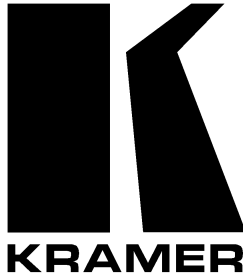


**Kramer Electronics, Ltd.**



# **USER MANUAL**

**Optical All-Fiber DVI Cable Model:**

**C-AFDM/AFDM**

**Available from 164 to 1640 feet**

## Contents

<b>1</b>	<b>Introduction</b>	<b>1</b>
<b>2</b>	<b>Getting Started</b>	<b>2</b>
<b>3</b>	<b>Overview</b>	<b>2</b>
3.1	System Requirements for Setup (Hardware)	3
<b>4</b>	<b>Using Your Optical All-Fiber DVI Cable</b>	<b>4</b>
4.1	Installing Your Optical All-Fiber DVI Cable	4
4.2	Avoiding Pitfalls using the Optical All-Fiber DVI Cable	5
4.2.1	Maintenance	5
<b>5</b>	<b>Technical Specifications</b>	<b>6</b>

## Figures

Figure 1:	Optical All-Fiber DVI Cable	3
Figure 2:	Optical All-Fiber DVI Cable – Receiver Module	4
Figure 3:	Optical All-Fiber DVI Cable – Transmitter Module	4

## Tables

Table 1:	Optical All-Fiber DVI Technical Specifications	6
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## 1 Introduction

Welcome to Kramer Electronics (since 1981): a world of unique, creative and affordable solutions to the infinite range of problems that confront the video, audio and presentation professional on a daily basis. In recent years, we have redesigned and upgraded most of our line, making the best even better! Our 500-plus different models now appear in 8 Groups<sup>1</sup>, which are clearly defined by function. Congratulations on purchasing your Kramer **C-AFDM/AFDM Optical All-Fiber DVI Cable!**

### Ordering Information

This cable is offered in a "built-to-order" fashion, which offers quick construction and delivery in the exact length required. Order any length from 164 feet to 1640 feet (50 meters to 500 meters).

### **C-AFDM/AFDM –XXXX**

where XXXX = length in feet

The unique Kramer Optical All-Fiber DVI Cable is ideal for:

- Integration of digital display systems for medical, military aerospace, factory automation and traffic control platforms
- Flat panel display, plasma display panel and projector installation in conference rooms, auditoriums and for kiosk systems
- LED signboards for large scale information display and stadiums
- Home theater systems

The package includes the following items:

- **C-AFDM/AFDM Optical All-Fiber DVI Cable**
- Two 5V AC/DC power adapters
- This user manual<sup>2</sup>

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<sup>1</sup> GROUP 1: Distribution Amplifiers; GROUP 2: Video and Audio Switchers, Matrix Switchers and Controllers; GROUP 3: Video, Audio, VGA/XGA Processors; GROUP 4: Interfaces and Sync Processors; GROUP 5: Twisted Pair Interfaces; GROUP 6: Accessories and Rack Adapters; GROUP 7: Scan Converters and Scalers; and GROUP 8: Cables and Connectors

<sup>2</sup> Download up-to-date Kramer user manuals from: <http://www.kramerelectronics.com>



## 2 Getting Started

We recommend that you:

- Unpack the equipment carefully and save the original box and packaging materials for possible future shipment
- Review the contents of this user manual

## 3 Overview

The Kramer **C-AFDM/AFDM** *Optical All-Fiber DVI Cable* is a digital high-quality graphics interface between a DVI-D source (for example, a host processor video source) and a DVI-D acceptor (for example, a display panel). The **C-AFDM/AFDM** consists of a transmitter and a receiver, connected by all fiber optic distribution cables with male DVI-D connectors at each end. The **C-AFDM/AFDM** transmits both the graphic signal and display information (DDC/HDCP) over optic fiber, thus overcoming the limit of using copper cables for DDC.

