



# 1T-VS-658

## Video/PC/HD/HDMI Scaler with stereo audio

### User Guide V 4.00

Firmware version 2.20

MNL-1T-VS-658-V4.00

Jan 2020

# In this guide

Welcome .....	2
Features.....	2
In the box .....	2
Supported input formats and resolutions .....	2
Supported output formats and resolutions.....	4
Hardware recommendations.....	5
About your 1T-VS-658 .....	6
Front panel.....	6
Rear panel.....	7
Remote control.....	8
Getting started.....	8
Using your 1T-VS-658.....	9
Using the on-screen display menus .....	9
With the front panel .....	9
With the remote control .....	9
Overview of the menu .....	9
RS-232 Protocol .....	11
(S) Set commands .....	12
(R) Status commands.....	15
(K) Key commands .....	16
Troubleshooting.....	17
Returning a product for repair .....	17
Regulatory compliance .....	18
Contact us .....	19

# Welcome

Thanks for purchasing this 1T-VS-658 HDMI Scaler with stereo audio from tvONE. The 1T-VS-658 Video Scaler is a professional Up and Cross Converter with an HDMI output. Fully scaleable video inputs include HDMI, DVI (via DVI-to-HDMI adapter), analog RGB via an HD-15, Analog YPbPr or 480i/576i YUV Component via three RCA, YC (S-Video) and Composite Video. It handles I/O resolutions up to 1080p and WUXGA. Both digital and analog audio processing is supported and audio delays of up to 150ms can be introduced to ensure lip sync. Five analog stereo and one SPDIF coaxial digital audio input can be selected for embedding into the HDMI output. A separate coaxial digital audio output is also provided.

## Features

- HDMI Max Res: WUXGA and 1080p
- HDMI, RGB, YPbPr, YUV, YC, CV In
- Both Analog & Digital Audio Capable
- Audio Delay for Lip Sync Corrections
- HDMI I/O is fully HDCP Compliant
- Infrared Remote Control
- 3D Motion Adaptive De-Interlace
- Noise Reduction
- 3:2 Pull-Down
- 2:2 Pull-Down Recovery
- Locking DC Power Supply
- Optional Rackmount Kit
- (RM-220 Single/Dual)

## In the box

- 1x 1T-VS-658 Scaler
- 1x Power Supply
- 1x IR Remote Control
- 1x Operations

## Supported input formats and resolutions

The 1T-VS-658 accepts HDMI, DVI, Analog PC, Analog Component, Composite, and YC (S-Video) inputs with separate connectors. Analog YPbPr input is only available via the 3-RCA Connectors and not via the HD-15 Connector.

Resolution		V. Rate/Hz	Scan	Format	Connector
CV	SDTV	60 NTSC, 50 PAL	Interlaced	NTSC/PAL	RCA
YC	SDTV	60 NTSC, 50 PAL	Interlaced	NTSC/PAL	4-Pin Mini-Din
480i	720x480	60	Interlaced	YUV NTSC	RCA
576i	720x576	50	Interlaced	YUV PAL	RCA
480p	720x480	60	Progressive	YPbPr/RGBHV (1)	HD15, HDMI, RCA
576p	720x576	50	Progressive	YPbPr/RGBHV (1)	HD15, HDMI, RCA
720p	1280x720	50, 60	Progressive	YPbPr/RGBHV (1)	HD15, HDMI, RCA
1080i	1920x1080	50, 60	Interlaced	YPbPr/RGBHV (1)	HDMI, RCA
1080p	1920x1080	50, 60	Progressive	YPbPr/RGBHV (1)	HD15, HDMI, RCA
VGA	640x480	60, 72, 75, 85	Progressive	RGBHV	HD15, HDMI
SVGA	800x600	56, 60, 72, 75, 85	Progressive	RGBHV	HD15, HDMI
XGA	1024x768	60, 70, 75, 85	Progressive	RGBHV	HD15, HDMI
SXGA	1280x1024	60, 75, 85	Progressive	RGBHV	HD15, HDMI
UXGA	1600x1200	60	Progressive	RGBHV	HD15, HDMI
SXGA+	1400x1050	60	Progressive	RGBHV	HD15, HDMI
UXGA	1600x1200	60	Progressive	RGBHV	HD15, HDMI
WXGA	1280x800	60	Progressive	RGBHV	HD15, HDMI

