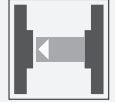




## Thru-beam sensor OBE2000-R3-SE0



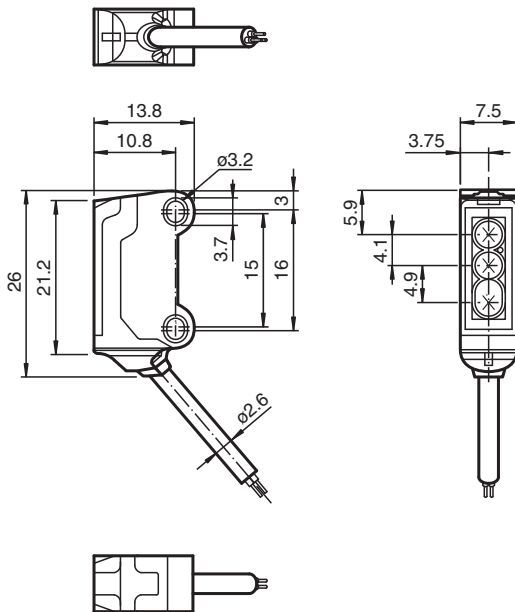
- 45° cable outlet for maximum mounting freedom under extremely tight space constraints
- Improvement in machine availability with abrasion-resistant, antistatic glass front
- Extremely large detection range in Long Range Mode
- Option of switching to high precision mode for greater switching accuracy

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



### Technical Data

System components	
Emitter	OBE2000-R3
Receiver	OBE2000-R3-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 °

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

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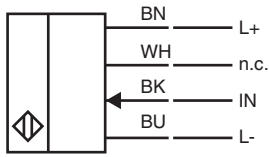
Singapore: +65 6779 9091  
fa-info@sg.pepperl-fuchs.com

**PF** PEPPERL+FUCHS

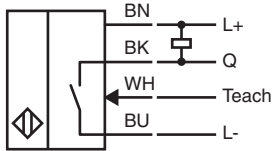
## Technical Data

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	
<b>Functional safety related parameters</b>		
MTTF <sub>d</sub>	806 a	
Mission Time (T <sub>M</sub> )	20 a	
Diagnostic Coverage (DC)	0 %	
<b>Indicators/operating means</b>		
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	
<b>Electrical specifications</b>		
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
<b>Input</b>		
Control input	Emitter selection BK: not connected, Long Range mode BK: 0 V, High Precision Mode	
Switching threshold	Teach-In input	
<b>Output</b>		
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 , resistive load	
Voltage drop	U <sub>d</sub>	≤ 1.5 V DC
Switching frequency	f	approx. 800 Hz
Response time	600 μs	
<b>Conformity</b>		
Product standard	EN 60947-5-2	
<b>Approvals and certificates</b>		
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	
<b>Ambient conditions</b>		
Ambient temperature	-25 ... 60 °C (-13 ... 140 °F)	
Storage temperature	-30 ... 70 °C (-22 ... 158 °F)	
<b>Mechanical specifications</b>		
Housing width	7.5 mm	
Housing height	26 mm	
Housing depth	13.8 mm	
Degree of protection	IP67	
Connection	2 m fixed cable	
<b>Material</b>		
Housing	PC/ABS and TPU	
Optical face	glass	
Cable	PUR	
Mass	approx. 20 g per sensor	
Cable length	2 m	

