

User Manual

SCA41HE

HDMI V2.0 4x1 Presentation Switcher with Audio Extraction



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Version: SCA41HE_2021V1.0

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1. Product Introduction

Thanks for choosing the HDMI V2.0 4x1 Presentation Switcher. The switcher allows selection of four different sources (one HDMI input, one USB-C input, one DisplayPort input and one VGA input), and will switch the selected video to HDMI output. It supports video resolution up to 4K@60Hz 4:4:4 8bit, 1080p, and 3D. In addition, there is the smart built-in EDID setting can be selected by the 4-pin DIP switch on the rear 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 an optical digital audio output and a balanced analog audio output.

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 from input 1 to 4. The switcher can be manually controlled by the front panel buttons, IR remote and RS232 commands. CEC allows the display device can be controlled by the front panel buttons and RS232 CEC commands.

1.1 Features

- Supports HDMI V2.0 and video resolution up to 4K@60Hz 4:4:4 8bit, 1080p 3D.
- 18Gbps high bandwidth and supports HDR 10.
- HDCP 2.3 compliant.
- Supports automatic switching.
- CEC control for display volume and ON/OFF.
- Controllable via RS232 and IR.
- VGA resolution is selectable on the front panel.
- Optical and balanced analog audio for audio de-embedding.
- Smart EDID management for various application and customized setting.

1.2 Package List

- | | |
|----------------------------------|---------------------------------|
| ● 1x SCA41HE Switcher | ● 1x Power Adapter (12V DC, 2A) |
| ● 2x Mounting Ears with 4 Screws | ● 4x Plastic Cushions |
| ● 1x IR Receiver | ● 1x IR Remote |
| ● 1x 3-pin Terminal Block | ● 1x 5-pin Terminal Block |
| ● 1x RS232 Cable (3-pin to DB9) | ● 1x User Manual |

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

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2. Specification

Video Input	
Input	(1) HDMI IN, (1) USB-C IN, (1) DP IN, (1) VGA IN
Input Connector	(4) Type-A female HDMI, (1) Type-C USB, (1) DisplayPort, (1) Female VGA (15-pin)
HDMI Input Resolution	Up to 4K@60Hz 4:4:4 8bit, HDR10
USB-C Input Resolution	Up to 4K@60Hz 4:4:4
DP Input Resolution	Up to 4K@60Hz 4:4:4
VGA Input Resolution	Up to 1920x1200@50/60Hz
Video Output	
Output	(1) HDMI
Output Connector	(1) Type-A female HDMI
HDMI Output Resolution	Up to 4K@60Hz 4:4:4 8bit, HDR10
VGA Scale Resolution	1024x768@60Hz, 1280x720@50Hz, 1280x720@60Hz, 1360x768@60Hz, 1600x1200@60Hz, 1920x1080@50Hz, 1920x1080@60Hz (Default), 1920x1200@60Hz
Audio	
Audio Output	(1) OPTICAL, (1) Stereo balanced L/R
Audio Output Connector	(1) Toslink 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.
DP Audio Format	8 channels LPCM, up to 24bit 192KHz, AC3, DTS
Balanced analog audio Format	PCM
Optical Digital Audio Format	PCM, Dolby Digital, DTS, DTS-HD
Frequency Response	20Hz to 20kHz, ±1dB
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	<± 0.1dB 20Hz ~ 20KHz
Output Load Capability	1KΩ and higher (supports 10x paralleled 10KΩ loads)
Stereo Channel Separation	>70dB@1kHz
Control Part	
Control	(1) FW, (1) EDID, (1) IR IN, (1) RS232
Control Connector	(1) Micro USB, (1) 4-pin DIP switch, (1) 3.5mm jack,

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	(1) 3-pin terminal block
General	
HDMI Version	2.0
HDCP Version	2.3
DP Version	1.2
CEC	Supported
HPD	Supported
Bandwidth	18Gbps
HDMI V2.0 Cable Length	4K@60Hz 4:4:4 ≤ 5m, 4K@60Hz 4:2:0 ≤ 10m, 1080p ≤ 15m
Operation Temperature	-5 to +55°C (+23° to +131°F)
Storage Temperature	-25 to +70°C (-13° to +158°F)
Relative Humidity	10% to 90%, Non-condensing
External Power Supply	Input: AC 100~240V, 50/60Hz, Output: 12V DC 2A
Power Consumption	8W (Max)
Dimension (W*H*D)	300mm x 26mm x 115mm
Net Weight	855g

