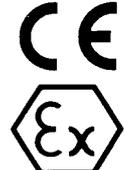


Original operating manual:

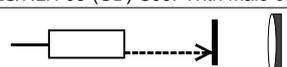
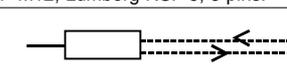
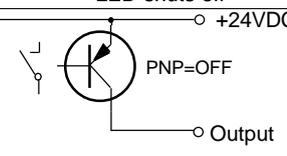
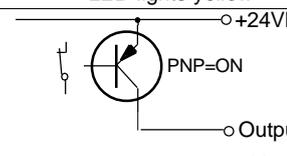
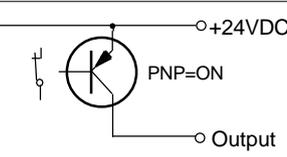
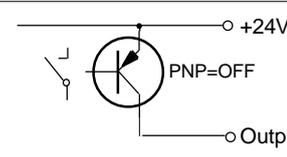
Reflective light barriers RLS/RLN/RLD-08(-GD)

RLD-08-GD-S***
Housing M18
RLN-08-GD-S***


- Series RLD and RLN: ATEX certified
- Series RLD: For use in Ex zones 1, 2, 21, 22
- Series RLN: For use in Ex zones 2, 22
- Short response time
- Type RLS-08-S90, with extended temperature range : -20°C up to +100°C
- Robust light barriers for industrial applications


 II 2G Ex d IIC T6 Gb
 II 2D Ex tb IIIB T100°C Db IP67

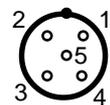
 II 3G Ex nA IIB T4 Gc
 II 3D Ex tc IIIA T135°C Dc IP67

