8018589

TECHNICAL INFORMATION

MultiPac

MultiTask photoelectric sensors

SICK
Sensor Intelligence.

Installation advice for the detection of bundles

MultiPac

WTB27-3P2483, -N2483

Operating Instructions with an advice for detection of bundles

SICK
Sensor Intelligence.

Safety Specifications

- Read the operating instructions and the assembly instructions before starting operation.
- Connection, assembly and settings only by competent technicans.
- Protect the device against moisture and soiling when operating.
- No safety component in accordance with EU machine guidelines.

Proper Use

The opto-electronic sensor WTB27-3 is used for detection of optical, non-contact detection of objects, animals and persons.

Starting Operation

The device has antivalent switching outputs:

$\overline{Q}$: dark-switching, object is not detected, output HIGH

Q: light-switching, object is detected, output HIGH

Screw Sensor to appropriate bracket, connect and secure cable receptacle tension-free. Connect the Sensor to operating voltage (see type label), green indicator-LED lights.

Maintenance

SICK photoelectric switches do not require any maintenance. We recommend that you clean the optical interfaces and check the screw connections, plug-in connections and the adjustment at regular intervals.

Modifications of devices may not be made.

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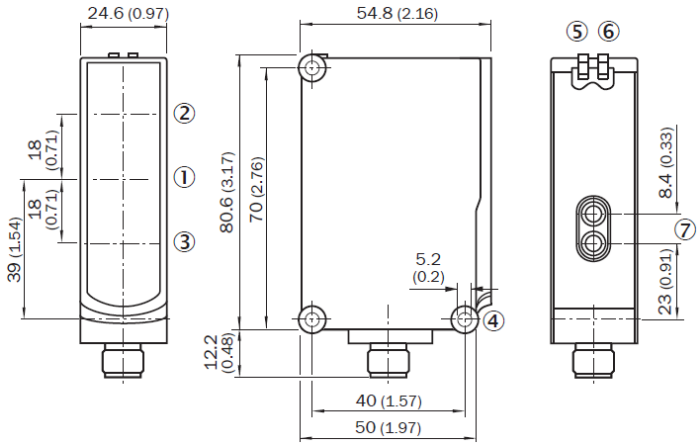
Dimensional drawing

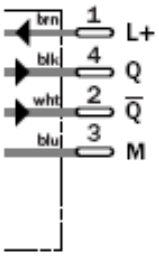


① Optical axis sender
② Optical axis receiver 1
③ Optical axis receiver 2
④ Mounting hole
⑤ LED indicator green, power on
⑥ LED indicator yellow, status of received light beam
⑦ Adjustment of scanning distance: double teach button

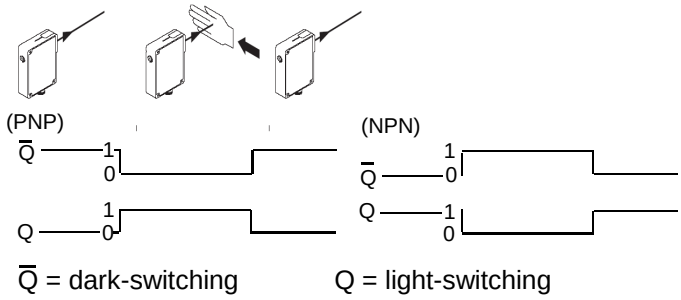
All dimensions in mm (inch)

Connection type

4-pin, M12



Switching outputs



$\overline{Q}$ = dark-switching Q = light-switching

Technical data

Distance between Sensor and conveyor belt, see chapter 1	Max. 500 mm	
Adjustment of operating distance	Teach-in: double teach button	
Light source, light type [1]	red light, HighPower-LED	
Light spot diameter	Approx. 12 mm at 500 mm distance	
Supply voltage V_S [2]	DC 10 … 30 V	
Ripple [3]	≤ 5 V_{ss}	
Power consumption [4]	≤ 55 mA	
Switching outputs	PNP, antivalent	WTB27-3P2483
Switching outputs	NPN, antivalent	WTB27-3N2483
Output current I_a max.	≤ 100 mA	
Response time [5]	≤ 5 ms	
Max. switching frequency [6]	100 Hz	
Protection class [7]	⧈	
Circuit protection [8]	A, B, C	
Enclosure rating	IP 66, IP67	
Ambient temperature operation	- 30 °C…+ 60 °C	
Ambient temperature storages	- 40 °C…+ 75 °C	

