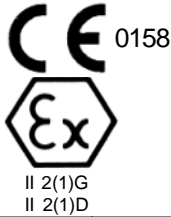


# Original Operating Manual:

## Light Barriers series IRL/ILN/ILD-201-SIR/SDI/EFP(-OP)

### ILD-201-SIR/EFP-OP

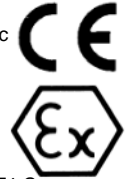


IECEX BVS 14.0108X  
 IEC IECEX  
 IECEX marking  
 Ex d [op is Ga] IIC T6 Gb  
 Ex tb [op is Da] IIIB T100°C Db IP67

### Housing M30

- High penetration capacity in polluted areas.
- Optimal alignment by status visualization trough receiver optic
- Series ILD: ATEX and IECEX certified
- ILD: For use in Ex zones (0), 1, 2, (20), 21, 22 optical radiation can operate into Ex Zones 0, 20
- ILN: For use in Ex zones 2, 22
- Robust light barrier for industrial applications

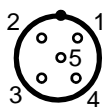
### ILN-201-SIR/EFP-OP



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

Type designation emitter	IRL-201-SIR-S***	ILN-201-SIR-OP-S***	ILD-201-SIR-OP-S***
Type designation receiver	IRL-201-EFP-S***	ILN-201-EFP-OP-S***	ILD-201-EFP-OP-S***
<b>Technical Data</b>	(S***: Designation for additional 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] IIIB T100°C Db IP67
For use in Ex zones	NONE	Zones 2, 22	Zones (0), 1, 2, (20), 21, 22
Sensing range	120m		
Minimum detectable object size	22mm (avoid mirror effects)		
Light source	Infrared 870nm		
Maximum radiant intensity	NOT LIMITED	<=5mWm <sup>2</sup>	<=5mWm <sup>2</sup>
Maximum radiant power	NOT LIMITED	< 35mW	< 15mW
Directional angle (at a distance of 10m)	Emitter: appr.8° / Receiver: appr.12°		
Response time	5ms		
Power up delay time	500ms		
Supply voltage	24VDC +15%		
Absolute maximum supply voltage Um	30VDC		
Current consumption, emitter	45mA	55mA	55mA
Current consumption, receiver	40mA		
Maximum power dissipation	Emitter: max. 1.93W / Receiver: 0.7W		
Output	push-pull type, 100mA, short circuit protected		
Pollution indication output "VA"	push-pull type, 100mA, short circuit protected		
Housing	M30, brass Ms 58, nickel plated		
Enclosure rating, in accordance with EN 60529	IP 65	IP 67	IP67
Ambient working temperature range Tamb	-20°C up to +50°C		
Storage temperature range	-20°C ... +70°C		
Relative humidity	15% ... 90%, noncondensing		
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-201-SIR/EFP(-OP): T3A30BP1 / IRL/ILN-201-SIR/EFP(-OP)-S099: T3A30BP2		
Connection cable	TPU insulation, AWM 20236, 2/3/4+PE x 0.5mm <sup>2</sup> , shielded, leads numbering marked, oil resistant cable for trailing, length: 10m		
Socket M12, only types IRL/ILN-201-***(-OP)-S099	Socket, Lumberg RSFM 5, 5 pins		
Accessories, all types, included	- 4x nuts M30 (or optional 2x clamps, on request)		
Accessories, only ILN-201-***-S099, included	- 1x Safety lock device, mount at the cable connection, for locking the connection. - 1x Warning plate "Do not open/close when supply voltage connected", self-sealing, for gluing on the cable connector. - 1x Protection cap for the sensor socket.		
Accessories, only ILN-201-***-S099, not included	- Single ended cordset, types RKTS 5-298/xx or RKWTH 5-298/xx, Lumberg		
Options	- IRL-201-SIR/EFP-S039: Cable connector Binder 423, 5 terminals, not for new applications - IRL/ILN/ILD-201-SIR/EFP(-OP)-S094: Lenses special luted - IRL/ILN-201-SIR/EFP(-OP)-S099: With socket M12, 5 pins - IRL/ILN/ILD-201-SDI(-OP): With emitter disable input DI - IRL/ILN/ILD-201-SIR/EFP(-OP)-S156: Ambient temperature range: -30°C to +50°C - IRL/ILN/ILD-201-***(-OP)-S299: Housing special steel 1.4404 (316L), with special nuts 1.4404 - IRL/ILN/ILD-201-***(-OP)-SM42: With special optic M42. - Cable length: Up to 100m, on request		
LED display and output function			
Output function and wiring diagram (cable):			
Receiver: 1: = +24VDC 2: = 0V 3: = Output 4: = Pollution indication output "VA"	Emitter: 1: = +24VDC 2: = 0V 3: = SDI, optional		
(Cable shields, connect to PE) For socket types, see on page 2 of this operating manual			
Function pollution indication output "VA"	Output VA = 0V (LED's shows red)		Output VA =24V if LED's shows green
Alignment and controlling by LED display (Status visualization trough receiver optic and LED at the rear side of the receiver)	LED red: Light beam interrupted / not aligned LED yellow: Polluted lenses / bad aligned LED green: Light beam free / well aligned	Visible red light source through the emitter lens	
EX related markings	CE0158 TypesILN: Ex d [op is Ga] IIC T6 Gb, TypesILN: II 3G Ex nA op is IIB T4 Gc, TypesILD: ATEX certification TypesILN: IECEX certification TypesILN: 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] IIIB 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"

Wiring IRL/ILN-201-SIR/SDI/EFP(-OP)-S099:



Receiver:

- 1/br +24VDC
- 2/ws Pollution indication output
- 3/bl 0V
- 4/sw Output
- 5/gr FE

M12  
Lumberg RSFM 5

Emitter:

- +24VDC
- SDI (Disable input)
- 0V
- NC
- FE

Wiring IRL-201-SIR/SDI/EFP-S39:



Receiver:

- 1 +24VDC
- 2 0V
- 3 Output
- 4 Pollution indication output
- 5 FE

Binder  
Series 423

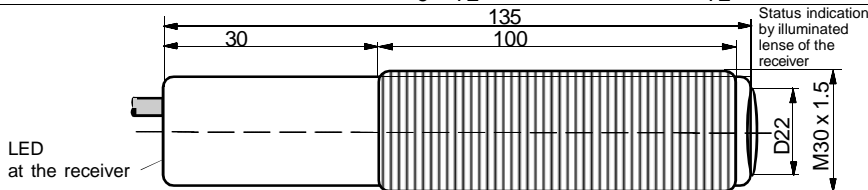
Emitter:

- +24VDC
- 0V
- SDI(Disable input)
- NC
- FE

Not for new applications

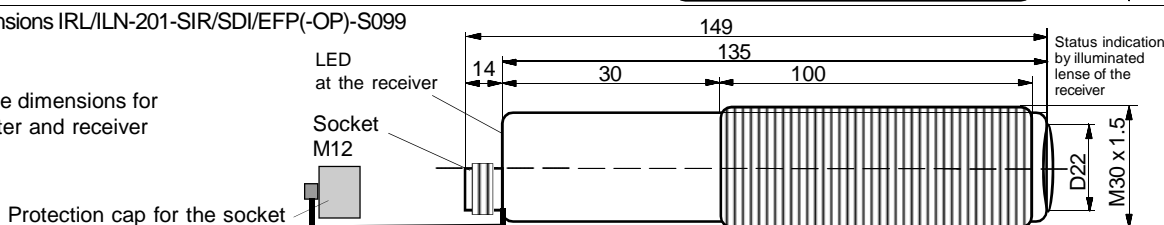
Dimensions  
IRL/ILN/ILD-201-SIR/SDI(-OP)-S\*\*\*,  
IRL/ILN/ILD-201-EFP-OP-S\*\*\*

Same dimensions for emitter and receiver

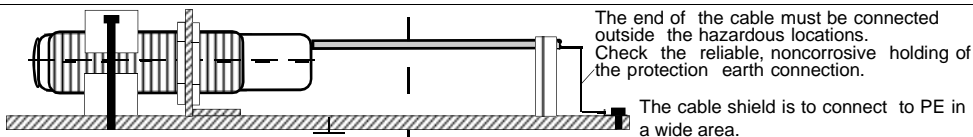


Dimensions IRL/ILN-201-SIR/SDI/EFP(-OP)-S099

Same dimensions for emitter and receiver



Safe equipotential Bonding for Ex Devices:



Operating Manual, EC-/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 (EN60079-14). The maximum input voltage  $U_m=30VDC$  must not be exceeded. The local equipotential bonding have to be done. The protective earth (PE) terminal is solid connected with the housing. The cable have to be 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. Use only original manufactured fibre optics and additional optical lenses, other additional optical lenses are not allowed in hazardous locations.

**Emitter: ILD-201-SIR/SID-OP-S\*\*\*, Receiver: ILD-201-EFP-OP-S\*\*\*:**  
For use in Ex zones 1, 2, 21, 22. The limited optical radiation can operate into hazardous locations 0 or 20 over certificated fibre optics or through a viewing glass.

**Emitter: ILN-201-SIR/SID-OP-S\*\*\*, Receiver: ILN-201-EFP-OP-S\*\*\*:**  
For use only in Ex zones 2, 22.

**Emitter: ILN-201-SIR/SID-OP-S099, Receiver: ILN-201-EFP-OP-S099:**  
For use only in Ex zones 2, 22. **WARNING!** 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 socket protection cap must be fitted, when the connection cable is not 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 to 0V. The load can be connected between the output and +24VDC or 0V.

Function at inverse connection of the supply voltage:

If the light beam is not interrupted the output switches to ON (0V). If the light beam is interrupted the output switches to +24VDC. The load can be connected between the output and +24VDC or 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, types IRL/ILN/ILD-201-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 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 SDI (DI) must be activated for  $\geq 15ms$ . 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.

Alignment of the Light Barrier:

The three color indication in the receiver optic allows an optimal alignment.

1. The emitter must be aligned this way, that the emitter lens is fully illuminated (By watching from the receiver at the emitter).
2. The receiver should be moved, until the LED (from the receiver) shows "green". Search the middle of the green range.

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-201-SIR/SID-OP-S099, ILN-201-EFP-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. In worst case of breakdown, 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 118a, single directive 1999/92/EC. The sensors are conform to the following standards: IEC/EN 60079-0:2012 + A11:2013, IEC/EN 60079-1:2007, EN 60079-15:2010, IEC/EN 60079-28:2007, IEC/EN 60079-31:2010, 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 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.

EC-/EU-Declaration of conformity:

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

<http://iecex.iec.ch/iecexweb/ref/0FE79714C0BAEF6F5C1257D7E0044F6A97?open=document>

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 EXAM GmbH, Zertifizierungsstelle, Carl-Beyling-Haus, Dinendahlstrasse 9, D-44809 Bochum, Kennnummer: 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 the ATEX directive 2014/34/EU. ATEX certification of quality type production of Ex devices in accordance to the ATEX directive 2014/34/EU, CE 0158. 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-201-OP-IECEX\_e9\_2017-07-03/HB

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