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FlexPoint Modular Media Converters

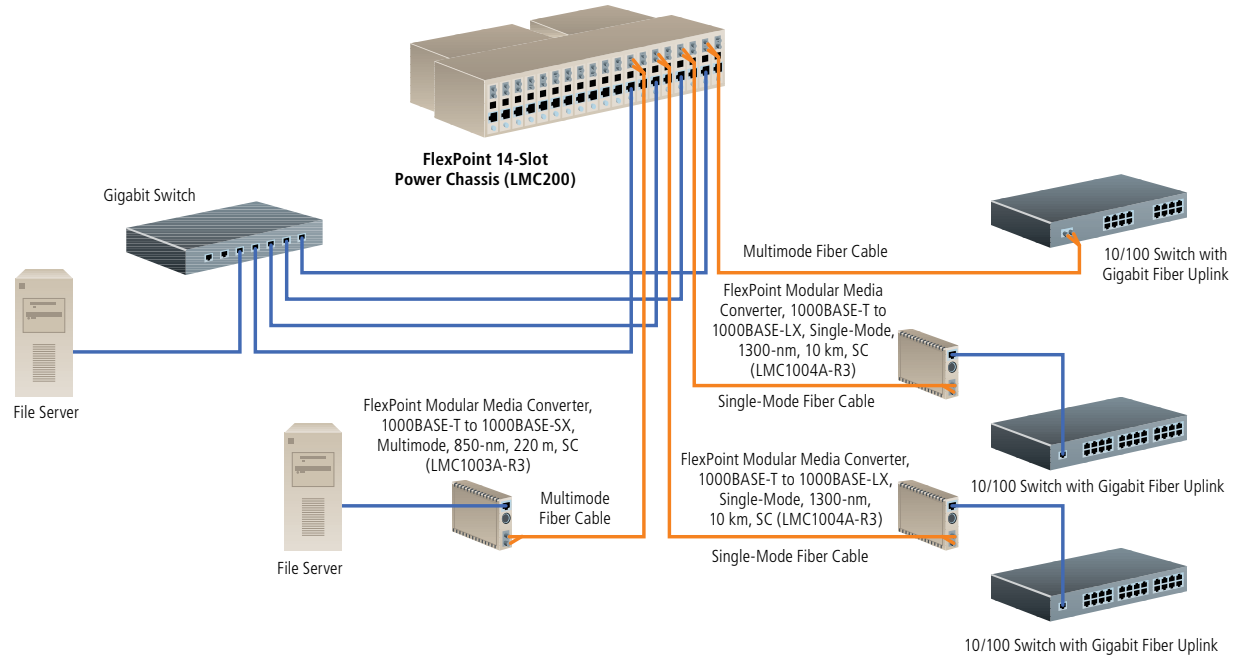
The flexible media converter solution that grows with your network.



FEATURES

- More interface choices than any other media converter system.
- Easy installation—no software required.
- FlexPoint Media Converters work as standalone or hot-swappable chassis-based media converters.
- The FlexPoint Power Chassis holds up to 14 media converters and features single or dual hot-swappable AC or DC power supplies.

Link different media types together in one local area network.



OVERVIEW

FlexPoint™ Modular Media Converters from Black Box provide the ultimate in flexibility and reliability for your expanding multimedia LAN. These standalone converters are also chassis-based modules!

Plus, FlexPoint offers you more interface options than any other media converter system. Your choices include:

- Ethernet
- Gigabit Ethernet
- Token Ring
- UTP
- Single-mode fiber
- Multimode fiber
- Coax
- 10/100 rate converters
- Single-mode to multimode fiber converters
- Long-distance fiber converters
- ATM OC-3
- ATM OC-12

FlexPoint Media Converters make it easy to expand your networks as your company grows. The incredible variety and versatility of this system make it ideal for networks that are subject to constant upgrades and changes.

LEDs on each FlexPoint Media Converter display status.

Tailor the system to your requirements: Get the media converters you need now and use them individually. Then, when your LAN grows, mount your media converters on the wall, in the 5-Position Rackmounting Kit, as modules in the Power Chassis, or on a DIN rail. The Power Chassis holds 14 media converters and a Single or Dual AC or DC Power Supply.

10BASE-T to BNC

This media converter joins unshielded twisted-pair (UTP) and coax LANs together to form one network.

