

User Guide

DVI / HDMI Fiber Optic Cables

DVI-23xxx-FO



TABLE OF CONTENTS

SECTION	PAGE
PRODUCT SAFETY	1
PRODUCT LIABILITY	1
1.0 INTRODUCTION	2
2.0 SPECIFICATIONS	3
3.0 PACKAGE CONTENTS	4
4.0 CONNECTING THE HARDWARE	4
5.0 OPERATING THE UNIT	6
6.0 TROUBLESHOOTING	8
7.0 LIMITED WARRANTY	9
8.0 REGULATORY COMPLIANCE	9

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 care to ensure that all connected cables are not forced to bend more than their minimum bend radius.

Product Liability Statement

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. DVI Gear 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.

DVI Gear and DVI Gear & Design are trademarks of DVI Gear, Inc. and may not be used without the prior written permission of DVI Gear, Inc.

All third-party trademarks and copyrights are recognized. HDMI™ is a registered trademark of HDMI LLC. All other trademarks are the property of their respective holders.

© 2005, 2013, 2015, 2017, 2018 DVI Gear, Inc. All rights are reserved. No part 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 prior written consent of DVI Gear.



1.0 INTRODUCTION

The DVI-23xxx-FO long-range DVI / HDMI Fiber Optic Cables feature integrated electro-optical converters that provide unmatched signal fidelity with cable lengths up to 100 meters (~ 328 ft.).

Designed to overcome the limitations of sending digital DVI and HDMI signals over copper wires, DVI Gear's fiber optic cables provide unmatched signal fidelity and transparency over a wide range of input resolutions. These cables utilize high-speed, electro-optical converters integrated within each connector. The transmitter module converts the electrical signals from a DVI or HDMI source device to optical pulses that are transported over the fiber optic cables to the receiver. The receiver module converts the optical pulses back to the original DVI or HDMI signal for display on a monitor or large screen projector.

The cable material utilizes an innovative hybrid design that includes 4x glass optical fibers and 6x copper wires. This approach provides a high degree of ruggedness and flexibility. The transmitter and receiver modules use locking DVI connectors and are shielded in high-impact, metal alloy enclosures that provide maximum strength and durability. These features make these cables especially well-suited for critical display applications that require long DVI or HDMI cable runs with flawless image quality.

Our digital video distribution products have been serving the professional AV industry for more than fifteen (15) years. Today, DVI Gear offers a full range of high performance products including: scalable AV-Over-10GbE Systems, Switchers, Splitters, Scalars, Up/Down/Cross-Converters, Format Converters, as well as a wide range of long-reach Digital Cables, Extenders, and Fiber Optic Transmission systems.

1.1 Features

The DVI / HDMI Fiber Optic Cables are available in lengths from 10 to 100 meters and offer the following features:

- Supports PC and HDTV resolutions up to 1080p and 2048x1080
- Supports digital bit rates up to 1.65 Gbps.
- Available in cable lengths up to 100 meters (328 ft.)
- Optical fiber transmission is immune to environmental signal noise
- Low RFI / EMI profile for sensitive applications
- Supports bidirectional DDC communications, fully HDCP compliant
- Can be powered by many DVI sources, or by using an optional +5 VDC external power supply
- Rugged yet pliable construction



