Atlona 6 Input Switcher and Scaler with HDBaseT and Mirrored HDMI Output

AT-UHD-CLSO-612

User Manual

Please check http://www.atlona.com/AT-UHD-CLSO-612 for the most recent **firmware update** or **manual**.

Table of Contents

Introduction

Easy to integrate, the CLSO-612 was designed for conference and classrooms with inputs at lecterns, tables, and desks. Sources and displays can be up to 230 feet (70 meters) from the switcher with HDBaseT inputs and outputs. Local HDMI and multifunction analog inputs work with any source. Combined with great features such as: 4K up/down scaling, microphone ducking, and audio control, this is the core component of your presentation AV system.

Package Contents

- 1 x AT-UHD-CLSO-612
- 11 x Female Captive Screw Connector
    6 pin: audio, 5 pin: IR, 3 pin: RS-232, 3 pin: MIC/Line
- 1 x 24V/2.7A DC power supply adaptor (AT-PW24V2.7A)
- 1 x Pair of dual purpose wall/rack mounts
- 1 x IR Remote Control
- 1 x User manual

Features

- Accepts HDMI and HDBaseT inputs from up to 230 feet away
- Multifunctional VGA ports for RGBHV, component, S-Video, and composite signals
- Microphone (dynamic, phantom, and line) input with ducking
- HDBaseT output mirrored to HDMI output
- Auto switching - automated switching to last connected source without using a control system
- Balanced audio inputs for embedding audio
- Balanced (+4 dbu) analog audio output for de-embedding audio to amplifiers or audio systems
- Upscaling and downscaling to ensure compatibility with any display up to 4K resolution
- Control via RS-232, IR, TCP/IP, WebGUI, and multi-language On-Screen Display
- Master and sub volume control
- Adjust treble and bass on audio output to ensure the best speaker performance
- PoCC to HDBaseT inputs and outputs (no power required with compatible devices)
- HDCP Compliant
- Supports 3D pass through

Panel Description

Front Panel
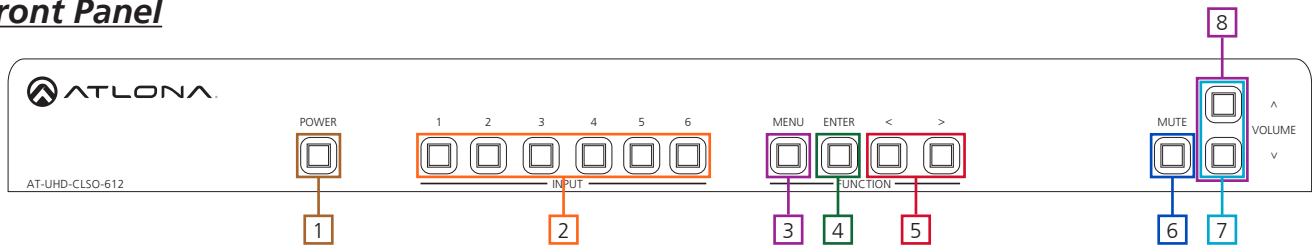
1. Power - Use to turn the unit on or place into standby. LED will illuminate blue for on and red for standby
2. Input - Switch between inputs - current input is blue
   1 - HDMI input 1 - Used while updating MCU firmware
   2 - HDMI input 2 - Used while updating OSD firmware
   3 - HDBaseT input 1 - Used while updating DSP firmware
   4 - HDBaseT input 2 - Used while updating FPGA firmware
   5 - Multifunction analog input 1
   6 - Multifunction analog input 2
3. Menu - Access the OSD menu - also used as a back button within the OSD
4. Enter - Select options within the OSD menu
5. < and > - Changes values of the currently select option (**e.g.** contrast to 50)
6. Mute - Silences all audio output from the CLSO-612
7. Volume up/down - Adjusts output master volume
8. ˄ and ˅ Use to navigate between selections within the OSD menu

Back Panel
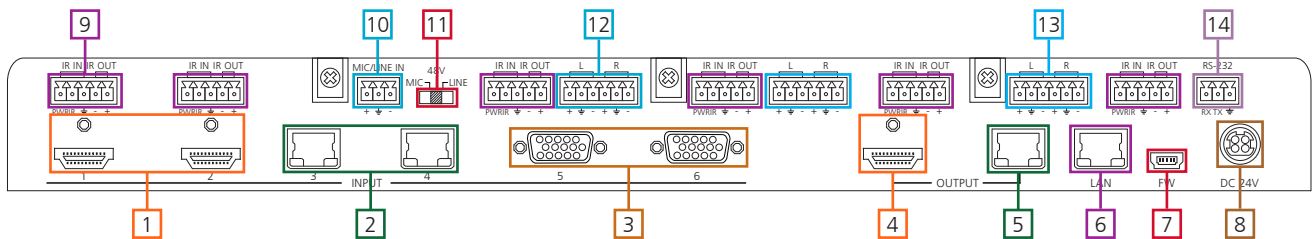
1. HDMI 1 and 2 - Connect HDMI sources here
2. HDBaseT 3 and 4 - Connect HDBaseT transmitters here (**e.g.** AT-HDTX-WP, AT-HDVS-TX-WP, etc)
   Note: Power source equipment (PSE) transmitters require external power (**e.g.** AT-HDTX, AT-HDTX-IR, etc)
3. VGA 5 and 6 - Connect analog video sources here
   Note: Compatible with component, composite, and S-Video signals
4. HDMI Output - Connect to local display
5. HDBaseT Output - Connect to compatible HDBaseT displays or compatible receivers
   (**e.g.** AT-HDRX-RSNET, etc)
   Note: Compatible PoCc receivers do not need power
6. LAN port - TCP/IP (Ethernet)
7. Firmware port - Connect to a PC with a USB cable for firmware updating
8. DC 24V port - Connect included power supply here
9. IR ports - IR control systems and compatible IR emitters connect to these ports (see pages 20-21)
10. MIC/LINE IN - Connect a microphone to this port
11. MIC Switch - Match microphone input to type of microphone in use
12. Audio In - Audio input ports for analog inputs 5 and 6
13. Audio Out - Audio output to audio amplifiers (**e.g.** AT-PA100-G2) or audio systems
14. RS-232 port - Connect control system or PC here

Wall/Rack mounts

A pair of mounts have been included for quick and easy installation to a rack or wall.

To install the CLSO-612 in a rack, use the screws already in the case (A-pictured below)
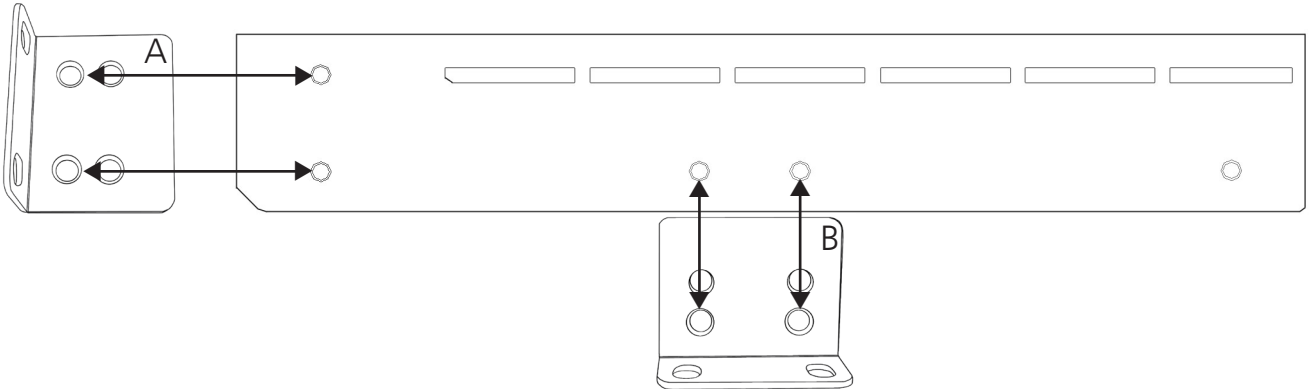
To install the CLSO-612 on a wall or under a desk/table, use the screws already in the case (B - pictured above)

Category Cable

For the category cables used in these products' installation, please be sure to use a 568B termination as pictured below.

1. White - Orange
2. Orange
3. White - Green
4. Blue
5. White - Blue
6. Green
7. White - Brown
8. Brown
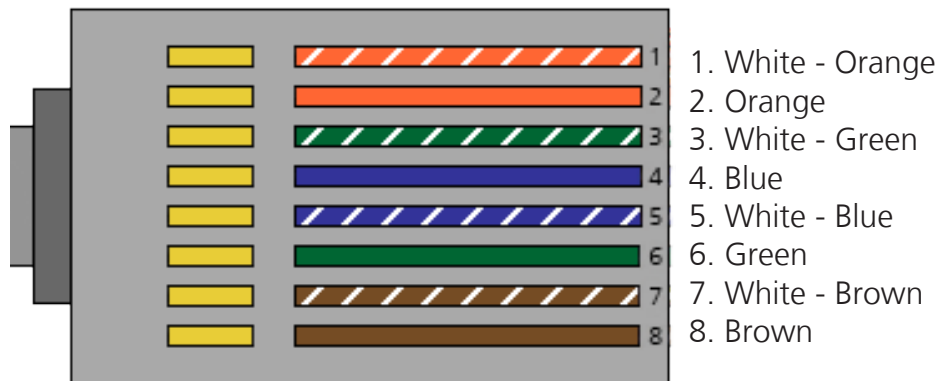
Use the table below to verify the best category cable for the installation.

Performance Rating		Type of LAN cable	
Wiring	**Shielding**	**CAT5e/6**	**CAT6a/7**
Solid	Shielded (STP/FTP)	***	****
	UnShielded (UTP)	**	N/A
Stranded - Patch cable (Not recommended)	Unshielded (UTP)	*	N/A
	Shielded (STP/FTP)	*	N/A
Termination		**Please use EIA/TIA-568-B termination (T568B) at anytime**	

Important! 4K signals are sensitive to cable quality and installation technique. It is recommended to use CAT6a/7 Solid core cables only.

Note: For cable distances see the specifications on page 32.

Analog Multi-Function Inputs

The CLSO-612 multi-function analog inputs (Input 5 and 6) can be used with most analog video signal formats including VGA (with DDC), RGBHV (without DDC), Component (YUV), S-Video, or composite video. Balanced analog audio can be input and embedded using the provided captive screw connectors.

Each format can be directly accessed from RS-232, IR, or IP control. Front panel buttons sequentially progress through each input format. The last format used is the first source selected when returning to these inputs. Unused formats can be removed from the sequence using the WebGUI, RS-232, or IP.

VGA (m) to BNC, VGA (m) to RCA, and S-Video to 2 BNC adaptors can be used to connect sources to these inputs.

VGA
Use a VGA to VGA cable to ensure that the Preferred Resolution DDC is communicated to your source.

RGBHV
Use a HD-15 (VGA) to 5 BNC breakout cable for this format. An existing RGBHV analog matrix switch can be connected here to maintain full function of the analog matrix.

Component
YUV (YP$_B$P$_R$) signal from DVD (or other sources) can be input to the CLSO-612 using the green (Y), blue (P$_B$), and red (P$_R$) connections on a HD-15 (VGA) to 5 BNC breakout cable or with a common VGA (m)-Component (3 RCA m) adaptor.

S-Video
YC signal from a VCR or teleconference system can be input to the CLSO-612 using the blue (Y), and green (C) connections on a HD-15 (VGA) to 5 BNC (m) breakout cable and a common S-Video (m) to 2 BNC (f) adaptor

Composite
NTSC, PAL, or Secam video signals can be input to the CLSO-612 using the blue connection on a HD-15 (VGA) to 5 BNC (m) breakout cable.

