ZIGEN

SW-41Plus

MKIII (2020)
4x1 HDMI 2.0 Switch
User Manual

SW-41Plus 4x1 HDMI Switch User Manual

UM-002-0001-000-00 | July 22, 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 July 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.

Licensing

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 SW-41Plus, packaged with the following items:

- 1x SW-41Plus 4 x 1 HDMI 2.0 Switch
- 1x Universal 100-240 VAC, 12V/1A Power Supply
- 1x IR Remote Control with CR2025 battery
- 1x RS-232 Cable (male DB9 to female DB9)
- 2x Wall Mounting Ears including Hardware
- 2x Rack Mounting Ears (1/2 Rack Height)
- 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.

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	4x
HDMI Outputs	1x
SPDIF Output	1x
Analog RCA Output	Left/Right
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 (SPDIF Output)	PCM, Dolby Digital, DTS 5.1
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
Auto Switching	✓
IR Remote Control	✓
RS-232 Port	✓
IR Input Port (2 or 3 Pins)	✓
Ethernet Port	✓
ZigNet Settings	✓
EDID Management	✓
Advanced Diagnostics	✓
CEC	✓
ARC (HDMI Input #1)	✓
Low Power Standby Mode	✓
Power	12VDC @ 1A, Center pin hot
Dimensions	273.08mm x 21.84mm x 93.98mm | 10.75 inches x 0.86 inches x 3.7 inches
Weight	635 grams | 1.4 pounds
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

Table of Contents

Front Panel

1 Front Panel

1 IR Sensor

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

2 HDMI Input Selection Buttons

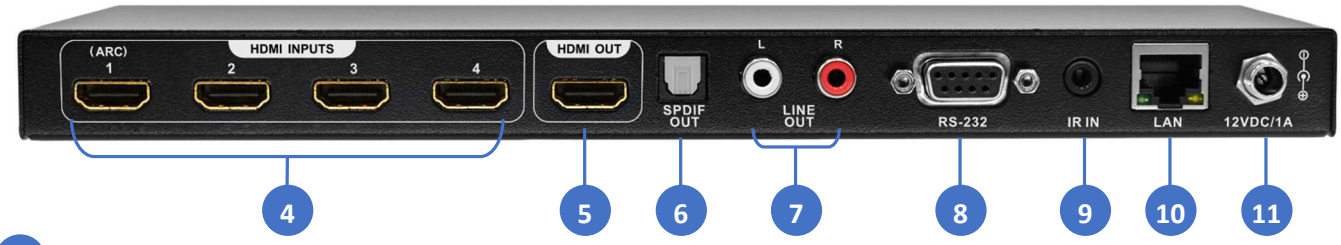
These illuminated buttons are used to select which of the four HDMI Inputs are to be routed to the HDMI Output. Both video and embedded audio will be routed. The selected button will illuminate blue while all other input buttons will be off. Flashing LED behaviors may occur for alert and diagnostic purposes.

3 Power Button

Pressing this illuminated button will toggle between Active Mode (Blue) and low power Stand-By Mode (Red) when power is applied from the included 12V DC power supply connected to an electrical outlet.

In Stand-By Mode, no video will be present at the output and the audio will be muted. However, administration through the Ethernet port will still be active to wake up the SW-41Plus.

2 Rear Panel



4 HDMI Inputs

Connect the video sources to any of the four HDMI inputs, which corresponds to the HDMI Selection buttons 1-4 located in the front. Input #1 supports Audio Return Channel (ARC), and by default, should be connected to an ARC capable Audio/Video Receiver (AVR) or Soundbar.

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 a display to this HDMI Output. One of the selected inputs will route video and embedded audio to this output. If ARC is enabled, audio sent to the display from the selected HDMI Input or audio sourced from the display (SmartTV Apps) will be passed through to HDMI input #1 if an ARC capable Audio/Video Receiver (AVR) or Soundbar is connected.

6 SPDIF (TOSLINK) Output

This SPDIF (TOSLINK) optical port will output the embedded audio either from the selected HDMI Inputs or from HDMI Out ARC depending on the audio source selection from the ZigNet Web Interface. The SPDIF output supports 2-Channel PCM as well as surround sound formats like Dolby Digital and DTS.

7 Unbalanced Analog Audio RCA Outputs

The RCA Left/Right connectors will output analog audio either from the selected HDMI Inputs or from HDMI Out ARC depending on the audio source selection from the ZigNet Web Interface. 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.

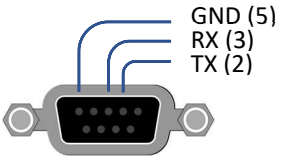
8 RS-232 Connection

An RS-232 connection is typically connected to a 3rd party Control System to configure the SW-41Plus. Communication through the RS-232 port is enabled in both Active and Standby Modes.

Back Panel

The default settings are:

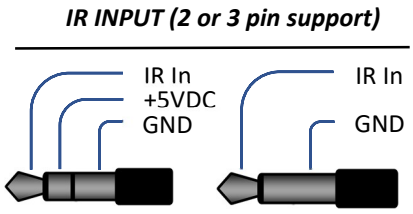
Baud Rate: 115,200
Data Bits: 8
Stop Bits: 1
Parity: None
Flow Control: None



For information on the RS-232 control port, refer to section **10 RS-232**.

9 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 **13 Infrared (IR) Protocol** for a list of available IR command protocols used to control the SW41Plus.

10 Ethernet LAN Port

The Ethernet LAN port is a 100 Base-T connection to any router, switch, or directly to a computer. The SW-41Plus features a web interface, called ZigNet. Hardware configuration, EDID management, and advanced diagnostics can all be accessed through ZigNet.

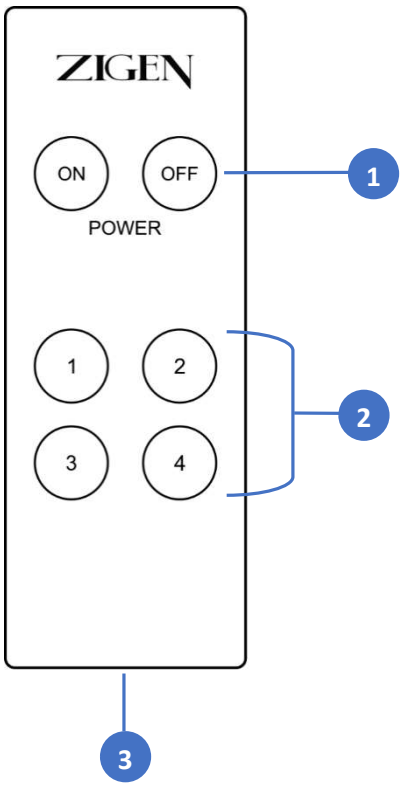
The Ethernet LAN also feature HTTP or Curl protocol to allow 3rd party Control Systems with appropriate drivers to control the SW41Plus. Refer to section **12 Application Program Interface (API)** for more information.