2.0 SPECIFICATIONS

Performance	
Compliance	DVI v1.0, HDMI v1.3, HDCP
Maximum Pixel Clock Frequency	165 MHz
Maximum Video Bit Rate	1.65 Gbps (Single-Link DVI)
Supported Color Depth	8-bit
Supported HDTV Formats	480i, 480p, 576i, 576p, 720p, 1080i, 1080p, and 2048x1080
Supported PC Resolutions	Up to 1600x1200 and 1920x1200
Digital Audio Support	HDMI v1.3
Connections	
DVI Input / DVI Output	1x 24+1 DVI-D male connector
Power Input	1x 3.5mm jack
Optical	
Optical Technology	4x Discrete Optical Channels
Optical Wavelength	850 nm
Optical Transmitter	Tx Module: 4x 850 nm VCSEL, Class 1 laser product
Optical Receiver	Rx Module: 4x GaAs PIN Photo Diodes
Cable	
Fiber Cable Type	4x 50/125 μ Multi-Mode Glass Optical Fibers
Standard Lengths (meters)	10, 15, 20, 25, 30, 40, 50, 75, 100
Standard Lengths (feet)	32.8, 49.2, 65.6, 82.0, 98.4, 131.2, 164.0, 246.1, 328.1
Custom Lengths	Available on request
Maximum Length	100 meters / 328 ft.
Cable Jacket	FR, PVC (orange, black on special request)
Cable Outside Diameter	7.4 mm \pm 0.20mm
DDC Support	
EDID Support	EDID communications are fully supported
HDCP Support	HDCP communications are fully supported
CEC Support	CEC is not supported
Mechanical - Tx and Rx Modules	
Construction	High-impact metal alloy enclosures
Dimensions (L x W x H)	3.0" x 1.6" x 0.6" (76.8 mm x 39.5 mm x 15.0 mm)
Mechanical - Cable	
Product Weight	Varies by length
Maximum Tensile Load	Short Term: 245 N
Minimum Bend Radius	Short Term: 75 mm Long Term: 150 mm
Crush Resistance	Short Term: 490 N / 50 mm section
Environmental	
Operating Temperature	+32° to +122° F (0° to +50°C)
Storage Temperature	-4° to +158° F (-20° to +70°C)
Operating / Storage Humidity	10% to 80% (non-condensing)



2.1 Specifications (continued)

Power Requirements	
Source Power	Requires at least 350 ma of DC current from pin 14 of DVI (source) connector. Optional external power supply may be used if needed.
Optional External AC Power Adapter	Input: 100-240VAC / 50-60Hz 0.2A Output: +5VDC, 3.0A (max.)
Power Consumption	Maximum: 1.8 watts
Regulatory Approvals	
Fiber Optic Cable	FCC, CE, RoHS
AC Power Adapter (optional)	FCC, CE, UL, C-UL, CEC, GS, PSE, RoHS
Warranty	
Limited Warranty	3 Years
Model Number	
DVI-23xxx-FO	DVI / HDMI Fiber Optic Cable (xxx = length in meters)
Accessories Included	
1x User Guide	
Optional Accessories	
DVI-7211-PS	External AC Power Adapter (with USA, Euro, UK, or Australia plugs)
DVI-8511b / DVI-8511c	DVI-I Female to HDMI Male Adapter Cable
DVI-2300-CVR	DVI / HDMI Fiber Optic Cable Protective Cover

3.0 PACKAGE CONTENTS

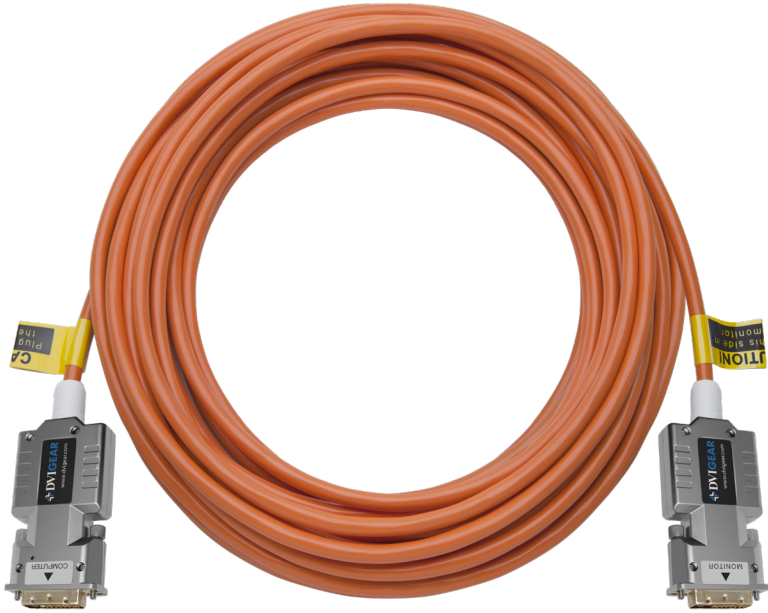
Before attempting to use this unit, please check the packaging and make certain the following items are contained in the shipping carton:

- 1x DVI-23xxx-FO DVI / HDMI Fiber Optic Cable
- 1x User Guide

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 DVI Gear immediately. Please have the Model Number, Serial Number and Invoice Number available for reference when you call.

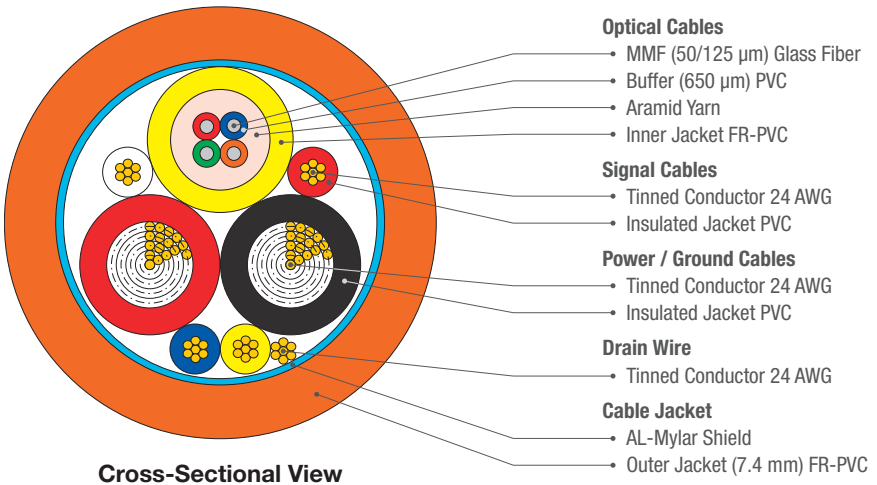
4.0 CONNECTING THE HARDWARE

The DVI-23xxx-FO cable consists of a transmitter module (labeled “Computer”) and a receiver module (labeled “Monitor”) integrated with the cable. The transmitter module converts the DVI or HDMI input signals into light pulses for transmission over 4x Multi-Mode glass fibers, and the receiver module converts the light pulses back to a DVI or HDMI signal for display on a monitor or projector. The transmitter module should be connected to the output port of the signal source (such as a PC). The receiver module should be connected to the input port of a digital display. This product may be connected to an HDMI source and/or display using a DVI Female to HDMI Male Adapter Cable (DVI Gear part numbers DVI-8511b or DVI-8511c).