Resolution		V. Rate/Hz	Scan	Format	Connector
WXGA+	1440x900	60	Progressive	RGBHV	HD15, HDMI
	1600x900	60	Progressive	RGBHV	HD15, HDMI
WSXGA	1680x1050	60	Progressive	RGBHV	HD15, HDMI
WUXGA	1920x1200	60	Progressive	RGBHV	HD15, HDMI

## Supported output formats and resolutions

The 1T-VS-658 supports these output resolutions.

Resolution		V. Rate/Hz	Scan	Format	Connector
480p	720x480	60	Progressive	RGBHV	HDMI
576p	720x576	50	Progressive	RGBHV	HDMI
720p	1280x720	50, 60	Progressive	RGBHV	HDMI
1080i	1920x1080	50, 60	Interlaced	RGBHV	HDMI
1080p	1920x1080	50, 60	Progressive	RGBHV	HDMI
VGA	640x480	60	Progressive	RGBHV	HDMI
SVGA	800x600	60	Progressive	RGBHV	HDMI
XGA	1024x768	60	Progressive	RGBHV	HDMI
SXGA	1280x1024	60	Progressive	RGBHV	HDMI
UXGA	1600x1200	60	Progressive	RGBHV	HDMI
WXGA	1280x800	60	Progressive	RGBHV	HDMI
WXGA+	1440x900	60	Progressive	RGBHV	HDMI
WSXGA	1680x1050	60	Progressive	RGBHV	HDMI
WUXGA	1920x1200	60	Progressive	RGBHV	HDMI

# Hardware recommendations

At tvONE, we design our products to the highest quality standards. To get the best results from our products, we recommend that you use the best quality connectors, cables, and adapters. Consider the points below when you choose accessories and position equipment.

- For best results with HDMI/DVI, use cables under 15 m long, or shorter if you use connection adapters. If you need to place your products more than 15 m apart, use a signal extender.

See our range of signal extenders at [tvone.com/signal-extension-systems](http://tvone.com/signal-extension-systems).

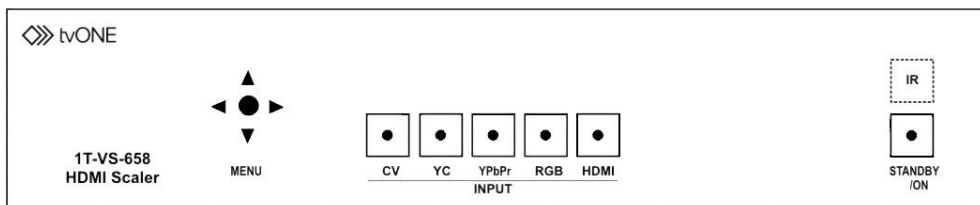
- For best results with HDMI, use High Speed or Premium High Speed HDMI cables.
- In industrial environments, use shielded Ethernet cables.

Shielded Ethernet cables are often marked F/UTP or FTP. Use shielded Cat 6 cables with HDBaseT input and output modules and Streaming media and 4K playback input modules.

- Use good quality USB 3.0 drives.

