Model Number

RL61-8-H-500-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.
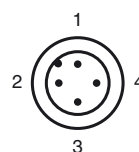
Dimensions
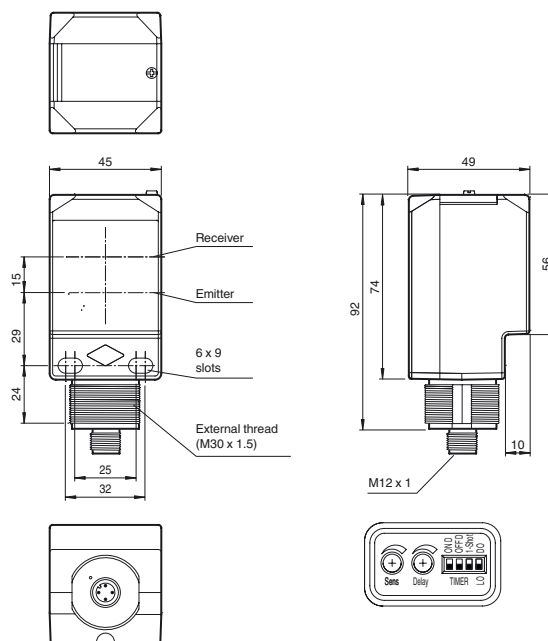
Electrical connection
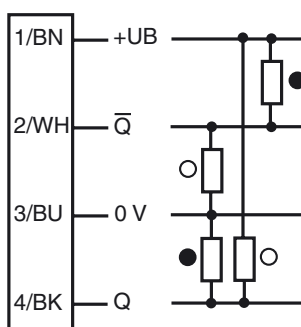
○ = Light on
● = Dark on

Pinout

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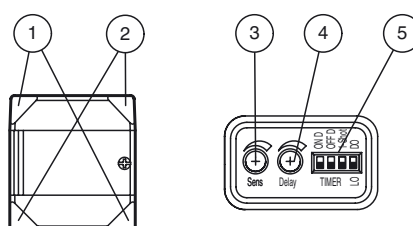
1	Operating display	green
2	Signal display	yellow
3	Sensing range adjuster	
4	Time adjuster	
5	DIP-switches	

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

Pepperl+Fuchs Group
www.pepperl-fuchs.com

USA: +1 330 486 0001
fa-info@us.pepperl-fuchs.com

Germany: +49 621 776 4411
fa-info@de.pepperl-fuchs.com

Singapore: +65 6779 9091
fa-info@sg.pepperl-fuchs.com

PEPPERL+FUCHS
SENSING YOUR NEEDS

1

Technical data

General specifications

Detection range	20 ... 500 mm
Detection range min.	20 ... 200 mm
Detection range max.	20 ... 500 mm
Adjustment range	200 ... 500 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 %)	< 8 % at 500 mm sensor range
Diameter of the light spot	approx. 6 mm at a distance of 500 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_B	10 ... 30 V DC
Ripple		10 %
No-load supply current	I_0	≤ 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_d	≤ 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-2M-PUR
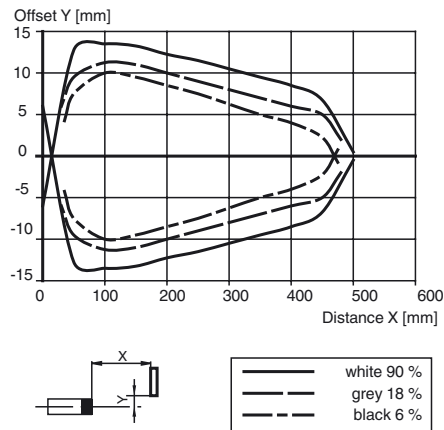Female cordset, M12, 4-pin, PUR cable

V1-W-2M-PUR
Female cordset, M12, 4-pin, PUR cable

Other suitable accessories can be found at www.pepperl-fuchs.com

PEPPERL+FUCHS
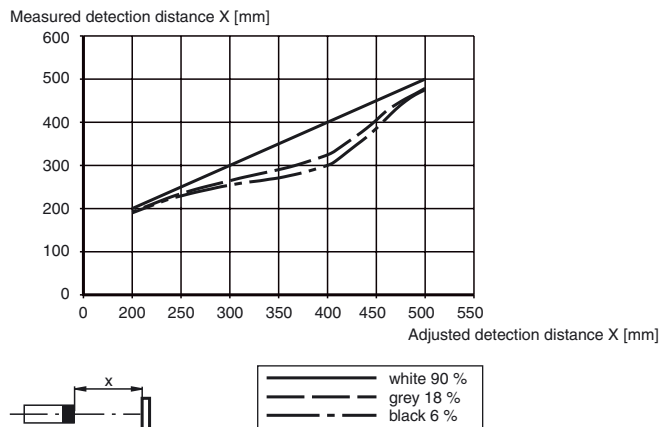*SENSING YOUR NEEDS*

Curves/Diagrams

Movement Characteristic

Offset Y [mm]

```
 15 ┤
 10 ┤
  5 ┤
  0 ┤
 -5 ┤
-10 ┤
-15 ┤
    └──┬────┬────┬────┬────┬────┬────┬──
    0  100  200  300  400  500  600
              Distance X [mm]
```

——————	white 90 %
— — —	grey 18 %
— · — ·	black 6 %

Difference in detection distance   RL(K)61-8-H-500-RT

Measured detection distance X [mm]

```
600 ┤
500 ┤
400 ┤
300 ┤
200 ┤
100 ┤
  0 ┤
    └──┬────┬────┬────┬────┬────┬────┬──
    0  200  250  300  350  400  450  500  550
           Adjusted detection distance X [mm]
```

——————	white 90 %
— — —	grey 18 %
— · — ·	black 6 %

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

Pepperl+Fuchs Group
www.pepperl-fuchs.com
USA: +1 330 486 0001
fa-info@us.pepperl-fuchs.com
Germany: +49 621 776 4411
fa-info@de.pepperl-fuchs.com
Singapore: +65 6779 9091
fa-info@sg.pepperl-fuchs.com
PEPPERL+FUCHS
SENSING YOUR NEEDS
3

Timer Functions

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

DIP-Switch position →

Time (T) is adjustable from 0 to 50 ms

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

Pepperl+Fuchs Group
www.pepperl-fuchs.com

USA: +1 330 486 0001
fa-info@us.pepperl-fuchs.com

Germany: +49 621 776 4411
fa-info@de.pepperl-fuchs.com

Singapore: +65 6779 9091
fa-info@sg.pepperl-fuchs.com

PEPPERL+FUCHS
SENSING YOUR NEEDS

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.

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

Pepperl+Fuchs Group	USA: +1 330 486 0001	Germany: +49 621 776 4411	Singapore: +65 6779 9091
www.pepperl-fuchs.com	fa-info@us.pepperl-fuchs.com	fa-info@de.pepperl-fuchs.com	fa-info@sg.pepperl-fuchs.com

PEPPERL+FUCHS
SENSING YOUR NEEDS