



Tekvox SCU21T-KVM USB C Switcher and HD BaseT Receiver User Manual

[Home](#) » [TEKVOX](#) » Tekvox SCU21T-KVM USB C Switcher and HD BaseT Receiver User Manual 

TEKVOX

SCU21T-KVM
79121-KVM User Manual
SCU21T-KVM
4K 2x1 HDMI/USB-C Switcher
& HDBaseT Receiver



All Rights Reserved
Version: 79121-KVM_2023V1.1
www.tekvox.com

Preface

Read this user manual carefully before using the product. Pictures shown in this manual are for reference only. Different product model specifications may vary.

This manual is only for operation instruction, please contact the local distributor for maintenance assistance. The functions described in this version were updated February, 2023. In order to continue improving the product, we reserve the right to make function or parameter changes without notice or obligation. Please refer to the dealers for the latest details.

Contents

- 1 FCC Statement
- 2 Safety Precautions
- 3 Product Introduction
- 4 Specifications
- 5 Panel Description
- 6 EDID Management
- 7 GUI Control
- 8 RS232 Control
- 9 System Connection
- 10 Panel Drawing
- 11 Documents / Resources
 - 11.1 References

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 ensure the best performance 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
- Do not dismantle the housing or modify the module (electrical shock or burn hazard)
- 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 or moisture, or install this product near water
- Do not put any heavy items on the product's power cable
- Do not remove the housing of the device, as opening or removing the housing may expose you to dangerous

voltages or other hazards

- Install the device in a place with sufficient ventilation to avoid damage caused by overheating
- 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

Product Introduction

TEKVOX's SCU21T-KVM is a 4K 2×1 HDMI/USB-C switcher with simultaneous HDMI and HDBaseT video outputs, audio de-embedding, and automatic source detection & switching. The switcher is capable of transmitting 4K video, audio, RS232 control, bi-directional 48V PoC, USB camera/microphone feeds, and Ethernet LAN up to 100m (328ft) via HDBaseT. Connected user laptops can access and use any USB devices connected to the DEVICE ports on either the switcher or its receiver, and the USB-C input supports up to 60W charging for connected devices.

With its streamlined yet versatile design, the SCU21T-KVM is the perfect switcher for sophisticated, modern video conferencing in any space and any application.

1.1 Features

- HDMI and USB-C (with 60W charging) video inputs
- USB-B and USB-C USB hosts for video conferencing and touchscreen connection
- Supports 4Kx2K@60Hz 4:4:4 resolutions, HDR10
- Supports automatic source detection and switching
- Controllable via RS232, CEC, or front panel buttons
- Simultaneous HDMI and HDBaseT video outputs
- 100m (328ft) HDBaseT transmission with bi-directional 48V PoC

Specifications

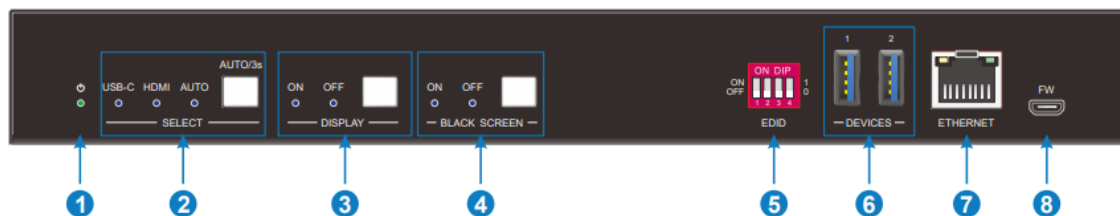
	Transmitter	Receiver
Video		
Inputs	1x HDMI (19-pin, Type-A, Female) 1x USB-C (Type-C, Female)	1x HDBaseT (RJ45, Female)
Input Resolution	HDMI: Up to 4Kx2K @ 60Hz 4:4:4, HDR10, Dolby Vision USB-C: Up to 4Kx2K @ 60Hz 4:4:4	Up to 4Kx2K @ 60Hz 4:2:0
Outputs	1x HDMI (19-pin, Type-A, Female) 1x HDBaseT (RJ45, Female)	1x HDMI (19-pin, Type-A, Female)
Output Resolution	HDMI: Up to 4Kx2K @ 60Hz 4:4:4, HDR10, Dolby Vision HDBaseT : Up to 4Kx2K @ 60Hz 4:2:0	Up to 4Kx2K @ 60Hz 4:4:4, HDR10, Dolby Vision
Compliances	HDMI: Up to 2.0b HDCP: Up to 2.2	
Audio		
Audio Output	1x Balanced Stereo (5-pin terminal block)	1x Balanced Stereo (5-pin terminal block)
Audio Format	PCM 2.0	
Frequency Response	20Hz — 20kHz, ±3dB	
Maximum Output Level	0.88VRMS ±0.5dB	
Total Harmonic Distortion + Noise (THD+N)	< 0.05% (-80 dB), 20 Hz — 20 kHz bandwidth, 1 kHz sine at 0 dBFS level (or max level)	
Signal-to-Noise Ratio (SNR)	> 80dB, 20Hz — 20kHz bandwidth	
Crosstalk Isolation	< -80dB, 10kHz sine at 0dBFS level (or max level before clipping)	
L-R Level Deviation	< 0.3dB, 1 kHz sine at 0dBFS level (or max level before clipping)	
Output Load Capability	1k Ω and higher (supports 10x parallel 10k Ω loads)	

