

MT-503A

HDMI and 3G-SDI Cross and Scaler Converter with 3.5" LCD monitor, and audio embedder/ de-embedder

User Manual



rev: 201215
Made in Taiwan

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INTRODUCTION

The **MT-503A HDMI and 3G/HD/SD-SDI Bi-directional scaler Converter with 3.5" LCD Monitor, Audio Embedder/Extractor & local loopout** is an advanced HDMI and SDI cross-conversion monitor with multi-format and multi-pattern support. Not only can it receive signals, the MT-503A can also extend HDMI or SDI input signals through SDI loop-out. It is equipped three buttons and a 3.5" panel to ease the control. With a 3.5" panel, the output signal can be monitored and controlled through OSD, such as resolution and image adjustments. This device can also be used as a tool for eye diagram scanning to check the quality of the SDI cable input. In addition, it provides a variety of test patterns, which can be used as a simple pattern generator. The MT-503A provides a cost effective way to the monitor video devices and displays.

FEATURES

- Input Video support
 - [3G] 1080p @50/59.94/60Hz (4:4:4)
 - [HD] 720p @50/59.94/60Hz, 1080i @50/59.94/60Hz, 1080p @24/30Hz
 - [SD] NTSC @59.94Hz, PAL @50Hz
- Input bandwidth 2.970Gbps
- Output maximum pixel rate: 165MHz
- Multiple VESA standards support for output video resolutions
- Deinterlacing supported
- Built-in test patterns
- HDMI and SDI cross conversion :
 - Simultaneous conversion between SDI to HDMI when HDMI to SDI
 - Simultaneous conversion between SDI to SDI when HDMI to HDMI
 - HDMI to SDI and HDMI
 - SDI to SDI and HDMI
- OSD control interface
- Push button control
- Supports eye diagram scanning
- Supports audio level bars
- Supports cable length indicator
- Supports output test patterns
- Supports audio embedding and extraction via stereo
- Supports noise reduction and video enhancement features
- Video H/V mirror supported
- Active video area adjustment supported
- USB firmware upgradable for expanded compatibility

