SCU21E-CODEC

18G 2x1 Presentation Switcher with Soft

Codec and CEC

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Version: SCU21E-CODEC_2019V1.3

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 till April, 2019. 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.

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 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.

Table of Contents

1. Product Introduction

Thanks for choosing the HDMI 2.0 2x1 Presentation Switcher. The switcher is designed to switch HDMI input or USB-C input to one HDMI output. It supports video resolution up to 4Kx2K@60Hz 4:4:4 8bit, 1080P, and 3D. In addition, there is smart built-in EDID setting can be selected by the 4-pin DIP switch on the front panel.

The switcher supports stereo and multichannel audio on the HDMI inputs. In addition to the audio embedded in the HDMI output stream, the audio is simultaneously de-embedded to a balanced analog audio output. It also supports device extension by providing one type-B USB port for host connection, and two type-A USB ports for HID devices such as camera, microphone, keyboard etc.

The switcher features multiple methods of control. When in the AUTO mode, the switcher will automatically switch to the first detected source device. When the active source is removed, the switcher will switch to the lowest numbered input. The switcher can be manually controlled by the front panel buttons and RS232 command. CEC allows the display device can be controlled by the front panel buttons and RS232 CEC commands.

1.1 Features

- 18G 2x1 switcher with HDMI and USB-C inputs.
- Supports automatic switching.
- Controllable via front panel buttons and RS232.
- Supports HDMI 2.0, 4Kx2K@60Hz 4:4:4, HDR 10, Dolby Vision, HDCP 2.2.
- Provides charging on USB-C port up to 40W.
- Provides USB data (USB 3.0/2.0) and 4K video transmission on USB-C port.
- Balanced analog audio for audio de-embedding.
- Peripheral units (e.g. microphone and camera) can be connected by type-A USB (USB 3.0/2.0) ports and automatically switched along with HDMI and USB-C input as USB DEVICES for corresponding HOST.
- Smart EDID management capable for various applications and customized setting.
- Front panel buttons trigger both CEC and RS232 commands for display control. (ON, OFF, MUTE, VOL+, VOL -).

1.2 Package List

- 1x SCU21E-CODEC 18G 2x1 Presentation Switcher
- 2x Mounting Ears with 4 Screws
- 4x Plastic Cushions
- 1x 5-pin Terminal Block
- 1x RS232 Cable (3-pin terminal block to DB9)
- 1x Power Cord
- 1x Power Adapter (24V DC, 2.71A)
- 1x User Manual

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

2. Specification

Video	
Video Input	(1) HDMI, (1) USB-C
Video Input Connector	(1) Type-A female HDMI, (1) Type-C USB
HDMI Input Resolution	Up to 4Kx2K@60Hz 4:4:4 8bit
USB-C Input Resolution	Up to 4Kx2K@30Hz 4:4:4
Video Output	(1) HDMI
Video Output Connector	(1) Type-A female HDMI
HDMI Output Resolution	Up to 4Kx2K@60Hz 4:4:4 8bit
HDMI Version	2.0
HDCP Version	2.2
USB Version	3.0
HDR 10	Supported
CEC	Supported
HPD	Supported
Audio	
Audio Output	(1) AUDIO OUT (Stereo balanced L/R)
Audio Output Connector	(1) 5-pin terminal block
HDMI Audio Format	LPCM 7.1 audio, Dolby Atmos®, Dolby® TrueHD, Dolby Digital® Plus, DTS: X™, and DTS-HD® Master Audio™ pass-through
Stereo balanced L/R audio Format	PCM
Max Output Level	2.0Vrms ± 0.5dB. 2V = 16dB headroom above -10dBV (316mV) nominal consumer line level signal
THD+N	<0.05% (-80dB), 20Hz ~ 20KHz bandwidth, 1KHz sine at 0dBFS level (or max level)
SNR	>80dB, 20Hz ~ 20KHz bandwidth
Crosstalk Isolation	>70dB, 10KHz sine at 0dBFS level (or max level before clipping)
L-R Level Deviation	< 0.3dB, 1KHz sine at 0dBFS level (or max level before clipping)
Frequency Response Deviation	<±0.5dB 20Hz ~ 20KHz
Output Load Capability	1KΩ and higher (supports 10x paralleled 10KΩ loads)
Stereo Channel Separation	>70dB@1KHz
Control Part	
Control	(1) EDID, (1) FW, (1) RS232, (1) HOST, (2) DEVICE
Control Connector	(1) 4-pin DIP switch, (1) Micro-USB, (1) 3-pin terminal block, (1) Type-B USB 3.0, (2) Type-A USB 3.0
General	
HDMI 2.0 Cable Length	4K@60Hz 4:4:4 ≤ 5m, 4K@60Hz 4:2:0 ≤ 10m, 1080P ≤ 15m

