DIGITUS®
Professional

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

User's Manual
DN-82140 • DN-82150 • DN-82160

Table of Contents

1. Overview

The media converters from DIGITUS® are an optimal solution for the migration of copper and fiber optic signals. From now on, you can access the fiber optic technology and transmit fiber optic signals over several kilometers without having to replace your entire network cabling. With our comprehensive range of products, you can respond to your individual needs. The intuitive operation guarantees a quick and easy installation. Many years of experience and a diverse range of services make DIGITUS® a reliable partner for your network technology.

About the Power over Ethernet Injector

It is an IEEE 802.3at/802.3af Power over Ethernet Injector that provide DC 52V over Ethernet cables. To inserts DC Voltage into Cat.5/5e/6 cables, allowing the cable between the Injector and PoE PD (Powered Device) to transfer data and power simultaneously. The maximum distance between the Injector and PoE PD is 100 meters. It combines the Ethernet digital data with power over the twisted pair cables as an IEEE 802.3at/802.3af Power over Ethernet Injector.

The benefits of DIGITUS® PoE Media Converter are like cost saving, easy for networking planning, power delivery and high reliability. Upon any IEEE 802.3at/802.3af devices installed, they can be powered and connected to a network via a PoE Media converter.

2. Package Content

PoE Media Converter box should contain the following items:

- 1000Base-X to 10/100/1000Base-T 802.3at PoE Media Converter x 1

- User's Manual x 1

- AC-DC Adapter (Input: 48-52V DC, 0.58A max.) x 1

- Power Cord x 1

If any of these are missing or damaged, please contact your dealer immediately, if possible, retain the carton including the original packing material, and use them against to repack the product in case there is a need to return it to us for repair.

|	
Note	DN-82140 is with one vacant SFP module slot. The mini GBIC SFP module is not bundled with in the package.

3. Product Outlook

Overview
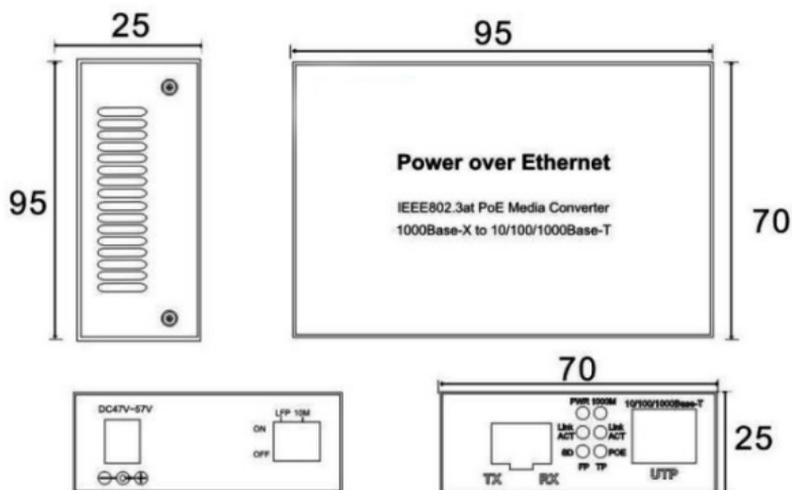
Figure 3-1: Product Outlook of DN-82140

Left View

There are RJ-45 Twisted-Pair jack (Auto-MDI/MDI-X), one fiber-optic connector (vary by model) and four LED indicators.
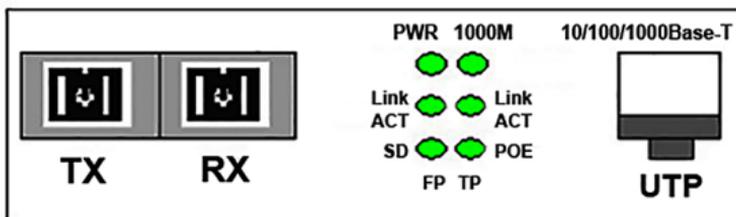

**Figure 3-2:** Product Outlook of DN-82150/DN-82160
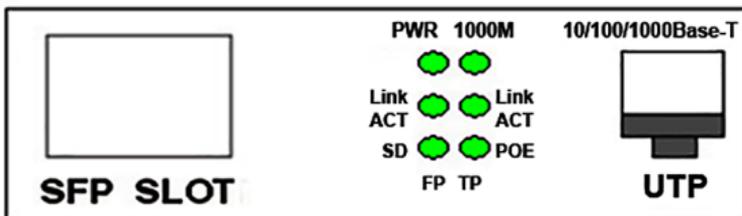
Figure 3-3: Product Outlook of DN-82140

Right 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. Please refer to the following sections for more.

