



**Model Number**

**LS684-DA-EN/F2/35/146**

Optical data coupler

**Features**

- Fast Ethernet; Powerlink; EtherCAT; Profinet
- Independent of Ethernet protocol
- Optimized for real-time Ethernet such as PROFINET IRT and EtherCAT
- Version for low temperature applications
- No parameterization
- Line indicator for signal strength

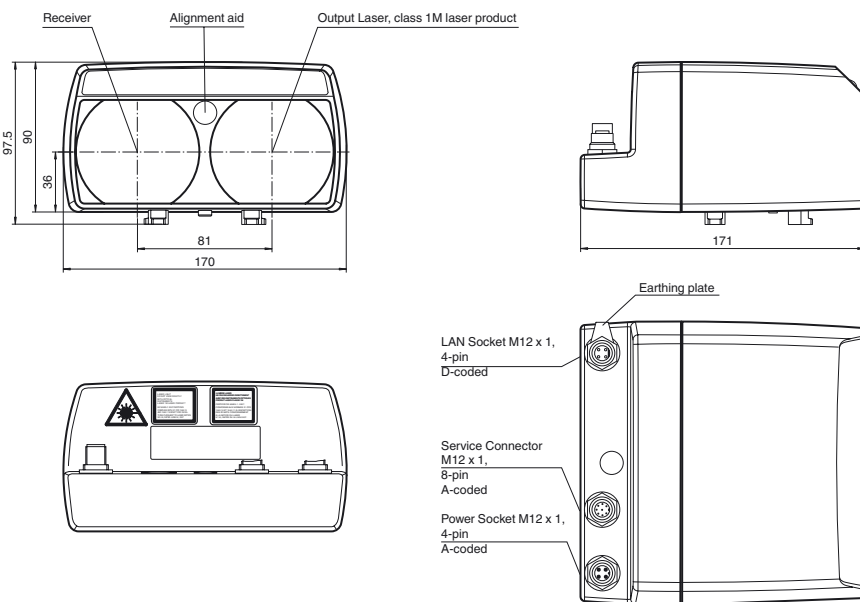
**Product information**

The optical data coupler connects Ethernet modules to remote modules. These can move toward each other along an axis. The devices are ideal for conditions in high-rack storage.

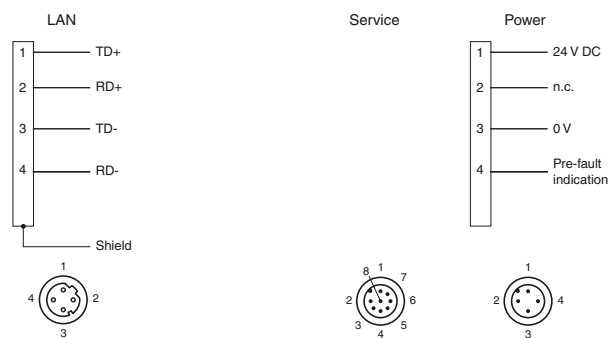
The physical transfer takes place protocol-free with 100 MBit/s full duplex. The device offers robust optical data transfer in real time for industrial Ethernet networks such as PROFINET IRT and EtherCAT.

The optical data coupler guarantees a consistent turnaround time for synchronous, jitter-free switching operations and control processes at both ends of the transmission range – over any distance and with any driving dynamics.

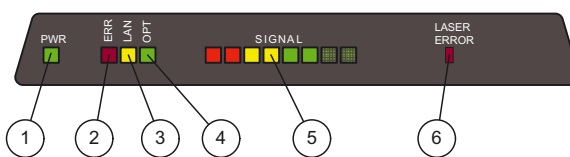
**Dimensions**



**Electrical connection**



**Indicators/operating means**



1	Operating indicator	green
2	Failure	red
3	LAN link	yellow
4	Opto link	green
5	Signal quality	
6	Error Laser	red

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Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

**Technical data****General specifications**

Effective detection range	0 ... 300 m
Threshold detection range	320 m
Light source	laser diode
Light type	modulated visible red light
<b>Laser nominal ratings</b>	
Note	VISIBLE LASER RADIATION , DO NOT VIEW DIRECTLY WITH OPTICAL INSTRUMENTS
Laser class	1M
Wave length	660 nm
Beam divergence	15 mrad
Pulse length	8 ns
Repetition rate	62.5 MHz
Maximum optical power output	60 mW
Diameter of the light spot	1.5 m at a distance of 100 m
Angle of divergence	1 °
Ambient light limit	> 10000 Lux

**Functional safety related parameters**

MTTF <sub>d</sub>	58.6 a
Mission Time (T <sub>M</sub> )	10 a
Diagnostic Coverage (DC)	0 %

**Indicators/operating means**

Data flow indicator	LED green: OPTO-Link LED yellow: LAN-Link LED red: ERROR
Function indicator	Signal strength (8 LED: Red, yellow, green)

