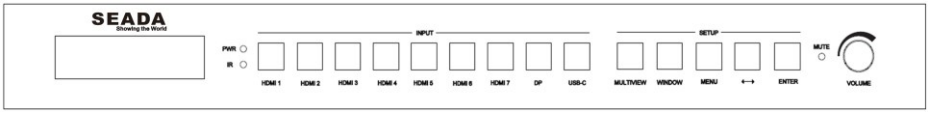
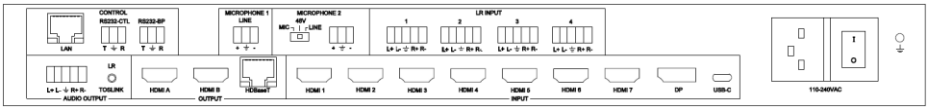
SEADA

Showing the World

SD-PS-M943

4K Presentation Switcher with Multiview





User Manual

VER 2.0

Content

Introduction

The SD-PS-M943 is a powerful seamless 4K presentation switcher with multiview function. It can take up to 9 video inputs with up to 4K resolution at different formats (HDMI, DP, USB-C) and then display it onto a display with resolution up to 4K. It not only can seamlessly switch between different video inputs onto the screen but also can display selected video inputs onto the screen at a preset multiview mode.

The SD-PS-M943 presentation switcher supports de-embedded input audios and embed any external audio onto the selected outputs, with line or microphone audio inputs. Scaled video signals are available as HDMI or HDBaseT for a long-distance transmission. This makes the SD-PS-M943 a great solution for a wide number of applications including classrooms, lecture halls, broadcasting, meeting, and conference rooms.

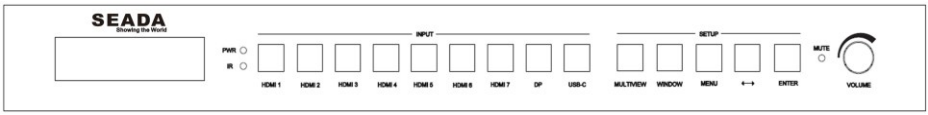
The SD-PS-M943 presentation switcher can be easily controlled via web GUI, front panel buttons, RS232, IR or an 3rd party controller which offers the greatly controlling flexibility. The unit can run standalone once configured.

1. Features

- 7 HDMI inputs, 1 DP input, 1 USB-C (Video and Audio only) input
- 3 mirrored outputs – HDMI A, HDMI B and HDBaseT
- HDBaseT transmission distance：70m@4K; 100m@1080p60
- Support HDMI 2.0, HDCP 2.2, video resolution up to 3840x2160@60
- Support SINGLE, PIP, PBP,3xWIN,4xWIN display mode
- Provide up to 20 display scenes to save or load
- Seamless switching on single window display mode
- Fast switching on non-single window display modes
- Support independent audio selection (break away selection)
- Support audio LPCM, AC3, DD+, DTS for Input HDMI1/2/3
- Support 2 microphone inputs, both can be mixed with main audio
- Independently microphones volume control and overall volume control
- Support balanced LR audio output and Toslink digital audio output
- Support external LR input
- Support multiple Test Pattern output
- Support 24V POC power supply to remote HDBaseT receiver
- Support OSD Menu navigation

2. Panel Layout

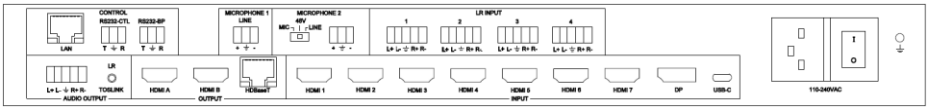
Front



Name	Description
Power LED	Lit when the switcher is powered
IR sensor	IR receiver for remote controller
HDMI 1, 2…,7, DP, USB-C	Total 9 inputs to be selected Press one of these buttons to direct select input source for single window display When display on PIP,PBP,3xWIN,4xWIN mode, one of the inside LED for the 9 input buttons will still be lit, it represents the input source of the window 1
MULTIVIEW	Press this button to loop select PIP, PBP, 3xWIN, 4xWIN display mode. When switcher work on single mode, then press Multiview button to select the last Multiview mode (PIP,PBP, 3xWIN or 4xWIN). The inside LED on Multiview button will be lit when work on PIP,PBP, 3xWIN or 4xWIN mode, and will be off when work on single window mode
WINDOW	Press this button, then 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 button such as HDMI 1**,** and then HDMI 1 will displayed on the current selected window
MENU, ↔ , ENTER	Three buttons to setup the system with front panel OSD navigation: 1. Microphone 1 ON or OFF 2. Microphone 1 volume, control it with audio knob 3. Microphone 2 ON or OFF 4. Microphone 2 volume, control it with audio knob 5. Main audio ON or OFF 6. Main audio selection 7. 4K AUTO output ON or OFF 8. COMP Mode: CSC,DSC. HDBT compression mode when output resolution is 4K60 9. Test Pattern ON or OFF 10. Output resolution selection 11. EDID selection