A common application for this type of input would be to connect a RGBHV matrix switcher to the CLSO-612. Then each input to the matrix could be connected to a different format analog signal. A 3rd party control system could ensure the correct format is selected to match the input to the switcher.

Analog Audio

A captive screw analog audio connector is provided to ensure a more reliable and secure connection. The captive screw connector supports balanced and unbalanced audio output.

Balanced audio connections use two signal wires and a ground to minimize interference to an audio signal over longer cable runs. Unbalanced audio connections use two wires for connection with consumer audio components.

Audio can be routed to any input for use with DVI or other sources. View page 27 for commands.
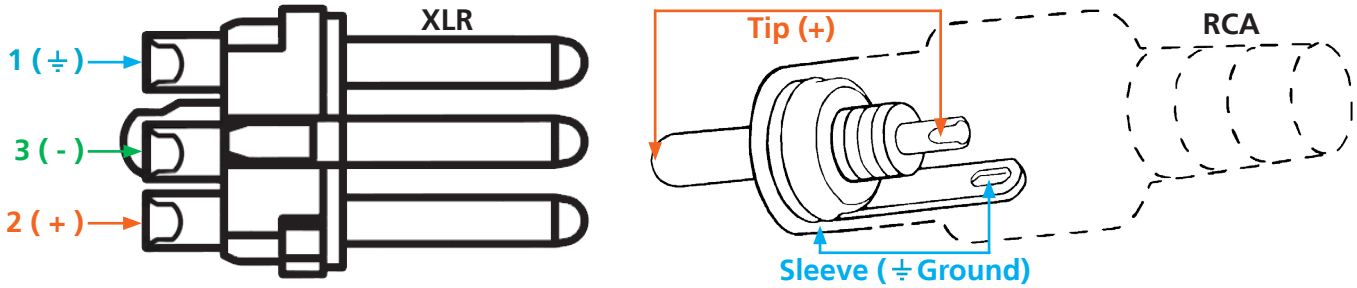
**Note:** Pin outs may vary, please refer to the audio device's manual to ensure a correct connection.
Important! When terminating cables, please ensure exposed adjacent wires do not touch. This may result in a short that can damage connected devices.
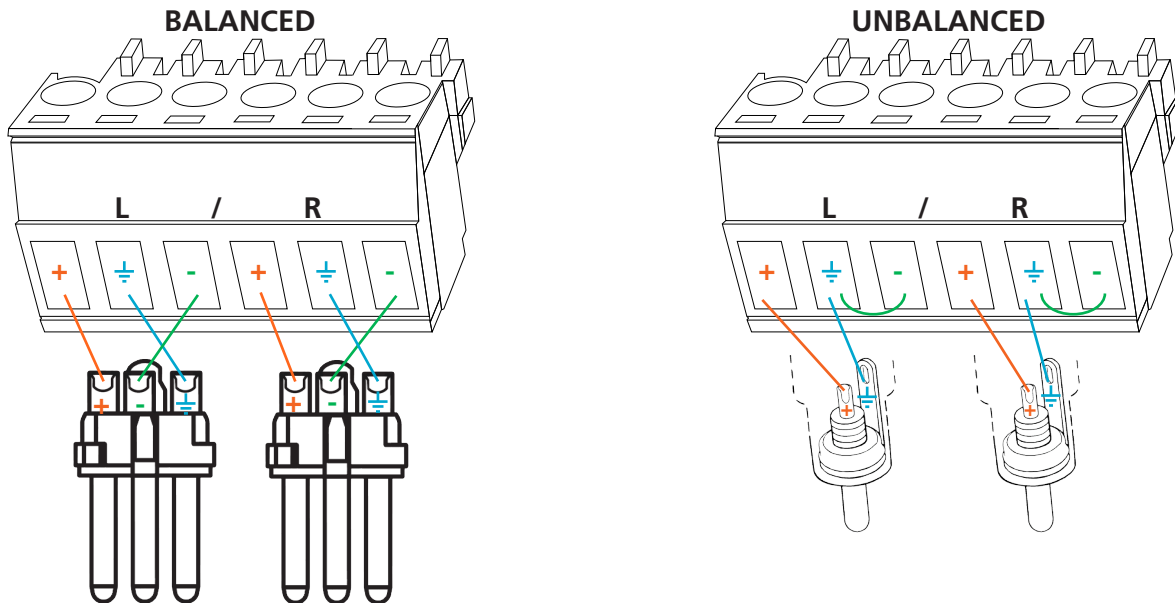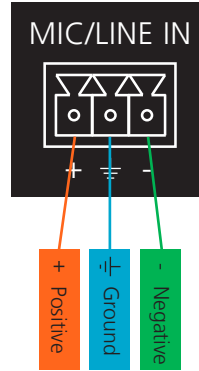

Important! With unbalanced connections a jumper is needed between ground and negative to reduce noise
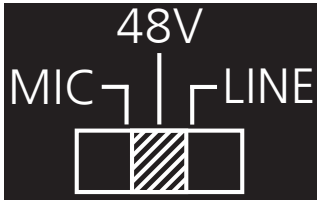
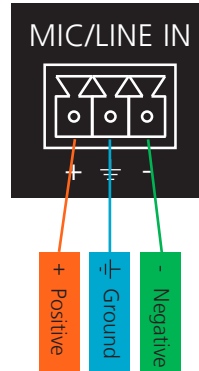atlona.com

Microphone Connection

MIC (Dynamic MIC)
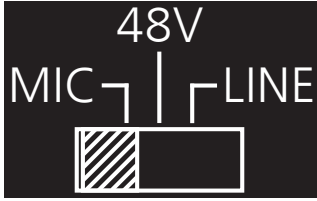
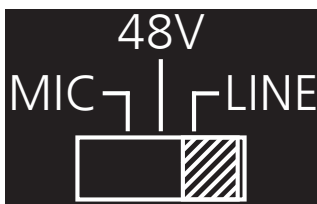

Connect dynamic or self-powered microphones in this mode.

MIC/LINE IN

+   ⏚   -

MIC

Balanced

Use this setting for phantom powered microphones. Supplies 48 volts.

MIC/LINE IN
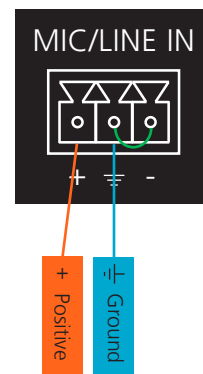
+   ⏚   -

MIC

Balanced

Connect wireless microphone receivers (or other sources) with line level outputs using this setting. Either balanced or unbalanced connections may be used.

MIC/LINE IN   **MIC/LINE IN**

+   ⏚   -   +   ⏚   -

LINE   **LINE**

Balanced   Unbalanced

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8
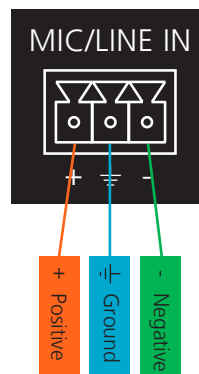
On Screen Display (OSD)

Input	Input 1	HDMI 1		
	Input 2	HDMI 2		
	Input 3	HDBaseT 1		
	Input 4	HDBaseT 2		
	Input 5	VGA 1		
		Component 1		
		Composite 1		
		S-Video 1		
	Input 6	VGA 2		
		Component 2		
		Composite 2		
		S-Video 2		
Audio	Volume	Master	-80 to +10db	
		Sub	HDMI 1	-80 to +10db
			HDMI 2	-80 to +10db
			HDBaseT 1	-80 to +10db
			HDBaseT 2	-80 to +10db
			Analog 1	-80 to +10db
			Analog 2	-80 to +10db
			Microphone	-80 to +10db
			Line In	-80 to 0db
	Bass	-10 to 12 dB		
	Treble	-10 to 12 dB		
Video	Contrast	0 to 100		
	Brightness	0 to 100		
	Sharpness	0 to 30		
	Color	0 to 100		
	Tint	0 to 100		
	H Position	0 to 40		
	Phase	0 to 63		
	NR	BNR	Disabled	
			Low	
			Medium	
			High	
		MNR	Disabled	
			Low	
			Medium	
			High	
		RNR	Disabled	
			Low	
			Medium	
			High	
	Scale	Full		
		Overscan		
		Underscan		
		Letterbox		
		Panscan		
		Follow Input		

Setup	Language	English	
		Spanish	
		French	
		German	
	OSD Settings	Transparency	
		Position	Horizontal
			Vertical
		Menu Timer	10 sec
			30 sec
			60 sec
		Logo	On
			Off
		Info Banner	On
			Off
	Output Format	HD	Pass Through
			480i@60 (NTSC)
			480p@60
			720p@60
			1080i@60
			1080p@60
			576i@50 (PAL)
			576p@50
			720p@50
			1080i@50
			1080p@50
			1080p@24
		Native	
		UHD	2048x1080p@24
			2048x1080p@50
			2048x1080p@60
			2048x1152p@60
			3840x2160p@24
			3840x2160p@25
			3840x2160p@30
			4096x2160p@24
			4096x2160p@30
		PC-1	640x480@60
			640x480@72
			640x480@75
			800x600@60
			800x600@72
			800x600@75
			1024x768@60
			1024x768@72
			1024x768@75
		PC-2	1280x768@60
			1280x800@60
			1280x960@60
			1280x1024@60
			1360x768@60
			1366x768@60
			1400x1050@60
			1440x900@60
			1600x900@60
			1600x1200@60
			1920x1200@60
			2560x1600@60
	Network	Network Status	MAC Address xx-xx-xx-xx-xx-xx IP Address xxx.xxx.x.xxx Subnet xxx.xxx.xxx.x Gateway xxx.xxx.x.x
		DHCP	ON
			OFF

Note: After selecting a new language, close the menu and reopen it for the change to take effect.

Status	System Info	Software Revision OSD Revision FPGA Revision On-Time (h-m)	x.x.xx (e.g. 1.0.01) x.x.x (e.g. 1.0.0) x.x.x (e.g. 1.0.0) x:xx (e.g. 1:15)
	Video Info	Input Signal Type Video Format Aspect Color Space Color Depth	xxxx (e.g. HDMI 1) xxxx (e.g. HDMI) xxxx (e.g. 1080i@60) xxxx (e.g. 16x9) xxxx (e.g. YUV) xxxx (e.g. 24)
	Audio Info	Input Audio Format Sampling Rate Channels	xxxx (e.g. HDMI 1) xxxx (e.g. PCM) xxxx (e.g. 48 KHz) xxxx (e.g. 2-Ch)

TCP/IP

For convenience, the CLSO-612 comes with DHCP on. This enables the switcher to be connected to a network without concern for overlapping IP addresses with other devices on the network. If your network does not support DHCP, this feature may be turned off and the IP address set using RS-232 commands or the WebGUI.

Note: If your system is controlled using IP, it is strongly recommended that you disable DHCP and select a unused IP address so that your system controller doesn't lose contact with the switcher.

TCP/IP WebGUI
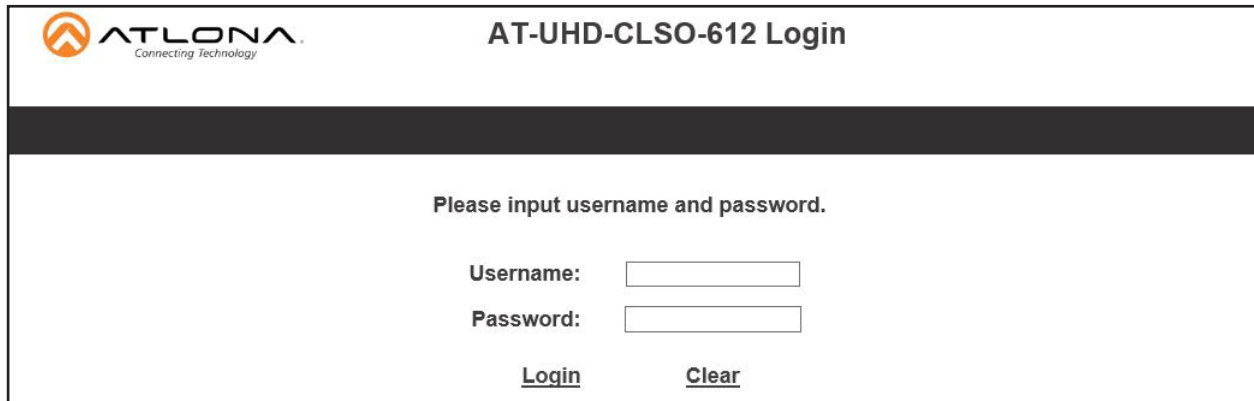
Atlona has created an easy to use WebGUI for initial setup and later changes to the configuration of the CLSO-612.

