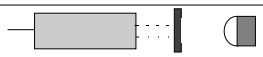
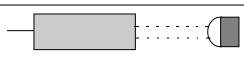
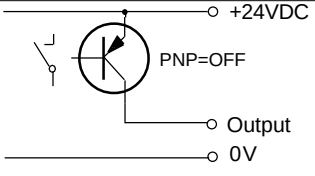
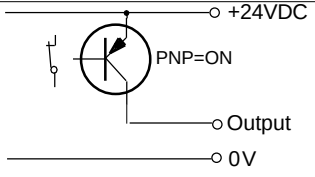
ISO 9001:2008 / ATEX

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

RLS-15 Housing M18 RLN-15-OP

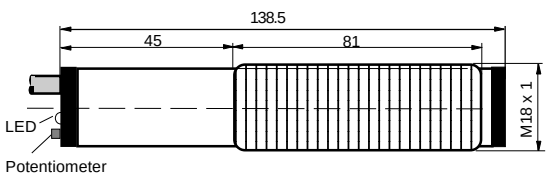
- Type RLN-15-OP: For use in Ex zones (1), 2, (21), 22, optical radiation can operate into Ex Zones 1 and 21
- With potentiometer for adjustment
- Light barriers for industrial applications with long detection range

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

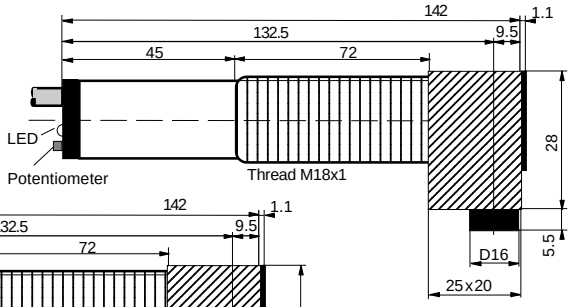
Technical data / Type	RLS-15	RLN-15-OP
Type of Ex protection Gas, according to 2014/34/EU	NONE	II 3(2)G Ex nA [op is Gb] IIB T4 Gc
Type of Ex protection Dust, according to 2014/34/EU	NONE	II 3(2)D Ex tc [op is Db] IIIA T135°C Dc IP67
For use in Ex Zones	NONE	(1),2 und (21), 22
Maximum nominal detection range[Note1]	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	NOT LIMITED	<=35mW
Maximum optical radiant intensity	NOT LIMITED	<=5mW/mm²
Response time	5ms	
Power up delay time	500ms	
Absolute maximum supply voltage Um	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 (0.2mm²), 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:	 LED OFF RL*-15-VA(-OP): LED lights red	 LED lights red RL*-15-VA(-OP): LED lights green or yellow
Output function and wiring: 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 manufacturer, 2014/34/EU II 3(2)D Ex tc [op is Db] IIIA T135°C Dc IP67 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: Range on reflectors, round, with different diameters	Reflector D=83mm: Range: 180cm Reflector D=50mm: Range: 140cm Reflector D=30mm: Range: 70cm	
Note 2: Note 1: At ambient temperatures less then +5°C, the cable must not be agitated.		

RLN-15-OP_e4/2014-10-27/HB

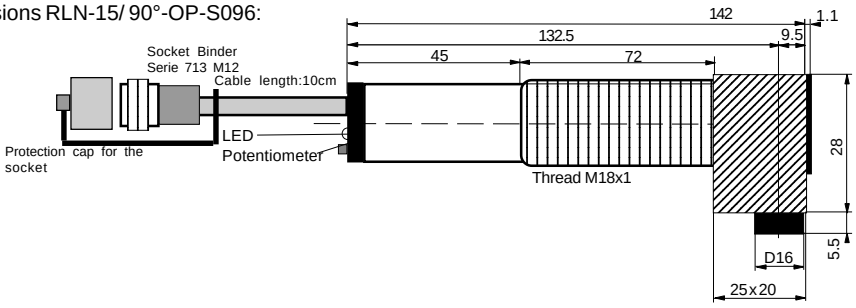
Dimensions RLS/RLN-15(-OP):
(RL*-15(-OP)-S099: With socket, without LED and Potentiometer)



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

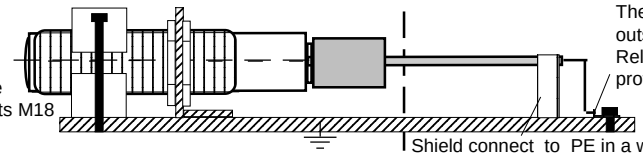


Dimensions RLN-15/ 90°-OP-S096:



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.

Operating Manual, EU - 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 Um = 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 then 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), 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 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, ATEX 118a, single directive 1999/92/EC.
The sensor is conform to the following standards:
EN 60079-0:2012, 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:

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, 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:

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