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HT-TRK1

Apollo Technology Room Kit

User Manual

Version: 5.1

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Introduction

OVERVIEW

The HT-TRK1 Apollo Technology Room Kit is a turn-key solution for classrooms and training rooms. The solution provides HDMI video switching, system control, video extension and analog audio amplification in a convenient and simple 3-piece kit. Utilizing HDBaseT technology, power, control, video up to 4K@60Hz, and audio are transported over a single Cat6 cable between the wall plate transmitter and the receiver.

The wall plate controller connects to the wall plate transmitter with a since Cat6 cable and allows for remote switching of the sources and volume control from a convenient location. Four total HDMI inputs can be utilized and each can scale inputs up to 4K@60Hz. The wall plate controller and wall plate transmitter are both powered by the receiver over the single Cat6 cable.

The receiver features analog audio de-embedding, a built-in 20W amplifier for stereo (8Ω) or mono (70V), and stereo analog outputs for connection into a larger amplifier or for audio recording. The receiver also supports audio mixing of all available audio signals. The receiver has a built-in Web UI for additional control and the system includes monitoring software allowing for easy multi-room configuration, system monitoring, and firmware updates for all devices.

The receiver also features an integrated Ethernet switch which allows for integration with a LAN network for the receiver and an additional device such as a camera. And with the USB 2.0 connectivity, integration with soft codecs and touch displays is possible.

FEATURES

- 4K Compatibility built on long-range HDBaseT Technology

- Versatile, All-in-One System

- Control and Security

- DSP Mixing Function

- Built-in Audio System

- Power, Video and Control over Cat6a up to 100m

- Simple operation with Web UI

Package Contents

RECEIVER

- 1 x Receiver

- 1 x DC 24V 5A Power Adapter

- 1 x AC Cable with US pins

- 1 x IR Emitter

- 2 x Mounting Brackets

- 4 x Mounting Screws

- 4 x Rubber Feet

- Phoenix Connectors for each port

WALL PLATE TRANSMITTER

- 1 x Transmitter

- 1 x 2-Gang Plastic Decora Plate, White

- 4 x #6-32*20mm Screws, Silver

- 4 x #6-32*7mm Screws, White

CONTROL PANEL

- 1 x Control Panel

- 1 x 2-Gang Plastic Decora Plate, White

- 4 x #6-32*20mm Screws, Silver

- 4 x #6-32*7mm Screws, White

- 1 x Sheet of Pre-printed Button Labels
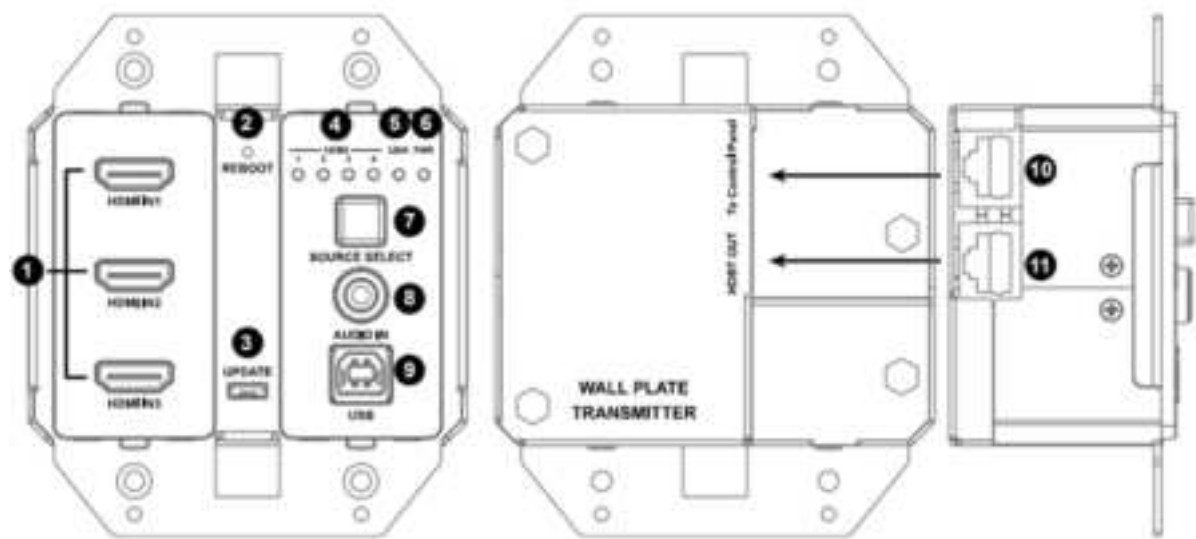
# Product Views