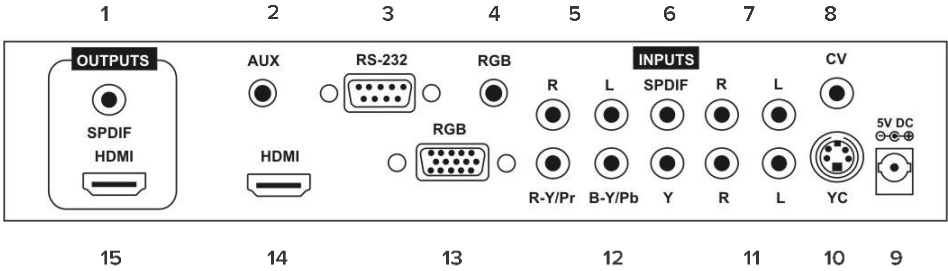
# About your 1T-VS-658

## Front panel



MENU	Joystick and control pad. Press the top of the joystick to open the On-Screen Display (OSD). Use the joystick to move to, select, and adjust functions.
CV YC YPbPr RGB HDMI	Select an input.
STANDBY/ON	Turn the unit on and off.

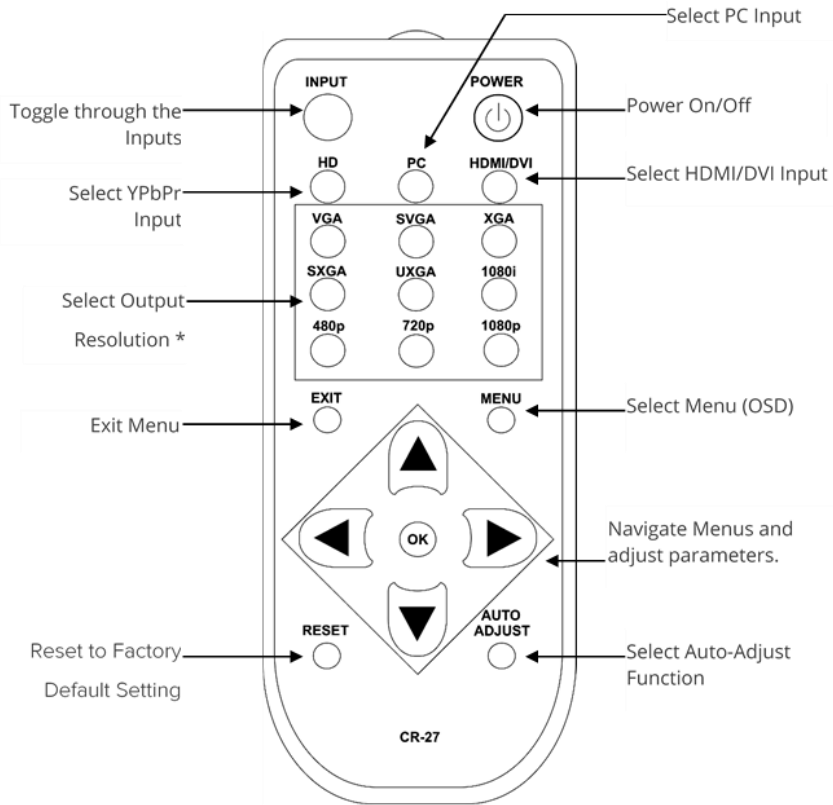
# Rear panel



1	S/PDIF Audio Output (Used when an HDMI Integrated Audio Steam is not desired.)
2	3.5mm Aux Audio Input (Used when the Video Signal is DVI using the HDMI Port.)
3	RS-232 Remote Control Connector
4	3.5mm PC Audio Input (Connects to Computer's Audio Output.)
5	Stereo Analog Audio Input for Component Video Input (2x RCA Connectors)
6	S/PDIF Audio Input
7	Stereo Analog Audio Input for Composite Video Input (2x RCA Connectors)
8	Composite Video Input (RCA Connector)
9	+5 VDC Input. (Connects to AC Adapter)
10	S-Video Input (4-Pin Mini-Din)
11	Stereo Analog Audio Input for S-Video Input (2x RCA Connectors)
12	Component Video Inputs (3x RCA Connectors)
13	PC Video Input (HD-15 Connector from PC's Monitor Output)
14	HDMI Video Input
15	HDMI Video Output



# Remote control



## Getting started

- Connect your input and output cables.
- Connect the AC power adaptor.
- Turn on the source and destination devices.
- Plug the AC Adapter into a wall outlet and press STANDBY/ON.

