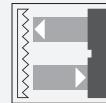




Retroreflective sensor

RL61-55-Z/92/136



- Cost-optimized series for standard tasks in a special design
- Compact design
- Wide range of mounting options thanks to cubic housing design with M30 thread
- 360° high visibility LEDs
- Programmable ON-delay, OFF-delay, and One-shot timers
- 4-in-1 output (push-pull)

Retroreflective sensor with polarization filter



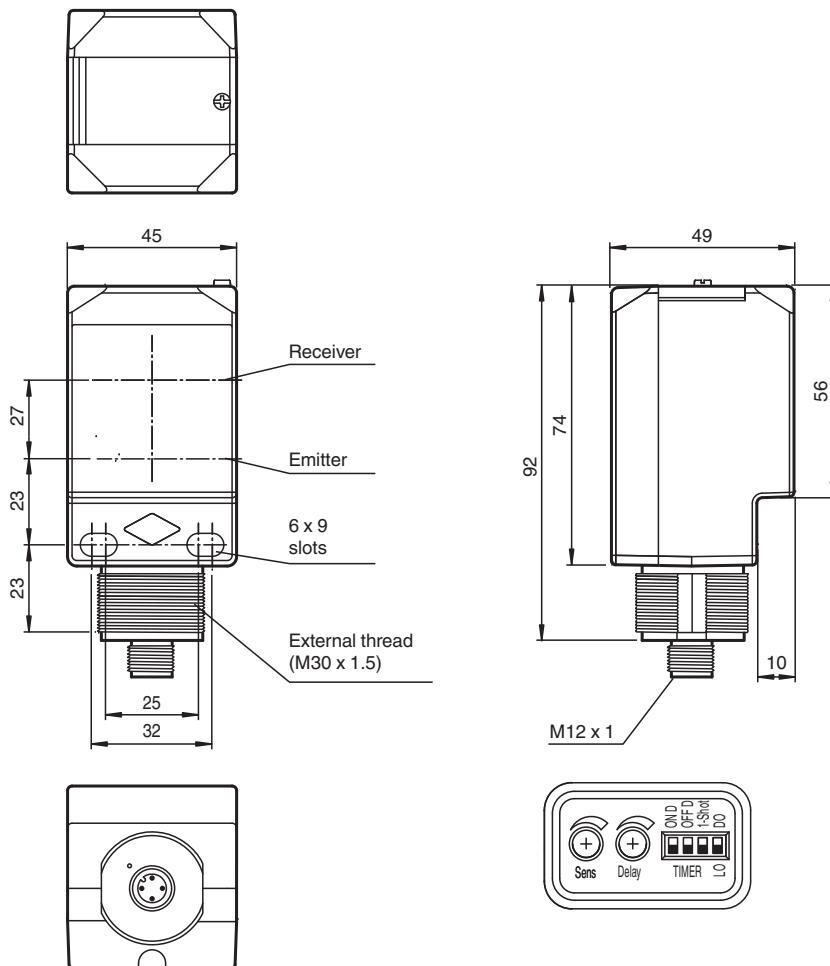
Function

The Series 61 sensor family is a comprehensive product line, offering five sensing modes. Each sensor is equipped with four LEDs that are highly visible from all directions, indicating Power-On, target presence and marginal excess gain. The widely recognized, polycarbonate housing provides a IP67 protection degree rating. Color-coded labels are clearly printed on the housing to easily identify the sensing mode. DC models offer a 4-in-1 output while AC/DC models have a SPDT relay output rated to 3 A. All versions come standard with an integral multifunction timer, sensitivity adjustment and Light-ON/Dark-ON switch. Series 61 sensors are cross-talk protected and have a high degree of resistance to ambient lighting. Each sensor can be mounted via front and rear slots, rear dovetail guide or M30 x 1.5 mounting base. Additionally, cabled sensor models provide 1/2" - 14 NPT internal threads for use with flexible conduit.

Application

- Object tracking in material handling, and the packaging sector
- Material flow monitoring
- Bin occupancy check in storage technology
- Fine positioning in high-bay warehouses
- Presence and height monitoring on pallet conveyors
- Single-beam protection for automatic industrial gates and elevator doors
- Protection at automatic gates

Dimensions



Technical Data

General specifications

Effective detection range	0 ... 18 m
Reflector distance	0.3 ... 18 m
Threshold detection range	25 m
Reference target	FE-RR1 reflector
Light source	LED
Light type	modulated visible red light , 630 nm
Polarization filter	yes
Diameter of the light spot	approx. 350 mm at a distance of 18 m
Opening angle	1.1 °
Ambient light limit	5000 Lux ; according EN 60947-5-2

Indicators/operating means

Operation indicator	2 LEDs green
Function indicator	2 LEDs yellow on: reflector inside the sensing range off: reflector outside the sensing range
Control elements	Light-on/dark-on changeover switch
Control elements	Sensing range adjuster
Control elements	Time adjuster (0 ... 50 ms)

