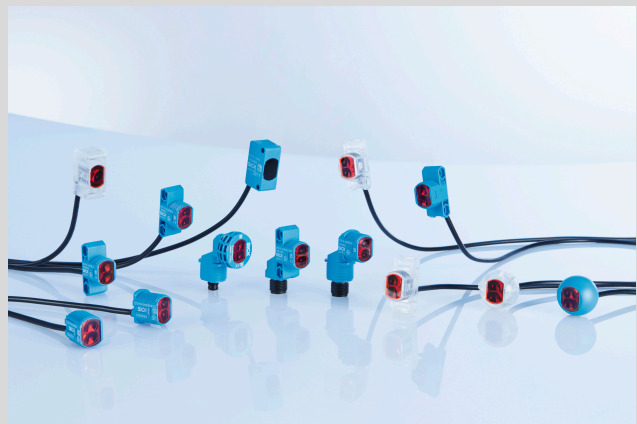


# ZTB18

Cylindrical photoelectric sensors

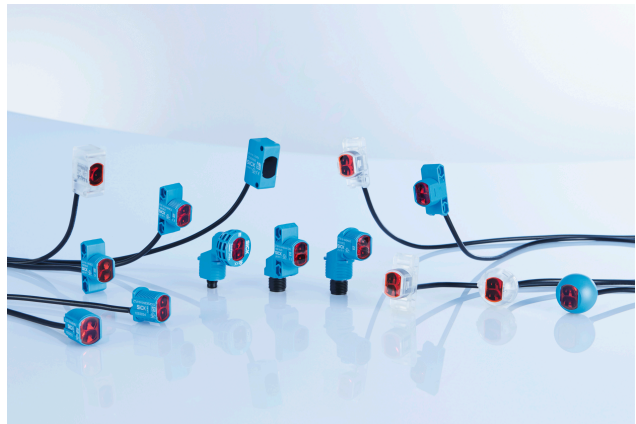
**SICK**  
Sensor Intelligence.



# ZTB18

Cylindrical photoelectric sensors

**SICK**  
Sensor Intelligence.



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### Described product

Z18 SimpleSense  
ZTB18

### Manufacturer

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

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### Original document




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## 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.

## 2 Notes on UL approval

Blue housing types (Zxx18-1xxxxx ... Zxx18-9xxxxx):

- Type 1 enclosure

Clear housing types (Zxx18-Axxxxx ... Zxx18-Jxxxxx):

- Type 1 enclosure
- Class 2 power supply required

## 3 Intended use

The ZTB18 is an opto-electronic photoelectric background suppression 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.

## 4 Operating and status indicators

Photoelectric proximity sensor with background suppression.

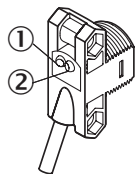


Figure 1: Status indicators

- ① LED indicator (green): power
- ② LED indicator (orange): light received

## 5 Mounting

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

Note the preferred orientation of the sensor relative to the direction of object motion, refer to [figure 2](#).

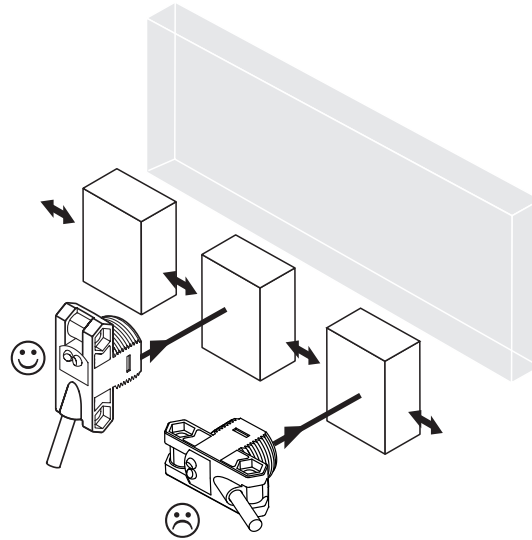


Figure 2: Sensor orientation relative to object direction

## 6 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:

- Plug connection: 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.

Explanation of connection terminology used in Tables 1-3:

BN = Brown  
 WH = White  
 BU = Blue  
 BK = Black  
 n. c. = no connection  
 Q1 = switching output 1  
 Q2 = switching output 2  
 L+ = supply voltage ( $U_v$ )  
 M = common  
 L.ON = light operate  
 D.ON = dark operate

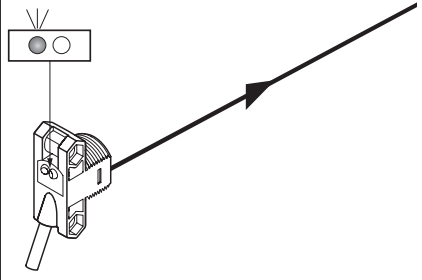
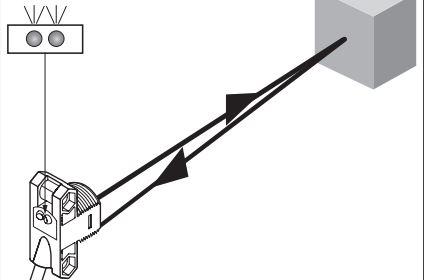
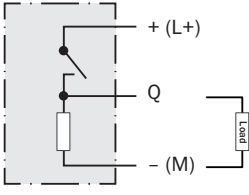
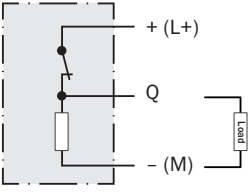
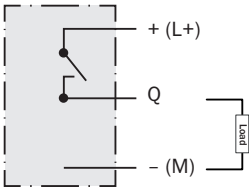
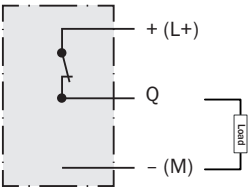
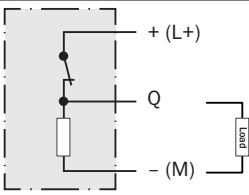
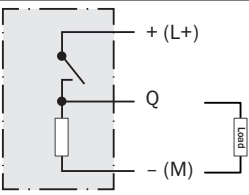
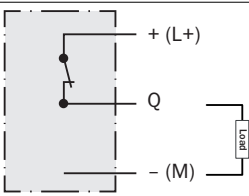
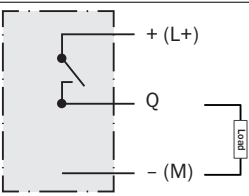
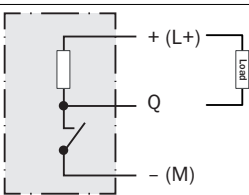
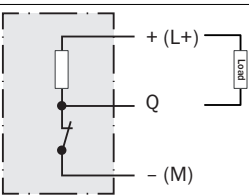
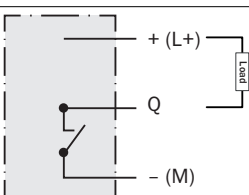
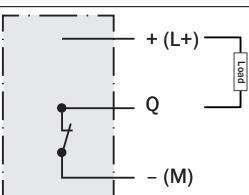


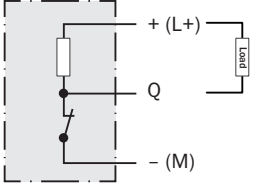
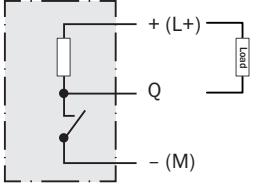
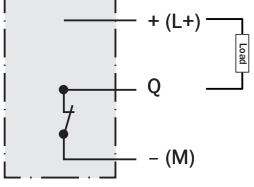
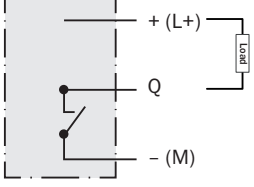
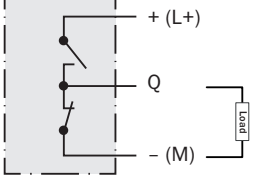
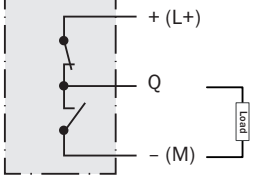
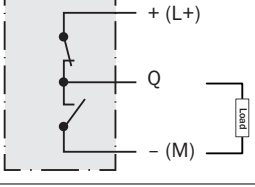
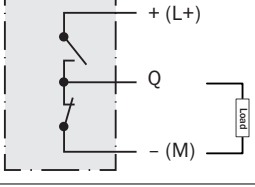
### NOTE

The sensor outputs may come equipped with a factory set ON delay and/or OFF delay. This is indicated by a Txx suffix at the end of the Model Number (Zxx18-xxxxxTxx).

