



M/E-TX-FX Series Mini Fast Ethernet Media Converters User Guide

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Revision History

Date	Rev.	Notes
04/11/13	A	Initial release.
6/7/21	B	Add PEM and update specs and certifications.
1/9/23	C	Initial Lantronix rebrand release.
10/17/24	D	Add TAA and NDAA Compliant and fix typo.

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1 Introduction

Product Description

Lantronix M/E-TX series of Fast Ethernet stand-alone Mini media converters provide cost effective media conversion between 100Base-TX ports and 100Base-FX ports. With its fixed configuration, deployments are just plug-and-play, and its small size makes it ideal for locations where space is limited. Operating at Layer 1, the physical layer, data is passed through the converter at line speed, making it ideal for applications where low latency is essential.

Ordering Information

Part Number	Description
M/E-TX-FX-01	100Base-TX (RJ-45) [100m/328 ft.]* to 100Base-FX 1300nm multimode (ST) [2km/1.2mi.]* Link Budget: 11.0db
M/E-TX-FX-01(SC)	100Base-TX (RJ-45) [100m/328 ft.]* to 100Base-FX 1300nm multimode (SC) [2km/1.2mi.]* Link Budget: 11.0db
M/E-TX-FX-01(SM)	100Base-TX (RJ-45) [100m/328 ft.]* to 100Base-FX 1310nm single mode (SC) [20km/12.4mi.]* Link Budget: 16.0db
M/E-TX-FX-01(SFP)	100Base-TX (RJ-45) [100m/328 ft.]* to 100Base-X SFP Slot (empty)
Optional Accessories (sold separately)	
SFP Modules	See the Lantronix SFP Products webpage
SPS-2460-SA	24VDC to 60VDC input Stand-alone Power Supply
WMBM	Wall Mount Bracket for Mini
M-MCR-01	18-Slot Powered Mini Chassis
DRBM	DIN Rail Mount Bracket for Mini
RMBM	Rack Mount Bracket for Mini; use with RMS19-SA4-02 and/or E-MCR-05

* Typical maximum cable distance; actual distance depends on the physical characteristics of the network. Longer transmission distances, bi-directional transmissions, and CWDM technology are all supported via specific SFP modules.



M/E-TX-FX-01



M/E-TX-FX-01(SC)



M/E-TX-FX-01(SM)



M/E-TX-FX(SFP)

Features

- Fiber integration used in pairs or as a single unit, this mini media converter will ease the integration of fiber optic cabling into copper-rich Fast Ethernet environments
- Extend Network Distance as fiber supports the transmission of Fast Ethernet data over much longer distances than possible twisted pair
- Low-Latency Layer 1 Design; this mini converter will retransmit Fast Ethernet signals without any store-and-forward packet inspection delays found in other Layer 2 devices
- Small Size is ideal for conversion locations where available space is limited - 65% smaller than standard media converters
- Unit and port LEDs allow for quick status information
- Auto-Negotiation and Auto-MDI/MDIX

Technical Specifications

Standards	IEEE 802.3u, 100Base-TX, 100Base-FX
Status LEDs	PWR (Power) below RJ-45: On = Power FX-Link/Act (Fiber Link / Activity) Upper Left on RJ-45: On = link, Flashing = Activity TX-Link/Act (Copper Link / Activity) Upper Right on RJ-45: On = link, Flashing = Activity
Dimensions	Width: 1.8" [46 mm] x Depth: 3.3" [85 mm] x Height: 0.85 [22 mm]
Power Consumption	2.6 Watts
Power Sources:	Barrel connector – Wall Mount AC power adapter 12VDC 400mA (the external power supply provided with this product is UL listed and C-UL listed Canada by the manufacturer).
Power Supply	External AC/DC required; +12VDC, 0.5A
Power Input	7.5VDC to 13.9VDC
Environment	Operating: 0°C to 50°C Storage: -15°C to 65°C Humidity: 5% to 95% (non-condensing) Altitude: 0 – 10,000 ft.
Weight	2 lbs. [0.90 kg]
MTBF	41,680 hours (MIL-HDBK-217F) 114,580 hours (Bellcore7 V5.0)
Certifications	Wall Mount Power Supply, UL Listed, cUL Listed (Canada)
Regulatory Compliance for Emission	FCC Class A; EN55022 Class A
Regulatory Compliance for Immunity	EN55024,
Safety Compliance	Unit: CE Mark
Warranty	Lifetime