To begin, connect the LAN port of the CLSO-612 to your network. Type the IP address of the CLSO-612 into the web browser of a PC connected to the same network (as seen below).

**To find the switcher IP:** Select "Network Status" within the OSD menu or use RS-232 command "IPCFG".
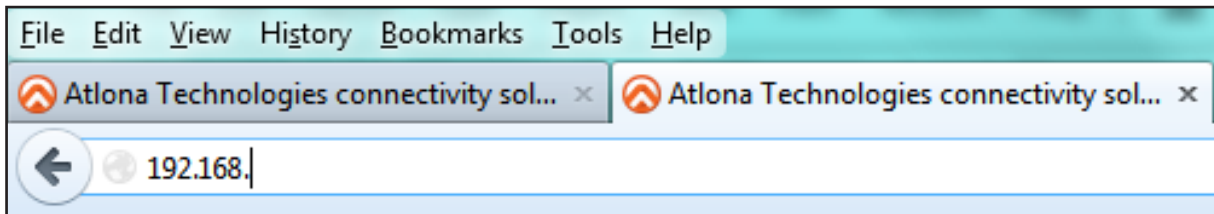
Important: If any stability issues are experienced, disable any anti-virus or firewall that may interfere with network communication to the switcher. Once set up is done and the switcher GUI is no longer being used, the firewall and anti-virus can be re-enabled.
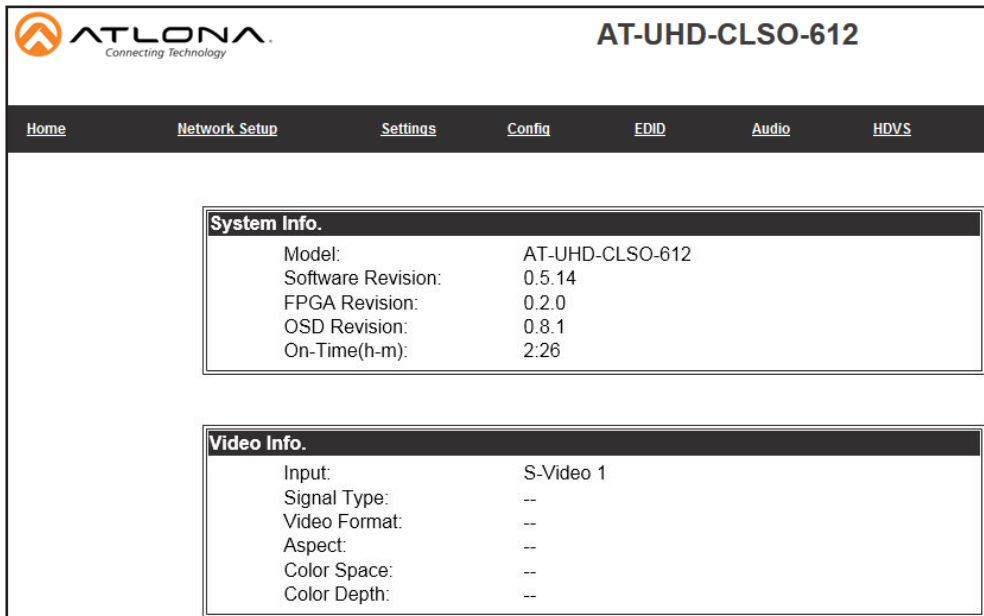

A login screen will appear (this is the same log in for admin and general users). For the first log in (and future admin changes) the username is "root" and password is "Atlona".

Note: Only the admin password can be changed (see page 17). The username will always remain "root".
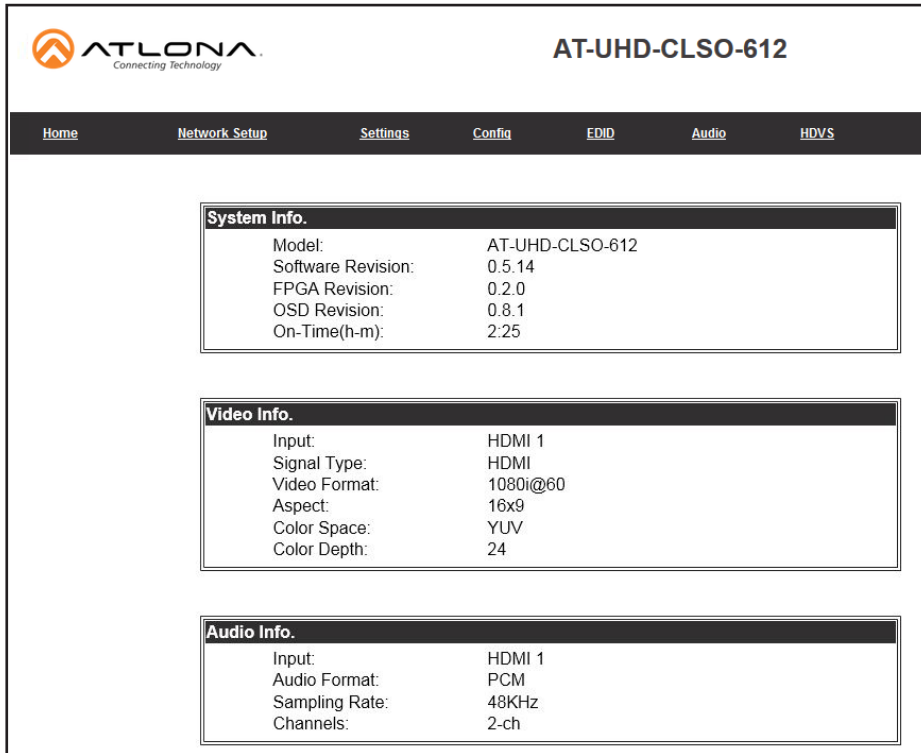
The home screen tab will display the general system information. If an HDMI or HDBaseT port is the current input, audio will display (see image above). If an analog port is selected then no audio information is displayed. (see below)

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 (see below).

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. When selecting an IP address, make certain no other devices on your network are using that IP address.

Note: Be sure to save all changes before moving to the next page.

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 CLSO is used with control systems that do not support passwords. If your control system supports password protection, set the login mode to 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.
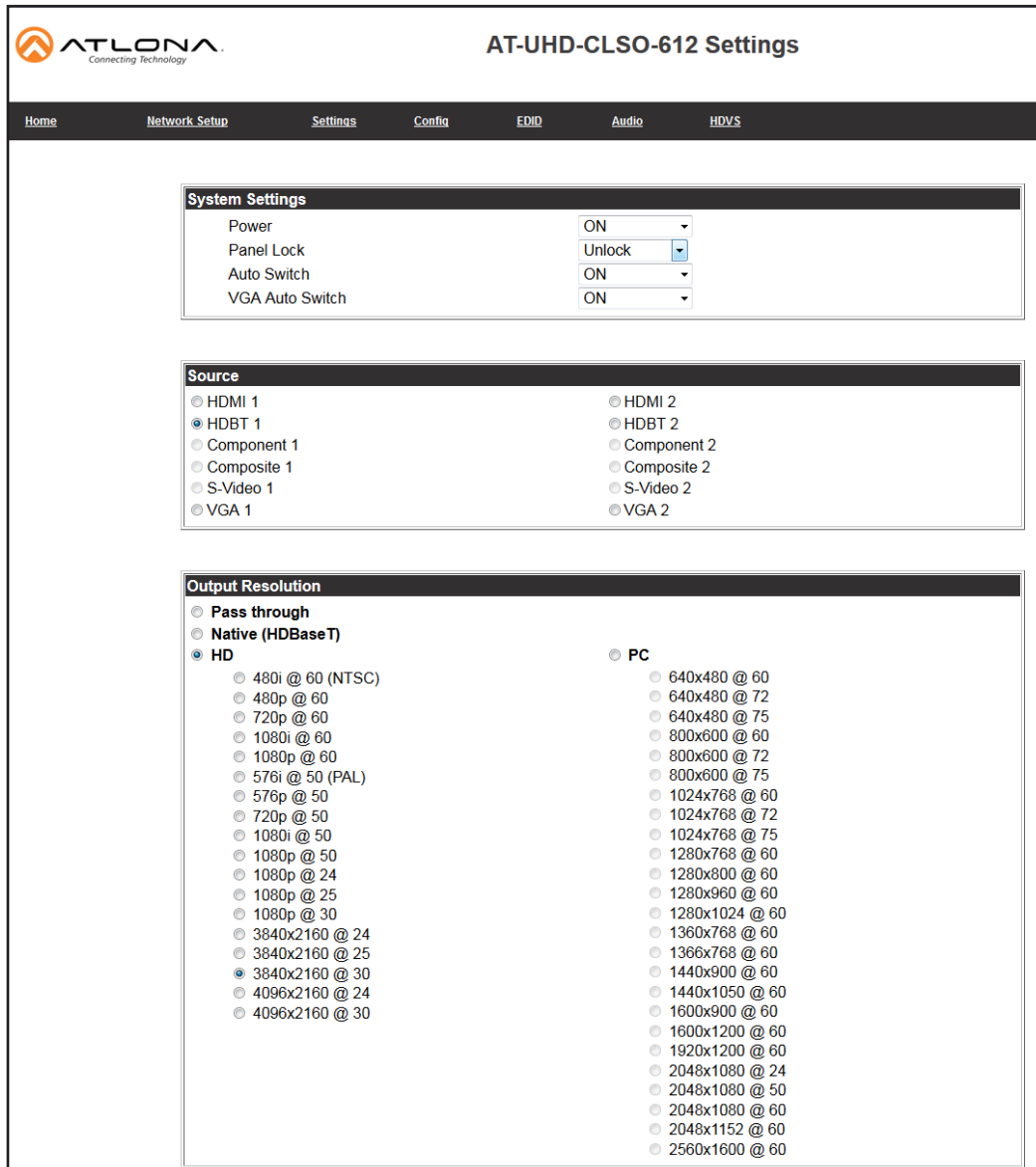
The settings page is used to set front panel and video options. Select the source from the first menu. If VGA is selected, more video options will display. (see top of page 16)

System Settings

Power - Turn the switcher on and off
Panel Lock - Locks/unlocks the front panel buttons
Auto Switch - Turns auto switching between HDMI and HDBaseT inputs on/off
VGA auto switch - Turns VGA auto switching on/off
Note: VGA auto switching is only available on VGA and will not work with component, composite, and S-Video
*Component, composite, and S-Video poll settings will grey out when VGA auto switching is on