|	
Bandwidth	18Gbps
Operation Temperature	-10℃ ~ +55℃
Storage Temperature	-25℃ ~ +70℃
Relative Humility	10% ~ 90%
External Power Supply	Input: AC 100~240V, 50/60Hz, Output: 24V DC 2.71A
Power Consumption	54W (Max)
Dimension (W*H*D)	168.0mm x 24.5mm x 95.0mm
Net Weight	245g

3. Panel Description

3.1 Front Panel
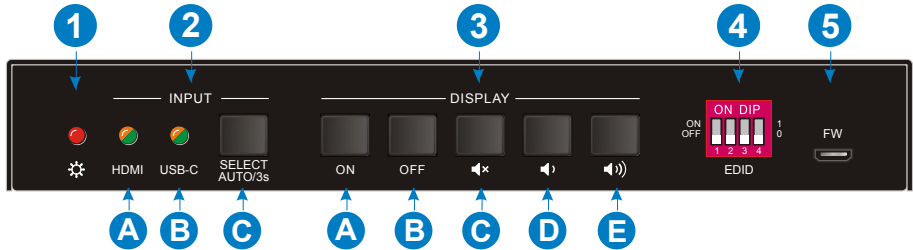
① **Power LED:** The LED illuminates red when the device is power on.

② **INPUT:**

    A. HDMI: The LED illuminates green when the HDMI input is selected in AUTO mode, or illuminates orange when the HDMI input is selected in manual mode.

    B. USB-C: The LED illuminates green when the USB-C input is selected in AUTO mode, or illuminates orange when the USB-C input is selected in manual mode.

    C. SELECT AUTO/3s: Press the button to select the next input source, or press and hold the button at least 3 seconds to enable auto switching mode. Note that the factory default switching mode is AUTO.

③ **DISPLAY:**

    A. Press **ON** to turn on the display.

    B. Press **OFF** to turn off the display.

    C. Press ◀× to mute/unmute display audio.

    D. Press ◀) to decrease the audio volume gradually, or press and hold it to decrease the audio volume constantly.

    E. Press ◀)) to increase the audio volume gradually, or press and hold it to increase the audio volume constantly.

④ **EDID:** 4-pin DIP switch for EDID setting.

⑤ **FW:** Micro-USB port for firmware upgrade.

3.2 Rear Panel
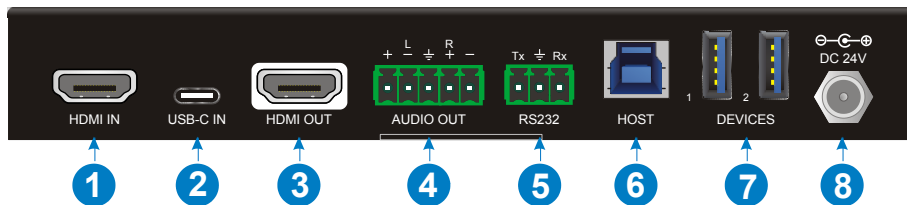
① **HDMI IN:** Type-A female HDMI input port to connect HDMI video source.

② **USB-C IN:** Type-C USB with charging capability to connect the Macbook or other device with SlimPort output.

   Note: The USB 3.0 cable is recommended to be used to ensure optimal machine performance.

③ **HDMI OUT:** Type-A female HDMI output port to connect video display.

④ **AUDIO OUT:** 5-pin terminal block for balanced audio output.

⑤ **RS232:** 3-pin terminal block to connect control device (e.g. PC) or third-party device for RS232 control.

⑥ **HOST:** Type-B USB ports for host connection.

⑦ **DEVICES:** Two type-A USB ports to connect HID devices (e.g. microphone and camera). The HID devices are used to control the HOST when the HDMI input has been selected, or to control the USB-C source device (e.g. Macbook) when the USB-C input has been selected.