Connection and Output detail:

Table 1: Output Operation

<p>ZTx18                  -x_xxxx = Q1 output                  -xx_xxx = Q2 output</p>		
<p>-xPxxxx                  -x8xxxx                  -xxPxxx                  L.ON, PNP: Q (≤ 100 mA)</p>		
<p>-xHxxxx                  -x4xxxx                  -xxHxxx                  L.ON, PNP Open Collector Q (≤ 100 mA)</p>		
<p>-xFxxxx                  -x2xxxx                  -xxFxxx                  D.ON, PNP: Q (≤ 100 mA)</p>		
<p>-xKxxxx                  -x6xxxx                  -xxKxxx                  D.ON, PNP Open Collector Q (≤ 100 mA)</p>		
<p>-xNxxxx                  -x7xxxx                  -xxNxxx                  L.ON, NPN: Q (≤ 100 mA)</p>		
<p>-xGxxxx                  -x3xxxx                  -xxGxxx                  L.ON, NPN Open Collector Q (≤ 100 mA)</p>		

<p>-xExxxx          -x1xxxx          -xxExxx          D.ON, NPN: Q (<math>\leq 100</math> mA)</p>		
<p>-xJxxxx          -x5xxxx          -xxJxxx          D.ON, NPN Open Collector Q (<math>\leq 100</math> mA)</p>		
<p>-xAxxxx          -XRxxxx          -xxAxxx          L.ON, Push-pull (<math>\leq 100</math> mA)<sup>1</sup></p>		
<p>-xBxxxx          -xSxxxx          -xxBxxx          D.ON, Push-pull (<math>\leq 100</math> mA)<sup>1</sup></p>		

<sup>1</sup> PNP output diagram pictured; NPN also possible by connecting the Load to + (L+) and Q



Table 2: Alarm/Health Operation

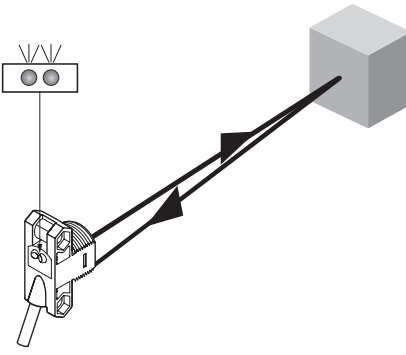
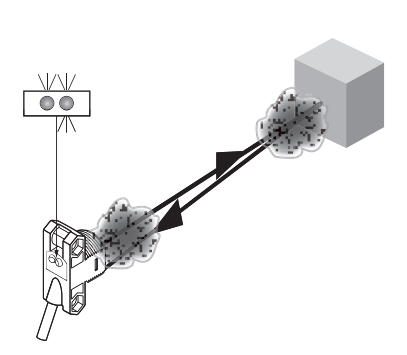
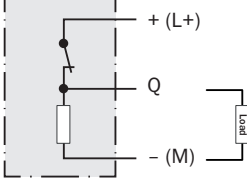
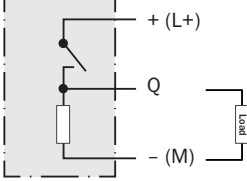
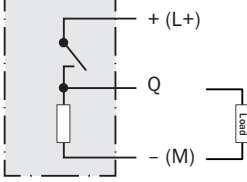
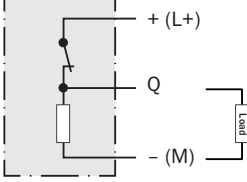
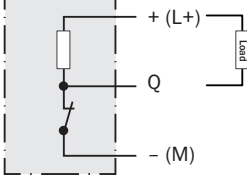
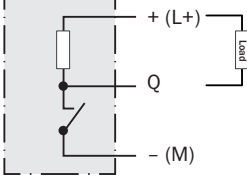
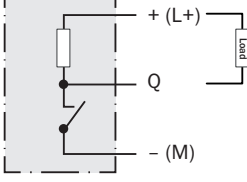
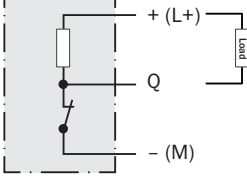
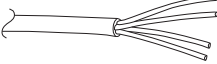
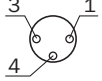
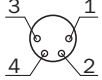
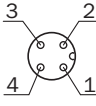
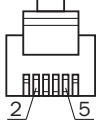
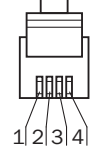
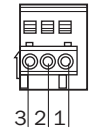
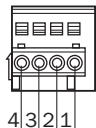
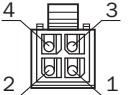
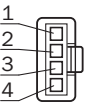
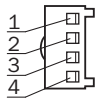
<p>ZTx18 -xx_XXX = Q2 output Health/Alarm is always the Q2 output</p>		
<p>-xxRxxx Health, PNP (<math>\leq 100</math> mA)</p>		
<p>-xxTxxx Alarm, PNP (<math>\leq 100</math> mA)</p>		
<p>-xxQxxx Health, NPN (<math>\leq 100</math> mA)</p>		
<p>-xxSxxx Alarm, NPN (<math>\leq 100</math> mA)</p>		

Table 3: Connection Pinout

Zxx18	Diagram	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6
-xxx1xx	 <p>0.14 mm<sup>2</sup> AWG26</p>	+ (L+) BN	Q2 WH	- (M) BU	Q1 BK	-	-
-xxx2xx M8, 3p		+ (L+) (BN)	-	- (M) (BU)	Q1 (BK)	-	-
-xxx3xx / -xxx5xx M8, 4p		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-

-xxx4xx M12, 4p		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-
-xxxAxx RJ12		n. c.	+ (L+) (BN)	Q1 (BK)	Q2 (WH)	- (M) (BU)	n. c.
-xxxBxx RJ9		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-
-xxxCxx Wago 733-103		+ (L+) (BN)	Q1 (BK)	- (M) (BU)	-	-	-
-xxxDxx Wago 733-104		+ (L+) (BN)	Q1 (BK)	- (M) (BU)	Q2 (WH)	-	-
-xxxExx Molex 23025-0400 (2x2)		Q1 (BK)	Q2 (WH)	+ (L+) (BN)	- (M) (BU)	-	-
-xxxFxx Tyco 1445022-4 (1x4)		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-
-xxxGxx Wuerth 61900411621 (1x4)		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-

1) Front view of connectors

## 7 Commissioning

### 1 Alignment

ZTB18-xxxx2: align sensor on the target object. Select the position so that the red emitted light beam hits the center of the target object. Ensure that the optical opening (front screen) of the sensor is completely clear [see figure 3].

ZTB18-xxxx1: align sensor on target object. Select the position so that the infrared light (not visible) hits the center of the target object. The correct alignment can only be detected via the LED indicators on the sensor. See figure 3 and table 1. Ensure that the optical opening (front screen) of the sensor is completely clear.

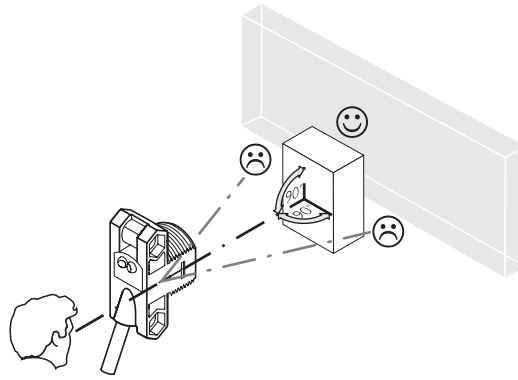


Figure 3: Alignment

## 2 Sensing range

Check the application conditions: The ZTB18 is available in two fixed sensing range (on white, 90%) versions:

- 50mm (ZTB18-xxxxxD02)
- 100mm (ZTB18-xxxxxD04)

Adjust the mounting position so that the sensing range and background are within specification. Refer to [see figure 4, page 11](#).



### NOTE

Please note the minimum range of 5 mm.

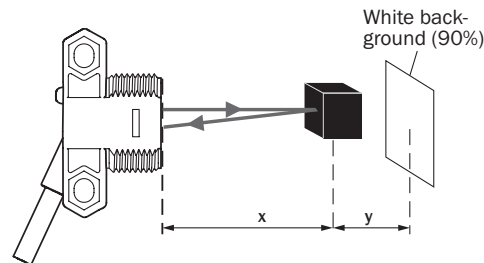


Figure 4: Sensing range on black

Sensing range on black, 6%:

- ZTB18-xxxxxD02:  $x = 47$  mm,  $y = 4$  mm
- ZTB18-xxxxxD04:  $x = 93$  mm,  $y = 8$  mm

Use [see table 1, page 7](#) to check the function. If the switching output fails to behave in accordance with [see table 1, page 7](#), check the application conditions.