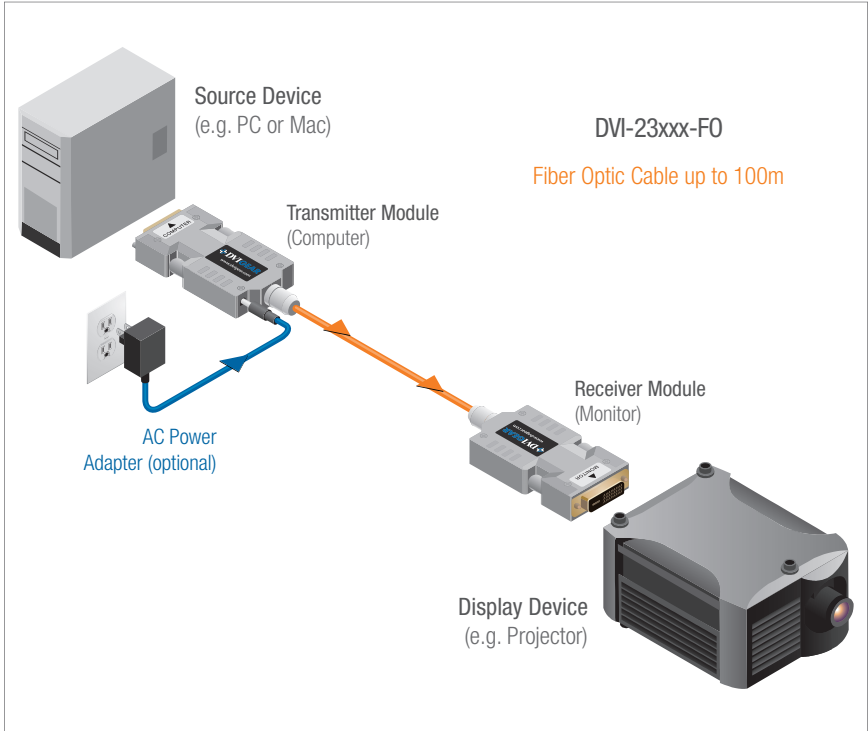


The cable material provides a high degree of ruggedness and flexibility and consists of 4x high-speed glass optical fibers and 6x copper wires. Note that the video signals travel over the glass fibers and are UNIDIRECTIONAL. The other signals (DDC, HPD, power, etc.) travel over the copper wires.

Warning: This cable will not function if it is installed backward. Always connect the transmitter module (Computer) to the source device and the receiver module (Monitor) to the display.



5.0 OPERATING THE UNIT



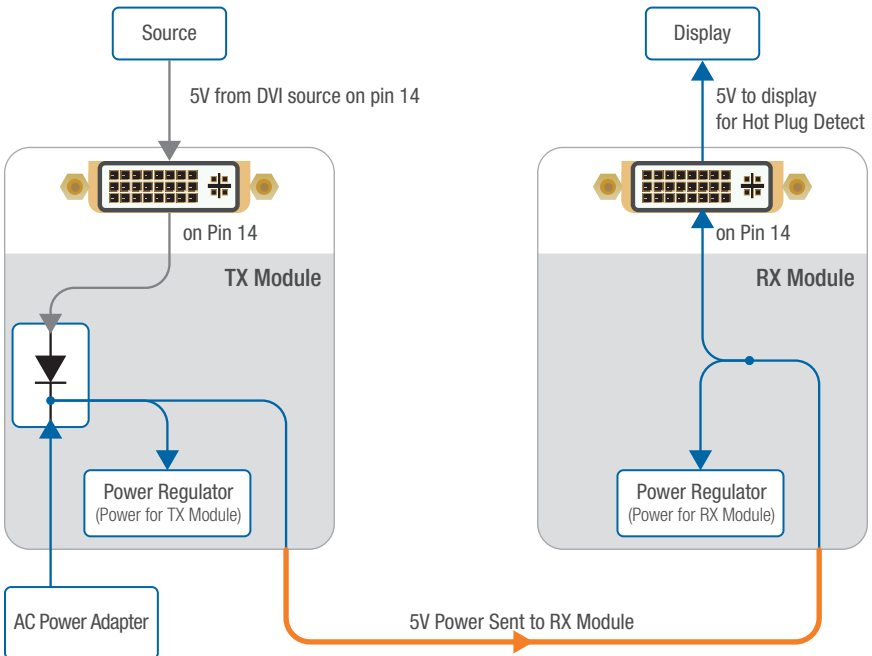
5.1 Interconnections

1. Connect the transmitter module (labeled “Computer”) to the source device (e.g. PC, Blu-ray, etc.).
2. Connect the receiver module (labeled “Monitor”) to the display or projector.
3. In many applications, the DVI-23xxx-FO cable can receive power from the source device via the 5V power pin on the DVI or HDMI connector. In the event that the source device cannot provide adequate power, the cable may also be powered using an optional External AC Power Adapter. In this case, connect an AC Power Adapter to the power input jack on the transmitter module and then to a live AC power source.
4. Turn ON the Display, and then turn ON switchers and other distribution equipment (if used). Finally, turn ON the source. Test the system to ensure proper performance.

