



ALL-MC202P-SFP1-PoE

1000Base-X to 10/100/1000Base-T
802.3at PoE Media Converter



USER MANUAL

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1. Overview

Thank you for purchasing ALL-MC202-SFP1-PoE 1000Base-X Fiber-optic to 10/100/1000 Mbps Ethernet Twisted pair 802.3at PoE Bridge Converter. This converter is used to convert one type media signal to other type equivalent that allows two type segments connect easily, efficiently and inexpensively. The converter provides Power over Ethernet power injector function which is able to drive one IEEE 802.3af/802.3at compliant powered devices.

About the Power over Ethernet Injector

The ALL-MC202P-SFP1-PoE is an IEEE 802.3at / 802.3af Power over Ethernet Injector. To inserts DC Voltage into Cat.5 / 5e / 6 cables, allowing the cable between the Injector (ALL-MC202P-SFP1-PoE) and PoE PD (Powered Device) to transfer data and power simultaneously. The maximum distance between the Injector (ALL-MC202P-SFP1-PoE) and PoE PD is 100 meters. The ALL-MC202P-SFP1-PoE combines the Ethernet digital data with power over the twisted pair cables as an IEEE 802.3at / 802.3af Power over Ethernet Injector. And using the Power over Ethernet splitter, it can separate the digital data and the power into two outputs. The benefits of ALL-MC202P-SFP1-PoE are like cost saving, easy for networking planning and higher reliability. What's more, upon any IEEE 802.3at / 802.3af devices installed, the ALL-MC202P-SFP1-PoE or PD all can make the connection while migrating and the Ethernet digital packets, such as connecting the ALL-MC202P-SFP1-PoE to an IEEE 802.3at / 802.3af complied devices, wireless AP or IP Camera.

2. Checklist

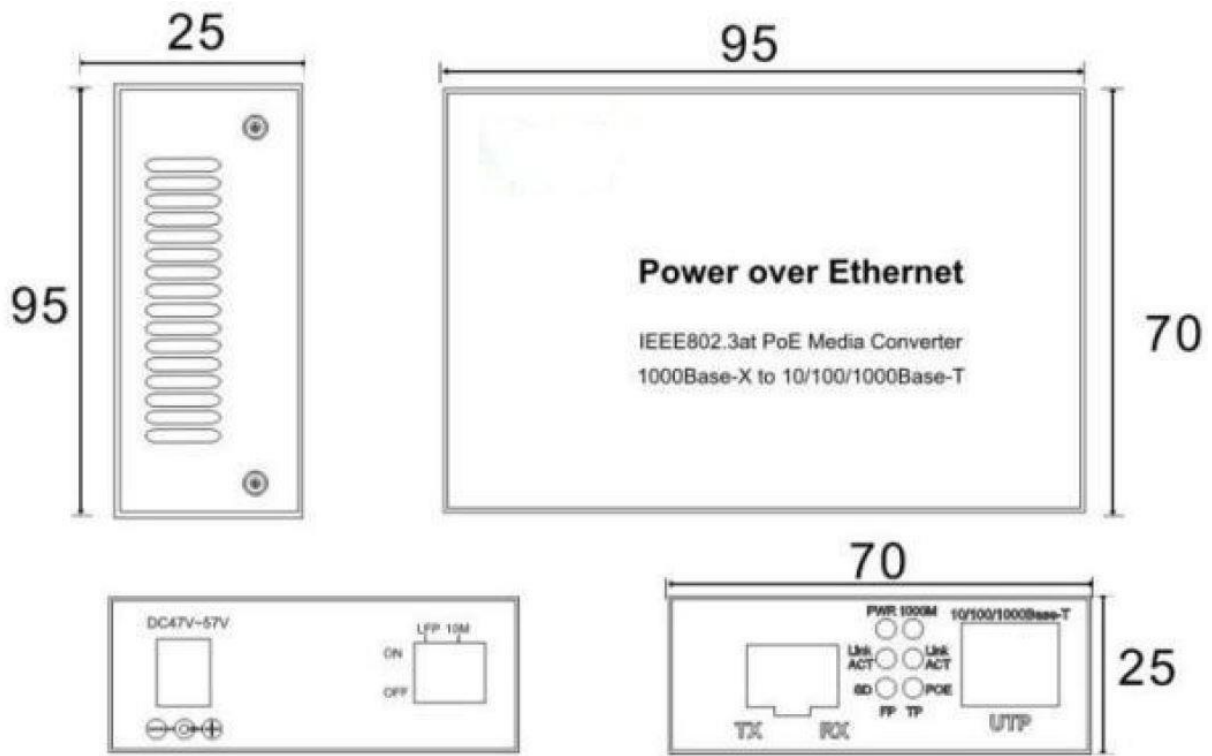
Your ALL-MC202P-SFP1-PoE box should contain the following items:

