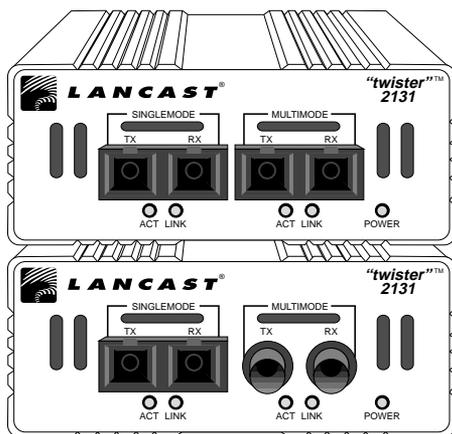


2131 SERIES “twister”™

SINGLEMODE-TO-MULTIMODE

100MBPS TRANSLATOR



Installation & User Guide

Models: 2131-34 / 2131-54



LANCAST®

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Introduction

Thank you for choosing “twister” Media Translators.

LANCAST “twister” Media Translators represent the hottest technology available for extending Ethernet and Fast Ethernet networks. Since LANCAST first invented “twister” media translation, it has become the industry recommended standard for providing a cost-effective means of integrating a mixed media environment. And, as LANs grow and evolve, this technology provides an ideal solution for building effective migration strategies.

These IEEE 802.3u compliant media translators are compatible with Ethernet and Fast Ethernet devices from Cisco, Cabletron, 3Com, Bay Networks, Newbridge Networks and other leading network technology providers. This increases the flexibility of your network configurations by ensuring reliable data transmission in multi-vendor as well as mixed media environments.

The information in this guide will help you to install and start using your “twister” Media Translator.

Product Overview

The LANCAST “twister” 2131 Series SM-to-MM Translator provides seamless integration between multimode fiber and the higher bandwidth provided by singlemode fiber optics. These units are an ideal connectivity solution for integrating into WANs or other commercial-grade infrastructures.

To optimize the performance of your Fast Ethernet network, this innovative translator series provides standard repeater functionality and automatically adjusts to full or half-duplex operation. Full signal restoration and data re-timing, with a latency of < 40 bits, ensures accurate data transmission to and from remote sites. This also allows optimal media length to be achieved on either side of the device. The “twister” Singlemode-to-Multimode Translator supports multimode segments up to 2km and singlemode segments up to 15km.

The “twister” Series also features Link Loss Carry Forward (LLCF) functionality to provide an easy means for troubleshooting a remote network connection. To ensure complete interoperability with devices that auto-negotiate, a simple slide switch on the back of the unit disables the LLCF function and allows the “twister” to constantly transmit a link signal. Please refer to the section in the **User Guide** titled *Link Loss Carry Forward (LLCF)* for more detailed information.

Whether you are updating or expanding your existing network, the LANCAST line of Media Translators support a wide range of configuration needs.

Installation Guide

Follow the four simple steps outlined in this section of the manual to install and start using your LANCAST “twister” Media Translator.

- 1** *Unpack the “twister” and any accessories.*
Check that the following components have been included with your order:
 - 2131 Series “twister”
 - Power Supply

Your order has been provided with the safest possible packaging, but shipping damage does occasionally occur. Inspect your order carefully for damage that may have occurred during shipment. If you discover any shipping damage, notify the carrier and follow its instructions for damage and claims. Be sure to save the original shipping carton if return or storage of the unit is necessary.

- 2** *Choose an appropriate location.*
The “twister” Singlemode-to-Multimode (SM-to-MM) Media Translator is intended for use in either office or industrial environments. The translator must be located within six (6) feet of the AC power source being used and placed as far away as possible from electrical noise generating equipment such as copiers, electrostatic printers and other motorized equipment. If exposed twisted-pair wiring is used nearby, the wiring should be routed as far away as possible from power cords and data cables to minimize interference.

The units may be oriented in any manner which permits the user to make physical connection to the power supply and leaves a minimum of six (6) inches of space for proper ventilation.

TUV Compliance Note

For pluggable equipment, the socket outlet must be installed near the equipment and be easily accessible.

Bei Geräten mit Steckanschluß muß die Steckdose nahe dem Gerät angebracht und leicht zugänglich sein.

