

User Guide

**4K HDMI Fiber Optic Extender, 1x LC
DVI-7365**



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WARNING – Product Safety

1. Do not dismantle the product housing or modify the printed circuit board module as this may result in electrical shock or burn.
2. Do not attempt to service this product yourself as opening or removing the product housing may expose you to dangerous voltages or other hazards. Refer all servicing to qualified service personnel.
3. Keep this product away from liquids. Spills into the product housing may result in fire, electrical shock, or equipment damage. If liquid spills into the housing, unplug the product immediately. Have the product checked by a qualified service engineer before using it again.
4. Place the product in an even and stable location. If the product falls or is dropped, it may cause an injury and/or malfunction.
5. Avoid exposing the product to extreme temperatures or to high humidity levels as this may result in damage to the product.
6. Only use the supplied External AC Power Adapter. The use of other power adapters may cause this product to fail or may cause a fire.
7. Do not twist or exert excessive force on the ends of the connected cables as this can cause them to malfunction. Take precaution to ensure that all connected cables are not forced to bend beyond their minimum bend radius.
8. **WARNING: Invisible Laser Radiation.** Do not view directly with optical instruments or look into beam.

Product Liability

Every effort has been made to ensure that this product is free of defects. DVI Gear cannot be held liable for the use of this product or for any direct or indirect consequential damages arising from its use. It is the responsibility of the users of this product to check that it is suitable for their requirements and that it is installed correctly.

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1.0 INTRODUCTION

The DVI-7365 is a high-performance, cost-effective, 4K Multiport Optical Extender designed to meet and exceed even the most demanding system requirements. It supports a wide array of signal types with or without HDCP content protection, provides long-distance extension over a single fiber cable, and supports ultra-high resolutions up to 4K (UHD) at 60Hz (4:4:4).

This multiport optical extender supports uncompressed HDMI 4K /60p, embedded audio, bi-directional IR, RS 232 and two 10/100 BaseT Ethernet ports, using only a single fiber optic cable. It can extend these signals over cable distances of up to 1.86 mi. (3,000 meters). For added versatility, these units provide Advanced EDID Management with four operating modes: Pass-through, Learn 1, Learn 2, and Factory Default.

Each extender set consists of an optical transmitter unit (TX) and an optical receiver unit (RX). The TX converts the AV signals into light pulses for transmission over a single strand of Multi-Mode or Single-Mode fiber optic cable. The RX converts the light pulses back to AV signals for the display, as well as other downstream devices. By using advanced fiber optic technology, without any compression, this product provides superior picture quality over greater distances than other extension methods, such as copper cables or CAT-X extenders. Together, these features make the DVI-7365 the ideal, cost-effective solution for system designers and integrators who need to support high resolution HDMI signals over extreme distances with flawless image quality.

1.1 Features

The DVI-7365 offers several exceptional features:

- Supports resolutions up to 4096x2160 /60p (4:4:4), without using compression
- Extends HDMI, Ethernet (10/100Base-T), RS-232, and bidirectional IR over a single strand of fiber optic cable
- HDCP 1.4 and HDCP 2.2 compliant
- **Maximum extension distances:**
 - Single-Mode Fiber: > 1.86 miles (~ 3,000 m)
 - OM3 Multi-Mode Fiber: > 1,000 feet (~ 300 m)
- Four Advanced EDID Management Modes: Pass-through, Learn 1, Learn 2, and Factory Default
- Optical fiber transmission is immune to environmental signal noise
- Low RFI / EMI profile for sensitive applications
- Locking DC power connectors for added security and reliability
- Heavy-duty mounting brackets are included



