



# Instruction Manual

1T-VS-647  
SDI to HDMI Scaler w/Audio





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## **1.0 INTRODUCTION**

Thanks for purchasing this 1T-VS-647 SDI to HDMI Scaler with Audio from TV One. The 1T-VS-647 SDI to HDMI Scaler converts a variety of SDI transmission rates and video resolutions into an HDMI signal. It also provides audio flexibility by outputting the audio embedded in the SDI signal to external connectors (both analog and digital formats) for distribution separate from the HDMI data stream. Additional capabilities include SDI loop-thru with equalization and reclocking which means the 1T-VS-647 SDI to HDMI Scaler doubles as an SDI repeater. Finally, as part of the SDI to HDMI scaling process, SDI timing is automatically converted to PC timing parameters. Our professional video conversion products have been serving the industry for over twenty years. TV One offers a full line of high quality Seamless Switchers, Video Scalers, Up/Down/Cross Converters, Analog-Digital Converters (SD/HD-SDI, HDMI, DVI), Format Converters, Standards Converters, TBC/Frame Synchronizers, Matrix Routing Switchers, Signal Distribution Amplifiers and Cat.5 Transmission Systems.

### **1.1 Liability Statement**

Every effort has been made to ensure that this product is free of errors. TV One cannot be held liable for the use of this hardware or any direct or indirect consequential damages arising from its use. It is the responsibility of the user of the hardware to check that it is suitable for his/her requirements and that it is installed correctly. All rights reserved. No parts of this manual may be reproduced or transmitted by any form or means electronic or mechanical, including photocopying, recording or by any information storage or retrieval system without the written consent of the publisher.

TV One reserves the right to revise any of its hardware and software following its policy to modify and/or improve its products where necessary or desirable. This statement does not affect the legal rights of the user in any way.

All third party trademarks and copyrights are recognised. The TV One logo, TV One-task and CORIO are the registered Trademarks of TV One. All other trademarks are the property of their respective holders.

### **1.2 Features**

- Bitrates to 2.970Gb/s
- Resolutions to 1080p
- Accepts 480i or 576i SDTV input
- SMPTE 425 A&B, 424M, 292M & 259M-C
- SDI equalized and Re-Clocked loop-thru
- De-embedded Audio – Analog and Digital Outputs
- OSD (On Screen Display)
- Automatic Input Video Format Detection
- SMPTE 425M level B to level A Conversion
- Converts SDI HD Timing to PC Timing

## 2.0 SPECIFICATIONS

<b>Video/Audio Input</b>	
SDI SD, HD, 3G-SDI	Via 2x BNC (1x Input w/Loop-Thru)
<b>Video Output</b>	
HDMI v1.3	Via 1x HDMI Connector
<b>Ancillary Audio Outputs</b>	
De-Embedded Digital Audio	Via 1x RCA, 48KHz
De-Embedded Analog Audio	Via 2x RCA, 48KHz
<b>Transmission Bitrates</b>	
SDI Inputs	2.970Gbit/s & 2.970/1.001 Gbit/s
<b>Frequency Bandwidth</b>	
MHz/Link	165MHz
<b>SDI Loop Thru</b>	
Signal Processing	Equalization & Re-Clocking
Cable Distance (Belden 1694A)	SD=300M, HD=200M, 3G=100M
<b>SDI Format Support</b>	
SD	480i, 576i
HD	720p 50/60, 1080i 50/60, 1080p 24/25/30
3G-SDI	1080p 50/60
<b>Signal Conversion</b>	
SMPTE Standard	425M Level B to Level A
Max Output Resolution	1080p 60, WUXGA
<b>De-Embedded Audio Support</b>	
Output Signal Types	Digital Coaxial, Analog R&L
Channel Compliment	4 Groups, 2 per Group
<b>Mechanical</b>	
Size (H-W-D)	30x180x142mm (1.2x7x5.6")
Weight (Net)	460g (16.2oz)
<b>Warranty</b>	
Limited Warranty	3 Years Parts and Labor
<b>Environmental</b>	
Operating Temperature	0° to +40°C (+32° to +104°F)
Operating Humidity	20% to 90%, Non-condensing
Storage Temperature	-20° to +60° C (-4° to +140° F)
Storage Humidity	20% to 90%, Non-condensing
<b>Power Requirement</b>	
External Power Supply	5VDC@2.6A
<b>Regulatory Approvals</b>	
Converter Unit	FCC, CE, RoHS
Power Supply	UL, CUL, CE, PSE, GS, RoHS
<b>Accessories Included</b>	
1x AC Power Adapter	US, UK or Euro
1x Operations Manual	
<b>Optional Accessories</b>	
Rack Mount Kit	RM-230

