

Retroreflective Light Barrier RLR / ISN / ISD - 2/4/6-XC-OP

ISN-2/4/6XC-OP

Housing M30

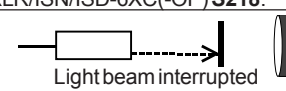
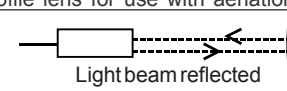
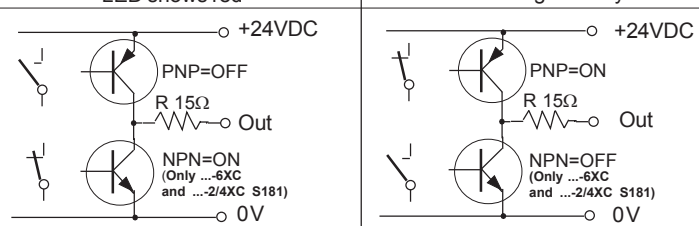
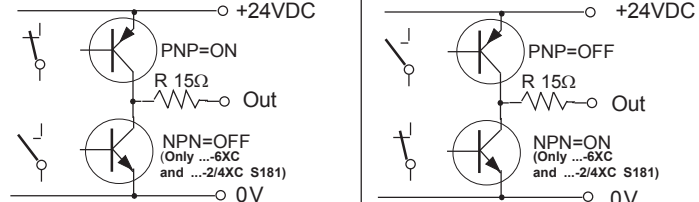
ISD-2/4/6XC-OP



- Long range
- Type ISD, applicable in Ex Zones (0), 1, 2, (20), 21, 22
- Type ISN, applicable in Ex Zones (1), 2, (21), 22
- Robust sensor for industrial applications

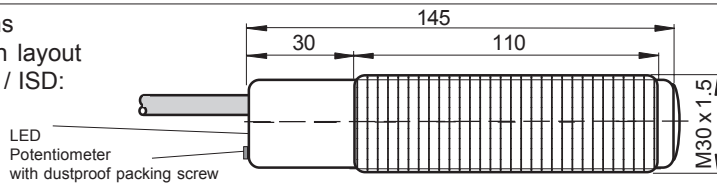

II 3(2)G Ex nA [op is Gb] IIB T4 Gc
II 3(2)D Ex tc [op is Db] IIIA T135°C Dc IP67

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

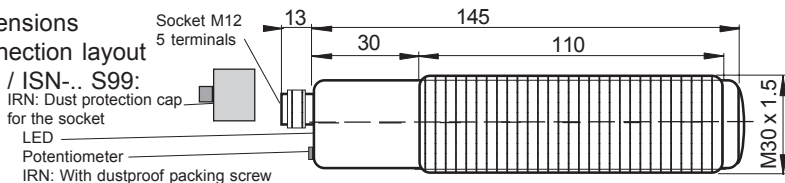
Technical Data	Type	RLR-2/4/6XC	ISN-2/4/6XC-OP	ISD-2/4/6XC-OP
Type of Ex protection, Gas		NONE	II 3(2)G Ex nA [op is Gb] IIB T4 Gc	II 2(1)G Ex d [op is Ga] IIC T6 Gb
Type of Ex protection, Dust		NONE	II 3(2)D Ex tc [op is Db] IIIA T135°C Dc IP67	II 2(1)D Ex tb [op is Da] IIIB T100°C Db IP67
Applicable in Ex Zones		None	Zones (1), 2, (21), 22	Zones (0), 1, 2, (20), 21, 22
Range (adjustable) (on reflector D=83mm)			IS./RLR-2XC(-OP)=2m IS./RLR-4XC(-OP)=4m IS./RLR-6XC(-OP)=6m	
Response time			IS./RLR-2/4XC(-OP): 5ms, IS./RLR-6XC(-OP): 1ms	
Light source			visible red, 623nm	
Beam pattern (at a distance of 2m)			appr. 12°	
Maximum radiant intensity		NOT LIMITED	<=5mW/mm²	<=5mW/mm²
Maximum radiant power		NOT LIMITED	< 35mW	< 15mW
Supply voltage			24VDC +-10%	
Absolute maximum input voltage Um			30VDC	
Maximum current consumption			45mA ... 60mA	
Maximum power dissipation			1.6W	
Output, series RLR/ISN/ISD-2/4XC(-OP)			1 x PNP, short circuit protected, maximum 100mA	
Output, series RLR/ISN/ISD-6XC(-OP) and S181			1 x Push-Pull, short circuit protected, maximum 100mA	
Output impedance			appr. 15Ω	
Pollution indication output VA			1 x PNP, short circuit protected, maximum 100mA	
Emitter disable input, only types ...-DI			PNP compatible, Ri=10kΩ	
Housing			M30, yellow brass, nickel plated, 6XC with additional optic	
Enclosure rating, at EN 60529		IP 54	IP67	IP67
Shock and vibrating resistance		Vibration: 30g over 20Hz to 2kHz. Shock: 50g for each direction (X, Y, Z)		
Operating temperature range Tamb		-20°C < Tamb < +60°C		
Connection cable		4 + PE x 0,5mm², TPU, oil resistant, shielded, leads numbering marked, L=3m		
Connection cable, types xxx-.-DI		6 + PE x 0,5mm², PVC, shielded, leads numbering marked, L=3m		
Socket, types RLR/ISN-2/4/6XC S99		Socket M12, Lumberg type RSF 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-2/4/6XC-OP S99		- 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-2/4/6XC(-OP) S99		- Cord Set Lumberg RKTS 5-298/xx (straight type), or RKTW/RKWT 5-298/xx (right angle type)		
Options		- Switching frequency: Up to 2kHz, on request - Cable length: Up to 100m, on request - ISD-2/4XC-OP S43 : With additional optic - RLR-2/4XC S109 : Working temperature range -20°C to +100°C - RLR/ISN/ISD-...XC(-OP) S147 : Special gluing of the lenses - RLR/ISN/ISD-2/4XC(-OP) S181 : With push-pull output - RLR/IS-2/4/6XC(-OP) DI : With emitter disable input (not for types S99) - RLR/ISN/ISD-6XC(-OP) S218 : Low profile lens for use with aeration tube		
Function Output and display		 Light beam interrupted LED shows red		
Function at standard supply voltage wiring:		 Light beam reflected by the triple mirror LED shows green or yellow		
+24VDC 0V Output Pollution indication output Disable input (only -DI) NC (to connect at 0V) PE Cable shield	Cable 1 2 3 4 5 6 yel-grn white	Socket 1 3 4 2 - - 5 -		
+24VDC 0V Output Pollution indication output Disable input (only -DI) NC (to connect at 0V) PE Cable shield	Cable 2 1 3 4 5 6 yel-grn white	Socket 3 1 4 2 - - 5 -		