2.0 SPECIFICATIONS

Performance	
Standards Compliance	HDMI 4K /60p, DVI v1.0, HDCP v2.2
Maximum Pixel Clock Frequency	600 MHz
Maximum Video Bit Rate	6Gbps / 18Gbps (Aggregate)
Total System Jitter (I/O)	0.6 UI maximum
Inter-Channel Skew	2 nanoseconds maximum
Ethernet	10/100 BaseT
Supported Color Depth	Up to 12-bit per pixel
Supported Resolutions	Up to 4K: 4096 x 2160 /60Hz (4:4:4)
Digital Audio Support	Embedded HDMI digital audio up to 8-channel (7.1) LPCM, 48 kHz, 24-bit audio capability
Connections	
HDMI Input / HDMI Output	1 ea. 19-pin Female HDMI connector
Optical	1 ea. LC fiber optic connector
Ethernet	2 ea. RJ-45 female connector
RS-232	1 ea. 3-pin Phoenix connector
IR Input / IR Output	IR IN: 1 ea. 3.5mm stereo mini-jack IR OUT: 1 ea. 3.5mm mini-jack
Power	1 ea. Screw-Locking 2.1 / 5.5 mm female connector
Controls	
TX Unit	Front Panel: EDID Learn button, LEDs for EDID, Power, Optical Link, HPD and Ethernet Back Panel: EDID Mode selection via 2x DIP switches
RX Unit	LEDs for Power, Optical Link, HPD and Ethernet
Optical	
Optical Technology	CWDM (Coarse Wavelength Division Multiplexing) using 6 optical wavelengths
Laser Diodes	1270 / 1290 / 1310 / 1330nm 10Gbps CWDM DFB Lasers 1490nm / 1550nm 2.5Gbps CWDM DFB Lasers
Photo Diodes	1100 – 1620nm PIN Photo Detectors
WDM Filter	Integrated 1270nm / 1290nm / 1310nm / 1330nm / 1490nm / 1550nm filter
Optical Wavelengths / Actual Data Rates	TMDS Signals: 1270nm / 1290nm / 1310nm / 1330nm = 6.0Gbps DDC, IR, RS-232, Ethernet Signals: 1490nm / 1550nm = 1.25Gbps
Optical Link Power Budget	8.0 dB (minimum)
Cable	
Maximum Cable Length (typical)	9/125 μ Single-Mode Fiber: > 1.86 miles (~ 3,000 meters) 50/125 μ OM3 Multi-Mode Fiber: > 1,000 ft. (~ 300 meters)
DVI Gear Fiber Cable	OFNP, Plenum rated – additional data and custom lengths available on request
Cable Jacket	OFNP, Plenum-rated, Black PVC Jacket
Cable Outside Diameter	0.2" (4.4 mm)

2.1 Specifications (Continued)

DDC Support	
EDID Management / Modes	EDID Pass-through (transparent) EDID Learn 1 / Learn 2 (cached) Factory Default EDID (1080p 2-Ch audio)
HDCP Support	Supports HDMI signals with or without HDCP encryption
Mechanical	
Case Dimensions (H x W x D)	Without Brackets: 1.0" x 7.5" x 3.9" (26.0 mm x 190.0 mm x 99.5 mm) Width with Brackets: 8.5" (215.5 mm)
Weight	TX Unit: 568g / RX Unit: 563g
Construction	High-impact metal enclosure with jet black finish
Mounting Options	Mounting Brackets are included
Environmental	
Operating Temperature	14° to +158° F (-10° to +70°C)
Storage Temperature	-40° to +185° F (-40° to +85°C)
Operating / Storage Humidity	5% to 80% (non-condensing); 5% to 95% (non-condensing)
Power Requirements	
Optical Transmitter / Receiver	Both TX and RX units must be powered by the supplied external power adapters
External AC Power Adapters	Model No: DVI-7216-PS Input: 100-240VAC / 50-60Hz 0.8A / Output: 12VDC, 2.0A
Maximum Power Consumption	DVI-7365-TX: 530 mA (6.4 watts) / DVI-7365-RX: 450 mA (5.4 watts)
Regulatory Approvals	
Fiber Optic Extender Unit	FCC Class B, CE, RoHS
Laser	US-FDA CDRH Class 1
External AC Power Adapters	FCC, CE, UL, C-UL, BSMI, CB, CCC, LVD, LPS, PSE, RCM, RoHS, WEEE
Warranty	
Limited Warranty	3 Years Parts and Labor
Model Numbers	
DVI-7365-TX	4K HDMI Fiber Optic Transmitter, 1x LC
DVI-7365-RX	4K HDMI Fiber Optic Receiver, 1x LC
DVI-CUST-OPT	Custom Fiber Optic Cable, Plenum rated, Specify: Length, Fiber Type (MMF, SMF) and Optical Connector (LC)
Accessories Included ⁽²⁻¹⁾	Optional Accessories
1x External AC Power Adapter (DVI-7216-PS) with USA plug 1x User Guide 1x 3-Pin Phoenix Connector (Phoenix p.n. 1840379) 1x IR Transmitter (DVI-7360-IR-TX) (ships with DVI-7365-TX) 1x IR Receiver (DVI-7361-IR-RX) (ships with DVI-7365-RX) 2x Mounting Brackets with Screws	External AC Power Adapter (p.n. DVI-7216-PS) with Euro, UK, or Australia plugs +12 VDC Power Distribution Unit (p.n. DVI-7520-PDU) Custom Optical Cables (contact DVI Gear for details)

Note 2-1: The Transmitter and Receiver Units are sold separately.
The accessories shown here are included per unit.

