MV41+

4K 4x1 Seamless Multiview Switcher

Version: 79141-MV_2022V1.0

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 January, 2022. 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.

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

Table of Contents

MV41+

79141-MV User Manual

1. Product Introduction

The MV41+ is a seamless 4K HDMI switcher with four video inputs, each with auto-scaling, and one output. It includes LINE and MIX audio inputs for audio embedding & mixing, as well as AUDIO and SPDIF outputs for audio extraction/de-embedding. The MV41+ offers sophisticated, flexible multiview operation for viewing multiple inputs simultaneously, with sixteen pre-defined multiview layouts; users can customize the layout and size of windows in multiview. When in single-window mode, the MV41+ also offers automatic source detection and switching. The MV41+ is controllable via the front panel buttons, RS232, and TCP/IP with a web GUI.

1.1 Features

- 4 HDMI Inputs, 1 HDMI Output
- Supports 4K@30Hz 4:4:4, HDCP 2.2
- Seamlessly switching among four inputs
- Built-in auto-scaling on all input ports
- Audio embedding, de-embedding, and mixing
- Supports automatic source detection and switching
- Multiview with 3 different window sizes and 16 pre-defined layouts
- Controllable via front panel buttons, IR remote, web GUI, and RS232 commands

1.2 Package List

- 1x MV41+ Multiview Switcher
- 1x RS232 cable (3-pin to DB9)
- 1x IR remote
- 2x 3-pin Terminal Block
- 1x Power Adapter (24V DC, 1.25A)
- 2x Mounting Ears
- 4x Mounting Screws
- 1x User Manual

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

2. Specifications

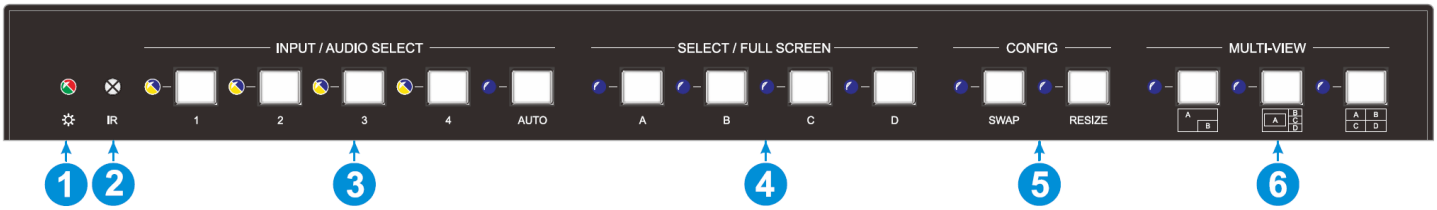
Video	
Video Input	4 HDMI In (Type-A, Female)
HDMI Input Resolution	Up to 4Kx2K@30Hz 4:4:4
Video Output	1 HDMI Out (Type-A, Female)
HDMI Output Resolution	Up to 4Kx2K@30Hz RGB[1]
HDMI Standard	HDMI 1.4
HDCP Standard	Up to HDCP 2.2
Audio Input	
Audio In	1 LINE IN (3-pin terminal block) 1 MIX IN (3-pin terminal block)
Frequency Response	20 Hz ~ 20 kHz, ±3dB
Maximum Input Level	2.0Vrms ± 0.5dB, 2V=16dB headroom above -10dBV (316 mV) nominal consumer line level signal
L-R Level Deviation	< 0.3dB, 1kHz sine at 0dBFS level (or max level before clipping)
Input Impedance	> 10kΩ
Audio Format	PCM 2-Channel
SPDIF Audio Output	
SPDIF Out	1 SPDIF (Toslink)
Maximum Output Level	± 0.05dBFS
Frequency Response	20Hz ~ 20kHz, ±1dB
Total Harmonic Distortion + Noise (THD+N)	< 0.05%, 20Hz ~ 20kHz bandwidth, 1kHz sine at 0dBFS level (or max level)
Signal-to-Noise Ratio (SNR)	> 90dB, 20Hz ~ 20kHz bandwidth
Crosstalk Isolation	< -70dB, 10kHz sine at 0dBFS level (or max level before clipping)

[1] 1080i @ 60Hz and HDR are not supported

Noise	-90dB
Audio format	PCM 2-Channel
Audio Output	
Audio Out	1 AUDIO (3.5mm mini jack)
Frequency Response	20Hz ~ 20kHz, ±dB
Maximum Output Level	2.0 Vrms ± 0.5dB, 2V=16dB headroom above -10dBV (316 mV) nominal consumer line level signal
THD+N	< 0.05%, 20Hz ~ 20kHz bandwidth, 1kHz sine at 0dBFS level (or max level)
SNR	> 80dB, 20Hz ~ 20kHz bandwidth
Crosstalk Isolation	< -80dB, 10kHz sine at 0dBFS level (or max level before clipping)
L-R Level Deviation	< 0.05dB, 1kHz sine at 0dBFS level (or max level before clipping)
Output Load Capability	1kΩ and higher (supports 10x parallel 10kΩ loads)
Noise	-80dB
Control	
Control Ports	1 RS232 (3-pin terminal block) 1 TCP/IP (RJ45)
General	
Operating Temperature	23 ~ 131°F (-5 ~ 55°C)
Storage Temperature	-13 ~ 158°F (-25 ~ 70°C)
Relative Humidity	10 ~ 90%
Power Supply	Input: AC 100 ~ 240 V, 50/60Hz Output: DC 24V, 1.25A
Power Consumption	13W (max)
Product Dimensions	11.22” (285mm) x 1.06” (27mm) x 6.79” (172.5mm)
Product Weight	2.73 lbs. (1.24 kg)

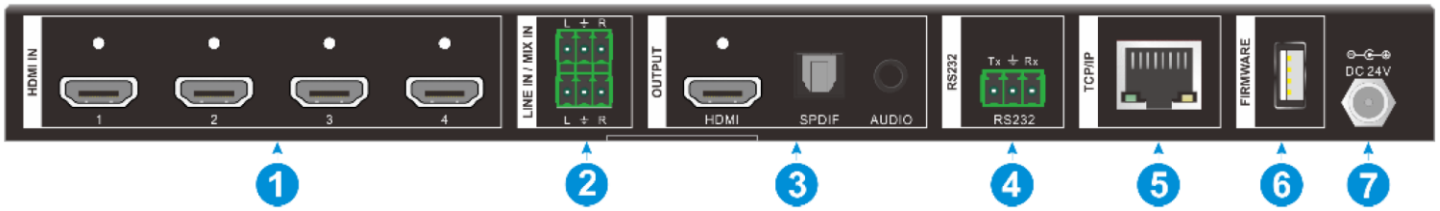
3. Panel Description

3.1 Front Panel



1. **Power LED**: The LED light up green when the switcher is working, and red when it is in standby
2. **IR LED**: Built-in IR sensor, receives signals sent by the IR remote
3. **Input/Audio Selection Buttons**:
    - Press the **1~4** buttons to select the corresponding HDMI input. Button LEDs will light up yellow when there is a video signal, and blue when the input is chosen as a source.
    - In Multi-View mode, press and hold the **1~4** buttons for at least 3 seconds to select the corresponding HDMI input source's audio as the audio output; the button will light up blue for 3 seconds, then turn off.
    - Press **AUTO** to enable Auto-Switching mode; the **AUTO** button's LED will light up blue
    - In Multi-View mode, press and hold the **AUTO** button for at least 3 seconds to select LINE audio as the audio output
4. **Select / Full Screen Buttons**: Press the **A~D** buttons to set the corresponding view window to full-screen; the selected source's LED will light up blue
5. **Config**:
    - Press the **SWAP** button to cycle the selected view window in numerical order (i.e. in quad view, **SWAP** cycles A > B > C > D); the button lights up blue when pressed
    - Press the **RESIZE** button to change the size of windows in the multiview layout; the button lights up blue when pressed
6. **Multi-View**: Press the buttons to choose from the available multi-view layouts; the LED of the selected mode will light up blue

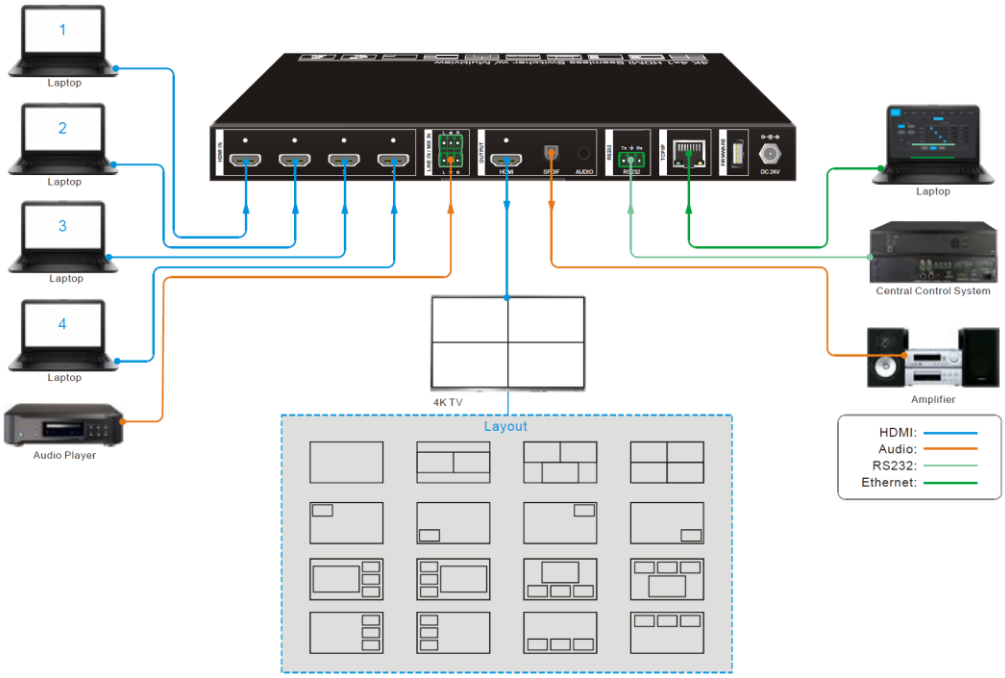
3.2 Rear Panel



1. **HDMI In**: 4 Type-A HDMI input ports for connecting HDMI source devices
2. **LINE IN**: 3-pin terminal block for connecting audio source device to embed in HDMI audio sources
   MIX IN: 3-pin terminal block for connecting audio source devices to mix with HDMI audio sources
3. **HDMI Output**: Type-A HDMI output port for connecting to display devices
   SPDIF Output: Toslink audio output for audio de-embedding from HDMI output
   Audio Output: 3.5mm mini jack audio output for audio de-embedding from HDMI output
4. **RS232**: 3-pin terminal block to connect an RS232 controller, or a third-party device to be controlled by RS232 commands
5. **TCP/IP**: RJ45 port to connect the switcher to a network for controlling it via the web GUI
6. **Firmware**: Type-A USB port for performing firmware updates
7. **DC 24V**: Port for connecting the switcher's DC power supply

4. System Connection Diagrams

4.1 Normal Connection



4.2 Cascade Connection

5. Front Panel Control

5.1 Multi-View Selection

By default, the switcher is set to quad-view, and the input-output correspondence is: Input 1-Window A, Input 2-Window B, Input 3-Window C, Input 4, Window D. To change the multi-view mode, press one of the other two multi-view buttons. The LEDs of the selected multi-view layout and corresponding windows will light up blue.

To switch to full-screen, press one of the Windows A~D buttons to display the corresponding window full-screen. While in Fullscreen mode, the LEDs of the selected input source and window will light up blue, and the LEDs of all other window and multi-view mode buttons will turn off.

