



Instruction Manual

**1T-SX-632 & 1T-SX-634
HDMI V1.3 Switchers**

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1.0 INTRODUCTION

The 1T-SX-632 and 1T-SX-634 HDMI Switchers allow selection of 2 or 4 inputs respectively for display on an HDMI compliant display device. These version 1.3 HDMI switchers support all standard High Definition Television formats, PC formats from 1024x768 thru 1920x1200 and embedded HD-Audio (including Dolby® TrueHD and DTS-HD). Infrared Remote Control and RS-232 Control are standard features of both products. Secured HDMI connectors insure input and output cables will not inadvertently become disconnected.

Our professional video conversion products have been serving the industry for over twenty years. tvONE 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. tvONE 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.

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1.2 Features

The 1T-SX-632 and 1T-SX-634 HDMI v1.3 Switchers have many features that enable them to perform in a superior manner. Among these features you will find:

- HDMI 1.3, HDCP 1.1 and DVI 1.0 Compliant
- Allows switching of 2 or 4 inputs
- Supports 10/12 bit Color Depth Display
- Supports PC resolutions to 1920x1200
- Supports HDTV resolutions to 1080p & SDTV resolutions of 480i and 576i
- Supports embedded Audio including Dolby® Digital TrueHD and DTS-HD
- Signal Enhancement feature enables longer cable runs
- Infrared Remote Control and RS-232 Control Standard

1.3 Getting the Best Results

There are many factors affecting the quality of results when distributing HDMI type signals. Some basic precautions will ensure the best possible performance from your new HDMI switch.

- **Output display device** – The quality of the output signal will depend largely upon the type and quality of the HDMI display device used. For instance, some video projectors just look better than others.
- **Distance between the DA sources and the display** – This plays a major role in the final result. Long distances are possible, but special measures should be taken in order to avoid signal loss. These include using high quality cables. Line amplifiers or the use of signal extension products may also be necessary for the longest runs.
- **Input/Output connection cables** – Low quality cables are susceptible to interference. They degrade signal quality due to poor matching and can cause elevated noise levels. Cables should be of the best quality.
- **Interference from nearby electrical devices** – These can have an adverse effect on signal quality. For example, an older computer monitor often emits very high electromagnetic fields that can interfere with the performance of video equipment in its proximity.

2.0 SPECIFICATIONS:

| | |
|--|--|
| Video Inputs | |
| 1T-SX-632 1T-SX-634 | 2x Type A HDMI Female 4x Type A HDMI Female |
| Video Outputs | |
| 1T-SX-632 1T-SX-634 | 1x Type A HDMI Female 1x Type A HDMI Female |
| General | |
| Video Bandwidth Color Depth Compliance Signal Enhancement | 2.25Gbps (Single Link) 10/12 bit Color Depth Display HDMI V1.3, HDCP V1.1, DVI V1.0 Switchable On/Off |
| Supported Video | |
| Input Format Input Signal Types | HDMI Version 1.3 HDMI (plus PC Video to WUXGA) |
| Supported Audio | |
| Embedded Audio | HD-Audio, including Dolby® TrueHD & DTS-HD |
| Device Control | |
| Local Control Remote Control | Front Panel via Push Button Switches Infrared and RS-232 via DB-9 Connector |
| Warranty | |
| Limited Warranty | 3 Years Parts and Labor |
| Mechanical | |
| 1T-SX-632 & 1T-SX-634 (H-W-D) 1T-SX-632 & 1T-SX-634 Weight | 30 x 200 x 89mm (1.2" x 7.9 x 3.5") 850g (1.87lbs) |
| Environmental | |
| Operating Temperature Operating Humidity | 0° to +50°C (+32° to +122°F) 10% to 90%, Non-condensing |
| Storage Temperature Storage Humidity | -10° to +50°C (+14° to +122°F) 10% to 90%, Non-condensing |
| Power Requirement | |
| External Power Supply | 5VDC@2.6A, twist lock connector |
| Regulatory Approvals | |
| HDMI Switch | FCC, CE, RoHS |
| Power Supply | UL, CUL, CE, PSE, GS, RoHS |
| Accessories Included | |
| 1x AC Power Adapter | US, UK and Euro |
| 1x Infrared Remote Control 1x Instruction Manual | |
| Optional Accessories | |
| Rackmount Kit | RM-230 Single/Dual |

3.0 CHECKING PACKAGE CONTENTS

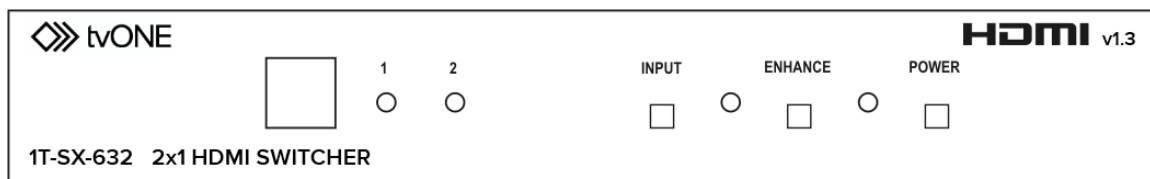
Before attempting to use this unit, please check the packaging and make certain the following items are contained in the shipping carton:

