

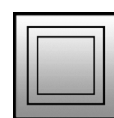
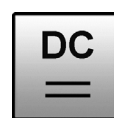
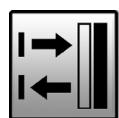
PT120520

Laser sensors
Diffuse-reflections sensor with background suppression



- / Setting by teach-in
- / Push-pull switching output
- / Window function programmable
- / IO-Link interface

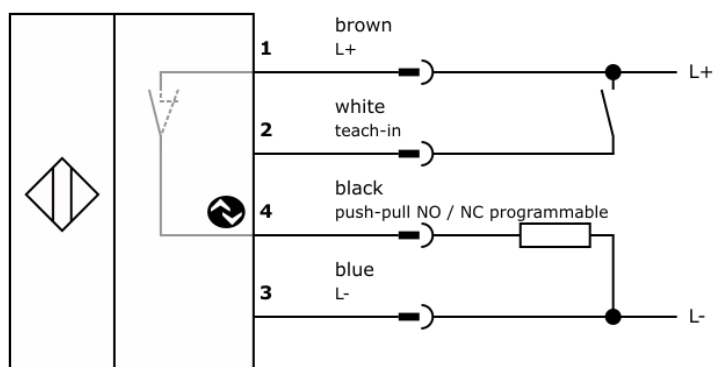
Infrared laser, laser protection class 1
ToF measurement method



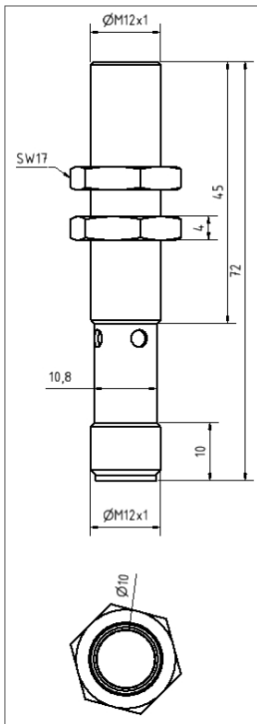
TECHNICAL DATA

Scanning range	50 ... 1,200mm
Output signal	Push-pull, light / dark switching, no / nc
Operating voltage U_B	10 ... 30V DC
Output current (max. Last)	100mA
Transmitting element	Laser diode, infrared light
Laser protection class	1
Switching frequency	$\leq 25\text{Hz}$
Display	LED yellow
Setting	Teach-in
Short-circuit proof	+
Reverse polarity protected	+
Dimension	M12 x 1
Length (thread / total)	45mm / 72mm
Material of the Housing	VA 1.4305
Material of the front screen	Lux acrylic 2H
Protection class (EN60529)	IP65
Temperature (operation)	-10 ... +60°C
Connection	M12-connector 4-pin
Connection accessories	e.g. VK205325 (Cable socket M12 shielded) AV000114 (Teach-in adapter)
Mounting accessories (Uni holder)	AY000115

Connection



Dimensional drawing



Operating instructions

Status display:

In normal operation, the yellow LED lights up when the switching output is active.
In teach mode, the LED flashes with different frequencies to indicate the respective mode.

Factory setting:

After the first power-up, the sensor has the following default setting:
Switching distance: 300mm sensing, hysteresis 20mm

Description of the teach modes:

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

If this connection exists between 1 and 4 seconds, the yellow LED flashes with a frequency of 1Hz. After releasing the connection, the teach mode "sensing function" becomes active.

If the connection exists between 4 and 8 seconds, the yellow LED flashes with a frequency of 3Hz. After the connection is released, the "Window function" teach mode becomes active.

If the connection is maintained for longer than 8 seconds, the device is reset to factory settings. The yellow LED then flashes with a frequency of 5Hz.

Make sure that the selected switching points are within the specified scanning range (50 ... 1,200mm).

If the object is less than 50mm away from the sensor during teaching, the minimum distance of 50mm is saved as the switching point.

