



# User Manual

## TL-CAV-01-HDV

Multi-function AV distribution system



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Version: TL-CAV-01-HDV\_180726

## Preface

Read this user manual carefully before using this product. Pictures shown in this manual is for reference only, different model and specifications are subject to real product.

This manual is only for operation instruction only, not for any maintenance usage.

## Trademarks

Product model and logo are trademarks. Any other trademarks mentioned in this manual are acknowledged as the properties of the trademark owner. No part of this publication may be copied or reproduced without the prior written consent.

## 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 A 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.



## SAFETY PRECAUTIONS

To insure the best from the product, please read all instructions carefully before using the device. Save this manual for further reference.

- Unpack the equipment carefully and save the original box and packing material for possible future shipment
- Follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
- Do not dismantle the housing or modify the module. It may result in electrical shock or burn.
- Using supplies or parts not meeting the products' specifications may cause damage, deterioration or malfunction.
- Refer all servicing to qualified service personnel.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
- Do not put any heavy items on the extension cable in case of extrusion.
- Do not remove the housing of the device as opening or removing housing may expose you to dangerous voltage or other hazards.
- Install the device in a place with fine ventilation to avoid damage caused by overheat.
- Keep the module away from liquids.
- Spillage into the housing may result in fire, electrical shock, or equipment damage. If an object or liquid falls or spills on to the housing, unplug the module immediately.
- Do not twist or pull by force ends of the optical cable. It can cause malfunction.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.
- Unplug the power cord when left unused for a long period of time.
- Information on disposal for scrapped devices: do not burn or mix with general household waste, please treat them as normal electrical wastes.

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# 1. Introduction

## 1.1 Brief Introduction

TL-CAV-01-HDV is a multi-function AV distribution system, which includes a wall plate Twisted Pair transmitter, Twisted Pair receiver with built-in audio amplifier and control panel. It is designed to provide HDMI and VGA video switching, system control, video extension and analog audio amplification in a convenient kit.

Transmitter provides one HDMI and one VGA with analog audio signal inputs, which support HDCP 1.4 and can be switched automatically or manually. It transmits the HDMI signal to the receiver via shielded solid core Cat 5e or greater cable, and the maximum distance can be up to 30m at 1920x1200 @ 60 Hz.

The receiver features a microphone input, analog audio output, 2x20 at 4 ohms speaker output, and IR or RS232 control to the display in addition to the HDMI output. A USB port on the receiver will transmit interactive display connections to the transmitter.

The control panel is an easy-to-use control device for huddle rooms, classrooms and boardrooms. It can power on and off the display, select between the two inputs, and separately adjust and mute the source and microphone audio.

TL-CAV-01-HDV supports simultaneous panel button and web-based GUI control. Moreover, with its PoC solution, a single power point on the receiver provides power to the transmitter and control panel over the Cat cables.

## 1.2 Features

- Switch between HDMI and VGA signal inputs
- HDMI output resolution up to 1920x1200 @ 60 Hz
- VGA input with scaler
- Supports HDCP1.4
- Supports MIC input
- 2x20 watts @ 4 ohms amplifier output.
- Control Panel with IR Learning
- Convenient configuration copying for multiple installations
- Supports UPNP
- Remote audio muting
- Interactive display USB pass-through
- Web GUI control option that works on all devices

### 1.3 Package List

- 1 x Transmitter
- 1 x Receiver
- 1 x Control Panel
- 1 x Power adapter (DC 24V 2.71 A)
- 2 x Mounting ears (for Receiver)
- 4 x Screws (for installing mounting ears)
- 4 x Rubber feet (for Receiver)
- 1 x Pluggable Terminal Block (4-pin block, used for 2x20Watt@4Ω port)
- 3 x Pluggable Terminal Block (3-pin blocks, used for LINE OUT or RS232 port)
- 1 x Pluggable Terminal Block (2-pin block, used for REMOTE MUTE port)
- 1 x IR emitter
- 1 x USB control cable (USB-A to USB-B)
- 1 x White face plate
- 1 x User Manual

**Notes:** If you find any defective or missing parts, please contact your local dealer.

## 2. Panel Description

### 2.1 Transmitter

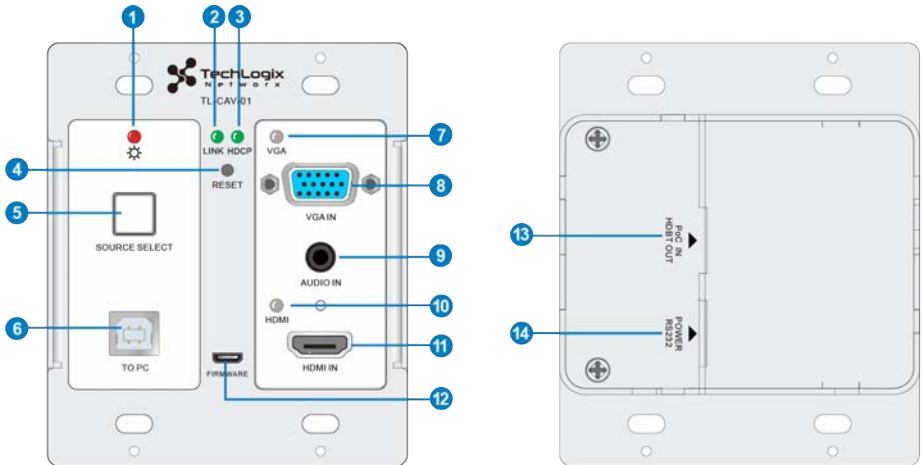


Figure 2-1 Transmitter

No.	Name	Description
①	Power	Turns red when power is connected
②	Link	TP Link status indicator: ✓ OFF: No Link ✓ GREEN: Link successful ✓ Blinking GREEN: Link abnormal
③	HDCP	HDCP compliance indicator: ✓ OFF: No HDMI traffic (no picture) ✓ GREEN: Traffic with HDCP ✓ Blinking GREEN: Traffic without HDCP
④	RESET	Press this button to reboot Transmitter.
⑤	SOURCE SELECT	Alternates between HDMI IN 1 and HDMI IN 2. Press and hold for 3 seconds to enable Auto switch mode.
⑥	To PC	Connect PC to transmit USB control signal from the display.
⑦	VGA IN indicator	✓ OFF: No VGA signal traffic ✓ YELLOW: VGA signal traffic ✓ GREEN: VGA IN is chosen as input source.
⑧	VGA IN	VGA input



⑨	AUDIO IN	Analog audio input paired with VGA input
⑩	HDMI IN indicator	<ul style="list-style-type: none"> <li>✓ OFF: No HDMI signal traffic</li> <li>✓ YELLOW: HDMI signal traffic</li> <li>✓ GREEN: HDMI IN is chosen as input source.</li> </ul>
⑪	HDMI IN	HDMI IN
⑫	FIRMWARE	Micro USB port used for firmware update.
⑬	PoC IN TP OUT	Connect to the TP IN/PoC port on the Receiver via CAT5e/CAT6a cable to transmit AV and control signal. With PoC solution, Transmitter can be powered by this port once Receiver has been powered up.
⑭	POWER RS232	RJ45 connector. Connect to the POWER/RS232 port on the Control Panel via CAT5e/CAT6a cable to transmit RS232 control signal and power Control Panel.

