

# Retroreflective Light Barrier RLS/RLN/RLD-2

## RLD-2-GD



**EEx d IIC T6**  
**II 2 G**  
**II 1/2 D IP67 T90°C**

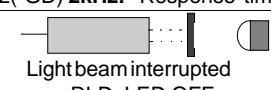
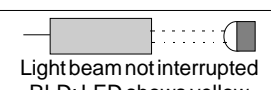
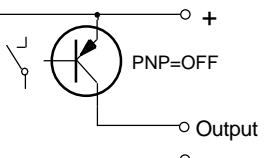
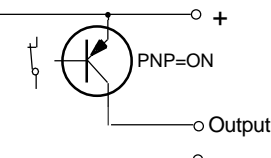
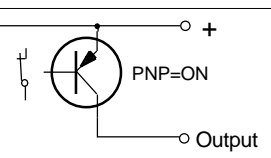
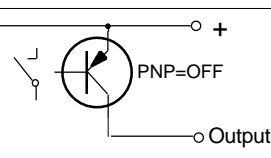

## Housing M18

- Type RLS-2 S90 with extended temperature range -20°C to +100°C
- Type RLD, applicable in Ex Zones 1, 2, 20/21, 22
- Type RLN, applicable in Ex Zones 2, 22
- short response time
- robust sensor for industrial applications

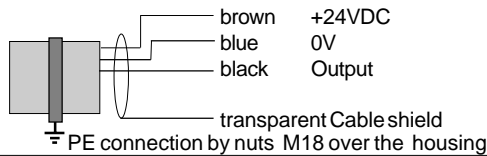
## RLN-2-GD



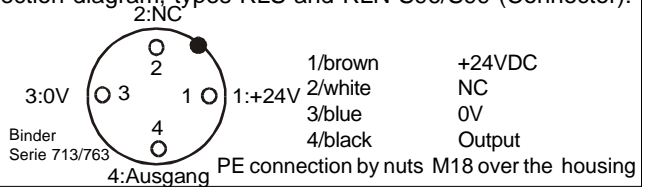
**EEx nA IIC T6**  
**II 3 G**  
**II 3 D IP67 T90°C**

Technical Data	Type	RLS-2	RLD-2-GD	RLN-2-GD
Type of Ex protection		none	EEx d IIC T6	EEx nA IIC T6
Applicable in Ex zone		none	Zones 1 + 20/21	Zones 2 and 22
Category / Grouping		--	II 2 G + II 1/2 D IP67 T90°	II 3 G + II 3 D IP67 T90°
Range, with/without 90° deviation mirror		25/35cm (on reflector D=50mm), 50/75cm (on reflector D=83mm)		
Minimum detectable object size		dependent on the reflector size		
Light source		visible redlight, 623nm		
Optical beam pattern (Distance 20cm)		appr.10°		
Response time		1ms		
Switching frequency		500Hz		
Supply voltage		24 VDC (20 to 28VDC)		
Current consumption		30mA / (RL-2(-GD) 2kHz=50mA)		
Maximum power dissipation		840mW / (RL-2(-GD) 2kHz=1.4W)		
Output		PNP, 100mA, short circuit protected		
Housing		M18, Ms 58 yellow brass, nickel plated, (PVC-Rear part, only RLS/RLN)		
Protection rating at EN 60529		IP 65	IP 67	IP67
Ambient temperature range TA		-20°C < TA < +60°C	-20°C < TA < +50°C	-20°C < TA < +60°C
Connection cable		3 x AWG24 (0.2mm <sup>2</sup> )+ Shield / L=3m		
Cable with connector, RLN-..S96		--	--	Binder series 763/4P (79-3529-33-04)
Connector connection, RL-..S99		Binder series 713/4P (09-0431-81-04)	--	Binder series 713/4P (09-0431-81-04)
Potentiometer, for fine adjustment		yes (not type S90/99)	no	yes (not type S99)
Accessories included, all types		- 2x nuts M18		
Accessories included, only RLN- S96/S99		- 1x Safety lock device, mount at the cable connection, for locking the connection. (black synthetic device) - 1x Warning plate "Do not open/close when supply voltage connected", self-sealing, for gluing on the cable connector. - 1x Protection cap for the sensor connector.		
Accessories not included		- 1x Reflector, Diameter 50mm or 83mm - 90° deviation mirror for screwing on: Type: U90M18/40 - Cable connector series 763 for RLN-2-GD S96 - Cable connector series 713, M12, 4 terminals for RL-2 S99		
Options		- RLS-2- <b>S90</b> : Temp. Range TA = -20°C to + 100°C, Cable length: 40cm - RLN-2-GD <b>S96</b> : Cable length: 10cm with connector M12/4 terminals Connector: Binder series 763, 79-3529-33-04 - RL-2(-GD) <b>S99</b> : Connector M12: Binder 713, 4 terminals, 09-0431-81-04 Types S99: without Potentiometer and LED - RL-2(-GD) <b>1kHz</b> : Response time = 472us - RL-2(-GD) <b>2kHz</b> : Response time = 241us		
Function and LED Indication: RL-2 S99: without LED)		 Light beam interrupted RLD: LED OFF		 Light beam not interrupted RLD: LED shows yellow
Output function on standard connection of the supply voltage:: 1 / brown = +24VDC 3 / blue = 0V 4 / black = Output 2 / = NC Cable shield on PE, Housing on PE		 PNP=OFF Output		 PNP=ON Output
Output function on inverted connection of the supply voltage: 1 / brown = 0V 3 / blue = +24VDC 4 / black = Output 2 / = NC Cable shield on PE, Housing on PE		 PNP=ON Output		 PNP=OFF Output
ATEX related designations		CE 0158  Manufacturer with address Device type RLD: II 2 G, II 1/2 D IP67 T90° / RLN: II 3 G, II 3 D IP67 T90° Certification number: RLD: DMT 99 ATEX E 056/N3 TA: -20°C < TA < 50° or 60°C Electrical data according to the chart Date of construction: Numeral 4 and 5 of the serial number		

