

**Multi-Sources to SDI/HDMI Scaler  
Box - ID# 15155**



**Operation Manual**

## Introduction

The HDMI/PC/Component/CV to SDI/HDMI Scaler allows you to upscale HDMI/PC/Component/Composite signals to high definition video of HDMI formats (720p@50/60 Hz or 1080p@50/60 Hz) and SDI formats (HD-SDI SMPTE 292M or 3G-SDI 424M/425M), then output to both ports at the same time. Besides scaling features, the device also carries functionalities for it to serve as control center of video wall up to 15×15 total 225 displays showing one single picture together

## Features

- Supports HDMI, PC, Component and Composite Video input signals
- Supports SDI and HDMI output simultaneously
- Supports SDI output distance up to 100 meters (3G-SDI), or 200 meters (HD-SDI) and 300 meters (SD-SDI)
  1. Scales any input signal to the following output signals: HDMI: 720p@50/60 Hz or HD-SDI: SMPTE 292M (1.485 Gbit/s)
  2. HDMI: 1080p@50/60 Hz or 3G-SDI: SMPTE 424M/425M (2.970 Gbit/s)
- Supports HDMI input timings: VGA@60 ~ WUXGA@60 Hz (RB) & 480p/576p ~ 1080p@50/60 Hz
- Supports VGA input timings: VGA@60 ~ WUXGA@60 Hz (RB) & 1920×1080@60 Hz
- Supports Component input timings: 480i/576i ~ 1080i/p@50/60 Hz
- Supports Composite Video input timings NTSC, PAL
- Supports video wall controlling

*Note: Tested with Belden 1694A cable. Results may vary with cables that have a different specification.*

## Applications

- Simultaneous output on HDMI and SDI display
- Up-scales video resolution to HD output display
- TV/Video/Display/Gaming/Movie wall display
- Combination advertising wall

## System Requirements

- HDMI/PC/Component/Composite input source signal and connection cables, output display HDMI & SDI monitors with connection cables.
- Or HDMI/SDI splitter with connection and RS-232 cables, output display TV wall with connection cables.



## Operation Controls and Functions

### Front Panel



#### 1. POWER

Press this button to switch on the device(s). All the connected Video wall system control device(s) will be switch to ON.

#### 2. IR Remote Control Sensor

#### 3. MENU

Press this button to enter into the OSD menu.

#### 4. DOWN

- Press the DOWN button to move down the selection in the OSD menu and value.
- When in Picture Menu, press DOWN button to show the individual setup slide bar and continue press the button to reduce the value.
- Press the DOWN button directly to adjust the audio volume down.

*Note: Audio volume adjustment not functional when HDMI source input.*

#### 5. UP

- Press the UP button to move up the selection in the OSD menu and value.
- When in Picture Menu, press UP button to show the individual setup slide bar and continue press the button to increase the value.
- Press the UP button directly to adjust the audio volume up.

Audio volume adjustment not functional when HDMI source input.

#### 6. ENTER

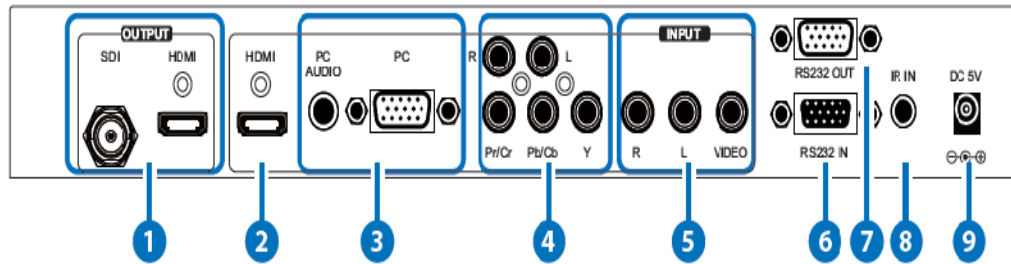
- Press ENTER to confirm the selection.
- When in Picture Menu, press ENTER button to move down the cursor.

#### 7. INPUT

- Press to select the input sources.
- When enter the OSD menu, press INPUT button to exit the setup.

*Note: Points a/b/c defines multiple usage of the key button.*

## Back Panel



### 1. SDI/HDMI OUT

These slots are where you connect the SDI/HDMI display. Both slots are output simultaneously.

### 2. HDMI IN

Connect the HDMI input port to the HDMI/DVI output ports of your source equipment such as DVD/Blu-ray player or set-top-box.

### 3. PC with PC AUDIO IN

Connect the PC/audio input port to the PC/audio output port of your source equipment such as Laptop or PC.

### 4. Component with R/L IN

Connect Component and R/L input port to the component and R/L output port of your source equipments such as DVD/Blu-ray player or set-top-box.

### 5. Video with R/L IN

Connect Video and R/L input port to the Video and R/L output port of your source equipments such as DVD player or set-top-box.