1) Average service life 100.000h at T_A = +25 °C
2) Limit values; operation in short-circuit protected network max. 8A
3) May not exceed or fail short of V_S tolerances
4) Without load
5) Signal transit time with resistive load
6) With light/dark ratio 1:1
7) Reference voltage 50 V DC
8) A = V_S connections reverse-polarity protected
   B = Outputs short-circuit protected
   C = Interference pulse suppression

1. Installation Height and Skew Angle

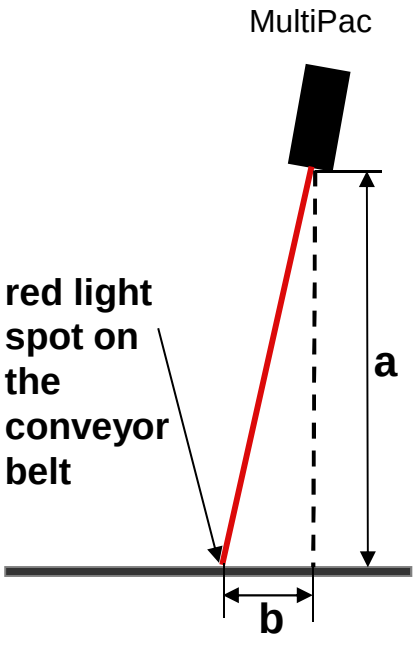
(depends on the type of bottle bundle)

1a Attach the MultiPac to the appropriate bracket.
Installation height should be adjusted for the maximum height of a given bottle bundle.
Example:
Maximimum bundle height is 350 mm (Dimension d).
The MultiPac installation height should not exceed 400 mm (Dimension a) or, the distance between bottle bundle and MultiPac should min. 20 mm (Dimension c), see dimensions in table on page 4.

1b Apply operating voltage to the MultiPac. The green indicator-LED will illuminate when the device is powered and the red light spot is visible a surface (i.e. the conveyor belt).

Adjustment of the skew angle depends on the type and shape of the bottle bundle. In general, larger diameter bottles will require a larger skew angle to cover gaps created between a bundle. See chapter 4 for additional detail.

The skew angle can be easily adjusted using the following table:



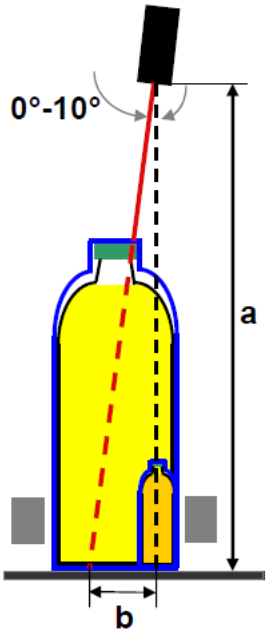
a [mm]	b [mm]		
Distance between sensor and conveyor belt	10°	15°	25°
500	88	133	233
450	79	120	209
400	70	107	186
350	61	93	163
300	52	80	139
250	44	66	116
200	35	53	93
150	26	40	70