# Using your 1T-VS-658

## Using the on-screen display menus

### With the front panel

- To open the on-screen display, press the top of the joystick.
- To navigate in the on-screen display, use the joystick or arrow buttons.
- To select an item, press the top of the joystick.
- To adjust items, move left or right with the joystick or arrow buttons.
- To save your changes, press the top of the joystick.

### With the remote control

- To open the on-screen display, press MENU.
- To navigate in the on-screen display, use the arrow buttons.
- To select an item, press OK.
- To adjust items, move left or right with the arrow buttons.
- To save your changes, press OK.

## Overview of the menu

Picture Setting	Contrast	0-100 Contrast Adjustment
	Brightness	0-100 Brightness Adjustment
	Exit	Return to High Level Menu
Finetune (Video or PC <sup>1</sup> )	Hue	0-100 Hue Adjustment
	Saturation	0-100 Color Level Adjustment
	Sharpness	0-100 Picture Sharpness Adjustment
	Noise Reduction	Low / Middle / High / Off
	Phase <sup>1</sup>	0-100 Input Phase Adjustment
	Clock <sup>1</sup>	0-100 Input Clock Adjustment
	H-Position <sup>1</sup>	0-100 Horizontal Image Position

	V-Position <sup>1</sup>	0-100 Vertical Image Position
	Exit	Return to High Level Menu
Color Setting	Red	0-100 Relative Red Color Level
	Green	0-100 Relative Green Color Level
	Blue	0-100 Relative Blue Color Level
	Exit	Return to High Level Menu
Output Setting	Size	Aspect / Full / Overscan / Underscan / Letterbox / Panscan
	Resolution <sup>2</sup>	NATIVE / 640x480/60 / 800x600/60 / 1024x768/60 / 1280x1024/60 / 1600x1200/60 / 1280x800/60 / 1440x900/60 / 1680x1050/60 / 1920x1200/60 / 480p60 / 720p60 / 1080i60 / 1080p60 / 576p50 / 720p50 / 1080i50 / 1080p50
	Mirror	Off / On
	Timing Shift	Off / On
	Exit	Return to High Level Menu
	Audio Setting <sup>5</sup>	Delay
	Input	Analog / Coaxial / *Embedded (*only for HDMI source)
	Sound	On / Mute
	Exit	Return to High Level Menu
OSD Setting <sup>3</sup>	H - Position	0-100 Relative L-R Position
	V - Position	0-100 Relative U-D Position
	Timer	5-100 Relative OSD Show Time (Sec)
	Background	0-100 Relative OSD Background Transparency
	Display Select	INFO / ON / OFF
	Exit	Return to High Level Menu
Factory Reset	-	Restores original factory settings

Information <sup>4</sup>	-	Source (Input Interface) Input (Input Resolution) Output (Output Resolution) Version (Firmware Version)
Exit	-	Close the OSD Menu

1. The PC sub-menu controls are only visible when you have selected a PC source.
2. The Resolution sub-menu allows you to specify the resolution you want the 1T-VS-658 to produce. Keep in mind that setting the resolution can cause an apparent malfunction if you select a resolution that your display device cannot reproduce. Make certain your display device can reproduce the resolution you select BEFORE you select it.
3. The OSD sub-menu allows you to customize the way the On Screen Display appears when it has been accessed. This is a personal preference matter. You can change the default if you wish or simply leave it at the factory setting.
4. The Info sub-menu contains technical information. If you have problems with the 1T-VS-658 and require assistance, the technician may ask you to read information from this menu to him as part of the troubleshooting process.
5. Since Video and Audio Lip Sync can be lost in Digital Television, the 1T-VS-658 provides a secondary menu item called "Delay" under the Audio high level menu selection where audio delay can be introduced to restore lip sync. Use this function if you hear audio before the video portion of the program appears to make the sound.