5.2 Video Signal Switching

5.2.1 In Multi-View Mode

Operation: *Input # + Window #*

Example: Switch Input 1 to Window B

Press **Input 1** (the **Input 1** LED will turn blue, and the **Windows A~D** LEDs will flash), then press **Window B** (the **Windows A, C,** and **D** LEDs will go out, then the **Input 1** and **Window B** LEDs will flash 3 times, and then the **Input 1** LED will go out and the **Windows A~D** LEDs will turn blue).

5.2.2 In Full-Screen Mode

5.2.2.1 Manual Switching

Operation: Input # + Window #

Example: Switch Input 2 to Window A

Press **Input 2** (the **Input 2** LED will turn blue), then press **Window A** (the **Input 2** and **Window A** LEDs will turn blue).

5.2.2.2 Auto-Switching

Press the **AUTO** button to enter Auto-Switching mode (the **AUTO** LED will turn blue). When in Auto-Switching mode, the signal switching obeys the following principles:

1. **HDMI Input Priority**: HDMI 1 > HDMI 2 > HDMI 3 > HDMI 4; when an input source and output window are connected, the corresponding LEDs will turn blue
2. **New Signal**: When the switcher detects a new input signal, the switcher will switch to the new signal automatically

3. **Last-Selected Input**: The switcher will remember which input source was last selected when it is powered off, and will automatically switch to that source when powering back on
4. **Manual Switching**: It is possible to switch sources manually while the switcher is in Auto-Switching mode, and doing so does not exit Auto-Switching mode
5. **Multi-View**: Changing from Fullscreen to Multi-View mode will not exit Auto-Switching mode

5.3 Video Switching Status Inquiry

In Multi-View mode (**Window A**, **B**, **C**, or **D** LEDs lit up blue)

Operation: Window #

Example. Press and hold the **Window B** button for at least 3 seconds. The **Window A**, **C,** and **D** LEDs will turn off, and the LED of the input source currently assigned to Window B will turn blue. After 3 seconds, the input source LED will turn off, and the **Window A**, **C**, and **D** LEDs will turn back on.

5.4 Audio Selection

By default, the audio source is set to HDMI 1. In Multi-View mode, pressing and holding any of the **Input 1~4** buttons for more than 3 seconds will change the audio output to the corresponding input source, and the input's LED will turn blue. After 3 seconds, the input LED will turn off.

Press and hold the **AUTO** button for at least 3 seconds to change the audio output to the LINE IN audio source.

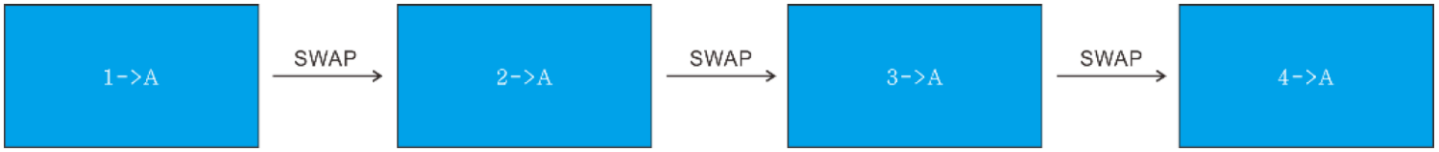
5.5 Config

5.5.1 Swap Button

Press the **SWAP** button to cycle through display windows sequentially (i.e. A -> B -> C -> D); the **SWAP** LED will light up blue while it is pressed.

Example: In Multi-View Mode

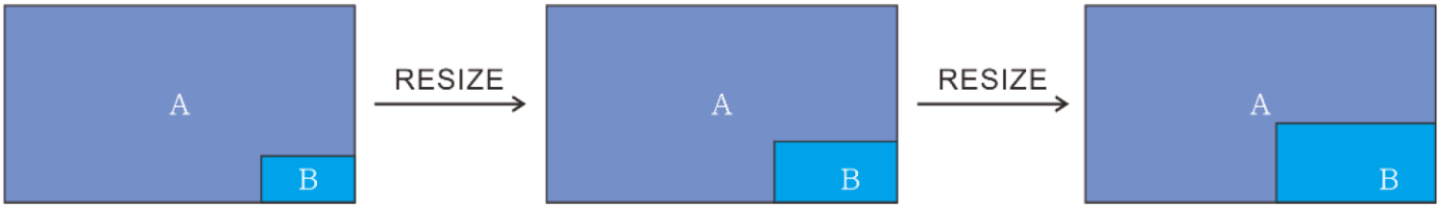
Example: In Fullscreen Mode



5.5.2 Resize button

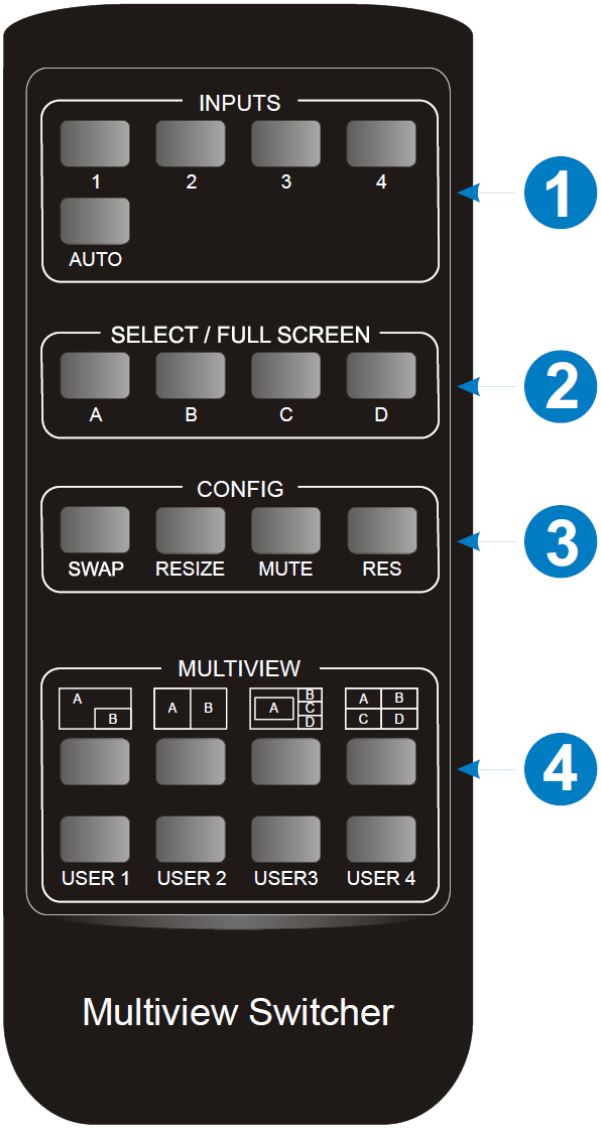
Press the **RESIZE** button the adjust the size of windows in Multi-View mode. (for more information, refer to **§7.1.1 Pre-Defined Layouts**)

Example: In Picture-in-Picture (PIP) mode



6. IR Remote

1. **Inputs**: Press the **Inputs 1~4** buttons to select the corresponding input source. Press the **AUTO** button to automatically detect and switch input sources.
2. **Select / Full Screen**: Press the **Window A~D** buttons to set the corresponding input to Fullscreen mode[2]
3. **Config**:
   - **Swap**: Press the **SWAP** button to cycle through display windows sequentially (i.e. A -> B -> C -> D)
   - **Resize**: Press the **RESIZE** button the adjust the size of windows in Multi-View mode
   - **Mute**: Press **MUTE** to mute or unmute the switcher's audio output
   - **Res**: Press the **RES** button to change the video output resolution
4. **Multiview**:
   - Pressing the top row of Multiview buttons changes the selected multi-view layout
   - Pressing the **User 1~4** buttons selects the corresponding user-defined multi-view layouts 1~4 (provided any have been configured using the web GUI)



[2] The IR remote does not support long-presses, and its button functions are identical to the 3.1 Front Panel buttons

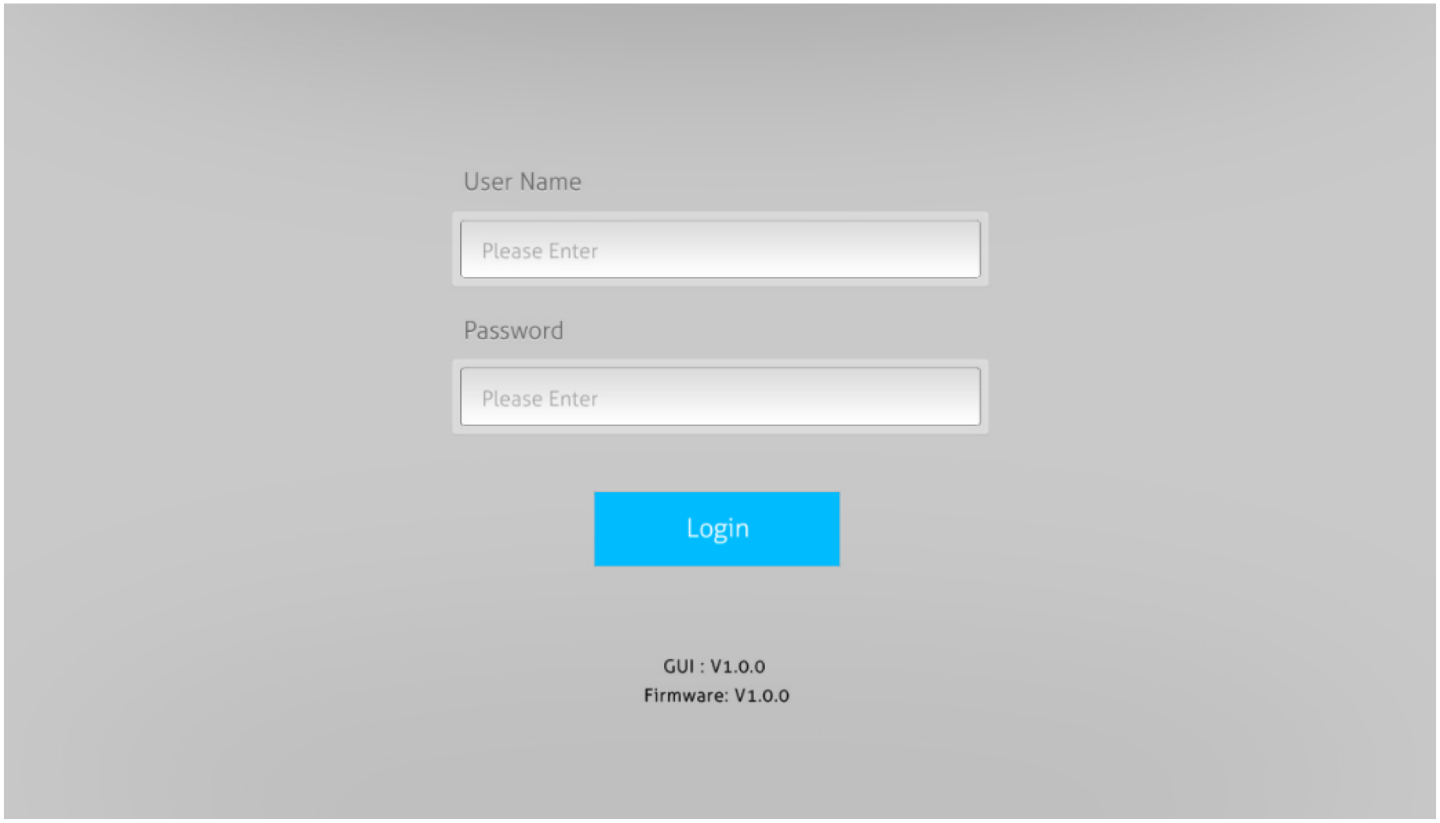
7. Web GUI Control

The switcher can be controlled via TCP/IP. The default IP settings are:

IP Address: 192.168.0.178

Subnet Mask: 255.255.255.0

Type 192.168.0.178 in an Internet browser to access the web GUI log-in page.