Noise Level	> 70dB @ 1kHz	
Control		
Control Ports	1x EDID Switch (4-pin DIP switch) 2x DEVICES (USB 3.0, Type-A, Female) 1x ETHERNET (RJ45, female) 1x Firmware (Micro-USB, Female) 1x HOST (USB 3.0, Type-B, Female) 2x GR (3-pin terminal block) 2x RS232 (3-pin terminal block) 1x TCP/IP (RJ45, Female)	3x DEVICES (USB 2.0, Type-A, Female) 1x DEVICES (USB 2.0, Type-C, Female) 1x ETHERNET (RJ45, Female) 1x RS232, 3-pin terminal block)
General		
Operating Temperature	23 ~ 131°F (-5 ~ 55°C)	
Storage Temperature	-13 ~ 158°F (-25 ~ 70°C)	
Operating Humidity	10 ~ 90%, non-condensing	
Power Supply	Input: AC 100 ~ 240V, 50/60Hz Output: DC 24V, 5A	48V Power-over-Cable (PoC)
Transmission Distance	328 feet (100m)	
Bandwidth	18Gbps	
Power Consumption	76.5W (max)	
USB-C Charging Power Delivery	60W (max)	
Product Dimensions	10.4" (265mm) x 5.9" (150mm) x 1.3" (32mm)	6.8" (173mm) x 3.7" (95mm) x 0.96" (24.5mm)
Product Weight	2.25lbs. (1020g)	0.9lbs. (410g)

Panel Description

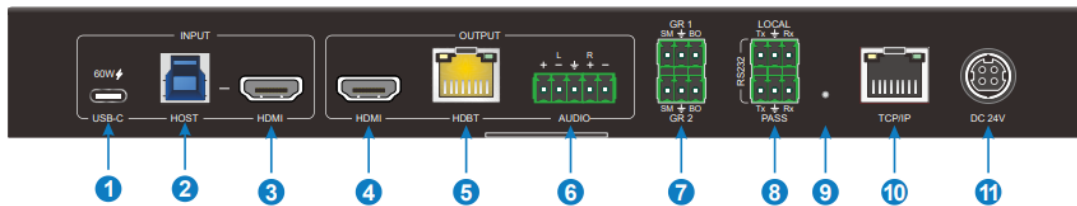
3.1 Transmitter

3.1.1 Front Panel



No.	Name	Description
1	Power LED	1x green indicator light; light is always on when the switcher has power and is working normally, and goes out when power is off
2	SELECT	1x white non-backlit button, 3x blue indicator lights Press the button to change input source (HDMI or USB-C); press and hold for at least 3 seconds to toggle auto-switching mode The indicator light of the selected source will always be on
3	DISPLAY	1x white non-backlit button, 2x blue indicator lights Press the button to send the DISPLAY ON/OFF CEC and RS232 commands to the TX and RX terminals switches The indicator light for the display's current state will always be on
4	BLACK SCREEN	1x white non-backlit button, 2x indicator lights Press the button to temporarily suppress video output (shows a black screen) The indicator light for the video output's current state will always be on
5	EDID	1x 4-pin DIP switch for EDID management
6	DEVICES	2x USB 3.0 for connecting a camera, microphone, or other equipment
7	ETHERNET	1x RJ45 used for network passthrough transmission via HDBaseT
8	FW	1x Micro-USB for MCU firmware upgrades