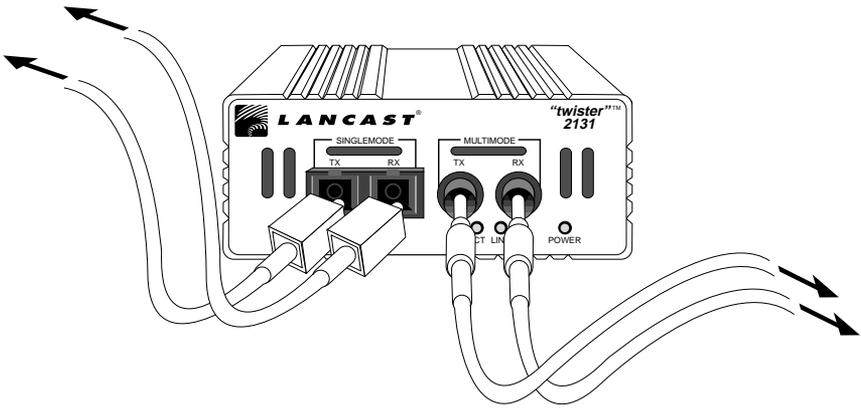
3

Connect to the network.

The LANCAST “twister” Media Translator offers the ease of plug-and-play installation.

The “twister” SM-to-MM Translator provides one duplex multimode fiber optic SC/ST port and one duplex singlemode SC port for 100BASE-FX connections. When making these connections, be sure that the transmit (TX) port of the “twister” connects to the receive (RX) port of the connected device; and be sure that the transmit (TX) port of the connected device connects to the receive (RX) port of the “twister” unit.

Once power is applied to the unit, correct connectivity can be verified via the LINK LED.

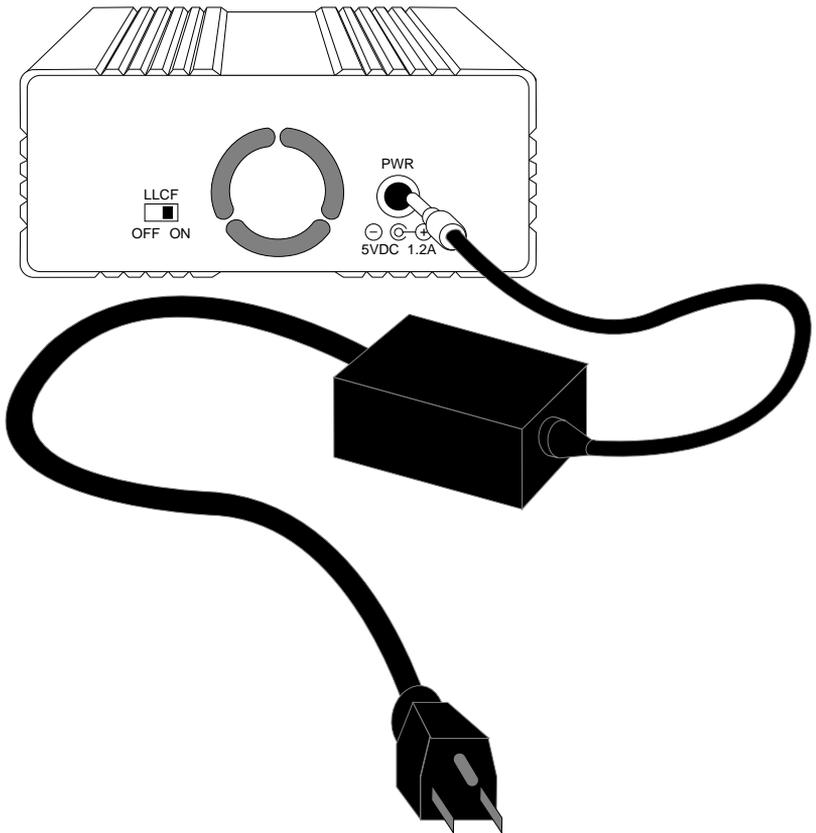


4

Apply power to the “twister”.