3.0 PACKAGE CONTENTS

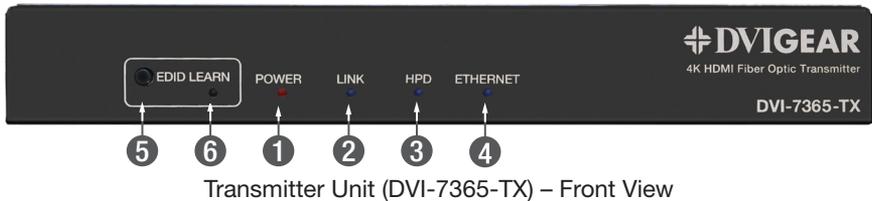
Before attempting to use this unit, please check the packaging and make certain the following items are contained in each shipping carton:⁽³⁻¹⁾

- 1x Transmitter (DVI-7365-TX) or Receiver (DVI-7365-RX) unit
- 1x User Guide
- 1x External AC Power Adapter (+12 VDC)
- 1x 3-pin 3.5mm Pitch Phoenix Connector (Phoenix p.n. 1840379)
- 1x IR Transmitter (with TX Unit) or IR Receiver (with RX Unit)
- 2x Mounting Brackets (attached to units)
- 4x Rack Mounting Screws

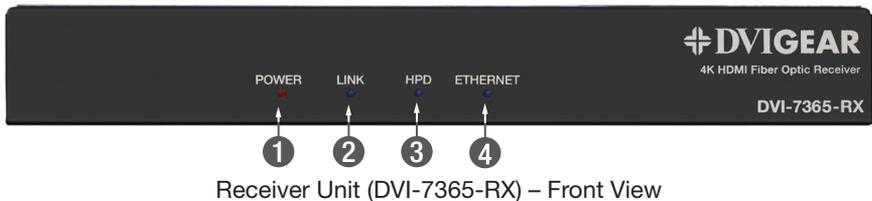
Note 3-1: *The Transmitter and the Receiver Units are sold individually. Please retain the original packing material should the need ever arise to return the unit. If you find any items are missing, contact your reseller or DVIgear immediately. Please have the Model Number, Serial Number, and Invoice Number available for reference when you call.*

4.0 CONNECTING THE HARDWARE

An extension set consists of a Transmitter unit (TX) and a Receiver unit (RX). Please see the following photos for information on the connections and controls.



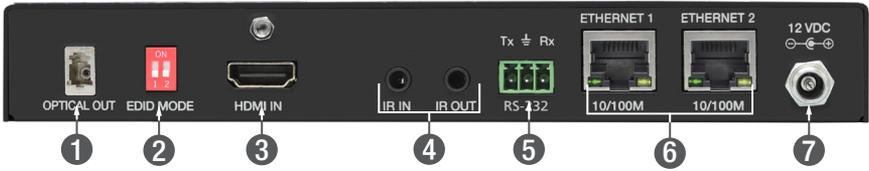
Transmitter Unit (DVI-7365-TX) – Front View



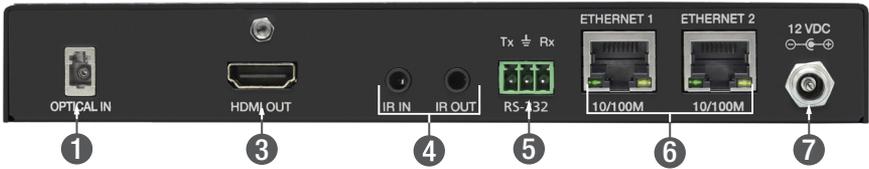
Receiver Unit (DVI-7365-RX) – Front View

- 1 **Power LED:** Lights red when power is applied.
- 2 **Link LED (TX):** LED lights blue whenever the RX laser is ON and the TX photodiode detects optical power (TX unit detects the RX laser optical power).
- 2 **Link LED (RX):** LED lights blue whenever the TX laser is ON and the RX photodiode detects optical power (RX unit detects the TX laser optical power).