Another one for 10Mbps feature, **"ON"** to change the data transfer rate of RJ-45 to 10Mbps. Then the device can transfer HD videos and extend the transfer distance of RJ-45 to 330 meters simultaneously. And **"OFF"** to turn off this feature

Also one DC 47V ~ 57V power socket for the PoE+ Media Converter.

Figure 3-4: Right View of DN-82140

DIP Switch settings instruction

DIP-Bit Number	Switch Status	Function Descriptions
I.	ON	LFP function enabled
	OFF	LFP function disabled
II.	OFF/OFF	
	OFF/ON	
III.	ON	Electrical port is forced to 10M
	OFF	Electrical interface of 10M/100M/1000M adaptive
IV.	ON	
	OFF	

# 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)

PoE Media Converter 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 PoE Media Converter for remote connectivity.
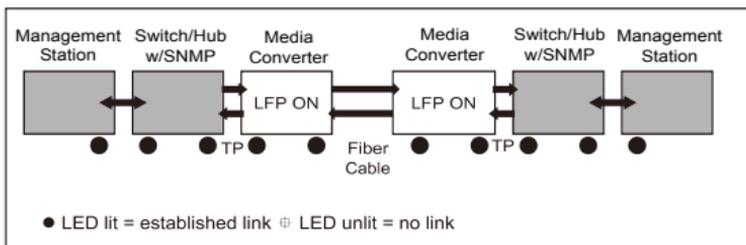
If the connection breaks, PoE Media Converter that link loss forward to the Switch/Hub that generates a trap to the management station. The administrator can then determine the source of the problem.

*Units are shipped with the LFP function disable (OFF).
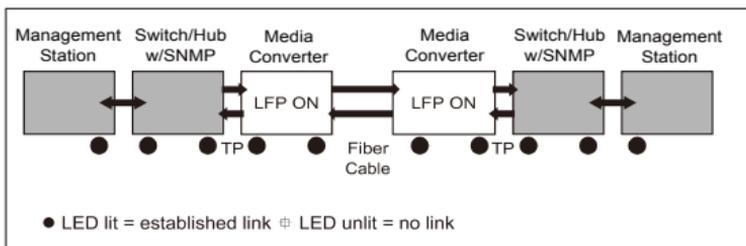
Link Loss Return (LLR)

The fiber ports of PoE Media Converter 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 PoE Media Converter for remote connectivity. Note that LLR and LLCF are enabled as indicated in the diagram.
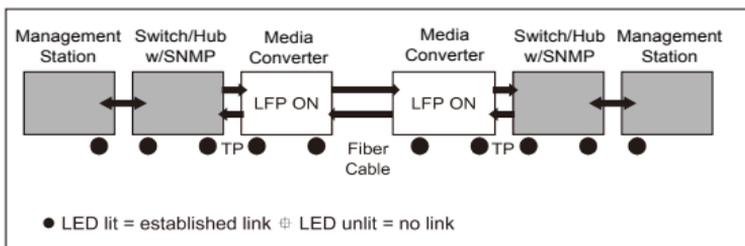
If one of the optical conductors is down (as shown in the diagram box below), the converter with LLR function will return a no-link condition to its link partner. With LLCF function also enabled, the no-link condition is carried forward to the switch/hub where a trap is generated to the management station and the administrator can then determine the source of the loss.

Management   Switch/Hub   Media   Media   Switch/Hub Management
Station   w/SNMP   Converter   Converter   w/SNMP   Station

LFP ON

● LED lit = established link ⊞ LED unlit = no link
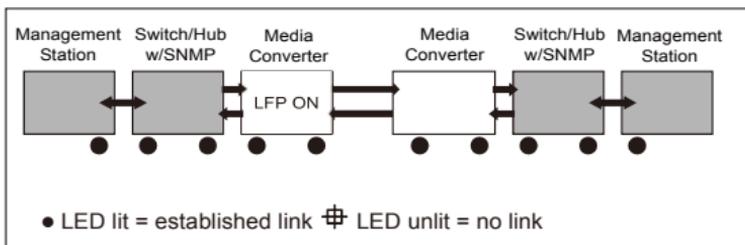
Note	LFP function is turn-off in default. This feature can also be turned via the side DIP-switch. If you are not familiar with the network installation and for diagnostic purpose (i.e. check which end is broken), you can turn it on and reset the converter to make it take effect. Otherwise, please remain it in the default position.

