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A UTC Fire & Security Company

IFS MC201-1P/1FS
User Manual

Manufacturer   UTC Fire & Security Americas Corporation, Inc. 2955 Red Hill Avenue, Costa Mesa, CA 92626-5923, USA

Version   This document applies to IFS MC201-1P/1FS version 1.0.

Certification $C\epsilon$ ⊘ N4131

FCC compliance   **Class A:** 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 his own expense.

ACMA compliance   **Notice!** This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

European Union directives   **2004/108/EC (EMC directive)**: Hereby, UTC Fire & Security declares that this device is in compliance with the essential requirements and other relevant provisions of Directive 2004/108/EC

2002/96/EC (WEEE directive): Products marked with this symbol cannot be disposed of as unsorted municipal waste in the European Union. For proper recycling, return this product to your local supplier upon the purchase of equivalent new equipment, or dispose of it at designated collection points. For more information see: www.recyclethis.info.

Contact information	www.utcfireandsecurity.com or www.interlogix.com
Customer support	www.interlogix.com/customer-support

Contents

Overview

Thank you for purchasing the IFS MC201-1P/1FS 10/100Mbps Ethernet Twisted pair to 100Base-FX fiber optic PoE Bridge Converter. This converter is used to convert one type of media signal to a different type of media that allows two segments to connect easily, efficiently and inexpensively. The converter supports Power over Ethernet to power one IEEE 802.3af compliant powered device.

About the MC201-1P/1FS

The MC201-1P/1FS is an IEEE 802.3af Power over Ethernet Converter that supplies 48 VDC over Ethernet cable. The MC201-1P/1FS IEEE 802.3af Power over Ethernet Converter inserts DC Voltage onto a Category 5 cable, allowing the cable between the Converter (MC201-1P/1FS) and PoE PD (Powered Device) to transfer data and power simultaneously. The maximum distance between the Converter (MC201-1P/1FS) and PoE PD is 328 ft. (100m). MC201-1P/1FS combines Ethernet with IEEE 802.3af power and transfers over the twisted pair cables. A PoE splitter can be used to separate the Ethernet data and power if needed to power a non-PoE device.

With the MC201-1P/1FS, only one Ethernet cable is needed to carry both power and data to each device providing simpler network designs, higher reliability while reducing costs.

Note: PSE (Power Sourcing Equipment) is a device (switch, or hub for instance) that will provide power in a PoE setup. The maximum allowed continuous output power per such device is 15.4W according to the IEEE 802.3af standard.

PD (Powered Device) is a device powered by the PSE and thus consumes energy, such as IP Phones, network cameras and Wireless access points, etc.

Package Contents

Open the package containing the MCR205-1T/1S and carefully unpack it. The box should contain the following items:

- MCR205-1T/1S PoE Media Converter x1

- User's Manual CD x1

If any of these items are missing or damaged, please contact your dealer immediately. If possible, retain the product box including the original packing material to return it for repair/replacement.

