



Thru-beam sensor OBE2000-R2-SE0



- 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

Thru-beam sensor for standard applications, miniature design, 2000 mm detection range, red light, dark on, NPN output, fixed cable

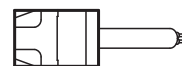
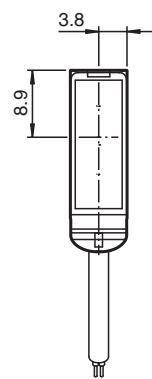
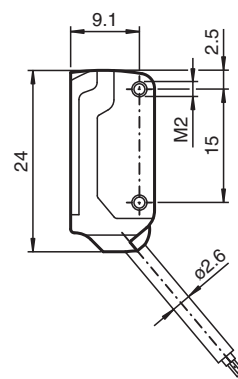
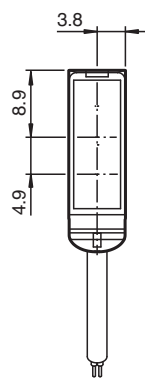
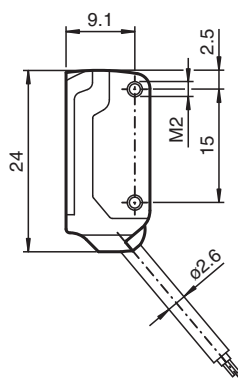
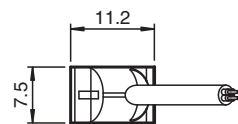
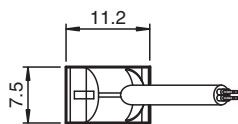


The nano sensor has been developed for a broad range of applications. It offers excellent durability and is exceptionally easy to install. The housing is compact and, with its 45° cable outlet, can be installed in the smallest spaces. New functional principles and functionality open up a range of new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

Dimensions

Transmitter

Receiver



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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 1111
fa-info@de.pepperl-fuchs.com

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

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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
Opening angle			approx. 2 °
Optical face			frontal
Ambient light limit			EN 60947-5-2 : 30000 Lux
Functional safety related parameters			
MTTF _d			806 a
Mission Time (T _M)			20 a
Diagnostic Coverage (DC)			0 %
Indicators/operating means			
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, flashes when falling short of the stability control ; OFF when light beam is interrupted
Electrical specifications			
Operating voltage	U _B		10 ... 30 V DC , class 2
No-load supply current	I ₀		Emitter: ≤ 11 mA Receiver: ≤ 8 mA
Input			
Control input			Emitter selection BK: not connected, Long Range mode BK: 0 V, High Precision 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 _d		≤ 1.5 V DC
Switching frequency	f		approx. 800 Hz
Response time			600 μs
Conformity			
Product standard			EN 60947-5-2
Approvals and certificates			
EAC conformity			TR CU 020/2011
UL approval			cULus Recognized, Class 2 Power Source
CCC approval			CCC approval / marking not required for products rated ≤36 V
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			

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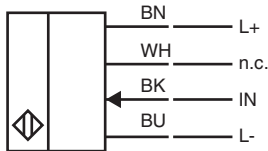
Pepperl+Fuchs Group
www.pepperl-fuchs.comUSA: +1 330 486 0001
fa-info@us.pepperl-fuchs.comGermany: +49 621 776 1111
fa-info@de.pepperl-fuchs.comSingapore: +65 6779 9091
fa-info@sg.pepperl-fuchs.com

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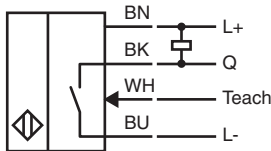
Technical Data

Housing	PC/ABS and TPU
Optical face	glass
Cable	PUR
Installation	Fixing screws , 2 x M2 allen head screws included with delivery
Mass	approx. 20 g per sensor
Cable length	2 m

