



1T-CT-653 Transmitter



1T-CT-654 Receiver

Instruction Manual

1T-CT-653/1T-CT-654
HDMI over Single Cat.5e/Cat.6
With LAN/RS-232



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1.0 INTRODUCTION

Thanks for purchasing this HDMI over Single Cat.5e or Cat.6 product from TV One. The product group consists of a 1T-CT-653 Transmitter coupled with a 1T-CT-654 Receiver which employs HDMI v1.4 capability and the HDBaseT  5Play™ technology to allow transmission of uncompressed, 1080p high definition television signals over a single Cat.5e or Cat.6 cable (this is the type cable typically employed for Ethernet computer networks). HDMI v1.4 signals - including 3D and 4K x 2K formats - are supported and the system will also allow DVI signal transmission with appropriate DVI to HDMI Cable adapters. In addition, embedded 7.1CH LPCM, Dolby TrueHD and DTS-HD Master Audio capability is standard. The 1T-CT-653/1T-CT-654 system can achieve signal distribution distances of up to 100 meters (325 feet) for uncompressed 1080p signals without signal degradation. Control of the system can be accomplished via Ethernet, Infrared or RS-232 and POH (Power Over HDBaseT) technology is employed to allow powering of the Receiver from the Transmitter, negating the need for a separate power supply for that unit.

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.

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1.2 Features

The 1T-CT-653/1T-CT-654 HDMI Over Single Cat.5e/Cat.6 systems have many features that enable them to perform in a superior manner. Among these features you will find:

- Resolutions to WUXGA @ 48bits or 4K x 2K
- Uncompressed signal distribution to 100 meters (325 feet)
- Uses HDBaseT performance enhancing technology *
- Supports Embedded HDMI Lossless Digital Audio
- Compliant with HDMI v1.4a, HDCP 1.1 and DVI 1.0 specifications
- Uses a single Cat.5e/Cat.6 Ethernet cable via RJ45 connectors
- Output resolution follows input
- Bi-directional Infrared remote control extension support
- Bi-directional RS-232 remote control
- Bi-directional Ethernet support
- POH (Power Over HDBaseT) capability for receiver

*  technology provides a methodology to distribute uncompressed video plus embedded audio at a bit rate of up to 10.2 Gbps over distances of up to 100 meters (325 ft.) via a single Cat.5e or Cat.6 cable. Video, Audio, 100Mbps Ethernet and up to 100 Watts of power can be placed on a single Cat.5e or Cat.6 cable connecting the transmitter and receiver units and the individual transmitter/receiver pairs can be cascaded up to eight times to yield a total transmission distance of 800 meters (2600 ft.).

NOTE: *Not all HDBaseT products will support all of the features listed.*

2.0 SPECIFICATIONS

Video I/O	
1T-CT-653 Tx-HDMI Input	1x via HDMI Connector
1T-CT-654 Rx-HDMI Output	1x via HDMI Connector
Cat.5e/Cat.6 Cable I/O	
1T-CT-653 Tx – Cat.5e/Cat.6 Output	1x via RJ45 Connector
1T-CT-654 Rx – Cat.5e/Cat.6 Input	1x via RJ45 Connector
Additional I/O	
Connectors (each unit)	1x RJ-45 LAN, 2x 3.5mm mini-jack (Infrared) 1x DB-9 (RS-232)
Supported Signals & Protocols	
Industry Standards	HDMI v1.4a (3D, 4K x 2K), HDCP, DVI 1.0, Infrared, RS-232 plus LAN
Video Performance	
Maximum Resolution	Up to 1080p@60Hz/48bit or 4K x 2K@24Hz
Audio Support	
Formats Supported	7.1CH, Dolby TrueHD, DTS-HD Master Audio
HDBaseT Support	
Maximum Bandwidth	Uncompressed Video/Audio to 10.2Gbps
Maximum Range	
One 1T-CT-653/654 Tx/Rx System	100m (325 ft.)
Environmental	
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
Warranty	
Limited Warranty	3 Years Parts and Labor
Regulatory Approvals	
Encoder/Decoder Unit	FCC, CE, RoHS
Power Supply	UL, CUL, CE, PSE, GS, RoHS
Cable Requirements (T/R)	
Ethernet Cable, Twisted Pair	Highest Quality Single Cat.5e or Cat.6 cable
Mechanical (H-W-D)	
1T-CT-653 Transmitter	25x102x113mm (0.98x4.0x4.45")
1T-CT-654 Receiver	25x102x107mm (0.98x4.0x4.21")
Weight	
1T-CT-653 Transmitter	252g (0.55 lbs.)
1T-CT-654 Receiver	256g (0.56 lbs.)
Power Requirement	
External Power Supply	1x 24VDC@1.25A, DC
Accessories Included	
1x Power Adapter	US, UK or Euro
1x User Manual	
1x IR Transmitter or Receiver	
Model Numbers	
1T-CT-653	HDMI Over Single Cat.5e/Cat.6 Transmitter
1T-CT-654	HDMI Over Single Cat.5e/Cat.6 Receiver

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 Transmitter (1T-CT-653) or Receiver (1T-CT-654) unit
- 1x Power Adapter
- 1x IR Transmitter Device (with 1T-CT-653) or
- 1x IR Receiver Device (with 1T-CT-654)
- 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, 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 HDMI signal input and output, Cat.5e/Cat.6 cable and power requirements.