Name	Description
	12. Auto Switch ON or OFF 13. Long Reach Mode ON or OFF 14. RS232 baud rate 15. IP address info 16. Firmware version info
MUTE LED	Lit when audio muted
Audio Knob	Left or right rotation to control overall audio volume (main audio and two microphones audio) Directly press it to mute or unmute overall audio output

Rear



Name	Description
Audio outputs	Balanced L+R output, 3.5mm L+R output and Toslink-optical output compatible
Outputs	HDMI A, HDMI B, HDBaseT
INPUTs	HDMI 1, ···, HDMI 7, DP, USB-C
LAN	TCP/IP control. Default parameters as following IP address: 192.168.0.247; Sub Mask: 255.255.255.0 GATEWAY: 192.168.0.1; NETPORT: 2000 All the parameters can be changed by RS232 command
RS232 control	Default baud rate 9600, 8 data bits, 1 stop bit, no parity T, Switcher → PC R, Switcher ←PC G, Ground Baud rate options as following, can be selected by front panel 9600,19200,38400,57600,115200
RS232-BP	Pass through RS232-CTL commands
Microphone 1	Microphone-Line input
Microphone 2	Microphone input, there are three options with slide switch to select: 48V Phantom, MIC, LINE

3. EDID and HDCP handle

User can select following EDID modes by RS232 command or front panel

Number	EDID mode	Number	EDID mode
1	4K60-2.0CH	11	1440x900

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

The HDMI output support 3 HDCP options: FORCE-1.4, FORCE-2.2, FORCE-OFF
User can select it by RS232 command

4. Video and Audio

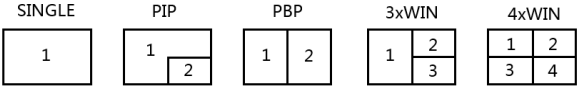
Support compressed audio such as AC3, DD+, DTS to pass through via HDMI cable with INPUT 1/2/3.
Beside HDMI(DP,USB-C) inner audio,there are 4 balanced LR audio inputs and one mute-NONE for main audio selection and this main audio selection is broken away from video selection.
So there are total 14 options for main audio selection:
WIN1, HDMI1, HDMI2,···HDMI7,DP,USB-C,LR1,LR2,LR3,LR4
WIN1 means the main audio is always taken from the source of window 1.
Both microphones (one is Microphone-Line only) can be mixed together with main audio. Microphone and overall volume can be controlled by RS232 command or front buttons and knob.
Please note when main audio is compressed format such as AC3 or DTS, the switcher can't do microphone mixer. And will pass through main audio to downstream.
The switcher support multiple resolution video input up to 3840x2160@60, and support following video output resolution:

Number	Output Resolution	Number	Output Resolution
1	4096x2160p 60Hz	8	1920x1080p 60Hz
2	4096x2160p 50Hz	9	1920x1080p 50Hz
3	3840x2160p 60Hz	10	1360x768p 60Hz
4	3840x2160p 50Hz	11	1280x800p 60Hz
5	3840x2160p 30Hz	12	1280x720p 60Hz
6	3840x2160p 25Hz	13	1280x720p 50Hz
7	1920x1200p60Hz RB	14	1024x768 60Hz

5. Multiview

The Switcher support 5 categories of multiview display modes
SINGLE, PIP, PBP, 3xWIN, 4xWIN
Users can select different operations for different Multiview modes as following:

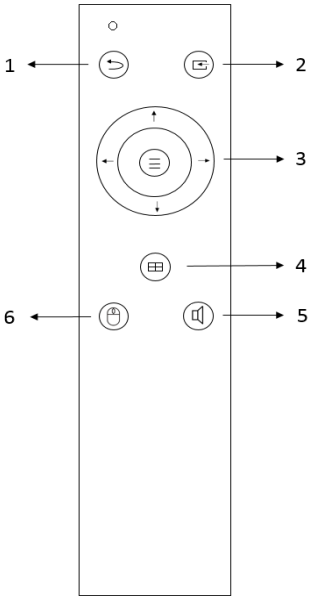
SINGLE, PIP, PBP, 3xWIN, 4xWIN
Multiview window distribution as following



User can do more layouts via RS232 commands and provide user defined multiview up to 10 scenes. The scene includes following points
Multiview Mode: SINGLE, PIP, PBP, 3xWIN, 4xWIN
SINGLE: Input selection
PIP: Inputs selection, Sub window size and position selection
PBP, 3xWIN, 4xWIN: Inputs selection, Layout Mode, Display aspect

