



# HDMI to 3G-SDI Converter with Scaling

## User Manual

**500743**



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## 1. Safety Precautions

To ensure the best performance from the product, please read all instructions carefully before using the device. Save this manual for future reference.

- Follow basic safety precautions to reduce the risk of fire, electrical shock, and injury.
- Do not dismantle the housing or modify the module. It may result in electrical shock or burns.
- Do not open or remove the housing of the device as you may be exposed to dangerous voltage or other hazards.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture and do not install this product near water. Keep the product away from liquids.
- Spillage into the housing may result in fire, electrical shock, or equipment damage. If an object or liquid falls or spills on the housing, unplug the module immediately.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.
- Using supplies or parts not meeting the product specifications may cause damage, deterioration or malfunction.
- Refer all servicing to qualified service personnel.
- Install the device in a place with adequate ventilation to avoid damage caused by overheat.
- Unplug the power when left unused for a long period of time.
- Information on disposal of devices: do not burn or mix with general household waste, please treat them as normal electrical waste.

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## 2. Introduction

HDMI to 3G-SDI Converter with Scaler (Model 500743) is an HDMI to 3G-SDI Processor with Video Scaling, Amplification and Re-clocking Technology. It performs high-quality, low-delay video auto format detection, video signal re-clocking, and video signal amplification for transmission over a long distance. It features one HDMI video input, dual 3G-SDI video output, a locking Power Supply connector, and a USB port for software control and software upgrade. Switches and LED indicators help control and show the status of different parameters.

## 3. Features

- HDMI to SDI Conversion
- Up/Down Video Resolution Conversion
- Multi-Standard Support (3G, HD, and SD-SDI)
- Supports up to 1080p
- Supports Two 3G-SDI Video outputs
- Easy plug and play installation
- Rugged design and integrated brackets for easy mounting
- Configure via USB port and the MuxLab SDI Manager software available for easy control and firmware upgrade

## 4. Package Contents

- One (1) HDMI to 3G-SDI Converter/Scaler
- One (1) Universal Power Supply including international plug connections for use around the world
- One (1) USB to Mini-USB cable
- One (1) User manual (available via download)

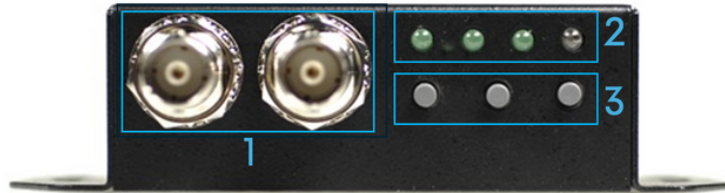
**Notes:** Confirm that the product and accessories are all included. If not, please contact the supplier from which you purchased the unit.

