Compact Media Converters

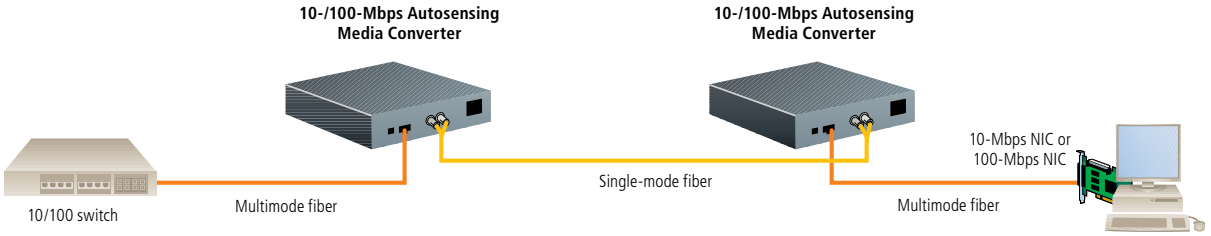
Small, inexpensive, easy to install—and each unit includes its own power supply.

The converters you need for simple high-end copper to fiber conversion.

FEATURES

- Integrate copper with fiber seamlessly.
- Compact 1U size saves space!
- Multimode models send data 2 km (1.2 mi.).
- Single-mode models send data 15 to 80 kilometers (9.3 to 49.7 mi.).
- 10BASE-T/ThinNet version enables you to integrate your legacy coax infrastructure into your twisted-pair network.
- With the single-strand models, you can convert 100- or 1000-Mbps copper wiring to 100- or 1000-Mbps single-mode fiber using a single strand that carries 1310- and 1550-nm wavelengths.
- Integral universal power supply autosenses 95–240 VAC for use around the world.
- No crossover cable needed on the UTP side! Auto MDI/ MDI-X detection figures out wiring type and adjusts to it automatically.
- Front-panel LEDs indicate activity, and Link-Fault Detection makes troubleshooting easy.
- LinkLoss™ and FiberAlert™ notify you automatically of "silent failures" on the fiber side.
- Converters feature externally accessible port settings.
- Half- or full-duplex operation.
- DIP switches for forcing modes of operation.
- WARRANTY — 6 Years

Use a pair of media converters to connect two multimode fiber optic network segments via single-mode fiber.



NOTE: This application will not work with a 10-/100-Mbps autosensing network interface card (NIC).

OVERVIEW

Save space.

Only 1U high, these converters are the ideal choice when space is at a premium. They also feature internal power supplies so you don't need to make space for bulky external transformers. And because the power supplies are autosensing 120–240 VAC, you can use these converters internationally.

Port settings are externally accessible, and each port includes diagnostic LEDs. Twisted-pair ports feature a straight-through/cross-over switch. The BNC port on the LMC009A-R4 features a termination switch.

When faults occur, diagnostic LEDs alert you to location and type, so you can quickly isolate any breaks or problems on the copper or fiber segments. LinkLoss and FiberAlert notify you automatically of connection failures on the fiber side. You can enable or disable LinkLoss/FiberAlert with a DIP switch.

What's more, these converters really go the distance. Multimode models send data 2 km (1.2 mi.). Single-mode models send data 15 km to 60 kilometers (9.3 to 37.2 mi.). Powerful Plus models run up to 80 kilometers (49.7 mi.).

Double your fiber capacity.

With the single-strand models, you get all the benefits of Compact Media Converters, plus the ability to double your fiber capacity. Whether you already have fiber or you're planning to install it, you can make better use of it with these converters.

Ideal for ISPs and enterprise networks, these converters enable you to double your fiber capacity when converting 100BASE-TX wiring to fiber optic wiring in Ethernet networks. The converters compress two individual channels that contain transmit and receive wavelengths (1310 or 1550 nm) onto one single-mode, full-duplex fiber. The converters must be used in matched transmit and receive pairs.

Technically Speaking

Single-strand fiber WDM.

