

4K HDR Four-Input HDMI Switcher with Auto-Switching and Return Optical Audio

AT-JUNO-451



User Manual

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Introduction

The Atlona JunoX™ 451 (AT-JUNO-451) is a 4x1 HDMI switcher for high dynamic range (HDR) formats. It is HDCP 2.2 compliant and supports 4K/UHD video @ 60 Hz with 4:4:4 chroma sampling, as well as HDMI data rates up to 18 Gbps. The JunoX 451 is ideal for residential applications with the latest as well as emerging 4K/UHD and HDR sources and displays. It is compatible with all video resolutions, audio formats, and color space formats supported in the HDMI 2.0a specification, plus the ability to pass metadata for HDR content. The JunoX 451 includes EDID management features and automatic input switching. It also supports the HDMI Audio Return Channel for receiving digital audio from a television, and includes a TOSLINK digital audio output for sending this audio to an AV receiver or soundbar. This JunoX Series HDMI switcher can be controlled via Ethernet, RS-232, and IR. A handheld IR remote control is included.

Package Content

AT-UHD-HDVS-300-TX

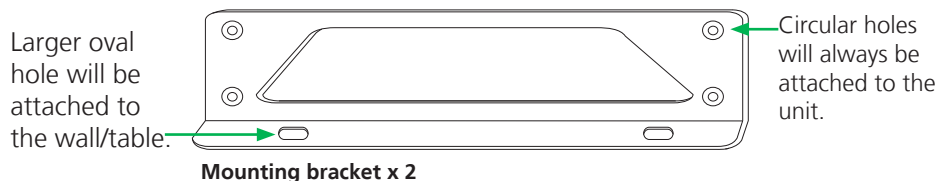
- 1 x Unit
- 1 x Female captive screw connector
5 pin: RS-232 and IR IN
- 2 x Mounting plates
- 4 x Rubber feet
- 4 x Screws
- 1 x IR remote control
- 1 x Installation guide

Features

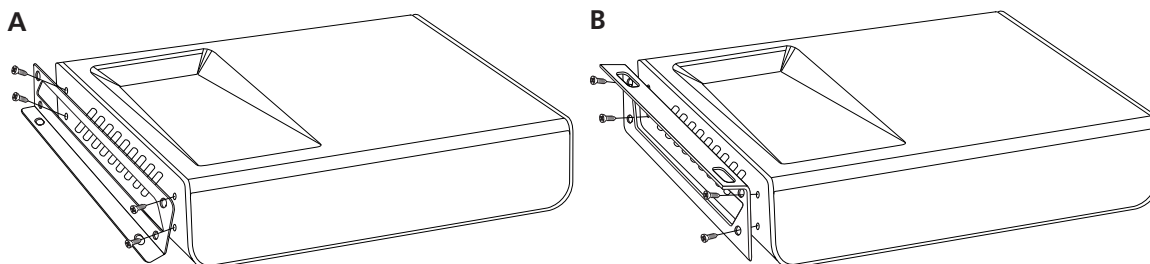
- 4 input, 1 output HDMI switcher
- Passes resolutions up to 4K@60Hz 4:4:4, including HDR
- ARC capable from compatible displays
- Auto switching using both Hot Plug Detect and video detecting technology
- Flexible control options using IR, front panel, RS-232, TCP/IP, webGUI, or AMS
- Easy firmware updating using USB, webGUI, or AMS
- Multiple EDID options using internal, pass through, or learned EDIDs
- HDCP 2.2 compliant

