

**4K2K**

**HDCP2.2**



# **SY-4KS-4K22**

**HDMI 4K Scaler with Dual outputs & HDCP Converter  
(4K, HDCP2.2, HDMI2.0)**

**OPERATION MANUAL**

## SAFETY PRECAUTIONS

Please read all instructions before attempting to unpack, install or operate this equipment and before connecting the power supply.

Please keep the following in mind as you unpack and install this equipment:

- Always follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
- Never spill liquid of any kind on or into this product.
- Never push an object of any kind into this product through any openings or empty slots in the unit, as you may damage parts inside the unit.
- Do not attach the power supply cabling to building surfaces.
- Use only the supplied power supply unit (PSU). Do not use the PSU if it is damaged.
- Do not allow anything to rest on the power cabling or allow any weight to be placed upon it or any person walk on it.
- To protect the unit from overheating, do not block any vents or openings in the unit housing that provide ventilation and allow for sufficient space for air to circulate around the unit.

## REVISION HISTORY

VERSION NO.	DATE DD/MM/YY	SUMMARY OF CHANGE
VR0	07/04/16	Preliminary Release
VR1	02/06/16	

# CONTENTS

1. Introduction.....	1
2. Applications.....	1
3. Package Contents .....	1
4. System Requirements.....	1
5. Features .....	2
6. Operation Controls and Functions.....	3
6.1 Front Panel .....	3
6.2 Rear Panel.....	4
6.3 OSD Menu .....	5
7. Connection Diagram .....	13
<b>8. Specifications .....</b>	<b>14</b>
8.1 Technical Specifications .....	14
8.2 Video Supports Specification .....	15
8.3 Audio Specifications .....	16
9. Acronyms .....	16

## **1. INTRODUCTION**

The 1 by 2 UHD Scaler with Audio De-Embedded is designed to upscale 1080p signal into 4K2K 6G or downscale 4K2K 6G signal into 1080p with synchronized digital and analog audio output. Friendly and simple design that allow user with direct viewing on input HDMI content and OSD that ease user with output settings/selection. Scaling signal up to 2 simultaneous HDMI output with two different resolutions or generate patterns to output display with assigned resolution allowing on-site display testing. This UHD Scaler is the best define tool between your HD and UHD signal.

## **2. APPLICATIONS**

- On-site equipment testing
- HDMI signal splitting
- Production testing
- R&D design and testing

## **3. PACKAGE CONTENTS**

- 1 x 1 by 2 UHD Scaler with Audio De-Embedded
- 1 x 5V DC Power adaptor
- Operational Manual

## **4. SYSTEM REQUIREMENTS**

Input source equipment such as PS3 or Blu-ray player and output display or TV with equivalent HDMI cables.

## 5. FEATURES

- HDMI with 6G 4Kx2K supported and HDCP 2.2 compliant
- Supports HDMI signal bypass on both outputs or upscale 1080p signal into 4K2K on output B and downscale 4K2K signal into 1080p on output A
- Supports 4K2K@50/60 (4:4:4) to 4K2K@50/60(4:2:0) conversion
- Supports auto pattern generation with assigned resolution for on-site display testing
- Supports HDMI input of one 6G and HDMI outputs of two 6G
- Supports HDMI signal bypass, upscale and downscale
- Supports EDID selections
- Supports High-Dynamic-Range (HDR) image
- Supports HDR conversion from 4Kx2K@24/25/30(444/422)10 or 12bit to 4096x2160@24/25/30Hz 8bit fix
- Supports UHD resolutions up to 4Kx2K: 3840x2160@24/25/30Hz 3840x2160@50/60 Hz (4:4:4) & 4096x2160 @24/25/30 Hz, 4096x2160@50/60Hz (4:4:4)
- Supports data rate up to 6Gbps (600MHz) and Deep Color up to 1080p 48-bit
- Supports pass-through of HD audio formats of LPCM 2/5.1/7.1CH, Dolby Digital 2~5.1CH, DTS 2~5.1CH, Dolby Digital Plus, Dolby TrueHD, Dolby Atmos and DTS-HD Master Audio
- HDMI compatible with DVI
- Supports OSD with instant I/O resolution display
- Supports Digital to Analog (DAC) audio conversion
- Supports Apple mode signal display
- Supports HDCP 2.2 to HDCP1.4 conversion

Note: When displaying HDMI 4Kx2K/HDR signal, equivalent source signal, output display and HDMI cables are required in order to secure the best image display. It is suggested to use Premium High Speed HDMI cable for 6G HDMI signal.