In addition, the **C-AFDM/AFDM**:

- Features a bandwidth of 1.65Gbps for each channel
- Supports all VESA resolutions up to WUXGA (1,920x1,200), at 60Hz refresh rate with 1 pixel/clock mode
- Has 8 fiber strands: four for DDC/HDCP interconnection and four for red, green, blue and clock transmission
- Extends up to 500 meters
- Does not emit any electromagnetic interference or emission on the cable, making it suitable for any medical or other EMI sensitive environment
- Electrically isolates the source from the acceptor
- Can use either DC power from the graphic card or AC/DC power from an external +5V adapter
- Requires no software installation

Figure 1 illustrates the **C-AFDM/AFDM** *Optical All-Fiber DVI Cable*:

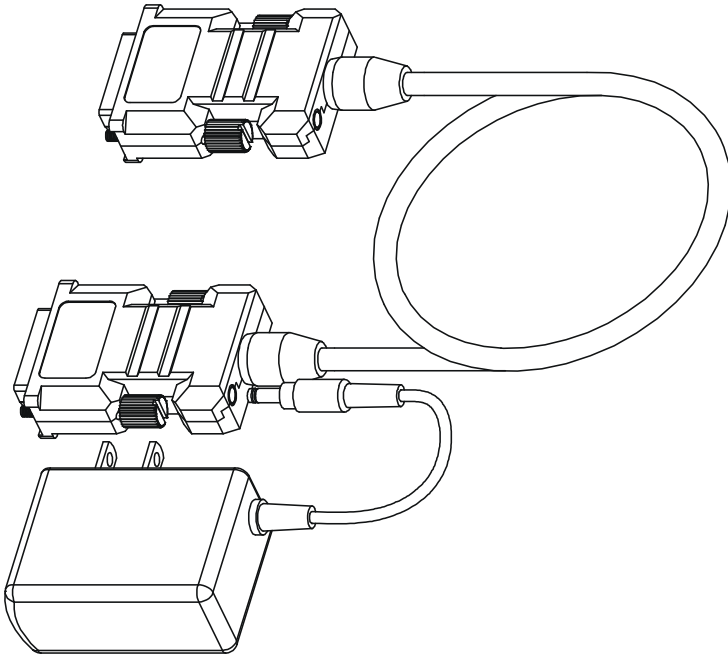


Figure 1: Optical All-Fiber DVI Cable

### 3.1 System Requirements for Setup (Hardware)

You must have a DVI graphic source or card that:

- Has a DVI port (for example, in your PC, SUN or Mac system) supporting a DVI-D signal
- Supports the maximum graphic resolution of the display that you want to connect

There are no special requirements regarding:

- The memory size, CPU speed and chipsets, if the DVI graphic controller or card is properly installed
- Software, if the DVI graphic controller or card is properly installed in your Operating System

**Note:** The transmitter module of the Kramer Optical All-Fiber DVI Cable is designed to use +5V internal power supplied through a DVI pin (#14) from the graphic card. While the transmitter module may receive power from pin 14, it also has the option of being powered via an external 5V power adapter. The receiver, however, requires an external +5V AC/DC power adapter.

## 4 Using Your Optical All-Fiber DVI Cable

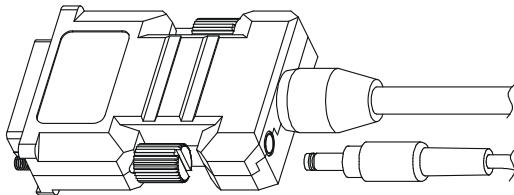
This section describes how to:

- Install the Optical All-Fiber DVI Cable (see section 4.1)
- Avoid pitfalls when using it (see section 4.2)

### 4.1 Installing Your Optical All-Fiber DVI Cable

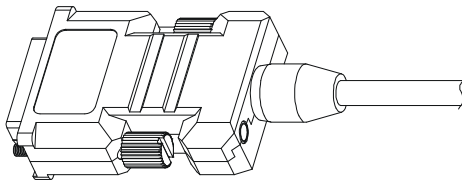
To connect the Optical All-Fiber DVI Cable, do the following:

1. Carefully remove your Optical All-Fiber DVI Cable from its packaging.
2. Connect an AC/DC power adapter to the receiver module (see Figure 2)



*Figure 2: Optical All-Fiber DVI Cable – Receiver Module*

3. Plug the Transmitter module of the Optical All-Fiber DVI Cable **directly** into the DVI receptacle of the computer.  
The Optical All-Fiber DVI Cable uses only the power +5V supplied through a DVI pin (#14) from the graphic card.



*Figure 3: Optical All-Fiber DVI Cable – Transmitter Module*

4. Plug the Receiver module of the Optical All-Fiber DVI Cable into the DVI display receptacle.
5. Turn ON the power on both the computer and the display device.  
You can replace any DVI cable or an Optical All-Fiber DVI Cable with another Optical All-Fiber DVI Cable by following the above procedures while the computer and display device are powered up.

If the system does not work properly after the Optical All-Fiber DVI Cable is installed, check that your computer system is capable of supplying more than 200mA.

6. If necessary, or if you prefer to do so, you can use the second AC/DC adapter, supplied with the cable, to power the transmitter.

## 4.2 Avoiding Pitfalls using the Optical All-Fiber DVI Cable

In the event that any of these problems occur, we recommend the following:

If the display device shows only a black screen:

- Be sure that the DVI ports are firmly plugged into the computer and the display device
- Make sure that the Transmitter and Receiver modules are correctly plugged into the PC and display device, respectively
- Check if the PC and display are powered ON and properly booted
- Reset the system by unplugging and then replugging the Transmitter DVI port or Receiver DVI port
- Reboot the system while connecting the optical DVI cable system

If the screen is distorted or displays noises:

- Check if the graphics resolution is properly set
- Go to the Display Properties of Windows and tap the settings
- Be sure that the resolution is set for UXGA (1,600 x 1,200), WUXGA or less at 60Hz refresh ratio
- Reset the system
- Disconnect and reconnect the optical DVI cables

### 4.2.1 Maintenance

These cables contain sensitive fiber optic materials that can be damaged through rough handling.

To properly sustain the system:

- Use caution during the installation and use of these cables to ensure that you do not damage them
- Do not install the cable in any environment where it is possible they could be stepped on, run over, pinched or crushed.
- Be sure that the cables are stored and used away from liquid or dirt

## 5 Technical Specifications

Table 1 includes the technical specifications:

*Table 1: Optical All-Fiber DVI Technical Specifications<sup>1</sup>*

Compliance with DVI Standard:	Supports DVI1.0 and DDC2B, fully implemented by fiber-optic communication, HDCP compatible
Extension Limit:	500m (>1,650 feet) for WUXGA (1920 x 1200) at 60Hz refresh rate
Resolution:	Up to WUXGA at 60Hz
Pure 8 Strands Fiber Optic Cable:	Riser Jacket of retardant PVC employing 8 strands
Tensile Load:	600N (cable only)
Minimum Bend Radius:	12.0cm
Outer Diameter of Cable:	5.5cm
Dimensions:	3.9cm x 1.54cm x 5.3cm (W, D, H)
Power Source:	Receiver: 5 VDC, <500mA; Transmitter: 5 VDC, <500mA
Clamping Strength to Cable:	14kg <sub>f</sub>
Operating Temperature:	0°C to 50°C
Storage Temperature:	-30°C to 70°C
Humidity:	10% to 85%

<sup>1</sup> Specifications are subject to change without notice



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## LIMITED WARRANTY

Kramer Electronics (hereafter *Kramer*) warrants this product free from defects in material and workmanship under the following terms.

### HOW LONG IS THE WARRANTY

Labor and parts are warranted for one year from the date of the first customer purchase.

