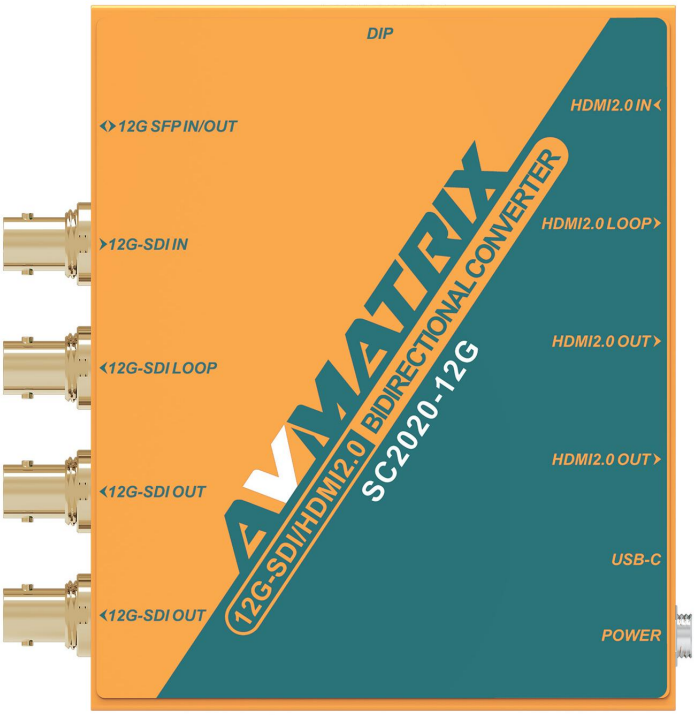


SC2020-12G

12G-SDI/HDMI2.0 Bidirectional Converter

USING THE UNIT SAFELY

Before using this unit, please read below warning and precautions which provide important information concerning the proper operation of the unit. Besides, to assure that you have gained a good grasp of every feature of your new unit, read below manual. This manual should be saved and kept on hand for further convenient reference.

Warning and Cautions

※ To avoid falling or damage, please do not place this unit on an unstable cart, stand, or table.

※ Operate unit only on the specified supply voltage.

※ Disconnect power cord by connector only. Do not pull on cable portion.

※ Do not place or drop heavy or sharp-edged objects on power cord. A damaged cord can cause fire or electrical shock hazards. Regularly check power cord for excessive wear or damage to avoid possible fire / electrical hazards.

※ Ensure unit is always properly grounded to prevent electrical shock hazard.

※ Do not operate unit in hazardous or potentially explosive atmospheres. Doing so could result in fire, explosion, or other dangerous results.

※ Do not use this unit in or near water.

※ Do not allow liquids, metal pieces, or other foreign materials to enter the unit.

※ Handle with care to avoid shocks in transit. Shocks may cause malfunction. When you need to transport the unit, use the original packing materials, or alternate adequate packing.

※ Do not remove covers, panels, casing, or access circuitry with power applied to the unit! Turn power off and disconnect power cord prior to removal. Internal servicing / adjustment of unit should only be performed by qualified personnel.

※ Turn off the unit if an abnormality or malfunction occurs. Disconnect everything before moving the unit.

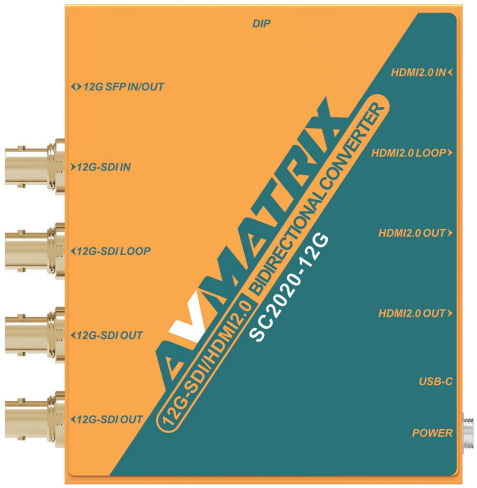
Note: due to constant effort to improve products and product features, specifications may change without notice.