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3. Panel Description

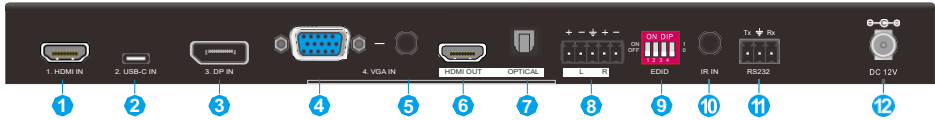
3.1 Front Panel



- ① **Power LED:** Illuminates red when the device is in standby, or illuminates green when the device is power on.
- ② **VIDEO SOURCE:**
 - Press **1~4** button to select input source respectively, and its corresponding LED illuminates green.
 - Press and hold the **AUTO** button at least three seconds to enable automatic switching mode, and its LED illuminates green.
- ③ **DISPLAY CONTROL:**
 - Press **ON** to turn on the display device.
 - Press **OFF** to turn off the display device.
 - Press  to mute/unmute audio of display device.
 - Press  to decrease the audio volume gradually, or press and hold it to decrease the audio volume constantly.
 - Press  to increase the audio volume gradually, or press and hold it to increase the audio volume constantly.
- ④ **VGA RESOLUTION:**
 - When the VGA input is selected, press **RES** button repeatedly can set the output resolution to 1280x720, 1920x1080 or 1920x1200.
 - One of three LEDs illuminates green to indicate which output resolution is selected.
- ⑤ **FW:** Micro-USB port for firmware upgrade.

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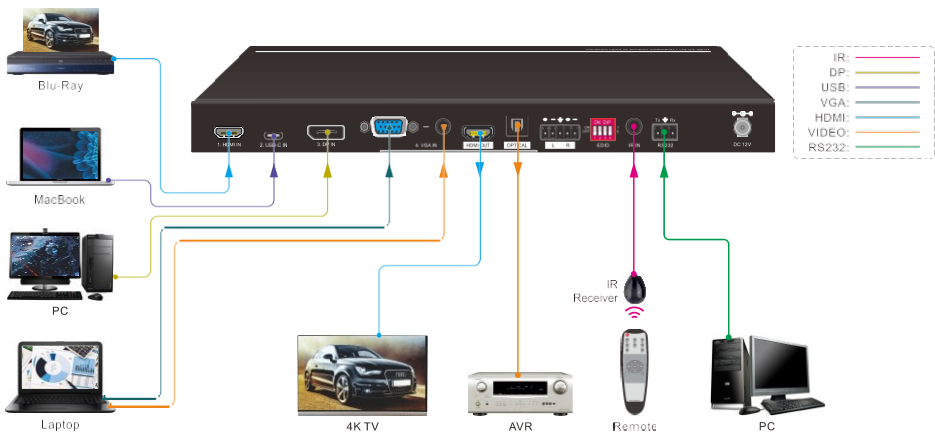
3.2 Rear Panel



- ① **1. HDMI IN:** Connects to HDMI video source.
- ② **2. USB-C IN:** Connects to the video source with SlimPort output, e.g. Macbook.
- ③ **3. DP IN:** Connects to DisplayPort video source.
- ④ **4. VGA IN:** Connects to VGA video source.
- ⑤ **VGA Audio IN:** Connects to audio source to be embedded in VGA video.
- ⑥ **HDMI OUT:** Connects to HDMI display device.
- ⑦ **OPTICAL:** Connects to audio playback device.
- ⑧ **L/R (5-pin balanced audio):** Connects to audio playback device.
- ⑨ **EDID:** 4-pin DIP switch for EDID setting.
- ⑩ **IR IN:** Connects to IR receiver to control the switcher by IR remote.
- ⑪ **RS232:** Connects to RS232 control device (e.g. PC) to control the switcher by RS232 commands.
- ⑫ **DC 12V:** DC barrel port for power adapter connection.

4. System Connection

The following diagram illustrates typical input and output connections that can be utilized with this switcher:



5. Button Control

5.1 Manual Switching

When the switcher is in the manual switching mode, the Auto Mode LED goes out. If need to change the input source, please directly press the **1**, **2**, **3** or **4** button, and the corresponding LED illuminates green immediately.