## 2.2 Receiver

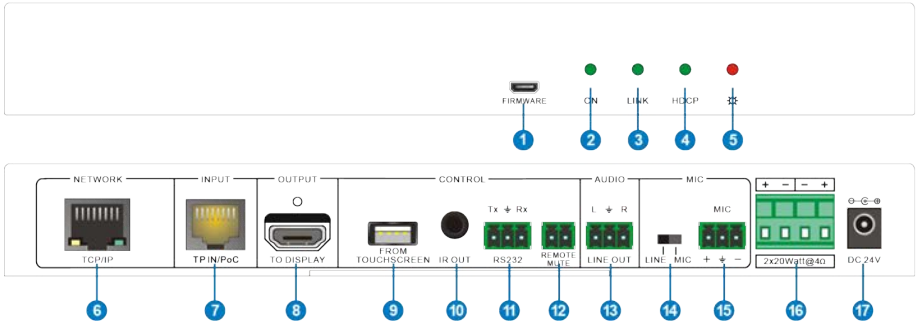


Figure 2-2 Receiver

No.	Name	Description
①	FIRMWARE	Micro USB port used for firmware updates.
②	ON	Flashes green when system is powered on; off when the system is in standby.
③	Link	TP Link status indicator: <ul style="list-style-type: none"> <li>✓ OFF: No Link</li> <li>✓ GREEN: Link successful</li> <li>✓ Blinking GREEN: Link abnormal</li> </ul>
④	HDCP	HDCP compliance indicator: <ul style="list-style-type: none"> <li>✓ OFF: No HDMI traffic (no picture)</li> </ul>

		<ul style="list-style-type: none"> <li>✓ GREEN: Traffic with HDCP</li> <li>✓ Blinking GREEN: Traffic without HDCP</li> </ul>
⑤	Power	Turns red when power is connected
⑥	TCP/IP	Connect to a PC to control the following items by Web-based GUI: <ul style="list-style-type: none"> <li>✓ Input signal switching</li> <li>✓ Volume adjustment</li> <li>✓ Turn on or off the display</li> <li>✓ Put the system into standby or start it</li> </ul>
⑦	TP IN /PoC	Connect to the PoC IN/TP OUT port of Transmitter with a CAT5e cable.
⑧	TO DISPLAY	HDMI port to the display
⑨	FROM TOUCH SCREEN	USB-A connector. Connect to an interactive display and send the USB signal back to signal source connected to the transmitter.
⑩	IR OUT	IR output for the display.
⑪	RS232	RS232 control for the display.
⑫	REMOTE MUTE	NO or NC connection to mute the audio when triggered by a mass notification system.
⑬	LINE OUT	Line level audio output.
⑭	MIC LINE SWITCH	<ul style="list-style-type: none"> <li>✓ When the switch is set to “MIC”, the microphone input is used to connect a dynamic microphone.</li> <li>✓ When the switch is set to “LINE”, the microphone input is used for connecting a line level audio source or wireless microphone output.</li> </ul>
⑮	MIC	<ul style="list-style-type: none"> <li>✓ Microphone wiring:             <ol style="list-style-type: none"> <li>1) <b>Unbalanced connection:</b> “⊥” connects to ground, and “-” connects to signal.</li> <li>2) <b>Balanced connection:</b> “+” connects to positive, “-” connects to negative and “⊥” connects to ground.</li> </ol> </li> <li>✓ Line level wiring:             <ol style="list-style-type: none"> <li>1) <b>Unbalanced connection:</b> “⊥” connects to ground, and “-” connects to signal.</li> <li>2) <b>Balanced connection:</b></li> </ol> </li> </ul>

		“+” connects to positive, “-” connects to negative and “⊥” connects to ground.
⑩⑥	2x20 watts at 4Ω	Speaker output.
⑩⑦	DC24V	Power input for the included DC 24V 2.71A power adapter.

### 2.3 Control Panel

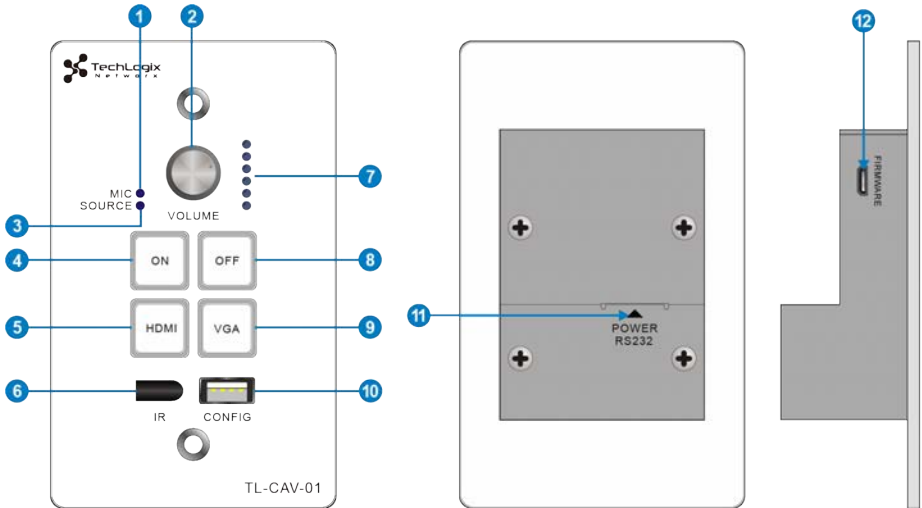


Figure 2-3 Control Panel

No.	Name	Description
①	MIC	MIC audio signal indicator, it will turn blue when the MIC audio is selected to adjust its volume.
②	VOLUME Knob	<ul style="list-style-type: none"> <li>✓ Press this button to mute or unmute speaker.</li> <li>✓ Long-press this button for 2 seconds to choose MIC or SOURCE input audio need to be adjusted.</li> <li>1. Clockwise adjustment to increase the volume.</li> <li>2. Counter-clockwise adjustment to decrease the volume.</li> </ul>
③	SOURCE	HDMI embedded audio signal indicator, it will turn blue when the HDMI embedded audio is selected to adjust its volume.
④	ON	Turn on the display and system.
⑤	HDMI	Press it to select <b>HDMI IN</b> signal as input source.
⑥	IR	Built-in IR sensor to pass-through or capture IR commands for the display.
⑦	Volume level indicator	Six volume indicators to indicate volume level.
⑧	OFF	Turn off the display and system.

