

Original operating manual: Photoelectric sensors with analog output: IRS-0**-LA*-S***

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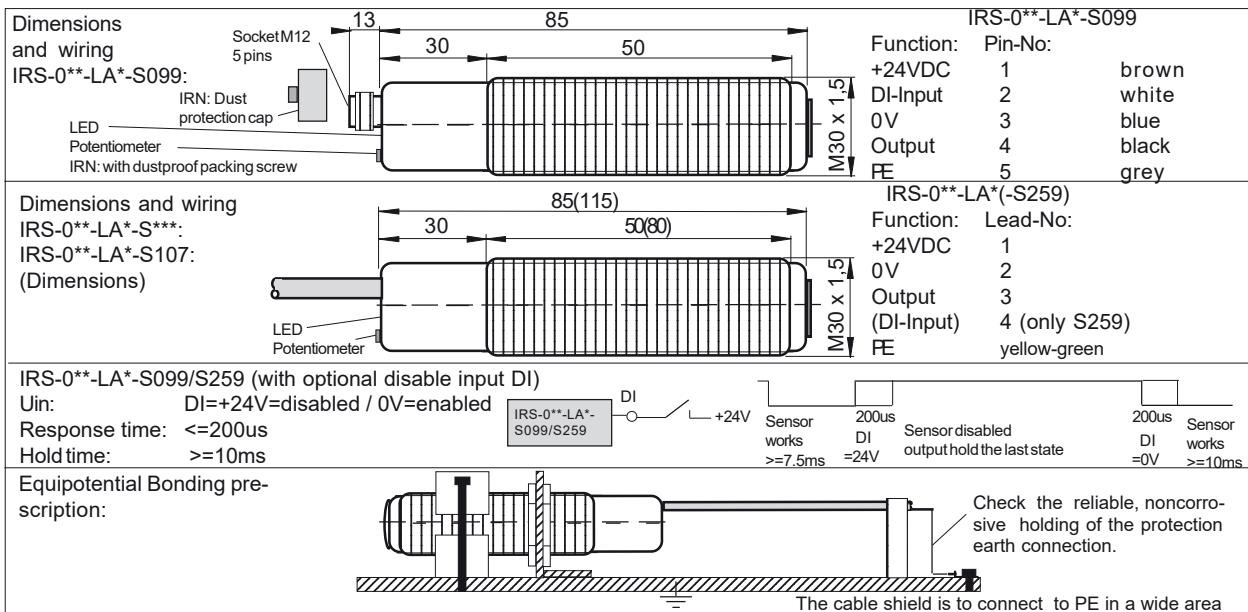
Housing M30



- Also for using with different types of fibre optics
- Measurement range 200mm, 500mm, 1000mm
- IRS-***-LAV-S***: Analog voltage output 0V ... 10VDC
- IRS-***-LAI-S***: Analog current output 0mA ... 20mA
- IRS-***-LA4-S***: Analog current output 4mA ... 20mA
- Applicable for range measurement or position detection