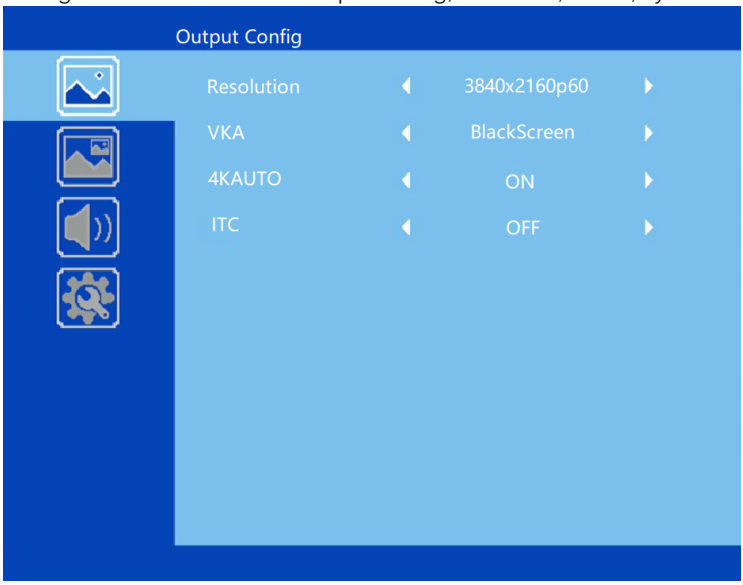
6. Remote Controller

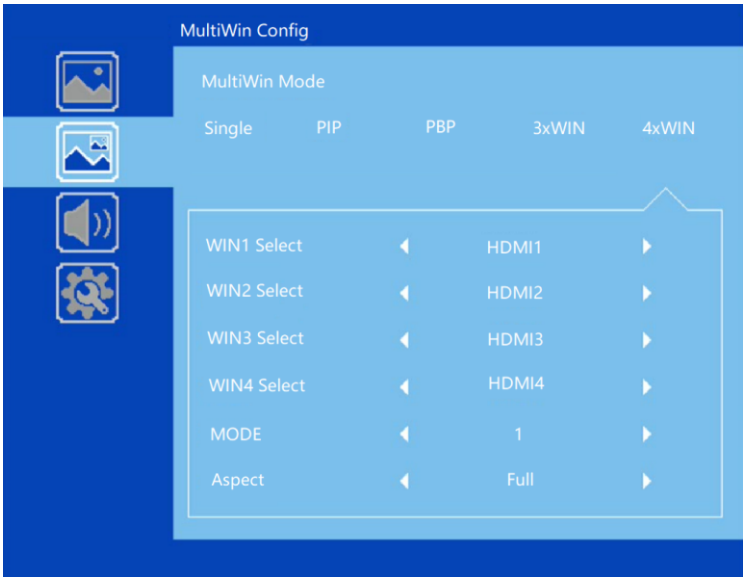
Number	Description
1	Return/Exit
2	Video input selection
3	OSD menu navigation Menu (Enter),UP, DOWN, LEFT,RIGHT Press Left or Right key alone can decrease or increase audio volume
4	Multiview mode selection
5	Audio input selection
6	Reserve

