

# ZIGEN

## HXL-88Plus/HXL-44Plus HDMI 2.0 Video/Audio Matrix Switch User Manual



HXL-88Plus 8x8x12 | HXL-44Plus 4x4x8 HDMI 2.0  
Video/Audio Matrix Switch User Manual  
UM-004-0001-000-01 | August 29, 2020

# Important Safety Instructions

Read this user manual carefully before using the product. Pictures shown in this manual are for reference only. Different models and specifications are subject to real product.

This manual is only for operation instruction, please contact the local distributor for maintenance assistance. The functions described in this version were updated on August 2020. In the constant effort to improve the product, we reserve the right to make function or parameter changes without notice or obligation. Please refer to Zigen dealers for the latest details.



This warning symbol is used to alert anyone to heed important operating, installing, and maintenance instructions. Failure to do so could result in injury to installers and end-users or damage to equipment.



This lightning symbol is used to alert anyone of the presence of dangerous voltage that has the potential to cause serious injury to installers and end-users.

## Safety Statements

1. Follow all instructions and heed all warnings.
2. Do not expose equipment to rain or moisture and ensure that no objects containing liquids are placed on top of equipment. This includes cups, glasses, or vases.
3. Do not place equipment in confined spaces such as cabinets or bookshelves. Do not block any ventilation holes of equipment that may restrict airflow. This may cause dangerous overheating, fire hazard, or electric shock.
4. Do not place near heat sources such as fireplaces, heaters, boilers, radiators or any apparatus that produce heat such as computers or power amplifiers.
5. Unplug equipment from power supply during dangerous lightning conditions or during prolonged periods of non-use.
6. Keep power cord away from walking traffic. Keep cord from being pinched by heavy objects.
7. Always unplug power supply before cleaning equipment. Clean only with dry cloth.
8. Handle equipment with proper Electro-Static-Discharge (ESD) practices. Failure to do so may result in equipment failure.
9. Only use attachments or accessories specified by the manufacturer.
10. No user serviceable parts inside. Refer all servicing to qualified service personnel.
11. Batteries that may be included with this product and/or accessories should never be exposed to open flame or excessive heat. Always dispose of used batteries according to the instructions.

## FCC Statement

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. It has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial installation.

Operation of this equipment in a residential area is likely to cause interference, in which case the user at their own expense will be required to take whatever measures may be necessary to correct the interference. Any changes or modifications not expressly approved by the manufacture would void the user's authority to operate the equipment.



This product uses software that is subject to open source licenses, lwIP is licensed under the BSD license:

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# Packing List

The *HXL-88Plus* are packaged with the following items:

- 1x HXL-88Plus 8x8x12 HDMI 2.0 Video/Audio Matrix Switch
- 1x Universal 100-240 VAC, 24V/5.0A Power Supply
- 1x IR Remote Control
- 1x RS-232 Cable (male DB9 to female DB9)
- 2x Rack Mounting Ears
- 4x Plastic Cushions
- 1x Quick Start Guide

The *HXL-44Plus* are packaged with the following items:

- 1x HXL-44Plus 4x4x8 HDMI 2.0 Video/Audio Matrix Switch
- 1x Universal 100-240 VAC, 24V/2.71A Power Supply
- 1x IR Remote Control
- 1x RS-232 Cable (male DB9 to female DB9)
- 2x Rack Mounting Ears
- 4x Plastic Cushions
- 1x Quick Start Guide

If any of these products are not present upon first opening of the package, please contact Zigen or your dealer.

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Zigen, Corp. reserves the right to make changes in the hardware, packaging, and any accompanying documentation without prior written notice.

# Specifications

Video Connection	HDMI 2.0b
Content Protection	HDCP 1.4   2.2
Maximum Video Resolution	4K60P UHD 4:4:4, 4K60P UHD 4:2:2 HDR
HDMI Inputs	8x (HXL-88Plus)   4x (HXL-44Plus)
HDMI Outputs	8x (HXL-88Plus)   4x (HXL-44Plus)
Analog RCA Output (L/R)	12x (HXL-88Plus)   8x (HXL-44Plus)
RJ-45 Ethernet LAN Port	1x (10/100BaseT)
RS-232 Port	1x (DB9)
3.5mm IR In Port	1x
IR Sensor (for Remote Control)	1x
2-Pin Power Input Jack	1x (Locking Connector)
Maximum HDMI Bandwidth	17.82 Gbps
Color Space Support	RGB, YUV
YUV Subsampling	4:4:4, 4:2:2, 4:2:0
Full Color Depth	8 bits, 10 bits, 12 bits
High Dynamic Range (HDR)	Dolby Vision   HDR10+   HDR10   HLG
Audio Format (HDMI Output)	7.1 Channel PCM, DTS, DTS-HD, Dolby Digital, Dolby TrueHD, Dolby Atmos
Audio Format (RCA Output)	2-Channel Stereo
Audio DSP (RCA Output)	Volume Attenuation, Tone Control Bass/Treble, 5-Band Equalizer, Equalizer Presets, Surround Sound Effects, and Bass Enhancement
IR Remote Control	✓
RS-232 Port	✓
IR Input Port (2 or 3 Pins)	✓
Ethernet Port	✓
ZigNet Settings	✓
EDID Management	✓
Advanced Diagnostics	✓
CEC	✓
Firmware Upgrades	✓ (Ethernet)
Power	24VDC @ 5.0A, Center pin hot (HXL-88Plus) 24VDC @ 2.71A, Center pin hot (HXL-44Plus)
Dimensions	436.4mm x 44.0mm x 238.1mm   17.18 inches x 1.73 inches x 9.38 inches
Weight	2.0 Kg (HXL-88Plus) 1.75 Kg (HXL-44Plus)
Temperature	0° to 40° C (10% - 90% Non-Condensing Humidity)   32° to 104° F
HDMI 4K 600Mhz ESD Protection	Exceeds IEC61000-4-2 (Level 4)
Contact/Air Gap Discharge on External Lines	±15-kV
Regulatory Safety and Emissions	CE   FCC   RoHS   UL Listed Power Supply

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# Introduction

## 1 Introduction

The HXL-Plus series products are HDMI 2.0 Video/Audio Matrix Switches. The devices have multiple HDMI inputs, HDMI outputs, and Analog RCA (L/R) outputs. Each HDMI video output can be connected to any HDMI video input. The audio extracted from each HDMI input can be routed to any Analog RCA outputs.

The HXL-Plus products include an IR Remote Control for configuring the audio and video matrix connections between inputs and outputs. The devices can also be controlled by 3<sup>rd</sup> party Control Systems (appropriate drivers required) through control ports such as IR Port (3.5mm Jack), RS-232 (DB9), and Ethernet LAN.

The HXL-Plus family are featured with a webGUI interface called ZigNet. With ZigNet, the user has full control of Video/Audio Switching, Analog Audio Processing, Source and Sink Diagnostics, and EDID Reporting. ZigNet eliminates the need for costly analyzers and time-consuming step by step troubleshooting.

This manual covers the two HXL-Plus products: HXL-88Plus and HXL-44Plus. The HXL-88Plus (8x8x12 Matrix Switch) has eight HDMI inputs, eight HDMI outputs, and twelve Analog RCA (L/R) outputs. The HXL-44Plus (4x4x8 Matrix Switch) has four HDMI inputs, four HDMI outputs, and eight Analog RCA (L/R) outputs. With the exception of the number of Video/Audio connections, both products feature the same capabilities and both units are referred herein as HXL-Plus.



# Front Panel

## 2 Front Panel

### HXL-88Plus Front Panel



### HXL-44Plus Front Panel



#### 1 IR Sensor

This IR sensor receives signals from the included IR remote control unit.

#### 2 LCD Display

The LCD Display shows the menus and current configuration of the unit. Refer to the information shown on the LCD Display whenever a local front panel button is pressed. The LCD Display will update and reflect the new changes sent by a 3<sup>rd</sup> party Control System through any of the device's control ports.

#### 3 Local Front Panel Buttons

The Front Panel buttons are used to locally control the unit. Each button is illuminated in Blue or Red to indicate the current configuration of the unit.

**INPUTS:** The Input Buttons are associated with the number of HDMI inputs of the unit (1-8 *HXL-88Plus*, 1-4 *HXL-44Plus*). When an Input button is pressed, all the connected outputs will also be illuminated.

**OUTPUTS:** The Output Buttons are associated with the number of HDMI outputs of the unit (1-8 *HXL-88Plus*, 1-4 *HXL-44Plus*). When configuring the Audio connections, the Output Buttons are associated with the number of Analog RCA outputs of the unit (1-12 *HXL-88Plus* [blue LEDs for Audio 1-8, red LEDs for Audio 9-12], 1-8 *HXL-44Plus* [blue LEDs for Audio 1-4, red LEDs for Audio 5-8]).

**VIDEO:** The Video button configures the Input and Output buttons for mapping HDMI Video.

**AUDIO (Blue):** The blue Audio button configures the Input and Output buttons for mapping RCA Audio (1-8 *HXL-88Plus*, 1-4 *HXL-44Plus*).

**AUDIO (Red):** The red Audio button configures the Input and Output buttons for mapping RCA Audio (9-12 *HXL-88Plus*, 5-9 *HXL-44Plus*).

**ENTER:** The Enter button is used to accept a selection in the Menu shown on the LCD Display. The Enter button is also used to navigate down to a submenu.

**ALL:** The All button is used to map all Video or Audio Outputs to the Input currently selected.

# Front Panel

**UP/DOWN:** The Up and Down buttons are used to navigate the Menus shown on the LCD Display.

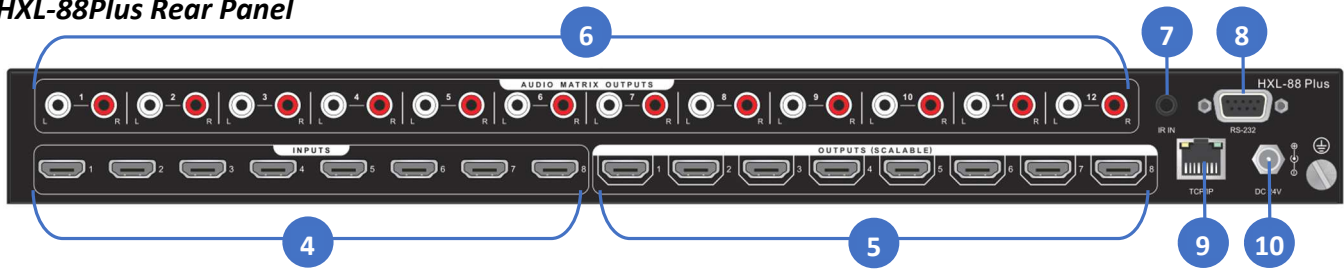
**MENU:** Pressing the Menu button will display the configuration menus on the LCD Display. Pressing the Menu will also navigate up from a submenu.

**EXIT:** Pressing the Exit button will close the configuration menus shown on the LCD Display.

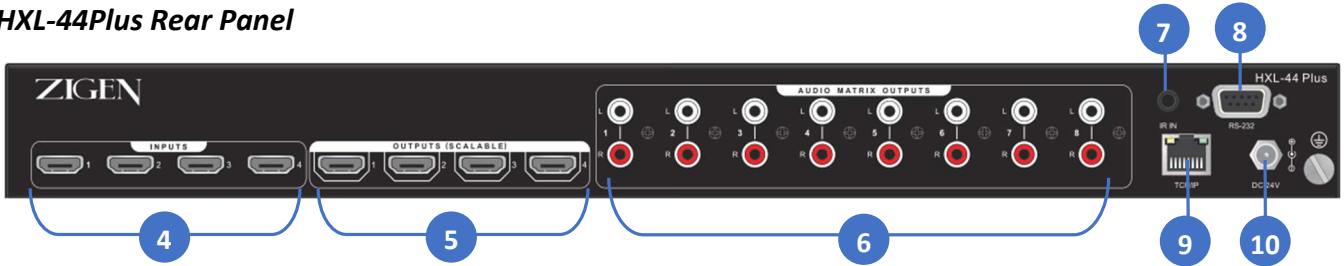
# Rear Panel

## 3 Rear Panel

### HXL-88Plus Rear Panel



### HXL-44Plus Rear Panel



#### 4 HDMI Inputs

Connect the video sources to any of the HDMI inputs, which corresponds to the Input buttons located in the front.

