SEADA

Showing the World

SD-MV-0501P

4K 5X1 Seamless Switcher with Multiview

User Manual

VER 2.0

Warning

- Do not expose this device to Rain, Moisture, and Dripping
- Only use accessories specified by the manufacture
- Unplug this device during Lightning Storms
- The manual is for reference only, maybe updated without further notice

Content

Introduction

SD-MV-0501P is a HDMI 2.0 and DP 1.2 Seamless Video Switcher with Multiview function. It supports 3x HDMI, 1x DP and 1x USB-C (video & Audio only) inputs, one HDMI and one HDBaseT video mirror outputs. One 3.5mm audio jacket can output analogue stereo audio. User can use Front Buttons, Remote Control or RS232 to control the switcher.

1. Features

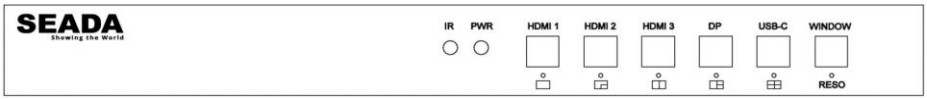
- Seamless Switching on single display window mode
- Support 5 Multiview display modes
- Support customized layouts
- Support customized output resolution
- Support HDMI 2.0, DP 1.2 input
- Scaling output with multiple resolution options, up to 4096x2160@60
- HDBaseT transmission length up to 70m @1080p, or 40m @4K
- Support volume control and independently audio selection
- Support LPCM, AC3, DD+, DTS, DTS-HD, up to 7.1 audio channel
- Audio extraction, 3.5mm L/R output
- Provide 24V/10watt PSE (POC) for HDBaseT receiver

2. Specification

Band Width	594MHz (18Gbps), HDMI 2.0, HDCP2,2
Audio Format	LPCM, AC3, DD+, DTS, DTS-HD, up to 7.1 channel
Output ports	1x HDMI, 1x HDBaseT
Input ports	3x HDMI, 1x DP, 1x USB-C (video & Audio only)
Power Supply	24V/1A ,14W max
Operating Temperature	0 to +40°C (+32 to +104 °F)
Operating Humidity	0 to 90 % RH (non-condensing)
Dimensions	L225 x W100 x H25 mm
Weight (Main Unit)	0.75kg

3. Connectors and Controls

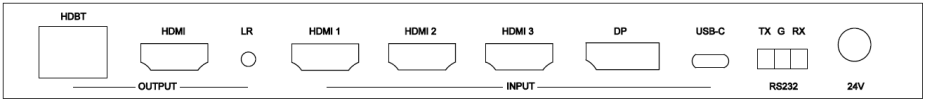
Front



Name	Description
HDMI 1	Press HDMI 1 button to select HDMI 1 as the input source. Long press it for 3 seconds to enter **SINGLE** mode, ▭. Note, when works on non-SINGLE mode, directly short press input buttons will be invalid.
HDMI 2	Press HDMI 2 button to select HDMI 2 as the input source. Long press it for 3 seconds to enter PIP Multiview mode, ◱.
HDMI 3	Press HDMI 3 button to select HDMI 3 as the input source. Long press it for 3 seconds to enter PBP Multiview mode, ▯▯.
DP	Press DP button to select DP as the input source. Long press it for 3 seconds to enter **3xWIN** mode, ◧.
USB-C	Press USB-C button to select USB-C (video only) as the input Long press it for 3 seconds to enter **4xWIN** mode, ⊞.
WINDOW/RESO	press this button, the screen will show up one yellow border on window 1. Continue press this button the border will be shown on window 2 or 3… then press one input button such as HDMI 1**,** and then HDMI 1 will be displayed on the current selected window. Long press this button for 3 seconds into RESO (short for Resolution) to select different output resolution. The resolution info will be shown on screen.

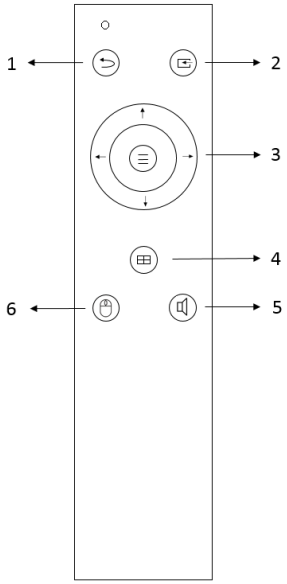
Please note: Press HDMI 3 and DP at the same time can enable/disable AUTO SWITCH function in **SINGLE** window display mode.

