



## DVI Extender over Fiber Optic Cable



Model #: FO-DVI-XX-MM



**WUXGA**  
**1920x1200**

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## Table of Contents

Section 1: Getting Started .....	3
1.1 Important Safeguards .....	3
1.2 Safety Instructions .....	3
1.3 Regulatory Notices Federal Communications Commission (FCC) .....	4
1.4 Introduction .....	4
1.5 Model Description .....	5
1.6 Package Contents.....	5
1.7 Before Installation.....	5
1.8 Installation .....	6
Section 2: Specifications.....	7
2.1 Part List.....	8
2.2 Power Consumption and DDC Power Requirements.....	9
2.3 Signal Pin Assignment .....	9
2.4 Characteristics of DVI Connector .....	10
2.4.1 Material .....	10
2.4.2 Electrical .....	10
2.4.3 Mechanical .....	10
2.5 Characteristics of FO-DVI-XX-MM .....	11
2.5.1 Mechanical .....	11
2.6 FO-DVI-XX Cable Construction .....	12
2.7 Physical Interconnect Specification .....	13
2.7.1 Mechanical Characteristics .....	13
2.7.2 Connector Electrical Characteristics.....	14

## Section 1: Getting Started

### 1.1 Important Safeguards

Please read all of these instructions carefully before you use the device. Save this manual for future reference.

#### What the warranty does not cover

- Any product, on which the serial number has been defaced, modified or removed.
- Damage, deterioration or malfunction resulting from:
  - Accident, misuse, neglect, fire, water, lightning, or other acts of nature, unauthorized product modification, or failure to follow instructions supplied with the product.
  - Repair or attempted repair by anyone not authorized by us.
  - Any damage of the product due to shipment.
  - Removal or installation of the product.
  - Causes external to the product, such as electric power fluctuation or failure.
  - Use of supplies or parts not meeting our specifications.
  - Normal wear and tear.
  - Any other causes which does not relate to a product defect.
- Removal, installation, and set-up service charges.

### 1.2 Safety Instructions

The Avenview FO-DVI-XX-MM, DVI Extender System over Fiber Optic, has been tested for conformance to safety regulations and requirements, and has been certified for international use. However, like all electronic equipment's, the FO-DVI-XX-MM should be used with care. Read the following safety instructions to protect yourself from possible injury and to minimize the risk of damage to the unit.

- Do not dismantle the housing or modify the module.
- Dismantling the housing or modifying the module may result in electrical shock or burn.
- Refer all servicing to qualified service personnel.
- Do not attempt to service this product yourself as opening or removing housing may expose you to dangerous voltage or other hazards
- Keep the module 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 module immediately.
- Have the module checked by a qualified service engineer before using it again.
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning.

## 1.3 Regulatory Notices Federal Communications Commission (FCC)

This equipment has been tested and found to comply with Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

Any changes or modifications made to this equipment may void the user's authority to operate this equipment.

## 1.4 Introduction

Avenview FO-DVI-XX-MM Series with fiber optic cable system lets you extend digital flat panel signal up to 100 meters (330 feet).

- High Speed and long distance transmission by Optical fiber
- Fully compatible with DVI Standard by DDWG
- Use of standard DVI Plug
- R, G, B, Clock signal is transmitted Optical Fiber
- Supports up to WUXGA (1920 x 1200) resolution
- DDC signal and 5V power line is transmitter by copper line
- Optical Fiber only system without DDC Corresponding to T.M.D.S Signal
- No EMI characteristics for medical instruments and airplane

### FO-DVI-xx-MM

Maximum length of 100m at 1920x1200 resolution

#### CABLE INDEX

- Output
- Input / Source
- SPDIF
- Audio
- RS-232
- IR
- CAT-5 / CAT-6
- DVI Loop







## 1.8 Installation

Avenview FO-DVI-XX-MM is composed of a Transmitter converting the graphic signal of a computer to optical and Optical Fiber propagating the optical signal and Receiver supplying electrical signal to monitor converted from the optical signal to electrical signal. The Transmitter should be connected to computer and the Receiver should be connected to a monitor.

Avenview FO-DVI-XX-MM is designed to self-detect the resolution of the monitor and change the resolution accordingly. Follow these steps for connecting to a device:

To setup Avenview FO-DVI-XX-MM follow these steps for connecting to a device:

1. Power on your display
2. Connect Transmitter to the PC and Receiver to the Display.
3. Connect the optical fiber between Transmitter and Receiver.
4. Restart the computer.