TRANSMITTER

CONTROL PANEL
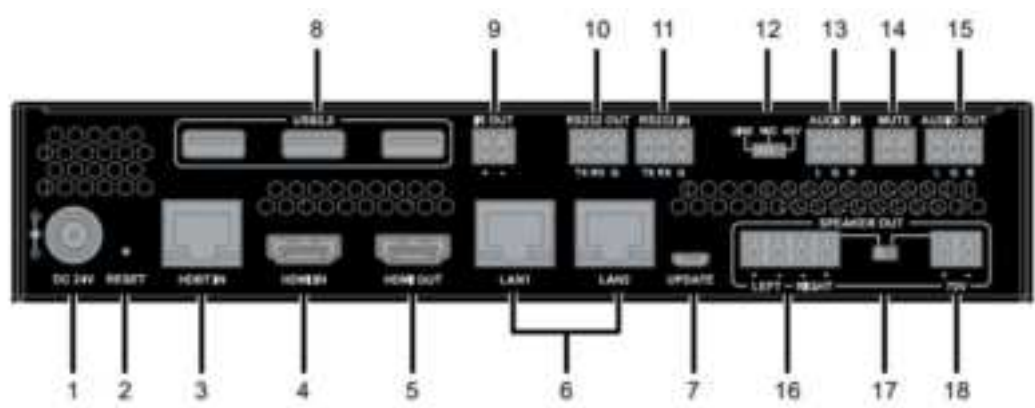
RECEIVER

Connectors & Indicators

TRANSMITTER

ID	Name	Description
1	HDMI IN 1~3	Connect up to three HDMI sources
2	REBOOT	Use a pointed stylus to press the button and reboot the transmitter.
3	UPDATE	Micro USB connection for updating the firmware.
4	HDMI LED	A solid LED shows the source that is selected. HDMI 1~3 are the three inputs on the transmitter; HDMI 4 is the input on the receiver.
5	LINK LED	**On:** The transmitter is connected to the receiver. **Off:** The transmitter is not connected to the receiver.
6	PWR LED	**On:** The transmitter is powered on. **Off:** The transmitter is powered off.
7	SOURCE SELECT	Press to toggle through the 4 inputs.
8	AUDIO IN	3.5mm audio input for stereo audio pass-through.
9	USB	Connect to a USB host, such as a laptop or PC.
10	To Control Panel	Connect to the control panel using Cat5e/6/6a/7 cable.
11	HDBT OUT	Connect to the receiver using Cat5e/6/6a/7 cable.

RECEIVER – FRONT PANEL
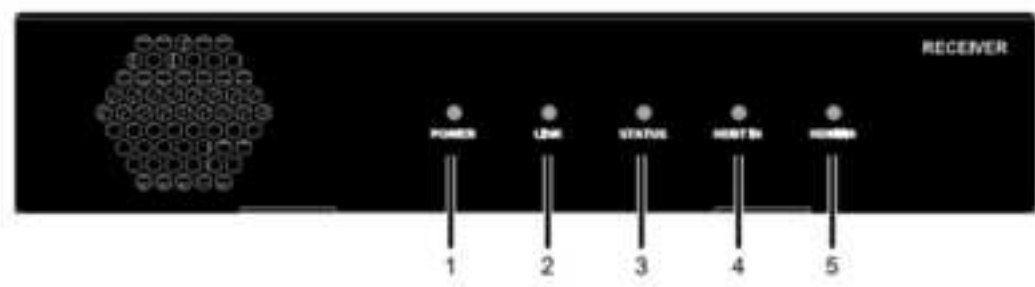
ID	Name	Description
1	POWER LED	**On:** The receiver is powered on. **Off:** The receiver is powered off.
2	LINK LED	**On:** The receiver is connected to the transmitter. **Off:** The receiver is not connected to the transmitter.
3	STATUS LED	**On:** The receiver is working properly. **Off:** The receiver is not working properly.
4	HDBT IN LED	**On:** The HDBT input is selected. **Off:** The HDBT input is not selected.
5	HDMI IN LED	**On:** The HDMI IN on the receiver is selected. **Off:** The HDMI IN on the receiver is not selected.

RECEIVER – REAR PANEL

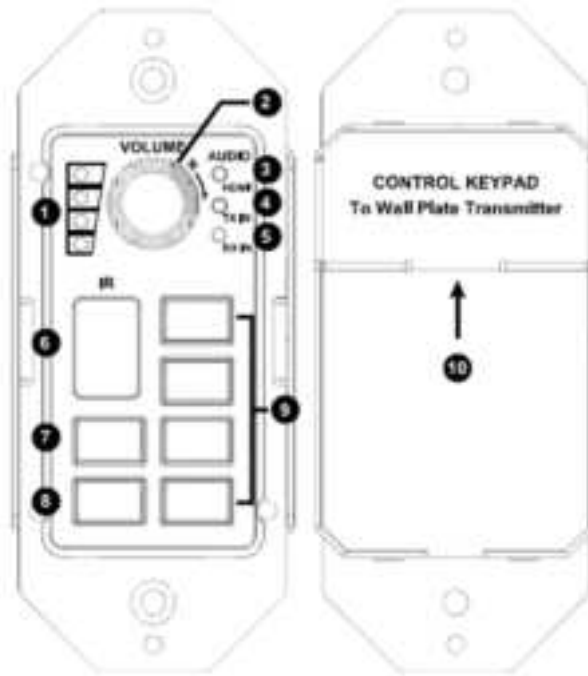| ID	Name	Description
1	DC 24V	Connect to the included DC 24V power adapter.
2	RESET	When the receiver is powered on, use a pointed stylus to hold this button down for three or more seconds to perform a factory reset. The LED indicators will blink quickly, and the transmitter and receiver will reset to factory defaults.
3	HDBT IN	Connect to the transmitter using a Cat5e/6/6a/7 cable.