Mounting

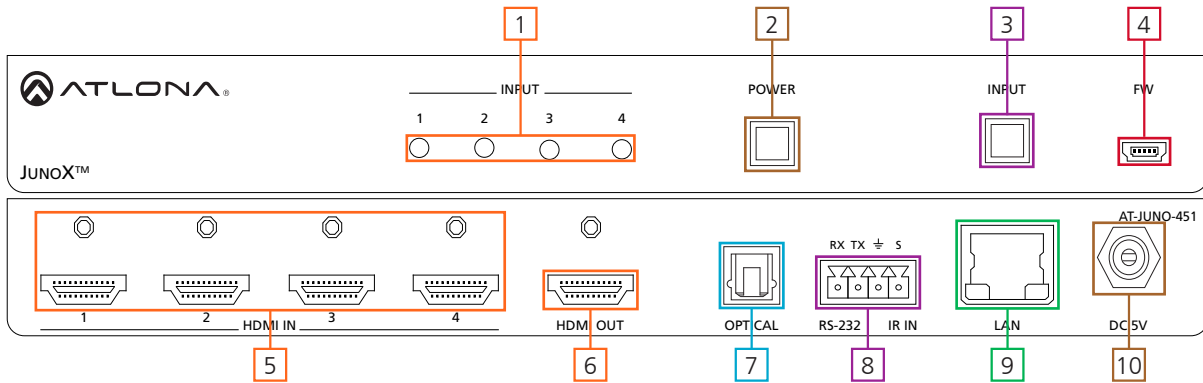
The JunoX comes with mounting brackets that can be used to affix the unit to a table, desk, etc.



To affix the mounting brackets to the unit, use the four included screws. The bracket can be affixed with the oval holes pointing to the bottom (for against the wall - picture A) or the oval holes facing the top (for under tables - picture B).



Panel Descriptions



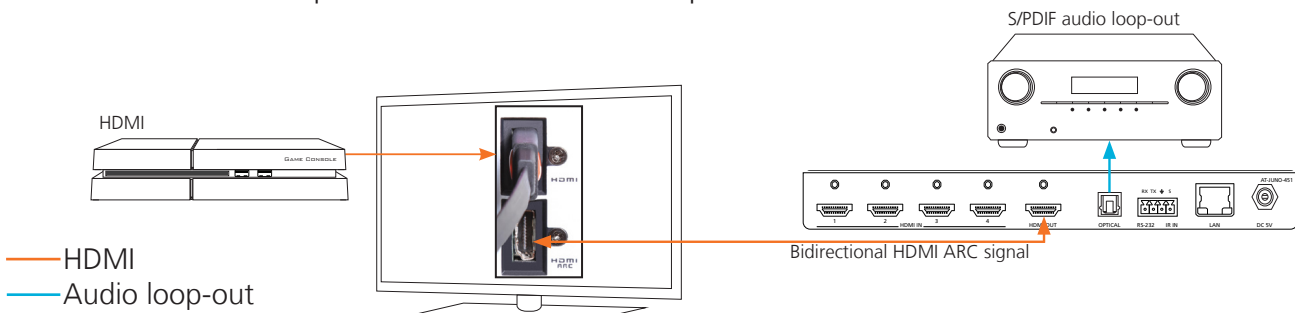
1. **INPUT** LEDs - LED will illuminate to display the currently selected input
2. **POWER** button - Turns switcher on or places the unit in standby mode
3. **INPUT** button - Use to switch between inputs
4. **FW** port: Firmware update port, connect a mini USB to USB A cable to a computer
Firmware is downloadable through <http://www.atlona.com/product/AT-JUNO-451/>
5. **HDMI IN** - Connect HDMI sources to these ports
6. **HDMI OUT** - Connect HDMI display to this port
7. **OPTICAL** port - Connect audio cable here for output to an AVR
8. **RS-232 / IR IN** - Connect to 3rd party control system for control
9. **LAN** port - Connect network switch or router here for Ethernet, TCP/IP, or webGUI control
10. **DC 5V** port - Connect included 5V power supply

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

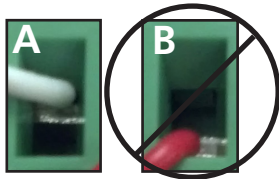


Captive Screw

The captive screw connectors allow you to cut cables to a suitable length, reducing cable clutter while providing a more reliable connection.


Connecting

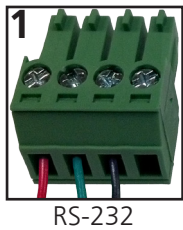
When connecting the cables to the female captive screw connector it is important that the wires be terminated correctly. The female captive screw connector has a contact plate at the top and must have the wires touching it for signal to pass. When wired correctly (see picture A) the signal will pass,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



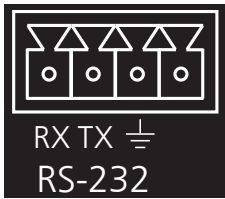
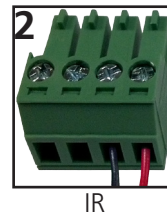
The captive screw connectors have a contact bar that is adjusted to compress the wire against the top contact plate. Use the screws at the top of the connector to compress the wire against the contact plate.