Output Resolution

Switch between multiple video output resolutions:
Pass through - Input video will pass to the display without being scaled
Native - Upscales/downscales the output signal to match the HDBaseT display's preferred resolution
HD - Will upscale/downscale the output signal to match the selected HD resolution
PC - Will upscale/downscale the output signal to match the selected PC resolution
Note: When the output is set to UHD resolutions, UHD sources are passed through without scaling. Frame rates are not changed. (**e.g.** if 3840x2160@30Hz input is received, output will remain 30Hz even if output is set to 24Hz)
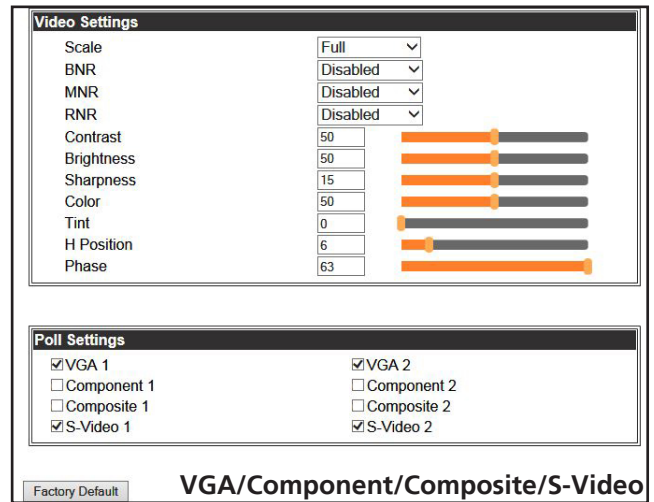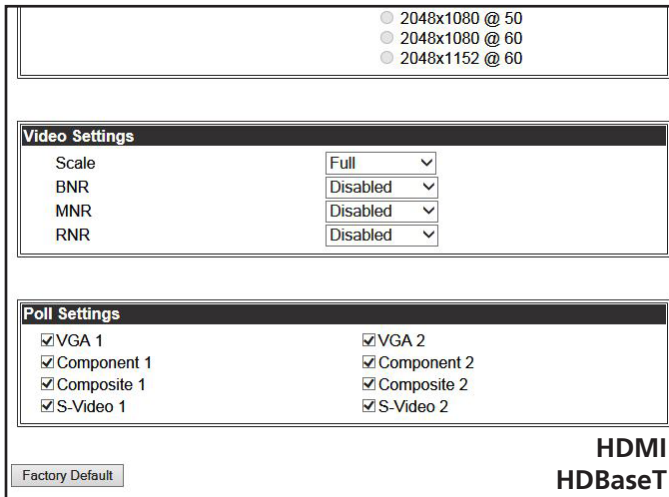
Video Settings

Set the output video settings:

Scale - Sets video output aspect ratio - Full, overscan, letter box, pan and scan, or follow input
     Full - Sources always fill the screen, regardless of source aspect ratio
     Overscan - Image is slightly zoomed in so that broadcast data at edges is masked
     LetterBox - Used to create 16:9 aspect ratio on 4:3 aspect ratio TVs
     Pan and Scan - Used to create 4:3 aspect ratio on 16:9 aspect ratio TVs
     Follow Input - Aspect ratio on TV matches source aspect ratio

BNR - Block noise reduction - Disabled, low, medium, or high

MNR - Mosquoto noise reduction - Disabled, low, medium, or high

RNR - Random noise reduction - Disabled, low, medium, or high

Contrast* - Sets output white levels - 0 up to 100

Brightness* - Sets output black levels - 0 up to 100

Sharpness* - Sets output sharpness - 0 up to 30

Color* - Sets output color saturation - 0 up to 100

Tint* - Sets output hues - 0 up to 100
     *Only available when inputs 5 and 6 (VGA 1 & VGA 2) are selected

Poll Settings

Turn analog input options on and off. If a selection is unchecked it will not display as an input option when switching to input 5 or 6.

e.g. In the above picture, only VGA and S-Video would show as a source option
Note: Component, composite, and S-Video poll settings will grey out when VGA auto switching is on
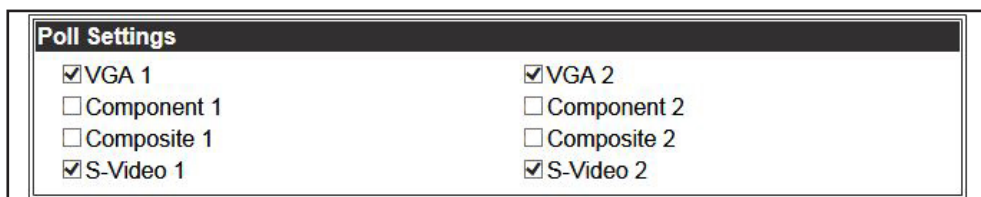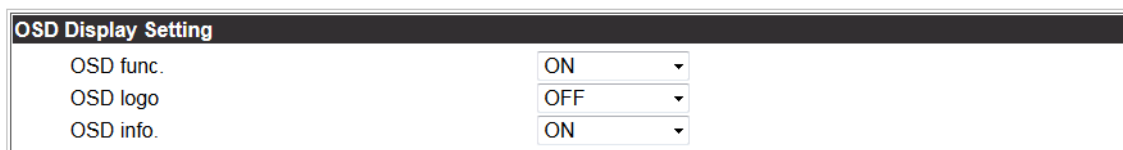

OSD Display Settings

OSD func - Turns the CLSO's display OSD menu on/off
OSD logo - Turns the atlona logo on/off when switching sources *recommended setting - off*
OSD info - Turns the source information on the display on/off when switching

Factory Default

Select to reset CLSO back to factory settings.

Note: This will reset the switcher to factory default, including resolutions, audio settings, HDCP settings, etc.

The config page will allow the admin password to be changed, users to be added, and the RS-232 ports to be configured (both CLSO-612 system ports and the RS-232 I/O ports accessed through the HDBaseT connections).

Note: User information will display for the admin only.
Note: Only the admin password can be changed. The admin 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. This function is controllable through RS-232 as well.

Note: CLSO-612 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 CLSO-612.
Note: When HDCP reporting is non-compliant, only user created content is transmitted. Protected content from all sources (**e.g.** BluRay, AppleTV, etc) is blocked.
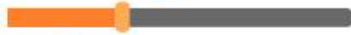
Audio settings adjust output volume for all sources including the microphone.
      Master - Affects all sources at the same time
      Inputs - Used to balance levels from each source.
Note: For best results, gains should be balanced between master and source levels.

Ducking Settings

Microphone	ON
Attack Time	450 ms
Release Time	2000 ms
Trig Level	-55 dB
Program Decrease	20 dB

Microphone ducking uses the audio level from the microphone to decrease the program level so the speaker may be heard.

Note: Proper set up is critical for satisfactory operation. If program levels are too high they can trigger the ducking process.
Note: Setting the microphone volume too high may result in feedback.

It is recommended that a handheld or headset microphone be used with ducking to reduce feedback and maximize the difference between voice and program levels.

Best results are received with the following sequence:
1. Set master volume to 0. (This is 10 db below maximum)
2. Raise appropriate microphone (or line in) volume until just below feedback or adequate volume is reached (whichever setting is lower). - Master level and amplifier gains may be increased to get appropriate levels
      Note: If feedback occurs and volume is not adequate, move the speakers and/or microphone to eliminate feedback.
3. Raise source "sub" volumes to appropiate levels without talking
4. Set attack time to minimize popping, but still fast enough that initial talking sounds are heard.
5. Set release time so that program levels do not increase between sentences.
      Note: Shorten time so that the microphone doesn't interfere with the program.
6. Set the trigger level so that words spoken at a normal level trigger the ducking process
      Note: Set the trigger level too sensitive and the program will trigger the ducking. Set too low and the speaker will have to talk very loudly to trigger ducking. The further right the slider is, the more sensitive the setting.
7. Set program decrease to ensure when ducking is triggered the program level is low enough the speaker can be heard.
      Fine tuning these settings will help achieve the best results.
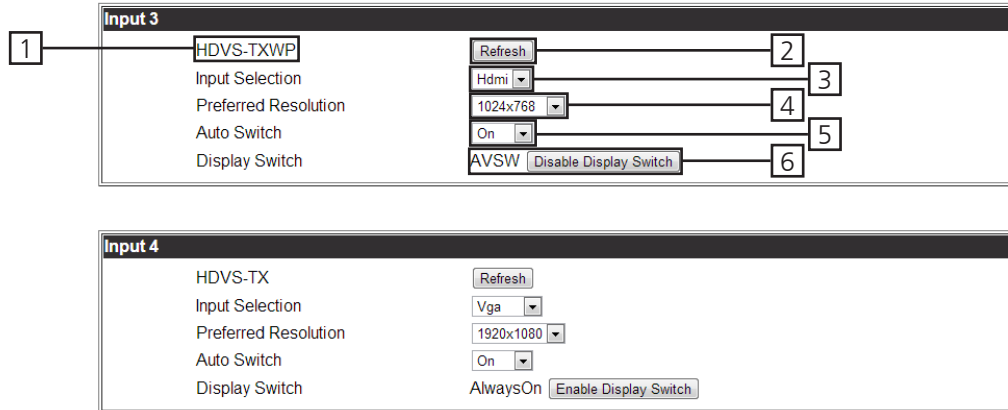
1. Displays model number of connected HDVS transmitter
2. Refresh button - Ensures the correct and current settings are displayed
3. Input selection - Switch between the HDVS inputs
4. Preferred resolution - Sets the HDVS VGA port preferred input resolution
5. Auto switch - Turns auto switching on/off for the HDVS transmitter
6. Display switch - Sets display switch function of the HDVS (default is disabled)
       Recommended set to disabled - product will be always on

HDVS transmitters have control codes for switching inputs. These codes can be found in the manual for each individual transmitter.

AT-HDVS-TX: http://www.atlona.com/AT-HDVS-TX/
AT-HDVS-TX-WP: http://www.atlona.com/AT-HDVS-TX-WP/

IMPORTANT - Firmware version must be 1.2.2 (and higher) or 2.2.2 (and higher) to be compatible with the CLSO. View firmware tab to verify which firmware is best for the extender being used.

HDTX-WP can be used to pass RS-232 and IR to the source.

HDTX-WP manual can be found at: http://www.atlona.com/AT-HDTX-WP/

IR

System IR

CLSO-612 has multiple IR routing options, allowing it to adapt to most IR needs.