- 3 **Hot Plug Detect (HPD) LED:** Lights blue on the RX unit when a DisplayPort Monitor is connected to the RX. Will also light blue on the TX unit at the same time, if a working fiber link is present.
- 4 **Ethernet LED:** Lights blue to indicate Ethernet traffic.
- 5 **EDID LED (TX Only):** See section 5.0 for details on this LED.
- 6 **EDID Learn Button (TX Only):** See section 5.1 for details on learning an EDID.

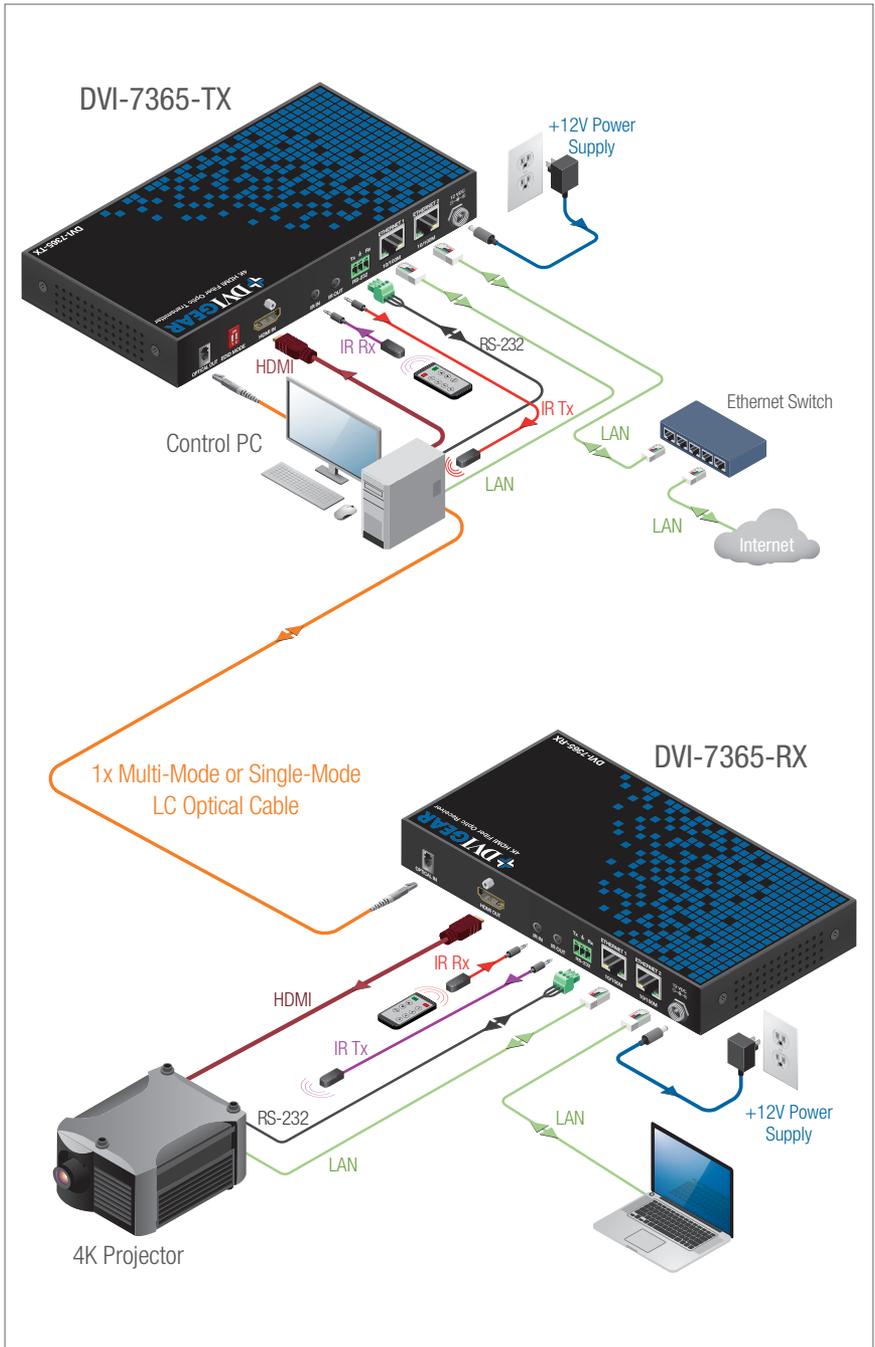


Transmitter Unit (DVI-7365-TX) – Rear View



Receiver Unit (DVI-7365-RX) – Rear View

- 1 **Optical Output Connector (TX):** Connect a Single-Mode or Multi-Mode Fiber Optic Cable. The DVI-7365-TX uses LC optical connectors.
- 1 **Optical Input Connector (RX):** Connect a Single-Mode or Multi-Mode Fiber Optic Cable. The DVI-7365-RX uses LC optical connectors.
- 2 **EDID DIP Switch (TX):** See Section 5.0 for details on settings.
- 3 **HDMI Input (TX):** Connect to an HDMI source.
- 3 **HDMI Output (RX):** Connect to an HDMI display.
- 4 **Infrared (IR) IN:** Connect the included IR receiver to accept IR signals for transmission over the fiber link. See Section 4.2 for further details.
- 4 **Infrared (IR) OUT:** Connect the included IR transmitter to accept IR signals over the fiber link and output them to a peripheral device. See Section 4.2 for further details.
- 5 **RS-232:** 3-pin female Phoenix Connector for serial data pass-through.
- 6 **LAN Ethernet Ports:** Extends 10/100Base-T network connectivity over the fiber link.
- 7 **+12 VDC Power Input:** Locking female connector for AC Power Adapter.





4.1 Installation Instructions

1. Mount the TX and Receiver Units as needed using the provided Mounting Brackets. See section 4.3 for more information.
2. Connect the TX to the HDMI output port of the signal source (e.g. PC) using a high quality HDMI cable.
