User Manual

Milestone PRO

# **MP-SU21T-KVM**

# 18Gbps HDMI+USB-C KVM Switcher KIT





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Version: MP-SU21T-KVM\_2022V1.1

# Preface

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 by April, 2022. In the constant effort to improve the product, we reserve the right to make functions or parameters changes without notice or obligation. Please refer to the dealers for the latest details.

# 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.

CE





# SAFETY PRECAUTIONS

To ensure 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 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. Product Introduction**

MP-SU21T-KVM is an 18Gbps switcher kit. It supports up to 4K/60/4:4:4, HDR10 and Dolby Vision, HDCP 2.2. It also supports uncompressed transmission of 18Gbps signals with a distance of up to 100m. At the same time, it can be connected to KVM equipment, which is very suitable for equipment connection and signal transmission in conference rooms. The switcher kit also supports RS232&CEC control and bidirectional 48V PoC

# 1.1 Features

- HDMI 2.0, highest support 4K@60HZ 4:4:4, HDR10 and Dolby Vision, HDCP 2.2,
- 1 x HDMI input, 1 x USB-B host, 1 x USB-C input, 1 x HDMI output and 1 x HDBaseT output
- HDBT 3.0, support 100m transmission and bidirectional 48V PoC
- Support RS232 control and CEC control
- USB-C input support 60W external charging
- Auto switch 5V or TMDS detection
- Support Dry Contact control

#### 1.2 Packing List

- 1 x MP-SU21T-KVMT
- 4 x 3-pin terminal block
- 1 x 5-pin terminal block
- 1 x 3-pin to DB9 RS232 cable
- 2 x hangers
- 4 x screws
- 4 x foot pads
- 1 x MP-SU21T-KVMR
- 1 x 3-pin terminal block
- 1 x 5-pin terminal block
- 2 x hangers
- 2 x screws
- 4 x foot pads
- 1 x DC24V/5A power adapter
- 1 x English manual

### **1.3 Customer Service**

We provide limited warranty for the product within **three years** counting from date of purchase (The purchase invoice shall prevail).

**Note:** Please contact your distributor immediately if any damage or defect in the components is found.

# 2. Specification

|                            | Transmitter   | Receiver  |  |  |
|----------------------------|---|---|--|--|
| Video                      |   |   |  |  |
| Video Input                | (1) HDMI IN, (1) USB-C IN   | (1) HDBT IN   |  |  |
| Video Output Connector     | (1) Type-A female HDMI<br>(1) Type-C  | (1) RJ45  |  |  |
| Input Resolution           | HDMI: Up to 4K@60Hz 4:4:4<br>HDR10, Dolby Vision<br>USB-C: Up to 4K@60Hz 4:4:4                  | Up to 4K@60Hz 4:2:0   |  |  |
| Video Output               | (1) HDMI OUT (1) HDBT OUT   | (1) HDMI  |  |  |
| Video Output Connector     | (2) Type-A female HDMI  | (1) Type-A female HDMI                                      |  |  |
| Output Resolution          | HDMI: Up to 4K@60Hz 4:4:4<br>HDR10, Dolby Vision<br>HDBT: Up to 4K@60Hz 4:2:0                   | Up to 4K@60Hz 4:4:4 HDR10,<br>Dolby Vision                  |  |  |
| HDMI Standard              | Up to HDMI 2.0b   | Up to HDMI 2.0b   |  |  |
| HDCP Version               | Up to HDCP 2.2  | Up to HDCP 2.2  |  |  |
| Audio                      |   |   |  |  |
| HDMI Embedded Audio Format | LPCM 7.1 audio, Dolby Atmos®,<br>Plus, DTS:X™, and DTS-HD® M                                    | Dolby® TrueHD, Dolby Digital®<br>aster Audio™ pass-through. |  |  |
| Audio Output Connector     | (1) 5-pin terminal block  | (1) 5-pin terminal block                                    |  |  |
| Frequency Response         | 20Hz–20KHz, ±3dB  |   |  |  |
| Max Output Level           | 0.88 Vrms $\pm$ 0.5 dB. 2 V = 16 dB<br>mV) nominal consumer line level<br>SPDIF: $\pm$ 0.05dBFS |   |  |  |
| THD+N                      | < 0.05% (-80 dB), 20 Hz – 20 kHz bandwidth, 1 kHz sine at 0 dBFS level (or max level)           |   |  |  |
| SNR                        | > 80dB, 20Hz-20 kHz bandwidth<br>SPDIF: > 90dB, 20Hz-20 kHz bandwidth                           |   |  |  |
| Crosstalk Isolation        | < -80 dB, 10 kHz sine at 0 dBFS level (or max level before clipping)                            |   |  |  |
| L-R Level Deviation        | < 0.3 dB, 1 kHz sine at 0 dBFS level (or max level before clipping)                             |   |  |  |
| Output Load Capability     | 1k ohm and higher (supports 10x paralleled 10k ohm loads)                                       |   |  |  |
| Noise Level                | >70dB @ 1 kHz   |   |  |  |
| Control                    |   |   |  |  |