## 6. OPERATION CONTROLS AND FUNCTIONS

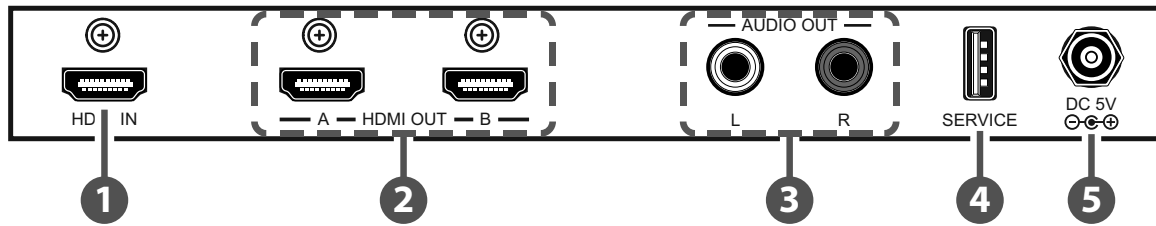
### 6.1 Front Panel



- 1 POWER LED:** This LED will illuminate when the device is connected with power supply.
- 2 4K2K LED:** This LED will illuminate when the input source contains 4K2K signal.
- 3 SYNC LED:** This LED will illuminate when the input source is sending signal.
- 4 MENU:** Press this button to enter into OSD menu and when under OSD selection press this button to exit. Press and hold this button together with TEST PATTERN “-” button for 3 seconds to set the device back to factory default.
- 5 TEST PATTERN -/+:** Press these buttons to select patterns to display on outputs instantly. Press these buttons together to switch output timing to 1280x720@60 instantly. When under OSD selection, press these buttons to roll the scroll.
- 6 ENTER:** Press this button to enter and confirm OSD selection.

*Press and hold this button together with the MENU button for 3 seconds to enter into firmware update mode. The LEDs will illuminate in circle from left to right. Plug in the USB thumb drive with updated firmware inside and the LEDs will stop illuminating. Once the update procedure completed or successfully, all LEDs will illuminate together but if update failed no LED will illuminate. The device will automatically reboot after 10 seconds or user may re-power on the device manually.*

## 6.2 Rear Panel



- 1 HDMI IN:** This slot is to connect with source equipment such as PS3 or Blu-ray player.
- 2 HDMI OUT:** These slots are to connect with UHD display/TV for images display. Each output can be displaying with different timing and pattern and image.
- 3 AUDIO OUT L/R:** These slots are to connect with audio equipment such as amplifier or speakers for audio signal output PCM 2CH that is synchronized with HDMI input audio signal.
- 4 SERVICE:** This slot is reserved for factory firmware update only.
- 5 DC 5V:** Plug the 5V DC power supply into the unit and connect the adaptor to an AC outlet.

### 6.3 OSD Menu

1 <sup>ST</sup> LEVEL	2 <sup>ND</sup> LEVEL	3 <sup>RD</sup> LEVEL	4 <sup>TH</sup> LEVEL
OUTPUT	OUTPUT A	INPUT 4K2K	<b>PASS THROUGH</b>
			DOWN 1080P* <sup>1</sup>
			FIX 4K2K(420)* <sup>2</sup>
			FIX 8 BITS* <sup>5</sup>
	OUTPUT B	INPUT 1080P	<b>PASS THROUGH</b>
			UP 4K2K* <sup>3</sup>
		INPUT 4K2K	UP 4K2K(420)* <sup>4</sup>
			<b>PASS THROUGH</b>
			FIX 4K2K(420)
			FIX 8 BITS* <sup>5</sup>
EDID	INT 4K(6G-2CH)	YES/NO	
	INT 4K(3G-2CH)	YES/NO	
	INT 4K(420-2CH)	YES/NO	
	<b>INT</b> <b>1080P(2CH)</b>	YES/NO	
	EXT OUT A	YES/NO	
	EXT OUT B	YES/NO	
	EXT OUT A (2CH)	YES/NO	
	EXT OUT B (2CH)	YES/NO	



1 <sup>ST</sup> LEVEL	2 <sup>ND</sup> LEVEL	3 <sup>RD</sup> LEVEL	4 <sup>TH</sup> LEVEL
HDCP	HDCP SUPPORT OFF		
	REFER TO SOURCE		
	<b>REFER TO DISPLAY</b>		
OSD	DISPLAY INFO.	ON	
		<b>OFF</b>	
	OSD TIME OUT	5 SEC.	
		10 SEC.	
		15 SEC.	
		20 SEC.	
		25 SEC.	
		30 SEC.	
		35 SEC.	
<b>40 SEC.</b>			
TEST PATTERN A	MODE	<b>OFF</b>	
		ON	
		AUTO PATTERN	
		AUTO TIMING	
	PATTERN	<b>WHITE COLOR</b>	
		RED COLOR	
		GREEN COLOR	
		BLUE COLOR	
		MEGENTA COLOR	
		YELLOW COLOR	