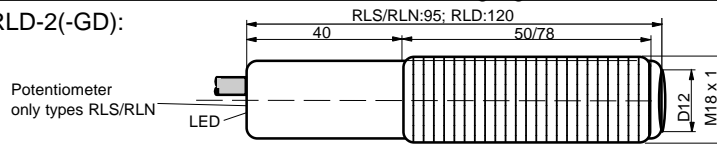
Connection diagram, Cable:



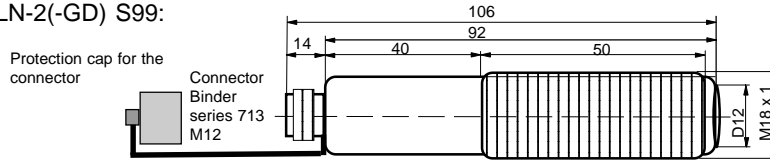
Connection diagram, types RLS and RLN S96/S99 (Connector):



Dimensions RLS/RLN / RLD-2(-GD):

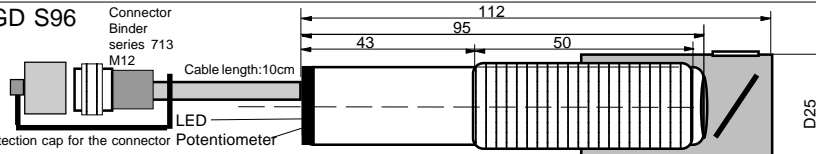


Dimensions RLS/RLN-2(-GD) S99:



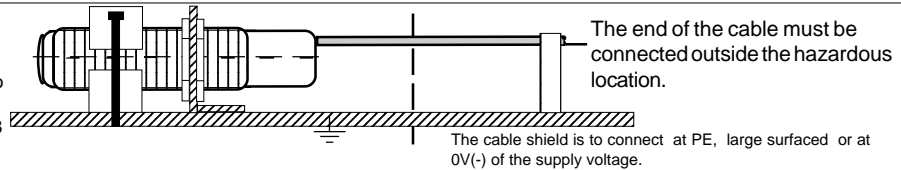
Dimensions RLN-2-GD S96

(with screwed on 90° deviator, accessory optional)  
Nr.:U-90/M18/40):



Equipotential Bonding pre-scription:

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



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. The local equipotential bonding have to be done with conductive corrosion-resistant clamps or nuts M18 over the housing. The internal protective earth (PE) is solid connected with the housing. The cable have to be installed and protected against damages. To connect cables inside hazardous locations only use certificated Ex e housings. All cable terminals must be connected outside hazardous locations. Other then original manufacturer, additional optical lenses are not allowed in hazardous locations.

**Type RLD-2-GD:** Applicable in Ex Zones 1 and 20/21. For the zones 20/21 only the front part (optical lens) can be mounted inside the zone 20. The rear part with the cable must be in the zone 21.

**Type RLN-2-GD:** Only applicable in Ex zones 2 and 22.

**Type RLN-2-GD S96/S99:** Only applicable in Ex zones 2 and 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. Only connectors, Binder series 713/763, are allowed. It is necessary to take into consideration the mounting prescription of the connector manufacturer. In dusty locations, without connected cable connectors, the protection caps must be fitted.

General mounting prescriptions:

Because this sensor has a very small aperture angle, mount the sensor and the reflection mirror free from vibrations and shocks. For connector type sensors use a shielded cable. 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.

Function principals

The sensor can only be driven with 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 not interrupted 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 0V.

Function at standard connection 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 interrupted the output switches OFF. The load must be connected between the output and 0V.

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 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.

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.

Safety Informations

**The sensors types RL-2 must not be used for Accident-Prevention!** In worst case of disturbance, the outputs can show any state. When installing and operating with the sensor, it is necessary to take into consideration the relevant international and other national regulations. ATEX 118a, ElexV, TRbF, TRD, UVV, EX-RL(BGR104), BetrSichV(ATEX137).

Standards met:

- EN 50014, Type RLD: EN 50018, Type RLN: EN 50021
- EN 50281-1-1; EN 61000-6-1/-2, EN 61000-6-3/4; EN 60529
- Ex protection: 94/9/EG (ATEX 100a)
- Machine directive: 98/37/EG
- Low voltage directive: 73/23/EWG, 93/68/EWG
- EMC 89/336/EWG, 91/263/EWG, 92/31/EWG, 93/68/EWG

General Notes

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.

Approvals: DMT 99 ATEX E 056/N3

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 with the ATEX module "Production", declares:

Hans Bracher, Matrix Elektronik AG