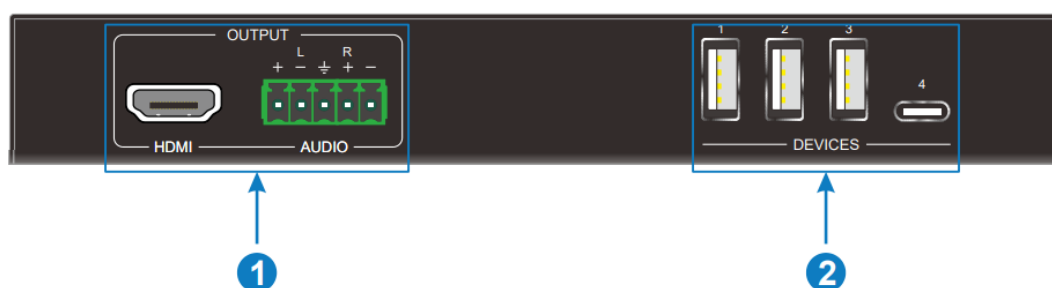
3.1.2 Rear Panel



No.	Name	Description
1	USB-C	1x USB-C 3.0 input; supports 60W charging for connected devices
2	HOST	1x USB 3.0 port for connecting to HOST devices (such as a laptop)
3	HDMI IN	1x HDMI input for connecting to HOST devices (such as a laptop)
4	HDMI OUT	1x HDMI loop output
5	HDBASET	1x HDBaseT output The green indicator light is always on when HDCP is detected, and flashes when an input signal without HDCP is detected The yellow indicator light is always on when the TX and RX are properly connected
6	AUDIO OUT	1x 5-pin balanced stereo audio output for audio de-embedding
7	Grommet	GR1 corresponds to the USB-C input GR2 corresponds to the HDMI input SM : Switches to the corresponding video input source BO : Temporarily suppresses video output (outputs a black screen) on the corresponding video input source
8	RS232	LOCAL : For connecting control devices to control the transmitter PASS : Bi-directional passthrough transmission via HDBaseT
9	Upgrade	1x Firmware Upgrade button Press and hold for 3 seconds to enter Upgrade Mode, and the power indicator will start flashing; users can then upgrade the unit's firmware via the RS232 port Press again to exit Upgrade Mode
10	TCP/IP	1x RJ45 for TCP/IP control
11	DC 24V	Connect DC 24V, 5A power adapter

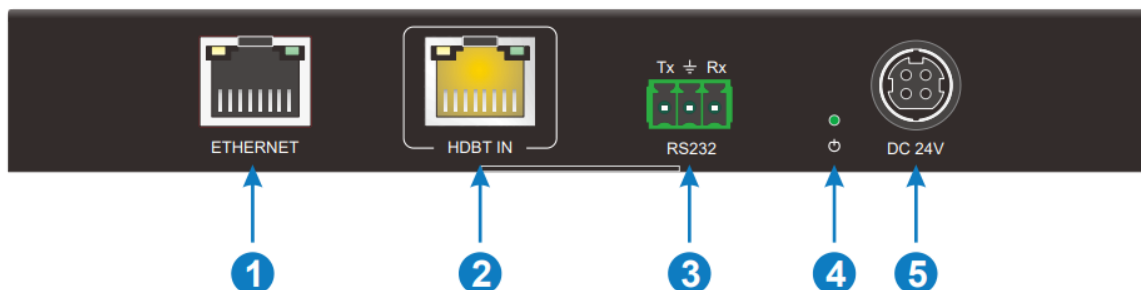
3.2 Receiver

3.2.1 Front Panel



No.	Name	Description
1	OUTPUT	1x HDMI Output 1x 5-pin balanced stereo audio output for audio de-embedding
2	DEVICES	2x USB-A 2.0, 1x USB-C for connecting a keyboard, mouse, camera, microphone, or other equipment

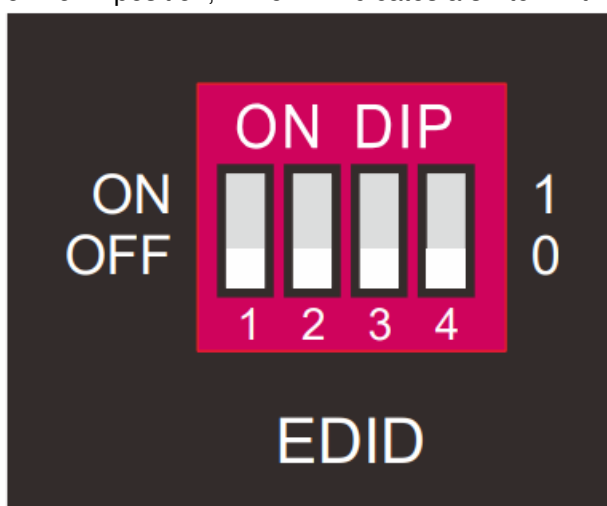
3.2.2 Rear Panel



No.	Name	Description
1	ETHERNET	1x RJ45 for network passthrough transmission via HDBaseT
2	HDBT IN	1x RJ45 HDBaseT input The green indicator light is always on when HDCP is detected, and flashes when an input signal without HDCP is detected The yellow indicator light is always on when the TX and RX are properly connected
3	RS232	1x 3-pin connector for RS232 passthrough transmission via HDBaseT
4	Power LED	1x green indicator light; always on when receiver has power and is working normally
5	DC 24V	Connect DC 24V, 5A power adapter

EDID Management

EDID settings for the switcher are controlled by the EDID DIP switches as described below. In the following table, “0” indicates a switch in the Off or Down position, while “1” indicates a switch in the ON or UP position.