5. Installing the Converter

- Please follow these steps to install the PoE+ Media converter:

- Turn off the power of the device/station in a network to which the PoE Media Converter will be attached.

- Ensure that there is no activity in the network.

- Attach fiber cable from the PoE Media Converter to the fiber network.

- Attach a Cat.5/5e/6 UTP cable from the 10/100/1000Base-T network to the RJ-45 port on the PoE Media Converter

- Connect the 48-52V DC power adapter to the PoE Media Converter and verify that the Power LED lights up.

- Turn on the power of the device/station, the TX Link and FX Link LEDs should light when all cables are attached.

10/100/1000Base-T UTP

1000Base-SX/LXSC Fiber
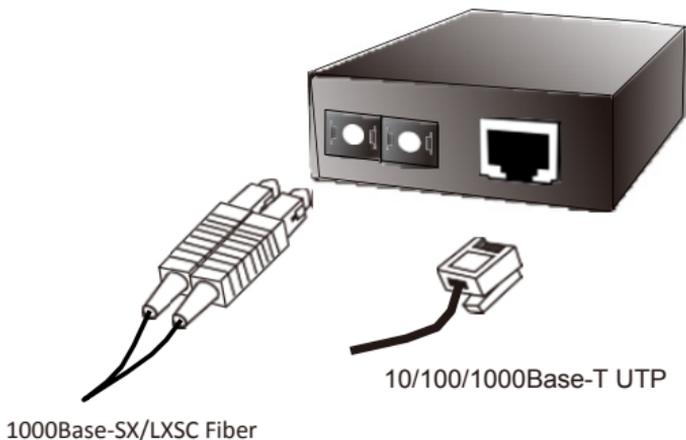
Figure 5-1: DN-82150, DN-82160 Installation

1000Base-SX/LX SFP transceiver

10/100/1000Base-T UTP

1000Base-SX/LX LC Fiber
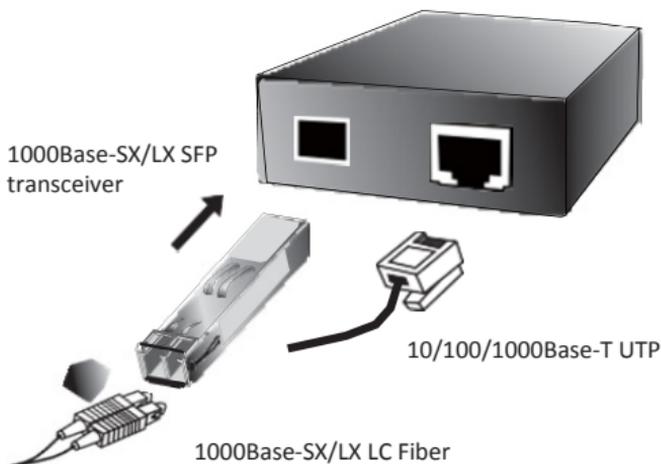
Figure 5-2: DN-82140 Installation

Note	RJ-45/STP, UTP Cat5/5e/6, straight/cross-over cable is accepted. Please refer to section 9 for more about the wiring distance of your TP, Optic-fiber networks.

6. PoE Function

Before your installation, it is recommended to check your network environment. If there is any IEEE 802.3at/802.3af devices need power on, this PoE Media Converter can provide you a way to supply power for this Ethernet device conveniently and easily.

The PoE Media Converter equips an AC-DC adapter with DC 48-52V input and it injects the DC power into the pin of the twisted pair cable (Pin 4, 5, 7 and 8).