WARNING: If the media converter is an IEEE802.3-2005 Powered Device (PD) capable of receiving power via the Media Dependent Interface (MDI) leads, the power source, connector, and cable attached to the barrel power connector must meet the isolation requirement specified in IEEE802.3-2005. Failure to observe this warning could result in an electrical shock.

CAUTION: Copper based media ports, e.g., Twisted Pair (TP) Ethernet, USB, RS232, RS422, RS485, DS1, DS3, Video Coax, etc., are intended to be connected to intrabuilding (inside plant) link segments that are not subject to lightening transients or power faults. These Copper-based media ports are NOT to be connected to interbuilding (outside plant) link segments that are subject to lightening transients or power faults. Failure to observe this caution could result in damage to equipment.

WARNING: Visible and invisible laser radiation when open. Do not stare into the beam or view directly with optical instruments. Failure to observe this warning could result in an eye injury or blindness.

WARNING: Use of controls, adjustments, or the performance of procedures other than those specified herein could result in hazardous radiation exposure. The information in this user guide is subject to change.

2 Installation

Checklist

Make sure you have received the following items. Contact your sales representative if any item is missing or damaged. Please save the packaging for possible future use.

- One M/GE-PSW-SFP-01 Media Converter
- One documentation postcard
- One country- specific power supply



M/E-TX-FX-01

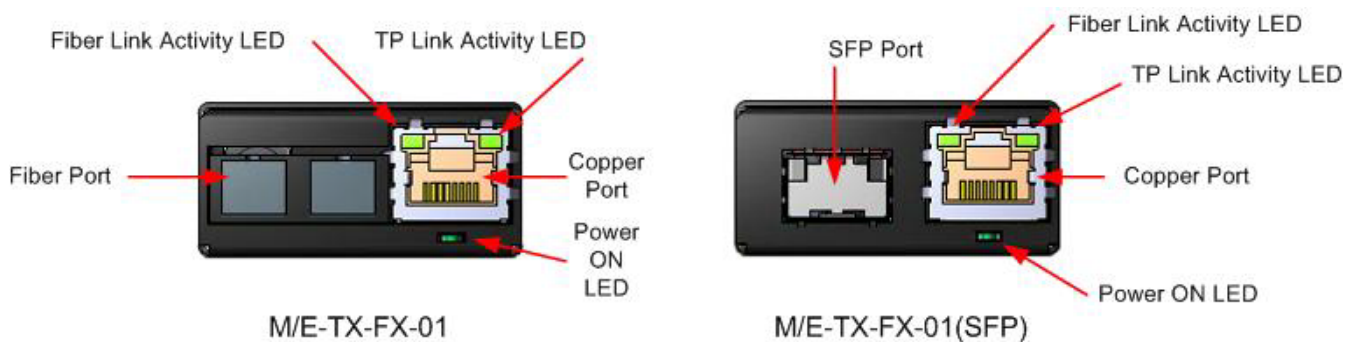
Observe ESD Precautions

Always observe the following ESD (Electrostatic Discharge) precautions when installing or handling the media converter:

- Do not remove the converter from its protective packaging until you are ready to install it.
- Wear an ESD wrist grounding strap before handling any module or component. If you do not have a wrist strap, maintain grounded contact with the system unit throughout any procedure requiring ESD protection.