- 1x ALL-MC202P-SFP1-PoE Media Converter
- 1x User Manual
- 1x Power Supply (48V DC / 1,25A)
- 1x Power Cord

Note: ALL-MC202P-SFP1-PoE is with one vacant SFP module slot. The mini GBIC SFP module is not bundled with in the package.

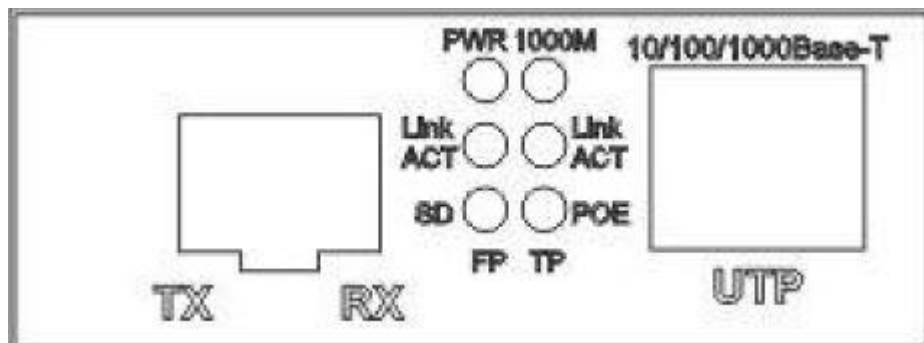
3. Product Outlook

Overview



Front View

There is one RJ45 Twisted-Pair jack (Auto-MDI/MDI-X), one fiber-optic connector and six LED indicators.



Rear View

There are two DIP switches. One DIP switch for Link Fault Pass Through (LFP) feature. „ON“ to turn on the LLCF and LLR detection. And „OFF“ to turn off this feature.

The other one is for 10Mbps feature. „ON“ to change the data transfer rate of RJ45 to 10Mbps. Then the device can transfer HD videos and extend the transfer distance of RJ45 to 330 meters simultaneously. Switch to „OFF“ to turn off this feature.