| Control port          | <ul> <li>(1) EDID switch, (2) DEVICES</li> <li>(1) ETHERNET, (1) FW,</li> <li>(1) HOST, (2) GR, (2) RS232</li> <li>(1) TCP/IP</li> </ul>  | (4) DEVICE, (1) ETHERNET<br>(1) RS232 |  |  |
|-----------------------|---|---------------------------------------|--|--|
| Control Connector     | <ul> <li>(1) 4-pin DIP switch</li> <li>(2) USB Type-A, (1) RJ45</li> <li>(1) Micro-USB, (1) USB Type-B</li> <li>(2) 3-pin terminal block</li> <li>(2) 3-pin terminal block, (1) RJ45</li> </ul> |                                       |  |  |
| General               | General   |                                       |  |  |
| Operation Temperature | -5 ~ +55°C  |                                       |  |  |
| Storage Temperature   | -25 ~ +70°C   |                                       |  |  |
| Relative Humidity     | 10% ~ 90%   |                                       |  |  |
| External Power Supply | Input: AC 100~240V, 50/60Hz; Ou   | utput: 24V DC 5A.                     |  |  |
| Power Consumption     | 76.5W (Max)   |                                       |  |  |
| USB-C Power Charging  | 60W(Max)  |                                       |  |  |
| Dimension (W*H*D)     | 265W x 150D x 32H mm 173W x 95D x 24.5H mm  |                                       |  |  |
| Net Weight            | 1020g   | 410g                                  |  |  |

# 3. Panel Description

# 3.1 Transmitter

# Front Panel



| No.        | Name      | Description   |  |  |  |
|------------|-----------|---|--|--|--|
| 1          | Power LED | 1 x green indicator light, the light is always on when the machine is working, and it goes out when the power is off  |  |  |  |
|            |           | • 1 x White non-backlit button, 3 x blue indicator lights,  |  |  |  |
| 2          | SELECT    | <ul> <li>Click the button to select the input source (HDMI or USB-C), press and hold for 3 seconds to enter or exit automatic switching mode, and the corresponding indicator is always on</li> </ul>                       |  |  |  |
|            |           | • 1 x white non-backlit button, 2 x blue indicator lights;  |  |  |  |
| 3          | DISPLAY   | <ul> <li>Press the button to send the DISPLAY ON/OFF CEC and<br/>RS232 commands to control the TX and RX display<br/>terminal switches at the same time, and the corresponding<br/>indicator light is always on;</li> </ul> |  |  |  |
|            | BLACK     | • 1 x white non-luminous button, 2 x blue indicator lights;   |  |  |  |
| 4          | SCREEN    | <ul> <li>Press the button to enter or exit the output black screen<br/>state, and the corresponding indicator light is always on;</li> </ul>  |  |  |  |
| 5          | EDID      | 1 x 4-pin DIP switch for EDID management  |  |  |  |
| 6          | DEVICES   | 2 x USB-A 3.0, connect keyboard, mouse, microphone, printer and other equipment   |  |  |  |
| $\bigcirc$ | ETHERNET  | 1 x RJ45, used for network passthrough transmission   |  |  |  |
| 8          | FW        | 1 x Micro-USB, used for MCU firmware upgrade  |  |  |  |

| 18Gbps HDMI+USB-C KVM | Switcher KIT |
|-----------------------|--------------|
|-----------------------|--------------|