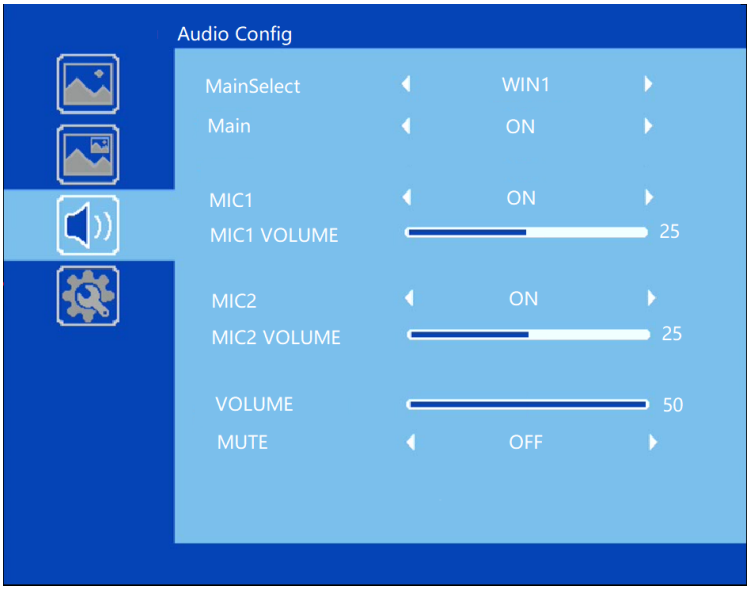


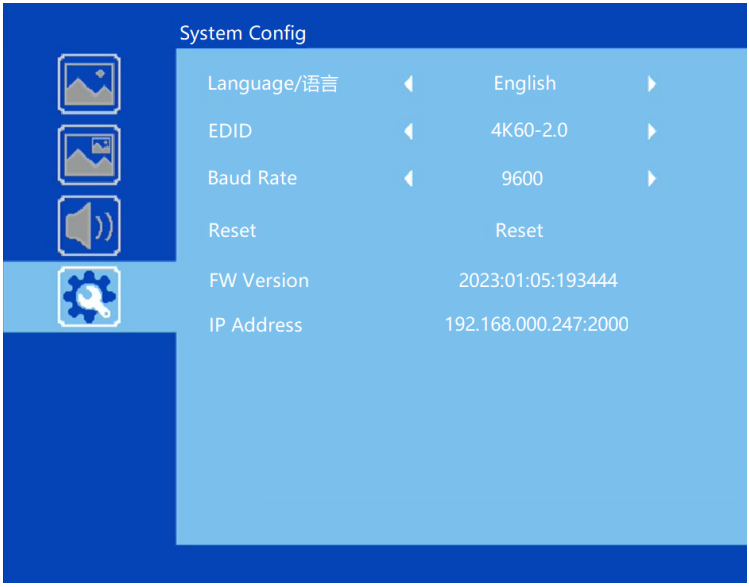
7. OSD Menu

Total 4 categories of OSD content: Output Config, Multiview, Audio, System






Audio Config
MainSelect
WIN1
Main
ON
MIC1
ON
MIC1 VOLUME
25
MIC2
ON
MIC2 VOLUME
25
VOLUME
50
MUTE
OFF


System Config
Language/语言
English
EDID
4K60-2.0
Baud Rate
9600
Reset
Reset
FW Version
2023:01:05:193444
IP Address
192.168.000.247:2000

8. Specification

Band Width	594MHz (18Gbps), HDMI 2.0, HDCP2,2
Audio Format	LPCM
Input ports	7 HDMI, 1 DP, 1 USB-C
Output ports	2 HDMI, 1 HDBaseT 1 5-way captive female screw connector 1 Mini Toslink connector
Power Supply	110-220VAC
Operating Temperature	0 to +40°C (+32 to +104 °F)
Operating Humidity	10 to 70 % RH (non-condensing)
ESD	Air: ± 8KV, Contact: ± 4KV,
Dimensions	L430 x W220 x H44 mm
Mass (Main Unit)	5kg

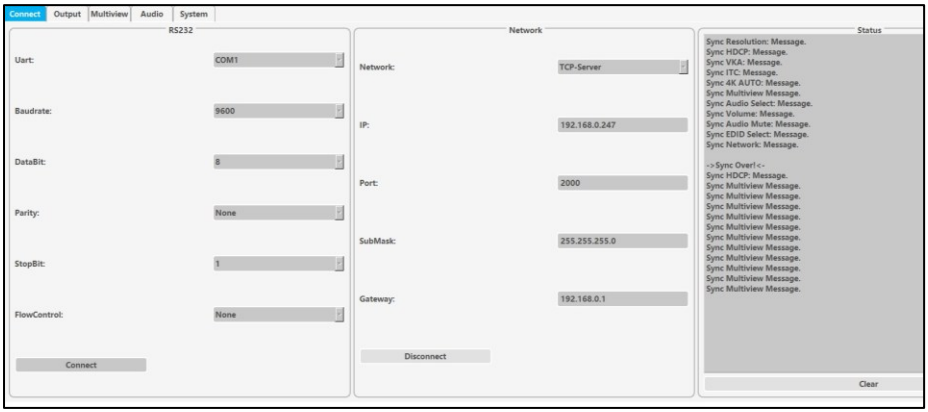
9. Package Contents

Item	Quantity
Switcher Unit	1
Remote Controller	1
AC Power Cord	1
Download Card	1
3-way male captive screw connector	3
5-way male captive screw connector	5

10. Control Software

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

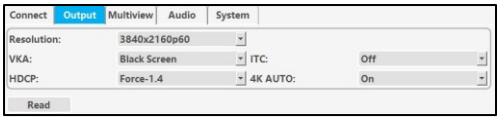
The default password for 'admin' is **111111**.



To successfully connect select the correct port and make sure that all settings are as below:

Network:
IP: **192.168.0.247**
Port **2000**
SubMask: **255.255.255.0**
Gateway: **192.168.0.1**

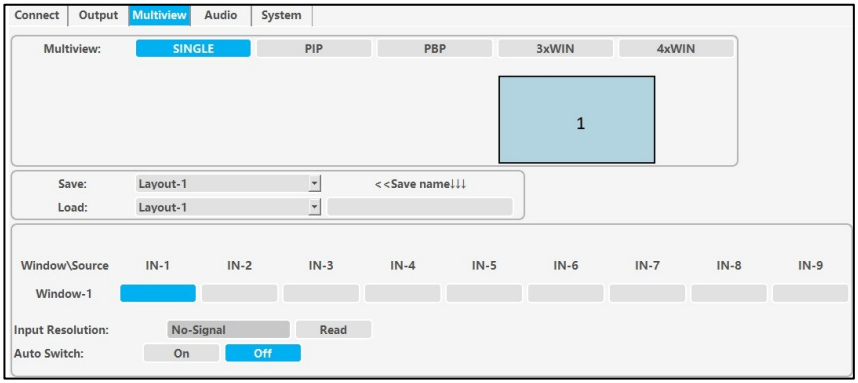
RS232:
Baud Rate: **9600**
Data Bits: **8**
Stop Bit: **1**
No Parity