1 <sup>ST</sup> LEVEL	2 <sup>ND</sup> LEVEL	3 <sup>RD</sup> LEVEL	4 <sup>TH</sup> LEVEL
		CYAN COLOR	
		COLOR BAR	
		RAMP	
		TOGGLE	
	RESOLUTION	720X480P@60	
		720X576P@50	
		1280X720P@50	
		<b>1280X720P@60</b>	
		1920X1080P@50	
		1920X1080P@60	
		3840X2160P@24	
		3840X2160P@25	
		3840X2160P@30	
		4096X2160P@24	
		4096X2160P@25	
		4096X2160P@30	
	HDCP	DISABLE	
		ENABLE	
	SWITCH TIME	<b>10 SEC.</b>	
		20 SEC.	
		30 SEC.	
		40 SEC.	
50 SEC.			
1 MIN.			
2 MIN.			

1 <sup>ST</sup> LEVEL	2 <sup>ND</sup> LEVEL	3 <sup>RD</sup> LEVEL	4 <sup>TH</sup> LEVEL
TEST PATTERN A		3 MIN.	
		5 MIN.	
	AUTO TIMING SELECT	720X480P@60	<i>YES/NO</i>
		720X576P@50	<i>YES/NO</i>
		1280X720P@50	<i>YES/NO</i>
		1280X720P@60	<i>YES/NO</i>
		1920X1080P@50	<i>YES/NO</i>
		1920X1080P@60	<i>YES/NO</i>
		NEXT PAGE	
		3840X2160P@24	<i>YES/NO</i>
		3840X2160P@25	<i>YES/NO</i>
		3840X2160P@30	<i>YES/NO</i>
		4096X2160P@24	<i>YES/NO</i>
		4096X2160P@25	<i>YES/NO</i>
		4096X2160P@30	<i>YES/NO</i>
		PREVIOUS PAGE	
		MODE	<i>OFF</i>
ON			
AUTO PATTERN			
AUTO TIMING			
<i>WHITE COLOR</i>			
RED COLOR			
GREEN COLOR			
BLUE COLOR			

1 <sup>ST</sup> LEVEL	2 <sup>ND</sup> LEVEL	3 <sup>RD</sup> LEVEL	4 <sup>TH</sup> LEVEL	
TEST PATTERN B	PATTERN	MEGENTA COLOR		
		YELLOW COLOR		
		CYAN COLOR		
		COLOR BAR		
		RAMP		
		TOGGLE		
	RESOLUTION	720X480P@60		
		720X576P@50		
		1280X720P@50		
		<b>1280X720P@60</b>		
		1920X1080P@50		
		1920X1080P@60		
		3840X2160P@24		
		3840X2160P@25		
		3840X2160P@30		
		4096X2160P@24		
		4096X2160P@25		
		4096X2160P@30		
		3840X2160P@50		
		3840X2160P@60		
		4096X2160P@50		
		4096X2160P@60		
				<b>10 SEC.</b>
				20 SEC.
	30 SEC.			

1 <sup>ST</sup> LEVEL	2 <sup>ND</sup> LEVEL	3 <sup>RD</sup> LEVEL	4 <sup>TH</sup> LEVEL
TEST PATTERN B	SWITCH TIME	40 SEC.	
		50 SEC.	
		1 MIN.	
		2 MIN.	
		3 MIN.	
		5 MIN.	
	HDCP	DISABLE	
		ENABLE	
	AUTO TIMING SELECT	720X480P@60	<b>YES/NO</b>
		720X576P@50	<b>YES/NO</b>
		1280X720P@50	<b>YES/NO</b>
		1280X720P@60	<b>YES/NO</b>
		1920X1080P@50	<b>YES/NO</b>
		1920X1080P@60	<b>YES/NO</b>
		NEXT PAGE	
		3840X2160P@24	<b>YES/NO</b>
		3840X2160P@25	<b>YES/NO</b>
		3840X2160P@30	<b>YES/NO</b>
		4096X2160P@24	<b>YES/NO</b>
		4096X2160P@25	<b>YES/NO</b>
		4096X2160P@30	<b>YES/NO</b>
		3840X2160P@50	<b>YES/NO</b>
		3840X2160P@60	<b>YES/NO</b>
		4096X2160P@50	<b>YES/NO</b>
		4096X2160P@60	<b>YES/NO</b>

