

*opto*LAN

Manual

Digital optical transmitter
for Ethernet (10/100 Mbit) signals



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1 Box contents

Quantity	Description
2	Transceiver <i>optoLAN</i>
1	Duplex multimode optical fiber 62,5 / 125µm
2	Chargers (standard)
1	Manual (english)
2	External battery packs (optional)

The shipment includes charged batteries. However, due to the self-discharging of NiMH-batteries they should be recharged again before use.

Read chap. 4 (Maintenance) before charging the devices!

2 Characteristics

The digital optical system **optoLAN** can be used to optically transmit ethernet (10/100 Mbit) signals. Because of the optical transmission, the system is very robust against EMS (electromagnetic susceptibility). It can withstand high electric and magnetic fields, like they appear in EMC-tests. The system also is optimized for low noise emission.

Power is supplied by internal NiMH-batteries which make the system easy to use. The **optoLAN** is prepared for the use of external batteries (with optional battery pack).

Read chap. 4 before charging!

3 Field of application

- Transmission of ethernet signals up to 10/100Mbit/s during EMC-tests
- Transmission of ethernet signals over long distances without signal loss (up to 100m or more, depending on timing requirements)
- Handle ground potential problems

4 Maintenance

Recharge batteries after use with the enclosed charger. To prevent a lazy battery effect, discharge the devices every 5 times completely by using the automatic switch off (Leave the system on, until it turns off automatically). Afterwards, charge the devices as usual.

The devices have to be turned off before connecting to the charger. If this is disregarded, the system might get damaged!

Fig. 4.1 shows the pinning of the charge connector. Chargers have to be connected to pin 2 (+) and pin 4 (GND). An external supply (6...8V, 0.5A) can be connected to pin 3 (+) and pin 4 (GND). **Use only power supplies which are certified by mk-messtechnik.**

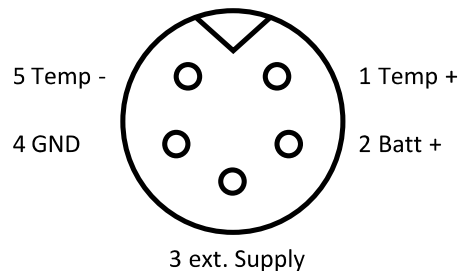


Fig. 4.1: Pinning of charge- / buffer connector

Maximum charging current is 1 A

Devices must be turned off before connecting to charger, or else the system might get damaged!

Pinning of charge- / buffer connector

**Do not use charger
or power supply
during EMI-test!**

The included chargers are not meant to power the transceivers during operation. The transceiver outside the shielded room can be run with an external power supply (optional). The internal transceiver can be run with an external battery, if needed (optional). Do not use the external power supply or charger to power the transceiver inside the shielded room while EMI-tests are running. This might damage the transceiver!

Due to self-discharge issues with NiMH batteries, recharge batteries before use, if the system has not been used for a longer time.

Do not use cleaning agents or solvents to clean the devices, only use a slightly moistened, soft cloth.

**Do not open the
devices!
Short cut / fire
hazard!**

Do not open the devices, as there are no parts inside which have to be maintained. The opened housing can pose a fire hazard through short-circuit currents! Please contact your distributor or the manufacturer if you have any problems. Send in the complete system (both transceivers), if a problem cannot be solved by turning the devices off and on again or by checking the positions of the switches. **Please contact us in any case before sending in the devices.**

5 Trouble shooting

The following trouble shooting list is provided to assist you while having problems. It might let you use the system again without a long down time:

Error:	Possible reasons:	Solution:
No or erroneous transmission	Receiver does not receive an optical signal Cables damaged or not attached properly Wrong optical fibers (diameter) Low battery System turned off	Check optical fibers and connections, change fibers if necessary Connectors and cables regarding damages Use fiber with 62,5/125µm Charge batteries Turn on all devices
Transmission stops	Low battery No optical signal at receiver System turned off	Charge batteries Check for light at optical output. Replace optical fiber Turn on all devices
Device cannot be turned on, cannot be charged	Batteries damaged Internal fuse is broke Charger or cable damaged Batteries over discharged	Send device to us Send device to us Check / replace charger and charging cable Charge batteries, maybe use other charger (5 battery cells)
Common problems	Defective optical or electrical cables or connectors	Check connectors, fibers and cables. Test with other ones. Replace cables