11 Power

The SW-41Plus requires 12VDC @ 1Amp to power the unit. 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 SW-41Plus.

3 IR Remote Control

The SW-41Plus IR remote control can be used for switching between inputs and powering the unit on or off.



1 On/Off Button

Press these buttons to toggle between the operating modes. OFF will set the unit in low power Stand-By mode. ON will set the unit in Active Mode and resets the unit.

2 Input Buttons 1-4

Press these buttons to select the desired input when performing routing operations. Each button corresponds to an accompanying HDMI port (1-4) on the back panel of the device.

3 Battery Compartment

Accepts one CR2025 Lithium Cell 3V Battery (included).

4 Installation

Video

1. Use HDMI cables to connect UltraHD sources to the Inputs on the back panel of the unit.

2. Use an HDMI cable to connect a display to the Output 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.

   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.

Power

3. Connect the included 12V DC locking power supply to the 12V DC power receptacle on the rear panel of the switch.

4. 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.

5 ARC Support

Audio Return Channel (ARC) is a feature where a display can send audio back to an Audio/Video Receiver (AVR) or Soundbar using the display's existing HDMI cable. Any HDMI cable can be used to transmit ARC and no additional audio cables, such as TOSLINK or RCA, are required. Audio to be sent through the ARC channel can be sourced from the display's numerous HDMI Inputs or, in the case of a SmartTV, built-in Apps such as Netflix®, or YouTube®.

For ARC to function properly, the AVR or Soundbar and the display must be capable of supporting ARC. The ARC capable AVR or Soundbar must be connected to HDMI Input #1 only. The SW41Plus must be configured to source audio from ARC using the ZigNet Web Interface.

Interconnect Diagram Example

6 Interconnect Diagram Example

7 Using the Front Panel

The front panel of the SW-41Plus has a set of four LED push button selectors which are associated with each HDMI input connector on the rear of the switch. Press the Input button to select the desired input to route to the device output.

1. When the SW-41Plus is powered-on for the first time, Input 1 will automatically be selected.
2. Under normal conditions, the four input selector buttons will illuminate blue when the corresponding input is selected. However, all input selectors will flash simultaneously if a fault condition is detected.
3. The button labeled Power will illuminate blue when pressed after connecting power to the unit. Pressing the button again will put the unit in Standby and the button will illuminate red.
4. If Auto Switching is enabled from ZigNet and the currently selected HDMI input source is turned off or disconnected, then the unit will automatically switch to the next available input.

8 Using the IR Remote Control

The included IR remote control is used to switch between HDMI inputs. The front panel of the SW-41Plus has a set of four LED indicators which are associated with each HDMI input on the switch.

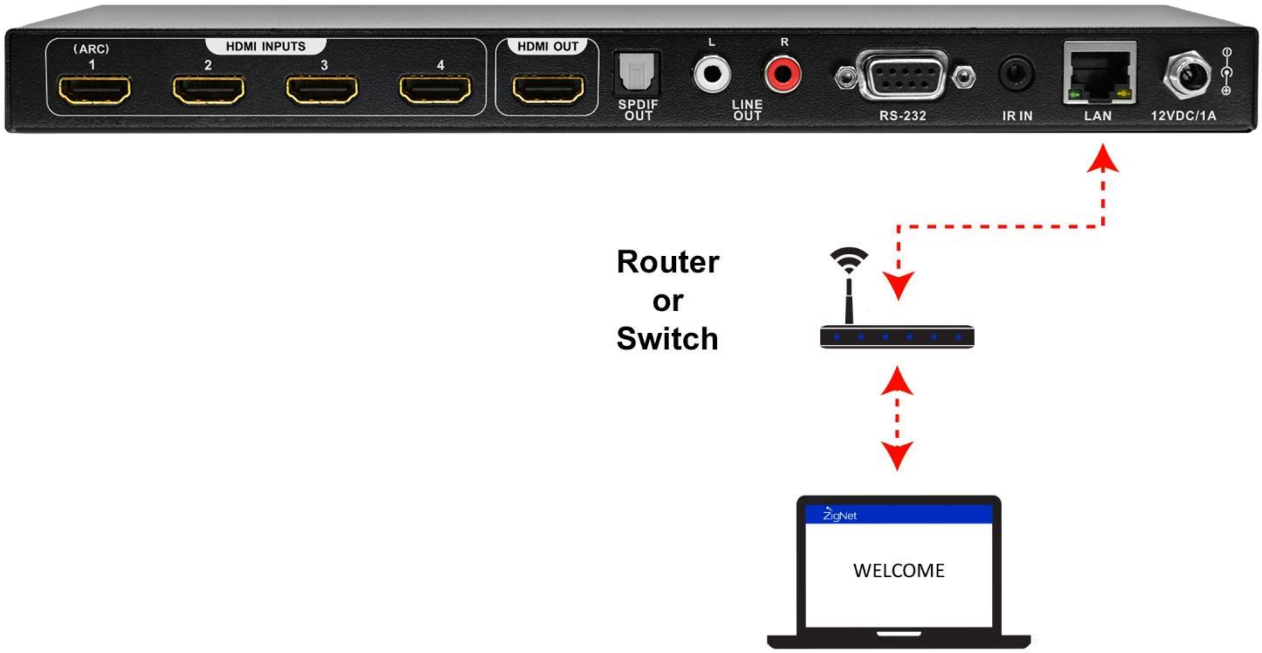
1. When the SW-41Plus is powered-on for the first time, Input 1 will automatically be selected.
2. Point the IR remote control unit at the IR sensor on the front panel. If an IR extender is being used, then both IR sensors will be used to receive IR signals.
3. Each numbered button on the IR remote control unit represents an input. Press the desired source button on the IR remote control to switch to that input.