⑨	VGA	Press it to select <b>VGA IN</b> signal as input source.
⑩	CONFIG	USB-A connector to import or export configuration data.
⑪	POWER RS232	RJ45 connector. Connect to the POWER/RS232 port on the Transmitter via CAT5e/CAT6a cable to transmit RS232 control signal. Control Panel can be powered by Transmitter via this port.
⑫	FIRMWARE	Micro USB port, used for firmware update.

**Note:** Pictures shown in this manual are for reference only.

### 3. System Connection

#### 3.1 Usage Precautions

- 1) Speakers must be connected before powering the receiver on.
- 2) All devices should be connected before powering the receiver on.
- 3) Use shielded solid core straight-thru Cat5e or greater with TIA/EIA T568B terminations to connect the TP ports.
- 4) All devices should be connected before power on.

#### 3.2 System Diagram

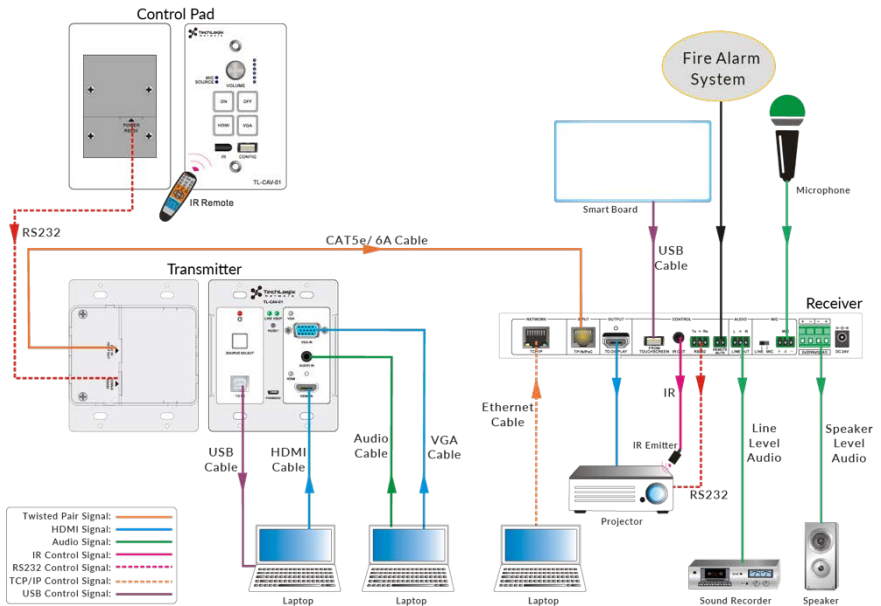


Figure 3-1 System Diagram

#### 3.3 Connection Procedure

- Step1.** Connect an HDMI source device to **HDMI IN** port of Transmitter with a high-quality HDMI cable.
- Step2.** Connect a VGA source device to **VGA IN** port of Transmitter with a high-quality VGA cable.
- Step3.** Connect PC to **TO PC** port of Transmitter with USB control cable if connecting

to an interactive display.

- Step4.** Connect **TP OUT/PoC IN** port of Transmitter and **TP IN/PoC** port of Receiver on the rear panel with single shielded solid core straight-thru Cat5e or greater cable with TIA/EIA T568B terminations.
- Step5.** Connect **POWER RS232** port of Transmitter and **POWER RS232** port of Control Panel on the rear panel with single CAT5e or greater cable. The distance between Transmitter and Control Panel should be kept within 5 meters.
- Step6.** Connect a display to the **TO DISPLAY** and **RS232** port of Receiver.
- Step7.** Connect an interactive display to the **FROM TOUCH SCREEN** port of Receiver with the included USB control cable.
- Step8.** Connect audio broadcast device to the **LINE OUT** port of Receiver.
- Step9.** Connect a microphone to the **MIC** port of Receiver
- Step10.** Connect **REMOTE MUTE** port of Receiver to the Fire Alarm System.
- Step11.** Connect a speaker to the **2x20Watt@4** port of Receiver.
- Step12.** Connect a PC to the **TCP/IP** port of Receiver for Web-based GUI control.
- Step13.** Connect the IR Emitter to the **IR OUT** port of Receiver, and then put it over the IR receiver port of the display.
- Step14.** Connect DC24V 2.71A power adaptor to the power port of Receiver.



- 1) System Diagrams shown in this manual are for reference only.
- 2) Connect TP ports via single shielded solid core straight-thru Cat5e or greater cable with TIA/EIA T568B terminations at both ends.

### 3.4 PoC Solution

TL-CAV-01-HDV supports PoC, which allows all components in the kit to share the same power supply and eliminates the need for extra power supplies at the remote nodes.

Connect the DC24V 2.71A power adapter to the power port of Receiver, Transmitter and Control Panel can be powered via the PoC solution, see the picture below:

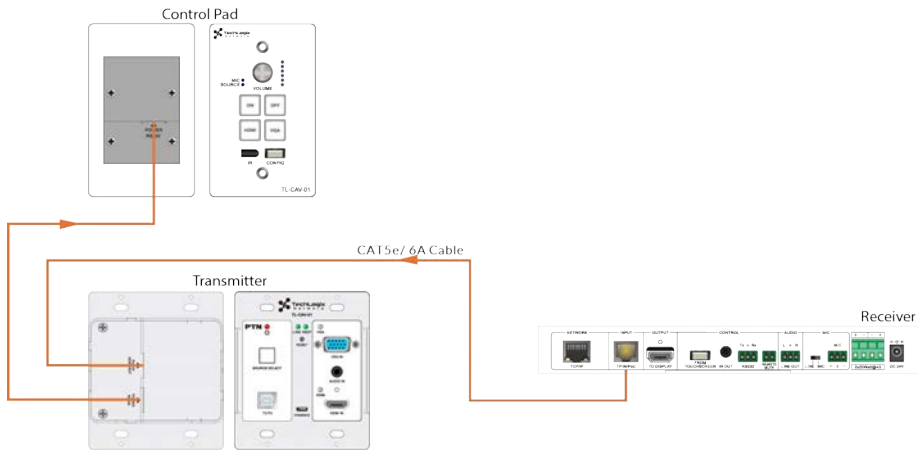


Figure 3-2 PoC Solution Diagram

### 3.5 Typical Application

TL-CAV-01-HDV is ideal for any space that requires a couple video sources and needs audio reinforcement. It is designed to solve some commonly inefficient issues, such as difficulty when trying to switch signal sources and providing whole room audio. This section provides a brief introduction to the typical application scenarios.

