ISO 9001:2015 ATEX

Light Barriers IRL-201-S/E / ILN-201-S/E-OP / ILD-201-S/E-OP

ILD-201-S/E-OP

CE 1258

Ex

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

- High penetration capacity in polluted areas.
- Optimal alignment by status visualization trough receiver optic and visible red light of the transmitter
- With optional emitter disable input DI
- 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 (1), 2, (21), 22
  Optical radiation can operate into Ex Zones 1, 21
- Robust light barrier for industrial applications

ILN-201-S/E-OP

CE

Ex

II 3(2)G Ex nA [op is Gb] IIB T4 Gc
II 3(2)D Ex tc [op is Db] IIIA T135°C Dc IP67

Technical Data / Type	IRL-201-S/E(-DI)	ILN-201-S/E(-DI)-OP	ILD-201-S/E(-DI)-OP
Designation Emitter + Receiver	Ixx-201-**S** = Emitter / Ixx-201-**E** = Receiver		
Designation, with optional emitter disable input DI	Ixx-201-S-**DI**(-OP) = Emitter with disable input		
Type of ex protection Gas, according to 2014/34/EU	NONE	II 3(2)G Ex nA [op is Gb] 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 3(2)D Ex tc [op is Db] IIIA T135°C Dc IP67	II 2(1)D Ex tb [op is Da] IIIB T100°C Db IP67
Applicable in Ex zones	NONE	2(1), 22(21)	1(0),21(20)
Sensing range	120m		
Minimum detectable object size	22mm (avoid mirror effects)		
Light source	Infrared 870nm		
Maximum radiant power	NOT LIMITED	<=35mW	<=15mW
Maximum radiant intensity	NOT LIMITED	<=5mW/mm²	<=5mW/mm²
Directional angle (at a distance of 10m)	Emitter: appr.8° / Receiver: appr.12°		
Response time	5ms		
Power up delay time	500ms		
Supply voltage	24 VDC +-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: 1.1W		
Output	push-pull type, 100mA, short circuit protected		
Pollution indication output "VA"	push-pull type, 100mA, short circuit protected		
Emitter disable input, only type I..-201-S-**DI**(-OP)	PNP compatible		
Housing	M30, brass, nickel plated		
Enclosure rating, according to EN 60529	IP 65	IP67	IP67
Ambient working temperature range T_{amb} Note 1	-20°C < T_{amb} < +50°C		
Storage temperature range	-20°C ... +70°C		
Relative humidity	15% ... 90%, noncondensing		
Pollution degree, according to EN 60664-1	4		
Utilization category, according to EN 60947-5-1/2	DC13		
Vibration and shock resistance	Vibration: 30g over 20Hz to 2kHz. Shock: 100g for 3ms		
Connection cable	TPU insulation, AWM 20236, 2/3/4+PE x 0.5mm², shielded, leads numbering marked, oil resistant cable for trailing		
Cable length Socket M12, only types IRL/ILN-201-S/E(-OP)-**S99**	10m M12 RSFM 5, 5 pins	10m M12 RSFM 5, 5 pins	10m --
Socket series 423, only types IRL/ILN-201-S/E(-OP)-**S39** (Not for new applications)	Binder model 423, 5 pins Not for new applications	Binder model 423, 5 pins Not for new applications	-- --
Accessories, all types	- 4 nuts M30 or optional 2 clamps		
Accessories, only type ILD-201-S/E-OP-S202	- 4 nuts M30 and 4 nuts M35		
Accessories, only type ILN-201-S/E-OP-S99	- 1x Safety lock device, mount at the cable connection, for locking the connection. (black synthetic device) - 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, optional for the types S99	- Single ended cordset, types RKTS 5-298/xx or RKWTH 5-298/xx, Lumberg		
Accessories, optional for the types S39	- Cable connector Binder 423, 5 terminals. Not for new applications		
Options:	- Cable length up to 100m: On request. - Type I..-201-S(-OP)-**DI**: With emitter disable input DI. - Type I..-201-S/E(-OP)/**M42**: With special optic M42. - Type IRL/ILN-201-S/E(-OP)-**S39**: With Socket, Binder series 423,5 terminals. Not for new applications. - Type I..-201-S/E(-OP)-**S94**: Lenses special luted. - Type IRL/ILN-201-S/E(-OP)-**S99**: With Socket M12, 5 terminals. - Type IRL/ILN-201-S/E(-OP)-**S162**: With special cable TPU. - Type ILD-201-S/E-OP-**S202**: With additional optic, overall length: 198mm		