⑧ **DC 24V:** DC barrel port for power adapter connection.

4. System Connection

4.1 Usage Precaution

● Make sure all components and accessories included before installation.

● System should be installed in a clean environment with proper temperature and humidity.

● All of the power switches, plugs, sockets, and power cords should be insulated and safe.

● All devices should be connected before power on.

4.2 System Diagram
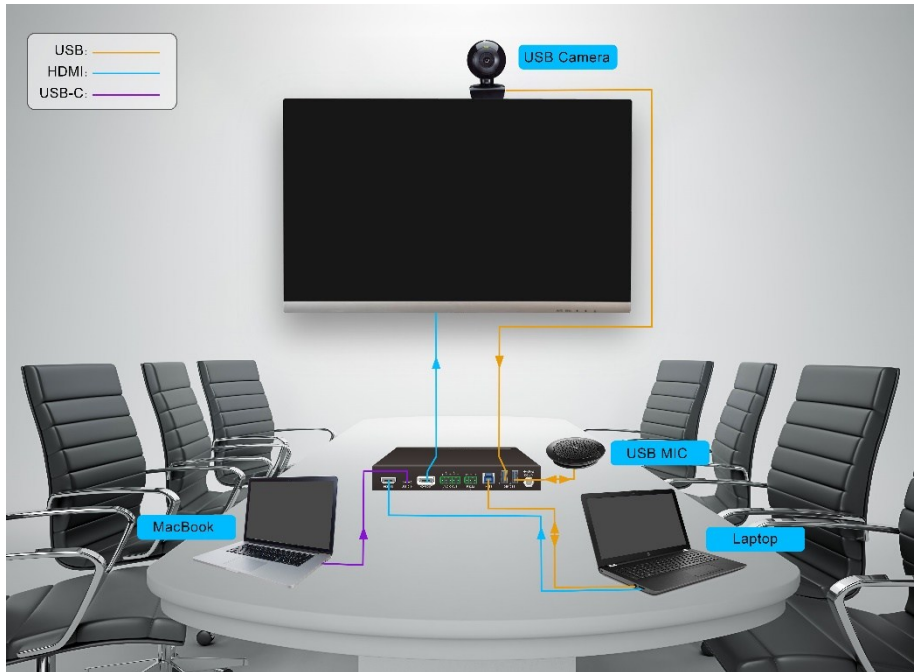
5. Button Control

5.1 Manual Switching

When the switcher is in the manual switching mode, press the **SELECT AUTO/3s** button repeatedly to cycle through the two video inputs, and the corresponding source LED illuminates orange immediately.

5.2 Automatic Switching

Press and hold the **SELECT AUTO/3s** button at least three seconds to enable automatic switching. The current input source will not be changed, and its source LED will turns green.

When in the AUTO mode, the switcher will switch according to the following rules:

- *Press and hold the **SELECT AUTO/3s** button at least three seconds again can exit AUTO mode, but the input source will not be changed, and the corresponding source LED will turns orange.*

- *New input: Upon detecting a new input, the switcher will automatically select the new input.*

- *Press the **SELECT AUTO/3s** button also can forcibly change the input source.*

- *Reboot: Once power is restored to the switcher, it will automatically reconnect the input before powered off.*

- *Source removed: When an active source is removed, the switcher will switch to the other active input.*

5.3 Display Control

Manual Control: Press the below **DISPLAY** buttons on the front panel to simultaneously send RS232 and CEC commands to control the display device.

- ***ON: Display On.***

- ***OFF:** Display Off.*

- 🔇 *: Mute/unmute display audio.*

- 🔉 *: Volume down display audio.*

- 🔊 *: Volume up display audio.*

Auto Control: When detecting a video input signal (5V or TMDS), automatically send CEC and RS232 commands to turn on the display device. When not detecting any video

signal within the setting time (default 10mins), automatically send RS232 and CEC commands to turn off the display device.

The RS232 command can be set by sending commands, please refer to the **_6.2.7 Third-party Device Control_** for more details.

5.4 EDID Setting

The Extended Display Identification Data (EDID) is used for the source device to match its video resolution with the connected display. By default, the source device obtains its EDID from the first connected display. Meanwhile, since the displays with different capabilities are connected to the switcher, the 4-pin DIP switch on the front panel can be used to set the EDID to a built-in fixed value. Use the following table to determine the setting for the 4-pin DIP switch for specific video resolution and audio capabilities.