Hardware Overview

Figure 1: Physical Layout

Real Panel

Top Panel

10/100BASE-TX TO 100BASE-FX
PoE MEDIA CONVERTER

ifs

Bottom

Front Panel

TX   RX

FX   TX

LNK
ACT

PWR   PoE
      In Use

PoE Media Converter
10/100Base-TX to 100Base-FX

10/100Base-TX

Ethernet+DC
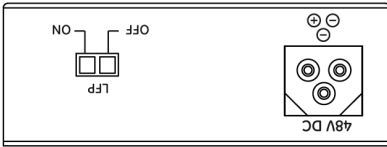
Front Panel

There is one RJ-45 Twisted-Pair jack (Auto-MDI/MDI-X), one fiber-optic connector and four LED indicators on the MC201-1P/1S front panel.
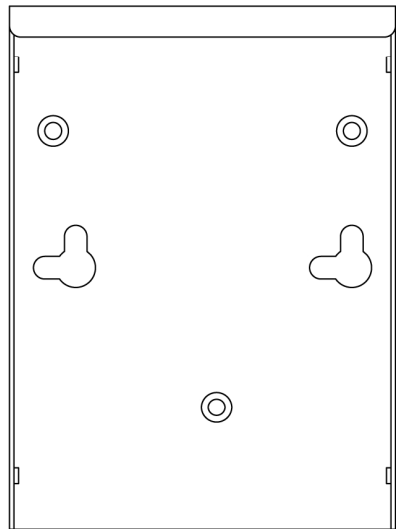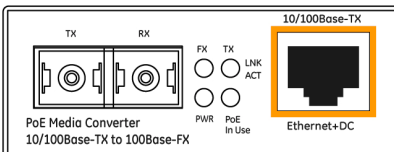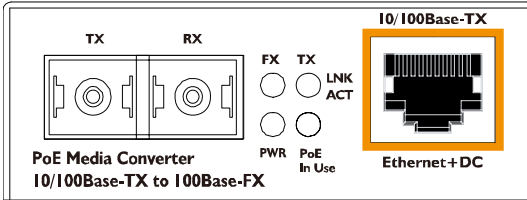

Back Panel

There is one DIP switch for turning the Link Fault Pass-through feature on or off, and 48V DC power input located at the back panel. The back panel also has one 48 VDC power socket for the MC201-1P/1S.

Note: Please make sure that the 48VDC power supply used is capable to provide 0.32A to support full PoE load.

Link Fault Pass-through (LFP)

The LFP function refers to the Link Fault Pass-through function (LLCF/LLR) and the DIP Switch design. LLCF/LLR can immediately notify administrators about a connectivity problem. The DIP Switch enables or disables the LFP function.

LLCF (Link Loss Carry Forward) detects the connection loss on the TP line, and LLR (Link Loss Return) detects the connection loss on the fiber line.

Link Loss Carry Forward (LLCF)

The MC201-1P/1FS incorporates an LLCF function for troubleshooting a remote connection. When LFP function is enabled, the FL/TP ports do not transmit a link signal until they receive a link signal from the opposite port.

The diagram below shows a typical network configuration with a good link status using MC201-1P/1FS for remote connectivity.
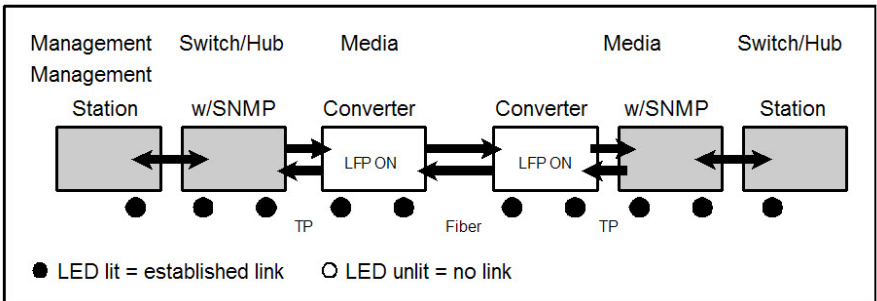
In case of a connectivity issue, the MC201-1T/1FS media converter LLCF sends the notification to the switch/hub that generates a trap to the management station.
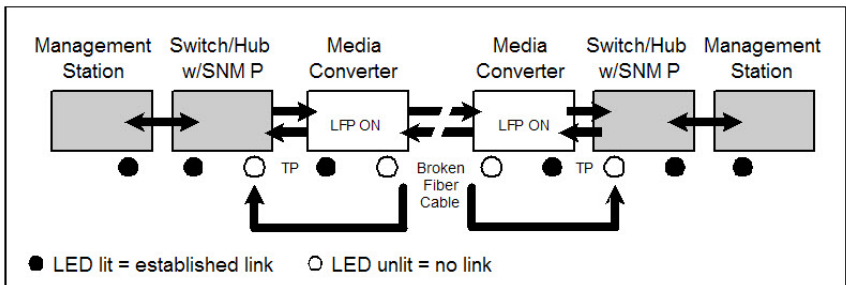
* The default is set to OFF for LFP function.