Rear



Name	Description
HDBT out	HDBaseT Scaling output up to 4096x2160@60, Act as 24V POC-PSE
HDMI out	HDMI scaling output up to 4096x2160@60
LR out	3.5mm LR stereo audio output, 20Hz ~ 20kHz, 1.5Vrms max
INPUTs	**HDMI 1**, **HDMI 2**, **HDMI 3**, **DP, USB-C**
RS232	Baud Rate: 9600, Data Bits:8, Parity: None Stop Bits:1 3 way 3.5mm phoenix connector **TX** means Switcher⟶ PC; **RX** means Switcher⟵ PC **G** means Ground
24V	24V power adapter to plug in

4. Remote Control



Number	Description
1	Return/Exit
2	Video input selection
3	OSD menu navigation Menu (Enter),UP, DOWN, LEFT,RIGHT
4	Multiview mode selection
5	Audio input selection
6	Reserved

5. EDID and HDCP handle

User can select following EDID modes by RS232 command or OSD menu navigation via remote control

Number	EDID mode	Number	EDID mode
1	4K60-2.0CH	11	1680x1050
2	4K60-5.1CH	12	1600x1200
3	4K60-7.1CH	13	1440x900
4	4K30-2.0CH	14	1360x768
5	4K30-5.1CH	15	1280x1024
6	4K30-7.1CH	16	1024x768
7	1080P60-2.0CH	17	720P
8	1080P60-5.1CH	18	AUTO
9	1080P60-7.1CH	19	USER
10	1920x1200		

The switcher support 3 HDCP options at HDMI output:
FORCE-1.4, FORCE-2.2, FORCE-OFF
User can select it via RS232.

6. Video and Audio output

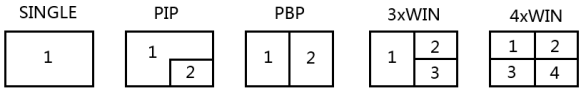
The switcher supports multiple resolution video input up to 4096x2160@60, and supports multiple audio format such as LPCM, AC3, DD+, DTS, DTS-HD, up to 7.1 channel pass through function via HDMI cable. It also supports audio matrix.
User can control the audio volume when the audio input is LPCM format. The switcher supports the following video output resolutions.

Number	Output Resolution	Number	Output Resolution
1	4096x2160p 60Hz	**9**	1920x1080p 50Hz
2	4096x2160p 50Hz	**10**	1360x768p 60Hz
3	3840x2160p 60Hz	**11**	1280x800p 60Hz
4	3840x2160p 50Hz	**12**	1280x720p 60Hz
5	3840x2160p 30Hz	**13**	1280x720p 50Hz
6	3840x2160p 25Hz	**14**	1024x768 60Hz
7	1920x1200P 60Hz RB	**15**	AUTO
8	1920x1080p 60Hz	**16**	USER

7. Multiview

The switcher support 5 categories of display modes**:** SINGLE, PIP, PBP, 3xWIN, 4xWIN.
Users can select different operations for different Multiview modes as following:
SINGLE: Inputs selection
PBP, 3xWIN & 4xWIN: Inputs selection, Display Aspect Ratio selection, Layout Mode
PIP: Inputs selection, Sub window size and position selection

Multiview window distribution as following:

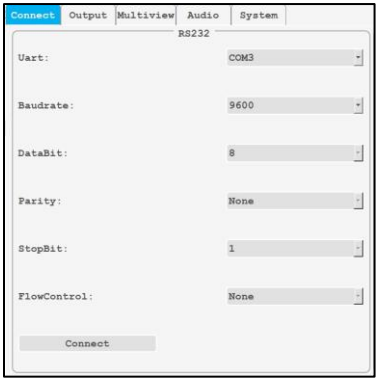


User can do more layouts via RS232 or OSD menu navigation. It can save up to 20 preset layouts via RS232.

8. Control Software

Users can run the software without installation, double click the software to get the 'UserLogin' box.

The default password for 'admin' is **111111**.



To successfully connect select correct port and make sure that all settings are as below:
Baud Rate: **9600**
Data Bits: **8**
Stop Bit: **1**
No Parity

Note:
Only Serial Port connection is supported.

In **'Output'** tab user can change the resolution, select VKA mode between Black Screen or Blue Screen, and Disable 4K Auto function.