PACKAGE CONTENTS

- 1x MT-503A
- 1x DC 12V 2A
- 1x User Manual

SPECIFICATIONS

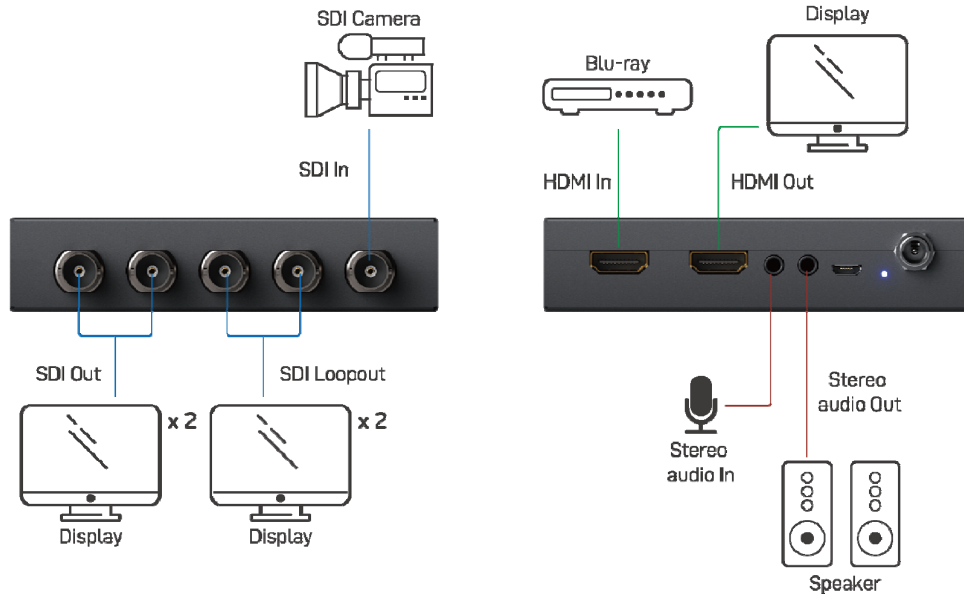
Model Name		MT-503A
Technical		
Role of usage	HDMI and SDI Bi-directional scaler Converter with 3.5" LCD monitor	
SDI standards	3G/HD/SD-SDI	
Input Video bandwidth	2.970 Gbit/s, 2.970/1.001 Gbit/s	
Input Video support	[3G] 1080p @50/59.94/60Hz (4:4:4) [HD] 720p @50/59.94/60Hz, 1080i @50/59.94/60Hz, 1080p @24/30Hz [SD] NTSC @59.94Hz, PAL @50Hz	
Output Video Frequency bandwidth	165MHz	
Audio support	PCM (48KHz only up to 8 channel)	
ESD protection	[1] Human body model — ±15kV [air-gap discharge] & ±8kV [contact discharge] [2] Core chipset — ±2kV	
PCB stack-up	8-layer board [impedance control — differential 100Ω; single 50Ω]	
Firmware update	Feasible via USB Port	
CEC Channel	N/A	
Input	1x HDMI + 1x BNC [SDI] +1x 3.5mm(Stereo)	
Output	1x HDMI + 4x BNC [SDI out/loop-out] +1x 3.5mm(Stereo)	
BNC connector	3G 75Ω inter-locked socket	
HDMI connector	Type A [19-pin female]	
USB connector	Micro USB	
Mechanical		
Housing	Metal enclosure	
Dimensions [L x W x H]	Model	
	Package	
Weight	Model	
	Package	
Power supply	12V DC	
Power consumption	8 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:** Connect to a 3G/HD/SD-SDI display
2. **SDI LOOPOUT:** Connect to a 3G/HD/SD-SDI display
3. **SDI IN:** Connect to a 3G/HD/SD-SDI source
4. **HDMI IN:** Connect to a HDMI source
5. **HDMI OUT:** Connect to a HDMI display
6. **STEREO AUDIO IN:** Connect to analog stereo audio source
7. **STEREO AUDIO OUT:** Connect to analog stereo audio speaker
8. **MICRO USB:** F/W update
9. **POWER LED:** Power LED indicator
10. **POWER JACK:** 12V DC power
11. **PUSH BUTTON:**
[LEFT] Enter OSD menu
[MID] OSD UP BUTTON/ Quick source switch for SDI output in cross conversion
[RIGHT] OSD DOWN BUTTON/ Quick source switch for HDMI output in cross conversion
12. **3.5" LCD Monitor**

CONNECTION DIAGRAM



OSD MENU

Using the On-Screen Display (OSD) menu

To access the OSD menu and make adjustments, do the following:

1. Press the **"MENU"** button to enter OSD menu or activate a highlighted menu item, and press the **"UP"** and **"DOWN"** button to highlight and adjust items in the menu.
2. Return to the main Menu by selecting **"Return"** in the OSD menu, and exit the menu by selecting **"Exit"** in the main menu.
3. Select the output which you desire to set in Menu Control. **HDMI Out** is highlighted in yellow and **SDI Out** is highlighted in green. When changing the output, the text in the OSD menu will also change to the representative color.

The following table lists the menu selections in the OSD menu.