Link Loss Return (LLR)

The fiber ports of the MC201-1P/1FS have been designed with an LLR function for troubleshooting a connectivity issue. LLR works in conjunction with LLCF.

When LFP function is enabled, the port's transmitter shuts down when its receiver fails to detect a valid connection. LLR should only be enabled on one end of the link and is typically enabled on either the unmanaged or remote device.

The diagram below shows a typical network configuration with a good link status using MC201-1P/1FS for remote connectivity. Note that LLR and LLCF are enabled as indicated in the diagram.
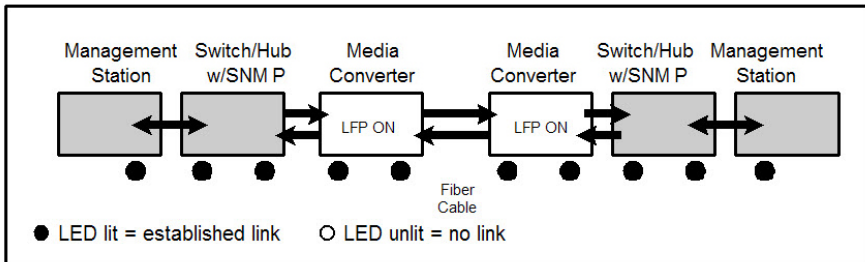
If one of the optical conductors is bad (as shown in the diagram box below), the fiber converter with LLR function will return a no-link condition to its link partner. With LLCF function also enabled, the no-link condition is carried forward to the switch/hub where a trap is generated to the management station.

Management   Switch/Hub   Media   Media   Switch/Hub Management
  Station   w/SNM P   Converter   Converter   w/SNM P   Station

                          LFP ON   LFP ON

                  TP   Broken   TP
             Port 2   Fiber   Port 1

      Link Loss Carried forward   Link Loss Carried forward

                          Link Loss Returned

● LED lit = established link   ○ LED unlit = no link
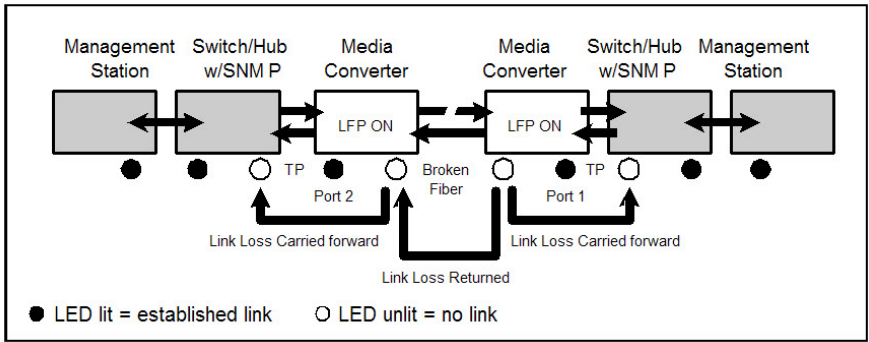
Note: LFP function is turned-off by default. This feature can also be enabled or disabled via the side DIP-switch. If the installer is familiar with the network installation and diagnostics (i.e. checking which end is broken in a connection), switch can be set to ON position and converter should be reset for changes to take effect. Otherwise, it's recommended to keep the DIP switch in its default position.

Installing the Converter

Please follow these steps to install the MC201-1P/1FS:

1. Turn off the power of the network device/station in the network to which the MC201-1P/1FS will be attached.

2. Ensure that there is no activity on the network.

3. Attach the fiber cable from the MC201-1P/1FS to the fiber network. TX/RX must be paired at both ends.

4. Attach a Category 5 UTP cable from the 10/100Base-TX network to the RJ-45 port on the MC201-1P/1FS.

5. Connect the 48V DC power adapter to the MC201-1P/1FS and verify that the Power LED illuminates.

6. Turn on the network device/station, the TX Link and FX Link LEDs should illuminate when all the cables are attached.
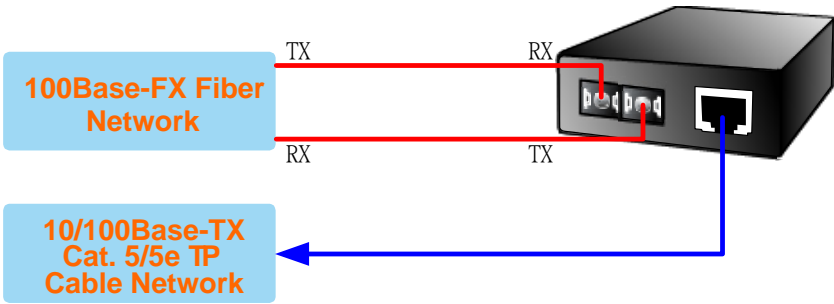
Note: RJ-45/STP, UTP Cat 5, straight /crossover cable is accepted.

Please refer to the Cable Specification section for more details about the wiring distance of your TP, optical fiber networks.

PoE Function

The MC201-1P/1FS IEEE 802.3af Powered Device/Splitter equipment installation:

It's recommended to check your network environment before the installation. The MC201-1P/1FS media converter sends the power over the twisted pair cable (pair 1, 2 and pair 3, 6).

For locations where it may be difficult to find a power outlet, the MC201-1P/1FS provides the easiest way to power your PoE powered Ethernet devices such as IP cameras, IP access control, VoIP, Wireless Access Points (WAP), etc.
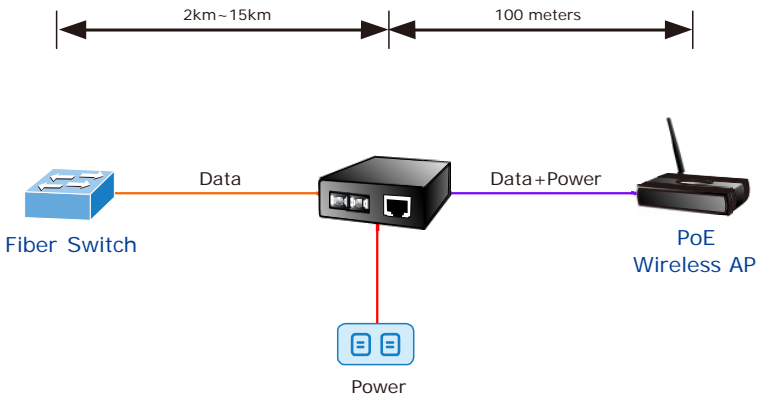
Note: The PoE feature requires the use of a recommended power adapter.

LED Indicators

System

LED	Color		Function
PWR	**Green**	**Lit**	Indicates the device is powered.

10/100Base-TX Port

LED	Color		Function
LNK/ACT	**Green**	**Blink**	Indicates that the Media Converter is actively sending or receiving data over that port.
		Lit	Indicates that the connection through the port is successfully established.
		Off	Indicates that the connection through the port is not established.
PoE in Use	**Green**	**Lit**	Indicates that the port is providing PoE to the connected device.
		Off	Indicates that the port is not providing PoE to the connected device.

100Base-FX SC Port

LED	Color		Function
LNK/ACT	**Green**	**Blink**	Indicates that the Media Converter is actively sending or receiving data over the port.
		Lit	Indicates that the port link is up.
		Off	Indicates that the port link is down.

Note: Fiber optic port should be set to the correct mode according to this LNK/ACT indicator for optimal network performance.

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Specifications

Ethernet

Data Rate	10/100/1000Mbps
Throughput (packet per second)	148810pps@64Bytes
Switch Architecture	Store-and-Forward
Flow Control	Back pressure for Half-Duplex mode Pause from for Full-Duplex mode (IEEE 802.3x)
Connector	RJ-45 with Auto-MDI/MDI-X and PoE injector function
Cable Type and Distance	10Base-T (Cat 3, 4, 5e) or 100Base-T (Cat 5e) – 328ft (100m)