9 Connecting to ZigNet

ZigNet is the SW-41Plus Web-based Graphical User Interface (GUI) for control and management of the device. To access ZigNet, the SW-41Plus must be connected to the same network LAN as a computer with a web browser. There are two network options to connect the SW-41Plus to a computer.

Network Setup Option 1:

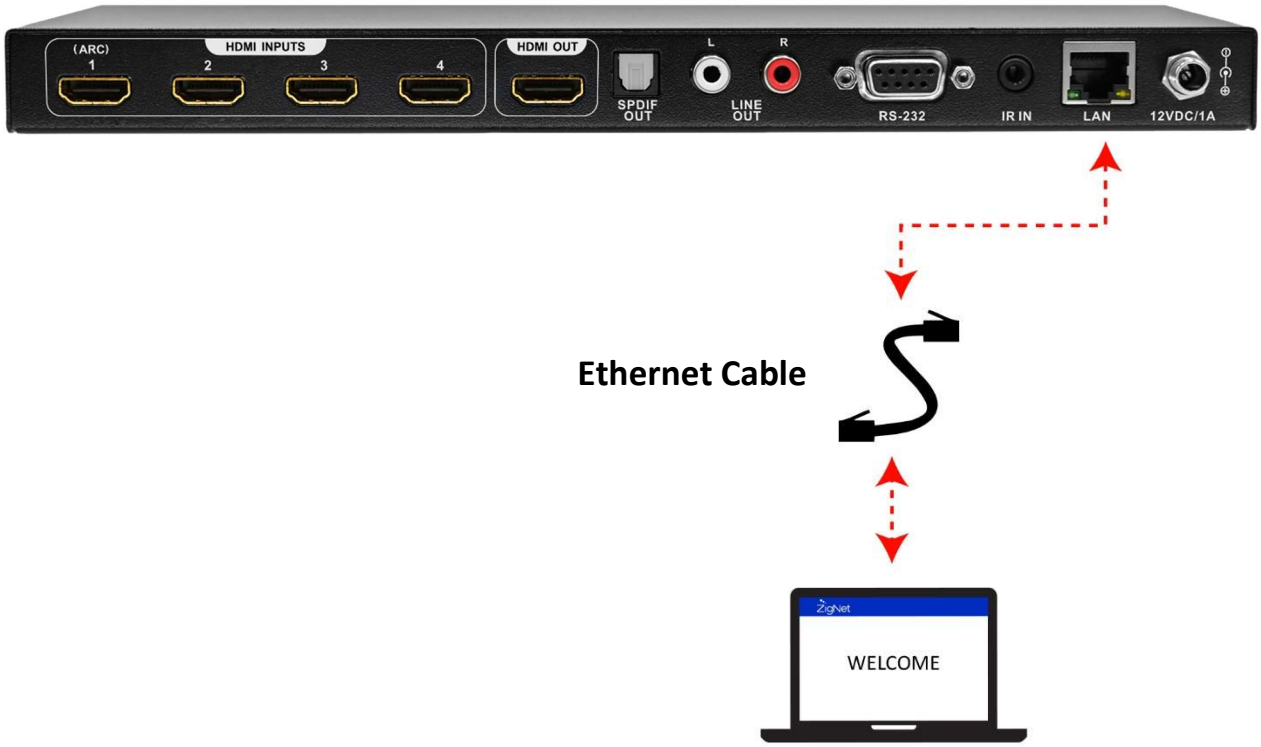
Connect the unit and computer to a router or switch with built-in DHCP Server.



Connecting to ZigNet

Network Setup Option 2:

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



Accessing ZigNet

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

Install ZigNet-Locator then run the application. Click the SEARCH button to find any network connected Zigen devices. Find the proper SW-41Plus unit and note its IP Address.

Open the computer's web browser and enter the SW-41Plus IP Address in the web browser's URL field.

***Note**: ZigNet-Locator will find network connected Zigen devices even though the unit is on a different subnet as the computer. However, the computer and the SW-41Plus must be on the same subnet to access the ZigNet web GUI.*

Using ZigNet

ZigNet provides easy management of all features used by the SW-41Plus.

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 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.

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.

Video Tab

Allows the user to switch the inputs for the output and manage EDID settings.

Audio Tab

Allows the user to manage audio settings.

