



**Comprehensive**<sup>®</sup>  
Connectivity Company

## CSW-PS512MV

Pro AV/IT 5x2 Seamless Presentation Switcher  
with Multi-Viewer & HDBT Extension up to 230ft



# User Manual

VER 1.0

# Thank you for purchasing this product

For optimum performance and safety, please read these instructions carefully before connecting, operating or adjusting this product. Please keep this manual for future reference.

## Surge protection device recommended

This product contains sensitive electrical components that may be damaged by electrical spikes, surges, electric shock, lightning strikes, etc. Use of surge protection systems is highly recommended in order to protect and extend the life of your equipment.

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## 1. Introduction

The CSW-PS512MV 5x2 Seamless Presentation Switcher provides 3×HDMI, 1×DP and 1×USB-C (AV only) inputs, 1×HDMI and 1×HDBaseT mirrored outputs with PIP/PAP/Tri/Quad-View Multi-View functionality. It supports single screen seamless switching with no freezing, black or snow screen. One 3.5mm audio de-embedding jacket can output analogue stereo audio. User can use Front Buttons or RS232 commands to control the switcher.

## 2. Features

- ☆ 5x2 presentation switcher with PIP/PAP/Tri/Quad-view
- ☆ True seamless switching, no freezing, black or snow screen
- ☆ Auto switching to active AV signal
- ☆ HDMI 2.0b, HDCP 2.2, DP1.4 up to 4K60@4:4:4
- ☆ 3×HDMI, 1×DisplayPort and 1×USB-C inputs
- ☆ 1×HDMI, 1×Mirrored HDBaseT 70M/POC output
- ☆ Full screen/PIP/PAP/Tri/Quad-view 5 configurable display modes
- ☆ Up to 14 output resolutions selectable
- ☆ 3.5mm analog audio de-embedding
- ☆ EDID management
- ☆ Buttons, RS-232 control and 3<sup>rd</sup> party control support

## 3. Package Contents

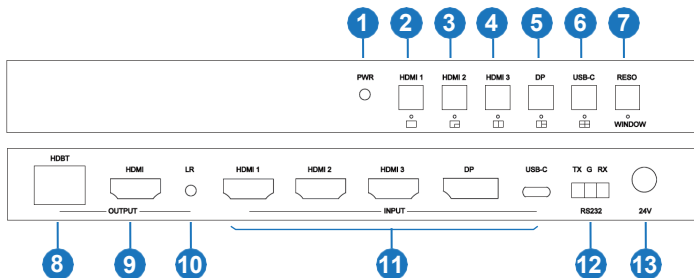
- ① 1 × CSW-PS512MV 5×2 Seamless Presentation Switcher
- ② 1 × HDBaseT 70m Receiver
- ③ 1 × 24V/1A Power Adapter
- ④ 2 × 3-way Female Captive Screw Connector
- ⑤ 1 × User Manual






## 4. Specifications

Technical	
HDMI Compliance	HDMI 2.0b
HDCP Compliance	HDCP 2.2
DP Compliance	DP 1.4
Video Resolution	Up to 3840×2160@60Hz
ESD Protection	Human-body Model: ±8kV (Air-gap discharge), ±4kV (Contact discharge)
Connection	
Switcher	INPUTS: 3×HDMI IN [Type A, 19-pin, Female] 1×DP IN 1×USB-C OUTPUTS: 1×HDBaseT OUT [RJ45] 1×HDMI OUT [Type A, 19-pin, Female] 1×L/R OUT [3.5mm, mini-Jack]
Receiver	INPUT: 1×HDBaseT In [RJ45] OUTPUT: 1×HDMI OUT [Type A, 19-pin Female]
Mechanical	
Housing	Metal Enclosure
Color	Black
Dimensions	Switcher: 225mm(W) × 100mm(D) × 25mm(H) Receiver: 157mm(W) × 90mm(D) × 20mm(H)
Weight	Switcher: 750g; Receiver: 333g
Power Supply	Input: AC100~240V 50/60Hz Output: DC 24V/1A
Power Consumption	14W (Max)
Operating Temperature	0°C ~ 40°C / 32°F ~ 104°F
Relative Humidity	10~50% RH (non-condensing)