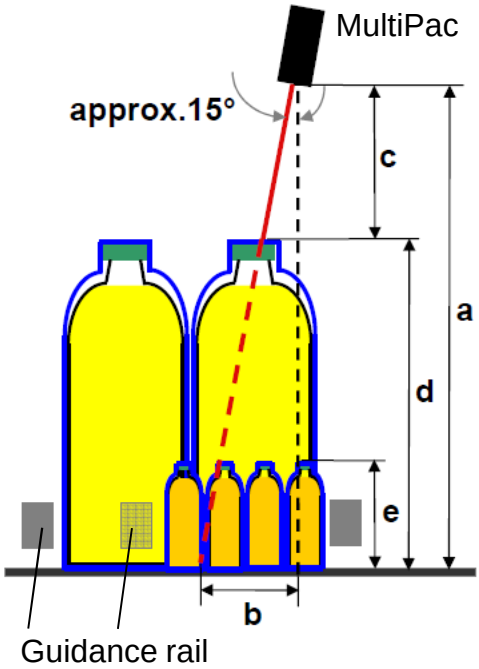
The pictures of the bundles give an overview for selecting of the suitable skew angle for the sensor.

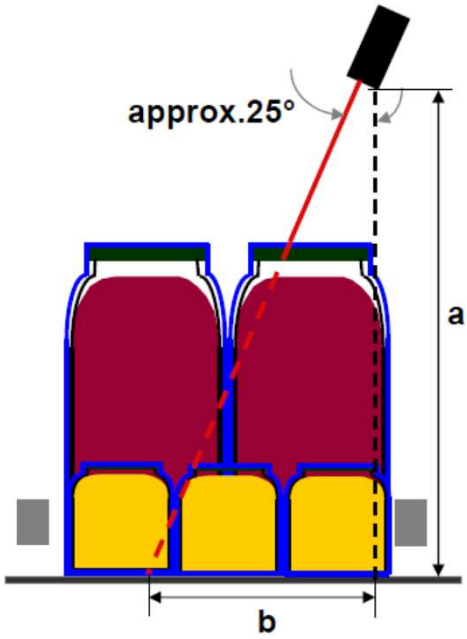
Example of a bundle

Example of bundles

Example of glasses with vegetables



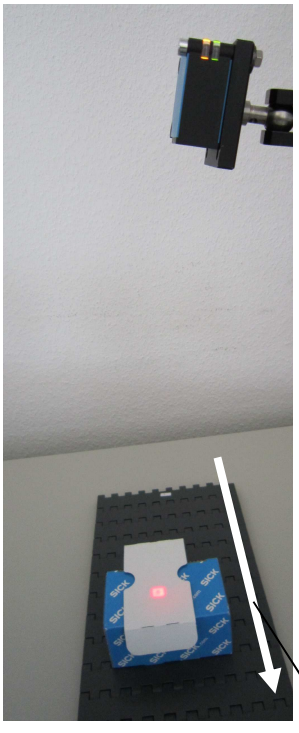




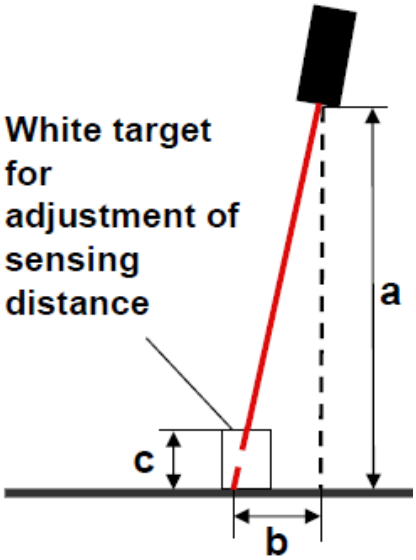
a	b [mm]		
[mm]	10°	15°	25°
500	88	133	233
450	79	120	209
400	70	107	186
350	61	93	163
300	52	80	139
250	44	66	116
200	35	53	93
150	26	40	70

c	Distance between Sensor and bundle	> 20 mm
d	Height of a bundle max.	450 mm
e	Height of a bundle min.	60 mm

2. Sensing distance adjustment



After mounting, place a white target (i.e. white spacer in the packaging) on the detection surface below the red sensor light spot at the desired sensing distance.



