



# User Manual

## TL-FO2-HDC

300m Fiber Optic Extender Set for HDMI, RS232 & IR



**All Rights Reserved**

Version: TL-FO2-HDC\_170912

## Preface

Read this user manual carefully before using this product. Pictures shown in this manual are for reference only; the actual product may vary.

This manual is only for operation instruction only and not for any maintenance or repair.

## Trademarks

Product model and logo are trademarked. Any other trademarks mentioned in this manual are acknowledged as the properties of the trademark owner. No part of this publication may be copied or reproduced without prior written consent.

## FCC Statement

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. It has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a commercial installation.

Operation of this equipment in a residential area is likely to cause interference, in which case the user at their own expense will be required to take whatever measures may be necessary to correct the interference.

Any changes or modifications not expressly approved by the manufacture would void the user's authority to operate the equipment.



## SAFETY PRECAUTIONS

To insure proper operation, please read all instructions carefully before using the device. Save this manual for further reference.

- Unpack the equipment carefully and save the original box and packing material for possible future shipment
- Follow basic safety precautions to reduce the risk of fire, electrical shock and injury to persons.
- Do not dismantle the housing or modify the module. It may result in electrical shock or burn.
- Using supplies or parts not meeting the products' specifications may cause damage, deterioration or malfunction.
- Refer all servicing to qualified service personnel.
- To prevent fire or shock hazard, do not expose the unit to rain, moisture or install this product near water.
- Do not remove the housing of the device, as opening or removing housing may expose you to dangerous voltage or other hazards.
- Install the device in a place with adequate ventilation to avoid damage caused by overheating.
- Keep the device away from liquids.
- Spillage into the housing may result in fire, electrical shock, or equipment damage. If an object or liquid falls or spills on to the housing, unplug the device immediately.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.
- Unplug the power cord when left unused for a long period of time.
- If disposing of the unit, do not burn or mix with general household waste. The device must be disposed of per local regulations for electronic recycling.

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# 1. Introduction

## 1.1 Introduction to TL-FO2-HDC

The TechLogix TL-FO2-HDC is an HDMI extender set with HDCP 2.2 compatibility, which offers the distribution of compressed UHD video, audio, and either RS232 or IR up to 300m/984ft over fiber optic cable. In addition to 4K/60 video with multichannel audio, the TL-FO2-HDC supports HDR, RGB, and YCbCr 4:4:4 color spaces. When the video signal bandwidth exceeds 9 Gpbs, the video scaling processor will dynamically scale the content for a visually lossless viewing experience. The TL-FO2-HDC features bi-directional RS232 or IR ports for controlling of AV devices. Sources and displays can be controlled from either the transmitter or receiver end using either RS232 or IR signals. The TL-FO2-HDC supports multi-mode duplex fiber up to 300m/1000ft, which is immune to RF and EM interference.

## 1.2 Features

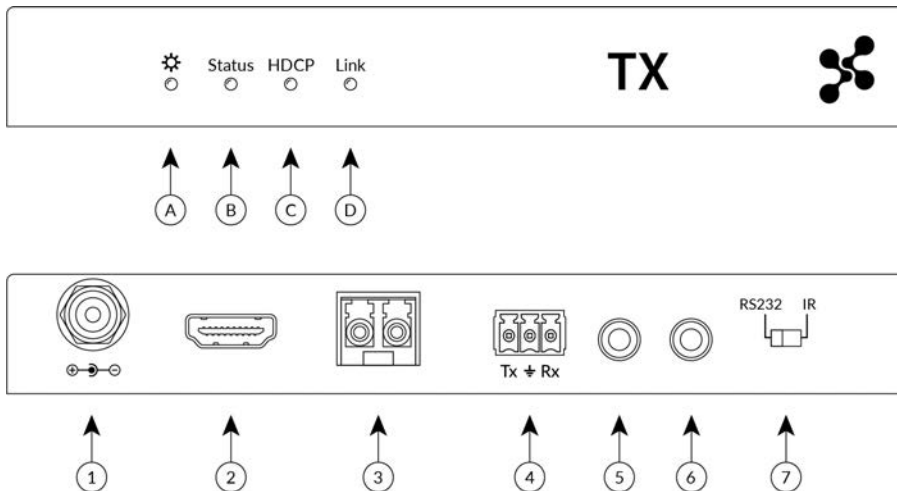
- Transmit HDMI and control up to 984 ft. (300m) over multimode fiber optic cabling
- Supports bi-directional IR or RS232 (selectable via dip switch)
- Supports full 18G 4K@60 4:4:4 8 bit HDMI
- Supports multichannel audio including 7.1 DTS Master HD and Dolby TrueHD
- HDMI 2.0, HDCP 2.2 and HDR compatible
- Swappable SFP+ module for longer distance applications
- Requires duplex fiber (two strands) with LC connectors