## 5. Operation Controls and Functions

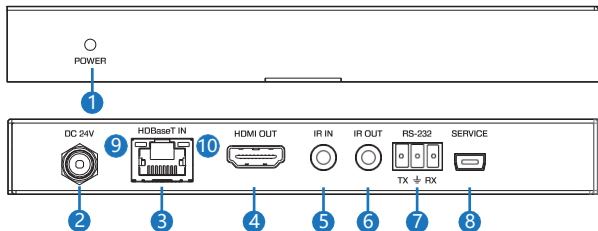
### 5.1 Switcher Panels



No.	Name	Function Description
1	PWR	When the device is powered on, the red LED lights on.
2	HDMI 1	Press HDMI 1 button to select HDMI 1 as the input source. Long press it for 3 seconds to enter <b>SINGLE</b> mode,  . SINGLE mode means only one display window on the screen. Note: When works on non-SINGLE mode, directly short press input buttons will be invalid.
3	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,  .
4	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,  .
5	DP	Press DP button to select DP as the input source. Long press it for 3 seconds to enter 3xWIN mode,  . 3xWIN mode is Three Windows Multiview mode.
6	USB-C	Press USB-C button to select USB-C (video only) as the input source. Long press it for 3 seconds to enter 4xWIN mode,  . 4xWIN mode is Four Windows Multiview mode.

No.	Name	Function Description
7	RESO	Press RESO (short for Resolution) button to select different output resolution. The resolution info will be shown on screen. Long press this button for 3 seconds 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 display on the current selected window.
8	HDBT out	HDBaseT Scaling output up to 3840x2160@60-4:2:0. Act as 24V POC-PSE.
9	HDMI out	HDMI scaling output up to 3840x2160@60.
10	LR out	3.5mm LR stereo audio output, 20Hz ~ 20kHz, 1.5Vrms max.
11	INPUTs	HDMI 1, HDMI 2, HDMI 3, DP, USB-C
12	RS232	External RS232 control Settings: Baud Rate: 9600, Data Bits: 8, Parity: None, Stop Bits: 1 RS232 Phoenix Connector Pinout: Switcher TX to PC TX (TX means Transmit) Switcher RX to PC RX (RX means Receive) Switcher G to PC G (G means Ground)
13	24V	24V power adapter to plug in

## 5.2 Receiver Panels



No.	Name	Function Description
1	Power LED	System power indicator.
2	DC 24V	Connect 24V/1A adaptor to AC wall outlet for power supply.
3	HDBaseT IN	Standard HDBaseT signal input port. Connect the HDBaseT port of the switcher with a UTP cable following the standard of direct interconnection method.
4	HDMI Out	HDMI output port. This slot is where you connect the HDTV or monitor with HDMI cable.
5	IR IN	IR signal receiving port (function reserved).
6	IR OUT	IR signal emitting port (function reserved).
7	RS-232	Phoenix jack provides serial control signal from switcher to receiver.
8	SERVICE	Manufacturer use only.
9	Connection Signal Indicator Lamp	<ul style="list-style-type: none"> <li>■ <b>Illuminating:</b> The switcher and receiver are in good connection.</li> <li>■ <b>Flashing:</b> The switcher and receiver are in poor connection.</li> <li>■ <b>Dark:</b> The switcher and receiver are not connected.</li> </ul>
10	Data Signal Indicator Lamp	<ul style="list-style-type: none"> <li>■ <b>Illuminating:</b> The HDMI signal with HDCP.</li> <li>■ <b>Flashing:</b> The HDMI signal without HDCP.</li> <li>■ <b>Dark:</b> No HDMI signal.</li> </ul>

## 6. EDID Modes

The switcher supports the following EDID modes for source to detection. User can select it by RS232 commands.

No.	EDID mode	No.	EDID mode
1	4K60-2.0CH	9	1680×1050
2	4K60-5.1CH	10	1600×1200
3	4K30-2.0CH	11	1440×900
4	4K30-5.1CH	12	1360×768
5	1080P-2.0CH	13	1280×1024
6	1080P-5.1CH	14	1024×768
7	720P	15	AUTO
8	1920x1200		

## 7. Video and Audio Output

The switcher supports the following video output resolution.

No.	Output Resolution	No.	Output Resolution
1	4096×2160p 60Hz	8	1920×1080p 60Hz
2	4096×2160p 50Hz	9	1920×1080p 50Hz
3	3840×2160p 60Hz	10	1360×768p 60Hz
4	3840×2160p 50Hz	11	1280×800p 60Hz
5	3840×2160p 30Hz	12	1280×720p 60Hz
6	3840×2160p 25Hz	13	1280×720p 50Hz
7	1920×1200P 60Hz RB	14	1024×768 60Hz

Audio output is always extracted from the source displayed on the window 1.



## 8. Multi-view

The Switcher supports 5 Multi-view display modes:

SINGLE, PIP, PBP, 3xWIN, 4xWIN

Users can select different operations for different Multi-view modes as following:

**SINGLE and 4xWIN:** Inputs selection;

**PBP and 3xWIN:** Inputs selection, Display Ratio selection;

**PIP:** Inputs selection, Display Ratio selection, Sub window size and position selection.

Multi-view window distribution as following:



User can use RS232 commands to do detail window layout.

## 9. RS232 commands

Note: All the commands begin with SET or GET, end with new line character (LF). ↵ Represents the enter button or key on your keyboard.