## 3 Sensing range setting

Sensor not able to be set: The sensor has been adjusted to maximum sensing range by the factory and is ready for operation.

## 4 Operation with marginal light reception

The sensor will provide a pre-failure notification by flashing the orange LED indicator when operating with marginal light reception. This may be the result of incorrect alignment, contaminated optical surface(s), and/or insufficient light remission from the target. The sensor may be equipped with a Health or Alarm output, which provide a discrete signal when the sensor is operating in the marginal condition. Refer to [table 2](#) for additional detail on Health/Alarm output operation.

# 8 Troubleshooting

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

Table 4: Troubleshooting

LED indicator/fault pattern	Cause	Measures
Yellow LED does not light up even though the sender is aligned to the object and the object is within the set sensing range	No voltage or voltage below the limit values	Check the power supply, check all electrical connections (cables and plug connections)
	Voltage interruptions	Ensure there is a stable power supply without interruptions
	Sensor is faulty	If the power supply is OK, replace the sensor
Yellow LED flashes; if Alarm / Health is present then take note of the corresponding output signal	Sensor is still ready for operation, but the operating conditions are not ideal	Check the operating conditions: Fully align the beam of light (light spot) with the object / Clean the optical surfaces
Yellow LED lights up, no object in the path of the beam	Stray background remission	Check the background for highly reflective objects and try to block from the sensors field of view
Object is in the path of the beam, yellow LED does not light up	Object remission is too low	Reduce distance between sensor and object. Note that the object may not have enough remission for detection.

## 9 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 this 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.

## 10 Maintenance

SICK recommends the following regular maintenance:

- Clean the external optical 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.

## 11 Technical data

	ZTB18-xxxxxD02	ZTB18-xxxxxD04
Sensing range min.	5 mm	5 mm
Sensing range	50 mm	100 mm
Sensing range max.	50 mm <sup>1)</sup>	100 mm <sup>1)</sup>
Light spot diameter/distance	8 mm / 100 mm	8 mm / 100 mm
Supply voltage $V_S$	DC 10 ... 30 V <sup>2)</sup>	DC 10 ... 30 V <sup>2)</sup>
Output current $I_{max}$	$\leq 100$ mA	$\leq 100$ mA
Max. switching frequency	500 Hz <sup>3)</sup>	500 Hz <sup>3)</sup>
Max. response time	$\leq 1$ ms <sup>4)</sup>	$\leq 1$ ms <sup>4)</sup>
Enclosure rating	IP67	IP67
Protection class	III	III
Circuit protection	A, B, D <sup>6)</sup>	A, B, D <sup>6)</sup>
Ambient operating temperature	-40 °C ... +55 °C	-40 °C ... +55 °C

- 1) Object with 90 % remission (based on standard white DIN 5033)
- 2) Limit value; operation in short-circuit protection mains max. 8 A; residual ripple max. 5  $V_{SS}$
- 3) With light / dark ratio 1:1
- 4) Signal transit time with resistive load
- 6) A =  $U_V$ -connections reverse polarity protected  
 B = inputs and output reverse-polarity protected  
 D = outputs overcurrent and short-circuit protected