## 2.1 Supported Resolutions

INPUT	
SDI	SD, HD, 3G-SDI
OUTPUT	
HDMI	NATIVE, 800x600@60, 1024x768@60, 1280x768@60, 1360x768 @60, 1280x800@60, 1280x1024@60, 1440x900@60, 1400x1050 @60, 1680x1050@60, 1600x1200@60, 1920x1200@60, 720x480p @60, 1280x720p @60, 1920x1080p@60, 720x576p@50, 1280x720p @50, 1920x1080p@50, 1920x1080i @60, 1920 x 1080i @50

*Note: The 1T-VS-647 automatically detects the type of the SDI source: (SD, HD, 3G-SDI)*

## 3.0 CHECKING PACKAGE CONTENTS

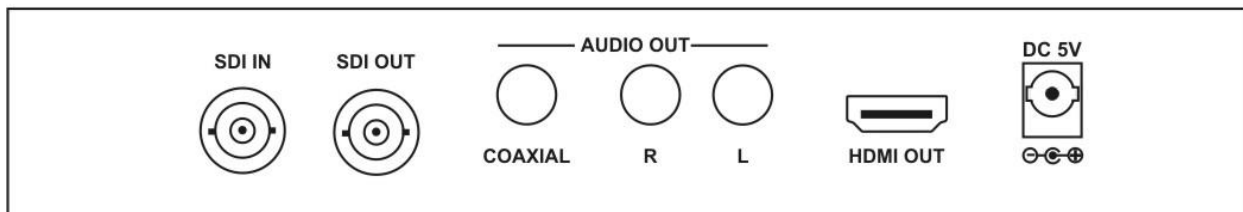
Before attempting to use this unit, please check the packaging and make certain the following items are contained in the shipping carton:

- 1x 1T-VS-647 SDI to HDMI Scaler w/Audio
- 1x AC Power Adapter
- 1x Operations Manual

**Note:** Please retain the original packing material should the need ever arise to return the unit. If you find any items are missing, contact your reseller or TV One immediately. Have the Model Number, Serial Number and Invoice available for reference when you call.

## 4.0 CONNECTING THE HARDWARE

Please study the panel drawings below and become familiar with the signal inputs, outputs, operational controls and the location of the power connector. Turn off the SDI source and the HDMI Display and connect the appropriate SDI, HDMI and audio cables; first between the source and the 1T-VS-647 and then between the 1T-VS-647 and the display. Plug in the provided AC adapter, first to the 1T-VS-647 and then to an active AC power source. Lastly, turn on the SDI source and display device. (The 1T-VS-647 has no power switch and will begin to function as soon as it has the AC adapter connected to it.)



*Note: By default, the 1T-VS-647 will have an output resolution that matches the native resolution of the connected display device. The resolution that is output by the scaler can be changed via the On Screen Display menu however, it's very important that you determine beforehand if the display device is capable of accepting the output resolution. Failure to do so can result in no image on the display device – a situation that is difficult to recover from since you would not be able to see the OSD display.*

## 5.0 OPERATING THE UNIT

The front panel of the 1T-VS-647 has four LEDs and four push buttons that are used to indicate status or to allow user interaction with the device. From left to right, the Power LED will illuminate anytime the device is receiving power from the included AC adapter. Next, the 3G, HD or SD LEDs will be illuminated to indicate what type of SDI signal is present as the device's source signal. (If none of the three SDI status LEDs are illuminated, a source signal is either missing or is not a suitable signal.)