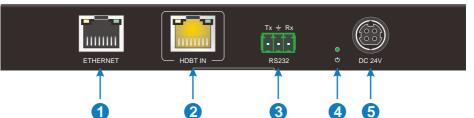
| R    | Rear Panel |  |  |  |  |  |
|------|------------|--|--|--|--|--|
|      |            |  |  |  |  |  |
| No.  | Name       | Description  |  |  |  |  |
| 1    | USB-C      | 1 x USB-C 3.0 input, support external 60W charging   |  |  |  |  |
| 2    | HOST       | 1 x USB-B 3.0, connect to HOST devices such as laptops   |  |  |  |  |
| 3    | HDMI IN    | 1 x HDMI input, connect to HOST devices such as laptops  |  |  |  |  |
| 4    | HDMI OUT   | 1 x HDMI loop output   |  |  |  |  |
| 5    | HDBT       | 1 x HDBT output, the green light is always on when the<br>signal is with HDCP, flashes when the input signal is without<br>HDCP; the yellow light is always on after the TX and RX are<br>connected;   |  |  |  |  |
| 6    | AUDIO      | 1 x 5-pin balanced audio output, output audio de-embedding   |  |  |  |  |
| 7    | Grommet    | GR1: Correspond the USB-C<br>GR2: Conrrespond the HDMI<br>SM: Switch to the current source<br>BO: Print a black screen to all outputs.   |  |  |  |  |
| 8    | RS232      | LOCAL: Connect the control devices to control the transmitter<br>PASS: Bidirectional passthrough transmission with Receiver  |  |  |  |  |
| 9    | Upgrade    | 1 x Built-in short-handled buttons, press and hold for 3s to<br>enter the upgrade mode, and the power indicator flashes. At<br>this time, you can upgrade the firmware through the serial<br>port, and press the button again to exit the upgrade mode |  |  |  |  |
| (10) | TCP/IP     | 1 x RJ45, TCP/IP control   |  |  |  |  |
| (11) | DC 24V     | Connect DC24V5A power adapter  |  |  |  |  |

### 3.2 Receiver

### Front Panel

|     | OUTPUT<br>+<br> |  |
|-----|-----------------|--|
| No. | Name            | Description  |
| 1   | OUTPUT          | <ul> <li>1 x HDMI output;</li> <li>1 x 5-pin balanced audio output, HDMI output audio de-<br/>embedding</li> </ul> |
| 2   | DEVICES         | 3 x USB-A 2.0, 1 x USB-C, connect keyboard, mouse, microphone, printer, camera and other equipment                 |

# **Rear Panel**



| No. | Name      | Description   |
|-----|-----------|---|
|     | ETHERNET  | 1 x RJ45, used for network passthrough transmission   |
| 2   | HDBT IN   | 1 x RJ45 interface, the green light is always on when the signal is with HDCP, flashes when the input signal is not HDCP; the yellow light is always on after the TX and RX are connected |
| 3   | RS232     | 1 x 3-pin phoenix head, RS232 passthrough transmission  |
| 4   | Power LED | 1 x green indicator light, always on when machine is working  |
| 5   | DC 24v    | Connect DC24V5A power adapter   |

# 4. EDID Management



EDID are control by the EDID DIP switch, the specific description is as follows:

0000 Learn the display EDID in the default mode: read the EDID of the TX HDMI output and RX HDMI output, and output the EDID with the lower resolution of the two, if you can't learn it, then use the built-in 1920x1080@60 8bit Stereo

0001 1920x1080@60 8bit High Definition Audio

0010 3840x2160@60Hz Deep Color Stereo Audio

0011 3840x2160@30Hz 8bit Stereo Audio

0100 3840x2160@30Hz Deep Color High Definition Audio

0101 3840x2160@60Hz 4:2:0 Deep Color Stereo Audio

0110 3840x2160@60Hz Deep Color High Definition Audio

0111 3840x2160@60Hz Deep Color HDR LPCM 6CH

1011 Custom EDID1

1100 Custom EDID2

1101 Custom EDID3

1110 Custom EDID4

1111 EDID management

# 5. GUI Control

The MP-SU21T-KVM can be controlled via TCP/IP. The default IP settings are:

IP Address:192.168.0.178

Subnet Mask:255.255.255.0

Gateway:192.168.0.1

Please type the IP Address of the control PC in the internet browser, and it will enter the below log-in webpage.

| User Name        |
|------------------|
| Please Enter     |
| Password         |
| Please Enter     |
| Login            |
|                  |
| GUI : V1.0.0     |
| Firmware: V1.0.0 |
|                  |

#### Username: admin

#### Password: admin

Please type the username and the password, and then click LOGIN.