1 <sup>ST</sup> LEVEL	2 <sup>ND</sup> LEVEL	3 <sup>RD</sup> LEVEL	4 <sup>TH</sup> LEVEL
		PREVIOUS PAGE	
INFORMATION	RESOLUTION	INPUT	XXX
		OUTPUT A	XXX
		OUTPUT B	XXX
	HDCP	OUTPUT A	DISABLE/ENABLE
		OUTPUT B	DISABLE/ENABLE
	FIRMWARE	VERSION	VX.XX
FIRMWAR UPDATE	<b>NO</b>		
	YES		
FACTORY SETTING	<b>NO</b>		
	YES		

*Default settings are in Italian bold font*

*Note: When input timing is non-VESA standard, OSD may be disable.  
To enter into OSD selection, press hot keys to enter into test  
pattern mode and do the OSD selection.*

**\* 1 Input → Output**

3840x2160@24 → 1920x1080p@24

3840x2160@25 → 1920x1080p@25

3840x2160@30 → 1920x1080p@30

3840x2160@50 → 1920x1080p@50

3840x2160@60 → 1920x1080p@60

4096x2160@24 → 1920x1080p@24

4096x2160@25 → 1920x1080p@25

4096x2160@30 → 1920x1080p@30

4096x2160@50 → 1920x1080p@50

4096x2160@60 → 1920x1080p@60

**\* 2 Input → Output**

3840x2160@50(RGB,YCbCr444,Ycbcr422) → 3840x2160@50(YCbCr420)

3840x2160@60(RGB,YCbCr444,Ycbcr422) → 3840x2160@60(YCbCr420)

4096x2160@50(RGB,YCbCr444,Ycbcr422) → 4096x2160@50(YCbCr420)

4096x2160@60(RGB,YCbCr444,Ycbcr422) → 4096x2160@60(YCbCr420)

