Leuze

Diffuse reflection sensor with background suppression

ODT25B

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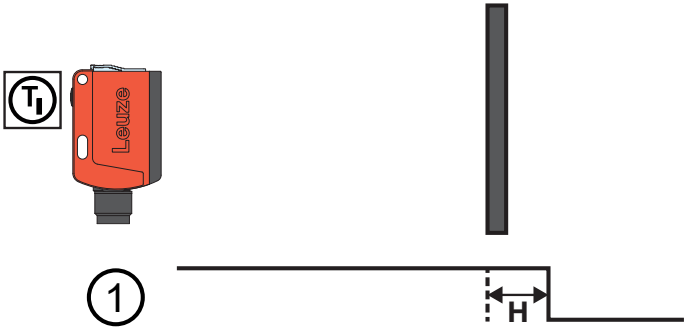
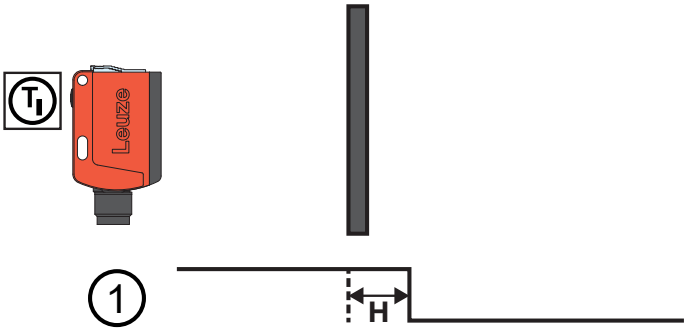
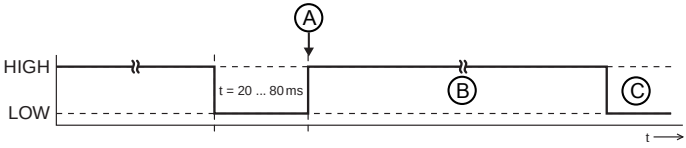
1



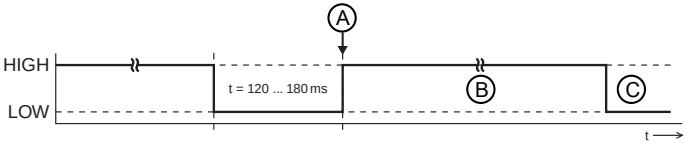
2



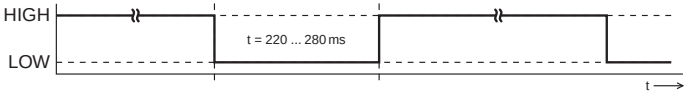
3


A
HIGH
LOW
t = 20 ... 80 ms
B
C
t

4


A
HIGH
LOW
t = 120 ... 180 ms
B
C
t

5


HIGH
LOW
t = 220 ... 280 ms
t

6


HIGH
LOW
t = 320 ... 380 ms
t

Notes

Application notes

- With the set detection range, a tolerance of the upper scanning range limit is possible depending on the reflection properties of the material surface.
- Range/reflectivity:

Object/diffuse reflection	
2 %	0,05 … 1,7 m
90 %	0,05 … 3,0 m

- Reflective, high-gloss objects (e.g. mirrors) are not detected.
- Optimum detection behavior is achieved when the light spot is fully on the object.
- The maximum possible angle relative to the object surface depends on the reflection properties.
- An only partially covered light spot can affect the detection behavior.

Sensor adjustment (teach) via teach button

Teaching of two individual switching points	
Operating level 1	**Operating level 2**
1 **Teach on object for Q1 (pin 4):** With this teach mode, the switching distance for switching output Q1 is configured in such a way that the object which is in the beam path during the teach procedure is reliably detected.	**2** **Teach on object for Q2 (pin 2):** With this teach mode, the switching distance for switching output Q2 is configured in such a way that the object which is in the beam path during the teach procedure is reliably detected.
Hysteresis H: To ensure continuous object detection in the switching point, the sensor has a switch hysteresis. Object is no longer detected if: distance to sensor > teach point + reserve + hysteresis.	

NOTICE	
	The sensors have a factory-set hysteresis H of 30 mm and a reserve of 30 mm. Both parameters can be adjusted via IO-Link.

Operation via teach button			
Teach-in on operating level 1 (switching distance for Q1)		**Teach-in on operating level 2 (switching distance for Q2)**	
1	Hold down the teach button (2 to 7 s) until the yellow and green LEDs flash **simultaneously**.	1	Hold down the teach button (7 to 12 s) until the yellow and green LEDs flash **alternately**.
2	Release teach button – ready.	2	Release teach button – ready.

Adjusting the switching behavior of the switching output – light/dark switching	
This function permits inversion of the sensors' switching logic.	
1	Press teach button until only the green LED flashes.
	Behavior of the yellow LED: – Yellow LED ON: switching outputs light switching (in the case of complementary sensors, Q1 (pin 4) light switching, Q2 (pin 2) dark switching), this means output active when object is detected. – Yellow LED OFF: switching outputs dark switching (in the case of complementary sensors, Q1 (pin 4) dark switching, Q2 (pin 2) light switching), this means output inactive when object is detected.
2	Release teach button. The yellow LED then indicates the toggled switching logic.

Set factory defaults	
It's possible to restore the factory settings of the sensor via the teach button.	
1	Hold down the teach button during power-on. The green and yellow LEDs flash simultaneously at 3 Hz.
2	Release the teach button. The green and yellow LEDs flash alternately at 3 Hz.
3	Press the teach button. The green and yellow LEDs flash simultaneously at 9 Hz.
4	Release the teach button. The factory settings are restored and the sensor is restarted.
The sequence must be completed within 10 s, otherwise the factory settings will not be restored.	

Sensor adjustment (Teach) via the Teach input (pin 2)

The following description applies to PNP switching logic:

Signal level LOW ≤ 2 V
Signal level HIGH ≥ (U_B-2 V)

With types with NPN switching logic, the signal levels are inverted.

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Line teach on operating level 1 (switching distance for Q1)

A Teach in operating level 1 is being carried out
B Teach button is locked
C Teach button may now be operated again

4

Line teach on operating level 2 (switching distance for Q2)

A Teach in operating level 2 is being carried out
B Teach button is locked
C Teach button may now be operated again

5

Light switching logic
Switching outputs light switching, this means outputs active when object is detected.
In the case of complementary switching outputs, Q1 (pin 4) light switching, Q2 (pin 2) dark switching.

6

Dark switching logic
Switching outputs dark switching, this means outputs inactive when object is detected.
In the case of complementary switching outputs, Q1 (pin 4) dark switching, Q2 (pin 2) light switching.

Locking the teach button via the teach input (pin 2)

A static HIGH signal (≥ 20 ms) at the teach input locks the teach button on the device, such that no manual operation is possible (e.g. protection from erroneous operation or manipulation).

If the teach input is not connected or if there is a static LOW signal, the button is unlocked and can be operated freely.