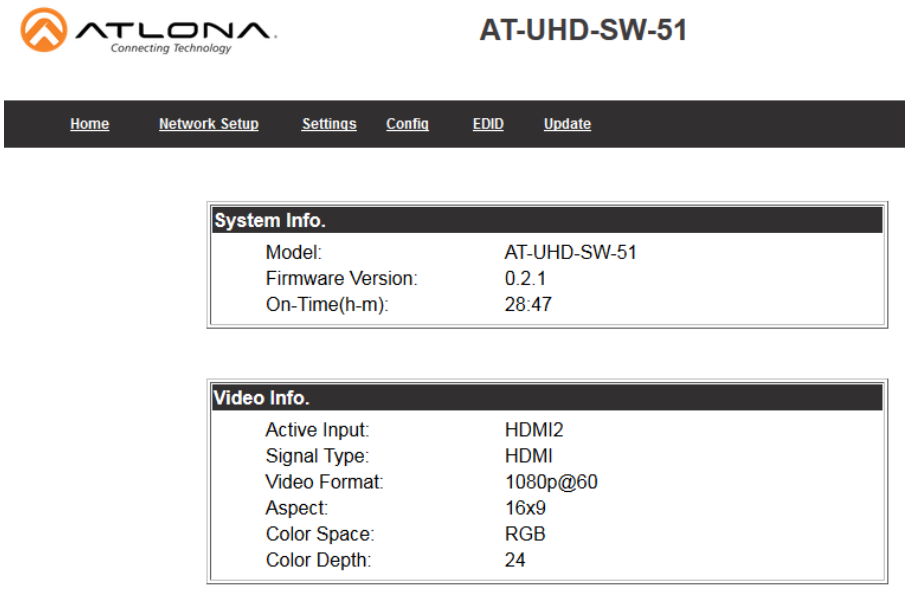


Important: If any stability issues are experienced, disable any anti-virus or firewall that may interfere with network communication to the switcher. Once set up is done and the switcher GUI is no longer used, the firewall and anti-virus can be re-enabled.

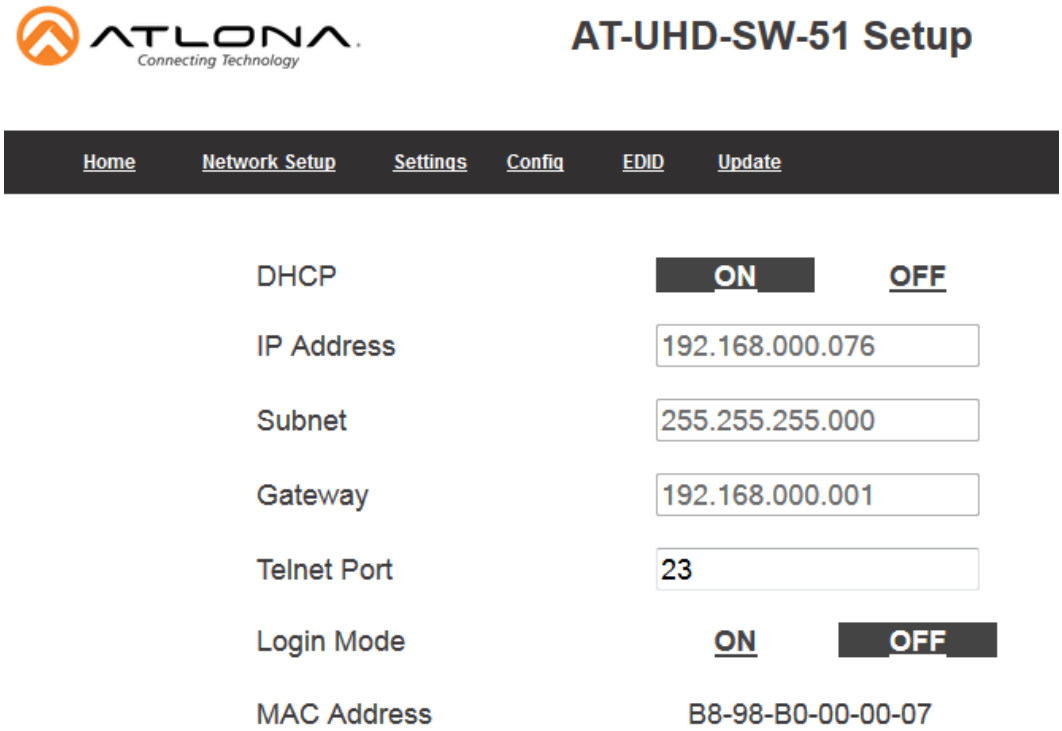


A login screen will appear (this is the same log in for admin and general users). For the first log in (and future admin changes) the username is "root" and password is "Atlona".

Note: Only the admin password can be changed (see page 9). The username will always remain "root".



The home screen tab will display the general system information.