*Note: Zigen highly recommends the use of premium 4K certified HDMI cables when viewing UHD 60p 4:4:4 or UHD 60p HDR 4:2:2 video resolutions. Zigen offers these premium 4K certified cables in varying lengths from 3 meters to 9 meters.*

#### 5 HDMI Output

Connect devices with HDMI inputs, such as displays, to the HDMI Outputs. The mapped HDMI input will route video and embedded audio to this output.

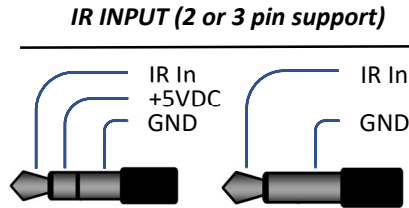
#### 6 Unbalanced Analog Audio RCA Outputs

The RCA Left/Right connectors will output analog audio from extracted audio of the mapped HDMI Input. Only 2-Channel Stereo audio format is supported. Noise will be heard on the RCA Outputs if a surround sound audio format, such as 5.1, 7.1, Dolby Digital, DTS, etc., is configured. Digital Signal Processing (DSP) functions such as Volume Attenuation, Tone Control Bass/Treble, 5-Band Equalizer, Equalizer Presets, Surround Sound Effects, and Bass Enhancement are available on all Analog RCA Outputs. The DSP parametric controls are available on ZigNet or 3<sup>rd</sup> party Control Systems with proper drivers.

# Rear Panel

## 7 IR Input Connection

The IR Input Plug can be connected to an IR Receiver (3-pin Jack, 5V) or 3rd party Control Systems (2-pin Jack). The pin out for the IR connectors are as follows:



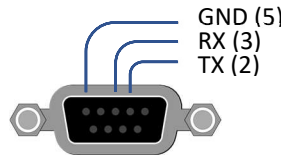
Refer to section **Infrared (IR) Protocol** for a list of available IR commands the protocol used to command the HXL-Plus.

## 8 RS-232 Connection

An RS-232 connection is typically connected to a 3rd party Control System to configure the HXL-Plus. Communication through the RS-232 power is enabled in both Active and Standby Modes.

The default settings are:

- Baud Rate: 115,200
- Data Bits: 8
- Stop Bits: 1
- Parity: None
- Flow Control: None



For information on the RS-232 control protocol, refer to section **RS-232 Control**.

## 9 Ethernet LAN Port

The Ethernet LAN port is a 100 Base-T connection to any router, switch, or directly to a computer. The HXL-Plus features a web interface, called ZigNet. Hardware configuration, EDID management, and advanced diagnostics can all be accessed through ZigNet.

The Ethernet LAN also feature HTTP or Curl protocol to allow 3<sup>rd</sup> party Control Systems with appropriate drivers to control the HXL-Plus. Refer to section **Application Program Interface (API)** for more information.

## 10 Power

Use the included power adaptor and ensure the locking ring is threaded snugly to prevent inadvertent disconnection of the power jack. Make sure all video, audio, and control ports are properly connected before applying power to the HXL-Plus.

**Included Power Supply:**

HXL-88Plus: 24VDC @ 5.0 Amps

HXL-44Plus: 24VDC @ 2.71 Amps

# Using the Front Panel

## 4 Using the Front Panel

The HXL-Plus devices can be locally controlled using the front panel buttons. Refer to section **Front Panel** for a complete description of the buttons.

### Configuring the Video Matrix Switch

This process will map or connect an HDMI video output(s) to a specific HDMI video input. If the VIDEO button is not already illuminated blue, press the VIDEO button. Next press one of the INPUT buttons and it will illuminate to confirm the button press. Any one of the output buttons will illuminate if it is currently mapped to the selected input. Press the desired OUTPUT button to connect it with the selected Input. The Input/Output buttons will flash momentarily to confirm the new mapping. If the ALL button is pressed, then all the HDMI video outputs will be mapped to the selected input.

#### *Example Front Panel Button sequence.*

##### 1.) Connecting an HDMI Input to an HDMI Output

- a. **Example:** Input 1 to Output 4  
→ Press VIDEO, INPUTS 1, OUTPUTS 4
- b. **Example:** Input 2 to all Outputs  
→ Press VIDEO, INPUTS 2, ALL

### Configuring the Analog Audio Matrix Switch

This process will map or connect an Analog Audio RCA output(s) to a specific extracted HDMI audio input. If the AUDIO button is not already illuminated blue or red, press the AUDIO button. The table below shows which set of Analog Audio outputs are being mapped depending on the color of the AUDIO button:

AUDIO Button LED Color	Analog Audio RCA Output
Blue	1-8 (HXL-88Plus)   1-4 (HXL-44Plus)
Red	9-12 (HXL-88Plus)   5-8 (HXL-44Plus)

Next press one of the INPUT buttons and it will illuminate to confirm the button press. Any one of the output buttons will illuminate if it is currently mapped to the selected input. Press the desired OUTPUT button to connect it with the selected Input. The Input/Output buttons will flash momentarily to confirm the new mapping. If the ALL button is pressed, then all the Analog Audio outputs will be mapped to the selected input.

#### *Example Front Panel Button sequence.*

##### 1.) Connecting an HDMI Input extracted audio to an Analog Audio Output

- a. **Example:** Input 1 to Output 4  
→ Press AUDIO (until blue), INPUTS 1, OUTPUTS 4
- b. **Example:** Input 2 to Output 9 (HXL-88Plus)  
→ Press AUDIO (until red), INPUTS 2, OUTPUTS 1

# Using the Front Panel

- c. **Example:** Input 5 to all Outputs  
→ Press AUDIO (blue or red), INPUTS 5, ALL

## Local Display Menu Structure

The local display is used in conjunction with the following front panel buttons: MENU, ENTER, UP, DOWN, and EXIT. The default display information shows the Zigen Matrix Switch model number and firmware version. When MENU is pressed, the HXL-Plus menu structure will be shown. To navigate the menu, use the UP/DOWN button to scroll through the display then press the ENTER button to navigate “down” the menu tree. Press the MENU button again to return “up” the menu tree. Press the EXIT button any time to exit the menus and return to the default display information. On some menus, the UP/DOWN buttons are used to change the selected control values and ENTER will accept the new control values.

## Menu Structure

Pressing the Menu button will display the menu structure shown in the table below:

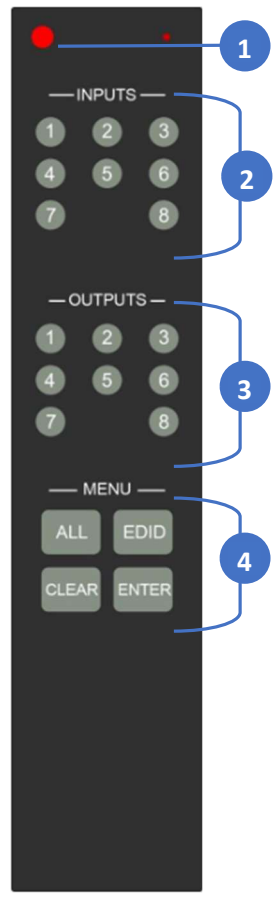
Menu Structure			
Main Menu	Sub Menu 1	Sub Menu 2	Description
<b>Switch Info</b>			
	In 2 2 2 2 Out 1 2 3 4		This Switch Info shows that all outputs are mapped to Input 2 ( <i>HXL-44Plus</i> shown).
<b>EDID Management</b>			
	View Output EDID	Output 1 EDID: 1080p60	Use the Up/Down buttons to cycle through the information on all Outputs. The front panel Output buttons can also be pressed to show its EDID.
	View Input EDID	Input 1 EDID: 2160p60	Use the Up/Down buttons to cycle through the information on all Inputs. The front panel Input buttons can also be pressed to show its EDID.
	Set Input EDID	Input 1 EDID: 2160p60 HDR	Press the UP/DOWN to scroll to all available formats. Pressing the ENTER button repeatedly will cycle to the next Input.
<b>Network</b>			
	View IP Address	IP Address: 192.168.0.100	Shows the actual IP Address of the unit.
	Set DHCP Options	DHCP Enable: No/Yes	Press the UP/DOWN to scroll to all available values. Press the ENTER button to take the new value.
	Set Static IP	Set Static IP: 192.168.0.101	Press the UP/DOWN to increment or decrement the field. Constantly pressing the UP/DOWN will automatically increment/decrement the value. Press the ENTER to change to the next field. <i>Note: the IP Address shown here may not be the actual IP Address of the unit if DHCP is configured to Yes.</i>
<b>Factory Reset</b>			Pressing ENTER will set the device to Factory Defaults

# IR Remote Control

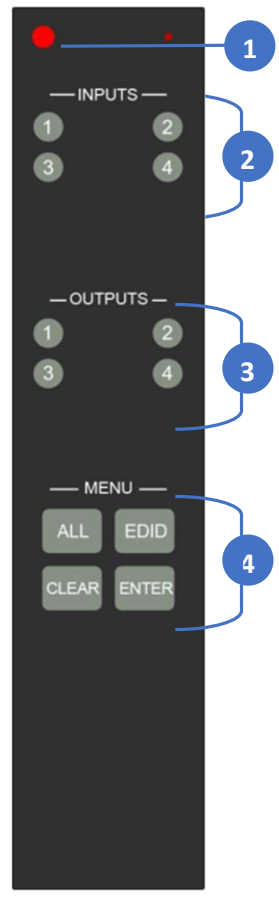
## 5 IR Remote Control

The HXL-Plus includes an IR remote control to be for switching between inputs and powering the unit on or off. Before pressing any buttons, aim the IR Remote Control towards the front panel display of the HXL-Plus unit.

*HXL-88Plus IR Remote Control*



*HXL-44Plus IR Remote Control*



### 1 On/Off Button

The On/Off buttons to toggle between the operating modes. ON will set the unit in Active Mode. OFF will set the unit in low power Stand-By mode.

### 2 Input Buttons

The Input Buttons are associated with the number of HDMI inputs of the unit (1-8 *HXL-88Plus*, 1-4 *HXL-44Plus*). These buttons are the same as the Input buttons located on the front panel. When an Input button is pressed, the same front panel button and all the connected outputs will be illuminated.

# IR Remote Control

## 3 Output Buttons

The Output Buttons are associated with the number of HDMI outputs of the unit (1-8 HXL-88Plus, 1-4 HXL-44Plus). These buttons are the same as the Output buttons located on the front panel.

## 4 Menu Buttons

There are four Menu buttons on the IR Remote Control: ALL, EDID, CLEAR, and ENTER.

**ALL:** The ALL button functions the same as the ALL button located in the front panel. When all is pressed, all outputs will be mapped to the selected input.

