

# CV-53AK

HDMI 2.0 to 12G/6G/3G/HD-SDI Converter with HDMI loop-out & Audio Embedder

User Manual



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## INTRODUCTION

The **CV-53AK HDMI 2.0 to 12G/6G/3G/HD-SDI Converter with HDMI loop-out & Audio Embedder** provides a professional way to convert HDMI 2.0 to 12G/6G/3G/HD-SDI in real time. The conversion between SDI and HDMI is pure digital and guarantees no loss transformation for both audio and video. Plus, with up to 8 channels audio support, 7.1 channel or 5.1 channel audio becomes available. The CV-53AK provides two low jitter SDI outputs & one HDMI loop-out and to provide more flexible application possibility, CV-53AK is also equipped with high quality analog stereo embedder. With the use of CV-53AK, the most popular uncompressed video interface in the consumer world is readily available for professional SDI equipment!

## FEATURES

- Supported high-definition (HD) formats:  
720p@50,720p@59.94, 720p@60, 1080i@50, 1080i@59.94, 1080i@60, 1080p@23.97, 1080p@24, 1080p@25, 1080p@29.97, 1080p@30, 1080p@50, 1080p@59.94, 1080p@60, 3840x2160@23.98, 3840x2160@24, 3840x2160@25, 3840x2160@29.97, 3840x2160@30, 3840x2160@50, 3840x2160@59.94, 3840x2160@60, 4096x2160@23.98, 4096x2160@24, 4096x2160@25, 4096x2160@29.97, 4096x2160@30, 4096x2160@50, 4096x2160@59.94, 4096x2160@60  
Bit Rate: 11.88 Gbps, 11.88/1.001 Gbps, 5.94 Gbps, 5.94/1.001 Gbps, 2.97 Gbps, 2.97/1.001 Gbps, 1.485 Gbps, 1.485/1.001 Gbps, 270 Mbps
- Support HDMI 2.0 & below
- Supports analog stereo embedder
- Two SDI & one HDMI compliant output and one HDMI compliant input



- ONLY supports format converter. NOT support frame conversion & scaling.
- ONLY supports two-sample interleave sampling scheme. NOT support Square Division method.
- NOT support SD-SDI
- NOT support 3G-SDI level B
- 4K2K@24/25/30Hz RGB or YCbCr 4:4:4 deep color signal can NOT be converted to YCbCr 4:2:2, only bypass to display.
- HDMI audio ONLY supports 48kHz.

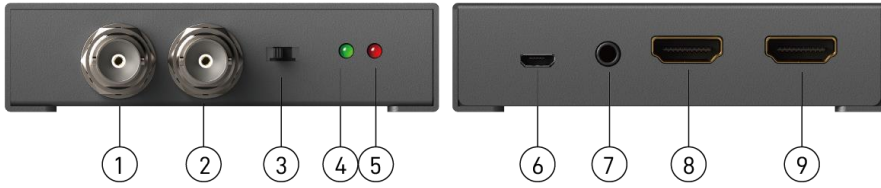
## PACKAGE CONTENTS

- 1x CV-53AK
- 1x 5V power adapter
- 1x Rack-mounting ears set
- 1x User Manual

## SPECIFICATIONS

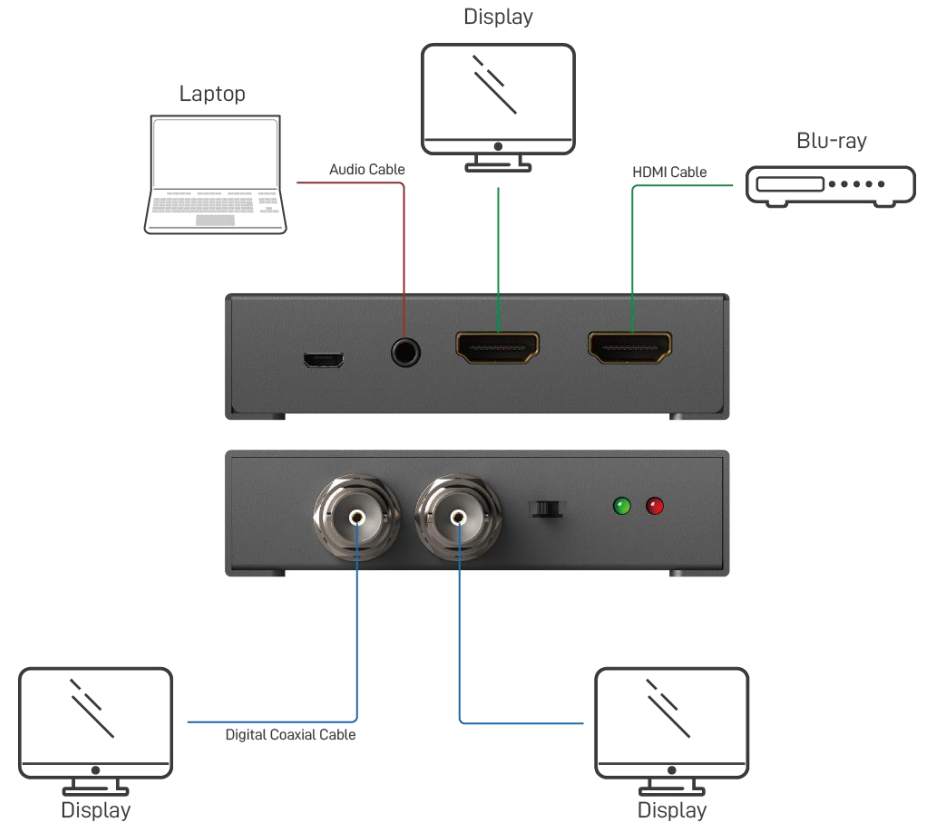
Model Name		CV-53AK
<b>Technical</b>		
SDI standards		12G/6G/3G/HD-SDI
HDMI standards		HDMI 2.0
Auto 3G/HD/SD-SDI detection		Yes
Video bandwidth		[SDI][ 11.88 Gbps, 11.88/1.001 Gbps] [HDMI] [up to 18Gbps]
Video support		[12G] 4K2K @50/59.94/60Hz [6G] 4K2K @23.98/24, 25, 29.97, 30Hz [3G] 1080p50/59.94/60 [HD] – 720p @50/59.94/60Hz,1080i @50/59.94/60Hz, 1080p @23.98/24/25/29.97/30Hz
Input signal		1x HDMI + 1x 3.5mm(Audio)
Output signal		2x SDI + 1x HDMI
Output impedance(SDI)		75Ω
Synchronization mode		Internal synchronization or external synchronization
Eye pattern characteristics		[12G-SDI] Timing jitter: 0.81 UI, Alignment jitter: 0.18 UI [6G-SDI] Timing jitter: 0.35 UI, Alignment jitter: 0.08 UI [3G-SDI] Timing jitter: 0.15 UI, Alignment jitter: 0.04 UI [HD-SDI] Timing jitter: 0.08 UI, Alignment jitter: 0.05 UI
Cable equalization		[12G-SDI] up to 70m [6G-SDI] up to 100m [3G-SDI] up to 190m [HD-SDI] up to 290m [Analog] Supports 2ch
Audio support		[HDMI] Surround sound (up to 7.1ch)
PCB stack-up		6-layer board [impedance control — differential 100Ω; single 50Ω]
Input		1x HDMI + 1x 3.5mm
Output		2x BNC [SDI] + 1x HDMI
BNC connector		75Ω inter-locked socket
HDMI connector		Type A [19-pin female]
<b>Mechanical</b>		
Housing		Metal enclosure
Dimensions [L x W x H]	Model	128 x 92 x 23mm[5" x 3.6" x 0.9" ]
	Package	198 x 137 x 74mm [7.8" x 5.4" x 2.9"]
	Carton	420 x 400 x 300mm [1'4"x 1'3" x 11.8"]
Weight	Model	192g[6.7 oz]
	Package	461g[1 lbs]
Power supply		5V DC
Power consumption		7 Watts [max]
Operation temperature		0~40°C [32~104°F]
Storage temperature		-20~60°C [-4~140°F]
Relative humidity		20~90% RH [no condensation]