### 11.1 Dimensional drawings

Table 5: Dimensional drawings

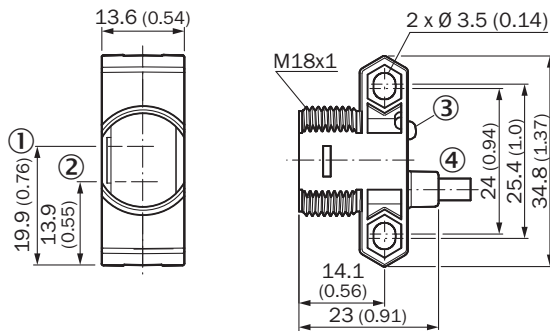


Figure 5: ZTx18-1xxxx / ZTx18-Axxxx

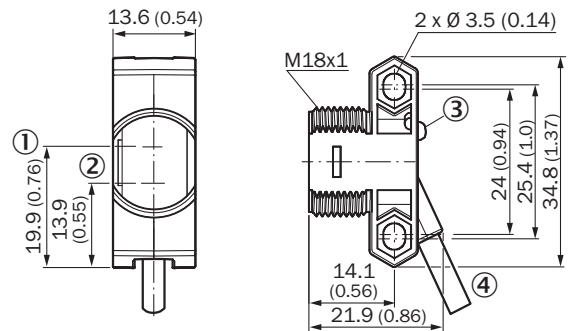


Figure 6: ZTx18-2xxxx / ZTx18-Bxxxx, cable

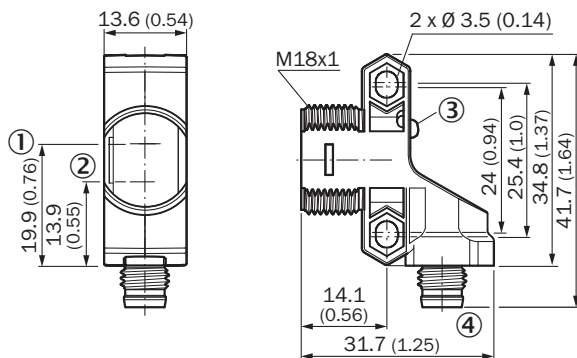


Figure 7: ZTx18-2xxxx / ZTx18-Bxxxx, M8 connector

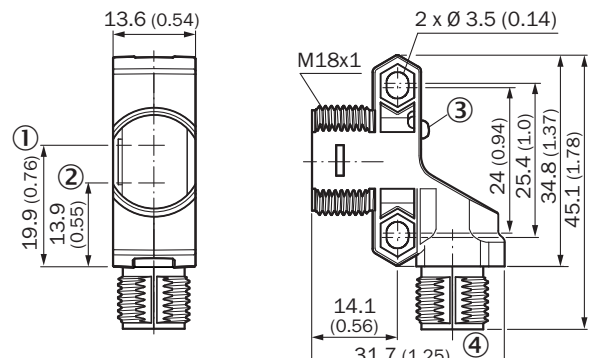


Figure 8: ZTx18-2xxxx / ZTx18-Bxxxx, M12 connector

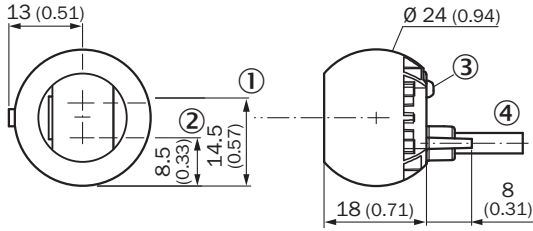


Figure 9: ZTx18-3xxxx / ZTx18-Cxxxx

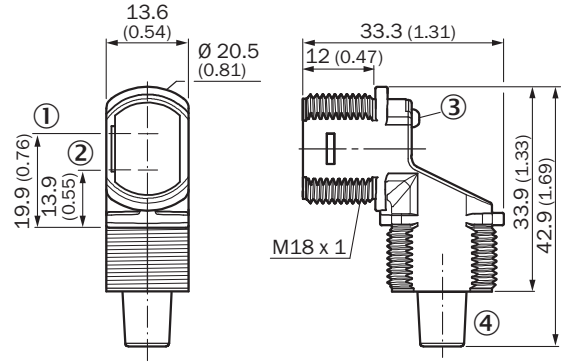


Figure 10: ZTx18-4xxxx / ZTx18-Dxxxx, cable

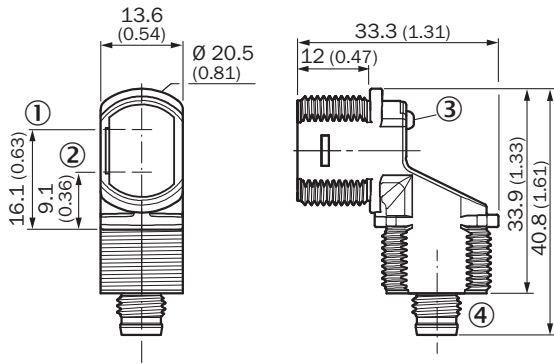


Figure 11: ZTx18-4xxxx / ZTx18-Dxxxx, M8 connector

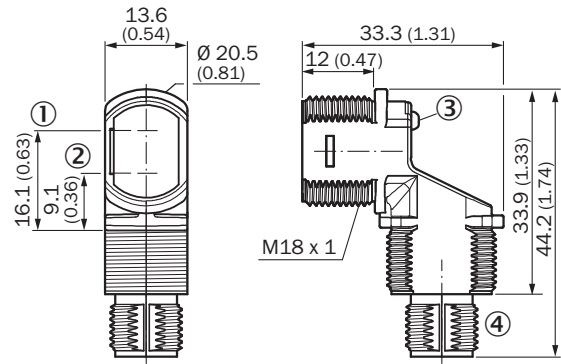


Figure 12: ZTx18-4xxxx / ZTx18-Dxxxx, M12 connector

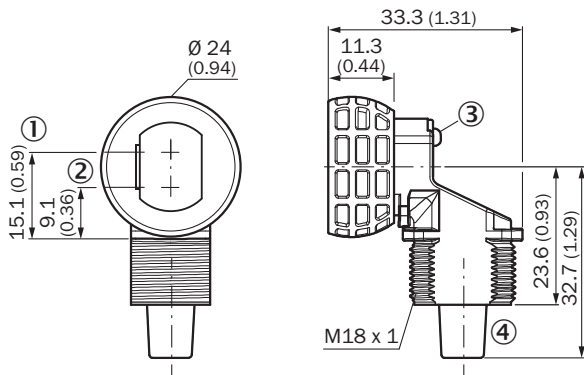


Figure 13: ZTx18-5xxxx / ZTx18-Exxxx, cable

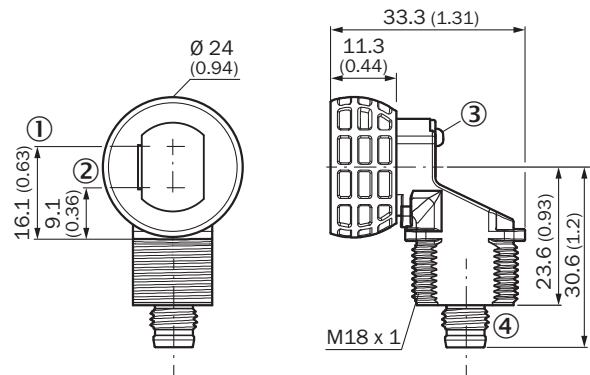


Figure 14: ZTx18-5xxxx / ZTx18-Exxxx, M8 connector

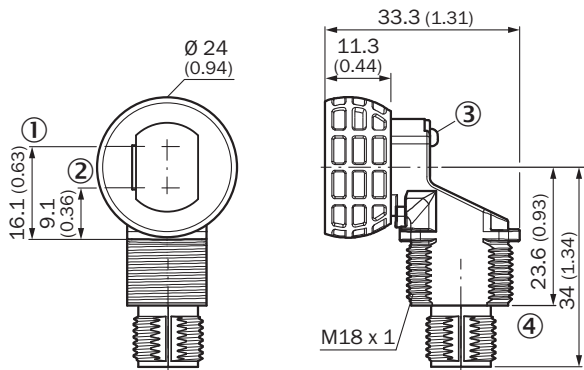


Figure 15: ZTx18-5xxxx / ZTx18-Exxxx, M12 connector

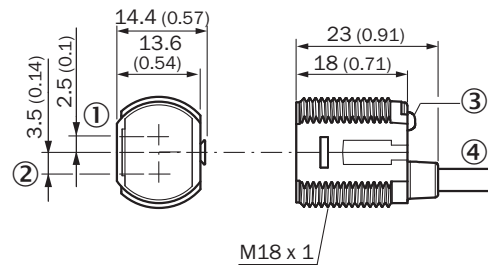


Figure 16: ZTx18-6xxxx / ZTx18-Fxxxx

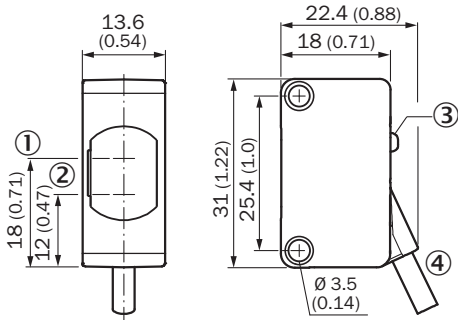


Figure 17: ZTx18-7xxxx / ZTx18-Gxxxx

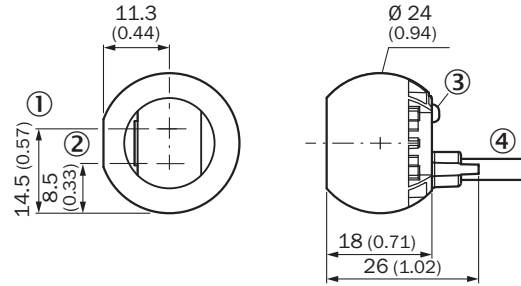


Figure 18: ZTx18-8xxxx / ZTx18-Hxxxx

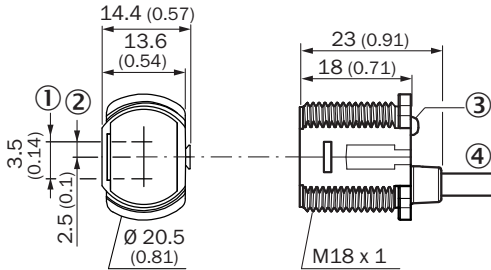


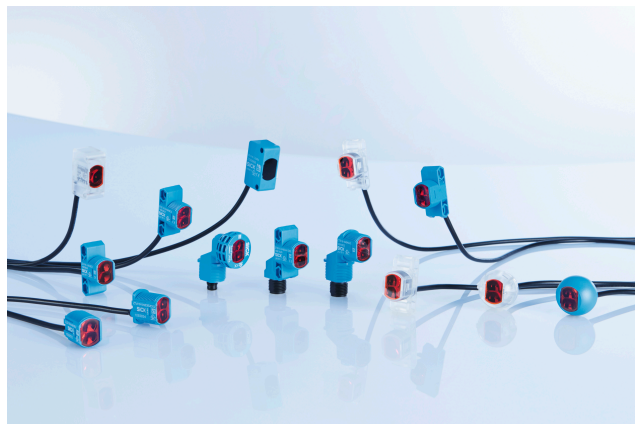
Figure 19: ZTx18-9xxxx / ZTx18-Jxxxx

- ① optical axis, sender
- ② optical axis, receiver
- ③ LED status indicators
- ④ connection / strain relief

# ZTB18

Rund-Lichttaster und Lichtschranken

**SICK**  
Sensor Intelligence.



de  
en  
es  
fr  
it  
ja  
pt  
ru  
zh



## Beschriebenes Produkt

Z18 SimpleSense

ZTB18

## Hersteller

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

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## 12 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.

## 13 Hinweise zur UL Zulassung

Blaue Gehäusetypen (Zxx18-1xxxxx ... Zxx18-9xxxxx):

- Type 1 enclosure

Transparente Gehäusetypen (Zxx18-Axxxxx ... Zxx18-Jxxxxx):

- Type 1 enclosure
- Class 2 power supply required

## 14 Bestimmungsgemäße Verwendung

Die ZTB18 ist ein optoelektronischer Reflexions-Lichttaster mit Hintergrundausbldung (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.

## 15 Betriebs- und Statusanzeigen

Lichtschranke mit Hintergrundausbldung.

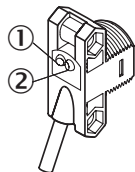


Abbildung 20: Anzeigeelemente

- ① LED-Anzeige (grün): Spannungsversorgung
- ② LED-Anzeige (orange): Licht empfangen

## 16 Montage

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

Bevorzugte Ausrichtung des Sensors relativ zur Bewegungsrichtung des Objekts beachten, siehe [Abbildung 21](#).