### WHO IS PROTECTED?

Only the first purchase customer may enforce this warranty.

### WHAT IS COVERED AND WHAT IS NOT COVERED

Except as below, this warranty covers all defects in material or workmanship in this product. The following are not covered by the warranty:

1. Any product which is not distributed by Kramer, or which is not purchased from an authorized Kramer dealer. If you are uncertain as to whether a dealer is authorized, please contact Kramer at one of the agents listed in the web site [www.kramerelectronics.com](http://www.kramerelectronics.com).
2. Any product, on which the serial number has been defaced, modified or removed.
3. Damage, deterioration or malfunction resulting from:
  - i) Accident, misuse, abuse, neglect, fire, water, lightning or other acts of nature
  - ii) Product modification, or failure to follow instructions supplied with the product
  - iii) Repair or attempted repair by anyone not authorized by Kramer
  - iv) Any shipment of the product (claims must be presented to the carrier)
  - v) Removal or installation of the product
  - vi) Any other cause, which does not relate to a product defect
  - vii) Cartons, equipment enclosures, cables or accessories used in conjunction with the product

### WHAT WE WILL PAY FOR AND WHAT WE WILL NOT PAY FOR

We will pay labor and material expenses for covered items. We will not pay for the following:

1. Removal or installations charges.
2. Costs of initial technical adjustments (set-up), including adjustment of user controls or programming. These costs are the responsibility of the Kramer dealer from whom the product was purchased.
3. Shipping charges.

### HOW YOU CAN GET WARRANTY SERVICE

1. To obtain service on your product, you must take or ship it prepaid to any authorized Kramer service center.
2. Whenever warranty service is required, the original dated invoice (or a copy) must be presented as proof of warranty coverage, and should be included in any shipment of the product. Please also include in any mailing a contact name, company, address, and a description of the problem(s).
3. For the name of the nearest Kramer authorized service center, consult your authorized dealer.

### LIMITATION OF IMPLIED WARRANTIES

All implied warranties, including warranties of merchantability and fitness for a particular purpose, are limited in duration to the length of this warranty.

### EXCLUSION OF DAMAGES

The liability of Kramer for any effective products is limited to the repair or replacement of the product at our option. Kramer shall not be liable for:

1. Damage to other property caused by defects in this product, damages based upon inconvenience, loss of use of the product, loss of time, commercial loss; or
2. Any other damages, whether incidental, consequential or otherwise. Some countries may not allow limitations on how long an implied warranty lasts and/or do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights, which vary from place to place.

**NOTE:** All products returned to Kramer for service must have prior approval. This may be obtained from your dealer.

This equipment has been tested to determine compliance with the requirements of:

- EN-50081: "Electromagnetic compatibility (EMC);  
generic emission standard.  
Part 1: Residential, commercial and light industry"
- EN-50082: "Electromagnetic compatibility (EMC) generic immunity standard.  
Part 1: Residential, commercial and light industry environment".
- CFR-47:  
FCC Rules and Regulations:  
Part 15: "Radio frequency devices  
Subpart B – Unintentional radiators"

### CAUTION!

- ☒ Servicing the machines can only be done by an authorized Kramer technician. Any user who makes changes or modifications to the unit without the expressed approval of the manufacturer will void user authority to operate the equipment.
- ☒ Use the supplied DC power supply to feed power to the machine.
- ☒ Please use recommended interconnection cables to connect the machine to other components.





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**For the latest information on our products and a list of Kramer distributors, visit our Web site: [www.kramerelectronics.com](http://www.kramerelectronics.com), where updates to this user manual may be found. We welcome your questions, comments and feedback.**



**Caution**

**Safety Warning:**

Disconnect the unit from the power supply before opening/servicing.



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**Kramer Electronics, Ltd.**

Web site: [www.kramerelectronics.com](http://www.kramerelectronics.com)

E-mail: [info@kramereel.com](mailto:info@kramereel.com)

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