Note: The resolution capability of the remotely located display devices must be capable of displaying the output of the source device. Before using the extender system, verify that the display device on the receiving end can support the output resolution and signal format by connecting it directly to the source device.

4.2 1T-CT-653 Transmitter



1. Connect the HDMI source device's output to the HDMI IN connector of the 1T-CT-653 Transmitter, using an appropriate HDMI cable, (1 Meter (~3') in length for 12 bit signals, 15 meters (~45') for 8 bit signals).
2. (OPTIONAL) If there is an IR controllable device on the 1T-CT-653 side that you wish to control remotely from the 1T-CT-654 side, connect the IR Transmitter device to the IR Tx connector on the 1T-CT-653. If there is an IR controllable device on the 1T-CT-654 side that you wish to control remotely from the 1T-CT-653 side, connect the IR Receiver device to the IR Rx connector on the 1T-CT-653.
3. Connect the Cat.5e or Cat.6 cable to the transmitter via the RJ45 connector. Ensure that the RJ45 connector achieves a positive lock into the transmitter's connector.
4. If using the RS-232 control feature, connect the RS-232 device to the 1T-CT-653 via the DB-9 connector.
5. If you wish to transmit Ethernet signals between the 1T-CT-653 and 1T-CT-654, connect an Ethernet cable/device via the RJ-45 LAN connector.
6. Connect the AC power adapter's DC power connector to the 1T-CT-653 Transmitter.

4.3 1T-CT-654 Receiver



1. At the remote location, connect the Cat.5e/Cat.6 cable to the Receiver's RJ45 connector. Ensure that the connector achieves a positive lock into the receiver's connector.
2. (OPTIONAL) If there is an IR controllable device on the 1T-CT-654 side that you wish to control remotely from the 1T-CT-653 side, connect the IR Transmitter device to the IR Tx connector on the 1T-CT-654. If there is an IR controllable device on the 1T-CT-653 side that you wish to control remotely from the 1T-CT-654 side, connect the IR Receiver device to the IR Rx connector on the 1T-CT-654.
3. Connect the HDMI connector of the Receiver to the HDMI input of the remote display or other device, using an appropriate cable, (1 Meter (~3') in length for 12 bit signals, 15 meters (~45') for 8 bit signals).
4. If using the RS-232 control feature, connect the RS-232 device to the 1T-CT-654 via the DB-9 connector.
5. If you wish to transmit Ethernet signals between the 1T-CT-653 and 1T-CT-654, connect an Ethernet cable/device via the RJ-45 LAN connector.
6. Turn on the source device and remote display. Observe the Link LEDs on the Transmitter and the Receiver. Both should be lighted.

Note: It's important that you verify that the HDMI source functions properly directly with the HDMI display device before you attempt to use the system components to extend the signal distribution distance. Failure to do this introduces an unwanted variable that would then have to be resolved should the system not function as expected.

4.4 RS-232 Cable Guide

To assist the user in fabricating the RS-232 cables used with external devices, the following chart is provided showing the pin-outs used for the RS-232 DB-9 connector.

DB-9 Connector Pin Number	Connectivity
1	N/C
2	TxD/RxD
3	RxD/TxD
4	N/C
5	Ground
6	N/C
7	N/C
8	N/C
9	N/C

5.0 OPERATING THE UNITS

Once the connections have been made and power applied as explained above, there are no operational adjustments required. It is recommended however that the power on sequence be as follows: HDMI destination device, HDMI Over Cat.5e/Cat.6 Transmitter, and HDMI source – in that order.

6.0 TROUBLESHOOTING

Other than faulty cables, a non-functional power supply source for the receiver or transmitter, or attempting to use the product over too great a distance, there are seldom problems with these products.

If there is no image present at the remote location, connect the display device directly to the source to make certain that the problem is not in the display or signal source. If an image is present under those circumstances, make certain the transmitter(s) and receiver(s) are receiving power. Next make certain your Cat.5e/Cat.6 cable is defect free and securely attached at both ends. Also make certain that the HDMI connectors are securely attached at both ends. 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-CT-653 and 1T-CT-654 HDMI Over Cat.5e/Cat.6 cable 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 TV One at the appropriate location shown below.

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