

**FlexPoint™ T1/E1 Copper to Fiber
Converters**

User Instructions

Description:

The FlexPoint T1/E1 connects T1 and E1 devices, such as PBXs, CSUs and routers, via multimode (MM) or single-mode (SM) fiber. Designed to extend the standard T1/E1 twisted pair or Coax network distances over fiber, this converter provides protection from environmental noise and effectively increases high-speed network reliability. The following models are described here.

Model #	Fiber Type	Max Distance
4470/90-x	MM, SC, 1310nm	5km
4471/91-x	SM, SC, 1310nm	30km
4472/92-x	MM, ST, 1310nm	5km
4473/93-x	SM, ST, 1310nm	30km
4474/94-x	SM, SC, 1310nm, LH	60km

Power Options (-x):

- 0 No power adapter included (chassis module)
- 1 110 Volt / 60 Hz
- 2 110-230 Volt / 50 Hz

Mounting Options

4380	FlexPoint Wall-Mounting Hardware Kit
4384	FlexPoint 18 to 72VDC Stand-Alone Power Supply
4381	FlexPoint DC Converter Wall-Mounting Kit (for 4384)
4385	FlexPoint 14-Unit 48VDC Power-Redundant Chassis
4392	FlexPoint 5-Unit Rack-Mounting Shelf
4395	FlexPoint 14-Unit AC Power-Redundant Chassis

Local loop-back and Remote loop-back

When both Local and Remote Loop-back are set to the Normal position, the FlexPoint T1/E1 uses the default B8ZS data format. When both switches are turned to their On position, it uses the AMI data format.

Transmit/force 1's to fiber

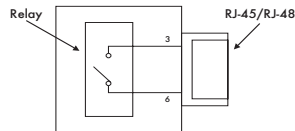
This switch is used to insert an "all ones" pattern into the data stream being transmitted out of the fiber port on the FlexPoint T1/E1 converter. Data being received on the coax or twisted pair will be disabled and data being received on the fiber is passed through to the coax or twisted pair side. By returning the switch to the normal position the unit will resume to normal operation.

Transmit/force 1's to Coax or UTP

This switch is used to insert an "all ones" pattern into the data stream being transmitted out of the coax or twisted pair on the FlexPoint T1/E1 converter. Data being received on the fiber will be disabled and data being received on the coax or twisted pair is passed through to the fiber side. By returning the switch to the normal position the unit will resume to normal operation.

Alarm Relay Contacts

The FlexPoint T1/E1 features dry relay contacts for optionally connecting the it into a separate T1/E1 alarm circuit. The relay closes when a loss of power or when signal detect is lost to the copper or fiber connection.



Operational rating on relay pins 3 & 6: 0-220VDC max 2A

Power Adapter Notice

- When Using in a stand-alone configuration, this product is intended to be and must be used only with a Listed Direct Plug-In Power Unit marked "Class 2" and rated at 9VDC, 1 Amp.
- This product should always be used only with Omnitron Supplied Power Unit model numbers 9113-PS or 9115-PS.

WARNING!
Before inserting the Power Adapter, verify that the power on the unit is appropriate for your AC line voltage source.

Mounting instructions:

The FlexPoint Fiber Converter can be solo-mounted using a wall-mounting kit, or rack-mounted using a 5-unit shelf, or a high-density FlexPoint 14-Unit Power-Redundant Chassis.

Fiber Optic Cable Attachment:

Connect the fiber cables between the FlexPoint T1/E1 converters. The transmit (Tx) must attach to the receive side and the receive (Rx) must attach to the transmit side. Note: Use fiber cables that are compliant with the specifications that are outlined in fiber cable specifications.

Copper Cable Attachment:

RJ-45/RJ-48 T1/E1 connector

Connect to the RJ-45/48 connector on the FlexPoint T1/E1 converter via a category 3 or better cable (Category 5 is recommended) and attach the other end to the network

LED Indicators

LED	Color	Status	Description
Power:	Yellow	On	Power applied
Fiber:	Green	Off	No signal detect
		On	Signal detect
		Blink	All ones received
UTP/Coax:	Green	Off	No signal detect
		On	Signal detect
		Blink	All ones received
Test:	Green	Off	Normal operation
		On	L/LB or All 1's Test mode
		Blink	R+L/LB Received master
		Fast Blink	R+L/LB Received slave

Fiber Cable Specifications:

Multimode	Cable: 50/125, 62.5/125, 100/140 μm
	Wavelength: 1310nm
	Max Distance: 5km
Singlemode	Cable: 9/125 μm
	Wavelength: 1310nm
	Max Distance: 30km
Singlemode long-haul	Cable: 9/125 μm
	Wavelength: 1310nm
	Max Distance: 60km

equipment. (The twisted pair connection requires two active pairs in a T1/E1 environment. The active pairs are pins 1&2 and pins 4&5. Only dedicated wire pairs should be used for the active pins.) Set the UTP DCE / DTE switch for the RJ-45/48 port to the appropriate setting.

Note: Use copper cables that are compliant with the specifications that are outlined in copper cable specifications.

Coax E1 Connector

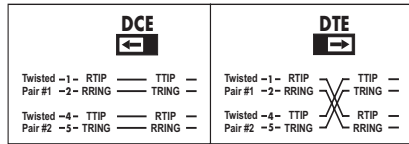
Attach the BNC to the FlexPoint T1/E1 converter and attach the other end of the BNC to the network equipment.

Note: Use copper cables that are compliant with the specifications that are outlined in copper cable specifications.

Switch Settings:

UTP DCE/DTE setting

The UTP DCE/DTE switch is used to eliminate the need for crossover and custom cables to connect devices together when using the RJ-45/48 port. Set this switch to DCE to use a straight-through cable and to DTE when a crossover-cable would be required.