**EDID:** The EDID button is used to transfer EDID information from an output to a selected or all inputs.

**CLEAR:** The CLEAR button is used to cancel the current IR Remote Control command sequence.

**ENTER:** The ENTER button is used to confirm the current IR Remote Control command sequence.

### *Example IR Remote Control command sequence.*

#### 2.) Connecting an HDMI Input to an HDMI Output

- a. **Example:** Input 1 to Output 4  
→ Press INPUTS 1, OUTPUTS 4, ENTER
- b. **Example:** Input 2 to all Outputs  
→ Press INPUTS 2, ALL, ENTER

#### 3.) HDMI Input learning EDID data from an HDMI Output

- a. **Example:** Input 2 learns EDID data from Output 3  
→ Press EDID, INPUTS 2, OUTPUTS 3, ENTER
- b. **Example:** All Inputs learn EDID data from Outputs 1  
→ Press EDID, ALL, OUTPUTS 1, ENTER

#### 4.) Cancelling a command sequence (*Note: CLEAR can be pressed anytime during a sequence*)

- a. **Example:** Cancelling an Input to Output connection  
→ Press INPUTS 2, OUTPUTS 3, CLEAR
- b. **Example:** Cancelling EDID data learning  
→ Press EDID, INPUTS4, OUTPUTS 1, CLEAR



# Installation

## 6 Installation

### Video

1. Use HDMI cables to connect video sources to the Inputs on the back panel of the unit.
2. Use HDMI cables to connect displays to the Outputs on the back panel of the unit.

The HDMI cable can then be connected in any of the following ways:

- Connect the HDMI cable to an Ultra HD display.
  - Connect the HDMI cable to another Zigen switch or splitter, for cascading purposes.
- 3.

*Note: Zigen highly recommends the use of premium 4K certified HDMI cables when viewing UHD 60p 4:4:4 or UHD 60p HDR 4:2:2 video resolutions. Zigen offers these premium 4K certified cables in varying lengths from 3 meters to 9 meters.*

### Audio

1. Use HDMI cables to connect video sources to the Inputs on the back panel of the unit.
2. Use HDMI cables to connect Audio/Video Receivers (AVR) to the Outputs on the back panel of the unit.
3. Use HDMI cables to connect Soundbars to the Outputs on the back panel of the unit.
4. Use RCA Left/Right cables to connect Multi-Zone Amplifiers or AVRs to the Analog Audio RCA Outputs on the back panel of the unit.

### Power

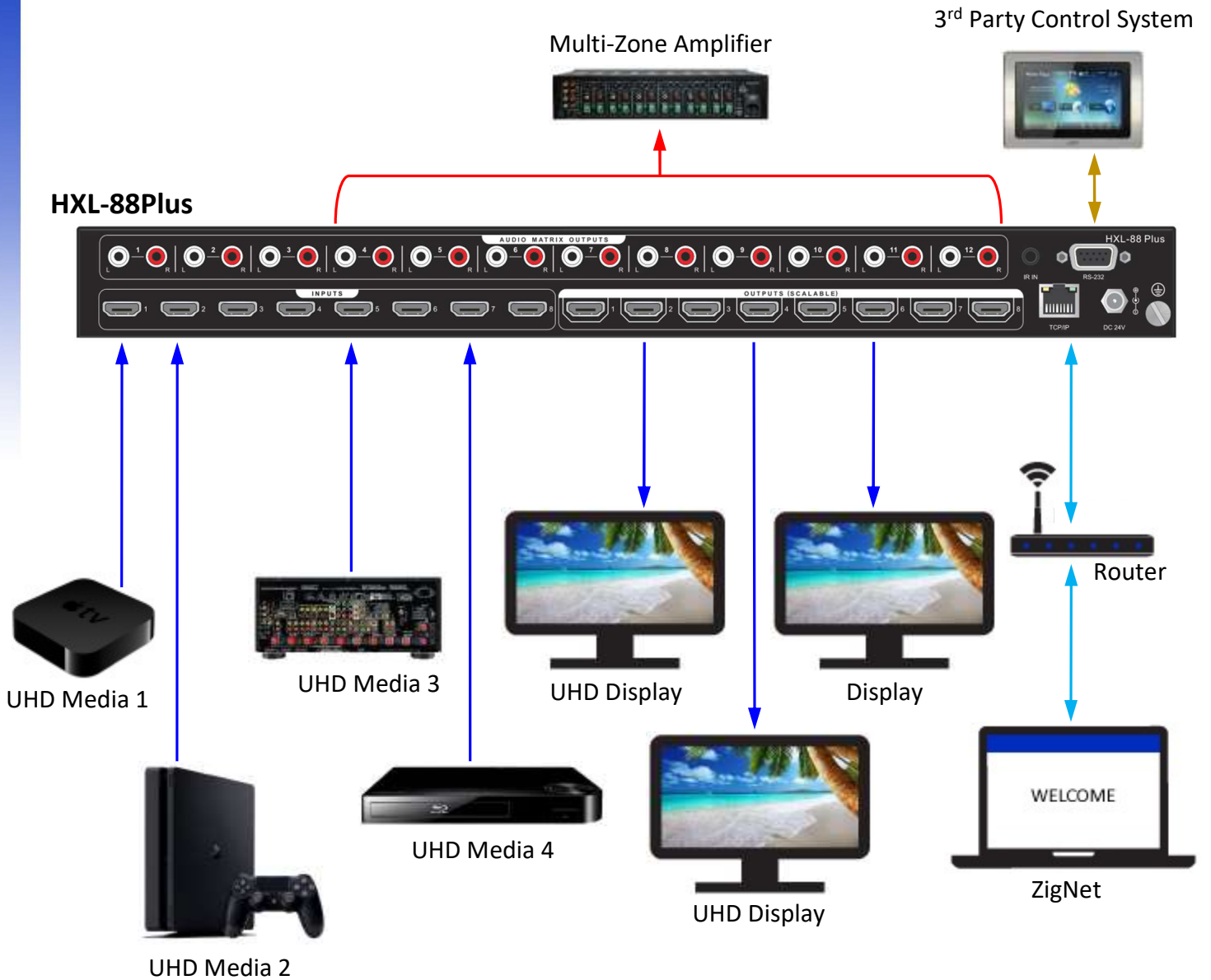
1. Connect the included 24VDC locking power supply to the 24V DC power receptacle on the rear panel of the switch.
2. Connect the power supply to an electrical outlet.



**IMPORTANT:** *Ensure that all video, audio, and control port interconnects are properly connected before applying power to the unit. Failure to do so could cause irreparable damage to the unit or cause injury to installers and end-users.*

# Interconnect Diagram Example

## 7 Interconnect Diagram Example



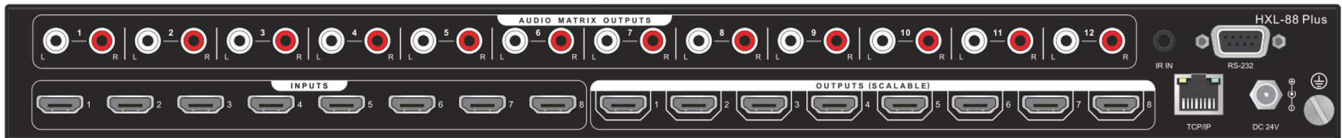
# Connecting to ZigNet

## 8 Connecting to ZigNet

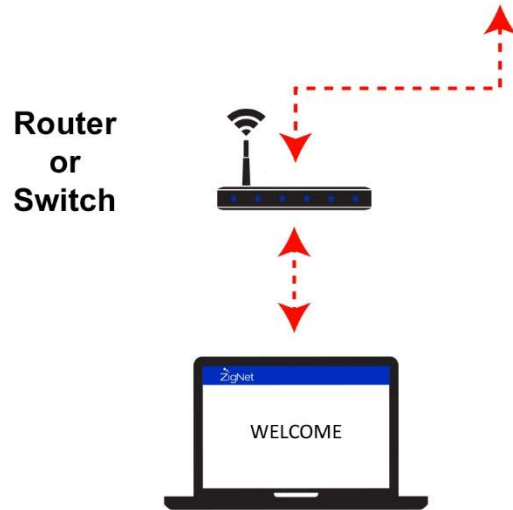
ZigNet is the HXL-Plus Web-based Graphical User Interface (GUI) for control and management of the device. To access ZigNet, the HXL-Plus must be connected to the same network LAN as a computer with a web browser. There are two network options to connect the HXL-Plus to a computer.

### Network Setup Option 1:

Connect the unit and computer to a router or switch with built-in DHCP Server.



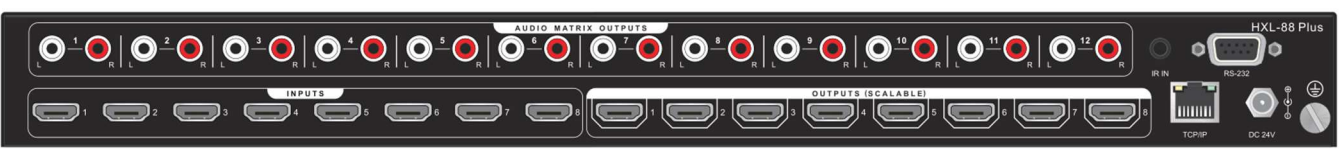
\* HXL-88Plus shown.



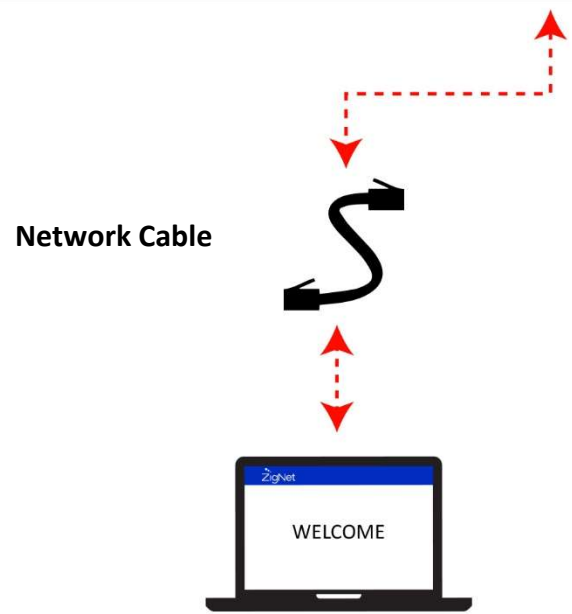
# Connecting to ZigNet

## Network Setup Option 2:

Connect a computer directly into the unit by using an Ethernet Category 5 or better cable.



\* HXL-88Plus shown.



## Accessing ZigNet

Download the application ZigNet-Finder from the Zigen Website. Download the ZigNet-Finder that is proper with your computer's Operating System such as Windows, OSX, or Linux.

Install ZigNet-Finder then run the application. Click the SEARCH button to find any network connected Zigen devices. Find the proper HXL-Plus unit and note its IP Address.

Open the computer's web browser and enter the HXL-Plus IP Address in the web browser's URL field.



**Note:** ZigNet-Finder will find network connected Zigen devices even though the unit is on a different subnet as the computer. However, the computer and the HXL-Plus must be on the same subnet to access the ZigNet webGUI.

# Using ZigNet

## Using ZigNet

ZigNet provides easy management of all features used by the HXL-Plus.

ZigNet is a highly functional web server that is accessible either remotely across the Internet or directly with a connection between a personal computer on a local area network, or a connection directly to the Ethernet connector on the back panel of the unit.

**With ZigNet, you are in full control.** Managing all of the excellent features our Zigen products have to offer is just a click away with a built in and free web interface. Use the provided login information and web-link to view features like Video, Audio, Diagnostics and Control pages. The new Diagnostics page allows you to monitor the health and disposition of your system. So, say goodbye to your bulky and expensive analyzer tool forever.