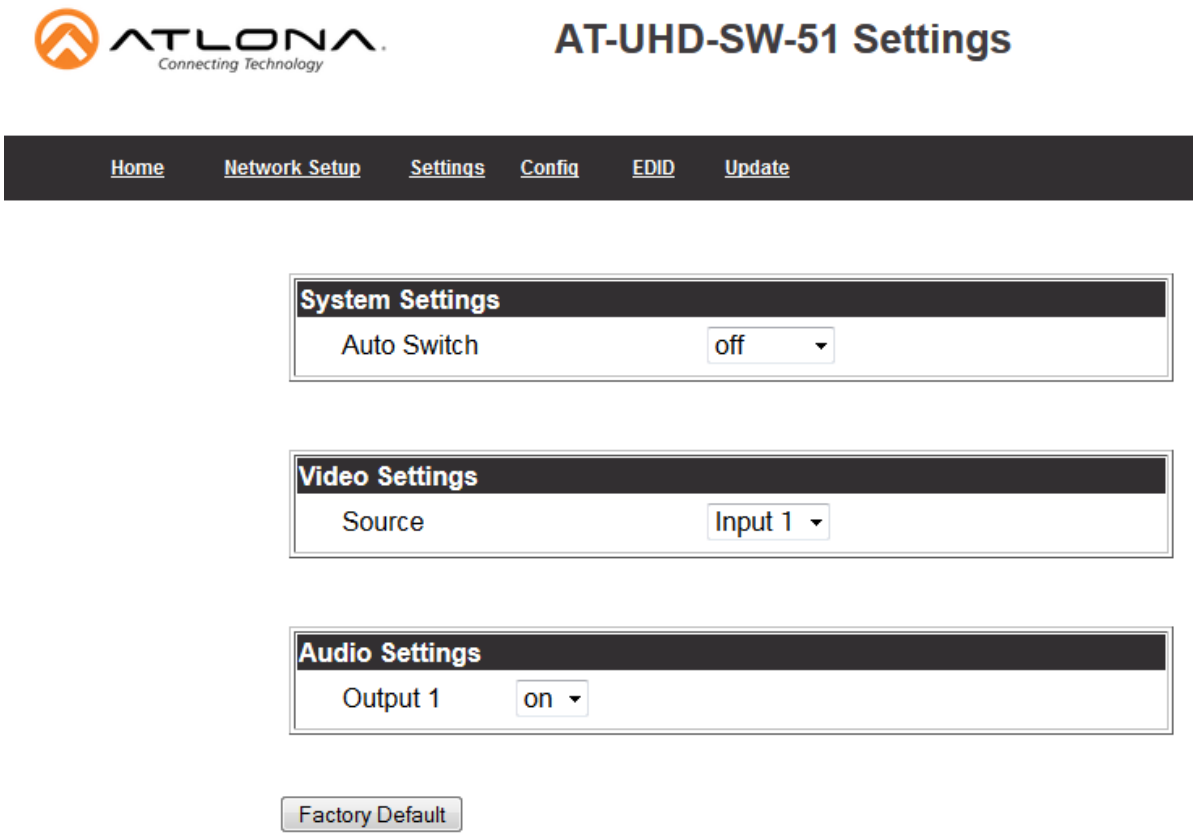


The network set up page will allow the IP information to be changed. When a change is made the screen will grey and the ability to save or cancel will display at the bottom.

Note: When DHCP is on, the IP address cannot be configured. Turn DHCP off to enable IP configuration.
Note: For a stable connection when using a control system, it is best to set up a static IP. As you select an IP address, make certain no other devices on your network are using that IP address.

Login Mode has been added to provide a secure telnet login. Once Login Mode has been turned on a username and password will be required on all IP connections to the switcher.

Note: Login mode should be in off position when the UHD-SW is used with control systems that do not support passwords. If your control system supports password protection, you can turn login mode on. The GUI always requires a password.
Note: The username and password used in IP Login Mode will be the same login information as the WebGUI.



System Settings

Auto Switch - Turn auto switching on/off. Default is off.

Video Settings

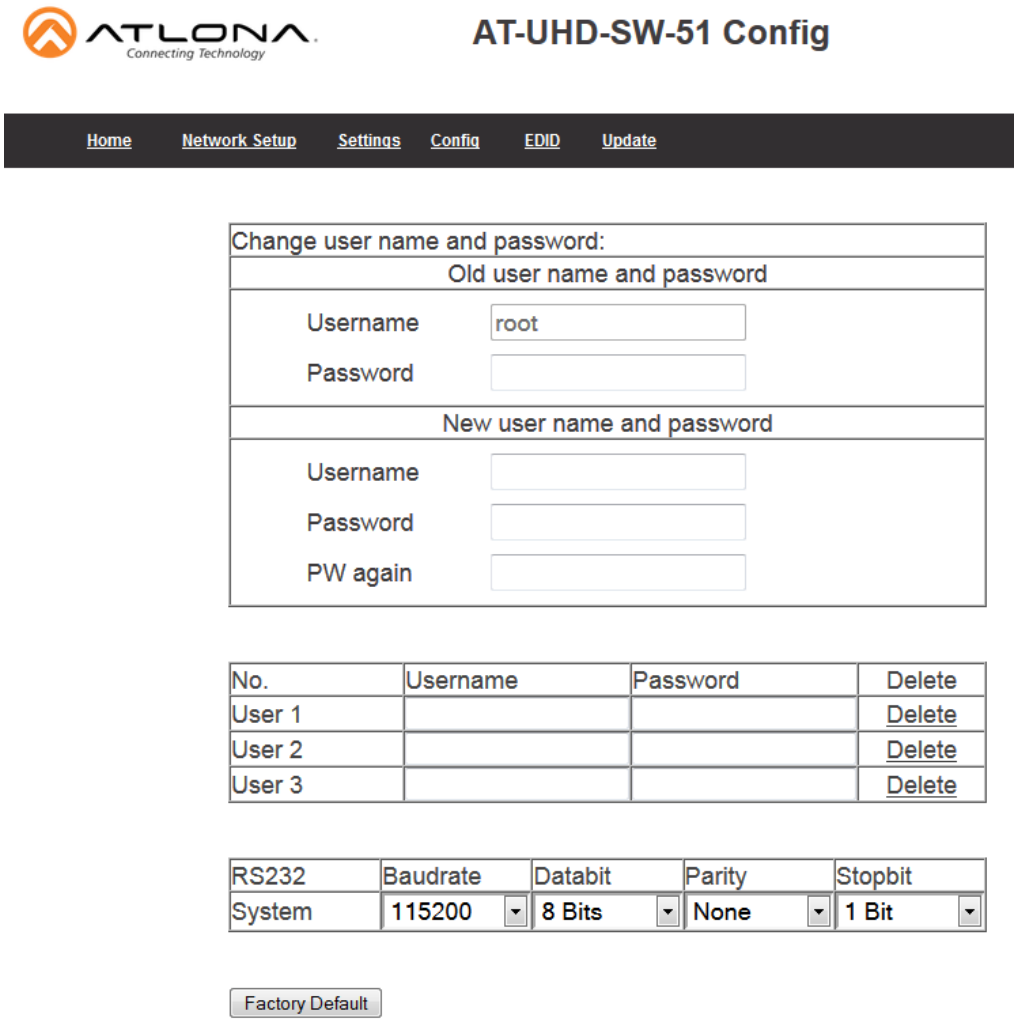
Source - Select one of the five inputs to be routed to the output.