#### ● Scenario 1: System Preparation

1. Press the “ON” button of Control Panel to turn on the display or long-press it to start system.
2. Connect signal source (e.g. PCs) to the **HDMI IN** and **VGA IN** ports of Transmitter.
3. Turn on wireless microphone.

#### ● Scenario 2: System use

1. Press the button “HDMI” or “VGA” to switch back and forth conveniently between two HDMI signal inputs.
2. Long-press the knob “VOLUME” to choose the audio source, MIC audio or HDMI embedded audio, that needs to be adjusted. Then, turn the knob clockwise to increase the volume or counter-clockwise to decrease the volume.
3. Users in the rear of the room will clearly hear the meeting leader or teacher without that person needing to yell to reach those users.

#### ● Scenario 3: System shutdown

Press the button “OFF” to turn off display or long-press it to put the system into standby.



## 4. System Operation

### 4.1 IR Learning Function

IR learning function allows user to use the buttons of Control Panel to control the display. The Control Panel has four buttons: “ON”, “OFF”, “HDMI”, and “VGA”. “HDMI” and “VGA” do not support the IR learning function, because they are designed for switching the HDMI signal sources.

- **Setup Procedure:**

1. Long-press the button “HDMI” until the buttons “ON” and “OFF” light up, and then release “HDMI”. The blue backlight of “HDMI” will go out to enter IR learning mode.
2. Press the button “ON” to enter IR learning status, and it will keep blinking blue.
3. Press the corresponding button (such as the “On” button) on IR remote, meanwhile, put IR remote close to the IR sensor of Control Panel.
4. Once user set up successfully, the button “ON” will stop blinking
5. Next, repeat the above steps to set another button “OFF”.
6. Finally, Long-press the button “VGA” to exit programming mode.

- **Operating Procedure:**

1. Press the button “ON” to turn on the display.
2. Press the button “OFF” to turn off the display.



- ✧ When the system enters IR learning status, long-press the “VGA” button for more than 5 seconds to exit.
- ✧ If there is no interaction for 60 seconds, the system will exit automatically.
- ✧ The blue backlight of all buttons will go out once the system exits successfully.

### 4.2 Front Panel Button Control

- **Via Control Panel**

- ✧ There are two modes for controlling display and system: synchronous and asynchronous control mode. They can be selected via the web-based GUI. For more details, please refer to the [4.6.2 Setting Menu](#).

- ◆ **Synchronous control:**

Press the buttons “ON” or “OFF” on Control Panel to turn on/off the display

and system concurrently.

◆ **Asynchronous control:**

Press “ON” to turn on display or long-press it to start system.

Press “OFF” to turn off display or long-press it to put system into standby.

✧ Press “HDMI” or “VGA” to switch to the appropriate input source.

● **Via Transmitter**

✧ Press “SOURCE SELECT” to select one source; press again to select next source.

✧ Press “RESET” to reboot Transmitter.

### 4.3 USB Signal Return

Receiver has a USB port (**FROM TOUCH SCREEN**) to connect with an interactive display. When the user makes annotations or control gestures on the interactive display, the Receiver will transmit the USB signal to the Transmitter which is connected to a PC via USB. Please refer to the return path of USB signal as shown as below.

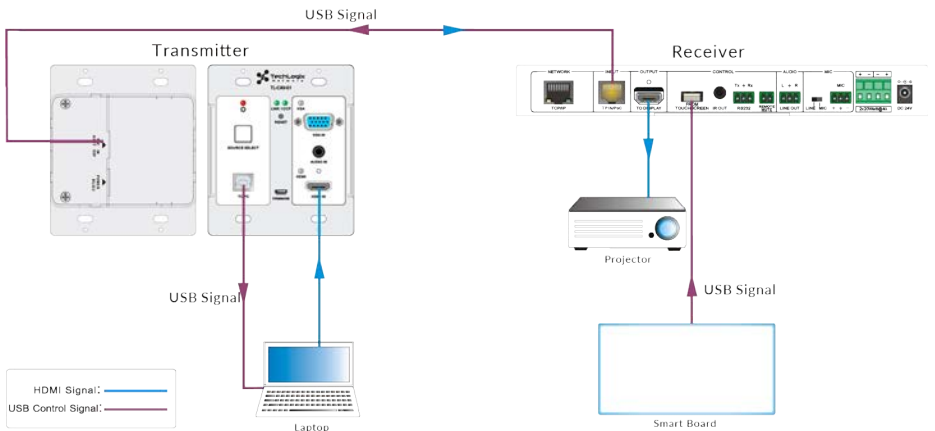


Figure 4-1 Return Path Diagram

Note: The distance between Receiver and interactive display should be within 4m. Otherwise, a special USB control cable should be used.

### 4.4 RS232 control

Receiver provides an additional RS232 interface to connect with a display, and then control it by sending RS232 commands via Web-based GUI. Please refer to [4.6.3 Command Menu](#).

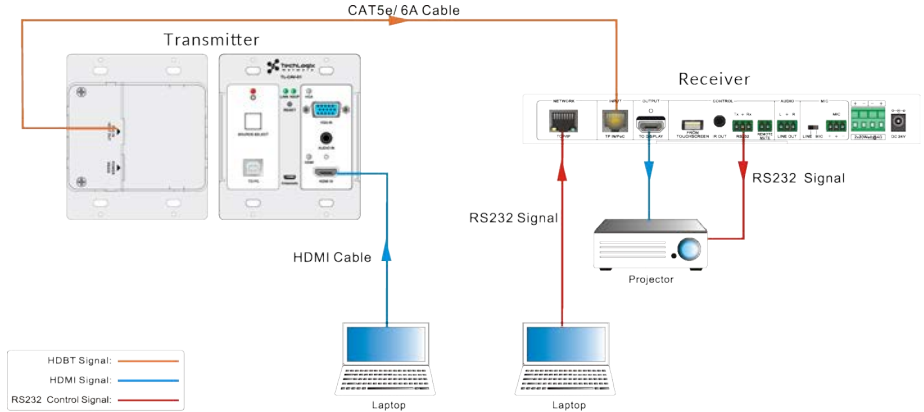


Figure 4-2 RS232 Control Diagram

### 4.5 IR control

Control Panel provides a built-in IR sensor and Receiver provides an **IR OUT** port for IR Emitter to control the display.

