

NOVEMBER 2001  
LTM215A-MM  
LTM215A-SM  
LTM215AE-MM  
LTM215AE-SM

## FlexPoint™ TR

**CUSTOMER SUPPORT INFORMATION** Order toll-free in the U.S.: Call 877-877-BBOX (outside U.S. call 724-746-5500)  
FREE technical support 24 hours a day, 7 days a week; Call 724-746-5500 or fax 724-746-0746  
Mailing address: **Black Box Corporation**, 1000 Park Drive, Lawrence, PA 15055-1018  
Web site: [www.blackbox.com](http://www.blackbox.com)  
E-mail: [info@blackbox.com](mailto:info@blackbox.com)

### Overview and Description:

The FlexPoint™ TR converts between 4/16 Mbps Token Ring twisted pair (RJ45 UTP) and fiber cabling. The following models are described here:

Model	UTP	Fiber, Connector
LTM215A-MM	Category 3/5	Multimode, ST, 850 nm
LTM215A-SM	Category 3/5	Single-mode, ST, 1310 nm
LTM215AE-MM	Category 3/5	Multimode, ST, 850 nm
LTM215AE-SM	Category 3/5	Single-mode, ST, 1310 nm

The FlexPoint TR can be used to connect between a MAU and a station, between Ring-in and Ring-out ports of MAUs or between a switch and a MAU's lobe. No configuration is required, the FlexPoint TR adjusts its operation to the proper speed (4 or 16 Mbps) and detects the type of port it is attached to.

### Installation and Configuration

#### Power Adapter Notice:

- When used in a stand-alone configuration, this product is intended to 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 its enclosed Power Unit.

#### WARNING!

**Before plugging the Power Adapter to any wall outlet or AC power source, verify that the power on the unit is appropriate for your AC line voltage source.**

### Mounting:

The FlexPoint TR can be individually wall-mounted using a wall-mounting kit, rack-mounted using a 5-position space-saver shelf, or inserted in a 14-position power-redundant FlexPoint Powered Chassis. When wall-mounting or shelf-mounting, attach the power adapter unit.

### Switch Settings:

**"RJ45 Cross-Over" Switch:** When connecting the UTP to a Ring-Out or a Lobe, set switch to "Straight-Through" (factory setting). When connecting to a Ring-In or a workstation, set it to "Cross-Over."

**"Auto Select/Cable Test" Switch:** When in "Auto Select" (factory setting), the FlexPoint TR adapts its operation to the type of equipment it is connected to. When in "Cable Test," the FlexPoint supports a fiber or copper media test.

### LED Indicators:

LED	Color	Description
Power	Yellow	Power applied
	Red	Error detected
Inst	Green	Inserted successfully into a lobe or Ring-In
	Yellow	Media (Cable) test is enabled
Fiber Ready	Green	Fiber OK
UTP Ready	Green	UTP OK

### Cable / Media Test:

When in "Cable Test," the FlexPoint TR provides a

cabling media test. For fiber test, provide a connection between the Tx and Rx fiber ports; a good fiber turns the "Fiber Ready" LED ON. For UTP test, connect a RJ45 cable to a port in a hub; a good cable turns the "UTP Ready" LED ON.

### Installation:

For all connections, attach the fiber between the two FlexPoint TR units first; the "Fiber Ready" LED on both units should turn ON.

Select the appropriate "Straight/Crossed" selection for the type of device being connected to the UTP side.

- Workstation (WS) to a hub: Attach the FlexPoint's UTP to the hub; "UTP Rdy" should go ON. Attach the FlexPoint's UTP to the WS. Reboot the WS; the UTP and Insert LEDs should turn ON.
- Ring-Out (RO) to Ring-In (RI): Attach the RI and RO cables to the hubs. Make sure that at least one WS is operational on the ring. The "UTP Rdy" on the RO side of the FlexPoint TR should turn ON. If using active MAUs, they may have to be set to 8228 mode.
- Hub (MAU) to a Switch: Attach to the hub's lobe; the "UTP Rdy" LED should turn ON. Attach to the switch's port; the "UTP Rdy" and Insert LEDs should turn ON. It may be required to set the switch to WS mode.

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### Specification

- **Protocol:** 4/16 Mbps IEEE 802.5j.
- **Interface:**
  - UTP: RJ45 - EIA/TIA 568.
  - Fiber: ST
  - Multi-mode: 50/125, 62.5/125, 100/140µm.
  - Single-mode: 9/125µm.
- **Supported Distances:**

	4Mbps	16Mbps
UTP Category 3	150 m	100 m
UTP Category 5	300 m	150 m
Fiber MM (62.5 um)	2.5 km	2.5 km
Fiber SM (9.0 um)	20 km	20 km
- **Dimensions / Weight:** W:3.0"xD:4.0"xH:1.0" / 2 lb.
- **Mounting:** Stand-alone, Rack or Powered Chassis.
- **Power:** 9 VDC / 750 mA.
- **Temperature:**
  - Operating: 0 to 45 degrees C
  - Storage: 0 to 85 degrees C
- **Humidity:** Up to 90% (non condensing)

### TRADEMARKS

All applied-for and registered trademarks are the property of their respective owners.

