

WTL16 - WTS16 Bluetooth®

SICK
Sensor Intelligence.



WTL16 - WTS16 Bluetooth®

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Sensor Intelligence.



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Described product

WTL16, WTS16 - Bluetooth®

Manufacturer

SICK AG
Erwin-Sick-Str. 1
79183 Waldkirch
Germany

Legal information

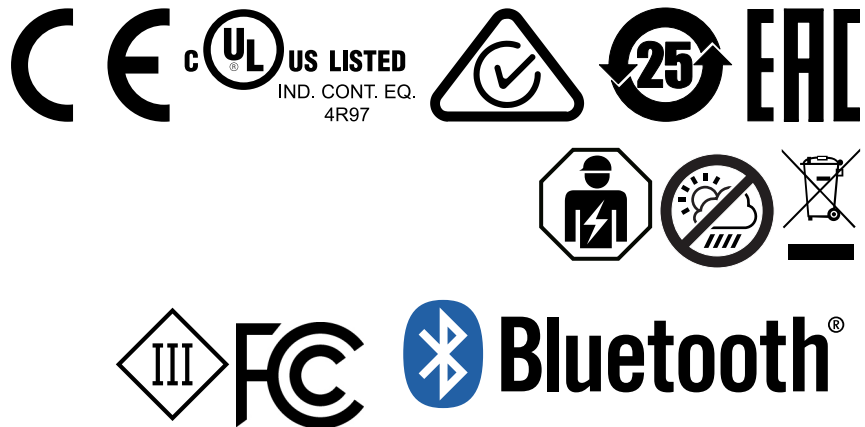
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Original document

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1 Safety information

1.1 General safety notes

- Read the operating instructions before commissioning.
-  Connection, mounting, and configuration may only be performed by trained specialists.
-  Not a safety component in accordance with the EU Machinery Directive.
-  When commissioning, protect the device from moisture and contamination.
- These operating instructions contain information required during the life cycle of the sensor.

1.2 Notes on UL approval

The device must be supplied by a Class 2 source of supply.

UL Environmental Rating: Enclosure type 1

2 Intended use

The WTL16 Bluetooth®, WTS16 Bluetooth® is an opto-electronic photoelectric proximity sensor (referred to as “sensor” in the following) for the optical, non-contact detection of objects, animals, and persons. If the product is used for any other purpose or modified in any way, any warranty claim against SICK AG shall become void.

The WTS16 is particularly suited to the detection of flat, glossy, contrast-rich, and uneven objects.

3 Operating and status indicators

Photoelectric proximity sensor with background suppression.

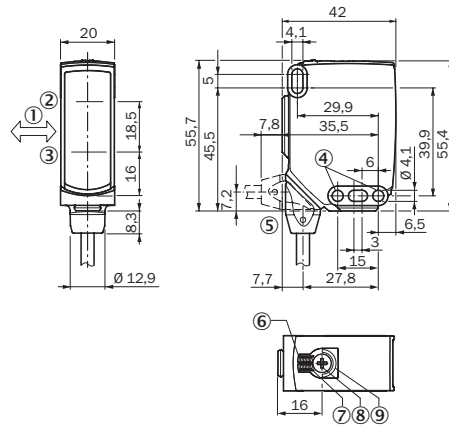


Figure 1: Dimensional drawing 1, WTL16 cable

- ① Preferred direction of the target object
- ② Center of optical axis, sender
- ③ Center of optical axis, receiver
- ④ Fixing hole, \varnothing 4.1 mm
- ⑤ Connection
- ⑥ LED indicator green: Supply voltage active
- ⑦ LED indicator yellow: Status of received light beam
- ⑧ Press-turn element: Adjusting the sensing range
- ⑨ BluePilot blue: Sensing range display

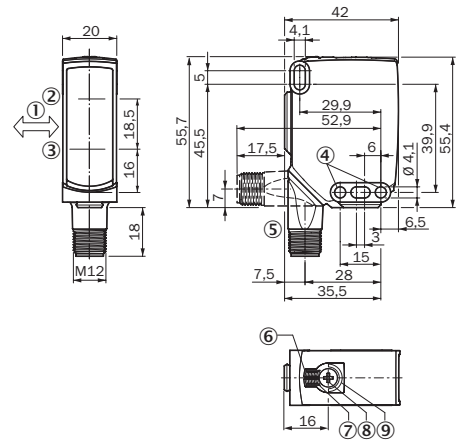


Figure 2: Dimensional drawing 2, WTL16 male connector

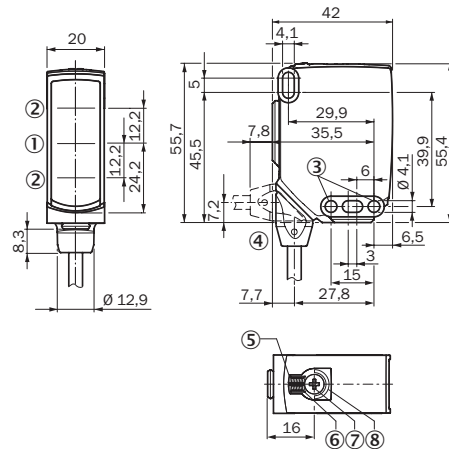


Figure 3: Dimensional drawing 3, WTS16 cable

- ① Center of optical axis, sender
- ② Center of optical axis, receiver
- ③ Fixing hole, \varnothing 4.1 mm
- ④ Connection
- ⑤ LED indicator green: Supply voltage active
- ⑥ LED indicator yellow: Status of received light beam

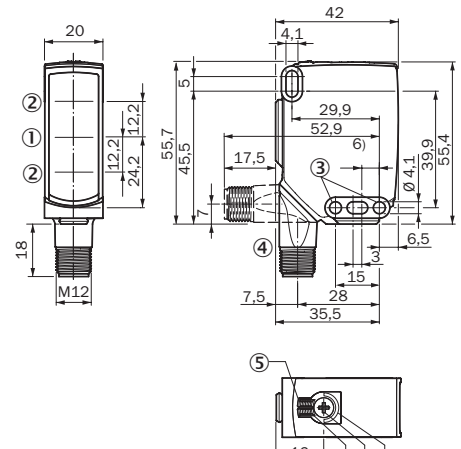


Figure 4: Dimensional drawing 1, WTS16 male connector

- ⑦ Press-turn element: Adjusting the sensing range
- ⑧ BluePilot blue: Sensing range display

4 Mounting

Mount the sensor using a suitable mounting bracket (see the SICK range of accessories).

Note the sensor's maximum permissible tightening torque of < 1,3 Nm.

Note the preferred direction of the object relative to the sensor, see figure 1, figure 2 (only applies to WTL16).

5 Electrical installation

The sensors must be connected in a voltage-free state ($U_V = 0\text{ V}$). The following information must be observed, depending on the connection type:

- Male connector connection: Note pin assignment.
- Cable: wire color

Only apply voltage/switch on the voltage supply ($U_V > 0\text{ V}$) once all electrical connections have been established.

Explanations of the connection diagram (table 1, table 2).

MF (pin 2 configuration) = external input, teach-in, switching signal

Q_{L1}/C = switching output, IO-Link communication

DC: 10 ... 30 V DC

Table 1: DC


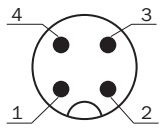
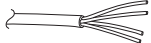
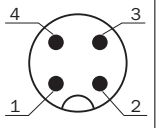
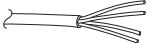
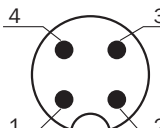
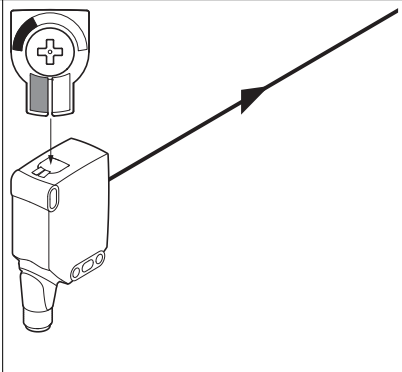
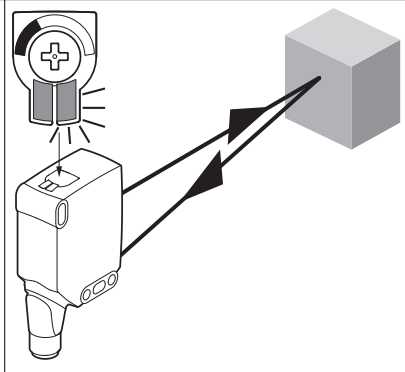
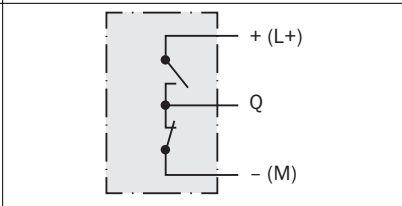
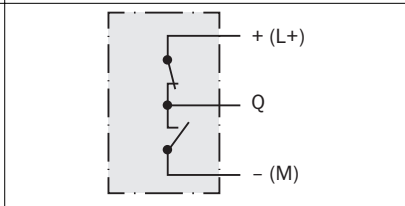
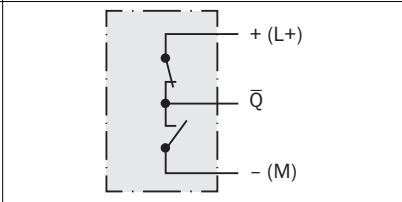
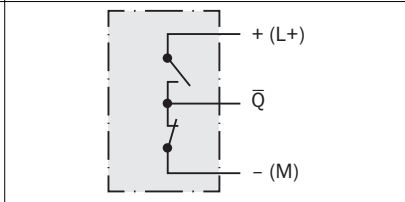
| WTL16 WTS16 | -24161xxxA00 -34161xxxA00 | -1x161xxxAO 0 | -24162xxxAO 0 -34162xxxAO 0 | -1x162xxxAO 0 | -2416xxxA01- A99 -3416xxxA01- A99 |
|---|---|--|--|--|---|
| 1 | + (L+) | | | | |
| 2 | MF | | | | |
| 3 | - (M) | | | | |
| 4 | Q_{L1}/C | | | | |
| Default: MF | \bar{Q} | \bar{Q} | Q | Q | www.sick.com 8020347 |
| Default: Q_{L1}/C | Q | Q | \bar{Q} | \bar{Q} | www.sick.com 8020347 |
|  |  | 1 = brn 2 = wht 3 = blu 4 = blk  0.14 mm ² AWG26 |  | 1 = brn 2 = wht 3 = blu 4 = blk  0.14 mm ² AWG26 |  |

Table 2: Push / pull

| | | |
|--|--|---|
| |  |  |
| <p>Q Push-pull (≤ 100 mA)</p> |  |  |
| <p>\bar{Q} Push-pull (≤ 100 mA)</p> |  |  |

6 Commissioning

Bluetooth® is switched on for initial commissioning. You can get SOPASair in the Google PlayStore (Android) and in the App Store (iOS).
 Operating system requirements: Android version 6.0, most current version of iOS.

Alignment

WTL16 Bluetooth®, WTS16 Bluetooth®: Align sensor on object. Select the position so that the red emitted light beam hits the center of the object. You must ensure that the optical opening (front screen) of the sensor is completely clear [figure 5].



NOTE

For WTS16: If the objects are detected from above, we recommend installing the sensor at an angle in order to prevent total reflection by a reflective surface, see figure 11, figure 14.

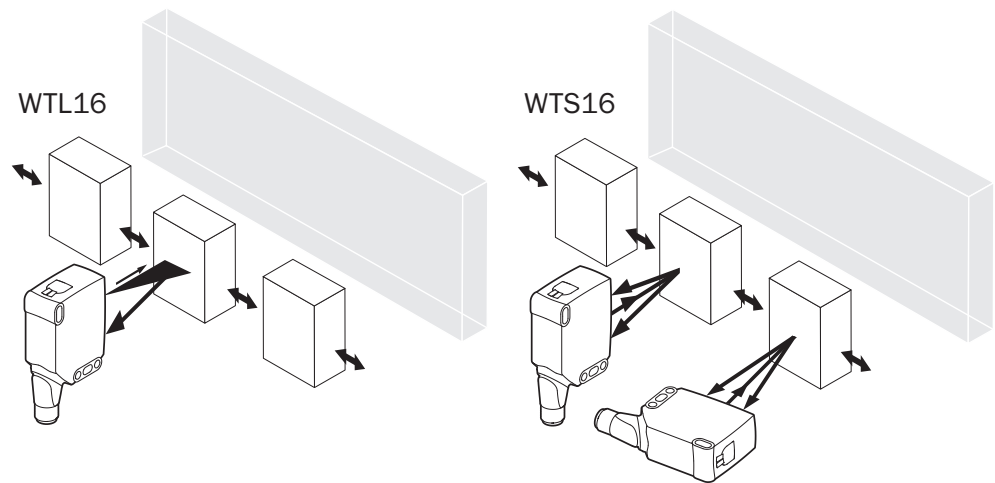


Figure 5: Alignment

Sensing range

Check the application conditions: Adjust the sensing range and distance to the object or background and the remission capability of the object according to the corresponding diagram [see figure 6 and figure 7] (x = sensing range, y = minimum distance between set sensing range and background (white 90%). Remission: 6% = black ①, 18% = gray ②, 90% = white ③ (referring to standard white as per DIN 5033). We recommend making the adjustments using an object with a low remission.

The minimum distance (= y) for background suppression can be determined from diagram [figure 6①] as follows:

Example: x = 200 mm, y = 15 mm. That is, the background (white, 90%) is suppressed at a distance of > 15 mm from the sensor.

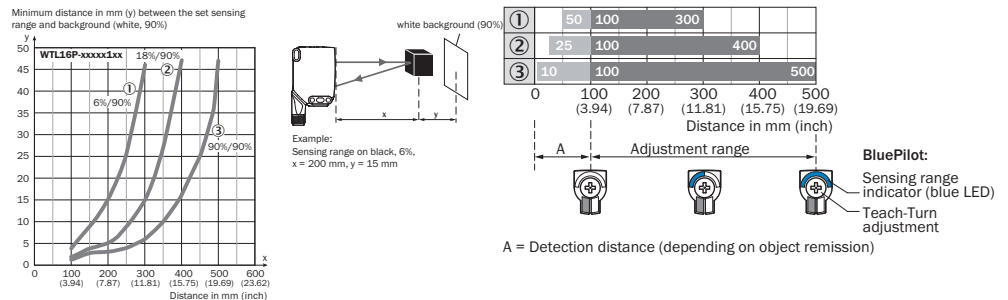


Figure 6: Characteristic line 1, WTL16 Blue-tooth@xxxx1xx, red light

- ① Sensing range on black, 6% remission
- ② Sensing range on gray, 18% remission
- ③ Sensing range on white, 90% remission

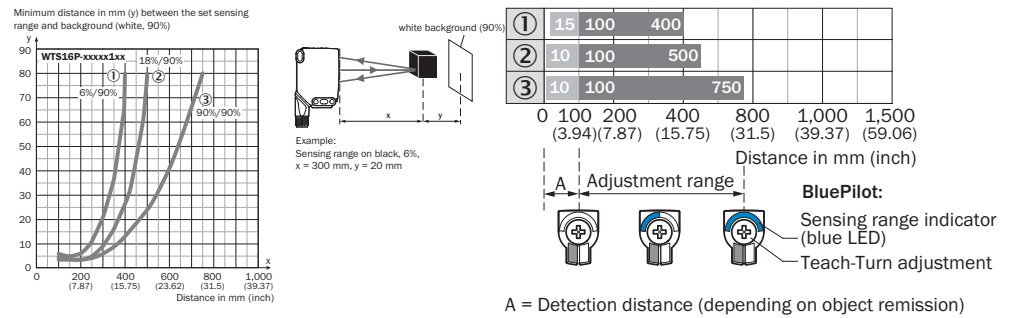


Figure 7: Characteristic line 1, WTS16 Blue-tooth@xxxx1xx, red light

- ① Sensing range on black, 6% remission
- ② Sensing range on gray, 18% remission
- ③ Sensing range on white, 90% remission

Sensing range setting WTL16, WTS16

WTL16x-xxxxxx2xAxx, WTS16x-xxxxxx2xAxx with press-turn element:

The sensing range is adjusted by pressing the teach-in button (approx. 1-3 sec.). Depending on the requirements, the potentiometer can be used for fine-tuning (without pressing the teach-in button).

Clockwise rotation: sensing range increased.

Counterclockwise rotation: sensing range reduced.

The sensing range can also be adjusted using just the potentiometer. We recommend placing the object within the sensing range, see figure 8 for an example. Once the sensing range has been adjusted, the object is removed from the path of the beam, which causes the background to be suppressed and the switching output to change (see table 1 and see table 2).

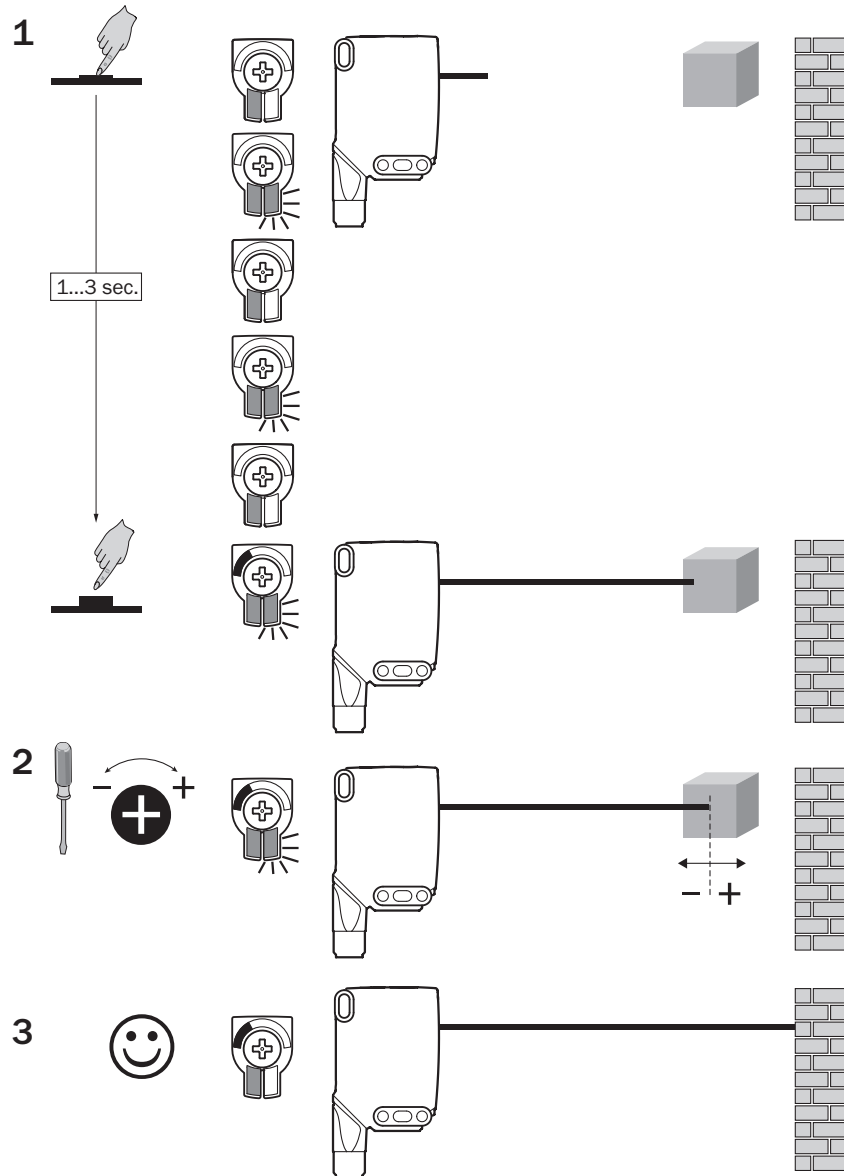


Figure 8: WTL16x-xxxxxx2xAxx, WTS16x-xxxxxx2xAxx red light, adjusting the sensing range with press-turn element

WTL16x-xxxxxx1xAxx, WTS16x-xxxxxx1xAxx with potentiometer:

The sensing range is adjusted with the potentiometer.

Clockwise rotation: sensing range increased.

Counterclockwise rotation: sensing range reduced.

We recommend placing the object within the sensing range, see figure 9 for an example. Once the sensing range has been adjusted, the object is removed from the path of the beam, which causes the background to be suppressed and the switching output to change (see table 1 and see table 2).

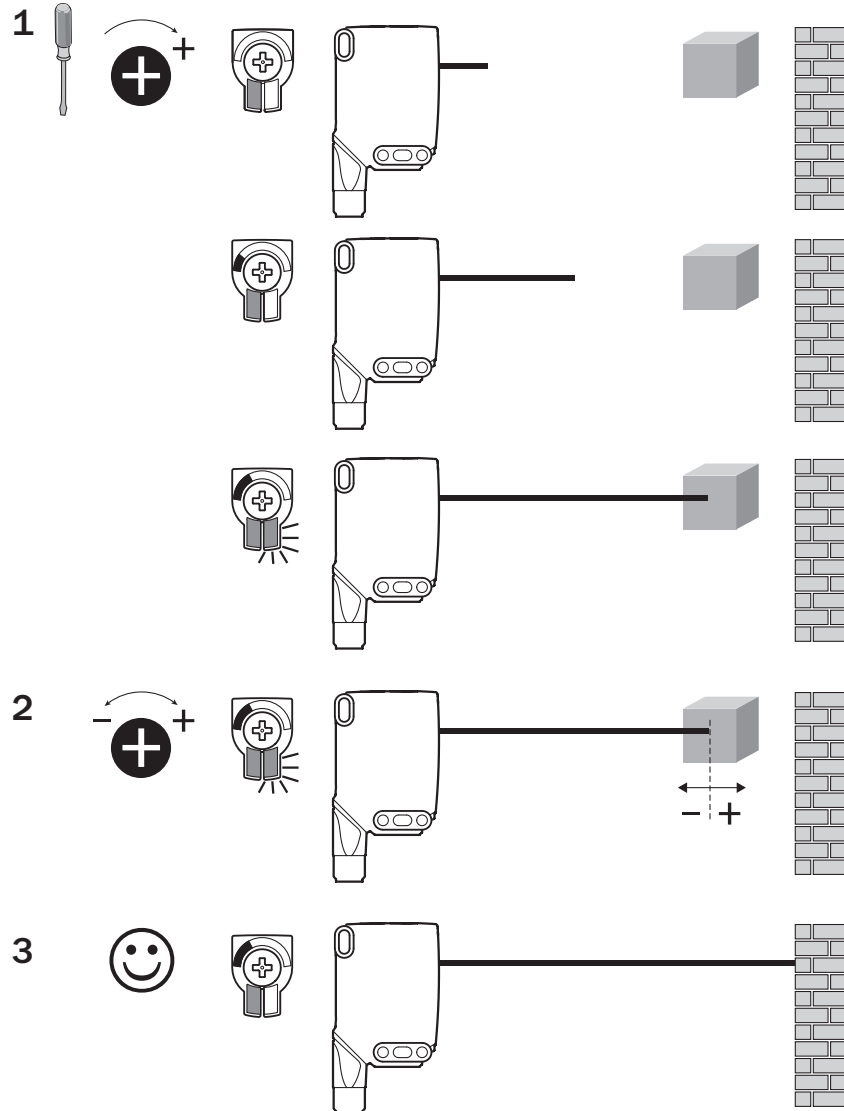


Figure 9: WTL16x-xxxxxx1xAxx, WTS16x-xxxxxx1xAxx red light, adjusting the sensing range with potentiometer

WTL16x-xxxxx3xAxx, WTS16x-xxxxx3xAxx with teach-in button:

The sensing range is adjusted by pressing the teach-in button (approx. 1-3 sec.). We recommend placing the object within the sensing range, see figure 9 for an example. Once the sensing range has been adjusted, the object is removed from the path of the beam, which causes the background to be suppressed and the switching output to change (see table 1 and see table 2).

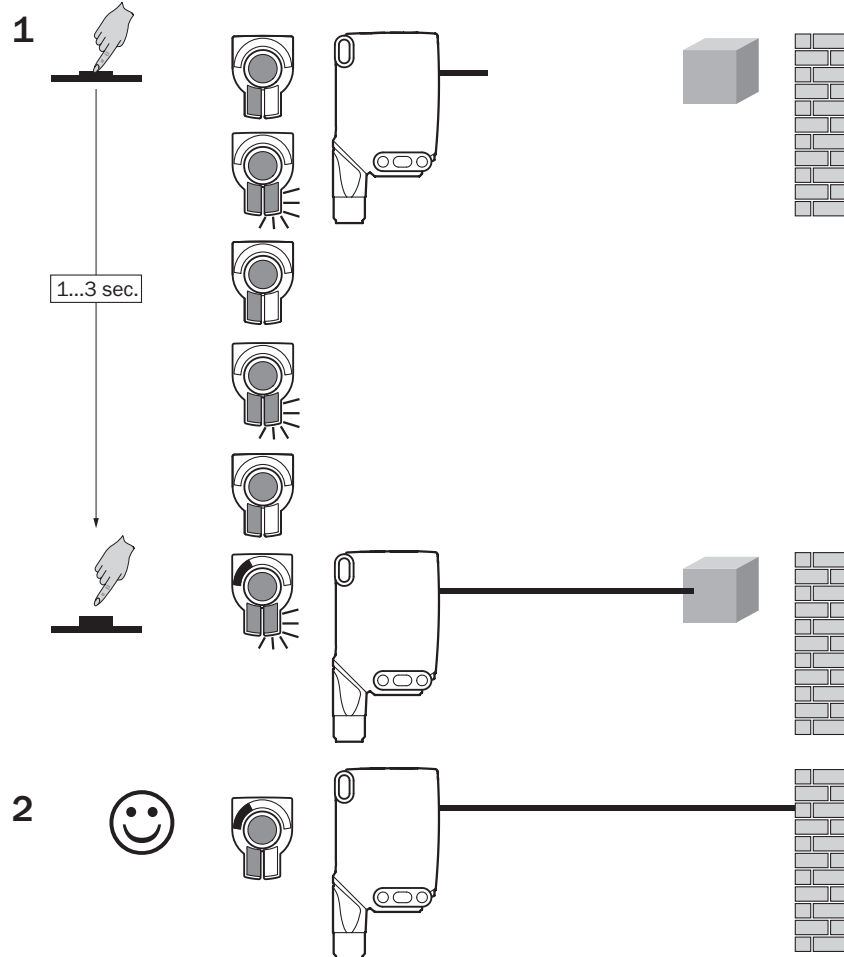


Figure 10: WTL16x-xxxxx3xAxx, WTS16x-xxxxx3xAx red light, adjusting the sensing range with teach-in button

Sensing range setting WTS16

Detection of flat, glossy, contrast-rich, and uneven objects.

If the objects are detected from above, we recommend installing the sensor at an angle in order to prevent total reflection by a reflective surface

- 1 When adjusting the sensing range, the light spot should be focused on an even, uniform surface, e.g. a white sheet of paper.

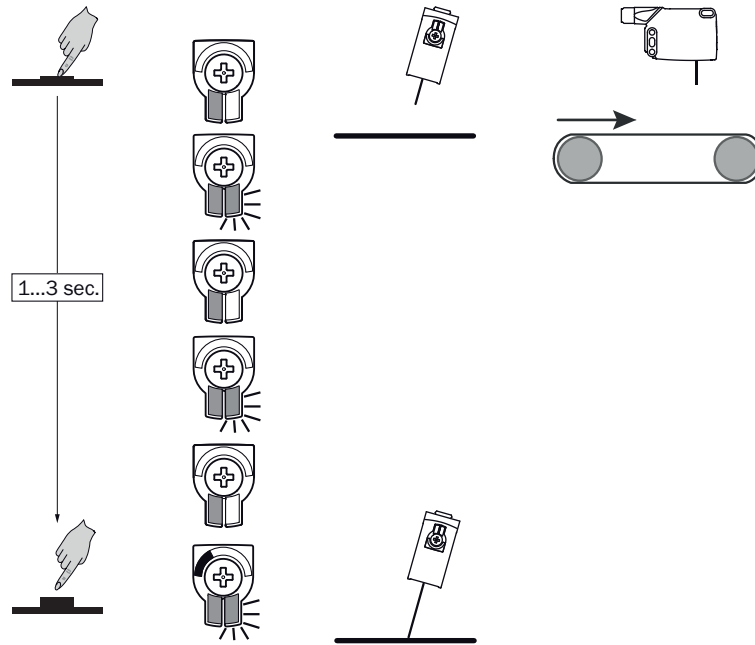


Figure 11: WTS16 sensing range setting

- 2 Turn the potentiometer a fraction counterclockwise until the yellow LED indicator no longer lights up. The sensing range is now located a fraction above the conveyor belt.

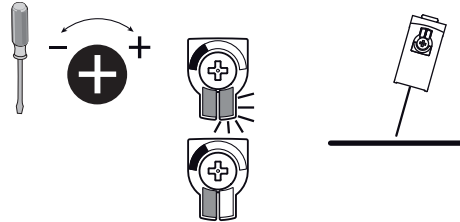


Figure 12: WTS16 sensing range setting

- 3 The conveyor belt should now be put into operation without any objects. If the yellow LED indicator does not light up during the test run, the sensing range is set correctly.

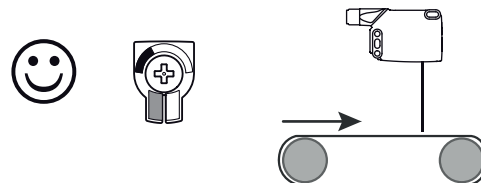


Figure 13: WTS16 sensing range setting

- 4 If the object is in the path of the beam and the yellow LED indicator lights up, the sensing range is set correctly.



Figure 14: WTS16 sensing range setting

Process data structure (Version 1.1)

| | A00 | A70 | A71 | A72 | A73 | A75 |
|----------------------------------|---|---|--------------------------------------|--|--|---|
| IO-Link | V1.1 | | | | | |
| Process data | 2 bytes | | | | | 4 bytes |
| | Byte 0: bits 15... 8 Byte 1: bits 7... 0 | | | | | Byte 0: bits 31... 24 Byte 1: bits 13... 16 Byte 2: bits 15... 8 Byte 3: bits 7... 0 |
| Bit 0 / Data type | Q _{L1} / Boolean | | | | | |
| Bit 1 / Data type | Q _{L2} / Boolean | | | Q _{int.1} / Boolean | Q _{L2} / Boolean | Q _{int.1} / Boolean |
| Bit... / Description / Data type | 2 ... 15 / [empty] | 2 ... 15 / [time measurement value] / UInt 14 | 2 ... 15 / [counter value] / UInt 14 | 2 ... 15 / [length / speed measurement] / SInt14 | 2 / Q _{int.1} / Boolean | 2 ... 7 / [empty] |
| Bit... / Description / Data type | | | | | 3 ... 15 / [time measurement value] / UInt13 | 8 ... 31 / [carrier load] / UInt 24 |

7 Troubleshooting

The Troubleshooting table indicates measures to be taken if the sensor stops working.

| LED indicator/fault pattern | Cause | Measures |
|--|---|--|
| Green LED flashes | IO-Link communication | None |
| Switching outputs do not behave in accordance with table 2 | 1. IO-Link communication 2. Change of the configuration 3. Short-circuit | 1. None 2. Adjustment of the configuration 3. Check electrical connections |
| WTS only: yellow LED flashes quickly | When adjusting the sensing range, the light spot is only half on the object or on a very high-contrast object | Sensing range setting according to Section "Sensing range setting for WTS16". |
| Yellow LED lights up, no object in the path of the beam | The sensing range distance is too large | Reduce the sensing range |

| LED indicator/fault pattern | Cause | Measures |
|---|---|--|
| Object is in the path of the beam, yellow LED does not light up | Distance between the sensor and the object is too long or sensing range is set too short | Increase the sensing range |
| The sensor is not displayed in SOPASair | <ol style="list-style-type: none"> 1. Connection to another hand-held exists. 2. The hand-held is outside of the transmission range of the sensor. 3. Bluetooth LE in the sensor is deactivated. 4. Bluetooth LE in the hand-held is deactivated. 5. MAC address filter activated, hand-held not authorized. | <ol style="list-style-type: none"> 1. No connection or deactivation of the existing connection. 2. Thorough check of installation situation (e.g. shielding by metal). 3. Activation of Bluetooth LE via SiLink2 master or IO-Link 4. Activation of Bluetooth LE 5. No or change to MAC address filter. |
| No connection can be made to the sensor | <ol style="list-style-type: none"> 1. The Android or iOS version does not comply with requirements. 2. SOPASair version does not contain the required driver. | <ol style="list-style-type: none"> 1. Check the operating system. 2. Uninstall SOPASair, install the most current app version. |

8 Disassembly and disposal

The sensor must be disposed of according to the applicable country-specific regulations. Efforts should be made during the disposal process to recycle the constituent materials (particularly precious metals).



NOTE

Disposal of batteries, electric and electronic devices

- According to international directives, batteries, accumulators and electrical or electronic devices must not be disposed of in general waste.
- The owner is obliged by law to return these devices at the end of their life to the respective public collection points.



■ This symbol on the product, its package or in this document, indicates that a product is subject to these regulations.

9 Maintenance

SICK sensors are maintenance-free.

We recommend doing the following regularly:

- Clean the external lens surfaces
- Check the screw connections and plug-in connections

No modifications may be made to devices.

Subject to change without notice. Specified product properties and technical data are not written guarantees.

10 Approvals

10.1 Bluetooth® approvals

| Country | Comments |
|---------------|--|
| Canada | IC: 21147-W16 |
| USA | FCC ID: 2AHDR-W16 |
| Europe + EFTA | <p>EU countries Belgium (BE), Bulgaria (BG), Denmark (DK), Germany (DE), Estonia (EE), Finland (FI), France (FR), Greece (GR), Ireland (IE), Italy (IT), Latvia (LV), Lithuania (LT), Luxembourg (LU), Malta (MT), Netherlands (NL), Austria (AT), Poland (PL), Portugal (PT), Romania (RO), Sweden (SE), Slovakia (SK), Slovenia (SI), Spain (ES), Czech Republic (CZ), Hungary (HU), United Kingdom (GB), Republic of Cyprus (CY).</p> <p>EFTA countries Iceland, Liechtenstein, Norway, Switzerland</p> |

This device complies with Part 15 of the FCC Rules and with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Changes or modifications made to this equipment not expressly approved by SICK AG may void the FCC authorization to operate this equipment.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

11 Technical data

11.1 Technical data

| | WTL16 Bluetooth® | WTS16 Bluetooth® |
|----------------------------------|--|--|
| Sensing range max. | 10 mm ... 500 mm ¹ | 10 mm ... 750 mm ¹ |
| Light spot diameter/distance | 30 mm x 3 mm (200 mm) | Ø 8 mm (300 mm) |
| Supply voltage V _S | DC 10 ... 30 V | DC 10 ... 30 V |
| Current consumption | ≤ 30 mA ² < 50 mA ³ | ≤ 30 mA ² < 50 mA ³ |
| Output current I _{max.} | ≤ 100 mA | ≤ 100 mA |
| Max. response time | ≤ 500 µs ⁴ | ≤ 1,4 ms ⁴ |
| Switching frequency | 1000 Hz ⁵ | 350 Hz ⁵ |
| Enclosure rating | IP66, IP67 | IP66, IP67 |
| Protection class | III | III |
| Circuit protection | A, B, C, D ⁶ | A, B, C, D ⁶ |
| Ambient operating temperature | -40 °C ... +60 °C | -40 °C ... +60 °C |

1 Object with 90 % remission (based on standard white DIN 5033)

2 16 VDC to 30 VDC, without load

3 10 VDC to 16 VDC, without load

4 Signal transit time with resistive load in switching mode. Deviating values possible in COM2 mode.

5 With a light/dark ratio of 1:1 in switching mode. Deviating values possible in IO-Link mode.

6 A = U_V-connections reverse polarity protected

B = inputs and output reverse-polarity protected

C = Interference suppression

D = outputs overcurrent and short-circuit protected

11.2 Bluetooth technical data®

| Features | Values |
|--------------------------------|---|
| Bluetooth® sensing range | 100 m on sight |
| Radio type | BLE |
| Radio class | 2 |
| Bluetooth® module manufacturer | BROADCOM Cypress Semiconductor Corporation 198 Champion Court San Jose CA 95134-1709 |
| RF band | 2,402 - 2,480 MHz |
| Output power | 2 dBm |
| Declaration ID | D033906 |
| Qualified design ID | 89630 |
| Specification name | 4.1 |
| Member company | SICK AG |

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Beschriebenes Produkt

WTL16, WTS16 - Bluetooth®

Hersteller

SICK AG
Erwin-Sick-Str. 1
79183 Waldkirch
Deutschland

Rechtliche Hinweise

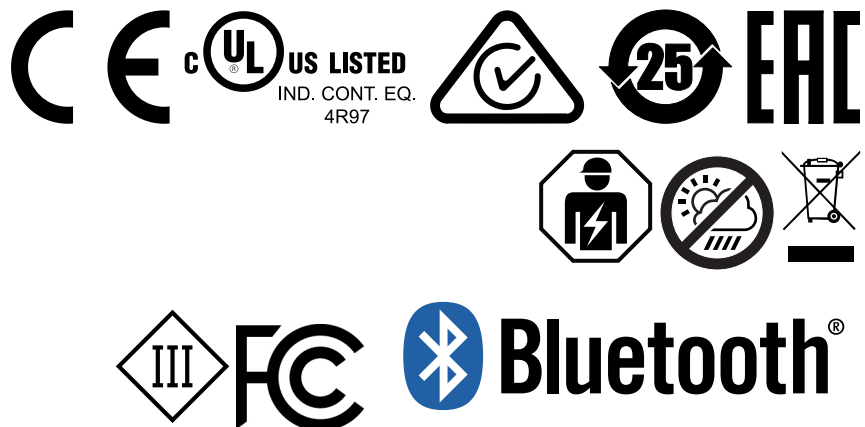
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12 Zu Ihrer Sicherheit

12.1 Allgemeine Sicherheitshinweise

- Lesen Sie vor der Inbetriebnahme des Geräts die Betriebsanleitung.
-  Der Anschluss, die Montage und die Konfiguration des Geräts dürfen nur von geschultem Fachpersonal vorgenommen werden.
-  Bei diesem Gerät handelt es sich um kein sicherheitsgerichtetes Bauteil im Sinne der EU-Maschinenrichtlinie.
-  Bei der Inbetriebnahme ist das Gerät ausreichend vor Feuchtigkeit und Verschmutzung zu schützen.
- Die vorliegende Betriebsanleitung enthält Informationen, die während des Lebenszyklus der Lichtschranke benötigt werden.

12.2 Hinweise zur UL Zulassung

The device must be supplied by a Class 2 source of supply.

UL Environmental Rating: Enclosure type 1

13 Bestimmungsgemäße Verwendung

Die WTL16 Bluetooth®, WTS16 Bluetooth® ist ein optoelektronischer Reflexions-Lichttaster (im Folgenden Sensor genannt) und wird zum optischen, berührungslosen Erfassen von Sachen, Tieren und Personen eingesetzt. Bei jeder anderen Verwendung und bei Veränderungen am Produkt verfällt jeglicher Gewährleistungsanspruch gegenüber der SICK AG.

Die WTS16 ist besonders zur Detektion von flachen, glänzenden, kontrastreichen und unebenen Objekten geeignet.

14 Bedien- und Anzeigeelemente

Reflexionslichttaster mit Hintergrundausblendung.

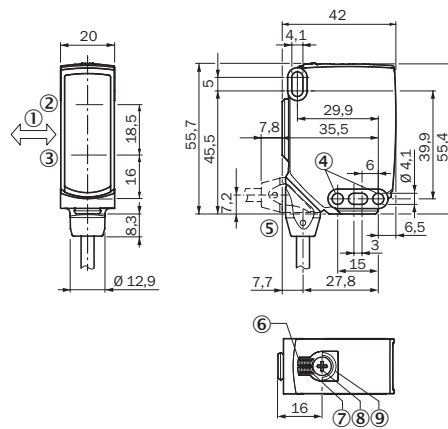


Abbildung 15: Maßzeichnung 1, WTL16 Leitung

- ① Vorzugsrichtung des Tastgutes
- ② Mitte Optikachse Sender
- ③ Mitte Optikachse Empfänger
- ④ Befestigungsbohrung, Ø 4,1 mm
- ⑤ Anschluss
- ⑥ Anzeige-LED grün: Betriebsspannung aktiv
- ⑦ Anzeige-LED gelb: Status Lichttempfang
- ⑧ Drück-Dreh-Element: Einstellung des Schaltabstands
- ⑨ BluePilot blau: Schaltabstandsanzeige

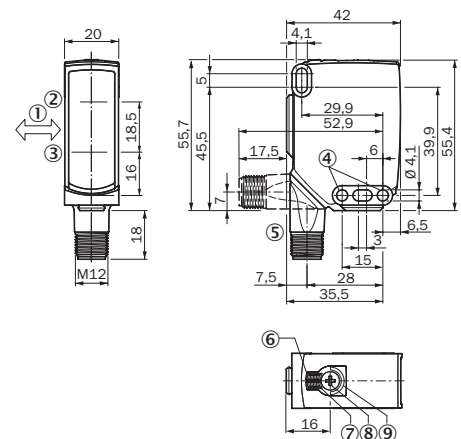


Abbildung 16: Maßzeichnung 2, WTL16 Stecker

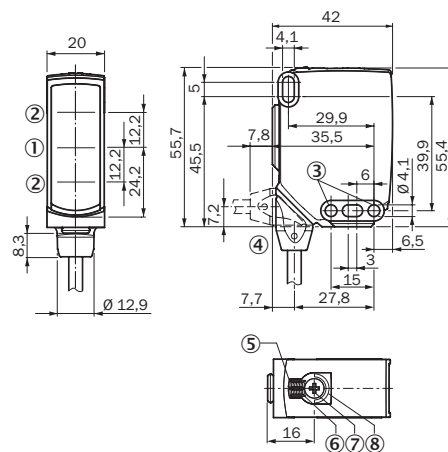


Abbildung 17: Maßzeichnung 3, WTS16 Leitung

- ① Mitte Optikachse Sender
- ② Mitte Optikachse Empfänger
- ③ Befestigungsbohrung, Ø 4,1 mm
- ④ Anschluss
- ⑤ Anzeige-LED grün: Betriebsspannung aktiv
- ⑥ Anzeige-LED gelb: Status Lichttempfang

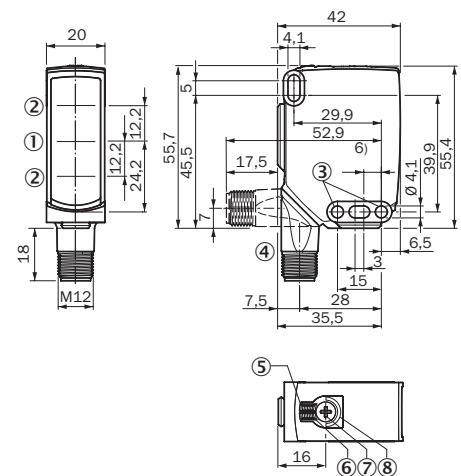


Abbildung 18: Maßzeichnung 1, WTS16 Stecker

- ⑦ Drück-Dreh-Element: Einstellung des Schaltabstands
- ⑧ BluePilot blau: Schaltabstandsanzeige

15 Montage

Den Sensor an einen geeigneten Befestigungswinkel montieren (siehe SICK-Zubehör-Programm).