In this system, put IR Emitter over the IR sensor of the display. Point the IR remote of display close to built-in IR sensor of Control Panel. The display can be controlled by IR remote via the IR pass-through function.

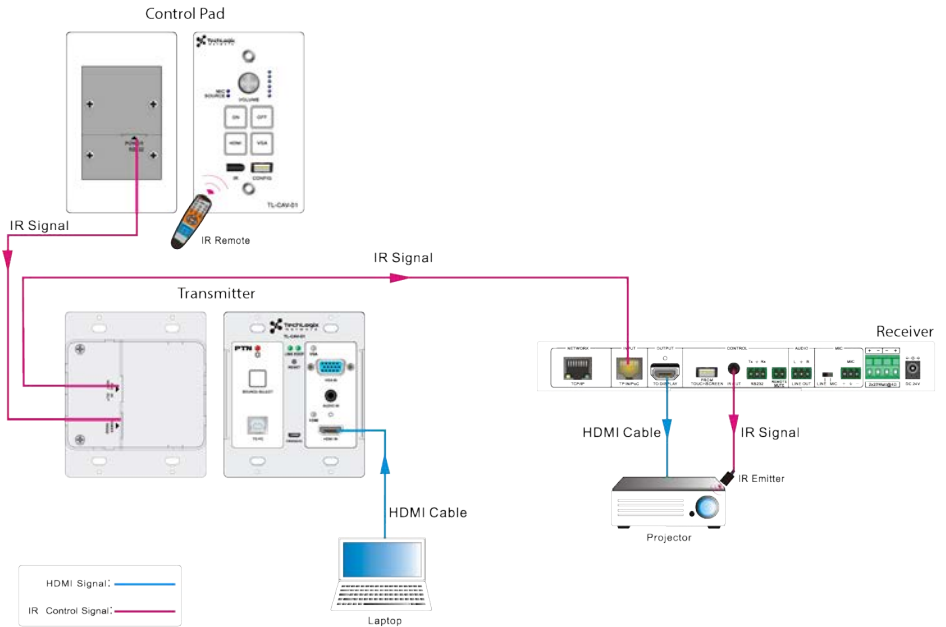


Figure 4-3 IR Control Diagram

## 4.6 Web-based GUI Control

Except button control, USB control, RS232 control, IR control, TL-CAV-01-HDV can be controlled via web-based GUI control. It allows users to interact with TL-CAV-01-HDV through graphical icons and visual indicators.

Connect the **TCP/IP** port of the Receiver to Ethernet port of PC with twisted pair, and then modify the PC's network segment as the same as the TL-CAV-01-HDV's. For example, the IP address of PC can be modified as 192.168.0.177.

Type 192.168.0.178 in your browser, it will enter the log-in interface shown as below:

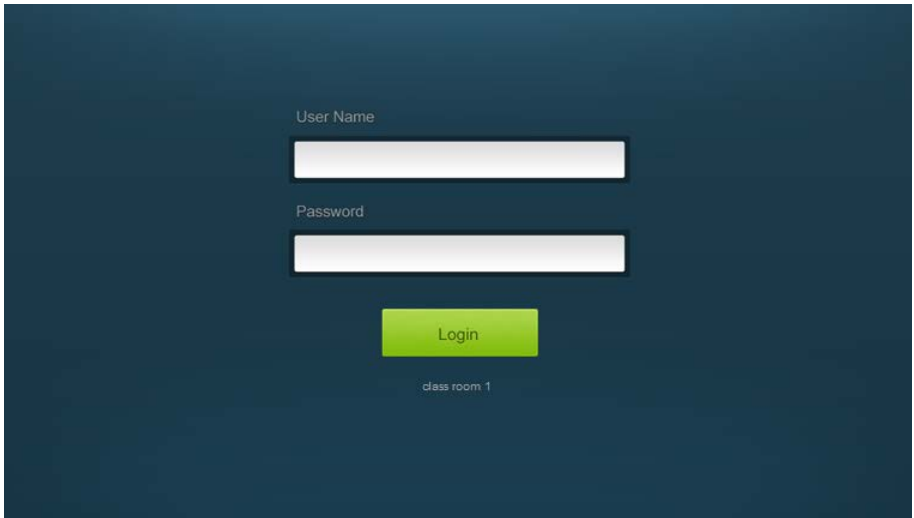


Figure 4-4 Login GUI

There are 2 selectable usernames – admin (default password: admin) and user (default password: user).



Logging in as admin can access more interfaces than user. Here is a brief introduction to these interfaces in administrator mode.

### 4.6.1 Control Menu




In log-in interface, type the username: **admin**, password: **admin**, and then click **Login**, it will show the control menu as shown below:



Figure 4-5 Control Menu

In this interface, you can:

- ✧ Click “HDMI” or “VGA” in the **HDMI & VGA** bar to choose a signal source
- ✧ Click “ON” or “OFF” in the **DISPLAY** bar to turn on or turn off the display device, here is a display.
- ✧ Select “ON” or “OFF” in the **SYSTEM** bar to turn on or turn off system.
- ✧ Adjust the volume of Microphone and signal source by moving slider or clicking the buttons below the slider. Click “Mute” to mute Mic or source sounds; click this button again to unmute.

**Note:** When using an iPad to click the button  or , it is normal behavior that the button  will flash.

#### 4.6.2 Setting Menu

In control menu, click the setting button  in the lower left corner to access the Setting menu as shown in the screenshot below:

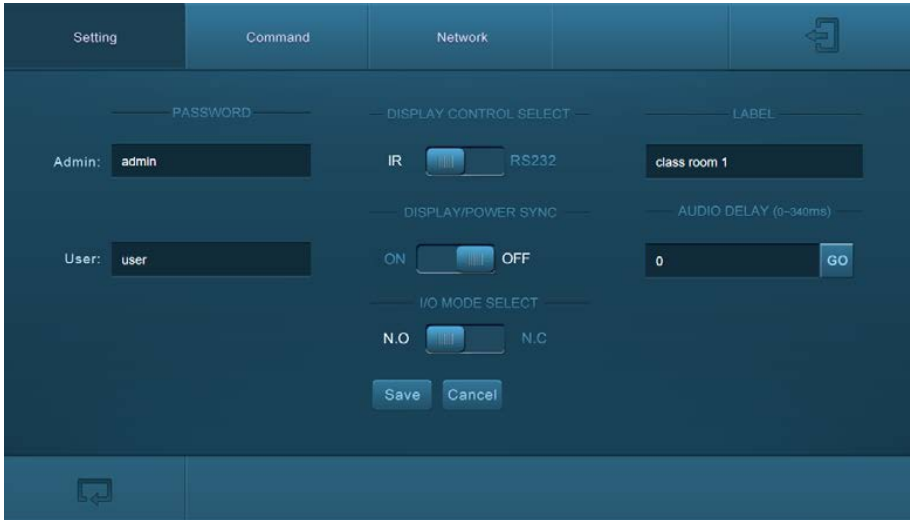


Figure 4-6 Setting Menu

In this interface, you can:

- ✧ Modify the passwords on the left **PASSWORD** bar.
- ✧ Select the control mode for turning on/off display in **DISPLAY CONTROL SELECT** bar, default mode is IR control.
- ✧ Select “**ON**” or “**OFF**” in the **DISPLAY/POWER SYNC** bar to turn on/off the synchronous control mode for display and system. This option is only active if the display is controlled via RS232.
  - ◆ When synchronous control mode is **ON**, press the buttons “**ON**” or “**OFF**” on Control Panel to turn on/off the display and system concurrently
  - ◆ When synchronous control mode is **OFF**, press “**ON**” on Control Panel to turn on display or long-press it to start system, press “**OFF**” to turn off display or long-press it to put this system into standby.
- ✧ Select “**N.O**” or “**N.C**” in the **I/O MODE SELECT** bar to turn on/off the **REMOTE MUTE** port connected Fire Alarm System. Under “**N.O**” mode, when the fire alarm system creates a signal short, the audio output of **HDMI signal source** will be set to mute.
- ✧ Modify the label shown on Log-in interface.
- ✧ Set the **AUDIO DELAY**, and the range is 0~340ms to ensure audio and video signal reach the users simultaneously.

- ✧ Click “**Save**” to save these settings.

### 4.6.3 Command Menu

In setting menu, click “**Command**” to access command menu as shown in the below:

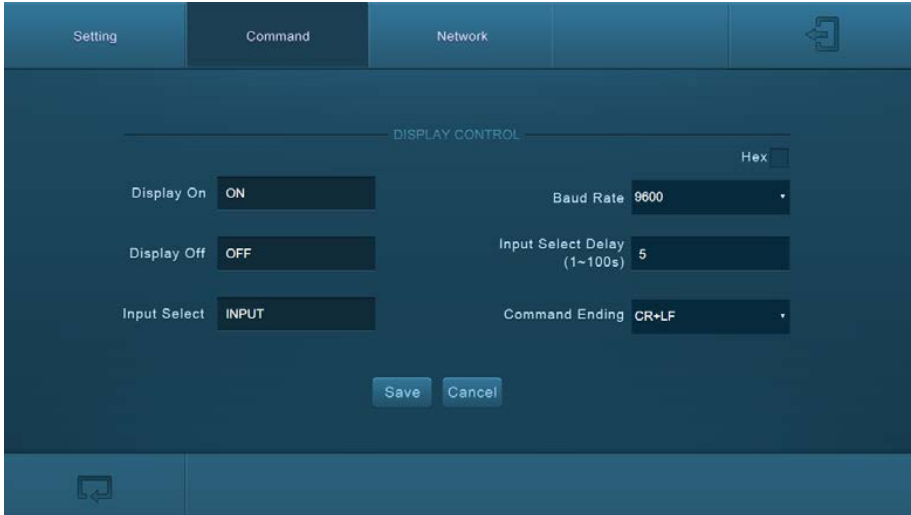


Figure 4-7 Command Menu

In this interface, you can:

- ✧ Enter the commands of display in **Display On/Display OFF/Input Select** box to turn on/turn off display or select signal source.
- ✧ Select the **Hex** checkbox to set the format of commands as hexadecimal. The default is character format.
- ✧ Modify the baud rate, the default value is 9600 and the selectable range is 2400~115200.
- ✧ Set the **Input Select Delay**. The default time is 5 seconds. Send the command typed in **Display ON** box, wait 5 seconds, and then send the command typed in **Input Select** box.
- ✧ Different displays may require a specific command ending, such as a carriage return (CR) or line feed (LF). Please check the device manufacture’s manual and select the appropriate command to broadcast at the end of the RS232 string.
- ✧ Click “**Save**” to save these settings.

**Note:** For more details about commands, please refer to the display’s user manual.



### 4.6.4 Network Menu

Click “Network” to access command menu as shown in the below:

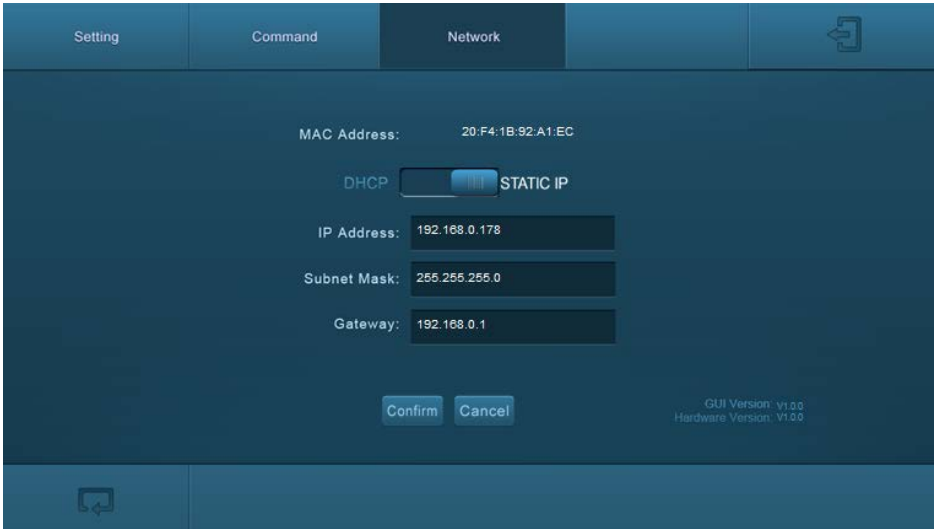


Figure 4-8 Network Menu

In this interface, you can:

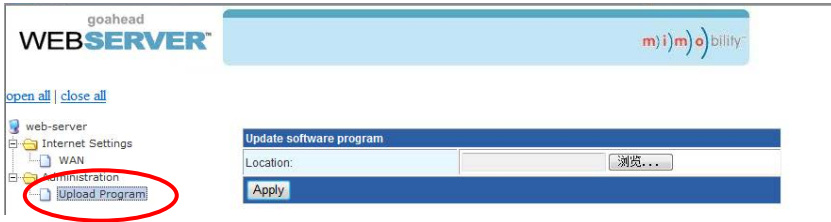
Select dynamic or static IP mode. Under static IP mode, IP address, subnet mask, and gateway can be set. Make sure the IP addresses are different to avoid IP conflict.