Traditional fiber optic media converters perform a useful function but don't really reduce the amount of cable needed to send data on a fiber segment. They still require two strands of glass to send transmit and receive signals for fiber media communications. Wouldn't it be better to combine these two logical communication paths within one strand?

That's exactly what single-strand fiber conversion does. It compresses the transmit and receive wavelengths into one single-mode fiber strand.

The conversion is done with Wavelength Division Multiplexing (WDM) technology. WDM technology increases the information-carrying capacity of optical fiber by transmitting two or more signals simultaneously at different wavelengths on the same fiber. The way it usually works is that one unit transmits at 1550 nm and receives at 1310 nm. The other unit transmits at 1310 nm and receives at 1550 nm. The two wavelengths operate independently and don't interfere with each other. Wavelength-sensitive filters are used at the receiving end to separate the wavelengths.

This bidirectional traffic flow effectively converts a single fiber into a pair of "virtual fibers," each driven independently at different wavelengths.

WDM on single-strand fiber is most often used for point-to-point links on a long-distance network. It's also used to increase network capacity or relieve network congestion.

Although the WDM used in media converters typically offers two channels on single-strand fiber at 10-, 100-, or 1000-Mbps speeds, WDM is a rapidly evolving techology that's increasing the capacity of fiber infrastructure by leaps and bounds.

Coarse wavelength-division multiplexing (CWDM) uses wavelengths between 1310 nm and 1610 nm and usually multiplexes signals across eight channels, although some versions support up to 16 channels. The relatively new 10GBASE-LX4 Ethernet standard achieves its 10-Gigabit speeds by using CWDM to divide the data stream into four separate 3.125-Gbps channels for transmission over fiber cable.

Dense wavelength-division multiplexing (DWDM) uses the 1550-nm band and increases channel density even more. It can achieve as many as 64 channels on a single fiber strand. With DWDM it's possible to achieve speeds of hundreds of Gbps across a single fiber. Its ability to handle vast amounts of traffic — even different kinds of traffic moving at different speeds — makes DWDM the technology of choice for metropolitan area networks. Companies that offer TV, Internet, and phone service on fiber use this technology.

LMC001A-R5

TECH SPECS

Approvals — UL®, cUL, CE, RoHS

Fiber Cable Requirements —
- LMC7001A-R4–LMC7002A-R4: Multimode duplex, 850 nm;
- LMC7005A–LMC7006A: Multimode duplex, 1300 nm
- LMC7003A-R4–LMC7004A-R4, LMC7007A–LMC7008A: Single-mode duplex, 1310 nm;
- LMC7009A: Single-mode duplex, 1550 nm

Full-Duplex Distance (Maximum) —
- LMC001A-R5–LMC004A-R5, LMC007A-R5–LMC008A-R5, LMC009A-R4: 10BASE-T link: 100 m (328 ft.);
- LMC001A-R5–LMC002A-R5, LHC001A-R4–LHC002A-R4, LHC009A-R3: Fiber link: 2 km (1.2 mi.);
- LMC003A-R5–LMC004A-R5: Fiber link: 10 km (6.2 mi.);
- LMC007A-R5–LMC008A-R5: Fiber link: 40 km (24.9 mi.);
- LMC010A–LMC011A: Fiber link: 80 km (49.7 mi.);
- LMC012A: Fiber link: 100 km (62.1 mi.);
- LMC009A-R4: 10BASE2 link: 185 m (607 ft.);
- LMC7001A-R4–LMC7002A-R4: 984.3 ft. (300 m);
- LMC7005A–LMC7006A: 1.2 mi. (2 km);
- LMC7003A-R4–LMC7004A-R4: 24.8 mi. (40 km);
- LMC7007A–LMC7009A: 49.7 mi. (80 km);
- LHC008A-R3–LHC009A-R3: Fiber link: 300 m (984.3 ft.);
- LHC001A-R4–LHC002A-R4, LHC005A-R4–LHC006A-R4: 100BASE-TX link: 100 m (328 ft.);
- LHC008A-R3–LHC009A-R3: 100BASE-TX link: 300 m (984.3 ft.);
- LHC005A-R4–LHC006A-R4: Fiber link: 40 km (24.9 mi.);
- LHC037A–LHC039A: Fiber link: 80 km (49.7 mi.)