#### 5.1 Video Tab

| Video | Configuration | CEC      | RS232    | Network | Access |
|-------|---------------|----------|----------|---------|--------|
|       |               |          |          |         |        |
|       |               | Sou      | ırce     |         |        |
|       |               |          |          | l i i   |        |
|       |               | JSB-C HE | DMI Auto | )       |        |
|       |               |          |          |         |        |
|       |               |          |          |         |        |
|       |               |          |          |         |        |

• Choose the HDMI, USB-C or Auto source according to actual usage.

# 5.2 Configuration Tab

#### 5.2.1 EDID

| Video | Configuration            | CEC                       | RS232   | Network                   | Access |
|-------|--------------------------|---------------------------|---|---------------------------|--------|
|       | EDID                     | Auto Down                 | iscale 🚺 HDCP                                   | • Tags                    |        |
|       |                          | USB-C                     | HDMI  |                           |        |
| •     | Pass Through: TX         |                           | 3840x2160@60H                                   | z Deep Color Stereo Audio |        |
| 0     | Pass Through: RX         |                           | 3840x2160@60Hz Deep Color High Definition Audio |                           |        |
| 0     | 1920×1080@60Hz 8bit Ster | eo Audio(Default)         | 3840x2160@60H                                   | z Deep Color HDR LPCM 6C  | н      |
| •     | 1920×1080@60Hz 8bit Hig  | Definition Audio          | User-defined 1                                  | .bin Apply                |        |
| 0     | 3840x2160@30Hz 8bit Ster | eo Audio                  | User-defined 2                                  | .bin Apply                |        |
| •     | 3840x2160@30Hz Deep Co   | lor High Definition Audio | User-defined 3                                  | .bin Apply                |        |
| •     | 3840x2160@60Hz 4:2:0 De  | ep Color Stereo Audio     | User-defined 4                                  | bin Apply                 |        |
|       |                          | Con                       | firm  |                           |        |
|       |                          |                           |   |                           |        |

• Choose the desired EDID format or define the appropriate EDID format.

#### 5.2.2 Auto Downscale

| Video | Configuration | CEC       | RS232        | Network | Access |
|-------|---------------|-----------|--------------|---------|--------|
|       | EDID          | Auto Dowr | nscale HDCP  | Tags    |        |
|       |               | En        | able Disable |         |        |
|       |               | Tx Output | •            |         |        |
|       |               | Rx Output | •            |         |        |
|       |               |           |              |         |        |
|       |               | Cor       | ıfirm        |         |        |
|       |               |           |              |         |        |

• Enable or disable the auto Downscale in TX or RX output.

#### 5.2.3 HDCP

| Video | Configuration | CEC              | RS232          | Network | Access |
|-------|---------------|------------------|----------------|---------|--------|
|       | • EDID        | Auto Dowr        | nscale 💽 HDCP  | Tags    |        |
|       |               |                  | Source Display |         |        |
|       |               | Tx Output Follow | • •            |         |        |
|       |               | Rx Output Follow | • •            |         |        |
|       |               |                  |                |         |        |
|       |               | Cor              | ıfirm          |         |        |
|       |               |                  |                |         |        |
|       |               |                  |                |         |        |

• Choose the HDCP follow the souse or display.

#### 5.2.4 Tags

| Video    | Configuration    | CEC               | RS232          | Network       | Access |
|----------|------------------|-------------------|----------------|---------------|--------|
|          | edid             | Auto Down         | nscale HDCP    | <b>O</b> Tags |        |
|          | In               | put               | 0              | utput         |        |
|          | USB-C            | USB-C             | Tx Output      | Tx Output     |        |
|          | HDMI             | HDMI              | Rx Output      | Rx Output     |        |
|          |                  |                   |                |               |        |
|          |                  | Con               | ıfirm          |               |        |
|          |                  |                   |                |               |        |
| Choose a | and enter the ta | ags, then click o | confirm to cha | nge the tags. |        |

#### 5.3 CEC Tab

### 5.3.1 Input

| Video | Configuration | CEC     | R5232              | Network           | Access |
|-------|---------------|---------|--------------------|-------------------|--------|
|       |               | Input O | utput User-defined | 1                 |        |
| -     | Input         |         | Function           |                   | _      |
|       |               |         | enu Volume +       | On Off Stop       |        |
|       |               |         |                    | evious Next Pause |        |
|       |               |         |                    | REW FF Play       |        |
|       |               |         |                    |                   |        |
|       |               |         |                    |                   |        |

