

# FR 25-RLO

## Autocollimation laser retroreflective photoelectric sensor



### PRODUCT HIGHLIGHTS

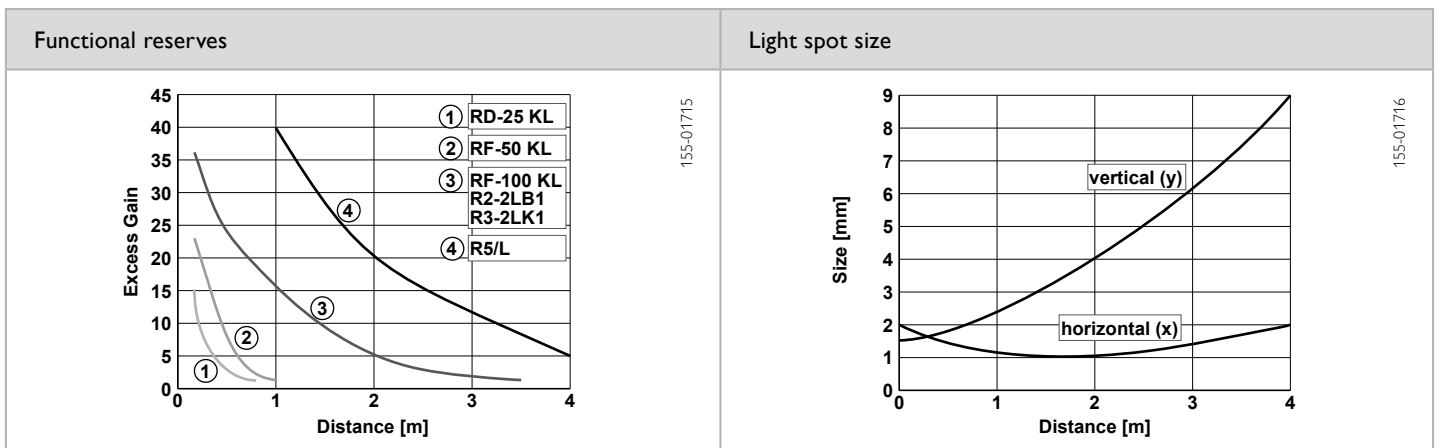
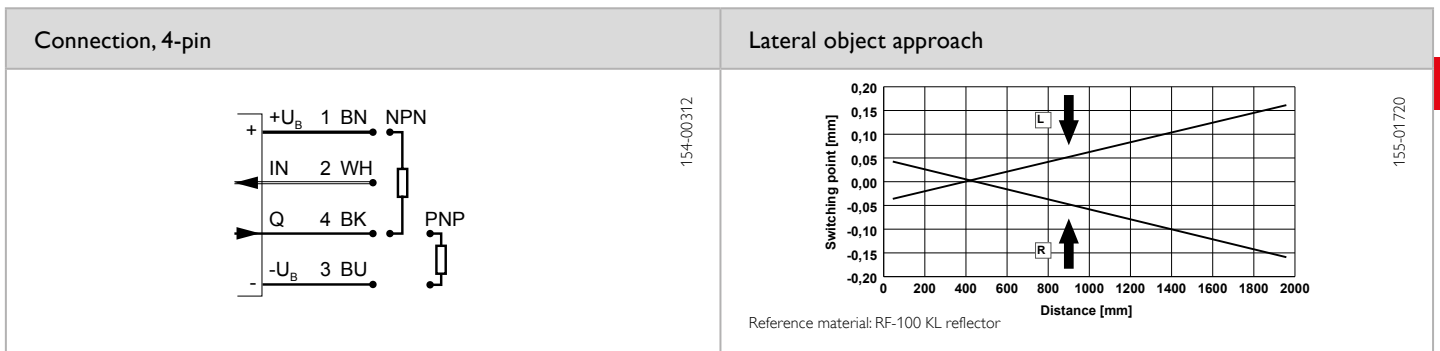
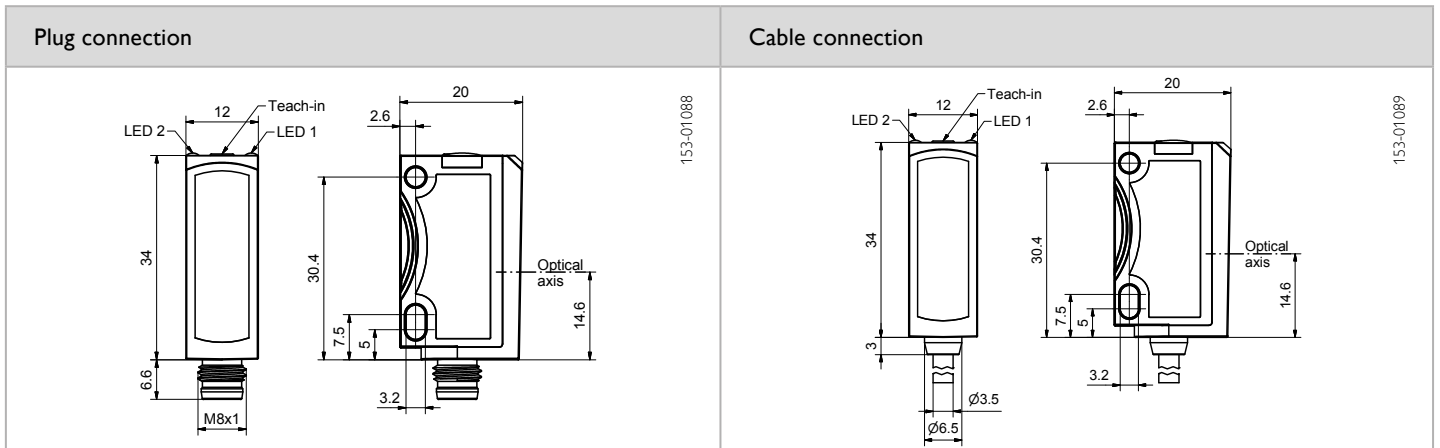
- Reliable small-part detection over the entire operating range from a size of 0.2 mm
- Precise front-edge detection even in fastest automation processes thanks to a high switching frequency of 10 kHz
- Constant detection position with lateral object approach over the entire operating range for maximum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