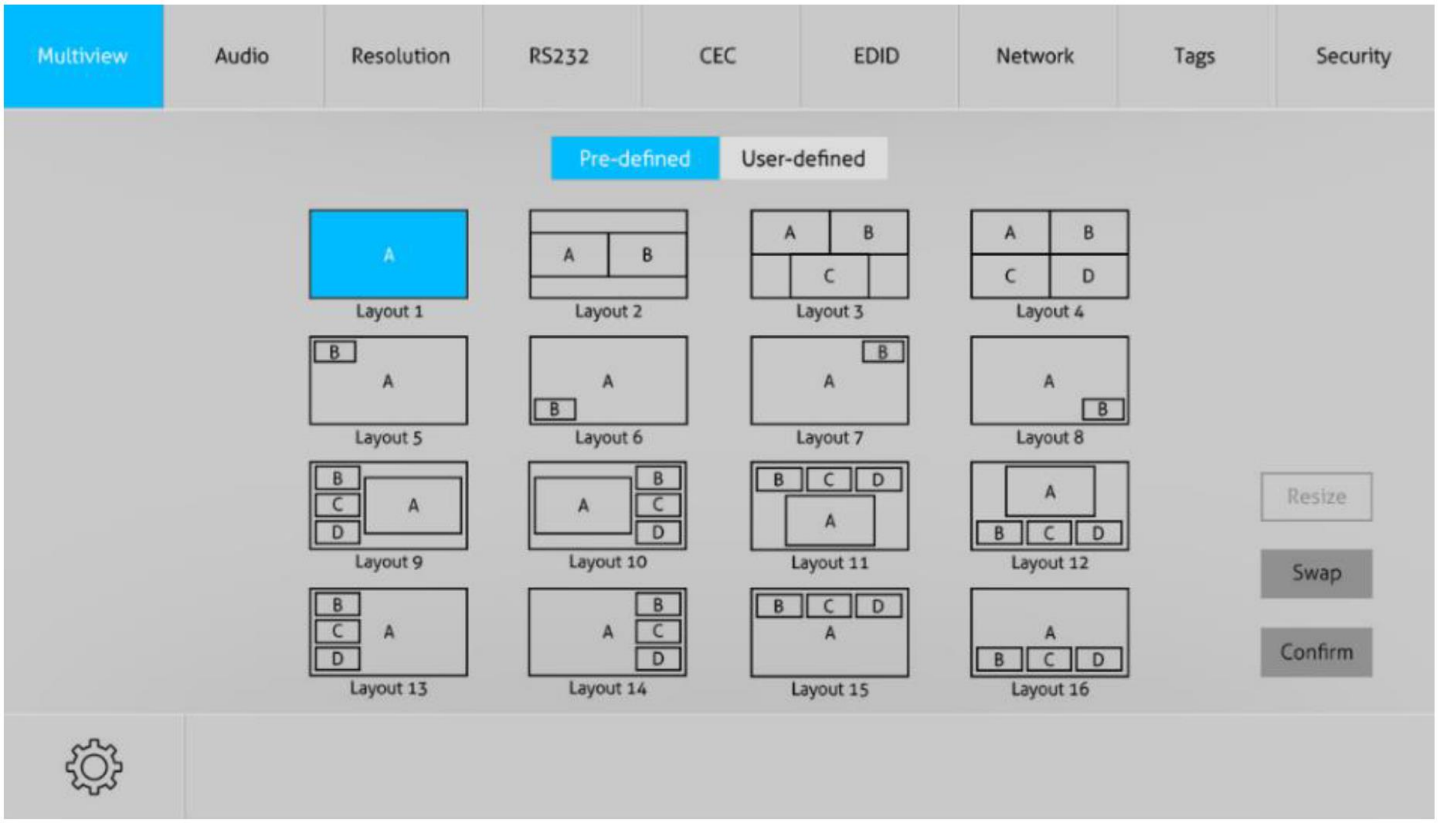
Username: admin

Password: admin

Type the username and password where prompted, then click **Login** to enter the Video Switching section.

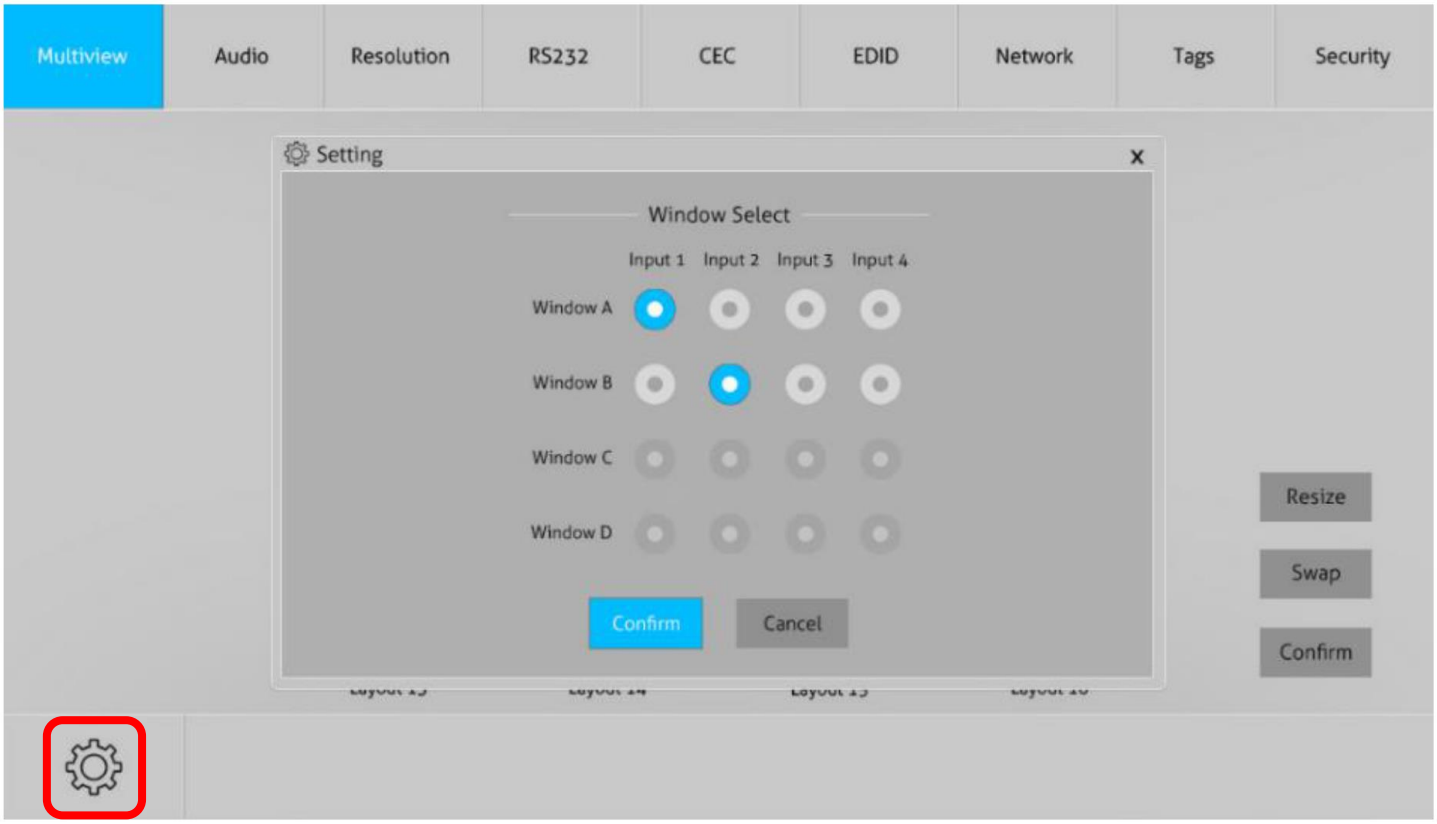
7.1 Multi-View Tab

7.1.1 Pre-Defined Layouts



1. Click a layout to set the multi-view mode to the corresponding layout
2. Click **Resize** to adjust the size of windows in Multi-View mode [3]
3. Click **Swap** to cycle through display windows sequentially (i.e. A -> B -> C -> D)
4. Click the **Confirm** button to complete the layout selection

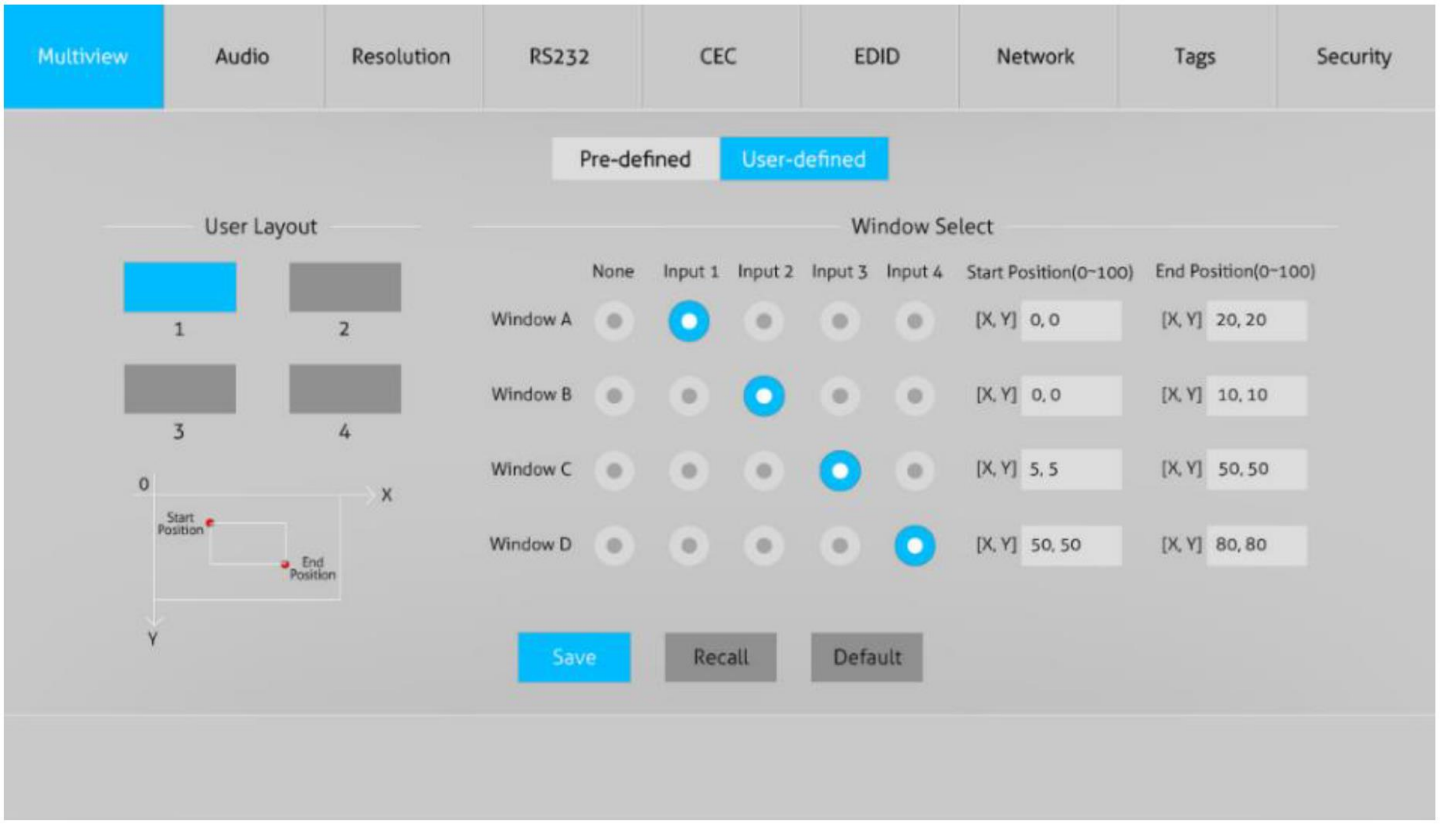
[3] Resize is only available for Preset Layouts 2 and 5~12



1. Click the **Settings** button in the bottom left corner of the screen to open the Window Select menu, which offers a grid for selecting which input source is mapped to which view window.
2. Click **Confirm** to apply the selected source mapping, or click **Cancel** to discard all changes and return to the Multi-View tab.