The switch represents "**0**" when in the lower (**OFF**) position, and it represents "**1**" while putting the switch in the upper (**ON**) position.

Switch Status	Video Resolution	Audio Format
0000 (Default)	EDID pass-through	
0001	1280x720@60Hz RGB 4:4:4	Stereo
0010	1920x1080@60Hz	DVI
0011	1920x1080@60Hz 2D	PCM 2.0
0100	1920x1080@60Hz RGB 4:4:4	Stereo
0101	1920x1080@60Hz RGB 4:4:4	High Definition
0110	1920x1200@60Hz RGB 4:4:4	Stereo
0111	3840x2160@60Hz RGB 4:2:0 HDR	Stereo
1000	3840x2160@60Hz RGB 4:2:0 HDR	High Definition
1001	3840x2160@60Hz RGB 4:4:4	Stereo
1010	3840x2160@60Hz RGB 4:4:4	High Definition
1011	User-defined EDID (Please refer to the **_6.2.3 User-defined EDID_**)	
1100		
1101		
1110		
1111		

Note: *The EDID DIP switch only used for setting the EDID of HDMI source device, and the USB-C source device will automatically gains the EDID of display device.*

6. RS232 Control

Connect the RS232 port to control device (e.g. PC) with RS232 cable. The switcher can be controlled by sending RS232 commands.

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 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 take the software **CommWatch.exe** as an example:

The main view is shown as below:

Parameter configuration area

PORT com1

BaudRa 9600

Parity pNone

Byte 8

Stop 1

Reset

Clear

Save To File

☐ Hex View

☐ Stop View

☐ Auto Clear View

☐ New Line

☐ Hex Send Mode

☐ Auto Send

Interval 1000 ms

Counter Reset

Send

Load File

Clear

Monitoring area, show the commands and its feedback information.

Command sending area

2013-0   14:03:35   Send:0   Receive:0   V1.0

Operation area
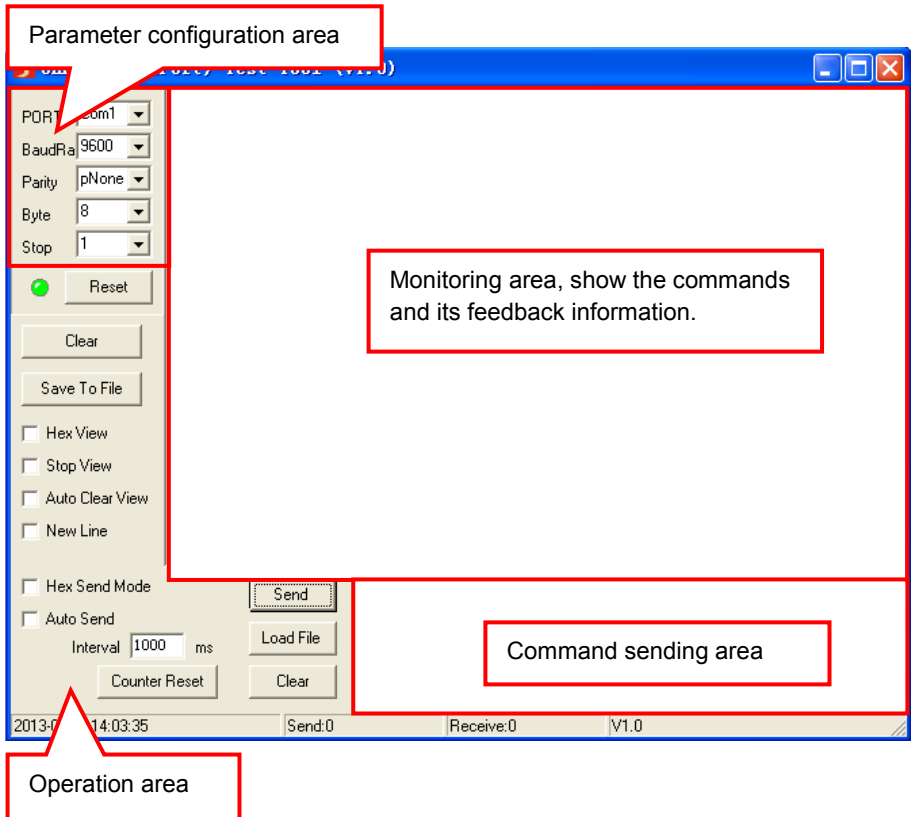
Please set the parameters of COM number, bound rate, data bit, stop bit and the parity bit correctly, and then you are able to send command in command sending area.