## 1.3 Package Contents

- 1 x TL-FO2-HDC Transmitter (with 10 Gbit/s MM SFP+ module)
- 1 x TL-FO2-HDC Receiver (with 10 Gbit/s MM SFP+ module)
- 2 x Power Adapter (DC 12V 0.5A)
- 2 x Phoenix Male Connector (3.5mm 3 Pin)
- 2 x IR Emitter Cables
- 2 x IR Broadband Receiver Cables
- 4 x Mounting Brackets


## 2. Panel Description

### 2.1 Transmitter

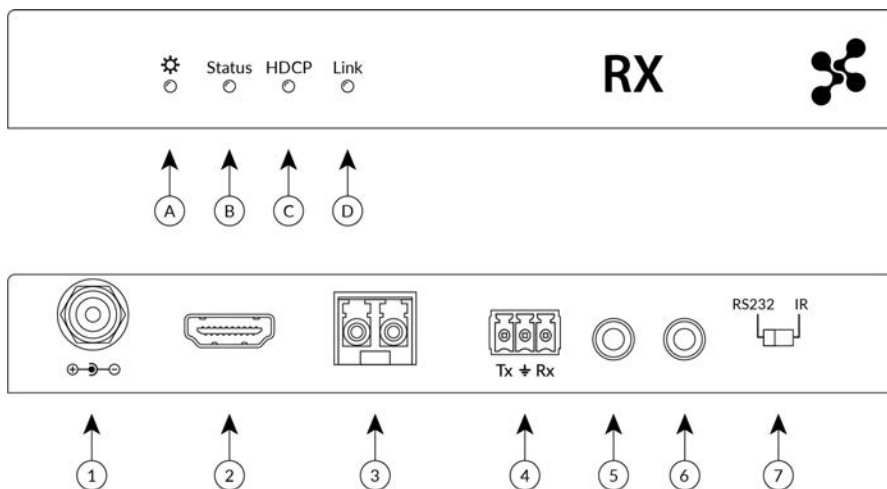


No.	Name	Description
A	Power	OFF: Powered off ON: Powered on
B	Status	OFF: Transmitter is not working properly FLASHING: Transmitter is working properly
C	HDCP	OFF: No HDMI signal FLASHING: Non-encrypted video is being transmitted ON: Encrypted video is being transmitted
D	Link	OFF or FLASHING: Link to the receiver has not been established ON: Link to the receiver has been established
1	12V DC	Connect to the power supply
2	HDMI IN	Connect to an HDMI source

3	OPTICAL OUT	Connect to the OPTICAL IN socket on the receiver via a duplex multi-mode cable
4	RS232	RS232 control connector
5	IR IN	Connects to a 5V IR receiver (with carrier); signals transmitted to the remote receiver
6	IR OUT	Connects to a 5V IR emitter (with carrier); signals transmitted from the remote receiver
7	CONTROL SELECTOR	Switch between IR or RS232 control pass-through

 Pictures shown in this manual are only for reference.

## 2.2 Receiver



No.	Name	Description
A	Power	OFF: Powered off ON: Powered on
B	Status	OFF: Receiver is not working properly FLASHING: Receiver is working properly

C	HDCP	OFF: No HDMI signal FLASHING: Non-encrypted video is being received ON: Encrypted video is being received
D	Link	OFF or FLASHING: Link to the transmitter has not been established ON: Link to the transmitter has been established
1	12V DC	Connect to the power supply
2	HDMI OUT	Connect to an HDMI display
3	OPTICAL IN	Connect to the OPTICAL OUT socket on the transmitter via a duplex multi-mode cable
4	RS232	RS232 control connector
5	IR IN	Connects to a 5V IR receiver (with carrier); signals transmitted to the remote receiver
6	IR OUT	Connects to a 5V IR emitter (with carrier); signals transmitted from the remote receiver
7	CONTROL SELECTOR	Switch between IR or RS232 control pass-through

 Pictures shown in this manual are only for reference.