## RS-232 Protocol

- Baud Rate: 19200bps
- Data Bit: 8 bits
- Parity: None
- Stop Bit: 1bit
- Flow Control: None

1T-VS-658	
PIN	Assignment
1	NC
2	Tx
3	Rx
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC

Remote Control	
PIN	Assignment
1	NC
2	Rx
3	Tx
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC

## (S) Set commands

Items in bold and brackets [X] are default values.

Command Code	Response	Description
S POWER 0	> POWER OFF	POWER OFF
S POWER 1	> POWER ON	POWER ON
S SOURCE 0	> SOURCE CV	COMPOSITE INPUT
S SOURCE 1	> SOURCE SV	S-VIDEO INPUT
S SOURCE 2	> SOURCE COMP	COMPONENT INPUT
S SOURCE 3	> SOURCE PC	PC INPUT
S SOURCE 4	> SOURCE HDMI	HDMI INPUT
S OUTPUT 0	> OUTPUT NATIVE	NATIVE RESOLUTION OUTPUT
S OUTPUT 1	> OUTPUT 640X480_60	640x480@60Hz RESOLUTION OUTPUT
S OUTPUT 2	> OUTPUT 800X600_60	800x600@60Hz RESOLUTION OUTPUT
S OUTPUT 3	> OUTPUT 1024X768_60	1024x768@60Hz RESOLUTION OUTPUT

Command Code	Response	Description
S OUTPUT 4	> OUTPUT 1280X1024_60	1280x1024@60Hz RESOLUTION OUTPUT
S OUTPUT 5	> OUTPUT 1600X1200_60	1600x1200@60Hz RESOLUTION OUTPUT
S OUTPUT 16	> OUTPUT 1280X800_60	1280x800@60Hz RESOLUTION OUTPUT
S OUTPUT 19	> OUTPUT 1440X900_60	1440x900@60Hz RESOLUTION OUTPUT
S OUTPUT 17	> OUTPUT 1680X1050_60	1680x1050@60Hz RESOLUTION OUTPUT
S OUTPUT 18	> OUTPUT 1920X1200_60	1920x1200@60Hz RESOLUTION OUTPUT
S OUTPUT 7	> OUTPUT 480P_60	480P@60Hz RESOLUTION OUTPUT
S OUTPUT 8	> OUTPUT 720P_60	720P@60Hz RESOLUTION OUTPUT
S OUTPUT 9	> OUTPUT 1080I_60	1080i@60Hz RESOLUTION OUTPUT
S OUTPUT 10	> OUTPUT 1080P_60	1080P@60Hz RESOLUTION OUTPUT
S OUTPUT 20	> OUTPUT 576P_50	576P@50Hz RESOLUTION OUTPUT
S OUTPUT 13	> OUTPUT 720P_50	720P@50Hz RESOLUTION OUTPUT
S OUTPUT 14	> OUTPUT 1080I_50	1080i@50Hz RESOLUTION OUTPUT
S OUTPUT 15	> OUTPUT 1080P_50	1080P@50Hz RESOLUTION OUTPUT
S SIZE 0	> SIZE FULL	SCALER FULL OUTPUT
S SIZE 1	> SIZE OVERSCAN	SCALER OVERSCAN OUTPUT
S SIZE 2	> SIZE UNDERSCAN	SCALER UNDERSCAN OUTPUT
S SIZE 3	> SIZE LETTERBOX	SCALER LETTERBOX OUTPUT
S SIZE 4	> SIZE PANSCAN	SCALER PANSCAN OUTPUT