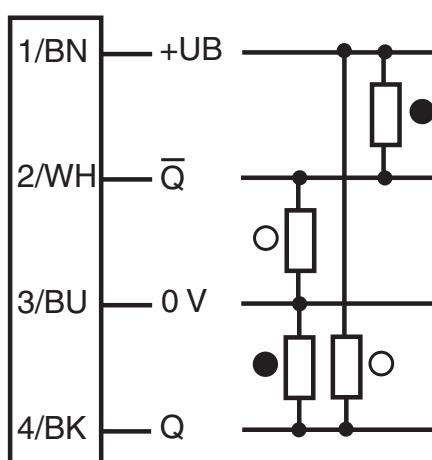
Electrical specifications

Operating voltage	U_B	10 ... 30 V DC
Ripple		10 %
No-load supply current	I_0	$\leq 35 \text{ mA}$

Technical Data

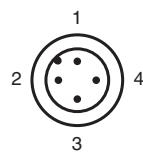
Protection class	II, rated voltage ≤ 250 V AC with pollution degree 1-2 according to IEC 60664-1 Output circuit basis insulation of input circuit according to EN 50178, rated insulation voltage 240 V AC	
Output		
Switching type	light/dark on, switchable	
Signal output	2 push-pull (4 in 1) outputs, short-circuit protected, reverse polarity protected	
Switching voltage	max. 30 V DC	
Switching current	max. 100 mA	
Voltage drop	U_d	≤ 2.5 V
Switching frequency	f	500 Hz
Response time	≤ 1 ms	
Timer function	DIP switch for selection of operating modes	
Compliance with standards and directives		
Standard conformity		
Product standard	EN 60947-5-2:2007 IEC 60947-5-2:2007	
Approvals and certificates		
EAC conformity	TR CU 020/2011	
UL approval	cULus	
CCC approval	CCC approval / marking not required for products rated ≤ 36 V	
Ambient conditions		
Ambient temperature	-40 ... 55 °C (-40 ... 131 °F)	
Storage temperature	-40 ... 70 °C (-40 ... 158 °F)	
Mechanical specifications		
Housing width	45 mm	
Housing height	73.7 mm	
Housing depth	48.6 mm	
Degree of protection	IP67	
Connection	4-pin, M12 x 1 connector	
Material		
Housing	PC (Polycarbonate)	
Optical face	PMMA	
Mass	120 g	
Tightening torque, fastening screws	max. 2 Nm	

Connection Assignment



○ = Light on
● = Dark on

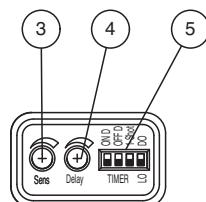
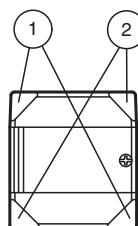
Connection Assignment



