

# FR 25-RLO

Autocollimation laser photoelectric retro-reflective sensor



## PRODUCT HIGHLIGHTS

- Reliable small-part detection over the entire operating range from a size of 0.2 mm
- Precise front-edge detection even in fastest automation processes thanks to a high switching frequency of 10 kHz
- Constant detection position with lateral object approach over the entire operating range for maximum switching point and positioning accuracy
- Setting of smart functions via IO-Link

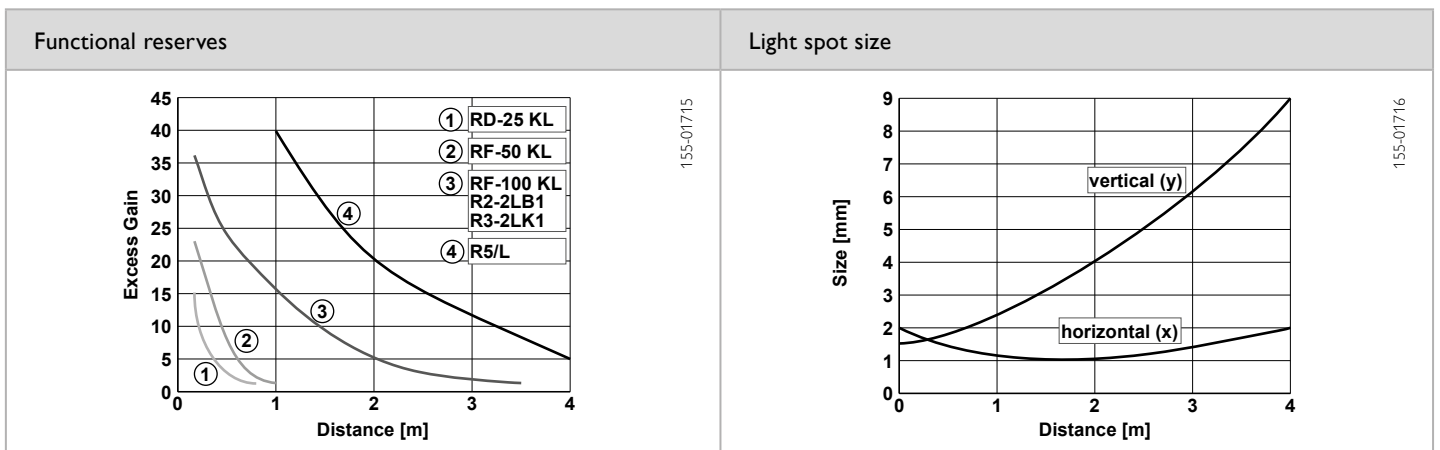
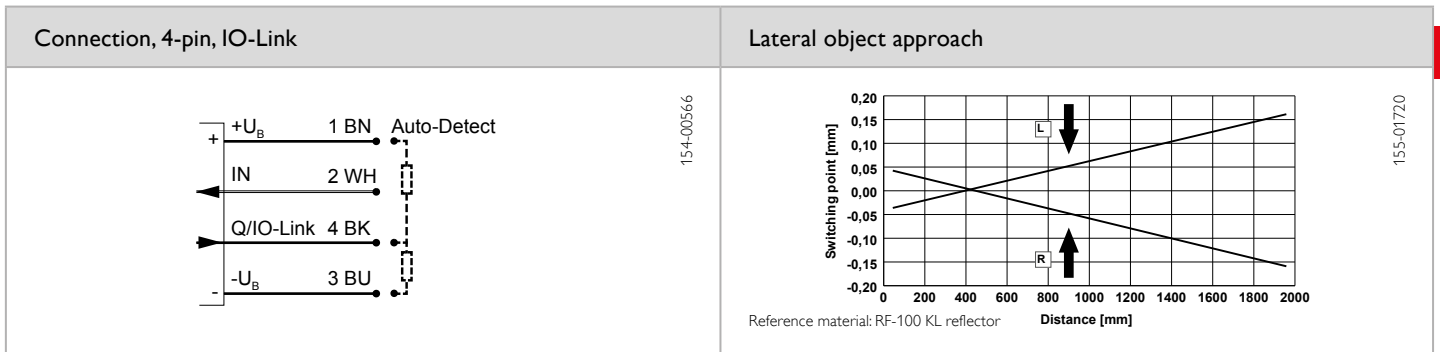
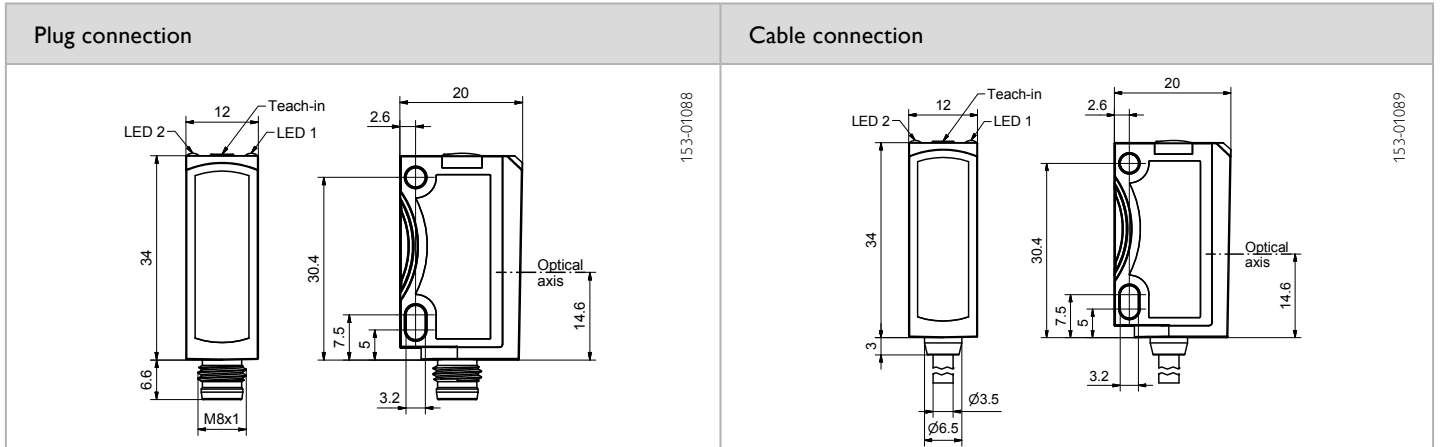
Optical data		Functions	
Limit range	0 ... 5 m <sup>1</sup>	Indicator LED, green	Operating voltage indicator
Operating range	0 ... 4 m <sup>1</sup>	Indicator LED, yellow	Switching output indicator
Type of light	Laser, red, 650 nm	Sensitivity adjustment	Via Teach-in button, control input and IO-Link
Light spot size	See diagram	Teach-in modes	Mode 1: during running process Mode 2: during standing process
Laser Class (IEC 60825-1)	1	Adjustment possibilities	N.O./N.C. and Auto-Detect / NPN / PNP via teach-in button, control input and IO-Link; Button lock via control input and IO-Link; Wide variety of adjustment possibilities via IO-Link
Polarising filter	Yes	Default settings	Max. range and N.O.
Electrical data		Mechanical data	
Operating voltage, +U <sub>B</sub>	10 ... 30V DC <sup>2</sup>	Dimensions	34 × 20 × 12 mm
No-load current, I <sub>0</sub>	≤ 30 mA	Enclosure rating	IP 69 & IP 67 <sup>4</sup>
Output current, I <sub>e</sub>	≤ 100 mA	Material, housing	ABS
Protective circuits	Reverse-polarity protection, U <sub>B</sub> / short-circuit protection (Q)	Material, front screen	PMMA
Protection Class	2	Type of connection	See selection table
Power On Delay	< 300 ms	Ambient temperature: operation	-20 ... +60 °C <sup>5</sup>
Switching output, Q	1x Auto-Detect (PNP/NPN) <sup>3</sup>	Ambient temperature: storage	-20 ... +80 °C
Output function	N.O./N.C.	Weight (plug device)	10 g
Switching frequency, f (ti/tp 1:1)	See selection table	Weight (metal plug device <sup>6</sup> )	10 g
Response time	See selection table	Weight (cable device)	40 g
Control input, IN <sup>3</sup>	+ U <sub>B</sub> = teach-in - U <sub>B</sub> = button locked Open = normal operation	Weight (pigtail)	20 g
		Vibration and impact resistance	EN 60947-5-2
IO-Link			
Communication mode	COM 2	Length process data	16 Bit
Min. cycletime	2.3 ms	Specification	1.1
SIO mode	Compatible		