### 3. System Connection

1. Using quality HDMI cables, connect an HDMI source (such as Blu-ray, games console, satellite/cable TV, media server etc.) to HDMI IN of the TL-FO2-HDC transmitter (TX).
2. Connect a good quality, well-terminal fiber cable between the OPTICAL OUT of the TL-FO2-HDC transmitter (TX) to the OPTICAL IN Input of the TL-FO2-HDC receiver (RX).
3. Connect the HDMI display device (LED/LCD display or projector) to the HDMI OUT of the TL-FO2-HDC receiver (RX).
4. For two-way IR control of connected sources and displays from either location, first, connect IR Emitters to the IR OUT ports of the TL-FO2-HDC transmitter (TX) and TL-FO2-HDC receiver (RX), and then insert IR Receivers into the IR IN ports of the TL-FO2-HDC transmitter (TX) and TL-FO2-HDC receiver (RX).
5. Connect the included 12V power supplies to the TL-FO2-HDC transmitter (TX) and TL-FO2-HDC receiver (RX).

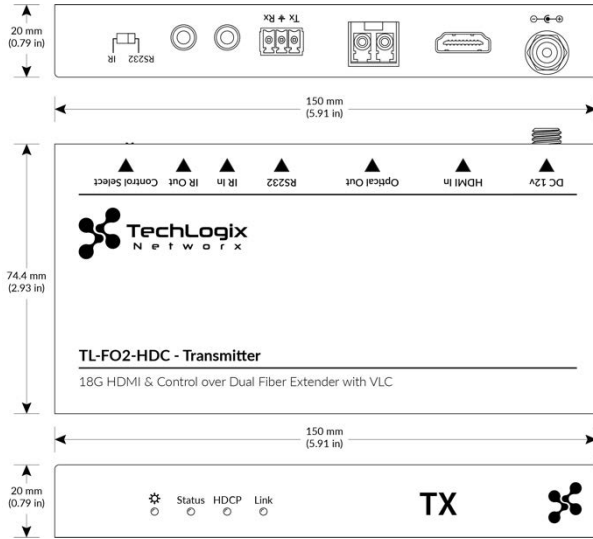
Check Power, Status, and HDCP & Link lights are illuminated on both units to indicate successful connection, with a lit HDCP light illustrating the presence of encryption within the signal. Power and Link are static lights. Status should be blinking.

## 4. Specification

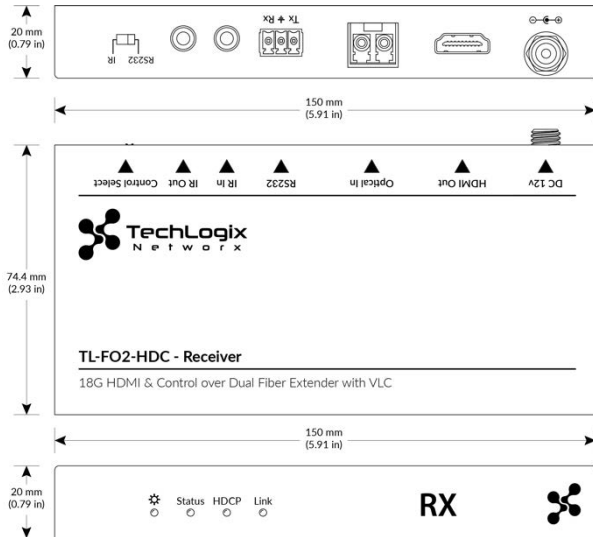
<b>Transmitter Input/Output</b>	
HDMI Input	1 HDMI Receptacle
Optical Output	2 LC Ports via SFP+ Module
IR Input/Output	2 3.5mm TRS Ports
RS232	1 3-pin Removable Terminal Block
12V DC	1 5.5mm OD/2.5mm ID Threaded Barrel Connector
Control Selector	1 2-position Switch
<b>Receiver Input/Output</b>	
HDMI Output	1 HDMI Receptacle
Optical Input	2 LC Ports via SFP+ Module
IR Input/Output	2 3.5mm TRS Ports
RS232	1 3-pin Removable Terminal Block
12V DC	1 5.5mm OD/2.5mm ID Threaded Barrel Connector
Control Selector	1 2-position Switch
<b>Supported Audio, Video, and Control</b>	
Compatible Video Signals	All SD, HD, and other resolutions up to - 4K/60 Hz / RGB and 4:4:4 8 bit (HDR) - 4K/60 Hz / 4:2:2 10 bit (HDR) - 4K/60 Hz / 4:2:0 10 bit (HDR)
Video Compliance	HDMI 2.0, HDMI 1.4, DVI 2.0 (Pixel clock up to 594 MHz)
Digital Content Protection	HDCP 1.2 / HDCP 2.2 Compatible
Embedded Audio	LPCM, Dolby Digital/Plus/EX, Dolby True HD, DTS, DTS-EX, DTS-96/24, DTS High Res, DTS-HD Master Audio, DSD
Supported RS232 Baud Rates	2400, 4800, 9600, 19200, 38400, 57600, 115200
Supported IR Carrier	33 to 55 kHz
<b>Fiber Optic Transmission Characteristics</b>	
Required Cable Type	Duplex OM3
Maximum Bandwidth	10 Gbps
Maximum Distance with Stock SFP+ Modules	300m (984 ft)

