

Original operating manual:

Light barriers series IRL/ILN/ILD-108-SIR/EFP(-OP)

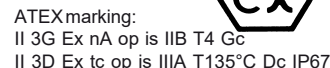
ILD-108-SIR/EFP-OP



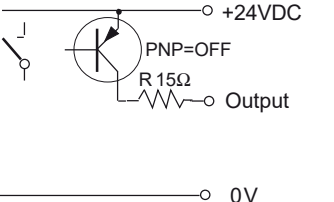
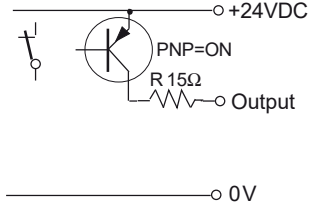

Housing M30

ILN-108-SIR/EFP-OP

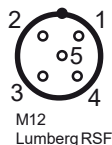


- Series ILD: ATEX and IECEx certified
- ILD: For using in Ex zones (0), 1, 2, (20), 21, 22
optical radiation can operate into Ex Zones 0, 20
- ILN: For using in Ex zones 2, 22
- Alignment aid by 3-color LED at the rearside of the receiver
- Robust light barriers for industrial applications



Type designation emitter	IRL-108-SIR-S***	ILN-108-SIR-OP-S***	ILD-108-SIR-OP-S***
Type designation receiver	IRL-108-EFP-S***	ILN-108-EFP-OP-S***	ILD-108-EFP-OP-S***
Technical data	(S***: Additional designations for options)		
Type of Ex protection, Gas, in accordance with 2014/34/EU	NONE	II 3G Ex nA op is IIB T4 Gc	II 2(1)G Ex d [op is Ga] IIC T6 Gb
Type of Ex protection, Dust, in accordance with 2014/34/EU	NONE	II 3D Ex tc op is IIIA T135°C Dc IP67	II 2(1)D Ex tb [op is Da] IIIC T100°C Db IP67
For using in Ex zones	NONE	Zones 2, 22	Zones (0), 1, 2, (20), 21, 22
Optical sensing distance	80m		
Minimum detectable object size	22mm (Avoid deflections on reflective surfaces)		
Light source	Infrared 870nm		
Maximum optical irradiance	NOT LIMITED	<=5mW/m²	<=5mW/m²
Maximum optical radiant power	NOT LIMITED	< 35mW	< 15mW
Optical aperture angle (Distance 10m)	Emitter: approx.8° / Receiver: approx.12°		
Response time	5ms		
Power up delay time	500ms		
Supply voltage	24VDC +/-10%		
Maximum permissible voltage Um	30VDC		
Current consumption, emitter	45mA		
Current consumption, receiver	40mA (without load current)		
Maximum power dissipation	Emitter: 1.2W / Receiver: 1.1W		
Output type	PNP, 100mA, short circuit protected		
Pollution indication output "EVP", optional	PNP, 100mA, short circuit protected		
Housing	M30, brass, nickel plated		
Enclosure rating, in accordance with EN 60529	IP 65	IP 67	IP67
Working ambient temperature range Tamb	-20°C < Tamb < +50°C		
Storage temperature range	-20°C ... +70°C		
Relative humidity	15% ... 80%		
Vibration and shock resistance	Vibration: 30g over 20Hz to 2kHz. Shock: 100g for 3ms		
Pollution degree, in accordance with EN 60664-1:2007	4		
Device designation, in accordance with EN 60947-5-2	IRL/ILN/ILD-108-SIR/EFP(-OP): T3A30BP1 / IRL/ILN-108-SIR/EFP(-OP):S099: T3A30BP2		
Connection cable	2/3/4 + PE x 0.5mm², TPU, shielded, leads numbering marked, drag chain suitable, L: 10m		
Socket, types IRL/ILN-108-S/E(-OP)-S099	Socket M12, Lumberg RSF 5, 5-contact		
Accessories, all types, included	<ul style="list-style-type: none"> - 4x Nuts M30 (or 2x Clamps, on request) - 2x Safety lock device, mount at the cable connection, for locking the connection - 2x Warning plate "Do not open/close when supply voltage connected" - 2x Dust protection cap for the sensor socket 		
