

Original Operating Manual: Reflective light barriers RLS-15 & RLN-15-OP

RLS-15**Housing M18****RLN-15-OP**



- Type RLN-15-OP: For use in Ex zones (1), 2, (21), 22, optical radiation can operate into Ex Zones 1 and 21
- With potentiometer for adjustment
- Light barriers for industrial applications with long detection range



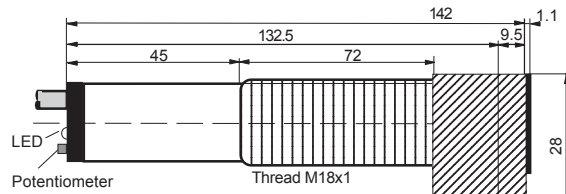
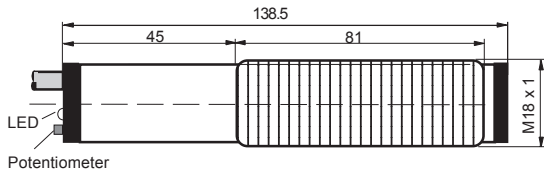
II 3(2)G Ex nA [op is Gb] IIB T4 Gc
II 3(2)D Ex tc [op is Db] IIIA T135°C Dc IP67

Technical data	Type	RLS-15	RLN-15-OP
Type of Ex protection Gas, according to 2014/34/EU		NONE	II 3(2)G Ex nA [op is Gb] IIB T4 Gc
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
For use in Ex Zones		NONE	(1), 2 und (21), 22
Maximum nominal detection range ^{Note 1}		appr. 150cm (on reflector D=83mm)	
Minimum detection range		15cm, (distance sensor to reflector)	
Minimum detectable object size		dependent on the reflector diameter	
Light source		visible red, 623nm	
Optical directional angle		appr. 12°	
Maximum optical radiant power		NOTLIMITED	<=35mW
Maximum optical radiant intensity		NOTLIMITED	<=5mW/mm ²
Response time		5ms	
Power up delay time		500ms	
Absolute maximum supply voltage U _m		30VDC	
Supply voltage		24 VDC +/-10%	
Current consumption		65mA	
Maximum power dissipation		1.72W	
Output		PNP type, 50mA, short circuit protected	
Housing		M18, Ms 58 nickel plated, PVC, PUR	
Enclosure rating, at EN 60529		IP65	IP67
Vibration and shock resistance		Vibration: 30g over 20Hz to 2kHz. Shock: 100g for 3ms	
Working ambient temperature range T _{amb} ^{Note 2}		-10°C up to +60°C	-10°C up to +50°C
Storage temperature range		-40°C ... +70°C	
Connection cable		3 x AWG24 (0.2mm ²), shielded, special PVC, length: 3m	
Potentiometer for adjustment		yes	
Accessories, included, all types		- 2x nuts M18	
Accessories, not included, RLN-15-OP-S096/S099		- 1x Connector 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. - 1x Protection cap for the sensor socket.	
Accessories, not included		- 1x Reflector, diameter 50mm or 83mm	
Accessories, not included, types RL*-15(-OP)-S096/S099		- Cord set with connector M12. Straight type: RKTS 5-299/..M or right angle type: RKWTH 5-299/..M, Lumberg M12/5P	
Options		- RLN-15-OP- S096 : Cable length 10cm, with socket M12/5 Pins, Lumberg type RSTS 5-298 - RL*-15(-OP)- S099 : Socket M12, male receptacle, type Lumberg RSF 5-polig, without potentiometer and LED - RL*-15/ 90° -OP: 90° viewing angle - RL*-15- VA (-OP): With pollution indication output "VA", PNP, 50mA - RL*-15/ 90°-VA -OP- S096 : 90° viewing angle, with pollution indication output "VA", Cable length 10cm, with socket M12/5 Pins	
Function and LED indication:		<p>LED OFF</p>	<p>LED lights red RL*-15-VA(-OP): LED lights green or yellow</p>
Output function and wiring:		<p>PNP=OFF</p>	<p>PNP=ON</p>
Function: Cable lead: Socket S096/S099:			
+24VDC = brown / brown Pin-No: 1			
0V = blue / black Pin-No: 3			
Output = black / red Pin-No: 4			
Output VA = grey / orange Pin-No: 2 (optional)			
PE -- -- Pin-No: 5			
Connect the housing to PE			
ATEX related designations		C E Manufacturer with address Type RLN: II 3(2)G Ex nA [op is Gb] IIB T4 Gc Declaration by II 3(2)D Ex tc [op is Db] IIIA T135°C Dc IP67 manufacturer, 2014/34/EU and DEKRA Test and Assessment Report BVS PP 10.2233 EG T _{amb} : -10°C < T _{amb} < +50°C Electrical data, according to the charts Date of production: Numerals 5 to 8 of the serial number (year/calendar week)	
Note 1:		Reflector D=83mm: Range: 180cm	
Range on reflectors, round, with different diameters		Reflector D=50mm: Range: 140cm	
		Reflector D=30mm: Range: 70cm	
Note 2: Note 1: At ambient temperatures less than +5°C, the cable must not be agitated.			