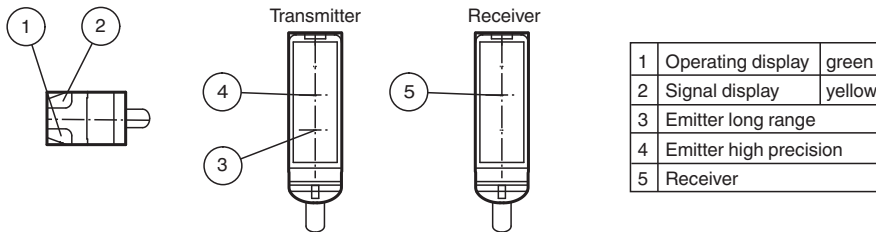
Connection Assignment



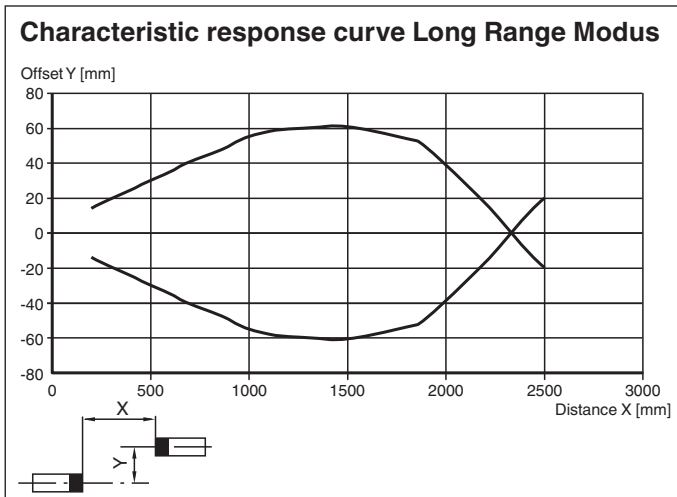
Connection



Assembly



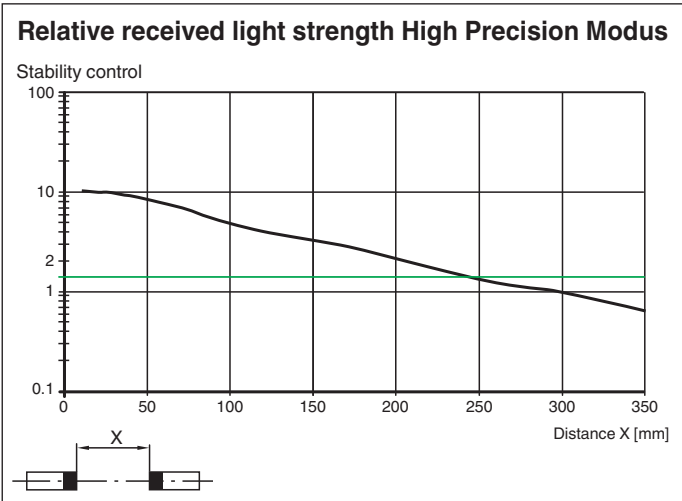
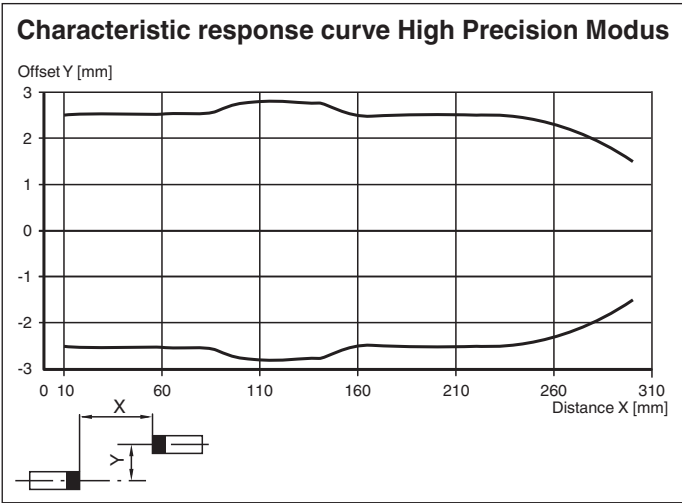
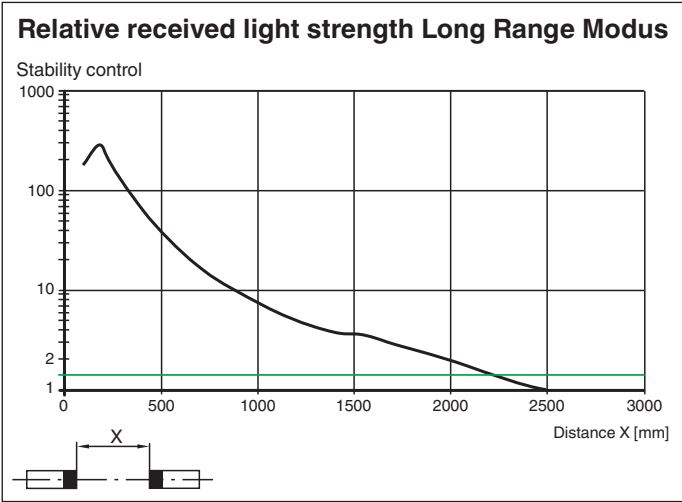
Characteristic Curve