4	HDMI IN	Connect to an HDMI source.
5	HDMI OUT	Connect to an HDMI display.
6	LAN 1~2	Connect to a LAN and/or a control system for Web UI and Telnet control.
7	UPDATE	Micro USB connection for updating the firmware.
8	USB 2.0	Connect to USB peripheral devices such as keyboard, mouse, touch display, USB camera, etc.
9	IR OUT	Connect to an IR device for IR control out to a display.
10	RS232 OUT	Connect to an RS232-enabled device for RS232 signal pass-through.
11	RS232 IN	Connect to a control PC or control system for serial control of the receiver.
12	LINE/MIC/48V	Selects the signal type connected into the AUDIO IN connector. **Line:** Line-level audio in. **MIC**: Microphone-level audio in. **48V:** Microphone input with 48V phantom power. **Warning:** Before the selector switch is set to position "48V" ensure any line device connected to "AUDIO IN" port has been removed to prevent damage to the line device.
13	AUDIO IN	Connect to an audio device based on the setting of LINE/MIC/48V.
14	MUTE	Connect to a contact closer for muting the audio signal of AUDIO OUT and SPEAKER OUT. **Note:** The kit supports paging which can be configured in the Web UI. In paging mode, only HDMI audio will be muted.
15	AUDIO OUT	Connect to an audio amplifier or other audio input device.
16	LEFT-RIGHT	Connect each to a separate 4Ω/8Ω loudspeaker.
17	Selector Switch	Select the desired speaker output.
18	70V	Connect to the 70V loudspeakers.

CONTROL PANEL

ID	Name	Description
1	Volume LED	Increase the volume and the LEDs will illuminate in gradient from the bottom to the top.
2	Volume Knob	• Turn the volume knob clockwise to increase the audio level; counterclockwise to decrease the audio level • When the audio mixing function is set to off, short press the volume knob to switch among the audio sources: VIDEO, TX IN and RX IN. • When the mixing audio function is set to on, short press the volume knob to select one audio input of the mixing volume or the mixing audio to adjust its audio level.
3	Video LED	**On:** The audio from the selected video source is selected. **Off:** The audio from the selected video source is not selected.
4	TX IN LED	**On:** The AUDIO IN on the transmitter is selected. **Off:** The AUDIO IN on the transmitter is not selected.
5	RX IN LED	**On:** The AUDIO IN on the receiver is selected. **Off:** The AUDIO IN on the receiver is not selected.
6	IR	Receives IR signals from IR remote.
7	On	• Short press the button to power on the display. • Hold press the button for 3 seconds to power on the system. **Note:** When power sync function is set to ON the display and system power on functions will be tied together.
8	Off	• Short press the button to power off the display. • Hold press the button for 3 seconds to power off the system.

		Note: When power sync function is set to ON the display and system power off functions will be tied together.
9	Video 1~4	When a video source is selected, its corresponding selector button will light up. Video 1~3 is for HDMI IN on the transmitter; HDMI 4 is on the receiver.
10	To Transmitter	Connect to the transmitter using Cat5e/6/6a/7 cable.

Installation

INSTALLATION

**Note:** Before installation, please ensure the device is disconnected from the power source.

Steps to install the receiver on a suitable location:

1. Attach the installation bracket to the enclosure using the screws provided in the package.
2. Attach the bracket as shown.
3. Repeat steps 1 and 2 for the other side of the device.
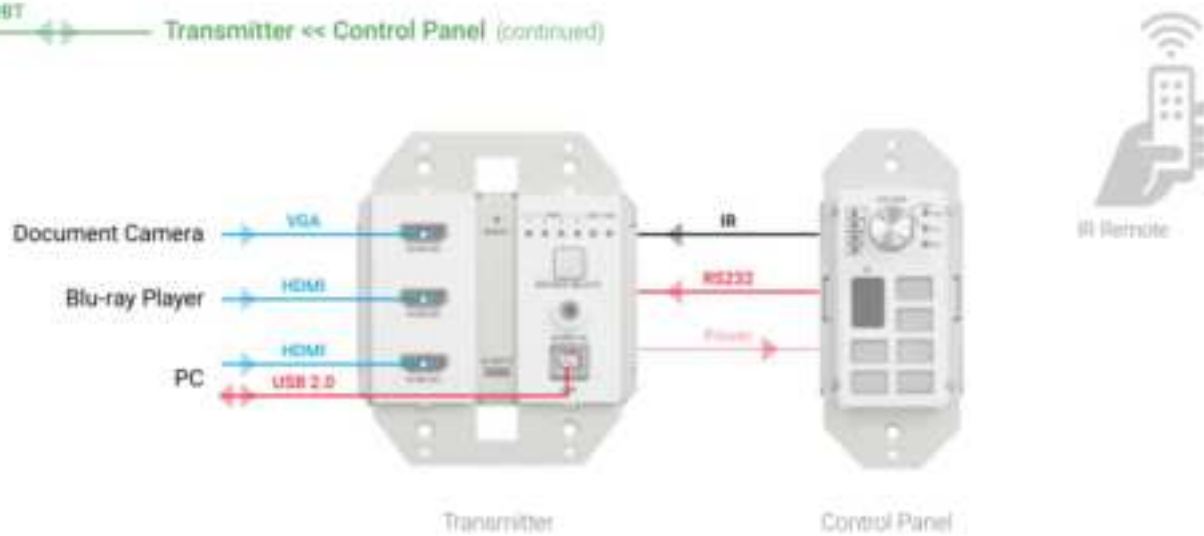4. Attach the brackets to the desired surface (screws provided by others).
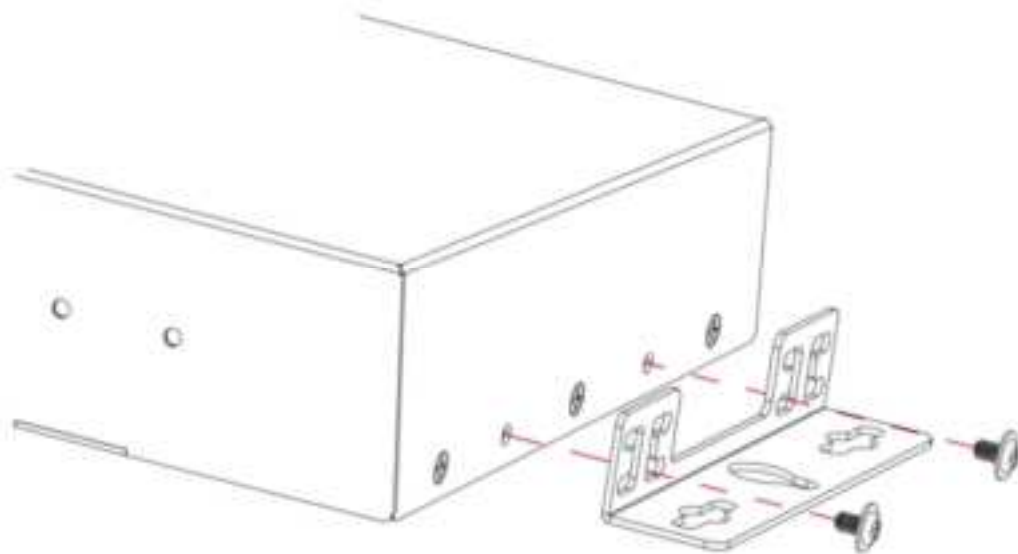
Application Wiring