Audio Settings

Output 1 - Turns HDMI audio output on or off.

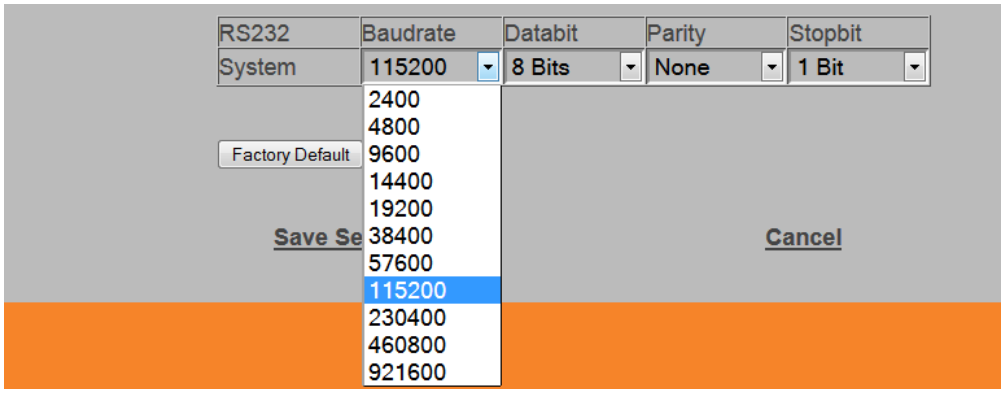
ARC Settings

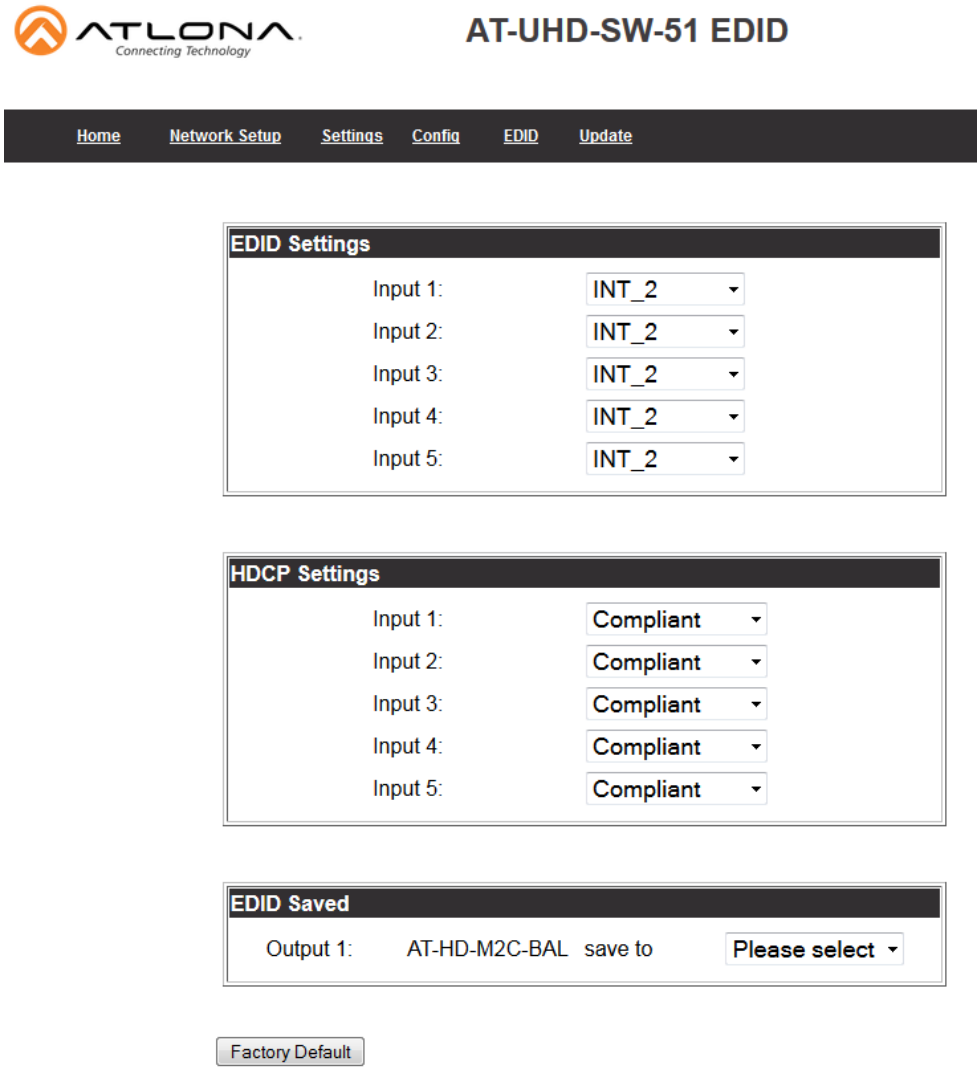
Output 1 - Turns ARC on or off.