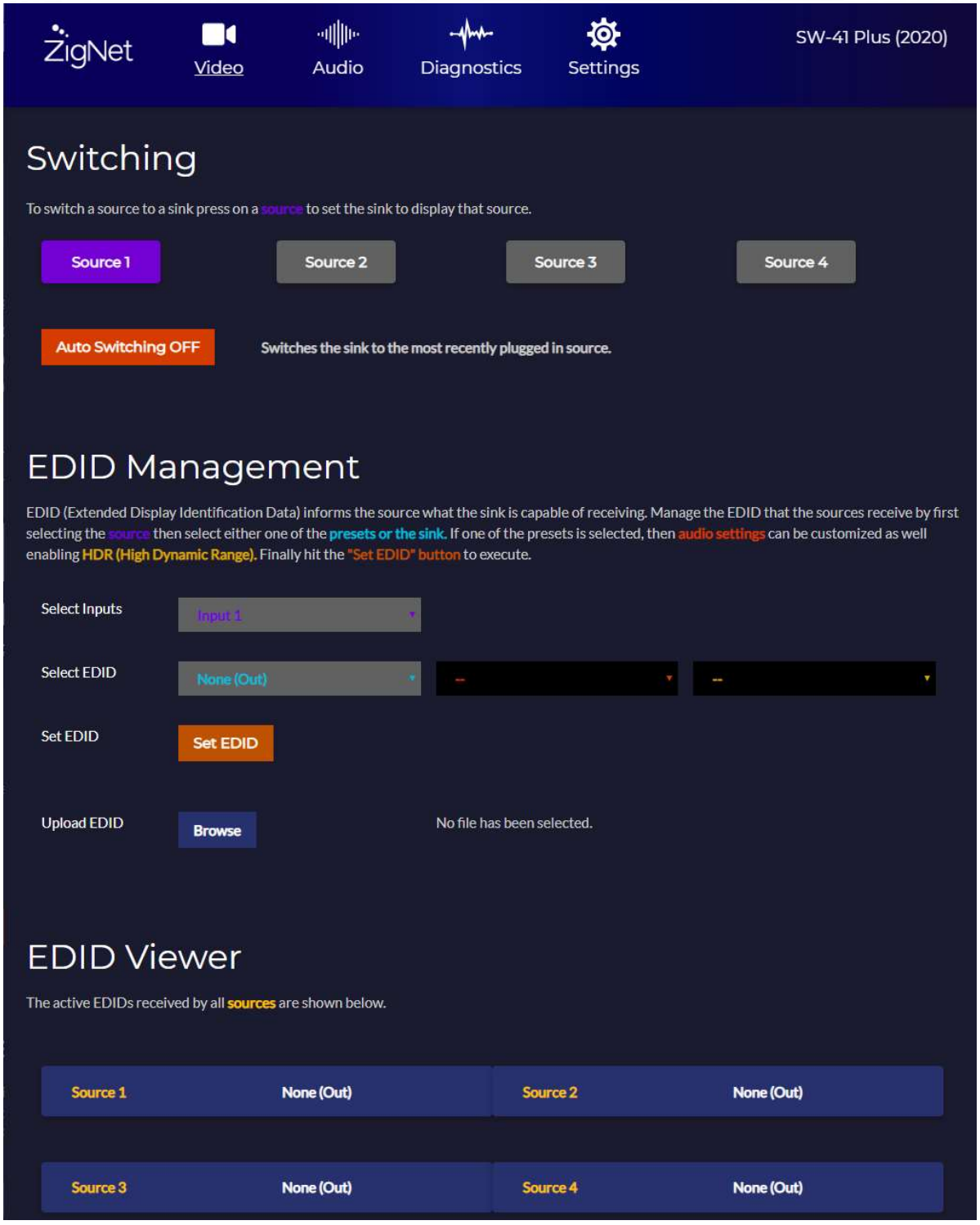
Diagnostics Tab

Allows the user to monitor video signals and system vitals.

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 SW-41Plus can only detect the availability of current firmware if the unit has access to the Internet through its network port.

Video



Switching

Source – Click the desired HDMI input source to connect to the output. The connected Input will be highlighted.

Video

Auto Switching On/Off – Click this button to enable or disable Auto Switching. If Auto Switching is turn on, the unit will automatically connect the most recently plugged HDMI input to the output.

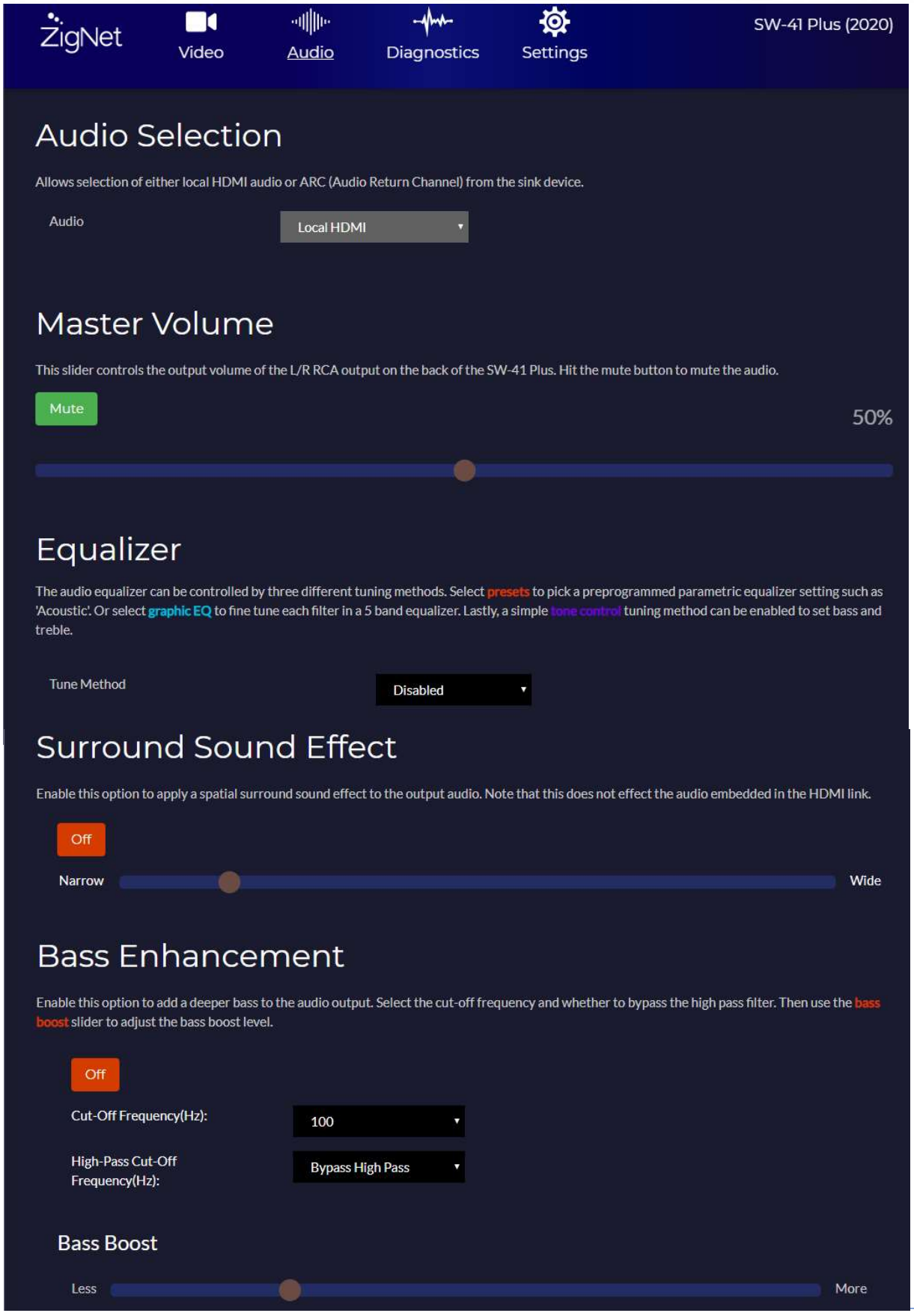
EDID Management

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 desired Input source then select either one of the presets or the sink (connected display). If one of the presets is selected, then audio settings and High Dynamic Range (HDR) parameters can be customized. Click the "Set EDID" button to execute.

EDID Viewer

The active EDIDs received by all sources are shown in the EDID Viewer table.