Maximal zulässiges Anzugsdrehmoment des Sensors von < 1,3 Nm beachten.

Vorzugsrichtung des Objektes zum Sensor beachten, [siehe Abbildung 15, Abbildung 16](#) (gilt nur für WTL16).

16 Elektrische Installation

Anschluss der Sensoren muss spannungsfrei ($U_V = 0\text{ V}$) erfolgen. Je nach Anschlussart sind die folgenden Informationen zu beachten:

- Steckeranschluss: Pinbelegung beachten.
- Leitung: Adernfarbe

Erst nach Anschluss aller elektrischen Verbindungen die Spannungsversorgung ($U_V > 0\text{ V}$) anlegen bzw. einschalten.

Erläuterungen zum Anschlusschema ([Tabelle 3, Tabelle 4](#)).

MF (Pin-2-Konfiguration) = Externer Eingang, Teach-in, Schaltsignal

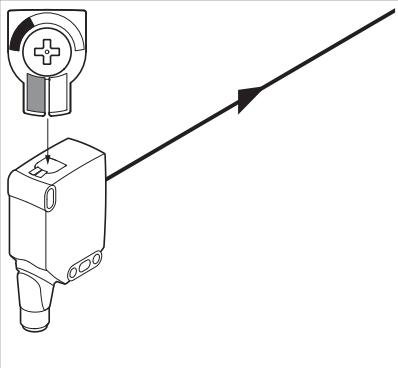
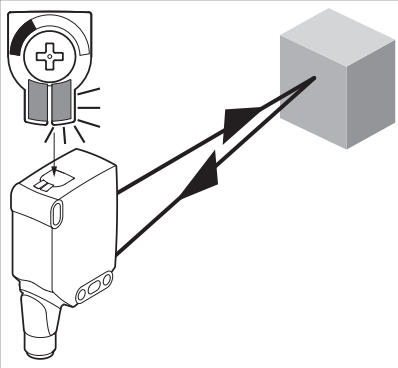
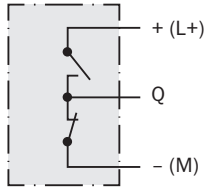
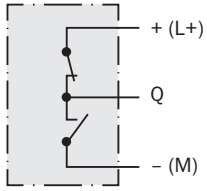
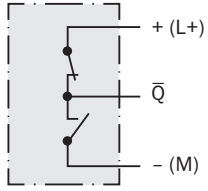
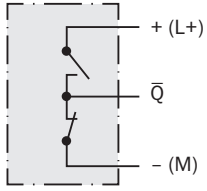
Q_{L1}/C = Schaltausgang, IO-Link Kommunikation

DC: 10 ... 30 V DC

Tabelle 3: DC

| WTL16 WTS16 | -24161xxxA00 -34161xxxA00 | -1x161xxxAO 0 | -24162xxxAO 0 -34162xxxAO 0 | -1x162xxxAO 0 | -2416xxxxA01- A99 -3416xxxxA01- A99 |
|------------------------|------------------------------|--|--------------------------------------|--|--|
| 1 | + (L+) | | | | |
| 2 | MF | | | | |
| 3 | - (M) | | | | |
| 4 | Q_{L1}/C | | | | |
| Default: MF | \bar{Q} | \bar{Q} | Q | Q | www.sick.com 8022709 |
| Default: Q_{L1}/C | Q | Q | \bar{Q} | \bar{Q} | www.sick.com 8022709 |
| | | 1 = brn 2 = wht 3 = blu 4 = blk | | 1 = brn 2 = wht 3 = blu 4 = blk | |

Tabelle 4: Push / Pull

| | | |
|--------------------------------------|--|---|
| |  |  |
| Q push-pull (≤ 100 mA) |  |  |
| \bar{Q} push-pull (≤ 100 mA) |  |  |

17 Inbetriebnahme

Bluetooth® ist bei der Ersteinbetriebnahme eingeschaltet. SOPASair erhalten Sie im Google PlayStore (Android) und im App Store (iOS).

Anforderungen an das Betriebssystem: Android-Version 6.0, iOS aktuellste Version.

Ausrichtung

WTL16 Bluetooth®, WTS16 Bluetooth®: Sensor auf Objekt ausrichten. Positionierung so wählen, dass der rote Sendelichtstrahl in der Mitte des Objekts auftrifft. Es ist darauf zu achten, dass die optische Öffnung (Frontscheibe) des Sensors vollständig frei ist [Abbildung 19].



HINWEIS

Bei WTS16: Wenn die Detektion der Objekte von oben erfolgt, empfehlen wir einen geeigneten Einbau des Sensors, damit eine Totalreflexion durch eine spiegelnde Oberfläche vermieden wird, siehe [Abbildung 25](#) - [Abbildung 28](#).

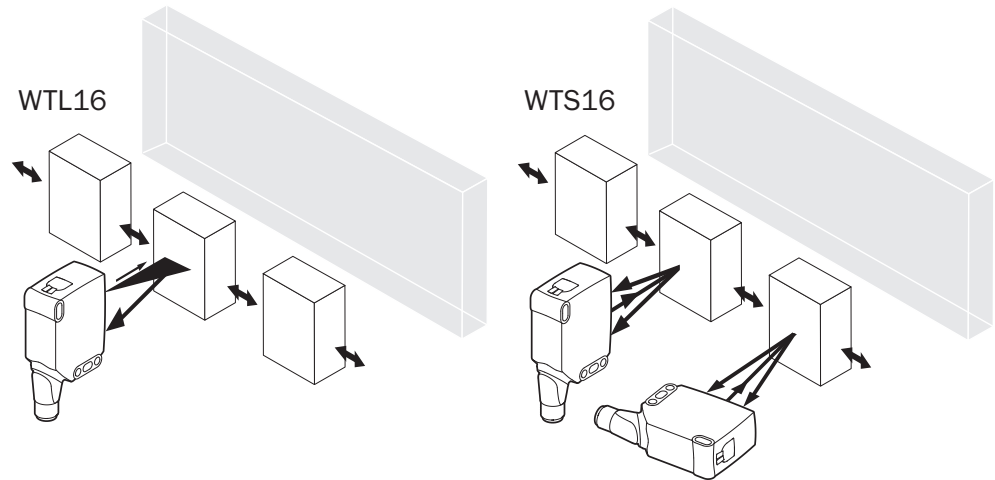


Abbildung 19: Ausrichtung

Schaltabstand

Einsatzbedingungen prüfen: Schaltabstand und Distanz zum Objekt bzw. Hintergrund sowie Remissionsvermögen des Objektes mit dem zugehörigen Diagramm [siehe [Abbildung 20](#), [Abbildung 21](#)] abgleichen (x = Schaltabstand, y = Mindestabstand zwischen eingestelltem Schaltabstand und Hintergrund (weiß 90%)). Remission: 6 % = schwarz ①, 18 % = grau ②, 90 % = weiß ③ (bezogen auf Standardweiß nach DIN 5033). Wir empfehlen, die Einstellung mit einem Objekt von niedriger Remission vorzunehmen.

Die minimale Distanz (= y) für die Hintergrundausbldung kann aus dem Diagramm [[Abbildung 20](#) ①] wie folgt ermittelt werden:

Beispiel: x = 200 mm, y = 15 mm. D. h. der Hintergrund (weiß, 90%) wird ab einer Distanz von > 15 mm vom Sensor ausgeblendet.

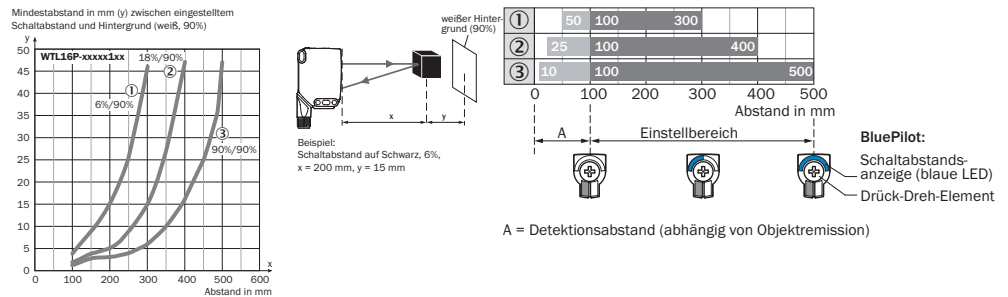


Abbildung 20: Kennlinie 1, WTL16 Bluetooth®-xxxxx1xx, Rotlicht

- ① Schaltabstand auf Schwarz, 6 % Remission
- ② Schaltabstand auf Grau, 18 % Remission
- ③ Schaltabstand auf Weiß, 90 % Remission

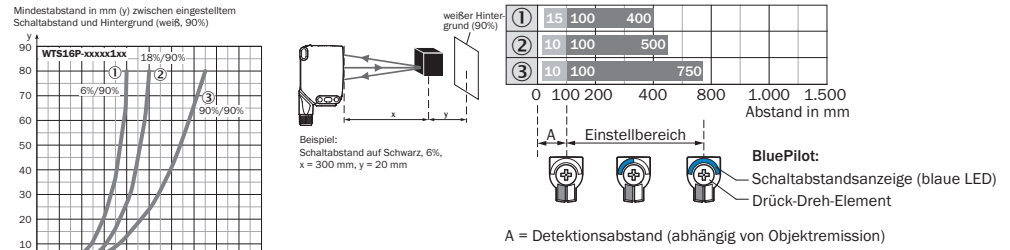


Abbildung 21: Kennlinie 1, : WTS16 Bluetooth®-xxxx1xx, Rotlicht

- ① Schaltabstand auf Schwarz, 6 % Remission
- ② Schaltabstand auf Grau, 18 % Remission
- ③ Schaltabstand auf Weiß, 90 % Remission

Einstellung Schaltabstand WTL16, WTS16

WTL16x-xxxxx2xAxx, WTS16x-xxxxx2xAxx mit Drück-Dreh-Element:

Durch Drücken der Teach-in-Taste (ca. 1- 3 sec.) wird der Schaltabstand eingestellt. Je nach Anforderungen kann mit dem Potentiometer (ohne Drücken der Teach-in-Taste) eine Feineinstellung vorgenommen werden.

Drehung nach rechts: Erhöhung des Schaltabstandes.

Drehung nach links: Verringerung des Schaltabstandes.

Der Schaltabstand kann auch alleinig mit dem Potentiometer eingestellt werden. Wir empfehlen, den Schaltabstand in das Objekt zu legen, z.B. siehe Abbildung 8. Nachdem der Schaltabstand eingestellt worden ist, das Objekt aus dem Strahlengang entfernen, der Hintergrund wird dabei ausgeblendet und der Schaltausgang ändert sich (siehe [Tabelle 3](#), [Tabelle 4](#)).

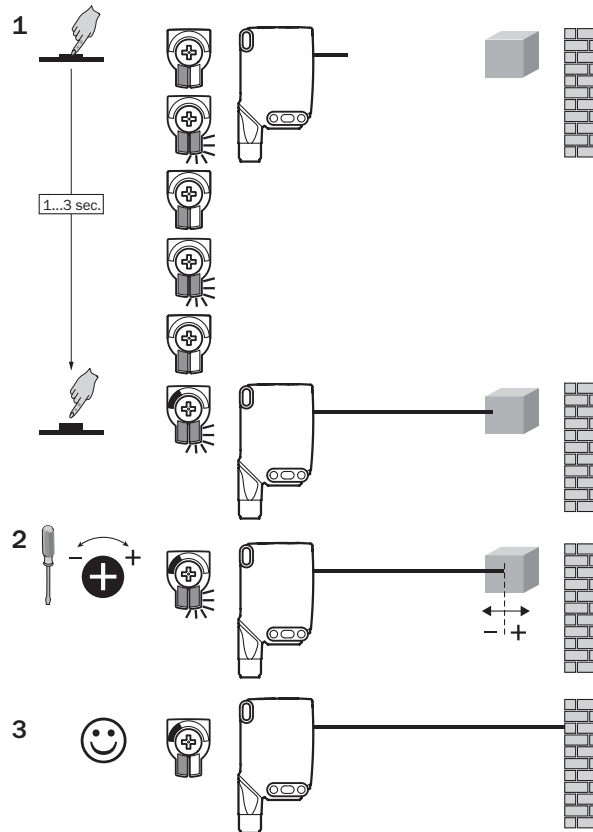


Abbildung 22: WTL16x-xxxxx2xAxx, WTS16x-xxxxx2xAxx Rotlicht, Einstellung des Schaltabstandes mit Drück-Dreh-Element

WTL16x-xxxxxx1xAxx, WTS16x-xxxxxx1xAxx mit Potentiometer:

Mit dem Potentiometer wird der Schaltabstand eingestellt.

Drehung nach rechts: Erhöhung des Schaltabstandes.

Drehung nach links: Verringerung des Schaltabstandes.

Wir empfehlen, den Schaltabstand in das Objekt zu legen, z.B. siehe Abbildung 9. Nachdem der Schaltabstand eingestellt worden ist, das Objekt aus dem Strahlengang entfernen, der Hintergrund wird dabei ausgeblendet und der Schaltausgang ändert sich (siehe Tabelle 3, Tabelle 4).

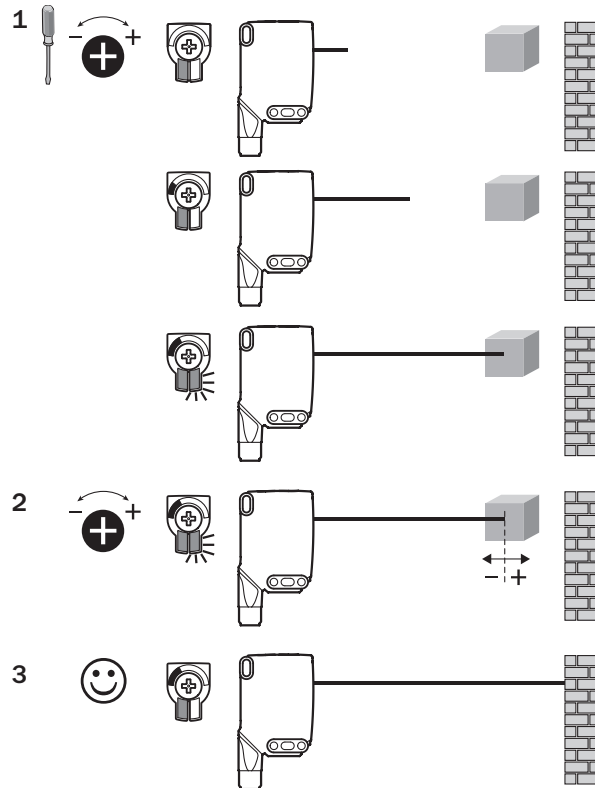


Abbildung 23: WTL16x-xxxxxx1xAxx, WTS16x-xxxxxx1xAxx Rotlicht, Einstellung des Schaltabstandes mit Potentiometer

WTL16x-xxxxx3xAxx, WTS16x-xxxxx3xAxx mit Teach-in-Taste:

Durch Drücken der Teach-in-Taste (ca. 1- 3 sec.) wird der Schaltabstand eingestellt. Wir empfehlen, den Schaltabstand in das Objekt zu legen, z.B. siehe Abbildung 9. Nachdem der Schaltabstand eingestellt worden ist, das Objekt aus dem Strahlengang entfernen, der Hintergrund wird dabei ausgeblendet und der Schaltausgang ändert sich (siehe [Tabelle 3](#), [Tabelle 4](#)).

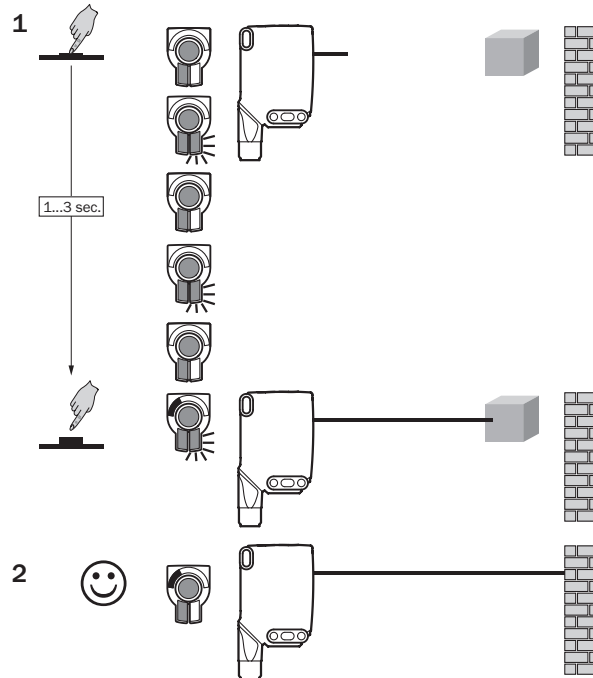


Abbildung 24: WTL16x-xxxxx3xAxx, WTS16x-xxxxx3xAx Rotlicht, Einstellung des Schaltabstandes mit Teach-in-Taste

Einstellung Schaltabstand WTS16

Detektion von flachen, glänzenden, kontrastreichen und unebenen Objekten.

Wenn die Detektion der Objekte von oben erfolgt, empfehlen wir einen geneigten Einbau des Sensors, damit eine Totalreflexion durch eine spiegelnde Oberfläche vermieden wird

- 1 Für die Einstellung des Schaltabstandes soll der Lichtfleck auf eine homogene und ebene Oberfläche, z.B. weißes Blatt, ausgerichtet werden.

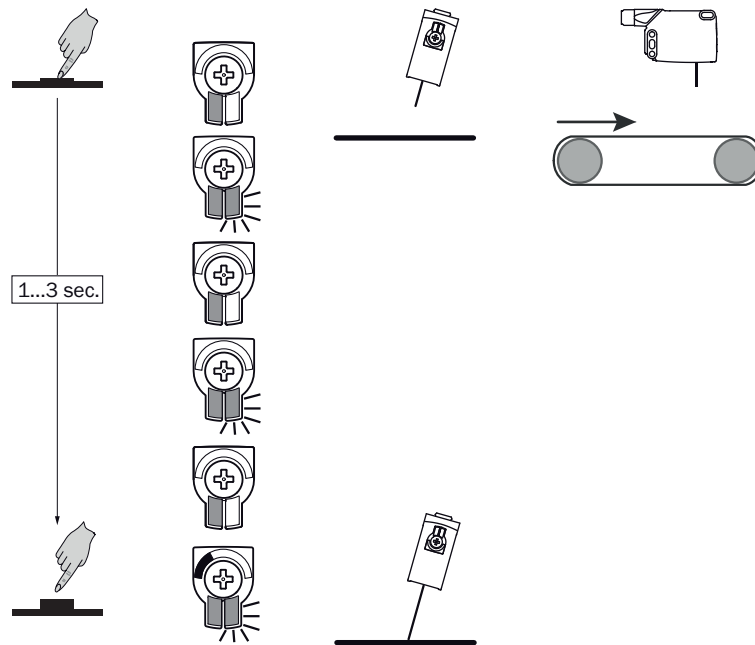


Abbildung 25: Einstellung Schaltabstand WTS16

- Das Potentiometer nur minimal nach links drehen bis die gelbe Anzeige-LED nicht mehr leuchtet. Der Schaltabstand befindet sich nun minimal oberhalb des Förderbandes.

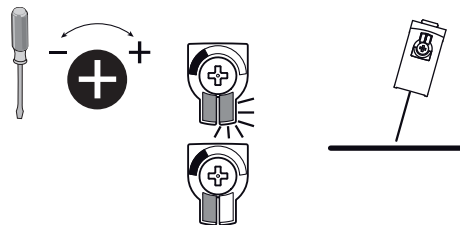


Abbildung 26: Einstellung Schaltabstand WTS16

- Das Förderband soll nun ohne Objekte in Betrieb genommen werden. Wenn die gelbe Anzeige-LED während des Testlaufs nicht leuchtet, ist der Schaltabstand korrekt eingestellt.

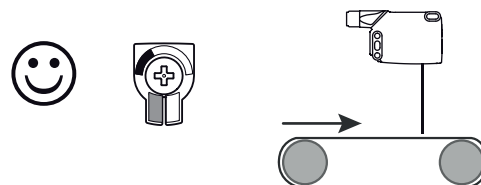


Abbildung 27: Einstellung Schaltabstand WTS16

- Wenn das Objekt im Strahlengang ist und die gelbe Anzeige-LED leuchtet, ist der Schaltabstand korrekt eingestellt.

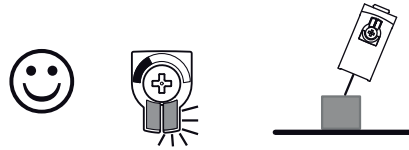


Abbildung 28: Einstellung Schaltabstand WTS16

Process data structure (Version 1.1)

| | A00 | A70 | A71 | A72 | A73 | A75 |
|----------------------------------|--|---|--------------------------------------|--|--|--|
| IO-Link | V1.1 | | | | | |
| Process data | 2 Byte | | | | | 4 Byte |
| | Byte 0 : Bit 15... 8 Byte 1: Bit 7... 0 | | | | | Byte 0 : Bit 31... 24 Byte 1: Bit 13... 16 Byte 2: Bit 15... 8 Byte 3: Bit 7... 0 |
| Bit 0/ Data type | Q _{L1} / Boolean | | | | | |
| Bit 1/ Data type | Q _{L2} / Boolean | | | Q _{int.1} / Boolean | Q _{L2} / Boolean | Q _{int.1} / Boolean |
| Bit... / Description / Data type | 2...15 / [empty] | 2...15 / [Time measurement value] / UInt 14 | 2 ... 15 / [Counter value] / UInt 14 | 2 ... 15 / [Length / speed measurement] / SInt14 | 2 / Q _{int.1} / Boolean | 2...7 / [empty] |
| Bit... / Description / Data type | | | | | 3 ... 15 / [Time measurement value] / UInt13 | 8 ... 31 / [Carrier load] / UInt 24 |

18 Störungsbehebung

Tabelle Störungsbehebung zeigt, welche Maßnahmen durchzuführen sind, wenn die Funktion des Sensors nicht mehr gegeben ist.

| Anzeige-LED / Fehlerbild | Ursache | Maßnahme |
|--|---|--|
| grüne LED blinkt | IO-Link Kommunikation | keine |
| Schaltausgänge verhalten sich nicht gemäß Tabelle 4 | 1. IO-Link Kommunikation 2. Änderung der Konfiguration 3. Kurzschluss | 1. keine 2. Anpassung der Konfiguration 3. Elektrische Anschlüsse prüfen |
| Nur WTS: gelbe LED blinkt schnell | Während der Einstellung des Schaltabstandes befindet sich der Lichtfleck nur zur Hälfte auf dem Objekt oder auf einem sehr kontrastreichen Objekt | Einstellung des Schaltabstandes gemäß Abschnitt "Einstellung Schaltabstand für WTS16". |

| Anzeige-LED / Fehlerbild | Ursache | Maßnahme |
|--|--|---|
| gelbe LED leuchtet, kein Objekt im Strahlengang | Schaltabstand ist auf zu großen Abstand eingestellt | Schaltabstand verringern |
| Objekt ist im Strahlengang, gelbe LED leuchtet nicht | Abstand zwischen Sensor und Objekt ist zu groß oder Schaltabstand ist zu gering eingestellt | Schaltabstand vergrößern |
| In SOPASair wird der Sensor nicht angezeigt | <ol style="list-style-type: none"> 1. Verbindung zu einem anderen Handheld besteht. 2. Das Handheld befindet sich außerhalb des Sendebereichs des Sensors. 3. Bluetooth LE im Sensor ist deaktiviert. 4. Bluetooth LE im Handheld ist deaktiviert. 5. MAC-Adressfilter aktiviert, Handheld nicht autorisiert. | <ol style="list-style-type: none"> 1. keine bzw. Deaktivierung der bestehenden Verbindung. 2. Prüfung der Einbausituation (z.B. Abschirmung durch Metall). 3. Aktivierung von Bluetooth LE per SiLink2 Master oder IO-Link 4. Aktivierung von Bluetooth LE 5. keine bzw. Änderung des MAC-Adress-Filter. |
| Es kann keine Verbindung zum Sensor aufgebaut werden | <ol style="list-style-type: none"> 1. Die Android bzw. iOS-Version entspricht nicht den Anforderungen. 2. SOPASair Version enthält nicht den erforderlichen Treiber. | <ol style="list-style-type: none"> 1. Prüfen Sie das Betriebssystem. 2. Deinstallieren Sie SOPASair, Installieren Sie die aktuellste App-Version. |

19 Demontage und Entsorgung

Die Lichtschranke muss entsprechend den geltenden länderspezifischen Vorschriften entsorgt werden. Bei der Entsorgung sollte eine werkstoffliche Verwertung (insbesondere der Edelmetalle) angestrebt werden.



HINWEIS

Entsorgung von Batterien, Elektro- und Elektronikgeräten

- Gemäß den internationalen Vorschriften dürfen Batterien, Akkus sowie Elektro- und Elektronikgeräte nicht mit dem Hausmüll entsorgt werden.
- Der Besitzer ist gesetzlich verpflichtet, diese Geräte am Ende ihrer Lebensdauer bei den entsprechenden öffentlichen Sammelstellen abzugeben.



■ Dieses Symbol auf dem Produkt, dessen Verpackung oder im vorliegenden Dokument gibt an, dass ein Produkt den genannten Vorschriften unterliegt.

20 Wartung

SICK-Sensoren sind wartungsfrei.

Wir empfehlen, in regelmäßigen Abständen

- die optischen Grenzflächen zu reinigen
- Verschraubungen und Steckverbindungen zu überprüfen

Veränderungen an Geräten dürfen nicht vorgenommen werden.

Irrtümer und Änderungen vorbehalten. Angegebene Produkteigenschaften und technische Daten stellen keine Garantieerklärung dar.

21 Zulassungen

21.1 Bluetooth® Zulassungen

| Land | Kommentare |
|---------------|--|
| Canada | IC: 21147-W16 |
| USA | FCC ID: 2AHDR-W16 |
| Europa + EFTA | <p>EU Länder Belgium (BE), Bulgaria (BG), Denmark (DK), Germany (DE), Estonia (EE), Finland (FI), France (FR), Greece (GR), Ireland (IE), Italy (IT), Latvia (LV), Lithuania (LT), Luxembourg (LU), Malta (MT), Netherlands (NL), Austria (AT), Poland (PL), Portugal (PT), Romania (RO), Sweden (SE), Slovakia (SK), Slovenia (SI), Spain (ES), Czech Republic (CZ), Hungary (HU), United Kingdom (GB), Republic of Cyprus (CY).</p> <p>EFTA Länder Iceland, Liechtenstein, Norway, Switzerland</p> |

This device complies with Part 15 of the FCC Rules and with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Changes or modifications made to this equipment not expressly approved by SICK AG may void the FCC authorization to operate this equipment.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

22 Technische Daten

22.1 Technische Daten

| | WTL16 Bluetooth® | WTS16 Bluetooth® |
|------------------------------------|--|--|
| Schaltabstand max. | 10 mm ... 500 mm ¹ | 10 mm ... 750 mm ¹ |
| Lichtfleckdurchmesser/Entfernung | 30 mm x 3 mm (200 mm) | Ø 8 mm (300 mm) |
| Versorgungsspannung U _V | DC 10 ... 30 V | DC 10 ... 30 V |
| Stromaufnahme | ≤ 30 mA ² < 50 mA ³ | ≤ 30 mA ² < 50 mA ³ |
| Ausgangsstrom I _{max.} | ≤ 100 mA | ≤ 100 mA |
| Ansprechzeit max. | ≤ 500 µs ⁴ | ≤ 1,4 ms ⁴ |
| Schaltfrequenz | 1000 Hz ⁵ | 350 Hz ⁵ |
| Schutzart | IP66, IP67 | IP66, IP67 |
| Schutzklasse | III | III |
| Schutzschaltungen | A, B, C, D ⁶ | A, B, C, D ⁶ |
| Betriebsumgebungstemperatur | -40 °C ... +60 °C | -40 °C ... +60 °C |

1 Tastgut mit 90 % Remission (bezogen auf Standard-Weiß DIN 5033)

2 16VDC...30VDC, ohne Last

3 10VDC...16VDC, ohne Last

4 Signallaufzeit bei ohmscher Last im Schaltmodus. Abweichende Werte im COM2-Modus möglich.

5 Bei Hell-Dunkel-Verhältnis 1:1 im Schaltmodus. Abweichende Werte im IO-Link-Modus möglich.

6 A = U_V-Anschlüsse verpolsicher

B = Ein- und Ausgänge verpolsicher

C = Störimpulsunterdrückung

D = Ausgänge überstrom- und kurzschlussfest

22.2 Technische Daten Bluetooth®

| Merkmale | Werte |
|-----------------------------|---|
| Bluetooth® Reichweite | 100 m auf Sicht |
| Funkart | BLE |
| Funkklasse | 2 |
| Hersteller Bluetooth® Modul | BROADCOM Cypress Semiconductor Corporation 198 Champion Court San Jose CA 95134-1709 |
| RF Band | 2402 - 2480 MHz |
| Ausgangs-Leistung | 2 dBm |
| Declaration ID | D033906 |
| Qualified Design ID | 89630 |
| Specification Name | 4.1 |
| Mitglieds Unternehmen | SICK AG |

WTL16 - WTS16 Bluetooth®

SICK
Sensor Intelligence.



de
en
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fr
it
ja
pt
ru
zh

Produit décrit

WTL16, WTS16 - Bluetooth®

Fabricant

SICK AG
Erwin-Sick-Straße 1
79183 Waldkirch
Allemagne

Remarques juridiques

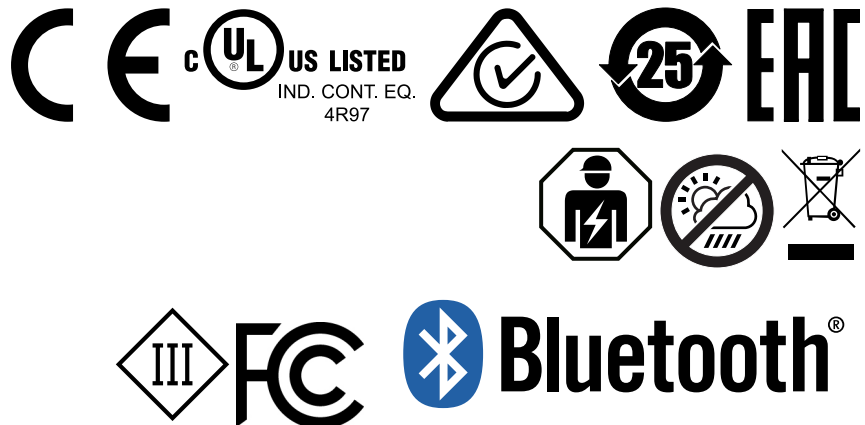
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23 Pour votre sécurité

23.1 Consignes générales de sécurité

- Lire la notice d'instruction avant la mise en service.
-  Le raccordement, le montage et la configuration ne doivent être réalisés que par un personnel qualifié.
-  N'est pas un composant de sécurité selon la Directive machines de l'UE.
-  Lors de la mise en service, protéger l'appareil contre l'humidité et la contamination.
- Cette notice d'instruction contient des informations nécessaires durant le cycle de vie du capteur.

23.2 Remarques sur l'homologation UL

The device must be supplied by a Class 2 source of supply.

UL Environmental Rating: Enclosure type 1

24 Utilisation conforme

La WTL16 Bluetooth®, WTS16 Bluetooth® est un détecteur à réflexion directe optoélectronique (appelé capteur dans ce document) qui permet la détection optique sans contact d'objets, d'animaux et de personnes. Toute autre utilisation ou modification du produit annule la garantie de SICK AG.

La variante WTS16 convient particulièrement à la détection d'objets plats, brillants, riches en contrastes et inégaux.

25 Éléments de commande et d'affichage

Détecteur à réflexion directe avec élimination d'arrière-plan

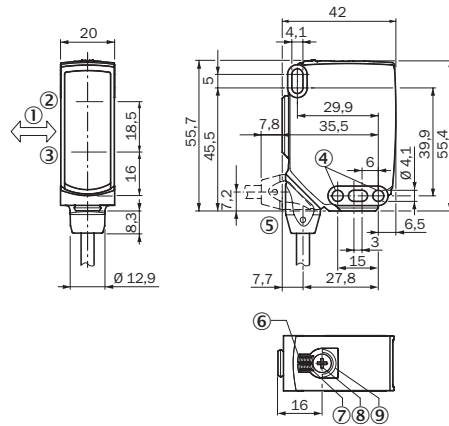


Illustration 29: Plan coté 1, WTL16 câble

- ① Sens recommandé de l'objet à détecter
- ② Centre de l'axe optique émetteur
- ③ Centre de l'axe optique récepteur
- ④ Trou de fixation, Ø 4,1 mm
- ⑤ Raccordement
- ⑥ LED d'état verte : tension d'alimentation active
- ⑦ LED d'état jaune : état réception de lumière
- ⑧ Bouton poussoir rotatif : réglage de la distance de commutation
- ⑨ BluePilot bleu : indication de la distance de commutation

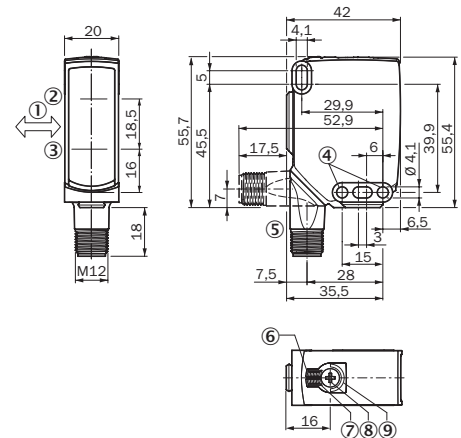


Illustration 30: Plan coté 2, WTL16 connecteur mâle

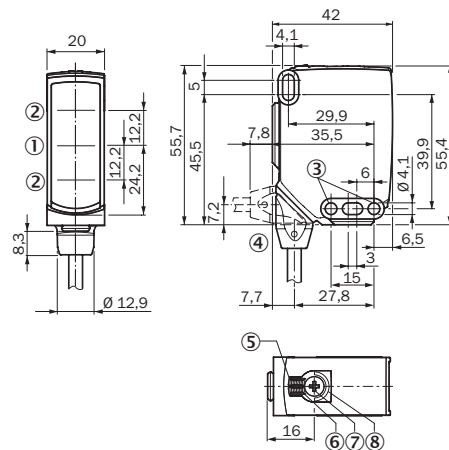


Illustration 31: Plan coté 3, WTS16 câble

- ① Centre de l'axe optique émetteur
- ② Centre de l'axe optique récepteur
- ③ Trou de fixation, Ø 4,1 mm
- ④ Raccordement
- ⑤ LED d'état verte : tension d'alimentation active
- ⑥ LED d'état jaune : état réception de lumière
- ⑦ Bouton poussoir rotatif : réglage de la distance de commutation

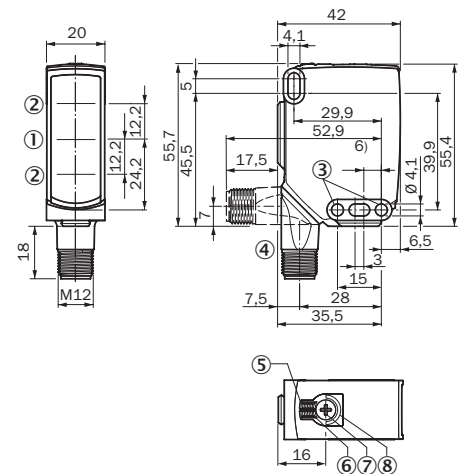


Illustration 32: Plan coté 1, WTS16 connecteur mâle

- ⑧ BluePilot bleu : indication de la distance de commutation

26 Montage

Montez le capteur sur une équerre de fixation adaptée (voir la gamme d'accessoires SICK).

Respecter le couple de serrage maximum autorisé du capteur de < 1,3 Nm.

Tenir compte de la direction préférentielle de l'objet par rapport au capteur, voir [illustration 29](#), [illustration 30](#) (ne s'applique qu'à WTL16).

27 Installation électrique

Le raccordement des capteurs doit s'effectuer hors tension ($U_v = 0\text{ V}$). Selon le mode de raccordement, respecter les informations suivantes :

- Raccordement du connecteur : respecter l'affectation des broches.
- Câble : couleur des fils

Après avoir terminé tous les raccordements électriques, appliquer ou activer l'alimentation électrique ($U_v > 0\text{ V}$).

Explications du schéma de raccordement ([tableau 5](#), [tableau 6](#)).

MF (configuration broche 2) = entrée externe, apprentissage, signal de commutation

Q_{L1}/C = sortie de commutation, communication IO-Link

CC 10 ... 30 V CC

Tableau 5: CC


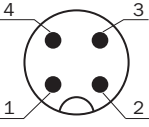
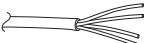
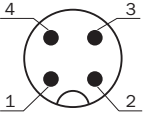
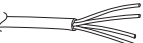
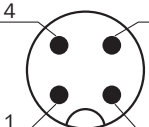
| WTL16 WTS16 | -24161xxxA00 -34161xxxA00 | -1x161xxxA0 0 | -24162xxxA0 0 -34162xxxA0 0 | -1x162xxxA0 0 | -2416xxxA01- A99 -3416xxxA01- A99 |
|---|---|---|--|---|---|
| 1 | + (L+) | | | | |
| 2 | MF | | | | |
| 3 | - (M) | | | | |
| 4 | Q_{L1}/C | | | | |
| Par défaut : MF | \bar{Q} | \bar{Q} | Sortie Q | Sortie Q | www.sick.com 8020347 |
| Par défaut : Q_{L1}/C | Sortie Q | Sortie Q | \bar{Q} | \bar{Q} | www.sick.com 8020347 |
|  |  | 1 = brn (mar- ron) 2 = wht (blanc) 3 = blu (bleu) 4 = blk (noir)  0,14 mm ² AWG26 |  | 1 = brn (mar- ron) 2 = wht (blanc) 3 = blu (bleu) 4 = blk (noir)  0,14 mm ² AWG26 |  |

Tableau 6: Push/Pull

| | |
|--|--|
| | |
| Sortie Q Push-pull (≤ 100 mA) | |
| \bar{Q} Push-pull (≤ 100 mA) | |

28 Mise en service

Bluetooth® est activé lors de la première mise en service. SOPASair est disponible sur Google PlayStore (Android) et l'App Store (iOS).

Système d'exploitation requis : version Android 6.0, dernière version iOS.

Alignement

WTL16 Bluetooth®, WTS16 Bluetooth®: aligner le capteur sur l'objet. Choisir la position de sorte que le faisceau lumineux émis rouge touche l'objet en plein centre. S'assurer que l'ouverture optique (vitre frontale) du capteur est parfaitement dégagée [illustration 33].



REMARQUE

Chez WTS16 : Lorsque la détection des objets se fait par le haut, nous recommandons un montage incliné du capteur pour éviter une réflexion totale par une surface réfléchissante, voir illustration 39, illustration 42.

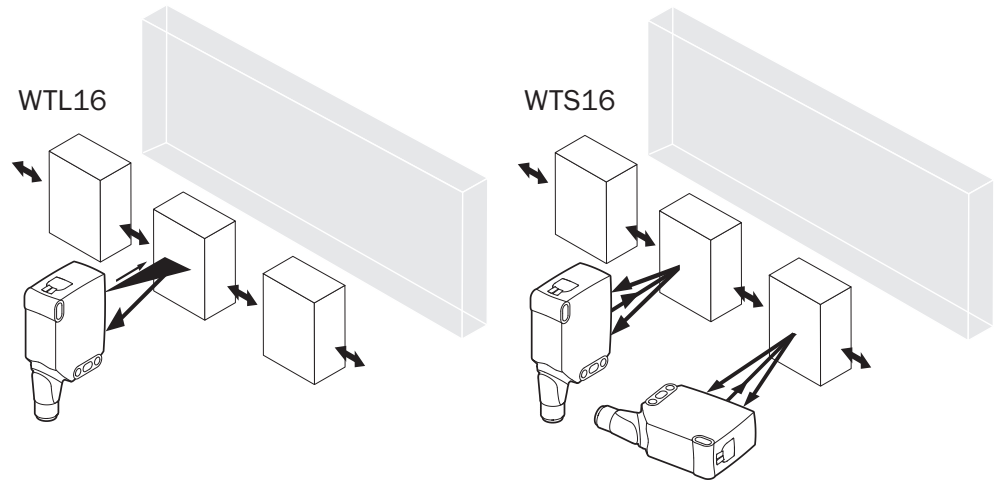


Illustration 33: Alignement

Distance de commutation

Vérifier les conditions d'utilisation : comparer la distance de commutation et la distance à l'objet ou à l'arrière-plan et les caractéristiques de rémission de l'objet avec le diagramme correspondant [voir illustration 34 et illustration 35] (x = distance de commutation, y = distance minimale entre la distance de commutation réglée et l'arrière-plan (blanc 90 %). Réflectance : 6 % = noir ①, 18 % = gris ②, 90 % = blanc ③ (par rapport au blanc standard selon DIN 5033). Nous recommandons de procéder au réglage avec un objet peu réfléchissant.

La distance minimale (=y) pour l'élimination d'arrière-plan peut être calculée à partir du diagramme [illustration 34 ①] comme suit :

Exemple : x = 200 mm, y = 15 mm. C'est à dire que l'arrière-plan (blanc, 90 %) est masqué à partir d'une distance du capteur > 15 mm.

