

Original operating manual:
Retroreflective Light Barriers series RLR/ISN/ISD-002/004/006-FXC/XCI(-OP)

ISD-***-***-OP

IECEx BV5 14.0108X


Housing M30

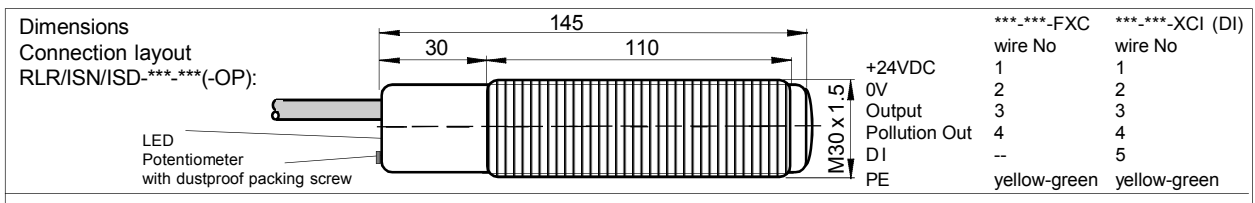
- Long sensing range
- Series ISD: ATEX and IECEx certified
- ISD: For use in Ex zones (0), 1, 2, (20), 21, 22 optical radiation can operate into Ex Zones 0, 20
- ISN: For use in Ex zones 2, 22
- Robust retroreflective light barrier for industrial applications