Type	IRS-002-LA*-S***	IRS-005-LA*-S***	IRS-010-LA*-S***
Technical data	LA*= Type of analog output. LAV: Voltage output 0 ... 10V. LAI: current loop output 0mA ... 20mA. LA4: current loop output 4mA ... 20mA		
Type of Ex protection Gas, according to 2014/34/EU	NONE		
Type of Ex protection Dust, according to 2014/34/EU	NONE		
For use in Ex Zones	NONE		
Output signal range	0.03VDC - 10.5VDC(Ripple:<20mV) or 0.06mA - 21mA or 4mA - 20mA		
Voltage output, adjustable, 5VDC at a distance of	200mm	500mm	1000mm
Current output, adjustable, 10mA at a distance of	200mm	500mm	1000mm
Light source	Infrared 870nm		
Optical aperture angle	approx.12°		
Maximum optical radiant power	<=35mW		
Maximum radiant power	<=5mW/mm²		
Response time	5ms (faster response time, on request)		
Power up delay time	500ms		
Supply voltage	24VDC +-10%, Um = maximum 30VDC		
Intrinsic current consumption	max. 60mA		
Maximum power dissipation	1.6W		
Output type, voltage, IRS-0**-LAV	PNP, output impedance appr. 25Ω, RLoad: 2kΩ to 1MΩ		
Output type, current, IRS-0**-LAI/LA4	NPN, output impedance appr. 500Ω, RLoad: 0Ω to 100Ω		
Disable-Input, only types IRS-0**-LA*-S099/S259	PNP compatible, Ri 10kΩ		
Housing	M30, brass Ms 58, nickel plated, head part: Steel optional stainless steel 1.4404, types: IRS-0**-A**-S224		
Enclosure rating, according to EN 60529	IP 67		
Ambient working temperature range Tamb	-20°C up to +50°C		
Storage temperature range	-20°C ... +70°C		
Relative humidity	15% ... 80%		
Vibration and shock resistance	Vibration: 30g over 20Hz to 2kHz. Shock: 100g for 3ms		
Pollution degree, according to EN 60664-1:2007	4		
Device designation, according to EN 60947-5-2	R3A30AP1		
Connection cable	3+PE x 0,5mm²,TPU, shielded, leads numbering marked, oil resistant cable for trailing, L: 3m UL AWM 20236 80°C 30V E63216, CSA AWM 90°C 30V I/II A/B FT1 LL46064		
Connection cable, types IRS-0**-LA*-S259	4+PE x 0,5mm²,TPU, shielded, leads numbering marked, oil resistant cable for trailing, L: 3m UL AWM 20236 80°C 30V E63216, CSA AWM 90°C 30V I/III A/B FT1 LL46064		
Socket, IRS-0**-LA*-S099	Male connector M12, Lumberg RSF 5, 5-leads		
Accessories, all devices	- 2x nuts M30 (or 1 clamp on demand)		
Accessories, not included, only IRS-**-S099	- Single ended cordset, types RKTS 5-298/xx or RKWTH 5-298/xx, Lumberg		
Accessories, not included, all types	- Additional optic, type DL-30: For range extension		
Options	- Cable length: Up to maximum 100m. Designation: IR*-005-LA*(-OP)/K:100m - IRS-0**-LA*-S099: Male connector M12: Lumberg RSF-5, 5 pins and with emitter disable input (DI) - IRS-0**-LA*-S110: With additional optic DL30 and special reflector - IRS-0**-LA*-S155: Response time = 1.5ms - IRS-0**-LA*(-OP)-S224: Housing stainless steel 1.4404 / 316L - IRS-0**-LA*-S259: With emitter disable input (DI) - IRS-0**-LA*-S107: Maximum ambient temperatur 80°C		
Function and LED indication	<p style="text-align: center;">Light beam free</p>		<p style="text-align: center;">Light beam interrupted</p>
	<p>The brightness of the LED and the output level, is dependant on the quantity of the detected light.</p>		No light detected. Output=OFF, LED=OFF
Wiring and connection			
Output diagram (measured on white paper, 80g, 20cm x 30cm) Potentiometer on MAXIMUM			

IRS-0xx-LAx_e2,2017-02-16/HB



Operating manual / EC-/EU-declaration of conformity:

General mounting prescriptions

It is necessary to take into consideration all the valid international and national rules and regulations. Do not exceed the maximum ratings. The maximum input voltage $U_m=30VDC$ must not be exceeded. The electrical connections must be exactly as shown in the connection diagram. The local equipotential bonding have to be done. The protective earth (PE) is solid connected with 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. Additional optical lenses are not allowed. 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 0.03V to 10.5VDC or a current loop, 0.06 or 4mA to 21mA. Please check the permissible load for the two different types of outputs. For best measurement results the sensor can be adjusted by the potentiometer.

IRS-0-LA*-S099/S259: Emitter disable input "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 (Response time: 200us). If only one sensor is activated in the same time, a mutual influence is precluded.

DI= 0V or not connected = emitter enabled
 DI= High (24VDC) = emitter disabled

For a correct function the sensor must be enabled for at minimum $\geq 10ms$ (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 sensors 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.

General safety instructions

The sensor must not be used for fail-safe applications! 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 national regulations.

The sensors are conform to the following standards: 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, 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:

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, declares:

Hans Bracher, Matrix Elektronik AG

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