Audio



Audio

Audio Selection

The Audio Selection menu selects the audio source to be heard on the TOSLINK Output and the RCA Analog Output. Click on the Audio Selection pulldown to pick either the selected local HDMI input or Audio Return Channel (ARC) from the sink device. The local HDMI input is the default selection.

Refer to section **4 ARC Support** for more information on enabling system ARC functionality.

Master Volume

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

Equalizer

The Equalizer only controls the frequency response of the Analog Audio output. TOSLINK and Embedded audio of 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.) Disable: By-pass digital tuning.

Surround Sound Effect

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

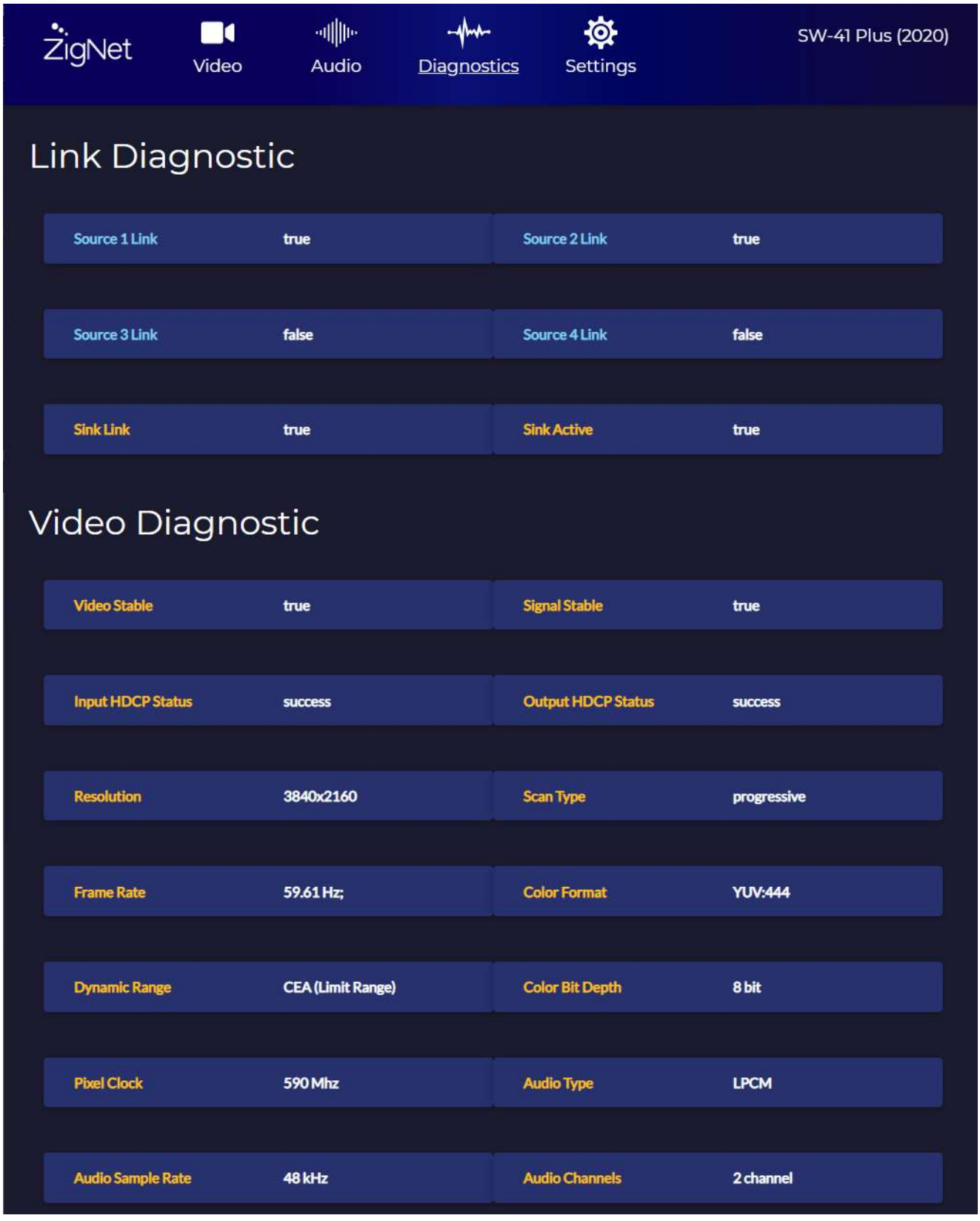
Use the toggle and slider to configure the surround sound effect.

Bass Enhancement

The Bass Enhancement only controls the bass response of the Analog Audio output. TOSLINK and Embedded audio of 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.