DIP Switch Position	EDID Behavior
0000	Switcher will automatically read the EDID of the transmitter and receiver HDMI outputs, and set its EDID to the lower of the two. If EDID cannot be detected, the switcher will default to 1920×1080@60 8bit Stereo.
0001	1920×1080 @ 60Hz 8-bit High Definition Audio
0010	3840×2160 @ 60Hz Deep Color Stereo Audio
0011	3840×2160 @ 30Hz 8-bit Stereo Audio
0100	3840×2160 @ 30Hz Deep Color High Definition Audio
0101	3840×2160 @ 60Hz 4:2:0 Deep Color Stereo Audio
0110	3840×2160 @ 60Hz Deep Color High Definition Audio
0111	3840×2160 @ 60Hz Deep Color HDR LPCM 6CH
1011	Custom EDID1
1100	Custom EDID2
1101	Custom EDID3
1110	Custom EDID4
1111	EDID Management

GUI Control

The SCU21T-KVM can be controlled via TCP/IP protocols. The default IP settings are:

IP Address: 132.168.0.178

Subnet Mask: 255.255.255.0

Gateway: 192.168.0.1

Type the IP address of the switcher into a web browser on the control PC to open the web GUI login page.

Username: admin

Password: admin

Enter the username and password, then click “Login” to open the web GUI.

5.1 Video Tab



Select HDMI or USB-C as the active video input source, or toggle Auto-Switching mode

5.2 Configuration Tab

5.2.1 EDID



Choose the desired EDID format, or define a custom EDID setting

5.2.2 Auto-Downscaling

The screenshot shows the 'Configuration' menu with the following options: Video, Configuration (selected), CEC, RS232, Network, and Access. Below the menu, there are four radio buttons: EDID, Auto Downscale (selected), HDCP, and Tags. A dashed line separates this section from the next. Below the line, there are two columns: 'Enable' and 'Disable'. Under 'Enable', there are two rows: 'Tx Output' and 'Rx Output', both with blue circles. Under 'Disable', there are two rows: 'Tx Output' and 'Rx Output', both with black circles. At the bottom, there is a 'Confirm' button.

Enable or disable automatic down-scaling for the transmitter and receiver video outputs

5.2.3 HDCP

The screenshot shows the 'Configuration' menu with the following options: Video, Configuration (selected), CEC, RS232, Network, and Access. Below the menu, there are four radio buttons: EDID, Auto Downscale, HDCP (selected), and Tags. A dashed line separates this section from the next. Below the line, there are two columns: 'Source' and 'Display'. Under 'Source', there are two rows: 'Tx Output Follow' and 'Rx Output Follow', both with blue circles. Under 'Display', there are two rows: 'Tx Output Follow' and 'Rx Output Follow', both with black circles. At the bottom, there is a 'Confirm' button.

Choose whether to have the HDCP for the transmitter and receiver follow the source or display

5.2.4 Tags

The screenshot shows the 'Configuration' menu with the following options: Video, Configuration (selected), CEC, RS232, Network, and Access. Below the menu, there are four radio buttons: EDID, Auto Downscale, HDCP, and Tags (selected). A dashed line separates this section from the next. Below the line, there are two columns: 'Input' and 'Output'. Under 'Input', there are two rows: 'USB-C' and 'HDMI', each with a text box containing 'USB-C' and 'HDMI' respectively. Under 'Output', there are two rows: 'Tx Output' and 'Rx Output', each with a text box containing 'Tx Output' and 'Rx Output' respectively. At the bottom, there is a 'Confirm' button.

Customize the tags for the HDMI and USB-C inputs, and for the transmitter and receiver HDMI outputs

5.3 CEC Tab

5.3.1 Input



Click to send the corresponding CEC command to the device connected to the HDMI input

5.3.2 Output



Click to send the corresponding CEC command to the device connected to either the transmitter or receiver's HDMI output.

5.3.3 User-Defined

Define custom CEC commands to send to either the transmitter or receiver's HDMI inputs or outputs. Click "Send" next to a custom command to send to the corresponding input or output

5.4 RS232 Tab

Choose whether to format RS232 commands as ASCII or HEX characters

Baud Rate: 9600, 19200, 38400, 57600, 115200

Command Ending: NULL, CR, LF, or CR+LF

Command: Type an RS232 command to send to the third-party device connected to the RS232 port

5.5 Network Tab

Video Configuration CEC RS232 **Network** Access

MAC Address: 44-33-4C-C9-35-12

DHCP ☒ Static IP

IP Address: 192.168.0.178

Subnet Mask: 255.255.255.0

Gateway: 192.168.0.1

Confirm

Choose whether the switcher is set to a Static IP address or gets a DHCP automatically from the network DHCP server.

Set the IP Address, Subnet Mask, and Gateway of the switcher (only available when set to Static IP)

5.6 Access Tab

Video Configuration CEC RS232 Network **Access**

Password

admin Confirm

Firmware Upgrade

C:\\ Confirm

Front Panel Lock

ON ☒ OFF

Password: Modify the password for accessing the web GUI

Firmware Upgrade: Browse to the file location of the firmware upgrade file in the computer's file explorer. Press "Confirm" while the switcher is in Upgrade Mode to update its firmware.

Front Panel Lock: Lock or unlock the front panels buttons for controlling the switcher

RS232 Control

Before controlling the SCU21T-KVM, make sure that all relevant inputs and outputs are connected, and that the COM port, baud rate, data bit, stop bit, and parity bit are set correctly.