**\* 3 Input → Output**

1920x1080p@24 → 3840x2160@24

1920x1080p@25 → 3840x2160@25

1920x1080p@30 → 3840x2160@30

1920x1080p@50 → 3840x2160@50

1920x1080p@60 → 3840x2160@60

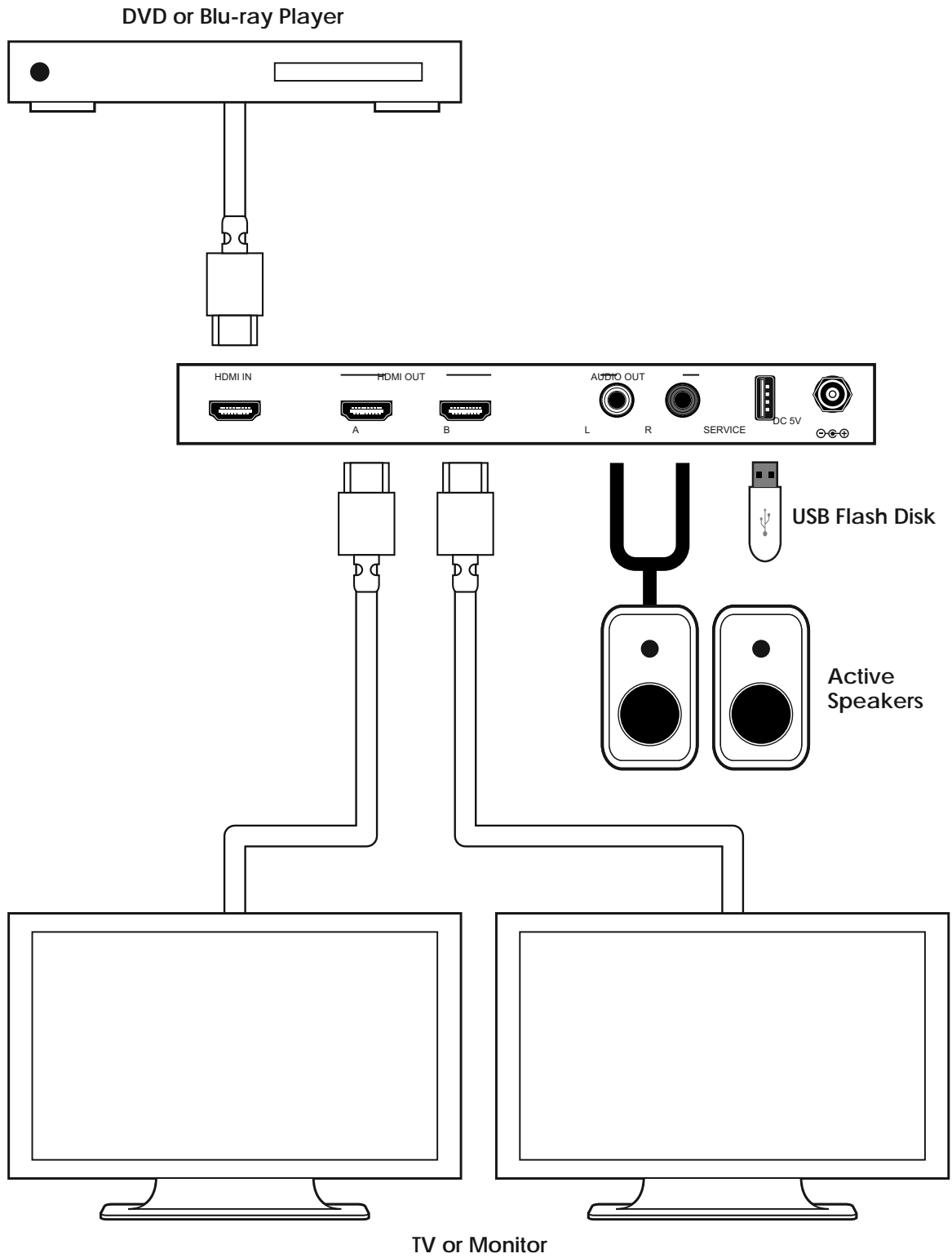
**\* 4 Input → Output**

1920x1080p@50(RGB,YCbCr444,Ycbcr422) →  
3840x2160@50(YCbCr420)

1920x1080p@60(RGB,YCbCr444,Ycbcr422) →  
3840x2160@60(YCbCr420)

**\* 5 Input → Output**

# 7. CONNECTION DIAGRAM





## 8. SPECIFICATIONS

### 8.1 Technical Specifications

<b>VideoBandwidth</b>	600MHz/18G 1 x USB (Service only)
<b>Output ports</b>	2 x HDMI 1 x R/L
<b>HDMI Cable Length</b>	15 m@1080p/8-bit, 10 m@1080p/12-bit, 5 m@4K
<b>Power Supply</b>	5V DC/2.6A (US/EU standards, CE/FCC/UL certified)
<b>ESD Protection</b>	Human body model: ±8kV (air-gap discharge) ±4kV (contact discharge)
<b>Dimensions</b>	231.5mm (W) x 108mm (D) x 25mm (H)/ Jack Excluded  231.5mm (W) x 117mm (D) x 25mm (H)/ Jack Included
<b>Weight</b>	616g
<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>	5.8W

**Note:** HDMI cable distance might be affected by material or design of cable. It is suggested to use Premium High Speed HDMI cable for 6G HDMI signal.

## 8.2 Video Supports Specification

DVI and HDMI Supported	Input	Output
640x480i@60	✓	✓
640x480p@60	✓	✓
720x480p@60	✓	✓
720x576i@50	✓	✓
720x576p@50	✓	✓
800x600@56/60/72/75/85	✓	✓
1024x768@60/70/75/85	✓	✓
1280x720p@50/60	✓	✓
1280x768@60/75	✓	✓
1280x800@60/75	✓	✓
1280x1024@60/75	✓	✓
1366x768@60	✓	✓
1400x1050@60/75	✓	✓
1440x900@60/75	✓	✓
1600x900@60	✓	✓
1600x1200@60	✓	✓
1680x1050@60	✓	✓
1920x1080i@50/60	✓	✓
1920x1080p@24/25/30/50/60	✓	✓
1920x1200@60	✓	✓
3840x2160@24/25/30/50/60	✓	✓
4096x2160@24/25/30/50/60	✓	✓

### 8.3 Audio Specifications

Input Level/Freq	Output Terminal	Output Level	THD+N	Frequency Response	SNR	Crosstalk
HDMI 0dBFS 20 ~ 1K ~ 20KHz	HDMI	0dB~-1dB	<0.01%	±1dB	>80dB	<-80dB
	L/R	Vrms±10%	<0.1%	±3dB	>70dB	<-60dB

### 9. ACRONYMS

ACRONYM	COMPLETE TERM



---

CIE-Group, 3 Widdowson Close, Blenheim Industrial Estate, Nottingham NG6 8WB

Tel: +44 (0)115 9770075 | Fax: +44 (0)115 9770081

Email: [info@cie-group.com](mailto:info@cie-group.com)

[www.cie-group.com](http://www.cie-group.com)

v1.00