Signal Compression	1.8:1 Maximum; Compression starts when video signal >9 Gbps
<b>Chassis and Environmental</b>	
Product Construction	Painted aluminum
Product Dimensions (W*H*D)	150 mm (5.91 in) x 20 mm (0.79 in) x 74.4 mm (2.93 in)
Product Operational Chassis Temperature	35 to + 44°C (95 to + 111 °F)
Environmental Operating Temperature	0 to + 45°C (32 to + 113 °F)
Environmental Operating Humidity	10% to 90%, non-condensing
Environmental Storage Temperature	-20 to +70°C (-4 to + 158 °F)
Environmental Storage Humidity	10% to 90%, non-condensing
<b>Power and Regulatory</b>	
Power Input	12V DC
Power Supply Input	100-240V AC at 50/60 Hz; 0.5A Max
Power Supply Output	12V DC at 1 A
Maximum Power Consumption	6 watts
ESD Protection	Human-body Model: ±8kV Air-gap discharge and ±4kV Contact discharge
Regulatory Compliance	FCC, CE, RoHS, WEEE
<b>Other</b>	
Warranty	Three years
Diagnostic LEDs	Link, Status, HDCP and Power
Included Accessories	IR Receiver (2 ea), IR Transmitter (2 ea), Mounting Ears (4 ea), Rubber Feet (8 ea), 12V 1A DC Power Supply (2 ea), 3-pin 3.5mm Terminal Block (2 ea)

## 5. Panel Drawing



5-1 Transmitter



5-2 Receiver

## 6. Troubleshooting & Maintenance

- **No image on display:**
  - Ensure that the display device has been set to the correct input.
  - Ensure that the HDMI cables used for both the source/transmitter and the receiver/display are properly connected and are working. Test the HDMI cables directly from a source to display and ensure their operation.
  - Ensure that the fiber optic cable has not been damaged and that it has been terminated correctly on both ends. A temporary length of fiber optic cable can be used for testing to ensure that the devices are all compatible and working properly.
  - Ensure proper grounding of the power supply.
- **Color lost or poor picture quality:**
  - Ensure that the HDMI cables used for both the source and transmitter and the receiver and display are properly connected and are of good quality. Test the HDMI cables directly from a source to display and ensure their picture quality.
  - Ensure proper grounding of the power supply.
  - If the static becomes stronger or picture quality becomes worse when connecting the video connectors, this may be due to improper grounding.
  - Check the grounding and make sure all the components are properly grounded to a common ground. Improper grounding may cause damage to the receiver.

If your problem persists after following the above troubleshooting steps, please contact your authorized reseller or TechLogix technical support.

## 7. After-sales Service

- 1) **Product Limited Warranty:** We warrant that our products will be free from defects in materials and workmanship for **three years**.
- 2) **Warranty coverage may be voided when:**
  - The warranty period has expired
  - The factory applied serial number has been altered or removed from the product
  - There is damage, deterioration or malfunction caused by:
    - Atypical wear and tear
    - Use of supplies or parts not meeting the specifications
    - No certificate or invoice as the proof of warranty
    - Damage caused by force majeure
    - Non-authorized service
- 3) **Technical Support:** When contacting TechLogix support, please have the following information available:
  - Product part number
  - Installation and sale date
  - Detailed failure information