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# DTX-1D

## Digital Video (DVI) Extender

### Product Manual

Part Number MAN-000003

Rev. A - May 2003



Logical Solutions Inc.  
100 Washington Street  
Milford, Connecticut 06460 U.S.A.

Telephone (203) 647-8700  
Fax (203) 783-9949  
[www.thinklogical.com](http://www.thinklogical.com)

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Logical Solutions Incorporated  
100 Washington Street  
Milford, Connecticut 06460 U.S.A.  
Telephone (203) 647-8700

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At Logical Solutions, we do our best to provide comprehensive information with our products. In the event we have an error or oversight in this document, we're sorry, and we will do our best to address the issue in the next revision (if there is one). If you have any issues or questions about the product or this documentation, please contact our Product Support personnel. However, we cannot be held responsible for typos or unintentional omissions from this manual.

Being a technology company, we are constantly looking for innovative ways to make our products work for the advantage of our customers. It is important to use the product manual that came with your system with that product. If you have any comments or suggestions for the product, please send your comments to our Product Support or our Sales personnel. Please see *Section 4, How to Contact Logical*, on page 19.

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## **1 Introduction**

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*Introducing the Logical Solutions Inc. DTX-1D Digital Video Extension System*

### **1.1 DTX-1D Transmitter and Receiver Pair**

The Logical Solutions Inc. DTX-1D is a Digital Video (DVI) extension system. The DTX-1D system consists of a pair of components that are interconnected using a multimode fiber optic cable, allowing DVI video support up to 500 meters / 1640 feet from the host computer. Each pair consists of a Transmitter unit and a Receiver unit (both units are similar in appearance, but are labeled differently).

**Figure 1.1** Logical Solutions DTX-1D, Receiver Unit shown



## 1.2 LASER Protection

The DTX-1D system is designed and identified as a Class 1 LASER product.

**CLASS 1 LASER PRODUCT**

The DTX-1D system design incorporates interactive circuitry to minimize the chance that a user's vision might be affected by the LASER output. The product's optical fiber control circuitry automatically limits the power output of the LASERS to something less than Class 1 levels in the event the fiber optic cable is disconnected or broken. This self-limiting circuitry operates in less than 10 microseconds to reduce the LASER output.

## 1.3 System Features

The DTX-1D systems are designed for high-resolution video extension applications, such as remote projection centers, theaters and assembly halls, and for secure computer installations. The ability to remotely locate the CPU away from the monitor allows more control of your computer environment. It is possible to position the monitor or projector in any setting from office to lecture hall to boardroom while keeping the computer secure in a remote, controlled location.

Each DTX-1D system includes the following features:

- Supports video resolutions from the Digital Display Working Group single link standard
- Support for high-resolution DVI-D interface
- Extend digital video signals up to 500 meters (1640 feet)
- Fully DDC2B compliant
- Invisible operation and functionality - no user interaction required
- Signal transmission via fiber optic cable - no RF interference
- Use single-strand multi-mode fiber, 50 or 62.5 micron, with ST-type connectors
- Safe design provides automatic shut-down (within 10 microseconds) in the event the fiber is disrupted

## **1.4 Hardware Features**

The DTX-1D systems are self-contained and do not require user modifications. Once installed, the application simply “works” and delivers the video signal clearly and consistently.

- Enclosed metal chassis for each Transmitter and Receiver unit
- One pair of DTX-1D components per video connection
- No user interaction or modification required
- Single ST-type connector for your multimode fiber optic cable
- One DVI-D port for digital video signal connection
- External power jack (required for Receiver end, Option for Transmitter end)
- 4 LASERS for transmission, one LED for feedback from Receiver
- LASERS controlled by feedback loop to prevent vision accidents
- Universal AC power Adapter provided with each DTX-1D pair

Most current DVI-D video cards provide suitable power for the DTX-1D Transmitter unit, and an AC-to-DC Adapter is not required for the Transmitter end of the connection. In some cases, especially with older DVI-D video cards, it may be necessary to provide an additional AC Power Adapter for the DTX-1D Transmitter. In that case, an extra AC adapter can be ordered separately (part number PWR-000004).