7.1.2 User-Defined Layouts

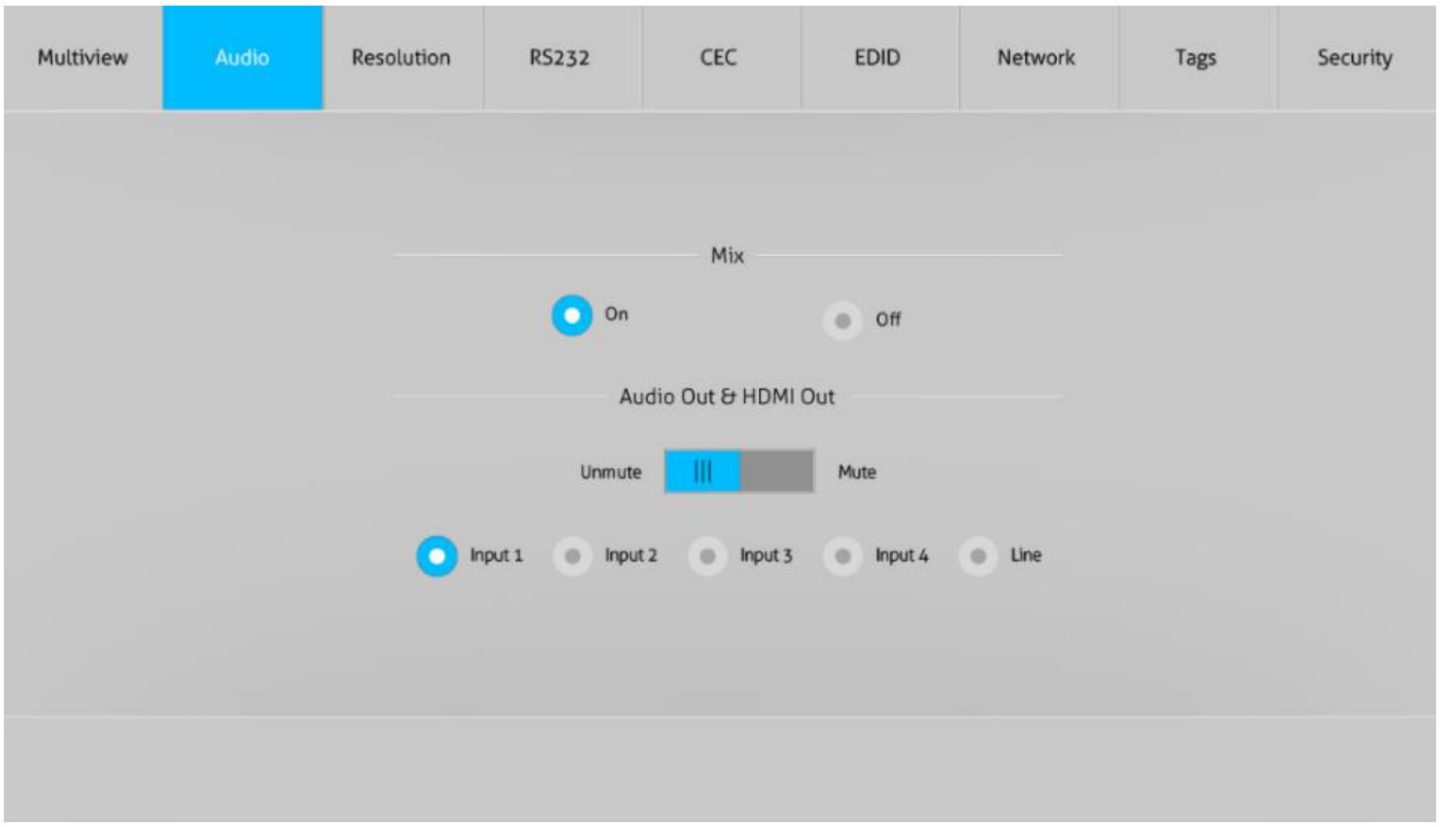
Click “User-Defined” at the top of the page to switch to user-defined multiview layouts.



1. Click the **User Layout 1~4** buttons to select a user-defined multi-view layout to edit
2. Use the **Window Select** section to define the input source mapping of the layout, along with the size and position of each window within the layout
3. Click **Save** to apply changes to the selected layout[4]

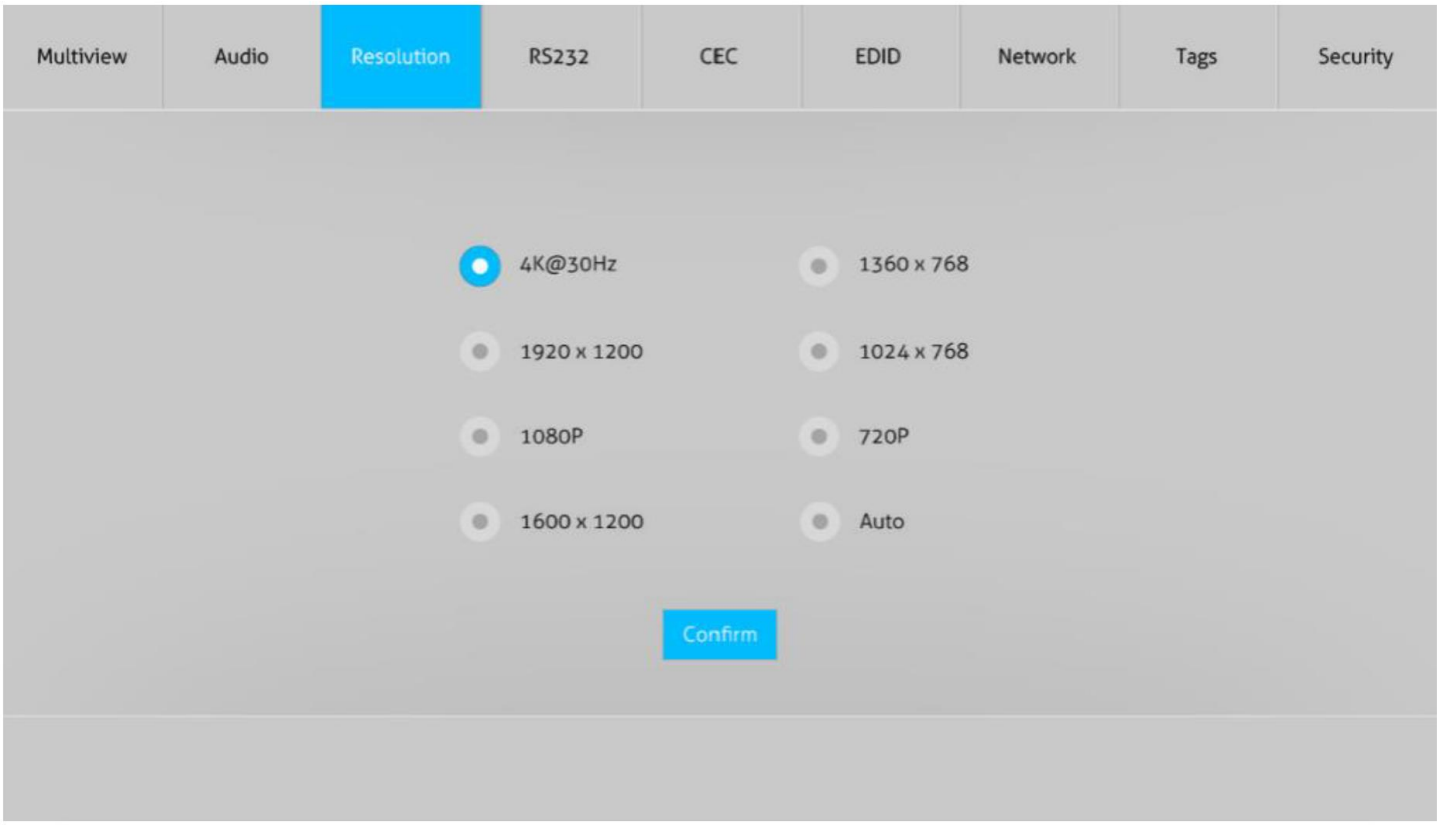
[4] If the user-defined layout exceeds the bandwidth limit, click OK to close the error message, then adjust the window sizes of the layout to reduce bandwidth consumption

7.2 Audio Tab



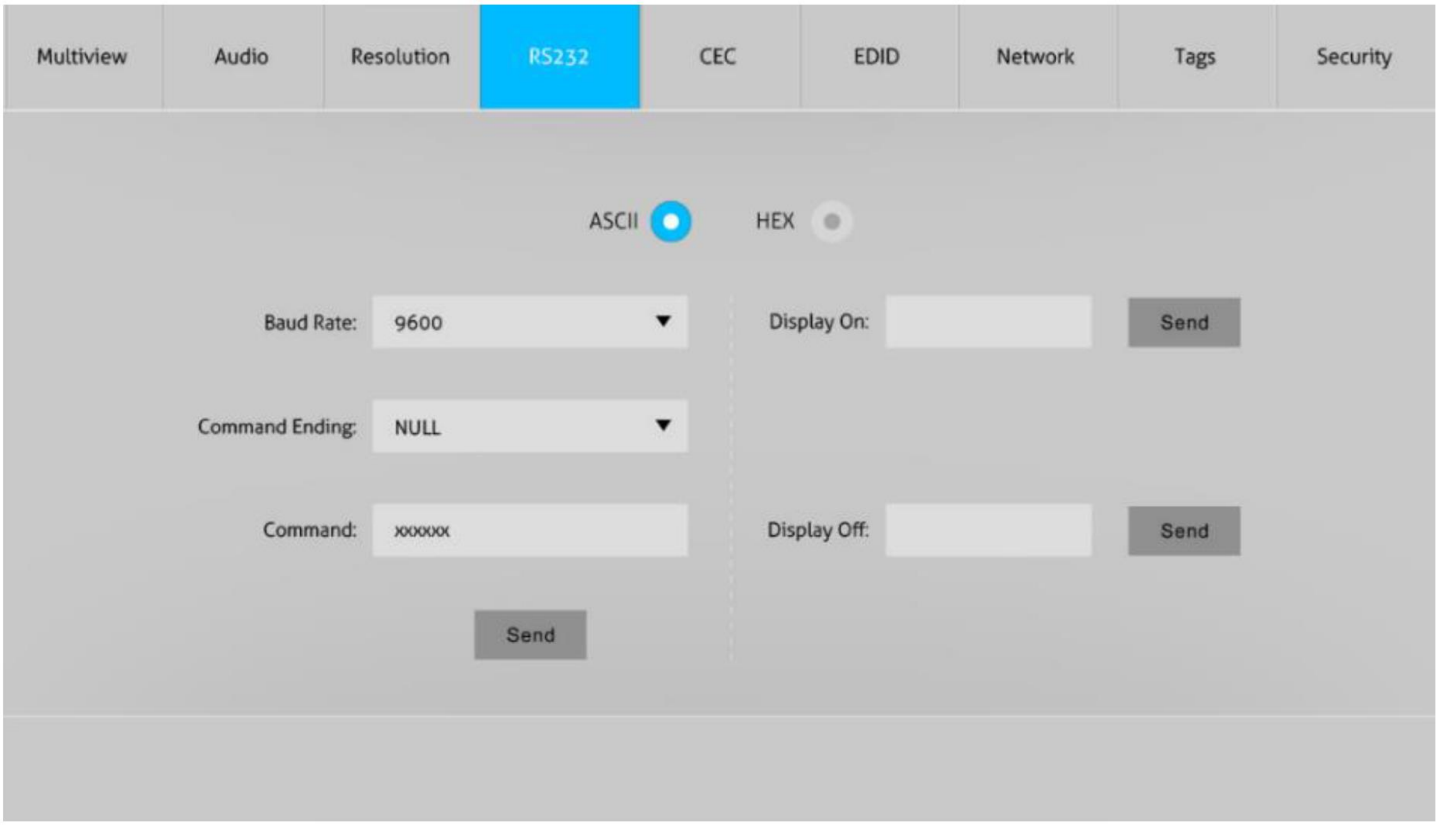
1. Click On to enter **Mix** mode, or click Off to exit **Mix** mode
2. Select **Mute** or **Unmute** to control whether the switcher outputs audio
3. Select **HDMI Input 1~4** or the **LINE IN** audio input as the audio output

