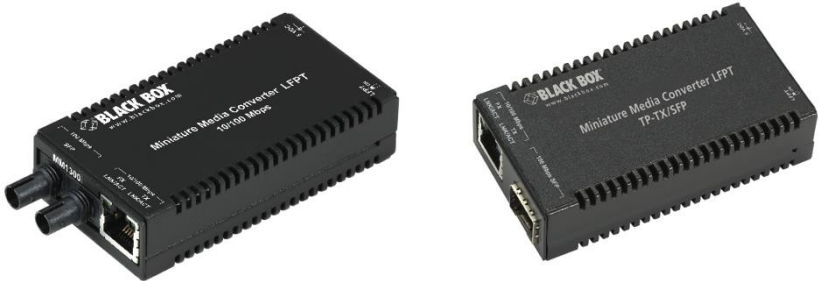# BLACK BOX®
NETWORK SERVICES

LHC013A-R3 LHC029A-R3 LHC042A-R4 LHC301A-R3
LHC014A-R3 LHC036A-R3 LHC043A-R4 FEMR347948
LHC015A-R3 LHC040A-R3
LHC028A-R3 LHC041A-R3

Miniature Media Converter 10/100 Switching and Miniature Media Converter w/SFP

These tiny media converters are perfect for bringing fiber to the desktop.

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 • E-mail: info@blackbox.com

TRADEMARKS USED IN THIS MANUAL

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Any other trademarks mentioned in this manual are acknowledged to be the property of the trademark owners.

FCC and Industry Canada RF Interference Statements

Class B Digital Device. This equipment has been tested and found to comply with the limits for a Class B computing device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. This equipment generates, uses, and can radiate radio frequency energy, and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. If this equipment does cause harmful interference to radio or telephone reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

• Reorient or relocate the receiving antenna.
• Increase the separation between the equipment and receiver.
• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
• Consult an experienced radio/TV technician for help.

CAUTION

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

To meet FCC requirements, shielded cables and power cords are required to connect this device to a personal computer or other Class B certified device.

This digital apparatus does not exceed the Class B limits for radio noise emission from digital apparatus set out in the Radio Interference Regulation of Industry Canada.

Certifications

> **Class 1 Laser product, Luokan 1 Laserlaite,**
> **Laser Klasse 1, Appareil A'Laser de Classe**

European Directive 2002/96/EC (WEEE) requires that any equipment that bears this symbol on product or packaging must not be disposed of with unsorted municipal waste. This symbol indicates that the equipment should be disposed of separately from regular household waste. It is the consumer's responsibility to dispose of this and all equipment so marked through designated collection facilities appointed by government or local authorities. Following these steps through proper disposal and recycling will help prevent potential negative consequences to the environment and human health. For more detailed information about proper disposal, please contact local authorities, waste disposal services, or the point of purchase for this equipment.

blackbox.com

Table of Contents

Part Numbers

Part Number	Description
LHC013A-R3	TP-TX/FX-MM1300-ST
LHC014A-R3	TP-TX/FX-MM1300-SC
LHC015A-R3	TP-TX/FX-SM1310/PLUS-SC
LHC028A-R3	TP-TX/SSFX-SM1310-SC (1310xmt/1550rcv - with AC adapter)
LHC029A-R3	TP-TX/SSFX-SM1550-SC (1550xmt/1310rcv - with AC adapter)
LHC036A-R3	TP-TX/FX-SM1310/PLUS-ST
LHC040A-R3	TP-TX/FX-MM850-ST
LHC041A-R3	TP-TX/FX-MM850-SC
LHC042A-R4	TP-TX/SSFX-SM1310-SC (1310xmt/1550rcv - with AC adapter)
LHC043A-R4	TP-TX/SSFX-SM1550-SC (1550xmt/1310rcv - with AC adapter)
LHC301A-R3*	TP-TX/SFP
*FEMR347948	TP-TX/FX-MM1300-ST with Custom Cable

NOTE
Single Strand (SS) versions display the transmit channel wavelength.
* Custom Kit with 12" USB Power Cable
*Requires one SFP/155Mbpx, available in a variety of fiber types.