The four push buttons are used to access the menu structure for making operational parameter changes as explained in the OSD menu discussion below. Other than these displays and push buttons, there are no status observations or user adjustments involved with using the 1T-VS-647 SDI to HDMI Scaler with Audio.

Please note that the SDI input is configured as a Loop-Thru system. The input signal is automatically equalized to a unity frequency response and signal level and is also reclocked which allows the 1T-VS-647 to function both as a SDI to HDMI scaler and also as an SDI repeater. Please consult the specification section above to determine the cable distance offered for each of the three supported SDI signal types.

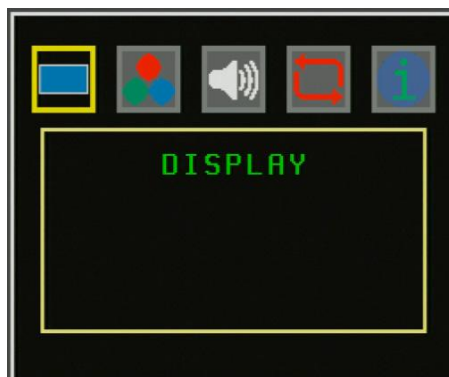


## 5.1 On Screen Display (OSD) Structure

The 1T-VS-647 is controlled via an On Screen Display (OSD) menu structure. Much of the operation of the scaler is done automatically (Plug & Play), however there may be an occasion where an adjustment is desired. Numerous parameters can be controlled from the menu including adjustment of output resolutions, type of audio output, etc.

*Note: Pressing the Menu button enters the OSD structure and also exits the structure when you are finished with your selections.*

The menu structure is grouped into a three tier arrangement. When you press the Menu button for the first time, you will display the top tier which is where you select the basic parameters. From Left to Right, the icons represent the following basic parameters: Display Setup, Color Adjustments, SDI Audio Group, Factory Reset and Device Information. (Display Setup is shown selected in the example below.)



Use the + and – buttons to move horizontally across the first tier selections until you arrive at the one associated with the parameters you wish to adjust and then press the Enter button to select that parameter.

If there is only one item in the second tier associated with the parameter where you are working, you can use the + and – buttons to directly make an adjustment or selection without selecting an item from the third tier. Press the Enter button to save the selection.

If there is more than one second tier item associated with the parameter, use the + and – buttons to move to the item you wish to work with and press the Enter button to select that item. Use the + and – buttons to make the adjustment or selection, and once the adjustment or selection is made, press the Enter button to save your change.

When the adjustment or selection has been made and saved, use the Menu button to exit the OSD. (From within the second tier, you can select the Exit function from the list to return to the first tier if it's offered.)

*Note: Press the Enter and the – button together to immediately select 720p output timing and press Enter and the + button together to immediately select XGA output timing. These are the two most commonly used scaler parameters.*

*Note 2: After making a resolution change you will have 15 seconds to confirm the newly selected resolution by pressing the “ENTER” button. If the new resolution is not confirmed then the output will revert to the original resolution.*

Here are textual representations of the items that will be shown for the three tiers within the OSD. The first tier list shown below is for Display functions:

1st Tier	2nd Tier	3rd Tier	
Display	Information	On/Auto/Off	
	Output	NATIVE	
		800 x 600 @60	
		1024 x 768 @60	
		1280 x 768 @60	
		1360 x 768 @60	
		1280 x 800 @60	
		1280 x 1024 @60	
		1440 x 900 @60	
		1400 x 1050 @60	
		1680 x 1050 @60	
		1600 x 1200 @60	
		1920 x 1200 @60	
		720 x 480p @60	
		720 x 576p @50	
		1280 x 720p @50	
		1280 x 720p @60	
		1920 x 1080i @60	
		1920 x 1080i @50	
	1920 x 1080p @50		
	1920 x 1080p @60		
	Size	Full	
		Over Scan	
		Under 1	
		Under 2	
		16:9	
		4:3	
	Exit		