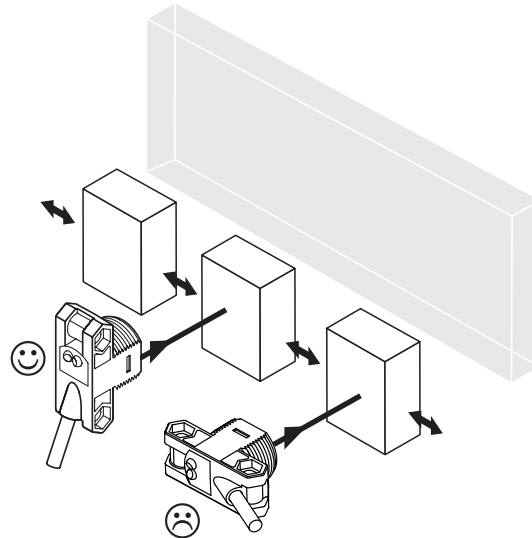


Abbildung 21: Ausrichtung des Sensors relativ zur Objekttrichtung

## 17 Elektrische Installation

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

- Steckeranschluss: Pinbelegung
- Leitung: Adernfarbe

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

Erläuterung der in Tabelle 1 bis 3 verwendeten Anschlussterminologie:

BN = braun  
 WH = weiß  
 BU = blau  
 BK = schwarz  
 n. c. = nicht angeschlossen  
 Q1 = Schaltausgang 1  
 Q2 = Schaltausgang 2  
 L+ = Versorgungsspannung ( $U_V$ )  
 M = Masse  
 L.ON = hellschaltend  
 D.ON = dunkelschaltend

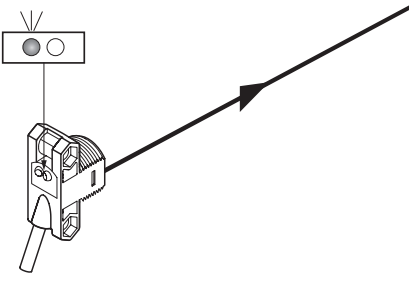
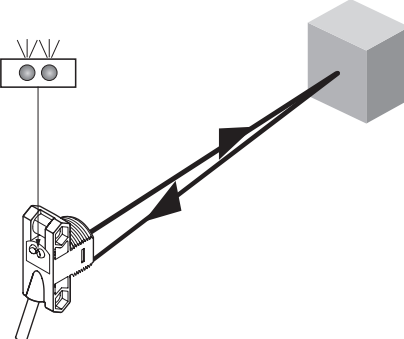
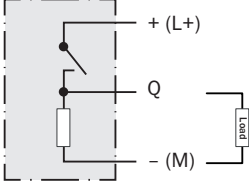
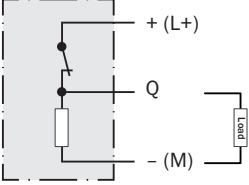
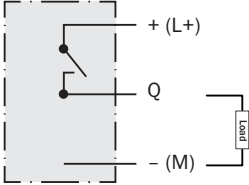
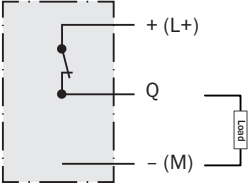
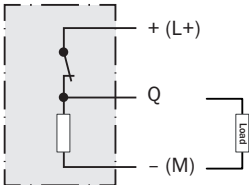
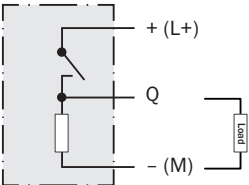
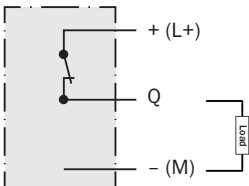
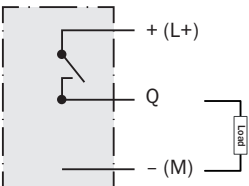
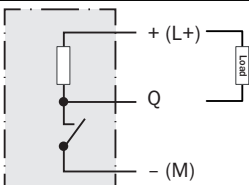
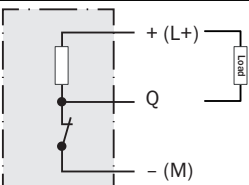
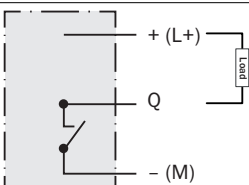
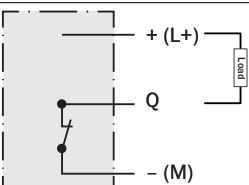


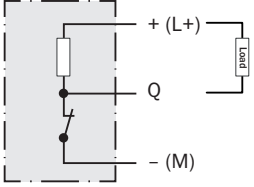
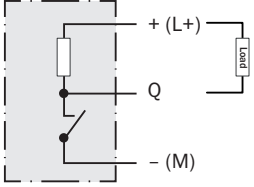
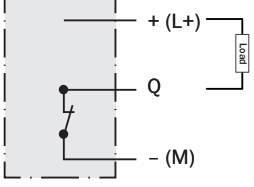
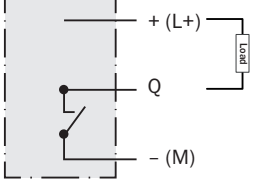
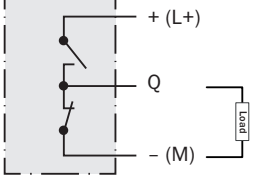
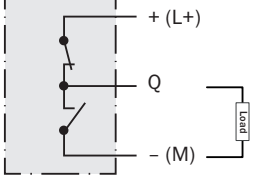
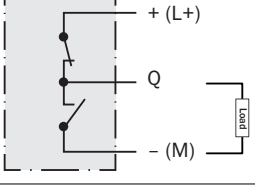
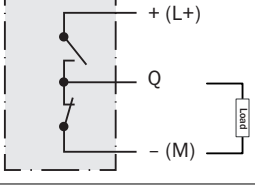
### HINWEIS

Die Sensorausgänge sind möglicherweise mit einer werkseitig eingestellten EIN- und/oder AUS-Verzögerung ausgestattet. Dies ist am Suffix Txx am Ende der Modellnummer erkennbar (Zxx18-xxxxxxTxx).

Anschluss- und Ausgangsdetails:

Tabelle 6: Ausgangsfunktion

<p>ZTx18                  -x_xxxx = Ausgang Q1                  -xx_xxx = Ausgang Q2</p>		
<p>-xPxxxx                  -x8xxxx                  -xxPxxx                  L.ON, PNP: Q (≤ 100 mA)</p>		
<p>-xHxxxx                  -x4xxxx                  -xxHxxx                  L.ON, PNP Open Collector Q (≤ 100 mA)</p>		
<p>-xFxxxx                  -x2xxxx                  -xxFxxx                  D.ON, PNP: Q (≤ 100 mA)</p>		
<p>-xKxxxx                  -x6xxxx                  -xxKxxx                  D.ON, PNP Open Collector Q (≤ 100 mA)</p>		
<p>-xNxxxx                  -x7xxxx                  -xxNxxx                  L.ON, NPN: Q (≤ 100 mA)</p>		
<p>-xGxxxx                  -x3xxxx                  -xxGxxx                  L.ON, NPN Open Collector Q (≤ 100 mA)</p>		

<p>-xExxxx          -x1xxxx          -xxExxx          D.ON, NPN: Q (≤ 100 mA)</p>		
<p>-xJxxxx          -x5xxxx          -xxJxxx          D.ON, NPN Open Collector Q (≤ 100 mA)</p>		
<p>-xAxxxx          -XRxxxx          -xxAxxx          L.ON, Push-pull (≤ 100 mA)<sup>1</sup></p>		
<p>-xBxxxx          -xSxxxx          -xxBxxx          D.ON, Push-pull (≤ 100 mA)<sup>1</sup></p>		

<sup>1</sup> PNP-Ausgangsschema dargestellt; NPN ebenfalls möglich durch Anschluss der Last an + (L+) und Q