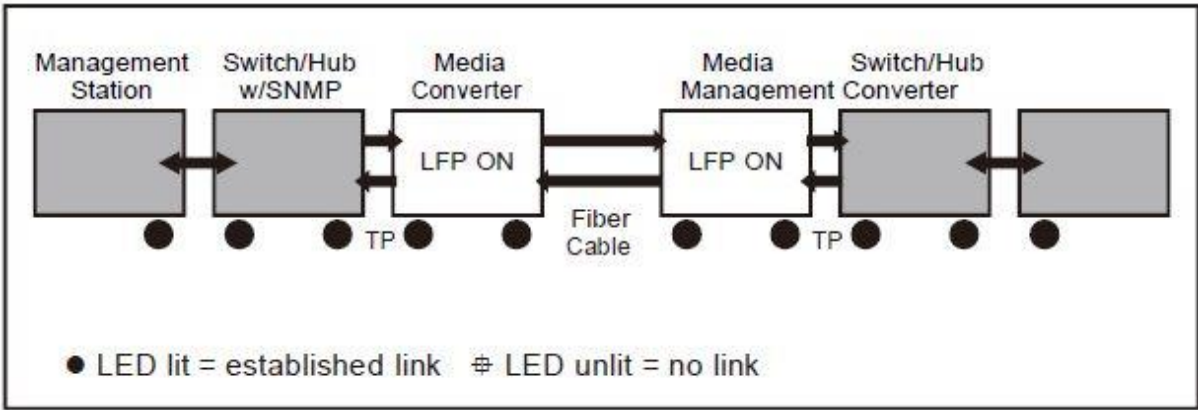


4. Link Fault Pass Through (LFP)

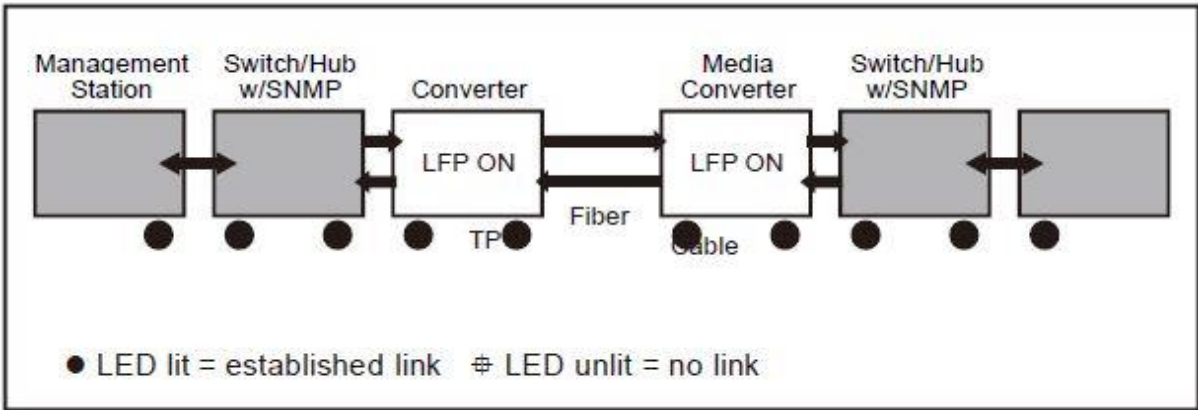
The LFP function includes the Link Fault Pass Through function (LLCF/LLR) and the DIP Switch design. LLCF/LLR can immediately alarm administrators the problem of the link media and provide efficient solution to monitor the net. The DIP Switch provides disable or enable the LFP function. LLCF (Link Loss Carry Forward) means when a device connected to the converter and the TP line loss the link, the converter's fiber will disconnect the link of transmit. LLR (Link Loss Return) means when a device connected to the converter and the fiber line loss the link, the converter's fiber will disconnect the link of transmit. Both can immediately alarm administrators the problem of the link media and provide efficient solution to monitor the net.

Link Loss Carry Forward (LLCF)

ALL-MC202P-SFP1-PoE 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 ALL-MC202P-SFP1-PoE for remote connectivity.

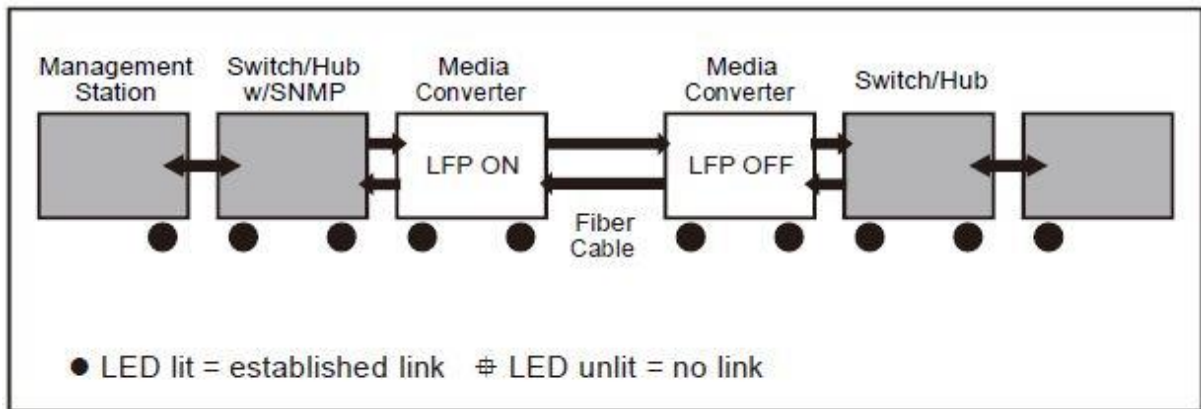


If the connection breaks, ALL-MC202P-SFP1-PoE that link loss forward to the Switch / Hub that generates a trap to the management station. The administrator can then determine the source of the problem.