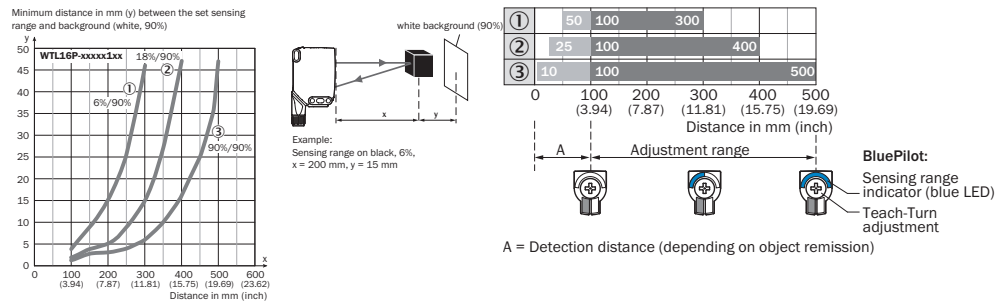


Illustration 34: Caractéristique 1, WTL16 Blue-tooth@-xxxx1xx, lumière rouge

- ① Distance de commutation sur noir, 6 % de rémission
- ② Distance de commutation sur gris, 18 % de rémission
- ③ Distance de commutation sur blanc, 90 % de réflectivité

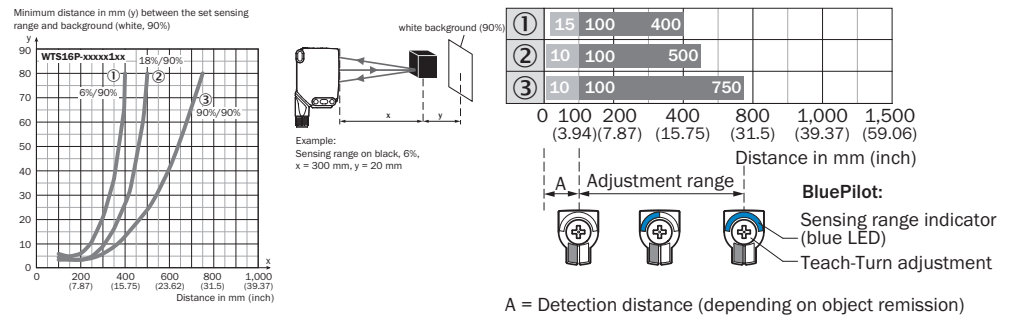


Illustration 35: Caractéristique 1 : WTS16 Blue-tooth@xxxx1xx, lumière rouge

- ① Distance de commutation sur noir, 6 % de rémission
- ② Distance de commutation sur gris, 18 % de rémission
- ③ Distance de commutation sur blanc, 90 % de réflectivité

Réglage distance de commutation WTL16, WTS16

WTL16x-xxxxxx2xAxx, WTS16x-xxxxxx2xAxx avec bouton poussoir rotatif :

Appuyer sur le bouton d'apprentissage (pendant environ 1 à 3 secondes) pour régler la distance de commutation. Selon les exigences, il est possible de procéder à un réglage fin avec le potentiomètre (sans appuyer sur le bouton d'apprentissage).

Rotation vers la droite : augmentation de la distance de commutation.

Rotation vers la gauche : réduction de la distance de commutation.

La distance de commutation peut aussi être sélectionnée uniquement au moyen du potentiomètre. Nous recommandons de placer la distance de commutation dans l'objet, par ex. voir l'illustration 8. Après le réglage de la distance de commutation, extraire l'objet de la trajectoire du faisceau, ce qui élimine l'arrière-plan et modifie la sortie de commutation (voir tableau 5, voir tableau 6).

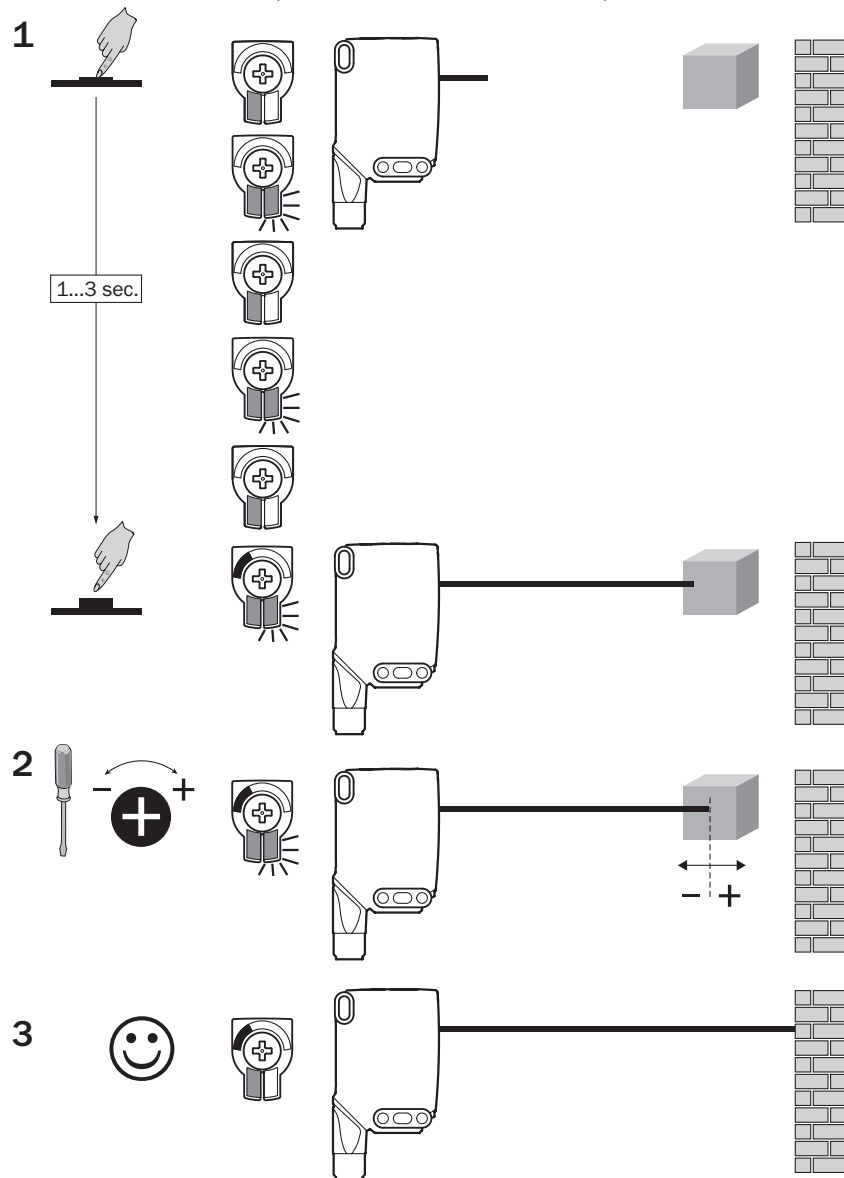


Illustration 36: WTL16x-xxxxxx2xAxx, WTS16x-xxxxxx2xAxx lumière rouge, réglage de la distance de commutation avec le bouton poussoir rotatif

WTL16x-xxxxxx1xAxx, WTS16x-xxxxxx1xAxx avec potentiomètre :

Le potentiomètre permet de régler la distance de commutation.

Rotation vers la droite : augmentation de la distance de commutation.

Rotation vers la gauche : réduction de la distance de commutation.

Nous recommandons de placer la distance de commutation dans l'objet, par ex. voir l'illustration 9. Après le réglage de la distance de commutation, extraire l'objet de la trajectoire du faisceau, ce qui élimine l'arrière-plan et modifie la sortie de commutation (voir tableau 5, voir tableau 6).

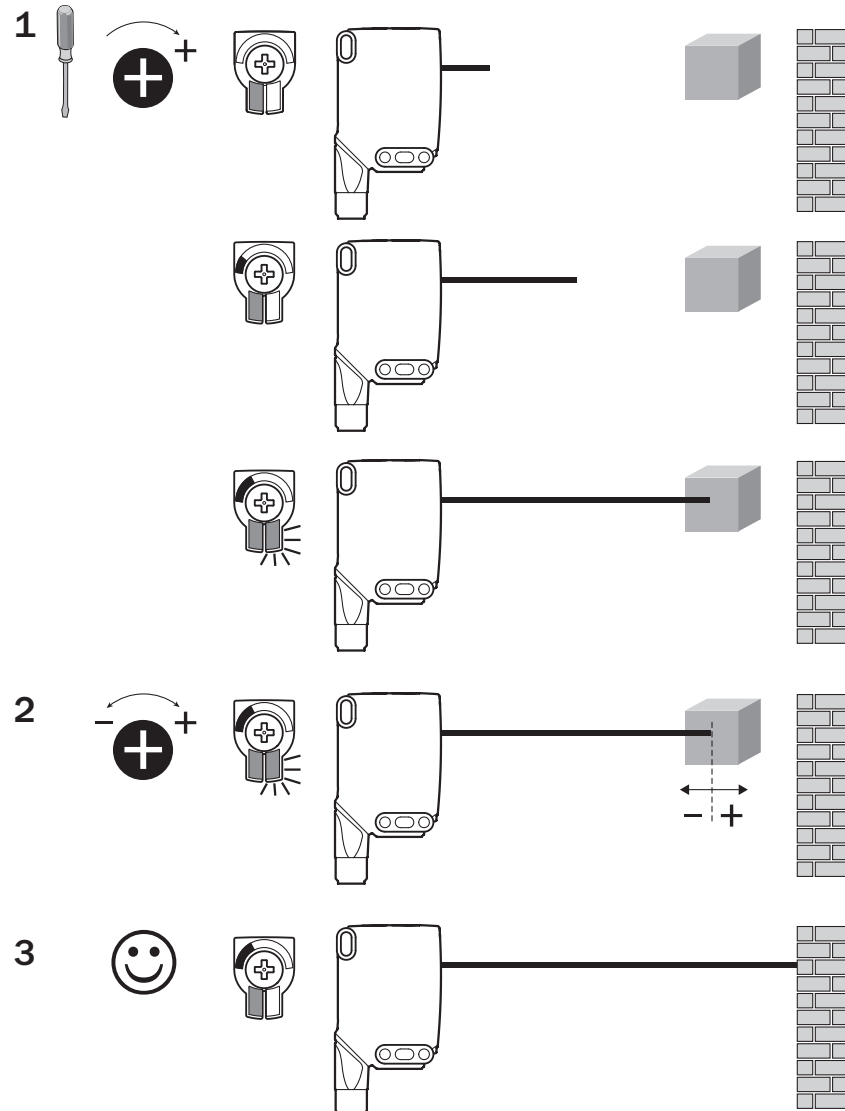


Illustration 37: WTL16x-xxxxxx1xAxx, WTS16x-xxxxxx1xAxx lumière rouge, réglage de la distance de commutation avec le potentiomètre

WTL16x-xxxxxx3xAxx, WTS16x-xxxxxx3xAxx avec bouton d'apprentissage :

Appuyer sur le bouton d'apprentissage (pendant environ 1 à 3 secondes) pour régler la distance de commutation. Nous recommandons de placer la distance de commutation dans l'objet, par ex. voir l'illustration 9. Après le réglage de la distance de commutation, extraire l'objet de la trajectoire du faisceau, ce qui élimine l'arrière-plan et modifie la sortie de commutation (voir tableau 5, voir tableau 6).

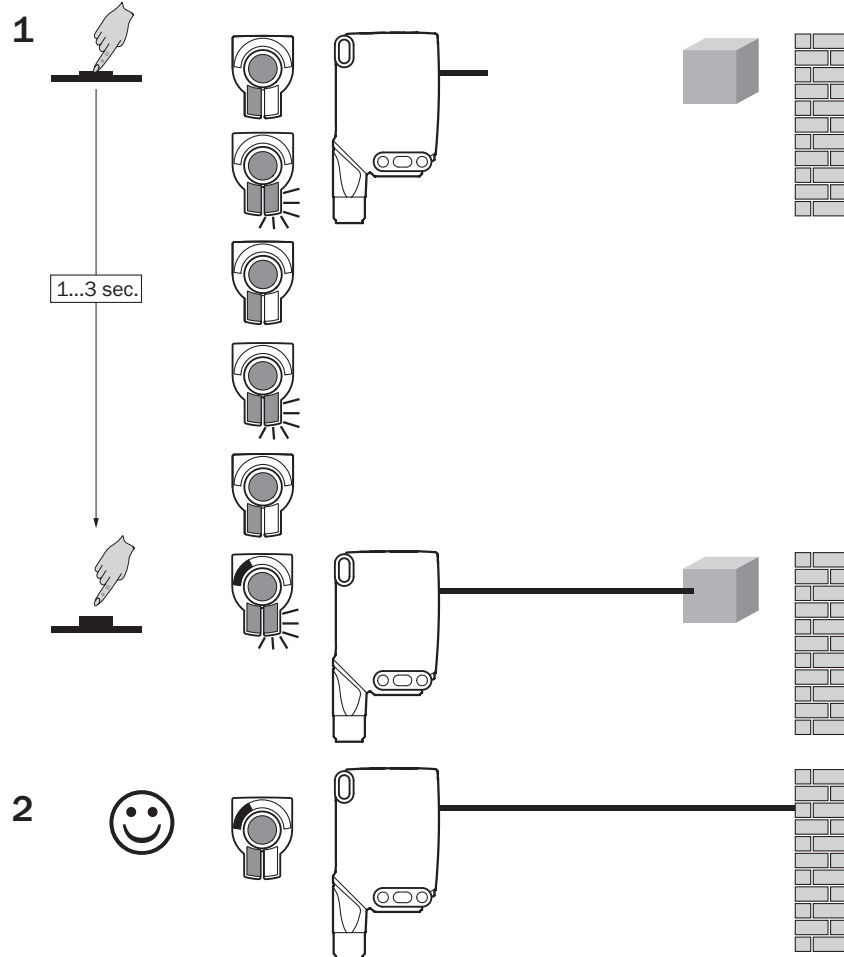


Illustration 38: WTL16x-xxxxxx3xAxx, WTS16x-xxxxxx3xAx lumière rouge, réglage de la distance de commutation avec le bouton d'apprentissage

Réglage distance de commutation WTS16

Détection d'objets plats, brillants, riches en contrastes et inégaux.

Lorsque la détection des objets se fait par le haut, nous recommandons un montage incliné du capteur pour éviter une réflexion totale par une surface réfléchissante

- 1 Pour le réglage de la distance de commutation, le spot lumineux doit être aligné sur une surface homogène et plane, p. ex. une feuille blanche.

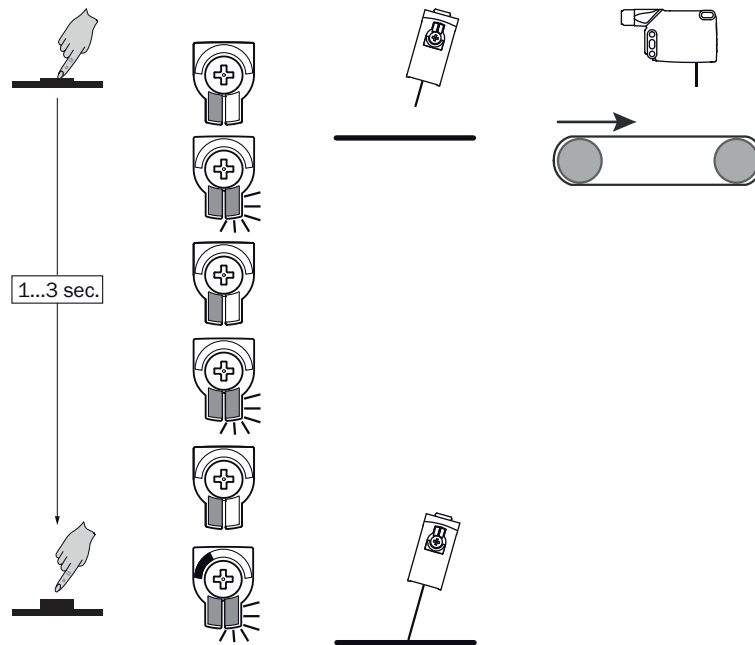


Illustration 39: Réglage distance de commutation WTS16

- 2 Tourner ensuite légèrement le potentiomètre vers la gauche jusqu'à ce que la LED jaune s'éteigne. La distance de commutation se trouve légèrement au-dessus de la bande transporteuse.

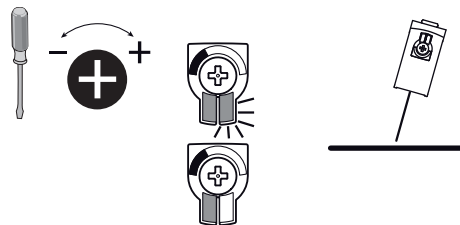


Illustration 40: Réglage distance de commutation WTS16

- 3 La bande transporteuse doit maintenant être mise en service sans objets. Si la LED jaune ne s'allume pas pendant la course de test, la distance de commutation est réglée correctement.

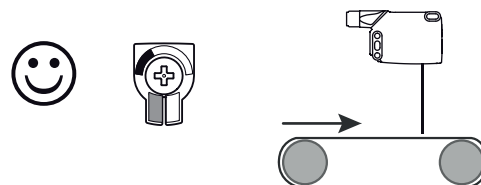


Illustration 41: Réglage distance de commutation WTS16

- 4 Si l'objet se trouve dans la trajectoire du faisceau et que la LED jaune s'allume, la distance de commutation est réglée correctement.

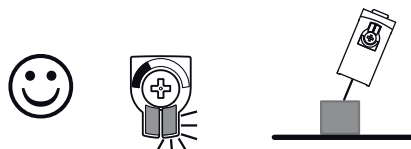


Illustration 42: Réglage distance de commutation WTS16

Process data structure (Version 1.1)

| | A00 | A70 | A71 | A72 | A73 | A75 |
|--|---|--|--|---|---|---|
| IO-Link | V1.1 | | | | | |
| Données de processus | 2 octets | | | | | 4 octets |
| | Octet 0 : bit 15 ... 8 Octet 1 : bit 7 ... 0 | | | | | Octet 0 : bit 31 ... 24 Octet 1 : bit 13 ... 16 Octet 2 : bit 15 ... 8 Octet 3 : bit 7 ... 0 |
| Bit 0 / type de données | Q _{L1} / booléen | | | | | |
| Bit 1 / type de données | Q _{L2} / booléen | | | Qint.1 / booléen | Q _{L2} / booléen | Qint.1 / booléen |
| Bit... / description / type de données | 2 ... 15 / [vide] | 2 ... 15 / [valeur de mesure du temps] / UInt 14 | 2 ... 15 / [contrôle-valeur] / UInt 14 | 2 ... 15 / [longueur / mesure de la vitesse] / Sint14 | 2 / Qint.1 / booléen | 2 ... 7 / [vide] |
| Bit... / description / type de données | | | | | 3 ... 15 / [valeur de mesure du temps] / UInt13 | 8 ... 31 / [charge support] / UInt 24 |

29 Élimination des défauts

Le tableau Élimination des défauts présente les mesures à appliquer si le capteur ne fonctionne plus.

| LED d'état / image du défaut | Cause | Mesure |
|---|---|---|
| La LED verte clignote | Communication IO-Link | Aucune |
| Les sorties de commutation ne se comportent pas selon tableau 6 | 1. Communication IO-Link 2. Modification de la configuration 3. Court-circuit | 1. Aucune 2. Adaptation de la configuration 3. Vérifier les raccordements électriques |

| LED d'état / image du défaut | Cause | Mesure |
|---|---|---|
| Uniquement pour WTS: la LED clignote rapidement | Durant le réglage de la distance de commutation, le spot lumineux se trouve à moitié seulement sur l'objet ou sur un objet à très fort contraste. | Réglage de la distance de commutation selon Section « Réglage distance de commutation pour les capteurs WTS163. |
| La LED jaune s'allume, pas d'objet dans la trajectoire du faisceau | La distance de commutation est réglée sur une distance trop grande | Réduire la portée |
| L'objet est dans la trajectoire du faisceau, la LED jaune ne s'allume pas | La distance entre le capteur et l'objet est trop grande ou la portée est trop faible | Augmenter la portée |
| Le capteur n'apparaît pas dans SOPASair. | <ol style="list-style-type: none"> 1. Connexion existante avec un autre appareil portatif. 2. L'appareil portatif se trouve en dehors de la zone d'émission du capteur. 3. Bluetooth LE désactivé dans le capteur. 4. Bluetooth LE désactivé dans l'appareil portatif. 5. Filtre d'adresse MAC activé, appareil portatif non autorisé. | <ol style="list-style-type: none"> 1. Aucune connexion ou connexion existante désactivée. 2. Contrôle de la figure de montage (p. ex. blindage par du métal). 3. Activation de Bluetooth LE par SiLink2 Master ou IO-Link 4. Activation de Bluetooth LE 5. aucun filtre d'adresse MAC ou filtre d'adresse MAC modifié. |
| Impossible d'établir une connexion avec le capteur | <ol style="list-style-type: none"> 1. La version Android / iOS ne satisfait pas aux exigences. 2. La version de SOPASair ne renferme pas le pilote nécessaire. | <ol style="list-style-type: none"> 1. Contrôlez le système d'exploitation. 2. Désinstallez SOPASair et installez la dernière version de l'appli. |

30 Démontage et mise au rebut

Le capteur doit être mis au rebut selon les réglementations spécifiques au pays respectif. Dans la limite du possible, les matériaux du capteur doivent être recyclés (notamment les métaux précieux).



REMARQUE

Mise au rebut des batteries, des appareils électriques et électroniques

- Selon les directives internationales, les batteries, accumulateurs et appareils électriques et électroniques ne doivent pas être mis au rebut avec les ordures ménagères.
- Le propriétaire est obligé par la loi de retourner ces appareils à la fin de leur cycle de vie au point de collecte respectif.



■ Ce symbole sur le produit, son emballage ou dans ce document indique qu'un produit est soumis à ces réglementations.

31 Maintenance

Les capteurs SICK ne nécessitent aucune maintenance.

Nous vous recommandons de procéder régulièrement

- au nettoyage des surfaces optiques
- au contrôle des vissages et des connexions enfichables

Ne procéder à aucune modification sur les appareils.

Sujet à modification sans préavis. Les caractéristiques du produit et techniques fournies ne sont pas une déclaration de garantie.

32 Homologations

32.1 Bluetooth® approvals

| Country | Comments |
|---------------|--|
| Canada | IC: 21147-W16 |
| USA | FCC ID: 2AHDR-W16 |
| Europe + EFTA | <p>EU countries Belgium (BE), Bulgaria (BG), Denmark (DK), Germany (DE), Estonia (EE), Finland (FI), France (FR), Greece (GR), Ireland (IE), Italy (IT), Latvia (LV), Lithuania (LT), Luxembourg (LU), Malta (MT), Netherlands (NL), Austria (AT), Poland (PL), Portugal (PT), Romania (RO), Sweden (SE), Slovakia (SK), Slovenia (SI), Spain (ES), Czech Republic (CZ), Hungary (HU), United Kingdom (GB), Republic of Cyprus (CY).</p> <p>EFTA countries Iceland, Liechtenstein, Norway, Switzerland</p> |

This device complies with Part 15 of the FCC Rules and with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Changes or modifications made to this equipment not expressly approved by SICK AG may void the FCC authorization to operate this equipment.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

33 Caractéristiques techniques

33.1 Caractéristiques techniques

| | WTL16 Bluetooth® | WTS16 Bluetooth® |
|---------------------------------------|--|--|
| Portée max. | 10 mm ... 500 mm ¹ | 10 mm ... 750 mm ¹ |
| Diamètre spot / distance | 30 mm x 3 mm (200 mm) | Ø 8 mm (300 mm) |
| Tension d'alimentation U _v | DC 10 ... 30 V | DC 10 ... 30 V |
| Consommation électrique | ≤ 30 mA ² < 50 mA ³ | ≤ 30 mA ² < 50 mA ³ |
| Courant de sortie I _{max.} | ≤ 100 mA | ≤ 100 mA |
| Temps de réponse max. | ≤ 500 µs ⁴ | ≤ 1,4 ms ⁴ |
| Fréquence de commutation | 1000 Hz ⁵ | 350 Hz ⁵ |
| Indice de protection | IP66, IP67 | IP66, IP67 |
| Classe de protection | III | III |
| Protections électriques | A, B, C, D ⁶ | A, B, C, D ⁶ |
| Température de service | -40 °C ... +60 °C | -40 °C ... +60 °C |

1 Objet avec 90 % de réémission (par rapport au blanc standard selon DIN 5033)

2 16 V CC ... 30 V CC, sans charge

3 10 V CC ... 16 V CC, sans charge

4 Durée du signal sur charge ohmique en mode commutation. Valeurs différentes possibles en mode COM2.

5 Pour un rapport clair/sombre de 1:1 en mode de commutation. Valeurs différentes possibles en mode IO-Link.

6 A = raccordements U_v protégés contre les inversions de polarité
 B = entrées et sorties protégées contre les inversions de polarité
 C = Suppression des impulsions parasites
 D = sorties protégées contre les courts-circuits et les surcharges

33.2 Caractéristiques techniques Bluetooth®

| Caractéristiques | Valeurs |
|-----------------------------|---|
| Portée Bluetooth® | 100 m à vue |
| Type de radio | BLE |
| Classe de radio | 2 |
| Fabricant module Bluetooth® | BROADCOM Cypress Semiconductor Corporation 198 Champion Court San Jose CA 95134-1709 |
| Bande RF | 2402 à 2480 MHz |
| Puissance de sortie | 2 dBm |
| Declaration ID | D033906 |
| Qualified Design ID | 89630 |
| Nom spécification | 4.1 |
| Entreprise membre | SICK AG |

WTL16 - WTS16 Bluetooth®

SICK
Sensor Intelligence.



de
en
es
fr
it
ja
pt
ru
zh

Produto descrito

WTL16, WTS16 - Bluetooth®

Fabricante

SICK AG
Erwin-Sick-Str. 1
79183 Waldkirch
Alemanha

Notas legais

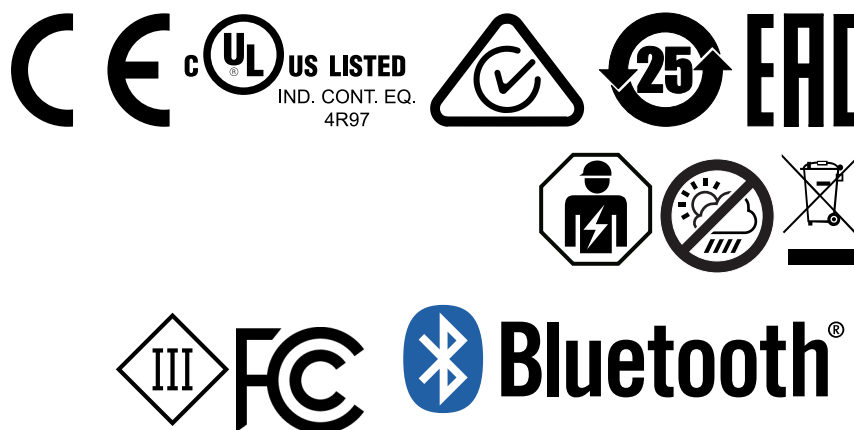
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Documento original

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34 Para a sua segurança

34.1 Instruções gerais de segurança

- Leia o manual de instruções antes de colocar em operação.
-  Conexão, montagem e configuração só podem ser realizadas por especialistas treinados.
-  Não é um componente de segurança em conformidade com a Diretriz de Máquinas da UE.
-  Ao colocar em operação, proteja o dispositivo de umidade e contaminação.
- Esse manual de instruções contém informações necessárias durante o ciclo de vida do sensor.

34.2 Indicações sobre a homologação UL

The device must be supplied by a Class 2 source of supply.

UL Environmental Rating: Enclosure type 1

35 Especificações de uso

O WTL16 Bluetooth®, WTS16 Bluetooth® é um sensor optoeletrônico de reflexão (doravante denominado “sensor”) utilizado para a detecção óptica e sem contato de objetos, animais e pessoas. Qualquer utilização diferente ou alterações do produto ocasionam a perda da garantia da SICK AG.

O WTS16 é especialmente adequado à detecção de objetos planos, brilhantes, contrastantes e desnivelados.

36 Elementos de comando e indicação

Sensor fotoelétrico de reflexão com supressão do fundo

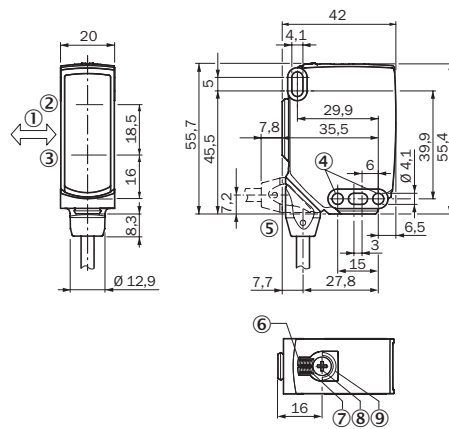


Figura 43: Desenho dimensional 1, WTL16 cabo

- ① Direção preferencial do material a ser detectado
- ② Centro do eixo do sistema óptico, emissor
- ③ Centro do eixo do sistema óptico receptor
- ④ Furo de fixação, Ø 4,1 mm
- ⑤ Conexão
- ⑥ LED indicador verde: tensão de alimentação ativa
- ⑦ Indicador LED amarelo: status recepção luminosa
- ⑧ Elemento de pressão e giro: configuração da distância de comutação
- ⑨ BluePilot azul: indicação da distância de comutação

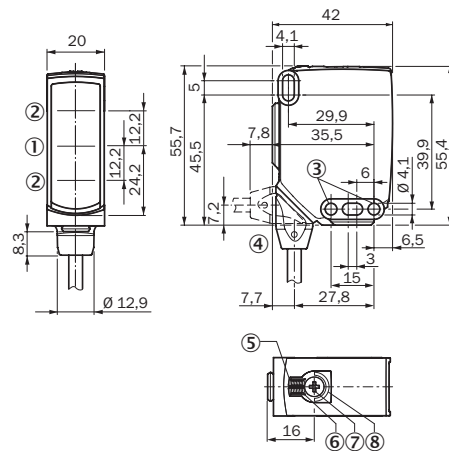


Figura 45: Desenho dimensional 3, WTS16 cabo

- ① Centro do eixo do sistema óptico, emissor
- ② Centro do eixo do sistema óptico receptor
- ③ Furo de fixação, Ø 4,1 mm
- ④ Conexão

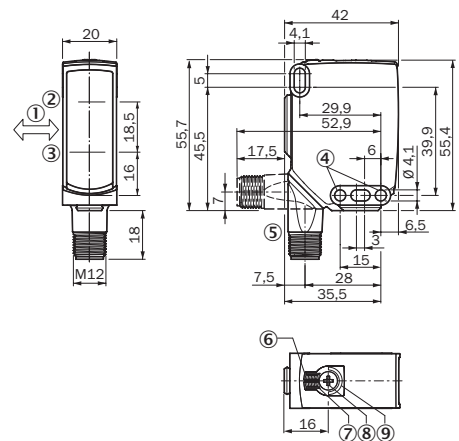


Figura 44: Desenho dimensional 2, WTL16 conector macho

- ① Direção preferencial do material a ser detectado
- ② Centro do eixo do sistema óptico, emissor
- ③ Centro do eixo do sistema óptico receptor
- ④ Furo de fixação, Ø 4,1 mm
- ⑤ Conexão
- ⑥ LED indicador verde: tensão de alimentação ativa
- ⑦ Indicador LED amarelo: status recepção luminosa
- ⑧ Elemento de pressão e giro: configuração da distância de comutação
- ⑨ BluePilot azul: indicação da distância de comutação

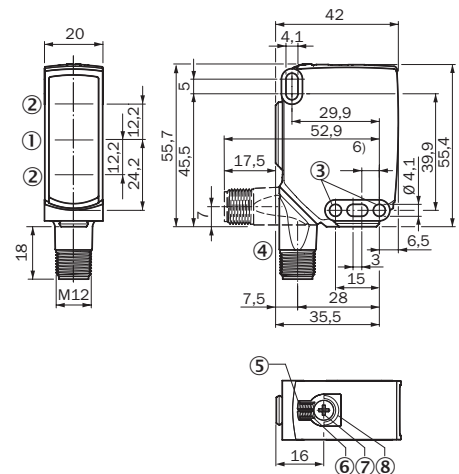


Figura 46: Desenho dimensional 1, WTS16 conector macho

- ① Centro do eixo do sistema óptico, emissor
- ② Centro do eixo do sistema óptico receptor
- ③ Furo de fixação, Ø 4,1 mm
- ④ Conexão

- ⑤ LED indicador verde: tensão de alimentação ativa
- ⑥ Indicador LED amarelo: status recepção luminosa
- ⑦ Elemento de pressão e giro: configuração da distância de comutação
- ⑧ BluePilot azul: indicação da distância de comutação

37 Montagem

Montar o sensor e o refletor em uma cantoneira de fixação adequada (ver a linha de acessórios SICK).

Observar o torque de aperto máximo permitido de $< 1,3$ Nm para o sensor.

Observar a direção preferencial do objeto em relação ao sensor ,[ver figura 43](#), [figura 44](#) (válido somente para WTL16).

38 Instalação elétrica

A conexão dos sensores deve ser realizada em estado desenergizado ($U_V = 0$ V). Conforme o tipo de conexão, devem ser observadas as seguintes informações:

- Conector: observar a disposição dos pinos.
- Cabo: Cor dos fios

Instalar ou ligar a alimentação de tensão ($U_V > 0$ V) somente após a conexão de todas as conexões elétricas.

Explicações relativas ao esquema de conexões ([tabela 7](#), [tabela 8](#)).

MF (configuração do pino 2) = entrada externa, Teach-in, sinal de comutação

Q_{L1}/C = saída de comutação, comunicação IO-Link

CC: 10 ... 30 V CC

Tabela 7: CC


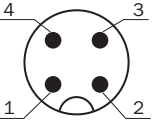
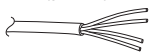
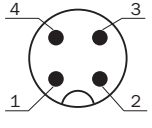
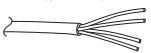
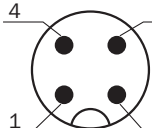


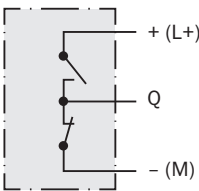
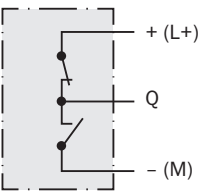

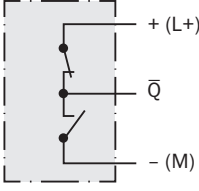
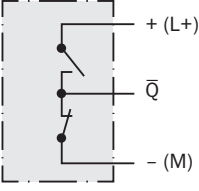

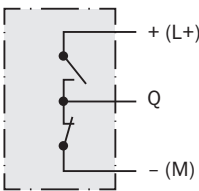
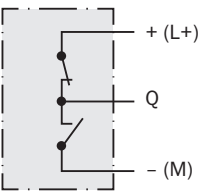
| | | | | | |
|---|---|---|--|---|---|
| WTL16 WTS16 | -24161xxxA00 -34161xxxA00 | -1x161xxxA0 0 | -24162xxxA0 0 -34162xxxA0 0 | -1x162xxxA0 0 | -2416xxxxA01- A99 -3416xxxxA01- A99 |
| 1 | + (L+) | | | | |
| 2 | MF | | | | |
| 3 | - (M) | | | | |
| 4 | Q _{L1} /C | | | | |
| Default: MF | \bar{Q} | \bar{Q} | Q | Q | www.sick.com 8020347 |
| Default: Q _{L1} /C | Q | Q | \bar{Q} | \bar{Q} | www.sick.com 8020347 |
|  |  | 1 = brn (marrom) 2 = wht (branco) 3 = blu (azul) 4 = blk (preto)  0,14 mm ² AWG26 |  | 1 = brn (marrom) 2 = wht (branco) 3 = blu (azul) 4 = blk (preto)  0,14 mm ² AWG26 |  |

Tabela 8: Push / Pull

| | | | |
|---|---|---|---|
|  |  |  |  |
| Q push-pull (≤ 100 mA) |  |  |  |
| \bar{Q} push-pull (≤ 100 mA) |  |  |  |

39 Colocação em operação

O Bluetooth® é ligado na primeira colocação em operação. Você pode obter SOPASair na Google PlayStore (Android) e na App Store (iOS).

Requisitos para o sistema operativo: Android-Version 6.0, iOS versão mais atual.

Alinhamento

WTL16 Bluetooth®, WTS16 Bluetooth®: alinhar o sensor ao objeto. Selecionar o posicionamento de forma que o feixe da luz de emissão vermelha incida sobre o centro do objeto. Certificar-se de que a abertura óptica (vidro frontal) do sensor esteja completamente livre [figura 47].



NOTA

No WTS16: se a detecção dos objetos é feita partindo de cima, recomendamos uma montagem adequada do sensor para que uma reflexão total através de uma superfície refletora seja evitada, ver figura 53, figura 56.

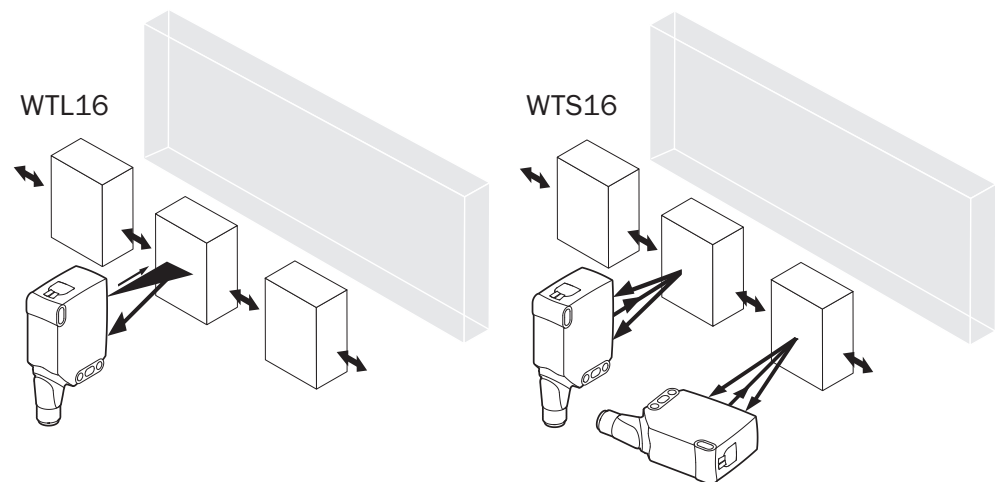


Figura 47: Alinhamento

Distância de comutação

Verificar as condições de uso: equiparar a distância de comutação e distância até o objeto ou plano de fundo, bem como a refletividade do objeto, com o respectivo diagrama [ver figura 48 e figura 49] (x = distância de comutação, y = distância mínima entre a distância de comutação ajustada e o plano de fundo (branco 90%)). Luminescência: 6% = preto ①, 18% = cinza ②, 90% = branco ③ (com base no padrão branco da norma DIN 5033). Recomendamos efetuar o ajuste com um objeto de baixa luminescência.

A distância mínima (= y) para a supressão de fundo pode ser determinada com base no diagrama [figura 48 ①] como a seguir:

Exemplo: x = 200 mm, y = 15 mm. Isto significa, que o sensor suprime o plano de fundo (branco, 90%) a partir de uma distância > 15 mm.

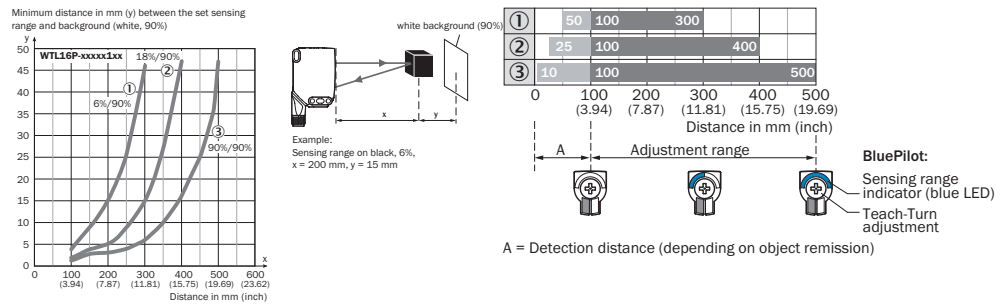


Figura 48: Curva característica 1, WTL16 Blue-tooth®-xxxxx1xx, luz vermelha

- ① Distância de comutação sobre preto, luminescência 6%
- ② Distância de comutação sobre cinza, luminescência 18%
- ③ Distância de comutação sobre branco, remissão 90%

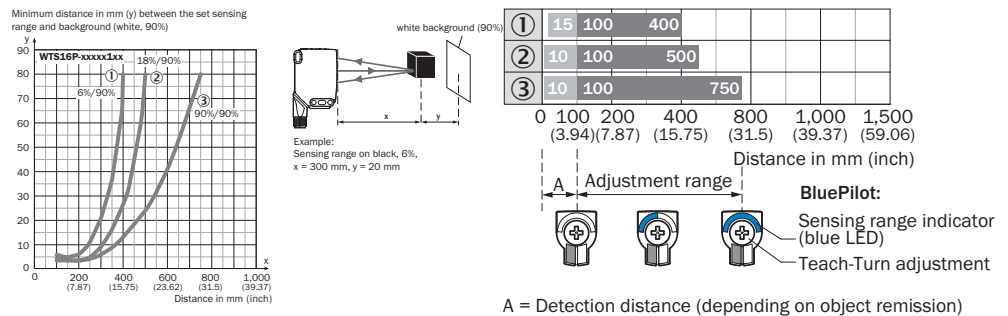


Figura 49: Curva característica 1, WTS16 Blue-tooth®-xxxxx1xx, luz vermelha

- ① Distância de comutação sobre preto, luminescência 6%
- ② Distância de comutação sobre cinza, luminescência 18%
- ③ distância de comutação sobre branco, remissão 90%

Ajuste da distância de comutação WTL16, WTS16

WTL16x-xxxxx2xAxx, WTS16x-xxxxx2xAxx com elemento de pressão e giro:

O ajuste da distância de comutação é efetuado com a pressão da tecla Teach-in (aprox. 1-3 seg.). Dependendo dos requisitos, é possível fazer um ajuste fino com o potenciômetro (sem apertar a tecla teach-in).