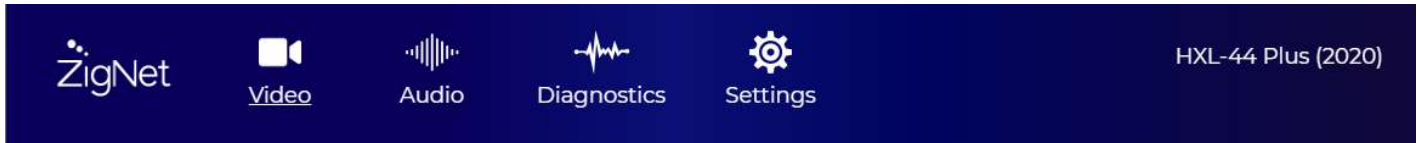
Our new Plus Series products are the first to include this web interface. You will find ZigNet to be a powerful tool that brings ease to managing and maintaining your setups.

**ZigNet truly works for you.**

# Using ZigNet

## Navigation Bar

From the navigation bar, select the appropriate tab to get to the corresponding page. The highlighted icon and underlined text indicate the page of the selected tab. The following webGUI pages pertain to all HXL-Plus devices.



*\* HXL-44Plus shown.*

### Video Tab

Allows the user to switch the inputs for the output and manage EDID settings. Refer to section [ZigNet Video](#) for more information.

### Audio Tab

Allows the user to manage audio settings. Refer to section [ZigNet Audio](#) for more information.

### Diagnostics Tab

Allows the user to monitor video signals and system vitals. Refer to section [ZigNet Diagnostics](#) for more information.

### Settings Tab

Displays the unit's Hardware and Firmware revisions. Allows the user to change network settings and update the latest firmware if available. The HXL-Plus can only detect the availability of current firmware if the unit has access to the Internet through its network port. Refer to section [ZigNet Settings](#) for more information.

ZigNet
Video
Audio
Diagnostics
Settings
HXL-44 Plus (2020)

---

## Matrixing

To switch a source to a sink press on a square in the grid. Press the buttons at the top of grid to apply to all outputs.

\	Input 1	Input 2	Input 3	Input 4	Presets	Save
Output 1	Selected				Preset 1	<<
Output 2		Selected			Preset 2	<<
Output 3		Selected			Preset 3	<<
Output 4				Selected	Preset 4	<<

## EDID Management

EDID (Extended Display Identification Data) informs the source what the sink is capable of receiving. Manage the EDID that the sources receive by first selecting the **source** then select either one of the **presets or the sink**. If one of the presets is selected, then **audio settings** can be customized as well enabling **HDR (High Dynamic Range)**. Finally hit the **"Set EDID" button** to execute.

Select Inputs Input 1

Select EDID 2160p60

Stereo Only  OFF

Remove Dolby Audio  OFF

Remove DTS Audio  OFF

Set EDID Set EDID

Upload EDID Browse No file has been selected.

## EDID Viewer

The active EDIDs received by all **sources** are shown below.

Source 1	2160p60	Source 2	2160p60
Source 3	2160p60	Source 4	2160p60

*\* HXL-44Plus shown.*

## Matrixing

This section is used to map an HDMI Output to and HDMI Input. Click on the appropriate rectangle on the matrix to connect an output to an input. Clicking on a top row labeled "Input" will map this column to all the outputs. Clicking on the top row labeled "\ " will map Input 1 to Output 1, Input 2 to Output2, Input 3 to Output 3 and so on...

There are Presets available on the matrix. Once an Input-Output matrix is configured, click on a Save button. Clicking on its respective Preset button will load the saved Input-Output matrix setting.

## EDID Management

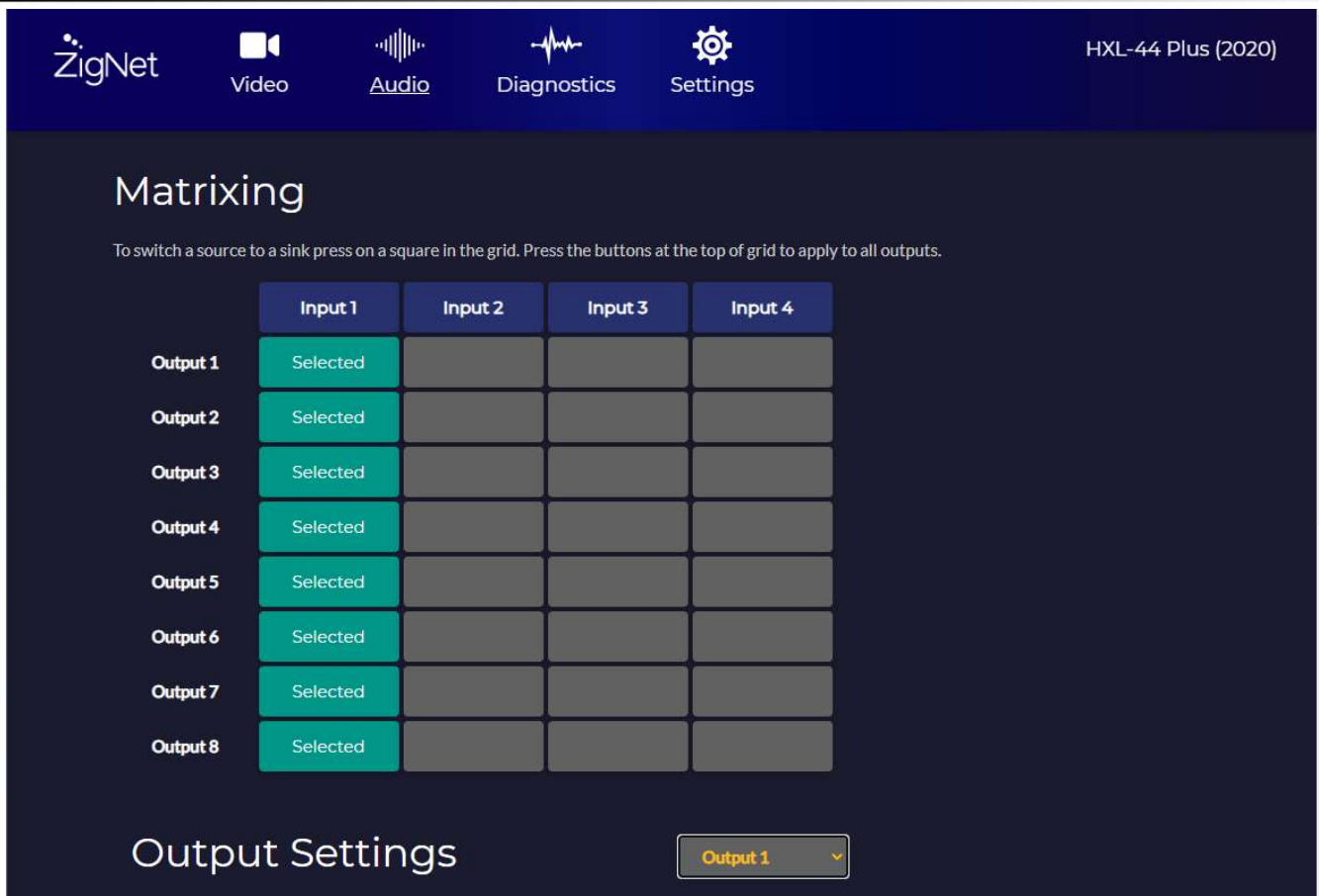
EDID (Extended Display Identification Data) informs the source what the sink is capable of receiving. Manage the EDID that the sources receive by first clicking on the "Select Inputs" pulldown and selecting the desired HDMI input. Next, click on the "Select EDID" pulldown and choose any of the preset EDID values (1080p60, 2160p30, 2160p30 HDR, 2160p60, 2160p60 HDR), any connected displays (sinks), or any uploaded Custom EDIDs (Custom EDID 1-8). Configure the appropriate Audio Settings (2-Channel Stereo, Dolby Audio, or DTS) then click the "Set EDID" button to execute. The displays may temporarily go to black as EDID negotiation is handled between the HXL-Plus and the sources.

Click the "Upload EDID Browse" button to choose an EDID file stored on the computer. Depending on the computer's operating system, a file browser will open to allow the user to select a proper EDID file (256-byte binary file format). Once an EDID file is selected, click the Upload button then a pop-up window will indicate a successful upload. Up to eight/four (HXL-88Plus/HXL-44Plus) Custom EDID files can be uploaded to the unit. Clicking on the "Select EDID" button will now show the new Custom EDID file on the dropdown list.

## EDID Viewer

The EDID Viewer table shows the active EDID selected for each source. To change the active EDID, use the EDID Management section to configure an available EDID for each source. The default active EDID for all sources is the built-in "2160p60, 2ch PCM Only, No HDR".





\* HXL-44Plus shown.

## Audio Selection

This section is used to map an Analog Audio RCA Output to and an audio extracted HDMI Input. Click on the appropriate rectangle on the matrix to connect an output to an input. Clicking on a top row labeled "Input" will map this column to all the outputs.

## Output Settings

Output 1

## Master Volume

This slider controls the output volume of the L/R RCA output on the back of the SW-41 Plus. Hit the mute button to mute the audio.

Mute

50%

## Equalizer

The audio equalizer can be controlled by three different tuning methods. Select **presets** to pick a preprogrammed parametric equalizer setting such as 'Acoustic'. Or select **graphic EQ** to fine tune each filter in a 5 band equalizer. Lastly, a simple **tone control** tuning method can be enabled to set bass and treble.

Tune Method

Disabled

## Surround Sound Effect

Enable this option to apply a spatial surround sound effect to the output audio. Note that this does not effect the audio embedded in the HDMI link.

Off

Narrow

Wide

## Bass Enhancement

Enable this option to add a deeper bass to the audio output. Select the cut-off frequency and whether to bypass the high pass filter. Then use the **bass boost** slider to adjust the bass boost level.

Off

Cut-Off Frequency(Hz):

100

High-Pass Cut-Off Frequency(Hz):

Bypass High Pass

## Bass Boost

Less

More

Click on the “Output Settings” pulldown to select a specific Analog Audio output. Audio signal processing controls will appear for that selected output.

## Master Volume

Use slider and Mute button to control the volume of the Analog Audio output. Embedded audio from the HDMI output will not change.

## Equalizer

The Equalizer only controls the frequency response of the Analog Audio output. Embedded audio from the HDMI output will not change.

- 1.) Presets: Select a preset to configure the parametric equalizer
- 2.) Graphical EQ: Use the sliders to configure dB levels for each frequency band.
- 3.) Tone Control: Use the sliders to set bass and treble.
- 4.) Disabled: By-pass digital tuning.

## Surround Sound Effect

The Surround Sound Effect only controls the spatial response of the Analog Audio output. Embedded audio from the HDMI output will not change.

Use the toggle and slider to configure the surround sound effect.

## Bass Enhancement

The Bass Enhancement only controls the bass response of the Analog Audio output. Embedded audio from the HDMI output will not change.

Use the drop-down menus to configure the cut-off frequency and high-pass filter cut-off frequency. The high-pass filter can also be bypassed. Use the Bass Boost slider to set the bass levels.

# ZigNet Diagnostics

The screenshot displays the ZigNet Diagnostics interface for an HXL-44 Plus (2020) device. The top navigation bar includes the ZigNet logo, icons for Video, Audio, Diagnostics (selected), and Settings, along with the device model name. The main content area is split into two columns: Source Diagnostic and Sink Diagnostic. Each column features a dropdown menu at the top and a list of diagnostic parameters with their corresponding values.

Source Diagnostic	Sink Diagnostic
Source Link: true	Sink Link: true
--	Sink Active: true
Video Stable: true	Video Stable: true
Signal Stable: true	Signal Stable: true
HDCP Status: success 2.2	HDCP Status: success 1.4
Resolution: 3840x2160	Resolution: 3840x2160
Scan Type: progressive	Scan Type: progressive
Frame Rate: 59.94 Hz;	Frame Rate: 55.17 Hz;
Color Format: YCbCr444	Color Format: YCbCr444
Dynamic Range: CEA (Limit Range)	Dynamic Range: CEA (Limit Range)
Color Bit Depth: 8 bit	Color Bit Depth: 8 bit
Pixel Clock: 593 MHz	Pixel Clock: 546 MHz
Audio Type: NLPCM	Audio Type: NLPCM
Audio Sample Rate: 48 kHz	Audio Sample Rate: 48 kHz
Audio Channels: 2 channel	Audio Channels: 2 channel

\* HXL-44Plus shown.