Fiber

	MC100FX-TX-PoE	MC201-1P/1FS
Data Rate	100Base-FX	100 Base-FX
Connector	SC	SC
Fiber Type	Multi-mode (50/125µm or 62.5/125µm	Single mode (9/125µm)
Distance	Up to 2km	Up to 15km

Power Over Ethernet (PoE)

PoE Standard	IEEE 802.3af
Power Pin Assignment	(+) Pins 1 & 2; (–) Pins 3 & 6
Power Output (Max. 1 PoE Device)	PoE 48 VDC, Max. 15.4 watts, 350mA

LED Indicators

Power Status	On - Green
10/100Base-T Link	Data Activity - Green
100Base-FX Link	Data Activity - Green
PoE In Use	Detection of PSE Device - Green

LFP Mode Switch

On	If either TX or FX port is faulty, disable other port
Off	Active link LED will still operate if other port is faulty

Electrical and Mechanical

Input Power	48VDC @ 0.38A
Enclosure	Metal
Dimensions (H x W x D)	1.02 x 2.76 x 3.82 in. (26 x 70 x 97 mm)
Weight	0.44 lbs. / 200g

Environmental

Operating Temperature	0ºC~50ºC
Storage Temperature	-120ºC~70ºC
Relative Humidity	0%–90% (non-condensing)

Cable Specifications

Duplex	Connection	Limitation (max.)
Twisted Pair		
Half / Full	Node to Node	100 meters
	Node to Switch/Hub	
Single-Mode Converters		
SM Full	Node to Node	15 kilometers
	Node to Switch	

RJ-45 Pin Assignments

10/100Mbps, 10/100Base-TX

| Contact	MDI	MDI-X
1	1 (TX +)	3
2	2 (TX -)	6
3	3 (RX +)	1
6	6 (RX -)	2
4, 5, 7, 8	Not used	Not used

Implicit implementation of the crossover function within a twisted-pair cable, or at a wiring panel, while not expressly forbidden, is beyond the scope of this standard.

RJ-45 Cable Pin Assignments
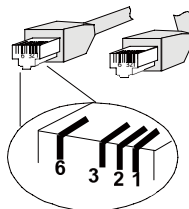
There are 8 wires on a standard UTP/STP cable and each wire is color-coded. The following shows the pin allocation and color of straight cable and crossover cable connections:
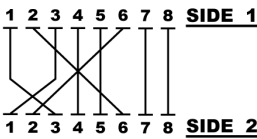
Straight Cable

1 2 3 4 5 6 7 8 <u>SIDE 1</u>

1 2 3 4 5 6 7 8 <u>SIDE 2</u>
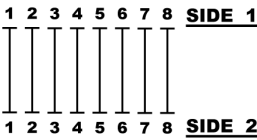
SIDE 1	SIDE 2
1 = White/Orange	1 = White/Orange
2 = Orange	2 = Orange
3 = White/Green	3 = White/Green
4 = Blue	4 = Blue
5 = White/Blue	5 = White/Blue
6 = Green	6 = Green
7 = White/Brown	7 = White/Brown
8 = Brown	8 = Brown

Cross Over Cable

1 2 3 4 5 6 7 8 <u>SIDE 1</u>

1 2 3 4 5 6 7 8 <u>SIDE 2</u>

SIDE 1	SIDE 2
1 = White/Orange	1 = White/Green
2 = Orange	2 = Green
3 = White/Green	3 = White/Orange
4 = Blue	4 = Blue
5 = White/Blue	5 = White/Blue
6 = Green	6 = Orange
7 = White/Brown	7 = White/Brown
8 = Brown	8 = Brown

Fiber Optic Cable Connection Specifications

The optical details are shown below:

Fiber Optical patch Cables:

Standard	Fiber Type	Cable Specification
100Base-FX (1310nm)	Multi-mode	50/125µm or 62.5/125µm
100Base-FX (1310nm)	Single-mode	9/125µm

Contacting Technical Support

Contact technical support if you encounter any difficulties during this installation. Please make sure you have the requested diagnostic or log files ready before you contact us by phone or go to www.interlogix.com/customer-support.

Technical Support

Europe, Middle East and Africa

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