ISD-XC-OP_e3/2024-03-04/MP

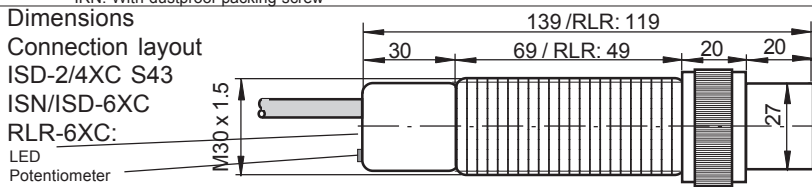
Dimensions	145	IS..-2/4XC	IS..-2/4XC-DI
Connection layout	30 110	+24VDC	1
RLR / ISN / ISD:		0V	2
		Output	3
		Pollution Out	4
		DI	5
		PE	yellow-green yellow-green



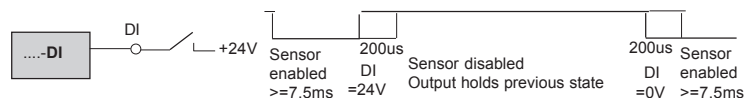
Dimensions	145	+24VDC	1	brown
Connection layout	30 110	Pollution Out	2	white
RLR / ISN... S99:		0V	3	blue
IRN: Dust protection cap		Output	4	black
for the socket		PE	5	grey
LED				
Potentiometer				
IRN: With dustproof packing screw				



Dimensions	139 / RLR: 119	IS..-2/4/6XC	IS..-2/4/6XC-DI
Connection layout	30 69 / RLR: 49 20 20	+24VDC	1
ISD-2/4XC S43		0V	2
ISN/ISD-6XC		Output	3
RLR-6XC:		Pollution Out	4
		DI	5
		PE	yellow-green yellow-green



....-DI (with optional Disable Input)			
Uin:	18V-28VDC, DI=+24V=Disable		
Response time:	<=200us		
Hold time:	>=7.5ms, DI = 0V=Enable		



ATEX related designations:		
CE 1258	Manufacturer with address	Electrical data according to the chart
Type ISD...-OP:	II 2(1)G Ex d [op is Ga] IIC T6 Gb	EC certification number: BVS 10 ATEX E 130 X
	II 2(1)D Ex tb [op is Da] IIIB T100°C Db IP67	EC certification number: BVS 10 ATEX E 130 X
Type ISN...-OP:	II 3(2)G Ex nA [op is Gb] IIB T4 Gc	Declaration by manufacturer
	II 3(2)D Ex tc [op is Db] IIIA T135°C Dc IP67	Declaration by manufacturer
Tamb: -20°C < Tamb < +60°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 applied with sensors with certificated limited optical power)		

Equipotential Bonding prescription for Ex Devices:		
	Ex Zone	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.

Operating Manual / EC-Declaration of Conformity:

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 $U_m=30VDC$ 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.

Type ISD-XC-OP: Applicable in Ex zones 1, 2, 21, 22. The limited optical radiation can operate into hazardous locations 0 or 20.

Type ISN-XC-OP: Only applicable in Ex zones 2, 22. The limited optical radiation can operate into hazardous locations 1 or 21.

Type ISN-XC-OP S99: 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. The load on the output must be connected to 0V.

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 work 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, typesXC-DI (Not for types S99/109): 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 $\geq 7.5ms$ (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-XC-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, ATEX 118a, single directive 1999/92/EC.

The sensor and the fibre optic are conform to the following standards: EN IEC 60079-0:2018, EN 60079-1:2014, EN 60079-15:2010, EN 60079-28:2015, EN 60079-31:2014, 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: 2004/108/EC, 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-Declaration of conformity

Model ISD: EC-Certification No. BVS 10 ATEX E 130 X. DEKRA. Model ISN: ATEX declaration by manufacturer at 2014/34/EU. ATEX certification of quality type production of Ex devices at the 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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