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

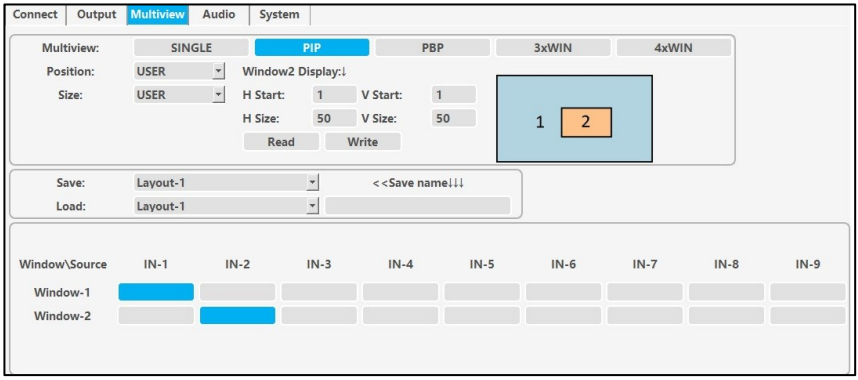
In **'Multiview'** tab users can select display category from: Single, PIP, PBP, 3x Win and 4xWin. Each category has different features:

- SINGLE



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

- PIP

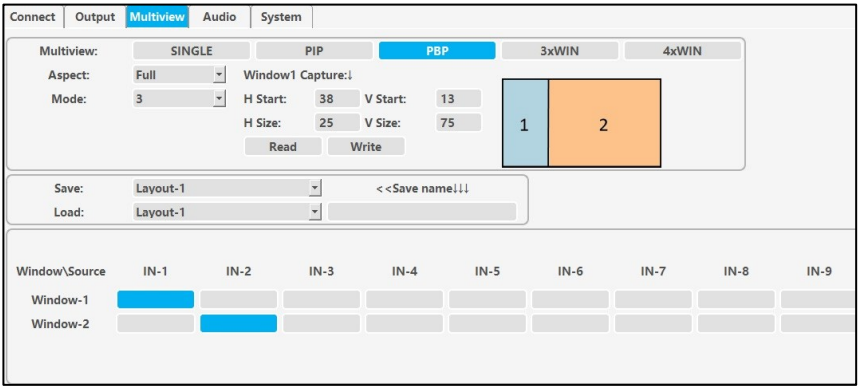


In **PIP** user can select position and size of **Window 2.**

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

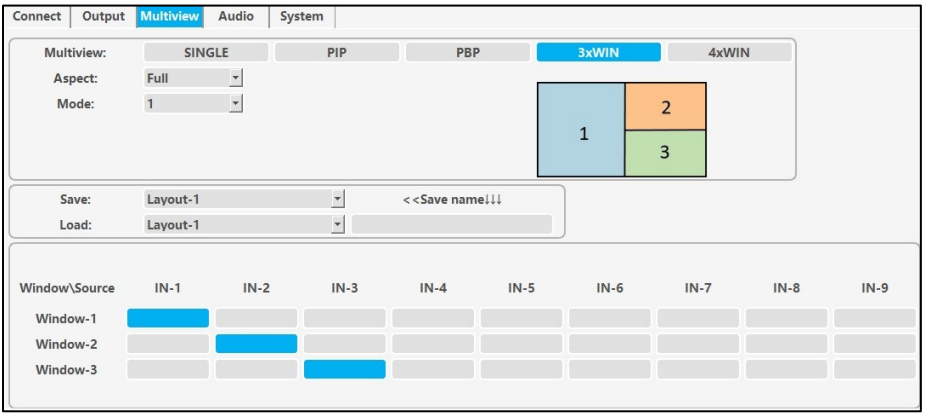
Note: Values for H and Y start are the positions. H and Y size are the **percentage** of the Display Screen.
You can only change the size and the position of **Window 2.** Users can assign different video sources to Window 1 and Window 2.

- PBP



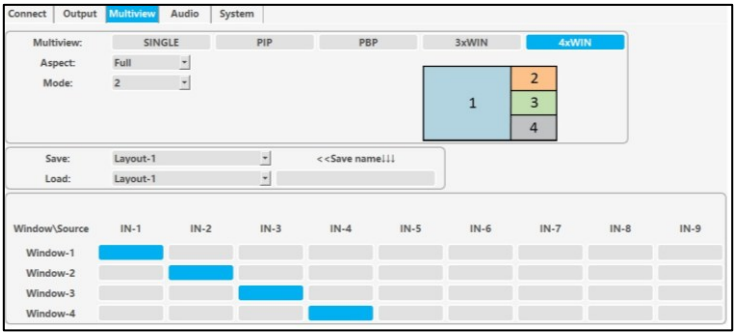
In **PBP** user can choose 'Aspect' ratio between full and 16:9. User can also select 1 of 3 modes for **Windows 1 & Windows 2** sizes.
When selecting 'Mode' 3 user can crop video source displayed on **Windows 1** by using 'Display config' boxes.

