



### Model Number

**RL61-8-H-2000-IR-Z/92/136**

Background suppression sensor  
with 4-pin, M12 x 1 connector

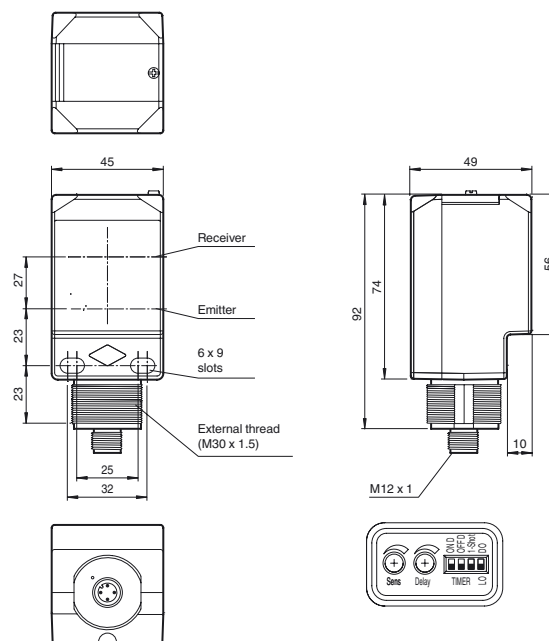
### Features

- 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)
- Version with infrared light

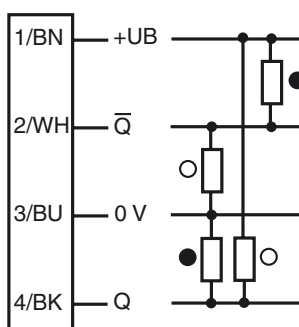
### Product information

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 ½" - 14 NPT internal threads for use with flexible conduit.

### Dimensions

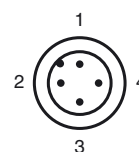


### Electrical connection

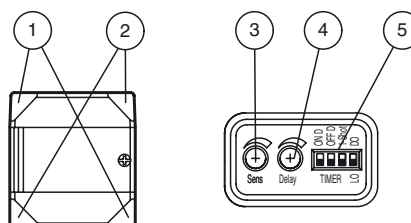


○ = Light on  
● = Dark on

### Pinout



### Indicators/operating means



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

**Technical data****General specifications**

Detection range	20 ... 2000 mm
Detection range min.	20 ... 500 mm
Detection range max.	20 ... 2000 mm
Adjustment range	500 ... 2000 mm
Background suppression	max. + 10 % of the upper limit of the detection range
Light source	IREd
Light type	modulated infrared light , 850 nm
Black/White difference (6 %/90 %)	< 40 %
Diameter of the light spot	approx. 24 mm at a distance of 2000 mm
Angle of divergence	0.7 °
Ambient light limit	30000 Lux

**Indicators/operating means**

Operation indicator	2 LEDs green
Function indicator	2 LEDs yellow ON: object inside the sensing range OFF: object outside the sensing range
Control elements	Light/Dark switch
Control elements	Detection range adjuster
Control elements	Time adjuster ( 0 ... 50 ms )

**Electrical specifications**

Operating voltage	U <sub>B</sub>	10 ... 30 V DC
Ripple		10 %
No-load supply current	I <sub>0</sub>	≤ 35 mA
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 <sub>d</sub>	≤ 2.5 V
Switching frequency	f	500 Hz
Response time	≤ 1 ms	
Timer function	DIP-switch for selection of operating modes	

**Ambient conditions**

Ambient temperature	-40 ... 55 °C (-40 ... 131 °F)
Storage temperature	-40 ... 70 °C (-40 ... 158 °F)

**Mechanical specifications**

Degree of protection	IP67
Connection	4-pin, M12 x 1 connector
Material	
Housing	PC (Polycarbonate)
Optical face	PMMA
Mass	approx. 120 g
Tightening torque, fastening screws	≤ 2 Nm

**Compliance with standards and directives**

Standard conformity	
Product standard	EN 60947-5-2:2007 IEC 60947-5-2:2007
Standards	EN 50178, UL 508

**Approvals and certificates**

UL approval	cULus
CCC approval	CCC approval / marking not required for products rated ≤36 V

**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-BK2M-PUR-U**

Female cordset, M12, 4-pin, PUR cable

**V1-W-BK2M-PUR-U**

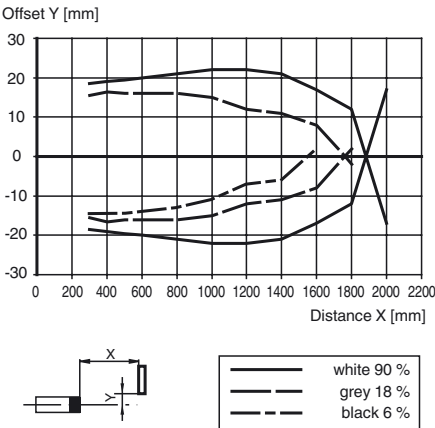
Female cordset, M12, 4-pin, PUR cable

Other suitable accessories can be found at [www.pepperl-fuchs.com](http://www.pepperl-fuchs.com)



Curves/Diagrams

Movement Characteristic



## Timer Functions

Switching Type	Detection Status	
	Operation Mode	
L.ON		Light Received No Light Received
OFF ON ON D OFF D 1-Shot DO Timer LO	No Delay (Timer OFF)	ON OFF
OFF ON ON D OFF D 1-Shot DO Timer LO	ON Delay	ON OFF
OFF ON ON D OFF D 1-Shot DO Timer LO	OFF Delay	ON OFF
OFF ON ON D OFF D 1-Shot DO Timer LO	One-Shot Delay	ON OFF
OFF ON ON D OFF D 1-Shot DO Timer LO	ON Delay and OFF Delay	ON OFF
D.ON		Light Received No Light Received
OFF ON ON D OFF D 1-Shot DO Timer LO	No Delay (Timer OFF)	ON OFF
OFF ON ON D OFF D 1-Shot DO Timer LO	ON Delay	ON OFF
OFF ON ON D OFF D 1-Shot DO Timer LO	OFF Delay	ON OFF
OFF ON ON D OFF D 1-Shot DO Timer LO	One-Shot Delay	ON OFF
OFF ON ON D OFF D 1-Shot DO Timer LO	ON Delay and OFF Delay	ON OFF

DIP-Switch position 

Time (T) is adjustable from 0 to 50 ms

## Adjustment Instructions

### Intended use:

The transmitter and receiver are located in the same housing of Diffuse Mode sensors with Background Suppression. The suppression of objects outside the sensing range is achieved by arranging the angle between the transmitter and receiver (2 receiver elements).

Objects are detected independently of their surface structures, brightness and color, as well as the brightness of the background.

### Mounting instructions:

The sensors can be fastened directly with fixing screws or with a mounting bracket (not included with delivery).

The surface underneath must be flat to prevent the housing from moving when the sensor is tightened into position. We recommend securing the nut and screw in place with lock washers to prevent the sensor from going out of adjustment.

### Adjustment:

After the operating voltage is applied, the green LEDs light up.

Align the sensor to the background. If the yellow LEDs are lit, the sensing range should be reduced with the sensing range adjuster until the yellow LEDs turn off.

### Object detection:

Place the object to be detected at the desired maximum sensing range and align the light spot to it. If the object is detected, the yellow LED lights up.

If they do not light up, the sensing range must be adjusted on the potentiometer until the yellow LEDs light up indicating that an object is detected.

### Cleaning:

We recommend cleaning the optical surface and checking all of the connections at regular intervals.