## 1.5 Technical Specifications

Each Logical Solutions DTX-1D system is designed to the following specifications:

<b>Electrical Cable to Computer</b>	1M (3 foot) DVI-D male-to-male cable (supplied with system)
<b>Connectors</b>	<p><b>Receiver:</b>  DVI-D female video input (1)  ST-type fiber connector (1)  2.5mm power connector (AC adapter provided and required)</p> <p><b>Transmitter:</b>  DVI-D female video output (1)  ST-type fiber connector (1)  2.5mm power connector (AC adapter optional)</p>
<b>Protocol</b>	Full DDC2B compliant
<b>Optical Budget</b>	4 dB
<b>Indicators</b>	Two LEDs on each DTX-1D module: Loss of Signal [LOS] (red, on when no signal), near ST connector Power (green, on solid), near DVI-D connector
<b>Optical Cable</b>	Single Fiber, multi-mode, 50 micron or 62.5 micron, ST-type connectors (Fiber Cable is customer-supplied)
<b>Operating Temperature and Humidity</b>	0 to 40 °C (32 to 122 °F), 5 to 95% RH, non-condensing
<b>Total Extension</b>	500 meters / 1640 feet
<b>Housing Dimensions</b>	Approx. 5 inches by 5 inches by 1-1/4 inches deep Wall-mount keyhole slot spacing: 4-1/2 inches x 3-3/16 inches
<b>Supply Voltage</b>	+5.0 VDC @ 600 mA Adapter has Universal AC Power Input (100-240 VAC, 50/60 Hz)
<b>AC to DC Adapter</b>	Input: 100-240VAC, 50/60 Hz, 0.4 Amperes Output: +5VDC @ 1.6 Amperes, 2.5mm barrel plug Logical Part Number: PWR-000004; one included with each DTX-1D pair



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## 2 Installation

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*Extend digital video (DVI) signals up to 500 meters over a single fiber!*

### 2.1 Intended Application

The DTX-1D from Logical Solutions permits the placement of a digital monitor or projector up to 500 meters (1640 feet) away from the controlling computer without loss of resolution. Traditional copper cables are limited to 3 meters (9.84 feet) in DVI applications. Each DTX-1D system consists of a pair of electronic units connected by a single strand multi-mode fiber optic cable. The transmitter unit connects to the computer with a 1 meter DVI-D male-to-male cable (supplied) and the receiver unit connects to the monitor or projector using the existing monitor cable. The receiver module requires an AC/DC power converter which is supplied with the system.

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#### **Caution**

The DTX-1D Transmitter emits invisible LASER Radiation.  
The DTX-1D is a Class 1 LASER product.

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#### **Note**

The DTX-1D contains a built-in safety circuitry to prevent hazardous LASER energy levels, however it is good practice to NOT disconnect the Fiber Cable while power is still applied, or to look into the optical connector or the cables.

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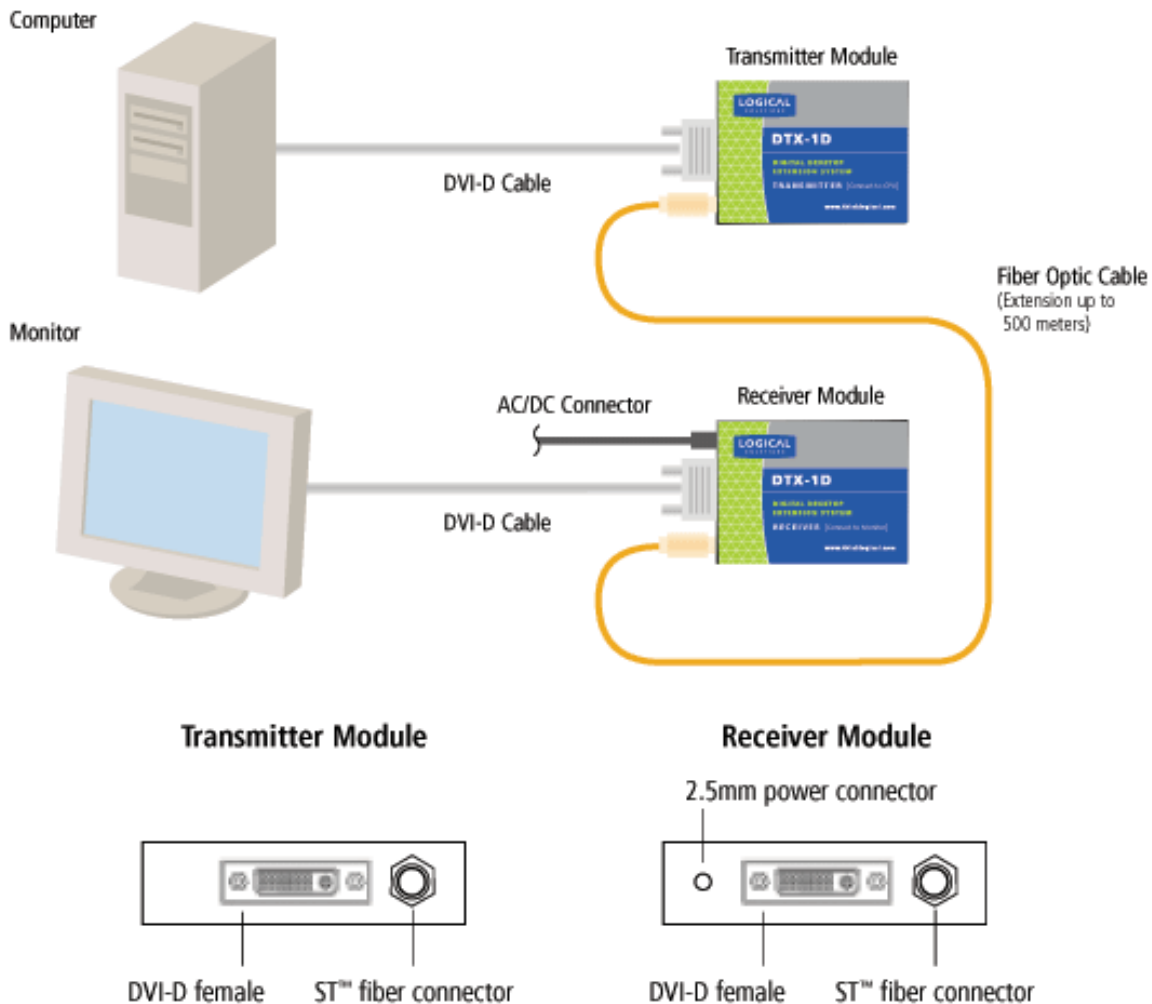
## 2.2 Small Form Factor