- 3 x WIN



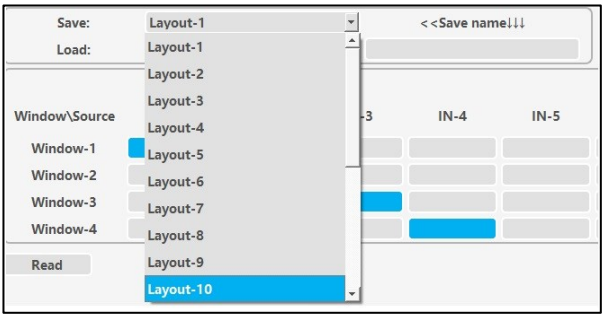
In **3xWIN** user can choose 'Aspect' ratio between full and 16:9. User can also select 1 of 4 modes for preset layouts of **Windows 1 ,2 ,3.**

- 4 x WIN



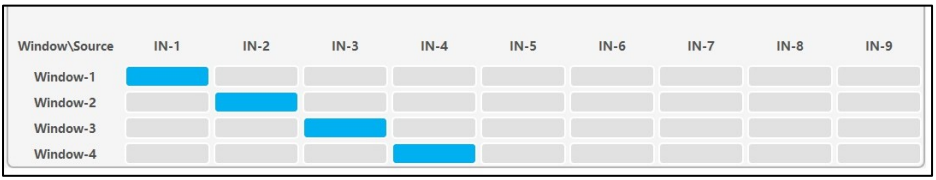
In **4xWIN** user can choose 'Aspect' ratio between full and 16:9. User can also select 1 of 2 modes for preset layouts of **Windows 1 ,2 ,3, 4.**

- Save & Load Layouts



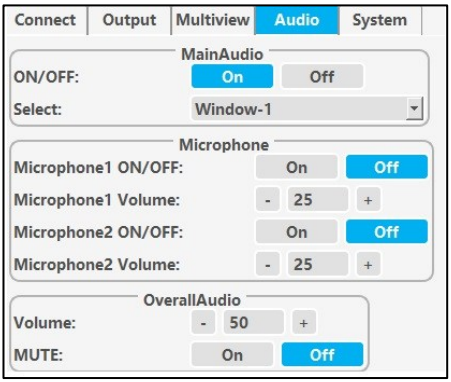
Users can save and load up to 20 layouts. To save the layout type in the name in the designated box and choose the slot from the dropdown list.

- Window/Source

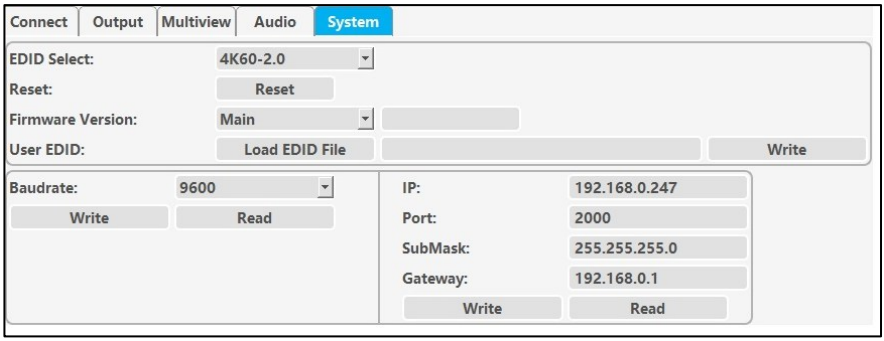


Users can change the source on each Window by selecting the grid.

In **'Audio'** user can select an audio source, control the volume or Mute it. Users can also turn ON/OFF and adjust the volume level of both microphones.



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



11. RS232 command

Note: All commands begin with SET or GET, end with Carriage Return (CR).

↵ Represents Carriage Return (CR).

All return messages are always end with CR.

System command

Command	Details
GET HELP↵	Get the Commands list
SET RESET↵	Recover to default setting
GET VERSION↵	Get main firmware version Return: VERSION w (w is version number)
GET SUB-VERSION↵	Get ARM firmware version Return: SUB-VERSION w (w is version number)
GET KEYBOARD-VERSION↵	Get Keyboard firmware version Return: KEYBOARD-VERSION w (w is version number)
SET BAUDRATE w↵	w is 9600, 19200, 38400,57600 or 115200 Return: BAUDRATE w
GET BAUDRATE↵	Return: BAUDRATE w
SET IP ADDRESS w↵	For example: SET IP ADDRESS 192.168.0.247 Return: IP ADDRESS w
GET IP ADDRESS↵	Return: IP ADDRESS w
SET SUBMASK w↵	For example: SET SUBMASK 255.255.255.0 Return: SUBMASK w
GET SUBMASK↵	Return: SUBMASK w
SET GATEWAY w↵	For example: SET GATEWAY 192.168.0.1 Return: GATEWAY w
GET GATEWAY↵	Return: GATEWAY w
SET NETPORT w↵	For example: SET NETPORT 2000 Return: NETPORT w
GET NETPORT↵	Return: NETPORT w
SET NETWORK-INFO IP PORT SUBMASK GATEWAY↵	For Example: SET NETWORK-INFO 192.168.0.247 2000 255.255.255.0 192.168.0.1 Return: NETWORK-INFO 192.168.0.247 2000 255.255.255.0 192.168.0.1
GET NETWORK-INFO↵	Return: NETWORK-INFO IP PORT SUBMASK GATEWAY
SET LONG-REACH w↵	w is ON or OFF