5.2 Optional AC Power Adapter

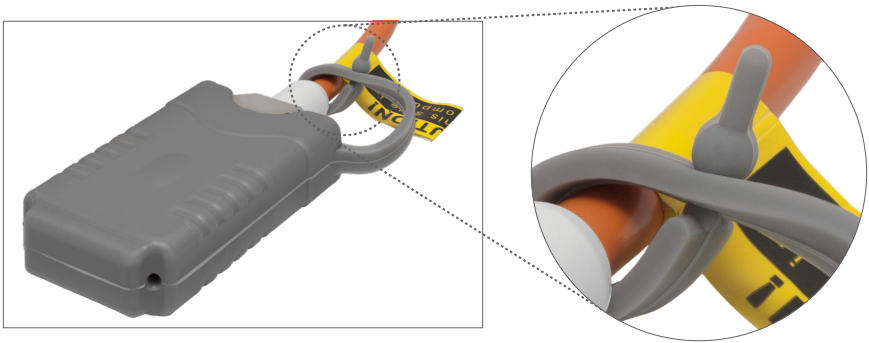
The DVI / HDMI Fiber Optic Cables can be powered by the source device, provided it can supply sufficient current to the cable via the 5V power pin on the DVI or HDMI connector. The cable requires ~350 ma of DC current to energize the electronics in both the transmitter and receiver modules. Some sources have no problem delivering sufficient power; however, other sources may not be able to meet this requirement. In such circumstances, the DVI / HDMI Fiber Optic cable will not be properly energized and will be unable to pass an image.

An optional +5VDC External AC Power Adapter may be used to avoid potential problems with inadequate source power. The power adapter plugs into a 3.5mm jack in the transmitter side of the cable. Inserting the power adapter blocks the 5V power from the DVI or HDMI source so that the adapter's power does not backflow to the source (see diagram below).



5.3 Optional Flexible Protective Boot for Tx and/or Rx Modules

The DVI-2300-CVR is a flexible boot cover that provides additional protection during installation, moving or storage. To secure the boot to a transmitter or receiver module, first slip the cover snugly over the module. Next, wrap the flexible attachment arm around the cable and create a loop. Pull the end of the attachment arm through the provided hole past the attachment point.



6.0 TROUBLESHOOTING

If the system fails to display an image, power OFF all devices and verify the following:

1. The transmitter module must be connected to the Source device. The receiver module must be connected to the Display.
2. Confirm there is power to the Fiber Optic Cable. The transmitter module must receive adequate power in order to function. In the event that the source device cannot provide sufficient power, the transmitter may be powered by an External AC Power Adapter (see page 7).
3. Once all connections have been verified, power ON the monitor first, then any intermediate equipment, such as switchers, and finally the source device.
4. If the system still fails to display an image, confirm that the fiber cable was not damaged during installation.
5. If the system still fails to display an image, check to ensure that the signal source is compatible with the display by making a direct connection between the two with a short cable so as to bypass the DVI / HDMI Fiber Optic Cable. 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 DVIGear via telephone at 1.888.463.9927 (toll-free for United States and Canada) or 1.770.421.6699. You may contact DVIGear 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, CE and RoHS rules and regulations. The optional AC Power Adapter is compliant with FCC, CE, UL, C-UL, CEC, GS, PSE and RoHS rules and regulations.



Your Digital Connectivity Experts

Toll Free 888.463.9927
Phone 770.421.6699
Fax 770.234.4207

DVIGear, Inc.
1059 Triad Court, Suite 8
Marietta, Georgia 30062-2258

www.dvigeear.com