

# Light Barriers series IRL/ILN/ILD-108-S/E

## ILN-108-S/E-OP

## Housing M30

## ILD-108-S/E-OP

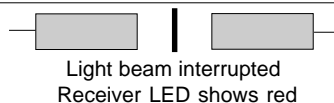
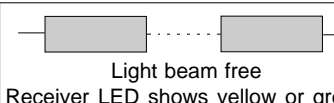
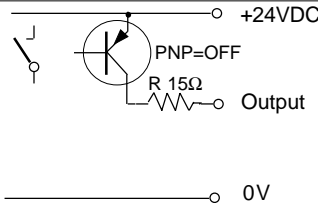
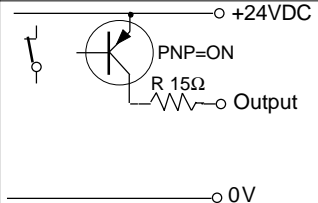


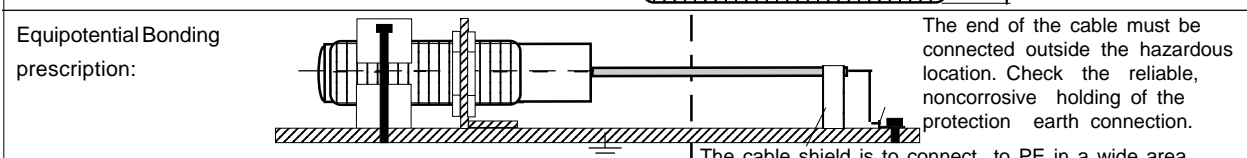
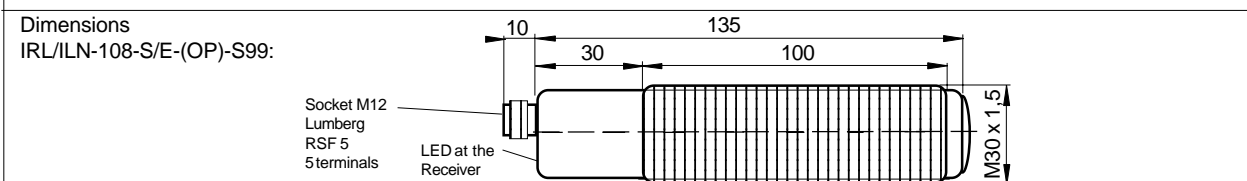
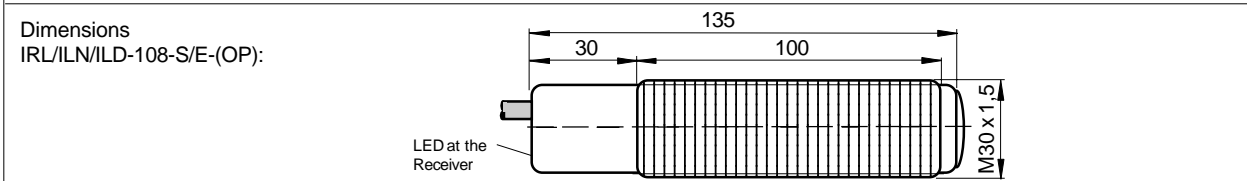
- Series ILD: For use in Ex-Zones (0), 1, 2, (20), 21, 22  
Optical radiation can operate into Ex Zones 0, 20
- Series ILN: For use in Ex-Zones 2, 22
- Good alignment by 3-color LED at the rear side
- Short response time
- Robust light barrier for industrial applications
- PNP output



II 3G Ex nA op is IIB T4 Gc  
II 3D Ex tc op is IIIA T135°C Dc IP67

II 2(1)G Ex d [op is Ga] IIC T6 Gb  
II 2(1)D Ex tb [op is Da] IIIB T100°C Db IP67