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

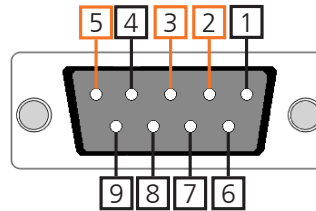
 **Counter Clockwise**
Turn the screws counter clockwise to lower the contact bar to release the wires.



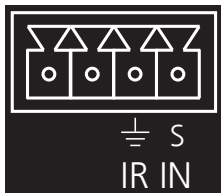
A female captive screw connector is included: RS-232/IR (see picture 1 & 2). Pin out color will differ per RS-232 cable.



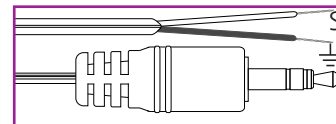
RS-232 pin out will be determined by the RS-232 cable and will connect as Rx (receiver), Tx (transmitter), and \perp (ground). (See picture 2)



Typical pin out:
2 - TX - Transmitter
3 - RX - Receiver
5 - GND - Ground



The IR IN is connected by a ground and a signal cable. The recommended use of this port is with a 3rd part control system. Atlona recommends using a AT-LC-CS-IR-2M (sold separately) for easy connection.

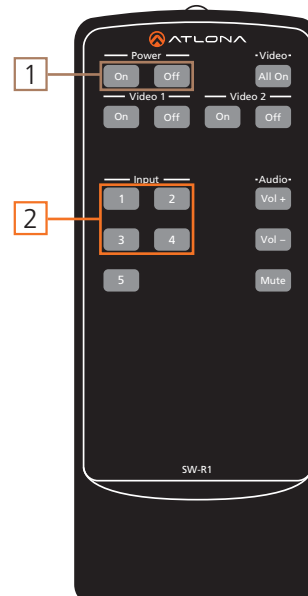


Signal (S)
Ground (\perp)

Remote Control

1. Power On/Off: Turn switcher power on and off
2. Input selection: Selects source

Note: On/off video, audio, and setup buttons are not functional for the JUNO-451 switcher



Ethernet

For convenience, the JunoX 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 switcher with a TCP/IP control system, this feature may be turned off and the IP address set using front panel.

Note: Press and hold the input button on the front panel to switch between static and DHCP IP address. Two button flashes means the unit is in static mode and four button flashes means the unit is DHCP. Static IP configuration will be: 192.168.1.254 - 255.255.255.0

AMS & webGUI

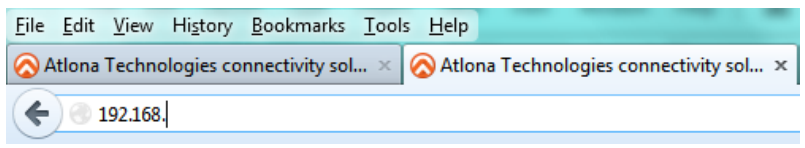
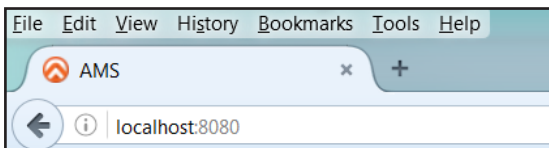
Atlona provides two simple solutions for setup and control: a built in webGUI and the free software AMS (AMS functionality coming soon).

To download AMS, go to <http://atlona.com/product/at-sw-ams/>

To get to the log in screen of AMS: type localhost:8080 into the web browser on the computer AMS is running on. It will go straight to the log in for AMS.