Heat Generated (Maximum) — 30 BTU/hour

Standards —
- LMC001A-R5–LMC004A-R5, LMC007A-R5–LMC008A-R5, LMC009A-R4, LMC010A–LMC012A, LHC001A-R4–LHC002A-R4, LHC005A-R4–LHC005A-R4, LHC008A-R3, LHC009A-R3, LHC037A–LHC039A: IEEE 802.3: 10BASE-T, 10BASE-FL;
- LMC7001A-R4–LMC7002A-R4: IEEE 802.3: 10BASE-T, 10BASE-FL, 100BASE-TX, 100BASE-SX;
- LMC7005A–LMC7006A, LMC7003A-R4–LMC7004A-R4, LMC7007A–LMC7009A: IEEE 802.3u: IEEE 802.3: 10BASE-T, 10BASE-FL, 100BASE-TX, 100BASE-FX

Wavelength —
- LMC001A-R5–LMC002A-R5: 850 nm multimode;
- LMC003A-R5–LMC004A-R5, LHC001A-R4–LHC002A-R4, LHC008A-R3–LHC009A-R3: 1300 nm multimode;
- LMC007A-R5–LMC008A-R5, LHC005A-R4–LHC006A-R4, LHC037A–LHC038A: 1300 nm single-mode;
- LHC039A: 1550 nm single-mode

User Controls — LMC7001A-R4–LMC7004A-R4, LMC7005A–LMC7009A: (1) external 8-position DIP switch, (1) twisted-pair crossover/pass-through button

Connectors — LMC009A-R4: (1) RJ-45 (shielded), (1) BNC F;
All others: (1) RJ-45 (shielded), (1) ST® or SC
- LMC7001A-R4, LMC7005A, LMC7003A-R4, LMC7007A: (1) RJ-45, (1) IEC 320 power connector, (1) pair of ST®;
- LMC7002A-R4, LMC7006A, LMC7004A-R4, LMC7008A–LMC7009A: (1) RJ-45, (1) IEC 320 power connector, (1) pair of SC

Indicators —
- LMC001A-R5–LMC004A-R5, LMC007A-R5–LMC008A-R5, LHC008A-R3–LHC009A-R3, LHC001A-R4–LHC002A-R4, LHC005A-R4–LHC006A-R4, LHC037A–LHC039A: Fiber Receive, Twisted-Pair Link, Fiber Alert, Fiber Link;
- LMC009A-R4: Twisted-Pair Receive, Twisted-Pair Link, BNC Collision, BNC Receive
- LMC7001A-R4–LMC7004A-R4, LMC7005A–LMC7009A:
  - (9) LEDs: (1) PWR: On when unit has power;
    - Twisted-pair ports (TX): (1) Link; (1) Act;
      - (1) 100: On when 100-Mbps data is detected;
      - (1) LFD: On when Link Fault Detection is available (only in PNP/Transparent mode);
      - (1) A: On when PNP/Transparent mode is enabled;
    - Fiber ports (SX):
      - (1) Link: On when link is established and all cables are connected;
      - (1) Act: Blinks when data is detected;
      - (1) 100: On when 100-Mbps data is detected

Temperature —
Operating: 32 to 104°F (0 to 40°C);
Storage: 22 to 160°F (-5 to +71°C)

Humidity Tolerance — 5 to 95%, noncondensing

Power —
- LMC001A-R5–LMC004A-R5, LMC007A-R5–LMC008A-R5, LMC009A-R4, LHC008A-R3–LHC009A-R3, LHC037A–LHC039A: 110–240 VAC, 50–60 Hz, internal, autosensing;
- LHC001A-R4–LHC002A-R4, LHC005A-R4–LHC006A-R4: 95–240 VAC, 50–60 Hz, 0.1/0.5 A, internal, autosensing
- LMC7001A-R4–LMC7004A-R4, LMC7005A–LMC7009A: 100/240 VAC (±10%), 50/60 Hz, 0.1/0.05 A