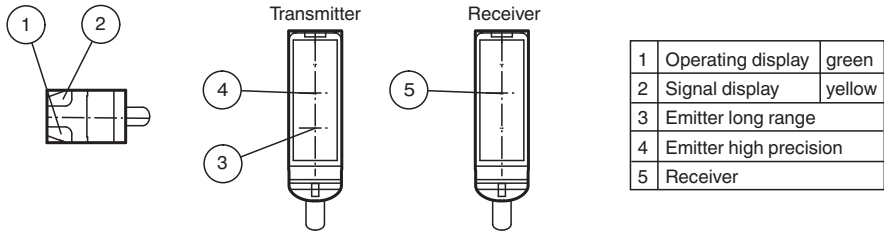
**Connection Assignment**



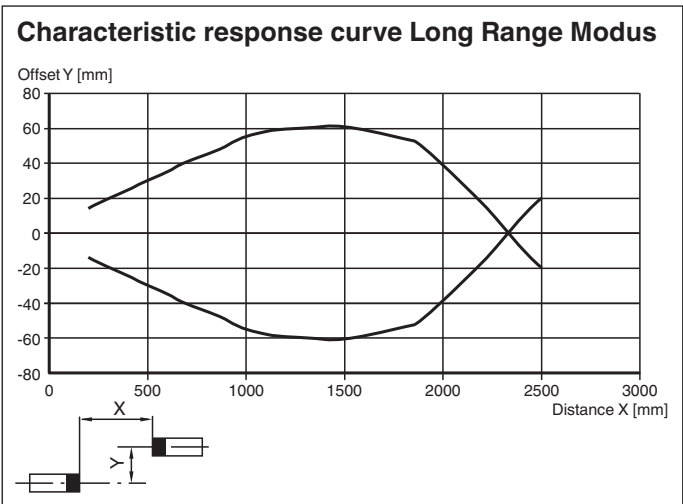
**Connection**



**Assembly**

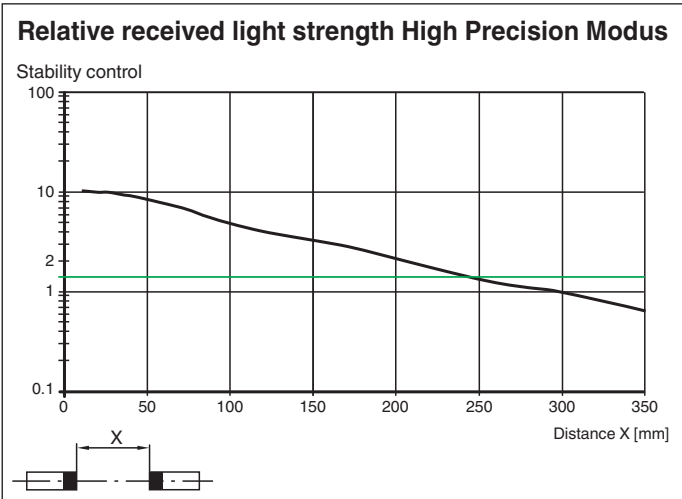
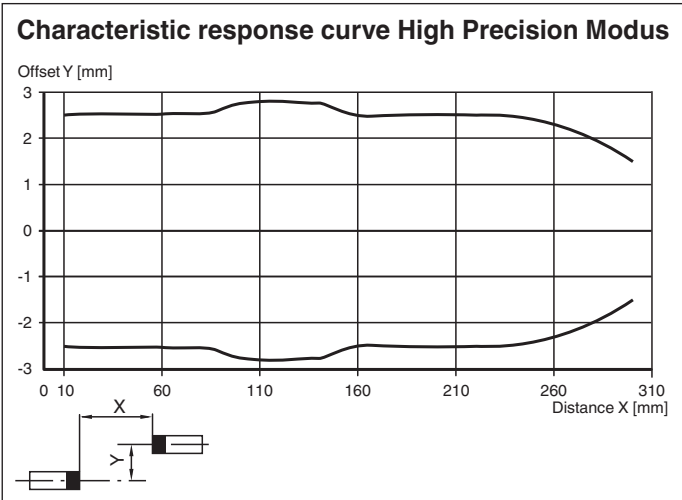
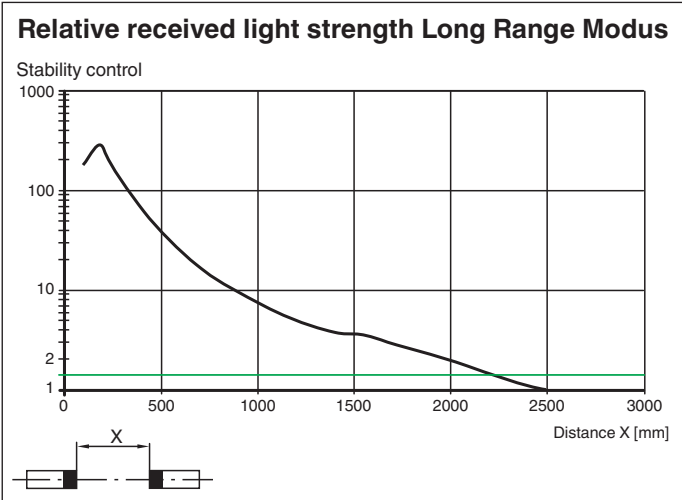