Tabelle 7: Alarm/Health-Betrieb

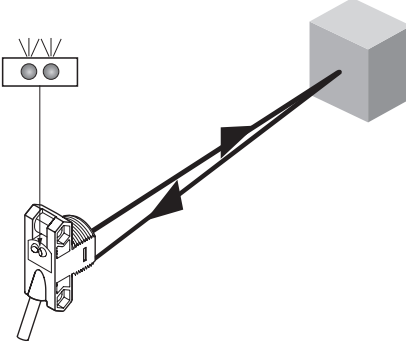
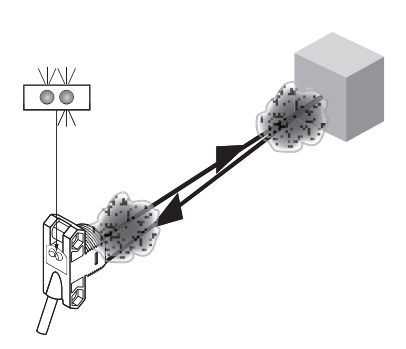
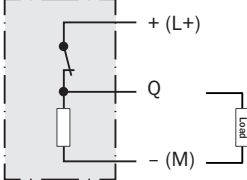
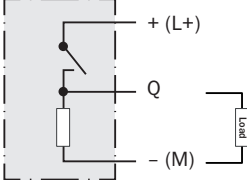
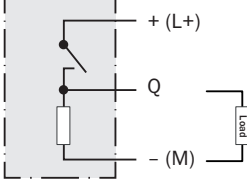
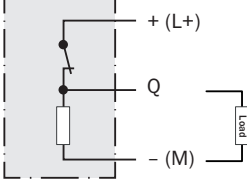
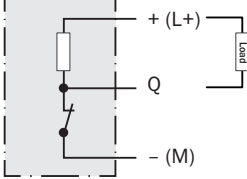
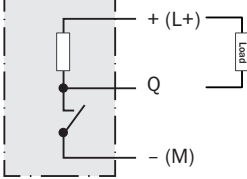
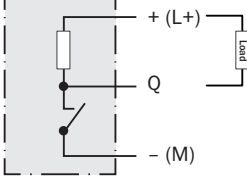
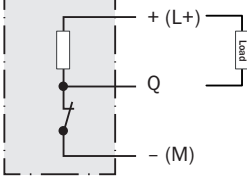
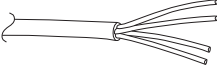
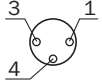
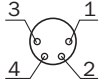
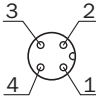
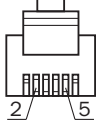
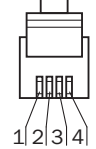
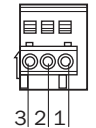
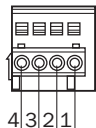
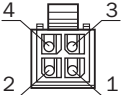
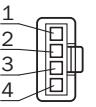
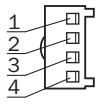
<p>ZTx18 -xx_xxx = Ausgang Q2 Health/Alarm ist stets der Ausgang Q2</p>		
<p>-xxRxxx Health, PNP (<math>\leq 100</math> mA)</p>		
<p>-xxTxxx Alarm, PNP (<math>\leq 100</math> mA)</p>		
<p>-xxQxxx Health, NPN (<math>\leq 100</math> mA)</p>		
<p>-xxSxxx Alarm, NPN (<math>\leq 100</math> mA)</p>		

Tabelle 8: Anschlussbelegung

Zxx18	Schema	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6
-xxx1xx	 0,14 mm <sup>2</sup> AWG26	+ (L+) BN	Q2 WH	- (M) BU	Q1 BK	-	-
-xxx2xx M8, 3p		+ (L+) (BN)	-	- (M) (BU)	Q1 (BK)	-	-
-xxx3xx/-xxx5xx M8, 4p		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-

-xxx4xx M12, 4p		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-
-xxxAxx RJ12		n. c.	+ (L+) (BN)	Q1 (BK)	Q2 (WH)	- (M) (BU)	n. c.
-xxxBxx RJ9		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-
-xxxCxx Wago 733-103		+ (L+) (BN)	Q1 (BK)	- (M) (BU)	-	-	-
-xxxDxx Wago 733-104		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-
-xxxExx Molex 23025-0400 (2x2)		Q1 (BK)	Q2 (WH)	+ (L+) (BN)	- (M) (BU)	-	-
-xxxFxx Tyco 1445022-4 (1x4)		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-
-xxxGxx Würth 61900411621 (1x4)		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-

1) Frontansicht der Steckverbinder

## 18 Inbetriebnahme

### 1 Ausrichtung

ZTB18-xxxx2: Sensor auf Objekt ausrichten. Positionierung so wählen, dass der rote Sensenlichtstrahl in der Mitte des Objekts auftrifft. Es ist darauf zu achten, dass die optische Öffnung (Frontscheibe) des Sensors vollständig frei ist [siehe [Abbildung 22](#)].

ZTB18-xxxx1: Sensor auf Objekt ausrichten. Positionierung so wählen, dass das Infrarotlicht (nicht sichtbar) in der Mitte des Objekts auftrifft. Die korrekte Ausrichtung kann nur über die Anzeige-LEDs erkannt werden. Siehe dazu [Abbildung 22](#) und [Tabelle 6](#). Es ist darauf zu achten, dass die optische Öffnung (Frontscheibe) des Sensors vollständig frei ist.



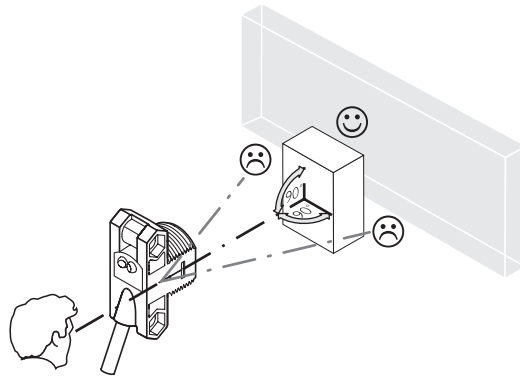


Abbildung 22: Ausrichtung

## 2 Schaltabstand

Die Einsatzbedingungen prüfen: Die ZTB18 ist in zwei Versionen mit festem Schaltabstand (auf Weiß, 90 %) erhältlich:

- 50 mm (ZTB18-xxxxxD02)
- 100 mm (ZTB18-xxxxxD04)

Die Montageposition so anpassen, dass der Schaltabstand und Hintergrund innerhalb der Spezifikationen liegen. Siehe [siehe Abbildung 23, Seite 25](#).



### HINWEIS

Den Mindestabstand von 5 mm beachten.

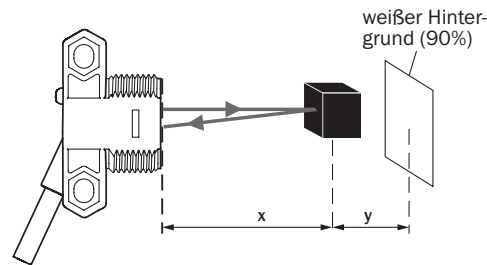


Abbildung 23: Schaltabstand auf Schwarz

Schaltabstand auf Schwarz, 6 %:

- ZTB18-xxxxxD02:  $x = 47$  mm,  $y = 4$  mm
- ZTB18-xxxxxD04:  $x = 93$  mm,  $y = 8$  mm

Mithilfe von [siehe Tabelle 6, Seite 21](#) die Funktion überprüfen. Wenn sich der Schaltausgang nicht entsprechend [siehe Tabelle 6, Seite 21](#) verhält, die Einsatzbedingungen prüfen.

## 3 Einstellung des Schaltabstands

Sensor kann nicht eingestellt werden: Der Sensor wurde werkseitig auf einen maximalen Schaltabstand eingestellt und ist betriebsbereit.

## 4 Betrieb mit grenzwertigem Lichtempfang

Bei Betrieb mit grenzwertigem Lichtempfang gibt der Sensor eine Vorausfallsmeldung durch Blinken der orangefarbenen LED-Anzeige aus. Dies kann die Folge einer falschen Ausrichtung, verschmutzter Optikflächen und/oder einer unzureichenden Lichtremission vom Objekt sein. Der Sensor verfügt möglicherweise über einen Health- oder Alarmausgang, der ein diskretes Signal ausgibt, wenn der Sensor unter dieser Grenzbedingung betrieben wird. Siehe [Tabelle 7](#) für nähere Einzelheiten zur Funktion des Health-/Alarmausgangs.

## 19 Störungsbehebung

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

Tabelle 9: Störungsbehebung

Anzeige-LED / Fehlerbild	Ursache	Maßnahme
Gelbe LED leuchtet nicht, obwohl der Sender am Objekt ausgerichtet ist und das Objekt sich innerhalb des eingestellten Schaltabstands befindet	keine Spannung oder Spannung unterhalb der Grenzwerte	Spannungsversorgung prüfen, den gesamten elektrischen Anschluss prüfen (Leitungen und Steckerverbindungen)
	Spannungsunterbrechungen	Sicherstellen einer stabilen Spannungsversorgung ohne Unterbrechungen
	Sensor ist defekt	Wenn Spannungsversorgung in Ordnung ist, dann Sensor austauschen
Gelbe LED blinkt; wenn Alarm/Health vorhanden ist, das entsprechende Ausgangssignal beachten	Sensor ist dennoch betriebsbereit, doch die Betriebsbedingungen sind nicht ideal	Betriebsbedingungen prüfen: Den Lichtstrahl (Lichtfleck) vollständig am Objekt ausrichten/Optikflächen reinigen.
gelbe LED leuchtet, kein Objekt im Strahlengang	Streuhintergrundremission	Den Hintergrund auf stark reflektierende Objekte prüfen und diese im Sichtfeld des Sensors blockieren
Objekt ist im Strahlengang, gelbe LED leuchtet nicht	Objektremission ist zu niedrig	Abstand zwischen Sensor und Objekt verringern. Möglicherweise ist die Remission des Objekts nicht ausreichend für eine Detektion.