• Select the function and press to control the input

#### 5.3.2 Output

| Video                         | Configuration    | CEC            | R5232              | Network  | Access |
|-------------------------------|------------------|----------------|--------------------|----------|--------|
|                               |                  | Input 0        | utput User-defined |          |        |
|                               |                  |                |                    |          |        |
|                               | Ou               | tput           | Function           |          |        |
|                               | <b>O</b> T       | Output         | On Off             | Source   |        |
| 1.00                          | • R              | « Output       |                    | •))      |        |
|                               |                  |                | Mute Volume - V    | /olume + |        |
|                               |                  |                |                    |          |        |
|                               |                  |                |                    |          |        |
| <ul> <li>Select th</li> </ul> | e function butto | on and press t | o control the ou   | tput     |        |

### 5.3.3 User-defined

| Video  | Configuration | CEC     | R5232                            | Network   | Access |
|--------|---------------|---------|----------------------------------|-----------|--------|
|        |               | Input C | Output User-defined              |           |        |
| Input  | _             |         | Output                           |           |        |
|        | Trigger 1     | Send    | Output<br>Tx Output<br>Rx Output | Trigger 1 | Send   |
|        | Trigger 2     |         |                                  | Trigger 2 |        |
| О номі |               | Send    | Rx Output                        |           | Send   |
|        |               |         |                                  |           |        |
|        |               |         |                                  |           |        |
|        |               |         |                                  |           |        |
|        |               |         |                                  |           |        |

• Define the Trigger of input and output

### 5.4 RS232 Tab CEC Video Configuration Network Access ASCII 🕥 HEX 🔍 Baud Rate: 9600 • Command Ending: NULL • Command: хххххх Cancel

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

- Command Ending: NULL, CR, LF or CR+LF can be chosen.
- Command: Type the command in the box to control the third-party device which is connected to the RS232 port of the MP-SU21T-KVM.

#### 5.5 Network Tab

| Video | Configuration | CEC                            | RS232         | Network | Access |
|-------|---------------|--------------------------------|---------------|---------|--------|
|       |               |                                |               |         |        |
|       | MAC A         | ddress: 44-33-4C-C9-35<br>DHCP | -12 Static IP |         |        |
|       | IP A          | ddress: 192.168.0.178          |               |         |        |
|       | Subne         | et Mask: 255.255.255.0         |               |         |        |
|       | G             | ateway: 192.168.0.1            |               |         |        |
|       |               | Con                            | tîrm -        |         |        |
|       |               |                                |               |         |        |

- Static IP or Dynamic Host Configuration Protocol (DHCP).
- Modify the static IP Address, Subnet Mask, and Gateway.

### 5.6 Access Tab

| Video | Configuration | CEC      | R5232    | Network |  |
|-------|---------------|----------|----------|---------|--|
|       |               |          |          |         |  |
|       |               | Pass     | word     |         |  |
|       |               | admin    | Confirm  |         |  |
|       |               |          |          |         |  |
|       |               | Firmware | Upgrade  |         |  |
|       |               | C:\\     | Confirm  |         |  |
|       |               |          |          |         |  |
|       |               | Front Pa | nel Lock |         |  |
|       |               | ON       | OFF OFF  |         |  |
|       |               |          |          |         |  |
|       |               |          |          |         |  |
|       |               |          |          |         |  |
|       |               |          |          |         |  |
|       |               |          |          |         |  |

- Modify the login password
- Choose the firmware upgrade file and click confirm to upgrade the firmware
- Lock or unlock the front panel buttons

# 6. RS232 control

#### 6.1 RS232 control software

Installation: Copy the control software file to the control PC

Uninstallation: Delete all the control software files in corresponding file path.

Basic Setting:

Connect the switcher kit with all input devices and output devices needed, then to connect it with a PC which is installed with RS232 control software. Double-click the software icon to run this software.

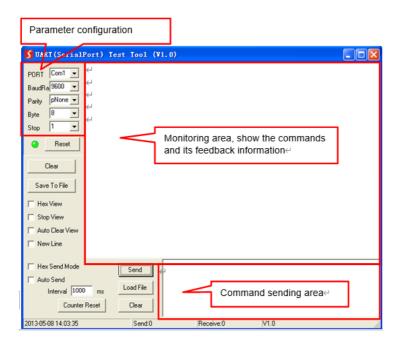
Here takes the software CommWatch.exe as example:



The main view is shown as below:

Please set the parameters of COM number, bound rate, data bit, stop bit and the

parity bit correctly, and then you are able to send command in command sending area.