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 and control input
Light spot size	See diagram	Teach-in modes	Mode 1: during running process
Laser Class (IEC 60825-1)	1	Adjustment possibilities	Mode 2: during standing process
Polarising filter	Yes		N.O./N.C. via Teach-in button and control input
		Default settings	Button lock via control input
			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 69K & IP 67 <sup>3</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	PNP/NPN (see Selection Table)	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>5</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	Vibration and impact resistance	EN 60947-5-2

<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> With connected IP 67 / IP 69K plug    <sup>4</sup> UL: -20 ... +50 °C    <sup>5</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	PNP	Metal plug, M8x1, 4-pin	FR 25-RLO1-PS-M4M	609-31003
≤ 10 kHz	50 μs	NPN	Metal plug, M8x1, 4-pin	FR 25-RLO1-NS-M4M	609-31004
≤ 10 kHz	50 μs	PNP	Cable, 2 m, 4-wire	FR 25-RLO1-PS-K4	609-31005
≤ 10 kHz	50 μs	NPN	Cable, 2 m, 4-wire	FR 25-RLO1-NS-K4	609-31006
≤ 4 kHz	125 μs	PNP	Plug, M8x1, 4-pin	FR 25-RLO2-PS-M4	609-31007
≤ 4 kHz	125 μs	NPN	Plug, M8x1, 4-pin	FR 25-RLO2-NS-M4	609-31008
≤ 4 kHz	125 μs	PNP	Cable, 2 m, 4-wire	FR 25-RLO2-PS-K4	609-31009
≤ 4 kHz	125 μs	NPN	Cable, 2 m, 4-wire	FR 25-RLO2-NS-K4	609-31010
≤ 4 kHz	125 μs	PNP	Pigtail, 150 mm with plug, M8, 4-pin	FR 25-RLO2-PS-KM4	609-31011

Switching frequency, f ( $t_i/t_p$ 1:1) <sup>2</sup>	Response time	Switching output	Type of connection	Part number	Article number
≤ 4 kHz	125 μs	NPN	Pigtail, 150 mm with plug, M8, 4-pin	FR 25-RLO2-NS-KM4	609-31012
≤ 4 kHz	125 μs	PNP	Pigtail, 500 mm with plug, M8, 4-pin	FR 25-RLO2-PS-KM4-X05	609-31013



Small part detection				Reflector / Reflective foil*	Operating range (min./max. reflector distance)
Reflector / Reflective foil*	Reflector distance	Scanning distance	Smallest detectable part		
R5L	1000 ... 4000 mm	0 ... 4000 mm	≥ 1 mm	R5L	0 ... 4000 mm
RD-25 KL	50 ... 500 mm	50 ... 500 mm	≥ 0.2 mm	RD-25 KL	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