

Original operating manual:

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

ILD-108-SIR/EFP-OP



0158



IECEx BVS 14.0108X

IECEx marking:

Ex d [op is Ga] IIC T6 Gb

Ex tb [op is Da] IIIC T100°C Db IP67

II 2(1)G

II 2(1)D



IECEx marking:

Ex d [op is Ga] IIC T6 Gb

Ex tb [op is Da] IIIC T100°C Db IP67

Housing M30

- Series ILD: ATEX and IECEx certificated
- 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 rear side of the receiver
- Robust light barriers for industrial applications

ILN-108-SIR/EFP-OP

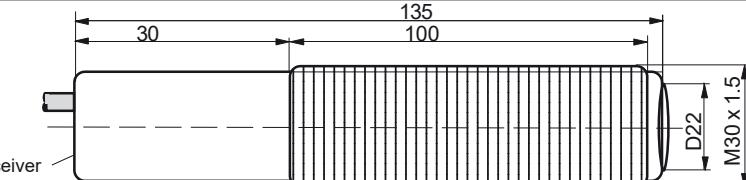
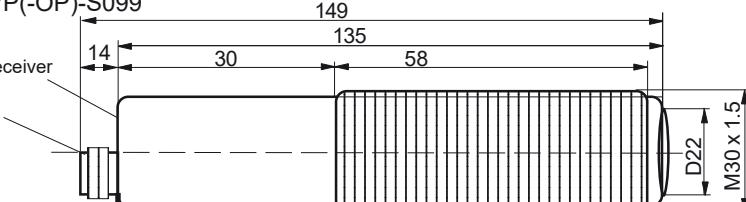
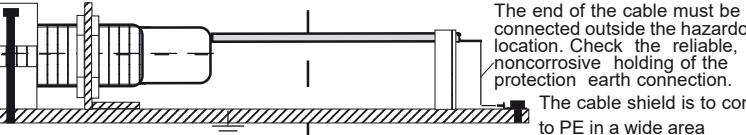


ATEX marking:

II 3G Ex nA op is IIB T4 Gc

II 3D Ex tc op is IIIA T135°C Dc IP67

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***
(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	<=5mWm ²	<=5mWm ²
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 0.5mm ² , 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	- 4x Nuts M30 (or 2x Clamps, on request)		
Accessories, only types ILN-***-S099, included	- 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	- Cord set M12, types Lumberg RKTS 5-298/xx (straight) or RKWTH 5-298/xx (angled)		
Options	- IRL/ILN/ILD-108-SIR/EFP/EVP(-OP)-S094: - IRL/ILN-108-SIR/EFP(-OP)-S099: - IRL/ILN/ILD-108-SIR/EFP(-OP)-S235: - IRL/ILN/ILD-108-SIR/EFP(-OP)-S292: - IRL/ILN/ILD-108-EVP(-OP): - IRL/ILN/ILD-108-SDI(-OP): - Cable length: - IRL/ILN/ILD-108-SIR/EFP/EVP(-OP)-S323:	Special gluing of the lenses Socket M12, 5-contact Special gluing of the lenses and Ta: -30°C Special gluing of the lenses and potentiometer at the emitter. Receiver with pollution indication output "VA" Emitter with disable input "DI" Up to 100m on request S094 + Housing M30, stainless steel 1.4404	
LED display and output function		Light beam interrupted Receiver-LED lights red	Light beam free Receiver-LED lights yellow or green
Output and connection assignments			
Wire: 1: Receiver: +24VDC 2: 0V 3: Output 4: VA-Output, optional white: Cable shield green-yellow: PE	Emitter: +24VDC 0V DI, optional -- Cable shield PE	<p>Diagram showing the connection for the IRL/ILN/ILD-108-SIR/EFP(-OP)-S099. The circuit includes a 24VDC power source, a PNP transistor, a 15Ω resistor, and an output terminal. The output is connected to ground (0V) through a diode. The PNP transistor is controlled by the receiver's output. The circuit is designed for PNP=ON.</p>	<p>Diagram showing the connection for the IRL/ILN-108-SIR/EFP(-OP)-S099. The circuit includes a 24VDC power source, a PNP transistor, a 15Ω resistor, and an output terminal. The output is connected to ground (0V) through a diode. The PNP transistor is controlled by the receiver's output. The circuit is designed for PNP=ON.</p>
Wiring for the socket types: See page 2		optional EVP/VA-Out = 0V	EVP/VA=24V, only if the LED lights green
Pollution indication output EVP/VA,			
Alignments and LED display (LED at the rear side of the receiver)	LED red: LED yellow: LED green:	Light beam interrupted Lenses polluted Light beam free	/ not aligned / bad aligned / well aligned
EX related markings	CE0158 Types ILD: Ex d [op is Ga] IIC T6 Gb, Types ILN: II 3G Ex nA op is IIB T4 Gc, Types ILD: ATEX certification Types ILD: IECEx certification Types ILN: ATEX declaration by manufacturer Tamb: -20°C < Tamb < +50°C Date of production: Numerals 5 to 8 of the serial number (Year/calendar week) (X designation of the certification number: Fibre optics must only be used with sensors with certificated limited optical power)		Manufacturer with address Ex tb [op is Da] IIIC T100°C Db IP67 II 3D Ex tc op is IIIA T135°C Dc IP67 No: BVS 10 ATEX E130 X DEKRA IECEx BVS 14.0108X in accordance with the ATEX directive 2014/34/EU Electrical data according to the table "Technical data" (X designation of the certification number: Fibre optics must only be used with sensors with certificated limited optical power)

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 M12 LumbergRSF5 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	
Equipotential bonding pre-scription:	 <p>The end of the cable must be connected outside the hazardous location. Check the reliable, noncorrosive holding of the protection earth connection. The cable shield is to connect to PE in a wide area</p>
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.	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.
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.	Mechanical Mounting Prescriptions Mount the light barriers free from vibrations and shocks. If it is practicable, protect the lenses from contamination.
Emitter: ILD-108-SIR/SID-OP-S***, Receiver: ILD-108-EFP/EVP-OP-S***: Only applicable in Ex zones 2, 22.	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.
Emitter: ILD-108-SIR/SID-OP-S099, Receiver: ILD-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.	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 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.	General safety instructions Types IRL-108-SIR/SID-OP-S099, IRL-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.
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.	The sensors are conform to the following standards: IEC60079-0:2017, IEC/EN60079-0:2018, IEC/EN60079-1:2014, 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.
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.	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.
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.	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://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] IIIB 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 ILL: 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: Pablo Ledergerber, Matrix Elektronik AG
Arrangement of light barriers, only types IRL/ILN/ILD-108-SDI(-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 DI= High (24VDC)	= emitter enabled = emitter disabled