GUI IP Address: may be found using an IP scanner software (e.g. Advanced IP Scanner)

Atlona does not assume responsibility for damage caused by other programs installed into a computer, verify programs before installing



AT-JUNO-451 Login

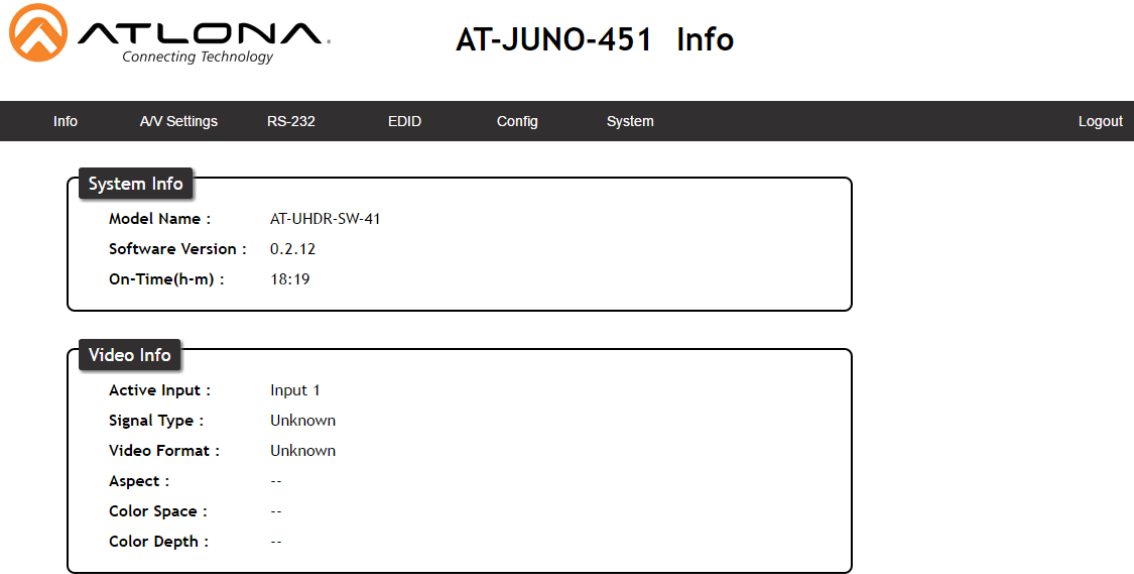
Login

Username

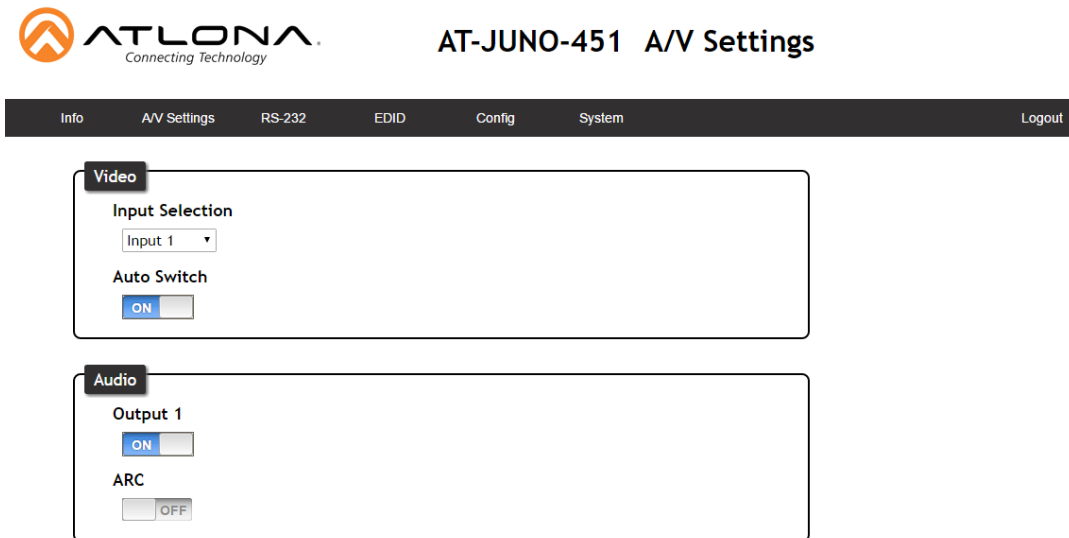
Password

A login screen will appear (this is the same log in for admin and general users). For the first login to AMS, the username is "admin" and password is "admin123". The login for the webGUI will be username "root" and password "Atlona".