For UTP, the 10BASE-T/BNC converter supports Category 3, 4, and 5 wiring at distances of 328 feet (100 m). This model also corrects wiring-polarity reversals and eliminates crossed cables with a crossover switch.

For coax, this converter has a BNC connector that supports 50-ohm cable at up to 607 feet (185 m). And you don't need a T-connector—switch-selectable termination is built in.

10BASE-FL to BNC

These 10BASE-FL to 10BASE2 media converters connect a ThinNet LAN to fiber to form one network.



For fiber, these converters use ST connectors. They come in 850-nm multimode, 1300-nm multimode, and 1300-nm single-mode models. The fiber length is limited to 1.2 miles (1.9 km) per IEEE 802.3 timing.

On the coax side, the converters have BNC connectors and support 50-ohm cable at distances of up to 607 feet (185 m). You can connect up to 30 workstations to this segment per the 802.3 IEEE standard.

A switch-selectable terminator is built in.

10BASE-T to 10BASE-FL

These media converters join unshielded twisted-pair (UTP) and fiber LANs into one network. They support half- and full-duplex (10- and 20-Mbps) operation.

For fiber, these converters use SC or ST® connectors in 850-nm multimode, 1300-nm multimode, 1300-nm single-mode, or 1550-nm single-mode.

For UTP, these media converters use an EIA/TIA modular 568 RJ-45 connector and support Category 3, 4, and 5 wiring, connecting at distances up to 328 feet (100 m).

10BASE-T to 10BASE-FL converters also correct wiring-polarity reversals and eliminate crossed cables with a crossover switch.

100BASE-TX to 100BASE-FX

This group of media converters connects Fast Ethernet 100BASE-FX fiber to 100BASE-TX UTP LANs. They use auto-negotiation for full- and half-duplex operation and can handle numerous fiber types.

These converters auto-adapt to the highest performance level supported by the device that is connected to the UTP port. When the device supports full-duplex, the converter adapts to full-duplex mode and creates a 200-Mbps bandwidth. When the connected device supports only half-duplex, the converter adapts to this mode and creates a 100-Mbps bandwidth. Full- and half-duplex operation can also be controlled by a manual override switch.

The fiber side of these converters operates at 1300 nm or 1500 nm and uses ST or SC connectors. Multimode models can support distances of up to 1.2 miles (2 km), and the single-mode models can operate at distances of 68.4 miles (110 km).

The UTP port, which supports distances of up to 328 feet (100 m), has a modular 568 RJ-45 connector for Category 5 wiring. A crossover switch eliminates the need for crossed cables.

Gigabit UTP to Fiber

Use FlexPoint Gigabit UTP to Fiber Media Converters to convert Gigabit Ethernet 1000BASE-T unshielded twisted-pair (UTP) cable to 1000BASE-SX single- or 1000BASE-LX multimode fiber. The converters comply with the IEEE 802.ab standard.

The converters auto-adapt to the full-/half-duplex and flow-control services supported by the device connected to its UTP port. User-selectable override options set the desired mode.

The converters operate in full-duplex to provide an effective 2-Gbps data rate or in half-duplex mode to provide a 1-Gbps rate. This maximizes the throughput when connecting to high-bandwidth full-duplex services such as servers or switches.

Network flow control is supported via an auto-selected or user-selected "Pause" function that helps relieve network congestion by providing "backpressure" to the sending device.

The converter supports 850-nm (SX), 1300-nm (LX), or 1550-nm fiber and uses SC, MT-RJ, or LC connectors. The Multimode SX supports distances of up to 722 feet (220 m); the single-mode models support distances of up to 40.4 miles (65 km).

User-selectable Link Propagation is available for Spanning-Tree redundant network architectures as well as for connecting to SNMP or other network-managed devices that monitor link availability. A user-selectable override is provided to isolate the link detection to a per-segment basis.

The converter's UTP port uses a modular EIA/TIA 568 RJ-45 connector and supports Category 5 or higher wiring with distances of up to 328 feet (100 m). Automatic polarity detection and correction assists in network installation and maintenance.

Token Ring UTP/Fiber

For Token Ring LANs with fiber-to-copper conversions, these models automatically sense and configure themselves to the network ring speed. They also self-configure to attached devices through an automatic sensing circuit.

The UTP port can attach to a workstation's network interface card, ring-in/ring-out port, or lobe. This converter can also support server or workstation fiber attachments and fiber ring extensions.