In **'Multiview'** tab user can select display category from: Single, PIP, PBP, 3x Win and 4xWin. Each category supports different features:

- **SINGLE**

In **Single** category user can assign input to the Window, select the Input Resolution, and turn on/off Auto Switch.

- **PIP**

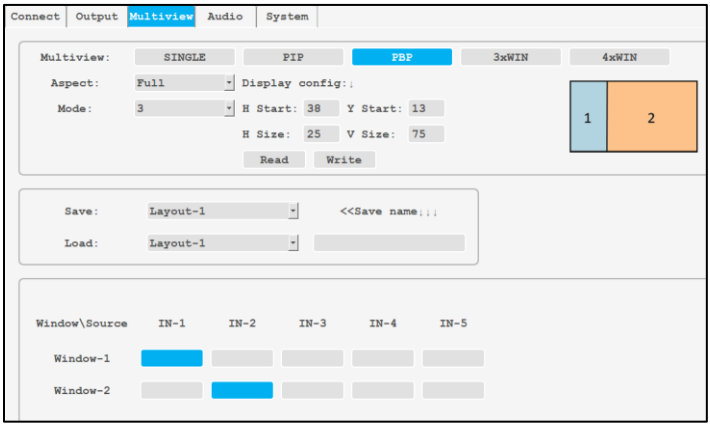
In **PIP** user can select position and size of **Window 2.**

To customize position and size of Window 2 please select **'USER'** from available options and in 'Display config' boxes type in desired values.

Note:
Values for H and Y start position and H and Y size are the **percentage** of the Display Screen. You can only change the size and the position of **Window 2.**

User can assign different video source to Window 1 and Window 2.

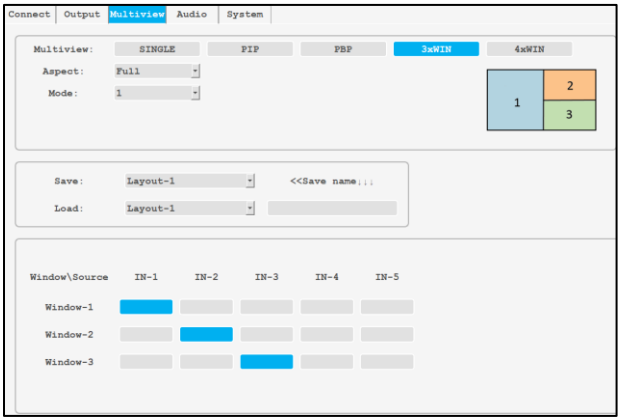
- **PBP**



In **PBP** user can choose 'Aspect' ratio between full and 16:9. User can also select 1 of 3 modes for **Windows 1 & Windows 2** sizes.

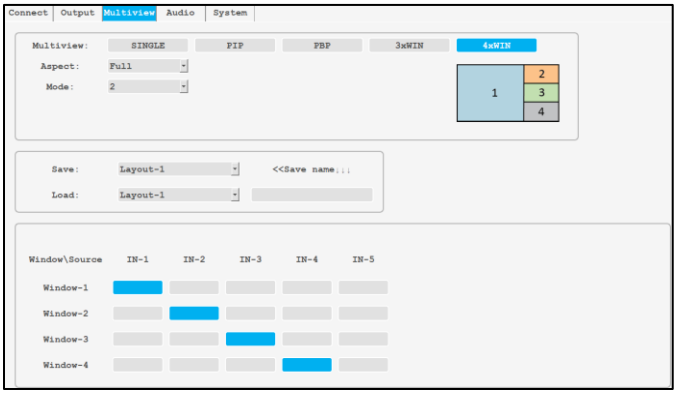
When selecting 'Mode' 3 user can crop video source displayed on **Windows 1** by using 'Display config' boxes.