If the object is more than 1,200mm away from the sensor during teaching, the maximum distance of 1,200mm is saved as the switching point.

Teach procedure of the sensing function

1. Connect the white wire (PIN 2) to the operating voltage for a period of between 1 and 4 seconds. The LED flashes with approx. 1Hz.
2. Disconnect 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) to the operating voltage at the same time. If the LED is on at this time, the switching output operates as a normally open contact (output active when the object is detected), if the LED is off at this time, the switching output operates as a normally closed contact (output active when the object is not detected). While the connection is closed, the LED flashes with 2Hz. As soon as you disconnect the connection, the current distance is taught-in and saved as a value.

Teach procedure of the window function

1. Connect the white wire (PIN2) to the operating voltage for a period of between 4 and 8 seconds. The LED flashes with approx. 3Hz.
2. Remove the connection. The yellow LED now flashes with a frequency of 2Hz.
3. Place the object to be detected at the desired sensor-remote switching point.
4. Connect the white wire (pin 2) to the operating voltage. As long as the connection is established, the LED flashes at 5Hz. As soon as you disconnect the connection, the current distance is taught in as a value and saved.
5. Place the object to be detected at the desired switching point close to the sensor. The distance to the previous point must be at least 50mm. Reconnect the white wire (Pin2) to the operating voltage. As long as the connection is established, the LED flashes at 5Hz. As soon as you disconnect the connection, the current distance is taught in as a value and saved.

The teach process is completed. The output of the sensor operates as a normally open contact, i.e. it is active when an object is detected between the two switching points. The taught values are stored and are also available after switching the sensor off and on again.

If the distance between the two switching points is too small during teaching, the sensor automatically saves a switching window with the required minimum distance.

Note on the switching function:

If the output is to operate as a normally closed contact when "Window function" is selected, i.e. if it is to be active outside the taught-in window, position the object to be detected first (3) at the switching point close to the sensor - and then (5) at the switching point remote from the sensor.

Note on the switching output:

The terms "normally open contact" and "normally closed contact" used in these operating instructions refer to the connection diagram (PNP) shown under "Connection" on page 1. If the device is connected to a control with NPN inputs, the switching output works in reverse. The LED display on the sensor is not affected by this.

Reset to factory setting

Connect the white wire (PIN 2) to the operating voltage for a period of more than 8 seconds. The LED flashes with a frequency of 5Hz. After disconnection, the sensor operates with the factory setting (sensing switching distance 300mm, hysteresis 20mm).

Note on the function

The sensor operates according to the "time-of-flight" principle. The light emission angle is approx. 25°. If the sensor in the background looks at two different distances at the same time (room corner, wall protrusion), uncontrolled switching of the output can occur due to the superimposition of the reflection signals. Therefore, make sure that the background in your application is flat.

Notes on avoiding interference coupling

Use a shielded cable socket, e.g. VK205325.

Connect the shield to ground or machine ground over a large area.

After teaching the desired distance or the desired switching function, connect the teach input to 0V.

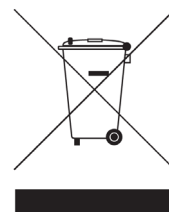
IO-Link interface

Additional configurations can be made using the IO-Link interface. For example, the scanning range can be increased to up to 2m and the width of the detection range can be set.

SAFETY INSTRUCTIONS:**Disposal**

Before commissioning, please make sure that all safety instructions listed in the product documentation, if applicable, have been observed!

At the end of its service life, the product must be disposed of in accordance with the country-specific regulations at a suitable disposal point for recycling electrical and electronic equipment (WEEE No. 40951076).



The PT120520 sensor is used for the contactless detection of objects within industrial machines and systems. It may only be commissioned by a qualified electrician.

Only use the sensor in accordance with the specified technical data and in technically perfect condition.

If there is a direct effect on personal safety, the use of these products is prohibited!