Size — 1.5"H x 4.7"W x 4.4"D (3.8 x 11.9 x 11.2 cm)

Weight — 2 lb. (0.9 kg)

LMC009A-R4

LMC7001A-R4

LHC5129A-R3

NOTE: Single-strand models must be used in matched transmit and receive pairs. For example, to send your data 20 kilometers, order the LHC5129A-R3 and the LHC5130A-R3 together. Questions? Contact our FREE Tech Support.

Item			Code
Compact Media Converters			
10BASE-T to 10BASE-FL			
Multimode			
850-nm	2 km	ST®	**LMC001A-R5**
		SC	**LMC002A-R5**
1300-nm	2 km	ST	**LMC003A-R5**
		SC	**LMC004A-R5**
Single-Mode Plus			
1310-nm	40 km	ST	**LMC007A-R5**
		SC	**LMC008A-R5**
	80 km	ST	**LMC010A**
		SC	**LMC011A**
1550-nm	80 km	SC	**LMC012A**
10BASE-T to ThinNet	300 m		**LMC009A-R4**
10BASE-T/100BASE-TX Autosensing to 100BASE-SX Duplex			
Multimode			
850-nm	300 m	ST	**LMC7001A-R4**
		SC	**LMC7002A-R4**
10BASE-T/100BASE-TX Autosensing to 100BASE-FX Duplex			
1300-nm	2 km	ST	**LMC7005A**
		SC	**LMC7006A**
Single-Mode Plus			
1310-nm	40 km	ST	**LMC7003A-R4**
		SC	**LMC7004A-R4**
	80 km	ST	**LMC7007A**
		SC	**LMC7008A**
1550-nm	80 km	SC	**LMC7009A**
100BASE-TX to 100BASE-FX Duplex			
Multimode			
850-nm	300 m	ST	**LHC008A-R3**
		SC	**LHC009A-R3**
1300-nm	2 km	ST	**LHC001A-R4**
		SC	**LHC002A-R4**

Item			Code
Compact Media Converters (Continued)			
100BASE-TX to 100BASE-FX Duplex (Continued)			
Single-Mode Plus			
1310-nm	40 km	ST	**LHC005A-R4**
		SC	**LHC006A-R4**
	80 km	ST	**LHC037A**
		SC	**LHC038A**
1550-nm	80 km	SC	**LHC039A**
100BASE-TX to 100BASE-BX Single-Strand			
Single-Mode *(Use in matched pairs.)*			
1310-nm TX/1550-nm RX	20 km	SC	**LHC5129A-R3**
1550-nm TX/1310-nm RX	20 km	SC	**LHC5130A-R3**
1310-nm TX/1550-nm RX	40 km	SC	**LHC5132A-R3**
1550-nm TX/1310-nm RX	40 km	SC	**LHC5133A-R3**
1310-nm TX/1550-nm RX	60 km	SC	**LHC5134A**
1550-nm TX/1310-nm RX	60 km	SC	**LHC5135A**
1000BASE-TX to 1000BASE-SX Duplex			
Multimode			
850-nm	300 m	SC	**LGC5134A-R4**
1000BASE-TX to 1000BASE-LX Duplex			
Single-Mode			
1310-nm	15 km	SC	**LGC5137A-R2**
1310-nm	40 km	SC	**LGC5135A-R3**
1550-nm	70 km	SC	**LGC5138A-R2**
1000BASE-TX to 1000BASE-LX Single-Strand			
Single-Mode *(Use in matched pairs.)*			
1310-nm TX/1550-nm RX	15 km	SC	**LGC5139A**
1550-nm TX/1310-nm RX	15 km	SC	**LGC5140A**
1310-nm TX/1550-nm RX	40 km	SC	**LGC5141A**
1550-nm TX/1310-nm RX	40 km	SC	**LGC5142A-R2**