5.2 Automatic Switching




Press and hold the **AUTO** button at least three seconds to enable automatic switching, and the Auto mode LED will light.

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

- *The switcher will switch to the first available active input starting at input 1 to 4.*
- *New input: The switcher will automatically select the new input once detecting a new input.*
- *Reboot: If 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 first available active input starting at HDMI input 1.*
- *Press the Video Source button (1, 2, 3 or 4) can directly change the input source. If the corresponding source device is active, it will be switched as input source; otherwise, the switcher will switch to the first available active input starting at HDMI input 1.*
- *Press and hold the **AUTO** button at least three seconds again can exit AUTO mode, but the input source will remain the current setting.*

5.3 Display Control

The switcher supports CEC, and the **DISPLAY CONTROL** buttons on the front panel are designed for Display On/Off and volume adjustment.

- **ON:** Display On.
- **OFF:** Display Off.
-  : Mute/unmute display device.
-  : Volume down display device.
-  : Volume up display device.

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5.4 VGA Resolution Selection

The **RES** button on the front panel is designed for VGA resolution selection.

*When switch to VGA input, press **RES** button repeatedly to set the output resolution to 1280x720, 1920x1080 or 1920x1200, and its corresponding LED will illuminate green.*

5.5 EDID Setting

The Extended Display Identification Data (EDID) is used for the source device to match its video resolution with the connected display. The 4-pin DIP switch on the rear 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	EDID
0000	EDID pass-through (Default)
0001	1920x1080@60Hz RGB 4:4:4 8bit Stereo Audio
0010	1920x1080@60Hz RGB 4:4:4 8bit High Definition Audio
0011	1920x1080@60Hz RGB 4:4:4 12bit Stereo Audio
0100	1920x1080@60Hz RGB 4:4:4 12bit High Definition Audio
0101	3840x2160@60Hz RGB 4:2:0 12bit Stereo Audio
0110	3840x2160@60Hz RGB 4:2:0 12bit High Definition Audio
0111	3840x2160p@60Hz 4:4:4 HDR 12bit Stereo Audio
1000	3840x2160p@60Hz 4:4:4 HDR 12bit High Definition Audio
1001	1280x800@60Hz RGB 4:4:4 8bit Stereo Audio
1010	1920x1200@60Hz RGB 4:4:4 8bit Stereo Audio
1011	User-defined EDID 1.
1100	User-defined EDID 2.
1101	User-defined EDID 3.
1110	User-defined EDID 4.
1111	Enable RS232 EDID management.

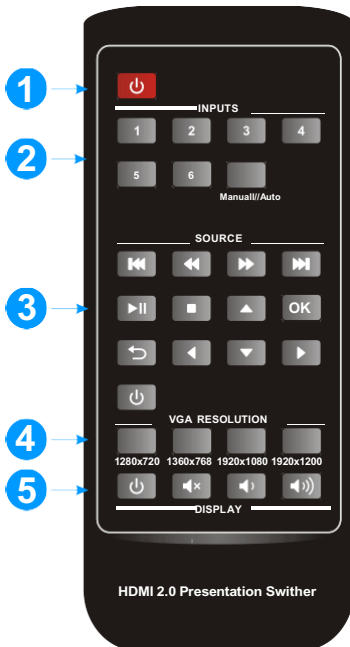
Note:

- *Stereo Audio: LPCM 2Ch.*
- *High Definition Audio: LPCM 8Ch, AC-3 6Ch, DTS 5.1, Dolby Digital 5.1.*
- *The four user-defined EDID can be customized by RS232 command, please refer to 7.2.4 EDID management for more details.*

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6. IR Remote Control














Connect the **IR IN** port to an IR receiver, the switcher can be controlled by the below IR remote.



① Enter or exit standby mode.

② Video input selection buttons (1~4) and **AUTO** mode button.

③ Source device control buttons.

	Page Up		Page Down
	Rewind		Fast Forward
	Pause/Play		Stop
	Exit		Enter
	Up		Down
	Left		Right
	Power On/Off		

④ VGA resolution selection buttons.

⑤ Display device control buttons.

	Power On/Off		Mute/Unmute
	Volume Down		Volume Up

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7. RS232 Control

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

The below command lists are used to control the switcher. The RS232 control software (e.g. docklight) needs to be installed on the control PC to send RS232 commands.