## 5. Specifications

Technical					
Environment	HDMI 1.3, SDI (SD-SDI, HD-SDI & 3G-SDI) (2.970Gbps, 1.485Gbps & 270Mbps)				
Audio Support	Stereo 2-Channel				
Coaxial Cable Type	RG6 (CANARE L-5CFB Cable) or RG59 (Belden 9275 Cable)				
Cable length	3G: 120m on RG6 100m on RG59	HD: 200m on RG6 140m on RG59	SD: 400m on RG6 280m on RG59		
Mini-USB	Software Control and Firmware Update				
Connection					
Input	HDMI	1 x HDMI IN [Type A, 19-pin female]			
Output	SDI	2 x 3G-SDI connector [High speed BNC female]			
Control	USB	1 x USB HOST [Mini-USB]			
Power	Barrel	7.5Vdc to 15Vdc with locking connector			
LEDs		SD LED (NTSC/PAL)	HD LED (720p, 1080i/p)	3G LED (1080p50, p60)	HDCP LED
	Bypass	ON	ON	ON	ON when content is HDCP protected
	720 x 480	ON	OFF	OFF	
	720 x 576	OFF	ON	OFF	
	1280 x 720	ON	ON	OFF	
	1920 x 1080i	OFF	OFF	ON	
	1920 x 1080p	ON	OFF	ON	
Switches	Position 1:	Output Resolutions toggling (Bypass, 720x480, 720x576, 1280x720, 1920x1080)			
	Position 2:	Output Frame Rate (24, 25, 30, 50, 60 fps interlaced or progressive)			
	Position 3:	Output Frame Rate Fraction (23.98, 29.97, 59.94 fps)			
Supported Formats					
Video Input formats	720x480i60, 720x576i50, 720x480 p60, 720x576 p50, 1280x720p60, 1280x720p50, 1920x1080i60, 1920x1080i50, 1920x1080p24, 1920x1080p25, 1920x1080p30, 1920x1080p60, 1920x1080p50, 640x350p85, 640x400p85, 720x400p85, 640x480p60, 640x480p72, 640x480p75, 640x480p85, 800x600p56, 800x600p60, 800x600p72, 800x600p75, 800x600p85, 848x480p60, 1024x768p50, 1024x768p59, 1024x768p60, 1024x768p70, 1024x768p75, 1024x768p85, 1152x864p70, 1152x864p75, 1280x768p50, 1280x768p60, 1280x768p75, 1280x768p85, 1280x800p60, 1280x800p75, 1280x800p85, 1280x960p60, 1280x960p75, 1280x960p85, 1280x1024p60, 1280x1024p75, 1280x1024p85, 1360x768p60, 1366x768p50, 1366x768p60, 1400x1050p50, 1400x1050p59, 1400x1050p60, 1400x1050p75, 1440x900p60, 1440x900p75, 1440x900p85, 1600x1200p50, 1600x1200p59, 1600x1200p60, 1600x1200p75, 1680x1050p50, 1680x1050p60, 1920x1200p60, 2048x1052p60, 2048x1080p50, 2048x1080p59, 2048x1080p60				
Video Output formats	720x480i60, 720x480i59.94, 720x576i50, 1280x720p60, 1280x720p59.94, 1280x720p50, 1920x1080i60, 1920x1080i59.94, 1920x1080i50, 1920x1080p60, 1920x1080p59.94, 1920x1080p50, 1920x1080p30, 1920x1080p29.97, 1920x1080p25, 1920x1080p24, 1920x1080p23.98				
Mechanical					
Housing	Black Metal Enclosure				
Dimensions (WxDxH)	104mm x 63.3mm x 26mm				
Weight	500g				
Power	7.5 Vdc to 15 Vdc, 5-Watt max.				
Temperature	Operating: 32°F to 104°F / 0°C to 40°C, Storage: -4°F to 140°F / -20°C to 60°C				
Relative Humidity	20 to 90% RH (non-condensing)				
Generic Specifications					
Warranty	2 years				
Order Information	500743 - HDMI to 3G-SDI Video Converter Scaler (UPC:627699007433)				

## 6. Hardware Interface

### 6.1 Front Panel



1. Two (2) 3G-SDI OUT connectors.
2. Four (4) LED displays: SD, HD, 3G and HDCP.
3. Three (3) Push Button Switches: Resolution, Frame Rate, and Frame Rate Fraction.

### 6.2 Rear Panel



1. Power 12VDC interface Locking Connector.
2. Video Input signal interface HDMI source.
3. Power and Lock LED display: Green for Signal Locked & Red for Signal Unlocked


### 6.3 Side Panel





1. Mini-USB connector to connect a PC running the MuxLab SDI Manager Software.

## 7. Switch Format

Click the button 1, the box will be setting to Output Format Mode and change Frame Rate by button 2 and 3.

RES	FRAME RATE	FRACTION
 1	2	3
By Pass		
720x480	B -59.94i (BT.656)	C- 59.94i (CEA-861)
720x576	50i	
1280x720	60p	59.94p
	50p	
	30p	
	25p	
1920x1080i	60i	59.94i
	50i	
1920x1080p	60p	59.94p
	50p	
	30p	29.97p
	25p	
	24p	23.98p

: is default format at change button 1 after.




 1	SD LED	HD LED	3G LED
BY PASS	●	●	●
720 x 480	●	○	○
720 x 576	○	●	○
1280 x 720	●	●	○
1920 x 1080i	○	○	●
1920 x 1080p	●	○	●

● : LED ON  
○ : LED OFF



## 8. Aspect Ratio Mode

Check the button 3 , the box will be setting to Aspect Ratio Mode

Mode	Display
16:9 (Default)	
4:3	
1:1 (dot by dot)	

## 9. Function Button Mode

Hold on the button 3 until show the Func button Mode

FUNC BUTTON  
UN-LOCK

LED indicate:

Function	SD LED	HD LED	3G LED	HDCP LED
UN-LOCK (default)	●	○	○	●
LOCK	○	○	●	●



## 10. LED Mode

a. Output Mode:

Resolution	SD LED	HD LED	3G LED	HDCP LED
NTSC / PAL	●	○	○	○
720p / 1080i / 1080 [24p, 25p, 30p]	○	●	○	○
1080 [50p,60p]	○	○	●	○
HDCP Content	○	○	○	●

b. Input Signal Mode:

	POWER/SIGNAL LED
SIGNAL LOCKED	●
SIGNAL UN-LOCKED	●

## 11. Firmware Mode

Hold on the 3 and 2 button, the display is showed firmware version on display of left upper.