Diagnostics

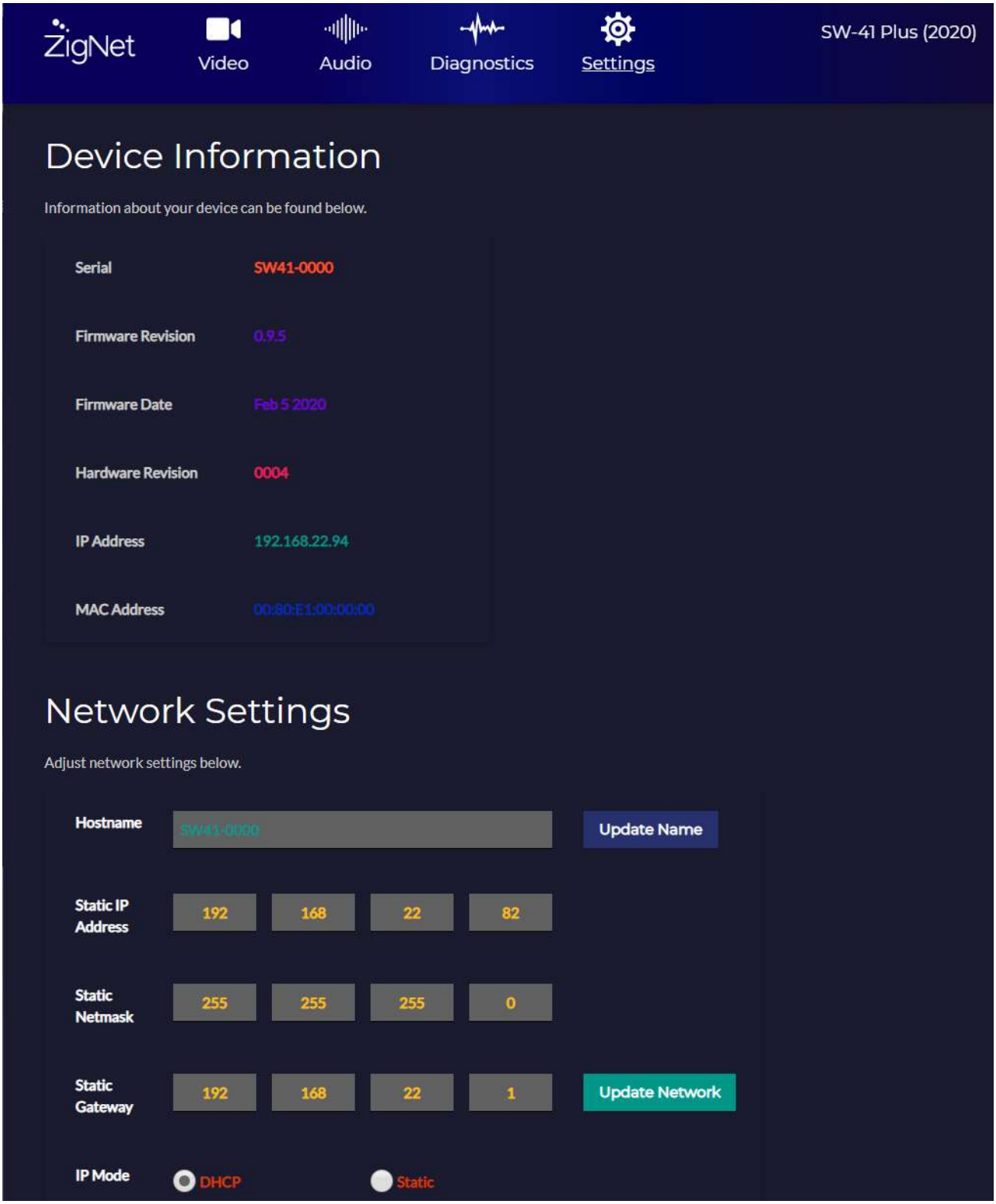


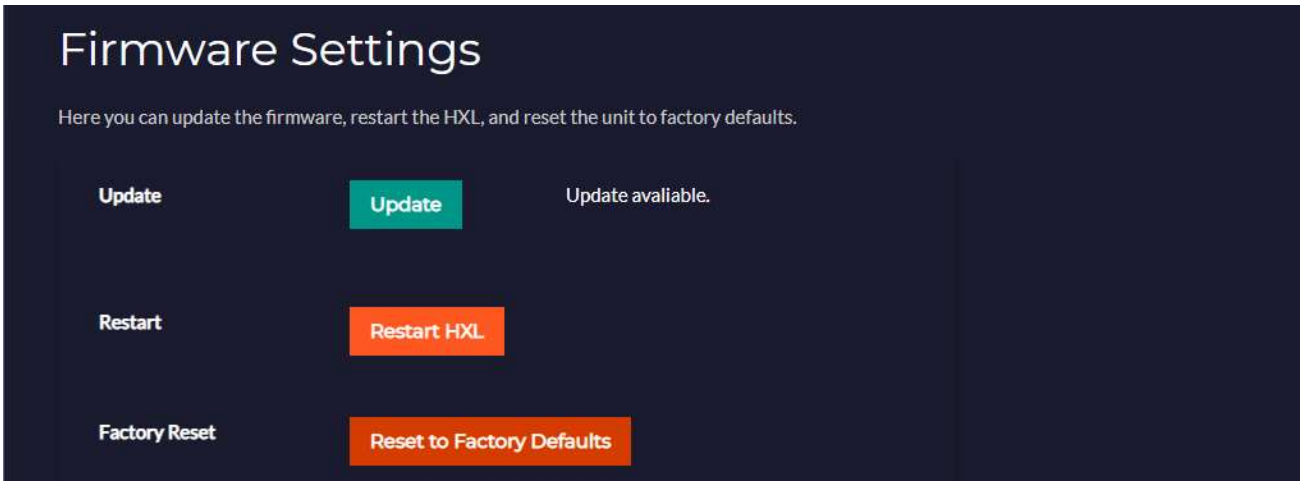
ZigNet Diagnostics

Diagnostics displays the status and parameters of the HDMI Input, Outputs and the disposition of the system. The Diagnostic Specifications are explained in the table below.

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

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 SW-41 Plus.
IP Address: Indicate 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 SW-41Plus will automatically assign network configuration using Auto-IP. Click Update Network upon completion.

***Note**: Use the ZigNet-Locator application to determine the IP Address of the SW-41Plus if DHCP mode is selected.*

Firmware Settings

Update: If the SW-41Plus 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.

***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.

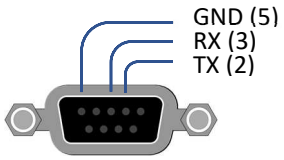
> ***Note**: The SW-41Plus will revert back to default DHCP mode when restoring back to factory defaults. Use the ZigNet-Locator application to determine the new IP Address of the unit.*

