

Photoelectric Sensor with Analog Output IRS/IRN/IRD-2LA
IRD-2LA/AI-GD

0158

**II 2 G EEx d IIC T6
II 1/2 D IP67 T90°C**
Housing M30

- With voltage or current loop output available
- Also for using with different types of fibre optics
- Applicable for range measurement
- Applicable as turbidimeter
- Usable for position detection
- Type IRD applicable in Ex Zones 1+20/21
- Type IRN applicable in Ex Zones 2+22

IRN-2LA/AI-GD


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

Technical Data	Type V-Out	IRS-U-2LA	IRN-2LA-GD	IRD-2LA-GD
	Type I-Out	IRS-U-2LAI	IRN-2LAI-GD	IRD-2LAI-GD
Type of Ex protection		none	EEx nA IIC T6	EEx d IIC T6
Applicable in Ex Zones		none	Zones 2 and 22	Zones 1 and 20/21
Category / grouping		--	II 3 G, II 3 D IP67 T90°C	II 2 G, II 1/2 D IP67 T90°C
Output signal range	V-Out	0.05VDC - 10.5VDC (Ripple: <20mV)		
	I-Out	0.1mA - 21mA (Ripple: <40uA), (4mA - 20mA optional)		
Optical range, (adjustable)	V-Out	2.5cm to 50cm / 5VDC/20cm		
(On white paper 80g, 20cm x 30cm)	I-Out	2.5cm to 50cm / 10mA/20cm		
Light source		Infrared, 880nm		
Beam pattern		appr. 12°		
Maximum radiant intensity		4.5mW/mm ²		
Response time		5ms		
Supply voltage		24 VDC (20 to 28VDC)		
Current consumption		maximum 60mA		
Maximum power dissipation		1.4W		
Output	V-Out	PNP, Output impedance appr. 25Ω, RL: 2kΩ to 1MΩ		
	I-Out	NPN, Output impedance appr. 500Ω, RL: 0Ω to 100Ω		
Input, only types IR-...-DI (Disable input)		PNP compatible, Ri 10kΩ		
Housing		M30, yellow brass (Ms 58), nickel plated		
Protection rating at EN 60529		IP 54	IP 67	IP67
Maximum working ambient temperature TA		-20°C < TA < +60°C	-20°C < TA < +50°C	-20°C < TA < +50°C
Connection cable		3+PE x 0,5mm ² , shielded / L=3m		
Connection cable, types IR-...-DI		4 x AWG24 (0,2mm ²), shielded / L=3m, PE at the housing		
Sensor socket, types IRN-...S99		Lumberg, M12 male receptacle, type RSF 5 contacts		
Accessories, all types		- 2 nuts M30 (or 1 clamp on request)		
Accessories, types IRN/IRD-...-GD		- 1x Spare safety screw with packing ring for potentiometer sealing		
Accessories, types IRN-...-GD S99		- 1x Safety lock device, mount at the cable connection, for locking the connection. (black synthetic device) - 1x Warning plate "Do not separate when supply voltage connected", self-sealing, for gluing on the cable connector. - 1x Protection cap for the sensor socket.		