6 Accessories / Options

Part	Order number	Comment
Optical fiber	LWL-2-xm	x = length in m, duplex
External batteries	BP-60	6V/4Ah
Connector cable for BP-60	AK-BP	Length approx. 15cm
Charger with connector plugs	CH-5	Standard charger
Manual	MA-optoLAN	German or english

7 Contact

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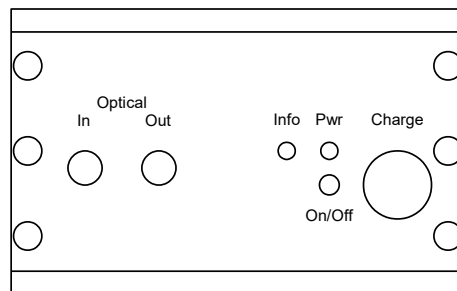
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Appendix: Details and operation

The following chapter describes special details of the **optoLAN** system for the transmission of ethernet signals. The system consists of two transceivers.

a) Housing and connectors / switches

Fig. a.1 shows the front side of the transceivers with connectors and switches:

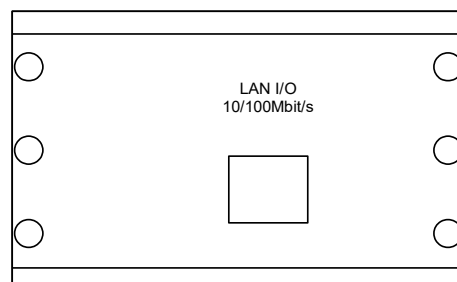


Front side with connectors and push buttons

Fig. a.1: Front side of the devices with connectors and push buttons

- power push button with control LED (*Pwr On/Off*)
- battery information LED (*Info*)
- charge plug (*Charge*)
- optical connector FSMA (*Optical In .. Out*) for duplex multimode fiber (62,5/125 μ m)

Fig. a.2 shows the rear side of the transceivers with RJ45 connector. (standard ethernet pinning):



Rear side with connector. Pinning is printed on the housing too.

Fig. a.2: Rear side of the devices with connectors and switches

- RJ45 plug *LAN I/O 10/100Mbit/s* for the ethernet signals to be transmitted.

The use of the external filter is essential for EMS-tests!

Use short, shielded ethernet cables with 1:1 pinning! (no crossing!)

Check info LED if transmission stops suddenly!

Only use battery packs and connector cables provided from mk-messtechnik. Other modules influence EMS-performance and might damage the opto-system!

b) Operation and handling of the *optoLAN*

- Set up the devices at the dedicated places. The transceiver connected to the PC can be powered by the power supply (optional) all the time, if there is no need for battery supply (EMC issues). The transceiver inside the chamber being connected to the DUT does not have to be powered by a power supply during testing (might get damaged)! It has integrated batteries to run the system.
- Connect the transceivers with standard ethernet cables (without crossing) to the PC and the DUT. Inside the absorber lined chamber, the ethernet cable should be as short as possible with a good shielding (e.g. CAT 6 or higher) to avoid rf coupling into the system.
- Connect the optical fiber (Out => In; In => Out). Only use 62,5/125µm multimode fibers.
- Connect the electric cables
- Turn on all devices (power push button, see Fig. a.1); the order does not matter
- The transmission starts automatically after a short initialization.

If the transmission suddenly stops after a long duration of measurement, check the *Info* LED of the transmitter (see Fig. a.1).

If the battery power falls below 5,2V, the *Info LED* is switched on. The system should be reloaded soon. Below 4,5V, the system is turned off automatically.

The measurements can be extended by using the optional battery pack (BP-60) with connector cable or a power supply certified by mk-messtechnik. The external supply can be connected to the system any time (parallel). The connection to the internal battery is decoupled with a diode.

Only use the battery pack and connector cables from mk-messtechnik! Others might lead to a damage of the system!