- 1x 1T-SX-632 or 1T-SX-634 HDMI Switcher
- 1x 100-240VAC to 5VDC Power Adapter
- 1x Instruction Manual
- 1x Infrared Remote Control

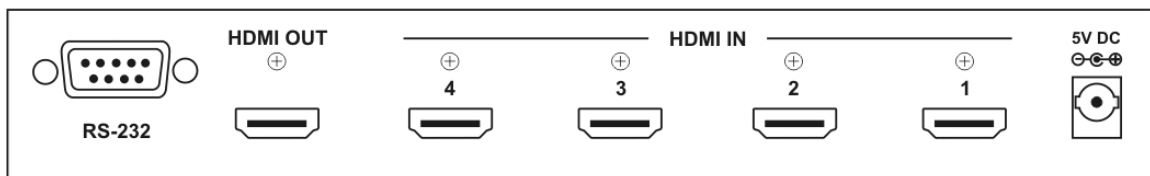
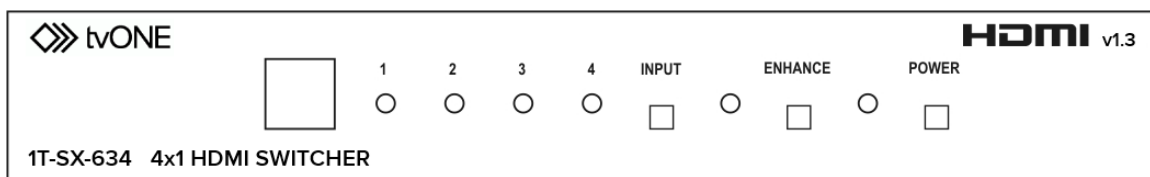
NOTE: Please retain the original packing material should the need ever arise to return the unit. If you find any items are missing, contact your reseller or tvONE immediately. Have the Model Number, Serial Number and Invoice available for reference when you call.

4.0 CONNECTING THE HARDWARE

Connect the HDMI Video Sources to the inputs of the 1T-SX-632 or 1T-SX-634 HDMI switcher, connect its output to a HDMI Compliant monitor and lastly connect the AC to DC Power Adapter. The drawings below show the locations of the inputs, output, power switch and power connector.



1T-SX-632 HDMI Switcher



1T-SX-634 HDMI Switcher

4.1 Connecting the Inputs to the 1T-SX-632 or 1T-SX-634

You can connect any HDMI compliant device's output to any of the HDMI inputs. Make certain that the HDMI cable is securely plugged into the source device as well as the HDMI Switcher. Always use a high quality cable, as short a length as possible, for best results.

4.2 Connecting the 1T-SX-632 or 1T-SX-634 Output

Using a high quality HDMI cable, connect the output of the HDMI Switcher to an HDMI compliant display device. Use the shortest cable run possible.

4.3 Connecting Power to the 1T-SX-632 or 1T-SX-634

Both units are shipped with a Power Adapter to convert 100-240VAC@50-60Hz to 5VDC. Connect the DC Output Cable from the Power Adapter to the back of the unit and then plug the Power Adapter into an AC Receptacle. You will be able to turn the HDMI Switchers "On" via either the front panel power switch, the power switch on the Infrared remote control or via RS-232 commands.

4.4 Using the Positive Cable Securing Feature

If HDMI cables are used that are equipped with Locking type connectors, an added step is necessary. Remove the Philips head screws from the rear of the unit just above the HDMI connectors and replace them with the Hex Nut/Screws that came in the 1T-SX-632 or 1T-SX-634 accessory pack. After screwing these into the threaded holes vacated by the Philips head screws, the Hex Nut provides a threaded receptacle for the screw that is part of the locking HDMI connector on the cable. Plug in the cable's Locking HDMI connector and secure it to the unit with its integral screw. This fastens the cable to the unit and prevents its inadvertent removal.

4.5 Optional Rack Mount Kit

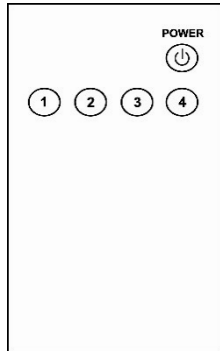
The 1T-SX-632 and 1T-SX 634 HDMI Switchers can be mounted in a standard 19" equipment rack. To mount the units, the optional RM-230 Rack Mount kit must be purchased. Using this kit, either type HDMI switcher can be mounted in the rack. It is also possible to mount one of each switcher in the rack using the dual rack mount capability. It is not necessary to mount two of the same type of switchers.