Each DTX-1D module is wall-mountable, if desired. Mounting centers are provided with keyhole slots (Fiber cable up, DVI connector and power connector down). A mounting template is provided at the end of this manual for your convenience. Mounting centers are 4-1/2 inches by 3-3/16 inches.

The transmitter and receiver modules of the DTX-1D are compact; measuring only 76.2mm (3") x 101.6mm (4") x 31.75mm (1.25") allowing for easy connection and placement.

Please note that the ST-fiber cable is located on the opposite end, than as depicted below.

**Figure 2.1** DTX-1D Application diagram



## 2.3 Increased Security and Efficiency

The ability to remote the CPU away from the monitor allows more control of the computer environment. Now it is possible to position the monitor or projector in any setting from office to lecture hall to boardroom while keeping the computer secure in a remote, controlled location.

## 2.4 Order of Installation Events

In order to properly use the DTX-1D system, you must follow this order of events for the initial power-up. By proceeding in this order, your monitor's DDC2B signal (if any) will be sent through the DTX-1D connection upon power-up.

1. Install and connect your Fiber Optic Cable between the DTX-1D Transmitter and DTX-1D Receiver modules.
2. Connect the AC Power Adapter for the DTX-1D Receiver to this unit, and plug it into a suitable power source.
3. Connect your video projector, monitor, or other display device to the DTX-1D Receiver, and turn it on.
4. Finally, connect your Computer to the DTX-1D Transmitter, and turn your computer on last.

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**Note**

If your Display is not turned on as indicated in #3 above, or there is no DDC2B signal received, the default resolution will be 800x600.

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## 2.5 Connecting the DTX-1D system

All physical connections to the product use industry-standard connectors.

### 2.5.1 Fiber Cable

A single fiber optic cable must be run between the location of the DTX-1D Transmitter (near your CPU or other DVI-D video source) and the DTX-1D Receiver (near the monitor, projector, etc.). The standard multi-mode fiber cable must be 50 or 62.5 micron, terminated with an ST-type twist-lock connector and no longer than 1640 running feet (500 meters). Be careful to not kink or pinch the fiber cable as it is being installed, and keep all bend radii to no less than 3 inches.

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**Note**

The DTX-1D has a safety feature preventing signal flow if the fiber optic cable is broken or disconnected. Therefore, the fiber cable should be connected first, and left in place.

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Connect your fiber cable to the ST-type connector on each DTX-1D pair (one Transmitter and one Receiver). Dress the cable so it will not get crushed, pinched or otherwise damaged.