## Edid Selection

Sink 2 EDID

Monitor Name	SAMSUNG
CEC Physical Address	20
Horizontal Pixels	3840
Vertical Pixels	2160
Framerate	60.00 Hz;
Scan Type	progressive
Maximum Pixel Clock	594.00 MHz
YUV:422 Color Support	true
YUV:444 Color Support	false
YUV:444 Deep Color Support	true
30 Bit Depth Color Support	true
36 Bit Depth Color Support	true
48 Bit Depth Color Support	false
HDR Support	true
<b>Audio Support</b>	
Audio Format	Dolby Digital Plus
Maximum Channels	8
Maximum Bitrate	128
Maximum Bit Depth	24
Maximum Sample Rate	48 kHz

Diagnostics displays the status and parameters of the HDMI Source (Input), HDMI Sink (Output), and the EDID information of the selected monitor (Sink). Click the pulldown menu to view the diagnostics information of the desired Source and Sink. The Diagnostic Specifications are explained in the table below.

## Source Diagnostics

<b>Source Link</b>	Indicates if a source is connected to the unit's HDMI input.
<b>Video Stable</b>	Indicates if the incoming video is valid and stable.
<b>Signal Stable</b>	Indicates if the incoming HDMI input is receiving TMDS signals from a source.
<b>HDCP Status</b>	Indicates the HDCP authentication status of the selected input.
<b>Resolution</b>	Indicates the video resolution of the selected input.
<b>Scan Type</b>	Indicates whether the video is interlaced or progressive.
<b>Frame Rate</b>	Indicates the frame rate of the selected input.
<b>Color Format</b>	Indicates if the incoming video is RGB 444, YUV444, YUV422, or YUV420.
<b>Dynamic Range</b>	Indicates the Dynamic range of the incoming video.
<b>Color Bit Depth</b>	Indicates if the incoming video is 8, 10, 12, or 16 bits of quantization.
<b>Pixel Clock</b>	Indicates the pixel clock frequency of the incoming video.
<b>Audio Type</b>	Indicates the audio type of the incoming HDMI audio such as LPCM.
<b>Audio Sample Rate</b>	Indicates the incoming audio sample rate frequency.
<b>Audio Channels</b>	Indicates the number of incoming audio channels

## Sink Diagnostics

<b>Sink Link</b>	Indicates if the unit's HDMI output is connected to a sink (display).
<b>Sink Active</b>	Indicates if the sink is ready to receive video.
<b>Video Stable</b>	Indicates if the incoming video is valid and stable.
<b>Signal Stable</b>	Indicates if the incoming HDMI input is receiving TMDS signals from a source.
<b>HDCP Status</b>	Indicates the HDCP authentication status of the output.
<b>Resolution</b>	Indicates the video resolution of the selected input.
<b>Scan Type</b>	Indicates whether the video is interlaced or progressive.
<b>Frame Rate</b>	Indicates the frame rate of the selected input.
<b>Color Format</b>	Indicates if the incoming video is RGB 444, YUV444, YUV422, or YUV420.
<b>Dynamic Range</b>	Indicates the Dynamic range of the incoming video.
<b>Color Bit Depth</b>	Indicates if the incoming video is 8, 10, 12, or 16 bits of quantization.
<b>Pixel Clock</b>	Indicates the pixel clock frequency of the incoming video.
<b>Audio Type</b>	Indicates the audio type of the incoming HDMI audio such as LPCM.
<b>Audio Sample Rate</b>	Indicates the incoming audio sample rate frequency.
<b>Audio Channels</b>	Indicates the number of incoming audio channels

EDID Selection	
<b>Monitor Name</b>	Indicates the model name specified in the EDID data.
<b>CEC Physical Address</b>	Indicates the CEC Physical address as specified in the EDID data.
<b>Horizontal Pixels</b>	Indicates the monitor's native Horizontal Pixels.
<b>Vertical Pixels</b>	Indicates the monitor's native Vertical Pixels.
<b>Framerate</b>	Indicates the native refresh rate of the monitor shown in Hertz.
<b>Scan Type</b>	Indicates the native scan type of the monitor as interlaced or progressive.
<b>Maximum Pixel Clock</b>	Indicates the monitor's maximum supported pixel clock shown in MHz.
<b>YUV:422 Color Support</b>	Indicates if the monitor is capable of supporting YUV 422 color space.
<b>YUV:444 Color Support</b>	Indicates if the monitor is capable of supporting YUV 444 color space.
<b>YUV:444 Deep Color Support</b>	Indicates if the monitor is capable of supporting Deep Color Space.
<b>30 Bit Depth Color Support</b>	Indicates if the monitor is capable of 30-bit quantization.
<b>36 Bit Depth Color Support</b>	Indicates if the monitor is capable of 36-bit quantization.
<b>48 Bit Depth Color Support</b>	Indicates if the monitor is capable of 48-bit quantization.
<b>HDR Support</b>	Indicates if the monitor is capable of displaying High Dynamic Range.
<b>Audio Support</b>	Indicates all the monitor's audio format capabilities (LPCM, Dolby Digital, Dolby Digital Plus, etc), Maximum Audio Channels, Maximum Bitrate, Maximum Bit Depth, and Maximum Sample Rate.

# ZigNet Settings

**Device Information**

Information about your device can be found below.

Serial	HXL44PLUS-0000
Firmware Revision	0.9.5
Firmware Date	May 14 2020
Hardware Revision	AA0
IP Address	10.0.0.10
MAC Address	44:BD:0D:E7:AE:7E

**Network Settings**

Adjust network settings below.

Hostname:

Static IP Address:

Static Netmask:

Static Gateway:

IP Mode:  DHCP  Static

\* HXL-44Plus shown.



# ZigNet Settings



## Device Information

**Serial:** Indicates the unit serial number.

**Firmware Revision:** Indicates the current firmware of the unit.

**Firmware Date:** Indicates the build date of the installed firmware.

**Hardware Revision:** Indicates the current hardware revision of the device.

**IP Address:** Indicates the current IP Address of the unit. This can be changed below by the user.

**MAC Address:** Indicates the MAC address of the hardware.

**Note:** *The MAC address of the unit is unique and cannot be changed.*

## Network Settings

**Hostname:** Type desired host name and press Update Name. The source name could be device type or location.

**IP Address, Static Netmask, Static Gateway, and IP Mode:** Enter the IP Address, Netmask, and Gateway fields if IP Mode is set for Static. If DHCP is selected, then the network settings will be automatically configured by the DHCP Server. If DHCP is selected but no DHCP Server is found, the HXL-Plus will automatically assign network configuration using Auto-IP. Click Update Network upon completion.

**Note:** *DHCP is the default network configuration. Use the ZigNet-Locator application to determine the IP Address of the HXL-Plus if DHCP mode is used. The IP Address can also be determined using the local display and menu buttons located on the front panel.*

## Firmware Settings

**Update:** If the HXL-Plus is connected to the Internet through its Ethernet port, the unit will be able to determine if there is a new firmware version available. If “Update available” is indicated, press the Update button and wait for the unit to complete the programming process.

# ZigNet Settings

**Important:** Do not turn off the unit or disrupt the Internet connection while the unit is programming. In the event of an unsuccessful firmware update, the unit will revert back to its previous firmware version.

**Restart:** This feature restarts the unit.

**Factory Reset:** Allows the unit to restore all settings back to factory defaults.

**Note:** The HXL-Plus will revert back to default DHCP mode when restoring back to factory defaults. Use the ZigNet-Locator application to determine the new IP Address of the unit. The IP Address can also be determined using the local display and menu buttons located on the front panel.

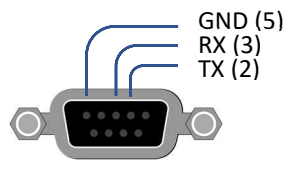
# RS-232

## 9 RS-232

### Configuring an RS-232 Connection

1. Connect the RS-232 port on the back of the HXL-Plus to a computer using an RS-232 cable.
2. Open a hyper-terminal app of your choice (Putty recommended) on a computer.
3. Enter default settings shown below:

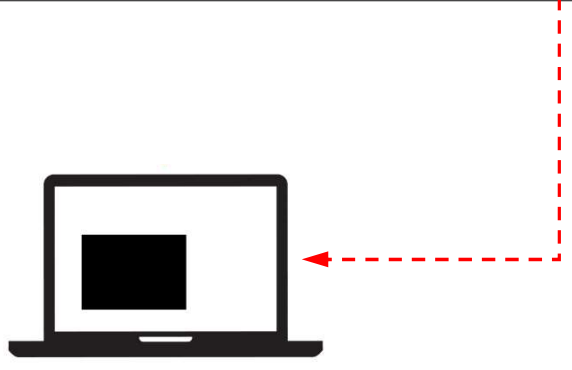
Baud Rate: 115200  
 Data Bits: 8  
 Stop Bits: 1  
 Parity: None  
 Flow Control: None



4. Your unit should now be connected.



\* HXL-44Plus shown.



## RS-232 Control

The RS-232 Control port can be used to control the HXL-Plus device using a 3<sup>rd</sup> party Control System or a computer running a Terminal emulator such as Putty, or Tera Term. The system status of the unit can also be determined through this serial port.

Upon boot time, the HXL-Plus will display the following status:

```
ZIGEN HXL88 Plus
1.0.21 (Aug 20 2020)
HXL88PLUS-0006
IP address: 10.0.0.157
Netmask: 255.255.255.0
Gateway: 10.0.0.1
```

The table below describes the RS-232 Control protocol. Every command must end with the special character “Line Feed <LF> (ASCII Hex code 0x0A)”.

Command	Syntax	Description
<b>Help</b>	help<LF>	Shows a list of available commands.
<b>Version</b>	version<LF>	Shows product name, firmware release, version, build date, and serial number.
<b>System Info</b>	sysinfo<LF>	Shows product information, firmware versions, serial number, MAC address and network information.
<b>Get Network</b>	getnet<LF>	Shows network information
<b>Device Status</b>	status<LF>	Shows connected monitors and sources.
<b>Switch Video</b>	switch video <0-8> <1-8><LF> ( <i>HXL-88Plus</i> ) switch video <0-4> <1-4><LF> ( <i>HXL-44Plus</i> )	Allows to switch the video output to a desired input. Use “0” to switch all outputs to the desired input.
<b>Switch Audio</b>	switch audio <0-12> <1-8><LF> ( <i>HXL-88Plus</i> ) switch audio <0-8> <1-4><LF> ( <i>HXL-44Plus</i> )	Allows to switch the audio RCA output to a desired HDMI input. Use “0” to switch all RCA outputs to the desired HDMI input.
<b>Load Video Preset</b>	preset video <1-8><LF> ( <i>HXL-88Plus</i> ) preset video <1-4><LF> ( <i>HXL-44Plus</i> )	Allows to set the video matrix to preset from a desired slot.
<b>Load Audio Preset</b>	preset audio <1-12> ( <i>HXL-88Plus</i> ) preset audio <1-8> ( <i>HXL-44Plus</i> )	Allows to set the audio matrix to preset from a desired slot.
<b>Set EDID</b>	set edid <0-8> <0-18><LF> ( <i>HXL-88Plus</i> ) set edid <0-4> <0-10><LF> ( <i>HXL-44Plus</i> )	Allows to set the EDID for a specific Source Input 0-8 ( <i>HXL-88Plus</i> ) / 0-4 ( <i>HXL-44Plus</i> ). Use “0” to configure