LED indication
Principle function

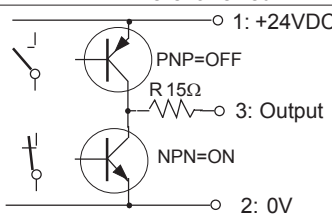
Light beam interrupted
LED's shows red

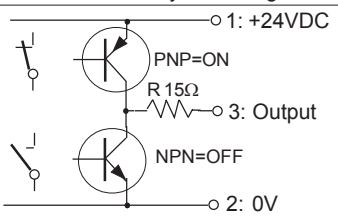
Light beam not interrupted
LED's shows yellow or green

Output function and wiring diagram (cable):
For socket types, see page 2

Receiver:		Emitter:	
1	= +24VDC	1	= +24VDC
2	= 0V	2	= 0V
3	= Output	3	= DI (N2)
4	= VA-Output		
yellow-green	= PE	yellow-green	= PE

(Cable shields, connect to PE)





Alignment and controlling by LED display:

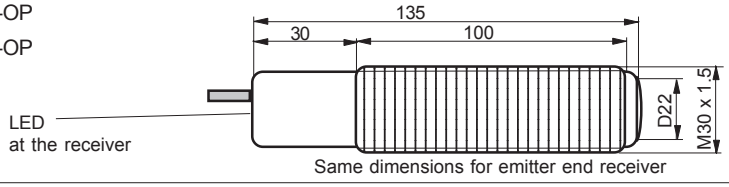
LED red: Light beam interrupted / not aligned
LED yellow: polluted lenses / badly aligned
LED green: Light beam free / well aligned
visible red light source of the emitter lens

The output function can be changed by exchanging the polaritiy of the supply voltage of the receiver. (Wire No. 1 = 0V, wire No. 2 = +24VDC)

Note 1: On temperatures less the +5°C, the cable must not be agitated.

Note 2: Only type I..-201-S-DI(-OP)

Dimensions:
IRL-201-S/E
ILN-201-S/E-OP
ILD-201-S/E-OP

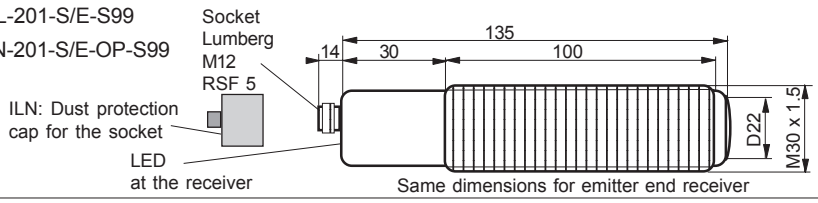


Same dimensions for emitter end receiver

Wiring:

	IRL-201-S ILN-201-S-OP ILD-201-S-OP Emitter:	IRL-201-E ILN-201-E-OP ILD-201-E-OP Receiver:
+24VDC	1	1
0V	2	2
Output	--	3
Output VA	--	4
DI Input	3, optional	--
PE	yellow-green	yellow-green
Cable shield	white	white