LED Indication

●	1000Base-SX/LX Fiber-optic
●	1000Base-T UTP with PoE
●	Power Line (AC)
●	Power Line (DC)
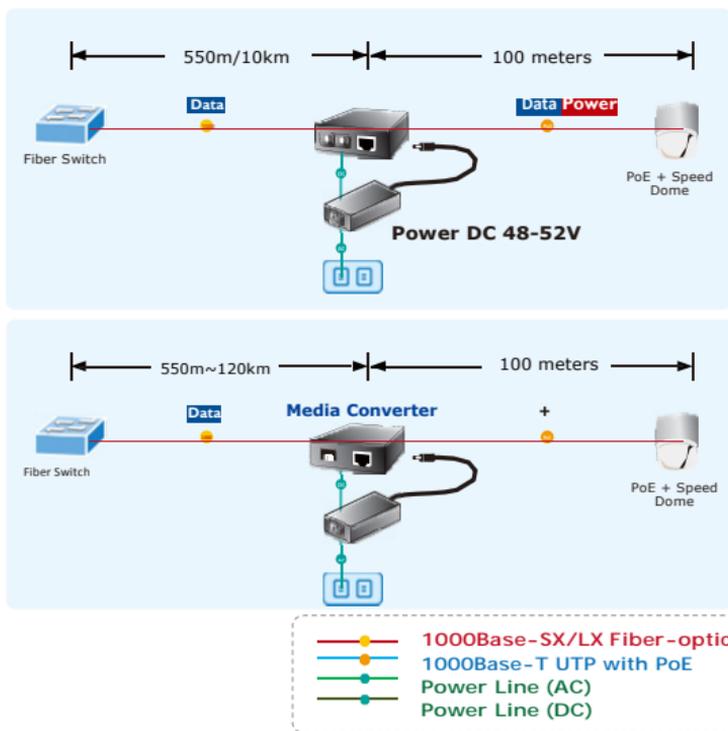
7. LED Indication

System

LED	Color	Function	
PWR	Green	**Light**	Indicate the device is powered.

10/100/1000Base-T Port

LED	Color	Function	
LNK/ACT	**Green**	**Blink**	Indicate that the PoE+ Media Converter is actively sending or receiving data over that port.
		Light	Indicate that the port is link up at 10/100/1000Mbps.
		Off	Indicate that the port is link down.
PoE	**Orange**	**Light**	Indicate that the port is providing DC 52V to remote powered device.
		Off	Indicate that the port is not providing DC 52V to remote powered device.

1000Base-X Fiber Port

LED	Color	Function	
LNK/ACT	Green	**Blink**	Indicate that the PoE+ Media Converter is actively sending or receiving data over that port.
		Light	Indicate that the port is link up.
		Off	Indicate that the port is link down.
SD	Green	**Light**	Indicate that fiber port is receiving optic signal
		Off	Indicate that fiber port is not receiving optic 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

Standard: IEEE 802.3/802.3u/802.3ab, 10/100/1000Base-T IEEE 802.3at pre-standard/802.3af Power over Ethernet standard

- **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:** DC 48V, Max. 30 Watts
- **Power Pin Assignment:** 4/5, 7/8/Mid-Span
- **Power Supply:** DC 48V, 1A, external AC-DC adapter
- **Ambient Temperature:** -20° to 60°C (operating)
- **Humidity:** 5% to 90% (non-condensing)
- **Dimension:** 95 x 70 x 25mm

Connectors:

- ◆ One RJ-45 (Auto-MDI/MDI-X) Twisted Pair, EIA568 with PoE
- ◆ One Fiber-optic
  - • SFP Slot   (DN-82140)
  - • SC Multi mode   (DN-82150)
  - • SC Single mode   (DN-82160)

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
- • Connecting to Router, Bridge, or Switch, Hub, please refer to the device's Technical Manual.

APPENDIX A

A.1 Device's RJ-45 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 Media Dependant Interface**	**MDI-X Media Dependant Interface -Cross**
1	Tx + (transmit)	Rx + (receive)
2	Tx - (transmit)	Rx - (receive)
3	Rx + (receive)	Tx + (transmit)
4, 5	Not used	
6	Rx - (receive)	Tx - (transmit)
7, 8	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 RJ-45 Cable Pin Assignment
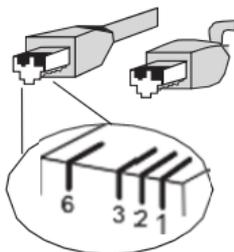
There are 8 wires on a standard UTP/STP cable and each wire is color-coded. The following shows the pin allocation and color of straight cable and crossover cable connection:

Straight Cable

	SIDE 1	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

|	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

Figure A-1: Straight-Through and Crossover Cable

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 Cable Connection Parameter

The wiring details are as below:

Fiber Optical Patch Cables:

Standard	Fiber Type	Cable Specification
1000Base-SX (850nm)	Multi-mode	50/125µm or 62.5/125µm
1000Base-LX (1310nm)	Multi-mode	50/125µm or 62.5/125µm
	Single-mode	9/125µm

Hereby Assmann Electronic GmbH, declares that the Declaration of Conformity is part of the shipping content. If the Declaration of Conformity is missing, you can request it by post under the below mentioned manufacturer address.

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