3. Connect the Receiver Unit to the HDMI input port of a destination device (e.g. digital display) using a high quality HDMI cable.
4. Connect an LC fiber optic cable (single strand of either Multi-Mode Fiber or Single-Mode Fiber) between the Optical Output port on the TX Unit and the Optical Input port on the Receiver Unit.⁽⁴⁻¹⁾
5. Connect other peripheral devices to the units as needed (see section 4.2).
6. Connect the supplied External AC Power Adapters to the power input jack on the TX and Receiver Units. Once the plug is inserted into the jack, rotate the locking nut on the plug clockwise until it is tight, to secure the cable. There is no power switch on these units. The units will turn ON as soon as the AC Power Adapter is connected to a live AC power receptacle. In the event of a power failure, the EDID files stored in the TX will not be affected as they are stored in non-volatile memory. Use only the supplied power adapters to avoid the possibility of equipment damage.
7. Apply power to the display device, then apply power to the source device. A picture should appear on the display within a few seconds. Next apply power to any connected peripheral devices.

Note 4-1: This product supports the use of both **Single-Mode Fiber (SMF)**, and **Multi-Mode Fiber (MMF)**. However, extra care is required when using SMF due to its smaller optical aperture (8.9 microns) versus 50-60 microns for MMF. This smaller aperture means that SMF optical cables have an increased risk of contamination due to dirt, dust, oils, etc. that can be caused by poor handling.

4.2 Optional Connections

In addition to the video signal, the DVI-7365 supports extension of other signal types over the fiber link. These pass-through connections can be used to provide communications with other devices in the system. These connections include 10/100Base-T Ethernet, bidirectional IR, and RS-232.