10 RS-232

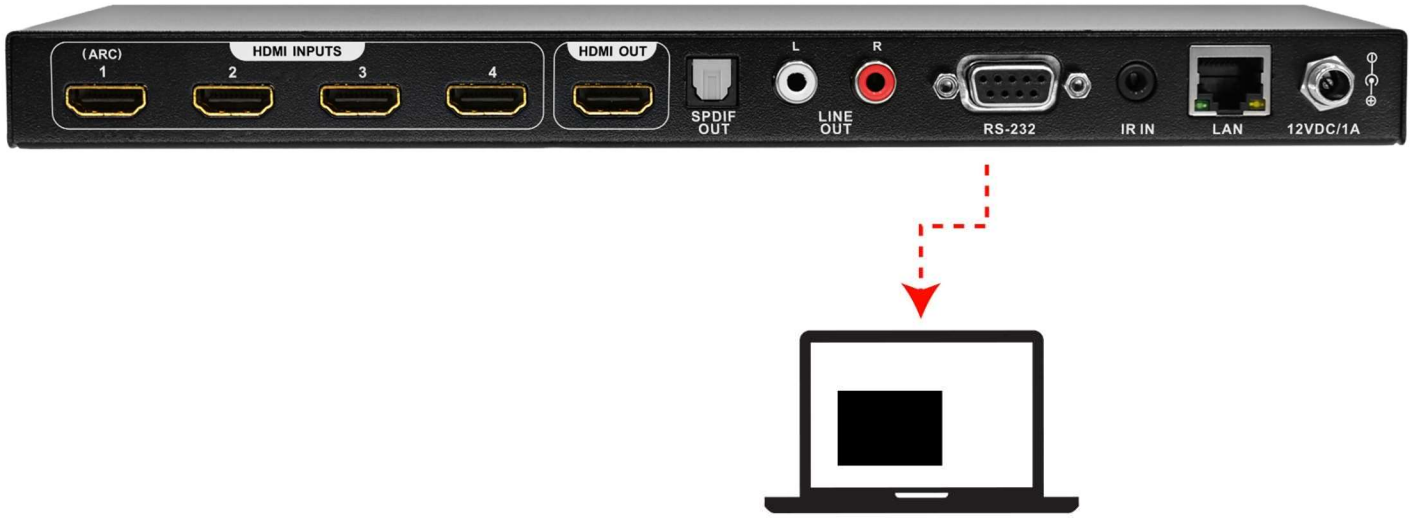
Configuring an RS-232 Connection

1. Connect the RS-232 port on the back of the SW-41Plus 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.



RS-232 Control Protocol

RS-232 Control Protocol

The RS-232 Control port can be used to control the SW41Plus device using a 3rd 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 SW41Plus will display the following status:

ZIGEN SW41 Plus
1.2.0 (May 21 2020)
SW41-0001
IP address: 10.0.0.10
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
Help	SW41-xxxx help<LF>	Shows a list of available commands.
System Info	SW41-xxxx sysinfo<LF>	Shows product name, firmware release, version, build date, serial number, and network information.
Get IP address	SW41-0001 getnet<LF>	Displays the current IP address, netmask, and gateway if resolved.
Device Status	SW41-xxxx st<LF>	Shows connected monitors and sources.
Input Select	SW41-xxxx insel <1/2/3/4><LF>	Lets you change the input.
Set EDID	SW41-0001 set edid <1/2/3/4> <0-24><LF>	Lets you set the EDID for an input
Volume Up	SW41-xxxx vol+<LF>	Lets you increase the volume of the RCA output.
Volume Down	SW41-xxxx vol-<LF>	Lets you decrease the volume of the RCA output.
Set Volume	SW41-xxxx vol <0-100><LF>	Lets you set the volume of the RCA output.
Mute Toggle	SW41-xxxx mutetogg<LF>	Lets you toggle mute of the RCA output.
Audio Select	SW41-0001 audiosel <local/arc><LF>	Lets you select local HDMI audio or ARC for analog output.
Power	SW41-xxxx pwr <on/off><LF>	Powers the device on or off.

To address a single unit, replace "xxxx" with the serial number located on the bottom of the unit. To address multiple SW-41Plus units use only "xxxx" without serial numbers.

***Note**: These commands can be combined like so: "SW41-xxxx st uptime version<LF>"*

Device Command Examples:

- To power ON the SW-41Plus use command: SW41-xxxx pwr on<LF>
- To select input #4 of SW-41Plus use command: SW41-xxxx insel 4<LF>

11 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.

<table>
<tr><th></th><th>8 bit</th><th>10 bit</th><th>12 bit</th><th>16 bit</th></tr>
<tr><td>4K@24</td><td rowspan="3">RGB
4:4:4</td><td rowspan="3">RGB
4:4:4</td><td rowspan="3">RGB
4:4:4
4:2:2</td><td rowspan="3">RGB
4:4:4</td></tr>
<tr><td>4K@25</td></tr>
<tr><td>4K@30</td></tr>
<tr><td>4k@50</td><td rowspan="2">RGB
4:4:4
4:2:0</td><td rowspan="2">4:2:0</td><td rowspan="2">4:2:2
4:2:0</td><td rowspan="2">4:2:0</td></tr>
<tr><td>4K@60</td></tr>
</table>

12 Application Program Interface (API)

The SW41Plus can be controlled over Ethernet using 3rd party Control Systems and appropriate drivers. Below is a list of commands to control the SW41Plus through network HTTP or Curl protocol. For specific usage details of the API, download the API HTLM document from the Zigen Website in the SW41Plus downloads section.

1. Get Active Source
2. Get Auto Switch
3. Get Custom EDID Info
4. Get Active EDID Info
5. Get Audio Settings
6. Get Sink Name
7. Get Admin Info
8. Get Video Info
9. Restart
10. Factory Reset
11. Request Update
12. Get Update Info
13. Set Active Source
14. Set Auto Switch
15. Set Audio Settings
16. Upload EDID
17. Set EDID
18. Set Hostname
19. Set Static IP
20. Set DHCP

13 Infrared (IR) Protocol

The SW-41 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.

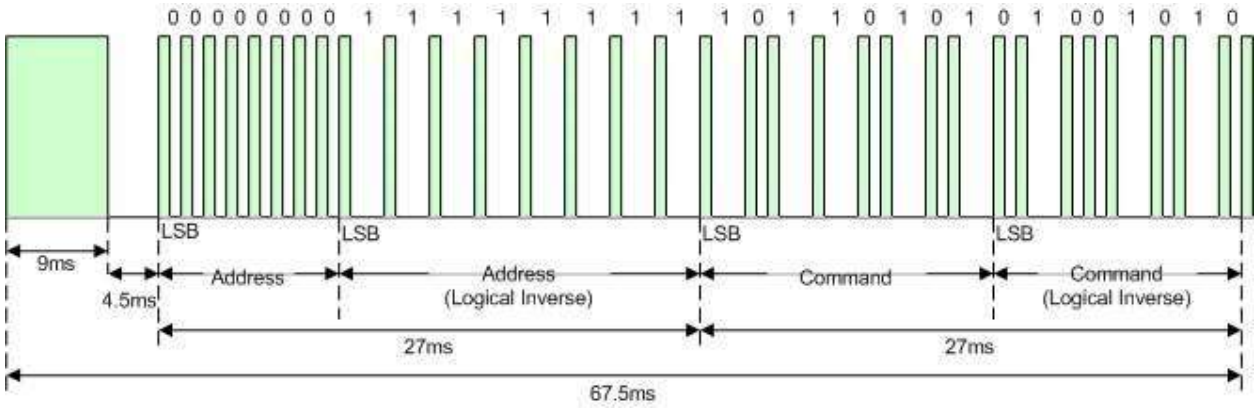


Illustration 1: NEC Protocol

IR Commands

Below are pronto hex codes for IR commands for the SW-41 Plus. All IR commands use address 0x09.