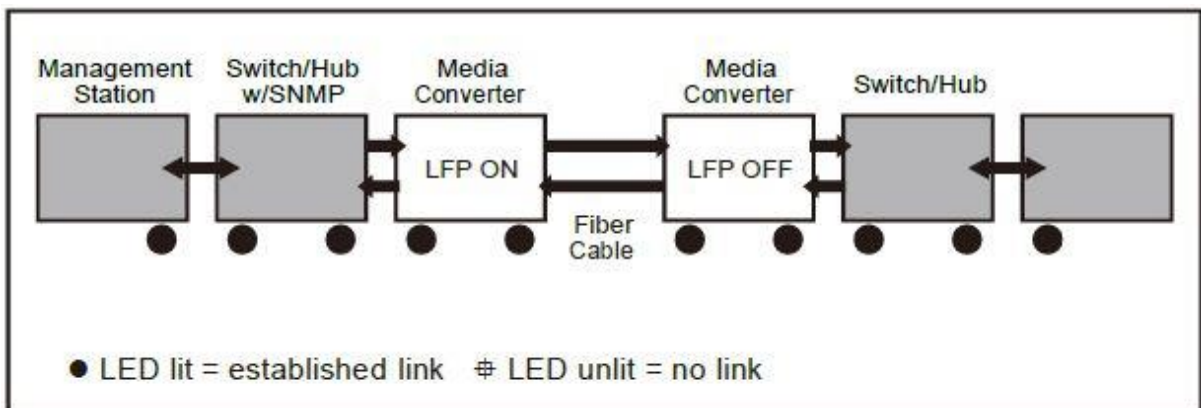


Link Loss Return (LLR)

The fiber ports of ALL-MC202P-SFP1-PoE have been designed with an LLR function for troubleshooting a remote connection. 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 receive link. 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 ALL-MC202P-SFP1-PoE for remote connectivity. Note that LLR and LLCF are enabled as indicated in the diagram.



If one of the optical conductors is down (as shown in the diagram box below), the 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, and the administrator can then determine the source of the loss.



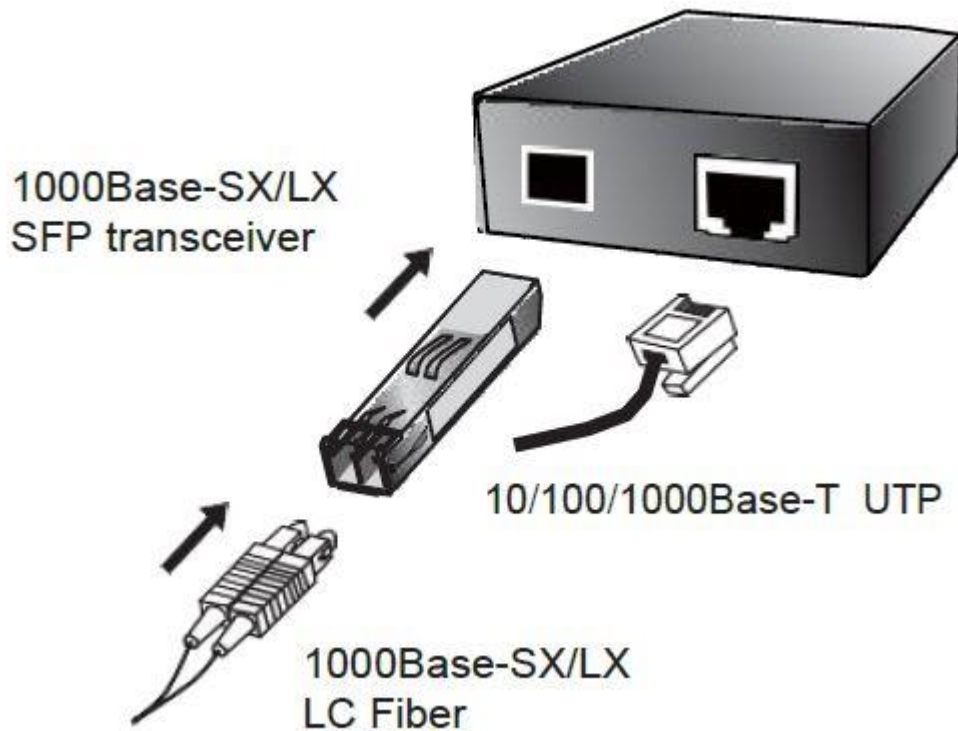
Note: LFP function is turn-off in default. This feature can also be turned via the side DIP-switch. If you are not familiar with the network installation and for diagnostic purpose (i.e. check which end is broken), you can turn it on and reset the converter to make it take effect. Otherwise, please remain it in the default position.