Accessories, only types IRL/ILN-***-S099, not included	<ul style="list-style-type: none"> - Cord set M12, types Lumberg RKT5 5-298/xx (straight) or RKWTH 5-298/xx (angled) 		
Options	<ul style="list-style-type: none"> - IRL/ILN/ILD-108-SIR/EFP/EVP(-OP)-S094: Special gluing of the lenses - IRL/ILN-108-SIR/EFP(-OP)-S099: Socket M12, 5-contact - IRL/ILN/ILD-108-SIR/EFP(-OP)-S235: Special gluing of the lenses and Ta: -30°C - IRL/ILN/ILD-108-SIR/EFP(-OP)-S292: Special gluing of the lenses and potentiometer at the emitter. - IRL/ILN/ILD-108-EVP(-OP): Receiver with pollution indication output "VA" - IRL/ILN/ILD-108-SDI(-OP): Emitter with disable input "DI" - Cable length: Up to 100m on request - IRL/ILN/ILD-108-SIR/EFP/EVP(-OP)-S323: S094 + Housing M30, stainless steel 1.4404 		
LED display and output function	 <p>Light beam interrupted Receiver-LED lights red</p>  <p>Light beam free Receiver-LED lights yellow or green</p>		
Output and connection assignments	 <p>PNP=OFF R 15Ω Output</p>  <p>PNP=ON R 15Ω Output</p>		
Wire: Receiver: Emitter:	<p>1: +24VDC +24VDC</p> <p>2: 0V 0V</p> <p>3: Output DI, optional</p> <p>4: VA-Output, optional --</p> <p>white: Cable shield Cable shield</p> <p>green-yellow: PE PE</p>		
Wiring for the socket types: See page 2			
Pollution indication output EVP/VA,	optional EVP/VA-Out = 0V EVP/VA=24V, only if the LED lights green		
Alignments and LED display (LED at the rearside of the receiver)	<p>LED red: Light beam interrupted / not aligned</p> <p>LED yellow: Lenses polluted / bad aligned</p> <p>LED green: Light beam free / well aligned</p>		
EX related markings	<p>CE0158</p> <p>Types ILD: Ex d [op is Ga] IIC T6 Gb,</p> <p>Types ILN: II 3G Ex nA op is IIB T4 Gc,</p> <p>Types ILD: ATEX certification</p> <p>Types ILN: IECEx certification</p> <p>Types ILD: ATEX declaration by manufacturer</p> <p>Tamb: -20°C < Tamb < +50°C</p> <p>Date of production: Numerals 5 to 8 of the serial number (Year/calendar week)</p> <p>(X designation of the certification number: Fibre optics must only be used with sensors with certificated limited optical power)</p>  <p>Manufacturer with address</p> <p>Ex tb [op is Da] IIIC T100°C Db IP67</p> <p>II 3D Ex tc op is IIIA T135°C Dc IP67</p> <p>No: BVS 10 ATEX E130 X DEKRA</p> <p>IECEx BVS 14.0108X</p> <p>in accordance with the ATEX directive 2014/34/EU</p> <p>Electrical data according to the table "Technical data"</p>		

Connection assignment, types IRL/ILN-108-SIR/SDI/EFP/EVP(-OP)-S099:



Receiver:

- 1 +24VDC
- 2 Pollution indication output EVP/VA, optional
- 3 0V
- 4 Output
- 5 PE

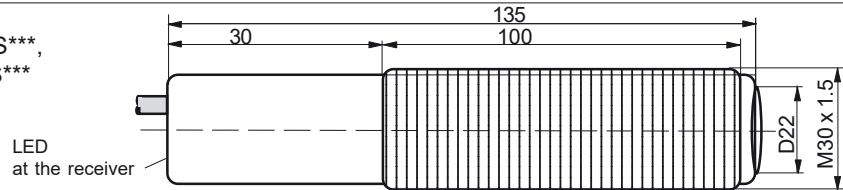
Emitter:

- +24VDC
- Emitter disable input SDI/DI, optional
- 0V
- NC
- PE

Dimensions

IRL/ILN/ILD-108-SIR/SDI(-OP)-S***,
IRL/ILN/ILD-108-EFP/EVP-OP-S***

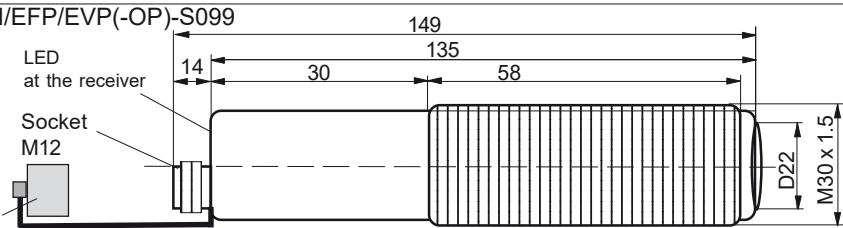
Same dimensions for
emitter and receiver



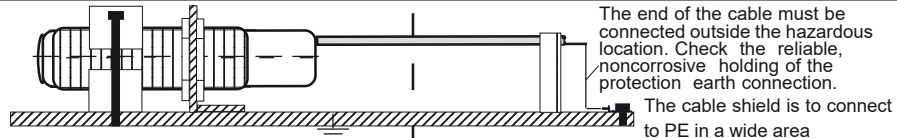
Dimension IRL/ILN-108-SIR/SDI/EFP/EVP(-OP)-S099

Same dimensions for
emitter and receiver

Dust protection cap for the socket



Equipotential bonding pre- scription:



Operating manual / EU-declaration of conformity:

Mounting prescriptions:

General prescriptions for all Ex devices

It is necessary to take into consideration the valid international and national rules and regulations (EN 60079-14). The maximum input voltage $U_m=30VDC$ must not be exceeded. The local equipotential bonding have to be done. The protective earth (PE) is solid connected with the housing. The cable have to be installed and protected against damages. The cable with termination fittings, or in cable tray systems and installed in a manner to avoid tensile stress at the termination fittings. To connect cables inside hazardous locations only use certificated Ex e housings. All cable terminals must be connected outside hazardous locations. Additional optical lenses are not allowed in hazardous locations. In dust Ex zones, do not operate the sensors without fixed dustproof sealing crew. After adjust the potentiometer, the dustproof sealing crew with undamaged packing ring, must be screwed down. Damaged or lost screws or packing rings must be replaced.

Emitter: ILD-108-SIR/SID-OP-S*, Receiver: ILD-108-EFP/EVP-OP-S***:** Only applicable in Ex zones 1, 2, 21, 22. The limited optical radiation can operate into hazardous locations 0 or 20.

Emitter: ILN-108-SIR/SID-OP-S*, Receiver: ILN-108-EFP/EVP-OP-S***:** Only applicable in Ex zones 2, 22.

Emitter: ILN-108-SIR/SID-OP-S099, Receiver: ILN-108-EFP/EVP-OP-S099: Only applicable in Ex zones 2, 22. Do not separate the connector when the supply voltage is connected to the cable. When installing the sensor, the safety lock device must be fitted at the cable connector. The additional adhesive warning label must be fixed to the connector housing at the connection cable. Lumberg cordsets RKTS 5-298/xx (Straight type) or RKWTH 5-298/xx (Right angle type), are allowed ONLY. It is necessary to take into consideration the mounting prescription of the connector manufacturer. In dusty locations, the protection cap for the sensor socket must be fitted, when no connection cable is connected.

General mounting prescriptions

Do not exceed the maximum ratings. The electrical connections must be exactly as shown in the connection diagram. The cable shield must be connected short. The cable shield should be connected to the protection earth, large-surfaced. Connection cables must not be installed parallel to high voltage cables.

Function at standard connection of the supply voltage

If the light beam is not interrupted the output switches to ON (+24V). If the light beam is interrupted the output switches OFF. The load must be connected between the output and 0V.

Function at inverse connection of the supply voltage

If the light beam is not interrupted the output switches to OFF. If the light beam is interrupted the output switches to ON (+24VDC). The load must be connected between the output and 0V.

Pollution indication output VA:

Only when the receiver LED's shows green, the pollution indication output VA switches to +24VDC. (Light barrier well aligned, no pollution or no other impairments). If the receiver LED's shows yellow or red, the output VA is switched to 0V. This function gives the possibility to a fast reaction at polluted lenses.