6.2 RS232 Command

Communication protocol: RS232 Communication Protocol

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

Note:

● *All commands need to be ended with "<CR><LF>".*

● *In the commands, "["and "]" are symbols for easy reading and do not need to be typed in actual operation.*

● *Type the command carefully, it is case-sensitive.*

6.2.1 Device Control

Command	Description	Command & Feedback Example
#GET_FIRMWARE_VER SION	Get the firmware version.	@V1.0.0
#FACTORY_RESET	Factory reset.	@FACTORY_RESET
#REBOOT	System reboot	@REBOOT

#HELP	Get the command details.	Example: #HELP SET_AV
		Feedback:
		@SELECT VIDEO AND AUDIO INPUT PORT
		#SET_AV PARAM1
		PARAM1=H,C
		H - HDMI
		C - TYPE-C

6.2.2 Source Switching

Command	Description	Command & Feedback Example
#SET_AV H	Switch to HDMI input.	@AV H
#SET_AV C	Switch to USB-C input.	@AV C
#GET_AV	Get the current input source.	@AV H @AV C
#SET_AUTO_SWITCH 1	Enable auto switching mode.	@AUTO_SWITCH 1
#SET_AUTO_SWITCH 0	Disable auto switching mode.	@AUTO_SWITCH 0
#GET_AUTO_SWITCH	Get the auto switching status.	@AUTO_SWITCH 1 @AUTO_SWITCH 0

6.2.3 User-defined EDID

There are five EDID values can be customized by sending the below command.

Command	Function & Operation
#UPLOAD_USER_EDID [PARAM].	**[PARAM]**=1~5, represents the EDID, its DIP switch status shows as below: **Operation:** **Step 1:** Prepare the EDID file (.bin). **Step 2:** Set the 4-pin DIP switch status, for example: "1011". **Step 3:** Send the command "**#UPLOAD_USER_EDID 1.**", and the feedback is "**@USER_EDID 1 READY** **PLEASE SEND EDID DATA IN 10S**". **Step 4:** Send the EDID file (.bin). If successfully upload, the feedback is: "**OK**".

[PARAM]	DIP Switch Status
1	1011
2	1100
3	1101
4	1110
5	1111

6.2.4 Switcher Baud Rate Setting

Command	Description	Command & Feedback Example
#SET_RS232_BAUD 0	Set the RS232 baud rate to 115200.	@RS232_BAUD 0
#SET_RS232_BAUD 1	Set the RS232 baud rate to 57600.	@RS232_BAUD 1
#SET_RS232_BAUD 2	Set the RS232 baud rate to 38400.	@RS232_BAUD 2
#SET_RS232_BAUD 3	Set the RS232 baud rate to 19200.	@RS232_BAUD 3
#SET_RS232_BAUD 4	Set the RS232 baud rate to 9600.	@RS232_BAUD 4
#SET_RS232_BAUD 5	Set the RS232 baud rate to 4800.	@RS232_BAUD 5
#SET_RS232_BAUD 6	Set the RS232 baud rate to 2400.	@RS232_BAUD 6
#GET_RS232_BAUD	Get the RS232 baud rate.	@RS232_BAUD 0 @RS232_BAUD 1 @RS232_BAUD 2 @RS232_BAUD 3 @RS232_BAUD 4 @RS232_BAUD 5 @RS232_BAUD 6

6.2.5 CEC/RS232 Function Setting

The ending mark of command is "<CR><LF>".