See diagram for connecting devices.
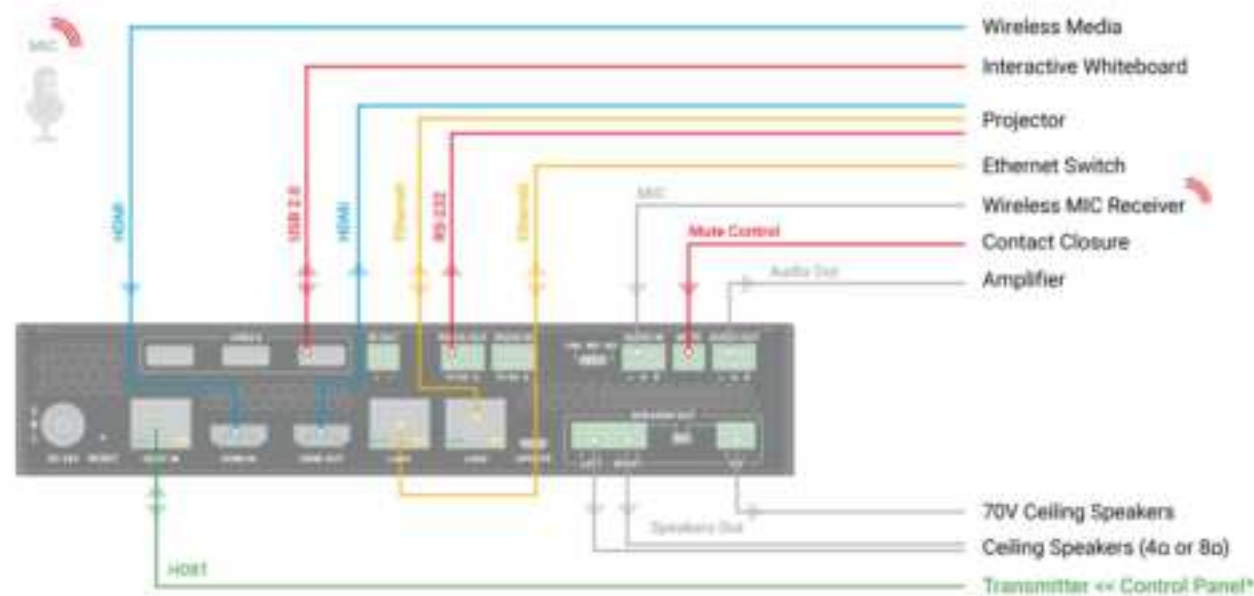
Pinout Information
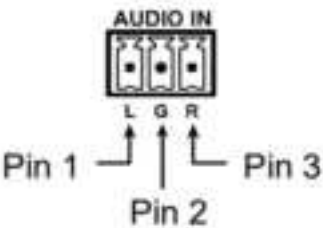
IR OUT

"+" Connects to positive
"-" Connects to negavie

AUDIO IN

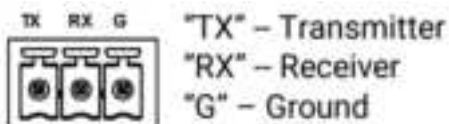The pinout of the Audio In connector may vary based on the selector switch's setting as shown:

NOTE:

1. When in the LINE and 48V settings, the AUDIO IN accepts 1Vrms audio level at max. IF AUDIO IN input signal exceeds the 1Vrms level, there may be audio clipping and distortion.
2. When in the MIC setting, the AUDIO IN accepts 150mVrms audio level at max. If AUDIO IN input signal exceeds the 150mVrms level, there may be audio clipping and distortion.
3. To connect wireless microphones, check if the microphone receiver outputs LINE or MIC level audio signal, and switch accordingly.
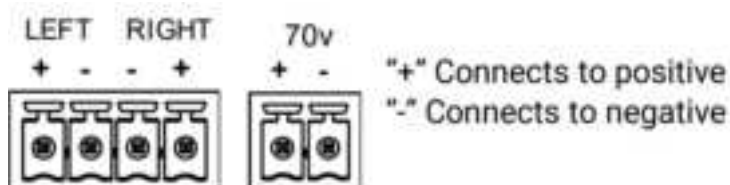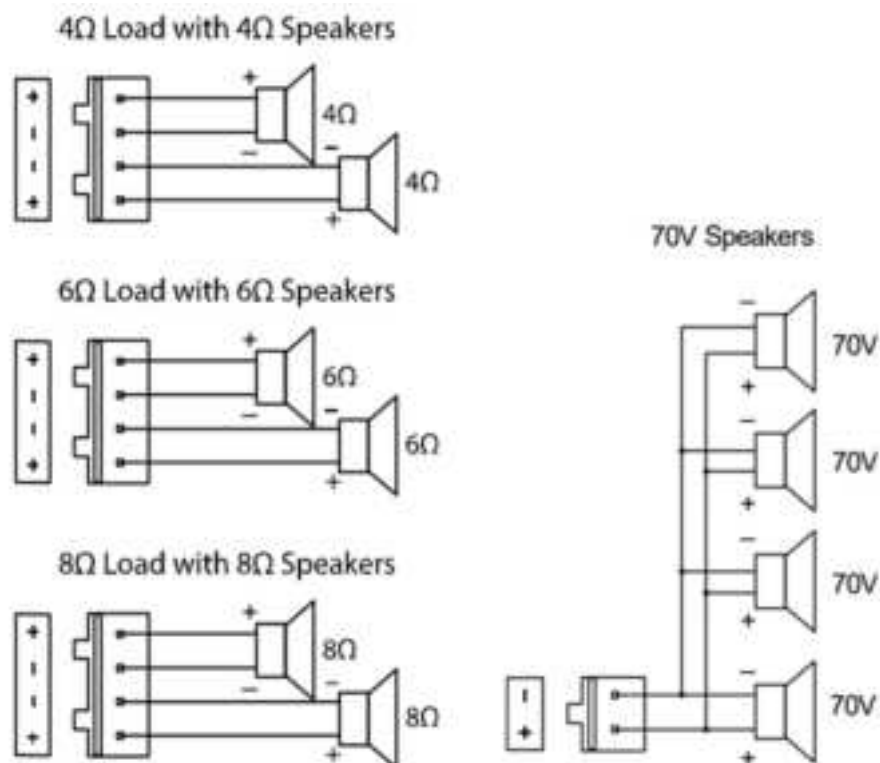
AUDIO OUT

"TX" – Transmitter
"RX" – Receiver
"G" – Ground

RS232

"TX" – Transmitter
"RX" – Receiver
"G" – Ground

SPEAKER OUT

"+" Connects to positive
"-" Connects to negative
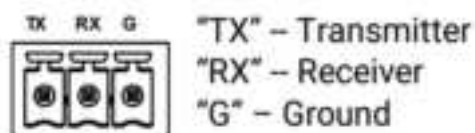
SPEAKER WIRING CONFIGURATIONS

4Ω Load with 4Ω Speakers

6Ω Load with 6Ω Speakers

8Ω Load with 8Ω Speakers

70V Speakers

Auto Switch

This kit supports auto switching among the four HDMI inputs on transmitter and receiver.

1. When multiple sources are inserted, power on all devices, the input will be switched to the active source with the highest priority. The priority is:

   RX HDMI IN > TX HDMI IN 1 > TX HDMI IN 2 > TX HDMI IN 3

2. When a new source is inserted, the input will be switched to it automatically (Last-in-first-out)

3. When the currently selected source is removed, the input will be switched to the last selected source port. If that port has no source inserted, the input will be switched to the active source with highest priority.

OSD

This kit supports OSD (On Screen Display) to display the IP address.

Control

IR LEARNING

The control panel supports IR learning for IR control from the control panel. To do so, perform the following steps:

1. **Step 1: Enter IR Learning Mode**

   Hold press **HDMI 1** button on the control panel for three seconds. The **ON** and **OFF** buttons will light up.

2. **Step 2: Start IR Learning**

   Press any button on the control panel to be controlled and it will start to flash. For example, if you want to have the **ON** button act as the Volume Up button:

   Press the **ON** button and it will start to flash. Point the display remote at the control panel's IR sensor and press the Volume Up button on the remote. The **ON** button on the control panel will stop flashing once IR code is learned.

3. **Step 3: Exit IR Learning Mode**

   Hold press **HDMI 4** button on the control panel for three seconds. The **ON** and **OFF** buttons will go dark and the control panel will be in standard control mode, with the **ON** button now turning the display volume up using IR.

4. **Step 4: Test IR Control on Control Panel**

   To test the volume up, short press the ON buttons on the control panel. Your display should respond to the commands appropriately. If not, repeat the steps.

NOTE: if the **ON** and **OFF** buttons are used for IR control as in the example above, to turn on and off the Technology Room Kit, the **ON** and **OFF** buttons will need to be pressed for three seconds.