GET LONG-REACH↵	Return: LONG-REACH w
SET FREEZE-WINx w	Freeze the display window,x is one of 1, 2, 3 ,4 or ALL, w is ON or OFF Return: FREEZE-WINx w
GET FREEZE-WINx	x is one of 1, 2, 3 ,4. Return: FREEZE-WINx w (w is ON or OFF)

Switching command, only available on SINGLE mode

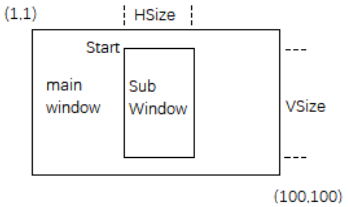
Commands	Details
SET AUTO SWITCH w↵	w is ON or OFF, default OFF Return: AUTO SWITCH w
GET AUTO SWITCH↵	Return: AUTO SWITCH w
SET IN SOURCE w↵	w is one of the following: HDMI1, HDMI2,…,HDMI7,DP,USB-C Return: IN SOURCE w
GET IN SOURCE↵	Get current input channel selection information Return: IN SOURCE w
GET IN RESOLUTION↵	Get current input resolution Return: IN RESOLUTION w (w is input resolution)
GET IN STATUS↵	Get status of all input ports x is HDMI1…..HMDI7,DP,USB-C Return: IN STATUS x VALID(or INVALID) If input port is vaild, Return: IN STATUS x InputRes ColorSpace ColorDepth

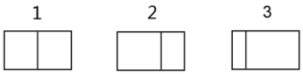
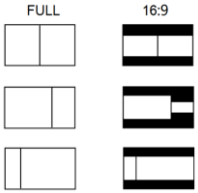
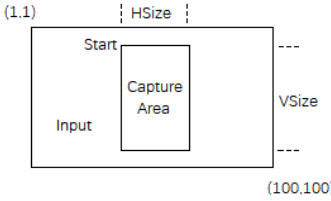
Output command

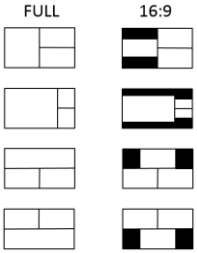
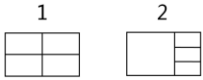
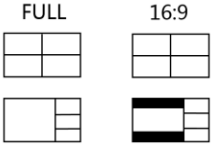
Commands	Details
SET OUT RESOLUTION w↵	w is one of the following, default: 3840x2160p60 4096x2160p60, 4096x2160p50, 3840x2160p60, 3840x2160p50, 3840x2160p30, 3840x2160p25, 1920x1200p60RB, 1920x1080p60, 1920x1080p50, 1360x768p60, 1280x800p60, 1280x720p60, 1280x720p50, 1024x768p60, AUTO, USER Return: OUT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

Height↵	Width is horizontal active pixels Height is vertical active lines For user define output resolution,the frame rate is always 60Hz Return: RESO-USER Width Height↵
GET RESO-USER↵	Return: RESO-USER Width Height↵
SET OUT HDCP w↵	w is one of following, default FORCE-1.4 FORCE-1.4,FORCE-2.2,FORCE-OFF Return: OUT HDCP w
SET OUT COMP w↵	w is CSC or DSC, default CSC Compression mode when HDBT output resolution is 4K60 Return: OUT COMP w
GET OUT COMP↵	Return: OUT COMP w
GET OUT HDCP↵	Return: OUT HDCP w
SET OUT VKA w↵	Set video keep alive mode w is BLUESCREEN or BLACKSCREEN. Default BLACKSCREEN. It is for no signal display Return: OUT VKA w
GET OUT VKA↵	Return: OUT VKA w
SET OUT ITC w↵	w is ON or OFF, default OFF Return: OUT ITC w Suggest **OFF** for video display and **ON** for PC especially desktop display, default setting is **OFF**
GET OUT ITC↵	Return: OUT ITC w
SET OUT TSP w↵	Set Test Pattern on or off, w is ON or OFF Return: OUT TSP w
GET OUT TSP↵	Return: OUT TSP w
SET OUT TSP-COLOR w↵	Set Test Pattern Colour , w is one of the following: BLACK, BLUE, GREEN, RED, WHITE, PRBS,RAMP, CHECKER_BOARD, STRIPE, RED_RAMP, GREEN_RAMP, BLUE_RAMP Default: CHECKER_BOARD Return: OUT TSP-COLOR w
GET OUT TSP-COLOR↵	Return: OUT TSP-COLOR w
SET OUT TSP-TIMING w↵	Set output timing for Test Pattern display w is one of the following: 4K30,1080p60, 720p60 default 1080p60 Return: OUT TSP-TIMING w
GET OUT TSP-TIMING↵	Return: OUT TSP-TIMING w