Giro para direita: aumento da distância de comutação.

Giro para esquerda: redução da distância de comutação.

A distância de comutação também pode ser ajustada somente com o potenciômetro.

Recomendamos posicionar a distância de comutação no objeto, por ex., ver a figura 8

Após o ajuste da distância de comutação, remover o objeto do caminho óptico; o fundo é suprimido e a saída de comutação se altera (ver tabela 7 e tabela 8).

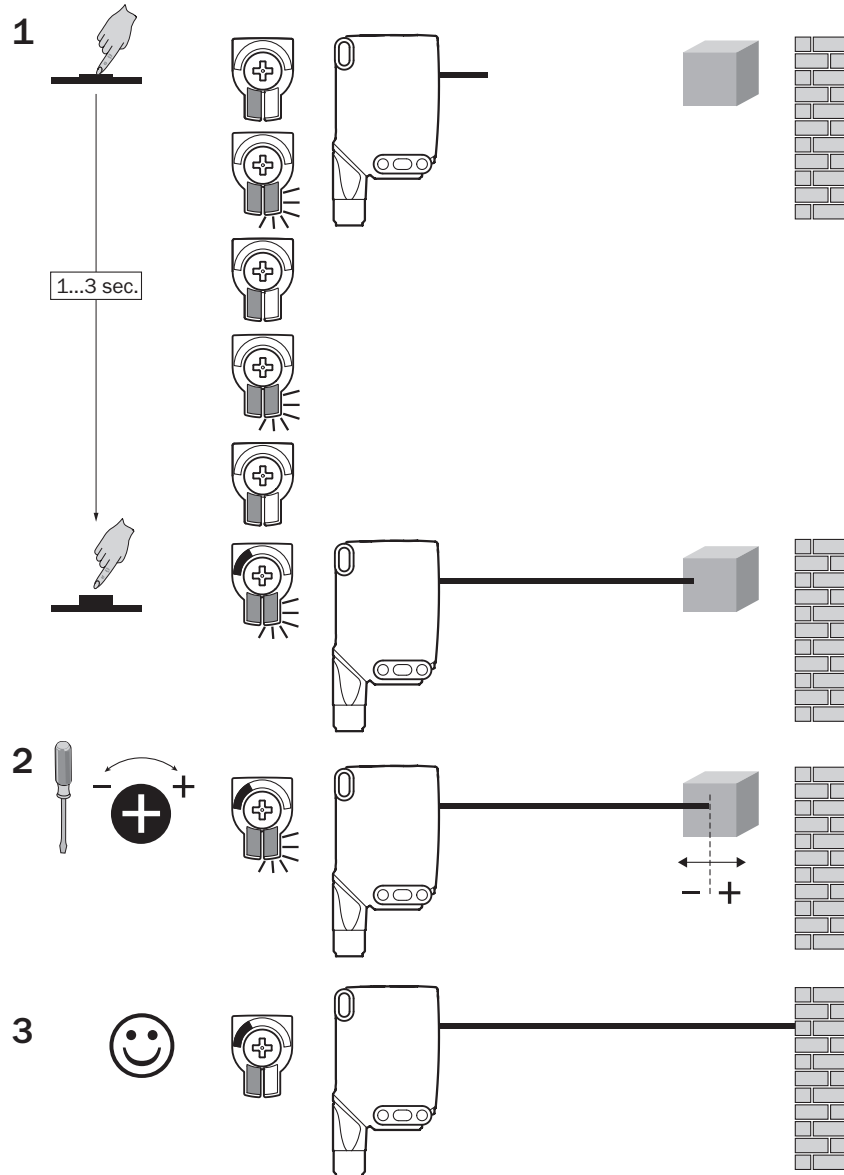


Figura 50: WTL16x-xxxxx2xAxx, WTS16x-xxxxx2xAxx luz vermelha, ajuste da distância de comutação com elemento de pressão e giro

WTL16x-xxxxx1xAxx, WTS16x-xxxxx1xAxx com potenciômetro:

O potenciômetro permite o ajuste da distância de comutação.

Giro para direita: aumento da distância de comutação.

Giro para esquerda: redução da distância de comutação.

Recomendamos posicionar a distância de comutação no objeto, por ex., ver a figura 9.

Após o ajuste da distância de comutação, remover o objeto do caminho óptico; o fundo é suprimido e a saída de comutação se altera (ver tabela 7 e tabela 8).

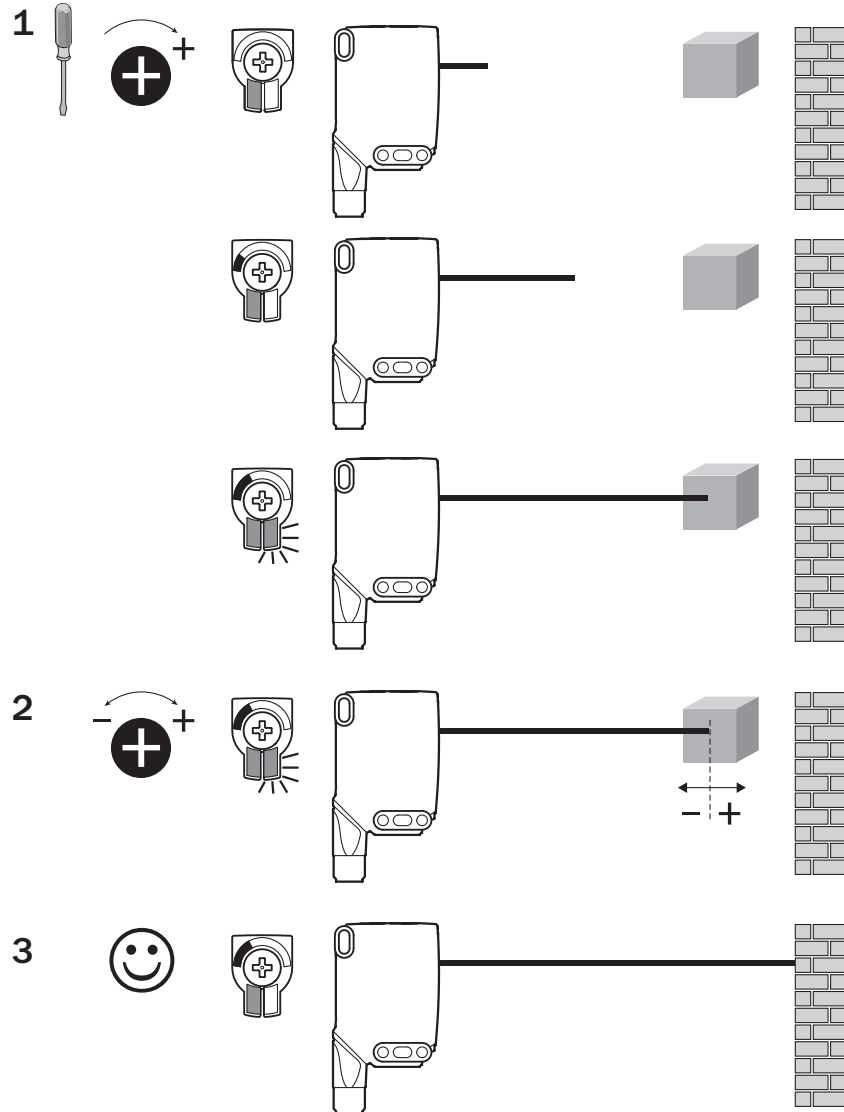


Figura 51: WTL16x-xxxxx1xAxx, WTS16x-xxxxx1xAxx luz vermelha, ajuste da distância de comutação com potenciômetro

WTL16x-xxxxxx3xAxx, WTS16x-xxxxxx3xAxx com tecla teach-in:

O ajuste da distância de comutação é efetuado com a pressão da tecla Teach-in (aprox. 1-3 seg.). Recomendamos posicionar a distância de comutação no objeto, por ex., ver a figura 9. Após o ajuste da distância de comutação, remover o objeto do caminho óptico; o fundo é suprimido e a saída de comutação se altera (ver tabela 7 e tabela 8).

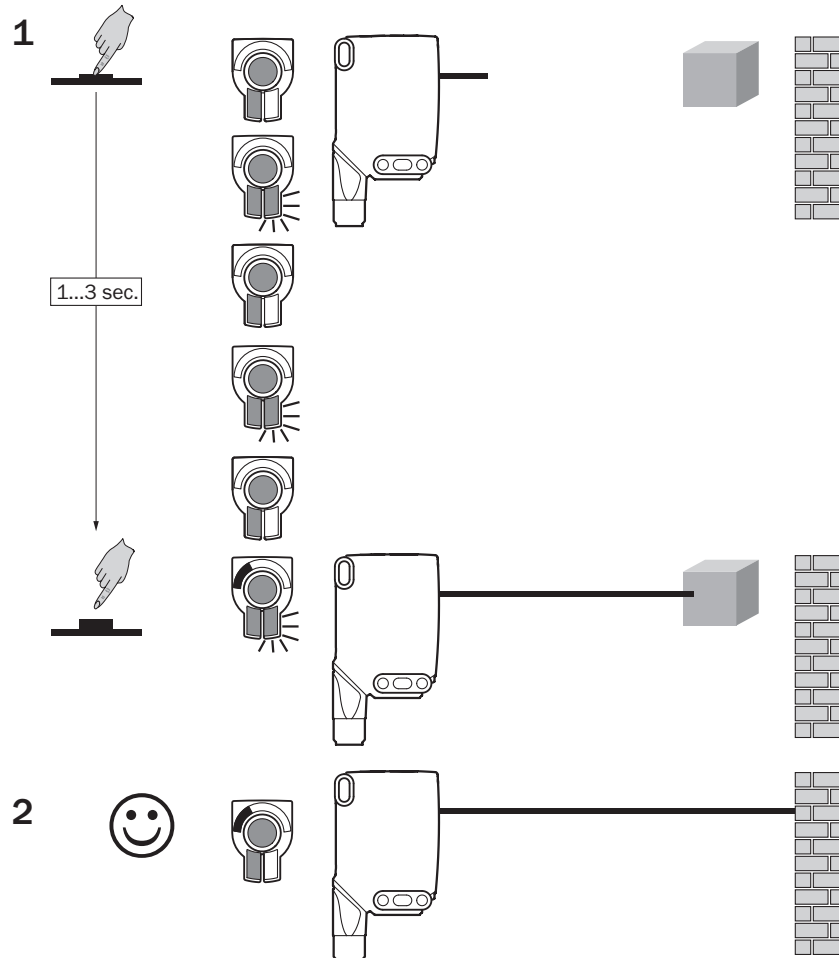


Figura 52: WTL16x-xxxxxx3xAxx, WTS16x-xxxxxx3xAx luz vermelha, ajuste da distância de comutação com tecla teach-in

Ajuste da distância de comutação WTS16

Deteção de objetos planos, brilhantes, contrastantes e desnivelados.

Se a deteção dos objetos é feita partindo de cima, recomendamos uma montagem adequada do sensor para que uma reflexão total através de uma superfície refletora seja evitada.

- 1 Para o ajuste da distância de comutação, o ponto de luz deve ser alinhado a uma superfície homogênea e plana, p. ex. folha branca.

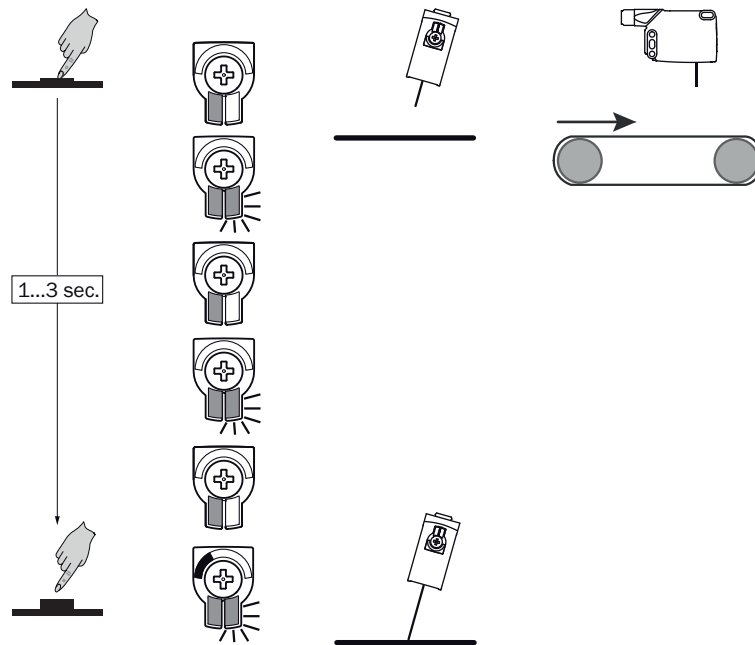


Figura 53: Ajuste da distância de comutação WTS16

- 2 Girar o potenciômetro para a esquerda somente até o indicador LED amarelo apagar. A distância de comutação se encontra agora apenas bem pouco acima da esteira transportadora.

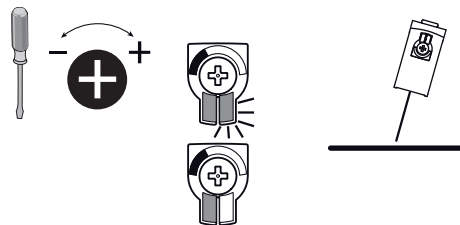


Figura 54: Ajuste da distância de comutação WTS16

- 3 A esteira transportadora deve agora ser operada sem objetos. Se o indicador LED amarelo durante o funcionamento teste não acender mais, a distância de comutação é ajustada corretamente.

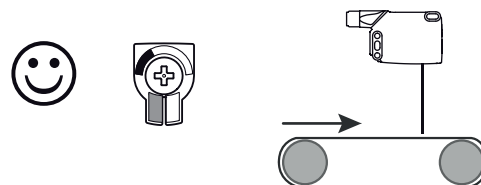


Figura 55: Ajuste da distância de comutação WTS16

- 4 Se o objeto estiver no caminho ótico e o indicador LED amarelo acender, a distância de comutação está ajustada corretamente.

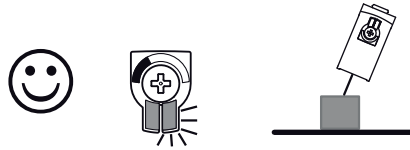


Figura 56: Ajuste da distância de comutação WTS16

Process data structure (Version 1.1)

| | A00 | A70 | A71 | A72 | A73 | A75 |
|----------------------------------|--|---|--------------------------------------|--|--|--|
| IO-Link | V1.1 | | | | | |
| Process data | 2 Byte | | | | | 4 Byte |
| | Byte 0 : Bit 15... 8 Byte 1: Bit 7... 0 | | | | | Byte 0 : Bit 31... 24 Byte 1: Bit 13... 16 Byte 2: Bit 15... 8 Byte 3: Bit 7... 0 |
| Bit 0/ Data type | Q _{L1} / Boolean | | | | | |
| Bit 1/ Data type | Q _{L2} / Boolean | | | Qint.1 / Boolean | Q _{L2} / Boolean | Qint.1 / Boolean |
| Bit... / Description / Data type | 2...15 / [empty] | 2...15 / [Time measurement value] / UInt 14 | 2 ... 15 / [Counter value] / UInt 14 | 2 ... 15 / [Length / speed measurement] / Sint14 | 2 / Qint.1 / Boolean | 2...7 / [empty] |
| Bit... / Description / Data type | | | | | 3 ... 15 / [Time measurement value] / UInt13 | 8 ... 31 / [Carrier load] / UInt 24 |

40 Eliminação de falhas

A tabela Eliminação de falhas mostra as medidas a serem executadas, quando o sensor não estiver funcionando.

| Indicador LED / padrão de erro | Causa | Medida |
|--|--|---|
| LED verde intermitente | Comunicação IO-Link | Nenhuma |
| As saídas de comutação não se comportam de acordo com a tabela 8 | 1. Comunicação IO-Link 2. Alteração da configuração 3. Curto-circuito | 1. Nenhuma 2. Adaptação da configuração 3. Verificar as conexões elétricas |
| LED amarelo intermitente | Durante o ajuste da distância de comutação, o ponto de luz se encontra apenas pela metade sobre o objeto ou sobre um objeto muito contrastante | Ajuste da distância de comutação segundo Parágrafo "Ajuste da distância de comutação para WTS16". |

| Indicador LED / padrão de erro | Causa | Medida |
|---|--|--|
| LED amarelo aceso, nenhum objeto no caminho óptico | A distância de comutação é ajustada com uma distância grande demais | Reduzir a distância de comutação |
| Objeto está no caminho óptico, LED amarelo apagado | Distância entre sensor e objeto é grande demais ou distância de comutação foi ajustada para um valor baixo demais | Aumentar a distância de comutação |
| No SOPASair, o sensor não é mostrado | <ol style="list-style-type: none"> Há uma conexão com um outro dispositivo portátil. O dispositivo portátil se encontra fora da área de transmissão do sensor. Bluetooth LE no sensor está desativado. Bluetooth LE no dispositivo portátil está desativado. Filtro de endereço MAC ativado, dispositivo portátil não autorizado. | <ol style="list-style-type: none"> ausência ou desativação da conexão existente. Verificação da situação de montagem (p.ex. blindagem por metal). Ativação do Bluetooth LE por SiLink2 Master ou IO-Link Ativação do Bluetooth LE ausência ou modificação do filtro MAC-Adress. |
| Não é possível estabelecer uma conexão com o sensor | <ol style="list-style-type: none"> A versão Android ou iOS não corresponde aos requisitos. A versão SOPASair não contém o driver necessário. | <ol style="list-style-type: none"> Verifique o sistema operativo. Desinstale Sie SOPASair, instale a atual versão App. |

41 Desmontagem e descarte

O sensor deve ser descartado de acordo com os regulamentos específicos por país aplicáveis. Deve-se realizar um esforço durante o processo de descarte para reciclar os materiais constituintes (particularmente metais preciosos).



NOTA

Descarte de pilhas e dispositivos elétricos e eletrônicos

- De acordo com diretrizes internacionais, pilhas, acumuladores e dispositivos elétricos ou eletrônicos não devem ser descartados junto do lixo comum.
- O proprietário é obrigado por lei a retornar esses dispositivos ao fim de sua vida útil para os pontos de coleta públicos respectivos.



Este símbolo sobre o produto, seu pacote ou neste documento, indica que um produto está sujeito a esses regulamentos.

42 Manutenção

Os sensores SICK não requerem manutenção.

Recomendamos que se efetue em intervalos regulares

- uma limpeza das superfícies ópticas
- uma verificação das conexões roscadas e dos conectores

Não são permitidas modificações no aparelho.

Sujeito a alterações sem aviso prévio. As propriedades do produto e os dados técnicos especificados não constituem nenhum certificado de garantia.

43 Homologações

43.1 Bluetooth® approvals

| Country | Comments |
|---------------|--|
| Canada | IC: 21147-W16 |
| USA | FCC ID: 2AHDR-W16 |
| Europe + EFTA | <p>EU countries Belgium (BE), Bulgaria (BG), Denmark (DK), Germany (DE), Estonia (EE), Finland (FI), France (FR), Greece (GR), Ireland (IE), Italy (IT), Latvia (LV), Lithuania (LT), Luxembourg (LU), Malta (MT), Netherlands (NL), Austria (AT), Poland (PL), Portugal (PT), Romania (RO), Sweden (SE), Slovakia (SK), Slovenia (SI), Spain (ES), Czech Republic (CZ), Hungary (HU), United Kingdom (GB), Republic of Cyprus (CY).</p> <p>EFTA countries Iceland, Liechtenstein, Norway, Switzerland</p> |

This device complies with Part 15 of the FCC Rules and with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Changes or modifications made to this equipment not expressly approved by SICK AG may void the FCC authorization to operate this equipment.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

44 Dados técnicos

44.1 Dados técnicos

| | WTL16 Bluetooth® | WTS16 Bluetooth® |
|---------------------------------------|--|--|
| Distância de comutação máx. | 10 mm ... 500 mm ¹ | 10 mm ... 750 mm ¹ |
| Diâmetro do ponto de luz/distância | 30 mm x 3 mm (200 mm) | Ø 8 mm (300 mm) |
| Tensão de alimentação U _v | DC 10 ... 30 V | DC 10 ... 30 V |
| Consumo de corrente | ≤ 30 mA ² < 50 mA ³ | ≤ 30 mA ² < 50 mA ³ |
| Corrente de saída I _{max} | ≤ 100 mA | ≤ 100 mA |
| Tempo máx. de resposta | ≤ 500 µs ⁴ | ≤ 1,4 ms ⁴ |
| Frequência de comutação | 1000 Hz ⁵ | 350 Hz ⁵ |
| Tipo de proteção | IP66, IP67 | IP66, IP67 |
| Classe de proteção | III | III |
| Circuitos de proteção | A, B, C, D ⁶ | A, B, C, D ⁶ |
| Temperatura ambiente de funcionamento | -40 °C ... +60 °C | -40 °C ... +60 °C |

1 Objeto a ser detectado com 90% de luminância (com base no padrão branco DIN 5033)

2 16VCC...30VCC, sem carga

3 10VCC...16VCC, sem carga

4 Tempo de duração do sinal em carga ôhmica no modo de comutação. Valores diferentes possíveis no modo COM2.

5 Na proporção claro-escuro 1:1 no modo de comutação. Valores diferentes possíveis no modo IO-Link.

6 A = conexões protegidas contra inversão de pólos U_v
 B = Entradas e saídas protegidas contra polaridade inversa
 C = Supressão de impulsos parasitas
 D = Saídas protegidas contra sobrecorrente e curto-circuito

44.2 Dados técnicos do Bluetooth®

| Características | Valores |
|------------------------------|---|
| Bluetooth® alcance | 100 m na vista |
| Tipo de transmissão | BLE |
| Classe de transmissão | 2 |
| Fabricante módulo Bluetooth® | BROADCOM Cypress Semiconductor Corporation 198 Champion Court San Jose CA 95134-1709 |
| Banda RF | 2402 - 2480 MHz |
| Potência de saída | 2 dBm |
| Declaration ID | D033906 |
| Qualified Design ID | 89630 |
| Specification Name | 4.1 |
| Empresa associada | SICK AG |

WTL16 - WTS16 Bluetooth®

SICK
Sensor Intelligence.



de
en
es
fr
it
ja
pt
ru
zh

Descrizione prodotto

WTL16, WTS16 - Bluetooth®

Produttore

SICK AG
Erwin-Sick-Str. 1
79183 Waldkirch
Germania

Note legali

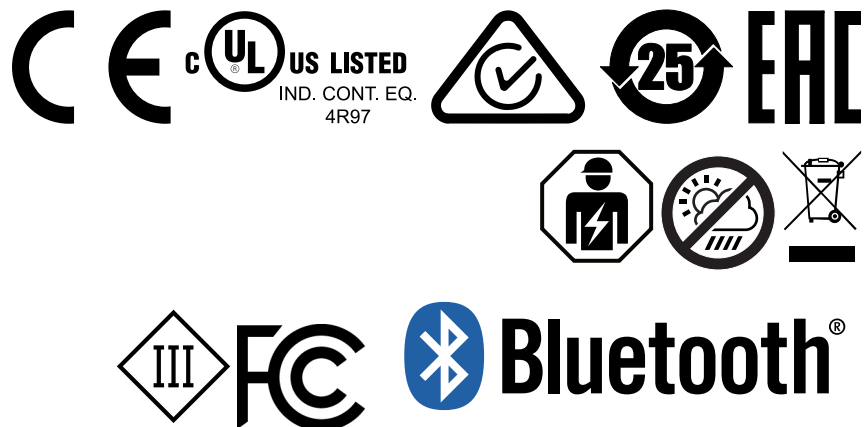
Questo manuale è protetto dai diritti d'autore. I diritti che ne conseguono rimangono alla ditta SICK. Il manuale o parti di esso possono essere fotocopiati esclusivamente entro i limiti previsti dalle disposizioni di legge in materia di diritti d'autore. Non è consentito modificare, abbreviare o tradurre il presente manuale senza previa autorizzazione scritta della ditta SICK AG.

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Documento originale

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45 Norme di sicurezza

45.1 Avvertenze di sicurezza generali

- Prima di eseguire la messa in servizio, leggere le istruzioni per l'uso.
-  Il collegamento, il montaggio e la configurazione devono essere eseguiti esclusivamente da personale tecnico qualificato.
-  Non è un componente di sicurezza ai sensi della Direttiva Macchine UE.
-  Durante la messa in servizio, proteggere il dispositivo dall'umidità e da possibili contaminazioni.
- Le presenti Istruzioni per l'uso contengono informazioni necessarie durante il ciclo di vita del sensore.

45.2 Indicazioni sull'omologazione UL

The device must be supplied by a Class 2 source of supply.

UL Environmental Rating: Enclosure type 1

46 Uso conforme alle disposizioni

WTL16 Bluetooth®, WTS16 Bluetooth® è un sensore fotoelettrico energetico (di seguito denominato sensore) utilizzato per il rilevamento ottico senza contatto di oggetti, animali e persone. Se viene utilizzato diversamente e in caso di modifiche del prodotto, decade qualsiasi diritto alla garanzia nei confronti di SICK.

WTS16 è particolarmente indicato per il rilevamento di oggetti piatti, lucidi, con contrasto elevato e irregolari.

47 Elementi di comando e di visualizzazione

Sensore fotoelettrico energetico con soppressione di sfondo.

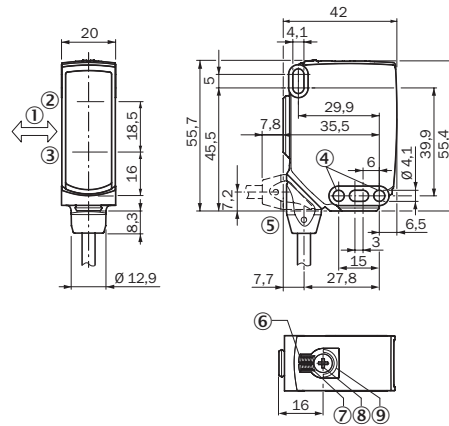


Figura 57: Disegno quotato 1, WTL16, cavo

- ① Direzione preferenziale dell'oggetto
- ② Centro asse ottico trasmettitore
- ③ Centro asse ottico ricevitore
- ④ Foro di fissaggio, $\varnothing 4,1$ mm
- ⑤ Collegamento
- ⑥ Indicatore LED verde: tensione di alimentazione attiva
- ⑦ Indicatore LED giallo: stato ricezione luce
- ⑧ Elemento a pressione-rotazione: impostazione della distanza di lavoro
- ⑨ BluePilot blu: visualizzazione distanza di lavoro

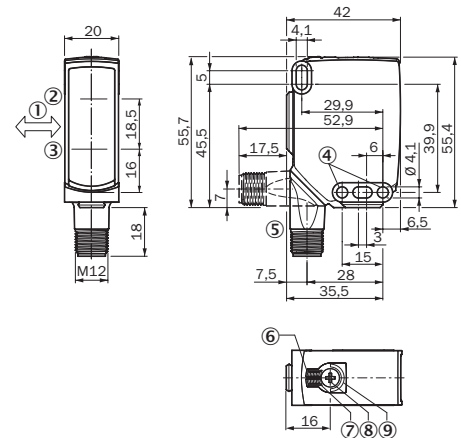


Figura 58: Disegno quotato 2, WTL16, connettore maschio

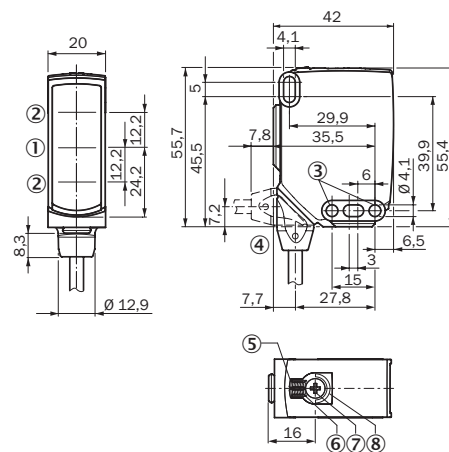


Figura 59: Disegno quotato 3, WTS16, cavo

- ① Centro asse ottico trasmettitore
- ② Centro asse ottico ricevitore
- ③ Foro di fissaggio, $\varnothing 4,1$ mm
- ④ Collegamento
- ⑤ Indicatore LED verde: tensione di alimentazione attiva
- ⑥ Indicatore LED giallo: stato ricezione luce

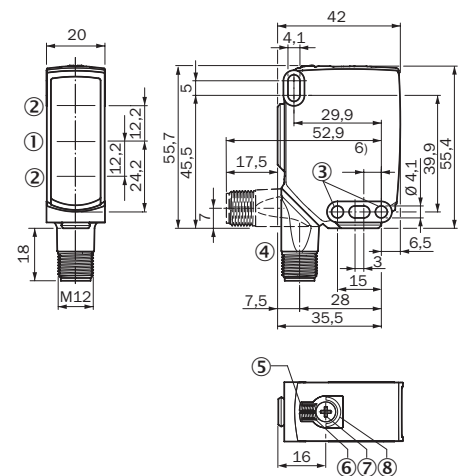


Figura 60: Disegno quotato 1, WTS16, connettore maschio

- ⑦ Elemento a pressione-rotazione: impostazione della distanza di lavoro
- ⑧ BluePilot blu: visualizzazione distanza di lavoro

48 Montaggio

Montare il sensore su una staffa di fissaggio adatta (vedi il programma per accessori SICK).

Rispettare la coppia di serraggio massima consentita del sensore di < 1,3 Nm.

Rispettare la direzione preferenziale dell'oggetto in relazione al sensore - cfr. [v. figura 57](#), [figura 58](#) (solo per WTL16).

49 Installazione elettrica

Il collegamento dei sensori deve avvenire in assenza di tensione ($U_V = 0\text{ V}$). In base al tipo di collegamento si devono rispettare le seguenti informazioni:

- Collegamento a spina: osservare la configurazione dei pin.
- Cavo: colore filo

Solamente in seguito alla conclusione di tutti i collegamenti elettrici, ripristinare o accendere l'alimentazione elettrica ($U_V > 0\text{ V}$).

Spiegazioni dello schema di collegamento ([tabella 9](#), [tabella 10](#)).

MF (configurazione pin 2) = ingresso esterno, teach-in, segnale di commutazione

Q_{L1}/C = uscita di commutazione, comunicazione IO-Link

DC: 10 ... 30 V DC

Tabella 9: DC


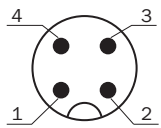

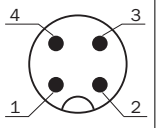
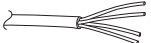
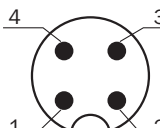
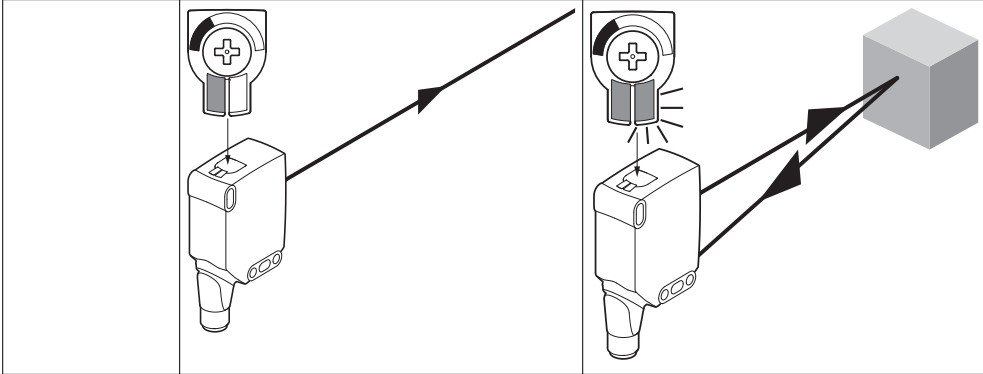
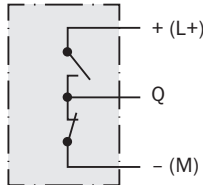
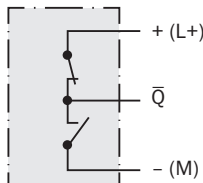
| WTL16 WTS16 | -24161xxxA00 -34161xxxA00 | -1x161x- xxA00 | -24162x- xxA00 -34162x- xxA00 | -1x162x- xxA00 | -2416xxxxA01- A99 -3416xxxxA01- A99 |
|---|---|--|--|--|---|
| 1 | + (L+) | | | | |
| 2 | MF | | | | |
| 3 | - (M) | | | | |
| 4 | Q_{L1}/C | | | | |
| Default: MF | \bar{Q} | \bar{Q} | Q | Q | www.sick.com 8020347 |
| Default: Q_{L1}/C | Q | Q | \bar{Q} | \bar{Q} | www.sick.com 8020347 |
|  |  | 1 = brn 2 = wht 3 = blu 4 = blk  0,14 mm ² AWG26 |  | 1 = brn 2 = wht 3 = blu 4 = blk  0,14 mm ² AWG26 |  |

Tabella 10: Push/Pull

| | |
|--------------------------------------|--|
| |  |
| Q push-pull (≤ 100 mA) |  |
| \bar{Q} push-pull (≤ 100 mA) |  |

50 Messa in funzione

Bluetooth® è acceso alla prima messa in servizio. SOPASair è disponibile in Google PlayStore (Android) e in App Store (iOS).

Requisiti del sistema operativo: versione Android 6.0, versione iOS più recente.

Orientamento

WTL16 Bluetooth®, WTS16 Bluetooth®: orientare il sensore sul rispettivo oggetto. Scegliere la posizione in modo tale che il raggio di luce rosso emesso colpisca il centro dell'oggetto. Accertarsi che l'apertura ottica del sensore (frontalino) sia completamente libera [figura 61].



INDICAZIONE

Per WTS16: se il rilevamento degli oggetti avviene dall'alto, si raccomanda un montaggio adeguato del sensore tale da evitare la riflessione totale dovuta a eventuali superfici riflettenti - v. figura 67 , figura 70.

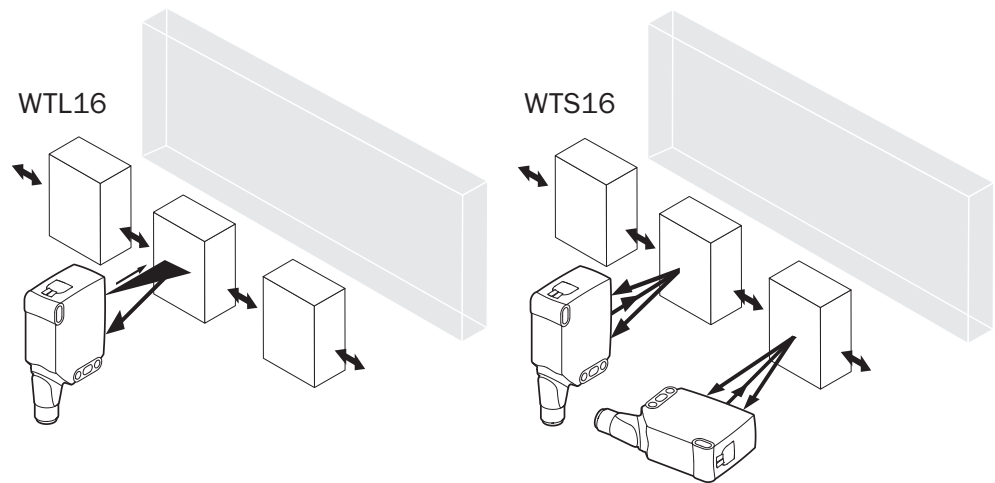


Figura 61: Orientamento

Distanza di lavoro

Controllare le condizioni d'impiego: predisporre la distanza di lavoro e la distanza dall'oggetto o dallo sfondo nonché il fattore di riflessione dell'oggetto in base al relativo diagramma [v. figura 62 e figura 63] (x = distanza di lavoro, y = distanza minima tra distanza di lavoro impostata e sfondo (bianco, 90%). Coefficiente di riflessione: 6% = nero ①, 18% = grigio ②, 90% = bianco ③ (riferito al bianco standard secondo DIN 5033). Si consiglia di effettuare l'impostazione con un oggetto con basso coefficiente di riflessione.

La distanza minima (= y) per la soppressione dello sfondo può essere rilevata dal diagramma [figura 62 ①] come segue:

Esempio: x = 200 mm, y = 15 mm. Questo significa che lo sfondo (bianco 90%) viene soppresso a partire da una distanza > 15 mm dal sensore.

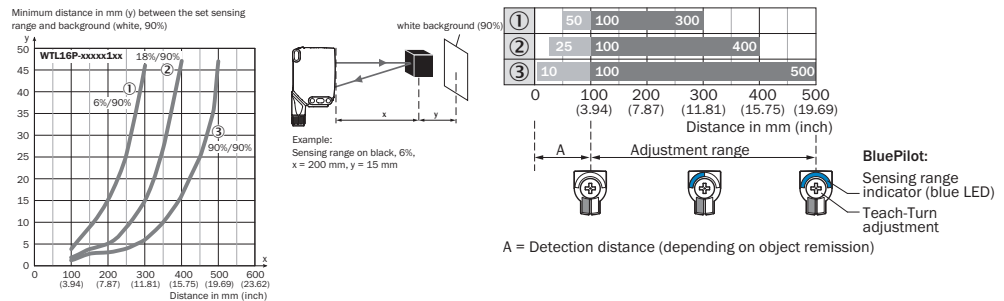


Figura 62: Linea caratteristica 1, WTL16 Blue-tooth@-xxxxx1xx, luce rossa

- ① Distanza di lavoro su nero, 6% di coefficiente di riflessione
- ② Distanza di lavoro su grigio, 18% di coefficiente di riflessione
- ③ Distanza di lavoro su bianco, 90% di coefficiente di riflessione

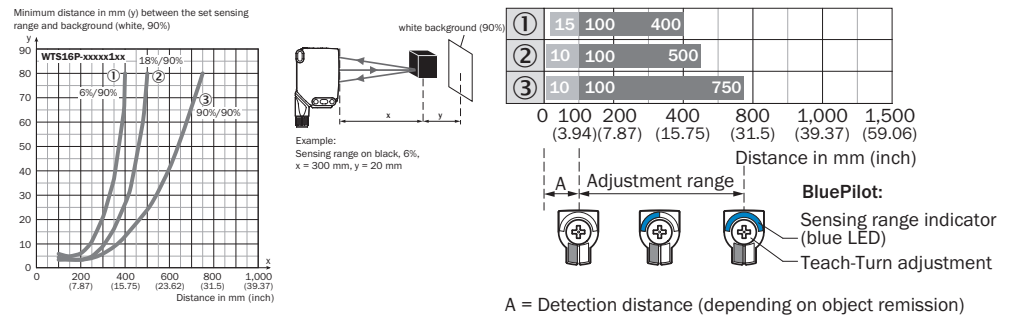


Figura 63: Linea caratteristica 1, WTS16 Blue-tooth®-xxxx1xx, luce rossa

- ① Distanza di lavoro su nero, 6% di coefficiente di riflessione
- ② Distanza di lavoro su grigio, 18% di coefficiente di riflessione
- ③ Distanza di lavoro su bianco, 90% di coefficiente di riflessione

Regolazione distanza di lavoro WTL16, WTS16

WTL16x-xxxxx2xAxx, WTS16x-xxxxx2xAxx con elemento a pressione-rotazione:

Premendo il pulsante teach-in (circa 1-3 sec.) viene impostata la distanza di lavoro. A seconda delle esigenze, con il potenziometro (senza premere il pulsante teach-in) è possibile eseguire un'impostazione di precisione.

Rotazione verso destra: aumento della distanza di lavoro.

Rotazione verso sinistra: riduzione della distanza di lavoro.

La distanza di lavoro può anche essere impostata unicamente con il potenziometro. Si consiglia di inserire nell'oggetto la distanza di lavoro, ad es. vedere l'immagine 8. Dopo aver impostato la distanza di lavoro, allontanare l'oggetto dalla traiettoria del raggio; lo sfondo viene quindi soppresso e l'uscita di commutazione cambia [v. [tabella 9](#) e [tabella 10](#)].

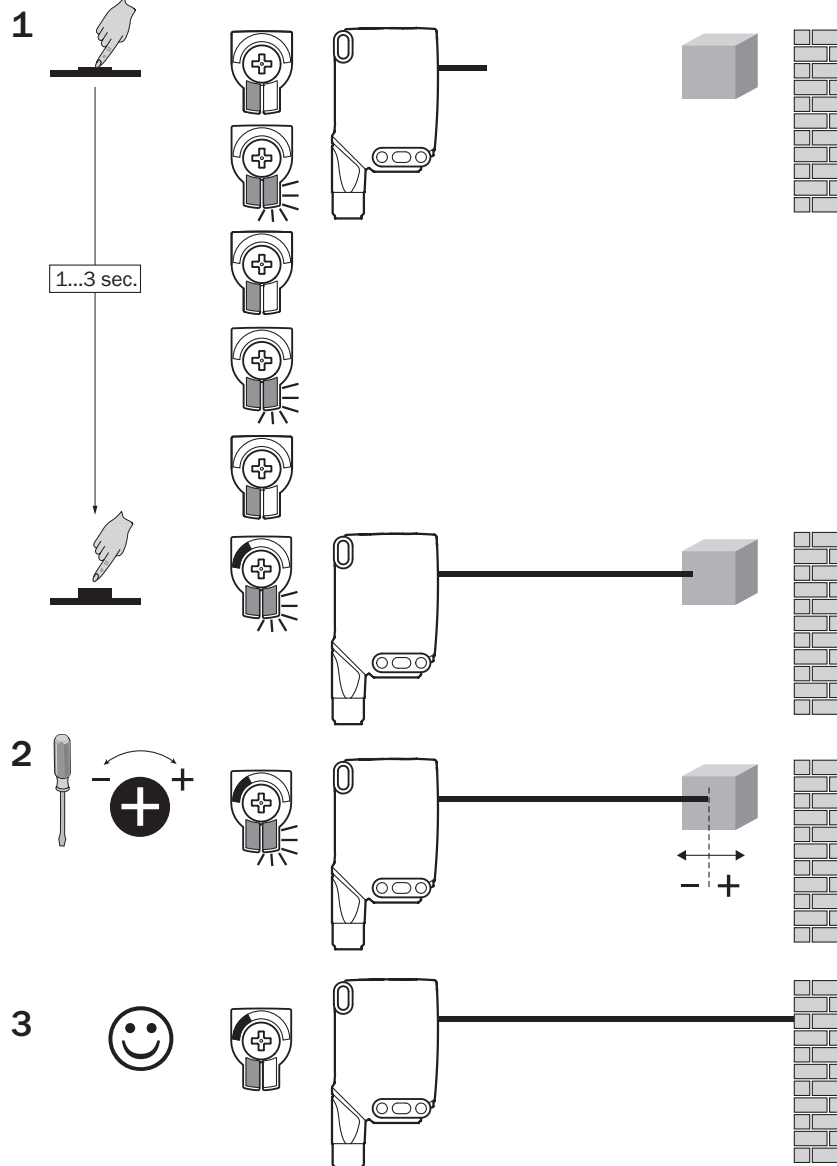


Figura 64: WTL16x-xxxxx2xAxx, WTS16x-xxxxx2xAxx luce rossa, impostazione della distanza di lavoro con l'elemento a pressione-rotazione

WTL16x-xxxxx1xAxx, WTS16x-xxxxx1xAxx con potenziometro:

Con il potenziometro viene impostata la distanza di lavoro.