Main Menu	Item	Remark
1. Output Setup	Menu Control	HDMI Out , SDI Out [HDMI Out] Bypass, 640x480 60/72/75, 800x600 60/72/75, 1024x768 60/70/75, 1152x864 75, 1280x768 60/75, 1280x1024 60/75, 1360x768 60, 1366x768 60, 1440x900 75, 1600x1200 60, 1680x1050 RB, SD (480p 60, 576p 50, 480i 60, 576i 50), HD (720p 60/59/50, 1080i 60/59/50, 1080p 60/59/50/30/29/25/24/23)
	Output Format	[SDI Out] Bypass, Level B_60 (1080p 60_LEVEL B), Level B_59 (1080p 59_LEVEL B), Level B_50 (1080p 50_LEVEL B), 3G (1080p60/59/50/30/29/25/24/23, 1080i 60/59/50), HD (720p60/59/50), SD (480i60, 576i 50)
	Test Pattern	Disable, White, Color Bar, Stair Gray, Window, H-Ramp, W-HRamp, W-VRamp, Diagonal, Red, Green, Blue, Checkfield, Check-2
	Audio Out	Follow, HDMI In, SDI In, External, Sine 48K, Mute
	Input Source	HDMI In, SDI In
	SDI LoopOut	SDI In, SDI Out

	Stereo Out	External, Sine 48KHz, HDMI In, SDI In
	Color Space (only HDMI Out)	RGB, YCbCr 444, YCbCr 422
2. Image	Contrast	0~255 of Contrast Level
	Brightness	0~255 of Brightness Level
	Saturation	0~255 of Saturation Level
	Hue	0~255 of Hue Level
	Gamma Adjust	Off, 1.1, 1.3, 0.7, 0.9
	Color Tone	Off, Green, Skin
	Edge Enhance	Off, Max, Mid, Min
3. H/V Mirror	H-Mirror	Off, On
	V-Mirror	Off, On
	H-Shift	0~200 of H-Shift Level
	V-Shift	0~100 of V-Shift Level
	Aspect ¹	4:3, 16:9, Stretch
4. System	Input Format	Input Format information
	F/W Version	Firmware Version information
	Factory Rest	No, Yes
	Eye Diagram ²	Quit, Scan
	LCD Sleep	Never, 10 Secs, 30 Secs, 1 Min, 5 Mins, 10 Mins, 30 Mins
	Sine Level (dB) ³	0dB, -6dB, -12dB, -18dB, -24dB, -30dB, -36dB, -42dB
5. OSD Control ⁴	OSD Enabled	All Disabled, All Enabled, Format & Range, Format & Audio, Only Format, Only Audio
	Audio Bar Sel.	External, Sine 48KHz, HDMI In, SDI In
	Audio Bar Ch.	2 Ch, 8 Ch, 6 Ch, 4 Ch
	Audio Bar Bor.	Off, On
6. Exit		

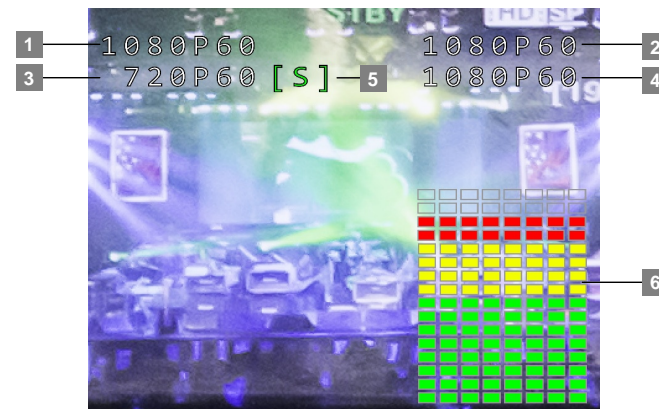
Notes

- The aspect ratio function can only be set for specific resolutions, including SD (480p 60, 576p 50, 480i 60, 576i 50), and HD (720p 60/59/50, 1080i 60/59/50, 1080p 60/59/50/30/29/25/24/23).
- The eye diagram will display the measured Amp. (amplitude) and Jit. (jitter) value of the SDI input signal.
- Set the volume of the built-in audio in Sine Level (dB). The following table lists the corresponding levels of Sine Level in the audio bar.

Sine Level (dB)	0dB	-6dB	-12dB	-18dB	-24dB	-30dB	-36dB	-42dB
Level Display	14	10	8	6	5	3	2	1

- Set the OSD information mode to be displayed on the LCD monitor in OSD control.

