

diff. reflection with background suppression

dimensions **M8x1**
 sensing range 20 ... 150mm



- ✓ background suppression
- ✓ time-of-flight measuring method
- ✓ infrared laser, laser protection class 1
- ✓ adjustment via teach-In
- ✓ push-pull switching output
- ✓ window function programmable
- ✓ short-circuit and reverse polarity protected
- ✓ LED-display
- ✓ M12-connector, 4-pin

diffuse reflection laser sensor with background suppression



description

With this new device ipf electronic presents for the first time an extremely compact optical diffuse reflection sensor with background suppression that is able to detect objects completely independent of their color.

The background suppression works according to the so-called "time-of-flight" principle (TOF), a transit time method used for distance measurement. With this method, the distance of an object is determined by measuring the time-of-flight of a light pulse that is emitted by a sensor transmitter, reflected by the detected object and then finally captured by the sensor receiver.

The range, or rather the switching distance, of this compact diffuse reflection sensor is therefore fully independent of the reflective properties of the object surface that is to be detected.

The electrical connection is made via a 4-pin M12-cable connector with 300mm length. The output stage and the LED are integrated in the cable connector.

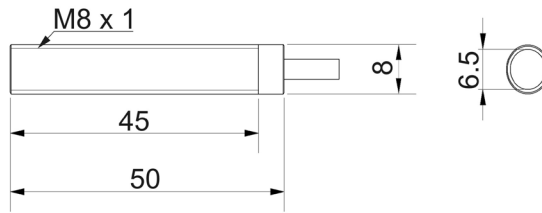
To avoid EMC-interferences, a shielded cable socket (e.g. VK205325) has to be used. The shield has to be connected to earth or machine ground over a large area. During normal operation, the teach-input has to be connected to 0V.

article-no.
operating range
connection

PT080320

20 ... 150mm

M12-cable connector, 4-pin



TECHNICAL DATA

sensing range
output signal

5 ... 150mm

push-pull, light-on / darl-on mode, no / nc

operating voltage
output current (max. load)
transmitting element
laser protection class
switching frequency

10 ... 30V DC

100mA

laser diode, infrared light

1

25Hz

display
settings
short-circuit protection
reverse polarity protection

LED yellow

teach-in

+

+

dimensions
length (thread / total)
material (housing)
material (front screen)
protection class (EN 60529)
temperature (operating)

M8x1

45mm / 50mm

VA 1.4305

lux acryl 2H

IP65

-10 ... +60°C

connection
connection accessories

M12-cable connector, 4-pin

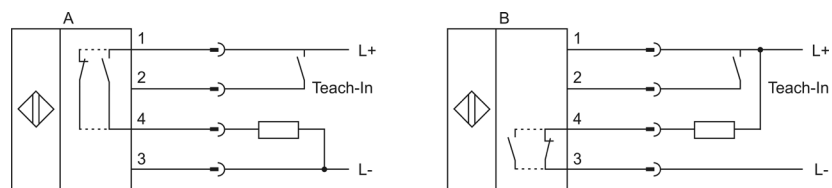
e.g. **VK205325** (cable socket M12 shielded)

AV000114 (teach-in adapter)

mounting accessories (universal holder)

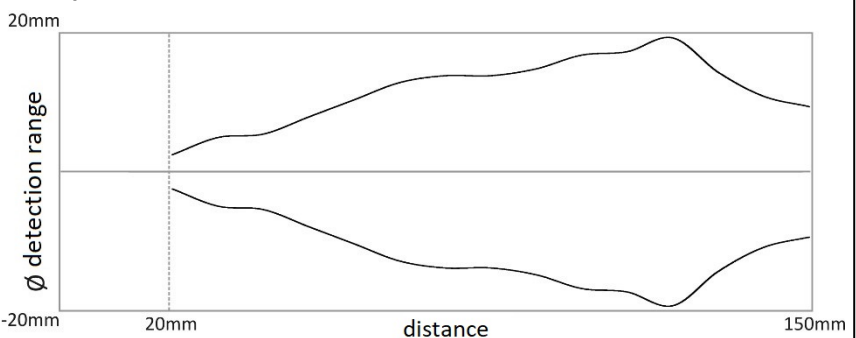
AY000115

connection



colors: 1 = BN (brown), 2 = WH (white), 3 = BU (blue), 4 = BK (black)
functions: 1 = L+, 2 = teach-in, 3 = L-, 4 = push-pull

beam path:



Warning:
Never use these articles in applications where the safety of a person depends on their functionality.