While in DHCP mode, if you need to get the IP address, it can be checked via UPNP function.

### 4.6.5 GUI update

GUI for TL-CAV-01-HDV supports online updates at <http://192.168.0.178:100>.

Type the username and password (the same as the GUI log-in settings, modified password will be available only after rebooting) to log in the configuration interface. After that, click Administration at the source menu to get to Upload Program as shown below:



Select the desired update file and press Apply, it will start upgrading then.

## 4.7 Copy and load configuration data

The system IR or RS232 configuration can be copied to a USB thumb drive and loaded into additional systems or be saved as a backup.

### 4.7.1 Copy Configuration Data

- 1) Insert a 4GB or smaller FAT32 formatted thumb drive into the CONFIG port on Control Panel.
- 2) Press “**HDMI 2**” + “**OFF**” simultaneously for three seconds on Control Panel. As soon as the buttons are released, they will light up while the copy is progress.
- 3) Remove the thumb drive from the CONFIG port once the buttons go dark.

### 4.7.2 Load configuration data

- 1) Insert a 4GB or smaller FAT32 formatted thumb drive with saved configuration data into the CONFIG port on Control Panel.
- 2) Press “**HDMI 1**” + “**ON**” simultaneously for three seconds on Control Panel, the blue backlight of buttons will go out while import successfully.
- 3) Remove the thumb drive from the CONFIG port once the buttons go dark.
- 4) Enter the Command Menu via Web GUI, the loaded RS232 commands will be shown, and then press “**Save**” to confirm them.

## 5. Specification

### 5.1 Transmitter

Video Ports			
Input Ports	1 x HDMI, 1 x VGA	Output Port	1 x TP+Power
Input Connectors	19-pin Type A HDMI female	Output Connector	RJ45
Transmission Mode	Twisted Pair		
Control Ports			
1 x USB 1 x Micro USB			
General			
Resolution	1920x1080 (24/25/30/50/60Hz), 1920x1080 (50/60Hz), 1920x1080i (50/60Hz), 1600x900, 1366x768, 1280x720, 1920x1200, 1680x1050, 1440x900, 1360x768, 1280x800, 1600x1200, 1400x1050, 1280x1204, 1024x768, 800x600, 640x480		
Deep Color	24-Bit at 1920x1080 ( 24/25/30/50/60Hz ) 4:4:4; 48-Bit at 1920x1080 ( 50/60Hz ) 4:4:4		
Signal Extension	Up to 30 meters @ 1080p/60 via Cat5e/6a cable.		
Bandwidth	10.2Gbps		
HDMI Standard	Support HDMI1.4 and HDCP1.4		
Temperature	0 ~ 50° C	Reference Humidity	10% ~ 90%
Dimension (W*H*D)	105 x 89 x 44 mm	Weight	242g

## 5.2 Receiver

<b>Video Ports</b>			
Input	1 x TP+Power	Output	1 x HDMI
Input Connector	RJ45	Output Connector	19-pin Type A HDMI female
<b>Audio Ports</b>			
Input	1 x MIC	Output	1 x amplifier (2x20Watt@4Ω) , 1 x analog audio (LINE OUT)
Input Connector	3-pin pluggable terminal block	Output Connector	4-pin pluggable terminal block; 3-pin pluggable terminal block
<b>Control Ports</b>			
1 x USB-A 1 x IR OUT (3.5mm jack) 1 x RS232 (3-pin pluggable terminal block) 1 x TCP/IP (RJ45)			
<b>Other Ports</b>			
1 x REMOTE MUTE(2-pin pluggable terminal block)			
<b>General</b>			
Resolution	1920x1080 (24/25/30/50/60Hz), 1920x1080 (50/60Hz), 1920x1080i (50/60Hz), 1600x900, 1366x768, 1280x720, 1920x1200, 1680x1050, 1440x900, 1360x768, 1280x800, 1600x1200, 1400x1050, 1280x1204, 1024x768, 800x600, 640x480		
Deep Color	24-Bit at 1920x1080 (24/25/30/50/60Hz) 4:4:4; 48-Bit at 1920x1080 (50/60Hz) 4:4:4		
Audio Format	HDMI embedded audio: PCM/Dolby/DTS MIC input audio: PCM/Dolby Digital/DTS/DTS-HD Analog output Audio: PCM		
Signal Extension	Up to 30 meters @ 1080p/60 via Cat5e/6a cable.		
Bandwidth	10.2Gbps		
HDMI Standard	Support HDMI1.4 and HDCP1.4		

Power Supply	DC24V 2.71A	Power consumption	55w (Max)
Temperature	0 ~ 50° C	Reference Humidity	10% ~ 90%
Dimension (W*H*D)	250x 31 x 130 mm	Weight	642g

### 5.3 Control Panel

Specification			
Program Port	1 x Micro USB	Output Port	1 RS232+Power
Others	1 x Knob 4 x buttons (ON, OFF, HDMI, VGA) 1 x IR in-built sensor		
Temperature	0 ~ 50° C	Humidity	10% ~ 90%
Case Dimensions	114x70 x34mm	Weight	140g