Content

1. Introduction

This 2-in-1 device combines a professional signal converter and a fiber extender in a compact design, supporting bidirectional conversion between 12G-SDI and HDMI 2.0 with up to 4K60 resolution. It features 12G-SDI and HDMI 2.0 inputs with loop-through outputs, providing flexible integration and efficient monitoring for broadcast and AV workflows.

Multiple color space options are supported, including Full RGB 4:4:4, Limited RGB 4:4:4, YCbCr 4:4:4, YCbCr 4:2:2, and YCbCr 4:2:0. With optional SFP module transceiver, the converter enables long-distance fiber transmission up to 20 km, while DIP switch and PC control allow fast setup and easy operation, making it an ideal solution for reliable 4K signal conversion and extension.



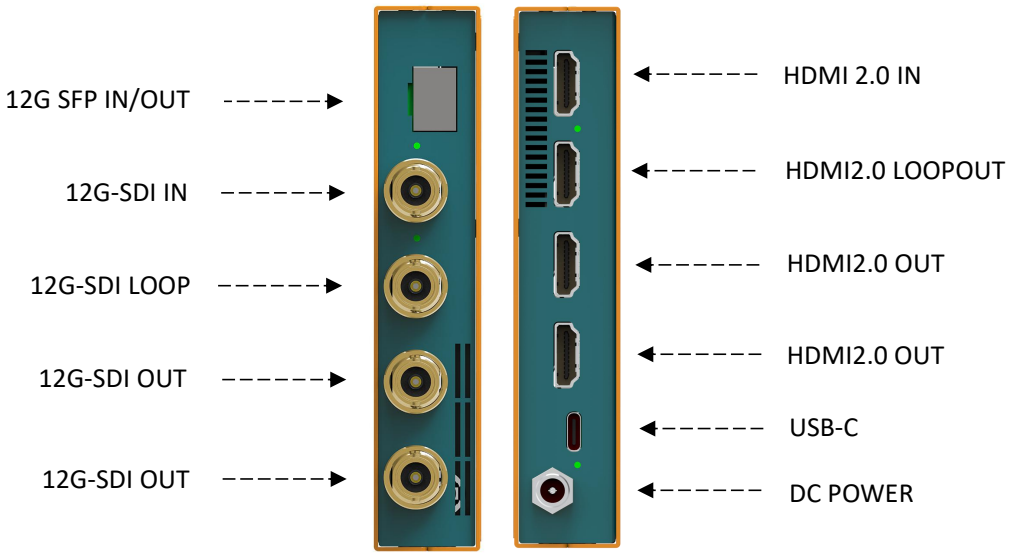
2. Main Features

- Input: 12G-SDI×1,HDMI2.0×1, Fiber in (SFP module optional) ×1
- Output: 12G-SDI loop×1, 12G-SDI×2, HDMI2.0 loop×1, HDMI2.0×2, Fiber out ×1
- 12G-SDI & HDMI 2.0 bidirectional conversion
- Up to 4K60 resolution
- Optional SFP module transceiver, long-distance fiber transmission up to 20 km
- DC 12V power supply
- Multiple color space options
- USB is used for PC software control, upgrade
- Control easily via the DIP switches and PC software

3. Specification

Video Input	HDMI2.0×1, 12G-SDI×1, 12G Fiber×1 (Select 1of 2)
Video Output	HDMI2.0 loop×1, HDMI2.0×2, SDI loop×1, 12G-SDI×2, 12G Fiber×1
USB	USB Type-C×1(Upgrade, PC software control)
Resolution Support	Up to 4K60 (2160p, 1080p, 1080i, 720p, NTSC, PAL)
HDMI Color Space	Full RGB 4:4:4, Limited RGB 4:4:4, YCbCr 4:4:4, YCbCr 4:2:2, YCbCr 4:2:0
Power Supply	DC 12V×1
Wide Voltage Range	DC 5-24V
Power Consumption	15W
Dimension (LWD)	104×125.5×24.5mm
Weight	Net Weight: 590g; Gross Weight: 888g
Temperature	Operating: -20-60℃, Storage: -30℃~70℃
Warranty	3 years

4. Interface



HDMI/SDI/SFP Input Signal Rate Indicator:

The color of the indicator LED represents the detected input signal rate format: green for HD, blue for 3G, yellow for 6G, and purple for 12G.