- **3 x WIN**



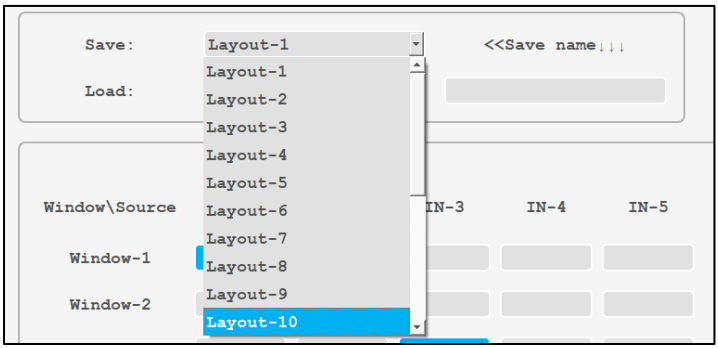
In **3xWIN** user can choose 'Aspect' ratio between full and 16:9. User can also select 1 of 4 modes for preset layouts of **Windows 1 ,2 ,3.**

- **4 x WIN**



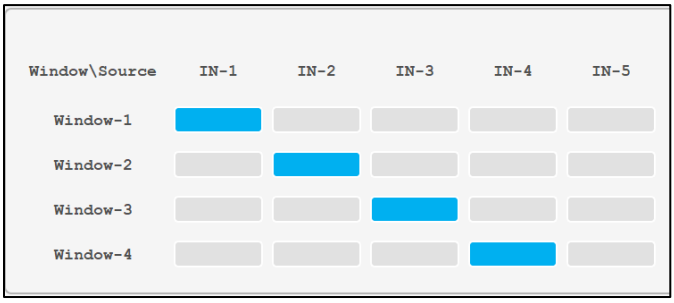
In **4xWIN** user can choose 'Aspect' ratio between full and 16:9. User can also select 1 of 2 modes for preset layouts of **Windows 1 ,2 ,3, 4.**

- **Save & Load Layouts**



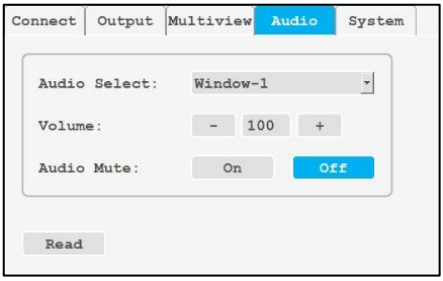
Users can save and load up to 20 layouts. To save the layout type in the name in the designated box and choose the slot from the dropdown list.

- **Window/Source**

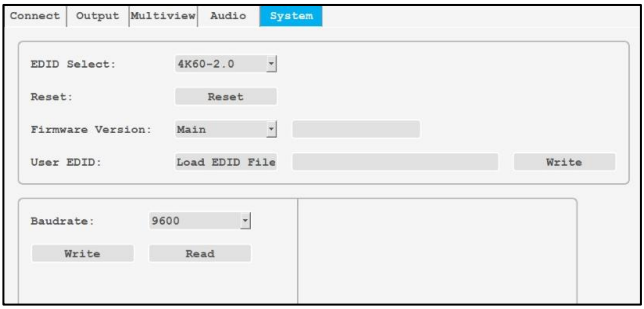


User can change the source on each Window by selecting right grid.

In **'Audio'** user can select an audio source, control the volume or Mute it.



'**System**' tab allows to select an EDID or upload customized Edid file. User can also change the Baudrate.



9. RS232 commands

Note: All the commands begin with SET or GET, end with Carriage Return (CR).
↵ Represents Carriage Return (CR). All return messages are always end with CR.

Baud Rate: 9600, Data Bits:8, Parity: None Stop Bits:1

System commands

This command returns the complete list of supported control commands

Command	Details
SET RESET↵	Reset to factory setting
GET VERSION↵	Get firmware version
SET BAUDRATE w↵	Set the new baudrate to the device
	w is 9600, 19200, 38400,57600 or 115200
GET BAUDRATE↵	Return current baudrate of the device

Switching and Input commands

The following commands are used for input selection or querying input information.
These commands only be valid on **SINGLE** mode.

Commands	Details
SET AUTO SWITCH w↵	Turn the auto switch on or off, w is ON or OFF, default OFF
GET AUTO SWITCH↵	Return AUTO SWITCH setting status
SET IN SOURCE w↵	Switch the video source to w
	w is one of the following: HDMI1, HDMI2, HDMI3, DP, USB-C
GET IN SOURCE↵	Get current input video source channel information
GET IN RESOLUTION↵	Get current input source resolution
GET IN STATUS↵	Get status of all input ports