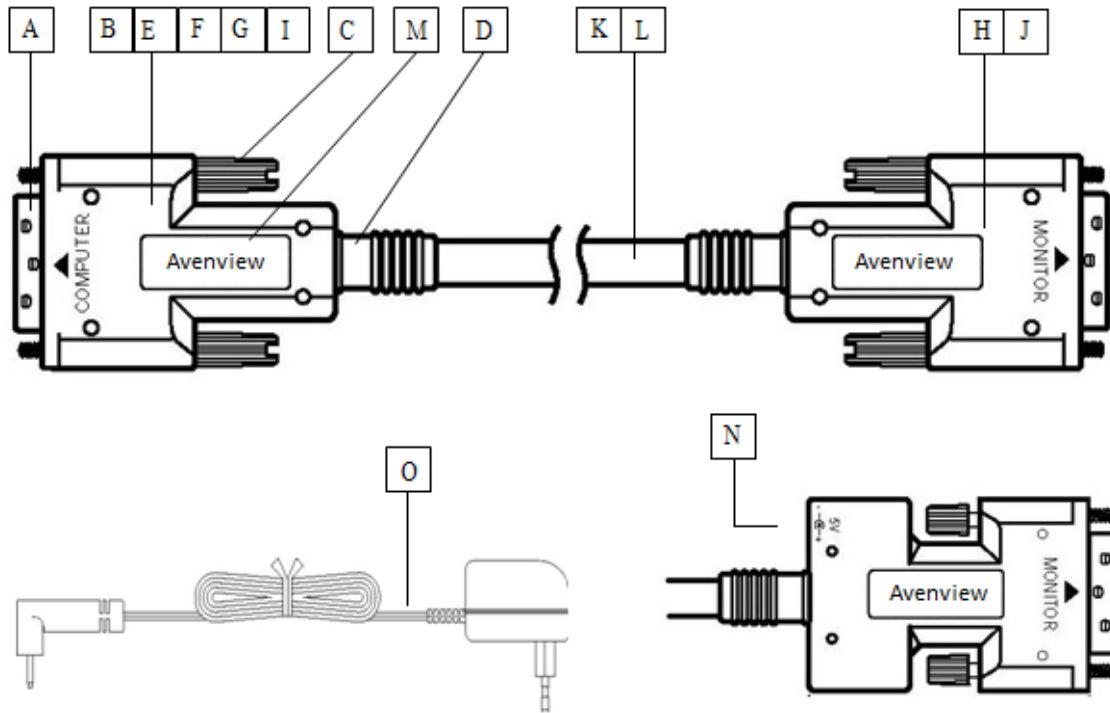
*Use the DC power adapter (optional) with correct specification. The Transmitter which is connected to a computer uses power from the computer.*

*Do not twist or pull by force the both ends of the optical cable. It may cause malfunction*

## Section 2: Specifications

Item	Description	
<b>Units</b>	FO-DVI-XX-MM (Transmitter)	FO-DVI-XX-MM (Receiver)
<b>Unit Description</b>	DVI Fiber Optic Transmitter	DVI Fiber Optic Receiver
<b>Input Signal</b>	TMDS Signal (DVI 1.0 Standard)	
<b>Output Signal</b>	TMDS Signal (DVI 1.0 Standard)	
<b>Video Bandwidth</b>	1.65Gbps	
<b>Supported Resolution &amp; Distance</b>	Up to WUXGA 1920 x 1200 @ 100 meters ( 330 feet)	
<b>Optical Converter</b>	4 ch 850 nm Multi-Mode VCSEL	4 ch GaAs PIN photo Diode
<b>DVI Connector</b>	24 pin DVI-D Plug	
<b>Optical Connector</b>	7 LC Connector	
<b>DDC Link Connector</b>	Rj45	
<b>Fiber Type</b>	50/125 $\mu$ m Multi-mode glass fiber	
<b>Dimensions (L x W x H)</b>	1.2" x 7.1" x 3.5"	
<i>Environmental</i>		
<b>Operating Temperature</b>	32° ~ 104°F (0° to 40°C)	
<b>Storage Temperature</b>	-4° ~ 140°F (-20° ~ 60°C)	
<b>Relative Humidity</b>	20~90% RH (no condensation)	