### 6. RS-232 IN

As a first device of the video wall system, this slot is to connect with PC/NB equipment for RS-232 control. Starting from the second device of the video wall system, this slot should be connected from the RS-232 out of the last device. For detail RS-232 commands please refers to section 8.

*Note: For RS-232 control it required a special level-shift board and it is an optional accessory selection.*

### 7. RS-232 OUT

This slot is to connect to the next video wall control system's RS-232 IN.

### 8. IR IN

This slot is to connect with IR receiver included in the package for receiving the IR signal of the device' remote controller.

### 9. Power

Plug the DC 5V power supply into the system and connect the adaptor to AC wall outlet.

## OSD Menu

Main Menu		2 <sup>nd</sup> Layer	
MAIN MENU	PICTURE MENU*1	STANDARD	ON/OFF
		R OFFSET	0~255 (118)
		G OFFSET	0~255 (116)
		B OFFSET	0~255 (118)
		R GAIN	0~255 (098)
		G GAIN	0~255 (098)
		B GAIN	0~255 (098)
		CONTRAST	0~63 (50)
		BRIGHTNESS	0~63 (40)
	SETUP MENU*1	LANGUAGE	ENG / T.CHINESE (ENG)
		HDMI SOUND	ON/OFF (ON)
		STANDARD	ON/OFF (ON)
		H POSITION START	000~385 (*2)
		V POSITION START	000~53 (*2)
		H Blanking Edit	0~255 (20)
		V Blanking Edit	0~255 (20)
		TV Option Width	1~15 (1)
		TV Option Height	1~15 (1)

**\*Note:**

1. The Picture Menu allows users to adjust single monitor's setting while the Setup Menu will only needs to be adjust once and all monitors will be automatically adjusted.

2. Suggest to set the SETUP MENU's STANDARD to ON after a change of the timings to obtain the best position.

Picture Standard: Set it to ON will allow system to set the picture menu into the default value as indicated in the ( ).

Picture R/G/B Offset: These functions are to set the single picture's **R/G/B brightness**.

Picture R/G/B Gain: These functions are to increase or decrease the color of single picture's R/G/B.

Picture Contrast: This function is to set the single picture's color contrast.

Picture Brightness: This function is to set the single picture's brightness.

Setup Language: There are two language available in the OSD and they are English and Traditional Chinese.

Setup HDMI Sound: This function is to set the HDMI output audio sound to be ON or OFF.

Setup Standard: Set it to ON will allow system to set the setup menu into the default value as indicated in the ( ).

Setup H/V Position Start: These functions are to set the total value of the vertical and horizontal value of the TV wall.

Setup H/V Zoom Size: These functions are to set the total value of the vertical and horizontal zoom in and zoom out size of the TV wall.

Setup H/V Blanking Edit: These functions are to set the total value of the vertical and horizontal value of the blanking area of the TV wall.

## Remote Control

*Setup TV Option Width: This function is to set the numbers of the TV/ display that is to be on a horizontal line of the TV wall.*

*Setup TV Option Height: This function is to set the numbers of the TV/display that is to be on a vertical line of the TV wall.*

### 1. POWER\*

Press this button to switch on the device(s). All the connected Video wall system control device(s) will be switch to ON.

### 2. POWER OFF\*

Press this button to switch off the device. All the connected Video wall system control device(s) will be switch to OFF.

### 3. SINGLE\*

Press this button to set the image to be displayed on each and every connected TV/monitor identically.

### 4. FULL\*

There are 6 options of setting an image to be displayed on TV/ monitor and they are 2x2, 3x3, 4x4, 3x2, 4x3 and 5x5.

### 5. ▲▼◀▶ & OK

Press the arrow buttons to select and adjust the selection in the OSD menu and value or to select the display. Press OK to confirm the selection and all the displays will be adjusted in once. If OK is not pressed only the first display will be adjusted to the selected value

### 6. RETURN

Press this button to return to the last layer of OSD selection or to exit the OSD.

### 7. MENU

Press this button to enter into the OSD menu. When the setting is selected and confirmed all the output display will automatically changed to the selected settings.

### 8. HDMI/VGA/COMP/CV\*

Press the hot key to select the input sources.