Baud Rate: 9600

Data Bit: 8

Stop Bit: 1

Parity Bit: None

6.1 System Control

All commands should be terminated with "<CR><LF>"

Command	Description	Command & Feedback Example
---------	-------------	----------------------------

PHDBTON.	Turn HDBaseT PoC On	HDBT 01 Power ON!
PHDBTOFF.	Turn HDBaseT PoC Off	HDBT 01 Power OFF!
HDMIA.	Set to Auto-Switching Mode	HDMI Out Switch Auto Mode!
HDMIM.	Set to Manual-Switching Mode	HDMI Out Switch Manual Mode!
HDMI[x].	Select video input source x = 1 ~ 2 1: USB-C Input 2: HDMI Input	HDMI Out Switch to 01! HDMI Out Switch to 01!
POWON.	Turn switcher on	Power ON!
POWOFF.	Turn switcher off	Power OFF!
SIGNALTRG[x]MODE.	Set auto-switching detection method x = 1 ~ 2 1: 5V Detection 2: TMDS Detection	Set Trigger Mode to 5V.
SIGNALTRGSTA.	Query the signal detection method (TMDS or 5V)	Get Trigger Mode is 5V.
RST	Restore factory default settings	Factory Default!
Lock.	Lock front panel buttons	Front Panel Locked!
Unlock.	Unlock front panel buttons	Front Panel UnLock!
STA.	Query device status	SCU21T-KVM V1.0.0 POWON! HDBT 01 Power ON! HDMI Out 01 Down Scale OFF! HDMI Out 02 Down Scale OFF! HDMI Out Switch Auto Mode! Get Trigger Mode is 5V. System Unlock! Baudrate 9600! GUI_IP:192.168.0.200! HDMI Out Switch 02! Set Output Black Screen ON! IN 1 2 LINK Y Y OUT 1 2 LINK Y Y Input 1 EDID From 1 User Define EDID! Input 2 EDID From 1 Internal EDID! OUT 01 HDCP MAT DISPLAY! OUT 02 HDCP MAT DISPLAY! Set POWOFF Delay to 600 Second(s)!

RS232ONSAVE:[y].[xxx]	Set an RS232 power on command to be sent to the display when an input is detected y = Baud Rate, 1 ~ 7 1: 2400 2: 4800 3: 9600 4: 19200 5: 38400 6: 57600 7: 115200 [xxx] = RS232 command	Save PON Command:YYYYY,Baudrate is 9600!
RS232OFFSAVE:[y],[xxx].	Set an RS232 display off command to be sent when no input is detected y = Baud Rate, 1 ~ 7 1: 2400 2: 4800 3: 9600 4: 19200 5: 38400 6: 57600 7: 115200 [xxx] = RS232 command	Save POFF Command:TTTTTT,Baudrate is 9600!
RS232DLYOUT[xx]:[yy]	Set how long the switcher will wait before sending the display power off command after no input is detected. Default is 10 minutes (600s) xx = 00 yy = seconds	Set POFF Delay To 10 Second(s)!