# RS-232 Control

		<p>all Source Inputs to the selected Sink EDID.</p> <p><b>Sink EDID Assignment (HXL-88Plus):</b></p> <ul style="list-style-type: none"> <li>• 0-2: Built-In EDID (1080p60/2160p30/2160p60)</li> <li>• 3-10: HDMI Sink 1-8</li> <li>• 11-18: Custom EDID 1-8</li> </ul> <p><b>Sink EDID Assignment (HXL-44Plus):</b></p> <ul style="list-style-type: none"> <li>• 0-2: Built-In EDID (1080p60/2160p30/2160p60)</li> <li>• 3-6: HDMI Sink 1-4</li> <li>• 7-10: Custom EDID 1-4</li> </ul>
<b>Volume Up</b>	<p>vol+ out &lt;0-12&gt;&lt;LF&gt; (HXL-88Plus)</p> <p>vol+ out &lt;0-8&gt;&lt;LF&gt; (HXL-44Plus)</p>	Lets you increase the volume of the RCA output. Use "0" to increase volume of all RCA outputs.
<b>Volume Down</b>	<p>vol- out &lt;0-12&gt;&lt;LF&gt; (HXL-88Plus)</p> <p>vol- out &lt;0-8&gt;&lt;LF&gt; (HXL-44Plus)</p>	Lets you decrease the volume of the RCA output. Use "0" to decrease volume of all RCA outputs.
<b>Mute Toggle</b>	<p>mutetogg out &lt;0-12&gt;&lt;LF&gt; (HXL-88Plus)</p> <p>mutetogg out &lt;0-8&gt;&lt;LF&gt; (HXL-44Plus)</p>	Lets you toggle mute of the RCA output. Use "0" to toggle mute all RCA outputs.
<b>Power</b>	pwr <on/off><LF>	Powers the device on or off.

**Note:** These commands can be combined like so: "status sysinfo version<LF>"

### Device Command Examples:

1. To power ON the HXL-Plus use command: **pwr on<LF>**
2. To connect HDMI output 4 to HDMI input #3 of HXL-Plus use command: **switch video 4 3<LF>**
3. To connect all HDMI outputs to HDMI input #2 of HXL-Plus use command: **switch video 0 2<LF>**
4. To connect Analog Audio RCA output 3 to HDMI input #1 of HXL-Plus use command: **switch audio 3 1<LF>**
5. To connect all Analog Audio RCA outputs to HDMI input #4 of HXL-Plus use command: **switch audio 0 4<LF>**

# Application Program Interface (API)

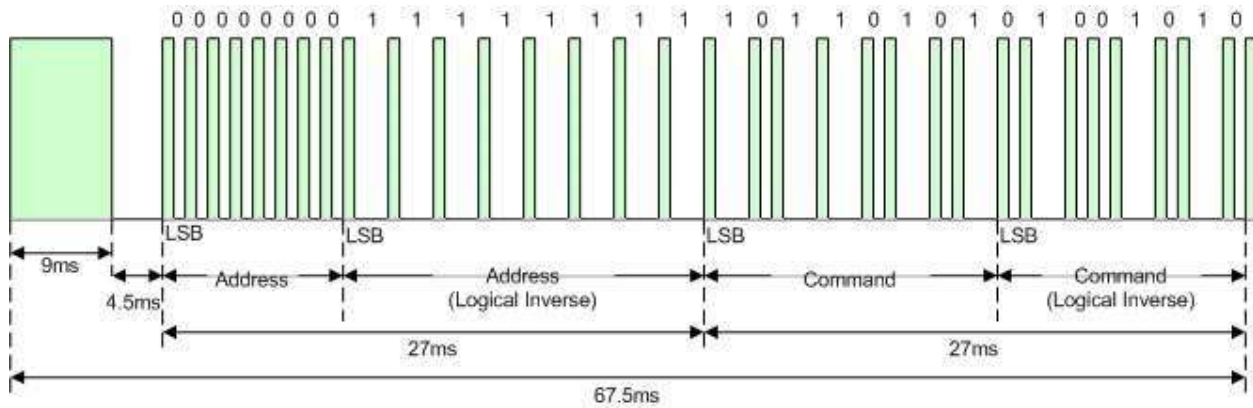
## 10 Application Program Interface (API)

The HXL-Plus can be controlled over Ethernet using 3<sup>rd</sup> party Control Systems and appropriate drivers. The HXL-Plus units can be controlled through network HTTP or Curl protocol. For specific usage details of the API, download the API HTML document from the Zigen Website in the HXL-88Plus or HXL-44Plus downloads section.

# Infrared (IR) Protocol

## 11 Infrared (IR) Protocol

The HXL-Plus IR protocol uses the NEC standard over 38kHz. An example IR message that uses the protocol with address 0x00 and command 0xAD is shown below this section.



**Illustration 1: NEC Protocol**

### IR Commands

Below are pronto hex codes for IR commands for the HXL-Plus. All IR commands use address 0x4B.

#### Select Output 1 to Input 1

*Description: Set HDMI Output 1 to Input 1. Command: 0x28 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0016 0016 0016 0016 0041 0016 0016
0016 0041 0016 0016 0016 0016 0016 0041 0016 0041 0016 0041 0016 0016 0016 0041 0016 0016
0016 0041 0016 0041 0016 05F7
```

#### Set Output 2 to Input 1

*Description: Set HDMI Output 2 to Input 1. Command: 0x35 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0041 0016 0016 0016 0041 0016 0016 0016 0041
0016 0041 0016 0016 0016 0016 0016 0016 0016 0041 0016 0016 0016 0041 0016 0016 0016 0016
0016 0041 0016 0041 0016 05F7
```

#### Set Output 3 to Input 1

*Description: Set HDMI Output 3 to Input 1. Command: 0x4C Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0016 0016 0041 0016 0041 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0016 0016 0016 0041
```

# Infrared (IR) Protocol

0016 0041 0016 0016 0016 0041 0016 05F7

## **Set Output 4 to Input 1**

*Description: Set HDMI Output 4 to Input 1. Command: 0x62 Pronto Hex:*

0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016  
 0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041  
 0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0016 0016 0016  
 0016 0041 0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0016  
 0016 0016 0016 0041 0016 05F7

## **Set Output 5 to Input 1 (HXL-88Plus Only)**

*Description: Set HDMI Output 5 to Input 1. Command: 0x29 Pronto Hex:*

0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016  
 0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041  
 0016 0041 0016 0016 0016 0041 0016 0041 0016 0016 0016 0016 0041 0016  
 0016 0041 0016 0016 0016 0016 0016 0041 0016 0041 0016 0016 0016 0041  
 0016 0041 0016 0041 0016 05F7

## **Set Output 6 to Input 1 (HXL-88Plus Only)**

*Description: Set HDMI Output 6 to Input 1. Command: 0x23 Pronto Hex:*

0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016  
 0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041  
 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0016 0016 0016  
 0016 0041 0016 0016 0016 0016 0016 0016 0016 0041 0016 0041 0016 0041  
 0016 0016 0016 0041 0016 05F7

## **Set Output 7 to Input 1 (HXL-88Plus Only)**

*Description: Set HDMI Output 7 to Input 1. Command: 0x3D Pronto Hex:*

0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016  
 0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041  
 0016 0041 0016 0016 0016 0041 0016 0041 0016 0016 0016 0041 0016 0041  
 0016 0041 0016 0016 0016 0016 0016 0016 0016 0041 0016 0016 0016 0016  
 0016 0041 0016 0041 0016 05F7

## **Set Output 8 to Input 1 (HXL-88Plus Only)**

*Description: Set HDMI Output 8 to Input 1. Command: 0x49 Pronto Hex:*

0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016  
 0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041  
 0016 0041 0016 0016 0016 0041 0016 0041 0016 0016 0016 0016 0041 0016  
 0016 0016 0016 0041 0016 0016 0016 0016 0016 0041 0016 0041 0016 0016  
 0016 0016 0016 0041 0016 05F7

## **Set Output 1 to Input 2**

*Description: Set HDMI Output 1 to Input 2. Command: 0x24 Pronto Hex:*

0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016



# Infrared (IR) Protocol

```
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041 0016 0016
0016 0041 0016 0016 0016 05F7
```

## Set Output 2 to Input 2

*Description: Set HDMI Output 2 to Input 2. Command: 0xB5 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0041 0016 0016 0016 0041 0016 0016 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0016
0016 0041 0016 0016 0016 05F7
```

## Set Output 3 to Input 2

*Description: Set HDMI Output 3 to Input 2. Command: 0xC2 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0041 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041
0016 0016 0016 0016 0016 05F7
```

## Set Output 4 to Input 2

*Description: Set HDMI Output 4 to Input 2. Command: 0xCA Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0016
0016 0016 0016 0041 0016 0041 0016 0041 0016 0016 0016 0041 0016 0016 0016 0041
0016 0041 0016 0016 0016 0016 05F7
```

## Set Output 5 to Input 2 (HXL-88Plus Only)

*Description: Set HDMI Output 5 to Input 2. Command: 0x5F Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0016 0016 0041 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0041
0016 0016 0016 0041 0016 05F7
```

## Set Output 6 to Input 2 (HXL-88Plus Only)

*Description: Set HDMI Output 6 to Input 2. Command: 0x67 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0016 0016 0016
0016 0041 0016 0041 0016 0016 0016 0016 0016 0016 0016 0016 0016 0041 0016 0041
0016 0016 0016 0041 0016 05F7
```

## Set Output 7 to Input 2 (HXL-88Plus Only)

*Description: Set HDMI Output 7 to Input 2. Command: 0x71 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0041 0016 0016 0016 0016 0016 0016 0041
0016 0041 0016 0041 0016 0016 0016 0016 0016 0041 0016 0041 0016 0041 0016 0016
0016 0016 0016 0016 0016 0041 0016 05F7
```

## Set Output 8 to Input 2 (HXL-88Plus Only)

*Description: Set HDMI Output 8 to Input 2. Command: 0x78 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0016 0016 0016 0016 0041 0016 0041
0016 0041 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0016 0016 0016
0016 0016 0016 0041 0016 05F7
```

## Set Output 1 to Input 3

*Description: Set HDMI Output 1 to Input 3. Command: 0xD7 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0016 0016 0041
0016 0016 0016 0041 0016 0041 0016 0016 0016 0016 0016 0016 0016 0041 0016 0016
0016 0016 0016 0016 0016 05F7
```

## Set Output 2 to Input 3

*Description: Set HDMI Output 2 to Input 3. Command: 0xDE Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041
0016 0016 0016 0041 0016 0041 0016 0041 0016 0016 0016 0016 0016 0016 0016 0016
0016 0041 0016 0016 0016 0016 05F7
```

## Set Output 3 to Input 3

*Description: Set HDMI Output 3 to Input 3. Command: 0xE3 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0016 0016 0016 0016
0016 0041 0016 0041 0016 0041 0016 0016 0016 0016 0016 0041 0016 0041 0016 0016
0016 0016 0016 0016 0016 05F7
```

## Set Output 4 to Input 3

*Description: Set HDMI Output 4 to Input 3. Command: 0xEC Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
```

# Infrared (IR) Protocol

```
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0016 0016 0041 0016 0041 0016 0016
0016 0041 0016 0041 0016 0041 0016 0041 0016 0041 0016 0016 0016 0016 0016 0041 0016 0016
0016 0016 0016 0016 0016 05F7
```

### Set Output 5 to Input 3 (HXL-88Plus Only)

*Description: Set HDMI Output 5 to Input 3. Command: 0x7F Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0041 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0016 0016 0041 0016 05F7
```

### Set Output 6 to Input 3 (HXL-88Plus Only)

*Description: Set HDMI Output 6 to Input 3. Command: 0x89 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0041 0016 0016 0016 0016 0016 0041 0016 0016
0016 0016 0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0016 0016 0041 0016 0041
0016 0041 0016 0016 0016 05F7
```