Control System Processor
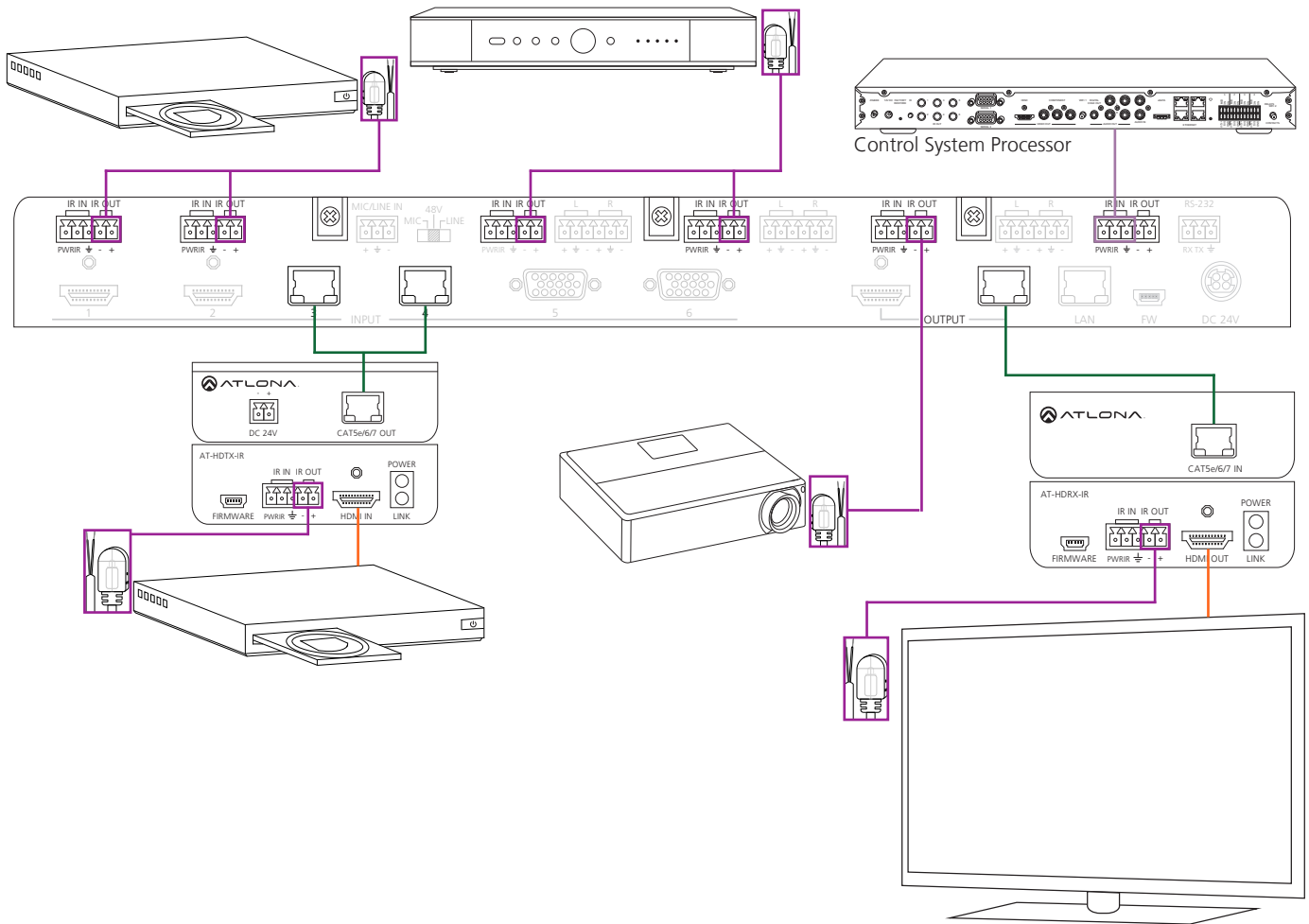
System IR is typically used to connect to control system processors. The signal is routed through the System IR IN and repeated to out all the IR OUT ports, including the HDBaseT ports. This input may also be used to control the CLSO-612.

Note: HDBaseT ports must be connected to HDBaseT receivers and transmitters with IR capabilities.
(**e.g.** AT-HDTX-IR, AT-HDTX-WP, AT-HDWP-IR, AT-HDRX-IR, etc)

1 IR

2 IR IN   IR OUT   PWR IR ⏚ - +

3

4 Emitter   - +
White: -   **Red**:+

5 Receiver   PWR   IR
Red: PWR **White**: IR **Black**: ⏚
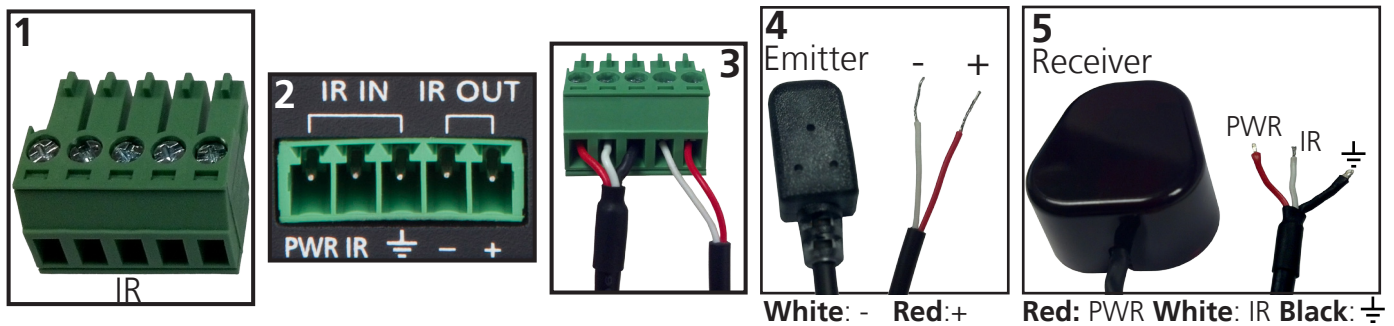
For your convenience the cables do not come pre-terminated. Each item, whether it's an IR receiver or IR emitter, will have wires exposed. Each wire is encased in a different colored cover. A female IR captive screw connector has been included (see picture 1).

IR pin outs have been included for the included IR emitter and IR receiver (see picture 2 & 3). The wires are colored for each pin (see picture 4 and 5).

System IR
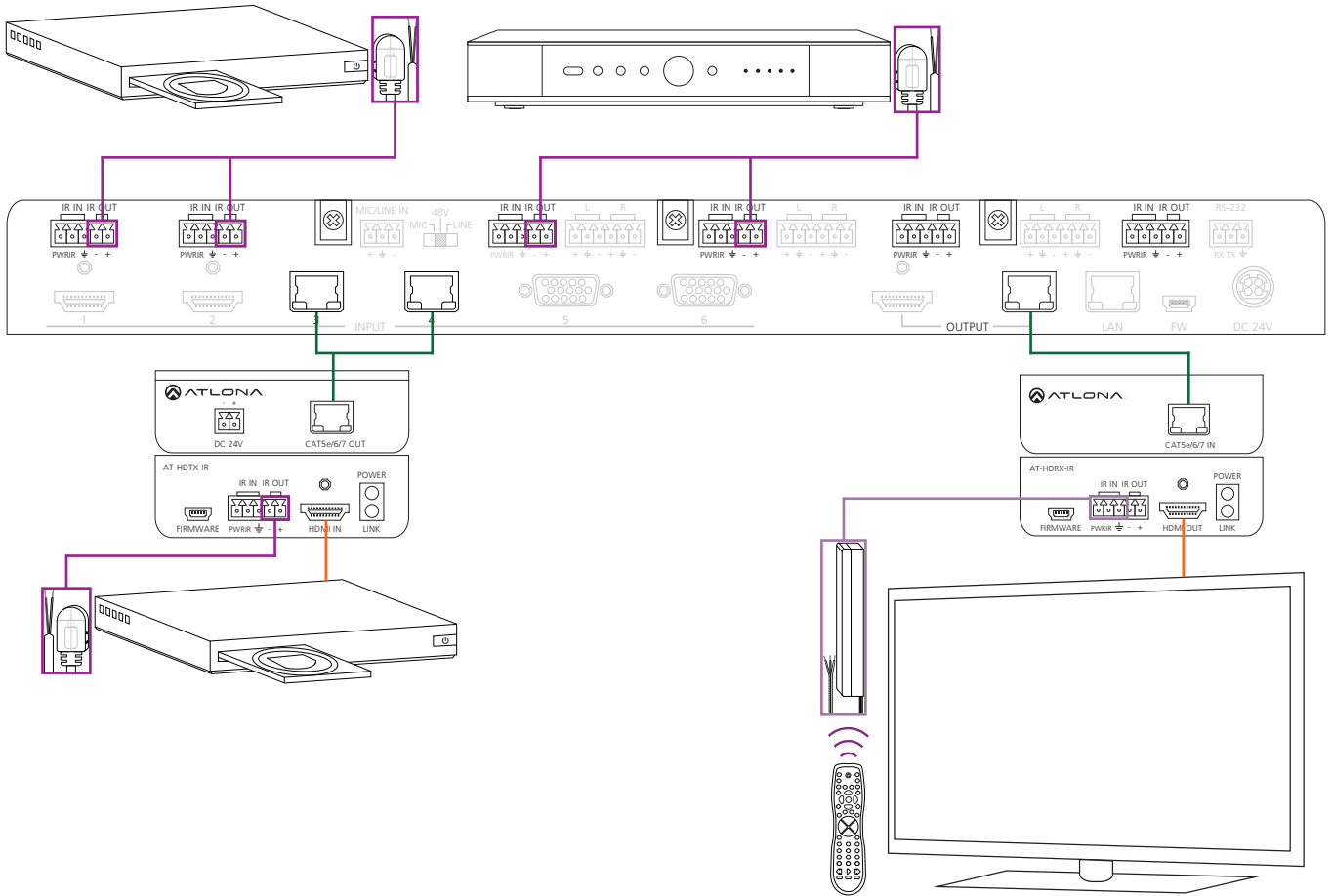
Output port IR routes back to the inputs only. If IR is injected through the HDMI IR IN then it will be routed to all the inputs, but not the HDBaseT output. IR injected through the HDBaseT will work similarly, routing to all inputs but not the HDMI output.

Note: HDBaseT input ports must be connected to HDBaseT transmitters with IR capabilities. (**e.g.** AT-HDTX-IR, AT-HDTX-WP, AT-HDTX-RSNET, etc)
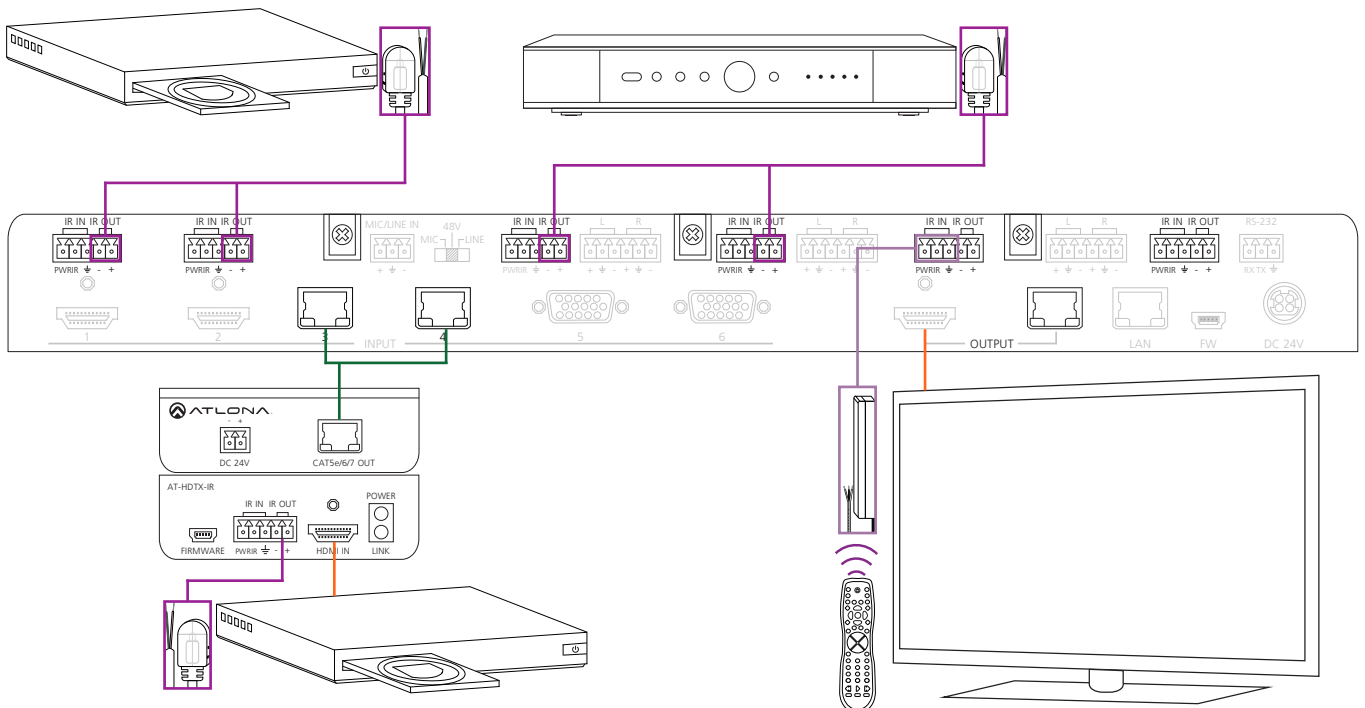
Remote