**Characteristic Curve**



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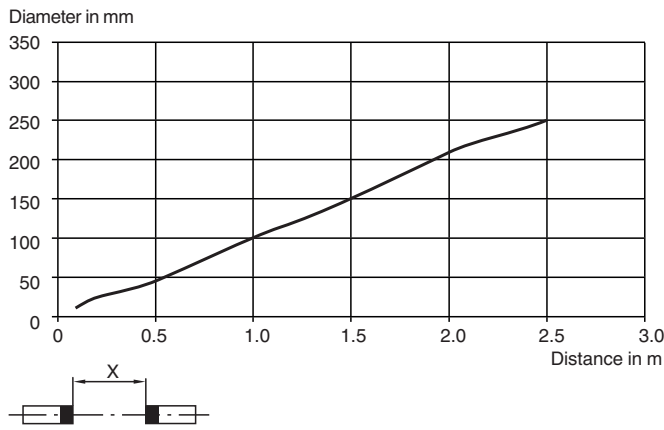
**Characteristic Curve**



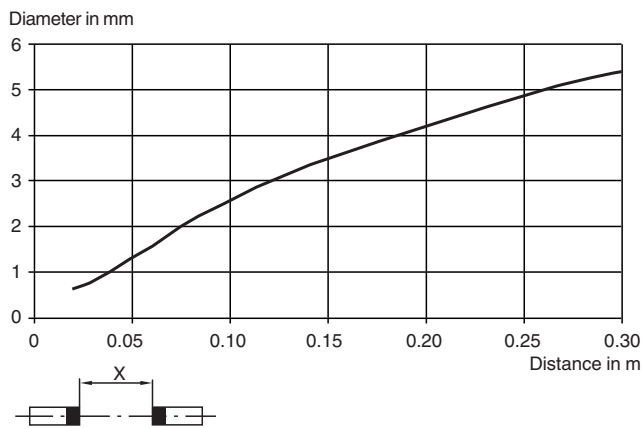
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**Characteristic Curve**

**Light spot diameter Long Range Modus**



**Light spot diameter High Precision Modus**



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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.

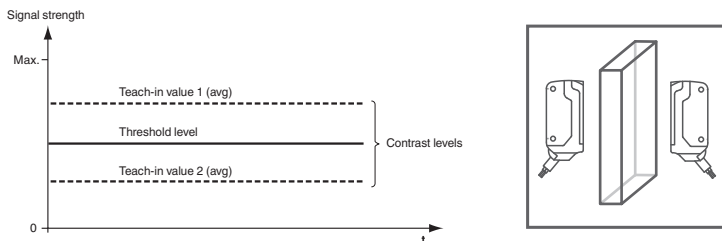
The best results are achieved in "High Precision" mode.

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.

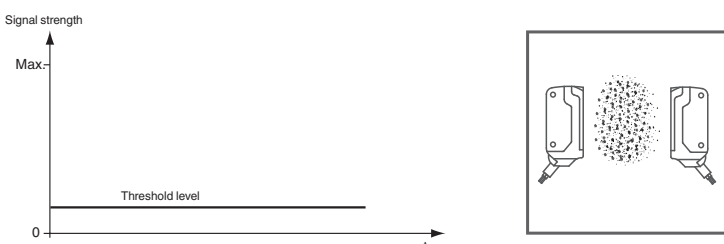
The best results are achieved in "High Precision" mode.

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.