RS-232 Control

Advanced users may want to control the Technology Room Kit through RS-232 serial communication. Please refer to the ***HT-TRK1_commands.pdf*** document for instructions and a list of commands.

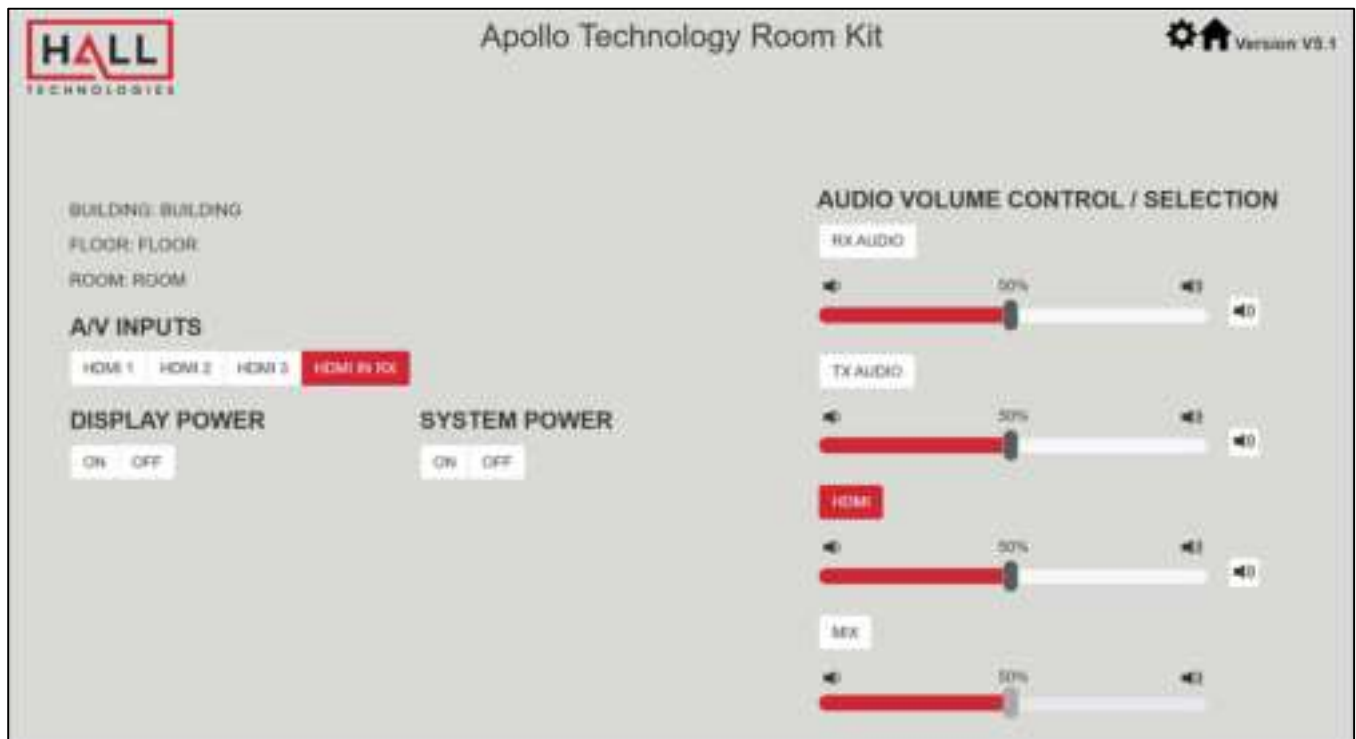| Parameters	Value
Baud Rate	9600 bps
Data Bits	8 bits
Parity	None
Stop Bits	1 bit
Flow Control	None

Web UI

The Web UI designed for the HT-TRK1 allows for basic controls and device settings. This Web UI can be accessed through a modern browser, e.g., Chrome, Safari, Firefox, IE10+, etc.
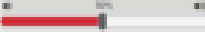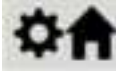
To get access the Web UI:

1. Connect the LAN port of the switcher to a local area network. Ensure there's a DHCP server in the network so that the device can obtain a valid IP address. (If there is no DHCP server the Technology Room Kit will revert to a 169.254.x.x address which you can find on the OSD.)
2. Connect the PC to the same network as the Technology Room Kit.
3. Input the HT-TRK1's IP address in the browser and press Enter, the following window pops up. (See OSD section to easily view the IP address)

4. Input the username and password (default: **admin**) and click **Login** to enter the main control page.

UI Element	Description
Information	Within settings users can change the building name, floor name/number, and room name/number. This information is displayed in the top left corner of the main page.
A/V Inputs	Click to select the desired source to display.
Display Power	**ON/OFF:** Click to turn the display on/off.
System Power	**ON/OFF:** Click to turn the system on/off.
Audio Volume Control / Selection	**Mute:** Click the button to mute/unmute corresponding audio sources.
	Audio Selection: When MIXING function is set to OFF, click to select audio source.
	Level: Increase/Decrease audio.
	Settings: Click to enter advanced settings **Home:** When in advanced settings tab, click home to return to main page. **Firmware:** Shows installed firmware version.