Output commands

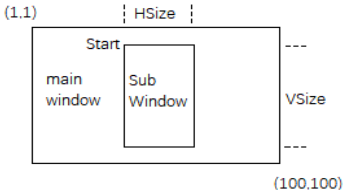
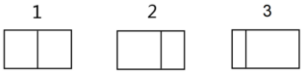
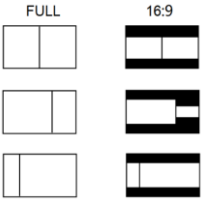
Commands	Details
SET OUT RESOLUTION w↵	Change the output resolution
	w is one of the following, default: 3840x2160p60 4096x2160p60, 4096x2160p50, 3840x2160p60, 3840x2160p50, 3840x2160p30, 3840x2160p25, 1920x1200p60RB, 1920x1080p60, 1920x1080p50, 1360x768p60, 1280x800p60, 1280x720p60, 1280x720p50, 1024x768p60, AUTO, USER
GET OUT RESOLUTION↵	Get current output resolution setting
SET RESO-USER Width Height↵	Set user defined output resolution

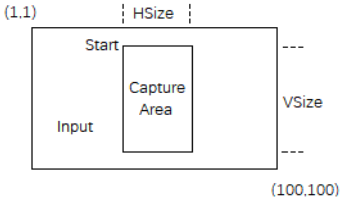
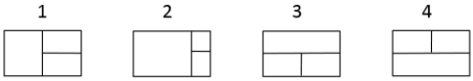
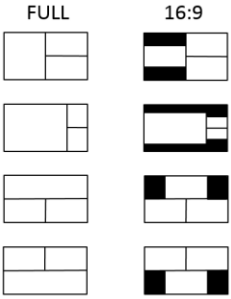
	Width is horizontal active pixels Height is vertical active lines For user define output resolution, the frame rate is always 60Hz
GET RESO-USER↵	Get current user defined resolution
SET OUT HDCP w↵	Set up output HDCP
	w is one of following, default is FORCE-OFF FORCE-1.4,FORCE-2.2,FORCE-OFF
GET OUT HDCP↵	Get the HDCP status on output
SET OUT VKA w↵	Set up screen colour when no signal display w is BLUESCREEN or BLACKSCREEN. Default BLACKSCREEN.
GET OUT VKA↵	Get the information of current no signal screen colour
SET OUT ITC w↵	Set up ITC w is ON or OFF, default OFF
GET OUT ITC↵	Get the current status of ITC

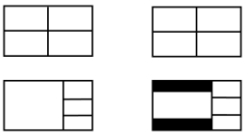
Multiview commands

The following commands used to select Multiview modes, windows layout and so on

Commands	Details
SET MULTIVIEW w↵	Select one Multiview mode for current display
	w is one of the following, default SINGLE SINGLE, PIP, PBP, 3xWIN, 4xWIN,
GET MULTIVIEW↵	Get the current Multiview mode
SET WINDOWx IN y↵	Select one input (y) for one display window (x) for the current Multiview mode.
	x is one of 1, 2, 3 or 4 y is one of the following: HDMI1, HDMI2, HDMI3, DP, USB-C
GET WINDOWx IN↵	Get which input source displayed on display window (x) for the current Multiview mode
	x is one of 1, 2, 3 or 4
SET FREEZE-WINx w↵	Freeze the display window (x)
	x is one of 1, 2, 3 ,4 or ALL, w is ON or OFF
GET FREEZE-WINx↵	Get the freeze status of display window (x)
	x is one of 1, 2, 3 ,4 or ALL

SET PIP POS w↵	This command to select the PIP sub window position. w is one of the following, default RightBottom LeftTop, LeftBottom, RightTop, RightBottom, USER
GET PIP POS↵	This command to get the PIP sub window position
SET PIP SIZE w↵	This command to select the PIP sub window size. w is one of the following, default LARGE SMALL,MIDDLE, LARGE, USER
GET PIP SIZE↵	Get the PIP window size.
SET PIP USER HStart VStart HSize VSize↵	This command allows users to customize a PIP layout with customized sub window position and size. This customized PIP layout will replace other pre-defined PIP modes (such as LeftTop, LARGE) and display on the screen **After the user enters SET PIP POS or SET PIP SIZE command, the PIP USER will become invalid**  Please note Value for Size are percentage of the total screen size Start point from (1,1) HStart plus HSize less than or equal to 101 VStart plus VSize less than or equal to 101
GET PIP USER↵	Get position and size of the USER PiP window
SET PBP MODE w↵	Set the PBP display mode, default is mode 1  w is one of 1,2 or 3,
SET PBP ASPECT w↵	 Set the PBP window display aspect. default is FULL