OSD Enabled	No.	Description															
Format	1-4	The format will display the resolution of HDMI and SDI input/output on the upper side of the LCD monitor. [1] HDMI Input, [2] HDMI Output, [3] SDI Input, [4] SDI Output															
Rang	5	The display of Range depends on the characteristics, length and quality of the coaxial cable. Take the Belden 1694A coaxial cable as an example. The range will display as below : <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Cable Type</th> <th colspan="4">Belden 1694A</th> </tr> <tr> <th>Cable Length</th> <th>1M</th> <th>5M</th> <th>50M</th> <th>100M</th> </tr> </thead> <tbody> <tr> <th>Test Result</th> <td>S(Short)</td> <td>S(Short)</td> <td>L(Long)</td> <td>L(Long)</td> </tr> </tbody> </table>	Cable Type	Belden 1694A				Cable Length	1M	5M	50M	100M	Test Result	S(Short)	S(Short)	L(Long)	L(Long)
Cable Type	Belden 1694A																
Cable Length	1M	5M	50M	100M													
Test Result	S(Short)	S(Short)	L(Long)	L(Long)													
Audio	6	Select the audio bar display source in Audio Bar Sel. Sine 48KHz is a built-in audio option. In addition, select the channel in Audio Bar Ch, and the corresponding number of Audio Bar will be displayed on the right side of the LCD monitor.															

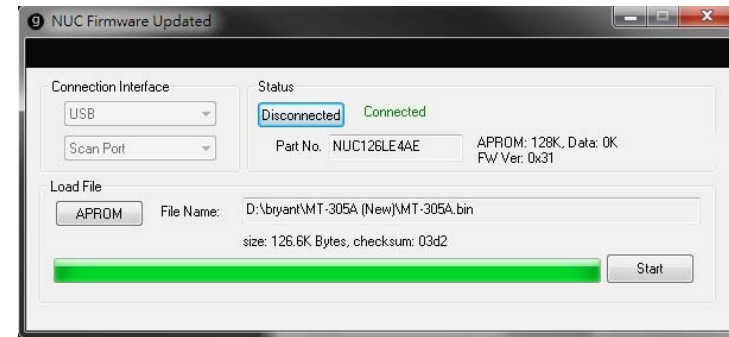


RESOLUTION SPECIFICATIONS

SDI	HDMI
[SD] 480i @ 60 576i @ 50	[SD] 480i @ 60 576i @ 50 480p @ 60 576p @ 50
[HD] 720p @ 50/59.9/60 1080i @ 50/59.9/60 1080p @ 23.9/24/25/29.9/30/50/59.9/60 1080p @ 50/59.9/60_Level B	[HD] 720p @ 50/59.9/60 1080i @ 50/59.9/60 1080p @ 23.9/24/25/29.9/30/50/59.9/60
	[Other] 640x480 @ 60/72/75 800x600 @ 60/72/75 1024x768 @ 60/70/75 1152x864 @ 75 1280x768 @ 60/75 1280x1024 @ 60/75 1360x768 @ 60 1366x768 @ 60 1440x900 @ 75 1600x1200 @ 60 1680x1050 @ RB

FIRMWARE UPDATE STEPS

1. Remove the power adapter from PRO-ScalerSDIHD.
2. Connect PRO-ScalerSDIHD and PC/laptop via micro USB cable.
3. Open update tool and load the firmware file.
4. Click connect and plug the power adapter.
5. Click start to activate the firmware update process.
6. Power cycle PRO-ScalerSDIHD.



WARRANTY

The SELLER warrants the **MT-503A HDMI and 3G/HD/SD-SDI Bi-directional scaler Converter with 3.5" LCD Monitor, Audio Embedder/Extractor & local loopout** 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 MT-503A features and specifications is subject to change without further notice.**