Select Input 1
Description: Set HDMI Output to Input 1. Command: 0x1A Pronto Hex:
0000 006e 0000 0022 0156 00ab 0015 003f 0015 0015 0015 0015 0015 003f 0015 0015
0015 0015 0015 0015 0015 0015 0015 0015 0015 003f 0015 003f 0015 0015 0015 003f 0015
003f 0015 003f 0015 003f 0015 0015 0015 003f 0015 0015 0015 003f 0015 003f 0015 0015
0015 0015 0015 0015 0015 003f 0015 0015 0015 003f 0015 0015 0015 0015 0015 003f 0015 003f 0015
003f 0015 1d0b

Select Input 2
Description: Set HDMI Output to Input 2. Command: 0x14 Pronto Hex:
0000 006e 0000 0022 0156 00ab 0015 003f 0015 0015 0015 0015 0015 003f 0015 0015
0015 0015 0015 0015 0015 0015 0015 0015 0015 003f 0015 003f 0015 0015 0015 003f 0015
003f 0015 003f 0015 003f 0015 0015 0015 0015 0015 003f 0015 0015 0015 003f 0015 0015
0015 0015 0015 0015 0015 003f 0015 003f 0015 0015 0015 003f 0015 0015 0015 003f 0015 003f 0015
003f 0015 1d0b

Select Input 3
Description: Set HDMI Output to Input 3. Command: 0x1B Pronto Hex:
0000 006e 0000 0022 0156 00ab 0015 003f 0015 0015 0015 0015 0015 003f 0015 0015
0015 0015 0015 0015 0015 0015 0015 0015 0015 003f 0015 003f 0015 0015 0015 003f 0015
003f 0015 003f 0015 003f 0015 003f 0015 003f 0015 0015 0015 003f 0015 003f 0015 0015

0015 0015 0015 0015 0015 0015 0015 0015 0015 003f 0015 0015 0015 0015 0015 003f 0015 003f 0015
003f 0015 1d0b

Select Input 4

Description: Set HDMI Output to Input 4. Command: 0x15 Pronto Hex:

0000 006e 0000 0022 0156 00ab 0015 003f 0015 0015 0015 0015 0015 003f 0015 0015
0015 0015 0015 0015 0015 0015 0015 0015 0015 003f 0015 003f 0015 0015 0015 003f 0015 003f 0015
003f 0015 003f 0015 003f 0015 0015 0015 003f 0015 0015 0015 003f 0015 0015
0015 0015 0015 0015 0015 0015 0015 003f 0015 0015 0015 003f 0015 0015 0015 003f 0015 003f 0015
003f 0015 1d0b

Power Off

Description: Sets the unit in standby mode. Command: 0x12 Pronto Hex:

0000 006e 0000 0022 0156 00ab 0015 003f 0015 0015 0015 0015 0015 003f 0015 0015
0015 0015 0015 0015 0015 0015 0015 0015 0015 003f 0015 003f 0015 0015 0015 003f 0015
003f 0015 003f 0015 003f 0015 0015 0015 003f 0015 0015 0015 0015 0015 003f 0015 0015
0015 0015 0015 0015 0015 003f 0015 0015 0015 003f 0015 003f 0015 0015 0015 003f 0015
003f 0015 003f 0015 1d0b

Power On

Description: Sets the unit in normal mode. Command: 0x18 Pronto Hex:

0000 006e 0000 0022 0156 00ab 0015 003f 0015 0015 0015 0015 0015 003f 0015 0015
0015 0015 0015 0015 0015 0015 0015 0015 0015 003f 0015 003f 0015 0015 0015 003f 0015
003f 0015 003f 0015 003f 0015 0015 0015 0015 0015 0015 0015 003f 0015 003f 0015 0015
0015 0015 0015 0015 0015 003f 0015 003f 0015 003f 0015 0015 0015 0015 0015 003f 0015
003f 0015 003f 0015 1d0b

Volume+

Description: Increase the volume of the RCA audio outputs. Command: 0x40 Pronto Hex:

0000 006C 0000 0022 0156 00ab 0015 003f 0015 0015 0015 0015 0015 003f 0015 0015
0015 0015 0015 0015 0015 0015 0015 0015 0015 003f 0015 003f 0015 0015 0015 003f 0015 003f 0015
003f 0015 003f 0015 0015 0015 0015 0015 0015 0015 0015 0015 0015 0015 0015
0015 003f 0015 0015 0015 003f 0015 003f 0015 003f 0015 003f 0015 003f 0015 003f 0015 0015 0015
003f 0015 1d0b

Volume-

Description: Decrease the volume of the RCA audio outputs. Command: 0x41 Pronto Hex:

0000 006C 0000 0022 0156 00ab 0015 003f 0015 0015 0015 0015 0015 003f 0015 0015
0015 0015 0015 0015 0015 0015 0015 0015 0015 003f 0015 003f 0015 0015 0015 003f 0015 003f 0015
003f 0015 003f 0015 003f 0015 0015 0015 0015 0015 0015 0015 0015 0015 0015
0015 003f 0015 0015 0015 0015 0015 003f 0015 003f 0015 003f 0015 003f 0015 003f 0015 0015 0015
003f 0015 1d0b

Mute Toggle

Description: Toggle the mute of the RCA audio outputs. Command: 0x45 Pronto Hex:

0000 006C 0000 0022 0156 00ab 0015 003f 0015 0015 0015 0015 0015 003f 0015 0015
0015 0015 0015 0015 0015 0015 0015 0015 0015 003f 0015 003f 0015 0015 0015 003f 0015
003f 0015 003f 0015 003f 0015 003f 0015 0015 0015 003f 0015 0015 0015 0015 0015 0015 0015 003f
0015 0015 0015 0015 0015 003f 0015 0015 0015 003f 0015 003f 0015 003f 0015 0015 0015 003f 0015
1d0b

14 Contacting Zigen

Technical Support

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

Email

info@zigencorp.com

Web

www.zigencorp.com

Mailing Address

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

15 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.