Command Code	Response	Description
S SIZE 5	> SIZE FOLLOWINPUT	SCALER MAINTAIN ASPECT
S TIMINGSHIFT 0-1	>TIMINGSHIFT [OFF/ON]	TIMING SHIFT CONTROL
S AUDIODELAY 0-3	>AUDIODELAY [OFF - 150mS]	0: OFF, 1: 40mS, 2: 110mS, 3: 150mS AUDIO DELAY CONTROL
S AUDIOINPUT 0-3	>AUDIOINPUT [ANALOG /COAXIAL/EMBEDDED]	0: ANALOG, 1: COAXIAL, 2: EMBEDDED (only for HDMI Source)
S AUDIOMUTE 0-1	>AUDIOMUTE [OFF/ON]	0: OFF, 1: ON AUDIO MUTE CONTROL
S CONTRAST 0-100	> CONTRAST [VALUE]	CONTRAST 0-100 ADJUST [50]
S BRIGHTNESS 0-100	> BRIGHTNESS [VALUE]	BRIGHTNESS 0-100 ADJUST [50]
S HUE 0-100	> HUE [VALUE]	HUE 0-100 ADJUST [50]
S SATURATION 0-100	> SATURATION [VALUE]	SATURATION 0-100 ADJUST [50]
S SHARPNESS 0-100	> SHARPNESS [VALUE]	SHARPNESS 0-100 ADJUST [10]
S NR 0-3	> NR [OFF/LOW/MIDDLE/HIGH]	0:OFF ; 1: LOW, 2: MIDDLE, 3: HIGH, NOISE REDUCTION CONTROL
S PCHPOSITION 0-100	> PCHPOSITION [VALUE]	H POSITION 0-100 ADJUST
S PCVPOSITION 0-100	> PCVPOSITION [VALUE]	V POSITION 0-100 ADJUST
S PCCLOCK 0-100	> PCCLOCK [VALUE]	PC MODE CLOCK 0-100 ADJUST
S PCPHASE 0-100	> PCPHASE [VALUE]	PC MODE PHASE 0-100 ADJUST
S RED 0-100	> RED [VALUE]	COLOR TEMP "RED" ADJUST [50]
S GREEN 0-100	> GREEN [VALUE]	COLOR TEMP "GREEN" ADJUST [50]
S BLUE 0-100	> BLUE [VALUE]	COLOR TEMP "BLUE" ADJUST [50]

Command Code	Response	Description
S OSDNOTICE 0-2	> OSDNOTICE [INFO/OFF/ON]	0: INFO, 1: OFF, 2: ON [0]
S OSDHPOSITION 0-100	> OSDHPOSITION [VALUE]	OSD H POSITION 0-100 ADJUST [10]
S OSDVPOSITION 0-100	> OSDVPOSITION [VALUE]	OSD V POSITION 0-100 ADJUST [90]
S OSDTIMEOUT 0-100	> OSDTIMEOUT [VALUE]	OSD TIMEOUT 0-100 SETTING [5]
S OSDBACKGROUND 0-100	> OSDBACKGROUND [VALUE]	OSD OSDBACKGROUND 0-100 ADJUST [50]

## (R) Status commands

Command Code	Response	Description
R POWER	> POWER [ON/OFF]	SHOW POWER STATUS
R SOURCE	> SOURCE [CV/SV/COMP/PC/HDMI]	SHOW SOURCE STATUS
R OUTPUT	> OUTPUT [VALUE]	SHOW OUTPUT STATUS
R SIZE	> SIZE [VALUE]	SHOW SIZE STATUS
R TIMINGSHIFT	> TIMINGSHIFT [OFF/ON]	SHOW TIMING SHIFT STATUS
R AUDIODELAY	> AUDIODELAY [VALUE]	SHOW AUDIO DELAY STATUS
R AUDIOINPUT	> AUDIOINPUT [ANALOG/COAXIAL /EMBEDDED]	SHOW AUDIO INPUT STATUS
R AUDIOMUTE	> AUDIOMUTE [OFF/ON]	SHOW AUDIO MUTE STATUS
R CONTRAST	> CONTRAST [VALUE]	SHOW CONTRAST STATUS
R BRIGHTNESS	> BRIGHTNESS [VALUE]	SHOW BRIGHTNESS STATUS
R HUE	> HUE [VALUE]	SHOW HUE STATUS
R SATURATION	> SATURATION [VALUE]	SHOW SATURATION STATUS
R SHARPNESS	> SHARPNESS [VALUE]	SHOW SHARPNESS STATUS
R NR	> NR [OFF/LOW/MIDDLE/HIGH]	SHOW NOISE REDUCTION STATUS
R PCHPOSITION	> PCHPOSITION [VALUE]	SHOW PC H-POSITION STATUS