FIRMWARE VERSION  
0.1.0.1

## 12. Default Mode

Press all button (1, 2 and 3) at the same time, the box auto reset to default.

## 13. Software Interface

The HDMI to 3G-SDI Converter/Scaler can be used right out of the box, without the use of any software. However, to use the product to its full capability, you must use the MuxLab SDI Manager software.

The MuxLab SDI Manager software can be used to control and manage the HDMI to 3G-SDI Converter/Scaler.

The software features also a firmware upgrade option for future firmware releases.

The software runs on Windows operating system and is available for download on the MuxLab website.

### 13.1 Software Download

When running the MuxLab SDI Manager software, you will see the splash screen below. Make sure to connect the USB cable between the PC and the device.

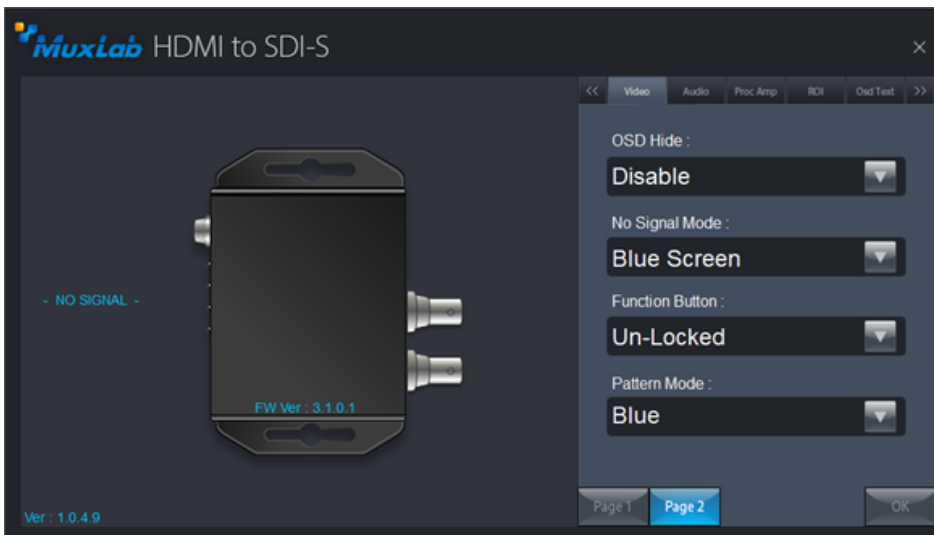
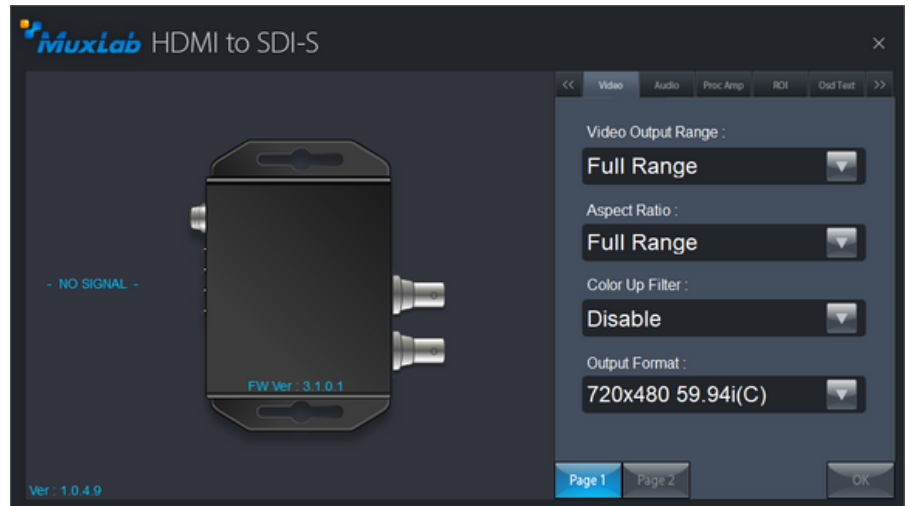


### 13.2 Software Settings

Once connected, you will see the Main screen. On the left side, the software will display the software version as well as the firmware version. It will also display the status of each port as reflected by the LEDs on each port.