1. Specifications

Ethernet Connections	10/100 BASE-T
	Auto Negotiation
	AutoCross
	Flow Control
	1916 MTU
	Full Line-Rate Forwarding
AC Wall Adapter	100 to 240 ±10% VAC input, 5 VDC output, 2A max.
Input Power Consumption (Typical, varies with optical transceiver type)	500 mA @ 5 VDC
Operating Temperature	+14°F to +122°F (-10°C to +50°C)
Storage Temperature	-31°F to +167°F (-35°C to +75°C)
Humidity	5% to 95% (non-condensing) 0 – 10,000 ft. altitude
Dimensions	0.83"H x 1.80"W x 3.35"D (2.11cm x 4.57cm x 8.51cm)

NOTE
Use only the supplied Black Box wall adapter or USB cable with this product. Using a non-Black Box power source will void the warranty.

NOTE: The media converters are now compliant to EN62368.

2. Overview: About the Miniature Media Converter 10/100 Switching and Miniature Media Converter w/SFP

The Miniature Media Converter 10/100 Switching and Miniature Media Converter w/SFP provide a single conversion between 10/100 Base-T twisted pair and 100 Base-SX/FX fiber. This device Auto Negotiates speed and duplex on the copper port and the fiber is fixed at 100Mbps. There is a fixed fiber and an SFP version available; both support jumbo frames up to 1916 MTU.

The Miniature Media Converter 10/100 Switching is a fixed fiber transceiver model, includes one 10/100Mbps RJ-45 connector and one 100Mbps SC fiber connector which can support Single Mode fiber or Multi Mode fiber in Dual Strand or Single Strand fiber.

The Miniature Media Converter w/SFP is an SFP port-based model, includes one 10/100/1000Mbps RJ-45 connector and one SFP port, which was designed to support MSA-compliant 100Mbps SFPs. The model will detect the SFP and run at the speed for which the SFP was designed.

3. Install the Miniature Media Converter 10/100 Switching and Miniature Media Converter w/SFP

The Miniature Media Converters install virtually anywhere as a standalone device in locations with extremely limited space. Installation options include:

- Velcro® strips

- DIN rail mounting with DIN Rail clips

- PowerTray/18 for high density applications

3.1 DIN Rail Mounting

The Miniature Media Converters can be mounted with two DIN Rail clips. Depending on the installation, the Miniature Media Converters can be mounted parallel or perpendicular to the DIN rail. Use the supplied screws to attach the DIN clips to the Miniature Media Converter, and then snap the converter to the DIN rail.

To remove the converter from the DIN rail, use a flat-head screwdriver in the slot to gently pry the converter from the rail.

NOTE
The DIN clips are designed for use on a DIN-35 rail (part number LXC-DR).

3.2 Cascading DC Power

When installing multiple Miniature Media Converters on a DIN rail, the end user can connect to one DC input source, and then cascade from one DC block to the next, until reaching the maximum current available.

3.3 Powering the Miniature Media Converter 10/100 Switching and Miniature Media Converter w/SFP

The Miniature Media Converter 10/100 Switching and Miniature Media Converter w/SFP include multiple powering options:
- A country-specific, high-reliability AC power adapter (included)
- IE PowerTray 18-Slot AC for Rack Mounting
- USB power cable

4. Operation

4.1 LED Operation
Each Miniature Media Converter includes two LEDs, located on the RJ-45 connector. LED functions are as follows:
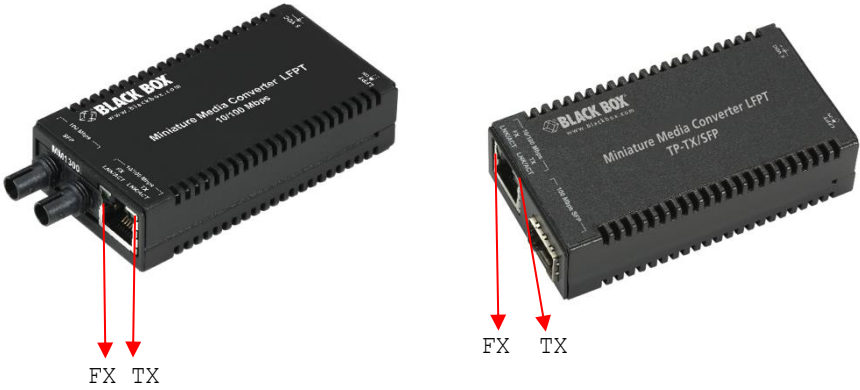
FX LNK/ACT   Glows green when a link is established on the fiber port; blinks green when activity is detected on the fiber port.