## **2.5.2 Digital Video (DVI-D) Input**

The DTX-1D Transmitter unit connects to your DVI video source (DVI-D video card) using the provided DVI-D male-to-male cable. The Digital Video Input connector on the transmitter will NOT accept other form factors of DVI connectors (DVI-I or DVI-A).

Connect the other end of the DVI-D cable to your video card.

## **2.5.3 Digital Video (DVI-D) Output**

The DTX-1D Receiver unit connects to your DVI video monitor, projector, or other viewing device. Your device must have a DVI-D connector on its cable.

## **2.5.4 AC Power (Receiver)**

A separate wall-pack AC-to-DC converter (part number PWR-000004) is included and required for the DTX-1D Receiver. A single power jack is provided on the Receiver and accepts the 5VDC input. The green power LED on the DTX-1D Receiver (near the DVI-D connector) will light when the unit is receiving power.

The DC power plug has a right-angle connector design.

The AC wall pack has a universal power rating (100-240VAC, 50/60 Hz), and also has slip-on receptacle 'fingers' for various AC power receptacles found throughout the world. Use the appropriate AC power 'fingers' for your country / location. The others are not needed.

### 2.5.5 AC Power (Transmitter)

The DTX-1D receives power from your DVI Video Card. The green power LED on the DTX-1D Transmitter (near the DVI-D connector) will light when the unit is receiving power.

A single power jack is provided on the Transmitter and accepts a 5VDC input, if required. In most cases, this connection is NOT required.

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**Note**

The Transmitter unit receives its DC power via the DVI-D cable connected to your computer, so long as it is sending power. Almost all DVI-D video cards support power output for connected devices.

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If your DVI Video Card does not provide adequate power, a separate wall-pack AC-to-DC adapter (part number PWR-000004) may be ordered for use with the DTX-1D Transmitter. This wall-pack is OPTIONAL, and is not provided with the DTX-1D system. You may order it separately, if it is required in your application. The DC power plug has a right-angle connector design.

Since it is the same AC power pack that is used with the Receiver, the (part number PWR-000004) AC wall pack has a universal power rating (100-240VAC, 50/60 Hz), and also has slip-on receptacle 'fingers' for various AC power receptacles found throughout the world. Use the appropriate AC power 'fingers' for your country / location. The others 'fingers' are not needed.



*For Your Notes*

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## 3 Regulatory & Safety

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### *Regulatory Information and Contact Information*

## 3.1 Safety Requirements

### 3.1.1 Symbols found on the Product

Markings and labels on the product follow industry-standard conventions. Regulatory markings found on the products comply with requirements.

#### 3.1.1.1 Class 1 LASER Labeling



### 3.1.2 Product Serial Number

The DTX-1D products have a unique serial number, imprinted on a small silver label that is placed on the bottom of the chassis. The serial number includes a day-code. The format for the day-code is 2-digits each for the month, the day and the year, and two digits for a unique unit number. This serial number is also found on the original shipping carton.

### **3.1.3 Connection to the Product**

Connections and installation hardware for the product use industry-standard devices and methods. All wiring connections to the customer equipment is done in a fashion to minimize proprietary or customized connectors or cabling. Power connections are made with regionally appropriate power cords and approved methods.

## **3.2 Regulatory Compliance**

The Logical Solutions Inc. DTX-1D products are designed and made in the U.S.A. The DTX-1D products have been tested by a nationally recognized testing laboratory and found to be compliant with the following standards (both domestic USA and many international locations).

### **3.3 North America**

These products comply with the following standards:

Safety

- UL60950 : 2000
- CAN/CSA C22.2 No. 60950-00

LASER Safety

- CDRH 21CFR 1040.10
- Class 1 LASER Product

Electromagnetic Interference

- FCC CFR47, Part 15, Class A
- Industry Canada ICES-003 Issue 2, Revision 1

### **3.4 Australia & New Zealand**

This is a Class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.



## **3.5 European Union**

### **3.5.1 Declaration of Conformity**

#### Manufacturer's Name & Address

Logical Solutions Inc.  
100 Washington Street  
Milford, Connecticut 06460 USA  
Telephone (203) 647-8700

#### Product Name

- Model: DTX-1D Digital Desktop Video Extension System

These products comply with the requirements of the Low Voltage Directive 72/23/EEC and the EMC Directive 89/336/EEC.