5. Power

DC Power Adapter

Plug the barrel connector into the converter's power socket and securely tighten the connector's locking ring. Then plug the DC adapter into a power outlet.

The power indicator lights up when a power source is connected, Once the converter is connected to a power source, and the converter is operational. The converter restarts with the most recent settings.

6. DIP Switchers

12G-SDI/HDMI2.0 Bidirectional Converter

DIP SWITCHES (1=ON, 0=OFF)					
SDI Out Source	SW1	HDMI Out Mode	SW4	SW5	SW6
HDMI In	1	Full RGB 4:4:4	1	1	1
SDI/SFP In	0	Limited RGB 4:4:4	1	1	0
HDMI Out Source	SW2	YCbCr 4:4:4	1	0	1
SDI/SFP In	1	YCbCr 4:2:2	0	1	1
HDMI In	0	YCbCr 4:2:0	0	1	0
SDI/SFP In Mode	SW3	3G-SDI Out Mode	SW7	SW8	
SDI In	1	Level-A	1	0	
SFP In	0	Level-B	0	0	
		Control	SW9		
		DIP	1		
		PC Software	0		

1.DIP SW1 SDI Out Source

Set the switch to select the video source for the SDI output between HDMI input and SDI/SFP input.

2.DIP SW2 HDMI Out Source

Set the switch to select the video source for the HDMI output between SDI/SFP input and HDMI input.

3.DIP SW3 SDI/SFP In Source

Set the switch to select the input source between the SDI port and the SFP optical port.

4.DIP SW4/ SW5/ SW6 HDMI Out Mode

Set the switches to configure the HDMI output color space, including RGB and YCbCr formats.

5.DIP SW7/SW8 3G-SDI Out Mode

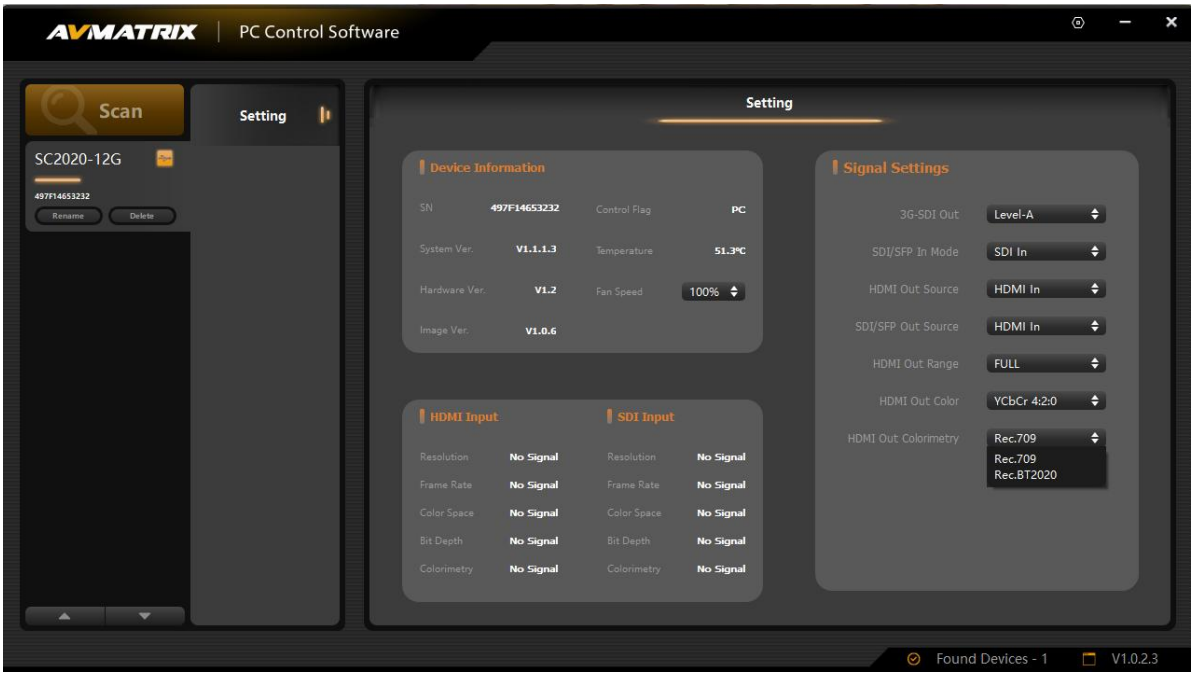
Set the switches to select the 3G-SDI output format, supporting Level A or Level B.