Power is provided to the “twister” from the desktop, universal input, switching power module. The universal power supply module provides a DC jack for connection of the desktop switching power supply module. The power module is equipped with a Switchcraft S760 hollow-type plug and standard IEC 320-type AC power receptacle.

IMPORTANT: When making power connections, connect the DC power cord to the DC input jack located on the back of the “twister” *before* making the IEC 320 connection to the outlet. **Failure to do this properly can damage the “twister” and void the user’s warranty.**



If an additional extension cord is used to connect the power module to the power source, the following guidelines must be followed.

While one end of the AC power cord can be fitted with whatever plug is standard for the country of operation, the end that connects to the “twister” power supply module must have a female plug that fits this type of AC receptacle.

- AC 115V (North American): use a UL-listed and CSA-certified cord set consisting of a minimum 18 AWG, type SVT or SJT three-conductor cord, a maximum of 15 feet in length and a parallel blade, grounding-type attachment plug rated 15A, 125V.
- AC 230V (USA): use a UL-listed cord set consisting of a minimum No. 18 AWG, type SVT three-conductor cord, a maximum of 15 feet in length and a Tandem blade grounding-type attachment plug rated 15A, 250V.
- 230V (outside USA): use a cord set consisting of a minimum No. 18 AWG cord and grounding-type attachment plug rated 15A, 250V. The cord set should have the appropriate safety approvals for the country in which the “twister” 2131 is installed and marked HAR.

Upon receiving power, the “twister” will go into normal operation mode and automatically provide the appropriate signal translation between the connected network segments.

Be sure to verify correct segment connectivity via the LINK LEDs on the front of the unit.

User Guide

This section contains more detailed user information regarding certain operating features and maintenance instructions for your “twister” Media Translator.

System LEDs

The LANCAST “twister” provides LEDs for the visible verification of translator status and proper unit functionality as well as to aid in troubleshooting and overall network diagnosis and management.

LEDs indicate the following:

- **POWER:** the unit is ON and functioning in normal operation mode.
- **LINK (SM and MM ports):** satisfactory link status on the respective port. *NOTE: The “twister” has been designed to display the link condition regardless of the state of LLCF. This feature can be very helpful in diagnosing any problems which may occur during installation or in the course of normal operation.*
- **ACT (activity/SM and MM ports):** valid data is being received on the respective port.

Link Loss Carry Forward (LLCF)

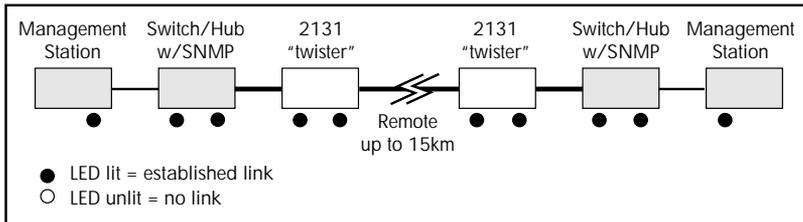
The LANCAST “twister” has been designed with Link Loss Carry Forward (LLCF) functionality. This added functionality allows a network administrator to troubleshoot a remote network connection.

All “twister” units are shipped from the factory with the LLCF switch set in the ON position. The “twister” will implement LLCF according to the following specification:

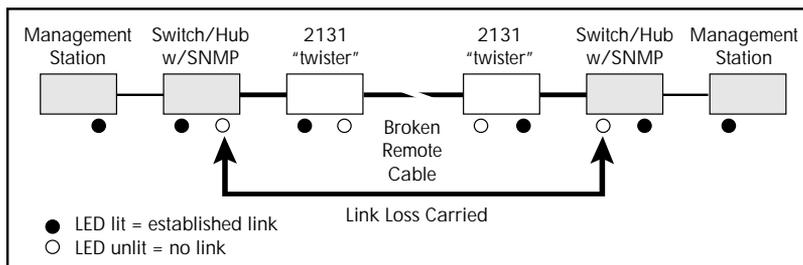
- If the multimode (MM) F/O port does not receive a valid link signal on the MM cable segment, then the singlemode (SM) port will not transmit a link signal onto the SM cable segment.
- If the singlemode (SM) F/O port does not receive a valid link signal on the SM cable segment, then the multimode (MM) port will not transmit a link signal onto the MM cable segment.

