



# Instruction Manual

**1T-CT-520 Series  
DVI-D+Audio to CAT.5 Extenders**



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## **1.0 INTRODUCTION**

Thanks for purchasing this Cat.5 Extender Product from TV One. The 1T-CT-520 Series product is a system for transmission of DVI-D video plus either S/DPDIF or analog stereo signals over cables normally used for Ethernet transmission. Video resolutions up to 1920x1200 and 1080p can be realized over Cat.5/5E or Cat.6 cable at great distances. The 1T-CT-521 Transmitter used in conjunction with the 1T-CT-524 Receiver can achieve distances up to 100 meters (325 feet), while use of the 1T-CT-528 Receiver can support distances up to 250 meters (800 feet). Both Receivers provide Gain and Equalization adjustments resulting in excellent picture quality. The unique TV One-task locking power connectors are used to enhance overall system security.

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 recognized. 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**

The 1T-CT-520 Series DVI-D+Audio to CAT.5 Extender Systems have many features that enable them to perform in a superior manner. Among those features you will find:

- Resolutions to 1920x1200, 1080p @ 50/60Hz
- Long Transmission Distance
- 1T-CT-524 provides up to 100 meters (325 feet)
- 1T-CT-528 provides up to 250 meters (800 feet)
- Includes either S/PDIF or Stereo Audio
- Built in EDID at Transmitter
- Gain and EQ Adjustments
- Normal operation requires 1x Cat.5, 5E or 6 Cable
- Locking power supply for security

### **1.2 1T-CT-521 Transmitter Features**

- Compliant with DVI 1.0 specifications
- EDID Capability
- Supports CAT-5/CAT-5E/CAT-6 cables of variable lengths
- Supports high definition input up to 1080P, output resolution follows input
- Data Stream includes either S/PDIF or Stereo audio

### **1.3 1T-CT-524 and 1T-CT-528 Receiver Features**

- Compliant with DVI 1.0 specifications
- Supports CAT-5/CAT-5E/CAT-6 cables of variable lengths
- Supports High Definition input up to 1080P, output resolution follows input
- 1T-CT-524 extends signal path to 100 Meters (325 Feet)
- 1T-CT-528 extends signal path to 250 Meters (800 Feet)
- Integrated Gain and Equalization Controls provided for both models
- Data Stream includes S/PDIF or Stereo audio

## 2.0 SPECIFICATIONS

<b>Video I/O</b>	
1T-CT-521 Tx-DVI-D In	1x via DVI-I Connector
1T-CT-524, 528 Rx-DVI-D Out	1x via DVI-I Connector
<b>Audio I/O</b>	
All Units	1x S/PDIF Coax, 1x 3.5mm Analog Stereo
<b>UTP Outputs I/O</b>	
1T-CT-521 Tx – UTP Out	1x via RJ-45
1T-CT-524, 528 Rx – UTP In	1x via RJ-45
<b>UTP Structure</b>	
Video UTP Connector	DVI-D Video/Audio Signal
<b>Video Performance</b>	
Maximum Resolution	Up to 1920x1200, 1080p/60Hz
Video Bandwidth	1.65Gbps
<b>Adjustments</b>	
1T-CT-524, 528	Equalization and Gain
<b>Maximum Range</b>	
1T-CT-524	100 meters (325 ft)
1T-CT-528	250 meters (800 ft)
<b>Environmental</b>	
Operating Temperature	0° to +50° C (+32° to +122° F)
Operating Humidity	10% to 90%, Non-condensing
Storage Temperature	-10° to +70° C (12° to +158° F)
Storage Humidity	10% to 90%, Non-condensing
<b>Warranty</b>	
Limited Warranty	2 Years Parts and Labor
<b>Regulatory Approvals</b>	
Encoder/Decoder Unit	FCC, CE, RoHS
Power Supply	UL, CUL, CE, PSE, GS, RoHS
<b>Cable Requirements</b>	
CAT.5/5E or CAT 6	Network Grade, Premium
<b>Mechanical (H-W-D)</b>	
All Models	30x123x125mm(1.18x4.84x”4.92)
<b>Weight</b>	
All Models	700g (1.54 lbs)
<b>Power Requirement</b>	
External Power Supply	5 VDC@2A, Locking DC
<b>Accessories Included</b>	
1x Power Adapter	US, UK or Euro
1x User Manual	
<b>Model Numbers</b>	
1T-CT-521	Transmitter
1T-CT-524	Receiver – Up to 100m (325 ft)
1T-CT-528	Receiver – Up to 250m (800 ft)