### HELP command

This command returns the complete list of supported control commands.

Command	Details
GET HELP ↵	Get the Commands list.
	Example: Send: GET HELP ↵ Receive: Command list

## Firmware version command

Command	Details
GET VERSION ↵	Get firmware version.
	Example: Send: GET VERSION ↵ Receive: 20210824 ↵

## Switching and Input commands

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

Command	Details
SET IN SOURCE w ↵	w is one of the following: HDMI1, HDMI2, HDMI3, DP, USB-C
	Example: Send: SET IN SOURCE HDMI1 ↵ Receive: IN SOURCE HDMI1 ↵
GET IN SOURCE ↵	Get current source selection.
	Example: Send: GET IN SOURCE ↵ Receive: IN SOURCE HDMI1 ↵

Command	Details
GET IN RESOLUTION ↵	Get current source resolution.
	Example: Send: GET IN RESOLUTION ↵ Receive: IN RESOLUTION 1920x1080p60 ↵






## Set output resolution commands

The following commands are used to select the output resolution:

Command	Details
SET OUT RESOLUTION w ↵	w is one of the following: 4096x2160p60,    4096x2160p50, 3840x2160p60,    3840x2160p50, 3840x2160p30,    3840x2160p25, 1920x1200p60RB, 1920x1080p60, 1920x1080p50,    1360x768p60, 1280x800p60,    1280x720p60, 1280x720p50,    1024x768p60 Default: 3840x2160p60
	Example: Send: SET OUT RESOLUTION 3840x2160p60 ↵ Receive: OUT RESOLUTION 3840x2160p60 ↵
GET OUT RESOLUTION ↵	Get current output resolution setting.
	Example: Send: GET OUT RESOLUTION ↵ Receive: OUT RESOLUTION 3840x2160p60 ↵

## Multi-view commands

The following commands are used to select Multi-view modes, windows layout and so on.

Command	Details
SET MULTIVIEW w ↵	<p>Select one Multi-view mode for current display. w is one of the following, default SINGLE.</p> <p>SINGLE, </p> <p>PIP, </p> <p>PBP, </p> <p>3xWIN, </p> <p>4xWIN, </p>
	<p>Example:</p> <p>Send: SET MULTIVIEW PIP ↵</p> <p>Receive: MULTIVIEW PIP ↵</p>
GET MULTIVIEW ↵	<p>Get the current Multi-view mode.</p> <p>Example:</p> <p>Send: GET MULTIVIEW ↵</p> <p>Receive: MULTIVIEW 3xWIN ↵</p>
SET WINDOWx IN y ↵	<p>Select one input for one display window for the current Multi-view mode. x is one of 1, 2, 3 or 4, y is one of the following: HDMI1, HDMI2, HDMI3, DP, USB-C</p> <p>Example:</p> <p>Send: SET WINDOW1 IN HDMI1 ↵</p> <p>Receive: WINDOW1 IN HDMI1 ↵</p>
GET WINDOWx IN ↵	<p>This command to get which is the input source for one display window for the current Multi-view mode.</p> <p>Example:</p> <p>Send: GET WINDOW1 IN ↵</p> <p>Receive: WINDOW1 IN HDMI1 ↵</p>

Command	Details				
SET PIP POS w ↵	<p>This command to select the PIP sub window position. w is one of the following, default RightBottom LeftTop, LeftBottom, RightTop, RightBottom</p> <p>Example: Send: SET PIP POS LeftTop ↵ Receive: PIP POS LeftTop ↵</p>				
GET PIP POS ↵	<p>This command to get the PIP sub window position.</p> <p>Example: Send: GET PIP POS ↵ Receive: PIP POS LeftTop ↵</p>				
SET PIP SIZE w ↵	<p>This command is to select the PIP sub window size. w is one of the following, default LARGE SMALL, MIDDLE, LARGE</p> <p>Example: Send: SET PIP SIZE SMALL ↵ Receive: PIP SIZE SMALL ↵</p>				
GET PIP SIZE ↵	<p>Get the PIP window size.</p> <p>Example: Send: GET PIP SIZE ↵ Receive: PIP SIZE SMALL ↵</p>				
SET PBP RATIO w ↵	<p>Set the PBP window display ratio. w is one of the following, 2:1, 1:1, default 2:1</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>RATIO 2:1</p> <table border="1" style="border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px;">1</td> <td style="width: 20px; height: 20px;">2</td> </tr> </table> </div> <div style="text-align: center;"> <p>RATIO 1:1</p> <table border="1" style="border-collapse: collapse;"> <tr> <td style="width: 20px; height: 20px;">1</td> <td style="width: 20px; height: 20px;">2</td> </tr> </table> </div> </div> <p>Example: Send: SET PBP RATIO 1:1 ↵ Receive: PBP RATIO 1:1 ↵</p>	1	2	1	2
1	2				
1	2				