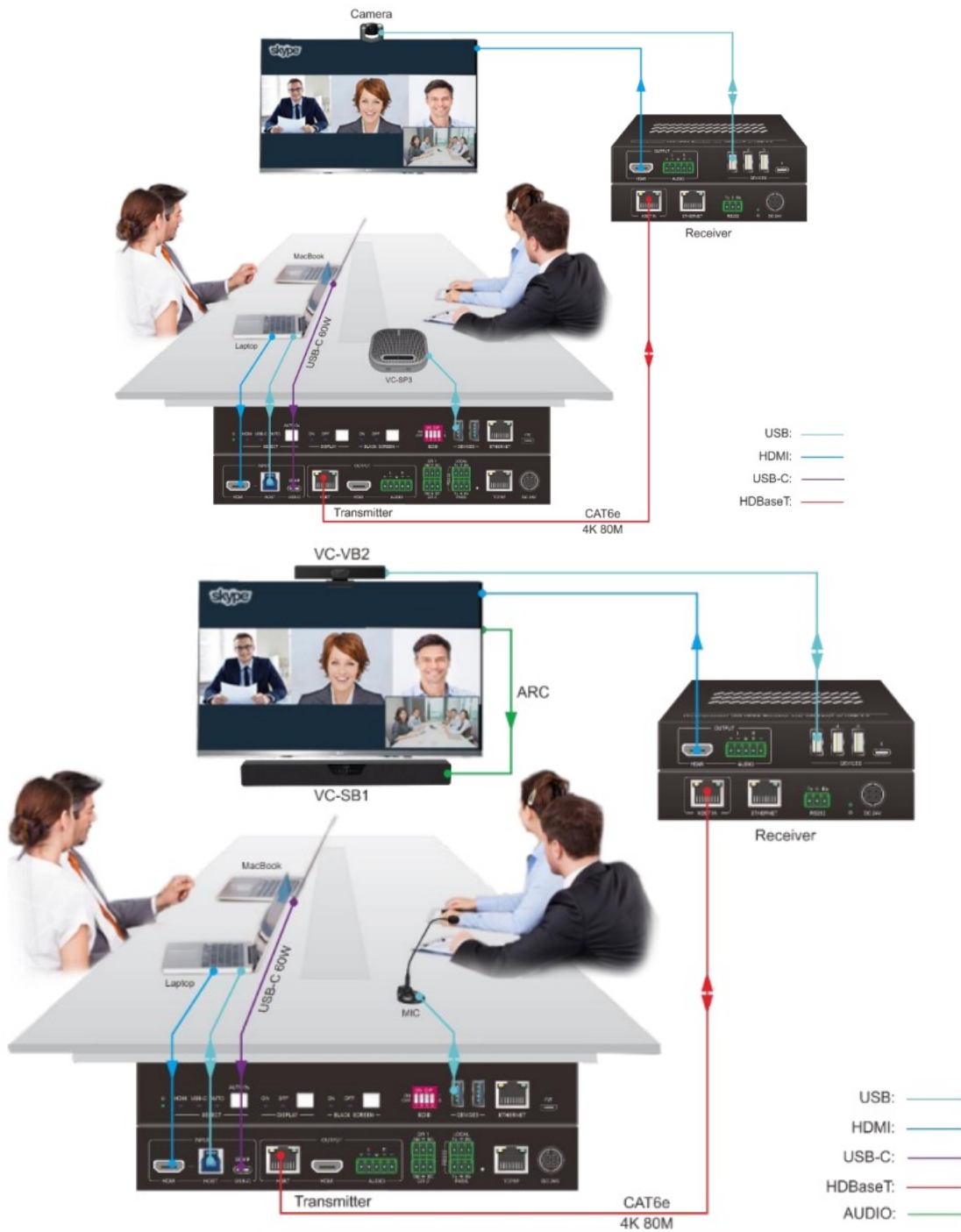
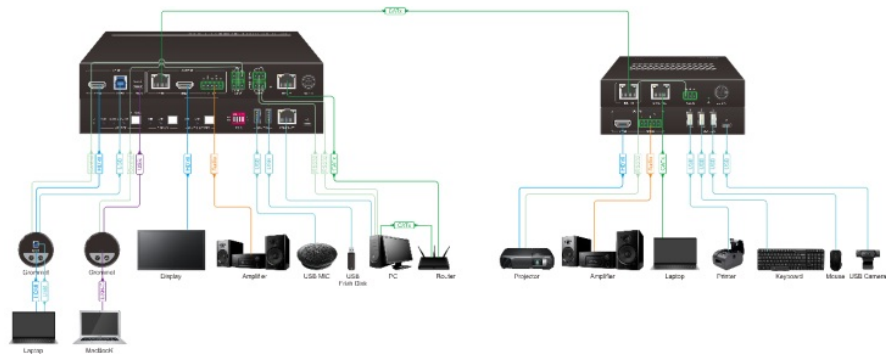
6.2 Source Control

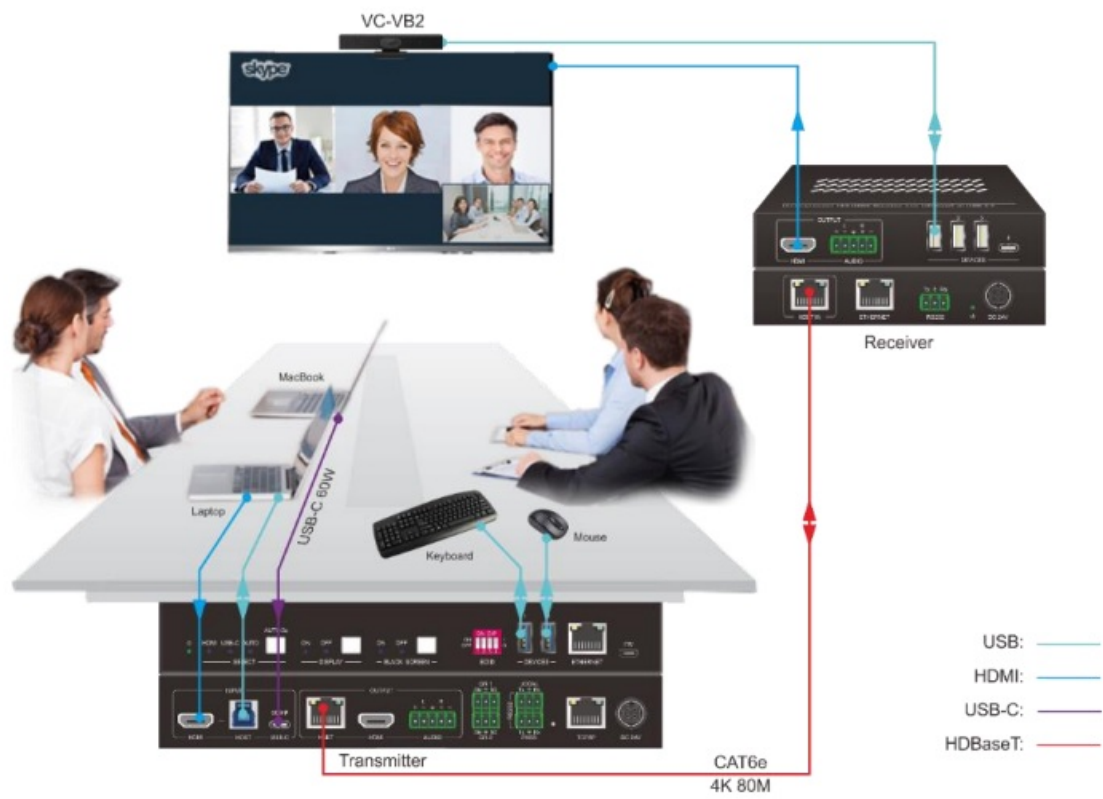
Command	Description	Command & Feedback Example
TVON.	Turn on display via CEC command	CEC_TC_POWON! CEC Output 01 Send Success. CEC Output 02 Send Success.
TVOFF.	Turn off display via CEC command	CEC_TV_POWOFF! CEC Output 01 Send Success. CEC Output 02 Send Success.
TVVOL+.	Increase display volume via CEC command	CEC_TV_VOLUP! CEC Output 01 Send Success. CEC Output 02 Send Success.