### **3.5.2 Standards With Which the Products Comply**

#### Safety

- IEC60950:1992+A1, A2, A3, A4, A11

#### LASER Safety

- IEC60825-1/2
- Class 1 LASER Product

#### Electromagnetic Emissions

- EN55022: 1994 (IEC/CSP1R22: 1993)
- EN61000-3-2/A14: 2000
- EN61000-3-3: 1994

#### Electromagnetic Immunity

- EN55024: 1998 Information Technology Equipment-Immunity Characteristics
- EN61000-4-2: 1995 Electro-Static Discharge Test
- EN61000-4-3: 1996 Radiated Immunity Field Test
- EN61000-4-4: 1995 Electrical Fast Transient Test
- EN61000-4-5: 1995 Power Supply Surge Test
- EN61000-4-6: 1996 Conducted Immunity Test
- EN61000-4-8: 1993 Magnetic Field Test
- EN61000-4-11: 1994 Voltage Dips & Interrupts Test

## 3.5.3 Supplementary Information

The following statements may be appropriate for certain geographical regions and might not apply to your location.

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**Note**

This equipment 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 when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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**Note**

This Class A digital apparatus complies with Canadian ICES-003 and has been verified as being compliant within the Class A limits of the FCC Radio Frequency Device Rules (FCC Title 47, Part 15, Subpart B CLASS A), measured to CISPR 22: 1993 limits and methods of measurement of Radio Disturbance Characteristics of Information Technology Equipment.

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This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

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**WARNING**

This is a Class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.

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## 4 How to Contact Logical

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### 4.1 Customer Support

*Thank You* to our Customers for choosing a Logical Solutions product for your application. We appreciate your business and are interested in helping you successfully use our products.

Logical is here to help you. To contact Logical Solutions, use the following telephone numbers and internet-based methods.

If you're not yet a Customer, but are interested in finding a Logical Solution for your application, we'll be glad to help you. Our expert Sales staff will help determine the best solution for your needs, and will help you be certain that you've come to a Logical Solution, too.

Any information we gain about our customers is held in confidence. We do not share customer names or contact information with other companies.

#### 4.1.1 Website

Check out our website for current product offerings, support information, and general information about all of the Logical Solutions we offer.

Our internet website offers product information on all current systems, including technical specification sheets and installation guides (for viewing on-line or for download), product diagrams showing physical connections, and other information you might need. We are constantly updating our website, so be sure to "refresh" your browser when visiting the Logical Solutions website to see the most up-to-date information.

**Internet:** [www.thinklogical.com](http://www.thinklogical.com)

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**Note**

Most online documents are stored as Adobe Acrobat "PDF" files. If you do not have the Adobe Acrobat Reader needed to view PDF files, visit [www.adobe.com](http://www.adobe.com) for this free download.

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## 4.1.2 E-mail

Logical Solutions is staffed Monday through Friday from 8:30AM to 5:30PM, Eastern Time Zone. We will try to respond to your email inquiries promptly, using the following email addresses for your different needs:

**info@thinklogical.com** -- Information on Logical Solutions and our products

**sales@thinklogical.com** -- Sales Department - orders, questions or issues

**support@thinklogical.com** -- Product support, technical issues or questions, product repairs, requests for Return Authorization, any other issue.

## 4.1.3 Telephone

**Telephone Sales:** Contact our expert technically-oriented Sales staff via telephone in Milford, Connecticut, at **(203) 647-8700** or if in the continental US, you may use our toll-free number **(800) 291-3211**. We're here Monday through Friday, 8:30AM to 5:30PM, Eastern Time Zone. Ask for their direct dial phone number when you call!

**Telephone Product Support:** Contact Product Support via telephone in Milford, Connecticut, at (203) 647-8700. The support lines are manned Monday through Friday, 9AM to 5PM, Eastern Time Zone.

**International Sales:** Please contact our US Sales staff in Milford, Connecticut, at **(203) 647-8700**. We're here Monday through Friday, 8:30AM to 5:30PM, Eastern Time Zone (same as New York City). If leaving a voice message, please provide a 'best time to call back' so we may reach you at your convenience.

We have an automated attendant answering our main telephone switchboard 24 hours a day. You can leave voice messages for individuals at any time. Our Sales Representatives have direct numbers to speed up your next call to us.

## 4.1.4 Fax

Our company facsimile number is **(203) 783-9949**. Please indicate the nature of the fax on your cover sheet, and provide return contact information.

## 4.2 Product Support

Logical Solutions Inc.'s support personnel are available Monday through Friday from 8:30AM to 5:30PM, Eastern Time Zone.

If your application might require assistance at some time outside of our normal business hours, please contact us beforehand and we will do our best to make arrangements to help you with your Logical Solutions products.