# 6.2 RS232 Command

#### Communication protocol: RS232 Communication Protocol

| Baud rate: 9600 | Data bit: 8 | Stop bit: 1 | Parity bit: none |
|-----------------|-------------|-------------|------------------|
|-----------------|-------------|-------------|------------------|

#### 6.2.1 System control

| Command            | Description  | Command & Feedback Example                       |
|--------------------|--|--|
| PHDBTON.           | HDBaseT OUT POC power on   | HDBT 01 Power ON!                                |
| PHDBTOFF.          | HDBaseT OUT POC power<br>off   | HDBT 01 Power OFF!                               |
| HDMIA.             | Auto-switch mode on  | HDMI Out Switch Auto Mode!                       |
| HDMIM.             | Manual-switch mode on  | HDMI Out Switch Manual Mode!                     |
| HDMI[x].           | HDMI input source<br>selection.<br>x = 1 & 2<br>1 – Type-C<br>2 – HDMI                                     | HDMI Out Switch To 01!<br>HDMI Out Switch To 01! |
| POWON.             | Turn off standby mode  | Power ON!  |
| POWOFF.            | Turn on standby mode   | Power OFF!                                       |
| SIGNALTRG[xx]MODE. | When setting the detection<br>mode xx=1, it is 5V<br>detection, and when it is 2, it<br>is TMDS detection. | Set Trigger Mode To 5V.                          |
| SIGNALTRGSTA.      | Query the method of signal detection (TMDS or 5V)  | Get Trigger Mode Is 5V.                          |
| RST.               | Restore Factory  | Factory Default!                                 |
| Lock.              | Turn on front panel lock   | Front Panel Locked!                              |

| Unlock.                    | Turn off front panel lock   | Front Panel UnLock!                         |
|----------------------------|---|---|
| STA.                       | Status query  | MP-SU21T-KVM                                |
|                            |   | V1.0.0                                      |
|                            |   | PWON!                                       |
|                            |   | 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!                              |
|                            |   | Baudrate9600!                               |
|                            |   | GUI_IP:192.168.0.200!                       |
|                            |   | HDMI Out Switch To 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<br>EDID!    |
|                            |   | Input 2 EDID From 1 Internal EDID!          |
|                            |   | OUT 01 HDCP MAT DISPLAY!                    |
|                            |   | OUT 02 HDCP MAT DISPLAY!                    |
|                            |   | Set POFF Delay To 600 Second(s)!            |
| RS232ONSAVE:[Y],[xx<br>x]. | Save the display terminal<br>boot command sent when<br>the input is detected. Y is<br>the baud rate, 12400; 2 | Save PON<br>Command:YYYYY,Baudrate Is 9600! |
|                            | 4800; 39600; 419200; 5  |   |

|                             | 38400; 6-57600; 7115200;<br>xxx is the command data   |   |
|-----------------------------|---|---|
| RS232OFFSAVE:[Y],[x<br>xx]. | Save the display terminal<br>shutdown command sent<br>when no input is detected. Y<br>is the baud rate, 12400; 2<br>4800; 39600; 419200; 5<br>38400; 6-57600; 7115200;<br>xxx is the command data | Save POFF<br>Command:TTTTTT.,Baudrate Is<br>9600! |
| RS232DLYOUT[xx]:[yy]        | Set the delayed sending<br>time of the display terminal<br>shutdown command sent<br>when no input is detected,<br>the default is 10 minutes,<br>600S  | Set POFF Delay To 10 Second(s)!                   |