## 20 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.

## 21 Wartung

SICK empfiehlt folgende regelmäßige Wartungsmaßnahmen:

- 
- Außenflächen der Optik reinigen
  - Schraubanschlüsse und Steckverbindungen überprüfen

Es dürfen keine Veränderungen an Geräten vorgenommen werden.

Irrtümer und Änderungen vorbehalten. Die spezifizierten Produktmerkmale und technischen Daten stellen keine schriftliche Garantie dar.

## 22 Technische Daten

	ZTB18-xxxxxD02	ZTB18-xxxxxD04
Schaltabstand min.	5 mm	5 mm
Schaltabstand	50 mm	100 mm
Schaltabstand max.	50 mm <sup>1)</sup>	100 mm <sup>1)</sup>
Lichtfleckdurchmesser/Entfernung	8 mm / 100 mm	8 mm / 100 mm
Versorgungsspannung $U_V$	DC 10 ... 30 V <sup>2)</sup>	DC 10 ... 30 V <sup>2)</sup>
Ausgangsstrom $I_{max}$	≤ 100 mA	≤ 100 mA
Schaltfolge max.	500 Hz <sup>3)</sup>	500 Hz <sup>3)</sup>
Ansprechzeit max.	≤ 1 ms <sup>4)</sup>	≤ 1 ms <sup>4)</sup>
Schutzart	IP67	IP67
Schutzklasse	III	III
Schutzschaltungen	A, B, D <sup>6)</sup>	A, B, D <sup>6)</sup>
Betriebsumgebungstemperatur	-40 °C ... +55 °C	-40 °C ... +55 °C

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

2) Grenzwerte; Betrieb im kurzschlussgeschützten Netz max. 8 A; Restwelligkeit max. 5 V<sub>ss</sub>