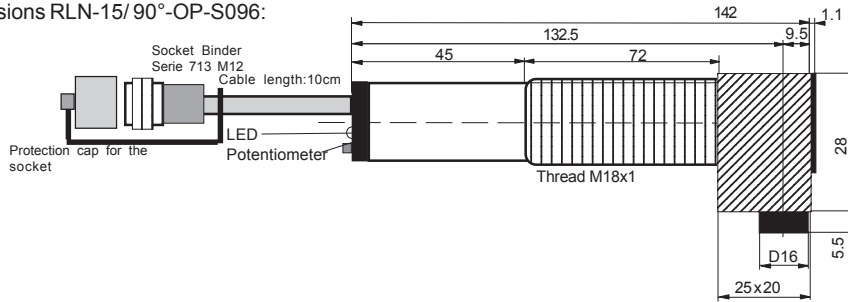
RLN-15-OP_e6/2022-01-10/MP

Dimensions RLS/RLN-15(-OP):
(RL*-15(-OP)-S099: With socket, without LED and Potentiometer)

Dimensions with 90° viewing angle,
Types:RL*-15/90°(-OP)

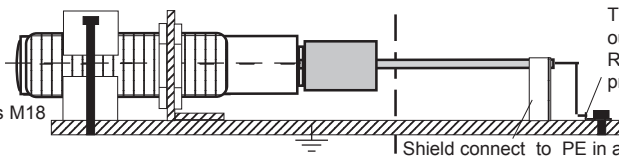


Dimensions RLN-15/90°-OP-S096:



Equipotential Bonding for
Ex Devices RLN:

The local equipotential bonding
have to be done with conductive
corrosion-resistant clamps or nuts M18



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

Shield connect to PE in a wide area

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

Ex protection:

General regulations for all types of Ex devices:
It is necessary to take into consideration the valid international and national rules and regulations (EN 60079-14). The maximum rated supply 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. At devices without PE terminal, the local equipotential bonding have to be done with conductive corrosion-resistant clamps or nuts M18 over 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 housings. All cable terminals must be connected outside hazardous locations. Other than original manufacturer, additional optical lenses are not allowed in hazardous locations.

Type RLN-15(/90°)-OP: ONLY applicable in Ex zones 2 and 22. The limited optical radiation can operate into hazardous locations 1 or 21 through a certificated viewing glass.

Type RLN-15(/90°)-OP-S096/S099: ONLY applicable in Ex zone 2 and 22 hazardous locations. 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), RKKWTH 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 socket 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. Since the angle of beam spread is relatively small, the sensor has to be mounted stable and vibration-free.

Function principals

The sensor can only be driven with a glass pearl reflector or a triplex mirror. Only 2 times broken light beams will be detected.

Function:

If the light beam is not interrupted he LED lights on (Types RL*-15(-OP)-S099) without LED) and 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.

Optional pollution indication output "VA", only RL*-15-VA(-OP):

The devices RL*-15-VA(-OP) have a 2-color indication LED. If the light beam is not interrupted and the lens and the reflector are not polluted the LED lights green. If the light beam is interrupted the LED lights red. If the lense or the reflector are polluted, the LED shows yellow and the VA output switches to ON (+24V). This function gives the possibility to recognize pollutions in a short time.

Potentiometer adjustment (Not for types RL*-15(OP)-S099)

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.

Maintenance:

No special maintenance is required. If the lense or the reflector becomes dirty, they should be cleaned with a non-aggressive solvents. Equipment must only be repaired by the manufacturer.

General safety instructions:

Types RLN-15(/90°)-OP-S096/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 cordsets or protection caps 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, single directive 1999/92/EC.

The sensor is conform to the following standards:

EN 60079-0:2012 + A11:2013, EN 60079-15:2010, EN 60079-28:2007, EN 60079-31:2010, EN 60825-1:2006, EN 60825-2:2004; EN 60529:2014; 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 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:

Models RLN: ATEX declaration by manufacturer according to the ATEX directive 2014/34/EU. Optical limited power at Test and Assessment Report BVS PP 10.2233 EG.

ATEX certification of quality type production of Ex devices according to the directive 2014/34/EU: Certification No.: SEV 21 ATEX 4580, QAR No.: CH/SEV/QAR21.0009/00, CB: Eurofins Electric & Electronic Product Testing AG, Luppenstrasse 3, CH-8320 Fehraltorf. Ident. No.: 1258. 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

RLN-15-OP_e6/2022-01-10/MP

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