Communication protocol:

RS232 Communication Protocol

Baud rate: 9600

Data bit: 8

Stop bit: 1

Parity bit: none

Note:

- Please remember to end the commands with the ending symbols "." or ";;".
- Please type the command carefully due to case-sensitive.

7.1.1 Device Control

Command	Function	Command Example and Feedback
POWON.	Power on system.	POWER ON!
POWOFF.	System standby.	POWER OFF!
RST.	Restore to factory default.	FACTORY DEFAULT! SCA41HE VERSION V1.0.0 POWER ON! FRONT PANEL UNLOCK! HDMI OUT SWITCH TO AUTO MODE! HDMI OUT SWITCH TO 1! DIP0000! DIP EDID0000! SPDIF OUT ON! IIS OUT ON! AUDIO MUTE OFF! AUDIO VOL:50! AUDIO OUT ON!
UNLOCK.	Unlock front panel buttons.	FRONT PANEL UNLOCK!
LOCK.	Lock front panel buttons.	FRONT PANEL LOCKED!

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Command	Function	Command Example and Feedback
STA.	Report system status.	RS232 QUERY STATUS! SCA41HE VERSION V1.0.0 POWER ON! FRONT PANEL UNLOCK! HDMI OUT SWITCH TO AUTO MODE! HDMI OUT SWITCH TO 2! DIP0000! DIP EDID0000! SPDIF OUT ON! IIS OUT ON! AUDIO MUTE ON! AUDIO VOL:00!
HELP.	Get the command list.	RS232 COMMANDS LIST: 1 - POWON 2 - POWOFF 3 - RST 4 – UNLOCK ...

7.1.2 Source Switching

Command	Function	Command Example and Feedback
HDMI1.	Switch to HDMI input.	HDMI OUT SWITCH TO 1!
HDMI2.	Switch to USB-C input.	HDMI OUT SWITCH TO 2!
HDMI3.	Switch to DP input.	HDMI OUT SWITCH TO 3!
HDMI4.	Switch to VGA input.	HDMI OUT SWITCH TO 4!
HDMI.A.	Enable auto switching mode.	HDMI OUT SWITCH TO AUTO MODE!
HDMIM.	Enable manual switching mode.	HDMI OUT SWITCH TO MANUAL MODE!

7.1.3 VGA Resolution Selection

When VGA source is selected, the below commands can be used to set the VGA output resolution.

Command	Function	Command Example and Feedback
VGARES1.	Set the VGA output resolution to	SET RESOLUTION OF VGA

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	1024x768@60Hz.	OUTPUT TO 1024x768@60Hz!
VGARES2.	Set the VGA output resolution to 1280x720@50Hz.	SET RESOLUTION OF VGA OUTPUT TO 1280x720@50Hz!
VGARES3.	Set the VGA output resolution to 1280x720@60Hz.	SET RESOLUTION OF VGA OUTPUT TO 1280x720@60Hz!
VGARES4.	Set the VGA output resolution to 1360x768@60Hz.	SET RESOLUTION OF VGA OUTPUT TO 1360x768@60Hz!
VGARES5.	Set the VGA output resolution to 1600x1200@60Hz.	SET RESOLUTION OF VGA OUTPUT TO 1600x1200@60Hz!
VGARES6.	Set the VGA output resolution to 1920x1080@50Hz.	SET RESOLUTION OF VGA OUTPUT TO 1920x1080@50Hz!
VGARES7.	Set the VGA output resolution to 1920x1080@60Hz.	SET RESOLUTION OF VGA OUTPUT TO 1920x1080@60Hz!
VGARES8.	Set the VGA output resolution to 1920x1200@60Hz.	SET RESOLUTION OF VGA OUTPUT TO 1920x1200@60Hz!
VGAUPGR.	Upgrade the firmware Of VGA input port chip	UPGRADING FIRMWARE OF VGA CHIP!
VGAAUTO.	Automatically adjust VGA input's picture.	VGAAUTO.
		Set VGA AUTO ADJUST!

7.1.4 EDID Management

Command	Function	Command Example and Feedback
EDIDRxxxx.	Read the preset EDID. The "xxxx" represents the 4-pin DIP switch status. It maybe from "0000" to "1110".	EDIDR0000.
		EDID HEX STRING OF '0000':
EDIDUSExxxx.	Invoke the preset EDID. The "xxxx" represents the 4-pin DIP switch status. It maybe from "0000" to "1110".	EDIDUSE0000.
		DIP0000! PLEASE SET DIP TO 1111 FIRST! [EDID_RS232_MODE!]