## PANEL DESCRIPTIONS



1. **SDI OUT:** 12G/6G/3G/HD-SDI output
2. **SDI OUT:** 12G/6G/3G/HD-SDI output
3. **Slide Switch**
  - [Left]** Stereo Audio Embedder Function(2ch)
  - [Middle]** HDMI Audio Bypass(up to 7.1ch)
  - [Right]** F/W update
4. **LED:** Signal LED indicator
5. **LED:** Power LED indicator
6. **Micro USB Port:** Connect to a 5V DC power unit.
7. **Stereo Audio Input**
8. **HDMI loop-out:** Connects to a HDMI display with a HDMI male-male cable
9. **HDMI IN:** Connects to a HDMI source with a HDMI male-male cable

## CONNECTION DIAGRAM



## SUPPORTED RESOLUTIONS

12G-SDI Output	
4K2K @50/59.94/60Hz	SMPTE ST-2082
6G-SDI Output	
4K2K @23.98/24, 25, 29.97, 30Hz	SMPTE ST-2081
3G-SDI Output	
1080p @ 50/ 59.94 / 60Hz	SMPTE 424M, SMPTE 425M
HD-SDI Output	
720p @ 50Hz	SMPTE 296M -3
720p @ 60 / 59.94Hz	SMPTE 296M -1, -2
1080i @ 50Hz	SMPTE 274M -6
1080i @ 60 / 59.94Hz	SMPTE 274M -4, -5
1080p @ 24 / 23.98Hz	SMPTE 274M -10, -11
1080p @ 25Hz	SMPTE 274M -9
1080p @ 30 / 29.97Hz	SMPTE 274M -7, -8

## WARRANTY

The SELLER warrants the **CV-53AK HDMI 2.0 to 12G/6G/3G/HD-SDI Converter with HDMI loop-out & Audio Embedder** to be free from defects in the material and workmanship for 1 year from the date of purchase from the SELLER or an authorized dealer. Should this product fail to be in good working order within 1 year warranty period, The SELLER, at its option, repair or replace the unit, provided that the unit has not been subjected to accident, disaster, abuse or any unauthorized modifications including static discharge and power surges.

Unit that fails under conditions other than those covered will be repaired at the current price of parts and labor in effect at the time of repair. Such repairs are warranted for 90 days from the day of reshipment to the BUYER. If the unit is delivered by mail, customers agree to insure the unit or assume the risk of loss or damage in transit. Under no circumstances will a unit be accepted without a return authorization number.

The warranty is in lieu of all other warranties expressed or implied, including without limitations, any other implied warranty or fitness or merchantability for any particular purpose, all of which are expressly disclaimed.

Proof of sale may be required in order to claim warranty. Customers outside Taiwan are responsible for shipping charges to and from the SELLER. Cables are limited to a 30 day warranty and cable must be free from any markings, scratches, and neatly coiled.

The content of this manual has been carefully checked and is believed to be accurate. However, The SELLER assumes no responsibility for any inaccuracies that may be contained in this manual. The SELLER will NOT be liable for direct, indirect, incidental, special, or consequential damages resulting from any defect or omission in this manual, even if advised of the possibility of such damages. **Also, the technical information contained herein regarding the CV-53AK features and specifications is subject to change without further notice.**