Command	Description	Command & Feedback Example
#SET_SYNCACT_CEC 1	Enable the function of automatically sending CEC commands. When detecting video input signal or not detecting any video signal, the switcher will automatically send the corresponding CEC command to control the display device.	@SYNCACT_CEC 1
#SET_SYNCACT_CEC 0	Disable the function of automatically sending CEC commands.	@SYNCACT_CEC 0
#GET_SYNCACT_CEC	Get the function setting status of automatically sending CEC commands.	@SYNCACT_CEC 1
#SET_SYNCACT_RS232 1	Enable the function of automatically sending RS232 commands. When detecting video input signal or not detecting any video signal, the switcher will automatically send the corresponding RS232 command to control the display device.	@SYNCACT_RS232 1
#SET_SYNCACT_RS232 0	Disable the function of automatically sending RS232 commands.	@SYNCACT_RS232 0
#GET_SYNCACT_RS232	Get the function setting status of automatically sending RS232 commands.	@SYNCACT_RS232 1
#SET_DTIME [PARAM1]: [PARAM2]	When not detecting video input signal, set the auto power-off time of display device to [PARAM1]: [PARAM2]. The default time is 10 minutes. [PARAM1]=0~30 minutes. [PARAM2]=0~1800 seconds.	**#SET_DTIME 1:30**
		@DTIME 1:30
#GET_DTIME	Get the auto power-off time of display device.	@DTIME 30:0

6.2.6 Display Control

Command	Description	Command & Feedback Example
#SET_AUDIO_MUTE	Mute/unmute the display audio through CEC and RS232 channels.	@AUDIO_MUTE_UNMUTE
#SET_VOL +	Increase the display audio through CEC and RS232 channels.	@VOL -
#SET_VOL -	Decrease the display audio through CEC and RS232 channels.	@VOL +
#SET_DISPLAY 1	Power on display device (Simultaneously sending CEC and RS232 commands to display device).	@DISPLAY 0
#SET_DISPLAY 0	Power off display device (Simultaneously sending CEC and RS232 commands to display device).	@DISPLAY 1

6.2.7 Third-party Device Control

Connect a third-party device (e.g. projector) to the RS232 port of switcher, the third-party device can be controlled simultaneously by the below RS232 commands while press the front panel button (ON, OFF, MUTE, VOLUME + or VOLUME -).

Note: The below commands don't need ending mark.

| Command	Description	Command & Feedback Example
#SET_ON_[PARAM1]_ [PARAM2]:XXXX	Set the ASCII RS232 command **XXXX** to be sent to control the third-party device when the **DISPLAY ON** button is pressed. ● [PARAM1] = 00~06 (Baud Rate) 　00 - 115200 　01 - 57600 　02 - 38400 　03 - 19200 　04 - 9600 　05 - 4800 　06 - 2400 ● [PARAM2] = 00~99. The delay time of sending command. ● XXXX: Any ASCII code (up to 48 bytes).	#SET_ON_05_30:1234567 @BAUDRATE: 4800 @DELAY TIME: 30 s @DISPLAY ON TO SEND:1234567
#SET_H_ON_[PARAM1]_ [PARAM2]:XX XX	Set the HEX RS232 command **XX XX** to be sent to control the third-party device when the **DISPLAY ON** button is pressed. ● [PARAM1] = 00~06 (Baud Rate) 　00 - 115200 　01 - 57600 　02 - 38400 　03 - 19200 　04 - 9600 　05 - 4800 　06 - 2400 ● [PARAM2] = 00~99. The delay time of sending command. ● XX XX: Any HEX code (0-9, A-F; up to 20 bytes. It must have a blank between 2 different XX).	#SET_H_ON_05_30:31 32 33 34 35 @BAUDRATE: 4800 @DELAY TIME: 30 s @DISPLAY ON HEX TO SEND:31 32 33 34 35

Command	Description	Command & Feedback Example
#SET_OF_[PARAM1]_ [PARAM2]:XXXX	Set the ASCII RS232 command **XXXX** to be sent to control the third-party device when the **DISPLAY OFF** button is pressed. ● [PARAM1] = 00~06 (Baud Rate) 　00 - 115200 　01 - 57600 　02 - 38400 　03 - 19200 　04 - 9600 　05 - 4800 　06 - 2400 ● [PARAM2] = 00~99. The delay time of sending command. ● XXXX: Any ASCII code (up to 48 bytes).	#SET_OF_05_30:ABCDEFG @BAUDRATE: 4800 @DELAY TIME: 30 s @DISPLAY OFF TO SEND:ABCDEFG
#SET_H_OF_[PARAM1]_ [PARAM2]:XX XX	Set the HEX RS232 command **XX XX** to be sent to control the third-party device when the **DISPLAY OFF** button is pressed. ● [PARAM1] = 00~06 (Baud Rate) 　00 - 115200 　01 - 57600 　02 - 38400 　03 - 19200 　04 - 9600 　05 - 4800 　06 - 2400 ● [PARAM2] = 00~99. The delay time of sending command. ● XX XX: Any HEX code (0-9, A-F; up to 20 bytes. It must have a blank between 2 different XX).	#SET_H_OF_05_30:41 42 43 44 45 @BAUDRATE: 4800 @DELAY TIME: 30 s @DISPLAY OFF HEX TO SEND:41 42 43 44 45