Wire colors in accordance with EN 60947-5-2

1	BN	(brown)
2	WH	(white)
3	BU	(blue)
4	BK	(black)

Assembly

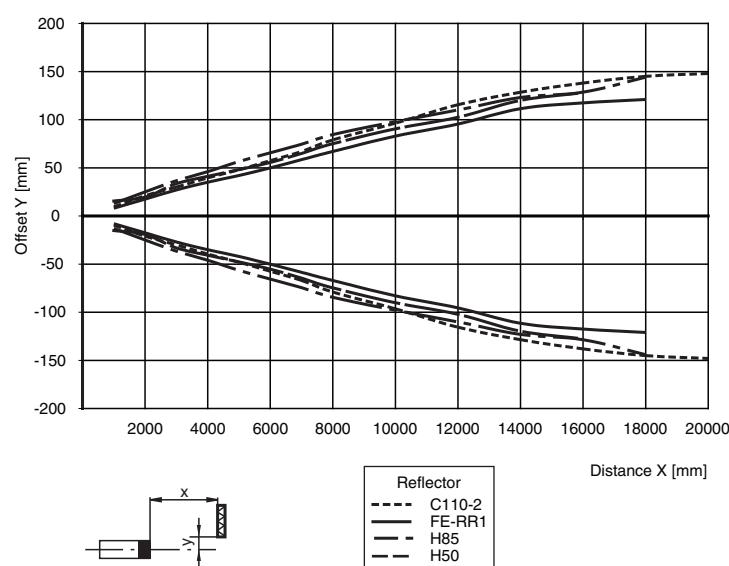


1	Operating display	green
2	Signal display	yellow
3	Sensing range adjuster	
4	Time adjuster	
5	DIP-switches	

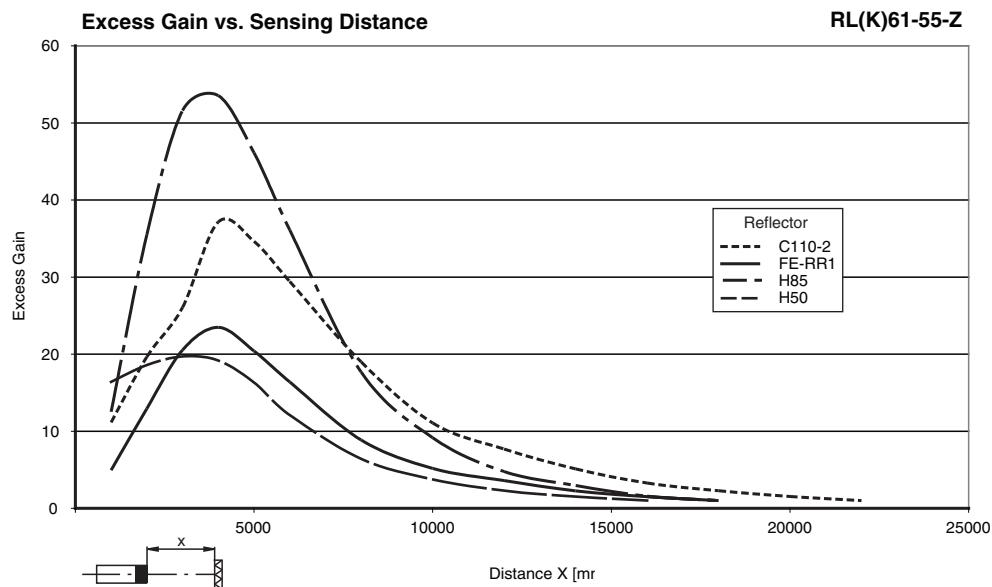
Characteristic Curve

Movement Characteristic

RL(K)-61-55-Z



Characteristic Curve



Timer Functions

Switching Type	Detection Status		
L.ON	Operation Mode	Light Received	No Light Received
OFF ON	No Delay (Timer OFF)	ON	OFF
OFF ON	ON Delay	ON	OFF
OFF ON	OFF Delay	ON	OFF
OFF ON	One-Shot Delay	ON	OFF
OFF ON	ON Delay and OFF Delay	ON	OFF
D.ON	Operation Mode	Light Received	No Light Received
OFF ON	No Delay (Timer OFF)	ON	OFF
OFF ON	ON Delay	ON	OFF
OFF ON	OFF Delay	ON	OFF
OFF ON	One-Shot Delay	ON	OFF
OFF ON	ON Delay and OFF Delay	ON	OFF

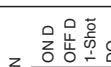
DIP-Switch position → 

Accessories

	MPZB01	Mounting bracket with vertical slots
	MPZB02	Mounting bracket with circular slots
	MPZB06	Ball and Swivel Mounting Bracket
	MPZB07	Ball and Swivel Vertical Mounting Plate
	V1-G-2M-PUR	Female cordset single-ended M12 straight A-coded, 4-pin, PUR cable grey
	V1-W-2M-PUR	Female cordset single-ended M12 angled A-coded, 4-pin, PUR cable grey

Additional Information

Timer Functions

Switching Type	Detection Status			Light Received
		Operation Mode		
L.ON	ON Delay (Timer OFF)		ON	ON
OFF ON	ON Delay (Timer OFF)		OFF	OFF
OFF ON	ON Delay		ON	ON
OFF ON	ON Delay		OFF	OFF
OFF ON	One-Shot Delay		ON	ON
OFF ON	One-Shot Delay		OFF	OFF
OFF ON	ON Delay and OFF Delay		ON	ON
OFF ON	ON Delay and OFF Delay		OFF	OFF
Switching Type	Detection Status			Light Received
		Operation Mode		
D.ON	ON Delay (Timer OFF)		ON	ON
OFF ON	ON Delay (Timer OFF)		OFF	OFF
OFF ON	ON Delay		ON	ON
OFF ON	ON Delay		OFF	OFF
OFF ON	OFF Delay		ON	ON
OFF ON	OFF Delay		OFF	OFF
OFF ON	One-Shot Delay		ON	ON
OFF ON	One-Shot Delay		OFF	OFF
OFF ON	ON Delay and OFF Delay		ON	ON
OFF ON	ON Delay and OFF Delay		OFF	OFF

DIP-Switch position 

Time (T) is adjustable from 0 to 50 ms

Adjustment Instructions

Intended use:

The retroreflective sensor contains the emitter and receiver in a single housing. The light from transmitter is reflected back from a reflector to the receiver. If an object interrupts the light beam, the switching function is initiated.

Mounting instructions:

The sensor can be mounted using the through-holes or with a mounting bracket (not included with delivery).

The base surface must be flat to avoid distorting the sensor housing during mounting. It is advisable to secure the bolts and screws with washers so that the sensor does not become misaligned.

Adjustment Instructions:

Connect the sensor to operating voltage and the green LED lights up solid.

Mount a suitable reflector opposite the sensor and make a rough adjustment.

The precise adjustment is done by swiveling the sensor horizontally and vertically. With optimum light reception, the yellow LED lights up solid. It will blink if the sensor requires fine adjustment.

Object detection:

Move an object into the light beam. If the object is detected, the yellow LED switches off. If it does not switch off, reduce the sensitivity with the potentiometer until it does. It should light up solid when the object is removed.

Cleaning:

The yellow LED flashes if the light received decreases (e.g. dirty lenses).

We recommend that you clean the optical interfaces and check all connections at regular intervals.