Multiview command

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 ⊞ Return: MULTIVIEW w
GET MULTIVIEW↵	Get the current Multiview mode Return: MULTIVIEW w
SET WINDOWx IN y↵	Select one input for one display window for the current Multiview mode. x is one of 1, 2, 3 or 4 y is one of HDMI1, HDMI2, ···, HDMI7, DP,USB-C Return: WINDOWx IN y
GET WINDOWx IN↵	This command to get which is the input source for one display window for the current Multiview mode Return: WINDOWx IN y
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 Return: PIP POS w
GET PIP POS↵	This command to get the PIP sub window position Return: PIP POS w
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 Return: PIP SIZE w
GET PIP SIZE↵	Return: PIP SIZE w
SET PIP USER HStart VStart HSize VSize↵	Return: PIP USER HStart VStart HSize VSize This command allows users to customize a PIP layout include 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  Please note

	HStart plus HSize less than or equal to 101 VStart plus VSize less than or equal to 101
GET PIP USER↵	Return: PIP USER HStart VStart HSize VSize
SET PBP MODE w↵	Set the PBP display mode w is one of 1,2 or 3, default 1  Return: PBP MODE w Please note for PBP mode 3, window2 can capture part of the input image area. It is main used for presenter show when work with conference camera situations The capture area can be defined by SET PBP-PRESENTER command
GET PBP MODE↵	Return: PBP MODE w
SET PBP ASPECT w↵	Set the PBP window display aspect w is FULL or 16:9, default FULL  Return: PBP ASPECT w
GET PBP ASPECT↵	Return: PBP ASPECT w
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 Return: PBP-PRESENTER HStart VStart HSize VSize  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 w is FULL or 16:9, default FULL  Return: 3xWIN ASPECT w
GET 3xWIN ASPECT↵	Return: 3xWIN ASPECT w
SET 4xWIN MODE w↵	Set the 4xWIN display mode w is 1 or 2 ,default 1  Return: 4xWIN MODE w
GET 4xWIN MODE↵	Return: 4xWIN MODE w
SET 4xWIN ASPECT w↵	Set the 4xWIN window display aspect w is FULL or 16:9, default FULL  Return: 4xWIN ASPECT w
GET 4xWIN ASPECT↵	Return: 4xWIN ASPECT w
GET MULTIVIEW-SYNC↵	Return Multiview layout information
SET SAVE SCENE w↵	Save current display scene w is 1, 2,…20 Return: SAVE SCENE w
SET LOAD SCENE w↵	Load display scene w is 1, 2,…20 Return: LOAD SCENE w

Audio command

Commands	Details
SET MAIN-AUDIO ONOFF w↵	Mute or unmute main audio Here w is ON or OFF, default ON Return:MAIN-AUDIO ONOFF w
GET MAIN-AUDIO ONOFF↵	Return:MAIN-AUDIO ONOFF w
SET AUDIO SOURCE w↵	Main audio selection, w is one of the following: WIN1,HDMI1,⋯,HDMI7,DP,USB-C,LR1,⋯,LR4 Return: AUDIO SOURCE w
GET AUDIO SOURCE↵	Return: AUDIO SOURCE w
SET AUDIO VOL+↵	Increase overall audio out volume Return: AUDIO VOL w (w is the volume value)
SET AUDIO VOL-↵	Decrease overall audio out volume Return: AUDIO VOL w (w is the volume value)
SET AUDIO VOL w↵	Set audio volume value w is 0,1⋯,50, default 50 For example: SET AUDIO VOL 50 Return: AUDIO VOL w
GET AUDIO VOL↵	Return: AUDIO VOL w
SET AUDIO-MUTE w↵	Mute or unmute overall audio output Here w is ON or OFF, default OFF Return: AUDIO-MUTE w
GET AUDIO-MUTE↵	Return: AUDIO-MUTE w
SET MIC1 ONOFF w↵	w is ON or OFF
GET MIC1 ONOFF↵	Return :MIC1 ONOFF w
SET MIC1 VOL+↵	Increase microphone 1 pre-volume Return: MIC1 VOL w (w is one of 0,1,...,50)
SET MIC1 VOL-↵	Decrease microphone 1 pre-volume Return: MIC1 VOL w
SET MIC1 VOL w↵	Set microphone 1 pre-volume value, default 25
GET MIC1 VOL w↵	Get microphone 1 pre-volume value
SET MIC2 ONOFF w↵	w is ON or OFF
GET MIC2 ONOFF↵	Return :MIC1 ONOFF w
SET MIC2 VOL+↵	Increase microphone 2 pre-volume Return: MIC2 VOL w (w is one of 0,1,...50)

SET MIC2 VOL-↵	Decrease microphone 2 pre-volume Return: MIC2 VOL w
SET MIC2 VOL w↵	Set microphone 2 pre-volume value, default 25
GET MIC2 VOL w↵	Get microphone 2 pre-volume value

EDID command

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

Commands	Details
SET IN EDIDMODE w↵	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 Default: 4K60-2.0 Return: IN EDIDMODE w
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↵	Return: IN EDIDMODE w