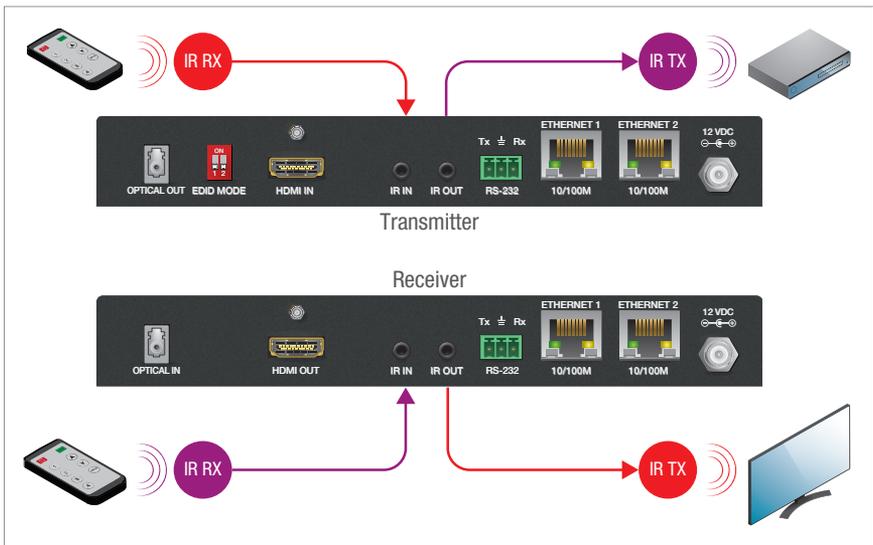
LAN Ethernet RJ45 port

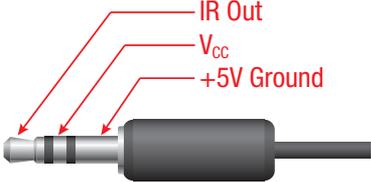
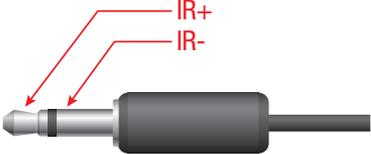
Connect to the LAN port of a peripheral device to provide a 10/100Base-T connection via the fiber link.

IR Connections

Each extender set supports bidirectional IR communications. The TX and Receiver Units each have two IR ports on the rear panel, labeled “IR IN” and “IR OUT”. To set up the IR data pathway, connect an IR receiver device (1x is included) to an “IR IN” port on one unit. Next, connect an IR transmitter to the “IR OUT” port of the other unit.

Any IR communications directed to the IR receiver module on one end of the extender set will be sent out of the IR transmitter module at the other end. For bidirectional communication, an additional IR TX and RX (purchased separately) may be connected. This allows IR data to be sent upstream, downstream, or both.

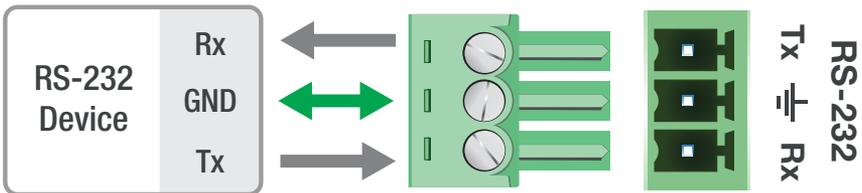


IR Receiver	IR Transmitter
<p style="text-align: center;">Pin Assignments</p> 	<p style="text-align: center;">Pin Assignments</p> 

Note 4-2: For best results, it is critical to carefully position the IR Transmitter and IR Receiver modules. The IR RX module should be placed where the user would typically aim the remote control. The IR TX module should be placed in close proximity to the IR window of the device being controlled. The IR TX module includes double-sided tape that can be used to adhere it in place.