● User-defined EDID

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

Note: When send the below commands to configure EDID, the 4-pin EDID DIP switch on the rear panel must be in the "1111" status.

Command	Function & Operation
EDIDW[xxxx].	User-defined EDID. [xxxx] = 1011, 1100, 1101 or 1110. Operation: Step 1: Prepare the EDID file (.bin). Step 2: Set the 4-pin DIP switch to "1111" status.

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	<p>Step 3: Send the command “EDIDW1101.”, and the feedback is “PLEASE SEND THE EDID FILE!”.</p> <p>Step 4: Send the EDID file (.bin). If successfully upload, the feedback is: “RECEIVED THE FILE, LENGTH=134! EDID1101 UPDATE SUCCESSFULLY!”</p>
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7.1.5 Audio Control

Command	Function	Command Example and Feedback
SPDIFON.	Turn on the OPTICAL audio output.	SPDIF OUT ON!
SPDIOFF.	Turn off the OPTICAL audio output.	SPDIF OUT OFF!
IISON.	Turn on the analog balanced L/R audio output.	IIS OUT ON!
IISOFF.	Turn off the analog balanced L/R audio output.	IIS OUT OFF!
SETAUDIOVOL <xx>.	Set the volume level of analog balanced L/R audio to xx. xx=0~60.	SETAUDIOVOL <0>. SETAUDIOVOL <60>.
		AUDIO VOL:0! AUDIO VOL:60!
AUDIOON	Enable HDMI output's audio	AUDIOON
		AUDIO HDMI OUT ON!
AUDIOOFF	Disable HDMI output's audio	AUDIOOFF
		AUDIO HDMI OUT OFF!

7.1.6 Display Control

Command	Function	Command Example and Feedback
TVON.	Send CEC "DISPLAY ON" command to power on the display device (e.g. TV).	CEC TV POWER ON!
TVOFF.	Send CEC "DISPLAY OFF" command to power off the display device (e.g. TV).	CEC TV POWER OFF!
TVVOL+.	Send CEC "VOLUME UP" command to volume up the display device (e.g. TV).	CEC TV VOLUME INCREASE!
TVVOL-.	Send CEC "VOLUME DOWN" command to volume down the display device (e.g. TV).	CEC TV VOLUME DECREASE!
TVMUTE.	Send CEC "VOLUME MUTE" command to mute/unmute the display device (e.g. TV).	CEC TV VOLUME MUTE/UNMUTE!

7.1.7 CEC Control

If the input sources and display support CEC, they can be controlled by sending the below command to replace IR remote.

Command	Function	Command Example and Feedback
CECxx <yy:yy:yy>.	Send CEC command "yy yy yy" to control the source device or the display device. ● The "xx" represents the port number.	CEC00 <40:44:41>.
		Send CEC command "40:44:41" to control the source device which is

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Command	Function		Command Example and Feedback
	00 – HDMI IN	01 – USB-C	connected to the 1-HDMI IN port.
	02 – DP IN	03 – HDMI OUT	
	<ul style="list-style-type: none">The “<yy:yy:yy>” represents the specific control command of source device or display device.		

7.1.8 Third-party Device Control

The switcher supports RS232 pass-through control, the third-party device can be controlled by RS232 command, and the command format as shown below:

Command	Function	Command Example and Feedback																				
/+[B]:xxx.	Send ASCII string to third-party device via RS232 port. xxx: ASCII string. The “B” represents the baud rate of third-party device.	/+3:abc123																				
	<table><tr><td>B</td><td>Baudrate</td><td>B</td><td>Baudrate</td></tr><tr><td>1</td><td>2400</td><td>2</td><td>4800</td></tr><tr><td>3</td><td>9600</td><td>4</td><td>19200</td></tr><tr><td>5</td><td>38400</td><td>6</td><td>57600</td></tr><tr><td>7</td><td colspan="3">115200</td></tr></table>	B	Baudrate	B	Baudrate	1	2400	2	4800	3	9600	4	19200	5	38400	6	57600	7	115200			Send the ASCII command “abc123” to the third-party whose baud rate is 9600.
	B	Baudrate	B	Baudrate																		
	1	2400	2	4800																		
	3	9600	4	19200																		
	5	38400	6	57600																		
	7	115200																				
/-[B]:xx xx xx.	Send HEX string to third-party device via RS232 port. xx xx xx: HEX string. The “B” represents the baud rate of third-party device.	/-3:1A 2A 3A 4A																				
	<table><tr><td>B</td><td>Baudrate</td><td>B</td><td>Baudrate</td></tr><tr><td>1</td><td>2400</td><td>2</td><td>4800</td></tr><tr><td>3</td><td>9600</td><td>4</td><td>19200</td></tr><tr><td>5</td><td>38400</td><td>6</td><td>57600</td></tr><tr><td>7</td><td colspan="3">115200</td></tr></table>	B	Baudrate	B	Baudrate	1	2400	2	4800	3	9600	4	19200	5	38400	6	57600	7	115200			Send the HEX command “1A 2A 3A 4A” to the third-party whose baud rate is 9600.
	B	Baudrate	B	Baudrate																		
	1	2400	2	4800																		
	3	9600	4	19200																		
	5	38400	6	57600																		
	7	115200																				