The config page will allow the admin password to be changed, users to be added, and the RS-232 port to be configured.

Note: User information will display for the admin only. Up to 3 users other than admin can be added.
Note: Only the admin password can be changed. The username will always remain "root". If the admin password is lost the system must be returned to factory settings and setup repeated.





The EDID page enables the input preferred timing to be selected and HDCP compliance reporting to be set.

Note: UHD-SW-51 protects HDCP encoded content and will not pass HDCP content to a non-HDCP compliant device.

Note: Some devices flag all content as protected when connected to an HDCP compliant display. This prevents what should be non-protected content from reaching devices (i.e. teleconference system) through the UHD-SW-51.

Note: When HDCP reports as non-compliant, only user created content is transmitted. Protected content from all sources (ex. Blu-ray, AppleTV, etc) is blocked.

This function is controllable through RS-232 and TCP/IP.

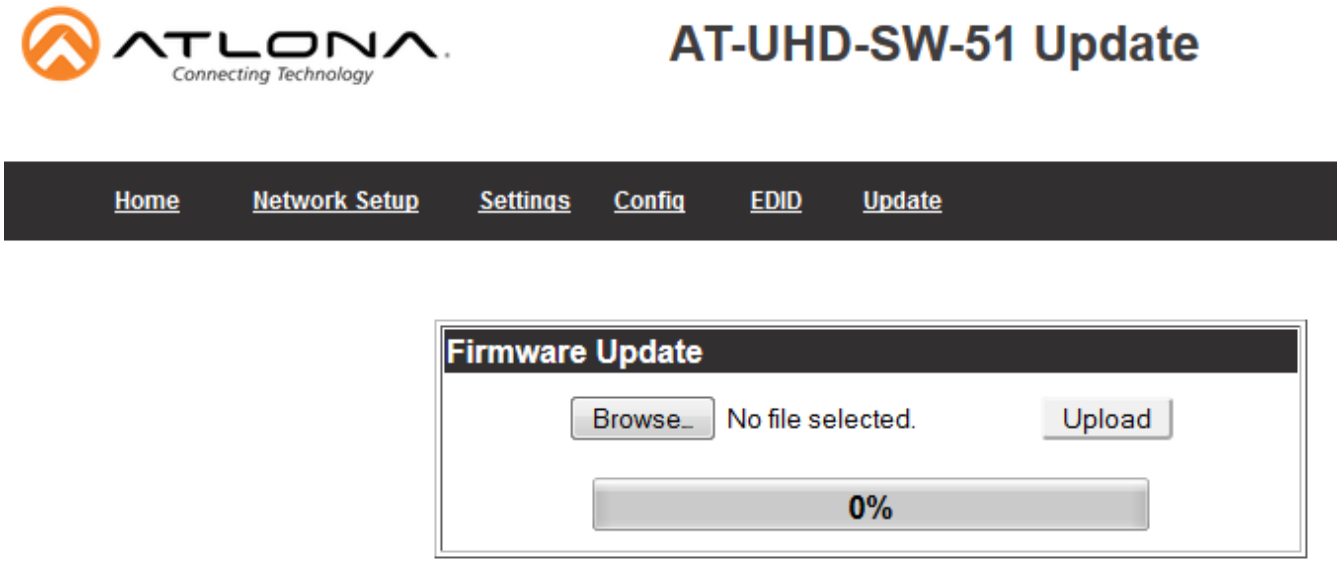
EDID Saved

Save the current output's EDID to memory. There are eight total EDID memories to save to.

Internal EDIDs -

STD	Sink (pass through)	**Int_1**	1080P 2Ch	**Int_2**	1080P MCh
Int_3	1080P DD	**Int_4**	1080P 3D 2Ch	**Int_5**	1080P 3D MCh
Int_6	1080P 3D DD	**Int_7**	720P 2CH	**Int_8**	720P DD
Int_9	1280x800 2Ch	**Int_10**	1366x768 2Ch	**Int_11**	1080P DVI
Int_12	1280x800 DVI	**Int_13**	3840x2160 2Ch	**Int_14**	3840x2160 MCh

Note: Internal EDIDs include audio EDIDs as well. 2Ch is two channel audio, MCh is multi-channel audio (including up to Dolby TrueHD or DTS-HD Master Audio), DD is Dolby Digital, and DVI does not include audio.



Download the latest firmware from http://www.atlona.com then update the unit using this function.