	Type	RLS-08-S***	RLN-08-GD-S***	RLD-08-GD-S***																														
Technical data		S***: Designation of options																																
Type of Ex protection Gas, according to 94/9/EC		NONE	II 3G Ex nA IIB T4 Gc	II 2G Ex d IIC T6 Gb																														
Type of Ex protection Dust, according to 94/9/EC		NONE	II 3D Ex tc IIIA T135°C Dc IP67	II 2D Ex tb IIIB T100°C Db IP67																														
For use in Ex zones		NONE	Zones 2, 22	Zones 1, 2, 21, 22																														
Range		80mm, (on reflective foil, type 3M 104-R00821, 18mm x 18mm)																																
Potentiometer for fine adjustment		yes	no (RLN-08-GD-S96: yes)	no																														
Light source		visible red light 623nm																																
Maximum optical radiant intensity		not limited	<=5mW/m ²	<=5mW/m ²																														
Maximum optical radiant power		not limited	< 35mW	< 15mW																														
Optical aperture angle		ca.8°																																
Response time		1ms (500Hz)																																
Power-up delay time		500ms																																
Supply voltage		24VDC +10%																																
Maximum permissible voltage Um		30VDC																																
Current consumption		30mA																																
Maximum power dissipation		840mW																																
Output		PNP, max. 100mA, short-circuit proof																																
Utilization category, according to EN 60947-5-1		DC13																																
Housing		M18, brass 58, nickel plated																																
Enclosure rating, according to EN 60529		IP 65	IP 67	IP67																														
Ambient operating temperature range T _{amb}		-20°C up to +60°C																																
Storage temperature range		-20°C ... +70°C																																
Relative humidity		10% ... 90%, noncondensing																																
Vibration and shock resistance		Vibration: 30g over 20Hz to 2kHz. Shock: 100g for 3ms																																
Pollution degree, according to EN 60664-1		4																																
Categorization, according to EN 60947-5-2		RL*-08-GD: T3A18BP1 / RLS/RLN-08(-GD)-S96/S99: T3A18BP2																																
Connection cable, type		3/4 x AWG24/0.25mm ² , Special-PVC/PVC, shielded																																
Connection cable, length		3m																																
Connector, types RLS/RLN-08(-GD)-S99		Male plug M12, Lumberg RSFM 5, 5-pins		--																														
Cable with connector, RLS/RLN-08(-GD)-S96		Cable 10cm with male plug M12 RSTS 5-298, 5-pins		--																														
Accessories, all types, included		- 2x nuts M18 (or 1x clamp, on request)																																
Accessories, only type RLN-08-GD-S99, included		- 1x 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. - 1x Protection cap for the sensor connector.																																
Accessories, only types RLS/RLN-08(-GD)-S96/-S99 not included		- Single ended cordset, Lumberg M12/5P, straight type: RKTS 5-298/..M or right angle type: RKWTH 5-298/..M																																
Accessories, all types, not included		- Reflectors - 90° deviation mirror for screwing on: Type: U90M18/40.																																
Options		- RLS-08-S90: Extended operating temperature range: -20°C up to +100°C, cable length: 1.2m. - RLS/RLN-08(-GD)-S96: Cable length: 10cm with male connector M12, cord set Lumberg RSTS 5-298, 5 pins. - RLS/RLN-08(-GD)-S99: With male connector M12, Lumberg RSF 5, 5 pins.																																
Function		 																																
LED indication: RLS/RLN-08(-GD)-S99: Without LED, without potentiometer		Light beam interrupted LED shuts off																																
		Light beam free LED lights yellow																																
Assignment, for standard output function:		<table border="0" style="width: 100%;"> <tr> <td>Function:</td> <td>RLS-08</td> <td>RLN/RLD</td> <td>S96</td> <td>S99</td> </tr> <tr> <td>+24VDC</td> <td>brown</td> <td>brown</td> <td>1/brown</td> <td>1/brown</td> </tr> <tr> <td>0V</td> <td>blue/black</td> <td>blue/black</td> <td>3/blue</td> <td>3/blue</td> </tr> <tr> <td>Output</td> <td>black/red</td> <td>black/red</td> <td>4/black</td> <td>4/black</td> </tr> <tr> <td>PE</td> <td>Housing</td> <td>grey/orange</td> <td>5/grey</td> <td>5/grey</td> </tr> <tr> <td>Cable shield</td> <td>white or blank</td> <td></td> <td></td> <td></td> </tr> </table>			Function:	RLS-08	RLN/RLD	S96	S99	+24VDC	brown	brown	1/brown	1/brown	0V	blue/black	blue/black	3/blue	3/blue	Output	black/red	black/red	4/black	4/black	PE	Housing	grey/orange	5/grey	5/grey	Cable shield	white or blank			
Function:	RLS-08	RLN/RLD	S96	S99																														
+24VDC	brown	brown	1/brown	1/brown																														
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Assignment, for inverted output function:		<table border="0" style="width: 100%;"> <tr> <td>Function:</td> <td>RLS-08</td> <td>RLN/RLD</td> <td>S96</td> <td>S99</td> </tr> <tr> <td>+24VDC</td> <td>blue/black</td> <td>blue/black</td> <td>3/blue</td> <td>3/blue</td> </tr> <tr> <td>0V</td> <td>brown</td> <td>brown</td> <td>1/brown</td> <td>1/brown</td> </tr> <tr> <td>Output</td> <td>black/red</td> <td>black/red</td> <td>4/black</td> <td>4/black</td> </tr> <tr> <td>PE</td> <td>Housing</td> <td>grey/orange</td> <td>5/grey</td> <td>5/grey</td> </tr> <tr> <td>Cable shield</td> <td>white or blank</td> <td></td> <td></td> <td></td> </tr> </table>			Function:	RLS-08	RLN/RLD	S96	S99	+24VDC	blue/black	blue/black	3/blue	3/blue	0V	brown	brown	1/brown	1/brown	Output	black/red	black/red	4/black	4/black	PE	Housing	grey/orange	5/grey	5/grey	Cable shield	white or blank			
Function:	RLS-08	RLN/RLD	S96	S99																														
+24VDC	blue/black	blue/black	3/blue	3/blue																														
0V	brown	brown	1/brown	1/brown																														
Output	black/red	black/red	4/black	4/black																														
PE	Housing	grey/orange	5/grey	5/grey																														
Cable shield	white or blank																																	
																																		
																																		

Assignment, cable types:

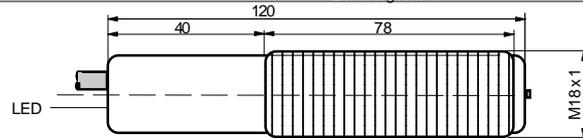
Function:	RLS, type 1:	RLS, type 2:	RLN/RLD, type 1:	RLN/RLD, type 2:
+24VDC	brown	brown	brown	brown
OV	blue	black	blue	black
Output	black	red	black	red
PE	Housing	Housing	grey	orange
Cable shield	white/blank	white/blank	white/blank	white/blank

Assignment, types RLS/RLN-08(-GD)-S096/S099:

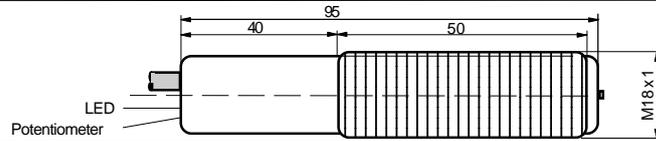


Pin-No:	Function
1 / brown	+24VDC
2 / white	NC
3 / blue	OV
4 / black	Output
5 / grey	PE

Dimension:
RLD-08-GD
RLN-08-GD:

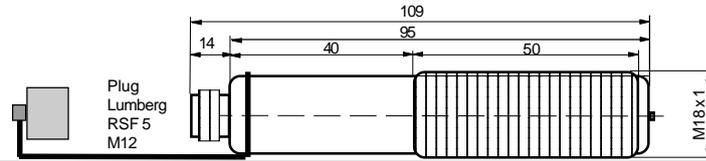


Dimension:
RLS-08:



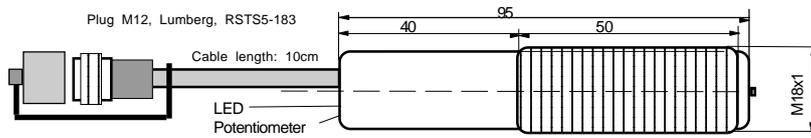
Dimension:
RLN-08-GD-S99,
RLS-08-S99:

RLN: Dust protection cap for the plug



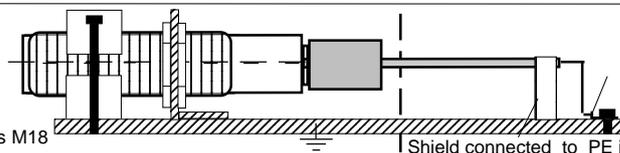
Dimension:
RLN-08-GD-S96,
RLS-08-S96:

RLN: Dust protection cap for the plug



Equipotential Bonding for Ex Devices:

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 connected to PE in a wide area

EX related markings

CE 0158

Types RLD: Ex d IIC T6 Gb,
Types RLN: II 3G Ex nA IIB T4 Gc,
Types RLD: ATEX certification
Types RLN: ATEX 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 used with sensors with certificated limited optical power)



Manufacturer with address

Ex tb IIIB T100°C Db IP67
II 3D Ex tc IIIA T135°C Dc IP67
No: BVS 10 ATEX E 130 X DEKRA
in accordance with 94/9/EC
Electrical data according to the table "Technical data"

Operating Manual / EC - Declaration of Conformity:

Operating Manual:

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. 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 RLD-08-GD-S***: Only fur using in Ex zones 1, 2, 21, 22. Types RLN-08-GD-S***: Only fur using in Ex zones 2, 22. Types RLN-08-GD-S96/S99: Only fur using in Ex zones 2, 22. 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 RKT5 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. Because this sensor has a very small aperture angle, mount the sensor and the reflection mirror free from vibrations and shocks.

Function principals

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

Function at standard connection of the supply voltage:

If the light beam is free, the LED shows yellow (Types RLS/RLN S99 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 OV.

Function at reversed polarity of the supply voltage:

If the light beam is interrupted The LED shows yellow (Types RLS/RLN S99 without LED) and the output switches to ON (+24V). If the light beam is free, the output switches OFF. The load must be connected between the output and OV.

Potentiometer adjustment (Not for types RLD and RLS/RLN S99)

For the detection of thin, transparent films, it is necessary the potentiometer by the following procedure:

- Mount the sensor and the reflector.
- 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 lenses becomes dirty, they should be cleaned with a non-aggressive solvents. Equipment must only be repaired by the manufacturer.

General safety instructions

Series RLN-08-GD-S96/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 sensors are conform to the following standards: IEC/EN 60079-0:2012, IEC/EN 60079-1:2007, EN 60079-15:2010, IEC/EN 60079-28:2007, IEC/EN 60079-31:2010, 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: 94/9/EC, 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:

ATEX certification, types RLD: II 2G Ex d IIC T6 Gb, II 2D Ex tb 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 RLN: II 3G Ex nA IIB T4 Gc, II 3D Ex tc op is IIIA T135°C Dc IP67. ATEX declaration by manufacturer in accordance to 94/9/EC. IECEx/ATEX certification of quality type production of Ex devices in accordance to the directive 94/9/EC, CE 0158. Certification No: BVS 12 ATEX ZQS / E118, QAR No. DE/BVS/QAR13.0004/01. 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:

Hans Bracher, Matrix Elektronik AG

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