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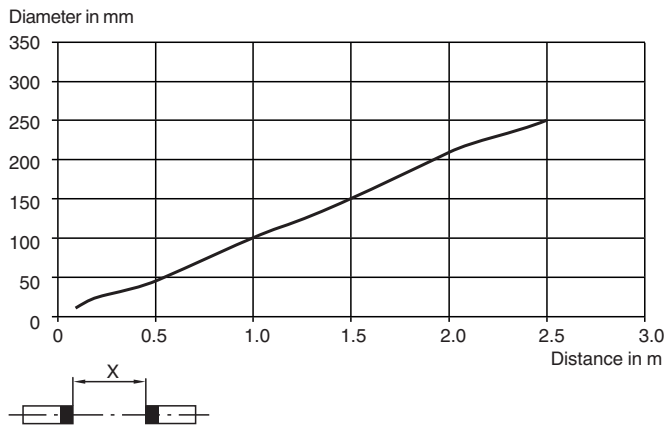
Characteristic Curve



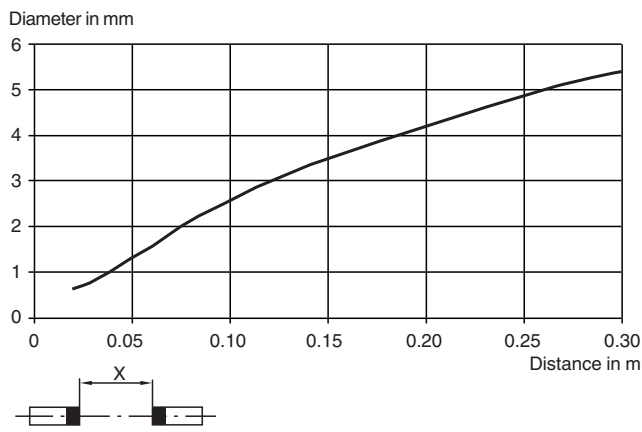
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Characteristic Curve





Light spot diameter Long Range Modus



Light spot diameter High Precision Modus



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

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Teach-In

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.

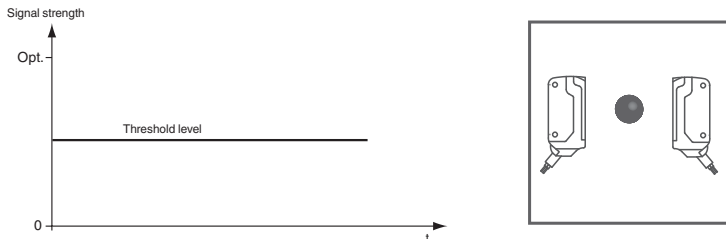
Essentially, all Teach-in methods can be used in both "High Precision" and "High Power" operating modes.

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

Position Teach

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 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.

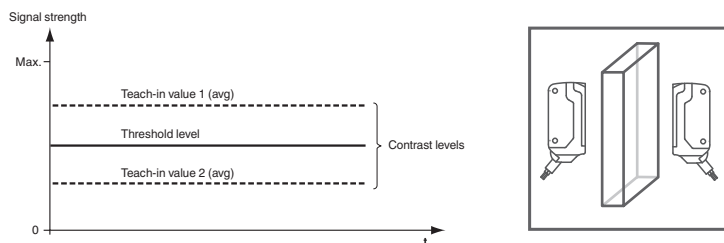
The best results are achieved in "High Precision" mode.

1. Make sure that there are no objects in the beam path and that the sensor is connected to the power supply.
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. 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 solid 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.

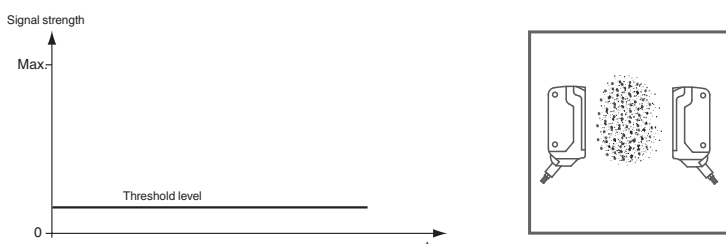
The best results are achieved in "High Precision" mode.

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 solid.

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



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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
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 solid.