6.DIP SW9 Control

Set the switch to select the control m ethod between DIP switch control and PC software control.

7. Signal Settings

The“Signal Settings”page in the control software allows users to configure the input and output signal formats for HDMI, SDI, and SFP interfaces and view device status information. The control software can be downloaded from the AVMATRIX official website at www.avmatrix.com.



7.1 3G-SDI Out

Select between outputting a 3G-SDI Level-A or 3G-SDI Level-B signal.

Important: When outputting a 3G-SDI signal, make sure the switcher is set to the correct Level-A or Level-B signal. Otherwise, the video signal will not be recognized by incompatible equipment, and it will not display a picture.

Configuration	SDI/SFP In mode	SDI In SFP In
	HDMI Out Source	HDMI In SDI In/SFP In
	SDI/SFP Out Source	HDMI In SDI In/SFP In
	HDMI Out Range	FULL LIMITED
	HDMI Out Color	RGB 4:4:4 YCbCr 4:4:4 YCbCr 4:2:2 YCbCr 4:2:0
	HDMI Out Colorimetry	Rec.709 Rec.2020

7.2 SDI/SFP In Mode

Select the signal source for SDI or SFP.

7.3 HDMI Out Source

Selects the signal source for the HDMI output.

Available sources include HDMI In, SDI In, or SFP In, depending on the current configuration.

SDI/SFP In selectable; only one active at a time.

7.4 SDI/SFP Out Source

Selects the signal source for the SDI or SFP output.

The output can be routed from HDMI In, SDI In, or SFP In.

7.5 HDMI Out Range

Sets the output video range for HDMI.

Available options include FULL and LIMITED, allowing compatibility with different display devices.

7.6 HDMI Out Color

Selects the HDMI output color space.

Supported options include RGB 4:4:4, YCbCr 4:4:4, YCbCr 4:2:2, YCbCr 4:2:0.

7.7 HDMI Out Colorimetry

Sets the HDMI output colorimetry standard, such as Rec.709 or Rec.2020, depending on the signal format.

8. HDMI Input / SDI Input

The HDMI Input and SDI Input sections display detailed information about the detected input signals, allowing users to monitor the current video format and signal status in real time.

For each input, the following parameters are shown:

8.1 Resolution

Displays the detected input resolution.

8.2 Frame Rate

Shows the input frame rate of the video signal.

8.3 Color Space

Indicates the current input color space format.

8.4 Bit Depth

Displays the bit depth of the input signal.

8.5 Colorimetry

Indicates the colorimetry standard of the input signal.

If no HDMI or SDI signal is connected or detected, all parameters will display “No Signal”.

9. Device Information

The Device Information page displays the current status and version details of the device, allowing users to quickly check system information and operating conditions.

9.1 SN

Displays the unique serial number of the device.

9.2 System Ver

Shows the current system firmware version installed on the device.

9.3 Hardware Ver.

Indicates the hardware revision of the device.

9.4 Image Ver.

Displays the image (FPGA / video processing) firmware version.

9.5 Control Flag

Indicates the current control mode.

PC: The device is being controlled via PC software.

DIP: The device is being controlled via DIP switcher.

9.6 Temperature

Shows the real-time internal temperature of the device in degrees Celsius (°C).

9.7 Fan Speed

Allows manual adjustment of the cooling fan speed.

The fan speed can be set from 20% to 100% to balance cooling performance and operating noise.Higher fan speed provides improved heat dissipation, recommended for high-load or high-temperature environments.