ISN-***-***-OP

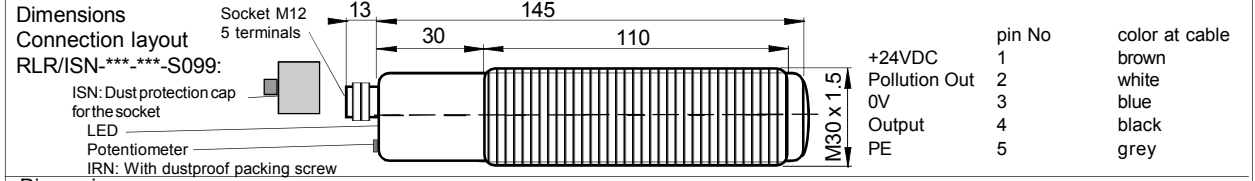


Technical Data	Type	RLR-***-FXC	ISN-***-FXC-OP	ISD-***-FXC-OP																											
*** : Sensing range, 002=2m, 004=4m, 006=6m (adjustable by potentiometer, measured on reflector D=83mm)																															
Type of Ex protection, Gas, according to 2014/34/EU	NONE	II 3G Ex nA op is IIB T4 Gc	II 2(1)G Ex d [op is Ga] IIC T6 Gb	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 Extc op is IIIA T135°C Dc IP67	II 2(1)D Ext b [op is Da] IIIB T100°C Dc IP67	II 2(1)D Ext b [op is Da] IIIB T100°C Dc IP67																											
For use in Ex Zones	None	Zones 2, 22	Zones (0), 1, 2, (20), 21, 22	Zones (0), 1, 2, (20), 21, 22																											
Response time	RLR/ISN/ISD-002/004-FXC(-OP)-S181): 5ms																														
Response time	RLR/ISN/ISD-006-FXC(-OP)-S181)-S225): 1ms																														
Power up delay time	500ms																														
Light source	visible red, 623nm																														
Beam pattern (at a distance of 2m)	appr. 12°																														
Maximum radiant intensity	NOT LIMITED	<=5mW/mm²	<=5mW/mm²	<=5mW/mm²																											
Maximum radiant power	NOT LIMITED	<35mW	<35mW	<15mW																											
Supply voltage	24VDC +/-10%																														
Absolute maximum input voltage Um	30VDC																														
Maximum current consumption	45mA...60mA																														
Maximum power dissipation	1.4W																														
Output, series RLR/ISN/ISD-002/004-FXC(-OP)	1 x PNP, short circuit protected, maximum 100mA																														
Output, series RLR/ISN/ISD-002/004-FXC(-OP)-S181	1 x Push-Pull, short circuit protected, maximum 100mA																														
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Output, series RLR/ISN/ISD-006-FXC(-OP)-S225	1 x NPN, short circuit protected, maximum 100mA																														
Pollution indication output VA	1 x PNP, short circuit protected, maximum 100mA																														
Utilization category, according to EN 60947-5-1	DC-13																														
Emitter disable input, only types ***-XCI-***, optional	PNP compatible, Ri=10kΩ																														
Housing	M30, brass Ms 58, nickel plated																														
Enclosure rating according to EN 60529	IP65	IP67	IP67	IP67																											
Ambient working temperature range Tamb	-20°C < Tamb < +60°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, according to EN 60664-1:2007	4																														
Device designation, according to EN 60947-5-2	***-006-FXC: R3A30AS1 / ***-002/4-FXC: R3A30AP1 / ***-006-FXC-S225: R3A30AN1 / ***-S099: R3A30A*2																														
Connection cable	4 + PE x 0,5mm², TPU, oil resistant, shielded, leads numbering marked, length: 3m																														
Connection cable, types ***-XCI-*** (DI)	6 + PE x 0,5mm², PVC, shielded, leads numbering marked, length: 3m																														
Socket, types RLR/ISN-***-S099	Socket M12, Lumberg type RSFM 5, 5 terminals																														
Accessories included, all types	- 2 nuts M30 (or 1 clamp, on request)																														
Accessories included, only ISN-***-*** and ISD-***-***	- 1x Spare safety screw with packing ring for potentiometer sealing																														
Accessories, included, only ISN-***-S099	- 1x Safety lock device, mount at the cable connection, for locking the connection. (black synthetic device) - 1x 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																														
Accessories, not included, only RLR/ISN-***-S099	- Cord Set Lumberg RKTS 5-298/xx (straight type), or RKTW/RKW TH 5-298/xx (right angle type)																														
Options	- Switching frequency: Up to 2kHz, on request - Cable length: Up to 100m, on request - ISD-002/004-FXC-OP-S043: With additional optic - RLR-002/004-FXC-S109: Working temperature range -20°C to +100°C - RLR/ISN/ISD-***-***(-OP)-S147: Special gluing of the lenses - RLR/ISN/ISD-002/004-***(-OP)-S181: With push-pull output - RLR/ISN/ISD-***-XCI(-OP): With emitter disable input. (Not for types ***-***(-OP)-S099) - RLR/ISN/ISD-***-***(-OP)-S225: With NPN output, function NO																														
Function and display	<p>Light beam interrupted LED shows red</p>		<p>Light beam reflected by the triple mirror LED shows green or yellow</p>																												
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Function at reversed supply voltage wiring: At +24V at wire 2/pin 3 and 0V at wire 1 / pin1 the function is changed																															

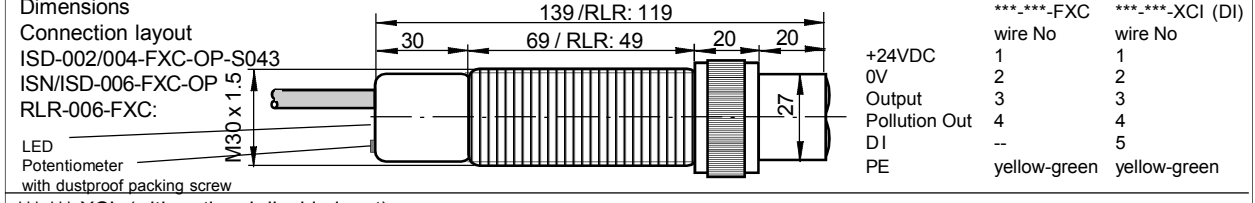
ISD-FXC-OP-IECEX_64/2018-10-01/HB



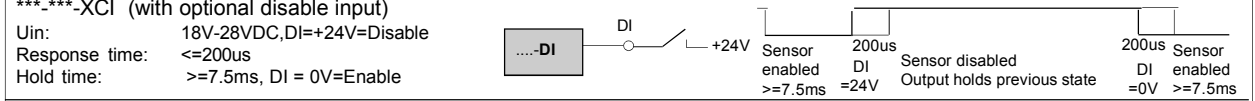
--FXC	***-***-XCI (DI)
wire No	wire No
1	1
2	2
3	3
4	4
5	5
yellow-green	yellow-green



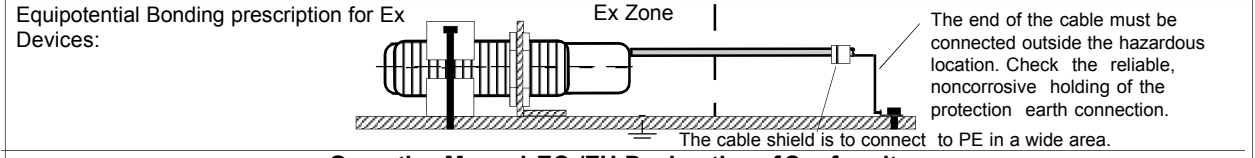
pin No	color at cable
1	brown
2	white
3	blue
4	black
5	grey