	w is FULL or 16:9,
GET PBP ASPECT↵	Get the PBP window display ratio
SET PBP-PRESENTER HStart VStart HSize VSize↵	Set window 1 capture area for PBP mode 3 This command only valid when the switcher already work on PBP mode 3, Default HStart 38, VStart 13, HSize 25, VSize 75. 
	Please note HStart plus HSize less than or equal to 101 VStart plus VSize less than or equal to 101
GET PBP-PRESENTER↵	Return: PBP-PRESENTER HStart VStart HSize VSize
SET 3xWIN MODE w↵	Set the 3xWIN display mode w is one of 1,2,3 or 4, default 1  Return: 3xWIN MODE w
GET 3xWIN MODE↵	Return: 3xWIN MODE w
SET 3xWIN ASPECT w↵	 Set the 3xWIN window display aspect ratio, default is FULL
	w is FULL or 16:9,
GET 3xWIN ASPECT ↵	Get the 3xWIN window display aspect ratio
	Set the 4xWIN display mode, default is 1

SET 4xWIN MODE w↵	1 2 
	w is 1 or 2
GET 4xWIN MODE↵	Get 4xWIN MODE w
SET 4xWIN ASPECT w↵	Set the 4xWIN window display aspect ratio, default is FULL FULL 16:9 
	w is FULL or 16:9,
GET 4xWIN ASPECT↵	Get 4xWIN ASPECT w
GET MULTIVIEW-SYNC↵	Return Multiview layout information
SET SAVE SCENE w↵	Save the current display layout as preset scene
	w is 1 to 20
SET LOAD SCENE w↵	Recall the preset scene
	w is 1 to 20

Audio commands

Commands	Details
SET AUDIO SOURCE w↵	w is one of the following: WIN1, HDMI1, HDMI2, HDMI3, DP, USB-C Return: AUDIO SOURCE w
GET AUDIO SOURCE↵	Get the information of which input signal audio source is from
SET AUDIO VOL+↵	Increase audio out volume
	w is the volume value
SET AUDIO VOL-↵	Decrease audio out volume
	w is the volume value
SET AUDIO VOL w↵	Set audio volume value, default is 100
	w is 0 to 100
GET AUDIO VOL↵	Get current audio volume value
SET AUDIO-MUTE w↵	Mute or unmute audio output, default is OFF
	w is ON or OFF
GET AUDIO-MUTE↵	Get status of audio mute

EDID command

The following commands are used to set EDID mode for the inputs

Commands	Details
SET IN EDIDMODE w↵	Customize the inputs EDID, Default is 4K60-2.0

	w is one of the following: 4K60-2.0, 4K60-5.1, 4K60-7.1, 4K30-2.0, 4K30-5.1, 4K30-7.1, 1080p60-2.0,1080p60-5.1, 1080p60-7.1,1920x1200, 1680x1050, 1600x1200, 1440x900, 1360x768, 1280x1024, 1024x768, 720p, AUTO,USER
SET EDID-USER w↵	Switcher can only support 256 bytes EDID-USER data. w is 256 bytes EDID data. Return: EDID-USER OK
GET IN EDIDMODE↵	Get the current EDID mode
	Example: Send: GET IN EDIDMODE↵ Receive: IN EDIDMODE 4K60-2.0↵

Video Keep Alive (VKA) command

When there is no signal present, 3 options are available for selection:
Output blue screen, Output black screen, No timing output (VKA off)

Commands	Details
SET OUT VKA w↵	w is one of the following, default BLACKSCREEN BLUESCREEN, BLACKSCREEN,NOTIMING
	Example: Send: SET OUT VKA BLUESCREEN↵ Receive: OUT VKA BLUESCREEN↵
GET OUT VKA↵	Get current VKA mode
	Example: Send: GET OUT VKA↵ Receive: OUT VKA BLUESCREEN↵

4K-AUTO command

If we set 4K output to a displayer which can't support 4K, 4K-AUTO command can be enabled, switcher will change the output resolution according to displayer's capability

Commands	Details
SET OUT 4K-AUTO w↵	w is one of ON or OFF, default ON
	Example: Send: SET OUT 4K-AUTO ON↵ Receive: OUT 4K-AUTO ON↵
GET OUT 4K-AUTO↵	Get current OUT 4K-AUTO mode
	Example: Send: GET OUT 4K-AUTO↵ Receive: OUT 4K-AUTO ON↵