Direction of transport of the bundles

Height of a bundle [mm]	c [mm]
100…450	50
60…100	25

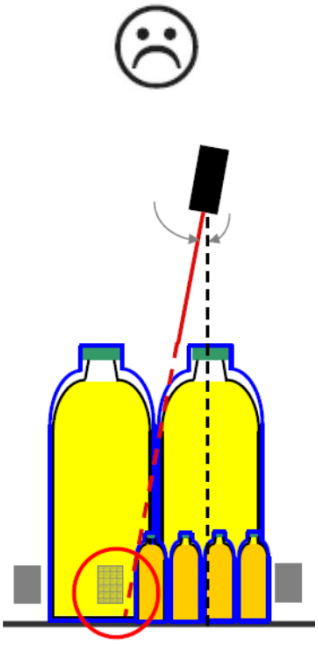
Simultaniously press both teach buttons (> two (2) seconds) until the yellow indicating LED blinks. Object is detected. Release both buttons, the yellow indicating LED lights continuously**.** The teach process is complete and the sensing distance is stored.

Minor correction of the sensing distance is possible using the „+“ and „-“ buttons indpendently:
Press the „+“ button for approximately 0.5 seconds to increase the sensing distance
Press the „-“ button for approximately 0.5 seconds to decrease the sensing distance

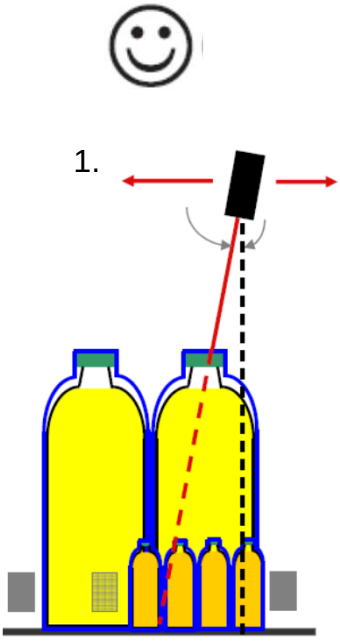
Benefit:
The MultiPac detects different types of bundles reliable regarding height and colour with *one* sensing distance and with *one* mounting position. Therefore the height adjustment of a sensor is eliminated in case of changing from one type of bundle to another type of bundle.

3. Positioning of the MultiPac

(detection of different bottle bundle types on one conveyor line)



The light beam may be to close to a small bottle bundle guide rail if simply positioned for a large bottle bundle.

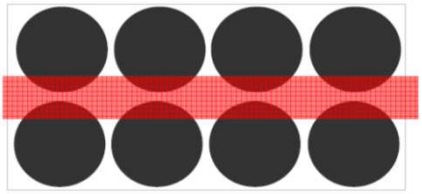


1. Move the MultiPac horizontally (perpendicular to the direction of travel) while retaining the skew angle to ensure both minimum and maximum bottle bundle size is detected.
2. Fix the position of the MultiPac.
3. Turn on the conveyor and make sure no bottle bundles are transported. The sensor output should not change state.
4. If the sensor output changes state, readjust and lower the sensing distance.
5. Check again: Turn on the conveyor and make sure no bottle bundles are transported. The sensor output should not change state.

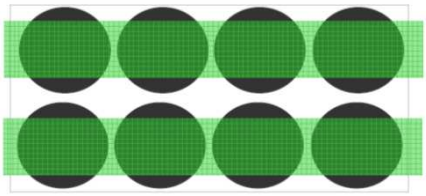
4. Positioning of the MultiPac

(detecting bottle bundles with large gaps)

Example



No reliable detection:
Ensure light spot is not in red section – between bundle rows



reliable detection:
Light spot should be in-line with a bundle row as indicated by the green sections.

5. Troubleshooting

Problems	Action
No target present and the sensor output is unregularly switching.	- Check installation position of the sensor, maybe the skew angle of the sensor has been changed after the adjustment of the sensing distance. - sensing distance is not correct adjusted, see chapter 2
Interruption of the sensor output while bottle bundles are pesent.	Check the positioning of the sensor, clean front lens of the sensor, see chapter 3 and 4