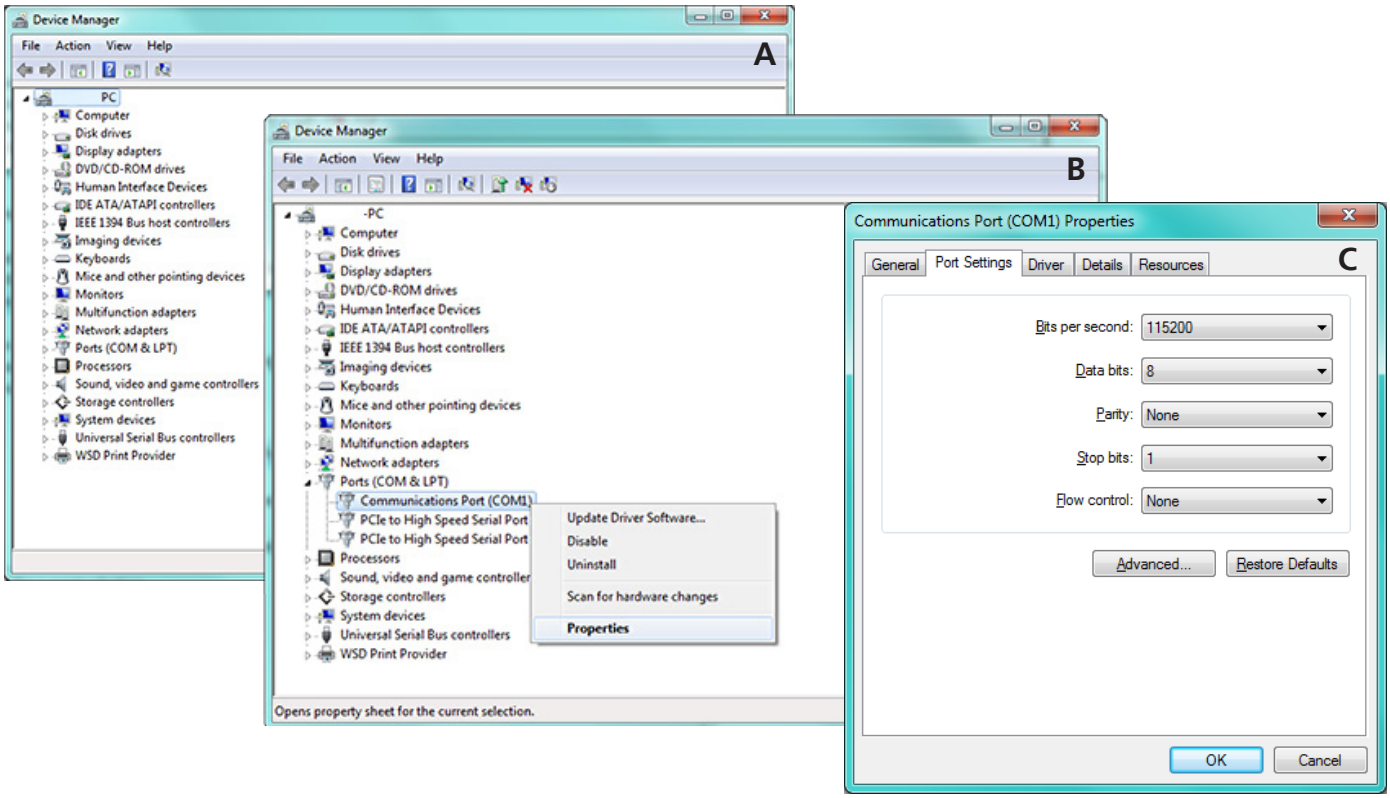
Click the browse button and select the firmware to be loaded. Once selected, press the upload button. The progress bar will display the progress of the firmware update.

RS-232

Hyperterminal

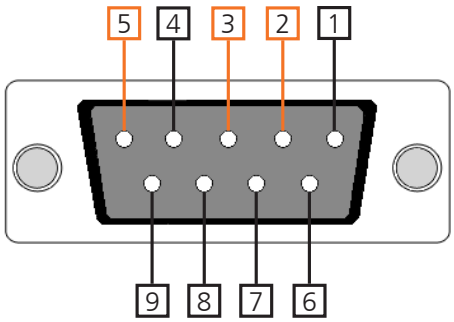
To set up the RS-232 hyperterminal the first thing needed is to find the RS-232 communications port under the computer's device manager. Once there right click the port and select properties. Under the properties menu select the port settings tab and update the menu to the switcher default:

Bits Per Second: 9600, Data Bits: 8, Parity: None, Stop Bits: 1 and Flow Control: None.



Connection

RS-232 is connected through a 9-pin female D connector. The pins will have functions associated with them, some will be unassigned.



No.	Pin	Function
1	----	Not used
2	Tx	Transmit
3	Rx	Receive
4	----	Not used
5	Gnd	Ground
6	----	Not used
7	----	Not used
8	----	Not used
9	----	Not used

Commands

The command codes are case sensitive, do not change capitalization, spacing, or lettering.

Command	Feedback	Description
PWON	PWON	Turns switcher on
PWOFF	PWOFF	Turns switcher off
PWSTA	PWSTA	Displays power status
VersionX Ex. Version OSD	VersionX Ex. Version x.x.xx	Displays the software versions: ex. VersionMCU firmware [MCU] OSD menu [OSD] DSP [DSP] FPGA [FPGA]
Type	AT-UHD-SW-51	Displays the model information
Mreset	Mreset	Reset device to manufacture default
Lock	Lock	Locks the front panel buttons
Unlock	Unlock	Unlocks the front panel buttons
x2AVx1	x2AVx1	Switch inputs Ex. Switch to input 4= x4AVx1
Status	x2AVx1	Displays what input is connected to the output
x1$ X	x1$ on	Turns on/off output channel (X= on, off, sta)
Auto X	Auto on	Turns auto switching on/off (X= on, off, sta)
IRON	IRON	Turns on the IR receiver window
IROFF	IROFF	Turns off the IR receiver window
EDIDCopy1 memY Ex. EDIDCopy1 mem2	EDIDCopy1 memY Ex. EDIDCopy1 mem2	Save the EDID of output 1 to memory (Y= 1-8)
EDIDMSetX default	EDIDMSetX default	Set the EDID of the input to the default EDID
EDIDMSetX saveY	EDIDMSetX saveY	Set the EDID of an input to the previously saved EDID memory Ex. EDIDMset3 save1 - sets input 3 to EDID memory 1
EDIDMSetX intY	EDIDMSetX intY	Sets the EDID of an input to one of the internal EDIDs Ex. EDIDMSet2 int3 - Sets input 3 to internal EDID 3
HDCPSet1 X Ex. HDCPSet1 on	HDCPSet1 X Ex. HDCPSet1 on	Set HDCP reporting mode of the HDMI input (X= 1-5)(Y= on, off, sta) Ex. Input 3 to report HDCP non-compliant = HDCPSet3 off
AudioOut1 X	AudioOut1 on	Turns the HDMI audio output on/off (X= on, off, sta)
ARC X	ARC on	Turns on/off ARC (X= on, off, sta)