*NOTE: If two “twister” units are connected together via a single cable segment (either SM or MM), the LINK LED will **not** illuminate. Only when a valid link pulse is connected to both the SM and MM ports will a complete connection be established.*

In the diagram below, we see a typical network configuration using a “twister” SM-to-MM Translator for remote connectivity:



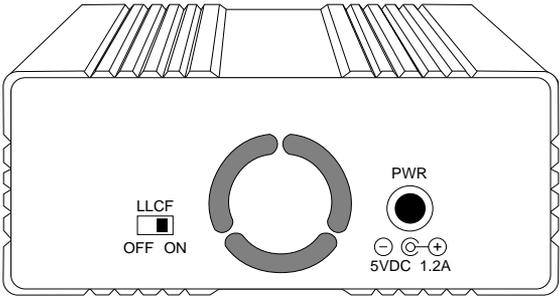
If the fiber connection breaks, or the remote device fails, the “twister” will carry that link loss all the way to the switch/hub which will generate a trap to the management station. The administrator can then look at the “twister” module to determine the source of the loss.



IMPORTANT: When connecting a “twister” to a 10/100Mbps device, you must force both sides of the configuration to 100Mbps full or half duplex. This will allow the “twister” to immediately see a normal link pulse and start passing data.

A simple user-selectable switch is incorporated on the back of the unit to disable the LLCF function. This function can only be disabled for both segments simultaneously.

When the LLCF function is disabled, the “twister” will continually transmit a link signal on both fiber segments. This can be useful to ensure interoperability with certain types of devices that use auto-negotiation.

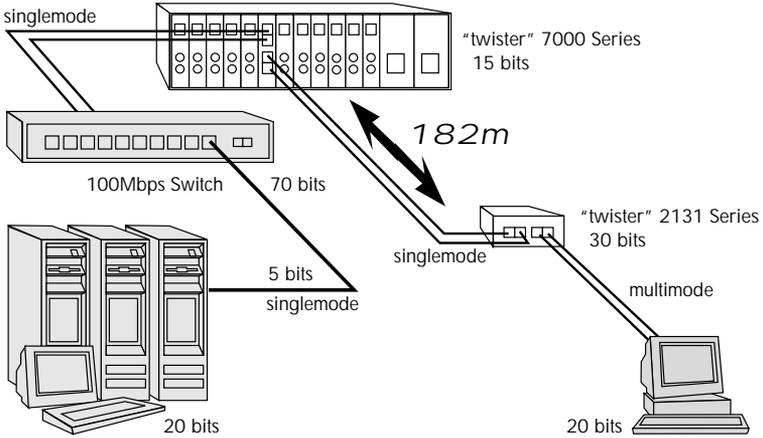


Bit Delay

The LANCAST "twister" Series provides the lowest bit delay in the industry.

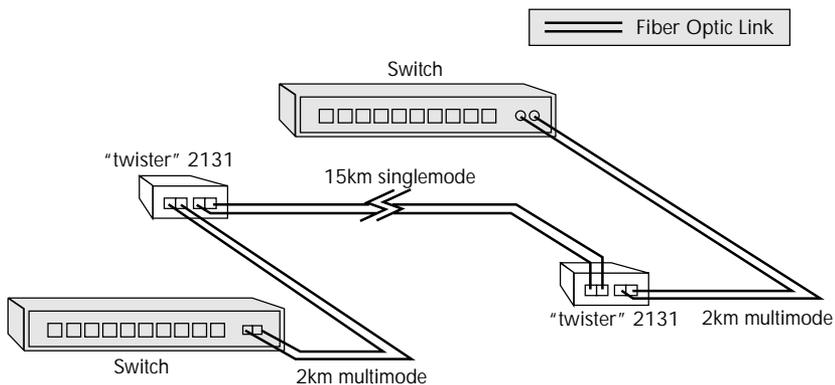
LANCAST "twister" = 226m additional cable

$256 \text{ Bits} - [70+5+20+5+20] - [30+15] = 91 \text{ Bits} \times (2m+) = 182m$