TVVOL-.	Decrease display volume via CEC command	CEC_TV_VOLDOWN! CEC Output 01 Send Success. CEC Output 02 Send Success.
TVMUTE.	Mute display audio via CEC command	CEC_TC_VOLMUTE/UNMUTE! CEC Output 01 Send Success. CEC Output 02 Send Success.
HDCP[x]PAS.	Set the output HDCP to follow the input x = 0 ~ 2 0: All outputs	OUT 01 HDCP PASSIVE! OUT 02 HDCP PASSIVE!
HDCP[x]MAT.	Set the output HDCP to follow the display x = 0 ~ 2 0: All outputs	OUT 01 HDCP MAT Display! OUT 02 HDCP MAT Display!
HDCP[x]ON.	Forces HDCP1.4 open on the output x = 0 ~ 2 0: All outputs	OUT 01 HDCP ON! OUT 02 HDCP ON!
HDCP[x]OFF.	Forces HDCP closed on the output x = 0 ~ 2 0: All outputs	OUT 01 HDCP OFF! OUT 02 HDCP OFF!
DS[x]ON.	Enable downscaling on the HDMI output x = 0 ~ 2 0: All outputs	HDMI OUT 01 Down Scale ON! HDMI OUT 02 Down Scale ON!
DS[x]OFF.	Disable downscaling on the HDMI output x = 0 ~ 2 0: All outputs	HDMI OUT 01 Down Scale OFF! HDMI OUT 02 Down Scale OFF!
STA_IN.	Get source connection status	IN 1 2 LINK N N
/+[x]:yyy.	Send an RS232 command to control a connected third-party device x = Baud rate, 1 ~ 7 1: 2400 2: 4800 3: 9600 4: 19200 5: 38400 6: 57600 7: 115200 yyy = RS232 command	123456
@OUT[xx].	Turn off the HDMI output's 5V, making it undetectable as an active source x = Output port, 00 ~ 01 00: All outputs	Set Output Black Screen ON!