Copper and Fiber Ports

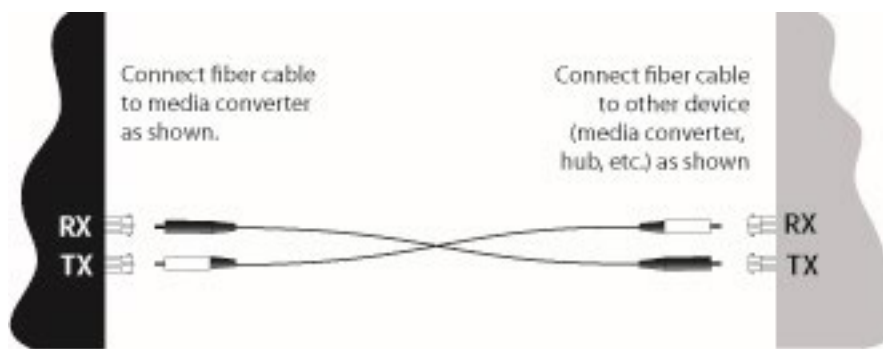
The figure below shows the front panel of the M/E-TX-FX-01 media converters.



Connect the Fiber Cable

Full duplex (always ON) is on the fiber side only; therefore, the 512-Bit Rule does not apply. The cable lengths are constrained by the cable requirement.

1. Locate or build IEEE 803.2 compliant 100 Base-X fiber cable with male, two-stranded TX to RX connectors installed at both ends.
2. Connect the fiber cable to the M/E-TX-FX-01 media converters as follows:
 - Connect the male TX cable connector to the female TX port.
 - Connect the male RX cable connector to the female RX port.
3. Connect the fiber cable to the other device (another media converter, hub, etc.) as follows:
 - Connect the male TX cable connector to the female RX port.
 - Connect the male RX cable connector to the female TX port.



Connect the Twisted-pair Copper Cable

The AutoCross feature allows either MDI (straight-through) or MDI-X (crossover) cable connections to be configured automatically, according to network conditions.

If full-duplex mode is used, the 512-Bit Rule does not apply. The cable lengths are constrained by the cable requirements.

Perform these steps:

1. Locate or build IEEE 803.2™ compliant 100Base-TX cable, with RJ-45 connectors installed at both ends.
2. Connect the RJ-45 connector at one end of the cable to the RJ-45 port on the M/E-TX-FX-01 media converter.
3. Connect the RJ-45 connector at the other end of the cable to the RJ-45 port on the other device (switch, workstation, etc.).



Power Warnings

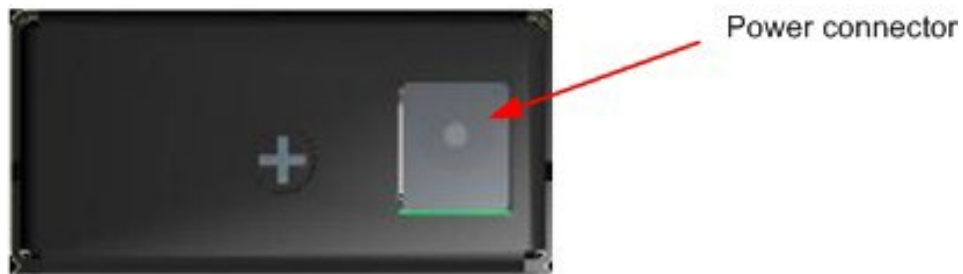
WARNING: If the media converter is an IEEE802.3-2005 Powered Device (PD) capable of receiving power via the Media Dependent Interface (MDI) leads, the power source, connector, and cables attached to the barrel power connector must meet the isolation requirement specified in IEEE 802.3-2005.

Power Supply Included

To order the corresponding country- specific power supply, add the extension from the list below to the end of the SKU. For example: M/E-TX-FX01-NA = North America, -LA = Latin America, -EU = Europe, -UK = United Kingdom, -SA = South Africa, -JP = Japan, -OZ = Australia, and -BR = Brazil.

Power up the Media Converter

The figure below shows the power connector.