5. Installing the Converter

Please follow these steps to install the converter:

- Turn off the power of the device/station in a network to which the ALL-MC202P-SFP1-PoE will be connected.
- Ensure that there is no activity in the network.
- Connect the fiber cable from the ALL-MC202P-SFP1-PoE to the fiber network.

- Connect a Cat.5/5e/6 UTP cable from the 10/100/1000Base-T network to the RJ45 port of the ALL-MC202P-SFP1-PoE.
- Turn on the power of the device/station, the TX Link and FX Link LEDs should light when all cables are connected.

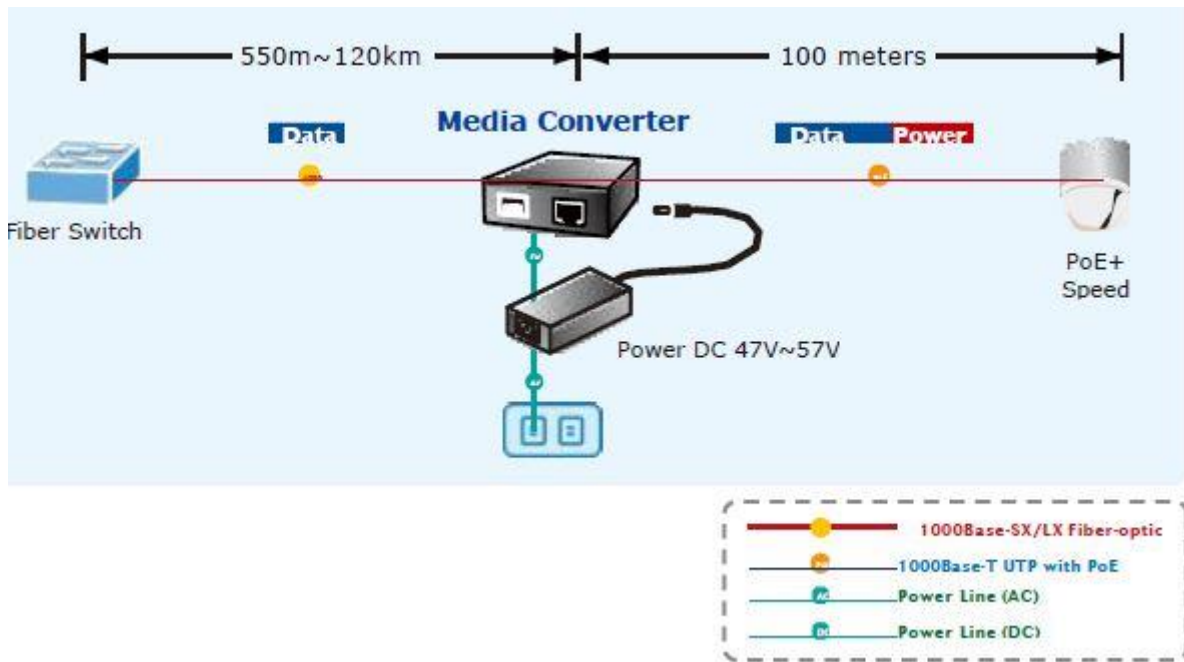


Note: RJ45/STP, UTP Cat.5/5e/6, straight/cross over cable is accepted. Please refer to section 8 for more about the wiring distance of your TP, Optical-fiber networks.

