

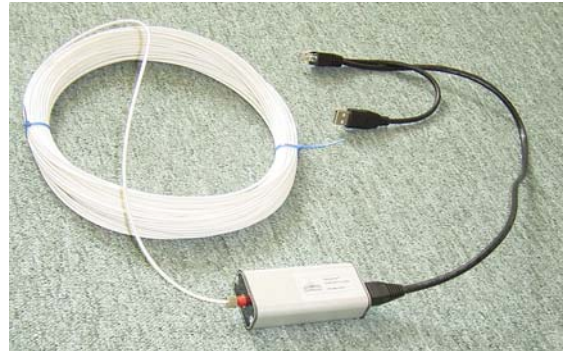
Fast Ethernet POF media converter:

Optospider™ DMMC 650nm simplex

Description:

The **Optospider™ DMMC 650nm simplex** development was done to fulfil the requirements of optical data communication networks in private homes. It is designed with respect to novel guidelines important for private customers:

- no electrical power consumption in stand by mode,
- optical simplex cable (though full duplex data transmission) for most easy cable installation,
- metal housing for perfect electro-magnetic radiation shielding,
- reliable signal detect indicator LED.



The converter allows the media conversion between twisted pair cable (100Base-TX) and standard POF cables (100Base-FX) in an Ethernet network (IEEE 802.3u). Though a one fiber simplex POF cable is used, the data transmission operates in full duplex mode. Directivity multiplex transmission mode with 650nm red light LED transmitters at both link sides is applied.

Optospider™ DMMC 650nm simplex features some attributes that are not standard in the product class of home network devices:

- **Optospider™ DMMC 650nm simplex** uses solid capacitors only for better quality and longer durability.
- Simplex POF cable operation allows the use of 50% smaller cross section and 50% lower cost POF cables. Even not jacketed transparent 1mm POF (bare fiber POF) can be used for home installations.
- A metal housing shields the electronics. The device doesn't emit radiation and is not affected by external radiation (e.g. mobil phones).
- The optical link indicator LED gives reliable information on the optical quality of the received signal. If the signal LED "OPT" is on, there is sufficient received optical power for 100Mbps transmission.

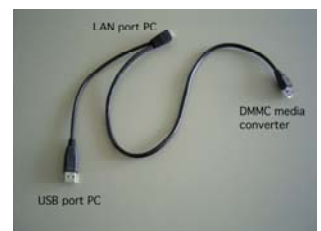
Two LED indicators in the RJ-45 jack indicate the connection status of the media converter. The LED "LAN" indicates the active network port, the LED "OPT" the availability of a 100Mbps suitable optical signal.

Passive Power over Ethernet (PPoE) concept

Each **Optospider™ DMMC 650nm simplex** comes with a special network cable that allows to feed the media converter's electrical power via an USB port with standard 5V power supply (see photo right). As no external power supply is needed, a common source of potential failures is removed. The concept has the additional advantage that the media converter is switched off, if the network unit is switched off. In this way there is electrical power consumption only, if the media converter is active. (Some PC require the BIOS modification to realize this functionality. Please open your PC BIOS system setup and look for the option "USB At power off" and change settings.)

**Do not plug the PPoE network cable to devices that do not support PPoE!
You may damage the device.**

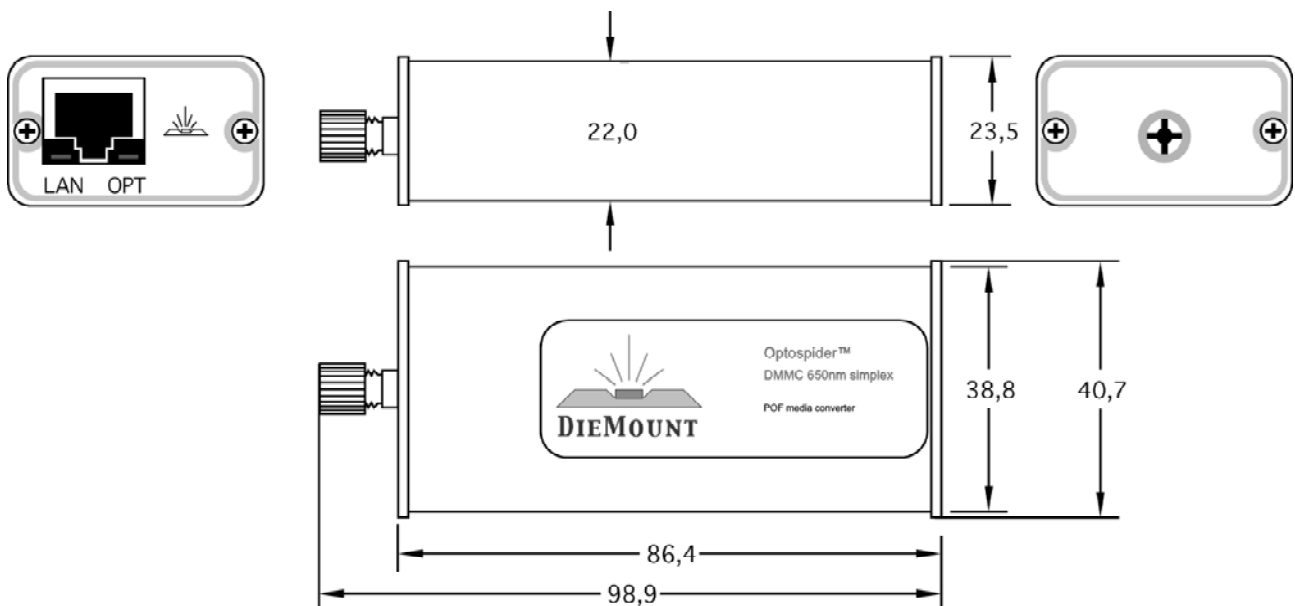
The PPoE network cable is 0.5m long. If a longer cable or a special cable, e.g. a CAT7 cable is required, PPoE power injector units with USB connectors are available. In this way PPoE special network cable are feasible with arbitrary cable lengths of up to 5m (see photo right).