M/E-TX-FX-01 and M/E-TX-FX-01(SFP) Back Panel Power

Power Adapter

AC Power

1. Connect the barrel connector of the power adapter to the media converter's power port (located on the back panel of the media converter).
2. Connect the power adapter plug to AC power.
3. Verify that the media converter is powered up by observing the lit power indicator LED on the front panel.

DC Power

See the Lantronix SPS-2460-SA DC external power supply [user guide](#) for powering the media converter.

3 Operation

Status LEDs

Use the LEDs to monitor the status of the media converter.

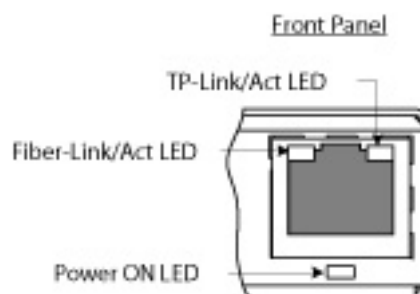
FX-Link/Act LED

Green ON = Link (*fiber*)
Flashing = Activity

TX-Link/Act LED

Green ON = Link
Flashing = Activity

Power LED ON = Connected to power



Feature Descriptions

Auto-Negotiation

The Auto-Negotiation feature is ON permanently for the M/E-TX-FX-01 media converters. Auto-Negotiation allows the media converter to configure itself automatically to achieve the best possible mode of operation over a link. It broadcasts speed (100 Mbps) and duplex capabilities (full) to the other device and negotiates the best mode of operation. Auto-Negotiation allows quick and easy installation because the optimal link is established automatically.

In a scenario where an auto-negotiation device is linked to a non-negotiating device, the negotiating device via parallel detection recognizes the speed of the second device then establishes the best operating speed (100 Mbps).

AutoCross

The AutoCross feature allows using either straight-through (MDI) or crossover (MDI-X) copper cables when connecting to 100Base-TX devices. AutoCross determines the characteristics of the connection and automatically configures the device to link up, regardless of the copper cable configuration (MDI or MDI-X).

Automatic Link Restoration

The media converter will automatically re-establish the link when connected to a switch if the link is lost, even with Auto-Negotiation enabled.

Far-End Fault (Always ON)

When a fault occurs on an incoming fiber link, the media converter transmits a Far-End Fault signal on the outgoing fiber link.

Cable Specifications

Cable physical characteristics must meet or exceed IEEE 802.3™ specifications.

Fiber Optics

Bit Error Rate:	<10 ⁻⁹
Single mode fiber (recommended):	9 μm
Multimode fiber (recommended):	62.5/125 μm
Multimode fiber (optional):	100/140, 85/140, 50/125 μm
M/E-TX-FX-01 (SC)	1300 nm multimode
Fiber Optic Transmitter Power:	min: -19.0 dBm max: -14.0 dBm
Fiber Optic Receiver Sensitivity:	min: -30.0 dBm max: -14.0 dBm
Link Budget:	11.0 dB
M/E-TX-FX-01 (SM)	1310 nm single mode
Fiber-optic Transmitter Power:	min: -15.0 dBm max: -8.0 dBm
Fiber-optic Receiver Sensitivity:	min: -31.0 dBm max: -8.0 dBm
Link Budget:	16.0 dB

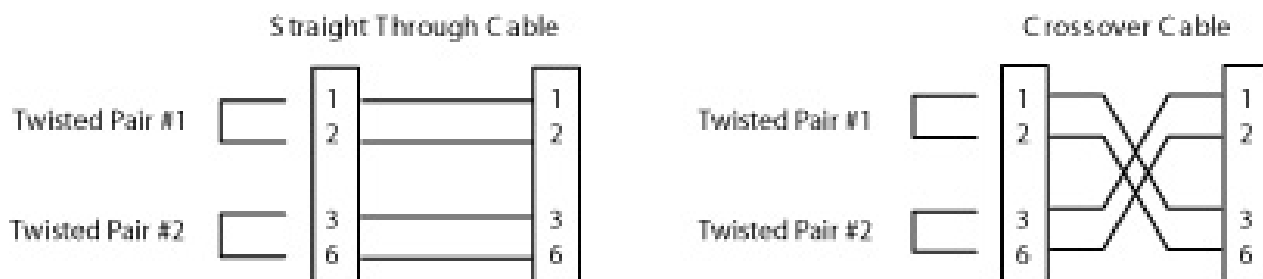
The fiber optic transmitters on this device meet Class I Laser safety requirements per IEC825/CDRH standards and comply with 21 CFR1040.10 and 21CFR1040.11.