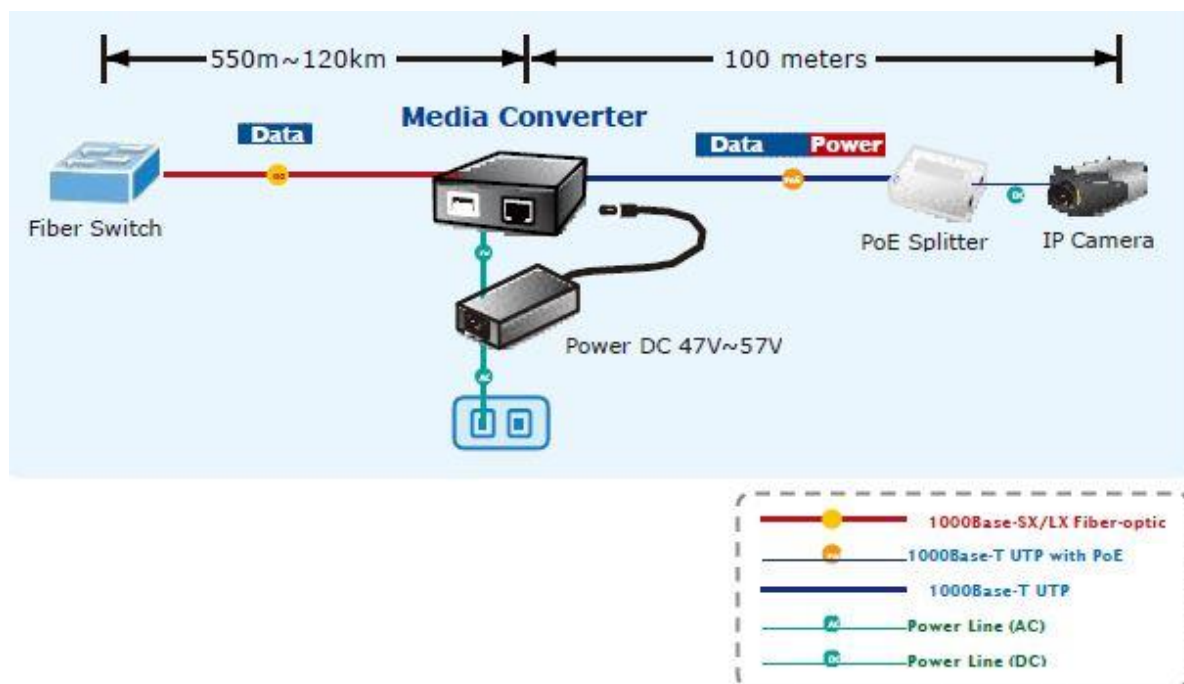
6. PoE Function

ALL-MC202P-SFP1-PoE and the IEEE 802.3at/802.3af Injector/Splitter equipment installation:

Before your installation, it is recommended to check your network environment. If there is any IEEE 802.3at / 802.3af devices need to power on, the ALL-MC202P-SFP1-PoE can provide you a way to supply power for this Ethernet device conveniently and easily. The ALL-MC202P-SFP1-PoE equips an AC-DC adapter with DC 48V input and it injects the DC power into the pin of the twisted pair cable (Pin 1, 2, 3 and 6).



For the places where are hard to find the power inlet, the ALL-MC202P-SFP1-PoE provide the easiest way to power your Ethernet devices such as IEEE 802.3at / 802.3af Power over Ethernet Splitter with Internet Camera or PoE Wireless Access Point installed in the wild rang place.



7. LED Indication

System

LED	Color	Function	
PWR	Green	On	Power ON

10/100/1000Base-T Port

LED	Color	Function	
LINK/ACT	Green	Blink	Data transmitting
		On	Connected device
		Off	No connection
PoE	Green	On	Connected PoE device
		Off	Not connected to PoE device

1000Base-X Fiber Port

LED	Color	Function	
LINK/ACT	Green	Blink	Data transmitting
		On	Connected device
		Off	No connection
SD	Green	On	SFP-Port receives optical signal
		Off	SFP-Port receives no optical signal

8. Cable Connection Parameter

The limitations are as below:

Duplex	Connection	Limitation (max.)
Twisted Pair		
Half / Full	Node to Node Node to Switch/Hub	100 meters
Multi-Mode Converters		
MM Half	Node to Node Node to Switch	412 meters
Multi / Single Mode Converters		
Full	Node to Node Node to Switch	Vary on SFP module

9. Technical Specifications

The ALL-MC202P-SFP1-PoE comes with the following standard features:

- **Standard:** IEEE 802.3 / 802.3u / 802.3ab, 10/100/1000Base-T
IEEE 802.3at pre-standard / 802.3af Power over Ethernet Standard
- **Connectors:**
 - One RJ-45 (Auto-MDI/MDI-X) Twisted Pair, EIA568 with PoE
 - One Fiber-optic, SFP Slot
- **Data Transfer Rate:** 10/100/1000Mbps (TP), 1000Mbps (Fiber)
- **Duplex mode support:** Full or Half-duplex mode by Auto-Negotiation (TP)
- **LED Indicators:** PWR, FX LNK/ACT, TP LNK/ACT, PoE in Use
- **PoE Power Output:** Max. 30 Watts
- **Power Pin Assignment:** 1/2, 3/6
- **Power Supply:** DC 52V, 0.58A, external AC-DC adapter
- **Ambient Temperature:** -20° to 60°C (operating)
- **Humidity:** 5% to 90% (non-condensing)
- **Dimension:** 95 x 70 x 25mm
- **Cable:**
 - UTP: Cat 5 / 5e / 6 UTP cable
 - Fiber: MM: 50/125 µm or 62.5/125 µm optic fiber
 - Fiber: SM: 9/125 µm optic fiber

10. APPENDIX A

A.1 RJ45 Pin Assignments

1000Mbps, 1000Base-T

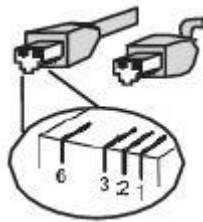
RJ-45 Connector pin assignment		
Contact	MDI	MDI-X
1	BI_DA+	BI_DB+
2	BI_DA-	BI_DB-
3	BI_DB+	BI_DA+
4	BI_DC+	BI_DD+
5	BI_DC-	BI_DD-
6	BI_DB-	BI_DA-
7	BI_DD+	BI_DC+
8	BI_DD-	BI_DC-

10/100Mbps, 10/100Base-TX

RJ-45 Connector pin assignment		
Contact	MDI	MDI-X
1	Tx+	Rx+
2	Tx-	Rx-
3	Rx+	Tx+
4	Not used	Not used
5	Not used	Not used
6	Rx-	Tx-
7	Not used	Not used
8	Not used	Not used

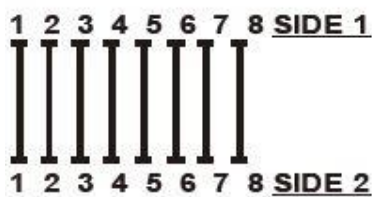
Implicit implementation of the crossover function within a twisted-pair cable, or at a wiring panel, while not expressly forbidden, is beyond the scope of this standard.

A.2 RJ45 Cable Pin Assignment



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 connection:

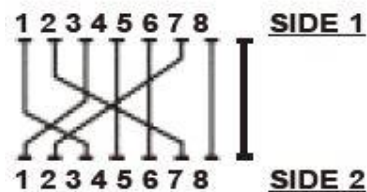
Straight Cable



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

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

Cross Over Cable



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

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

Please make sure your connected cables are with same pin assignment and color as above picture before deploying the cables into your network.

A.3 Fiber Optical Connection Parameter

The wiring details are below:

Fiber Optical Patch Cables:

Standard	Fiber Type	Cable Specification
1000Base-SX (850nm)	Multi-mode	50/125µm or 62.5/125µm
1000Base-LX (1300nm)	Multi-mode	50/125µm or 62.5/125µm
	Single-mode	9/125µm



Safety Warnings

For your safety, be sure to read and follow all warning notices and instructions.

- Do not open the device. Opening or removing the device cover can expose you to dangerous high voltage points or other risks. Only qualified service personnel can service the device. Please contact your vendor for further information.
- Do not use your device during a thunderstorm. There may be a risk of electric shock brought about by lightning.
- Do not expose your device to dust or corrosive liquids.
- Do not use this product near water sources.
- Make sure to connect the cables to the correct ports.
- Do not obstruct the ventilation slots on the device.

ALLNET GmbH Computersysteme declares that the device **ALL-MC202P-SFP1-PoE** is in compliance with the essential requirements and other relevant provisions of Directive 2014/30/EU. The Declaration of conformity can be found under this link:
<http://ce.allnet.de/>

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