Power
On - turns CLSO-612 on
Off - sets CLSO-612 into standby

ON ──── POWER ──── OFF

HDMI1	VGA1	CV1
HDMI2	VGA2	CV2
CAT1	SV1	COMP1
CAT2	SV2	COMP2

Controls
Menu - Pulls up on screen display
      menu - also serves as back
      button
Exit - Closes on screen display
      menu
Arrows - Use to navigate the on
      screen display menu and
      adjust volume
OK - Enter button, use to select
      choices within the on
      screen display menu
Mute - Silences all audio outputs
Auto - Auto VGA setup

EXIT   MENU

OK

MUTE   AUTO

SVGA	XGA	WXGA 1
WXGA 2	SXGA	SXGA+
UXGA	WUXGA	720p
1080p	4Kx2K	NATIVE

CLSO R1
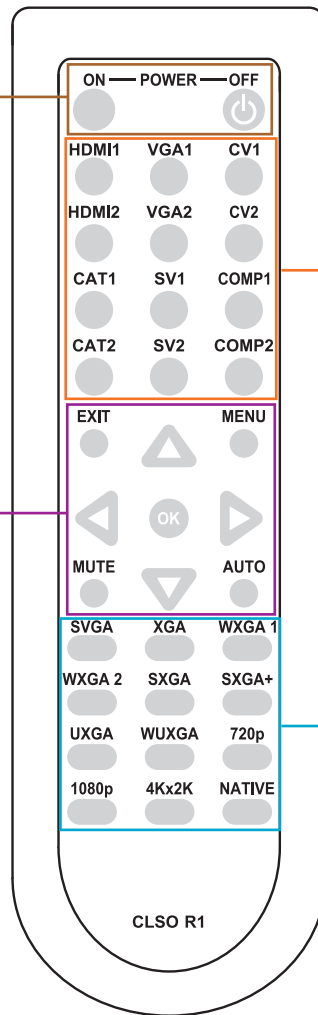
Source Selection
HDMI1 - Input 1 (HDMI 1)
HDMI2 - Input 2 (HDMI 2)
CAT1 - Input 3 (HDBaseT 1)
CAT2 - Input 4 (HDBaseT 2)
VGA1 - Input 5 (VGA 1)
VGA2 - Input 6 (VGA 2)
SV1 - Input 5 (S-Video 1)
SV2 - Input 6 (S-Video 2)
CV1 - Input 5 (Composite 1)
CV2 - Input 5 (Composite 2)
COMP1 - Input 5 (Component 1)
COMP2 - Input 6 (Component 2)

Output Resolution Selection
SVGA - 800x600
XGA - 1024x768
WXGA1 - 1280x800
WXGA2 - 1360x768
SXGA - 1280x1024
SXGA+ - 1440x900
UXGA - 1600x1200
WUXGA - 1920x1200
720p
1080p
4Kx2K - 3840x2160
Native - Upscales/downscales
      the output signal to match
      the HDBaseT display's
      preferred resolution

RS-232

Connection

RS-232 pin out will be determined by the RS-232 cable and will connect as Rx (receiver), Tx (transmitter), and ⏚ (ground). (See picture 1)
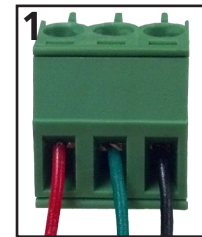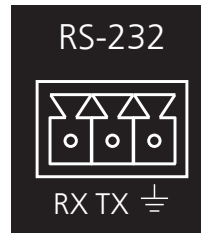
Wire color will differ by cable manufacturer.

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

> **Note:** Typical DB9 connectors use pin 2 for TX, pin 3 for RX, and pin 5 for ground. On some devices functions of pins 2 and 3 are reversed.
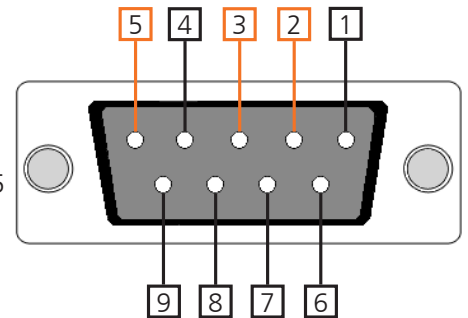
Set Up

To set up the RS-232 hyperterminal (if not using 3rd party software) use the following steps:

1. Connect the CLSO-612 to a PC using a 3 pin to USB cable
2. Go to the Device manager folder (see picture A)
3. Find the CLSO-612 COM port and right click with a mouse and select properties (see picture B)
> **Note:** If unsure which COM port is the CLSO-612, unplug the cable and plug it back in. It will disappear and reappear on the COM port list.
4. Under the properties menu select the port settings tab and update the menu to the **CLSO-612 default settings of**: Bits Per Second: 115200, Data Bits: 8, Parity: None, Stop Bits: 1 and Flow Control: None. (see picture C)

Set up is done and any hyperterminal program may be used to control the CLSO-612 now.
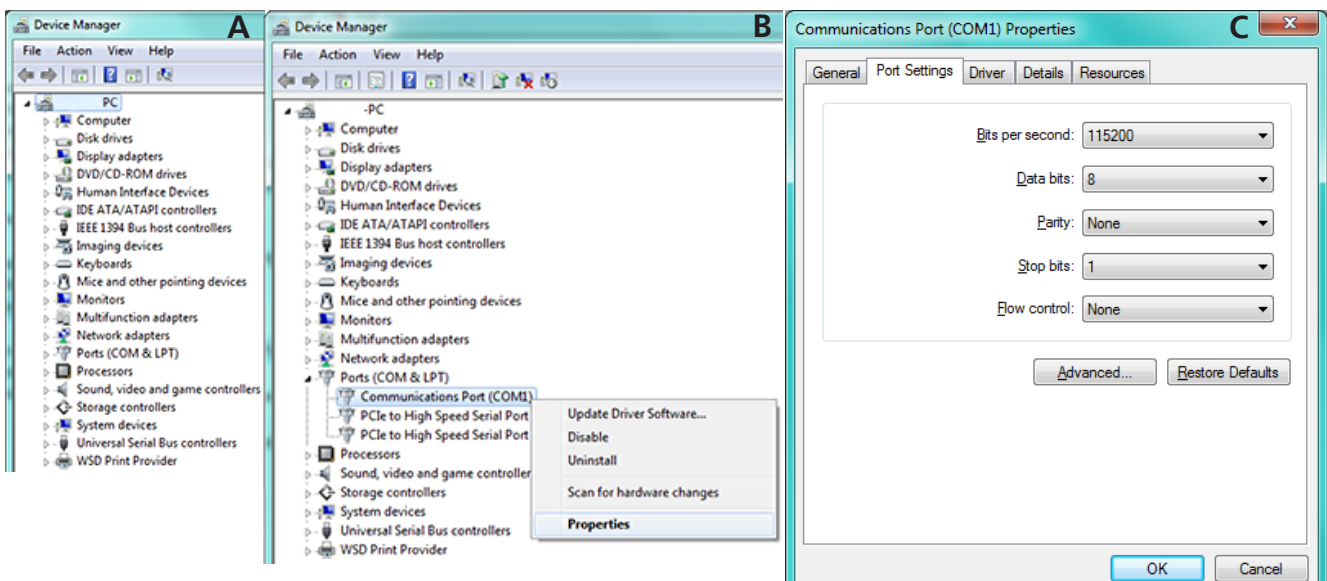
Commands

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

Command	Feedback	Description
PWON	PWON	Power ON
PWOFF	PWOFF	Stand-by
PWSTA	PWON/PWOFF	Get system power status
RS232zone[X][Y]	RS232zoneX[Y]	RS232zoneX[Y], X: 1-3. Y is the command sent to the HDBaseT port [Y] is the command string sent to the display device
RS232para[X][Y]	RS232paraX[Y]	RS232paraX[baudrate,databit,parity,stopbit] X is 1-3. [Y] is the parameter for RS232.
CSpara[Y]	CSpara[Y]	Set RS232 parameter [Y] is the parameter for RS-232.
VOL+	VOL(xx)	Turns the volume up one level
VOL-	VOL(xx)	Turns the volume down one level
VOL(xx)	VOL(xx) **e.g.** VOL(10)	Turns volume to the specified level <xx: 10 ~ -80> Read the volume current level status => VOL **e.g.** Adjusts the master volume level to -23dB => VOL(-23)
MVOL+	MVOL(xx)	Turns the MIC volume up one level
MVOL-	MVOL(xx)	Turns the MIC volume down one level
MVOL(xx)	MVOL(xx) ex. MVOL(30)	Turns MIC5V volume to the specified level <xx: 30 ~ -80> Read the MIC5V volume current level status => MVOL
MICx [Y]	MICx [Y] **e.g.** MICon 20	Sets up MIC values x = on / off / sta / atime (attack time) / rtime (background release time) / sens (microphone sensitivity level) / reduce (background reduce level) [Y] = value (**e.g.** 20)
LVOL+	LVOL(xx)	Turns the Line volume up one level
LVOL-	LVOL(xx)	Turns the Line volume down one level
LVOL(xx)	LVOL(xx) **e.g.** LVOL(0)	Turns Line volume to the specified level <xx: 0 ~ -80> Read the Line volume current level status => LVOL
SnVOL+	SnVOL(xx)	Turns the Sub volume up one level <n: 1-6> (n = input number) **e.g.** Adjusts the HDBT2 volume to up => S4VOL+
SnVOL-	SnVOL(xx)	Turns the Sub volume down one level <n: 1-6> (n = input number) **e.g.** Adjusts the VGA1 volume to down => S5VOL-
SnVOL(xx) **e.g.** S2VOL(-15)	SnVOL(xx) **e.g.** S2VOL(-15)	Turns Sub volume to the specified level <n: 1-6, xx: 0 ~ -80> (n = input number) Read the Sub volume current level status => SnVOL **e.g.** Adjusts the HDMI1 volume level to -10dB => S1VOL(-10)
VOLMute [Y]	VOLMute [Y]	VOLMute [on/off/sta]. Set volume to mute on. => VOLMute on
Menu[X]	Menu[X] **e.g.** MenuDown	Sets to control OSD interface, [X]: Sw/Up/Down/Left/Right/Info/Sel **e.g.** Select OSD option => MenuSel
Lock	Lock	Locks the front panel
Unlock	Unlock	Unlocks the front panel
Version [Y] **e.g.** Version osd	Version [Y] **e.g.** Version x.x.xx	Brings up the software versions: ex. Version mcu firmware [mcu] OSD menu [osd] DSP [dsp] FPGA [fpga]
Type	AT-UHD-CLSO-612	Brings up the model information
Mreset	Mreset	Reset device to manufacture default

[X] Zones -
1: HDBaseT IN 3   **2**: HDBaseT IN 4   **3**: HDBaseT OUT

Command	Feedback	Description
EQB+	EQB(xx)	Turns EQ bass up one level
EQB-	EQB(xx)	Turns EQ bass down one level
EQB(xx)	EQB(xx)	Turns EQ bass to the specific level xx: (xx: -10 to 12)
EQT+	EQT(xx)	Turns EQ treble up one level
EQT-	EQT(xx)	Turns EQ treble down one level
EQT(xx)	EQT(xx)	Turns EQ treble to the specific level xx: (xx: -10 to 12)
ManHPos+	ManHPos(xx)	Sets horizontal position one pixel to the right
ManHPos-	ManHPos(xx)	Sets horizontal position one pixel to the left
ManHPos(xx)	ManHPos(xx)	Sets horizontal position to a specific setting (xx: 0-40)
ManPha+	ManPha(xx)	Adjusts pixel phase up one level
ManPha-	ManPha(xx)	Adjusts pixel phase down one level
ManPha(xx)	ManPha(xx)	Adjusts pixel phase to a set amount (xx: 0 to 63)
Menu[X] **e.g.** MenuDown	Menu[X] **e.g.** MenuDown	Sets to control OSD interface, [X]: Sw/Up/Down/Left/Right/Info/Sel **e.g.** Select OSD option => MenuSel
Lock	Lock	Locks the front panel
Unlock	Unlock	Unlocks the front panel
Version [Y] **e.g.** Version osd	Version [Y] **e.g.** Version x.x.xx	Brings up the software versions: ex. Version mcu firmware [mcu] OSD menu [osd] DSP [dsp] FPGA [fpga]
Type	AT-UHD-CLSO-612	Brings up the model information
Mreset	Mreset	Reset device to manufacture default
VFmtRes [Y] **e.g.** VFmtRes 09	VFmtRes XX **e.g.** VFmtRes 09	Set output video format to any of the [Y] resolutions below **e.g.** Set output video format to 1080p@60 => VFmtRes 06 **e.g.** Read the list of video format => VFmtRes List