Once login is complete, the webGUI will display the JUNO-451 status information



Once logged in, select each page from the bar across the top



Video

Input Selection

Displays current input and allows the input to be selected manually

Auto Switch

Auto Switch: Toggles auto switching on/off

Audio

Output 1

Turns output audio on/off

ARC

Turns audio return channel on/off

RS-232

RS-232 Parameter Setting

Console

Baud rate:

Data bit:

Parity:

Stop bit:

RS-232 parameters

Set the baud rate, databit, parity, and stop bit of the system

EDID Settings

Input 1:

Input 2:

Input 3:

Input 4:

EDID Saved

Output 1 save to:

The EDID tab enables the EDID settings to be changed or output EDIDs to be saved to memory.

Note: To ensure compatibility, it is best to set the EDID to match the native resolution of the connected display and the audio format of the connected sound system

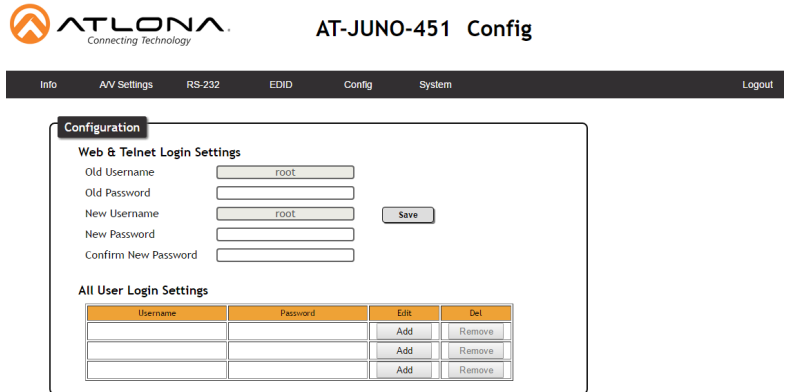
- | | | | |
|----------------------------------|----------------------------------|----------------------------------|---------------------|
| 0 STD | 1 1080p 2CH | 2 1080p MCH | 3 1080p DD |
| 4 1080p 3D 2CH | 5 1080p 3D MCH | 6 1080p 3D DD | 7 720p 2CH |
| 8 720p DD | 9 1280x800 2CH | 10 1366x768 2CH | 11 1080p DVI |
| 12 1280x800 DVI | 13 1920x1200 2CH | 14 3840x2160@60 4:2:0 2CH | |
| 15 3840x2160@60 4:2:0 MCH | 16 3840x2160@30 4:4:4 2CH | 17 3840x2160@30 4:4:4 MCH | |
| 18 4096x2160@60 4:2:0 2CH | 19 4096x2160@60 4:2:0 MCH | 20 3840x2160@60 4:4:4 2CH | |
| 21 3840x2160@60 4:4:4 MCH | | | |

Note: STD passes the display's EDID to the source

EDID Saved

Saves any connected display's EDID to one of the four EDID memories of the JUNO-451

- Select the memory number to save the current output's EDID to and press the save button at the bottom of the page.



The Users tab/page will allow users and passwords to be added/changed.



Network: IP address, netmask, gateway, and telnet port can be set to any settings compatible with your network. The Netmask and Gateway must match your existing network settings

IP Mode -

Static: Set a fixed IP address

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

DHCP: Dynamic Host Configuration Protocol will automatically select an IP address on the network that is not already in use

Telnet Login Mode - Turn on/off - requires a password to adjust settings

Telnet Timeout - Set the auto log-off time between 1 and 3600 seconds

Broadcast - Turn on and off the feedback through all control ports

System:

Power - Turn the switcher on and off

Lock - Locks/unlocks the front panel buttons

Reset to Default - Reset the device to factory settings

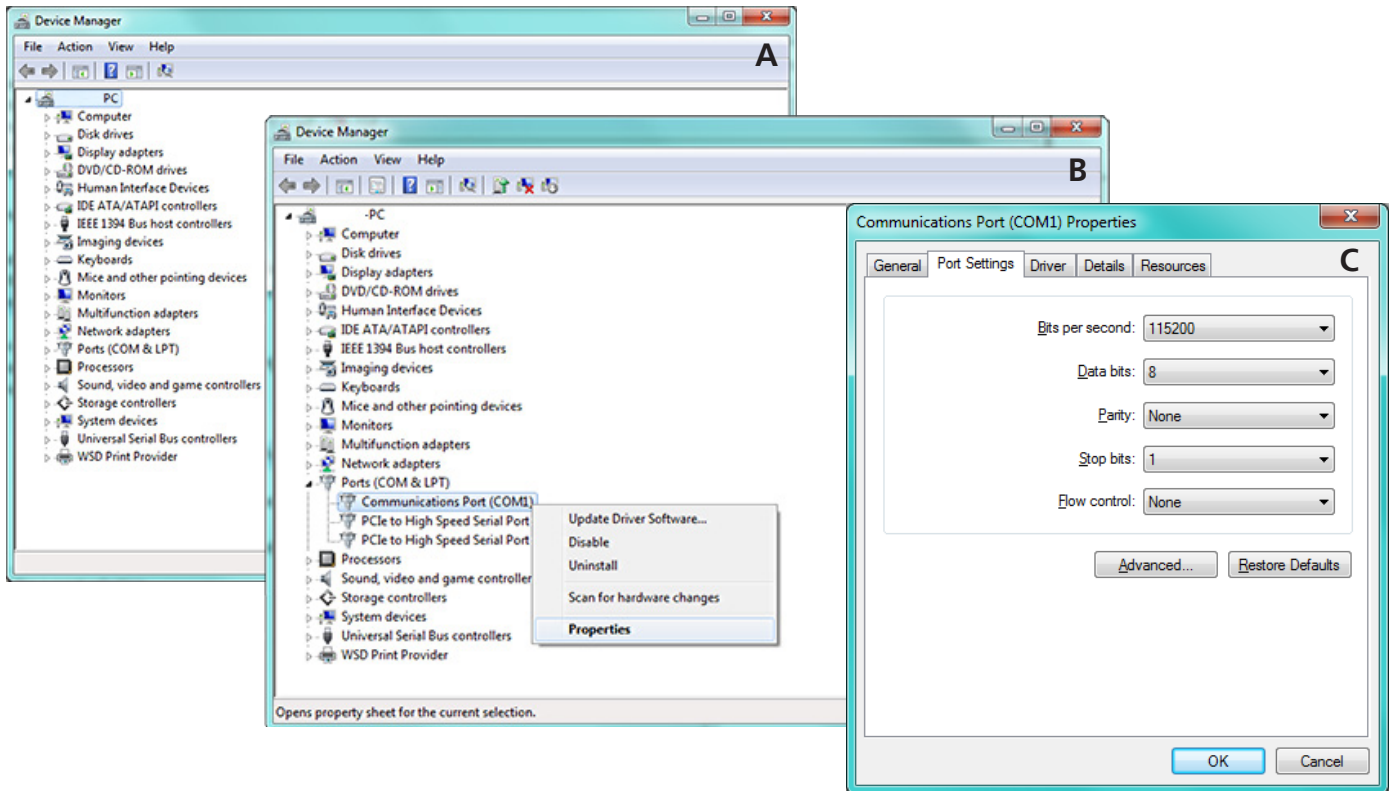
Firmware Update - Use this feature to find and load the MCU firmware to the switcher

Note: Firmware can be found and downloaded from <http://www.atlona.com/product/AT-JUNO-451/> page under the firmware tab

RS-232 & TCP/IP

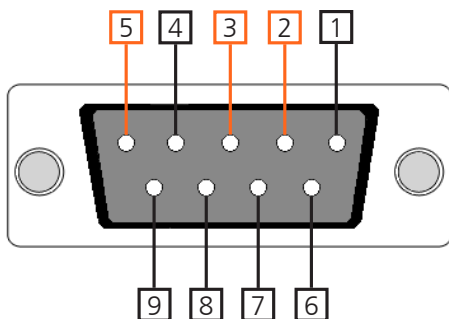
Terminal

To set up the RS-232 terminal 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 set the menu to the switcher default: Bits per second: 115200, Data bits: 8, Parity: None, Stop bits: 1 and Flow control: None.