7.3 Resolution Tab



1. Choose any of the built-in resolutions for the selected input source device, or choose **Auto** to show the resolution from a third-party display device automatically
2. Click **Confirm** to apply the selected resolution

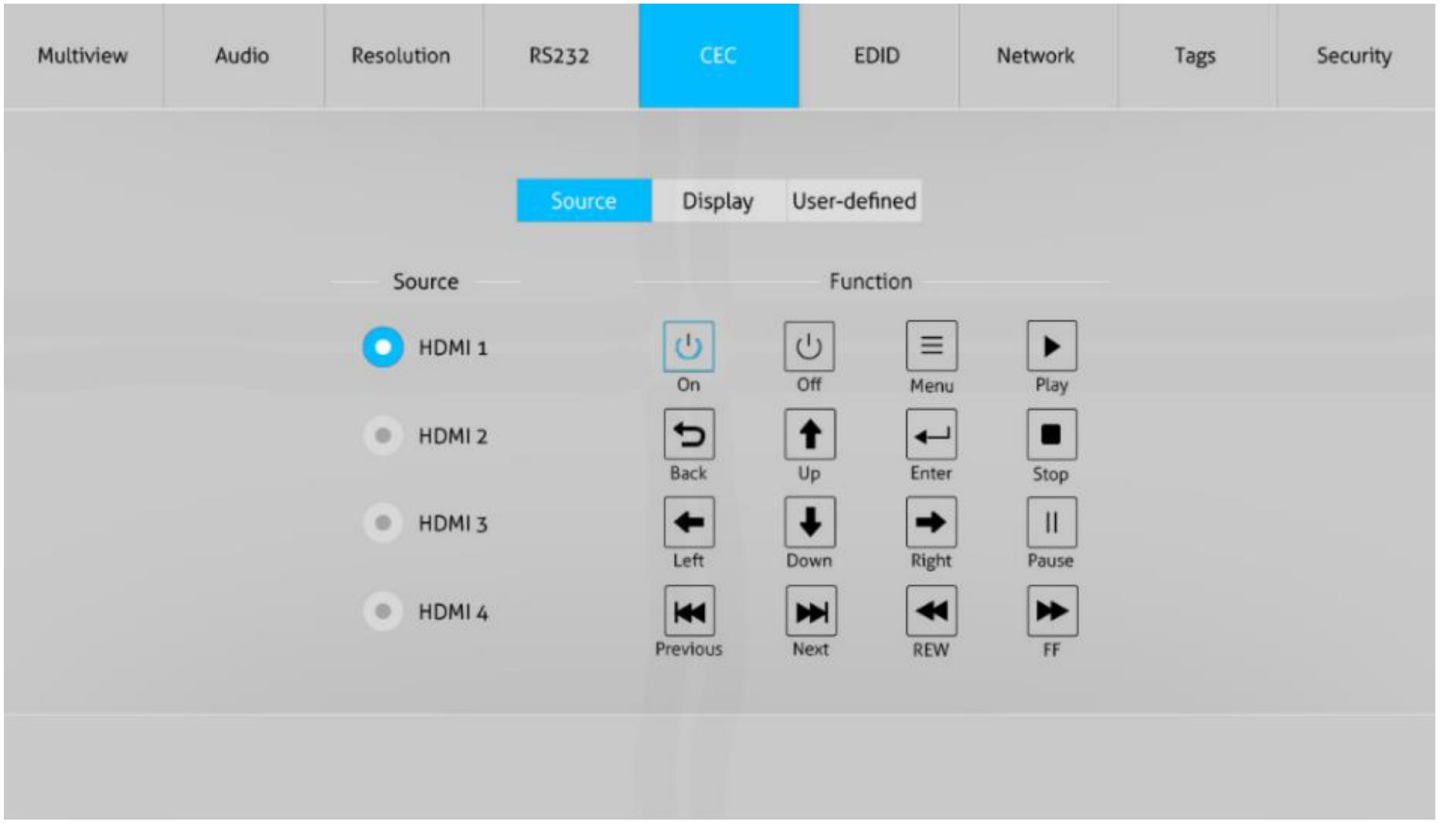
7.4 RS232 Tab



1. Choose whether to send RS232 commands as **ASCII** or **HEX**
2. **Baud Rate**: Supports 2400, 4800, 9600, 19200, 38400, 57600, and 11520
3. **Command Ending**: RS232 commands can be terminated with **NULL**, **CR**, **LF**, or **CR+LF**
4. **Command**: Type a command to control the third-party device connected to the RS2323 port of the switcher
5. **Display On**: Type and send a Display ON RS232 command to the connected third-party device
6. **Display Off**: Type and send a Display OFF RS232 command to the connected third-party device

7.5 CEC Tab

7.5.1 Source CEC Control

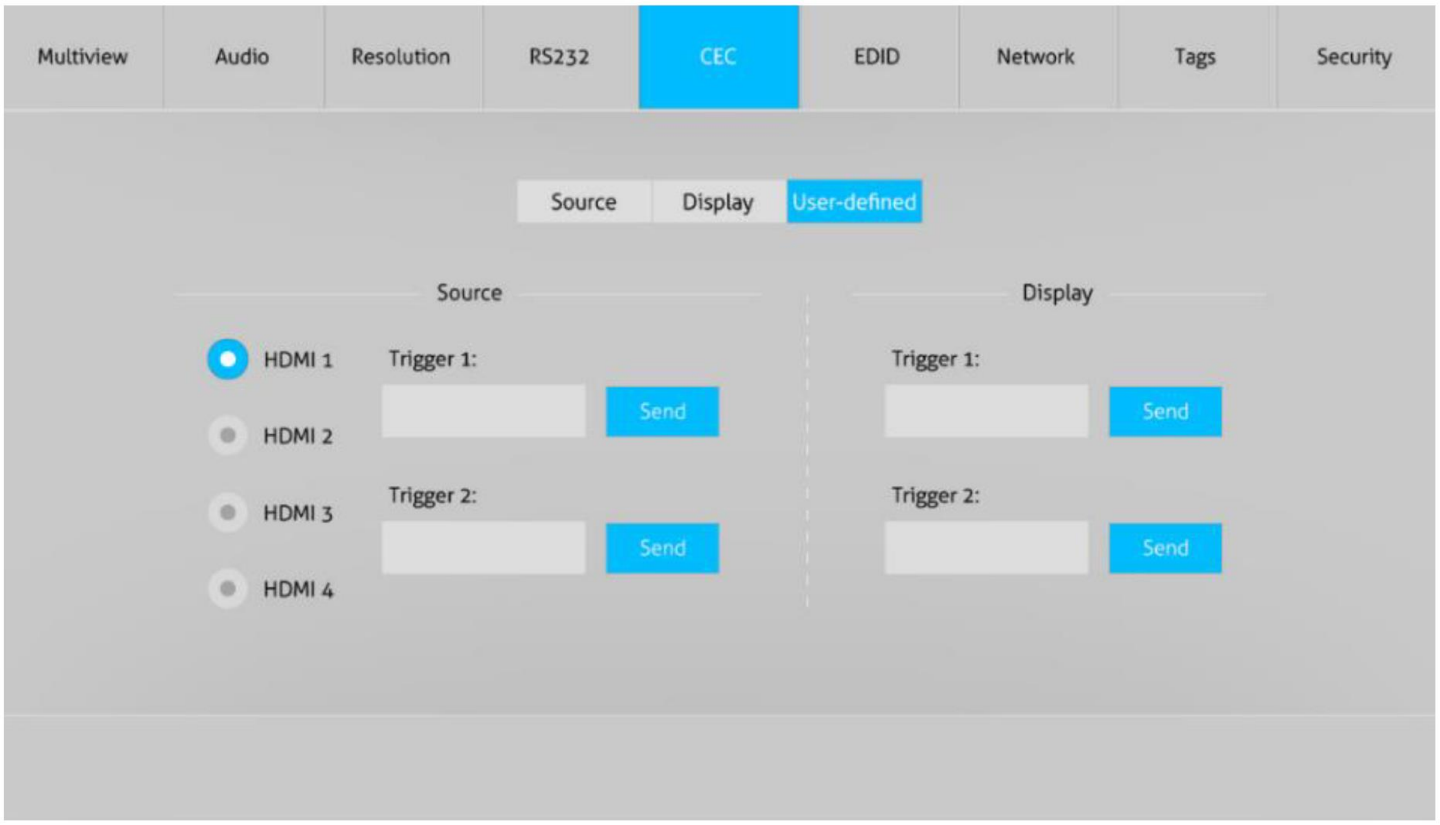


1. Choose an **HDMI Input 1~4** to control via CEC
2. Choose a **Function** to send the corresponding CEC command to the selected HDMI Input

7.5.2 Display CEC Control

1. Select a **Function** to send the corresponding CEC command to the third-party device connected to the **HDMI output** port of the switcher