### Set Output 7 to Input 3 (HXL-88Plus Only)

*Description: Set HDMI Output 7 to Input 3. Command: 0x96 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0016 0016 0041
0016 0016 0016 0016 0016 0041 0016 0041 0016 0016 0016 0016 0016 0041 0016 0016 0016 0041
0016 0041 0016 0016 0016 05F7
```

### Set Output 8 to Input 3 (HXL-88Plus Only)

*Description: Set HDMI Output 8 to Input 3. Command: 0x9D Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0016 0016 0041
0016 0016 0016 0016 0016 0041 0016 0041 0016 0016 0016 0016 0016 0041 0016 0016
0016 0041 0016 0041 0016 0016 0016 05F7
```

### Set Output 1 to Input 4

*Description: Set HDMI Output 1 to Input 4. Command: 0xF3 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0016 0016 0016 0016 0041
0016 0041 0016 0041 0016 0041 0016 0016 0016 0016 0016 0016 0016 0041 0016 0041 0016 0016
0016 0016 0016 0016 0016 05F7
```

## Set Output 2 to Input 4

*Description: Set HDMI Output 2 to Input 4. Command: 0xA8 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0016 0016 0016 0041 0016 0016
0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0016 0016 0041 0016 0016
0016 0041 0016 0016 0016 05F7
```

## Set Output 3 to Input 4

*Description: Set HDMI Output 3 to Input 4. Command: 0x93 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0016 0016 0016 0041
0016 0016 0016 0016 0016 0041 0016 0016 0016 0016 0016 0041 0016 0041 0016 0016
0016 0041 0016 0041 0016 0016 0016 05F7
```

## Set Output 4 to Input 4

*Description: Set HDMI Output 4 to Input 4. Command: 0x7B Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0016 0016 0041 0016 0041
0016 0041 0016 0041 0016 0016 0016 0016 0016 0016 0016 0041 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 05F7
```

## Set Output 5 to Input 4 (HXL-88Plus Only)

*Description: Set HDMI Output 5 to Input 4. Command: 0xA4 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0016 0016 0041 0016 0016 0016
0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0016 0016 0041 0016 0016
0016 0041 0016 0016 0016 05F7
```

## Set Output 6 to Input 4 (HXL-88Plus Only)

*Description: Set HDMI Output 6 to Input 4. Command: 0xAE Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0016
0016 0041 0016 0016 0016 0041 0016 0041 0016 0016 0016 0016 0016 0016 0016 0041
0016 0016 0016 0041 0016 0016 0016 05F7
```

## Set Output 7 to Input 4 (HXL-88Plus Only)

*Description: Set HDMI Output 7 to Input 4. Command: 0xBA Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
```

# Infrared (IR) Protocol

```
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0041 0016 0016 0016 0041 0016 0016 0016 0016 0016 0016
0016 0041 0016 0016 0016 05F7
```

### Set Output 8 to Input 4 (HXL-88Plus Only)

*Description: Set HDMI Output 8 to Input 4. Command: 0xBE Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0041 0016 0016 0016 0016 0016 0016 0016 0016
0016 0041 0016 0016 0016 05F7
```

### Set Output 1 to Input 5 (HXL-88Plus Only)

*Description: Set HDMI Output 1 to Input 5. Command: 0xC6 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0016 0016 0016
0016 0016 0016 0041 0016 0041 0016 0041 0016 0016 0016 0016 0016 0041 0016 0041
0016 0041 0016 0016 0016 0016 0016 05F7
```

### Set Output 2 to Input 5 (HXL-88Plus Only)

*Description: Set HDMI Output 2 to Input 5. Command: 0xCE Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0016
0016 0016 0016 0041 0016 0041 0016 0041 0016 0016 0016 0016 0016 0016 0016 0041
0016 0016 0016 0016 0016 05F7
```

### Set Output 3 to Input 5 (HXL-88Plus Only)

*Description: Set HDMI Output 3 to Input 5. Command: 0xD4 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0016 0016 0041 0016 0016 0016 0041
0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0016 0016 0041 0016 0016
0016 0016 0016 0016 0016 05F7
```

### Set Output 4 to Input 5 (HXL-88Plus Only)

*Description: Set HDMI Output 4 to Input 5. Command: 0xDA Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0041
0016 0016 0016 0041 0016 0041 0016 0041 0016 0016 0016 0041 0016 0016 0016 0016
0016 0041 0016 0016 0016 0016 0016 05F7
```

## **Set Output 5 to Input 5 (HXL-88Plus Only)**

*Description: Set HDMI Output 5 to Input 5. Command: 0xE7 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0016 0016 0016
0016 0041 0016 0041 0016 0041 0016 0016 0016 0016 0016 0016 0016 0041 0016 0041 0016 0016
0016 0016 0016 0016 0016 05F7
```

## **Set Output 6 to Input 5 (HXL-88Plus Only)**

*Description: Set HDMI Output 6 to Input 5. Command: 0xEF Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041 0016 0016
0016 0041 0016 0041 0016 0041 0016 0016 0016 0016 0016 0016 0016 0016 0016 0041 0016 0016
0016 0016 0016 0016 0016 05F7
```

## **Set Output 7 to Input 5 (HXL-88Plus Only)**

*Description: Set HDMI Output 7 to Input 5. Command: 0xF8 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0016 0016 0016 0016 0041 0016 0041
0016 0041 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041 0016 0016 0016 0016
0016 0016 0016 0016 0016 05F7
```

## **Set Output 8 to Input 5 (HXL-88Plus Only)**

*Description: Set HDMI Output 8 to Input 5. Command: 0xFE Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0041 0016 0041 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0016 0016 05F7
```

## **Set Output 1 to Input 6 (HXL-88Plus Only)**

*Description: Set HDMI Output 1 to Input 6. Command: 0x0C Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0016 0041 0016 0041 0016 0016
0016 0016 0016 0016 0016 0016 0016 0041 0016 0041 0016 0016 0016 0016 0016 0041 0016 0041
0016 0041 0016 0041 0016 05F7
```

## **Set Output 2 to Input 6 (HXL-88Plus Only)**

*Description: Set HDMI Output 2 to Input 6. Command: 0x12 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
```

# Infrared (IR) Protocol

```
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0016 0016 0016 0016 0041
0016 0016 0016 0016 0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0016
0016 0041 0016 0041 0016 0041 0016 05F7
```

### Set Output 3 to Input 6 (HXL-88Plus Only)

*Description: Set HDMI Output 3 to Input 6. Command: 0x17 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0016 0016 0041
0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0041 0016 0016 0016 0041
0016 0041 0016 0041 0016 05F7
```

### Set Output 4 to Input 6 (HXL-88Plus Only)

*Description: Set HDMI Output 4 to Input 6. Command: 0x25 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0041 0016 0016 0016 0041 0016 0016 0016 0016
0016 0041 0016 0016 0016 0016 0016 0016 0016 0041 0016 0016 0016 0041 0016 0016
0016 0041 0016 0041 0016 05F7
```

### Set Output 5 to Input 6 (HXL-88Plus Only)

*Description: Set HDMI Output 5 to Input 6. Command: 0x2B Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0016 0016 0041 0016 0016
0016 0041 0016 0016 0016 0016 0016 0016 0016 0016 0016 0041 0016 0016 0016 0041
0016 0016 0016 0041 0016 0041 0016 05F7
```

### Set Output 6 to Input 6 (HXL-88Plus Only)

*Description: Set HDMI Output 6 to Input 6. Command: 0x37 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0016 0016 0041
0016 0041 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0041 0016 0016
0016 0041 0016 0041 0016 05F7
```

### Set Output 7 to Input 6 (HXL-88Plus Only)

*Description: Set HDMI Output 7 to Input 6. Command: 0x3F Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0041 0016 0041 0016 05F7
```

# Infrared (IR) Protocol

## Set Output 8 to Input 6 (HXL-88Plus Only)

*Description: Set HDMI Output 8 to Input 6. Command: 0x4E Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0016 0016 0016 0016 0016 0041
0016 0041 0016 0016 0016 0041 0016 05F7
```

## Set Output 1 to Input 7 (HXL-88Plus Only)

*Description: Set HDMI Output 1 to Input 7. Command: 0x52 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0016 0016 0016 0041
0016 0016 0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0016 0041
0016 0016 0016 0041 0016 05F7
```

## Set Output 2 to Input 7 (HXL-88Plus Only)

*Description: Set HDMI Output 2 to Input 7. Command: 0x64 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0016 0016 0041 0016 0016 0016 0016
0016 0041 0016 0041 0016 0016 0016 0041 0016 0041 0016 0016 0016 0041 0016 0041 0016 0016
0016 0016 0016 0041 0016 05F7
```

## Set Output 3 to Input 7 (HXL-88Plus Only)

*Description: Set HDMI Output 3 to Input 7. Command: 0x6A Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0016
0016 0041 0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0016 0016 0041
0016 0016 0016 0016 0016 0041 0016 05F7
```

## Set Output 4 to Input 7 (HXL-88Plus Only)

*Description: Set HDMI Output 4 to Input 7. Command: 0x6F Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041 0016 0016
0016 0041 0016 0041 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016 0041 0016 0016
0016 0016 0016 0041 0016 05F7
```

## Set Output 5 to Input 7 (HXL-88Plus Only)

*Description: Set HDMI Output 5 to Input 7. Command: 0x76 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
```



# Infrared (IR) Protocol

```
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0016 0016 0041
0016 0041 0016 0041 0016 0016 0016 0041 0016 0016 0016 0016 0016 0041 0016 0016 0016 0016
0016 0016 0016 0041 0016 05F7
```

## Set Output 6 to Input 7 (HXL-88Plus Only)

*Description: Set HDMI Output 6 to Input 7. Command: 0x7D Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041
0016 0041 0016 0041 0016 0016 0016 0016 0016 0041 0016 0016 0016 0016 0016 0016
0016 0016 0016 0016 0016 0041 0016 05F7
```

## Set Output 7 to Input 7 (HXL-88Plus Only)

*Description: Set HDMI Output 7 to Input 7. Command: 0x82 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0016 0016 0016 0016 0016
0016 0016 0016 0016 0016 0041 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 05F7
```

## Set Output 8 to Input 7 (HXL-88Plus Only)

*Description: Set HDMI Output 8 to Input 7. Command: 0x87 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0016 0016 0016
0016 0016 0016 0016 0016 0041 0016 0016 0016 0016 0016 0016 0016 0041 0016 0041
0016 0041 0016 0016 0016 05F7
```

## Set Output 1 to Input 8 (HXL-88Plus Only)

*Description: Set HDMI Output 1 to Input 8. Command: 0x91 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0041 0016 0016 0016 0016 0016 0016 0016 0041
0016 0016 0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0016
0016 0041 0016 0041 0016 0016 0016 05F7
```

## Set Output 2 to Input 8 (HXL-88Plus Only)

*Description: Set HDMI Output 2 to Input 8. Command: 0x98 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0016 0016 0016 0016 0041 0016 0041
0016 0016 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0016 0016 0016
0016 0041 0016 0016 0016 05F7
```

# Infrared (IR) Protocol

## Set Output 3 to Input 8 (HXL-88Plus Only)

Description: Set HDMI Output 3 to Input 8. Command: 0xA2 Pronto Hex:

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0016 0016 0016 0016
0016 0041 0016 0016 0016 0041 0016 0041 0016 0016 0016 0041 0016 0041 0016 0016
0016 0041 0016 0016 0016 05F7
```

## Set Output 4 to Input 8 (HXL-88Plus Only)

Description: Set HDMI Output 4 to Input 8. Command: 0xA6 Pronto Hex:

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0016 0016
0016 0041 0016 0016 0016 0041 0016 0041 0016 0016 0016 0016 0016 0041 0016 0041
0016 0016 0016 0041 0016 0016 0016 05F7
```

## Set Output 5 to Input 8 (HXL-88Plus Only)

Description: Set HDMI Output 5 to Input 8. Command: 0xAB Pronto Hex:

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0016 0016 0041 0016 0016
0016 0041 0016 0016 0016 0041 0016 0016 0016 0016 0041 0016 0016 0016 0041 0016
0016 0041 0016 0016 0016 05F7
```

## Set Output 6 to Input 8 (HXL-88Plus Only)

Description: Set HDMI Output 6 to Input 8. Command: 0xB1 Pronto Hex:

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0041 0016 0016 0016 0016 0016 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0016
0016 0041 0016 0016 0016 05F7
```

## Set Output 7 to Input 8 (HXL-88Plus Only)

Description: Set HDMI Output 7 to Input 8. Command: 0xB7 Pronto Hex:

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0016 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0016 0016 0016 0016 0041 0016 0016
0016 0016 0016 0041 0016 0016 0016 05F7
```

## Set Output 8 to Input 8 (HXL-88Plus Only)

Description: Set HDMI Output 8 to Input 8. Command: 0xBC Pronto Hex:

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
```

# Infrared (IR) Protocol

```
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0016 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0016 0016 0016 0016 0016
0016 0041 0016 0016 0016 05F7
```

## Broadcast Input 1

*Description: Set all HDMI Outputs to Input 1. Command: 0x6D Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0041 0016 0016 0016 0041 0016 0041 0016 0016
0016 0041 0016 0041 0016 0016 0016 0016 0016 0041 0016 0016 0016 0016 0041 0016 0016
0016 0016 0016 0041 0016 05F7
```

## Broadcast Input 2

*Description: Set all HDMI Outputs to Input 2. Command: 0x50 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0016 0016 0016 0016 0016 0016 0041
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0016
0016 0041 0016 0016 0016 0041 0016 05F7
```

## Broadcast Input 3

*Description: Set all HDMI Outputs to Input 3. Command: 0x3A Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0041
0016 0041 0016 0016 0016 0016 0016 0041 0016 0016 0016 0041 0016 0016 0016 0016
0016 0041 0016 0041 0016 05F7
```

## Broadcast Input 4

*Description: Set all HDMI Outputs to Input 4. Command: 0x2E Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0016
0016 0041 0016 0016 0016 0016 0016 0041 0016 0016 0016 0016 0016 0016 0041 0016 0016
0016 0041 0016 0041 0016 05F7
```

## Broadcast Input 5 (HXL-88Plus Only)

*Description: Set all HDMI Outputs to Input 5. Command: 0xD1 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0041 0016 0016 0016 0016 0016 0016 0016 0041
0016 0016 0016 0041 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0016
0016 0041 0016 0016 0016 0016 0016 05F7
```

## **Broadcast Input 6 (HXL-88Plus Only)**

*Description: Set all HDMI Outputs to Input 6. Command: 0xE0 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0016 0016 0016 0016 0016
0016 0041 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041 0016 0016
0016 0016 0016 0016 0016 05F7
```

## **Broadcast Input 7 (HXL-88Plus Only)**

*Description: Set all HDMI Outputs to Input 7. Command: 0xF1 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0041 0016 0016 0016 0016 0016 0041
0016 0041 0016 0041 0016 0041 0016 0016 0016 0041 0016 0041 0016 0016 0016 0016
0016 0016 0016 0016 0016 05F7
```

## **Broadcast Input 8 (HXL-88Plus Only)**

*Description: Set all HDMI Outputs to Input 8. Command: 0xF6 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0016 0041
0016 0041 0016 0041 0016 0041 0016 0016 0016 0016 0016 0041 0016 0016
0016 0016 0016 0016 0016 05F7
```

## **Set Output 1 EDID**

*Description: Send Output 1 EDID to all the inputs. Command: 0x1A Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0016 0016 0041
0016 0016 0016 0016 0016 0016 0016 0041 0016 0016 0016 0041 0016 0016 0016 0041
0016 0041 0016 0041 0016 05F7
```

## **Set Output 2 EDID**

*Description: Send Output 2 EDID to all the inputs. Command: 0x74 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0016 0041 0016 0016 0016 0041
0016 0041 0016 0041 0016 0016 0016 0041 0016 0041 0016 0016 0016 0041 0016 0016
0016 0016 0016 0041 0016 05F7
```

## **Set Output 3 EDID**

*Description: Send Output 3 EDID to all the inputs. Command: 0x85 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016
```

# Infrared (IR) Protocol

```
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0041 0016 0016 0016 0041 0016 0016 0016 0016
0016 0016 0016 0016 0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0041
0016 0041 0016 0041 0016 0016 0016 05F7
```

## Set Output 4 EDID

*Description: Send Output 4 EDID to all the inputs. Command: 0x9A Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0041
0016 0016 0016 0016 0016 0041 0016 0041 0016 0016 0016 0041 0016 0016 0016 0016 0016 0041
0016 0041 0016 0016 0016 05F7
```

## Set Output 5 EDID (HXL-88Plus Only)

*Description: Send Output 5 EDID to all the inputs. Command: 0xFB Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0041
0016 0016 0016 0016 0016 0016 0016 0041 0016 0016 0016 0041 0016 0016 0016 0016 0016 0041
0016 0041 0016 0041 0016 05F7
```

## Set Output 6 EDID (HXL-88Plus Only)

*Description: Send Output 6 EDID to all the inputs. Command: 0x21 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0016 0016 0041 0016 0016 0016 0041
0016 0041 0016 0041 0016 0016 0016 0041 0016 0041 0016 0016 0016 0041 0016 0016
0016 0016 0016 0016 0016 0041 0016 05F7
```

## Set Output 7 EDID (HXL-88Plus Only)

*Description: Send Output 7 EDID to all the inputs. Command: 0x33 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0041 0016 0016 0016 0041 0016 0016 0016 0016
0016 0016 0016 0016 0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 05F7
```

## Set Output 8 EDID (HXL-88Plus Only)

*Description: Send Output 8 EDID to all the inputs. Command: 0x56 Pronto Hex:*

```
0000 006C 0000 0022 015B 00AD 0016 0016 0016 0016 0016 0016 0016 0016 0016 0016
0016 0016 0016 0041 0016 0016 0016 0041 0016 0041 0016 0041 0016 0041 0016 0041
0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0016 0016 0041 0016 0041
0016 0016 0016 0016 0016 0041 0016 0041 0016 0016 0016 0041 0016 0016 0016 0016 0016 0041
0016 0041 0016 0016 0016 05F7
```

## 12 Glossary

**4:4:4** – Type of chroma subsampling. 4:4:4 defines 12 unique values of color per 4 pixels.

**4:2:2** – Type of chroma subsampling. 4:2:2 defines 8 unique values of color per 4 pixels.

**4:2:0** – Type of chroma subsampling. 4:2:0 defines 6 unique values of color per 4 pixels.

**4K60** – defines a video format of 3840 x 2160 pixels at 60 Hz.

**CEC** – Consumer electronics control. A channel in the HDMI connection that allows consumer electronics to control other media.

**S/PDIF** – Digital audio interconnect delivering digital audio over a coaxial cable with RCA connectors.

**DHCP** – Dynamic Host Configuration Protocol is a standardized network protocol used to designate IP addresses to media.

**DIP Switch** – dual in-line package switch is a manual electric switch that is packaged with others in a group.

**Dolby TrueHD** – High performance audio codec from Dolby.

**DTS-HD Master** – High performance audio codec from DTS.

**EDID** – Extended Display Information Data is used to relay specifications and capabilities of a sink device to a source device.

**HDCP** – High-bandwidth Digital Content Protection is a form of digital copy protection to prevent copying of digital audio and video content across connections.

**HDMI** – High Definition Multimedia Interface is a proprietary audio/video interface for transmitting video data and audio data.

**HDR** – High Dynamic Range refers to a technique in imaging to reproduce a greater range of luminosity.

**HPD** – Hot plug detect is a signal in the HDMI interface that allows a sink device to notify a source that a connection is valid.

**IR** – Infrared

**LAN** – Local Area Network.

**Null Modem** – Null modem is referred to as a device or implementation that allows the receiver and transmitter lines of the RS232 protocol to be swapped.

**RCA** – also called a phono connector is an electrical connector used to carry audio and video signals.

**RGB** – A color format in which color data is represented as a combination of Red, Green, and Blue.

**RS-232** – RS-232 is a standard for serial communication transmission of data. It is commonly used with a DB-9 connector.

**SMPTE** – Society of Motion Picture and Television Engineers (SMPTE) is a foundation that has set standards for television and digital cinema formats. In this manual it is used to refer to cinema formats such as 4096 x 2160.

# Glossary

**Static IP** – In contrast to DHCP, static IP refers a to unit or device that has a set IP address and configured to attempt connect with the predefined IP address.

**UHD** – Ultra High Definition. This is commonly referred to the video format 3840 x 2160.

**VESA** – Video Electronics Standards Association is a technical standards organization for computer display formats.

**ZigNet** – Proprietary web control developed by Zigen, Inc.

## HDMI 2.0 4K Specifications

The table below specifies the only combinations of resolution, frame rate, color space and depth.

	8 bit	10 bit	12 bit	16 bit
4K@24	RGB 4:4:4	RGB 4:4:4	RGB	RGB 4:4:4
4K@25			4:4:4	
4K@30			4:2:2	
4k@50	RGB 4:4:4	4:2:0	4:2:2	4:2:0
4K@60	4:2:0		4:2:0	

# Contacting Zigen

## 13 Contacting Zigen

### Technical Support

Tel: (818) 654-5252

Fax: (818) 654-5355

9:00AM - 5:00PM (PST)

### Email

[info@zigencorp.com](mailto:info@zigencorp.com)

### Web

[www.zigencorp.com](http://www.zigencorp.com)

### Mailing Address

Zigen Corp.  
c/o Customer Service  
16135 Wyandotte Street  
Lake Balboa CA 91406  
USA



# Warranty Information

## 14 Warranty Information

### Powered Product Warranty

Zigen, Inc. warrants its powered products against any defects in materials and workmanship for a period of three years from the date of invoice. Touchscreen displays carry a one-year parts and labor warranty. If a malfunction occurs during the warranty period, Zigen, Inc. will repair or replace a product to its original operating condition. A return authorization number must be obtained from Zigen, Inc. before products are returned for service.

### Non-Powered and Cable Products - Lifetime Limited Performance Warranty

Zigen, Inc. warrants that its non-powered products and cable products will be free from defects in material and workmanship for as long as you or your customer owns the product. All Zigen non-powered products and cables are designed and engineered to meet and exceed performance specifications. If, at any time, the product fails due to manufacturer defect, Zigen will repair or replace the product to ensure that it meets original performance specifications. Reduced performance due to normal wear and tear, or damages caused by misuse or negligence will not be covered. Zigen will test and evaluate all non-powered and cable products claimed defective. Products must be shipped to Zigen, prepaid along with proof of purchase only after obtaining a Return Merchandise Authorization (RMA) number from the Zigen. This statement of policy is in lieu of any other policy expressed or implied and no representative or person is authorized to assume any other liability or adopt any other policy for Zigen without our written consent.

### Return Policy

If you would like to return a Zigen product, it can be done within 30 days of purchase for a full refund, less shipping and handling. Zigen will not be responsible for shipping and handling of product returns. Returns will only be accepted of products with proof of purchase, products in the original packaging with zero to minimal use and a Return Merchandise Authorization RMA number provided by Zigen.