### 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 or Receiver unit
- 1x Power Adapter
- 1x Operations Manual

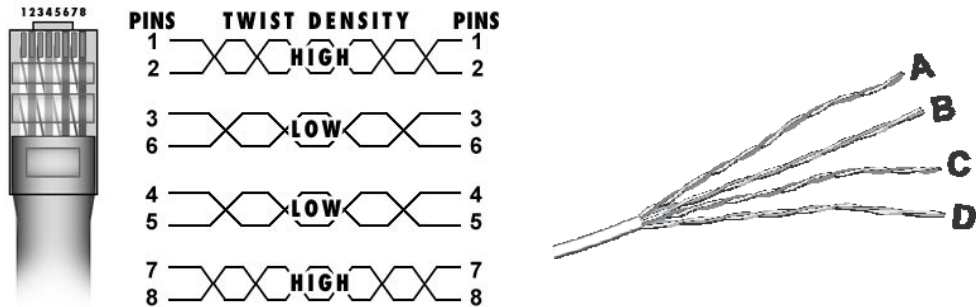
**Note:** Please retain the original packing material should the need ever arise to return the unit. If you find any items are missing, contact your reseller or TV One immediately. Have the Model and Serial Number and Invoice available for reference when you call.

### 4.0 CONNECTING THE HARDWARE

Please study the panel drawings below and become familiar with the signal input, outputs, power requirements/inputs plus any controls present. *Note: The resolution capability of the remotely located display devices must be capable of displaying the output of the source device. Before connecting the CAT.5 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.*

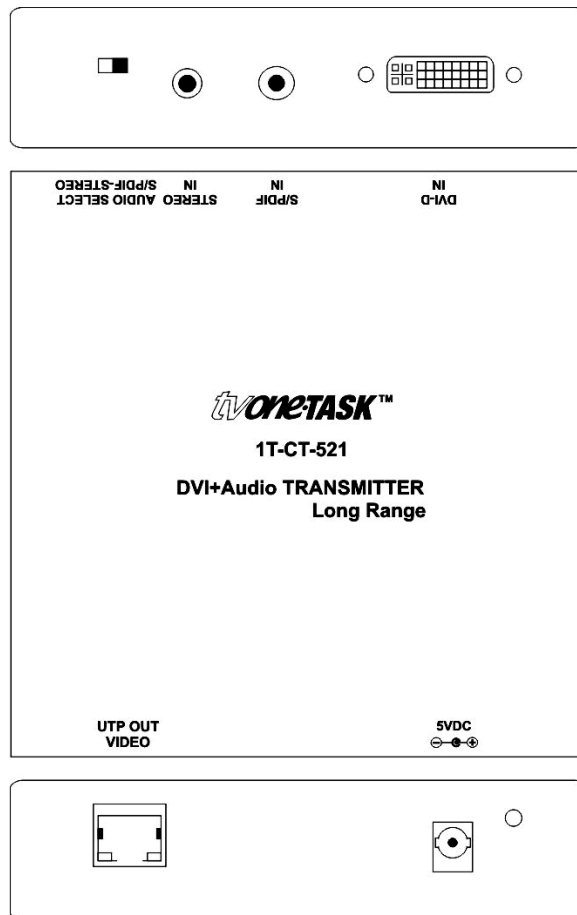
#### 4.1 Cat.5/5E/6 Cable Notes

**Pins and pairing.** Make sure the CAT5/5E/6 cable pin assignments are standard. The correct pairing is straight through, pin-to-pin, with pairing as follows.



**Twist density.** UTP cable pairs have different twist densities (twist pitches). There are two pairs with high density twist and two pairs with low density. Colors vary by manufacturer. Twist densities can be seen by stripping off about 10 cm (4') of insulation and visually inspecting. Pairs 1-2 and 7-8 should be assigned to high density twists. Failure to assign correct twist densities can result in image jitter. The ABCD picture shows typical UTP cable, with pairs A and C showing a high pitch twist (assigned to pin pairs 1-2 & 7-8), and B and D with low pitch twist (assigned to pin pairs 3-6 & 4-5).