Rotazione verso destra: aumento della distanza di lavoro.

Rotazione verso sinistra: riduzione della distanza di lavoro.

Si consiglia di inserire nell'oggetto la distanza di lavoro, ad es. vedere l'immagine 9.

Dopo aver impostato la distanza di lavoro, allontanare l'oggetto dalla traiettoria del raggio; lo sfondo viene quindi soppresso e l'uscita di commutazione cambia [v. [tabella 9](#) e [tabella 10](#)].

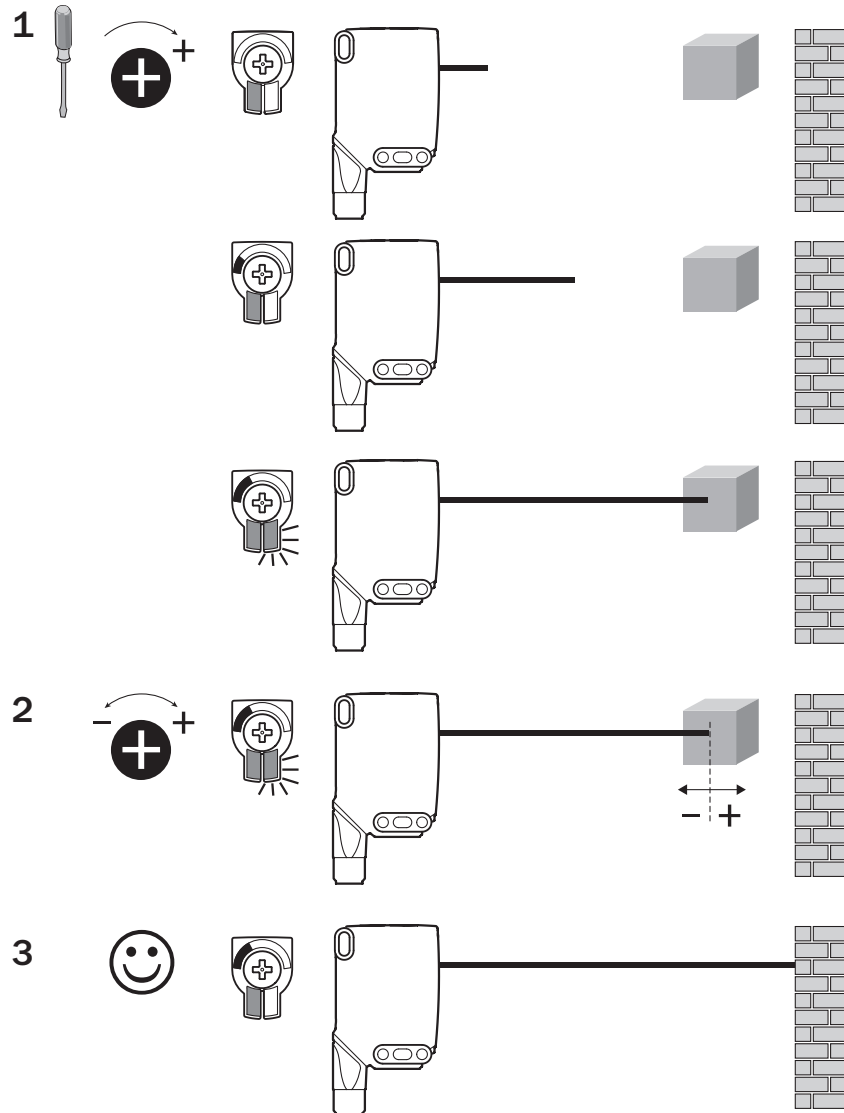


Figura 65: WTL16x-xxxxx1xAxx, WTS16x-xxxxx1xAxx luce rossa, impostazione della distanza di lavoro con potenziometro

WTL16x-xxxxx3xAxx, WTS16x-xxxxx3xAxx con pulsante teach-in:

Premendo il pulsante teach-in (circa 1-3 sec.) viene impostata la distanza di lavoro. Si consiglia di inserire nell'oggetto la distanza di lavoro, ad es. vedere l'immagine 9. Dopo aver impostato la distanza di lavoro, allontanare l'oggetto dalla traiettoria del raggio; lo sfondo viene quindi soppresso e l'uscita di commutazione cambia [v. [tabella 9](#) e [tabella 10](#)].

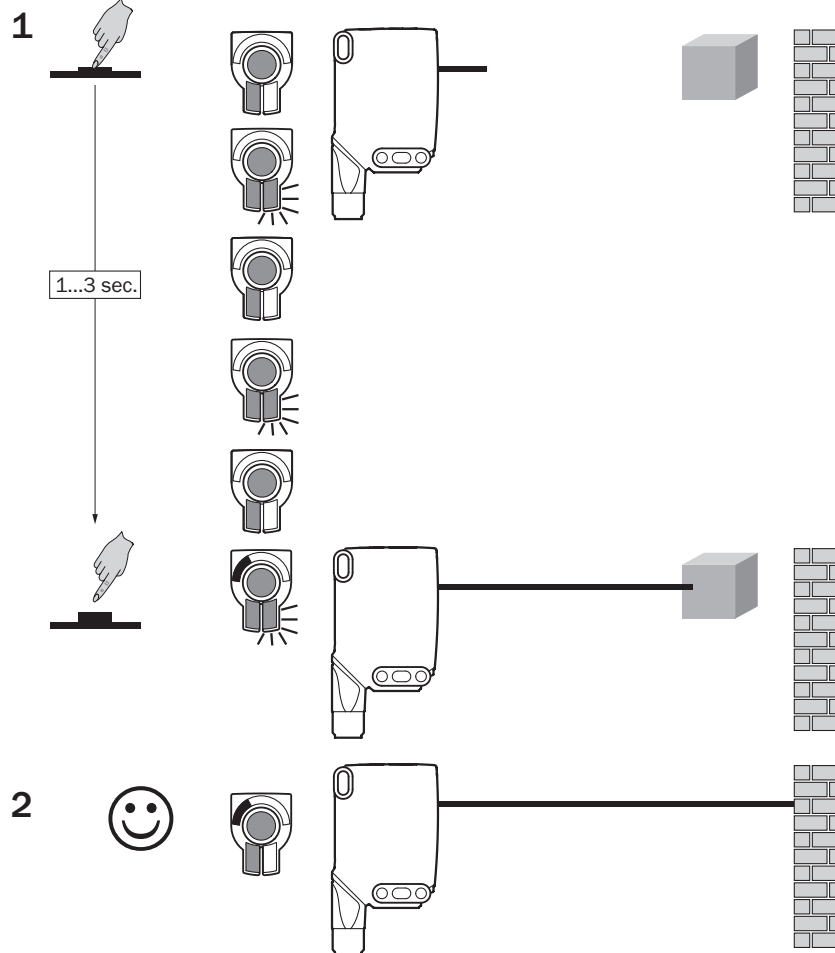


Figura 66: WTL16x-xxxxx3xAxx, WTS16x-xxxxx3xAx luce rossa, impostazione della distanza di lavoro con pulsante teach-in

Regolazione distanza di lavoro WTS16

Rilevamento di oggetti piatti, lucidi, con contrasto elevato e irregolari.

Se il rilevamento degli oggetti avviene dall'alto, si raccomanda un montaggio adeguato del sensore tale da evitare la riflessione totale dovuta a eventuali superfici riflettenti.

- 1 Per l'impostazione della distanza di lavoro è necessario che il punto luminoso sia orientato verso una superficie omogenea e piana, ad es. un foglio bianco.

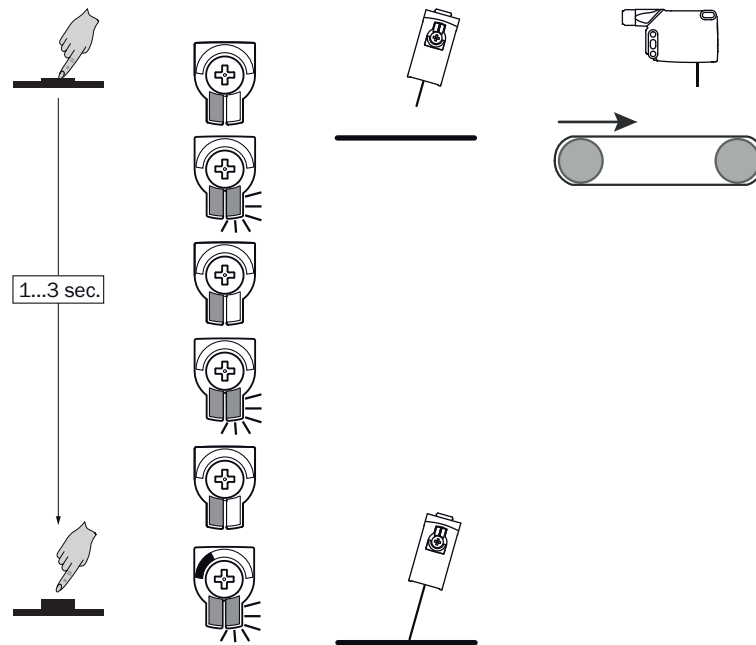


Figura 67: Impostazione distanza di lavoro WTS16

- 2 Ruotare appena il potenziometro verso sinistra finché l'indicatore LED giallo non è più acceso. La distanza di lavoro si trova ora al di sopra del nastro trasportatore.

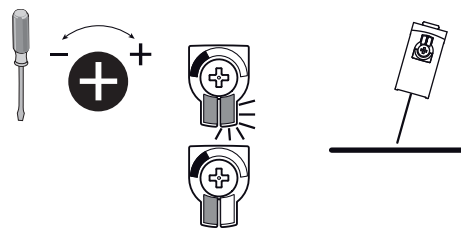


Figura 68: Impostazione distanza di lavoro WTS16

- 3 A questo punto il nastro trasportatore deve essere messo in funzione senza oggetti. Se durante la prova il LED giallo non si accende, la distanza di lavoro è impostata correttamente.

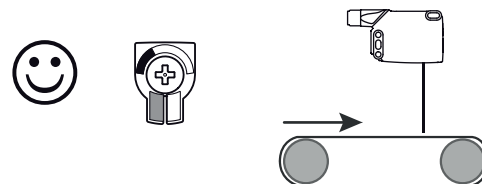


Figura 69: Impostazione distanza di lavoro WTS16

- 4 Se l'oggetto si trova nel fascio luminoso e il LED giallo si accende, la distanza di lavoro è impostata correttamente.

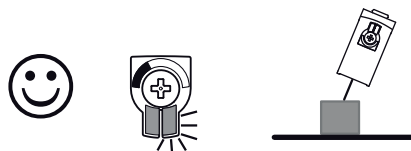


Figura 70: Impostazione distanza di lavoro WTS16

Process data structure (Version 1.1)

| | A00 | A70 | A71 | A72 | A73 | A75 |
|----------------------------------|--|---|--------------------------------------|--|--|---|
| IO-Link | V1.1 | | | | | |
| Process data | 2 byte | | | | | 4 byte |
| | Byte 0 : bit 15... 8 Byte 1: bit 7... 0 | | | | | Byte 0: bit 31... 24 Byte 1: bit 13... 16 Byte 2: bit 15... 8 Byte 3: bit 7... 0 |
| Bit 0/ Data type | Q _{L1} / Boolean | | | | | |
| Bit 1/ Data type | Q _{L2} / Boolean | | | Q _{int.1} / Boolean | Q _{L2} / Boolean | Q _{int.1} / Boolean |
| Bit... / Description / Data type | 2...15 / [empty] | 2...15 / [Time measurement value] / UInt 14 | 2 ... 15 / [Counter value] / UInt 14 | 2 ... 15 / [Length / speed measurement] / Sint14 | 2 / Q _{int.1} / Boolean | 2...7 / [empty] |
| Bit... / Description / Data type | | | | | 3 ... 15 / [Time measurement value] / UInt13 | 8 ... 31 / [Carrier load] / UInt 24 |

51 Eliminazione difetti

La tabella di rimozione dei disturbi mostra quali provvedimenti si devono adottare quando il sensore non funziona più.

| Indicatore LED / figura di errore | Causa | Provvedimento |
|---|---|--|
| Il LED verde lampeggia | Comunicazione IO-Link | Nessuno |
| Le uscite di commutazione non si comportano conformemente alle tabella 10 | 1. Comunicazione IO-Link 2. Modifica della configurazione 3. Corto circuito | 1. Nessuno 2. Adattamento della configurazione 3. Controllare i collegamenti elettrici |
| Solo WTS: il LED giallo lampeggia velocemente | Durante l'impostazione della distanza di lavoro, il punto luminoso si trova solo per metà sull'oggetto o su un oggetto pieno di contrasti | Impostazione della distanza di lavoro secondo Paragrafo "Impostazione della distanza di lavoro per WTS16". |

| Indicatore LED / figura di errore | Causa | Provvedimento |
|--|--|--|
| il LED giallo si accende, nessun oggetto nella traiettoria del raggio | La distanza di lavoro è impostata a una distanza eccessiva | Diminuire la distanza di commutazione |
| L'oggetto è nella traiettoria del raggio, il LED giallo non si accende | La distanza tra sensore e oggetto è troppo grande o la distanza di commutazione ha un'impostazione troppo bassa | Aumentare la distanza di commutazione |
| In SOPASair il sensore non viene visualizzato | <ol style="list-style-type: none"> 1. Esiste un collegamento con un altro handheld. 2. Handheld esterno al campo di emissione del sensore. 3. Bluetooth LE disattivato nel sensore. 4. Bluetooth LE disattivato nell'handheld. 5. Filtro di indirizzo MAC attivato, handheld non autorizzato. | <ol style="list-style-type: none"> 1. Nessun collegamento o disattivazione del collegamento esistente. 2. Verifica della condizione di montaggio (ad es. schermo mediante metallo). 3. Attivazione di Bluetooth LE tramite master SiLink2 o IO-Link 4. Attivazione di Bluetooth LE 5. Nessuna modifica del filtro di indirizzo MAC. |
| Non può essere effettuato alcun collegamento con il sensore | <ol style="list-style-type: none"> 1. La versione Android o iOS non corrisponde ai requisiti. 2. La versione SOPASair non contiene il driver necessario. | <ol style="list-style-type: none"> 1. Controllare il sistema operativo. 2. Disinstallare SOPASair, installare la versione App più recente. |

52 Smontaggio e smaltimento

Il sensore deve essere smaltito in conformità con le leggi nazionali vigenti in materia. Durante il processo di smaltimento, riciclare se possibile i materiali che compongono il sensore (in particolare i metalli nobili).



INDICAZIONE

Smaltimento di batterie, dispositivi elettrici ed elettronici

- In base a direttive internazionali, le batterie, gli accumulatori e i dispositivi elettrici ed elettronici non devono essere smaltiti tra i rifiuti generici.
- Il titolare è tenuto per legge a riconsegnare questi dispositivi alla fine del loro ciclo di vita presso i rispettivi punti di raccolta pubblici.



Questo simbolo presente sul prodotto, nella sua confezione o nel presente documento, indica che un prodotto è soggetto a tali regolamentazioni.

53 Manutenzione

I sensori SICK sono esenti da manutenzione.

A intervalli regolari si consiglia di

- pulire le superfici limite ottiche
- Verificare i collegamenti a vite e gli innesti a spina

Non è consentito effettuare modifiche agli apparecchi.

Contenuti soggetti a modifiche senza preavviso. Le proprietà del prodotto e le schede tecniche indicate non costituiscono una dichiarazione di garanzia.

54 Autorizzazioni

54.1 Bluetooth® approvals

| Country | Comments |
|---------------|--|
| Canada | IC: 21147-W16 |
| USA | FCC ID: 2AHDR-W16 |
| Europe + EFTA | <p>EU countries Belgium (BE), Bulgaria (BG), Denmark (DK), Germany (DE), Estonia (EE), Finland (FI), France (FR), Greece (GR), Ireland (IE), Italy (IT), Latvia (LV), Lithuania (LT), Luxembourg (LU), Malta (MT), Netherlands (NL), Austria (AT), Poland (PL), Portugal (PT), Romania (RO), Sweden (SE), Slovakia (SK), Slovenia (SI), Spain (ES), Czech Republic (CZ), Hungary (HU), United Kingdom (GB), Republic of Cyprus (CY).</p> <p>EFTA countries Iceland, Liechtenstein, Norway, Switzerland</p> |

This device complies with Part 15 of the FCC Rules and with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Changes or modifications made to this equipment not expressly approved by SICK AG may void the FCC authorization to operate this equipment.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

55 Dati tecnici

55.1 Dati tecnici

| | WTL16 Bluetooth® | WTS16 Bluetooth® |
|--|--|--|
| Distanza max. di commutazione | 10 mm ... 500 mm ¹ | 10 mm ... 750 mm ¹ |
| Diametro punto luminoso/distanza | 30 mm x 3 mm (200 mm) | Ø 8 mm (300 mm) |
| Tensione di alimentazione U _v | DC 10 ... 30 V | DC 10 ... 30 V |
| Consumo di corrente | ≤ 30 mA ² < 50 mA ³ | ≤ 30 mA ² < 50 mA ³ |
| Corrente di uscita I _{max.} | ≤ 100 mA | ≤ 100 mA |
| Tempo di reazione max. | ≤ 500 µs ⁴ | ≤ 1,4 ms ⁴ |
| Frequenza di commutazione | 1000 Hz ⁵ | 350 Hz ⁵ |
| Tipo di protezione | IP66, IP67 | IP66, IP67 |
| Classe di protezione | III | III |
| Commutazioni di protezione | A, B, C, D ⁶ | A, B, C, D ⁶ |
| Temperatura ambientale di funzionamento | -40 °C ... +60 °C | -40 °C ... +60 °C |

1 Oggetto con il 90% di remissione (riferito al bianco standard DIN 5033)

2 16 V DC ... 30 V DC, senza carico

3 10 V DC ... 16 V DC, senza carico

4 Durata segnale con carico ohmico in modalità di commutazione. Possibilità di valori diversi in modalità COM2.

5 Con rapporto chiaro/scuro 1:1 in modalità di commutazione. Possibilità di valori diversi in modalità IO-Link

6 A = U_v-Allacciamenti protetti dall'inversione di polarità

B = entrate e uscite protette da polarità inversa

C = Soppressione impulsi di disturbo

D = uscite protette da sovracorrente e da cortocircuito.

55.2 Dati tecnici Bluetooth®

| Caratteristiche | Valori |
|------------------------------|---|
| Portata Bluetooth® | 100 m a vista |
| Tipo di tecnologia radio | BLE |
| Classe di potenza | 2 |
| Produttore modulo Bluetooth® | BROADCOM Cypress Semiconductor Corporation 198 Champion Court San Jose CA 95134-1709 |
| RF Band | 2402-2480 MHz |
| Potenza in uscita | 2 dBm |
| Declaration ID | D033906 |
| Qualified Design ID | 89630 |
| Specification Name | 4.1 |
| Membro associato | SICK AG |

WTL16 - WTS16 Bluetooth®

SICK
Sensor Intelligence.



de
en
es
fr
it
ja
pt
ru
zh

Producto descrito

WTL16, WTS16 - Bluetooth®

Fabricante

SICK AG
Erwin-Sick-Str. 1
79183 Waldkirch
Alemania

Información legal

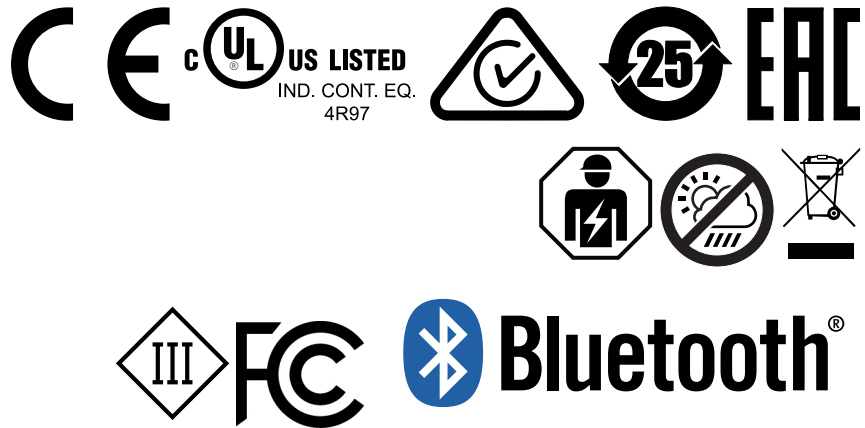
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Documento original

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56 Para su seguridad

56.1 Indicaciones generales de seguridad

- Lea las instrucciones de uso antes de realizar la puesta en servicio.
-  Únicamente personal especializado y debidamente cualificado debe llevar a cabo las tareas de conexión, montaje y configuración.
-  No se trata de un componente de seguridad según las definiciones de la directiva de máquinas de la UE.
-  Al realizar la puesta en servicio, el dispositivo se debe proteger ante la humedad y la contaminación.
- Las presentes instrucciones de uso contienen la información necesaria para toda la vida útil del sensor.

56.2 Indicaciones sobre la homologación UL

The device must be supplied by a Class 2 source of supply.

UL Environmental Rating: Enclosure type 1

57 Uso conforme a lo previsto

Las WTL16 Bluetooth® y WTS16 Bluetooth® son fotocélulas optoelectrónicas de reflexión sobre espejo (en lo sucesivo llamadas sensor) empleadas para la detección óptica y sin contacto de objetos, animales y personas. Cualquier uso diferente al previsto o modificación en el producto invalidará la garantía por parte de SICK AG.

La WTS16 es perfecta para la detección de objetos planos, brillantes, ricos en contrastes e irregulares.

58 Elementos de mando y visualización

Fotocélula de reflexión sobre espejo con supresión de fondo.

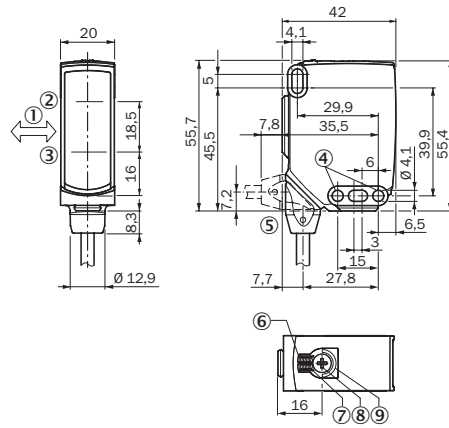


Figura 71: Dibujo acotado 1, cable WTL16

- ① Orientación preferente del objeto
- ② Centro del eje óptico del emisor
- ③ Centro del eje óptico del receptor
- ④ Orificio de fijación, Ø 4,1 mm
- ⑤ Conexión
- ⑥ LED indicador verde: tensión de alimentación activa
- ⑦ LED indicador amarillo: estado de recepción de luz
- ⑧ Pulsador giratorio: ajuste de la distancia de conmutación
- ⑨ BluePilot azul: indicador de distancia de conmutación

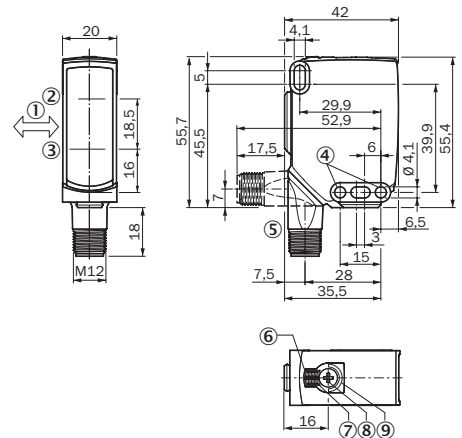


Figura 72: Dibujo acotado 2, conector WTL16

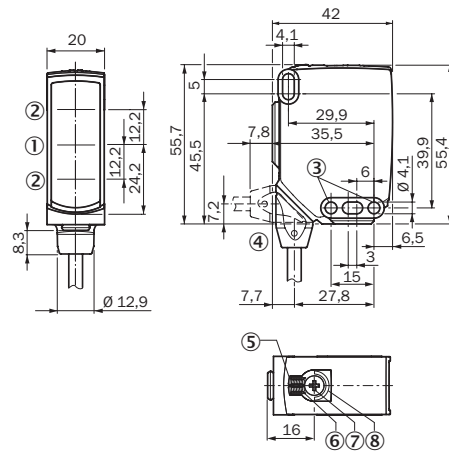


Figura 73: Dibujo acotado 3, cable WTS16

- ① Centro del eje óptico del emisor
- ② Centro del eje óptico del receptor
- ③ Orificio de fijación, Ø 4,1 mm
- ④ Conexión
- ⑤ LED indicador verde: tensión de alimentación activa
- ⑥ LED indicador amarillo: estado de recepción de luz
- ⑦ Pulsador giratorio: ajuste de la distancia de conmutación

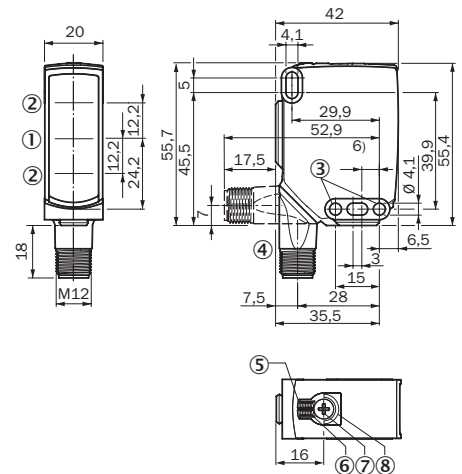


Figura 74: Dibujo acotado 1, conector WTS16

- ⑧ BluePilot azul: indicador de distancia de conmutación

59 Montaje

Montar el sensor en una escuadra de fijación adecuada (véase el programa de accesos SICK).

Respetar el par de apriete máximo admisible del sensor de < 1,3 Nm.

Respetar la orientación preferente del objeto con respecto al sensor, véase figura 71, figura 72(válido solo para WTL16).

60 Instalación eléctrica

Los sensores deben conectarse sin tensión ($U_v = 0$ V). Debe tenerse en cuenta la siguiente información en función del tipo de conexión:

- Conexión de enchufes: observar la asignación de terminales.
- Cable: color del hilo

No aplicar ni conectar la alimentación de tensión ($U_v > 0$ V) hasta que no se hayan finalizado todas las conexiones eléctricas.

Explicaciones relativas al diagrama de conexiones (tabla 11, tabla 12).

MF (configuración 2 de terminales) = entrada externa, teach-in, señal de conmutación

Q_{L1}/C = salida conmutada, comunicación con sistema IO-Link

CC: 10 ... 30 V CC

Tabla 11: CC


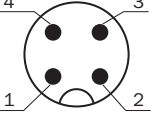

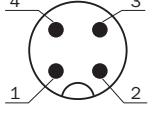
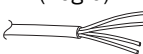
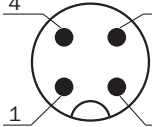
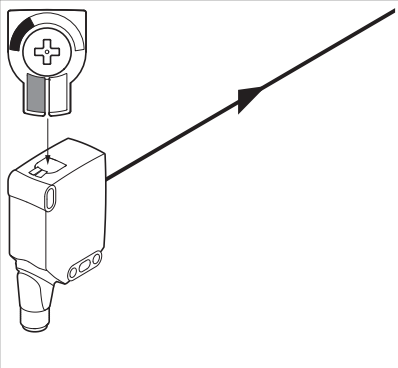
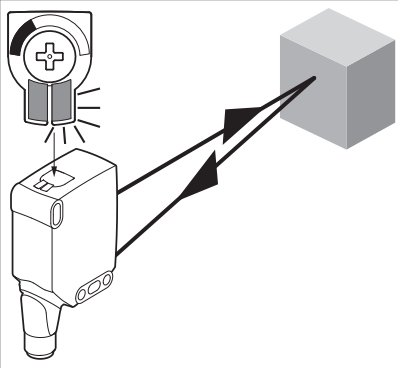
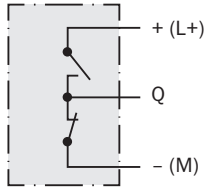
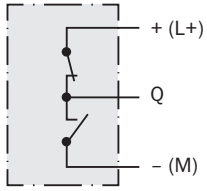
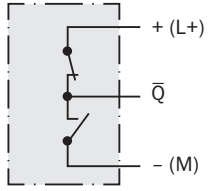
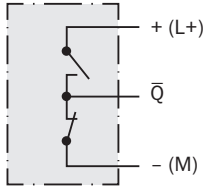
| WTL16 WTS16 | -24161xxxA00 -34161xxxA00 | -1x161xxxAO 0 | -24162xxxAO 0 -34162xxxAO 0 | -1x162xxxAO 0 | -2416xxxxA01- A99 -3416xxxxA01- A99 |
|---|---|--|--|--|---|
| 1 | + (L+) | | | | |
| 2 | MF | | | | |
| 3 | - (M) | | | | |
| 4 | Q_{L1}/C | | | | |
| Por defecto: MF | \bar{Q} | \bar{Q} | Q | Q | www.sick.com 8020347 |
| Por defecto: Q_{L1}/C | Q | Q | \bar{Q} | \bar{Q} | www.sick.com 8020347 |
|  |  | 1 = brn (marrón) 2 = wht (blanco) 3 = blu (azul) 4 = blk (negro)  0,14 mm ² AWG26 |  | 1 = brn (marrón) 2 = wht (blanco) 3 = blu (azul) 4 = blk (negro)  0,14 mm ² AWG26 |  |

Tabla 12: Push / Pull

| | | |
|--------------------------------------|--|---|
| |  |  |
| Q push-pull (≤ 100 mA) |  |  |
| \bar{Q} push-pull (≤ 100 mA) |  |  |

61 Puesta en marcha

Bluetooth® se conecta durante la puesta en servicio inicial. SOPASair está disponible en Google PlayStore (Android) y en App Store (iOS).

Requisitos del sistema operativo: versión 6.0 de Android; última versión de iOS.

Alineación

WTL16 Bluetooth®, WTS16 Bluetooth®: oriente el sensor hacia un objeto. Debe seleccionarse una posición que permita que el haz de luz roja del emisor incida en el centro del objeto. Hay que procurar que la apertura óptica (pantalla frontal) del sensor esté completamente libre [figura 75].



INDICACIÓN

En WTS16: si la detección de los objetos se efectúa desde arriba, recomendamos montar el sensor inclinado para evitar así una reflexión total debido a una superficie reflectante, véase figura 81, figura 84.

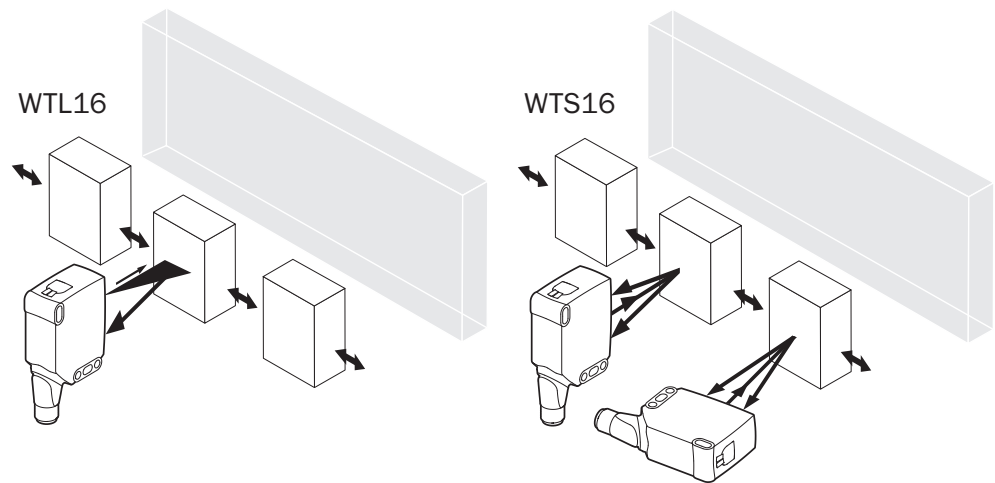


Figura 75: Alineación

Distancia de conmutación

Comprobar las condiciones de aplicación: comparar la distancia de conmutación y la distancia respecto al objeto o al fondo, así como la capacidad de reflectancia del objeto, con el diagrama correspondiente [véase figura 76, figura 77] (x = distancia de conmutación, y = distancia mínima entre la distancia de conmutación ajustada y el fondo [blanco, 90%]). Reflectancia: 6% = negro ①, 18% = gris ②, 90% = blanco ③ (referido al blanco estándar según DIN 5033). Recomendamos realizar los ajustes con un objeto de reflectancia baja.

La distancia mínima (= y) para la supresión del fondo puede calcularse a partir del diagrama [figura 76 ①] del modo siguiente:

Ejemplo: x = 200 mm, y = 15 mm. Es decir, el fondo (blanco, 90%) se suprimirá a partir de una distancia > 15 mm del sensor.

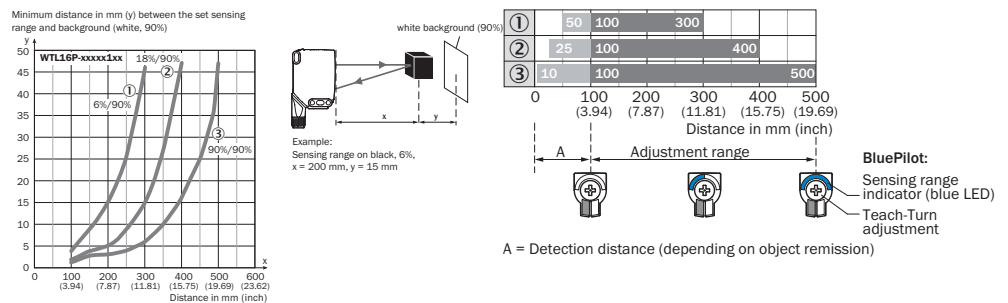


Figura 76: Curva característica 1, WTL16 Blue-tooth@-xxxx1xx, luz roja

- ① Distancia de conmutación sobre negro, 6% de reflectancia
- ② Distancia de conmutación sobre gris, 18% de reflectancia
- ③ Distancia de conmutación sobre blanco, 90% de reflectancia

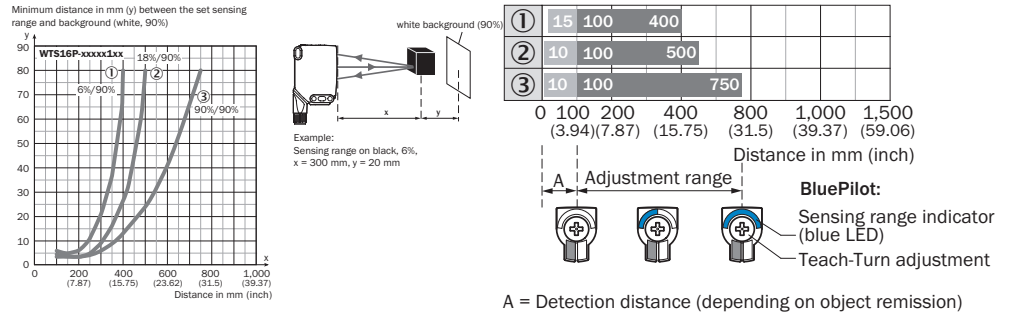


Figura 77: Curva característica 1, WTS16 Blue-tooth@-xxxxx1xx, luz roja

- ① Distancia de conmutación sobre negro, 6% de reflectancia
- ② Distancia de conmutación sobre gris, 18% de reflectancia
- ③ Distancia de conmutación sobre blanco, 90% de reflectancia

Ajuste de la distancia de conmutación WTL16, WTS16

WTL16x-xxxxx2xAxx, WTS16x-xxxxx2xAxx con pulsador giratorio:

Pulsando la tecla teach-in (aprox. de 1 a 3 s) se ajusta la distancia de conmutación. En función de los requisitos, con el potenciómetro (sin pulsar la tecla teach-in) puede llevarse a cabo un ajuste de precisión.

Giro hacia la derecha: aumenta la distancia de conmutación.

Giro hacia la izquierda: se reduce la distancia de conmutación.

La distancia de conmutación también puede ajustarse solo con el potenciómetro.

Recomendamos poner la distancia de conmutación en el objeto, p. ej., véase la imagen 8. Una vez ajustada la distancia de conmutación, retirar el objeto de la trayectoria del haz, el fondo se suprime, y la salida conmutada cambia (véase tabla 11 and véase tabla 12).

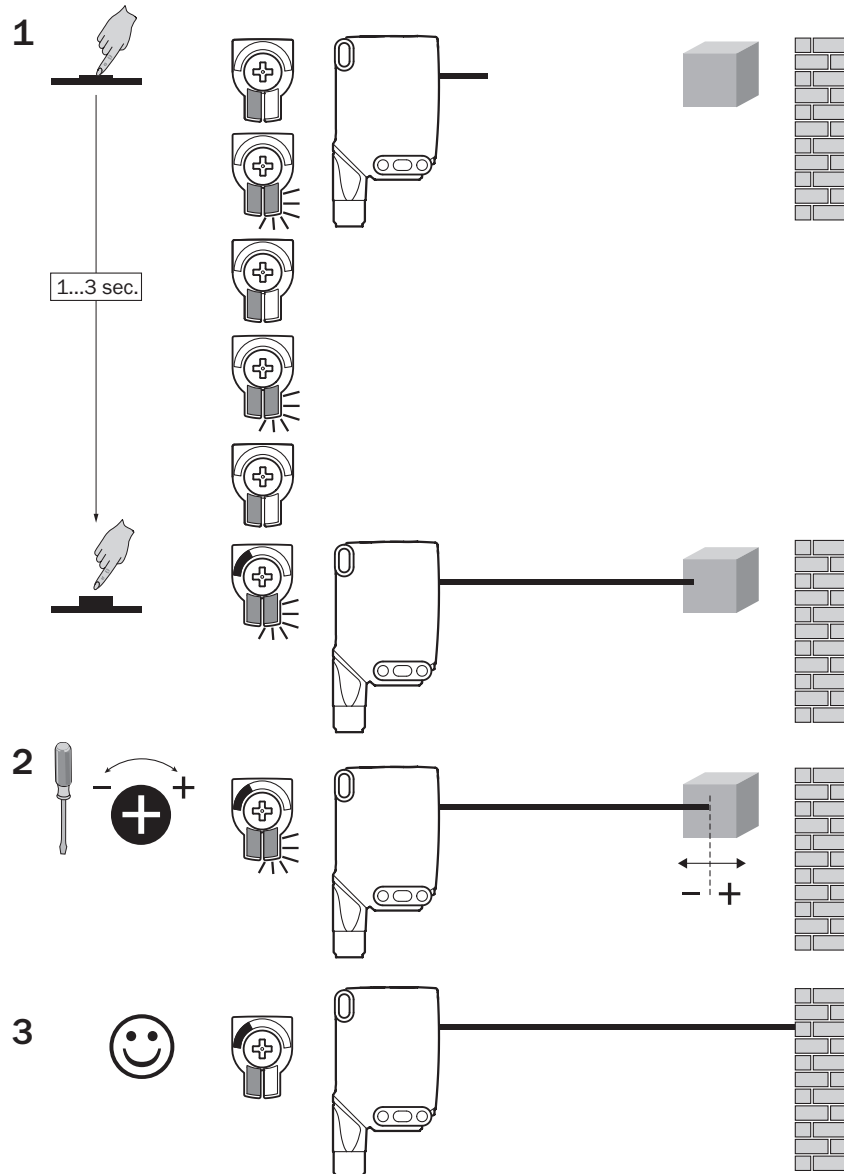


Figura 78: WTL16x-xxxxx2xAxx, WTS16x-xxxxx2xAxx luz roja, ajuste de la distancia de conmutación con pulsador giratorio

WTL16x-xxxxx1xAxx, WTS16x-xxxxx1xAxx con potenciómetro:

Con el potenciómetro se ajusta la distancia de conmutación.

Giro hacia la derecha: aumenta la distancia de conmutación.

Giro hacia la izquierda: se reduce la distancia de conmutación.

Recomendamos poner la distancia de conmutación en el objeto, p. ej., véase la imagen 9. Una vez ajustada la distancia de conmutación, retirar el objeto de la trayectoria del haz, el fondo se suprime, y la salida conmutada cambia (véase tabla 11 and véase tabla 12).