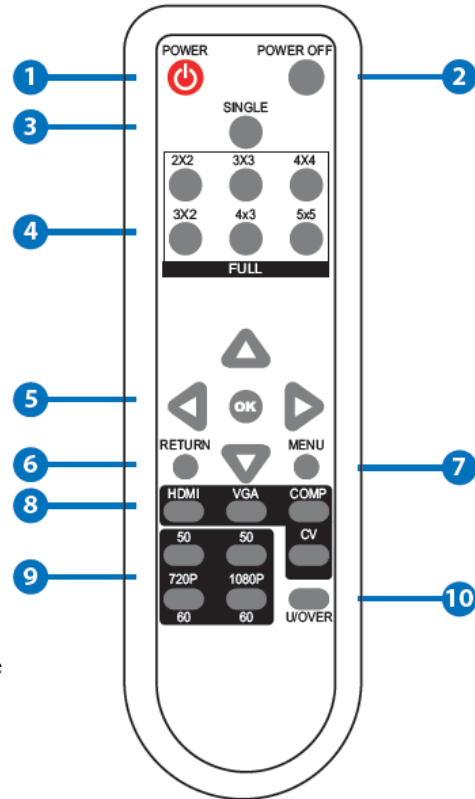
### 9. 720p/1080p@50/60\*

Press the hot key to select 720p@50 Hz, 720p@60 Hz, 1080p@50 Hz and 1080p@60 Hz timings for HDMI output, the SDI output timings will be automatically converted to SMPTE 292M (1.485 Gbit/s) and SMPTE 424M/425M (2.970 Gbit/s)

### 10. U/OVER

Press this key to change the output image to be overscan or underscan.

\*Function that automatically adjusts all monitors in once.



## RS-232 Pin Assignments

RS-232 IN			RS-232 OUT	
PIN	Assignment		PIN	Assignment
1	NC		1	NC
2	TxD		2	RxD
3	RxD	←	3	TxD
4	NC		4	NC
5	GND	→	5	GND
6	NC		6	NC
7	Connect to pin 8		7	Connect to pin 8
8	Connect to pin 7		8	Connect to pin 7
9	NC		9	NC

Baud Rate: 19200 bps

Data bit: 8-bit

Parity: None

Stop Bit: 1

Flow Control: None

## RS-232 Commands

Command	Action
0x23 0x53 0x30 0x30 0x31 0x23	POWER ON
0x23 0x53 0x30 0x30 0x30 0x23	POWER OFF
0x23 0x43 0x30 0x30 0x30 0x23	UNDER SCAN
0x23 0x43 0x30 0x30 0x31 0x23	OVER SCAN
0x23 0x43 0x52 0xWH 0x00 0x23	*Note
0xEF 0x05 0xD7 0xC0 0x22 0x0F 0xEE	CHANGE TO HDMI
0xEF 0x05 0xD7 0xC0 0x22 0x0E 0xEE	CHANGE TO PC
0xEF 0x05 0xD7 0xC0 0x22 0x02 0xEE	CHANGE TO COMPOSITE
0xEF 0x05 0xD7 0xC0 0x22 0x0A 0xEE	CHANGE TO COMPONENT

**Note:** WH are the TV Option's Width and Height. W&H can be indicated from 1~9 & A~F where 11 means single panel's TV wall, 22 means 2x2's TV wall and so on up to FF is 15x15's TV wall setting.

## Specifications

<b>SDI Transmission Rates</b>	2.970 Gbps, 2.971/1.001 Gbps, 1.485 Gbps and 1.485/1.001 Gbps
<b>Video Bandwidth</b>	148 MHz
<b>Input Ports</b>	1×HDMI (Type A connector), 1×PC with Audio, 1×Component with R/L, 1×Composite with R/L
<b>Output port</b>	1×SDI (SD/HD/3G-SDI), 1×HDMI
<b>SDI Cable Distance</b>	3G/HD/SD up to 100/200/300 meters with BELDEN 1694A cable
<b>HDMI Cable Distance</b>	Input: 10 m, 8/12-bit Output: 10 m, 8/12-bit
<b>Input HDMI Timing Support</b>	VGA@60/72/75, SVGA@56/60/72/75, XGA@60/70/75, SXGA@60/75, UXGA@60, WUXGA@60, WXGA@60, 480p@60, 576p@50, 720p@50/60, 1080i@50/60, 1080p@50/60
<b>Input VGA Timing Support</b>	VGA@60/72/75, SVGA@56/60/72/75, XGA@60/70/75, SXGA@60/75, UXGA@60, WUXGA@60, WXGA@60, 1920×1080@60
<b>Input Component Support</b>	480i/p@60, 576i/p@50, 720p@50/60, 1080i/p@50/60
<b>Input Composite Support</b>	NTSC, PAL
<b>Output Timing Support</b>	HDMI: 720p@50/60, 1080p@50/60 SDI: SMPTE 292M (1.485 Gbit/s) & SMPTE 424M/425M (2.970 Gbit/s)
<b>ESD Protection</b>	Human-body Model: ±8 kV (air-gap discharge) ±4kV (contact discharge)
<b>Dimensions</b>	320 mm (W)×201mm (D)×49 mm (H)
<b>Weight</b>	1630 g
<b>Chassis Material</b>	Metal
<b>Silkscreen Color</b>	Black
<b>Operating Temperature</b>	0°C~40°C / 32°F ~ 104°F
<b>Storage temperature</b>	-20°C~60°C / -4°F ~ 140°F
<b>Relative Humidity</b>	20~90% RH (no condensation)
<b>Power Consumption</b>	W



# Connection Diagram