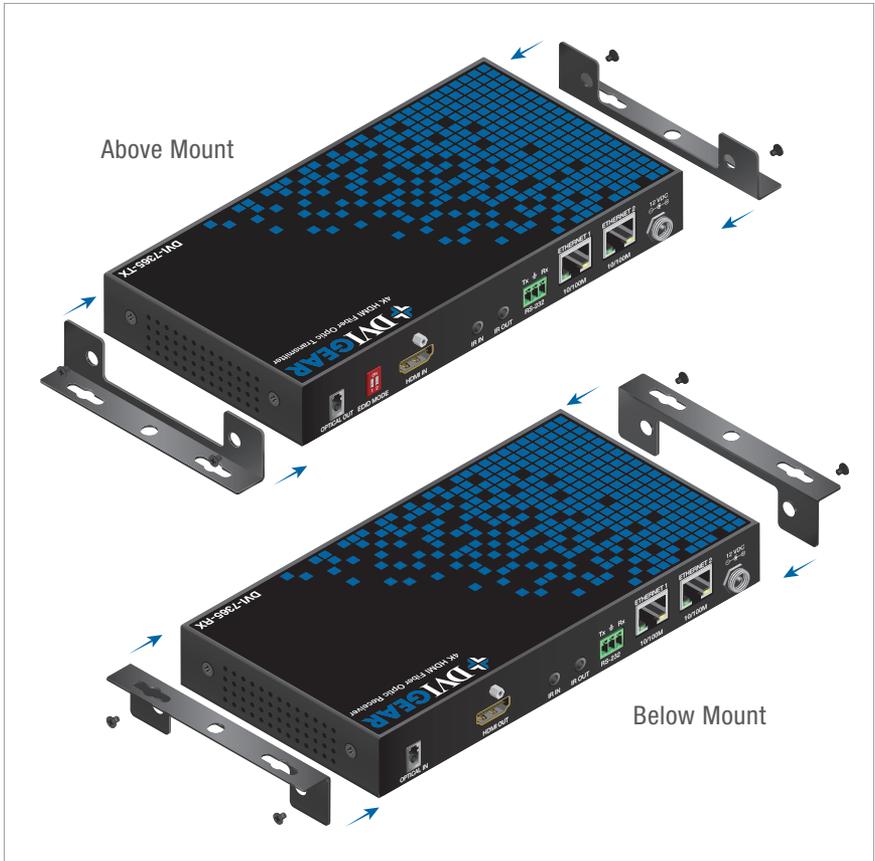
RS-232 Connections

Connect to an RS-232 device on both the TX and Receiver Units to allow serial communication to pass-through via the optical link. Please refer to *Warning 4-3* regarding wiring recommendations.



Note 4-3 - WARNING: DVIgear recommends that only qualified technical personnel be permitted to wire the Phoenix connectors as improper wiring can cause equipment damage. For best results, it is important to use stranded wires and avoid tinning the wire ends as this can allow them to be removed too easily from the Phoenix receptacles.

4.3 Mounting Hardware



Each TX and Receiver Unit comes with a pair of Mounting Brackets to facilitate installation on furniture or other surfaces. These Mounting Brackets are reversible, so the unit may be installed above or below the mounting surface. The units are shipped with the brackets installed in the “above mount” configuration. To change the orientation of the mounting brackets, first remove the two screws on the sides of each bracket and set them aside. Next, flip the mounting brackets into the desired position and screw them into the two mounting holes located on each side of the extender units.

5.0 OPERATING THE UNIT

In most cases, the default configuration is sufficient for proper operation; however, this extender set includes 4x EDID modes to optimize system performance.

EDID (Extended Display Identification Data) is a small data file stored in virtually every TV, monitor and display device made over the last twenty years. This file contains information about the display’s capabilities, such as its supported resolutions, refresh rates, color space, type of display, manufacturer, serial number, etc. After connecting a display to a source device, the source reads and saves the EDID in order to determine the most suitable display parameters (e.g. resolution and refresh rate). In this way, EDID plays an essential role in the modern “Plug & Play” user experience.

The DVI-7365 has four (4) EDID operation modes.

EDID Mode	DIP Switch Configuration	Description
Factory Default ⁽⁵⁻¹⁾		Use the factory default EDID permanently stored in the transmitter. The factory default EDID has a preferred timing of 1920x1080 /60p resolution with 2-channel PCM audio, though resolutions of up to 3840x2160 may be set.
Learn EDID 1 ⁽⁵⁻¹⁾		Learn the EDID from the connected display to Memory Slot 1 in the transmitter. See section 5.1 for instructions on learning an EDID.
Learn EDID 2 ⁽⁵⁻¹⁾		Learn the EDID from the connected display to Memory Slot 2 in the transmitter. See section 5.1 for instructions on learning an EDID.
Pass-through ⁽⁵⁻¹⁾		Pass-through EDID communication. In this mode, it is possible to support live DDC and HDCP communications.

Note 5-1: Pass-through EDID mode is the only mode that supports live DDC communications. The extender can be set to different EDID modes by using the DIP switches on the rear of the TX Unit. The EDID LED on the front panel of the TX Unit will change based on the current mode being used.



5.1 Learning an EDID

1. Set the EDID switch on the Transmitter to the desired EDID learning mode (EDID Learn 1 or EDID Learn 2).
2. Connect the HDMI input on the Transmitter to the HDMI input port on the display using a short, high quality cable.
3. First, supply power to the display. Next, supply power to the Transmitter. The EDID LED on the front panel of the Transmitter should light up blue. Now, press and hold the EDID button on the front panel of the Transmitter for about 2 seconds and then release.
4. If the EDID has been successfully learned, the EDID LED will blink once. The saved EDID file will be stored in non-volatile memory. If the EDID learning process fails, then the EDID LED will flash 5 times. In this case, repeat steps 1-4 above. Contact technical support if further assistance is required.
5. Finally, disconnect the Transmitter from the display. Continue with system setup as described in section 4.1.