## 13.3 Video Settings

On the right side, under the Video tab, you can choose the Video Output Range (Full Range or Limited Range), Aspect Ratio is Full Range, Color Up Filter (Enabled or Disabled), Output Format (Pass Through, toggle through different resolutions).



On Page 2, you can choose On-Screen Display (OSD), Screen display when No Signal (Blue, Black or Disable output), Function button (Lock, Unlock), and pattern mode (various patterns).

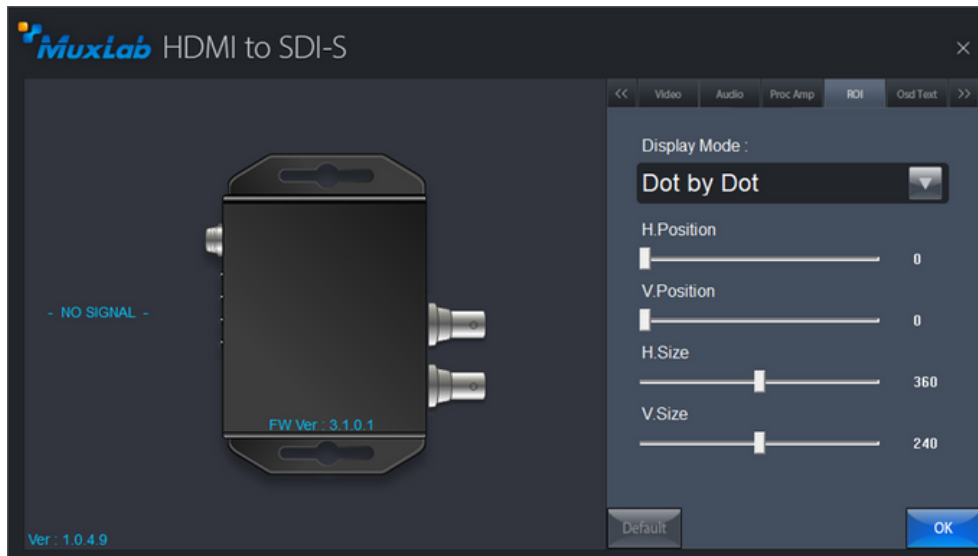
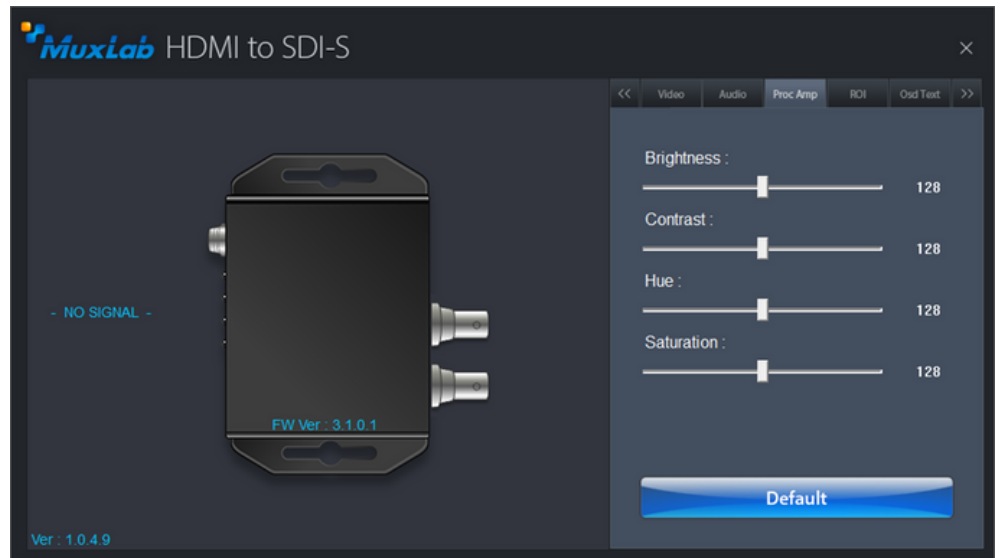
## 13.4 Audio Settings

Under the Audio tab you will have the possibility to mute or unmute the Audio.