Command Code	Response	Description
R PCVPOSITION	> PCVPOSITION [VALUE]	SHOW PC V-POSITION STATUS
R PCCLOCK	> PCCLOCK [VALUE]	SHOW PC CLOCK STATUS
R PCPHASE	> PCPHASE [VALUE]	SHOW PC PHASE STATUS
R RED	> RED [VALUE]	SHOW COLOR TEMP RED STATUS
R GREEN	> GREEN [VALUE]	SHOW COLOR TEMP GREEN STATUS
R BLUE	> BLUE [VALUE]	SHOW COLOR TEMP BLUE STATUS
R OSDHPOSITION	> OSDHPOSITION [VALUE]	SHOW OSD H-POSITION STATUS
R OSDVPOSITION	> OSDVPOSITION [VALUE]	SHOW OSD V-POSITION STATUS
R OSDTIMEOUT	> OSDTIMEOUT [VALUE]	SHOW OSD TIMEOUT STATUS
R OSDBACKGROUND	> OSDBACKGROUND [VALUE]	SHOW OSD BACKGROUND STATUS
R OSDNOTICE	> OSDNOTICE [INFO/OFF/ON]	SHOW OSD STATUS

## (K) Key commands

Command Code	Response	Description
S RESET	> RESET	RESET SYSTEM

# Troubleshooting

If specific troubleshooting advice isn't helping, or your product has stopped working, go through the points below. If your product still doesn't work, you might need to return it for repair.

1. Make sure your product is set up correctly, as shown in this guide.
2. Check that your cables and equipment are all connected firmly.
3. Check that your product is connected to an electrical outlet that is switched on.

Can you see LED lights on the front of your product?

4. Test your sources by connecting them directly to a display.
5. Test your display by connecting it directly to a source.
6. Test each cable.
7. Try restoring your product to factory default settings.

**Note:** during factory reset your custom settings are deleted.

8. Try updating your firmware.

**Note:** during a firmware update your custom settings are deleted.

## Returning a product for repair

You can request to return your product to tvONE™ for repair. When you contact tvONE support, have the following information ready.

- Product type
- Serial number of the faulty unit (this is on the underside of the unit)
- Full details of the issue
- Invoice number (if available)

Contact tvONE support for your area.

- Customers in North, Central, and South America (NCSA), email [tech.usa@tvone.com](mailto:tech.usa@tvone.com).

- Customers in Europe, the Middle East, and Africa (EMEA), email [tech.europe@tvone.com](mailto:tech.europe@tvone.com).
- Customers in Asia, email [tech.asia@tvone.com](mailto:tech.asia@tvone.com).

## EMEA and Asia

Customers in EMEA and Asia receive an RMA Request form from tvONE support. Complete the form and return it to tvONE support for your area.

## All customers

tvONE support decides if your product needs to return for repair, and, if needed, provide a return authorization number.

Send your product to tvONE by insured carrier or registered mail. Write your return authorization number on the outside of the packaging, and on any documents you send with your product.

You must arrange and pay for shipping and insurance. Products in transit are your responsibility. tvONE does not accept responsibility for products lost in transit.

Do not return a product for warranty repair without a return authorization number. tvONE will not repair your product.

## Regulatory compliance

The 1T-VS-658 Scaler has been tested for compliance with the 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 is RoHS compliant.

# Contact us

tvone.com

info@tvone.com

**Support NCSA:** tech.usa@tvone.com

**Support EMEA:** tech.europe@tvone.com

**Support Asia:** tech.asia@tvone.com

Information in this document is subject to change without notice. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or any means electronic or mechanical, including photocopying and recording for any purpose other than the purchaser's personal use without the written permission of tvONE.

Copyright © 2020 tvONE™. All rights reserved.

Registered in the U.S. Patent and Trademark Office.