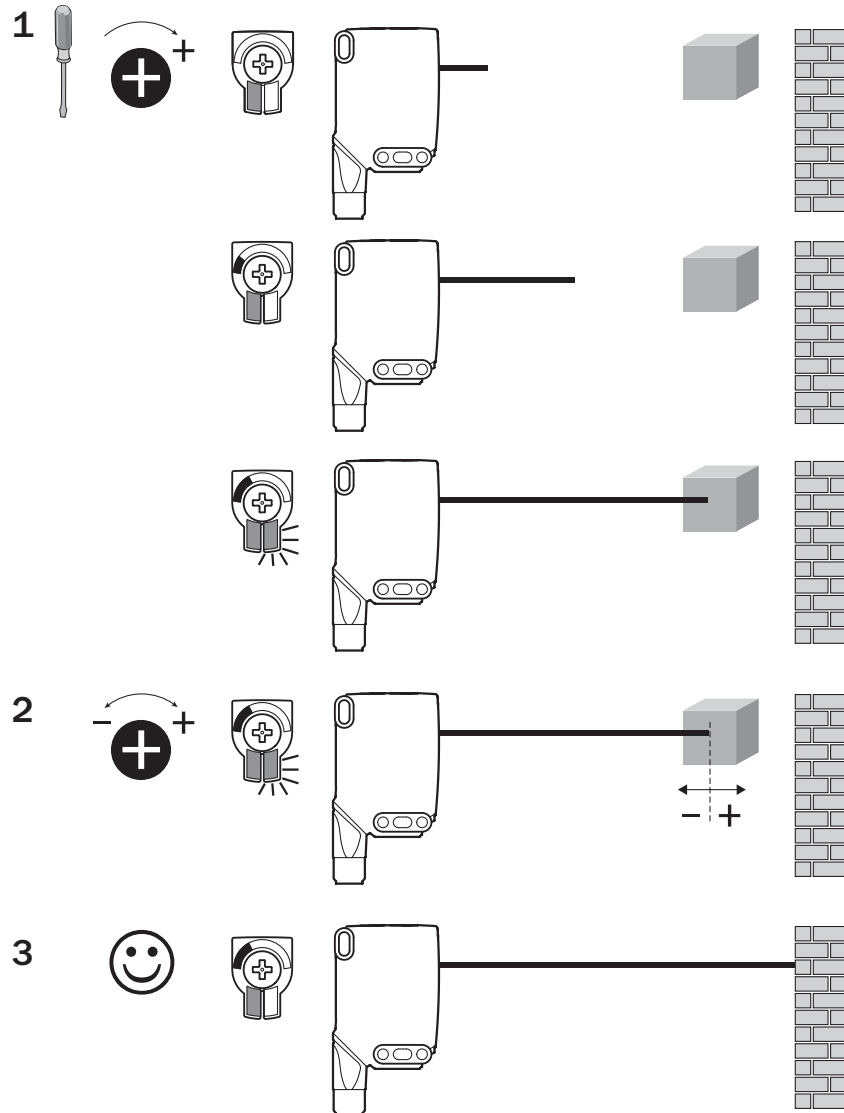


Figura 79: WTL16x-xxxxx1xAxx, WTS16x-xxxxx1xAxx luz roja, ajuste de la distancia de conmutación con potenciómetro

WTL16x-xxxxxx3xAxx, WTS16x-xxxxxx3xAxx con tecla teach-in:

Pulsando la tecla teach-in (aprox. de 1 a 3 s) se ajusta la distancia de conmutación. Recomendamos poner la distancia de conmutación en el objeto, p. ej., véase la imagen 9. Una vez ajustada la distancia de conmutación, retirar el objeto de la trayectoria del haz, el fondo se suprime, y la salida conmutada cambia (véase tabla 11 and véase tabla 12).

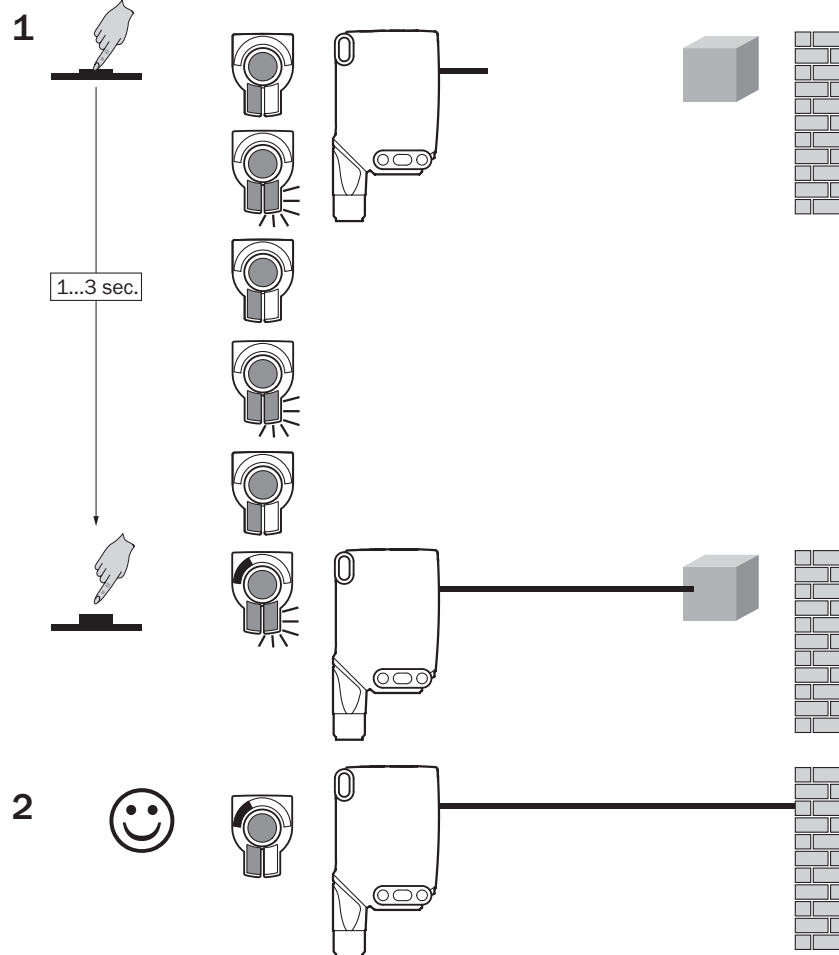


Figura 80: WTL16x-xxxxxx3xAxx, WTS16x-xxxxxx3xAx luz roja, ajuste de la distancia de conmutación con tecla teach-in

Ajuste de la distancia de conmutación WTS16

Detección de objetos planos, brillantes, ricos en contrastes e irregulares.

Si la detección de los objetos se efectúa desde arriba, recomendamos montar el sensor inclinado para evitar así una reflexión total debido a una superficie reflectante

- 1 Para ajustar la distancia de conmutación, el spot debe orientarse a una superficie lisa y homogénea, p. ej., una hoja de papel blanco.

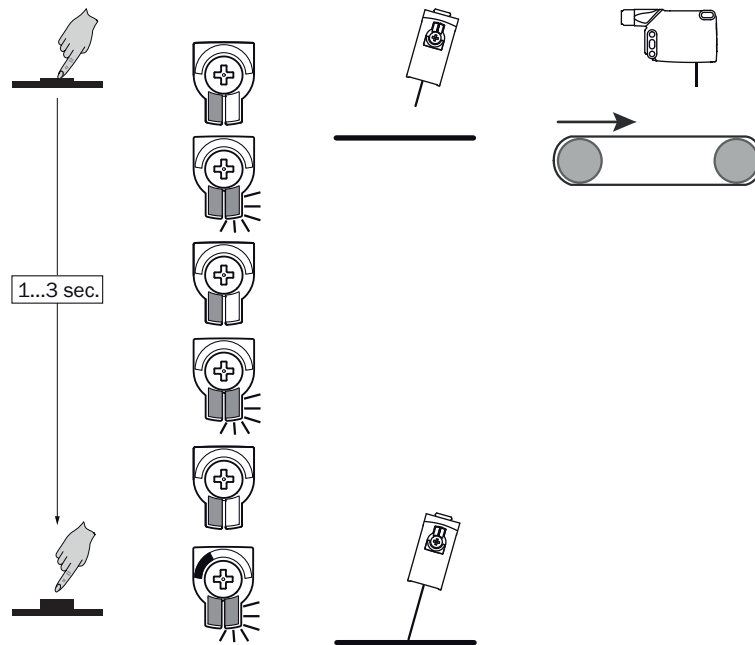


Figura 81: Ajuste de la distancia de conmutación para WTS16

- 2 Girar el potenciómetro mínimamente hacia la izquierda hasta que el LED indicador amarillo deje de iluminarse. La distancia de conmutación se encuentra ahora un poco por encima de la cinta transportadora.

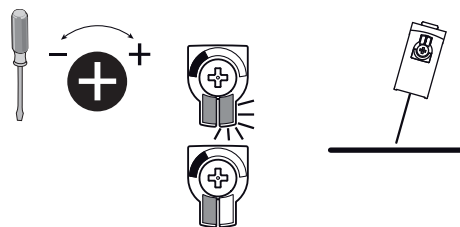


Figura 82: Ajuste de la distancia de conmutación para WTS16

- 3 Ahora debe ponerse en funcionamiento la cinta transportadora sin objetos. Si el LED indicador amarillo no se ilumina durante el funcionamiento de prueba, la distancia de conmutación se ha ajustado correctamente.

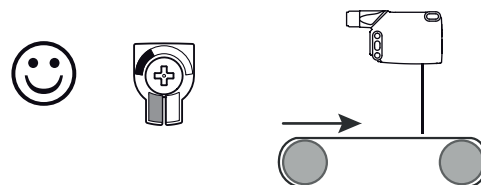


Figura 83: Ajuste de la distancia de conmutación para WTS16

- 4 Si el objeto se encuentra en la trayectoria del haz y el LED indicador amarillo se ilumina, la distancia de conmutación se ha ajustado correctamente.

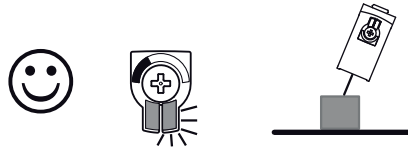


Figura 84: Ajuste de la distancia de conmutación para WTS16

Process data structure (Version 1.1)

| | A00 | A70 | A71 | A72 | A73 | A75 |
|--------------------------------------|---|--|--|---|---|---|
| IO-Link | V1.1 | | | | | |
| Datos de proceso | 2 bytes | | | | | 4 bytes |
| | Byte 0: bit 15 ... 8 Byte 1: bit 7 ... 0 | | | | | Byte 0: bit 31 ... 24 Byte 1: bit 13 ... 16 Byte 2: bit 15 ... 8 Byte 3: bit 7 ... 0 |
| Bit 0 / tipo de datos | Q _{L1} / booleano | | | | | |
| Bit 1 / tipo de datos | Q _{L2} / booleano | | | Qint.1 / booleano | Q _{L2} / booleano | Qint.1 / booleano |
| Bit... / descripción / tipo de datos | 2 ... 15 / [vacío] | 2 ... 15 / [valor de medición de tiempo] / UInt 14 | 2 ... 15 / [valor de contador] / UInt 14 | 2 ... 15 / [longitud de medición de velocidad] / Sint14 | 2 / Qint.1 / booleano | 2 ... 7 / [vacío] |
| Bit... / descripción / tipo de datos | | | | | 3 ... 15 / [valor de medición de tiempo] / UInt13 | 8 ... 31 / [carga de portador] / UInt 24 |

62 Resolución de problemas

La tabla “Resolución de problemas” muestra las medidas que hay que tomar cuando ya no está indicado el funcionamiento del sensor.

| LED indicador / imagen de error | Causa | Acción |
|--|--|---|
| El LED verde parpadea | Comunicación con sistema IO-Link | ninguna |
| Las salidas conmutadas no se comportan según la tabla 12 | 1. Comunicación con sistema IO-Link 2. Cambio de la configuración 3. Cortocircuito | 1. ninguna 2. Adaptación de la configuración 3. Comprobar las conexiones eléctricas |

| LED indicador / imagen de error | Causa | Acción |
|---|--|--|
| Solo WTS: el LED amarillo parpadea rápido | Durante el ajuste de la distancia de conmutación, solo la mitad del spot se encuentra sobre el objeto o sobre un objeto de alto contraste | Ajuste de la distancia de conmutación conforme a Sección "Ajuste de la distancia de conmutación para WTS16" |
| El LED amarillo se ilumina, no hay ningún objeto en la trayectoria del haz | La distancia de conmutación está ajustada a una distancia excesiva | Reducir la distancia de conmutación |
| El objeto se encuentra en la trayectoria del haz, el LED amarillo no se ilumina | La distancia entre el sensor y el objeto es excesiva o la distancia de conmutación ajustada es insuficiente | Aumentar la distancia de conmutación |
| En SOPASair no se muestra el sensor | <ol style="list-style-type: none"> 1. Existe conexión con otro dispositivo portátil. 2. El dispositivo portátil está fuera de la zona de emisión del sensor. 3. Bluetooth LE está desactivado en el sensor. 4. Bluetooth LE está desactivado en el dispositivo portátil. 5. El filtro de dirección MAC está activado; el dispositivo portátil no está autorizado. | <ol style="list-style-type: none"> 1. Ninguna o desactivar la conexión existente. 2. Comprobar la situación de montaje (p. ej., apantallamiento metálico). 3. Activar Bluetooth LE mediante el maestro SiLink2 o IO-Link 4. Activar Bluetooth LE 5. Ninguna o cambiar el filtro de dirección MAC. |
| No se puede establecer conexión con el sensor | <ol style="list-style-type: none"> 1. La versión de Android o iOS no cumple con los requisitos. 2. La versión de SOPASair no contiene el controlador requerido. | <ol style="list-style-type: none"> 1. Compruebe el sistema operativo. 2. Desinstale SOPASair; instale la última versión de la aplicación. |

63 Desmontaje y eliminación

El sensor debe eliminarse de conformidad con las reglamentaciones nacionales aplicables. Como parte del proceso de eliminación, se debe intentar reciclar los materiales al máximo posible (especialmente los metales preciosos).



INDICACIÓN

Eliminación de las baterías y los dispositivos eléctricos y electrónicos

- De acuerdo con las directivas internacionales, las pilas, las baterías y los dispositivos eléctricos y electrónicos no se deben eliminar junto con la basura doméstica.
- La legislación obliga a que estos dispositivos se entreguen en los puntos de recogida públicos al final de su vida útil.



La presencia de este símbolo en el producto, el material de embalaje o este documento indica que el producto está sujeto a esta reglamentación.

64 Mantenimiento

Los sensores SICK no precisan mantenimiento.

A intervalos regulares, recomendamos:

- Limpiar las superficies ópticas externas
- Comprobar las uniones roscadas y las conexiones.

No se permite realizar modificaciones en los aparatos.

Sujeto a cambio sin previo aviso. Las propiedades y los datos técnicos del producto no suponen ninguna declaración de garantía.

65 Homologaciones

65.1 Bluetooth® approvals

| Country | Comments |
|---------------|--|
| Canada | IC: 21147-W16 |
| USA | FCC ID: 2AHDR-W16 |
| Europe + EFTA | <p>EU countries Belgium (BE), Bulgaria (BG), Denmark (DK), Germany (DE), Estonia (EE), Finland (FI), France (FR), Greece (GR), Ireland (IE), Italy (IT), Latvia (LV), Lithuania (LT), Luxembourg (LU), Malta (MT), Netherlands (NL), Austria (AT), Poland (PL), Portugal (PT), Romania (RO), Sweden (SE), Slovakia (SK), Slovenia (SI), Spain (ES), Czech Republic (CZ), Hungary (HU), United Kingdom (GB), Republic of Cyprus (CY).</p> <p>EFTA countries Iceland, Liechtenstein, Norway, Switzerland</p> |

This device complies with Part 15 of the FCC Rules and with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Changes or modifications made to this equipment not expressly approved by SICK AG may void the FCC authorization to operate this equipment.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

66 Datos técnicos

66.1 Datos técnicos

| | WTL16 Bluetooth® | WTS16 Bluetooth® |
|--|--|--|
| Distancia de conmutación máx. | 10 mm ... 500 mm ¹ | 10 mm ... 750 mm ¹ |
| Diámetro del punto luminoso/distancia | 30 mm x 3 mm (200 mm) | Ø 8 mm (300 mm) |
| Tensión de alimentación U _v | DC 10 ... 30 V | DC 10 ... 30 V |
| Consumo de corriente | ≤ 30 mA ² < 50 mA ³ | ≤ 30 mA ² < 50 mA ³ |
| Intensidad de salida I _{max.} | ≤ 100 mA | ≤ 100 mA |
| Tiempo de respuesta máx. | ≤ 500 µs ⁴ | ≤ 1,4 ms ⁴ |
| Frecuencia de conmutación | 1000 Hz ⁵ | 350 Hz ⁵ |
| Tipo de protección | IP66, IP67 | IP66, IP67 |
| Clase de protección | III | III |
| Circuitos de protección | A, B, C, D ⁶ | A, B, C, D ⁶ |
| Temperatura ambiente de servicio | -40 °C ... +60 °C | -40 °C ... +60 °C |

1 Material con un 90% de reflexión (sobre el blanco estándar según DIN 5033)

2 16 VCC...30 VCC, sin carga

3 10 VCC...16 VCC, sin carga

4 Duración de la señal con carga óhmica en modo de conmutación. Posibilidad de valores diferentes en el modo COM2.

5 Con una relación claro/oscuro de 1:1 en modo de conmutación. Posibilidad de valores diferentes en el modo IO-Link.

6 A = U_v protegidas contra polarización inversa

B = Entradas y salidas protegidas contra polarización incorrecta

C = Supresión de impulsos parásitos

D=Salidas a prueba de sobrecorriente y cortocircuitos.

66.2 Datos técnicos de Bluetooth®

| Características | Valores |
|-------------------------------------|---|
| Alcance de Bluetooth® | 100 m con vista |
| Tipo de radio | BLE |
| Clase de radio | 2 |
| Fabricante del módulo de Bluetooth® | BROADCOM Cypress Semiconductor Corporation 198 Champion Court San Jose CA 95134-1709 EE. UU. |
| Banda de RF | 2402 - 2480 MHz |
| Potencia de salida | 2 dBm |
| ID de declaración | D033906 |
| ID de diseño cualificado | 89630 |
| Nombre de especificación | 4.1 |
| Empresa miembro | SICK AG |

WTL16 - WTS16 Bluetooth®

SICK
Sensor Intelligence.



de
en
es
fr
it
ja
pt
ru
zh

所说明的产品

WTL16, WTS16 - Bluetooth®

制造商

SICK AG
Erwin-Sick-Str. 1
79183 Waldkirch, Germany
德国

法律信息

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原始文档

本档为西克股份公司的原始文档。






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67 安全信息

67.1 一般安全提示

- 调试之前阅读本操作指南。
-  只有经过培训的专业人员才能执行连接、安装和配置工作。
-  非符合欧盟机械指令的安全组件。
-  调试时防止设备受到潮湿和污染影响。
- 这些操作指南包含传感器寿命周期内所必需的信息。

67.2 关于 UL 认证的提示

The device must be supplied by a Class 2 source of supply.

UL Environmental Rating: Enclosure type 1

68 预期用途

WTL16 Bluetooth®, WTS16 Bluetooth® 是一种漫反射式光电传感器（下文简称为“传感器”），用于物体、动物和人体的非接触式光学检测。如滥用本产品或擅自对其改装，则 SICK 公司的所有质保承诺均将失效。

WTS16 特别适合用来检测扁平、发亮、高对比度以及不平坦的物体。

69 操作及显示元件

带背景抑制功能的漫反射式光电传感器

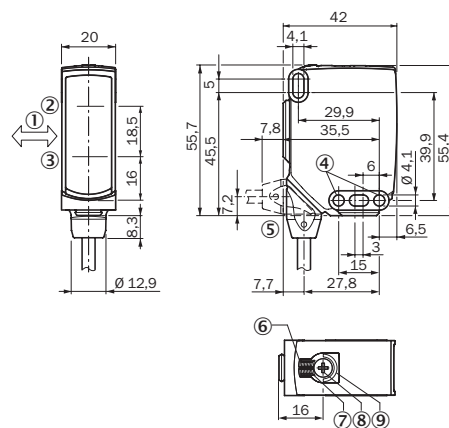


插图 85: 尺寸图 1, WTL16 电缆

- ① 待测物体的优选方向
- ② 发射器光轴中心
- ③ 接收器光轴中心
- ④ 安装孔, $\varnothing 4.1$ mm
- ⑤ 接口

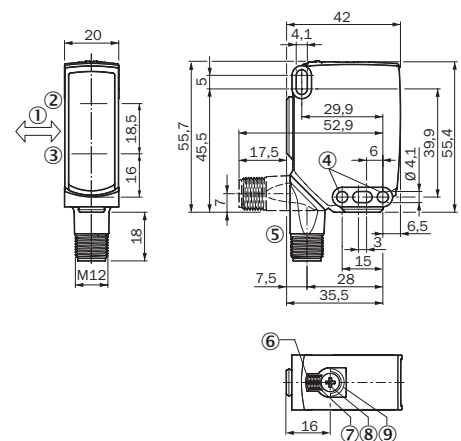


插图 86: 尺寸图 2, WTL16 插头

- ⑥ 绿色 LED 指示灯: 工作电压激活
- ⑦ 黄色 LED 指示灯: 光接收状态
- ⑧ 按转元件: 设置触发感应距离
- ⑨ BluePilot 蓝色: 触发感应距离指示灯

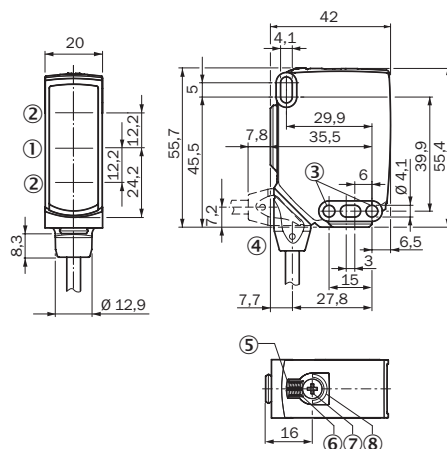


插图 87: 尺寸图 3, WTS16 电缆

- ① 发射器光轴中心
- ② 接收器光轴中心
- ③ 安装孔, \varnothing 4.1 mm
- ④ 接口
- ⑤ 绿色 LED 指示灯: 工作电压激活
- ⑥ 黄色 LED 指示灯: 光接收状态
- ⑦ 按转元件: 设置触发感应距离
- ⑧ BluePilot 蓝色: 触发感应距离指示灯

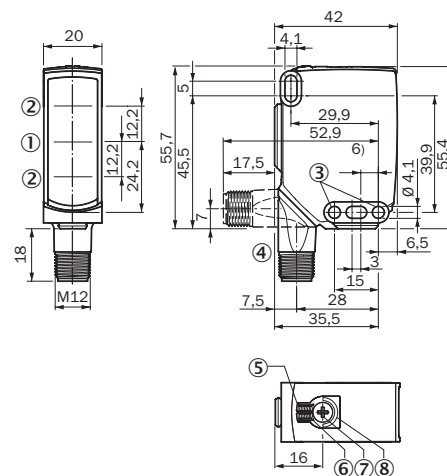


插图 88: 尺寸图 1, WTS16 插头

70 安装

将传感器安装在合适的安装支架上 (参见 SICK 配件目录)。

注意传感器的最大允许拧紧力矩为 $< 1,3$ Nm。

以传感器为参照物, 注意物体的优先方向, 参见插图 85, 插图 86 (仅适用于 WTL16)。

71 电气安装

必须在无电压状态 ($U_V = 0$ V) 连接传感器。依据不同连接类型, 注意下列信息:

- 插头连接: 注意引脚分配。
- 电缆: 芯线颜色

完成所有电气连接后, 才可施加或接通电压供给 ($U_V > 0$ V)。


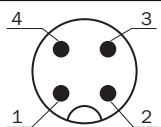
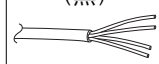
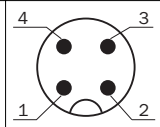
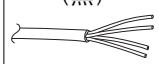
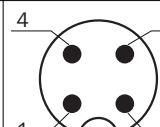
接线图 (表格 13, 表格 14) 说明。

MF (针脚 2 配置) = 外部输入端, 示教功能, 开关信号



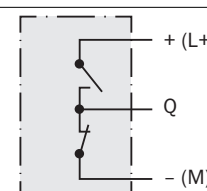
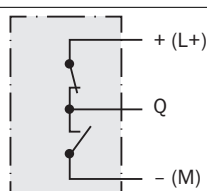
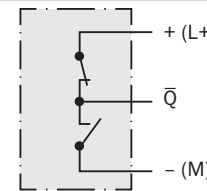
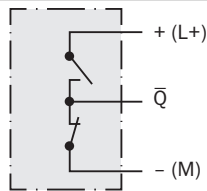
Q_{L1}/C = 开关量输出, IO-Link 通信

DC: 10 ... 30 V DC

表格 13: DC

| | | | | | |
|---|---|---|--|---|---|
| WTL16 WTS16 | -24161xxxA0 0 -34161xxxA0 0 | -1x161xxxA 00 | -24162xxxA 00 -34162xxxA 00 | -1x162xxxA 00 | -2416xxxxA01- A99 -3416xxxxA01- A99 |
| 1 | + (L+) | | | | |
| 2 | MF | | | | |
| 3 | - (M) | | | | |
| 4 | Q _{L1} /C | | | | |
| 默认: MF | \bar{Q} | \bar{Q} | Q | Q | www.sick.com 8020347 |
| 默认: Q _{L1} /C | Q | Q | \bar{Q} | \bar{Q} | www.sick.com 8020347 |
|  |  | 1 = brn (棕) 2 = wht (白) 3 = blu (蓝) 4 = blk (黑)  0.14 mm ² AWG26 |  | 1 = brn (棕) 2 = wht (白) 3 = blu (蓝) 4 = blk (黑)  0.14 mm ² AWG26 |  |

表格 14: 推/挽

| | | |
|-------------------------------|---|---|
| |  |  |
| Q 推挽 (≤ 100 mA) |  |  |
| \bar{Q} 推挽 (≤ 100 mA) |  |  |

72 调试

Bluetooth® 在首次调试启用时开启。SOPASair 可在 Google PlayStore (Android) 和 App Store (iOS) 中下载。

对于操作系统的要求：Android 版本 6.0, iOS 最新版本。

校准

WTL16 Bluetooth®, WTS16 Bluetooth®: 将传感器对准物体。选择定位, 确保红色发射光束射中物体的中间。此时, 应注意传感器的光学开口 (透明保护盖) 处应无任何遮挡 [插图 89]。



提示

对于 WTS16: 若是从上方执行物体检测, 则建议倾斜安装传感器, 以便避免因反射表面造成全反射, 参见插图 95 至插图 98。

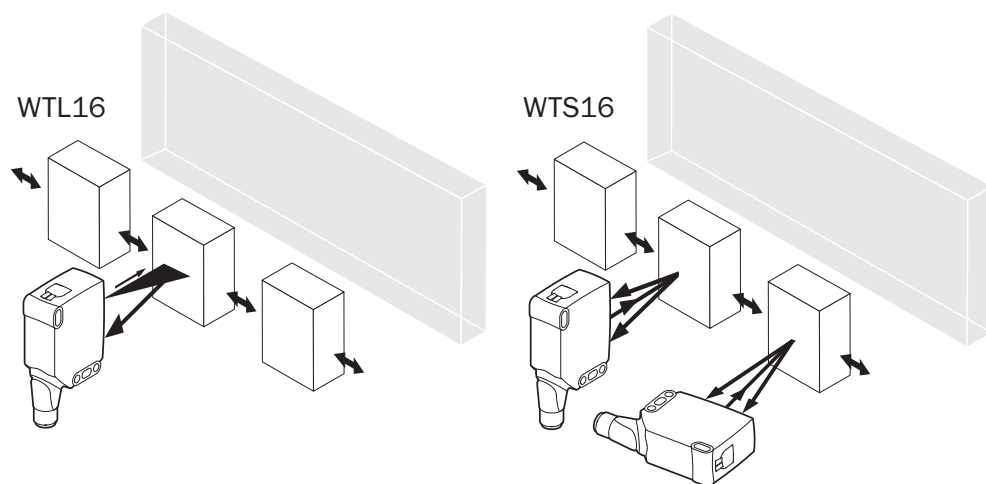


插图 89: 校准

触发感应距离

检查使用条件: 根据相关图表 [参见插图 90, 插图 91] 调整触发感应距离和对物体或背景的距离 (x = 触发感应距离, y = 已设置的触发感应距离和背景 (白色, 90%) 之间的最小距离)。反射比: 6% = 黑色 ①, 18% = 灰色 ②, 90% = 白色 ③ (DIN 5033 规定的标准白)。我们建议使用反射比较低的物体进行设置。

根据图表 [插图 90 ①] 按如下方法确定背景抑制功能的最小距离 (= y):

示例: x = 200 mm, y = 15 mm。即, 当与传感器距离 > 15 mm 时, 才能抑制背景 (白色, 90%)。

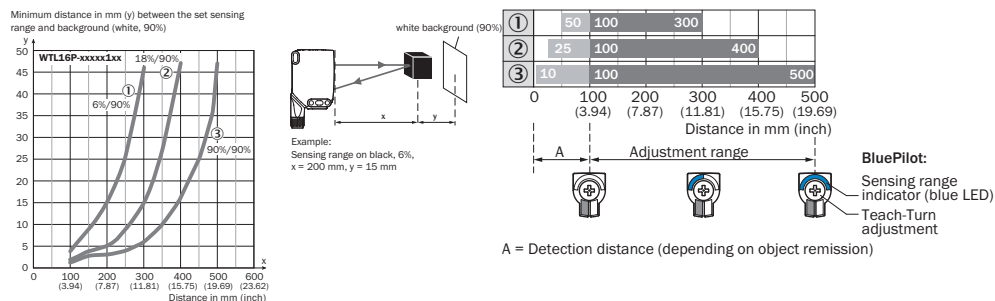


插图 90: 特征曲线 1, WTL16 Bluetooth®-xxxxx1xx, 红光

- ① 触发感应距离, 基于黑色, 6% 反射比
- ② 触发感应距离, 基于灰色, 18% 反射比

③ 触发感应距离，基于白色，90% 反射比

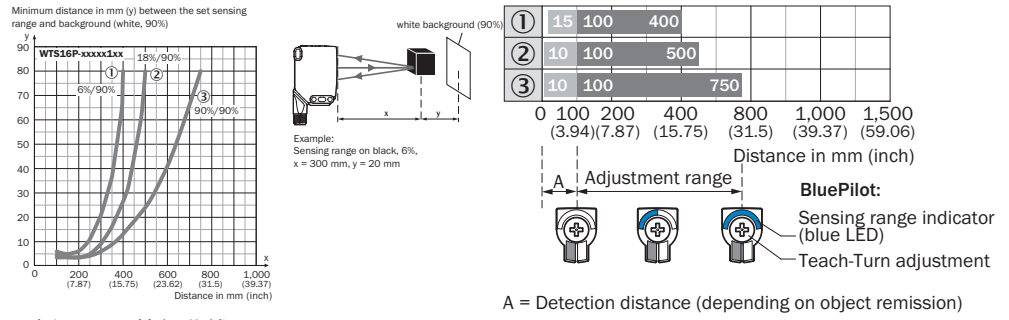


插图 91: 特征曲线 1: WTS16 Bluetooth®-xxxxx1xx, 红光

- ① 触发感应距离，基于黑色，6% 反射比
- ② 触发感应距离，基于灰色，18% 反射比
- ③ 触发感应距离，基于白色，90% 反射比

触发感应距离设置 WTL16、WTS16

WTL16x-xxxxxx2xAxx、WTS16x-xxxxxx2xAxx，带有按转元件：

通过按下示教键（约 1-3 秒）可设置触发感应距离。根据要求，可使用电位计（不要按压示教键）进行微调。

向右旋转：提高触发感应距离。

向左旋转：降低触发感应距离。

也可仅通过电位计设置触发感应距离。我们建议触发感应距离应涵盖物体位置，例如参见插图 8。触发感应距离设置完成后，将物体从光路中移除，同时，将抑制背景并改变开关量输出（参见表格 13, 表格 14）。

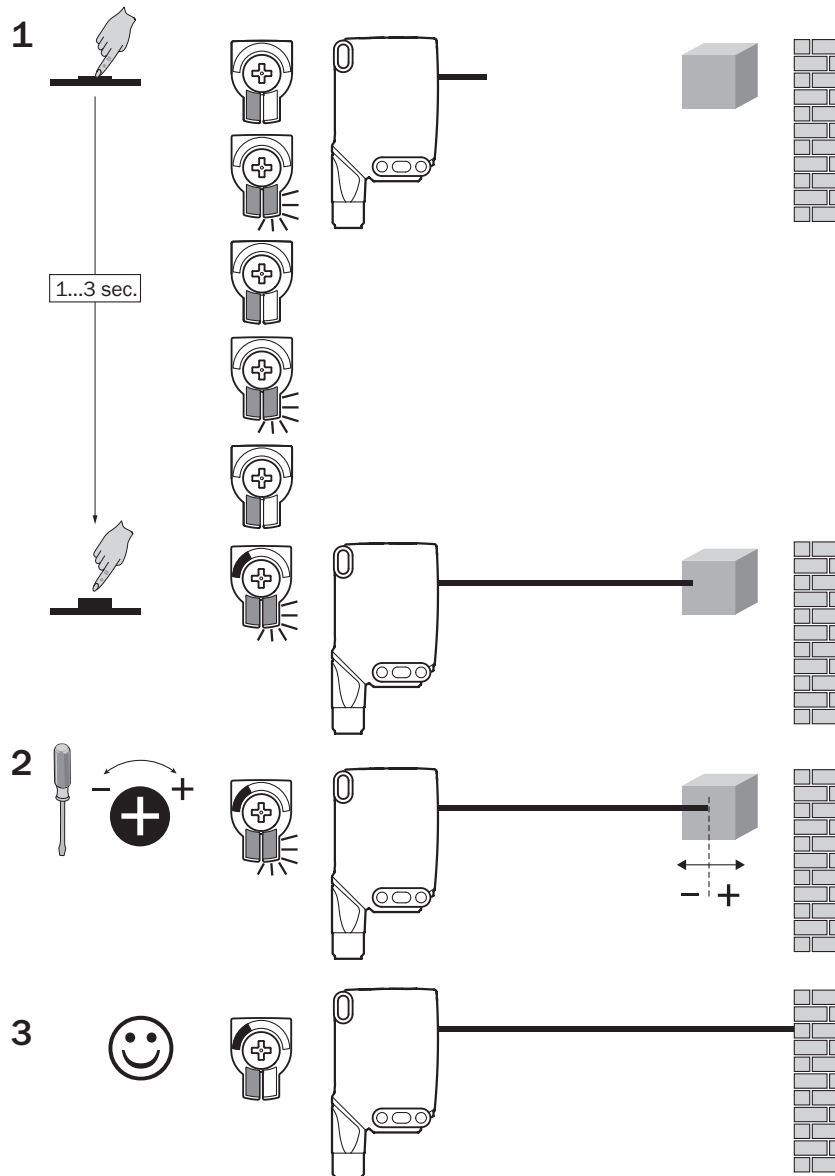


插图 92: WTL16x-xxxxxx2xAxx、WTS16x-xxxxxx2xAxx 红光，利用按转元件设置触发感应距离

WTL16x-xxxxxx1xAxx、WTS16x-xxxxxx1xAxx 带有电位计:

利用电位计设置触发感应距离。

向右旋转: 提高触发感应距离。

向左旋转: 降低触发感应距离。

我们建议触发感应距离应涵盖物体位置, 例如参见插图 9。触发感应距离设置完成后, 将物体从光路中移除, 同时, 将抑制背景并改变开关量输出 (参见 表格 13, 表格 14)。

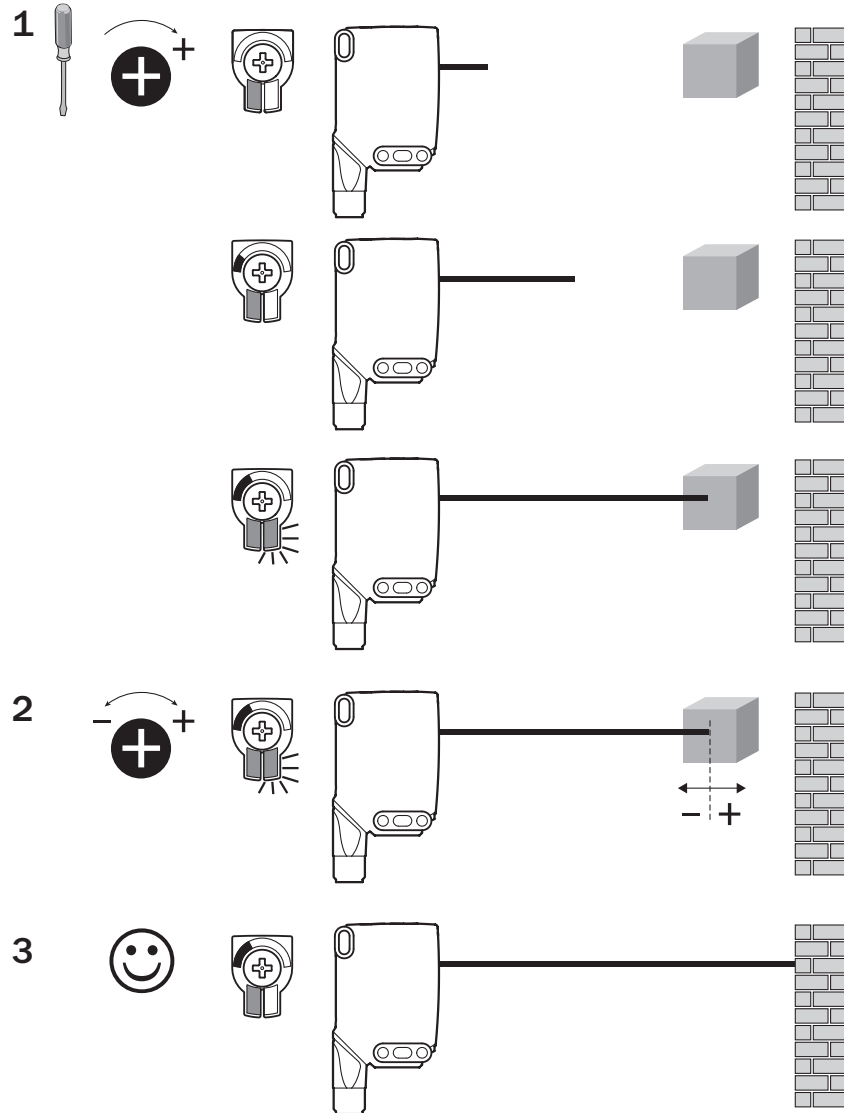


插图 93: WTL16x-xxxxxx1xAxx、WTS16x-xxxxxx1xAxx 红光, 利用电位计设置触发感应距离

WTL16x-xxxxxx3xAxx、WTS16x-xxxxxx3xAxx 带有示教键:

通过按下示教键（约 1-3 秒）可设置触发感应距离。我们建议触发感应距离应涵盖物体位置，例如参见插图 9。触发感应距离设置完成后，将物体从光路中移除，同时，将抑制背景并改变开关量输出（（参见 表格 13, 表格 14））。

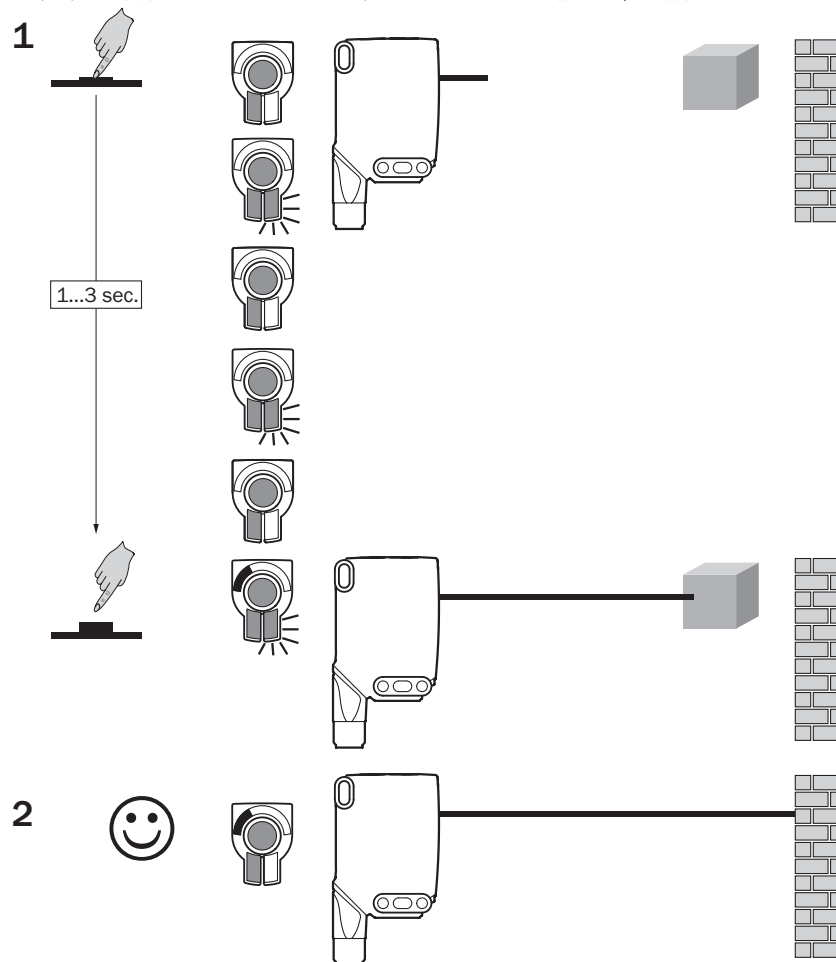


插图 94: WTL16x-xxxxxx3xAxx、WTS16x-xxxxxx3xAx 红光，利用示教键设置触发感应距离

触发感应距离设置 WTS16

检测扁平、发亮、高对比度以及不平坦的物体。

若是从上方执行物体检测，则建议倾斜安装传感器，以便避免因反射表面造成全反射

- 1 设置触发感应距离时，光点应对准均质且平坦的表面（例如白纸）。

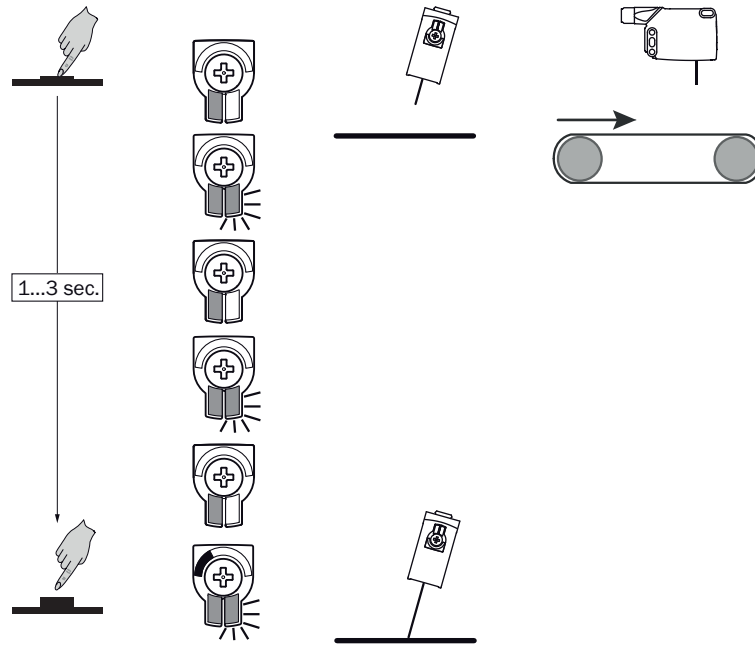


插图 95: WTS16 触发感应距离设置

- 2 仅略微左旋电位计，直至黄色 LED 指示灯不再亮起。触发感应距离目前略高于输送带。

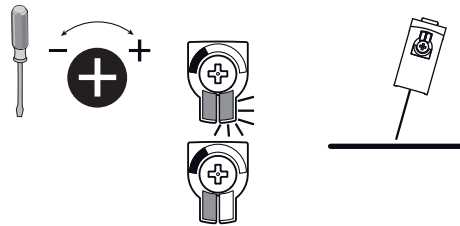


插图 96: WTS16 触发感应距离设置

- 3 输送带的运行现在应该不带物体。如果黄色 LED 指示灯在试运行期间未亮起，那么触发感应距离设置正确。

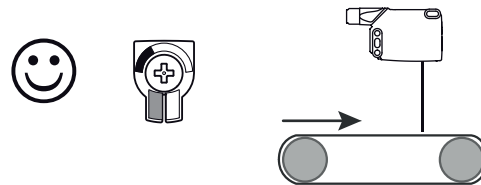


插图 97: WTS16 触发感应距离设置

- 4 当物体位于光路时黄色 LED 指示灯亮起，那么触发感应距离设置正确。

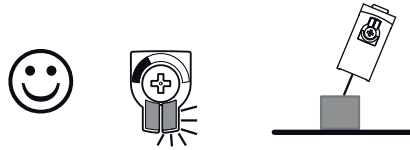


插图 98: WTS16 触发感应距离设置

Process data structure (Version 1.1)

| | A00 | A70 | A71 | A72 | A73 | A75 |
|-------------------|---|---|--------------------------------------|--|--|--|
| IO-Link | V1.1 | | | | | |
| 流程数据 | 2 Byte | | | | | 4 Byte |
| | Byte 0: Bit 15... 8 Byte 1: Bit 7... 0 | | | | | Byte 0: Bit 31... 24 Byte 1: Bit 13... 16 Byte 2: Bit 15... 8 Byte 3: Bit 7... 0 |
| Bit 0/ 数据类型 | Q _{L1} / Boolean | | | | | |
| Bit 1/ 数据类型 | Q _{L2} / Boolean | | | Qint.1 / Boolean | Q _{L2} / Boolean | Qint.1 / Boolean |
| Bit... / 描述/ 数据类型 | 2...15 / [empty] | 2...15 / [Time measurement value] / UInt 14 | 2 ... 15 / [Counter value] / UInt 14 | 2 ... 15 / [Length / speed measurement] / Sint14 | 2 / Qint.1 / Boolean | 2...7 / [empty] |
| Bit... / 描述/ 数据类型 | | | | | 3 ... 15 / [Time measurement value] / UInt13 | 8 ... 31 / [Carrier load] / UInt 24 |