Category 3, 4, and 5 wiring can be used. At 16 Mbps, Category 5 wiring can support distances of 492.1 feet (150 m). At 4 Mbps, Category 5 wiring will support distances of 1604.4 feet (489 m). With fiber, the converter supports 1.6 miles (2.6 km) using multimode fiber and 12.4 miles (20 km) using single-mode fiber.

These models also test cable integrity in the network.

100-Mbps Fiber-to-Fiber Mode Converters

Multimode-to-Single-Mode converters connect to the network over multimode fiber. But between Media Converters, they connect with single-mode fiber to give you distances up to 36.1 miles (58.1 km).

Multimode-to-Multimode versions extend your network up to 3.1 miles (5 km).

100-Mbps Fiber-to-Fiber Mode Converters support Token Ring, Ethernet, and Fast Ethernet.

1000-Mbps Multimode-to-Single-Mode

1000-Mbps Multimode-to-Single-Mode converters connect to the network over multimode fiber and extend the network with single-mode fiber. They support single-mode distances up to 31.1



miles (50 km). The converters comply with IEEE 802.3 and 1000BASE-LX/SX standards.

Mode Converters for ATM OC-3 and OC-12

Mode Converters for ATM support OC-3 or OC-12 standards over ATM networks and the Synchronous Optical NETwork (SONET).

They're perfect for extending line drops in large corporations, regional and national telco switching offices, and other intercampus telecommunication systems.

The FlexPoint OC-3 Single-Mode to Multimode Fiber Converter provides 155-Mbps connections to extend network distances by connecting multimode fiber networks or devices over single-mode fiber cabling.

The FlexPoint OC-12 Single-Mode to Multimode Fiber Converter provides 622-Mbps connections to extend network distances by connecting multimode fiber networks or devices over single-mode fiber cabling.

LEDs report the availability of power and the detection of devices attached to the fiber ports.

10/100 Rate Converters

This group of rate converters connects Fast Ethernet 100BASE-FX fiber to 10BASE-T or 100BASE-TX UTP LANs. They use autonegotiation for full- and half-duplex operation and can handle numerous fiber types. An override switch provides total manual control over the 10/100 operation of the UTP port and the half-/full-duplex operation of both the fiber and UTP port.

The fiber port operates at 1300 or 1550 nm (depending on the model) and features SC, ST, or MT-RJ connectors. Multimode models support distances of 1.2 miles (1.9 km), and single-mode models support up to 16.8 miles (27 km). Long-haul (LH) models support distances of up to 34.8, 51, or 60 miles (56, 82, or 96.6 km).

These converters also feature a 1 MB store-and-forward buffer and MAC address learning.

T1/E1 Copper to Fiber Line Drivers

FlexPoint T1/E1 Copper to Fiber Line Drivers convert coax and twisted pair to multimode or single-mode fiber—and they extend T1/E1 over fiber.

T1/E1 Copper to Fiber Line Drivers feature a crossover switch on the RJ-45/RJ-48 port for easy connections to equipment. Dry relay contacts on Pins 3 and 6 of the RJ-45 connector provide connection to alarm equipment. The contact closes when the signal is lost on the copper or fiber connection.

LEDs display the T1/E1 link status, diagnostic modes of operation, and line segment errors.

The line drivers support AMI, B8ZS, and HDB3 line codes.

To install any of the converters on a DIN rail, select the DIN Rail Mounting Kit (LMC207-DRM).

TECH SPECS

Power Chassis:
Indicators — LED: (1) Power
Power — LMC200: 115–230-VAC, 50–60-Hz, autosensing single power supply;
LMC200-2PS: 115–230-VAC, 50–60-Hz, autosensing dual power supply;
LMC200A-DC: 48-VDC, single power supply;
LMC200A-2PS-DC: 48-VDC dual power supply
Size — 3"H x 19"W x 10"D (7.6 x 48.3 x 25.4 cm)
Weight — 7 lb. (3.2 kg)

5-Position Rackmounting Kit:
Size — 1.75" (1U) H x 19"W x 5"D (4.4 x 48.3 x 12.7 cm)
Weight — 2 lb. (0.9 kg)

Modules:
CE Approval — Yes
Power — 110-VAC, 60-Hz, external power supply (230-VAC, 50-Hz version on request) or from Power Chassis
Size — 1"H x 3"W x 4"D (2.5 x 7.6 x 10.2 cm)
Weight — 0.4 lb. (0.2 kg)