### 4.2.1 Warranty

Logical Solutions Inc.'s products carry a one year warranty, with longer-term warranties available at time of purchase on most products. Please refer to your product invoice for your product's Warranty Terms and Conditions.

For specific details about the product warranties, please contact Sales.

### 4.2.2 Return Authorization

If, for some reason, you need to return your Logical Solutions product to us, please get a **Return Authorization Number (RA# or RMA#)** from Logical's **Product Support** department before sending the unit in. Return Authorization must include contact information (phone preferred) in the event we have any questions.

After receiving your RA Number, please ship the unit postpaid, with the RA# prominently displayed on the shipping container.

We will contact you about your product once we determine its status.

Products received without Return Authorization and/or Contact information may require additional attention on our part that may delay any desired service or support with your system.

### 4.2.3 Our Address

If you have any issue with the product, have product questions, or need technical assistance with your DTX-1D system, please call us **(203) 647-8700** and let us help.

If shipping something with an RA#, or if you'd like to write us, we are located at:

Logical Solutions Inc.  
100 Washington Street  
Milford, CT 06460 USA



*For Your Notes*

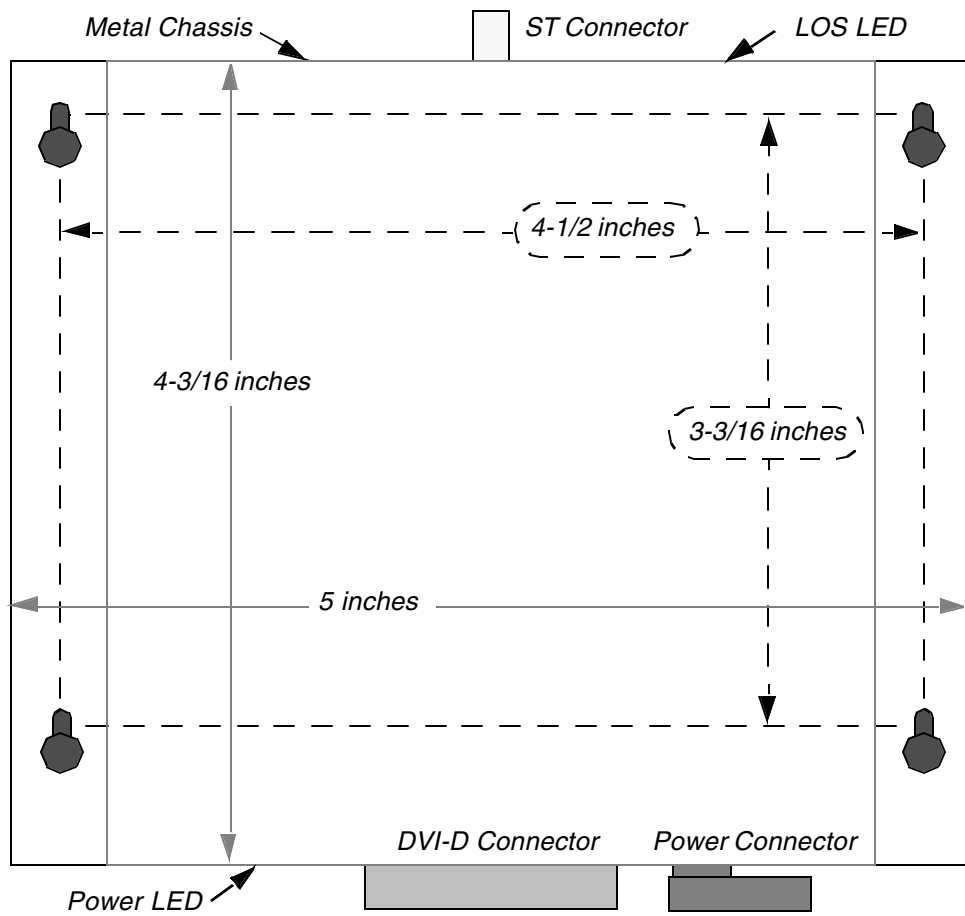
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## **Appendix A DTX-1D Mounting Template**

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Wall Mounting dimensions for DTX-1D units (full size) - DASHED LINES. Use appropriate fasteners and anchors of your choosing to mount each unit.

*Note: Leave Clearance (3 inch bend radius) your Fiber Cable at top*



*Note: Leave Clearance for your DVI-D Cable at bottom*

Power connection is only REQUIRED on Receiver (Monitor) end