Command	Details								
GET PBP RATIO ↵	<p>Get the PBP window display ratio.</p> <p>Example: Send: GET PBP RATIO ↵ Receive: PBP RATIO 1:1 ↵</p>								
SET 3xWIN RATIO w ↵	<p>Set the 3xWIN window display ratio. w is one of 2:1 or 1:1, default 2:1.</p> <p>RATIO 2:1                  RATIO 1:1</p> <table border="1" style="display: inline-table; margin-right: 20px;"> <tr><td> </td><td>2</td></tr> <tr><td>1</td><td>3</td></tr> </table> <table border="1" style="display: inline-table;"> <tr><td> </td><td>2</td></tr> <tr><td>1</td><td>3</td></tr> </table> <p>Example: Send: SET 3xWIN RATIO 1:1 ↵ Receive: 3xWIN RATIO 1:1 ↵</p>		2	1	3		2	1	3
	2								
1	3								
	2								
1	3								
GET 3xWIN RATIO ↵	<p>Get the 3xWIN window display ratio.</p> <p>Example: Send: GET 3xWIN RATIO ↵ Receive: 3xWIN RATIO 1:1 ↵</p>								

## Output HDCP Commands

The following commands are used to select the HDMI Output HDCP modes:

Command	Details
SET OUT HDCP w ↵	<p>w is one of following, default FORCE-1.4 FORCE-1.4, FORCE-2.2, FORCE-SINK</p> <p>Example: Send: SET OUT HDCP FORCE-1.4 ↵ Receive: OUT HDCP FORCE-1.4 ↵</p>

Command	Details
GET OUT HDCP ←↵	Get the output current HDCP mode.
	Example:
	Send: GET OUT HDCP ←↵ Receive: OUT HDCP FORCE-1.4 ←↵

## EDID commands

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

Command	Details
SET IN EDIDMODE w ←↵	w is one of the following: 4K60-2.0, 4K60-5.1, 4K30-2.0, 4K30-5.1, 1080p60-2.0 1080p60-5.1, 1920x1200, 1680x1050, 1600x1200, 1440x900, 1360x768, 1280x1024, 1024x768, 720p, AUTO Default: 4K60-2.0
	Example:
	Send: SET IN EDIDMODE 4K60-2.0 ←↵ Receive: IN EDIDMODE 4K60-2.0 ←↵
GET IN EDIDMODE ←↵	Get the current EDID mode.
	Example:
	Send: GET IN EDIDMODE ←↵ Receive: IN EDIDMODE 4K60-2.0 ←↵

## Video Keep Alive (VKA) commands

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

Command	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 ↵

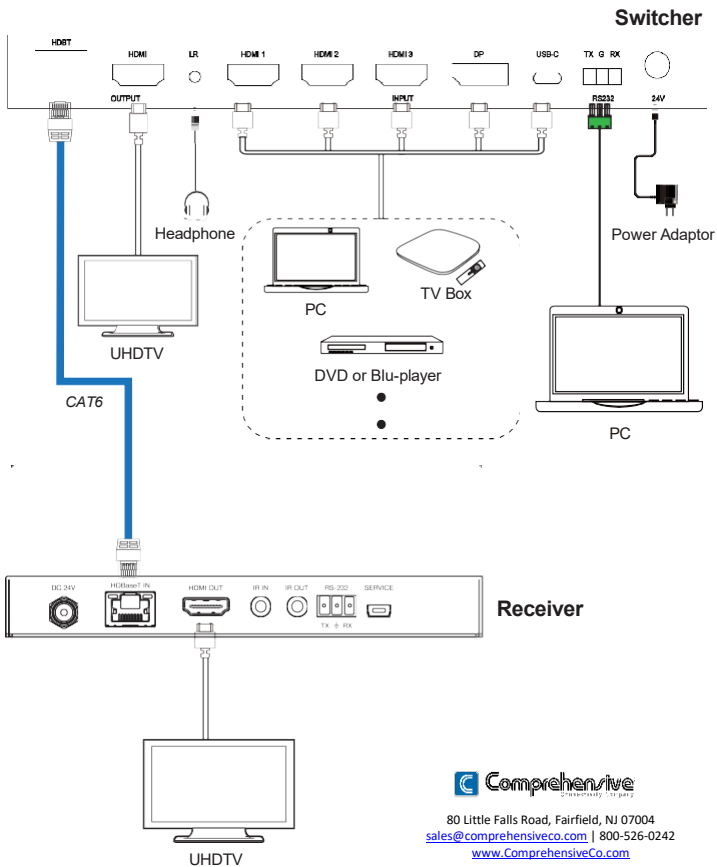
## 4K-AUTO commands

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.

Command	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 ↵



## 10. Application Example



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