Advanced Settings

NAME/LOCATION

UI Element	Description
BUILDING	Enter the Building Name where the HT-TRK1 is installed.
FLOOR	Enter the Floor Name/Number where the HT-TRK1 is installed.
ROOM NAME/NUMBER	Enter the Room Name/Number where the HT-TRK1 is installed.
APPLY / CANCEL	Click to apply or cancel the changes.

AUDIO MIX

UI Element	Description
MIXING ENABLED	Click to turn mixing enabled on/off. Default setting is OFF. (Image above is enabled to show it in mixing mode, otherwise everything is grayed out.)
DUCK MASTER SELECT	Click the desired input to act as the ducking master. Default is RX IN.
MIXER SETTINGS	Click the desired audio mix and adjust the sliders as desired for the mix.
DUCKING SETTINGS	**Attack Time:** User the slider to adjust the attack time after the ducking master threshold is passed. Default setting is 500ms.
	Release Time: Use the slider to adjust the release time after the ducking master threshold is not exceeded. Default setting is 500ms.
	Ducking Trigger Level: Use the slider to adjust the trigger level of ducking. The lower the level is set, the easier the ducking is triggered.
	Ducking Level: Use the slider to set the volume ratio of the master audio and other audio inputs in mixed audio. The larger the ratio set, the lower the volume of the other audio inputs with the main master audio input.

CONTROL SETTINGS

UI Element	Description
RS232 SETTINGS	**BAUD RATE:** Set the RS232 out baud rate to match the baud rate of the device being controlled. **COMMAND ENDING:** Select between NONE, \r, \n, or \r\n to append to an ASCII command.
TCP/IP SETTINGS	**DEVICE IP ADDRESS:** Enter the IP address of the device being controlled. **PORT:** Select the port of the device being controlled. **COMMAND ENDING:** Select between NONE, \r, \n, or \r\n to append to an ASCII command.
AUDIO MUTE	Select between all audio muted and muted during paging.
VIDEO SWITCHING	Select between Auto or Manual video switching.

COMMANDS

UI Element	Description
BUTTON	Rename buttons in this column.
DELAY (1-10s)	Indicate the desired time of the command delay (in "Double" or "Toggle" modes)
PRESS	**Single:** Pressing the button sends a single command. **Double:** Pressing the button sends two commands. **Toggle:** Pressing the button sends first command. Pressing the button again sends the second command.
TYPE	**TRK1:** Select from standard commands built-in the TRK1 unit. **IR Learned:** Send an IR command based on what was learned on the control unit. **RS232:** Send an RS232 command. **TCP/IP:** Send a command over the network.
COMMAND	Select from built-in commands if TRK1 type is selected, or enter ASCII or HEX command.
AUTO ON / OFF	When TRK1 is selected as Type and the Command is CEC Display Power On, if Auto On is checked and an HDMI signal is detected, CEC trigger will be sent. Same with Auto Off.
LIGHTS A / B	Select between Lights A or Lights B. In each only one button can be illuminated at a time. To have ON and SOURCE illuminated at the same time, set one as A and one as B.
EXPORT/IMPORT	Export the list of commands saved and import into another unit.

EDID / SCALING

UI Element	Description
INPUT EDID	Click the drop-down menu to select a specific EDID. The default input EDID is 3840x2160@30Hz 2CH-no HDR.
OUTPUT RESOLUTION	Click the drop-down menu to select a compatible resolution for the connected display. By default the Output Resolution is set to "auto".
CANCEL / APPLY	Save or cancel the setting changes.

NETWORK

| UI Element	Description
DHCP	When enabled, the IP address of the kit is assigned automatically by the DHCP server. Default setting is DHCP.
STATIC	When the kit fails to obtain an IP address from the network, select Static as the mode.
CANCEL / APPLY	Save or cancel the setting changes.

PREFERENCES

UI Element	Description
INPUT NAME	Change the input names of inputs 1 ~ 4.
PASSWORD	Change the password of the user and admin. Default for admin is "admin" and default for user is "user".
AUDIO INPUT NAME	Change the audio input names.
CANCEL / APPLY	Save or cancel the setting changes.
CUSTOM WEB UI LOGO	Click "Upload" to select a PNG image from a local PC to upload. This image must be in PNG format with a resolution of 292x80 pixels.

FIRMWARE UPGRADE

UI Element	Description
VERSION INFO	Displays the loaded firmware version.
SYSTEM	Click to reboot or factory reset the unit.
ARM UPGRADE	Click browse for the .bin file and click upgrade to start the upgrade. A pop-up will appear letting the user know it will take about 8 minutes to upgrade. **NOTE:** all devices need to be connected during firmware upgrade.
MCU UPGRADE	Click browse for the MCU upgrade in .zip format. A status bar will indicate how much of the firmware has been loaded. **NOTE:** all devices need to be connected during firmware upgrade.