Each command or feedback is terminated with a carriage return.
Note: If the command fails or is incorrect the feedback is "Command FAILED"

[Y] preferred timing -

STD	Sink (pass-through)	**1**	1080P 2Ch	**2**	1080P MCh
3	1080P DD	**4**	1080P 3D 2Ch	**5**	1080P 3D MCh
6	1080P 3D DD	**7**	720P 2CH	**8**	720P DD
9	1280x800 2Ch	**10**	1366x768 2Ch	**11**	1080P DVI
12	1280x800 DVI	**13**	3840x2160 2Ch	**14**	3840x2160 MCh

Note: Preferred timings include audio EDIDs as well. 2Ch is two channel audio, MCh is multi-channel audio (including up to Dolby TrueHD or DTS-HD Master Audio), DD is Dolby Digital, and DVI does not include audio.

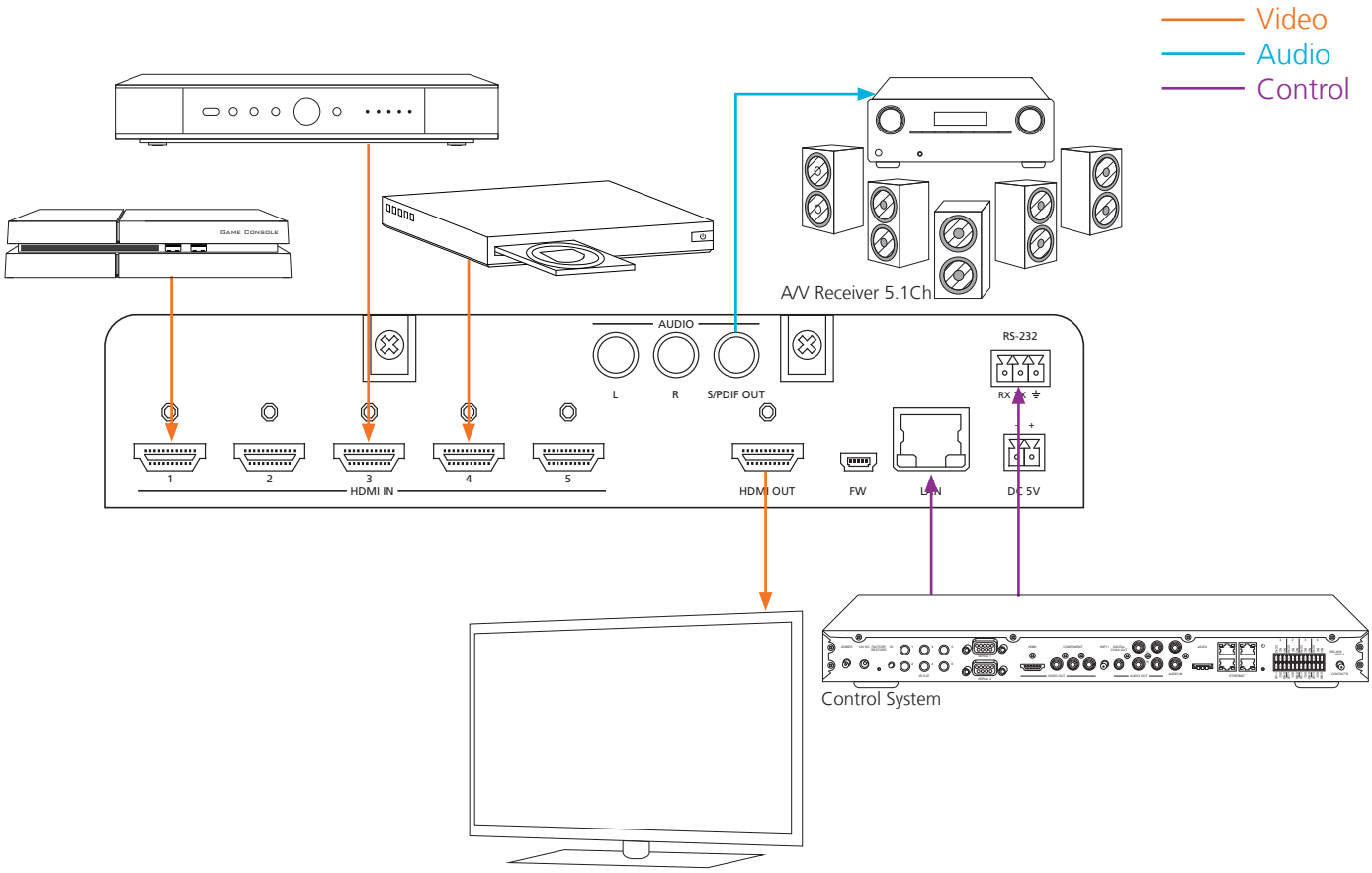
IP Commands

Command	Feedback	Description
IPCFG	IP Addr : x.x.x.x Netmask : x.x.x.x Gateway : x.x.x.x IP Port : x	Displays IP address configuration
IPQuit	IPQuit	Logs out of TCP/IP Connection
IPAddUser X Y Ex. IPAddUser Atlona 1234	TCP/IP user was added	Adds a user for TCP/IP control X= user and Y= Password
IPAddUser	username password username password username password	Displays a list of users and passwords
IPDelUser X	TCP/IP user was deleted	Delete a user from TCP/IP X= username
IPDHCP X	IPDHCP X	Turns HDCP on or off X= on, off, sta
IPStatic X Y Z Ex. IPStatic 192.168.1.1 255.255.255.0 192.168.1.200	IPStatic X Y Z Ex. IPStatic 192.168.1.1 255.255.255.0 192.168.1.200	Sets static IP address IPStatic Address(X) Netmask(Y) Gateway(Z)
IPPort X	IPPort X	Set the TCP/IP Port
IPLogin X Ex. IPLogin off	IPLogin X Ex. IPLogin off	Enables IP Login X= on, off, sta
Broadcast X Ex. Broadcast on	Broadcast X Ex. Broadcast on	Sets broadcast mode on or off X= on, off, sta
IPTimeout XX Ex. IPTimeout 300	IPTimeout XX Ex. IPTimeout300	Determines amount of seconds of inactivity before TCP/IP disconnects

Each command or feedback is terminated with a carriage return.

Note: If the command fails or is incorrect the feedback is "Command FAILED"

Connections and Installation



Specifications

Resolutions

Video	4096x2160@24/25/30Hz*, 3840x2160@24/25/30Hz* (UHD), 2048x1080p, 1080p@23.98/24/25/29.97/30/50/59.94/60Hz, 1080i@50/59.94/60Hz, 720p@50/59.94/60Hz, 576p, 576i, 480p, 480i	
VESA	2560x2048, 2560x1600, 2048x1536, 1920x1200, 1680x1050, 1600x1200, 1600x900, 1440x900, 1400x1050, 1366x768, 1360x768, 1280x1024, 1280x800, 1280x768, 1152x864, 1024x768, 800x600, 640x480	
Colorspace	YUV, RGB	
Chroma Sub-sampling	4:4:4, 4:2:2, 4:2:0	
Color depth	8-bit, 10-bit, 12-bit	

Audio

Formats - HDMI IN/OUT	PCM 2 Ch, LPCM 5.1, LPCM 7.1, Dolby Digital, DTS 5.1, Dolby Digital Plus, Dolby TrueHD, DTS-HD Master Audio	
Formats - S/PDIF	PCM 2 Ch, LPCM 5.1, LPCM 7.1, Dolby Digital, DTS 5.1, Dolby Digital Plus,	
Format - L/R audio	maximum analog output: balanced +5dBu @ 0dBfs, 2Ch PCM only	
Sample rate	32 kHz, 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz, 192 kHz	

Distance (per port)