# 6.2.2 Source control

| Command | Description                   | Command & Feedback<br>Example   |
|---------|-------------------------------|---|
| TVON.   | Turn on TV by CEC control     | CEC_TV_POWON!<br>CEC Output 01 Send Success.<br>CEC Output 02 Send Success.   |
| TVOFF.  | Turn off TV by CEC control    | CEC_TV_POWOFF!<br>CEC Output 01 Send Success.<br>CEC Output 02 Send Success.  |
| TVVOL+. | TV volume plus by CEC control | CEC_TV_VOLUP!<br>CEC Output 01 Send Success.<br>CEC Output 02 Send Success.   |
| TVVOL   | TV volume down by CEC control | CEC_TV_VOLDOWN!<br>CEC Output 01 Send Success.<br>CEC Output 02 Send Success. |

| TVMUTE.         | TV mute by CEC control   | CEC_TV_VOLMUTE/UNMUT<br>E!<br>CEC Output 01 Send Success.<br>CEC Output 02 Send Success. |
|-----------------|--|--|
| HDCP[x]PAS.     | The output HDCP follows the input.<br>[x] The value is 0-2 or 00-02, and 0<br>means all outputs.<br>HDCP output follow the display | OUT 01 HDCP PASSIVE!<br>OUT 02 HDCP PASSIVE!<br>OUT 01 HDCP MAT Display!                 |
|                 | [x] Value 0-2 or 00-02, 0 means all output   | OUT 02 HDCP MAT Display!   |
| HDCP[x]ON.      | Forced to open the output HDCP,<br>output HDCP1.4.<br>[x] Value 0-2 or 00-02, 0 means all<br>output                                | OUT 01 HDCP ON!<br>OUT 02 HDCP ON!   |
| HDCP[x]OFF.     | Forcibly close the output HDCP.<br>[x] Value 0-2 or 00-02, 0 means all<br>output   | OUT 01 HDCP OFF!<br>OUT 02 HDCP OFF!   |
| DS[x]ON.        | Turn on the DOWN SCALE of the<br>HDMI output. (Compatible with<br>[X]/[XX])<br>[x] Value 0-2 or 00-02, 0 means all<br>output       | HDMI OUT 01 Down Scale<br>ON!<br>HDMI OUT 02 Down Scale<br>ON!                           |
| DS[x]OFF.       | Turn off the DOWN SCALE of the<br>HDMI output. (Compatible with<br>[X]/[XX])<br>[x] Value 0-2 or 00-02, 0 means all<br>output      | HDMI OUT 01 Down Scale<br>OFF!<br>HDMI OUT 02 Down Scale<br>OFF!                         |
| STA_IN.         | Source connection status   | IN 1 2<br>LINK N N   |
| /+[X]/[YY]:XXX. | RS232 sends commands to control  | 123456   |

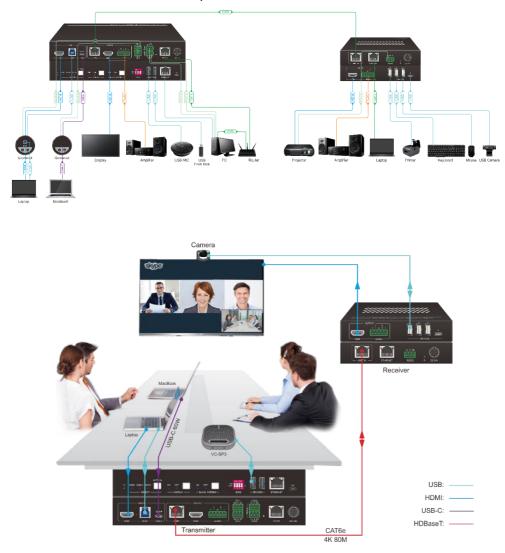
|                                     | peripheral devices.  |   |
|-------------------------------------|--|---|
|                                     | [YY]The value is 00 or 01;   |   |
|                                     | [X] is 12400; 24800; 39600; 4<br>19200; 538400; 6-57600; 7115200   |   |
| @OUT[xx].                           | Turn on the HDMI 5V of the output port.  | Set Output Black Screen ON!                                 |
|                                     | [xx] The value 00-01,00 means all outputs.   |   |
| \$OUT[xx].                          | Turn off the HDMI 5V of the output port.   | Set Output Black Screen OFF!                                |
|                                     | [xx] The value 00-01,00 means all outputs.   |   |
| GETGUIIP.                           | Query GUI IP   | GUI_IP:192.168.0.173!                                       |
| SetGuilP_DHCPON .                   | Dynamic DHCP   | GUI IP DHCP ON!   |
| SetGuilP_DHCPOF<br>F:xxx.xxx.x.xxx. | Static DHCP+set IP (default is 192.168.0.178)  | GUI IP DHCP<br>OFF!SETGUIIP:192.168.0.123<br>!              |
| EDIDUpgrade[xx].                    | The serial port upgrades EDID data.<br>1. [xx] represents the input port, the<br>value is 00-02 and U. [xx]=00-02<br>means to customize the EDID of the<br>corresponding input port (EDID is<br>switched to the custom EDID after<br>customization, and will not be saved in<br>the machine), 00 means to operate on<br>all input ports, 01-02 Means input 01-<br>02,<br>2. [xx]=U1-U4 means custom built-in<br>EDID (can be saved in the machine<br>and recalled at any time), only one<br>built-in EDID can be customized, and<br>the current EDID still used after the<br>customization is completed will not | Input XX/User Define EDID<br>Upgrade OK By RS232 Or<br>GUI! |