73 故障排除

故障排除表格中罗列了传感器无法执行某项功能时应采取的各项措施。

| LED 指示灯 / 故障界面 | 原因 | 措施 |
|----------------------|--|-------------------------------|
| 绿色 LED 闪烁 | IO-Link 通信 | 无 |
| 开关量输出的表现不符合表格 14 | 1. IO-Link 通信 2. 配置变化 3. 短路 | 1. 无 2. 配置调整 3. 检查电气连接 |
| 仅限 WTS: 黄色 LED 快速闪烁。 | 在设置触发感应距离过程中, 光点仅在物体上出现一半或仅出现在反差明显的物体上 | 设置触发感应距离遵循章节“WTS16 触发感应距离设置”。 |
| 黄色 LED 亮起, 光路中无物体 | 触发感应距离设置过大 | 降低开关距离 |

| LED 指示灯 / 故障界面 | 原因 | 措施 |
|--------------------|---|--|
| 光路中有物体，黄色 LED 未亮起 | 传感器和物体之间的间距过大或开关距离设置的过小 | 增大开关距离 |
| 在 SOPASair 中不显示传感器 | <ol style="list-style-type: none"> 1. 与另一个手持式编程工具存在连接。 2. 该手持式编程工具位于传感器的发射范围之外。 3. 传感器中的蓝牙 LE 已禁用。 4. 手持式编程工具中的蓝牙 LE 已禁用。 5. MAC 地址筛选已启用，手持式编程工具未授权。 | <ol style="list-style-type: none"> 1. 无连接或现有连接已禁用。 2. 检测安装情况（例如由于金属而受到屏蔽）。 3. 通过 SiLink2 Master 或 IO-Link 启用蓝牙 LE 4. 蓝牙 LE 的启用 5. MAC 地址筛选缺失或已更改。 |
| 无法建立与传感器的连接 | <ol style="list-style-type: none"> 1. Android 或 iOS 版本不符合要求。 2. SOPASair 版本中没有所需的驱动程序。 | <ol style="list-style-type: none"> 1. 请检查操作系统。 2. 请卸载 SOPASair，安装最新的应用程序版本。 |

74 拆卸和废弃处置

必须根据适用的国家/地区特定法规处理传感器。在废弃处置过程中应努力回收构成材料（特别是贵金属）。



提示

电池、电气和电子设备的废弃处置

- 根据国际指令，电池、蓄电池和电气或电子设备不得作为一般废物处理。
- 根据法律，所有者有义务在使用寿命结束时将这些设备返还给相应的公共收集点。



■ 产品、其包装或本文档中的此符号表示产品受这些法规约束。

75 保养

SICK 传感器无需保养。

我们建议，定期：

- 清洁镜头检测面
- 检查螺栓连接和插头连接

不得对设备进行任何改装。

如有更改，不另行通知。所给出的产品特性和技术参数并非质保声明。

76 许可

76.1 Bluetooth® approvals

| Country | Comments |
|---------------|-------------------|
| Canada | IC: 21147-W16 |
| USA | FCC ID: 2AHDR-W16 |
| Europe + EFTA | EU countries |

| Country | Comments |
|---------|--|
| | Belgium (BE), Bulgaria (BG), Denmark (DK), Germany (DE), Estonia (EE), Finland (FI), France (FR), Greece (GR), Ireland (IE), Italy (IT), Latvia (LV), Lithuania (LT), Luxembourg (LU), Malta (MT), Netherlands (NL), Austria (AT), Poland (PL), Portugal (PT), Romania (RO), Sweden (SE), Slovakia (SK), Slovenia (SI), Spain (ES), Czech Republic (CZ), Hungary (HU), United Kingdom (GB), Republic of Cyprus (CY). EFTA countries Iceland, Liechtenstein, Norway, Switzerland |

This device complies with Part 15 of the FCC Rules and with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Changes or modifications made to this equipment not expressly approved by SICK AG may void the FCC authorization to operate this equipment.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

77 技术数据

77.1 技术数据

| | WTL16 Bluetooth® | WTS16 Bluetooth® |
|------------------------|--|--|
| 最大开关距离 | 10 mm ... 500 mm ¹ | 10 mm ... 750 mm ¹ |
| 光斑直径/距离 | 30 mm x 3 mm (200 mm) | Ø 8 mm (300 mm) |
| 供电电压 U _V | DC 10 ... 30 V | DC 10 ... 30 V |
| 消耗电流 | ≤ 30 mA ² < 50 mA ³ | ≤ 30 mA ² < 50 mA ³ |
| 输出电流 I _{max.} | ≤ 100 mA | ≤ 100 mA |
| 最长响应时间 | ≤ 500 µs ⁴ | ≤ 1,4 ms ⁴ |
| 开关频率 | 1000 Hz ⁵ | 350 Hz ⁵ |
| 防护类型 | IP66, IP67 | IP66, IP67 |
| 防护等级 | III | III |
| 保护电路 | A, B, C, D ⁶ | A, B, C, D ⁶ |
| 工作环境温度 | -40 °C ... +60 °C | -40 °C ... +60 °C |

- 1 具有 90 % 反射比的扫描对象 (指 DIN 5033 规定的标准白)
- 2 16VDC...30VDC, 无负荷
- 3 10VDC...16VDC, 无负荷
- 4 信号传输时间 (开启模式中的电阻性负荷时)。在 COM2-模式下允许偏差值。
- 5 明暗比 1:1, 在开启模式时。在 IO-Link 模式下允许偏差值。
- 6 A = U_V 接口 (已采取反极性保护措施)
B = 具有反极性保护的输入端和输出端
C = 抑制干扰脉冲
D = 抗过载电流和抗短路输出端

77.2 Bluetooth 技术参数®

| 特点 | 数值 |
|------------------|---|
| Bluetooth® 有效距离 | 视野范围 100 m |
| 无线电类型 | BLE |
| 无线电级别 | 2 |
| Bluetooth® 模块制造商 | BROADCOM Cypress Semiconductor Corporation 198 Champion Court San Jose CA 95134-1709 |
| RF 频段 | 2402 - 2480 MHz |
| 输出功率 | 2 dBm |
| 声明 ID | D033906 |
| 合格设计 ID | 89630 |
| 规格名称 | 4.1 |
| 成员公司 | SICK AG |

WTL16 - WTS16 Bluetooth®

SICK
Sensor Intelligence.



de
en
es
fr
it
ja
pt
ru
zh

説明されている製品

WTL16, WTS16 - Bluetooth®

メーカー

SICK AG
Erwin-Sick-Str.1
79183 Waldkirch
Germany

法律情報

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78 安全情報

78.1 一般的な安全上の注意事項

- コミッショニング前に取扱説明書をよくお読みください。
-  本製品の接続・取付・コンフィグレーションは、訓練を受けた技術者が行ってください。
-  本製品は、EU の機械指令を満たす人体保護用の安全コンポーネントではありません。
-  コミッショニング前に、湿気や汚れから機器を保護してください。
- 本取扱説明書には、センサのライフサイクル中に必要となる情報が記載されています。

78.2 UL 認証に関する注意事項

The device must be supplied by a Class 2 source of supply.
UL Environmental Rating: Enclosure type 1

79 正しいご使用方法

WTL16 Bluetooth®, WTS16 Bluetooth® はリフレクタ形光電スイッチ (以下センサと呼ぶ) で、物体、動物または人物などを光学技術により非接触で検知するための装置です。製品を用途以外の目的で使用したり改造したりした場合は、SICK AG に対する一切の保証請求権が無効になります。

WTS16 は、平坦で光沢があり、コントラストが強く凸凹のある対象物の検出に特に適しています。

80 操作/表示要素

背景抑制付きリフレクタ形光電スイッチ

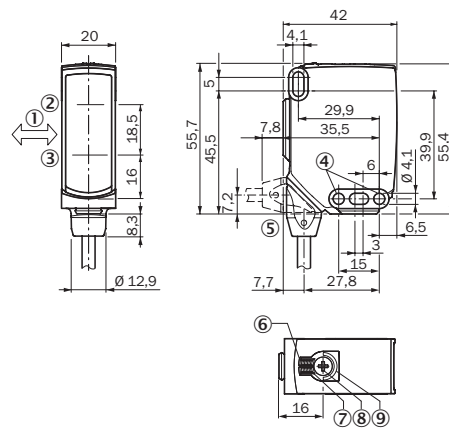


図 99: 寸法図 1, WTL16 ケーブル

- ① 検出対象物の優先方向
- ② 投光器光軸の中心
- ③ 受光器光軸の中心
- ④ 取付穴、 $\varnothing 4.1$ mm
- ⑤ 接続
- ⑥ 緑色の LED 表示: 動作電圧有効
- ⑦ 黄色 LED 表示: 受光ステータス
- ⑧ プッシュボタン要素: 検出距離の設定
- ⑨ BluePilot 青色: 検出距離表示灯

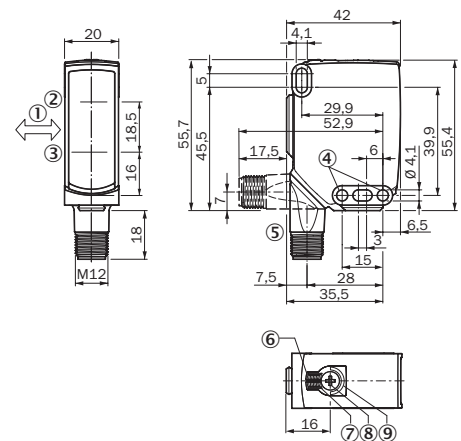


図 100: 寸法図 2, WTL16 オスコネクタ

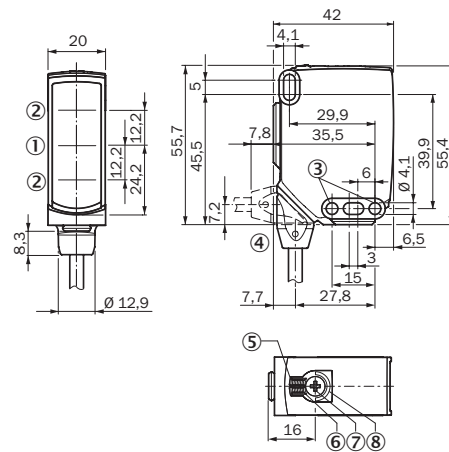


図 101: 寸法図 3, WTS16 ケーブル

- ① 投光器光軸の中心
- ② 受光器光軸の中心
- ③ 取付穴、 $\varnothing 4.1$ mm
- ④ 接続
- ⑤ 緑色の LED 表示: 動作電圧有効
- ⑥ 黄色 LED 表示: 受光ステータス
- ⑦ プッシュボタン要素: 検出距離の設定
- ⑧ BluePilot 青色: 検出距離表示灯

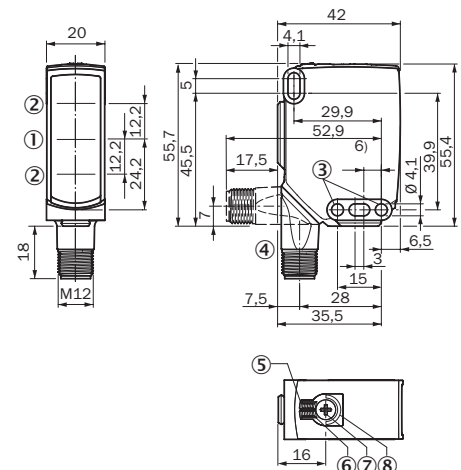


図 102: 寸法図 1, WTS16 オスコネクタ

81 取り付け

センサを適切な取付ブラケットに取り付けます (SICK 付属品カタログを参照)。

センサの締付トルクの最大許容値 < 1,3 Nm を遵守してください。

センサに対して対象物が検出可能な方向にあることを確認してください (参照 図 99, 図 100) (WTL16 のみ対象)。

82 電氣的設置

センサの接続は無電圧 ($V_s = 0\text{ V}$) で行わなければなりません。接続タイプに応じて以下の情報を遵守してください:

- コネクタ接続: ピン割り当てに注意。
- ケーブル: 芯線色

すべての電気機器を接続してから供給電圧 ($V_s > 0\text{ V}$) を印加、あるいは電源を入れてください。

配線図の説明 (表 15, 表 16)

MF (ピン 2 設定) = 外部入力、ティーチイン、スイッチング信号

Q_{L1}/C = スwitching出力、IO-Link 通信

DC: 10 ... 30 V DC

表 15: DC


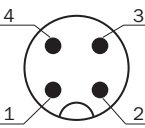
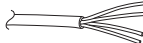
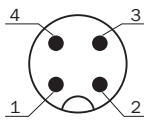

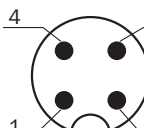
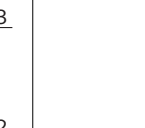
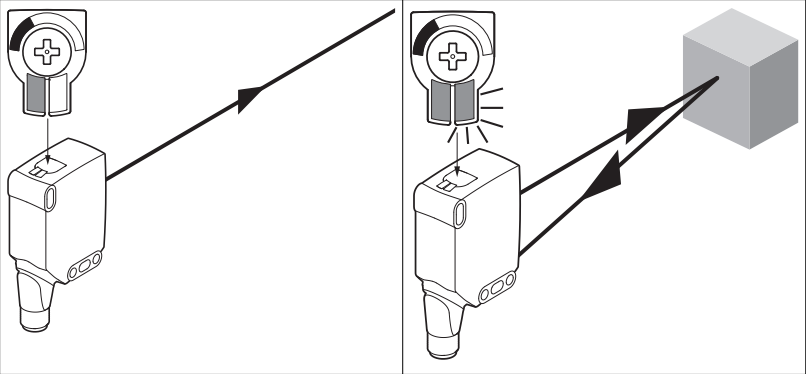
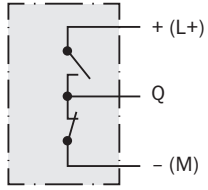
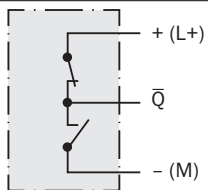
| WTL16 WTS16 | -24161xxxA0 0 | -1x161xxxA 00 | -24162xxxA 00 | -1x162xxxA 00 | -2416xxxxA01- A99 | -3416xxxxA01- A99 |
|---|---|--|--|--|---|---|
| 1 | + (L+) | | | | | |
| 2 | MF | | | | | |
| 3 | - (M) | | | | | |
| 4 | Q_{L1}/C | | | | | |
| デフォルト: MF | \bar{Q} | \bar{Q} | Q | Q | www.sick.com 8020347 | |
| デフォルト: Q_{L1}/C | Q | Q | \bar{Q} | \bar{Q} | www.sick.com 8020347 | |
|  |  | 1 = 茶 2 = 白 3 = 青 4 = 黒  0.14 mm ² AWG26 |  | 1 = 茶 2 = 白 3 = 青 4 = 黒  0.14 mm ² AWG26 |  |  |

表 16: プッシュ / プル

| | |
|--|--|
| |  |
| Q プッシュプル ($\leq 100 \text{ mA}$) |  |
| \bar{Q} プッシュプル ($\leq 100 \text{ mA}$) |  |

83 コミッショニング

Bluetooth®は、初回起動時に有効になります。SOPASair は Google PlayStore (Android) および App Store (iOS) から入手可能です。
 オペレーティングシステム要件: Androidのバージョン 6.0、iOS の最新バージョン。

光軸調整

WTL16 Bluetooth®, WTS16 Bluetooth®: センサを対象物に合わせて光軸調整します。赤色の投光軸が対象物の中央に照射されるように位置決めします。センサの光開口 (フロントカバー) が全く遮らぎられないよう注意してください [図 103]。



注意事項

WTS16 の場合: 対象物を上から検出する際は、反射面による完全反射を回避するために、センサを傾斜させて設置することをお勧めします (参照 図 109～図 112)。

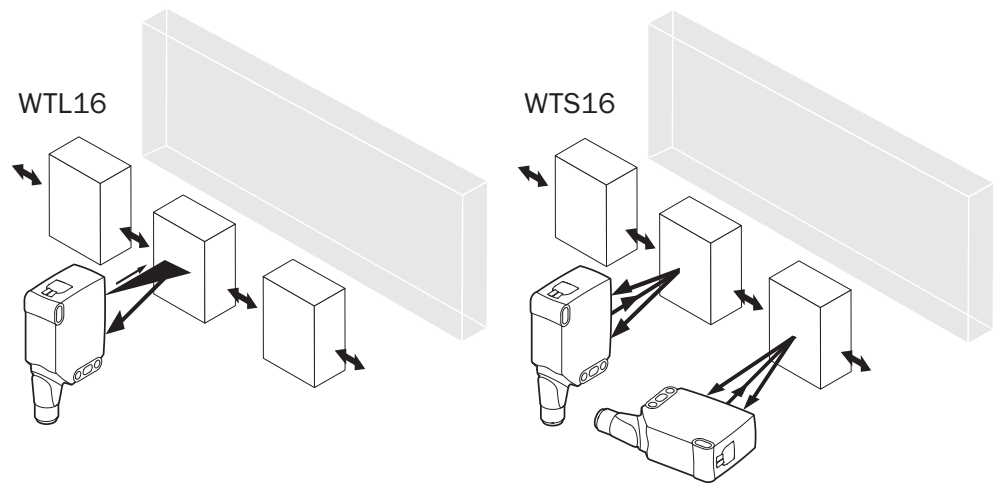


図 103: 光軸調整

検出距離

使用条件を確認してください: 検出距離および対象物または背景との間隔、ならびに対象物の反射率に対応する図 [参照 図 104 図 104] と照合します (x = 検出距離、y = 設定した検出距離と背景との最小距離 (白 90%))。反射率: 6% = 黒色 ①、18% = 灰色 ②、90% = 白色 ③ (DIN 5033 に準拠した白)。反射率の低い対象物を使用して調整することをお勧めします。

背景抑制のための最低必要距離 (= y) (図 104 ①) から以下のように算出することができます:

例: x = 200 mm、y = 15 mm。つまりセンサからの間隔が 15 mm より大きい場合に背景 (白、90%) が抑制されます。

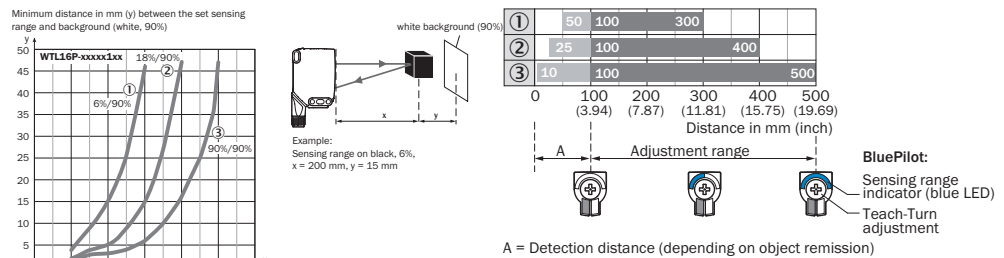


図 104: 特性曲線 1, WTL16 Bluetooth®-xxxxx1xx, 赤色光

- ① 黒色の検出距離、反射率 6%
- ② グレーの検出距離、反射率 18%
- ③ 白色の検出距離、反射率 90%

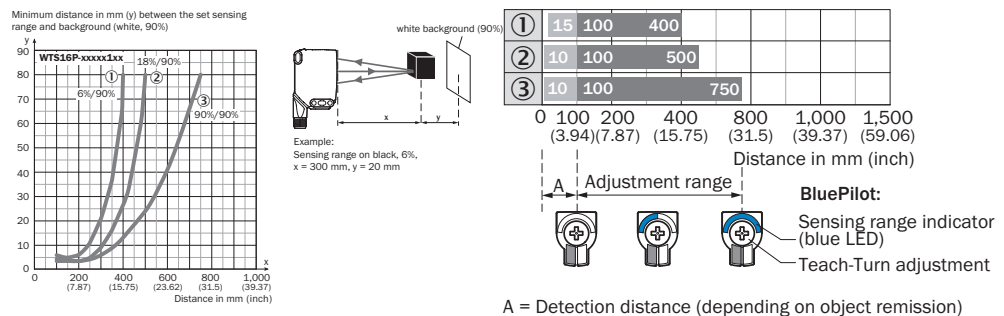


図 105: 特性曲線 1, WTS16 Bluetooth®-xxxxx1xx, 赤色光

- ① 黒色の検出距離、反射率 6%

- ② グレーの検出距離、反射率 18%
- ③ 白色の検出距離、反射率 90%

検出距離の設定 WTL16、WTS16

プッシュターン要素付きの WTL16x-xxxxxx2xAxx、WTS16x-xxxxxx2xAxx:

ティーチンボタンを押すと (約 1~3 秒) 検出距離を設定できます。要件に応じて、ポテンショメータで (ティーチンボタンを押さずに) 微調整することができます。

右へ回すと検出距離が増大します。

左へ回すと検出距離が減少します。

検出距離はポテンショメータのみで設定できます。検出距離を対象物内に入れることをお勧めします (例として図 8 を参照)。検出距離が設定された後、対象物を光路から取り除きます。この際、背景は抑制され、スイッチング出力が変化します (参照表 15, 表 16)。

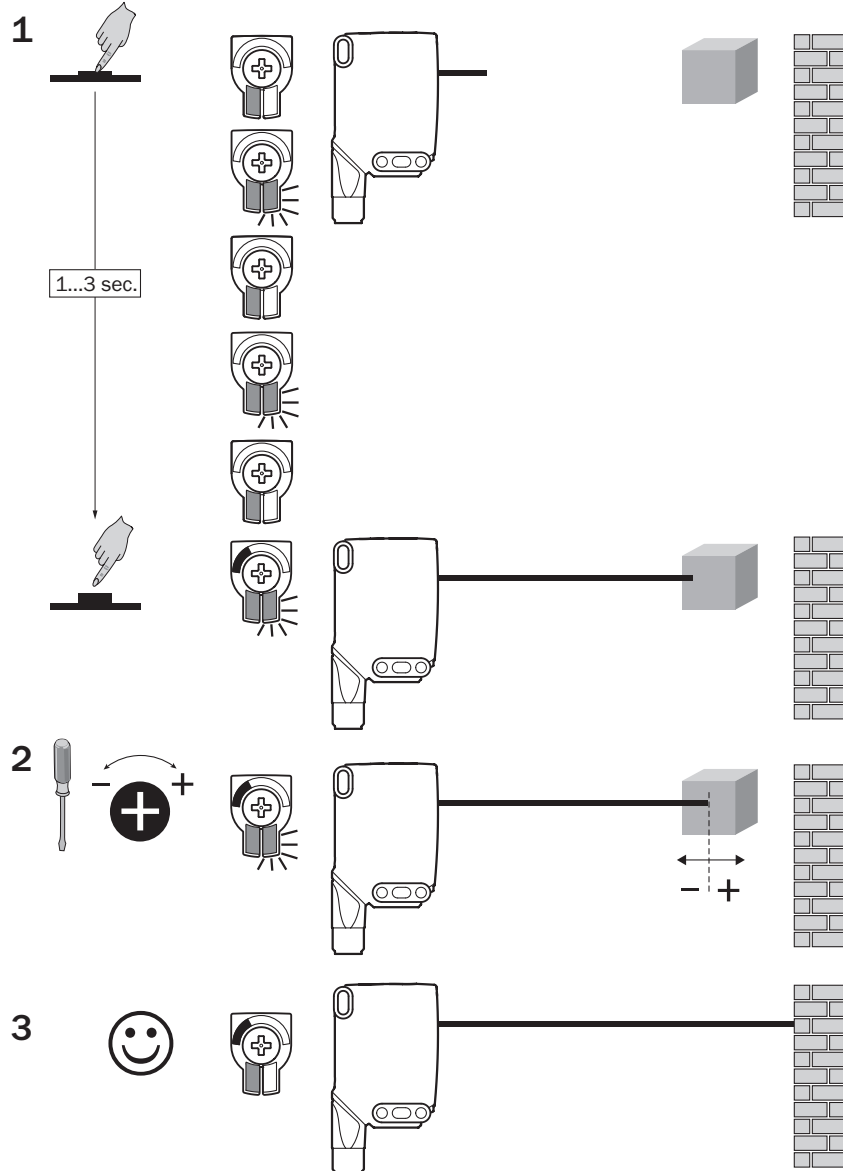


図 106: WTL16x-xxxxxx2xAxx、WTS16x-xxxxxx2xAxx 赤色光、プッシュターン要素による検出距離の設定

ポテンシオメータを備えた WTL16x-xxxxxx1xAxx、WTS16x-xxxxxx1xAxx:

ポテンシオメータで検出距離を設定します。

右へ回すと検出距離が増大します。

左へ回すと検出距離が減少します。

検出距離を対象物内に入れることをお勧めします (例として図 9 を参照)。検出距離が設定された後、対象物を光路から取り除きます。この際、背景は抑制され、スイッチング出力が変化します (参照 表 15, 表 16)。

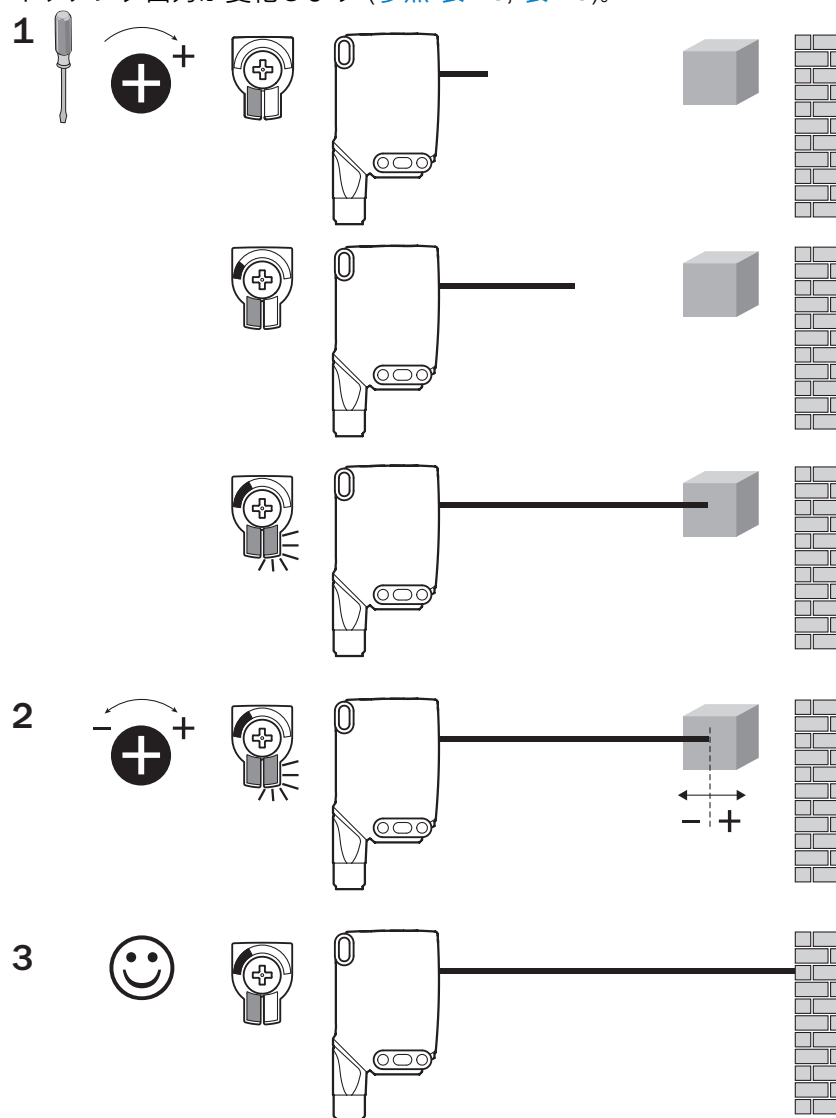


図 107: WTL16x-xxxxxx1xAxx、WTS16x-xxxxxx1xAxx 赤色光、ポテンシオメータによる検出距離の設定

ティーチンボタンを備えた WTL16x-xxxxxx3xAxx、WTS16x-xxxxxx3xAxx:

ティーチンボタンを押すと (約 1~3 秒) 検出距離を設定できます。検出距離を対象物内に入れることをお勧めします (例として図 9 を参照)。検出距離が設定された後、対象物を光路から取り除きます。この際、背景は抑制され、スイッチング出力が変化します (参照表 15, 表 16)。

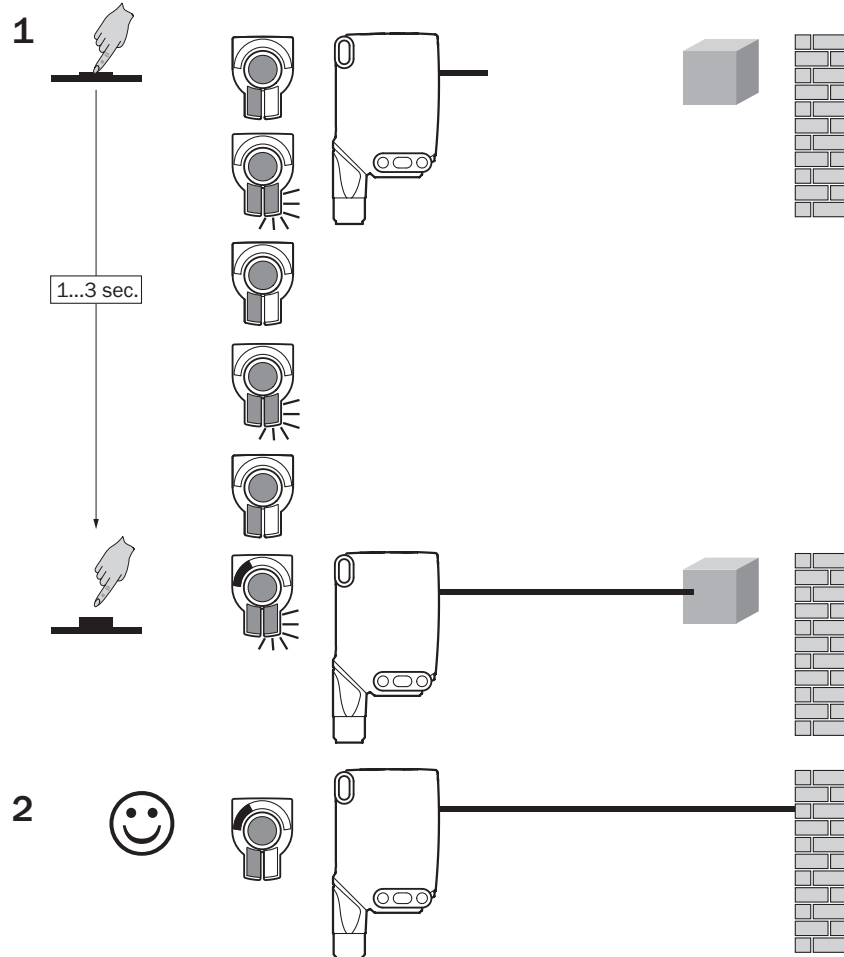


図 108: WTL16x-xxxxxx3xAxx, WTS16x-xxxxxx3xAx 赤色光、ティーチンボタンによる検出距離の設定

検出距離の設定 WTS16

平坦で光沢があり、コントラストが強く凸凹のある対象物の検出。

対象物を上から検出する際は、反射面による完全反射を回避するために、センサを傾斜させて設置することをお勧めします。

- 1 検出距離の設定では、白い紙など均一で平らな表面上で光軸スポットの方向調整を行う必要があります。

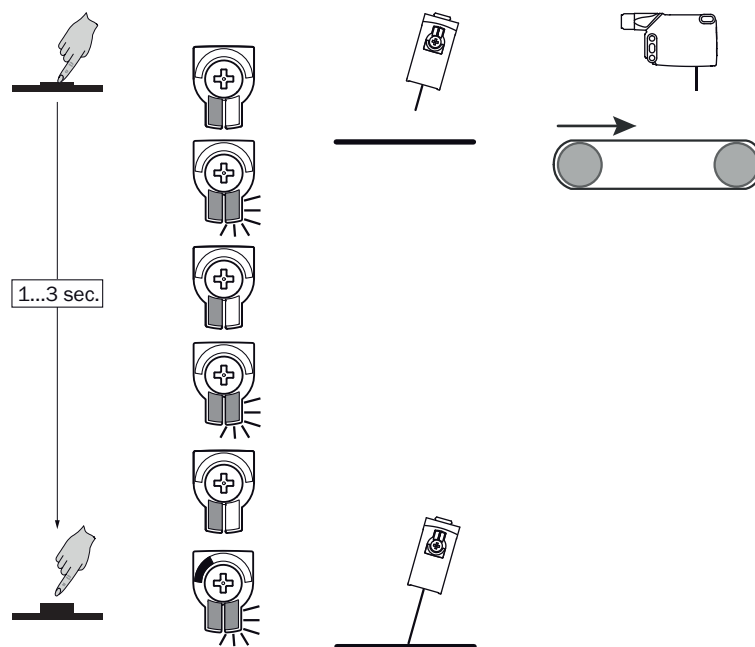


図 109: WTS16 の検出距離の設定

- 2 黄色い LED 表示灯が点灯しなくなるまでポテンシオメータをわずかに左へ回転させます。これで検出距離はベルトを若干上回る位置になりました。

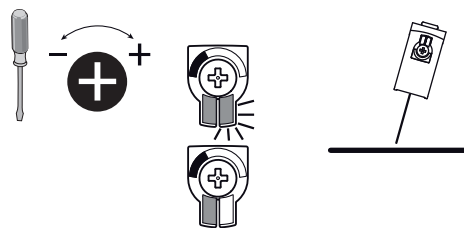


図 110: WTS16 の検出距離の設定

- 3 これで対象物なしでベルトを動作させることができます。テスト動作中に黄色い LED 表示灯が点灯しなければ、検出距離が正しく設定されていることを意味します。

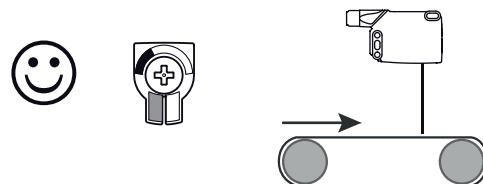


図 111: WTS16 の検出距離の設定

- 4 対象物が光路内にあり、黄色い LED 表示灯が点灯すれば、検出距離が正しく設定されていることを意味します。

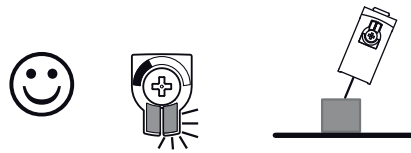


図 112: WTS16 の検出距離の設定

Process data structure (Version 1.1)

| | A00 | A70 | A71 | A72 | A73 | A75 |
|----------------------|---|----------------------------|------------------------------|---------------------------------|----------------------------|---|
| IO-Link | V1.1 | | | | | |
| プロセスデータ | 2 バイト | | | | | 4 バイト |
| | バイト 0: ビット 15... 8 バイト 1: ビット 7... 0 | | | | | バイト 0: ビット 31... 24 バイト 1: ビット 13... 16 バイト 2: ビット 15... 8 バイト 3: ビット 7... 0 |
| ビット 0 / データタイプ | Q _{L1} / ブール型 | | | | | |
| ビット 1 / データタイプ | Q _{L2} / ブール型 | | | Qint.1 / ブール型 | Q _{L2} / ブール型 | Qint.1 / ブール型 |
| ビット... / 説明 / データタイプ | 2...15 / [空] | 2...15 / [時間測定値] / UInt 14 | 2 ... 15 / [カウンタ値] / UInt 14 | 2 ... 15 / [長さ / 速度測定] / SInt14 | 2 / Qint.1 / ブール型 | 2...7 / [空] |
| ビット... / 説明 / データタイプ | | | | | 3 ...15 / [時間測定値] / UInt13 | 8 ... 31 / [キャリアロード] / UInt 24 |

84 トラブルシューティング

トラブルシューティングの表は、センサが機能しなくなった場合に、どのような対策を講じるべきかを示しています。

| LED 表示灯/故障パターン | 原因 | 対策 |
|-------------------------------|---|-------------------------------------|
| 緑色の LED が点滅 | IO リンク通信 | なし |
| スイッチング出力がに従った動作を示さない。 表 16 | 1. IO リンク通信 2. 設定の変更 3. 短絡 | 1. なし 2. 設定の調整 3. 電氣的接続を点検する |
| 黄色の LED が点滅 | 検出距離の設定中、対象物または極めてコントラストの強い対象物の上に光軸スポットの半分しか位置していない | 以下に準拠した検出距離の設定: 項目「WTS16 の検出距離の設定」。 |

| LED 表示灯/故障パターン | 原因 | 対策 |
|--------------------------|--|---|
| 黄色い LED が点灯、光軸に対象物がない | 検出距離が長すぎる距離に合わせて設定されています | 検出範囲を縮小します。 |
| 対象物は光軸にある、黄色い LED は点灯しない | センサと対象物の間隔が長すぎる、または検出範囲の設定が短すぎる | 検出範囲を拡大します。 |
| SOPASair にセンサが表示されない | <ol style="list-style-type: none"> 1. 他のハンドヘルド機器と接続されている。 2. ハンドヘルドがセンサの投光領域外にある。 3. センサの Bluetooth LE が無効になっている。 4. ハンドヘルドの Bluetooth LE が無効になっている。 5. MAC アドレスフィルタが有効で、ハンドヘルドが承認されていない。 | <ol style="list-style-type: none"> 1. 接続がない、または既存の接続の無効化。 2. 取り付け状況の点検 (金属によるシールドなど)。 3. SiLink2 Master または IO-Link 経由による Bluetooth LE の有効化 4. Bluetooth LE の有効化 5. MAC アドレスフィルタがない、またはその変更。 |
| センサへの接続を確立できない | <ol style="list-style-type: none"> 1. アンドロイドまたは iOS バージョンが要件を満たしていない。 2. SOPASair バージョンに必要なドライバが含まれていない。 | <ol style="list-style-type: none"> 1. オペレーティングシステムを点検してください。 2. SOPASair をアンインストールし、最新のアプリバージョンをインストールしてください。 |

85 分解および廃棄

センサは必ず該当国の規制にしたがって処分してください。廃棄処理の際には、できるだけ構成材料をリサイクルするよう努めてください (特に貴金属類)。



注意事項

バッテリー、電気および電子デバイスの廃棄

- ・ 国際的指令に従い、バッテリー、アキュムレータ、および電気または電子デバイスは、一般廃棄物として廃棄することはできません。
- ・ 法律により、所有者は、本デバイスの耐用年数の終了時に本デバイスをそれぞれの公的な回収場所まで返却することが義務付けられています。



■ 製品、梱包または本文書に記載されているこの記号は、製品がこれらの規制の対象であることを示します。

86 メンテナンス

SICK センサはメンテナンスフリーです。

定期的に以下を行うことをお勧めしています：

- ・ レンズ境界面の清掃
- ・ ネジ締結と差込み締結の点検

機器を改造することは禁止されています。

記載内容につきましては予告なしに変更する場合がございますのであらかじめご了承ください。指定された製品特性および技術データは保証書ではありません。

87 認可

87.1 Bluetooth® approvals

| Country | Comments |
|---------------|--|
| Canada | IC: 21147-W16 |
| USA | FCC ID: 2AHDR-W16 |
| Europe + EFTA | <p>EU countries Belgium (BE), Bulgaria (BG), Denmark (DK), Germany (DE), Estonia (EE), Finland (FI), France (FR), Greece (GR), Ireland (IE), Italy (IT), Latvia (LV), Lithuania (LT), Luxembourg (LU), Malta (MT), Netherlands (NL), Austria (AT), Poland (PL), Portugal (PT), Romania (RO), Sweden (SE), Slovakia (SK), Slovenia (SI), Spain (ES), Czech Republic (CZ), Hungary (HU), United Kingdom (GB), Republic of Cyprus (CY).</p> <p>EFTA countries Iceland, Liechtenstein, Norway, Switzerland</p> |

This device complies with Part 15 of the FCC Rules and with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Changes or modifications made to this equipment not expressly approved by SICK AG may void the FCC authorization to operate this equipment.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

88 技術仕様 (抜粋)

88.1 技術仕様 (抜粋)

| | WTL16 Bluetooth® | WTS16 Bluetooth® |
|-----------------------|--|--|
| 最大検出範囲 | 10 mm ... 500 mm ¹ | 10 mm ... 750 mm ¹ |
| 光点のスポット径/距離 | 30 mm x 3 mm (200 mm) | Ø 8 mm (300 mm) |
| 供給電圧 U _v | DC 10 ... 30 V | DC 10 ... 30 V |
| 消費電流 | ≤ 30 mA ² < 50 mA ³ | ≤ 30 mA ² < 50 mA ³ |
| 出力電流 I _{max} | ≤ 100 mA | ≤ 100 mA |
| 最大応答時間 | ≤ 500 µs ⁴ | ≤ 1,4 ms ⁴ |
| スイッチング周波数 | 1000 Hz ⁵ | 350 Hz ⁵ |
| 保護等級 | IP66, IP67 | IP66, IP67 |
| 保護クラス | III | III |
| 回路保護 | A, B, C, D ⁶ | A, B, C, D ⁶ |
| 周辺温度 (作動中) | -40 °C ... +60 °C | -40 °C ... +60 °C |

1 反射率 90 % の対象物 (DIN 5033 に準拠した白色)

2 16VDC...30VDC、負荷なし

3 10VDC...16VDC、負荷なし

4 切替モードでの抵抗負荷における信号遷移時間。COM2 モードでは値が異なる場合があります。

5 切替モードで明暗比率 1:1 の場合 IO-Link モードでは値が異なる場合があります。

6 A = U_v 電源電圧逆接保護

B = 入出力 逆接保護

C = 干渉パルス抑制

D = 出力の過電流保護および短絡保護

88.2 Bluetooth の技術仕様®

| 特徴 | 値 |
|---------------------|---|
| Bluetooth®通信範囲 | 距離 100 m |
| 無線タイプ | BLE |
| 無線クラス | 2 |
| Bluetooth®モジュールメーカー | BROADCOM Cypress Semiconductor Corporation 198 Champion Court San Jose CA 95134-1709 |
| 無線周波数帯域幅 | 2402~2480 MHz |
| 出力電力 | 2 dBm |
| Declaration ID | D033906 |
| Qualified Design ID | 89630 |
| Specification Name | 4.1 |
| 会員企業 | SICK AG |

WTL16 - WTS16 Bluetooth®

SICK
Sensor Intelligence.



de
en
es
fr
it
ja
pt
ru
zh

Описание продукта

WTL16, WTS16 - Bluetooth®

Изготовитель

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Правовые примечания

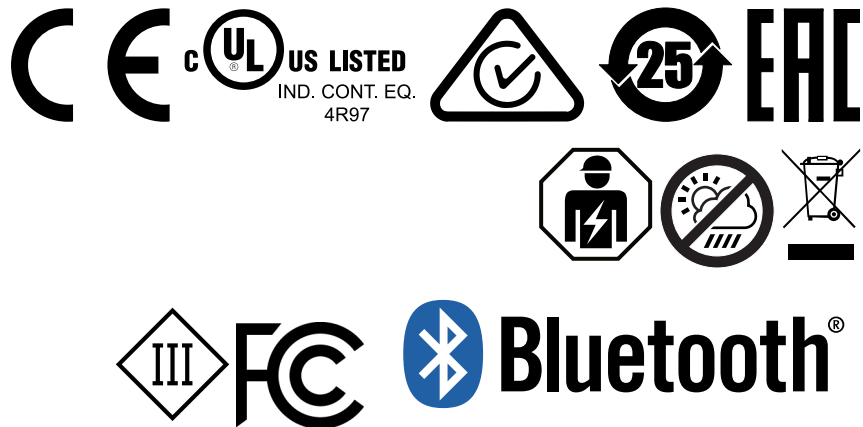
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Оригинальный документ

Настоящий документ является оригинальным документом SICK AG.