Connection

RS-232 is connected through a 9-pin female D connector. Three pins will have specific functions associated with them, some are 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 (RS-232 and TCP/IP)

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

Command	Feedback	Description
PWX e.g. PWSTA	PWX e.g. PWON	Turn the unit on/off X= ON, OFF, STA e.g. Displays the unit's power status
Version	Version x.x.xx	Displays the software version
Type	AT-UHD-HDVS-300	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
x1AVx1 e.g. x4AVx1	x1AVx1 e.g. x4AVx1	Switch inputs e.g. Switch output 1 to input 4
Statusx1	x2AVx1	Displays what input is connected to the what output
AutoSW X	AutoSW on	Turns auto switching on/off (X= on, off, sta)
EDIDCopy X	EDIDCopy X	Copies the EDID of the currently connected display to memory X = 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 e.g. 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 e.g. EDIDMSet2 int3 - Sets input 3 to internal EDID 3
HDMI Aud X	HDMI Aud X	Enables/Disables audio on the HDMI output X= on, off, sta
SPDIF X	SPDIF X	Turns audio output through the S/PDIF port on/off X= on, off, sta
ARC X	ARC X	Enables/disables ARC audio output X= on, off, sta
IR X	IR X	Turns the IR receiver window on/off 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 - Internal EDIDs -

0 Display's EDID	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 1920x1200 2CH	14 3840x2160@60 4:2:0 2CH	
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21 3840x2160@60 4:4:4 MCH			