6.0 TROUBLESHOOTING

If the system fails to display a signal, power OFF all devices and verify that the following connections are properly installed:

- Ensure the TX Unit is connected to the source and the Receiver Unit is connected to the Display using short, high quality HDMI cables.
- The fiber optic cable must be connected on both the TX Unit and Receiver Unit. Check to ensure that the optical cable is fully inserted into the ports. Note that slight pressure on the fiber optic cable and/or connector should NOT have any influence on the image quality of the signal.
- The supplied External AC Power Adapters should be connected to both the TX and Receiver Units.

Once all connections have been verified, power ON the display first, and then the HDMI signal source.

If there is no picture or if there are intermittent picture issues, please determine whether the Fiber Link LEDs are lit. If the Fiber Link LEDs light up, then there may be an EDID issue. Please check to be sure the appropriate EDID mode is being used. See section 5.0 for information on setting the EDID mode of the extender.

If the Fiber Link LEDs are not lit, then it may be necessary to check the quality and/or condition of the fiber optic cable being used. Fiber optic ports and cables are very sensitive to dust, dirt and oil from handling. Even minute amounts of obstructive material can interfere with or disrupt the optical transmission of the video signals. If erratic performance or disruption is noted, it may be necessary to have qualified technical personnel clean the optical ports and/or optical cable using appropriate procedures and cleaning materials.⁽⁶⁻¹⁾

Note 6-1: *This product supports the use of both **Single-Mode Fiber (SMF)**, and **Multi-Mode Fiber (MMF)**. However, extra care is required when using SMF due to its smaller optical aperture (8.9 microns) versus 50-60 microns for MMF. This smaller aperture means that SMF optical cables have an increased risk of contamination due to dirt, dust, oils, etc. that can be caused by poor handling.*

If the system still fails to display an image, ensure that the HDMI signal source is compatible with the display by making a direct connection between the two, bypassing the Fiber Optic Extender. If there is still no image, then there is a compatibility issue between the source and the display that must be resolved.

If the problem persists after trying the above suggestions, please contact your dealer for additional assistance. If the dealer's technical personnel are unable to assist you, please contact DVI Gear via telephone at 1.888.463.9927 (toll-free for United States and Canada) or 1.770.421.6699. You may contact DVI Gear by e-mail at support@dvigear.com.



7.0 LIMITED WARRANTY

LIMITED WARRANTY – Subject to the limitations stated below, DVI Gear warrants that this product will be free from defects in materials and workmanship for a period of three (3) years from the date of purchase.

Should the product, in DVI Gear's opinion, prove defective within the warranty period stated above, DVI Gear, at its option, will repair or replace this product without charge. Any defective parts replaced become the property of DVI Gear. This warranty does not apply to products that 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 intended.

If repairs are necessary under this warranty policy, the original purchaser must obtain a Return Authorization Number from DVI Gear and return the product freight prepaid to a location designated by DVI Gear. After repairs are complete, the product will be returned, freight prepaid.

The foregoing warranty is the sole and exclusive warranty given by DVI Gear, express or implied, and DVI Gear disclaims all implied warranties, including but not limited to implied warranties of merchantability or fitness for a particular use.

LIMITATIONS – The liability of DVI Gear with respect to any defective products will be limited to the repair or replacement of such products. In no event shall DVI Gear be responsible or liable for any damage arising from the use of such defective products, including but not limited to loss of use, revenue or profit, whether such damages are direct, indirect, consequential or otherwise and whether such damages are incurred by the reseller, end user, or any third party.

8.0 REGULATORY COMPLIANCE

This product is compliant with appropriate FCC Class B, CE, RoHS rules and regulations. The supplied AC Power Adapters are compliant with FCC, CE, UL, C-UL, BSMI, CB, CCC, LVD, LPS, PSE, RCM, RoHS, and WEEE rules and regulations.



Your Digital Connectivity Experts

Toll Free 888.463.9927
Phone +1.770.421.6699
Fax +1.770.234.4207

DVIGear, Inc.
1059 Triad Court, Suite 8
Marietta, Georgia USA 30062

www.dvigeear.com