5.0 OPERATING THE HDMI SWITCHERS

The 1T-SX-632 and 1T-SX-624 HDMI Switchers can be operated via the front panel controls. If the cable run length is excessive and the quality of the display is less than optimum, you can press the Enhance switch on the front panel which will turn on a low noise amplifier within the switcher and light an LED indicating that the amplifier is in use. Provided there is enough signal for the amplifier to recover the HDMI bitstream, you will be able to use inputs and a display located farther apart than is normally possible. Another front panel control is the input select switch. This switch is pressed to select the desired

input. Each time the switch is pressed, the next input in sequence (from left to right) is selected. LED displays indicate which input is active. Finally, there is an On/Off Power Switch and an indicator LED that shows when the unit is turned on.

5.1 Operation of the 1T-SX-632 or 1T-SX-634 via Remote Control



Operation of the HDMI Switchers is possible via an included Infrared Remote Control. Selection of Enhance mode is not possible from the IR Remote however the unit can be turned on and off and the inputs can be selected simply by pressing the appropriate button on the remote.

NOTE: When you unpack either HDMI Switcher, you may have to remove an insulator from the battery compartment of the remote in order for the remote to receive power. The battery compartment slides out from the bottom of the unit.

5.2 Operation of the 1T-SX-632 or 1T-SX-634 via RS-232 Machine Control

Operation using RS-232 protocols is possible for either HDMI Switcher. The technical information needed is provided in the two charts which follow but if you are not technically inclined, seek help from an appropriately trained individual since cables will have to be constructed and programs written to use the RS-232 capabilities.

5.2.1 Connector Pin Outs

| HDMI Switcher | | | Controller | |
|---------------|------------|---|------------|------------|
| Pin Number | Definition | | Pin Number | Definition |
| 1 | NC | | 1 | NC |
| 2 | Tx | → | 2 | Rx |
| 3 | Rx | ← | 3 | Tx |
| 4 | NC | | 4 | NC |
| 5 | GND | | 5 | GND |
| 6 | NC | | 6 | NC |
| 7 | NC | | 7 | NC |
| 8 | NC | | 8 | NC |
| 9 | NC | | 9 | NC |

5.2.2 Communications Protocol

Baud Rate: 9600 bps
 Data Structure: 8 Bits
 Parity: None
 Stop Bit: 1 bit
 Flow Control: None

5.2.3 Command Set

This table contains the command set that is available for control of the 1T-SX-632 and 1T-SX-634. You should adhere to this structure when controlling the unit via a computer or a hardwired controller.

| Command | Action |
|-----------|------------------------|
| "1" + "1" | Port 1 On |
| "1" + "2" | Port 2 On |
| "1" + "3" | Port 3 On |
| "1" + "4" | Port 4 On |
| "S" + "1" | Enable Signal Enhance |
| "S" + "0" | Disable Signal Enhance |
| "P" + "1" | Power On |
| "P" + "0" | Power Off |

6.0 TROUBLESHOOTING

In the event of problems, first make certain that the input and output cables are no more than 50 feet long (for signals to 1080i resolution) and are of the highest possible quality. Next, make certain that the Switcher is receiving power.

If all is well in these areas, remember that HDMI devices communicate with one another so the source devices and destination device must be fully HDMI capable. In addition, HDCP encryption requires additional processing which also is dependent on the equipment you have connected to the sources and destination device. If you experience problems using the 1T-SX-632 or 1T-SX-634 HDMI Switcher, you should attempt to determine what is wrong by attaching each of the source devices – one at a time – directly to the destination device using the same cables you are using with the expanded system. This is a way of determining if the problem is due to bad cables or a problem with the other devices. If you are unable to obtain a signal using this simplified path, suspect the cables, the source device(s) or the destination device.

Note: It is strongly recommended that you use premium cables in order to achieve maximum distance cable runs and the best performance possible.

After trying the above suggestions should the problem still persist, contact your dealer for additional suggestions before contacting tvONE. Should the dealer's technical personnel be unable to assist you, contact tvONE 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

tvONE 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. tvONE branded products based on tvONE'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. tvONE products, other than those based on tvONE'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 tvONE.

Should a product, in tvONE's opinion, prove defective within this warranty period, tvONE, at its option, will repair or replace this product without charge. Any defective parts replaced become the property of tvONE. 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 tvONE and return the product to a location designated by tvONE, 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 the stated number of years from the date of purchase. tvONE assumes no liability to distributors, resellers or end-users or any third parties for any loss of use, revenue or profit.

tvONE 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 tvONE with respect to any defective products will be limited to the repair or replacement of such products. In no event shall tvONE 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-SX-632 and 1T-SX-634 HDMI Switcher products have 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 tvONE at the appropriate location shown below.

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