Manual**Status display:**

During normal operation, the yellow LED lights up when the switching output is active. During the teach-mode the LED flashes with different frequencies and thus displays the respective mode.

Factory settings:

After the initial startup, the sensor has the following default settings:

switching distance: approx. 65mm sensing

Description of the teach modes:

To start the teach process, connect the white wire (PIN 2) with the operating voltage.

If this connection exists between 3 and 6 seconds, the yellow LED will flash with a frequency of 5Hz. After releasing the connection, the teach mode „sensing function“ is active.

If this connection exists between 6 and 10 seconds, the yellow LED will flash with a frequency of 2.5Hz. After releasing the connection, the teach mode „window function“ is active.

If the connection exists more than 10 seconds, the device will be reset to the factory settings. The yellow LED flashes with a frequency of 0.5Hz.

Teach-process of the sensing function

1. Connect for a period of time between 3 and 6 seconds the white wire (PIN 2) to the operating voltage. The LED flashes with approx. 5Hz.
2. Release the connection. The yellow LED now flashes with a frequency of 0.3Hz.
3. Place the object to be detected at the desired distance in front of the sensor.
4. Connect the white wire (Pin 2) for at least 1 second with the operating voltage. If the LED lights up at that time, the switching output functions as normally open contact (output is active when object is detected). If the LED is off at that time, the switching output functions as normally closed contact (output is active, when object is not detected).
5. If the yellow LED flashes with a frequency of 2.5Hz, the teach process was successful. You can release the connection now. The taught value is stored and is also available after switching the sensor off and on again.
6. If the LED flashes with a frequency of 6Hz, the teach process has failed. The object could not be detected, because it was e.g. placed beyond the detection range. In this case, the teach process has to be repeated.

Teach-process of the window function

1. Connect for a period of time between 6 and 10 seconds the white wire (PIN2) to the operating voltage. The LED flashes with approx. 2.5Hz.
2. Release the connection. The yellow LED now flashes with a frequency of 1Hz.
3. Place the object to be detected at the switching point at long distance.
4. Connect the white wire (Pin2) for at least 1 second to the operating voltage. The yellow LED will flash with a frequency of 2.5Hz, if the value is stored.
5. Release the connection.
6. Place the object to be detected at the switching point at small distance. The distance to the previous taught switching point has to be at least 5mm!
7. Reconnect the white wire (Pin2) for at least 1 second to the operating voltage. The yellow LED will flash with a frequency of 5Hz, if the value is stored.
8. The teach process is completed. The sensor's output functions as normally open contact, i.e. it is active, when an object is detected between the two switching points. The taught value is stored and is also available after switching the sensor off and on again.
9. If the LED flashes with a frequency of 6Hz, the teach process has failed. The object could not be detected, because it was e.g. placed beyond the detection range. In this case, the teach process has to be repeated.

Note regarding the switching function:

If you want the output to function as normally closed contact during mode „window function“, i.e. beyond the taught window, place the object to be detected first (3) at the switching point at small distance – and then (6) at the switching point at long distance.

Note regarding the switching output:

The terms „normally open contact“ and „normally closed contact“ used in this manual refer to the wiring diagram A (PNP). If the device is connected according to wiring diagram B (NPN), the switching output functions inversely.

Reset to the factory settings

Connect for more than 10 seconds the white wire (PIN2) with the operating voltage. The LED flashes with approx. 0.5Hz.

After releasing the connection the sensor functions with the factory settings (switching distance approx. 65mm, sensing).

Notes to avoid EMC-interferences

Please use a shielded cable socket , e.g. VK205325.

The shield has to be connected to earth or machine ground over a large area.

After having taught the desired distance or switching function, please connect the teach-input to 0V.