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Command	Function	Command Example and Feedback																				
CMDON/+ [B]:xx x.	<p>Set the ASCII string of “DISPLAY ON” to be saved. It will be automatically sent to display device when the “DISPLAY ON” button have been pressed.</p> <p>xxx: ASCII string.</p> <p>The “B” represents the baud rate of third-party device.</p> <table><tr><th>B</th><th>Baudrate</th><th>B</th><th>Baudrate</th></tr><tr><td>1</td><td>2400</td><td>2</td><td>4800</td></tr><tr><td>3</td><td>9600</td><td>4</td><td>19200</td></tr><tr><td>5</td><td>38400</td><td>6</td><td>57600</td></tr><tr><td>7</td><td colspan="3">115200</td></tr></table>	B	Baudrate	B	Baudrate	1	2400	2	4800	3	9600	4	19200	5	38400	6	57600	7	115200			<p>CMDON/+3:abc123</p>
B	Baudrate	B	Baudrate																			
1	2400	2	4800																			
3	9600	4	19200																			
5	38400	6	57600																			
7	115200																					
CMDON/- [B]:xx xx xx.	<p>Set the HEX string of “DISPLAY ON” to be saved. It will be automatically sent to display device when the “DISPLAY ON” button have been pressed.</p> <p>xx xx xx: HEX string.</p> <p>The “B” represents the baud rate of third-party device.</p> <table><tr><th>B</th><th>Baudrate</th><th>B</th><th>Baudrate</th></tr><tr><td>1</td><td>2400</td><td>2</td><td>4800</td></tr><tr><td>3</td><td>9600</td><td>4</td><td>19200</td></tr><tr><td>5</td><td>38400</td><td>6</td><td>57600</td></tr><tr><td>7</td><td colspan="3">115200</td></tr></table>	B	Baudrate	B	Baudrate	1	2400	2	4800	3	9600	4	19200	5	38400	6	57600	7	115200			<p>CMDON/-3:1A 2A 3A 4A</p>
B	Baudrate	B	Baudrate																			
1	2400	2	4800																			
3	9600	4	19200																			
5	38400	6	57600																			
7	115200																					