## 6. Panel Drawing

### 6.1 Transmitter

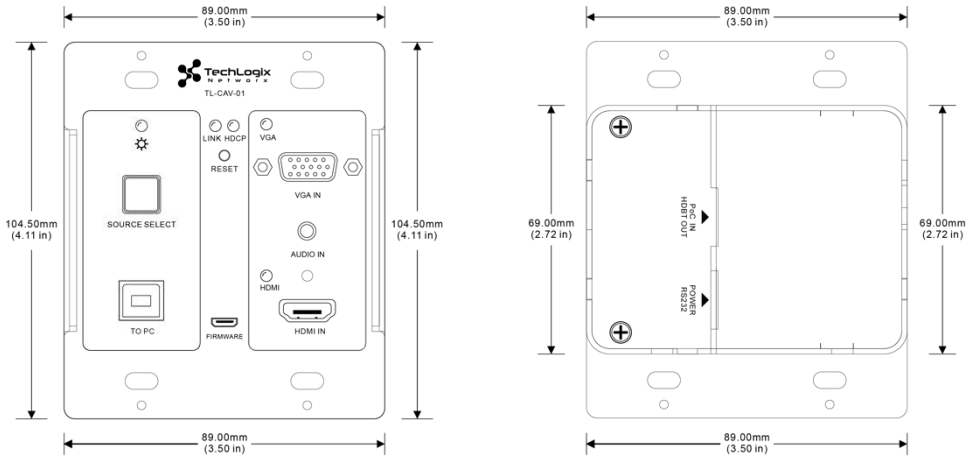


Figure 6-1 Dimension of Transmitter

### 6.2 Receiver

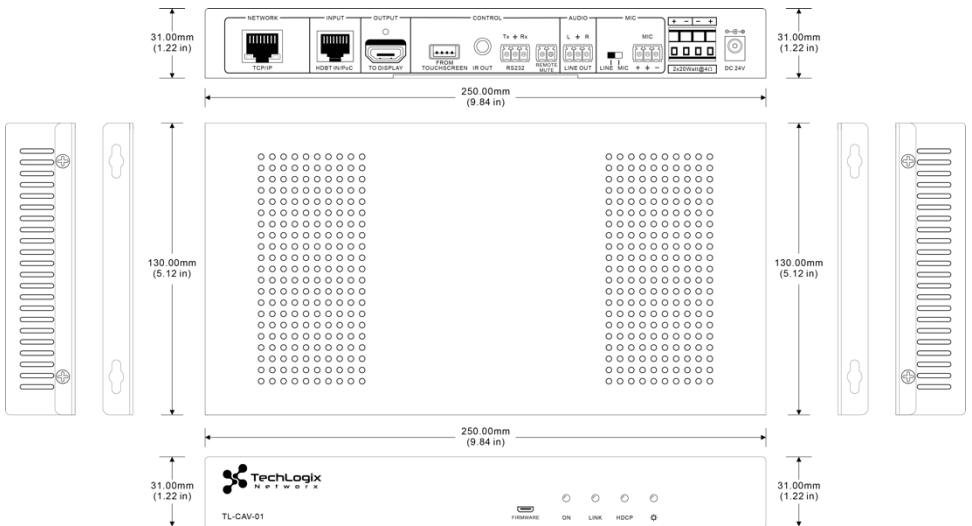


Figure 6-2 Dimension of Receiver

### 6.3 Control Panel

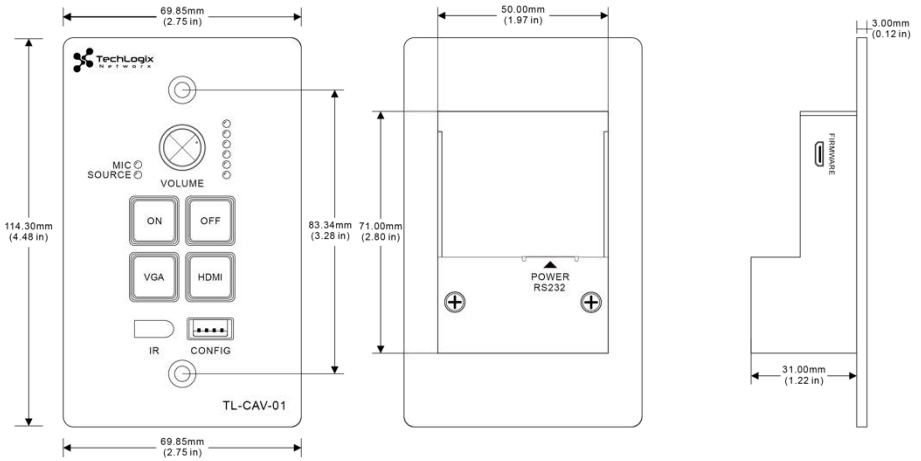


Figure 6-3 Dimension of Control Panel

## 7. Troubleshooting & Maintenance

Problems	Causes	Solutions
No reaction to any operation, power indicator is off	Haven't been powered on.	Insert power adapter to the receiver.
	The poor quality of network cable.	Should the replacement CAT5e/CAT6a cable of high quality.
<b>POWER</b> indicator doesn't work or no respond to any operation	Loose or failed power cord connection	Ensure the power cord connection is good
Color lose or poor picture quality	Signal loss caused by long transmission distance beyond effective value.	Make sure the connecting cable is within 30m and of good quality.
	Bad quality of the HDMI or VGA cable.	Ensure the cables used at source, transmitter, receiver and display are properly connected and are of good quality.
	HDMI cables are too long to transmit high-resolution HDMI signal successfully.	Shorten the length of HDMI cables.
No video output	Communication cables has no connection or bad connection.	Recheck all cables and ports.
	The display that you use is incompatible with this device.	It is recommended that you use mainstream display.
No audio output	Input source and output device are connected to the wrong ports.	Check again and make sure input source and output device are connected correctly.
	Audio output device don't support the audio format.	Change for other output devices that support the audio formats listed in <i>Specifications</i> .



Unable to login to Web-based GUI	The PC's network segment has not been modified.	The PC's network segment need to be set as the same as the TL-CAV-01-HDV's
Static becomes stronger when connecting the video connectors	bad grounding	Check the grounding and make sure it is connected well.
Cannot control the display by control device (e.g. a PC) through RS232 port	Wrong RS232 communication parameters	Make sure the RS232 communication parameters are correct.
Cannot use the device	the device is broken	Send it to authorized dealer for repairing.
Need to reset to factory defaults		Press and hold the On and Off buttons on the wall controller until all LEDs turn off momentarily then turn back on.

If your problem persists after following the above troubleshooting steps, seek further help from authorized dealer or our technical support.

## 8. After-sales Service

If there appear some problems when running this product please check and deal with the problems reference to this user manual. Any transport costs are borne by the users during the warranty.

- 1) **Product Limited Warranty:** We warrant that our products will be free from defects in materials and workmanship for **three years**. Please see warranty page posted on [www.tlnetwork.com](http://www.tlnetwork.com) for more info.
- 2) **What the warranty does not cover:**
  - Warranty expiration.
  - Factory applied serial number has been altered or removed from the product.
  - Damage, deterioration or malfunction caused by:
    - Normal wear and tear
    - Use of supplies or parts not meeting our specifications
    - No certificate or invoice as the proof of warranty.
    - The product model shown on the warranty card does not match with the model of the product for repairing or had been altered.
    - Damage caused by force majeure.
    - Servicing not authorized
    - Any other causes which does not relate to a product defect
  - Delivery, installation or labor charges for installation or setup of the product
- 3) **Technical Support:** Email to our after-sales department or make a call, please inform us the following information about your cases.
  - Product version and name.
  - Detailed failure situations.
  - The formation of the cases.

**Remarks:** For any questions or problems, please try to get help from your local distributor.