## 13.5 Processor Settings

The processor's tab menu provides the settings for the Brightness, Contrast, Hue and Saturation; with a possibility to come back to default balanced settings.



The ROI tab will provide the possibility to adjust the image dot-by-dot, or full-screen; and horizontal and vertical adjustments.

The OSD Text tab will provide the possibility to enable On-Screen Display and define the text to be displayed.



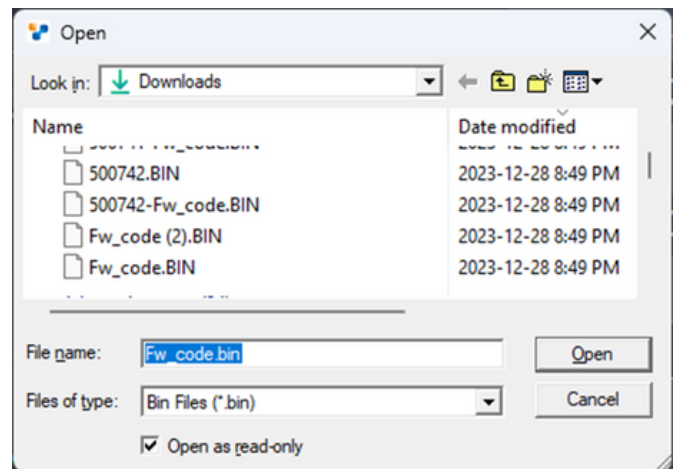
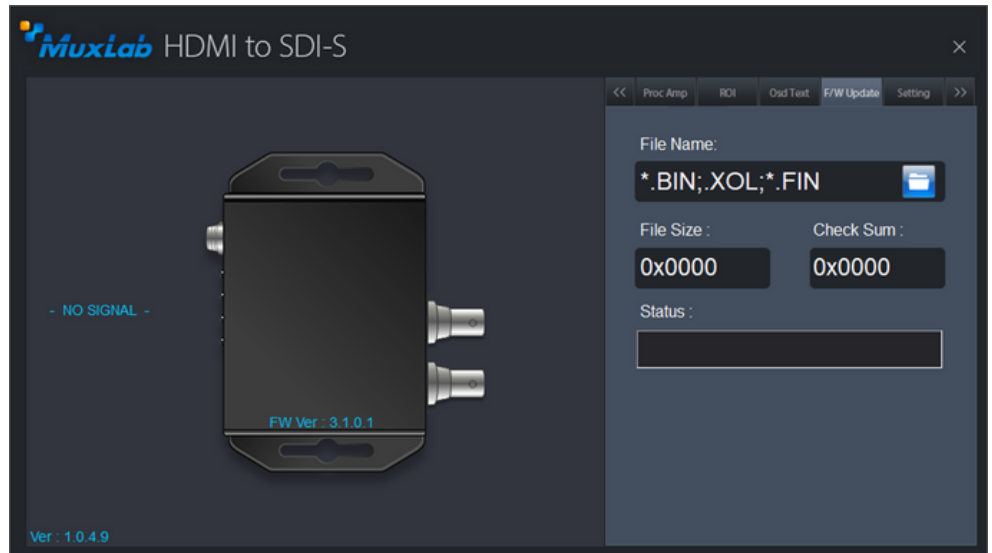
## 13.6 Firmware Upgrade

The F/W Update tab will display the menu for upgrading the device's firmware.

To upgrade the firmware, three files could be provided depending on what need to be updated.

The firmware upgrade procedure is as follows:

- Go to the "F/W Update" tab
- Click on the folder button to select the file(s)
- A File Open Menu will appear
- Select a BIN file or a FIN file to update.
- Click on "Start" button; a progress bar will be displayed. Make sure the device is powered at all times during the firmware update process.
- Once the progress bar is complete, repeat the two steps above for all the three files for upgrade.
- After all the three files have been uploaded successfully, power cycle the device.



## 13.7 General Settings

The Setting Tab can be used to perform a hardware reset. The device will reboot for a few seconds and will reconnect to the software.



# 14. Application Diagram