Technical Data	Type	IRL-108-S/E (-S99)	ILN-108-S/E-OP (-S99)	ILD-108-S/E-OP
Designation		I..-108-S: Emitter / I..-108-E: Receiver		
Type of Ex protection, Gas, according to 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, according to 2014/34/EU		NONE	II 3D Ex tc op is IIIA T135°C Dc IP67	II 2(1)D Ex tb [op is Da] IIIB T100°C Db IP67
For use in Ex Zones		--	2, 22	(0), 1, 2, (20), 21, 22
Range			80m	
Minimum detectable object size		22mm (avoid mirror effects)		
Light source		Infrared 870nm		
Maximum radiant power		NOTLIMITED	<=35mW	<=15mW
Maximum radiant intensity		NOTLIMITED	<=5mW/mm <sup>2</sup>	<=5mW/mm <sup>2</sup>
Directional angle (measured at a distance of 10m)		Emitter: appr.8° / Receiver: appr.12°		
Response time		5ms		
Supply voltage		24 VDC +-15%		
Current consumption, emitter		45mA		
Current consumption, receiver		40mA		
Maximum power dissipation		Emitter: 1.26W / Receiver: 0.7W		
Output		PNP, 100mA, short circuit protected		
Output pollution indication VA, optional		PNP, 100mA, short circuit protected		
Housing		M30, brass, nickel plated		
Enclosure rating according to EN 60529		IP 65	IP 67	IP67
Maximum ambient working temperature T <sub>amb</sub>		-20°C < T <sub>amb</sub> < +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		
Connection cable		2/3/4+PE x 0.5mm <sup>2</sup> , shielded, TPU, leads numbering marked, length: 10m		
Socket, type IRL/ILN-108-S/E-(-OP)-S99		Lumberg M12, type RSF 5, 5 terminals		--
Accessories, included, all types		- 4 nuts M30 (or 2 clamps M30 optional)		
Accessories, included, only ILN-108-S/E-OP-S99		- 2x Safety lock device, mount at the cable connection, for locking the connection. (black synthetic device). - 2x Warning plate "WARNING - Explosion Hazard - Do Not Disconnect While Circuit Is Live Unless Area Is Known To Be Non-Hazardous", self-sealing, for gluing on the cable connector. - 2x Protection cap for the sensor socket.		
Accessories, not included, for IRL/ILN-.. S99		- Cordset Lumberg, RKTS 5-298/xx or RkWTH 5-298/xx		
Options		- I..-108-S-DI(-OP): Emitter with disable input DI, for polling emitters - I..-108-E-VA(-OP): With integrated pollution indication output "VA", PNP type - I..-108-S/E-(-OP)-S94: Lenses special luted - IRL/ILN-108-S/E-(-OP)-S99: Socket M12, 5 terminals - Cable length: Up to 100m, on request		
LED indication Output function				
Wiring diagram for cable devices:				
Alignment and controlling by LED indication (LED at the rearside of the receiver)		LED red:	Light beam interrupted	- not aligned
		LED yellow:	polluted lenses	- badly aligned
		LED green:	Light beam free	- well aligned
ATEX related designations:		CE 0158 Type IRL-108-S/E-OP: II 2(1)G Ex d [ex op is Ga] IIC T6 Gb, II 2(1)D Ex tb [ex op is Da] IIIB T90°C Db IP67 EC certification number: BVS 10 ATEX E 130 X Type ILN-108-S/E-OP: II 3G Ex nA op is IIB T4 Gc, II 3D Ex tc op is IIIA T135°C Dc IP67 Declaration by manufacturer, according to the ATEX directive 2014/34/EU Tamb: -20°C < Tamb < +50°C Date of construction: Numeral 5 to 8 of the serial number (Year/Week) (X designation of the certification number: Fibre optics must only be applied with sensors with certificated limited optical power)		



**Operating Manual, EU - Declaration of Conformity:**

**Installation prescriptions for Ex hazardous locations**  
**General regulations for all types of Ex devices**  
 It is necessary to take into consideration the valid international and national rules and regulations (EN 60079-14). The local equipotential bonding have to be done. The protective earth (PE) is solid connected with the housing. The maximum input voltage  $U_m=30VDC$  must not be exceeded. 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 housings. All cable terminals must be connected outside hazardous locations. Other than original manufacturer, additional optical lenses are not allowed in hazardous locations.

**Types ILD-108-S/E-OP:** ONLY Applicable in Ex zones 1, 2, 21, 22. The limited optical radiation can operate into hazardous locations 0 or 20 through a viewing glass.

**Types ILN-108-S/E-OP:** ONLY Applicable in Ex zones 2, 22.

**Types ILN-108-S/E-OPS99:** 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) 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.

**Optional pollution indication output VA**  
 Only when the receiver LED's shows yellow, the pollution indication output VA switches to +24VDC. (Light barrier bad aligned, or lenses polluted or other impairments). If the receiver LED's shows green 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 I.-108-S-DI (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 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 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**  
 Series IRL-108-S/E-OP-S99: "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, single directive 1999/92/EC.

The sensor and the fibre optic are conform to the following standards:  
 EN 60079-0:2012 + A11:2013, EN 60079-1:2007, EN 60079-15:2010, EN 60079-28:2007, EN 60079-31:2010, EN 60825-1:2006, EN 60825-2:2004; EN 60529:2014; EN 61000-4-2 to EN 61000-4-6, EN 61000-6-1/-2, EN 61000-6-4.  
 ATEX directive: 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**  
 Model ILD: ATEX-Certification No. BVS 10 ATEX E 130 X. DEKRA.  
 Model ILN: ATEX declaration by manufacturer according to the ATEX directive 2014/34/EU. ATEX certification of quality type production of Ex devices according to the ATEX directive 2014/34/EU. Certification No: BVS 15 ATEX ZQS / E118. 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 9001:2008 with the ATEX module "Production", declares:

Hans Bracher, Matrix Elektronik AG

ILD-108-OP\_e12,2017-01-09/HB

**Tippkemper - Matrix GmbH**  
 Meegerer Str. 43 D-51491 Overath  
 Tel.: +49 2206 9566-0 Fax -19  
 info@tippkemper-matrix.com

**Matrix Elektronik AG (Manufacturer)**  
 Kirchweg 24 CH-5420 Ehrendingen  
 Tel.: +41 56 20400-20 Fax -29  
 info@matrix-elektronik.com