Dimensions:
IRL-201-S/E-S99
ILN-201-S/E-OP-S99

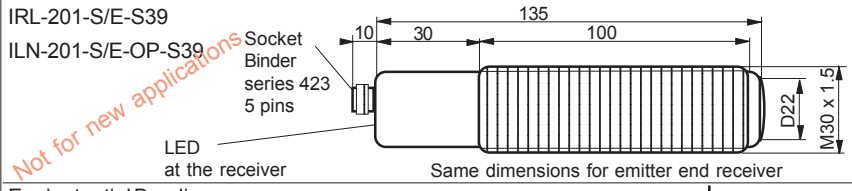


Same dimensions for emitter end receiver

Wiring:

	IRL-201-S-S99 ILN-201-S-OP-S99 Emitter:	IRL-201-E-S99 ILN-201-E-OP-S99 Receiver:
+24VDC	1/brown	1/brown
0V	3/blue	3/blue
Output	--	4/black
Output VA	--	2/white
DI Input	2/white	--
PE	5/grey	5/grey
Cable shield	at the socket housing	

Dimensions:
IRL-201-S/E-S39
ILN-201-S/E-OP-S39

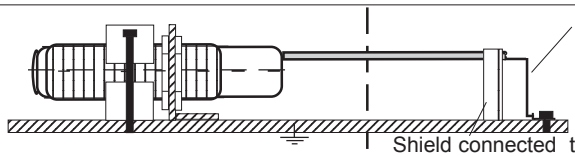


Same dimensions for emitter end receiver

Wiring:

	IRL-201-S-S39 ILN-201-S-OP-S39 Emitter:	IRL-201-E-S39 ILN-201-E-OP-S39 Receiver:
+24VDC	1	1
0V	2	3
Output	--	3
Output VA	--	4
DI Input	3, optional	--
PE	5	5

Equipotential Bonding
for Ex Devices:



The end of the cable must be connected outside the hazardous locations.
Reliable, noncorrosive holding of the protection earth connection.

Shield connected to PE in a wide area

ATEX RELATED MARKINGS:

CE 1258	Date of production: Numerals 5 to 8 of the serial number (year/calendar week)	Manufacturer with address
Device ILD-..-OP:	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	EC-Type-Examination No: BVS 10 ATEX E130 X, DEKRA
Device ILN-..-OP:	II 3(2)G Ex nA [op is Gb] IIB T4 Gc, II 3(2)D Ex tc [op is Db] IIIA T135°C Dc IP67	ATEX declaration by manufacturer according to 2014/34/EU
T_{amb}:	-20°C < T_{amb} < +50°C	Electrical data according to the chart

(X designation of the certification number: Fibre optics must only be applicated with sensors with certificated limited optical power)

Operating Manual, EU - Declaration of Conformity:

Installation prescriptions for Ex hazardous locations

Ex protection:

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 Um=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.

Types: ILD-201-S/E(-DI)-OP: Only for use in Ex zones 1, 2, 21, 22. The limited optical radiation can operate into hazardous locations 0 or 20 through a certificated viewing glass.

Types: ILN-201-S/E(-DI)-OP: Only for use in Ex zones 2, 22. The limited optical radiation can operate into hazardous locations 1 or 21 through a certificated viewing glass.

Types: ILN-201-S/E(-DI)-OP-S99: Only applicable in Ex zones 2, 22. The limited optical radiation can operate into hazardous locations 1 or 21 through a certificated viewing glass. 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 I..-201-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 >= 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:

Series ILN-201-S/E(-DI)-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 light barriers 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 118a, single directive 1999/92/EC. The sensors 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; 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:

ATEX, Model 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, Notified Body: DEKRA EXAM GmbH, Carl-Beyling-Haus, Dinendahlstrasse 9, D-44809 Bochum, CE 0158.

ATEX, Model ILN: II 3(2)G Ex nA [op is Gb] IIB T4 Gc, II 3(2)D Ex tc [op is Db] IIIA T135°C Dc IP67. ATEX declaration by manufacturer according to 2014/34/EU. ATEX certification of quality type production of Ex devices according to the ATEX directive 2014/34/EU, CE 1258, Eurofins. Certification No: SEV 21 ATEX 4580. 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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