--FXC	***-***-XCI (DI)
wire No	wire No
1	1
2	2
3	3
4	4
5	5
yellow-green	yellow-green



ATEX/IECEx RELATED MARKINGS CE 0158 T_{amb}: -20°C < T_{amb} < +60°C Manufacturer with address
 Type ISD: 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-Certification No. BVS 10 ATEX E130 X DEKRA
 Type ISN: II 3G Ex nA op is IIB T4 Gc, II 3D Ex tc op is IIIA T135°C Dc IP67 IECEx Certification No. IECEx BVS 14.0108X
 Electrical data according to the chart 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 applied with sensors with certificated limited optical power) ATEX declaration by manufacturer 2014/34/EU



Mounting prescriptions

Ex Protection:
 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) 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.
Type ISD-*-FXC/XCI-OP-S***:** Applicable in Ex zones 1, 2, 21, 22. The limited optical radiation can operate into hazardous locations 0 or 20.
Type ISN-*-FXC/XCI-OP-S***:** Only applicable in Ex zones 2, 22. The limited optical radiation can operate into hazardous locations 1 or 21.
Type ISN-*-FXC/XCI-OP-S099:** Only applicable in Ex zones 2, 22. The limited optical radiation can operate into hazardous locations 1 or 21. 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.
 Do not exceed the maximum ratings.

Function
 The sensor can only be driven with a Triplex mirror. Only 2 times broken light beams will be detected. The sensor works basically as light barrier on reflective mirrors. If the sensor detects reflected light, the output switches to +24VDC or 0V dependent of the polarity of the supply voltage. If the sensor works under safe conditions the LED shows green. If the sensor detects only poor reflected light, the LED shows yellow and the pollution indication output VA switches to +24VDC. If no reflected light will be recognized, the LED shows red, the outputs switches to 0V and the control output is switching OFF.
Potentiometer adjustment
 For the detection of thin, transparent films, it is necessary the potentiometer by the following procedure:
 -Mount the sensor and the mirror.
 -Turn the potentiometer left to the sensor is switching off.
 -Turn the potentiometer right just to the sensor is switching on.
 -Check the safe function of the sensor. The output must works without any output delay. If a delayed function of the output / LED is recognized, turn the potentiometer a little more to the right side.

Sensors with disable input, types *-***-XCI (Not for types *-S099):**

Operating Manual, EC-/EU-Declaration of Conformity:

If several sensors are installed close to another, it is necessary to use sensors with disable input. By using the disable input DI, each sensor can be controlled in a short reaction time. If only one sensor is activated in the same time, a mutual influence is precluded.
 DI= 0V or not connected = emitter enabled
 DI= High (24VDC) = emitter disabled
 For a correct function the sensor must be enabled for at minimum >= 7.5ms (DI=0V). If the DI input will be disabled, the outputs holds the previous output status from the last enabled time.
 The DI input is PNP compatible.

Maintenance
 For a high reliability hold the lens and the mirror free from sediment. No special maintenance is required. If the lens or the mirror becomes dirty, they should be cleaned with a non-aggressive cleaning liquid. Equipment must only be repaired by the manufacturer.

General safety instructions
 Series ISN-***-FXC/XCI-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 118a, single directive 1999/92/EC.
 The sensors are conform to the following standards:
 IEC/EN 60079-0:2012 + A11:2013, IEC/EN 60079-1:2014, 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 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 ISD: Ex d [op is Ga] IIC T6 Gb, Ex tb [op is Da] IIIB T100°C Db IP67. Certification No. IECEx BVS 14.0108X.
<http://iecex.iec.ch/iecexweb.nsf/0FE79714C0BAEF65C1257D7E004F6A9?opendocument>
 ATEX certification, types ISD: 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 EXAM GmbH, Zertifizierungsstelle, Carl-Beyling-Haus, Dinendahlstrasse 9, D-44809 Bochum, Kennnummer: 0158.
 ATEX certification, types ISN: II 3G Ex nA 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 9001:2015 with the ATEX module "Production", declares:
 Hans Bracher, Matrix Elektronik AG

ISD-FXC-OP-IECEx_e4/2018-10-01/HB

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