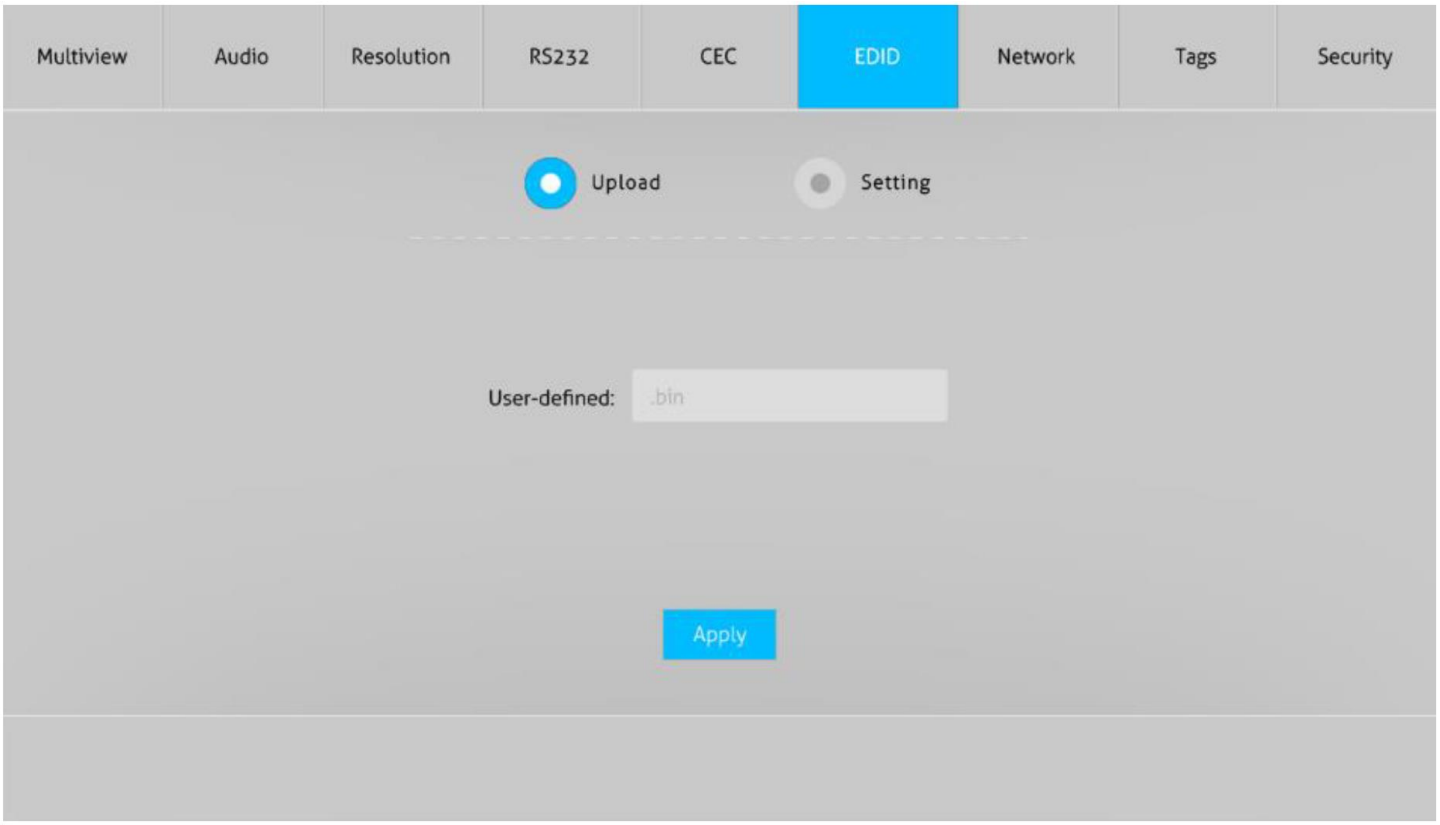
7.5.3 User-Defined CEC Control



1. Select an **HDMI Input 1~4** to send CEC commands to
2. Type custom CEC commands in the **Source** section and click **Send** to control source devices via CEC
3. Type custom CEC commands in the **Display** section to control the display device via CEC

7.6 EDID Tab

7.6.1 Upload User-Defined EDID File



1. Customize user-defined EDID
2. Prepare the EDID file (.bin) on the controlling PC
3. Click the **User-defined** box and select the EDID file from the PC's file system
4. Click **Apply** to upload the user-defined EDID file

7.6.2 Built-In EDID Settings

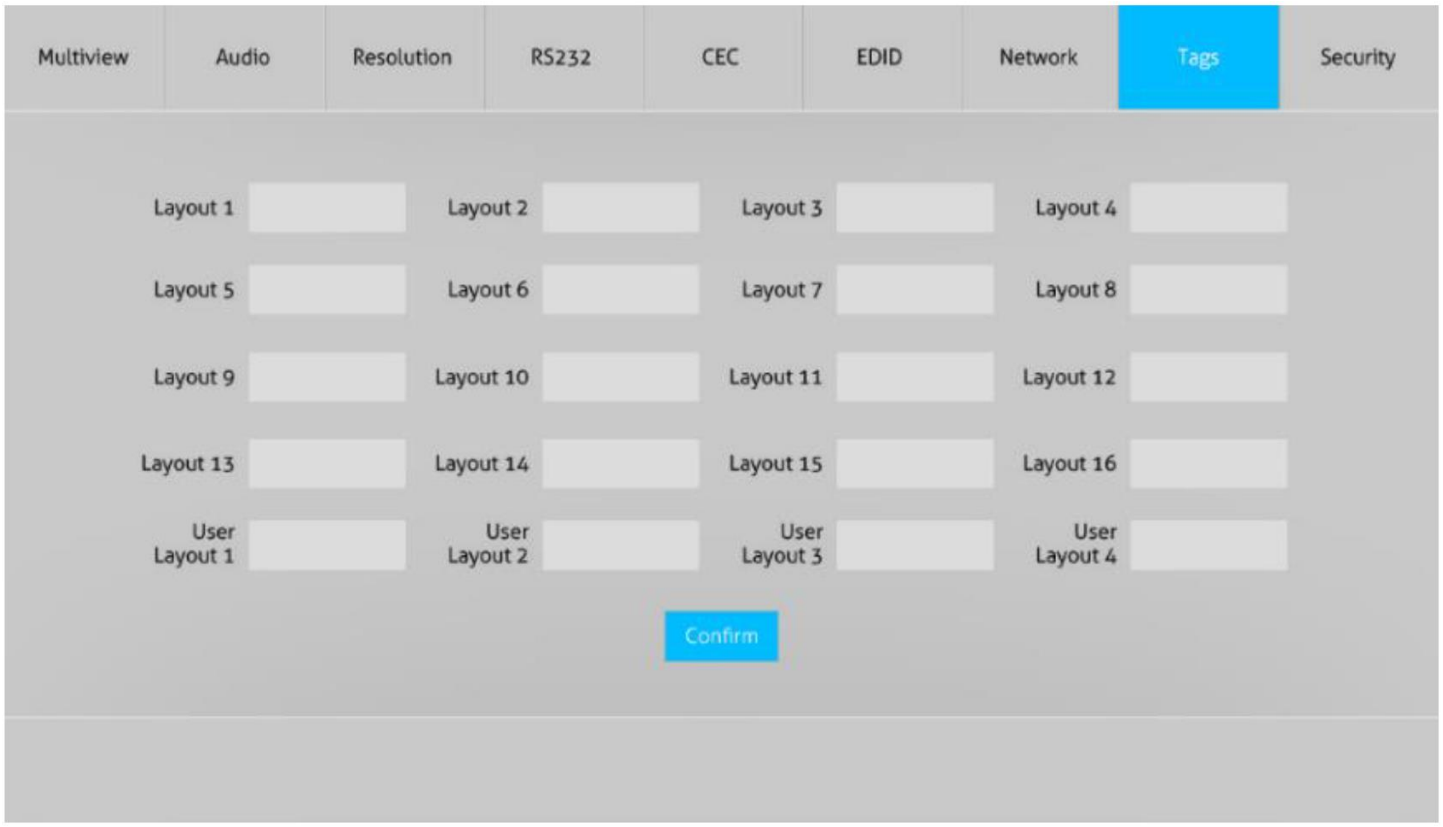
1. Click **Setting** to access built-in EDID settings for source devices
2. Choose an **HDMI Input 1~4** to select a source
3. Choose one of the built-in EDID options for the selected HDMI input
4. Click **Confirm** to apply the selected EDID settings

7.7 Network Tab

1. Select Dynamic Host Configuration Protocol (DHCP) or Static IP
2. Set the IP Address, Subnet Mask, and Gateway[5]

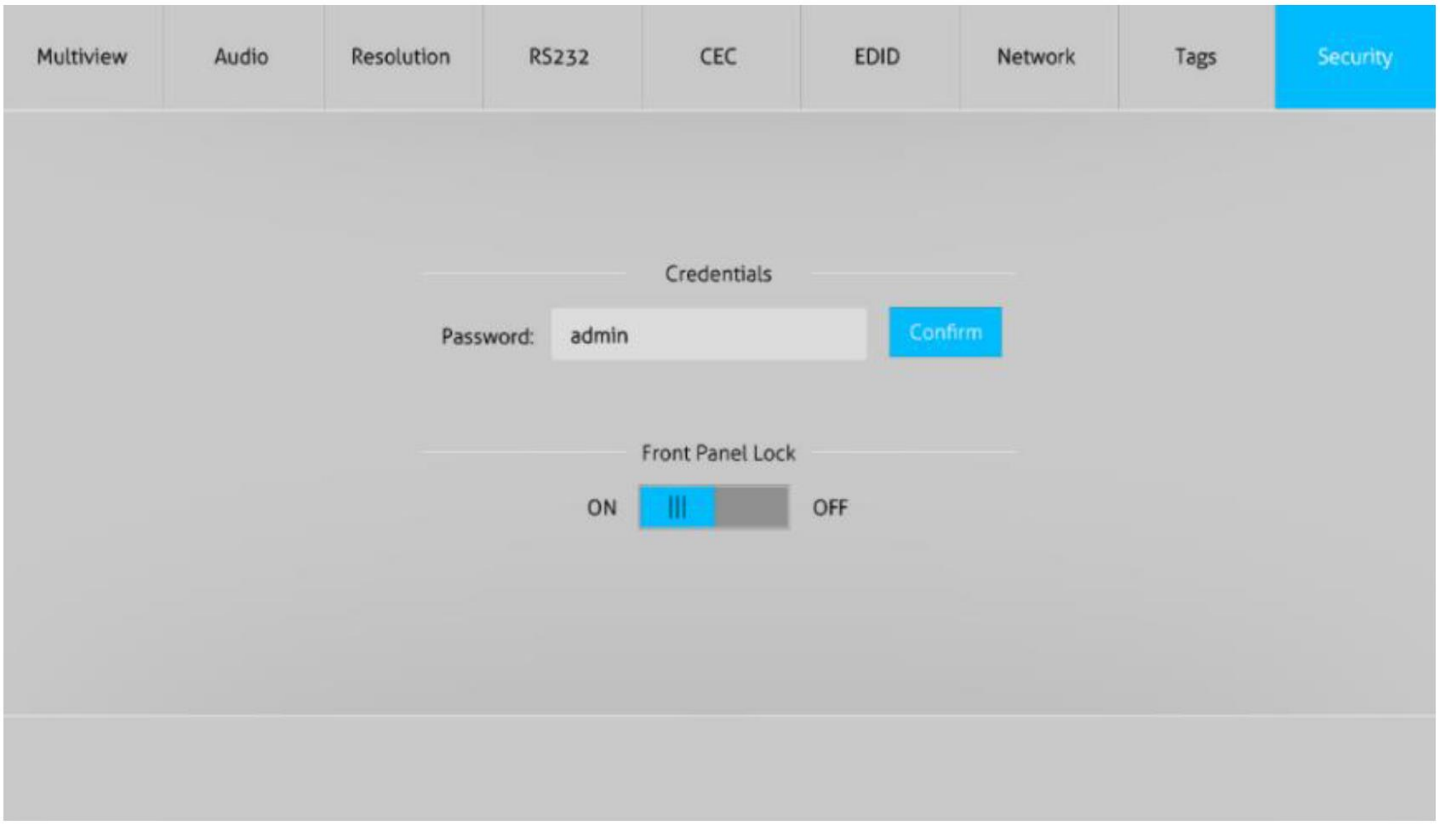
[5] Entered IP Address, Subnet Mask, and Gateway are not used when set to DHCP

7.8 Tags Tab



1. Enter custom labels for any built-in or user-defined multi-view layout
2. Click **Confirm** to apply the custom labels