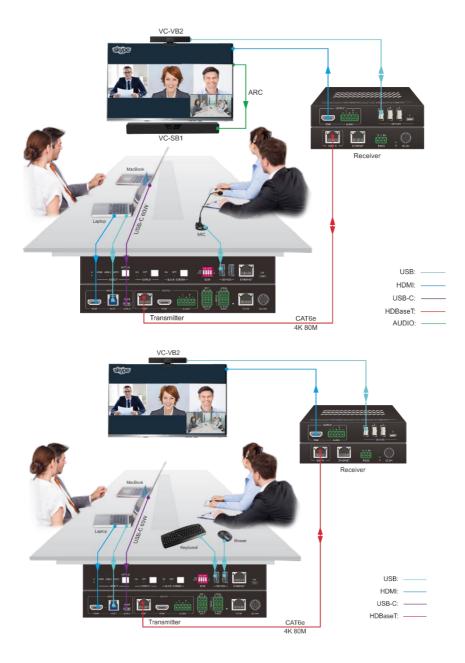
|                               | switch to the customized EDID .   |   |
|-------------------------------|---|---|
|                               | After receiving the instruction, the<br>machine will prompt to send the EDID<br>file. The file format must be .bin within<br>10s (in order to ensure normal data<br>reception, all HDBaseT must be<br>disconnected before sending the<br>instruction)                         |   |
| EDID/[xx]/[yy].               | The input port xx uses the built-in EDID numbered yy.   | Input 02 EDID Upgrade OK By<br>01 Internal EDID!          |
|                               | [xx] represents the input port, the value<br>00-02, 00 represents all input ports, 01-<br>02 separately represents input 1-2;   |   |
|                               | [yy] represents the built-in EDID<br>number, the value is 01-12, 01-08<br>represents the built-in EDID that<br>cannot be customized, and 09-12<br>represents the customized EDID  |   |
| EDIDM[x]B[y].                 | The input port learns the EDID of the output port.  | Input 01 EDID Upgrade OK By<br>02 EXT EDID!               |
|                               | <ul> <li>[X] represents the output port number,</li> <li>[X] takes the value 1-2 (or 01-02 Note:</li> <li>01-02 must be used in conjunction with</li> <li>00-02 below), 1-2 represents output 1-</li> <li>2.1 represents output 1, 2 represents</li> <li>Output 2.</li> </ul> |   |
|                               | [y] represents the input port, the value<br>is 0-2 (00-02), 0 represents all input<br>ports, and 1-2 separates represents<br>input 1-2;   |   |
| Baudrate[XXX].                | Set control baud rate. [XXX] Support<br>115200, 57600, 38400, 19200, 9600   | Set Local RS232 Baudrate Is<br>9600!                      |
| CEC[I/O][AA][BB][<br>CC][DD]. | I/O: means input or output port, AA,<br>BB, CC, DD are all hexadecimal data;  | CEC Input 01 Send Success!<br>CEC Output 01 Send Success! |
|                               | AA: indicates the port number, the  |   |

| input is 01-02, the output is 01-02, and FF means all;   | CEC Output 01 Send Success! |
|--|-----------------------------|
| BB: Indicates the device type (TV: 40, 20, 80, disc player 04, 08, etc.);  |                             |
| CC: indicates the CEC function<br>category (for example, 44 indicates the<br>remote control function)  |                             |
| DD: indicates the specific data under<br>the function (for example: 41,<br>representing the volume plus), this can<br>send combined data such as two or<br>three groups, or not, up to 9 groups; |                             |

# 7. System Connection

The following diagram illustrates typical input and output connections that can be utilized with the Distribution Amplifier:





# 8. Panel Drawing