HDMI @ 1080p	10 meters	30 feet
HDMI @ 4K	5 meters	15 feet

Signal

Bandwidth	10.2 Gbps	
CEC	Pass through	
HDCP	Switchable - Complaint / Non-compliant	

Temperature

Operating	0°C to 50°C	32°F to 122°F
Storage	-20°C to 60°C	-4°F to 140°F
Humidity	20 to 90% non-condensing	

Power

Consumption	5.94W	
Idle Consumption	1.57W	
Supply	Input: AC100~240V 50/60Hz Output: DC 5V/3.6A	

Dimension

H x W x D	44 x 222.25 x 261 (mm)	1.73 x 8.75 x 10.28 (inch)
Rack size	1/2 rack, 1RU	

Weight

Device	3.10 kg	1.40 lbs

Certification

Power Supply	CE, FCC, cULus, RCM
Product	CE, FCC

Safety Information

Safeguards

To reduce the risk of electric shock, do not expose this product to rain or moisture

Do not modify the wall plug. Doing so will void the warranty and safety features.

If the wall plug does not fit into your local power socket, hire an electrician to replace your obsolete socket.

This equipment should be installed near the socket outlet and the device should be easily accessible in the case it requires disconnection.

Precautions

FCC regulations state that any unauthorized changes or modifications to this equipment, not expressly approved by the manufacturer, could void the user's authority to operate this equipment.

Operate this product using only the included external power supply. Use of other power supplies could impair performance, damage the product, or cause fires.

In the event of an electrostatic discharge this device may automatically turn off. If this occurs, unplug the device and plug it back in.

Protect and route power cords so they will not be stepped on or pinched by anything placed on or against them. Be especially careful of plug-ins or cord exit points from this product.

Avoid excessive humidity, sudden temperature changes or temperature extremes.

Keep this product away from wet locations such as bathtubs, sinks, laundries, wet basements, fish tanks, and swimming pools.

Use only accessories recommended by Atlona to avoid fire, shock, or other hazards.

Unplug the product before cleaning. Use a damp cloth for cleaning and not cleaning fluid or aerosols. Such products could enter the unit and cause damage, fire, or electric shock. Some substances may also mar the finish of the product.

Never open, remove unit panels, or make any adjustments not described in this manual. Attempting to do so could expose you to dangerous electrical shock or other hazards. It may also cause damage to your product. Opening the product will void the warranty.

Do not attempt to service the unit. Disconnect the product and contact your authorized Atlona reseller or contact Atlona directly.

Atlona, Inc. ("Atlona") Limited Product Warranty Policy

Coverage

Atlona warrants its products will substantially perform to their published specifications and will be free from defects in materials and workmanship under normal use, conditions and service.