<sup>1</sup> Reference material: R5/L reflector    <sup>2</sup> Max. 10 % ripple, within U<sub>B</sub>, ~ 50 Hz / 100 Hz    <sup>3</sup> Auto-Detect, automatic PNP/NPN selection by the sensor; PNP or NPN fixed

<sup>4</sup> With connected IP 67 / IP 69 plug    <sup>5</sup> UL: -20 ... +50 °C    <sup>6</sup> No Ecolab

Switching frequency, f (ti/tp 1:1) <sup>2</sup>	Response time	Switching output	Type of connection	Part number	Article number
≤ 10 kHz	50 μs	Auto-Detect	Metal plug, M8x1, 4-pin, IO-Link	FR 25-RLO1-PNSL-M4M	609-31019
≤ 10 kHz	50 μs	Auto-Detect	Cable, 2 m, 4-wire, IO-Link	FR 25-RLO1-PNSL-K4	609-31020

Switching frequency, $f$ (ti/tp 1:1) <sup>2</sup>	Response time	Switching output	Type of connection	Part number	Article number
≤ 4 kHz	125 μs	Auto-Detect	Plug, M8x1, 4-pin, IO-Link	FR 25-RLO2-PNSL-M4	609-31021
≤ 4 kHz	125 μs	Auto-Detect	Cable, 2 m, 4-wire, IO-Link	FR 25-RLO2-PNSL-K4	609-31022
≤ 4 kHz	125 μs	Auto-Detect	Pigtail, 150 mm with plug, M8, 4-pin, IO-Link	FR 25-RLO2-PNSL-KM4	609-31023



Small part detection				Reflector / Reflective foil*	Operating range (min./max. reflector distance)	Accessories	
Reflector / Reflective foil*	Reflector distance	Scanning distance	Smallest detectable part			Connection cables	From Page A-38
R5L	1000 ... 4000 mm	0 ... 4000 mm	≥ 1 mm	R5L	0 ... 4000 mm		
RD 25LK	50 ... 500 mm	50 ... 500 mm	≥ 0,2 mm	RD 25LK	50 ... 600 mm		
RF-100 KL*	500 ... 2500 mm	0 ... 500 mm	≥ 0,2 mm	RF-100 KL*	0 ... 2500 mm		
R2-2LB1	500 ... 2500 mm	0 ... 500 mm	≥ 0,2 mm	R2-2LB1	0 ... 2500 mm		
R3-2LK1	500 ... 2500 mm	0 ... 500 mm	≥ 0,2 mm	R3-2LK1	0 ... 2500 mm		
RF-50 KL*	100 ... 500 mm	100 ... 500 mm	≥ 0,2 mm	RF-50 KL*	0 ... 800 mm		