## 2.1 Part List



Item	Description	Q'ty	Material
A	DVI-D Single Link 18 Plug	2	Glass filled thermoplastic UL94V-0
B	DVI Case-Top, Bottom	2	Glass filled PC UL94V-0
C	DVI Thumb Screw	4	SUM 24L+ABS
D	Stopper	2	PVC 55%
E	Epoxy Printed Circuit Board for Tx	1	FR-4, 1.5t UL94V-0
F	Optical Connector for VCSEL,PD	2	PA46 UL94V-0 + C5210
G	Optical Connector for fiber	2	PA46 UL94V-0
H	Epoxy Printed Circuit Board for Rx	1	FR-4, 1.5t UL94V-0
I	Vertical Surface Emitting Laser Diode	4	GaAs
J	Photo Detector	4	GaAs
K	4 fiber 5 copper DVI Optic Cable	1	See Section 4
L	4 fiber DVI Optic Cable	1	See Section 4
M	Label	4	Polyester-matte 3.3mil
N	DC Power Jack	2	Polyamide 6/6
O	DC Power Adaptor	1	E191362 (UL No)

## 2.2 Power Consumption and DDC Power Requirements

Power consumption of FO-DVI-xx-MM Transmitter and Receiver Module

Item	Typical	maximum	unit
Transmitter	0.	0.53	Watt
Receiver	0.	0.56	Watt

Transmitter module of FO-DVI-XX-MM without external power supply is operated by drawing out power for DDC from the computer and receiver module of FO-DVI-XX-MM cable also utilize the DDC power delivered via copper wire.

*If graphic board of the computer does not supply over 0.6A, 5V, FO-DVI-XX-MM cable may not operate normally.*

## 2.3 Signal Pin Assignment

Pin	Signal Assignment	Pin	Signal Assignment	Pin	Signal Assignment
1	T.M.D.S. Data2-	9	T.M.D.S. Data1-	17	T.M.D.S. Data0-
2	T.M.D.S. Data2+	10	T.M.D.S. Data1+	18	T.M.D.S. Data0+
3	T.M.D.S. Data2 Shield	11	T.M.D.S. Data1 Shield	19	T.M.D.S. Data0 Shield
4	No Connect	12	No Connect	20	No Connect
5	No Connect	13	No Connect	21	No Connect
6	DDC Clock	14	+5V Power	22	T.M.D.S. Clock Shield
7	DDC Data	15	Ground (for +5V)	23	T.M.D.S. Clock+
8	No Connect	16	Hot Plug Detect	24	T.M.D.S. Clock-

## 2.4 Characteristics of DVI Connector

### 2.4.1 Material

<b>Housing</b>	Glass Filled Thermoplastic, Black UL94V-0
<b>Contact</b>	Brass
<b>Shell</b>	Steel (Nickel Plated)

### 2.4.2 Electrical

<b>Rated</b>	1.5A, 40V (AC)
<b>Contact Resistance</b>	20 m $\Omega$ Maximum
<b>Insulation Resistance</b>	1000 m $\Omega$ Minimum
<b>Dielectric withstanding Voltage</b>	500VDC

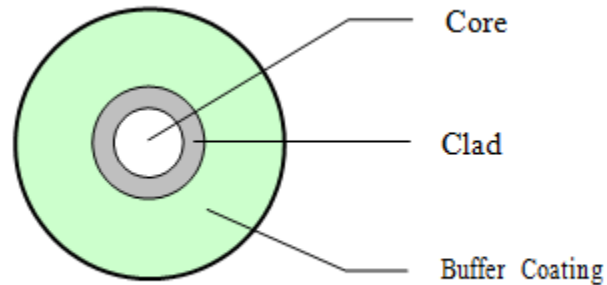
### 2.4.3 Mechanical

<b>Mating Force</b>	4.5Kg (10lbs) Maximum
<b>Un-mating Force</b>	1Kg (2.2lbs) Minimum 4Kg (8.8lbs) Maximum

## 2.5 Characteristics of FO-DVI-XX-MM

### 2.5.1 Mechanical

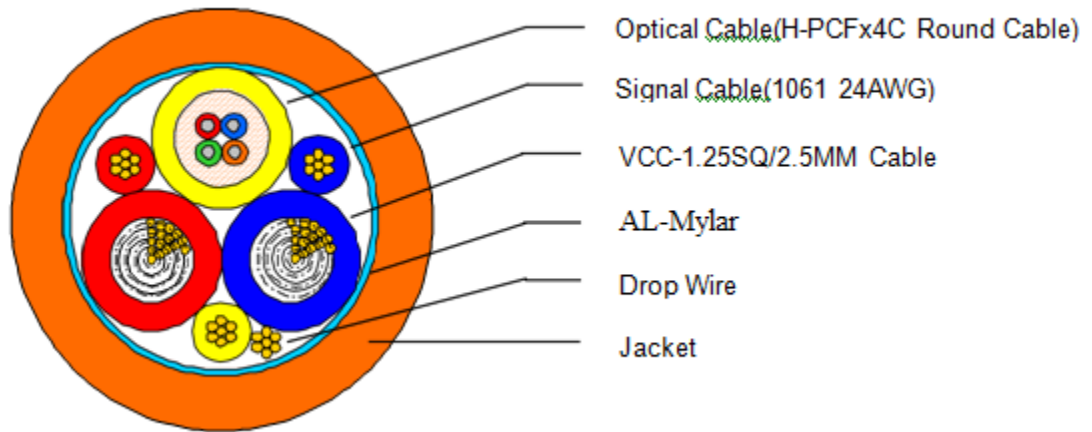
The construction of the buffered optical fiber shall be in accordance with Figure 1 and Table 1 below:



Item	Description	
Fiber Type	Hard Plastic Clad Silica Optical Fiber(H-PCF)	
Index Profile	Semi Graded	
Core	Material	GeO <sub>2</sub> doped Silica glass
	Diameter	φ200±5um
	Non-circularity	Less than 6%
Cladding	Material	Fluoroacrylate
	Diameter	φ225±5um
	Concentricity	Less than 6um
Buffer Coating	Material	Acrylate
	Diameter	φ0.5±0.03mm

## 2.6 FO-DVI-XX Cable Construction

The construction of 4 Optical Fibers and 4 Copper wires cable shall be in accordance with Figure and Table below:



The Dimension of FO-DVI-XX-MM Cable		
Items	Unit	Specification
DVI Cable Make-up	-	Layer Stranding
Drain Wires (Size/Stranded)	mm(AWG)	-0.203/7 (24)
AL-Mylar Screen Shield	-	A
Cable Outer Diameter	mm	7.40±0
Jacket Color	-	FR-PVC(Orange)
Cable Marking	-	If

## 2.7 Physical Interconnect Specification

### 2.7.1 Mechanical Characteristics

Ite	Test Condition	Requirements
<b>Vibration</b>	ANSI/EIA-364-28, Condition III Method 5A, 15 minute/axis	No discontinuity at 1us or longer (each contact) when continuity is tested per ANSI/EIA-364-46
<b>Mechanical Shock</b>	ANSI/EIA-364-27 Condition A (specified pulse)	No discontinuity at 1us or longer (each contact) when continuity is tested per ANSI/EIA-364-46
<b>Durability</b>	ANSI/EIA-364-09 Automatic cycling to 100 cycles Rate: 100±50 cycles per hour	Low Level contact resistance per ANSI/EIA-364-23 10 mΩ maximum change from initial per contact pair
<b>Mating &amp; Un-mating Forces</b>	ANSI/EIA-364-13 Insert and extract at a speed of 25mm/minute	Un-mating force: 1 kg force minimum, 4 kg force maximum Mating force: 4.5 kg force maximum
<b>Cable Pullout Force</b>	Test for cable strain relief & termination integrity. Cable subjected to 11.3 kg(25.0 lbs) static load for one minute while monitoring continuity. Isolate	No discontinuities greater than 1 us

## 2.7.2 Connector Electrical Characteristics

Item	Test Condition	Requirements
<b>Contact Resistance</b>	ANSI/EIA-364-23	20mΩ, maximum, initial per contact mated pair 10mΩ, maximum change from original per contact mated pair
<b>Shell Resistance</b>	ANSI/EIA-364-06A-83 Contact resistance measured from receptacle shell leg to plug cable braid. Test current = 100mA; Test Voltage = 5V DC open circuit maximum	50mΩ, maximum initial 50mΩ, maximum change from original
<b>Dielectric Withstanding Voltage</b>	ANSI/EIA-364-20 Test voltage 500V DC ± 50V Method C, unmated and un-mounted Barometric pressure of 15 psi	No Flash-over, No Spark-over, No Excess Leakage, No Breakdown
<b>Insulation Resistance</b>	ANSI/EIA-364-21 Test voltage 500V DC ± 50V Method C, unmated and un-mounted	1GΩ minimum between adjacent contacts and contacts and shell
<b>Contact Current Rating</b>	ANSI/EIA-364-70, TP-70 55°C, maximum ambient 85°C, maximum temperature change	1.5A minimum
<b>Applied Voltage Rating</b>		40V AC(ms) continuous maximum, on any signal pin with respect to the shield
<b>Electrostatic Discharge</b>	IEC 801-2 Test un-mounted from 1kV to 8kV in 1kV steps using 8mm ball probe	No evidence of discharge to contacts. Discharge to the shell is acceptable.



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