Sélecteur 18G HDMI, USB-C, Displayport & VGA

Command	Function	Command Example and Feedback																				
CMDOFF/+ [B]:x xx.	<p>Set the ASCII string of “DISPLAY OFF” to be saved. It will be automatically sent to display device when the “DISPLAY OFF” button have been pressed.</p> <p>xxx: ASCII string.</p> <p>The “B” represents the baud rate of third-party device.</p> <table><tr><td>B</td><td>Baudrate</td><td>B</td><td>Baudrate</td></tr><tr><td>1</td><td>2400</td><td>2</td><td>4800</td></tr><tr><td>3</td><td>9600</td><td>4</td><td>19200</td></tr><tr><td>5</td><td>38400</td><td>6</td><td>57600</td></tr><tr><td>7</td><td colspan="3">115200</td></tr></table>	B	Baudrate	B	Baudrate	1	2400	2	4800	3	9600	4	19200	5	38400	6	57600	7	115200			CMDOFF/+3:abc123
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CMDVOLUP/+ [B]]:xxx.	<p>Set the ASCII string of “VOLUME UP” to be saved. It will be automatically sent to display device when the “VOLUME UP” button have been pressed.</p> <p>xxx: ASCII string.</p> <p>The “B” represents the baud rate of third-party device.</p> <table><tr><td>B</td><td>Baudrate</td><td>B</td><td>Baudrate</td></tr><tr><td>1</td><td>2400</td><td>2</td><td>4800</td></tr><tr><td>3</td><td>9600</td><td>4</td><td>19200</td></tr><tr><td>5</td><td>38400</td><td>6</td><td>57600</td></tr><tr><td>7</td><td colspan="3">115200</td></tr></table>	B	Baudrate	B	Baudrate	1	2400	2	4800	3	9600	4	19200	5	38400	6	57600	7	115200			CMDVOLUP/+3:abc123
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CMDVOLUP/-[B] :xx xx xx.	<p>Set the HEX string of “VOLUME UP” to be saved. It will be automatically sent to display device when the “VOLUME UP” button have been pressed.</p> <p>xx xx xx: HEX string.</p> <p>The “B” represents the baud rate of third-party device.</p> <table><tr><td>B</td><td>Baudrate</td><td>B</td><td>Baudrate</td></tr><tr><td>1</td><td>2400</td><td>2</td><td>4800</td></tr><tr><td>3</td><td>9600</td><td>4</td><td>19200</td></tr><tr><td>5</td><td>38400</td><td>6</td><td>57600</td></tr><tr><td>7</td><td colspan="3">115200</td></tr></table>	B	Baudrate	B	Baudrate	1	2400	2	4800	3	9600	4	19200	5	38400	6	57600	7	115200			CMDVOLUP/-3:1A 2A 3A 4A
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CMDVOLDN/+ [B] :xxx.	<p>Set the ASCII string of “VOLUME DOWN” to be saved. It will be automatically sent to display device when the “VOLUME DOWN” button have been pressed.</p> <p>xxx: ASCII string.</p> <p>The “B” represents the baud rate of third-party device.</p> <table><tr><td>B</td><td>Baudrate</td><td>B</td><td>Baudrate</td></tr><tr><td>1</td><td>2400</td><td>2</td><td>4800</td></tr><tr><td>3</td><td>9600</td><td>4</td><td>19200</td></tr><tr><td>5</td><td>38400</td><td>6</td><td>57600</td></tr><tr><td>7</td><td colspan="3">115200</td></tr></table>	B	Baudrate	B	Baudrate	1	2400	2	4800	3	9600	4	19200	5	38400	6	57600	7	115200			CMDVOLDN/+3:abc123
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Command	Function	Command Example and Feedback																				
CMDVOLMT/+[B]:xxx.	<p>Set the ASCII string of “VOLUME MUTE” to be saved. It will be automatically sent to display device when the “VOLUME MUTE” button have been pressed.</p> <p>xxx: ASCII string.</p> <p>The “B” represents the baud rate of third-party device.</p> <table><tr><td>B</td><td>Baudrate</td><td>B</td><td>Baudrate</td></tr><tr><td>1</td><td>2400</td><td>2</td><td>4800</td></tr><tr><td>3</td><td>9600</td><td>4</td><td>19200</td></tr><tr><td>5</td><td>38400</td><td>6</td><td>57600</td></tr><tr><td>7</td><td colspan="3">115200</td></tr></table>	B	Baudrate	B	Baudrate	1	2400	2	4800	3	9600	4	19200	5	38400	6	57600	7	115200			<p>CMDVOLMT/+3:abc123</p>
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8. Firmware Upgrade

Please follow the steps as below to upgrade firmware by the **FW** port on the front panel:

- 1) Prepare the latest upgrade file (.bin) and rename it as “FW_MERG.bin” on PC.
- 2) Power off the switcher, and connect the **FW** port of switcher to the PC with USB cable.
- 3) Power on the switcher, and then the PC will automatically detect a U-disk named of “BOOTDISK”.
- 4) Double-click the U-disk, a file named of “READY.TXT” would be showed.
- 5) Directly copy the latest upgrade file (.bin) to the “BOOTDISK” U-disk.
- 6) Reopen the U-disk to check the filename “READY.TXT” whether automatically becomes “SUCCESS.TXT”, if yes, the firmware was updated successfully, otherwise, the firmware updating is fail, the name of upgrade file (.bin) should be confirmed again, and then follow the above steps to update again.
- 7) Remove the USB cable after firmware upgrade.
- 8) After firmware upgrade, the switcher should be restored to factory default by sending command.



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