Under its Limited Product Warranty, Atlona, at its sole discretion, will either:

A) repair or facilitate the repair of defective products within a reasonable period of time, restore products to their proper operating condition and return defective products free of any charge for necessary parts, labor and shipping

OR

B) replace and return, free of charge, any defective products with direct replacement or with similar products deemed by Atlona to perform substantially the same function as the original products

OR

C) refund the pro-rated value based on the remaining term of the warranty period, not to exceed MSRP, in cases where products are beyond repair and/or no direct or substantially similar replacement products exist.

Repair, replacement or refund of Atlona's products is the purchaser's exclusive remedy and Atlona's liability does not extend to any other damages, incidental, consequential or otherwise.

This Limited Product Warranty extends to the original end-user purchaser of Atlona's products and is non-transferrable to any subsequent purchaser(s) or owner(s) of these products.

Coverage Periods

Atlona's Limited Product Warranty Period begins on the date of purchase by the end-purchaser. The date contained on the end-purchaser's sales or delivery receipt is the proof purchase date.

Limited Product Warranty Terms – New Products

- 10 years from proof of purchase date for hardware/electronics products purchased on or after June 1, 2013
- 3 years from proof of purchase date for hardware/electronics products purchased before June 1, 2013
- Lifetime Limited Product Warranty for all cable products

Limited Product Warranty Terms – Refurbished (B-Stock) Products

- 3 years from proof of purchase date for all Refurbished (B-Stock) hardware and electronic products purchased on or after June 1, 2013

Remedy

Atlona recommends that end-purchasers contact their authorized Atlona dealer or reseller from whom they purchased their products. Atlona can also be contacted directly. Visit www.atlona.com for Atlona's contact information and hours of operation. Atlona requires that a dated sales or delivery receipt from an authorized dealer, reseller or end-purchaser is provided before Atlona extends its warranty services. Additionally, a return merchandise authorization (RMA) and/or case number, is required to be obtained from Atlona in advance of returns.

Atlona requires that products returned are properly packed, preferably in the original carton, for shipping. Cartons not bearing a return authorization or case number will be refused. Atlona, at its sole discretion, reserves the right to reject any products received without advanced authorization. Authorizations can be requested by calling 1-877-536-3976 (US toll free) or 1-408- 962-0515 (US/international) or via Atlona's website at www.atlona.com.

Exclusions

This Limited Product Warranty excludes:

- Damage, deterioration or malfunction caused by any alteration, modification, improper use, neglect, improper packing or shipping (such claims must be presented to the carrier), lightning, power surges, or other acts of nature.
- Damage, deterioration or malfunction resulting from the installation or removal of this product from any installation, any unauthorized tampering with this product, any repairs attempted by anyone unauthorized by Atlona to make such repairs, or any other cause which does not relate directly to a defect in materials and/or workmanship of this product.
- Equipment enclosures, cables, power supplies, batteries, LCD displays, and any accessories used in conjunction with the product(s).
- Products purchased from unauthorized distributors, dealers, resellers, auction websites and similar unauthorized channels of distribution.

Disclaimers

This Limited Product Warranty does not imply that the electronic components contained within Atlona's products will not become obsolete nor does it imply Atlona products or their electronic components will remain compatible with any other current product, technology or any future products or technologies in which Atlona's products may be used in conjunction with. Atlona, at its sole discretion, reserves the right not to extend its warranty offering in instances arising outside its normal course of business including, but not limited to, damage inflicted to its products from acts of god.

Limitation on Liability

The maximum liability of Atlona under this limited product warranty shall not exceed the original Atlona MSRP for its products. To the maximum extent permitted by law, Atlona is not responsible for the direct, special, incidental or consequential damages resulting from any breach of warranty or condition, or under any other legal theory. Some countries, districts or states do not allow the exclusion or limitation of relief, special, incidental, consequential or indirect damages, or the limitation of liability to specified amounts, so the above limitations or exclusions may not apply to you.

Exclusive Remedy

To the maximum extent permitted by law, this limited product warranty and the remedies set forth above are exclusive and in lieu of all other warranties, remedies and conditions, whether oral or written, express or implied. To the maximum extent permitted by law, Atlona specifically disclaims all implied warranties, including, without limitation, warranties of merchantability and fitness for a particular purpose. If Atlona cannot lawfully disclaim or exclude implied warranties under applicable law, then all implied warranties covering its products including warranties of merchantability and fitness for a particular purpose, shall provide to its products under applicable law. If any product to which this limited warranty applies is a "Consumer Product" under the Magnuson-Moss Warranty Act (15 U.S.C.A. §2301, ET SEQ.) or other applicable law, the foregoing disclaimer of implied warranties shall not apply, and all implied warranties on its products, including warranties of merchantability and fitness for the particular purpose, shall apply as provided under applicable law.

Other Conditions

Atlona's Limited Product Warranty offering gives legal rights, and other rights may apply and vary from country to country or state to state. This limited warranty is void if (i) the label bearing the serial number of products have been removed or defaced, (ii) products are not purchased from an authorized Atlona dealer or reseller. A comprehensive list of Atlona's authorized distributors, dealers and resellers can be found at www.atlona.com.

Atlona Product Registration

Thank you for purchasing this Atlona product. - We hope you enjoy it and will take an extra few moments to register your new purchase.

Registration creates an ownership record if your product is lost or stolen and helps ensure you'll receive notification of performance issues and firmware updates.

At Atlona, we respect and protect your privacy, assuring you that your registration information is completely secure. Atlona product registration is completely voluntary and failure to register will not diminish your limited warranty rights.

To register go to: http://www.atlona.com/registration