Technical Data:

Type	POF-Fast Ethernet media converter for coupling between twisted pair (100Base-TX) and simplex POF (100Base-FX)	
Fiber type	standard simplex POF, NA = 0.5, outside cable jacket diameter 2.2mm	
Transmission distance typ.	0m to 30m	At 30m transmission distance there is a system margin of 3dB at least. 30m transmission distance are guaranteed.
Full duplex datarate net	100 Mbit/s	
Operating temperature	0°C to 60°C	
Power supply	The media converter's power supply is realized via "Passive PoE" (PPoE) over the supplied network cable. An USB plug on the PC cable side introduces the necessary 5V supply voltage, if connected to a free USB port in the PC. Alternatively, a commercial USB power adapter can be used.	
Current max.	270mA (up to 320mA during switch on phase)	
Dimensions	23.5 x 38.8 x 98.9 mm (H x W x D)	
LED indicators	LED1 on:	electrical data connection active
	LED2 on:	optical data connection active
	LED1 and LED2 flash:	data transfer active

Mechanical dimension:



Installation media converter:

The POF media converter installation is very easy (see photos below). A simplex POF cable is cut with a POF cutting tool. The fiber endface should be as smooth as possible in order to avoid optical reflections. Introduce the POF cable to the POF ferrule of the DMMC 650nm simplex media converter and fix the lock nut adapter.

Plug in the USB PPoE network cable at the other media converter side and connect USB connector and RJ45 connector to the network unit and PC, respectively. As soon as the computer is switched on and an optical signal comes from the other link side, both indicator LED, "LAN" and "OPT" switch on, too. The media converter is ready for operation.



The POF cable termination and media converter connection process in detail: cut, plug to transceiver, connect to network and USB port at the PC, ready for operation

External power supply

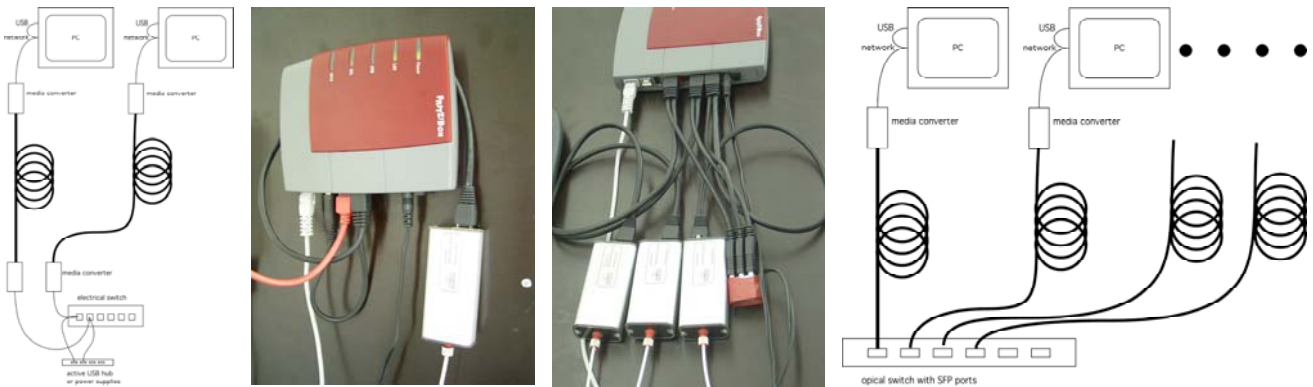
An external power supply that provides the electrical power for the media converter (5V, min. 0.5A) in a USB jack may be used as an alternative to the power supply from the network unit (PC). Connect the USB connector of the PPOE cable to the USB power adapter. In this configuration the media converter power supply does not occupy an USB port in the PC.



Typical network setup

Typically a POF inhouse data network is designed as star network. From the central switch with data connection to the public network POF cables are running to each PC or network connected unit. In a small network with 1, 2 or 3 data links only, media converters are suitable for data conversion at both link sides (left figure below). The power feeding of 2 or 3 media converters can be done with an active USB hub or a standard 5V(2A) power supply with 3 port USB connector.

Larger networks with more than 3 data links should apply POF SFP transceivers and suitable SFP switches (right figure below).



Media converter based network structure for small POF networks (left) and network structure comprising SFP optical switch (right).

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