Receiver







# **Model Number**

#### OBE2000-R2-SE0

Thru-beam sensor with 2 m fixed cable

#### **Features**

- Ultra-small housing design
- 45° cable outlet for maximum mounting freedom under extremely tight space constraints
- Improvement in machine availability with abrasion-resistant, antistatic glass front
- Extremely large detection range in Long Range Mode
- Option of switching to high precision mode for greater switching accuracy

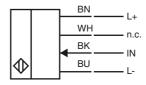
## **Product information**

The nano sensor has been developed for a broad range of applications. It offers excellent durability and is exceptionally easy to install. The housing is compact and, with its 45° cable outlet, can be installed in the smallest spaces. New functional principles and functionality open up a range of new options. The abrasion-resistant lens allows long operating times close to the moving object.

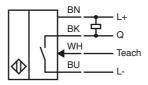
## **Dimensions**

## **Electrical connection emitter**

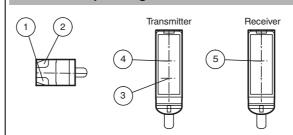
Transmitter



#### **Electrical connection receiver**



# Indicators/operating means



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1	Operating display	green		
2	Signal display	yellow		
3	Emitter long range			
4	Emitter high precision			
5 Receiver				

Technical data

Technical data			
System components			
Emitter		OBE2000-R2	
Receiver		OBE2000-R2-E0	
General specifications			
Effective detection range		Long range mode: 0 2 m High precision mode: 0 200 mm	
Threshold detection range		Long range mode: 2.5 m High precision mode: 300 mm	
Light source		LED	
Light type		modulated visible red light, 630 nm	
Angle deviation		approx. 2°	
Diameter of the light spot		Long range mode: 150 mm at a distance of 2000 mm High precision mode: 0.5 mm at a distance of 50 mm	
Angle of divergence		approx. 2 °	
Optical face		frontal	
Ambient light limit		EN 60947-5-2 : 30000 Lux	
Functional safety related para	meters	000	
MTTF <sub>d</sub>		806 a	
Mission Time (T <sub>M</sub> ) Diagnostic Coverage (DC)		20 a 0 %	
J J ,		0 %	
Indicators/operating means		LED avecan statically lit Devices on shout sixevity LED avecan	
Operation indicator		LED green, statically lit Power on , short-circuit : LED green flashing (approx. 4 Hz)	
Function indicator		Receiver: LED yellow, lights up when light beam is free, flashe when falling short of the stability control; OFF when light beam is interrupted	
Electrical specifications			
Operating voltage	U <sub>B</sub>	10 30 V DC , class 2	
No-load supply current	I <sub>0</sub>	Emitter: ≤ 11 mA Receiver: ≤ 8 mA	
Input			
Control input		Emitter selection BK: not connected, Long Range mode BK: 0 V, High Precicion Mode	
Switching threshold		Teach-In input	
Output			
Switching type		NO contact	
Signal output		1 NPN output, short-circuit protected, reverse polarity protected open collector	
Switching voltage		max. 30 V DC	
Switching current		max. 50 mA	
Voltage drop	U <sub>d</sub>	≤1.5 V DC	
Switching frequency	f	approx. 800 Hz	
Response time		600 μs	
Conformity			
Product standard		EN 60947-5-2	
Ambient conditions			
Ambient temperature		-25 60 °C (-13 140 °F)	
Storage temperature		-30 70 °C (-22 158 °F)	
Mechanical specifications			
Housing width		7.5 mm	
Housing height		24 mm	
Housing depth		11.2 mm	
Degree of protection		IP67	
Connection		2 m fixed cable	
Material		DC/ARS and TRIL	
Housing Option force		PC/ABS and TPU	
Optical face Cable		glass PUR	
Installation			
Mass		Fixing screws, 2 x M2 allen head screws included with deliver approx. 20 g Per sensor	
Cable length		2 m	
Approvals and certificates			
UL approval		cULus Recognized, Class 2 Power Source	
CCC approval		CCC approval / marking not required for products rated ≤36 V	
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# **Accessories**

#### MH-R2-01

Mounting aid for R2 series, Mounting bracket

## MH-R2-02

Mounting aid for R2 series, Mounting bracket

## MH-R2-03

Mounting aid for R2 series, Mounting bracket

#### MH-R2-04

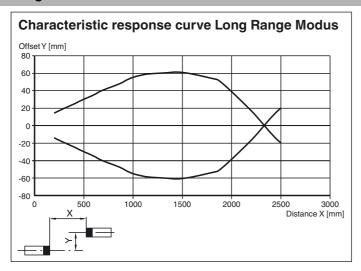
Mounting aid for R2 series, Mounting bracket