**Electrical specifications**

Operating voltage	U <sub>B</sub>	18 ... 30 V DC
No-load supply current	I <sub>0</sub>	200 mA
Data rate		100 MBit/s (Fast Ethernet)
Signal delay		3.4 µs (across the entire effective operating distance)

**Interface**

Interface type	100 BASE-TX
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**Output**

Pre-fault indication output	1 PNP, inactive when falling short of the stability control , short-circuit protected, max. 200 mA
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**Ambient conditions**

Ambient temperature	-30 ... 50 °C (-22 ... 122 °F)
Storage temperature	-40 ... 70 °C (-40 ... 158 °F)

**Mechanical specifications**

Degree of protection	IP65
Connection	4-pin, M12x1 connector, standard (supply) , 8-pin, M12x1 connector, service , 4-pin, M12x1 socket, D-coded (LAN)

**Material**

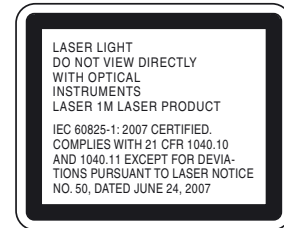
Housing	ABS / PC
Optical face	plastic
Mass	700 g

**Compliance with standards and directives**

<b>Directive conformity</b>	
EMC Directive 2004/108/EC	EN 61000-6-2:2005; EN 60947-5-2:2007
<b>Standard conformity</b>	
Laser class	IEC 60825-1:2007 EN 60825-1:2007

**Approvals and certificates**

UL approval	cULus Listed
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**Laserlabel****Accessories****OMH-LS610-01**

Mounting bracket for optical data coupler

**OMH-LS610-02**

Direct mounting set consisting of 4 x M4 threaded inserts

**OMH-LS610-03**

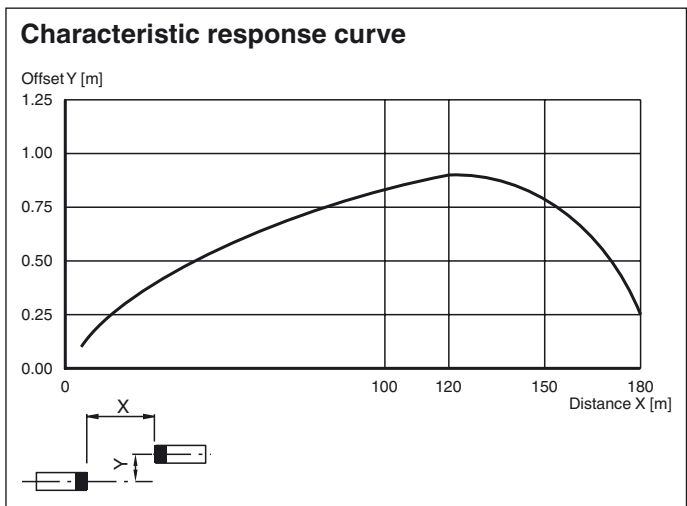
Mounting bracket with deviation mirror for optical data coupler

**OMH-LS610-05**

Mounting bracket for optical data coupler and distance measurement devices

Other suitable accessories can be found at [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com)

**Curves/Diagrams**



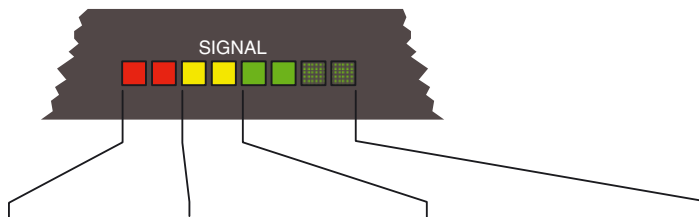
**Function**

The LS682-DA-EN is a device for serial data transfer in Ethernet systems. One F1 and one F2 device is needed for each data transfer link.

Data is transferred in both directions simultaneously by means of modulated light.

**Function Displays/Excess Gain**

A red alignment LED, which can be seen from a long way off, is located on the front of the device to serve as an alignment aid. As soon as a receiver detects the emitted light of the device opposite it, the flashing frequency of the alignment aid decreases. If the light goes out, this indicates that the devices are aligned with sufficient excess gain. For fine adjustment, the optical data coupler features a bar graph display (signal display) for optimum alignment.



Signal display	Red area	Yellow area (at least one LED)	Green area (at least one LED)
Status	Weak signal	Sufficient excess gain	Signal with excess gain weak signal output active
Transmission	Blocked	Released	Transmission with excess gain

**Mounting**

The device is mounted using appropriate accessories, e.g., OMH-LS610-01 for wall mounting.

The x-y adjuster is delivered preassembled. It is fixed in the required beam direction ( $\pm 90^\circ$  rotation possible) on the mounting bracket.

**Laser notice laser class 1M**

- The irradiation can lead to irritation especially in a dark environment. Do not point at people!
- Caution: visible and invisible laser radiation, do not observe laser light with optical instruments such as magnifying glasses, microscopes, telescopes or binoculars!
- Maintenance and repairs should only be carried out by authorized service personnel!
- Attach the device so that the warning is clearly visible and readable.
- Caution: use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

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