## 4.2 1T-CT-521 Transmitter



Connect the DVI-D source device's output to the DVI-I IN connector of the 1T-CT-521 Transmitter, using the appropriate DVI cable. Then connect either an S/PDIF audio signal or an analog Stereo audio signal to the appropriate connector.

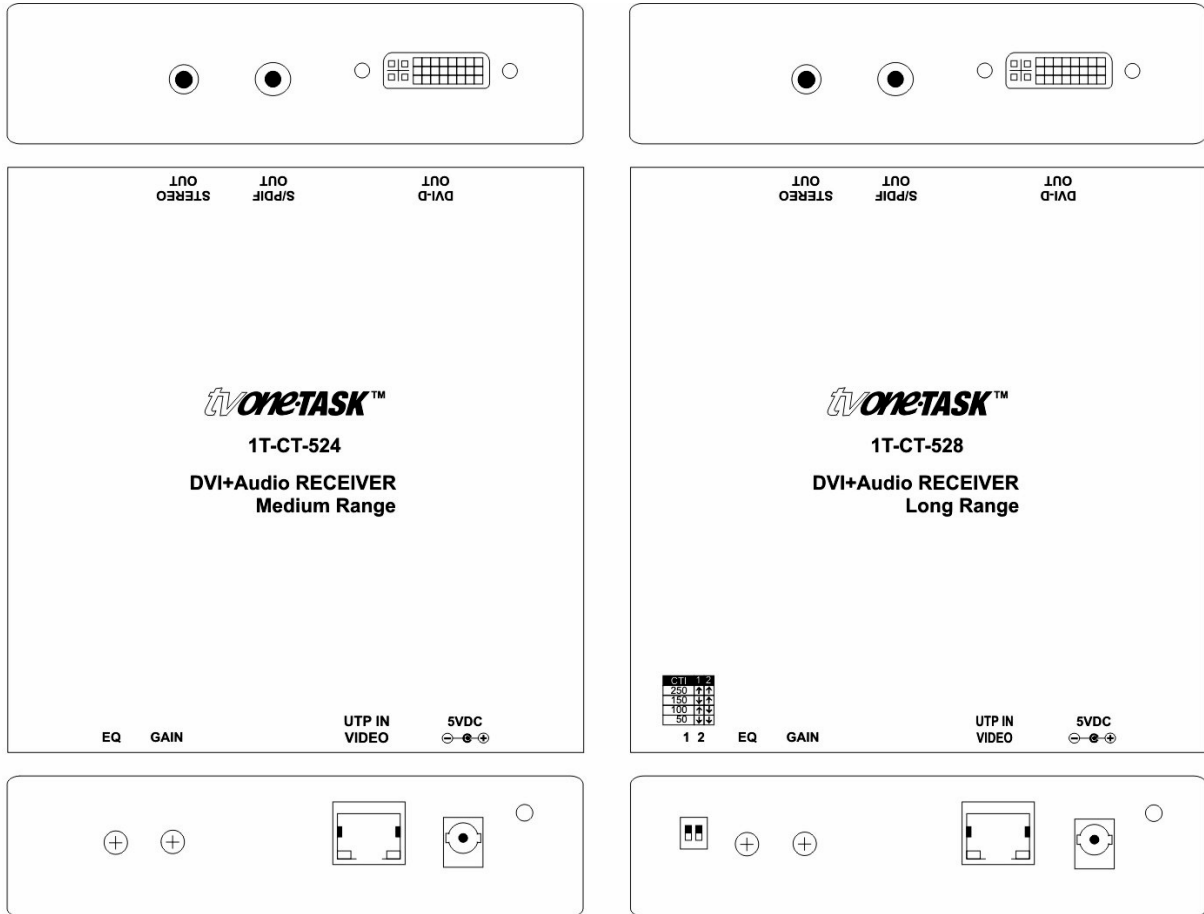
1. Connect a Cat.5/5E or Cat.6 cable to the VIDEO UTP output connector of the Transmitter. Defer connecting the AC adapter until the Cat.5/Cat.6 cables are connected to both the Transmitter and the Receiver.
2. Select the proper Audio type on the S/PDIF/Stereo switch located on the side of the same end of the transmitter where the audio input connectors are located.

*Note: Other than the audio select switch, there are no user controls provided on the 1T-CT-521 Transmitter. It's important that you verify that the DVI-D source functions properly with the DVI-D display device before you attempt to use the extender system by connecting the two devices directly using a fully functional DVI-D. Failure*



to do this would introduce an unwanted variable that will have to be resolved should the system not function as expected.