Arrangement of light barriers,

only types IRL/ILN/ILD-108-SID(-OP)(-S*** (optional):

If several light barriers are installed close to another, it is necessary to use light barriers with emitters with disable input. By using the disable input SDI/DI, each emitter can be controlled in a short reaction time. If only one emitter is activated in the same time, a mutual influence is precluded.

DI= 0V or not connected = emitter enabled
DI= High (24VDC) = emitter disabled

The Disable Input DI must be activated for $\geq 10ms$. The DI input is PNP compatible. The Emitter-Disable-Input SDI/DI can also be used for testing the associated receiver. By a short-time shut-off of the emitter, the switching off of the receiver output and with it the correct function of the receiver will be checked.

Mechanical Mounting Prescriptions

Mount the light barriers free from vibrations and shocks. If it is practicable, protect the lenses from contamination.

Alignment of the Light Barrier

The three color indication at the receiver allows an optimal alignment.

1. The emitter beam must hit the receiver lens in an angle near to 90° .

2. The receiver should be moved, until the LED (from the receiver) shows "green". Search the middle of the green range. If the receiver LED shows yellow, the light barrier is bad aligned, or the lenses are polluted.

Maintenance

No special maintenance is required. If the lenses becomes dirty, they should be cleaned with a non-aggressive solvents. Equipment must only be repaired by the manufacturer.

General safety instructions

Types ILN-108-SIR/SID-OP-S099, ILN-108-EFP/EVP-OP-S099: "WARNING - EXPLOSION HAZARD - WHEN IN HAZARDOUS LOCATIONS, TURN OFF POWER BEFORE REPLACING OR WIRING MODULES. DO NOT DISCONNECT EQUIPMENT UNLESS POWER HAS BEEN SWITCHED OFF OR THE AREA IS KNOWN TO BE NONHAZARDOUS". The mounting of the sensor in dusty locations without fixed cordset or protection cap results in a high ignition risk. The sensors must not be used for Accident-Prevention! In worst case the output can change to any state! When installing and operating with the sensor, it is necessary to take into consideration the relevant international and other national regulations: EN 60079-14, ATEX 137, single directive 1999/92/EC.

The sensors are conform to the following standards: IEC60079-0:2017, IEC/EN 60079-0:2018, IEC/EN 60079-1:2014, EN 60079-15:2010, IEC/EN 60079-28:2015, IEC/EN 60079-31:2014, EN 60529:2014, EN 60950-1:2006; EN 61000-4-2 to EN 61000-4-6, EN 61000-6-1/-2, EN 61000-6-4, ATEX directives: 2014/34/EU, Machine directive: 2006/42/EC, EMC directive: 2014/30/EU, RoHS directive: 2011/65/EU.

General Notes, disposal:

We reserve the right to modify our equipment. Our equipment is designed such way, that it has the least possible adverse effect on the environment. It neither emit or contain any damaging or siliconized substances and use a minimum of energy and resources. No longer usable or irreparable units must be disposed of in accordance with local waste disposal regulations.

EU-Declaration of conformity:

IECEx certification, types ILD: Ex d [op is Ga] IIC T6 Gb, Ex tb [op is Da] IIC T100°C Db IP67. Certification No. IECEx BVS 14.0108X.

<https://www.iecex-certs.com/deliverables/CERT/46408/view>

ATEX certification, types ILD: II 2(1)G Ex d [op is Ga] IIC T6 Gb, II 2(1)D Ex tb [op is Da] IIB T100°C Db IP67. Certification No. BVS 10 ATEX E 130 X, DEKRA Testing and Certification GmbH, Zertifizierungsstelle, Carl-Beyling-Haus, Dinendahlstrasse 9, D-44809 Bochum, ident. number: 0158. ATEX certification, types ILN: II 3G Ex d op is IIB T4 Gc, II 3D Ex tc op is IIIA T135°C Dc IP67. ATEX declaration by manufacturer in accordance to 2014/34/EU. ATEX certification of quality type production of Ex devices in accordance to the directive 2014/34/EU, CE 0158. Certification No: BVS 18 ATEX ZQS / E118, QAR No. DE/BVS/QAR13.0004/04. The conformity of the devices with the EC standards and directives and the EC-type examination certificate and the observation of the Quality Safety System ISO 9001:2015 with the ATEX module "Production", declares:

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