Topology Solutions

LANCAST "twister" 2131 SM-to-MM Translator



Technical Specifications

Data Rate

Half-duplex _____ 100Mbps
Full-duplex _____ 200Mbps

Singlemode F/O Interface

Connector _____ SC
RX Input Sensitivity _____ -35 dBm peak minimum
Output Power _____ -8 dBm to -15 dBm (9/125 μ m)
Supported Link Length _____ up to 15km full duplex
Cable Type _____ 8.3/125, 8.7/125, 9/125, 10/125 μ m F/O

Multimode F/O Interface

Connector _____ ST or SC
RX Input Sensitivity _____ -31 dBm peak minimum
Output Power _____ -14 dBm to -23.5 dBm (50/125 μ m)
_____ -14 dBm to -20 dBm (62.5/125 μ m)
Supported Link Length _____ up to 2km full duplex
Cable Type _____ 50/125, 62.5/125, 100/140 μ m F/O

Power

Input _____ 90-260V AC 50/60 Hz
Output _____ +5VDC @ 1.2 A

Environmental

Operating Temperature _____ 0° — 55° C
Storage Temperature _____ -25° — 70° C
Relative Humidity _____ 5% — 95% non-condensing
Physical Case _____ Fully enclosed metal construction
Dimensions _____ 4.5" L x 3.8" W x 1.8" H
Weight _____ 3 lbs (including power supply)

Regulatory

Compliance _____ IEEE 802.3u 100BASE-FX
Safety _____ UL, CSA, EN60950
Emissions _____ FCC Part 15, Class A, EN55022 A, EN50082-1

Product Safety, EMC and Compliance Statements

This equipment complies with the following requirements:

- UL
- CSA
- EN60950 (safety)
- FCC Part 15, Class A
- EN55022 Class A (emissions)
- EN50082-1 (immunity)

The following *FCC* and *Industry Canada* compliance information is applicable to North American customers only.

USA FCC Radio Frequency Interference Statement

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.

***Caution:** Changes or modifications to this equipment not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.*

Canadian Radio Frequency Interference Statement

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.

Warranty and Servicing

LANCAST, Inc. warrants the “twister” 2131 Series Media Translators to be in good working order for a period of THREE YEARS from the date of purchase. Should the unit fail anytime during said THREE YEAR period, LANCAST will, at its option, replace or repair the product. This warranty is limited to defects in workmanship and materials and does not cover damage from accident, disaster, misuse, abuse or unauthorized modifications. Under no circumstances will LANCAST be liable for any damages incurred by the use of this product including, but not limited to, lost profits, lost savings, and any incidental or consequential damages arising from the use of, or inability to use, this product.

If the product was purchased from an authorized LANCAST dealer, limited warranty service may be obtained by returning the product to the dealer. Return the product in its original shipping container (or equivalent), pre-insured, and with proof of purchase.

Additional Stand-Alone “twisters” available from LANCAST:

100Mbps “redundant twisters”:

- 2731-11 _____ TX to Redundant TX
- 2731-13 _____ TX to Redundant FX multimode SC
- 2731-14 _____ TX to Redundant FX singlemode SC
- 2731-15 _____ TX to Redundant FX multimode ST

“super twisters”:

- 6348-01 _____ half-duplex TX to full-duplex FX multimode SC
- 6348-02 _____ half-duplex TX to full-duplex FX multimode ST
- 6348-03 _____ half-duplex TX to full-duplex FX singlemode SC
- 6348-04 _____ half-duplex TX to full-duplex FX singlemode SC
(40km extended distance support)

“twisters”:

- 6318-74 _____ TX to FX multimode SC
- 6318-75 _____ TX to FX multimode ST
- 6318-76 _____ TX to FX singlemode SC
- 6318-86 _____ TX to FX singlemode SC
(40km extended distance support)

10Mbps “twisters”:

- 4318-13 _____ BNC to F/O multimode ST
- 4318-45 _____ TP to AUI
- 4318-73 _____ TP to BNC
- 4318-74 _____ TP to F/O multimode ST
- 4318-76 _____ TP to F/O singlemode ST
- 4318-93 _____ TP to BNC (110V)
- 4318-94 _____ TP to F/O multimode ST (110V)



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