## 4.2 1T-CT-524 and 1T-CT-528 Receivers



*Note: If the CAT.5/Cat.6 cables runs are equal to or less than 100 Meters (325 Feet), you can use either the 1T-CT-524 or 1T-CT-528 Receiver to complete the system. If the cable runs are between 100 Meters (325 Feet) and 250 Meters (800 Feet), you must use the 1T-CT-528 Receiver.*

1. At the remote location, connect the Cat.5/5E or Cat.6 cable to the UTP VIDEO IN connector of the Receiver.
2. Connect the DVI-I connector of the Receiver to the DVI-D input of the remote display or other device, using the appropriate cable.
3. Connect the appropriate audio cable to the receiver and then to the audio amplifier input or the audio input on the display device.
4. Connect the supplied AC adapters first to the Transmitter and Receiver and then to the AC sockets.

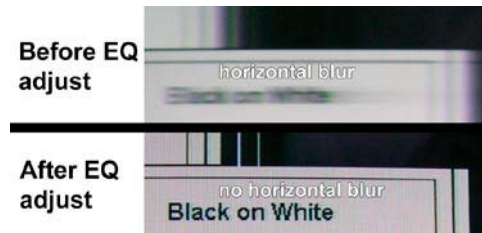
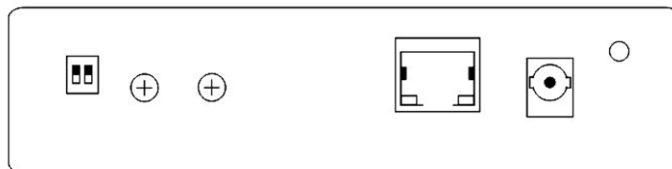
5. Lastly, turn on the source device and remote display. The source signal should now appear on the remotely located display. If not, consult the Troubleshooting section of this manual.

## 5.0 OPERATING THE UNITS

Once the connections have been made and power applied, there is little in the way of operational adjustments required however, all Receivers have Equalization and Gain adjustments which may be adjusted to improve the appearance of the video signal. Normally adjustment is not required on shorter cable runs but receivers located at the end of cable runs near the limit of specified range may need small adjustments of the Equalization or Gain controls or both.

### 5.1 Equalization and Gain Adjustments

On all Receiver models, locate the EQ (Equalization) and GAIN adjustments on the side of the Receiver. The EQ control, is on the left and the Gain Control is next to it, to the right.



On long cable runs, the high frequency detail can be lost resulting in a “soft” looking picture. This will first show up in text where the characters will lose their sharp edges.

Adjust the EQ can sharpen the image. While viewing an image on a display connected to the Receiver, insert a small screwdriver into the EQ adjustment on the side panel of the Receiver. Rotate gently until the best EQ setting, as determined by image clarity, is achieved. Next, insert the screwdriver into the GAIN adjustment, and rotate gently until the best Gain setting, as determined by the brightness of the image is achieved. You may notice an increase in video noise (sometimes called “snow”) in the picture at higher gain settings so a compromise will have to be found if the cable run is at or near the maximum length. EQ and GAIN settings are retained by the Receiver. On the 1T-CT-528 Receiver, the longer range capability of this unit can be equalized using the controls described above plus the use of the two DIP switches provided. Set the DIP switches to the approximately cable length being utilized and then adjust the EQ and Gain controls for best picture. If the EQ and/or Gain controls appear to be at or near their range limit, select another combination of switches from the DIP switch array.

## 6.0 TROUBLESHOOTING

Other than faulty Cat.5/Cat.6 cables or attempting to use the product over too great a distance, there are seldom problems with these Video Extender 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. If an image is present under those

circumstances, make certain the transmitter and receiver(s) are receiving power. Next make certain your Cat.5/5E/6 cable is defect free and the RJ-45 connectors are securely attached to the cable 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**

LIMITED WARRANTY – With the exceptions noted in the next paragraph, TV One warrants the original purchaser that the equipment it manufactures or sells will be free from defects in materials and workmanship for a period of two years from the date of purchase. Should this 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.

Items integrated into TV One products that are made by other manufacturers, notably computer hard drives and liquid crystal display panels, are limited to the term of the warranty offered by the respective manufacturers. Such specific warranties are available upon request to TV One.

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-520 Series DVI-D+Audio Extender 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.

### **TV One USA**

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