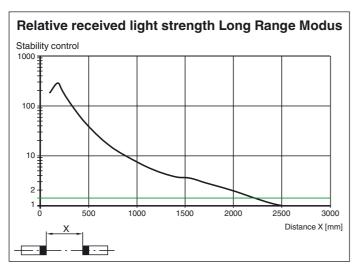
Other suitable accessories can be found at www.pepperl-fuchs.com

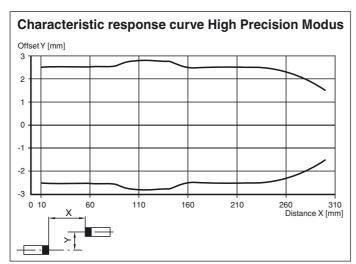
**FPEPPERL+FUCHS** 

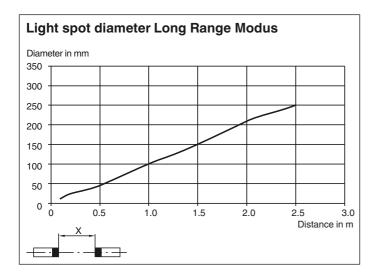
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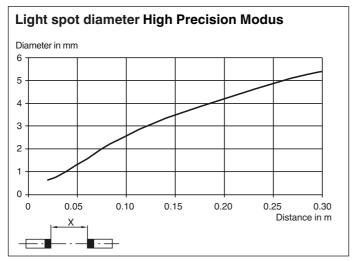
# **Curves/Diagrams**











# **Teach-In Methods**

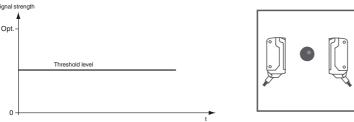
The thru-beam sensor enables the switching points to be taught in for optimum adaptation to specific applications. This eliminates the need for additional components such as apertures.

Essentially, all Teach-in methods can be used in both "High Precision" and "High Power" operating modes.

The sensitivity of the thru-beam sensor can be adjusted using three Teach-in methods:

#### **Position Teach**

- The gain is set to an optimum value
- The signal threshold is set to a minimum



#### Recommended application:

This method enables extremely small differences in contrast to be detected, as well as minuscule particles in the beam path, and provides exceptional positioning accuracy.

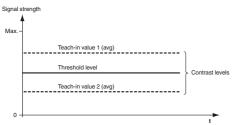
The best results are achieved in "High Precision" mode.

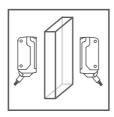
- 1. Make sure that there are no objects in the beam path and that the sensor is connected to the power supply.
- Connect the white cable on the receiver (WH/IN) to the blue cable (BU/0 V) on the receiver.
   The green and yellow LED indicators flash simultaneously at 2.5 Hz
- 3. Disconnect the white cable on the receiver (WH/IN) from the blue cable (BU/0 V) on the receiver. The green and yellow LED indicators flash alternately at 2.5 Hz
- 4. The end of the Teach-in process is indicated when the green LED indicator lights up sold and yellow LED blinks.

#### Two-Point Teach-In

When using this Teach-in method, the following settings are made on the thru-beam sensor:

- The gain is set to an optimum value
- The signal threshold is set in the center between the two taught signal values





## Recommended application:

Enables detection of transparent objects.

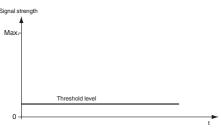
The best results are achieved in "High Precision" mode.

- 1. Make sure that there are no objects in the beam path and that the sensor is connected to the power supply.
- 2. Connect the white cable on the receiver (WH/IN) to the blue cable (BU/0 V) on the receiver. The green and yellow LED indicators flash simultaneously at 2.5 Hz
- 3. Position the object in the beam path.
- 4. Disconnect the white cable on the receiver (WH/IN) from the blue cable (BU/0 V) on the receiver. The green and yellow LED indicators flash alternately at 2.5 Hz
- 5. The end of the Teach-in process is indicated when the green LED indicator lights up sold.

# Maximum Teach-In

When using this Teach-in method, the following settings are made on the thru-beam sensor:

- The gain is set to a maximum
- The signal threshold is set to a minimum





#### Recommended application:

Enables an object to be detected with a high excess gain. This can be useful if there is severe environmental contamination or to achieve long operating times.

The best results are achieved in "High Precision" mode.

- 1. Make sure that there are no objects in the beam path and that the sensor is connected to the power supply.
- 2. Cover the receiver or transmitter.
- 3. Connect the white cable on the receiver (WH/IN) to the blue cable (BU/0 V) on the receiver. The green and yellow LED indicators flash simultaneously at 2.5 Hz
- Disconnect the white cable on the receiver (WH/IN) from the blue cable (BU/0 V) on the receiver.
   The green and yellow LED indicators flash alternately at 2.5 Hz
- 5. The end of the Teach-in process is indicated when the green LED indicator lights up sold.

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