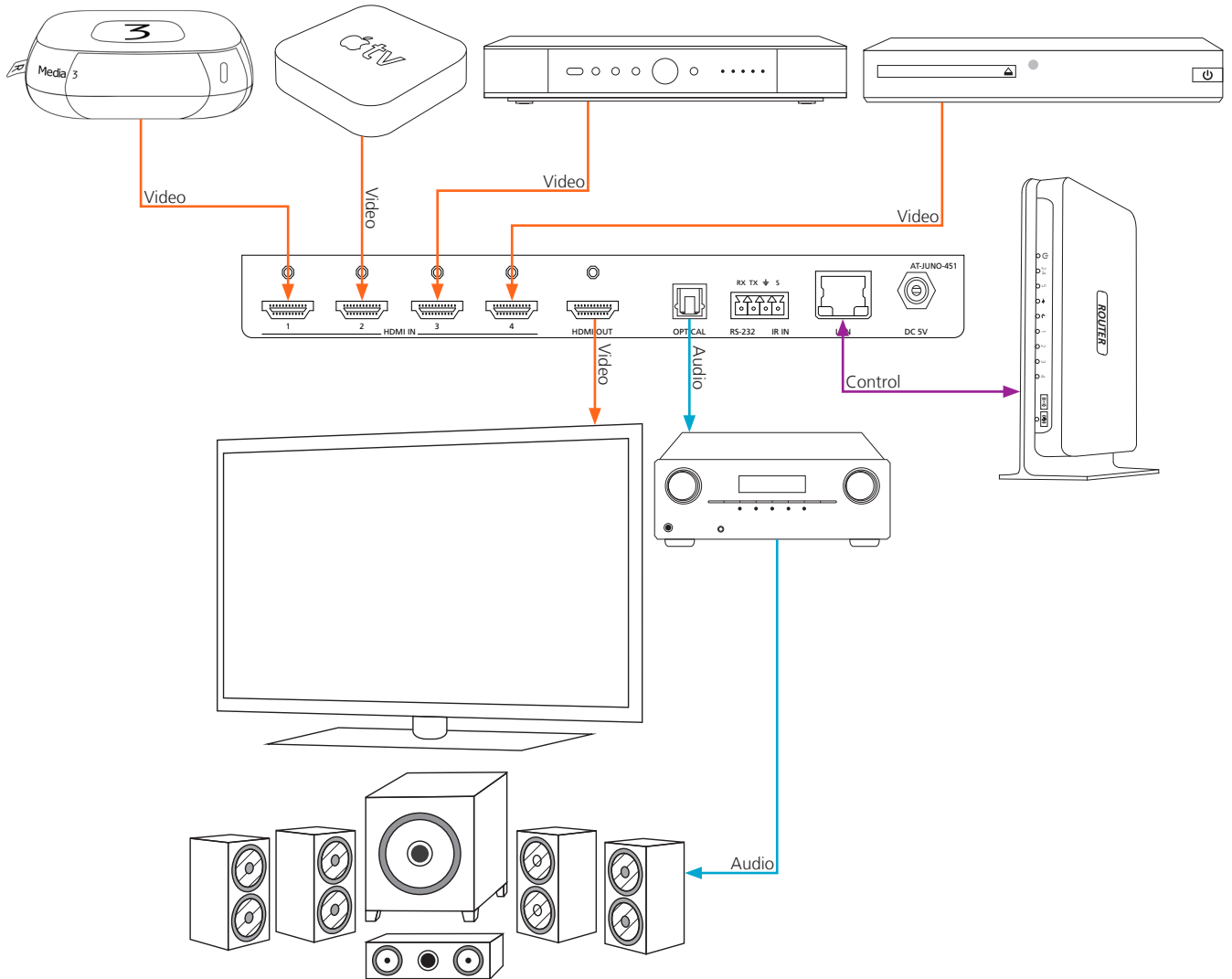
IP Commands

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 e.g. IPAddUser Atlona 1234	TCP/IP user was added	Adds a user for TCP/IP control X= user and Y= Password
IPDelUser X	TCP/IP user was deleted	Delete a user from TCP/IP X= username
IPDHCP X	IPDHCP X	Turns DHCP on or off X= on, off, sta
IPStatic X Y Z e.g. IPStatic 192.168.1.1 255.255.255.0 192.168.1.200	IPStatic X Y Z e.g. 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 e.g. IPLogin off	IPLogin X e.g. IPLogin off	Enables IP Login X= on, off, sta
Broadcast X e.g. Broadcast on	Broadcast X e.g. Broadcast on	Sets broadcast mode on or off X= on, off, sta
IPTimeout XX e.g. IPTimeout 300	IPTimeout XX e.g. IPTimeout300	Determines amount of seconds of inactivity before TCP/IP disconnects
UartPara W,X,Y,Z e.g. UartPara 115200,8,0,1	UartPara W,X,Y,Z e.g. UartPara 115200,8,0,1	Set UART parameters W=baud rate X=data length Y=parity Z=stop-bit e.g. Set the parameters to 115200, 8, 0, 1
UartPara sta	UartPara W,X,Y,Z	Displays UART parameters
RAtIMac	xx-xx-xx-xx-xx-xx	Displays the MAC address of the unit

Each command or feedback is terminated with a carriage return.

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

Connection Diagram



Specifications

Video Resolutions

Video	4096x2160@24/25/30/50/60Hz, 3840x2160@24/25/30/50/60Hz (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, 1440x900, 1400x1050, 1366x768, 1360x768, 1280x1024, 1280x800, 1280x768, 1152x768, 1024x768, 800x600, 640x480	
Color Space	YUV, RGB	
Chroma Subsampling	4:4:4, 4:2:2, 4:2:0	
Color Depth	8-bit, 10-bit, 12-bit	

Audio

HDMI	PCM 2ch, LPCM 5.1, LPCM 7.1, Dolby® Digital, DTS® 5.1, Dolby Digital Plus, Dolby TrueHD, DTS-HD Master Audio™, Dolby Atmos®, DTS:X™	
OPTICAL	LPCM 2.0, LPCM 5.1, LPCM 7.1, Dolby® Digital, DTS® 5.1, Dolby Digital Plus	
Sample Rate	32 kHz, 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz, 192 kHz	
Bit Rate	up to 24-bit	

Distance

HDMI IN/OUT @ 4K	up to 5m	up to 15 ft
HDMI IN/OUT @ 1080p	up to 10m	up to 30 ft

Signal

Bandwidth	18 Gbps
CEC	Compliant
HDCP	2.2 compliant

Temperature

Operating	0°C to 40°C	32°F to 104°F
Storage	-20°C to 60°C	-4°F to 140°F
Humidity	20 to 90% non-condensing	

Power

Consumption	6.6 W
Idle	5.9 W
Supply	Input: AC100-240V ~ 50/60Hz Output: DC 5V

Dimension

H x W x D	26 x 219 x 152 (mm)	1.0 x 8.6 x 5.9 (inch)
Rack Size	1/2 Rack 1RU	

Weight

Device	0.82 kg	1.8 lbs
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Certification

Unit	CE, FCC	
Power Supply	CE, FCC, Level VI, RoHS, cULus, RCM, CCC	

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>