What's included

Media Converter Chassis (LMC200, LMC200A-DC, LMC200-2PS, LMC200A-2PS-DC):

- ✦ Chassis
- ✦ Power cord
- ✦ User's manual

Media Converter Modules:

- ✦ Converter
- ✦ Power supply
- ✦ User's manual



LMC206-WALL



LMC200: shown with modules



LMC205: shown with modules

Item	Code
FlexPoint 14-Slot Power Chassis	
Single Power Supply	
115–230 VAC	**LMC200**
48 VDC	**LMC200A-DC**
Dual Power Supply	
115–230 VAC	**LMC200-2PS**
48 VDC	**LMC200A-2PS-DC**
5-Position Rackmounting Kit—Nonpowered Rack Holds up to Five FlexPoint Media Converters	**LMC205**
Wallmounting Hardware for Single FlexPoint Media Converter	**LMC206-WALL**
FlexPoint Media Converter Modules	
ThinNet	
10BASE-T/BNC	**LMC210A**
10BASE-FL/BNC	
850-nm, Multimode, 2 km	
ST	**LMC211A-MM**
1300-nm, Multimode, 2 km	
ST	**LMC211A-13MM**
1300-nm, Single-Mode, 2 km	
ST	**LMC211A-SM**
10-Mbps UTP to Fiber	
10BASE-T to 10BASE-FL	
850-nm, Multimode, 2 km	
ST	**LMC212A-MM-R3**
SC	**LMC212A-MM-SC-R2**
1300-nm, Multimode, 5 km	
ST	**LMC212A-13MM-R2**
1300-nm, Multimode, 15 km	
ST	**LMC212A-SM-R3**
1300-nm, Single-Mode, 28 km	
ST	**LMC212A-SM-LH-R2**
1550-nm, Single-Mode, 85 km	
SC	**LMC212A-SM-XLH**
1550-nm, Single-Mode, 110 km	
SC	**LMC212A-SM-SLH**
100-Mbps UTP to Fiber	
100BASE-TX to 100BASE-FX	
1300-nm, Multimode, 2 km Full Duplex, 412 m Half-Duplex	
ST	**LMC213A-MMST-R2**
SC	**LMC213A-MMSC-R2**
MT-RJ	**LMC213A-MMRJ**
1300-nm, Single-Mode, 25 km	
ST	**LMC213A-SMST-R2**
SC	**LMC213A-SMSC-R2**
MT-RJ	**LMC213A-SMRJ**
1550-nm, Single-Mode, 85 km	
SC	**LMC213A-SM-XLH-R2**
1550-nm, Single-Mode, 110 km	
SC	**LMC213A-SM-SLH-R2**
1300-nm, Single-Mode Plus, 58 km	
ST	**LMC214A-STP-R2**
SC	**LMC214A-SCP-R2**

Item	Code
FlexPoint Media Converter Modules (Continued)	
Gigabit UTP to Fiber	
1000BASE-T to 1000BASE-SX (UTP to Fiber)	
850-nm, Multimode, 220 m	
MT-RJ	**LMC1007A-R3**
SC	**LMC1003A-R3**
1000BASE-T to 1000BASE-LX	
1300-nm, Single-Mode, 10 km	
SC	**LMC1004A-R3**
Token Ring UTP/Fiber	
850-nm, Multimode, 2.5 km	**LTM215A-MM**
1300-nm, Single-Mode, 20 km	**LTM215A-SM**
100-Mbps Fiber-to-Fiber Mode Converters	
1300-nm Multimode to 1300-nm Single-Mode, 5 km–28 km	
ST to ST	**LMC250A-ST**
SC to SC	**LMC250A**
850-nm Multimode to 1300-nm Single-Mode, 500 m–28 km	
ST to ST	**LMC251A-ST**
SC to SC	**LMC251A-SC**
1300-nm Multimode to 100BASE-FX 1300-nm Single-Mode, 5 km Multimode to 58 km Single-Mode	
ST to ST	**LMC250A-ST-LH**
SC to SC	**LMC250A-LH**
850-nm Multimode to 100BASE-FX (SX) 1300-nm Single-Mode, 5 km Multimode to 58 km Single-Mode	
ST to ST	**LMC251A-ST-LH**
SC to ST	**LMC251A-SC-LH**
1300-nm Multimode to 1300-nm Multimode, 5 km to 5 km Full Duplex, 412 m to 412 m Half-Duplex	
ST to ST	**LMC253A-ST**
SC to SC	**LMC253A-SC**
850-nm Multimode to 1300-nm Multimode, 5 km to 5 km Full Duplex, 412 m to 412 m Half-Duplex	
ST to ST	**LMC252A-ST**
SC to SC	**LMC252A-SC**