Specifications

Technical	
Audio/Video Inputs	**Transmitter:** 3 x HDMI, 1 x 3.5mm Audio **Receiver:** 1 x HDMI, 1 x HDBT, 1 x Audio (Phoenix), 1 x RS-232 (Phoenix), 1 x Mute (Phoenix), 2 x LAN **Control Panel:** None
Audio/Video Outputs	**Transmitter:** 1 x HDBT **Receiver:** 1 x HDMI, 1 x Stereo (8Ω) or Mono (70V) Speaker (Phoenix) **Control Panel:** None
Control I/O:	**Transmitter:** 1 x USB Type-B Host, 1 x Micro USB Firmware Update, 1 x RJ45 (to Control Panel) **Receiver:** 3 x USB 2.0 Type-A, 1 x IR OUT (Phoenix), 1 x RS-232 OUT (Phoenix), 1 x RS-232 IN (Phoenix), 1 x Mute (Phoenix), 2 x LAN, 1 x Micro USB Firmware Update **Control Panel:** 1 x RJ45 (to Transmitter)
Interfaces	**Transmitter:** 1 x Source Select Button, 1 x Reboot Button **Receiver:** 1 x Audio Level Selector Switch, 1 x Speaker Output Selector Switch, 1 x Reset Button **Control Panel:** 4 x Source Selector Buttons, 2 x Power Buttons, 1 x Volume Knob
Input Signal Type	**Transmitter:** HDMI with 4K@60Hz YUV 4:2:0, HDCP2.2 **Receiver:** HDMI with 4K@60Hz YUV 4:4:4, HDCP2.2
Input Resolution Supported	**Transmitter HDMI In:** **VESA:** 1920×1200^{8} | 1680×1050^{8} | 1600×1200^{8} | 1600×900^{8} | 1440×900^{8} | 1366×768^{8} | 1360×768^{8} | 1280×1024^{8} | 1280×960^{8} | 1280×800^{8} | 1280×768^{8} | 1024×768^{8} | 800×600^{8} **SMPTE:** $4096\times2160^{2,3,5,8*}$ | $3840\times2160^{2,3,5,8*}$ | $1920\times1080P^{6,7,8}$ | $1280\times720P^{6,7,8}$ **Receiver HDMI In:** **VESA:** 1920×1200^{8} | 1680×1050^{8} | 1600×1200^{8} | 1600×900^{8} | 1440×900^{8} | 1366×768^{8} | 1360×768^{8} | 1280×1024^{8} | 1280×960^{8} | 1280×800^{8} | 1280×768^{8} | 1024×768^{8} | 800×600^{8} **SMPTE:** $4096\times2160^{2,3,5,8}$ | $3840\times2160^{2,3,5,8}$ | $1920\times1080P^{6,7,8}$ | $1280\times720P^{6,7,8}$ 1 = @23.98Hz, 2 = @24Hz, 3 = @25Hz, 4 = @29.97Hz, 5 = @30Hz, 6 = @50 Hz, 7 = @59.94Hz, 8 = @60Hz, * = 4:2:0
Output Resolution Supported	**VESA:** 1920×1200^{8} | 1680×1050^{8} | 1600×1200^{8} | 1600×900^{8} | 1440×900^{8} | 1366×768^{8} | 1360×768^{8} | 1280×1024^{8} | 1280×960^{8} | 1280×800^{8} | 1280×768^{8} | 1024×768^{8} | 800×600^{8} **SMPTE:** $4096\times2160^{2,3,5,6,8}$ | $3840\times2160^{2,3,5,6,8}$ | $1920\times1080P^{6,8}$ | $1280\times720P^{6,8}$ 1 = @23.98Hz, 2 = @24Hz, 3 = @25Hz, 4 = @29.97Hz, 5 = @30Hz, 6 = @50 Hz, 7 = @59.94Hz, 8 = @60Hz **Note:** Built-in scaler cannot output resolutions with Deep Color, HDR and 4:2:2/4:2:0 color space.
Audio Format	• HDMI In/Out: Stereo • Audio In & Mic/Line In: Stereo • Audio Out & 4Ω/8Ω Speaker Out: Stereo • 70V Speaker Out: Mono
Maximum Data Rate	**Transmitter:** HDMI In, HDBT Out: 10.2Gbps

	Receiver: HDBT In: 10.2Gbps HDMI In & HDMI Out: 18Gbps
Control Method	Control panel, Button on transmitter, LAN control (Web UI/Telnet), RS-232

Transmission Distance

Cat5e	100m/330ft	Up to 1080P@60Hz 36bpp
	90m/295ft	1080P@60Hz 48bpp
Cat6/6a/7	100m/330ft	1080P@60Hz 3D 4k@30Hz 4:4:4 24bpp 4k@30Hz 4:2:0 24bpp
HDMI	Input: 15m/50ft Output: 10m/33ft	1080P@60Hz 24bpp
	Input/Output: 10m/33ft	4K@30Hz 4:4:4 24bpp 4K@30Hz 4:2:0 24bpp
	Input: 5m/16ft Output: 3m/10ft	4K@30Hz 4:4:4 24bpp

General

Operating Temperature	0°C ~ 45°C (32°F to 113°F), 10% to 90%, non-condensing
Storage Temperature	-20°C ~ 70°C (-4°F to 158°F), 10% to 90%, non-condensing
ESD Protection	Human-body Model: ±8kV (Air-gap discharge) / ±4kV (Contact discharge)
Power Supply	DC 24V 5A
Power Consumption (Max)	81W
Dimension (Width x Height x Depth)	**Transmitter:** 89mm x 105.6mm x 43mm | 3.5" x 4.16" x 1.69" **Receiver:** 215mm x 42mm x 160.2mm | 8.46" x 1.65" x 6.31" **Control Panel:** 45mm x 105.6mm x 28.7mm | 1.77" x 4.16" x 1.13"
Weight	**Transmitter:** 0.3kg | 0.66lb **Receiver:** 1.43kg | 3.15lb **Control Panel:** 0.16kg | 0.35lb

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