Command	Description	Command & Feedback Example
#SET_AM_[PARAM1]_ [PARAM2]:XXXX	Set the ASCII RS232 command **XXXX** to be sent to control the third-party device when the **VOLUME MUTE** button is pressed. ● [PARAM1] = 00~06 (Baud Rate) 　00 - 115200 　01 - 57600 　02 - 38400 　03 - 19200 　04 - 9600 　05 - 4800 　06 - 2400 ● [PARAM2] = 00~99. The delay time of sending command. ● XXXX: Any ASCII code (up to 48 bytes).	#SET_AM_05_30:ABCDEFG @BAUDRATE: 4800 @DELAY TIME: 30 s @VOLUME MUTE TO SEND:ABCDEFG
#SET_H_AM_[PARAM1]_ [PARAM2]:XX XX	Set the HEX RS232 command **XX XX** to be sent to control the third-party device when the **VOLUME MUTE** button is pressed. ● [PARAM1] = 00~06 (Baud Rate) 　00 - 115200 　01 - 57600 　02 - 38400 　03 - 19200 　04 - 9600 　05 - 4800 　06 - 2400 ● [PARAM2] = 00~99. The delay time of sending command. ● XX XX: Any HEX code (0-9, A-F; up to 20 bytes. It must have a blank between 2 different XX).	#SET_H_AM_05_30:31 32 33 34 35 @BAUDRATE: 4800 @DELAY TIME: 30 s @VOLUME MUTE HEX TO SEND:31 32 33 34 35

Command	Description	Command & Feedback Example

#SET_AU_[PARAM1]_ [PARAM2]:XXXX	Set the ASCII RS232 command **XXXX** to be sent to control the third-party device when the **VOLUME UP** button is pressed.
	● [PARAM1] = 00~06 (Baud Rate)
	   00 - 115200
	   01 - 57600
	   02 - 38400
	   03 - 19200
	   04 - 9600
	   05 - 4800
	   06 - 2400
	● [PARAM2] = 00~99. The delay time of sending command.
	● XXXX: Any ASCII code (up to 48 bytes).
		#SET_AU_05_30:ABCDEFG
		
		@BAUDRATE: 4800
		@DELAY TIME: 30 s
		@VOLUME + TO SEND:ABCDEFG

#SET_H_AU_[PARAM1]_ [PARAM2]:XX XX	Set the HEX RS232 command **XX XX** to be sent to control the third-party device when the **VOLUME UP** button is pressed.
	● [PARAM1] = 00~06 (Baud Rate)
	   00 - 115200
	   01 - 57600
	   02 - 38400
	   03 - 19200
	   04 - 9600
	   05 - 4800
	   06 - 2400
	● [PARAM2] = 00~99. The delay time of sending command.
	● XX XX: Any HEX code (0-9, A-F; up to 20 bytes. It must have a blank between 2 different XX).
		#SET_H_AU_05_30:31 32 33 34 35
		