[Y] resolution list -

00 Pass-Through	01 640x480p60	02 720x480i60
03 720x480p60	04 1280x720p60	05 1920x1080i60
06 1920x1080p60	07 720x576i50	08 720x576p50
09 1280x720p50,	10 1920x1080i50	11 1920x1080p50
12 1920x1080p24	13 1920x1080p25	14 1920x1080p30
15 640x480p72	16 640x480p75	17 800x600p60
18 800x600p72	19 800x600p75	20 1024x768p60
21 1024x768p72	22 1024x768p75	23 1280x768p60
24 1280x800p60	25 1280x960p60	26 1280x1024p60
27 1360x768p60	28 1366x768p60	29 1440x900p60
30 1600x1200p60	31 1920x1200p60	32 2048x1080p24
33 2048x1080p50	34 2048x1080p60	35 2048x1152p60
36 3840x2160p24	37 3840x2160p25	38 3840x2160p30
39 4096x2160p24	40 4096x2160p30	41 1400x1050p60
42 1600x900p60	43 2560x1600p60	254 Native

Command	Feedback	Description
Input [X] [Y]	Input [X] [Y] Input HDBT 2	Input [interface]* [index]*. Select input source video. e.g. Select input to HDBT 2 video => Input HDBT 2
HDCPSetX [Y] ex. HDCPSet2 off	HDCPSetX Y ex. HDCPSet2 off	Sets HDCP mode of the HDMI ports X = 1 / 2 / 3 / 4 Y = on / off / sta
PrefTimg [X]	PrefTimg [X]	Set preferred timing to EDID. X is 1-10 & sta
VGAPrefT [X]	VGAPrefT [X]	Set preferred VGA timing to EDID. X is 1-8 & sta
BNR [Y]	BNR [Y]	BNR [off/low/medium/high/sta]. Configure video block noise reduction
MNR [Y]	MNR [Y]	MNR [off/low/medium/high/sta]. Configure video mosquito noise reduction
RNR [Y]	RNR [Y]	RNR [off/low/medium/high/sta]. Configure video random noise reduction
PollAddInX [Y]	PollAddInX [Y]	PollAddIn [VGA/COMP/CVBS/SVIDEO]. Add source of analog polling. Ex: Add COMP & SVIDEO => PollAddIn COMP,SVIDEO If only command write "IPAddUser", it will display all user list
PollDelInX [Y]	PollDelIn [Y]	PollDelIn [VGA/COMP/CVBS/SVIDEO]. Delete source of analog polling. e.g. Delete VGA & CVBS & COMP => PollDelIn VGA,CVBS,COMP
OSD [Y]		OSD [func/logo/info][on/off/sta]
Aspect [Y]	Aspect [Y]	Aspect [full/overscan/underscan/letterbox/panscan/follow/sta] Sets video aspect function
OutAMute [Y]	OutAMute [Y]	OutAMute [on/off/sta] Sets output audio mute of HDMI and HDBT
AUD In[X] Ai[Y]	AUD In[X] Ai[Y]	AUD In[X] Ai[Y] x: 1-6 Y: 5-6 or P Replaces the selected input's audio with the selected analog input (5 or 6) or sets it to pass through (p) normally e.g. Replace input 2's audio with analog 6 - Aud In2 Ai6 e.g. Pass through input 3's audio normally - Aud In3 AiP
AutoSW [Y]	AutoSW [Y]	AutoSW [on/off/sta/VGAon/VGAoff/VGAsta] Sets auto switch mode status Factory Default: Sets auto switch to on with VGA auto switch to off
ASwPrePort [Y]	ASwPrePort [Y]	ASwPrePort [HDMI1/HDMI2/HDBT1/HDBT2/Previous] Sets default auto switch port or sets to previous input
ASwOutTime [Y]	ASwOutTime [Y]	ASwOutTime [sec] Sec: 1-600 (default is 1 second) Sets the delay time for how long the auto switching receives no signal from the input before switching ports e.g. Sets the auto switching delay time to 1 minute with no signal before changing ports - ASwOutTime60

[Interface] index -

HDMI 1	HDMI 2	HDBT 1
HDBT 2	COMP 1	COMP 2
CVBS 1	CVBS 2	SVIDEO 1
SVIDEO 2	VGA 1	VGA 2

[X] preferred timing -

1	1280x800	2	1920x1080	3	1024x768
4	1280x720	5	1920x1200	6	1366x768
7	800x600	8	1600x900	9	2560x440
10	3840x2160	sta	Read status		

VGA [X] preferred timing -

1	1280x800	2	1920x1080	3	1024x768
4	1280x720	5	1920x1200	6	1366x768
7	800x600	8	1600x900	sta	Read status

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 configure
IPQuit	IPQuit	Telnet Logout
IPAddUser [X] [Y]	IPAddUser [X] [Y]	IPAddUser [name] [password]. Add user of telnet. If only command write "IPAddUser", it will display all user list. => IPAddUser
IPDelUser [Y]	IPDelUser [Y]	IPDelUser [name]. Del user of telnet
IPDHCP [Y]	IPDHCP [Y]	IPDHCP [on/off/sta]. Set DHCP mode status and auto reset telnet. **e.g.** Set DHCP mode is on => IPDHCP on
IPStatic [X] [Y] [Z]	IPStatic [X] [Y] [Z]	IPStatic [Address] [Netmask] [Gateway]. Set static IP address and auto reset telnet. **e.g.** Set static IP address is 192.168.1.1 255.255.255.0 192.168.1.254 => IPStatic 192.168.1.1 255.255.255.0 192.168.1.254
IPPort [Y]	IPPort [Y]	IPPort [port]. Set telnet port and auto reset telnet **e.g.** Set telnet port 80 => IPPort 80
IPLogin [Y]	IPLogin [Y]	IPLogin [on/off/sta]. Set telnet login status. **e.g.** Set telnet login is on => IPLogin on
Broadcast [Y]	Broadcast [Y]	Broadcast [on/off/sta]. Broadcast switch. **e.g.** Set broadcast mode is on => Broadcast on
IPTimeout [Y]	IPTimeout [Y]	IPTimeout [Sec]. Set telnet idle timeout time. Default is 2 minute. **e.g.** Set telnet idle timeout 10 minutes => IPTimeout 600

Each command is terminated with a carriage return.
Feedback is terminated with a carriage return and line feed.
Note: If the command fails or is incorrect the feedback should be "Command FAILED"

Baud Rate

Zone RS-232 port conifiguration must match the connected device on all parameters including baud rate, data-length, parity, and stop-bit. These parameters can easily be set using the WebGUI or following commands through RS-232 or TCP/IP.

The baud rate for the switcher is for switcher control and the transmitter/receiver baud rate is for control of the RS-232 device in zone. All commands from your control processor are at the settings for the switcher. The switcher will modify the baud rate and other settings to these set parameters by zone.

Note: *Baud rate options 2400, 4800, 9600, 19200, 38400, 57600, or 115200*

Command for Switcher Parameters

CSpara[baudrate,data-length,parity,stop-bit] (data, parity, and stop bit for switcher must be 8,0,1)

For example if you wish to change the baud rate of the switcher to 38400 the command would look like this:

CSpara[38400,8,0,1]

Note: *Default for the switcher is: Baud rate-115200bps, Data length-8bit, Parity-None, Stop Bit-1*

RS232para

The RS-232 status command will provide feedback for the current parameters for each transmitter/receiver.

Example: (See example of feedback below)

RS232para
Current RS232 parameter:
- Zone 1 :BaudRate 2400bps, DataBits 0, Parity None, StopBits 1.
- Zone 2 :BaudRate 9600bps, DataBits 0, Parity ODD, StopBits 1.
- Zone 3 :BaudRate 9600bps, DataBits 0, Parity None, StopBits 1.

Note: Zone 1 is HDBaseT IN 3, zone 2 is HDBaseT IN 4, and zone 3 is HDBaseT OUT.

Note: *Default for the transmitters/receivers is: Baud-9600bps, Data length-8bit, Parity-None, Stop Bit-1*

Control Diagram
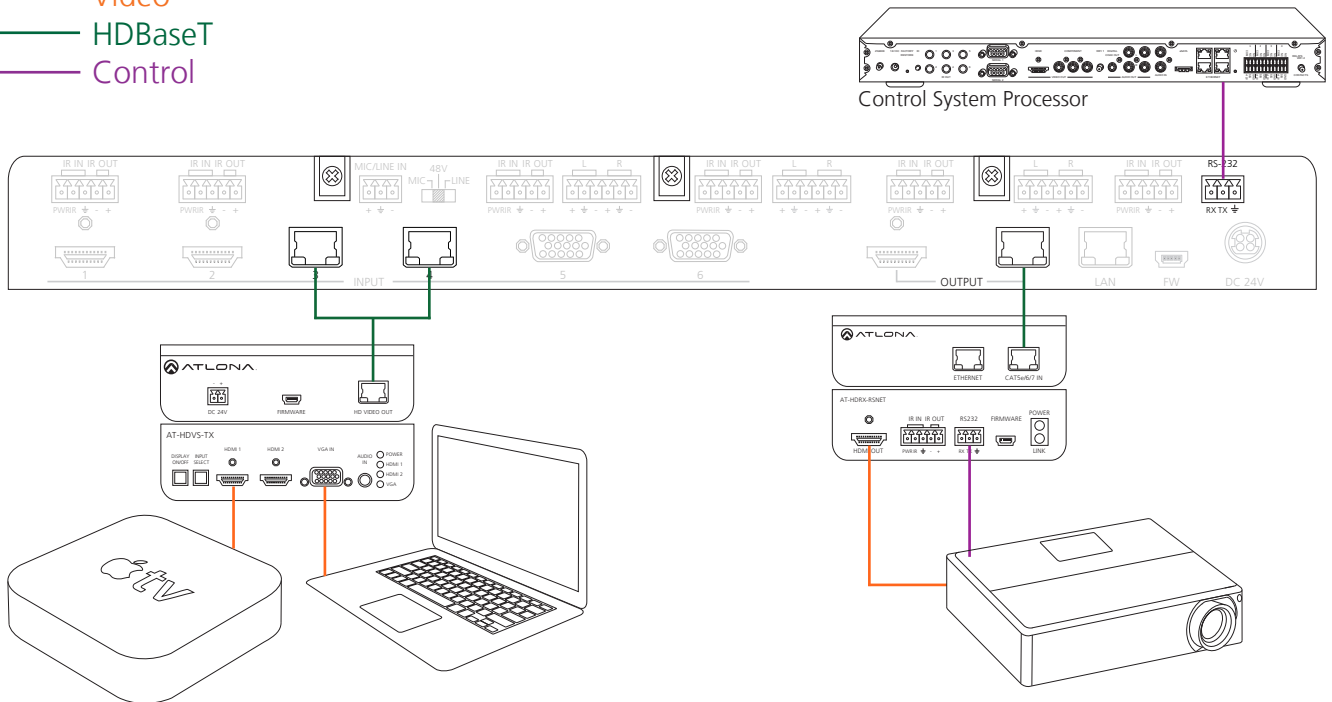
Use RS-232 commands to select inputs on AT-HDVS-TX

