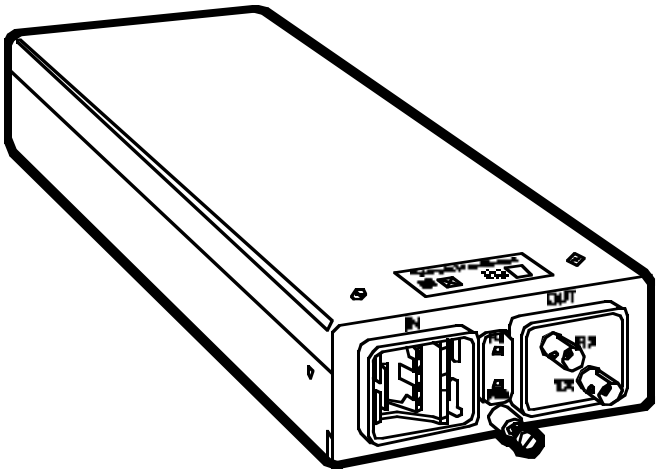
BLACK BOX®
NETWORK SERVICES

Fiber Optic Repeaters



Extend the distance between units up to 3 km over multimode, and up to 20 km over single-mode fiber.

Key Features

- *Operates at 4 or 16 Mbps.*
- *Detects cable breaks and performs automatic loopback.*
- *Performs jitter attenuation.*

Overview

These Fiber Optic Repeaters from Black Box are versatile fiberoptic repeaters for 4- and 16-Mbps Token Ring LANs. They provide a range of up to 3 km over multimode fiber or up to 20 km over single-mode fiber.

Two models are available: For a multimode interface, select the LT0008A-ST. It has a wavelength of 850 nm and is used with 50/125, 62.5/125, or 100/140 micron fibers. If you need a single-mode interface, use the LT0008A-1300. It features a wavelength of 1300 nm and is used with 9/125 micron fibers.

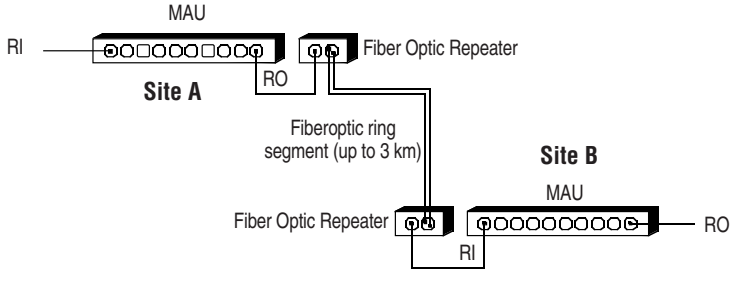
Both models perform two basic functions: conversion between electrical and optical signals and repeating. An example of a typical application is shown below.

As you can see from the illustration, there's a Repeater connected at the RO port of the MAU at Site A. It receives the main-path ring signal, recovers its timing, and then regenerates a clean retimed signal.

In addition, this Repeater performs jitter attenuation. The lower the jitter, the higher the number of stations that can be connected in the ring. The regenerated signal is applied to the Repeater's fiberoptic transmitter. The transmitter converts the electrical signal to an optical signal and sends it via the fiberoptic cable to Site B. The Repeater connected to the RI port of the MAU at Site B receives the optical signal and reconverts it to an electrical Token-Ring signal with full amplitude—in effect, operating as another repeater circuit in the direction of the attached MAU. The Repeater provides the same functions for the backup path. The repeater serving the backup path is included in the Fiber Optic Repeater connected to the RI port.

Typical Application

MAUs located at two distant sites are interconnected by a fiberoptic segment and terminated by two Repeaters.



Specifications

Electrical Interface

Transmission Line — 4-wire (dual twisted pair)

Transmission Range — (On IBM® Type 1 cable between the Repeater and the next active station) 2500 feet (762 meters) @ 4 Mbps; 1200 feet (366 meters) @ 16 Mbps

Data Rate — 4 or 16 Mbps

Data Format — Balanced bipolar, differential Manchester encoding

Output Level (nominal) — 3 to 4 Vptp (on 150 Ω)

Input Impedance — STP: 150±15 Ω

Electrical Connector — STP: IBM Data Connector

Optical Interface

Interface Types — LT0008A-ST: Multimode; LT0008A-1300: Single-mode

Transmission Line — Dual fiberoptic cable

Transmission Mode — 4 or 16 Mbps

Data Rate — 4 or 16 Mbps

Wavelength — LT0008A-ST (Multimode interface): 850 nm; LT0008A-1300 (Single-mode interface): 1300 nm

Transmission Range — LT0008A-ST (Multimode interface): Typically up to 1.9 miles (3.1 km); LT0008A-1300 (Single-mode interface): Typically up to 12.5 miles (20.1 km)

Optical Output Power — LT0008A-ST (Multimode): *50/125 micron multimode fiber:* -22 dBm; *62.5/125 micron multimode fiber:* -18 dBm; *100/140 micron multimode fiber:* -14 dBm; LT0008A-1300 (Single mode): *9/125 micron single-mode fiber:* -18 dBm

Fiberoptic Connector — ST®

Receiver Sensitivity — -32 dBm minimum

Dynamic Range — 20 dB minimum

Optical Power Budget — LT0008A-ST (Multimode): *50/125 micron multimode fiber:* 10 dB; *62.5/125 micron multimode fiber:* 14 dB; *100/140 micron multimode fiber:* 18 dB; LT0008A-1300 (Single-mode): *9/125 micron single-mode fiber:* 14 dB

General

Compliance — FCC Part A, CE

Cable-Break Protection — User-selectable; the main path signal appearing at the repeater output is looped to the backup path when the optical signal is lost

Power-Loss Protection — The Fiber Optic Repeater is automatically bypassed upon loss of power

Indicators — (2) LEDs: (1) Green PWR (On when the unit is powered); (1) Red FLT (On when the optical signal is lost and flashes when the remote optical signal is lost)

Diagnostics — Fault (FLT) LED shows problems on the fiber cable

MTBF — 1,235, 369 hours

Operating Temperature — 0 to 50°C

Relative Humidity Tolerance — 10 to 90%, noncondensing

Power — 115–230 VAC±10%, 47–63 Hz, 5 watts

Size — 4.5 x 10.9 x 23.9 cm

Weight — 1.3 kg

Additional equipment you may need:

- STP Patch cables (IBM Type 6)
- Fiberoptic cables

Ordering Information

This information will help you place your order quickly.

PRODUCT NAME	ORDER CODE
Fiber Optic Repeaters	
Multimode	LT0008AE-ST-R2
Single-mode	LT0016AE