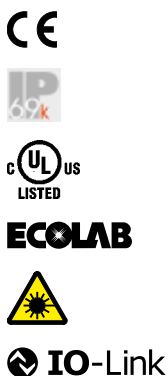


FR 55-RLAP

Distance sensor with a reflector for large distances – Time-of-flight technology



PRODUCT HIGHLIGHTS

- Sensor with large range for anticollision and positioning applications
- IO-Link with many functions for an individual application customisation
- Compact design for an easy integration
- Easy installation and operation via external teach-in
- Clearly visible laser light spot (laser class 1) for a precise alignment and full eye safety

Optical data		Functions	
Measurement range	0.3 ... 70 m ¹	Indicator LED 1, green	Operating voltage indicator
Resolution Q _A	35 mm = 8 μA (11 Bit) ²	Indicator LED 2 yellow	Switching output indicator
Resolution IO-Link	1 mm	Setting measuring range / switching point	Via Teach-in button, control input or IO-Link
Linearity Q _A	± 0.5 % ^{1,3,4}	Adjustment possibilities	Adjustable analogue measurement range Q _A , invertible analogue characteristic, adjustable switching output Q
Linearity IO-Link	50 ... 350 mm	Software functions adjustable via IO-Link (e.g. via SensIO)	Window mode, hysteresis mode or switching point, adjustable mean value filter, delay functions (on/off/pulse), counter; signal quality output in percent via IO-Link
Repeatability	≤ 6 mm ⁵ (see selection table)	Default settings	See selection table
Hysteresis	60 mm		
Type of light	Laser, red 655 nm		
Laser class (IEC 60825-1)	1		
Electrical data		IO-Link	
Operating voltage +U _B	18 ... 30V DC	Communication mode	COM 2
No-load current I ₀	≤ 60 mA	Min. cycle time	3 ms
Output current I _e Q	≤ 100 mA	IO-Link profile	Smart SensorV1.0
Protection circuits	Reverse polarity protection U _B / short-circuit protection (Q)	Resolution distance value	1 mm
Protection class	2	SIO mode	Compatible
Power On Delay	≤ 100 ms	Data storage	Compatible
Switching output Q	1x Auto-Detect (PNP/NPN) ⁶	Specification	V1.1
Output function	N.O./N.C.		
Switching frequency f (ti/tp 1:1) Q	≤ 50 Hz		
Response time Q	10 ms		
Load	≤ 500 Ohm (4 ... 20 mA) ≥ 4 k Ohm (0 ... 10V) ⁷		
Analogue output Q _A	4 ... 20 mA / 0 ... 10V ⁷		
Response time measured value	See table repeatability		
Update rate Q _A	10 ms ⁶		
Mechanical data		Ambient temperature: operation	-30 ... +60 °C ⁹
Dimensions	50 x 50.1 x 23 mm	Ambient temperature: storage	-40 ... +80 °C
Enclosure rating	IP 67 & IP 69K ⁸	Weight (plug device)	42 g
Material, housing	ABS	Resistance to vibration and impacts	EN 60947-5-2
Material, front screen	PMMA		
Type of connection	See selection table		

¹ Reference material: RF250 reflector ² For a max. measurement range of 70 m ³ 0.5 % of the set measurement range, for load 500 Ω ⁴ Min. linearity error 50 mm

⁵ The set measuring range is < 10 m, for further values see diagram ⁶ Auto-Detect: Automatic selection of PNP or NPN by the sensor; PNP or NPN can be fixed

⁷ adjustable via IO-Link, e.g. with SensIO ⁸ With connected IP 67 / IP 69K plug ⁹ UL: max. +45 °C

Measurement range ¹	Analogue output	Switching output	Type of connection	Part Number	Article number
0.3 ... 70 m	4 ... 20 mA	1 x Auto-Detect	Plug, M12x1, 5-pin, IO-Link	FR 55-RLAP-70-PNSIL-L5	621-11028

¹ Reference material: RF250 reflector

Plug connection	Connection, 5-pin, Auto-Detect

Linearity Q_A / digital (typ.) ¹⁰	Light spot size

¹⁰ Linearity deviations can be positive or negative

Repeatability Q_A (typ.) ¹¹	Characteristic analogue curve														
<table border="1"> <thead> <tr> <th>Averaging time</th> <th>Repeatability⁴ [mm], typ.</th> </tr> </thead> <tbody> <tr> <td>10 ms</td> <td>≤ 13</td> </tr> <tr> <td>100 ms</td> <td>≤ 12</td> </tr> <tr> <td>200 ms</td> <td>≤ 11</td> </tr> <tr> <td>.</td> <td>.</td> </tr> <tr> <td>900 ms</td> <td>≤ 7</td> </tr> <tr> <td>1000 ms</td> <td>≤ 6</td> </tr> </tbody> </table>	Averaging time	Repeatability ⁴ [mm], typ.	10 ms	≤ 13	100 ms	≤ 12	200 ms	≤ 11	.	.	900 ms	≤ 7	1000 ms	≤ 6	
Averaging time	Repeatability ⁴ [mm], typ.														
10 ms	≤ 13														
100 ms	≤ 12														
200 ms	≤ 11														
.	.														
900 ms	≤ 7														
1000 ms	≤ 6														

¹¹ Constant ambient conditions, 6 σ static object, reflector RF 250 (599-91009)

Default setting	Measurement range	Accessories
Analogue output Q_A	2 ... 6 m	Mounting angle MA F 55 (579-50007)
Switching output Q , N.O.	Switching window 2 ... 6 m	Connection cables
Response time measured value (e.g. Q_A)	10 ms	Reflective foil RF 250 (599-91009)
		Sensolo (901-01001)