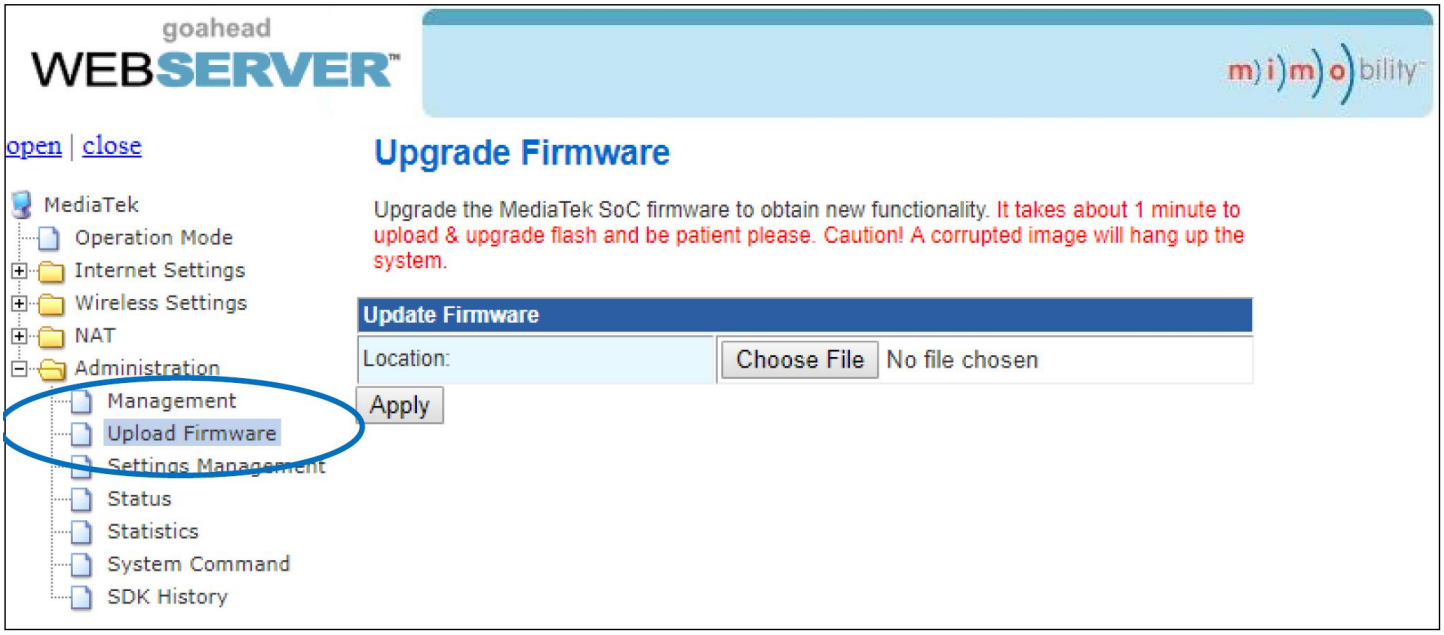
7.9 Security Tab



1. Type a new password in the Credentials field to change the GUI login password
2. Click **Confirm** to apply the new password
3. Lock or unlock the switcher's front panel buttons (locking the front panel prevents the switcher from being controlled via the front panel buttons)

7.10 GUI Update

Before proceeding, confirm that the switcher has power and is online. To update the switcher's GUI, navigate to http://192.168.0.178:100 in a web browser. Log into the configuration interface using the same username and password used to access the GUI (see **§7. Web GUI Control**). Next, open **Administration** in the file tree on the left side of the screen, then select **Upload Firmware**.



Click **Choose File** and navigate to the desired update file in the controlling PC's file system, then click **Apply** to start the upgrade. Once a message appears, click "OK" to finish the update. If a message does not appear, then the GUI update may have failed. Follow the above steps again to reattempt the update.

8. RS232 Control

To control the switcher using RS232 commands, connect the RS232 port of the switcher to a control device (PC, TekMonitor, etc.) with an RS232 cable. The command lists in the following sections are used to control the switcher. If using a PC to send RS232 commands, the Pc must have RS232 control software installed.

After installing the RS232 control software, set the COM port's parameters according to the following in order to send RS232 commands to the switcher:

Baud Rate: 9600

Data Bit: 8

Stop Bit: 1

Parity Bit: None

Note:

- In the following commands, "[" and "]" are symbols included to make reading the commands easier, and do not need to be typed when sending commands
- All commands are case-sensitive
- Unless otherwise stated, the ending mark of all commands is "<CR><LF>"

8.1 System Control

Command	Description	Command & Feedback Example
#GET_FIRMWARE_VERSION	Get the firmware version	@V1.0.0
#FACTORY_RESET	Restore all settings to factory defaults	@FACTORY_RESET
#REBOOT	Reboot the switcher	@REBOOT

#HELP [PARAM]	Get details of a command
	[PARAM]=Any command (without "#" symbol)
	[PARAM]=Null to get help with all commands
		#HELP SET_AV
		@Select the input source
		#SET_AV INPARAM TO OUTPARAM
		INPARAM = 1~4
		1 – HDMI 1
		2 – HDMI 2
		3 – HDMI 3
		4 – HDMI 4
		OUTPARAM = A~D

#GET_IP_ADDR	Get the IP to access web GUI	@IP_ADDR: 192.168.0.178 @SUBNET_MASK: 255.255.255.0 @GATEWAY: 192.168.0.1

8.2 Signal Switching

Command	Description	Command & Feedback Example
#SET_AV [INPARAM] TO [OUTPARAM]	Switch an input signal to one or more outputs **[INPARAM]** = 1~4 **1** – HDMI 1 **2** – HDMI 2 **3** – HDMI 3 **4** – HDMI 4 **[OUTPARAM]** = A~D **[OUTPARAM]** = Null to switch input to Window A	#SET_AV 1 #SET_AV 1 TO @AV 1 TO A

Command	Description	Command & Feedback Example
#GET_AV [PARAM]	Get the current switching status of any output **[PARAM]** = A~D **[PARAM]** = Null to get status of all outputs	#GET_AV
		@VIDEO OUT A B C D IN 1 2 3 4 @AUDIO_SRC 1
#SET_AUTO_SWITCH [PARAM]	Enable/Disable Auto-Switching mode **[PARAM]** = 0~1 **0** – Disable **1** – Enable	#SET_AUTO_SWITCH 1
		@AUTO_SWITCH 1
#GET_AUTO_SWITCH	Get the Auto-Switching status	@AUTO_SWITCH 1

8.3 Audio Switching

Command	Description	Command & Feedback Example
#SET_AUDIO_MUTE [PARAM]	Mute/Unmute audio **[PARAM]** = 0~1 **0** – Unmute **1** – Mute	#SET_AUDIO_MUTE 1
		@AUDIO_MUTE 1
#GET_AUDIO_MUTE	Get the audio mute status	@AUDIO_MUTE 1
#SET_AUDIO_SRC [PARAM]	Set the audio output source **[PARAM]** = 1~5 **1** – HDMI 1 **2** – HDMI 2 **3** – HDMI 3 **4** – HDMI 4 **5** – LINE IN	#SET_AUDIO_SRC 1
		@AUDIO_SRC 1
#GET_AUDIO_SRC	Get the audio output source	@AUDIO_SRC 1
#SET_AUDIO_MIX [PARAM]	Enable/Disable audio mix **[PARAM]** = 0~1 **0** – Disable **1** - Enable	#SET_AUDIO_MIX 1
		@AUDIO_MIX 1

Command	Description	Command & Feedback Example
#GET_AUDIO_MIX	Get audio mix status	@AUDIO_MIX 1
#SET_FULL_SWAUD [PARAM]	Enable/Disable whether the audio output follows the video switching when in Fullscreen mode **[PARAM]** = 0~1 **0** – Disable **1** – Enable	#SET_FULL_SWAUD 1
		@FULL_SWAUD 1
#GET_FULL_SWAUD	Get whether the audio output follows the video switching when in Fullscreen mode	@FULL_SWAUD 1

8.4 Function Settings

Command	Description	Command & Feedback Example
#SET_RS232_BAUD [PARAM]	Set the RS232 baud rate **[PARAM]** = 1~7 **1** – 115200 **2** – 57600 **3** – 38400 **4** – 19200 **5** – 9600 **6** – 4800 **7** - 2400	#SET_RS232_BAUD 5
		@RS232_BAUD 5
#GET_RS232_BAUD	Get the RS232 baud rate	@RS232_BAUD 5
#SET_OUTPUT_RES [PARAM]	Set the output resolution **[PARAM]** = 1~8 **1** – 1024 x 768 60 Hz **2** – 1280 x 720 60 Hz **3** – 1360 x 768 60 Hz **4** – 1600 x 1200 60 Hz **5** – 1920 x 1080 60 Hz **6** – 1920 x 1200 60 Hz **7** – 3840 x 2160 30 Hz **8** - Auto	#SET_OUTPUT_RES 7
		@OUTPUT_RES 7

Command	Description	Command & Feedback Example
#GET_OUTPUT_RES	Get the output resolution	@OUTPUT_RES 7
#GET_INPUT_RES [PARAM]	Get the input resolution **[PARAM]** = 1~4 **1** – HDMI 1 **2** – HDMI 2 **3** – HDMI 3 **4** – HDMI 4	@INPUT_RES: 1920x1080 60Hz
#SET_OUTPUT_HDCP [PARAM]	Set the HDCP mode for the HDMI output port **[PARAM]** = 1~3 **1** – HDCP 1.4 **2** – HDCP 2.2 **3** – OFF	#SET_OUTPUT_HDCP 1
		@OUTPUT_HDCP 1
#GET_OUTPUT_HDCP	Get the HDCP mode for the HDMI output port	@OUTPUT_HDCP 1
#SET_EDID_MODE [PARAM1] [PARAM2]	Set the EDID mode of an HDMI input **[PARAM1]** = 1~4 **1** – HDMI 1 **2** – HDMI 2 **3** – HDMI 3 **4** – HDMI 4 **[PARAM2]** = 1~4 **1** – 1920 x 1080 60Hz PCM 2CH **2** – 3840 x 2160 30Hz PCM 2CH **3** – BYPASS **4** – USER	#SET_EDID_MODE 1 1
		@EDID_MODE 1 1
#GET_EDID_MODE [PARAM]	Get the EDID mode of an HDMI input **[PARAM]** = 1~4 **1** – HDMI 1 **2** – HDMI 2 **3** – HDMI 3 **4** – HDMI 4	#GET_EDID_MODE 1
		@EDID_MODE 1 1

Command	Description	Command & Feedback Example
#UPLOAD_USER_EDID	Upload user-defined EDID	@USER_EDID READY PLEASE SEND EDID DATA IN 10S OK
#SET_KEYPAD_LOCK [PARAM]	Lock/unlock the front panel buttons **[PARAM]** = 0~1 **0** – Unlock **1** – Lock	#SET_KEYPAD_LOCK 1
		@KEYPAD_LOCK 1
#GET_KEYPAD_LOCK	Get the front panel lock status	@KEYPAD_LOCK 1
#SET_POWER [PARAM]	Enter/exit Standby mode **[PARAM]** = 0~1 **0** – Standby mode (Power off) **1** – Power On mode	#SET_POWER 1
		@POWER 1
#GET_POWER	Get the standby status	@POWER 1
#SET_MV_MODE [PARAM]	Set multi-view mode **[PARAM]** = 1~20 **1** – 1 Window Fullscreen **2** – 2 Windows Side-by-Side **3** – 3 Windows 2 Up, 1 Down **4** – 4 Windows Same Size **5** – 2 Windows PIP Top Left **6** – 2 Windows PIP Bottom Left **7** – 2 Windows PIP Top Right **8** – 2 Windows PIP Bottom Right **9** – 4 Windows 3 Left, 1 Right **10** – 4 Windows 1 Left, 3 Right **11** – 4 Windows 3 Up, 1 Down **12** – 4 Windows 1 Up, 3 Down **13** – 4 Windows PIP, 3 Left **14** – 4 Windows PIP, 3 Right **15** – 4 Windows PIP, 3 Up **16** – 4 Windows PIP, 3 Down **17** – User-Defined Layout 1 **18** – User-Defined Layout 2 **19** – User-Defined Layout 3 **20** – User-Defined Layout 4	#SET_MV_MODE 1
		@MV_MODE 1