The remaining first tiers lists allow you to reach adjustments for the Color parameters, select the SDI Audio Groups you wish to de-embed, perform a Factory Reset to default conditions and display the current status Information for the device:

Color	Contrast	0~255 (105)
	Brightness	0~192 (96)
	R	0~255 (128)
	G	0~255 (128)
	B	0~255 (128)
	R Offset	0~63 (32)
	G Offset	0~63 (32)
	B Offset	0~63 (32)
	Exit	
SDI Audio	Group 1+2	
	Group 2+3	
	Group 3+4	
	Group 4+1	
	Auto	
	Off	
Factory	Yes	
Information	Input Timing, Output Timing & Version	

## 6.0 TROUBLESHOOTING

Faulty cables are the most common problem associated with the 1T-VS-647. Make certain you are using the highest quality cables available. In the event of trouble with the unit, inspect the cables for damage and make sure they are completely seated in their connectors. Also make certain that the AC adapter is plugged in to a working AC socket and that the Power LED is illuminated.

After trying the above suggestions should the problem still persist, contact your dealer for additional suggestions before contacting TV One. Should the dealer's technical personnel be unable to assist you, contact TV One via our support website: **<http://tvone.crmdesk.com>**. Create a technical support request on the site and our support team will respond within a short period of time.

## 7.0 LIMITED WARRANTY

TV One warrants the original purchaser that the equipment it manufactures or sells will be free from defects in materials and workmanship for a fixed term from the date of purchase. The warranty term for specific product lines is defined below.

1. TV One branded products based on TV One's CORIO technology are warranted for a period of five years from the date of purchase. This includes products with the model number prefix of C2, 1T-C2, CX, A2 or S2.
2. TV One-task branded products, other than those based on TV One's CORIO technology mentioned above, are warranted for a period of three years from the date of purchase. This includes products with the model number prefix of 1T, with the exception of 1T-C2.
3. LCD Monitors are warranted for a period of three years from the date of purchase, with the exception of the LCD panels integrated into the monitors that are supplied by third parties. LCD panels are limited to the term and conditions of the warranty offered by the respective LCD panel manufacturer. Such specific LCD panel warranties are available upon request to TV One.

Should a product, in TV One's opinion, prove defective within this warranty period, TV One, at its option, will repair or replace this product without charge. Any defective parts replaced become the property of TV One. This warranty does not apply to those products which have been damaged due to accident, unauthorized alterations, improper repair, modifications, inadequate maintenance and care, or use in any manner for which the product was not originally intended.

If repairs are necessary under this warranty policy, the original purchaser must obtain a Return Authorization Number from TV One and return the product to a location designated by TV One, freight prepaid. After repairs are complete, the product will be returned, freight prepaid.

**LIMITATIONS** - All products sold are "as is" and the above Limited Warranty is in lieu of all other warranties for this product, expressed or implied, and is strictly limited to two years from the date of purchase. TV One assumes no liability to distributors, resellers or end-users or any third parties for any loss of use, revenue or profit.

TV One makes no other representation of warranty as to fitness for the purpose or merchantability or otherwise in respect of any of the products sold. The liability of TV One with respect to any defective products will be limited to the repair or replacement of such products. In no event shall TV One be responsible or liable for any damage arising from the use of such defective products whether such damages be direct, indirect, consequential or otherwise, and whether such damages are incurred by the reseller, end-user or any third party.

## 8.0 REGULATORY COMPLIANCE

The 1T-VS-647 has been tested for compliance with appropriate FCC and CE rules and regulations. The Power Adaptor/Supply has been tested for compliance with appropriate UL, CUL, CE, PSE, GS Rules, Regulations and/or Guidelines. This Product and Power Adapter is RoHS Compliant.

## 9.0 CONTACT INFORMATION

Should you have questions or require assistance with this product in areas not covered by this manual, please contact TV One at the appropriate location.

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End of Manual