### FEDERAL COMMUNICATIONS COMMISSION AND CANADIAN DEPARTMENT OF COMMUNICATIONS RADIO FREQUENCY INTERFERENCE STATEMENTS

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to be cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

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

*This digital apparatus does not exceed the Class A limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of the Canadian Department of Communications.*

*Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique publié par le ministère des Communications du Canada.*

### NORMAS OFICIALES MEXICANAS (NOM)

#### ELECTRICAL SAFETY STATEMENT

- Todas las instrucciones de seguridad y operación deberán ser leídas antes de que el aparato eléctrico sea operado.
- Las instrucciones de seguridad y operación deberán ser guardadas para referencia futura.
- Todas las advertencias en el aparato eléctrico y en sus instrucciones de operación deben ser respetadas.
- Todas las instrucciones de operación y uso deben ser seguidas.
- El aparato eléctrico no deberá ser usado cerca del agua—por ejemplo, cerca de la tina de baño, lavabo, sótano mojado o cerca de una alberca, etc.
- El aparato eléctrico debe ser usado únicamente con carritos o pedelstales que sean recomendados por el fabricante.
- El aparato eléctrico debe ser montado a la pared o al techo sólo como sea recomendado por el fabricante.
- Servicio—El usuario no debe intentar dar servicio al equipo eléctrico más allá de lo descrito en las instrucciones de operación. Todo otro servicio deberá ser referido a personal de servicio calificado.
- El aparato eléctrico debe ser situado de tal manera que su posición no interfiera su uso. La colocación del aparato eléctrico sobre una cama, sofá, alfombra o superficie similar puede bloquea la ventilación, no se debe colocar en libreros o gabinetes que impidan el flujo de aire por los orificios de ventilación.
- El equipo eléctrico debe ser situado fuera del alcance de fuentes de calor como radiadores, registros de calor, estufas u otros aparatos (incluyendo amplificadores) que producen calor.
- El aparato eléctrico deberá ser conectado a una fuente de poder sólo del tipo descrito en el instructivo de operación, o como se indique en el aparato.

- Precación debe ser tomada de tal manera que la tierra física y la polarización del equipo no sea eliminada.
- Los cables de la fuente de poder deben ser guiados de tal manera que no sean pisados ni pellizcados por objetos colocados sobre o contra ellos, poniendo particular atención a los contactos y receptáculos donde salen del aparato.
- El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
- En caso de existir, una antena externa deberá ser localizada lejos de las líneas de energía.
- El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
- Cuidado debe ser tomado de tal manera que objetos líquidos no sean derramados sobre la cubierta u orificios de ventilación.
- Servicio por personal calificado deberá ser provisto cuando:
  - A: El cable de poder o el contacto ha sido dañado; u
  - B: Objetos han caído o líquido ha sido derramado dentro del aparato; o
  - C: El aparato ha sido expuesto a la lluvia; o
  - D: El aparato parece no operar normalmente o muestra un cambio en su desempeño; o
  - E: El aparato ha sido tirado o su cubierta ha sido dañada.

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14. El equipo eléctrico debe ser limpiado únicamente de acuerdo a las recomendaciones del fabricante.
15. En caso de existir, una antena externa deberá ser localizada lejos de las líneas de energía.
16. El cable de corriente deberá ser desconectado del cuando el equipo no sea usado por un largo periodo de tiempo.
17. Cuidado debe ser tomado de tal manera que objetos líquidos no sean derramados sobre la cubierta u orificios de ventilación.
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  - B: Objetos han caído o líquido ha sido derramado dentro del aparato; o
  - C: El aparato ha sido expuesto a la lluvia; o
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### Installation:

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1. Workstation (WS) to a hub: Attach the FlexPoint's UTP to the hub; "UTP Rdy" should go ON. Attach the FlexPoint's UTP to the WS. Reboot the WS; the UTP and Insert LEDs should turn ON.

2. Ring-Out (RO) to Ring-In (RI): Attach the RI and RO cables to the hubs. Make sure that at least one WS is operational on the ring. The "UTP Rdy" on the RO side of the FlexPoint TR should turn ON. If using active MAUs, they may have to be set to 8228 mode.

3. Hub (MAU) to a Switch: Attach to the hub's lobe; the "UTP Rdy" LED should turn ON. Attach to the switch's port; the "UTP Rdy" and Insert LEDs should turn ON. It may be required to set the switch to WS mode.

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