Command	Description	Command & Feedback Example
#GET_MV_MODE	Get the multi-view mode	@MV_MODE 1
#GET_STATUS	Get the full system status	@V1.0.0 @VIDEO OUT A B C D IN 1 2 3 4 @AUDIO_SRC 1 @OUTPUT_RES 7 @AUTO_SWITCH 1 @EDID_MODE 1 2 …
#SET_SWAP_SRC	Swap Input Source	@SWAP_SRC @VIDEO OUT A B C D In 2 3 4 1 @AUDIO_SRC 2
#SET_RESIZE_WIM	Resize display windows	@RESIZE_WIM
#SET_SYNCACT_CEC [PARAM]	Enable/Disable whether to send the corresponding CEC command when detecting a Power On/Off signal **[PARAM]** = 0~1 **0** – Disable (Don't send) **1** – Enable (Send)	#SET_SYNCACT_CEC 1
		@SYNCACT_CEC 1
#GET_SYNCACT_CEC	Get whether to send the corresponding CEC command when detecting a Power On/Off signal	@SYNCACT_CEC 1
#SET_SYNCACT_RS232 [PARAM]	Enable/Disable whether to send the corresponding RS232 command when detecting a Power On/Off signal **[PARAM]** = 0~1 **0** – Disable **1** – Enable	#SET_SYNCACT_RS232 1
		@SYNCACT_RS232 1

Command	Description	Command & Feedback Example
#GET_SYNCACT_RS232	Get whether to send the corresponding RS232 command when detecting a Power On/Off signal	@SYNCACT_RS232 1
#SET_DTIME [PARAM1]:[PARAM2]	Set the delay time for automatically sending the Display Off command when no signal is detected **[PARAM1]** = 0~30 minutes **[PARAM2]** = 0~1800 seconds	#SET_DTIME 1:30 @DTIME 1:30
#GET_DTIME	Det the delay time for automatically sending the Display Off command when no signal is detected	@DTIME 1:30
#SET_AUTO_POWER [PARAM]	Enable/Disable Auto-Standby function **[PARAM]** = 0~1 **0** – Disable **1** – Enable	#SET_AUTO_POWER 1 @AUTO_POWER 1
#GET_AUTO_POWER	Get the Auto-Standby status	@AUTO_POWER 1
#SET_OFF_CNT [PARAM]	Set the number of times to send the Display Off command **[PARAM]** = 1~2	#SET_OFF_CNT 1 @ODD_CNT 1
#GET_OFF_CNT	Get the number of times to send the Display Off command	@OFF_CNT 1
#SET_OFF_DELAY [PARAM]	Set the interval between sendings of the Display Off command **[PARAM]** = 5~100 (1 = 100 ms)	#SET_OFF_DELAY 5 @OFF_DELAY 5
#GET_OFF_DELAY	Get the interval between sendings of the Display Off command	@OFF_DELAY 5

8.5 CEC Commands

Command	Description	Command & Feedback Example
#SET_SRC_MENU [PARAM]	Send CEC MENU command to source device **[PARAM]** = 1~4 **1** – HDMI 1 **2** – HDMI 2 **3** – HDMI 3 **4** – HDMI 4	#SET_SRC_MENU 1
		@SRC_MENU 1
#SET_SRC_UP [PARAM]	Send CEC UP command to source device **[PARAM]** = 1~4 **1** – HDMI 1 **2** – HDMI 2 **3** – HDMI 3 **4** – HDMI 4	#SET_SRC_UP 1
		@SRC_UP 1
#SET_SRC_DOWN [PARAM]	Send CEC DOWN command to source device **[PARAM]** = 1~4 **1** – HDMI 1 **2** – HDMI 2 **3** – HDMI 3 **4** – HDMI 4	#SET_SRC_DOWN 1
		@SRC_DOWN 1
#SET_SRC_LEFT [PARAM]	Send CEC LEFT command to source device **[PARAM]** = 1~4 **1** – HDMI 1 **2** – HDMI 2 **3** – HDMI 3 **4** – HDMI 4	#SET_SRC_LEFT 1
		@SRC_LEFT 1
#SET_SRC_RIGHT [PARAM]	Send CEC RIGHT command to source device **[PARAM]** = 1~4	#SET_SRC_RIGHT 1

Command	Description	Command & Feedback Example
	1 – HDMI 1 **2** – HDMI 2 **3** – HDMI 3 **4** – HDMI 4	@SRC_RIGHT 1
#SET_SRC_BACK [PARAM]	Send CEC BACK command to source device **[PARAM]** = 1~4 **1** – HDMI 1 **2** – HDMI 2 **3** – HDMI 3 **4** – HDMI 4	#SET_SRC_BACK 1
		@SRC_BACK 1
#SET_SRC_ENTER [PARAM]	Send CEC ENTER command to source device **[PARAM]** = 1~4 **1** – HDMI 1 **2** – HDMI 2 **3** – HDMI 3 **4** – HDMI 4	#SET_SRC_ENTER 1
		@SRC_ENTER 1
#SET_SRC_ON [PARAM]	Send CEC ON command to source device **[PARAM]** = 1~4 **1** – HDMI 1 **2** – HDMI 2 **3** – HDMI 3 **4** – HDMI 4	#SET_SRC_ON 1
		@SRC_ON 1
#SET_SRC_OFF [PARAM]	Send CEC OFF command to source device **[PARAM]** = 1~4 **1** – HDMI 1 **2** – HDMI 2 **3** – HDMI 3 **4** – HDMI 4	#SET_SRC_OFF 1
		@SRC_OFF 1
#SET_SRC_STOP [PARAM]	Send CEC STOP command to source device **[PARAM]** = 1~4	#SET_SRC_STOP 1

Command	Description	Command & Feedback Example
	1 – HDMI 1 **2** – HDMI 2 **3** – HDMI 3 **4** – HDMI 4	@SRC_STOP 1
#SET_SRC_PLAY [PARAM]	Send CEC PLAY command to source device **[PARAM]** = 1~4 **1** – HDMI 1 **2** – HDMI 2 **3** – HDMI 3 **4** – HDMI 4	#SET_SRC_PLAY 1
		@SRC_PLAY 1
#SET_SRC_PAUSE [PARAM]	Send CEC PAUSE command to source device **[PARAM]** = 1~4 **1** – HDMI 1 **2** – HDMI 2 **3** – HDMI 3 **4** – HDMI 4	#SET_SRC_PAUSE 1
		@SRC_PAUSE 1
#SET_SRC_PREV [PARAM]	Send CEC PREV command to source device **[PARAM]** = 1~4 **1** – HDMI 1 **2** – HDMI 2 **3** – HDMI 3 **4** – HDMI 4	#SET_SRC_PREV 1
		@SRC_PREV 1
#SET_SRC_NEXT [PARAM]	Send CEC NEXT command to source device **[PARAM]** = 1~4 **1** – HDMI 1 **2** – HDMI 2 **3** – HDMI 3 **4** – HDMI 4	#SET_SRC_NEXT 1
		@SRC_NEXT 1
#SET_SRC_REW [PARAM]	Send CEC REWIND command to source device **[PARAM]** = 1~4	#SET_SRC_REW 1

Command	Description	Command & Feedback Example
	1 – HDMI 1 **2** – HDMI 2 **3** – HDMI 3 **4** – HDMI 4	@SRC_REW 1
#SET_SRC_FF [PARAM]	Send CEC FAST-FORWARD command to source device **[PARAM]** = 1~4 **1** – HDMI 1 **2** – HDMI 2 **3** – HDMI 3 **4** – HDMI 4	#SET_SRC_FF 1 @SRC_FF 1
#SET_DIS_ON	Send CEC ON command to display device	@DIS_ON
#SET_DIS_OFF	Send CEC OFF command to display device	@DIS_OFF
#SET_DIS_SOURCE	Send CEC SOURCE command to display device	@DIS_SOURCE
#SET_DIS_MUTE	Send CEC MUTE command to display device	@DIS_MUTE/UNMUTE
#SET_DIS_VOL+	Send CEC VOLUME+ command to display device	@DIS_VOL+
#SET_DIS_VOL-	Send CEC VOLUME- command to display device	@DIS_VOL-

8.6 Special Commands

***Note**: The following commands don't need ending marks*

Command	Description	Command & Feedback Example
#SET_ON_[PARAM]:XXXX	Set the ASCII command to be sent to the display device when the switcher powers on **[PARAM]** = 01~07 (Baud Rate) **01** – 11520 **02** – 57600 **03** – 38400 **04** – 19200 **05** – 9600 **06** – 4800 **07** – 2400 **XXXX** = ASCII data to be sent (up to 48 characters)	#SET_ON_05:1234567 @BAUDRATE: 9600 @DISPLAY ON TO SEND: 1234567
#SET_H_ON_[PARAM]:XX XX	Set the HEX command to be sent to the display device when the switcher powers on **[PARAM]** = 01~07 (Baud Rate) **01** – 11520 **02** – 57600 **03** – 38400 **04** – 19200 **05** – 9600 **06** – 4800 **07** – 2400 **XX XX** = HEX data to be sent (**X** = 0~9, A~F, up to 20 octets)	#SET_H_ON_05:50 31 32 33 34 @BAUDRATE: 9600 @DISPLAY ON HEX TO SEND:30 31 32 33 34
#SET_OF_[PARAM]:XXXX	Set the ASCII command to be sent to the display device when the switcher powers off or enters Standby mode **[PARAM]** = 01~07 (Baud Rate) **01** – 11520 **02** – 57600	#SET_OF_05:ABCDEFG

Command	Description	Command & Feedback Example
	03 – 38400 **04** – 19200 **05** – 9600 **06** – 4800 **07** – 2400 **XXXX** = ASCII data to be sent (up to 48 characters)	@BAUDRATE:9600 @DISPLAY OFF TO SEND:ABCDEFG
#SET_H_OF_[PARAM]:XX XX	Set the HEX command to be sent to the display device when the switcher powers off or enter Standby mode **[PARAM]** = 01~07 (Baud Rate) **01** – 11520 **02** – 57600 **03** – 38400 **04** – 19200 **05** – 9600 **06** – 4800 **07** – 2400 **XX XX** = HEX data to be sent (**X** = 0~9, A~F, up to 20 octets)	#SET_OF_05:41 42 43 44 45 46
		@BAUDRATE: 9600 @DISPLAY OFF HEX TO SEND:41 42 43 44 45 46

9. Firmware Upgrade

1. Prepare the upgrade file (.bin) on the PC, and rename it as “FW_MV.bin”
2. Power off the switcher and connect the FIRMWARE port of the switcher to the PC with a Type-A USB cable
3. Power on the switcher, and the PC will automatically detect a flash drive named “BOOTDISK”
4. Copy the upgrade file (.bin) onto the “BOOTDISK” flash drive
5. Close the flash drive, and wait for the switcher’s firmware to update
6. Reopen the flash drive and check for a file named “SUCCESS.txt”. If this file is present, the firmware has been updated successfully. If the file is missing, then the firmware update has failed. Double-check the named of the upgrade file, the repeat the previous steps.
7. Remove the USB cable after the firmware upgrade is complete
8. Perform a factory reset on the switcher by sending the appropriate command (see **§8.1 System Control**)