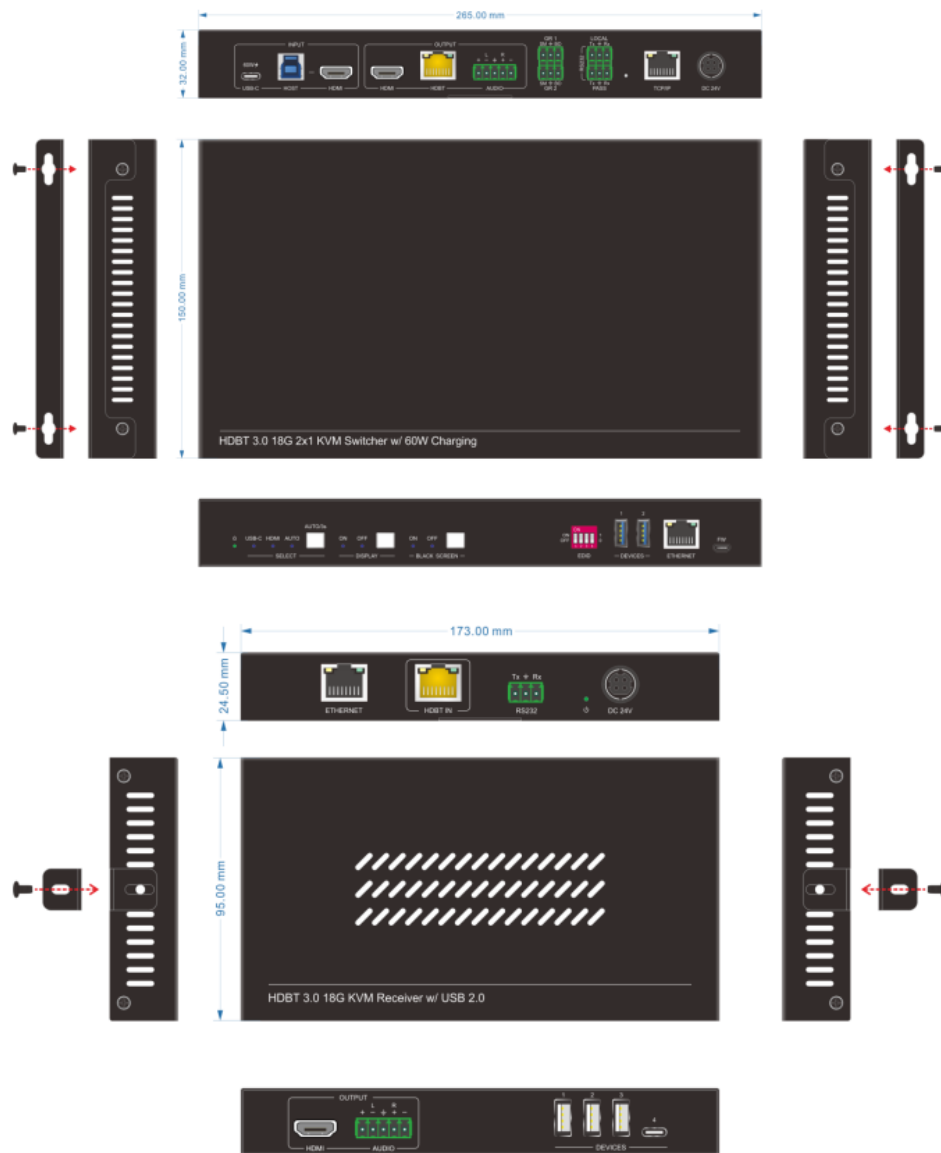
\$OUT[xx].	Turn on the HDMI output's 5V, making it detectable as an active source x = Output port, 00 ~ 01 00: All outputs	Set Output Black Screen OFF!
GETUIIP.	Get the web GUI IP address	GUI_IP:192.168.0.173!
SetGuiIP_DHCPON.	Set switcher to Dynamic IP addresses (DHCP)	GUI IP DHCP ON!
SetGuiIP_DHCPOFF: xxx.xxx.x.xxx.	Set switcher to static IP address (default is 192.168.0.178)	GUI IP DHCP OFF!SETGUIIP:192.168.0.123!
EDIDUpgrade[xx].	Upgrades EDID data via serial port (requires additional software) xx = Input port, 00 ~ 02 x: All inputs Custom EDID is applied setting, but not saved in switcher memory OR xx = User-defined EDID, U1 ~ U4 Only one user-defined EDID can be customized at once, and the switcher will not automatically switch to the custom EDID after upgrading Ensure that all HDBaseT is disconnected before sending command	
EDID/[xx]/[yy].	Set input port xx to use EDID setting yy xx = 00 ~ 02 00: All input ports yy = 01 ~ 12 01 ~ 08: Built-in EDID (cannot be changed) 09 ~ 12: User-defined EDID	Input 02 EDID Upgrade OK By 01 Internal EDID!
EDIDM[x]B[y].	Set input port y to inherit EDID from output x x = 1 ~ 2 y = 0 ~ 2 0: All input ports	Input 01 EDID Upgrade OK By 02 EXT EDID!
Baudrate[xx].	Set the RS232 baud rate to xx xx = 9600, 19200, 38400, 57600, or 115200	Set Local RS232 Baudrate Is 9600!
CEC[x][AA][BB] [CC][DD].	Send custom CEC command x = Input or output port, I or O AA = Port number, 01 ~ 02 FF: All ports BB = Device Type (e.g. TV: 40/20/80, Blu-ray Player: 04/08, etc.) CC = CEC Function Category DD = CEC command to be sent (e.g. "41" for Volume +); can send up to 9 combined commands	

System Connection





Panel Drawing



TEKVOX


www.tekvox.com

Documents / Resources



[Tekvox SCU21T-KVM USB C Switcher and HD BaseT Receiver](#) [pdf] User Manual
 SCU21T-KVM USB C Switcher and HD BaseT Receiver, SCU21T-KVM, USB C Switcher and H
 D BaseT Receiver, Switcher and HD BaseT Receiver, HD BaseT Receiver, BaseT Receiver

References

-  [TEKVOX | Drop-In Commercial A/V Solutions: Custom & Easy](#)
- [User Manual](#)

[Manuals+](#), [Privacy Policy](#)

This website is an independent publication and is neither affiliated with nor endorsed by any of the trademark owners. The "Bluetooth®" word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. The "Wi-Fi®" word mark and logos are registered trademarks owned by the Wi-Fi Alliance. Any use of these marks on this website does not imply any affiliation with or endorsement.