Item	Code
FlexPoint Media Converter Modules (Continued)	
1000-Mbps Multimode to Single-Mode Fiber-to-Fiber Mode Converters	
850-nm Multimode to 1300-nm Single-Mode, 220 m Multimode to 5 km Single-Mode	
SC to SC	**LMC1001A**
850-nm Multimode to 1300-nm Single-Mode, 220 m Multimode to 20 km Single-Mode	
SC to SC	**LMC1002A**
850-nm Multimode to 1550-nm Single-Mode, 220 m Multimode to 50 km Single-Mode	
SC to SC	**LMC1000A**
Fiber-to-Fiber Mode Converters for ATM OC-3	
1300-nm Multimode to 1300-nm Single-Mode, 5 km to 28 km	
ST to ST	**LMC155A-ST**
SC to SC	**LMC155A**
850-nm Multimode to 1300-nm Single-Mode, 5 km to 28 km	
ST to ST	**LMC156A-ST**
SC to SC	**LMC156A-SC**
1300-nm Multimode to 1550-nm Single-Mode, 5 km to 85 km	
SC to SC	**LMC155A-XLH**
1300-nm Multimode to 1300-nm Single-Mode, 5 km to 58 km	
ST to ST	**LMC155A-ST-LH**
SC to SC	**LMC155A-LH**
850-nm Multimode to 1300-nm Single-Mode, 5 km to 50 km	
ST to ST	**LMC156A-ST-LH**
SC to SC	**LMC156A-SC-LH**
Fiber-to-Fiber Mode Converters for ATM OC-12 LX	
1300-nm Multimode to 1300-nm Single Mode, 550 m to 20 km	
SC to SC	**LMC622A-LH**
1300-nm Multimode to 1300-nm Single Mode, 550 m to 5 km	
SC to SC	**LMC622A**
1300-nm Multimode to 1550-nm Single-Mode, 550 m to 50 km	
SC to SC	**LMC622A-LLH**

Item	Code
FlexPoint Media Converter Modules (Continued)	
10/100 Rate Converters	
1300-nm, Multimode, 2 km	
ST	**LMC100A-R2**
SC	**LMC100A-SC-R2**
MT-RJ	**LMC100A-RJ-R2**
1300-nm, Single-Mode, 28 km	
ST	**LMC100A-SM-R2**
SC	**LMC100A-SMSC-R2**
MT-RJ	**LMC100A-SMRJ-R2**
1300-nm, Single-Mode, 58 km	
SC	**LMC100A-SMSC-LH-R2**
1550-nm, Single-Mode, 85 km	
SC	**LMC100A-SMSC-XLH-R2**
1550-nm, Single-Mode, 100 km	
SC	**LMC100A-SMSC-SLH-R2**
T1/E1 Copper to Fiber Line Drivers	
1310-nm, Multimode, 5 km	
ST	**MT660A-MM**
1310-nm, Single-Mode, 28 km	
ST	**MT660A-SM**
FlexPoint Accessories and Replacement Parts	
Power Supply for Power Chassis	
115–230 VAC	**PSFP200**
48 VDC	**PSFP20-DC**
DC Power Converter, 18-to-72 VDC	
Standalone	**LMC204A**
DC Power Converter	
Wallmounting Kit	**LMC206A-WALL-DC**
International Power Supply for all	
FlexPoint Models (9 V, 1 A)	**LMC203A**
To install the converter on DIN rails, order…	
FlexPoint DIN Rail Mounting Kit	**LMC207-DRM**
You may also need…	
Category 5 Solid-Conductor Cable, 4-Pair, Straight-Pinned, PVC	**EYN556MS**
Duplex Fiber Optic Cable, PVC, ST–ST	**EFN110**
Single-Mode Duplex Fiber Optic Cable, PVC, ST–ST	**EFN310**
T1 Cable, RJ-48/RJ-48, Straight-Pinned	**ETNMSR01**