		@BAUDRATE: 4800
		@DELAY TIME: 30 s
		@VOLUME + HEX TO SEND:41 42 43 44 45

Command	Description	Command & Feedback Example
#SET_AD_[PARAM1]_ [PARAM2]:XXXX	Set the ASCII RS232 command **XXXX** to be sent to control the third-party device when the **VOLUME DOWN** button is pressed. ● [PARAM1] = 00~06 (Baud Rate) 00 - 115200 01 - 57600 02 - 38400 03 - 19200 04 - 9600 05 - 4800 06 - 2400 ● [PARAM2] = 00~99. The delay time of sending command. ● XXXX: Any ASCII code (up to 48 bytes).	#SET_AD_05_30:ABCDEFG @BAUDRATE: 4800 @DELAY TIME: 30 s @VOLUME - TO SEND:ABCDEFG
#SET_H_AD_[PARAM1]_ [PARAM2]:XX XX	Set the HEX RS232 command **XX XX** to be sent to control the third-party device when the **VOLUME DOWN** button is pressed. ● [PARAM1] = 00~06 (Baud Rate) 00 - 115200 01 - 57600 02 - 38400 03 - 19200 04 - 9600 05 - 4800 06 - 2400 ● [PARAM2] = 00~99. The delay time of sending command. ● XX XX: Any HEX code (0-9, A-F; up to 20 bytes. It must have a blank between 2 different XX).	#SET_H_AD_05_30:41 42 43 44 45 @BAUDRATE: 4800 @DELAY TIME: 30 s @VOLUME - HEX TO SEND:41 42 43 44 45

7. Panel Drawing
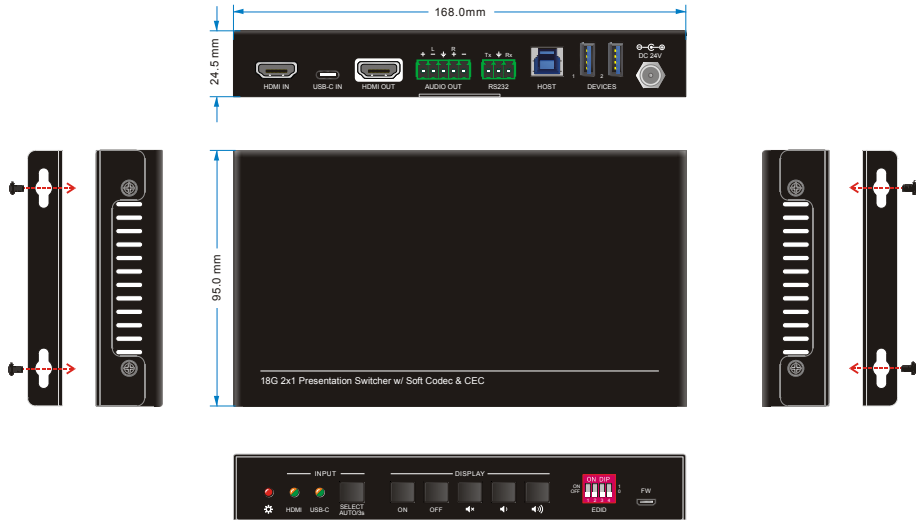
8. Troubleshooting & Maintenance

Problems	Potential Causes	Solutions
Output image with snowflake	Bad quality of the connecting cable.	Try another high quality cable.
	Fail or loose connection.	Make sure the connection is good
No output image when switching	No signal at the input / output end.	Check with oscilloscope or multimeter if there is any signal at the input/ output end.
	Fail or loose connection.	Make sure the connection is good.
	The switcher is broken.	Send it to authorized dealer for repairing.
POWER indicator doesn't work or no respond to any operation	Fail connection of power cord.	Make sure the power cord connection is good.
Static becomes stronger when connecting the video connectors	Bad grounding.	Check the grounding and make sure it is connected well.
Cannot control the device by control device (e.g. a PC) through RS232 port	Wrong RS232 communication parameters.	Type in correct RS232 communication parameters.
	Broken RS232 port.	Send it to authorized dealer for checking.

Note: If your problem still remaining after following the above troubleshooting steps, please contact your local dealer or distributor for further assistance.

9. Customer Service

The return of a product to our Customer Service implies the full agreement of the terms and conditions hereinafter. There terms and conditions may be changed without prior notice.

1) **Warranty**

 The limited warranty period of the product is fixed three years.

2) **Scope**

 These terms and conditions of Customer Service apply to the customer service provided for the products or any other items sold by authorized distributor only.

3) **Warranty Exclusion**

 - 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 showed 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 by distributor.

   ✓ Any other causes which does not relate to a product defect.

 - Shipping fees, installation or labor charges for installation or setup of the product.

4) **Documentation**

 Customer Service will accept defective product(s) in the scope of warranty coverage at the sole condition that the defeat has been clearly defined, and upon reception of the documents or copy of invoice, indicating the date of purchase, the type of product, the serial number, and the name of distributor.

Remarks: Please contact your local distributor for further assistance or solutions.