Copper Cable

Category 5: (Minimum requirement for 100 Mb/s operation)

Gauge	24 to 22 AWG
Attenuation	22.0 dB /100m @ 100 MHz
Maximum Cable Distance	100 meters

- Straight-through or crossover twisted-pair cable may be used.
- Shielded (STP) or unshielded (UTP) twisted-pair cable may be used.
- Pins 1&2 and 3&6 are the two active pairs in an Ethernet network.
- Use only dedicated wire pairs for the active pins:
(e.g., blue/white & white/blue, orange/white & white/orange, etc.)
- Do not use flat or silver satin wire.



4 Troubleshooting and Compliance Information

If the media converter fails, isolate and correct the failure by determining the answers to the following questions, and then taking the indicated action:

1. Is the power LED lit and did the TX and FX LEDs turn ON and then turn OFF?

NO

- Is the device powered by an adapter?
- Is the power adapter the proper type of voltage and cycle frequency for the AC outlet?
- Is the power adapter properly installed in the media converter and in the AC outlet?
- Contact Technical Support: See [Contact Us](#) below.

YES

Proceed to step 2.

Note: The M/E-TX-FX-01 (no link pass-through option), the TX LED will turn ON when the twisted pair copper cable is installed; the FX LED will turn ON when the fiber cable is installed.

2. Are the TX and FX-Link/ACT LEDs lit on the RJ-45 port?

NO

- Check the copper cables for proper connection.
- Check the fiber cables for proper connection.
- Contact Technical Support: See [Contact Us](#) below.

YES

Contact Technical Support: See [Contact Us](#) below.

Contact Us

- Lantronix website : <https://www.lantronix.com>
- Technical Support: <https://www.lantronix.com/technical-support/>
- Compliance: [NDAA, RoHS, REACH and WEEE Compliance](#)

Note that this manual may provide links to third party websites for which Lantronix is not responsible.

Compliance Information

Declaration of Conformity

Manufacture's Name: Lantronix, Inc.

Manufacture's Address: 48 Discovery, Suite 250, Irvine, California 92618 USA

Declares that the product(s)

Media Converters M/E-TX-FX-01 and M/GE-R-xxx-01

Model #s: M/E-TX-FX-01, M/E-TX-FX-01(SC), M/E-TX-FX-01(SM), M/E-TX-FX-01(SFP), and M/GE-T-SX-01, M/GE-T-LX-01, M/GE-T-SFP-01

Conform to the following Product Regulations:

FCC 47 CFR Part 15: 2012 Class A

ANSI C63.4:2009

EMC-Directive 2004/108/EC

EN 55022:2010 Class A

EN 61000-3-2:2006/A1:2009/A2:2009, EN 61000-3-3:2008

EN55024:2010

IEC61000-4-2:2008, IEC61000-4-3:2006/A2:2010, IEC61000-4-4:2004, IEC61000-4-5:2005,

IEC61000-4-6:2008, IEC61000-4-8:2009, IEC61000-4-11:2004

TAA Compliant and NDAA Compliant

With the technical construction on file at the above address, this product carries the CE Mark

I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s).

Place: Irvine, California

Date: April 27, 2022

Signature: *Fathi Hakam*

Full Name: Fathi Hakam

Position: Vice President of Engineering

FCC Regulations

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at the user's own expense.

Canadian Regulations

This digital apparatus does not exceed the Class A limits for radio noise for digital apparatus set out on the radio interference regulations 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 Class A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.



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