

## Optical proximity switch for glass fiber wave guides OPD Series

- For all glass fiber wave guides of SNT Sensortechnik AG (scanners and barriers)
- Detection of smallest objects
- Teach-In with button or externally
- Very robust die cast housing
- High light power
- High speed 1.5kHz
- Water tight, IP 65, robust



### Technical specifications

### OPD 1500 TA 24 C

Emitted light	nm	880nm (infrared light, clocked)
Detection range	mm	1500 min, against white surface, without wave guide
Power supply voltage	VDC	10 - 35
Mean consumption	mA	<45
External teach input	-	active: teach 2s → U <sub>B</sub> , inactive: teach → GND
Status indicator	-	LED yellow
Operating indicator	-	LED green
Teach and error indicator	-	LED red
Switch output	-	PNP, NO/NC selectable
Switching frequency	Hz	1500
Current capacity of output	mA	max. 200, reversal polarity protection
Voltage drop	V	<2.8
Hysteresis of switch output	%	<12
Reproducibility	%	<2
Ambient temperature	°C	-10°C min 60°C max
Ambient light immunity	Lx	50'000
Protection class	-	IP65
Mass	g	330
Housing material	-	Zinc die-cast
Electrical connection	-	M12 connector, 4 pin

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## Properties

The optical proximity switch for glass fiber wave guides type OPD is the basic electronics for all fiber-optic cables of the type's FOY (scanner) and FOI (barriers) of SNT Sensortechnik AG. It can also be operated stand alone as an optical proximity switch. It reaches very high detection distances and is therefore suited for long and thin wave guides. Due to it's clocked infrared light it is non sensitive to ambient light.

The electronics is built in a very robust metal housing. The OPD together with the SNT glass fiber wave guides are a very robust detection device for smallest parts under difficult conditions. The switching distance can be learnt by teach-in keys or by an external signal. Moreover it can be readjusted manually by the same keys if necessary. To change from NO to NC is done by push button as well.

## Function

Optical wave guide sensors are ideally suited when objects have to be detected in confine conditions. The larger sensor is separated from the small scanner head. Glass fiber wave guides are more robust and have longer service life compared to plastic guides. The proximity switch OPD is a sensor which fits to the glass fiber wave guides of SNT Sensortechnik AG. The guide is mounted with an appropriate nut on the thread of the sensor. The O-ring seal makes it a fully tight connection.

### Scanner:

Together with a FOY glass fiber wave guide a reflection scanner can be achieved. When an object enters the invisible light beam within the preselected distance, the sensor switches.

### Barrier:

The sensor works as light barrier together with an FOI glass fiber wave guide. When the invisible light beam is interrupted by an object, the sensor switches.

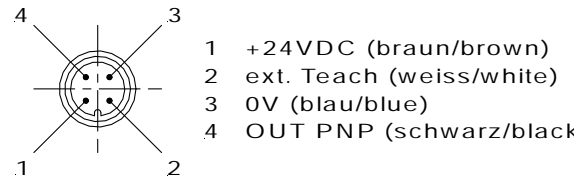
The output function can be selected between NO or NC. The output status is indicated by the yellow LED in the front panel of the sensor. The LED is on when the output is active.

## Mounting

The sensor can be mounted with 2 M4 screws through 2 long holes in the metal housing.

## Electrical connection

The electrical connection is done with a 3 wire cable (without external teach-in function) or with a 4 wire cable (with external teach-in function). The connector is an M12 sensor type connector.



View to the connector on the sensor

When a 4 wire cable is used, the teach-in wire has always to be connected to ground. An open wire can cause interference.

## Teach-In

### External teach input:

The teaching can be controlled e.g. by a PLC with the external teach input.

Teach input	Teach mode
>2s → U <sub>B</sub> (+24VDC)	Active
GND	Inactive

The procedure is the same as with manual teach-in with the **Teach** key.

### Teaching of operating distance:

Teaching has to be done under original application conditions in the following sequence:

#### Scanner:

1. Background (no object)
2. Teach the object

#### Barrier:

1. interrupted (object)
2. open (no object)

After switching the power on, the sensor works in normal mode (detection mode). The green LED **Run** is on.

- Teach the background or the closed barrier
- Remove the object from the detection zone (scanner) or place object in the barrier
- Press the **Teach** key for min. 2s

After pressing the **Teach** key the green LED switches off and the sensor goes after 2s into the teach mode. The red LED **Teach/Error** lights up. The background value has been stored.

- Teach the object (scanner) or the open barrier
- Place the object in the detection zone (scanner) or remove it from the barrier Press the **Teach** key again for a short moment

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After a successful teach-in the red LED **Teach/Error** lights up twice, and the sensor goes back into normal operating mode (green LED **Run** is on). The object value has been stored.

If the teach-in has not been properly done, the red LED **Teach/Error** is quickly blinking for approx. 5 s.

Manual setting of switching distance:

The manual setting can be used for adjustment of switching distance or for varying the functional reserve. It is available only after a teach-in on an object.

The adjustment happens in steps.

- Push the keys **Man+** or **Man-** for min. 2s.

After pushing the key the green LED **Run** switches off and the sensor goes into teach mode after 2s. The red LED **Teach/Error** is on.

- The switching distance can now be adjusted to the application by repeated pushing of the keys **Man-** or **Man+**.

If the programmed value is accepted, the red LED **Teach/Error** flashes twice after each push on the keys **Man+** or **Man-**.

If the sensor is already on the lower or upper limit, the red LED **Teach/Error** flashes quickly after each key push for approx. 5s.

If no key is pushed anymore, the sensor returns automatically to normal mode after 10s (green LED **Run** lights up).

**Reverse output function**

The switch output can be reversed by simultaneous pushing on the keys **Man+** and **Man-** for min. 2s:

- NO
- NC

After releasing the keys the red LED **Teach/Error** flashes twice. The output function has been reversed.

**Cable**

The OPD sensor has a 4 pin M12 connector. However 3 or 4 wire M12 cables can be connected on the same connector. Cables are available separately.

**Contents**

- Optical proximity switch for glass fiber wave guides

**Accessories (see also data sheet ,ACC')**

PUR cable 3-wire with M12 connector:  
l=2m Type KAB 2L3VGPUR

PUR cable 4-wire with M12 connector:  
l=2m Type KAB 2L4VGPUR

**Keyboard**

**Man-**  
Switching distance -  
Programming output function

**Man+**  
Switching distance +  
Programming output function



**LED Run**  
Green, normal operation

**Teach**  
Store object and background

**LED Output**  
Yellow, output status

**LED Teach/Error**  
Red, teach mode,  
teach acknowledgement,  
error indication

**Dimensions**