TX LNK/ACT   Glows green when a link is established on the copper port; blinks green when activity is detected on the copper port.
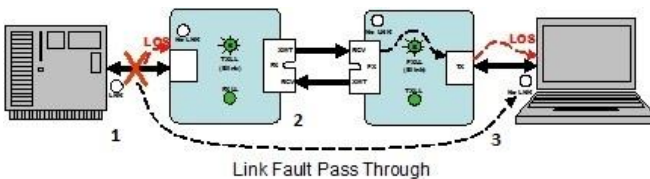
LFPT

The Miniature Media Converter with LFPT includes a DIP Switch, located on the back of the unit. DIP Switch functions are as follows:

Switch Up	**LFPT ON**
Switch Down	**LFPT OFF**

Link Fault Pass-Through (LFPT) is a troubleshooting feature that combines TX and FX LinkLoss from both the local and remote MiniMc, TX-FX/SFP modules. LFPT is enabled by turning on the DSW on both modules. This feature allows either end of the conversion to detect a link fault occurring at the other end of the media conversion chain.

Link Fault Pass Through

LFPT requires both TXLL and FXLL to be enabled.

Regardless if there is a break in segment 1, 2 or 3, the link will drop on the switches at both ends. The link fault is passed through the media conversion and is observed at each end. It acts just like it would if the devices were directly connected.

5. Contacting Black Box

Black Box Customer Service

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

Mail order: Black Box Corporation
1000 Park Drive, Lawrence, PA 15055-1018

Web site: www.blackbox.com

E-mail: info@blackbox.com

6.   Fiber Optic Cleaning Guidelines

Fiber Optic transmitters and receivers are extremely susceptible to contamination by particles of dirt or dust, which can obstruct the optic path and cause performance degradation. Good system performance requires clean optics and connector ferrules.

1. Use fiber patch cords (or connectors, if you terminate your own fiber) only from a reputable supplier; low-quality components can cause many hard-to-diagnose problems in an installation.

2. Dust caps are installed at Black Box to ensure factory-clean optical devices. These protective caps should not be removed until the moment of connecting the fiber cable to the device. If you need to disconnect the fiber device, reinstall the protective dust caps.

3. Store spare caps in a dust-free environment such as a sealed plastic bag or box so that when reinstalled they do not introduce any contamination to the optics.

4. If you suspect that the optics have been contaminated, alternate between blasting with clean, dry, compressed air and flushing with methanol to remove particles of dirt.

7.   Electrostatic Discharge Precautions

Electrostatic discharge (ESD) can cause damage to any product, add-in modules or stand alone units, containing electronic components. Always observe the following precautions when installing or handling these kinds of products.
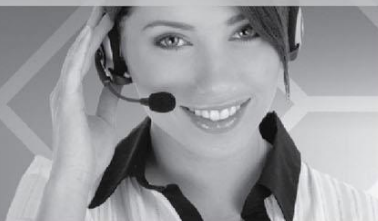
1. Do not remove unit from its protective packaging until ready to install.
2. Wear an ESD wrist grounding strap before handling any module or component. If the wrist strap is not available, maintain grounded contact with the system unit throughout any procedure requiring ESD protection.
3. Hold the units by the edges; do not touch the electronic components or gold connectors.
4. After removal, always place the boards on a grounded, static-free surface, ESD pad or in a proper ESD bag. Do not slide the modules or stand alone units over any surface.

WARNING! Integrated circuits and fiber optic components are extremely susceptible to electrostatic discharge damage. Do not handle these components directly unless you are a qualified service technician and use tools and techniques that conform to accepted industry practices.

◆ BLACK BOX®

About Black Box

Black Box provides an extensive range of networking and infrastructure products. You'll find everything from cabinets and racks and power and surge protection products to media converters and Ethernet switches all supported by free, live, 24/7 Tech Support available in 60 seconds or less.

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LHC013A-R3 Rev. 4   55-80632BB-00 Rev. C2