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89 Безопасность

89.1 Общие указания по технике безопасности

- Перед вводом в эксплуатацию прочитайте инструкции по эксплуатации.
-  Подключение, монтаж и настройку могут выполнять только квалифицированные специалисты.
-  Не является компонентом безопасности в соответствии с Директивой ЕС по работе с машинным оборудованием.
-  При вводе в эксплуатацию защищайте устройство от влаги и загрязнений.
- Настоящие инструкции по эксплуатации содержат информацию, необходимую в течение срока эксплуатации датчика.

89.2 Указания по допуску к эксплуатации UL

The device must be supplied by a Class 2 source of supply.

UL Environmental Rating: Enclosure type 1

90 Применение по назначению

WTL16 Bluetooth®, WTS16 Bluetooth® является оптоэлектронным отражательным световым датчиком (в дальнейшем «сенсор») и предназначен для оптической бесконтактной регистрации предметов, животных и людей. В случае использования устройства для иных целей, а также в случае внесения в изделие изменений, любые претензии к компании SICK AG на предоставление гарантии исключаются.

WTS16 идеально подходит для обнаружения плоских, блестящих, высококонтрастных и неровных объектов.

91 Элементы управления и индикаторы

Фотозлектрический датчик диффузионного типа с подавлением заднего фона.

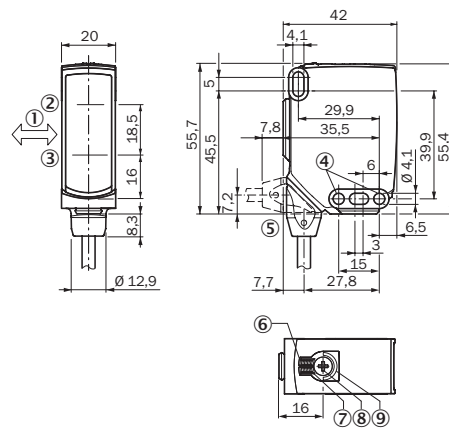


Рисунок 113: Масштабный чертёж 1, кабель WTL16

- ① Предпочтительное направление распознаваемого объекта
- ② Середина оптической оси передатчика
- ③ Середина оптической оси приемника
- ④ Крепежное отверстие, \varnothing 4,1 мм
- ⑤ Соединение
- ⑥ Светодиодный индикатор, зелёный: напряжение питания включено
- ⑦ СД-индикатор жёлтый: состояние приёма света
- ⑧ Поворотно-нажимной элемент: настройка расстояния срабатывания
- ⑨ BluePilot, синий: индикатор расстояния срабатывания

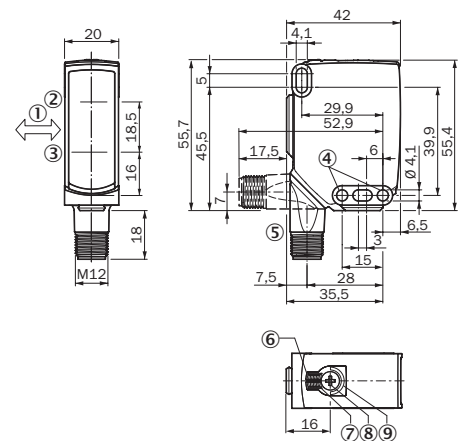


Рисунок 114: Масштабный чертёж 2, штекер WTL16

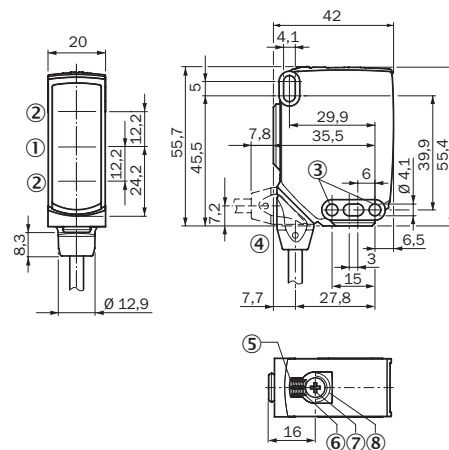


Рисунок 115: Масштабный чертёж 3, кабель WTS16

- ① Середина оптической оси передатчика
- ② Середина оптической оси приёмника
- ③ Крепежное отверстие, \varnothing 4,1 мм
- ④ Соединение

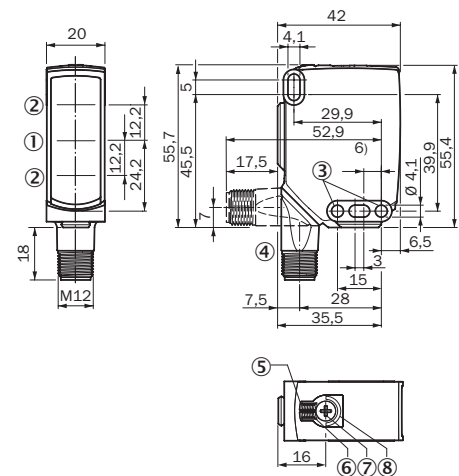


Рисунок 116: Масштабный чертёж 1, штекер WTS16

- ⑤ Светодиодный индикатор, зелёный: напряжение питания включено
- ⑥ СД-индикатор жёлтый: состояние приёма света
- ⑦ Поворотно-нажимной элемент: настройка расстояния срабатывания
- ⑧ BluePilot, синий: индикатор расстояния срабатывания

92 Монтаж

Установите датчик на подходящем крепёжном уголке (см. программу принадлежностей от SICK).

Выдерживайте максимально допустимый момент затяжки датчика в $< 1,3$ Нм.

Учитывайте предпочтительное направление объекта относительно датчика, см. [рисунок 113](#), [рисунок 114](#) (действительно только для WTL16).

93 Электрическое подключение

Подключение датчиков должно производиться при отключенном напряжении питания ($U_V = 0$ В). В зависимости от типа подключения следует принять во внимание следующую информацию:

- Штекерное соединение: соблюдать расположение выводов.
- Кабель: цвет жилы

Подавать напряжение питания и включать источник напряжения только после завершения подключения всех электрических соединений ($U_V > 0$ В).

Пояснения к схеме подключений ([таблица 17](#), [таблица 18](#)).

MF = (конфигурация контакта 2) внешний вход, обучение, коммутационный сигнал

Q_{L1}/C = переключающий выход, коммуникация IO-Link

пост. ток: 10 ... 30 В пост. тока

Таблица 17: пост. ток


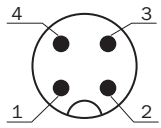

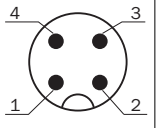
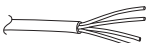
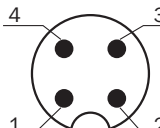
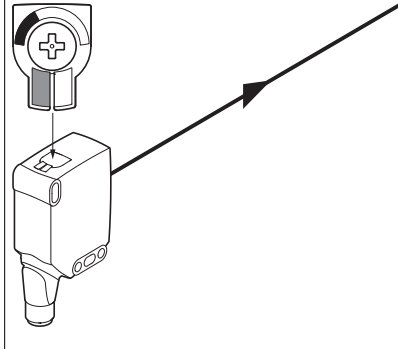
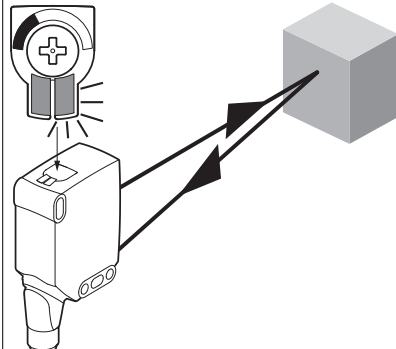
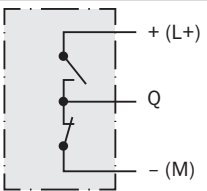
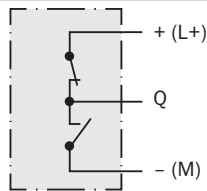
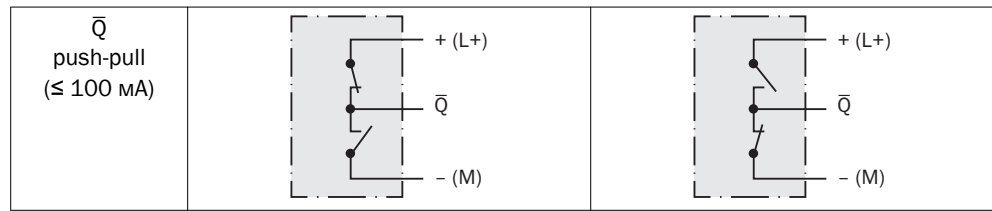
| | | | | | |
|---|---|--|--|--|---|
| WTL16 WTS16 | -24161xxxA00 -34161xxxA00 | -1x161xxxA0 0 | -24162xxxA0 0 -34162xxxA0 0 | -1x162xxxA0 0 | -2416xxxxA01- A99 -3416xxxxA01- A99 |
| 1 | + (L+) | | | | |
| 2 | MF | | | | |
| 3 | - (M) | | | | |
| 4 | Q _{L1} /C | | | | |
| По умолчанию: MF | \bar{Q} | \bar{Q} | Q | Q | www.sick.com 8020347 |
| По умолчанию: Q _{L1} /C | Q | Q | \bar{Q} | \bar{Q} | www.sick.com 8020347 |
|  |  | 1 = brn (коричневый) 2 = wht (белый) 3 = blu (синий) 4 = blk (черный)  0,14 мм ² AWG26 |  | 1 = brn (коричневый) 2 = wht (белый) 3 = blu (синий) 4 = blk (черный)  0,14 мм ² AWG26 |  |

Таблица 18: Push / Pull

| | | |
|------------------------------|--|---|
| |  |  |
| Q push-pull (≤ 100 mA) |  |  |



94 Ввод в эксплуатацию

Bluetooth® включён при первичном вводе в эксплуатацию. SOPASair Вы найдёте в Google PlayStore (Android) и в App Store (iOS).
 Системные требования: Android версии 6.0, последняя версия iOS.

Выравнивание

WTL16 Bluetooth®, WTS16 Bluetooth®: направить датчик на объект. Выберите такую позицию, чтобы красный луч передатчика попадал в центр объекта. Оптическое отверстие (фронтальное стекло) на датчике должно быть полностью свободным [рисунок 117].



УКАЗАНИЕ

WTS16: Если обнаружение объектов осуществляется сверху, мы рекомендуем установку датчика под наклоном для предотвращения полного отражения посредством зеркальной поверхности, см. рисунок 123-рисунок 126.

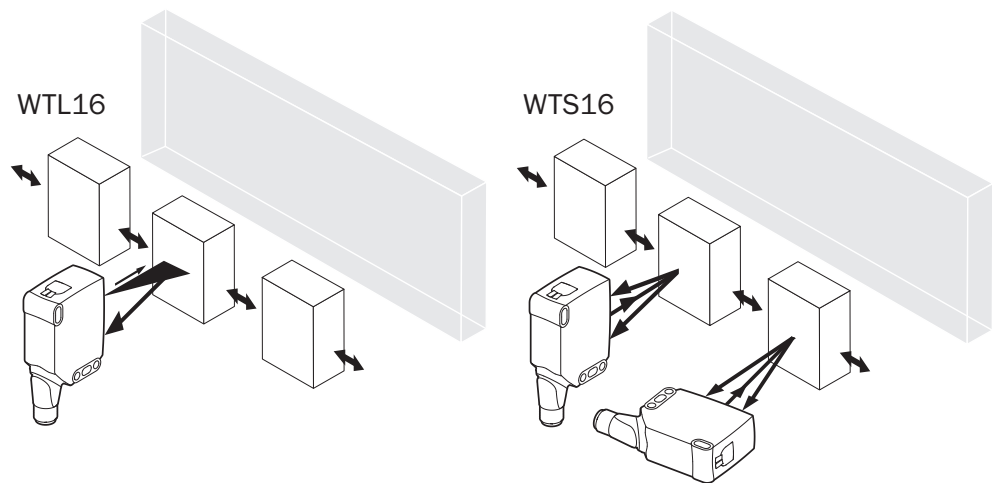


Рисунок 117: Выравнивание

Расстояние срабатывания

Проверить условия применения: скорректировать расстояние срабатывания и дистанцию до объекта / фона, а также яркость объекта с помощью соответствующей диаграммы [см. рисунок 118 и рисунок 119] (x = расстояние срабатывания, y = минимальные расстояния между установленным расстоянием срабатывания и фоном (белый 90 %)). Коэффициент диффузного отражения: 6 % = чёрный ①, 18 % = серый ②, 90 % = белый ③ (относительно стандартного белого по DIN 5033). Мы рекомендуем выполнять настройку с объектом, имеющим низкий коэффициент диффузного отражения.

Минимальную дистанцию ($= y$) для подавления заднего фона можно определить по диаграмме [рисунок 118 ①] следующим образом:

Пример: $x = 200$ мм, $y = 15$ мм. То есть, фон (белый, 90%) затемняется при расстоянии > 15 мм от датчика.

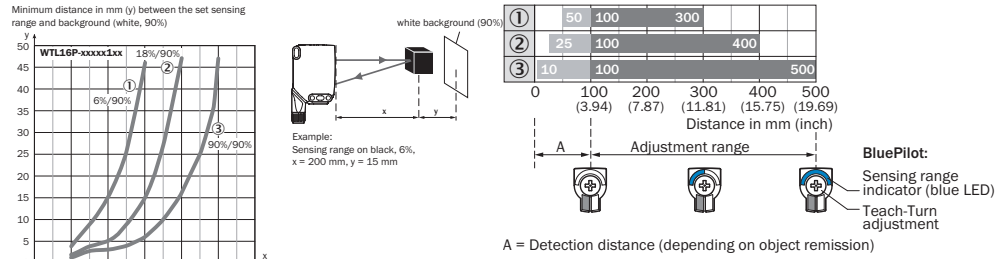


Рисунок 118: Характеристика 1, WTL16 Bluetooth®-xxxxx1xx, красный свет

- ① Расстояние срабатывания на черном, коэф. диффузного отражения 6 %
- ② Расстояние срабатывания на сером, коэф. диффузного отражения 18 %
- ③ Расстояние срабатывания на белом, коэф. диффузного отражения 90 %

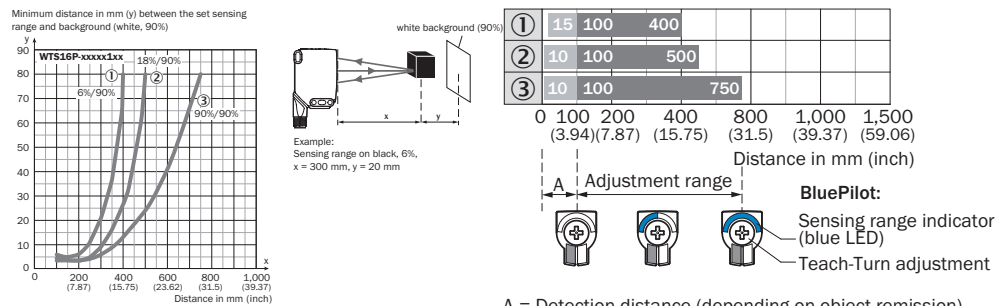


Рисунок 119: Характеристика 1, : WTS16 Bluetooth®-xxxxx1xx, красный свет

- ① Расстояние срабатывания на черном, коэф. диффузного отражения 6 %
- ② Расстояние срабатывания на сером, коэф. диффузного отражения 18 %
- ③ Расстояние срабатывания на белом, коэф. диффузного отражения 90 %

Настройка расстояния срабатывания WTL16, WTS16

WTL16x-xxxxxx2xAxx, WTS16x-xxxxxx2xAxx с поворотно-нажимным элементом:

Регулировка расстояния срабатывания производится нажатием кнопки Teach-in (примерно 1-3 сек). В зависимости от требований плавная регулировка может производиться с помощью потенциометра (без нажатия кнопки обучения).

Поворот вправо: увеличение расстояния срабатывания.

Поворот влево: уменьшение расстояния срабатывания.

Расстояние срабатывания может быть установлено также исключительно с помощью потенциометра. Мы рекомендуем устанавливать расстояние срабатывания в объекте, например, смотри Рисунок 8. После настройки расстояния срабатывания, удалить объект с траектории луча, при этом затемняется фон и изменяется переключающий выход (см. таблица 17 и таблица 18).

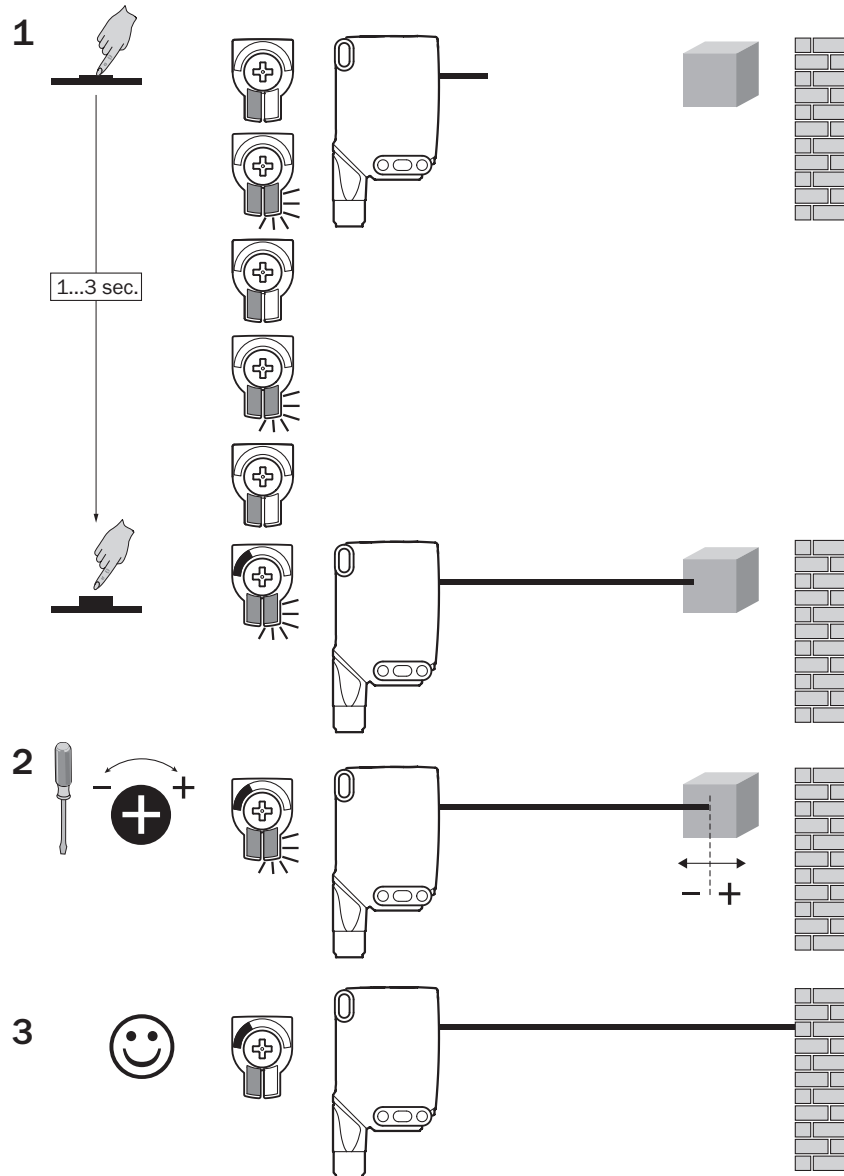


Рисунок 120: WTL16x-xxxxxx2xAxx, WTS16x-xxxxxx2xAxx красный свет, настройка расстояния срабатывания с помощью поворотного-нажимного элемента

WTL16x-xxxxxx1xAxx, WTS16x-xxxxxx1xAxx с потенциометром:

С помощью потенциометра регулируется расстояние срабатывания.

Поворот вправо: увеличение расстояния срабатывания.

Поворот влево: уменьшение расстояния срабатывания.

Мы рекомендуем устанавливать расстояние срабатывания в объекте, например, смотри Рисунок 9. После настройки расстояния срабатывания, удалить объект с траектории луча, при этом затемняется фон и изменяется переключающий выход (см. таблица 17 и таблица 18).

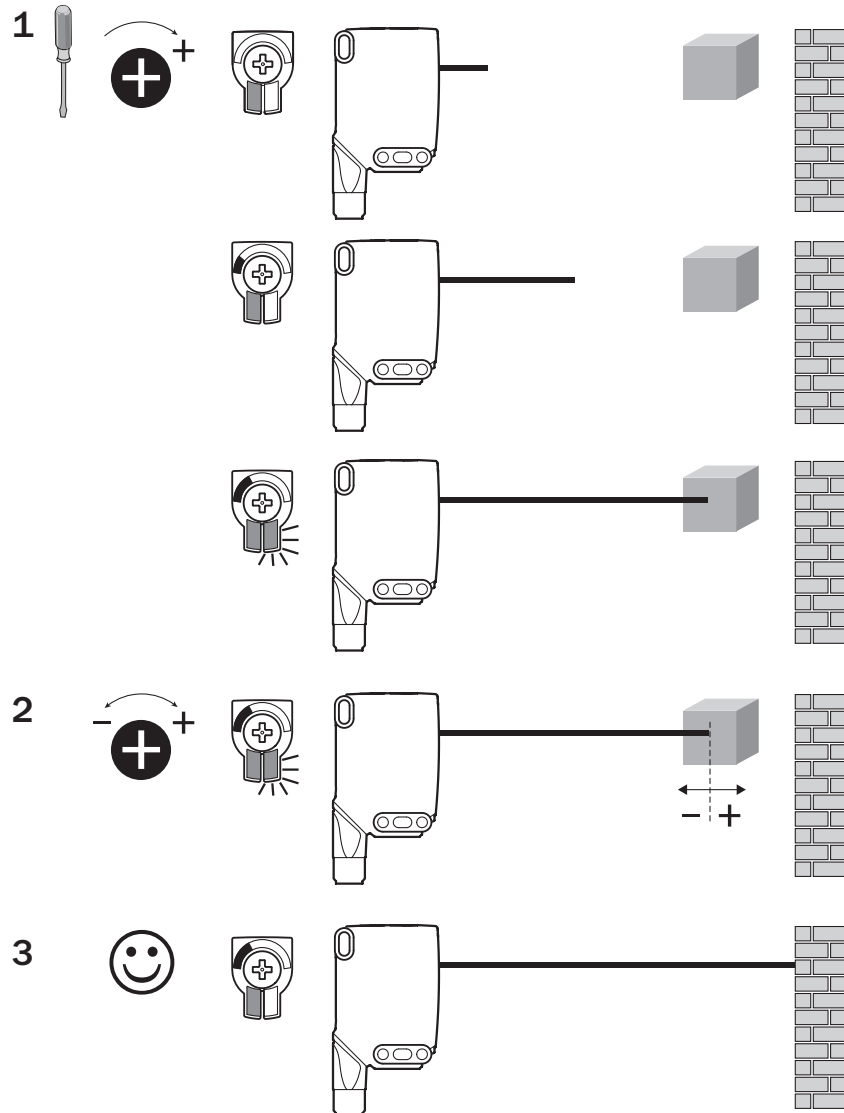


Рисунок 121: WTL16x-xxxxxx1xAxx, WTS16x-xxxxxx1xAxx красный свет, настройка расстояния срабатывания с помощью потенциометра

WTL16x-xxxxxx3xAxx, WTS16x-xxxxxx3xAxx с кнопкой обучения:

Регулировка расстояния срабатывания производится нажатием кнопки Teach-in (примерно 1-3 сек). Мы рекомендуем устанавливать расстояние срабатывания в объекте, например, смотри Рисунок 9. После настройки расстояния срабатывания, удалить объект с траектории луча, при этом затемняется фон и изменяется переключающий выход (см. таблица 17 и таблица 18).

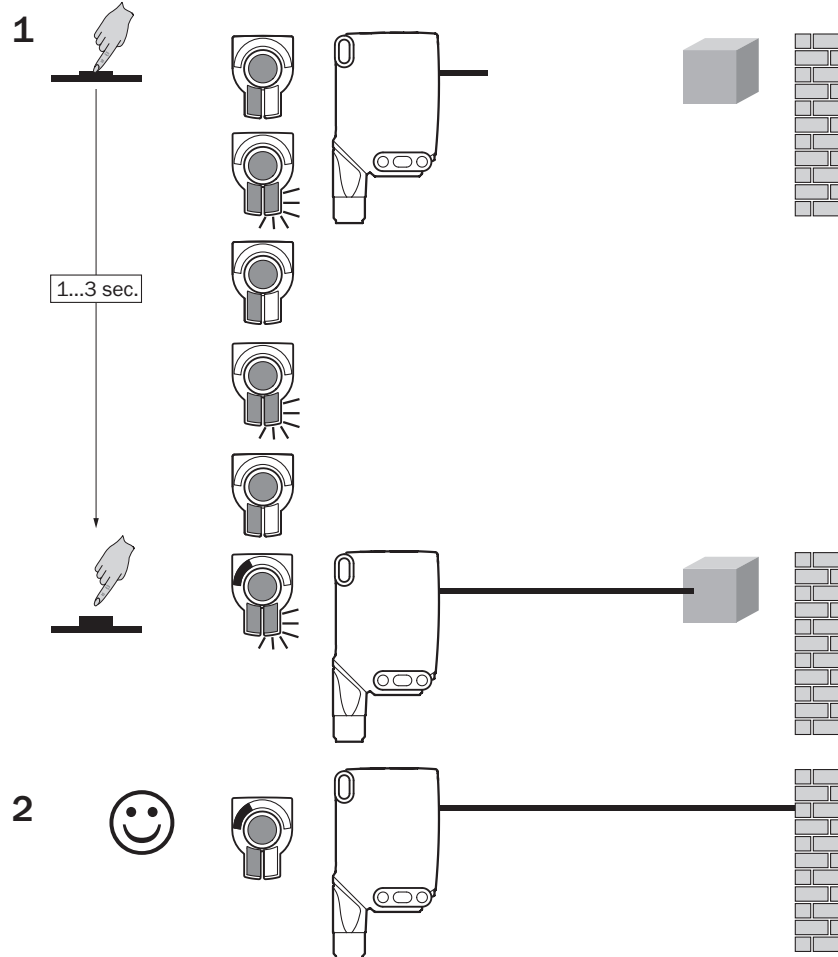


Рисунок 122: WTL16x-xxxxxx3xAxx, WTS16x-xxxxxx3xAx красный свет, настройка расстояния срабатывания с помощью кнопки обучения

Настройка расстояния срабатывания WTS16

Обнаружение плоских, блестящих, высококонтрастных и неровных объектов. Если обнаружение объектов осуществляется сверху, мы рекомендуем установку датчика под наклоном для предотвращения полного отражения посредством зеркальной поверхности

- 1 Для настройки расстояния срабатывания световое пятно должно быть направлено на однородную и ровную поверхность, например, белый лист.

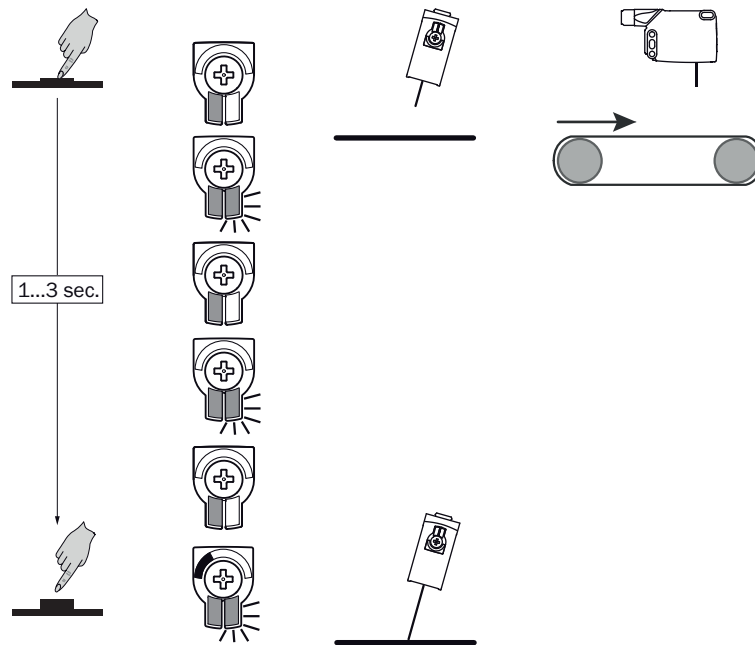


Рисунок 123: Настройка расстояния срабатывания WTS16

- Минимально повернуть потенциометр влево, пока жёлтый светодиодный индикатор не погаснет. Теперь расстояние срабатывания минимально выше транспортёрной ленты.

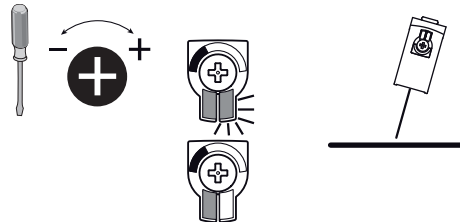


Рисунок 124: Настройка расстояния срабатывания WTS16

- Запуск транспортёрной ленты должен быть выполнен без объектов. Если во время выполнения теста жёлтый светодиод не горит, значит расстояния срабатывания настроено правильно.

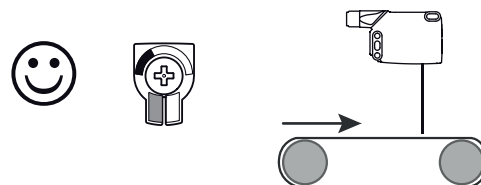


Рисунок 125: Настройка расстояния срабатывания WTS16

- Если объект располагается на траектории луча и жёлтый индикатор горит, расстояния срабатывания настроено правильно.

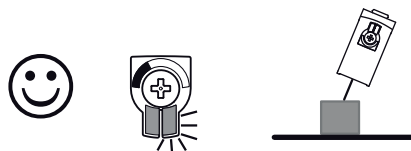


Рисунок 126: Настройка расстояния срабатывания WTS16

Process data structure (Version 1.1)

| | A00 | A70 | A71 | A72 | A73 | A75 |
|--------------------------------|---|--|---|---|---|---|
| IO-Link | V1.1 | | | | | |
| Данные процесса | 2 байта | | | | | 4 байта |
| | 0 байт: бит 15... 8 1 байт: бит 7... 0 | | | | | 0 байт : бит 31... 24 1 байт: бит 13... 16 2 байта: бит 15... 8 3 байта: бит 7... 0 |
| 0 бит / тип данных | Q _{L1} / Boolean | | | | | |
| 1 бит / тип данных | Q _{L2} / Boolean | | | Qint.1 / Boolean | Q _{L2} / Boolean | Qint.1 / Boolean |
| Бит... / описание / тип данных | 2... 15 / [пусто] | 2... 15 / [значение измерения времени] / UInt 14 | 2... 15 / [значение счётчика] / UInt 14 | 2... 15 / [измерение длины / скорости] / SInt14 | 2 / Qint.1 / Boolean | 2... 7 / [пусто] |
| Бит... / описание / тип данных | | | | | 3... 15 / [значение измерения времени] / UInt13 | 8 ... 31 / [пропускная способность] / UInt 24 |

95 Устранение неисправностей

В таблице Устранение неисправностей показано, какие меры необходимо предпринять, если датчики не работают.

| Светодиодный индикатор / картина неисправности | Причина | Меры по устранению |
|---|---|--|
| зеленый светодиод мигает | Коммуникация IO-Link | Нет |
| Коммутационные выходы ведут себя не согласно таблица 18 | 1. Коммуникация IO-Link 2. Изменение конфигурации 3. Короткое замыкание | 1. Нет 2. Адаптация конфигурации 3. Проверка электрических подключений |
| желтый светодиод мигает | Во время настройки расстояния срабатывания световое пятно расположено | Настройка расстояния срабатывания согласно Раздел «Настройка расстояния срабатывания для WTS16». |

| Светодиодный индикатор / картина неисправности | Причина | Меры по устранению |
|---|---|---|
| | на объекте, или на очень высококонтрастном объекте, только на половину | |
| желтый светодиод горит, объект на пути луча отсутствует | Расстояние срабатывания настроено на слишком большое расстояние | Уменьшить расстояние срабатывания |
| Объект на пути луча, желтый светодиод не горит | Слишком большое расстояние между сенсором и объектом или установлена слишком малая дистанция переключения | Увеличить расстояние срабатывания |
| В SOPASair датчик не отображается | <ol style="list-style-type: none"> 1. Подключён к другому ручному сканеру. 2. Ручной сканер находится за пределами радиуса действия передатчика. 3. Bluetooth LE в датчике деактивирован. 4. Bluetooth LE в ручном сканере деактивирован. 5. Фильтр MAC-адресов активирован, ручной сканер не авторизован. | <ol style="list-style-type: none"> 1. отсутствует или отключена существующее соединение. 2. Проверка установочного положения (например, экранирование металлом). 3. Активация Bluetooth LE через SiLink2 Master или IO-Link 4. Активация Bluetooth LE 5. Отсутствие или изменение фильтра MAC-адресов. |
| Связь с датчиком не может быть установлена | <ol style="list-style-type: none"> 1. Версия Android или iOS не отвечает требованиям. 2. Версия SOPASair не содержит требуемый драйвер. | <ol style="list-style-type: none"> 1. Проверьте операционную систему. 2. Удаление SOPASair, установите последнюю версию приложения. |

96 Демонтаж и утилизация

Датчик должен быть утилизирован в соответствии с действующим законодательством конкретной страны. В процессе утилизации следует прилагать усилия для переработки составляющих материалов (особенно драгоценных металлов).



УКАЗАНИЕ

Утилизация батарей, электрических и электронных устройств

- В соответствии с международными директивами батареи, аккумуляторы и электрические или электронные устройства не должны выбрасываться в общий мусор.
- По закону владелец обязан вернуть эти устройства в конце срока их службы в соответствующие пункты общественного сбора.



Этот символ на изделии, его упаковке или в данном документе указывает на то, что изделие подпадает под действие настоящих правил.

97 Техобслуживание

Датчики SICK не нуждаются в техобслуживании.

Рекомендуется регулярно

- очищать оптические ограничивающие поверхности
- проверять прочность резьбовых и штекерных соединений

Запрещается вносить изменения в устройства.

Право на ошибки и внесение изменений сохранено. Указанные свойства изделия и технические характеристики не являются гарантией.

98 Допуски

98.1 Bluetooth® approvals

| Country | Comments |
|---------------|--|
| Canada | IC: 21147-W16 |
| USA | FCC ID: 2AHDR-W16 |
| Europe + EFTA | <p>EU countries Belgium (BE), Bulgaria (BG), Denmark (DK), Germany (DE), Estonia (EE), Finland (FI), France (FR), Greece (GR), Ireland (IE), Italy (IT), Latvia (LV), Lithuania (LT), Luxembourg (LU), Malta (MT), Netherlands (NL), Austria (AT), Poland (PL), Portugal (PT), Romania (RO), Sweden (SE), Slovakia (SK), Slovenia (SI), Spain (ES), Czech Republic (CZ), Hungary (HU), United Kingdom (GB), Republic of Cyprus (CY).</p> <p>EFTA countries Iceland, Liechtenstein, Norway, Switzerland</p> |

This device complies with Part 15 of the FCC Rules and with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes: (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Changes or modifications made to this equipment not expressly approved by SICK AG may void the FCC authorization to operate this equipment.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

99 Технические характеристики

99.1 Технические характеристики

| | WTL16 Bluetooth® | WTS16 Bluetooth® |
|------------------------------------|--|--|
| Расстояние срабатывания, макс. | 10 mm ... 500 mm ¹ | 10 mm ... 750 mm ¹ |
| Диаметр светового пятна/расстояние | 30 mm x 3 mm (200 mm) | Ø 8 mm (300 mm) |
| Напряжение питания U _V | DC 10 ... 30 V | DC 10 ... 30 V |
| Потребляемый ток | ≤ 30 mA ² < 50 mA ³ | ≤ 30 mA ² < 50 mA ³ |
| Выходной ток I _{макс.} | ≤ 100 mA | ≤ 100 mA |
| Время отклика макс. | ≤ 500 µs ⁴ | ≤ 1,4 ms ⁴ |
| Частота переключения | 1000 Hz ⁵ | 350 Hz ⁵ |
| Класс защиты | IP66, IP67 | IP66, IP67 |
| Класс защиты | III | III |
| Схемы защиты | A, B, C, D ⁶ | A, B, C, D ⁶ |
| Диапазон рабочих температур | -40 °C ... +60 °C | -40 °C ... +60 °C |

1 Сканируемый объект – ремиссия 90 % (относительно стандартного белого по DIN 5033)

2 16 ... 30 В пост. тока, без нагрузки

3 10 ... 16 В пост. тока, без нагрузки

4 Продолжительность сигнала при омической нагрузке в режиме переключения. Возможны другие значения в режиме COM2.

5 При соотношении «светло/темно» 1:1, в режиме переключения. Возможны другие значения в режиме IO-Link.

6 A = U_V-подключения с защитой от перепутывания полюсов

B = входы и выходы с защитой от перепутывания полюсов

C = подавление импульсных помех

D = выходы защищены от перенапряжения и короткого замыкания

99.2 Технические характеристики Bluetooth®

| Отличительные свойства | Значения |
|------------------------------------|---|
| Bluetooth® Расстояние срабатывания | 100 м по траектории |
| Вид радио | BLE |
| Класс радио | 2 |
| Производитель Bluetooth® модуль | BROADCOM Cypress Semiconductor Corporation 198 Champion Court San Jose CA 95134-1709 |
| Диапазон радиовещания | 2402 - 2480 МГц |
| Выходная мощность | 2 дБм |
| Declaration ID | D033906 |
| Qualified Design ID | 89630 |
| Specification Name | 4.1 |
| Компания-член | SICK AG |

| | | |
|---|--|---|
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