T1/E1 Copper line configuration settings

The T1/E1 copper line codes and line lengths are configured using dip switches located on the side of the FlexPoint T1/E1 media converter.

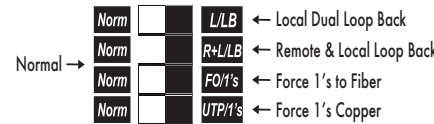
Line Type	Port Type	Distances	Switch Positions
			1 2 3 4
T1 DSX-1	RJ-45/48	0' - 133'	↓ ↓ ↓ ↓
T1 DSX-1	RJ-45/48	133' - 266'	↓ ↓ ↓ ↑
T1 DSX-1	RJ-45/48	266' - 399'	↓ ↓ ↑ ↓
T1 DSX-1	RJ-45/48	399' - 533'	↓ ↓ ↑ ↑
T1 DSX-1	RJ-45/48	533' - 655'	↓ ↑ ↓ ↓

T1 DS-1	RJ-45/48	0 dB	↓ ↓ ↓ ↓
T1 DS-1	RJ-45/48	-7.5 dB	↓ ↑ ↓ ↑
T1 DS-1	RJ-45/48	-15.0 dB	↓ ↑ ↑ ↓
T1 DS-1	RJ-45/48	-22.5 dB	↓ ↑ ↑ ↑

E1 75 Ω	Coax/BNC	Standard	↑ ↓ ↓ ↓
E1 120 Ω	RJ-45/48	Standard	↑ ↓ ↓ ↑
E1 75 Ω	Coax/BNC	Extended	↑ ↑ ↓ ↓
E1 120 Ω	RJ-45/48	Extended	↑ ↓ ↑ ↑

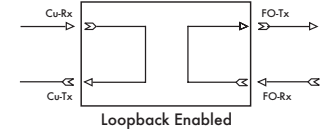
Operational switch settings and functions

The following operational switches located on the front of the FlexPoint T1/E1 converter are to assist in installation and fault isolation.



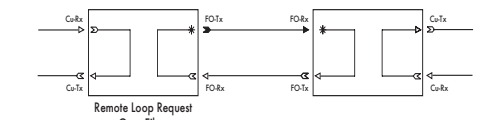
Local loop-back (L/LB)

This switch will set the FlexPoint T1/E1 converter in a loop-back mode on both the fiber and copper connections. By returning the switch to the normal position the unit will resume to normal operation.



Remote loop-back (R+L/LB)

This switch will allow the entire fiber segment to be tested at either of the FlexPoint T1/E1 converters without having to set switches on both units. When set in this mode the local unit is switched to a local loop-back mode. The fiber Tx port will be further encoded to carry a remote loop-back protocol. This remote loop-back will set the far end FlexPoint T1/E1 converter to remote loop-back mode and return a signal to the sending unit. An LED on the local and remote FlexPoint T1/E1 converters will show a confirmation that the fiber segment is communicating properly between devices. By returning the switch to the normal position it will return to normal operation.



Warning

The operating description in this Instruction Manual is for use by qualified personnel only. To avoid electrical shock, do not perform any servicing of this unit other than that contained in the operating instructions, unless you are qualified and certified to do so by Omnitron Systems Technology, Inc.

Caution

All user-required operations can be performed without opening the unit. Never attempt to open or remove the cover or tamper with the unit.

Warranty

This product is warranted to the original purchaser against defects in material and workmanship for a period of TWO YEARS from the date of shipment. A LIFETIME warranty may be obtained by the original purchaser by REGISTERING this product with Omnitron within 90 days from the date of shipment. TO REGISTER, COMPLETE AND MAIL OR FAX THE REGISTRATION PORTION OF THIS INSTRUCTION MANUAL TO THE INDICATED ADDRESS. Or you may register your product on the Internet at <http://www.omnitron-systems.com>. During the warranty period, Omnitron will, at its option, repair or replace a product which is proven to be defective.

For warranty service, the product must be sent to an Omnitron designated facility, at Buyer's expense. Omnitron will pay the shipping charge to return the product to Buyer's designated US address using Omnitron's standard shipping method.

Limitation of Warranty

The foregoing warranty shall not apply to defects resulting from improper or inadequate use and/or maintenance of the equipment by Buyer, Buyer-supplied equipment, Buyer-supplied interfacing, unauthorized modifications or tampering with equipment (including removal of equipment cover by personnel not specifically authorized and certified by Omnitron), or misuse, or operating outside the environmental specification of the product (including but not limited to voltage, ambient temperature, radiation, unusual dust, etc.), or improper site preparation or maintenance.

No other warranty is expressed or implied. Omnitron specifically disclaims the implied warranties of merchantability and fitness for any particular purpose.

Exclusive Remedies

The remedies provided herein are the Buyer's sole and exclusive remedies. Omnitron shall not be liable for any direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any legal theory.

User Warranty Registration
Please register on-line @ <http://www.omnitron-systems.com> or complete both sides and mail or fax this registration form to:

Omnitron Systems Technology, Inc.
140 Technology Drive, #500
Irvine, CA 92618, USA
Fax: (949) 250-6514

Name: _____
Company: _____
Address: _____
City: _____ State: _____ Zip Code: _____
Country: _____
Phone: _____ Fax: _____
E-mail: _____

User Warranty Registration
Please register on-line at <http://www.omnitron-systems.com> or complete both sides and return this form to Omnitron Systems.

Model: _____ Purchase Date: _____
Serial Number: _____
Purchased From: _____
Address: _____ Zip Code: _____
City: _____ State: _____
Country: _____
Comments and Suggestions: _____