Connection and Installation

HDMI
VGA
HDBaseT
Audio
MIC

or

or

or

AT-HDVS-TX

AT-HDRX-RSNET

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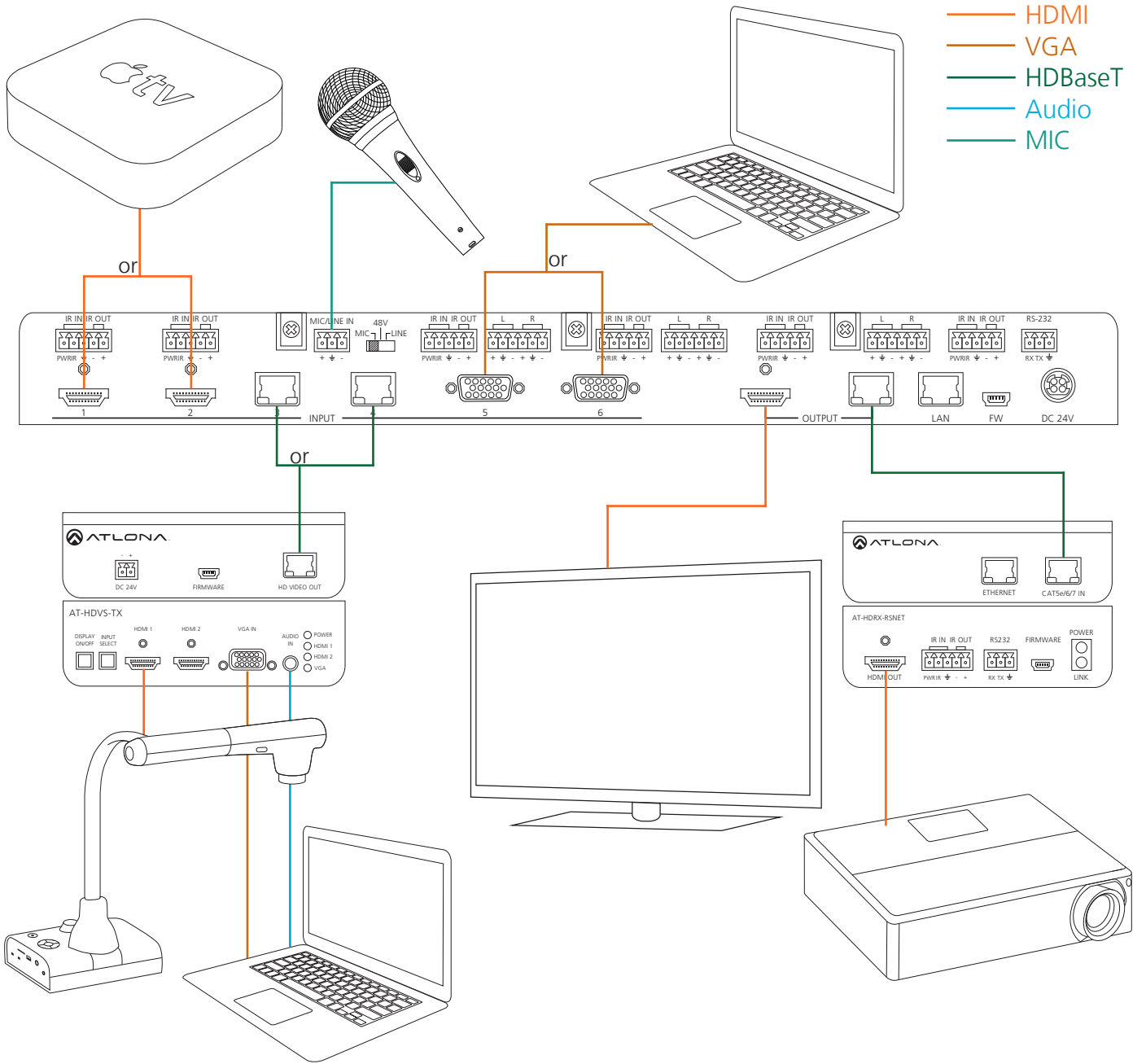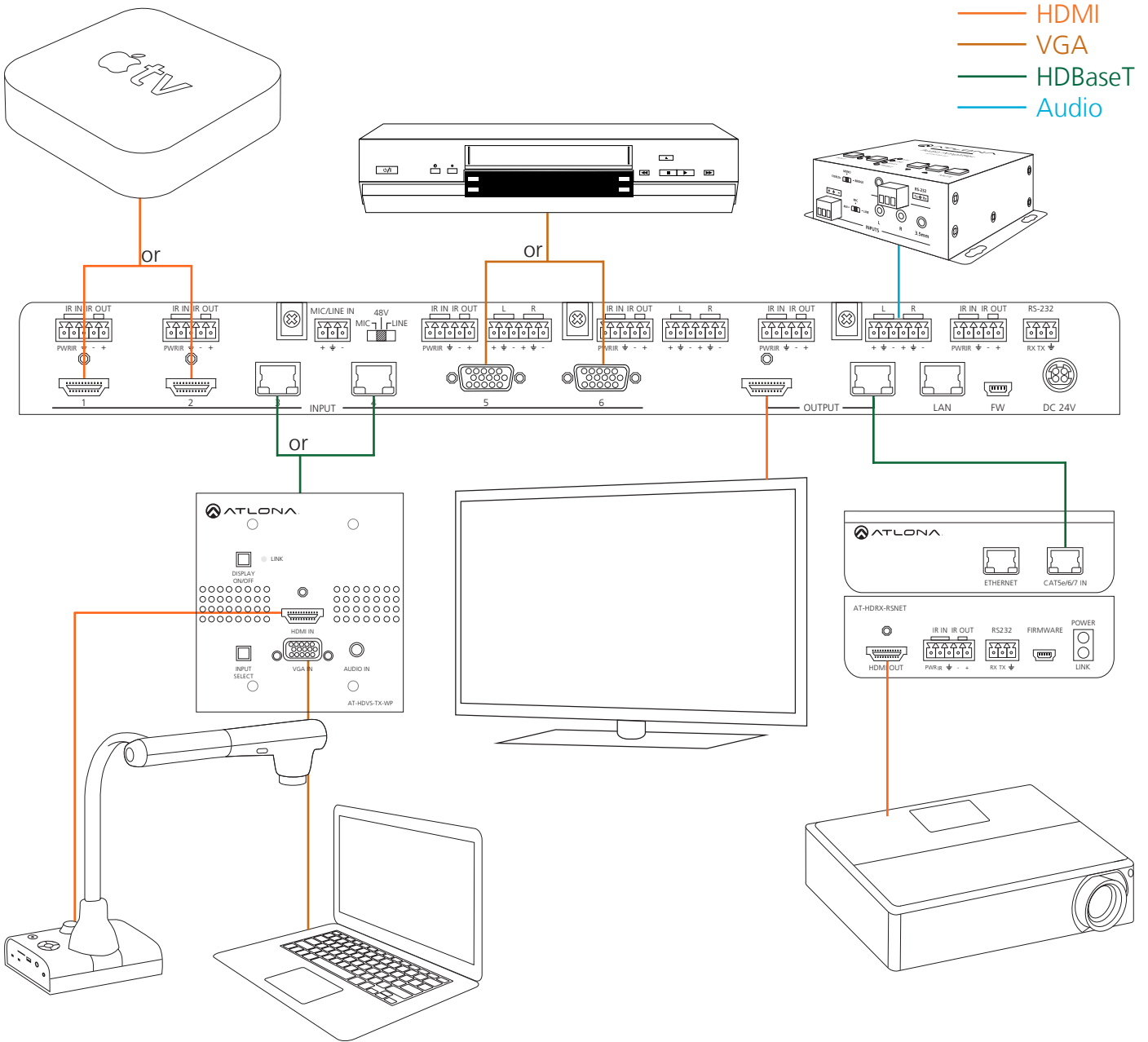
Control Drivers

Visit the **Control Drivers** tab at http://www.atlona.com/UHD-CLSO-612.html to download the control drivers for the CLSO-612.

CLSO-612 Updating

Visit the **Firmware Update** tab at http://www.atlona.com/UHD-CLSO-612.html to download the current updates and instructions for the CLSO-612: OSD and Firmware.

Note: Atlona is constantly improving and updating features and stability. It is recommended that you check to make sure you are on the most current firmware before installation, especially when using a control system.

Specifications

Video Resolutions

IN	480i, 480p, 576i, 576p, 720p@25/29.97/30/50/59.94/60Hz, 1080i@50/59.94/60Hz, 1080p@23.98/24/25/29.97/30/50/59.94/60 3840x2160@24/25/30Hz**, 4096x2160@24Hz** 600x600, 800x600, 1024x768, 1280x768, 1280x800, 1280x960, 1280x1024, 1360x768, 1366x768, 1440x900, 1600x900, 1600x1200, 1680x1050, 1920x1200, 2560x1440
OUT	480p, 720p@50/59.94/60Hz, 1080i@50/60Hz, 1080p@24/25/30/50/60Hz, 2048x1080p@24/50/60Hz, 3840x2160@24/25/30Hz, 4096x2160@24Hz 800x600, 1024x768, 1280x768, 1280x800, 1280x1024, 1360x768, 1366x768, 1680x1050, 1920x1200
Composite/S-Video	NTSC, NTSC4, PAL, PAL-M, PAL-N, SECAM
Colorspace	YCbCr, RGB
Chroma Subsampling	4:4:4, 4:2:2, 4:2:0 (UHD only)
Color depth	8-bit, 10-bit, 12-bit
Nominal Level	Composite - (1 Vp-p)
	S-Video - Y(1Vp-p) - C(0.3 Vp-p)
	Component - Y(1Vp-p) - Pb(0.7 Vp-p) - Pr(0.7 Vp-p)
	VGA - R(0.7 Vp-p) - G(0.7 Vp-p) - B(0.7 Vp-p)
Minimum/Maximum levels	Analog: 0.0V to 1.0 Vp-p wit no offset at unity gain
Impedance	75 ohms
Horizontal Frequency	15kHz to 100kHz
Vertical Frequency	24Hz to 120Hz

Audio

Analog Output	PCM 2Ch (de-embedded)
HDMI/HDBaseT Output	PCM
Frequency Response	20Hz to 20KHz ±1db
THD + Noise	<0.01%, 20Hz to 20kHz at nominal level
S/N	≤ -68dB @ 1kHz, fully loaded
Bass	+15dB to -12dB @ 250Hz
Treble	+15dB to -12dB @ 3kHz

Distance

HDMI	10 meters	30 feet
CAT5e/6	up to 35 meters (1080p3D up to 4K)	up to 115 feet
CAT6a/7	up to 40 meters (1080p3D up to 4K)	up to 130 feet
CAT5e/6	up to 60 meters (≤1080p 36bpp)	up to 197 feet
CAT6a/7	up to 70 meters (≤1080p 36bpp)	up to 230 feet

Signal

Bandwidth	10.2 Gbps
CEC	No
HDCP	Switchable - Compliant / 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	55W
Idle Consumption	9.3W
Supply	Input: AC100~240V 50/60Hz
	Output: DC 24V/2.7A

Dimension

H x W x D	44 x 433.8 x 255 (mm)	1.73 x 17.08 x 10.04 (inch)
w/feet	55.15 x 433.8 x 255 (mm)	2.17 x 17.08 x 10.04 (inch)
Rack Unit	1U	

Specs Cont.

Weight
Device	3.14 kg	6.92 lbs

Certification
Device	CE, FCC, RoHS
Power Supply	CE, FCC, RoHS, cULus

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, Inc 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