Options

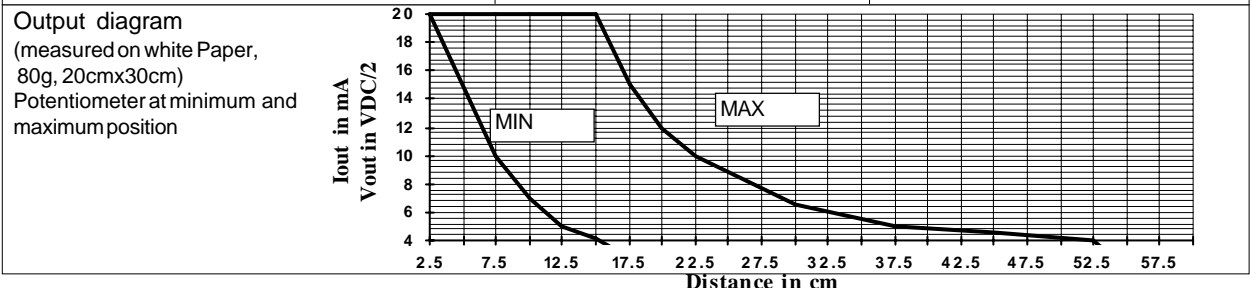
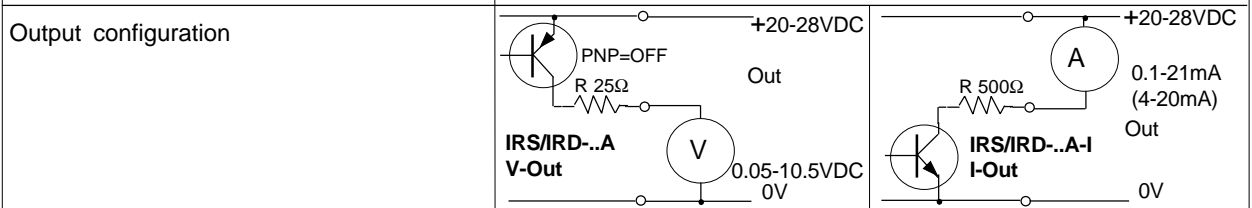
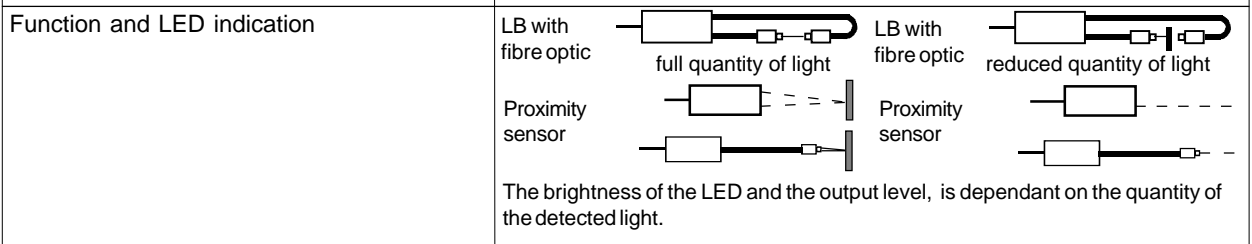
- IR-...-DI (with disable input)
- IR-...-A-I4: Sensors with current output 4 - 20mA
- IRS/IRN/IRD-2L-X: Output function invertible by the polarity of the supply voltage
- IRS-U-2LA S66: With additional lens type DL30, socket type Binder 713/4-terminals with a cord length of 20cm. Nominal range: 75cm.
- IRS/IRN-... S99: Socket types, M12, Lumberg, 5 terminals - IRN-2LAI4-GD S110: With additional optic DS30 and special reflector

ATEX related designations

CE 0158
Device type

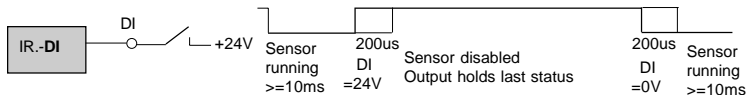
Certification number, type IRD:
TA: -20° < TA < 50°
Date of construction: Numerals 4 to 7 of the serial number

Manufacturer with address
IRD: II 2 G, II 1/2 D IP67 T90°C
IRN: II 3 G, II 3 D IP67 T90°C
DMT 99 ATEX E 056/N1/N4/N5
Electrical data according to the chart

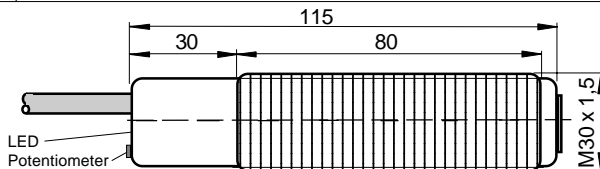


IR.-2LA-DI (Connection disable input DI)

U_{in}: 18V-28VDC, DI=+24V=Inactive
 Reaction time: <=200us
 Hold time: >=10ms, DI = 0V=Aktiv

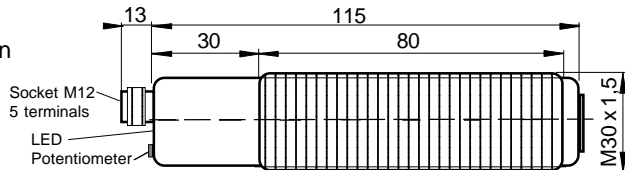


Dimensions and electrical connection
 IRN/IRD-2LA:



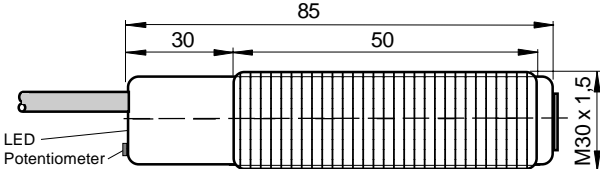
	IRN/IRD-..	IRN/IRD-..-DI
+24VDC	1	brown
0V	2	blue
OUTPUT	3	black
DI	4=NC	grey
PE	yel-grn	at housing

Dimensions and electrical connection
 IRS/IRN-2LA S99:



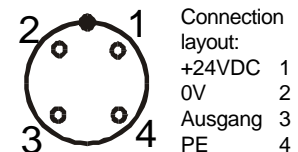
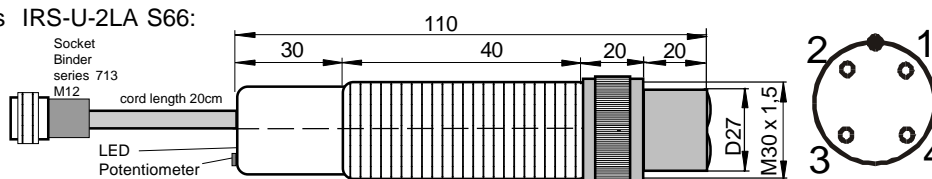
	IRN-... S99	IRN-..-DI S99
1/brown	+24VDC	+24VDC
2/white	NC	DI
3/blue	0V	0V
4/black	OUTPUT	OUTPUT
5/grey	PE	PE

Dimensions and electrical connection
 IRS-U-2LA:

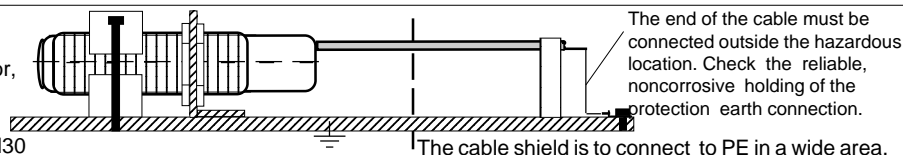


	IRS-..	IRS-..-DI
+24VDC	brown	brown
0V	blue	blue
OUTPUT	black	black
DI	--	grey
PE	yel-grn	at housing

Dimensions IRS-U-2LA S66:



Equipotential Bonding prescription:
 For types without PE at the connector, the local equipotential bonding have to be done with conductive corrosion-resistant clamps or nuts M30



Operating Manual / EC - Declaration of Conformity:

Operating Manual:

Ex protection:

General prescriptions for all Ex types:

It is necessary to take into consideration the valid international and national rules and regulations. The maximum input voltage U_m=30VDC must not be exceeded. The local equipotential bonding have to be done. At sensors with a PE-terminal, the protective earth (PE) is solid connected with the housing. At sensors without a PE-terminal, connect the housing reliable and noncorrosive to the general protection earth by using the nuts M30. The cable have to be protected against damages. To connect cables inside hazardous locations only use certificated EEx e 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. In Ex zones 20/21 and 22, 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: IRD-2LA/AI: Applicable in Ex zones 1, 2 and 20/21, 22. 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: IRN-2LA/AI-GD: Only applicable in Ex zones 2 and 22.

Type: IRN-2LA/AI-GD 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. Lumberg cordsets RKTS 5-186/xx (Straight type) RKTW/RKWTH 5-186/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.

Function

Corresponding to the quantity of detected light, the output of the sensor generates an analog output signal. Without fibre optics or with fibres 2 in 1 type, the sensor is applicable as relative distance detection device or similar applications. With 2-2 type fibres, function as light barrier, the sensor can be used for turbidity measurement or similar applications. Dependent on the selected type, the output generates a voltage signal from 0.1V to 10VDC or a current loop, 0 or 4mA to 20mA. Please check the permissible load for the two different types of outputs. For best measurement results the sensor can be adjusted by the potentiometer.

Sensors with disable input, types IR-...-DI:

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. The response time of the DI-input is 200us. DI= 0V or not connected = emitter enabled
 DI= High (24VDC) = emitter disabled
 For a correct function the sensor must be enabled for at minimum >= 10ms (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.

Nominal range

The nominal range is defined as function "distance measurement" on white paper. At the nominal distance the output level shows the middle of the output range. The real output level is depended on the color, the form, the dimension, and the surface finish of the object.

Fibre optics

For efficiently detection solutions look for our multiple program of fibre optics, also for high temperature areas.

Maintenance

Protect the sensor and the optional fibre optics against pollution. If the fibre optics or the sensor lenses are contaminated, clean with alcohol. Do not use aggressive solvents. Optical fibres can be destroyed by strong solvents. Equipment must only be repaired or serviced by the manufacturer.

Safety Informations

The sensors types IRS/IRN/IRD-.. must not be used for Accident-Prevention! When installing and operating with the sensor, it is necessary to take into consideration the relevant international and other national regulations. ATEX118a, EX-RL(BGR104), ElexV, TrbF, TRD, UVV, BetrSichV(ATEX137), Einzel-RL 1999/92/EG.

Standards met:

- EN 50014, IRD: EN 50018, IRN: 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 neither emit or contain any damaging or siliconized substances. No longer usable or irreparable units must be disposed of in accordance with local waste disposal regulations.

Declaration of Conformity

Approvals: DMT 99 ATEX E 056/N1/N4/N5
 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

IRNSD_ANALOG_2L_GD_e5_DEC.14.05/HB

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