3) Mit Hell- / Dunkelverhältnis 1:1

4) Signallaufzeit bei ohmscher Last

6) A =  $U_V$ -Anschlüsse verpolsicher

B = Ein- und Ausgänge verpolsicher

D = Ausgänge überstrom- und kurzschlussfest

### 22.1 Maßzeichnungen

Tabelle 10: Maßzeichnungen

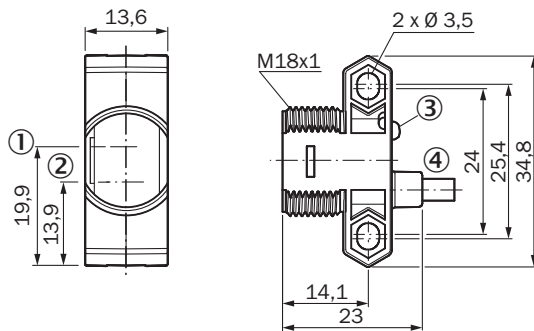


Abbildung 24: ZTx18-1xxxxx/ZTx18-Axxxxx

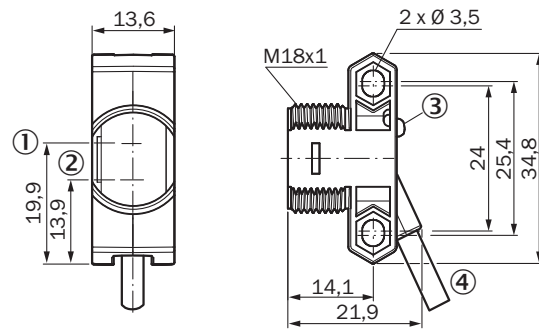


Abbildung 25: ZTx18-2xxxxx/ZTx18-Bxxxxx, Leitung

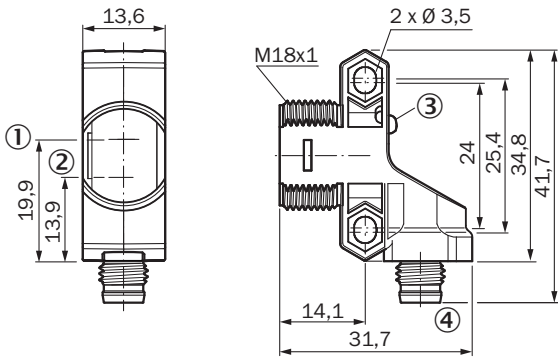


Abbildung 26: ZTx18-2xxxxx/ZTx18-Bxxxxx, M8-Steckverbinder

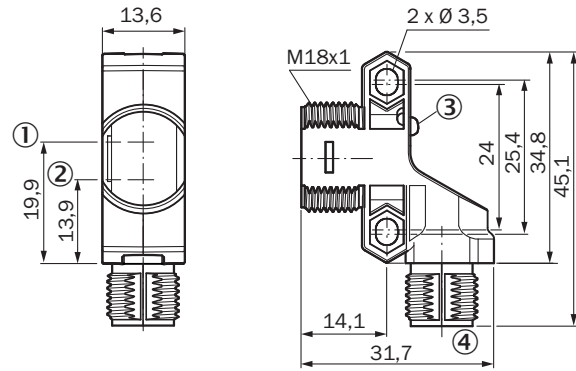


Abbildung 27: ZTx18-2xxxxx/ZTx18-Bxxxxx, M12-Steckverbinder

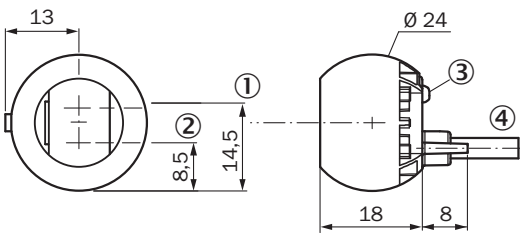


Abbildung 28: ZTx18-3xxxxx/ZTx18-Cxxxxx

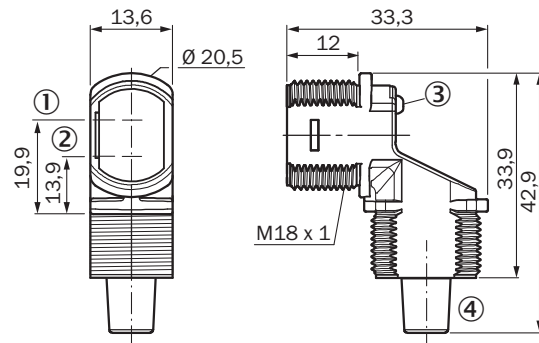


Abbildung 29: ZTx18-4xxxxx/ZTx18-Dxxxxx, Leitung

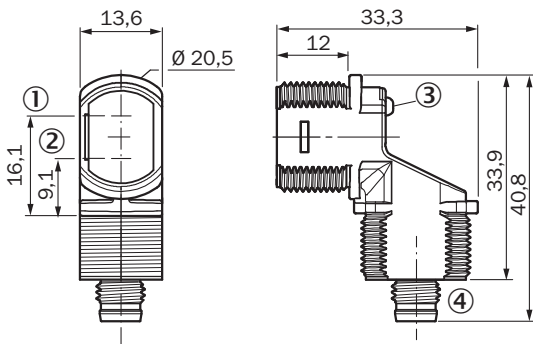


Abbildung 30: ZTx18-4xxxxx/ZTx18-Dxxxxx, M8-Steckverbinder

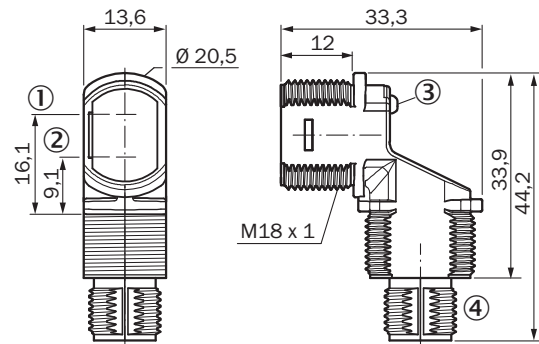


Abbildung 31: ZTx18-4xxxxx/ZTx18-Dxxxxx, M12-Steckverbinder

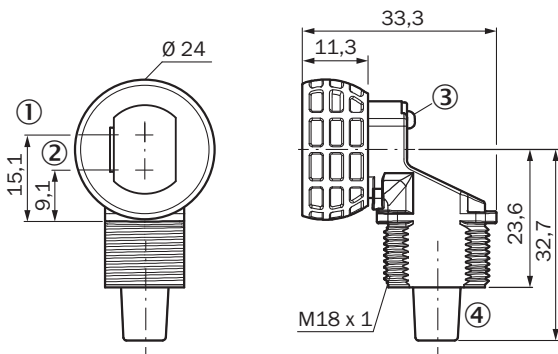


Abbildung 32: ZTx18-5xxxxx/ZTx18-Exxxxx, Leitung

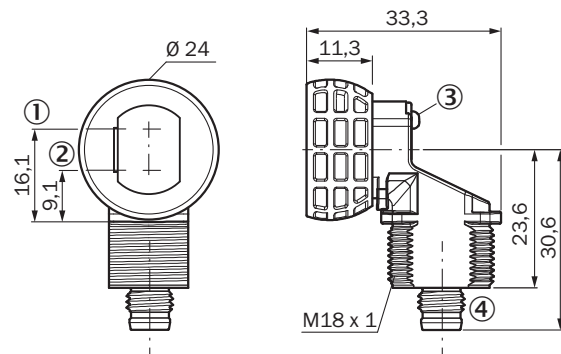


Abbildung 33: ZTx18-5xxxxx/ZTx18-Exxxxx, M8-Steckverbinder

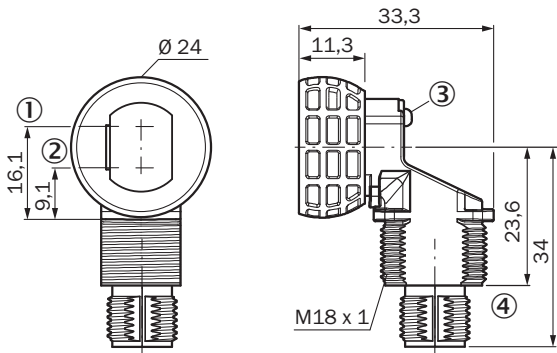


Abbildung 34: ZTx18-5xxxxx/ZTx18-Exxxxx, M12-Steckverbinder

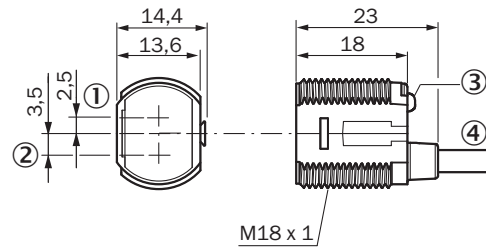


Abbildung 35: ZTx18-6xxxxx/ZTx18-Fxxxxx

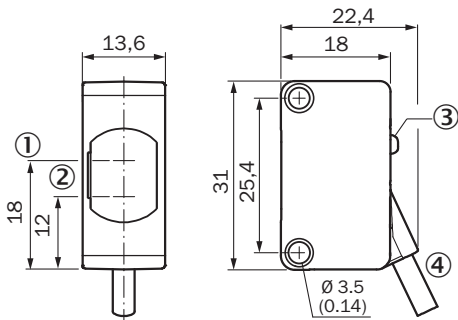


Abbildung 36: ZTx18-7xxxxx/ZTx18-Gxxxxx

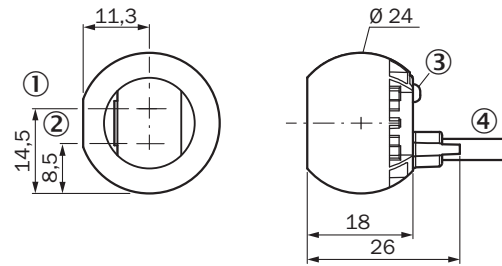


Abbildung 37: ZTx18-8xxxxx/ZTx18-Hxxxxx

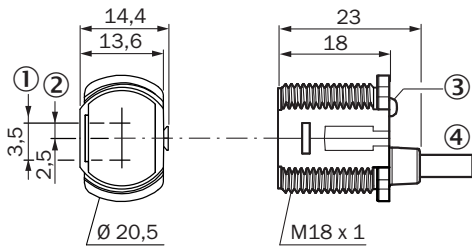


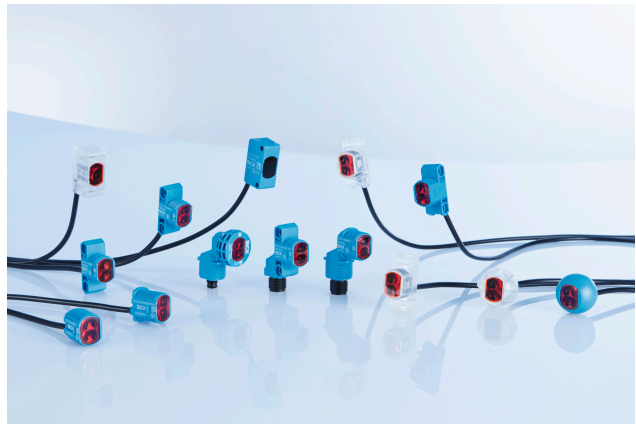
Abbildung 38: ZTx18-9xxxxx/ZTx18-Jxxxxx

- ① Optikachse, Sender
- ② Optikachse, Empfänger
- ③ LED-Statusanzeigen
- ④ Anschluss/Zugentlastung

# ZTB18

Capteurs photoélectriques cylindriques

**SICK**  
Sensor Intelligence.



de  
en  
es  
fr  
it  
ja  
pt  
ru  
zh

### Produit décrit

Z18 SimpleSense  
ZTB18

### Fabricant

SICK AG  
Erwin-Sick-Straße 1  
79183 Waldkirch  
Allemagne

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### 23 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.

### 24 Remarques sur l'homologation UL

Types de boîtiers bleus (Zxx18-1xxxxx ... Zxx18-9xxxxx) :

- Type 1 enclosure

Types de boîtiers clairs (Zxx18-Axxxxx ... Zxx18-Jxxxxx) :

- Type 1 enclosure
- Class 2 power supply required

### 25 Utilisation conforme

Le ZTB18 est un capteur photoélectrique de proximité opto-électronique avec EAP (appelé ci-dessous « capteur ») qui est utilisé pour la détection d'objets optiques, d'animaux et de personnes sans contact. La garantie offerte par la société SICK AG sera caduque si l'appareil est utilisé pour un autre usage, s'il est modifié de quelque manière que ce soit.

### 26 Afficheurs d'état et de fonctionnement

Détecteur à réflexion directe avec élimination d'arrière-plan.

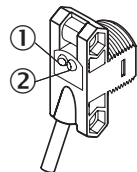


Illustration 39: Afficheurs d'état

- ① Afficheur à LED (vert) : marche
- ② Afficheur à LED (orange) : lumière reçue

## 27 Montage

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

Noter l'orientation privilégiée du capteur par rapport à la direction du mouvement d'objet, voir [illustration 40](#).

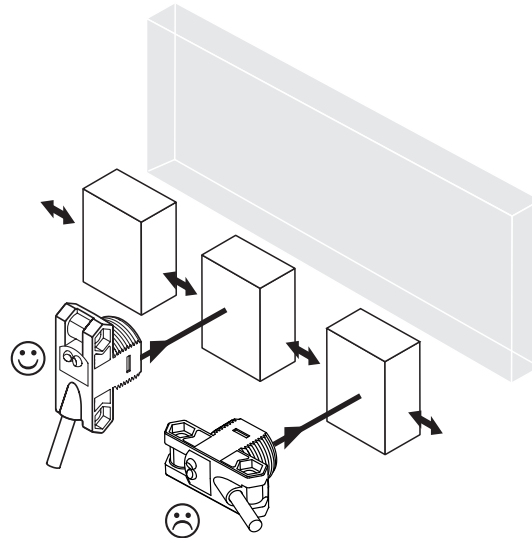


Illustration 40: Orientation du capteur par rapport à la direction de l'objet

## 28 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 : affectation des broches
- Câble : couleur des fils

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

Explication de la terminologie de raccordement utilisée aux tableaux 1 à 3 :

BN = Brown (Marron)  
 WH = White (Blanc)  
 BU = Blue (Bleu)  
 BK = Black (Noir)  
 n. c. = non connecté  
 Q1 = sortie de commutation 1  
 Q2 = sortie de commutation 2  
 L+ = tension d'alimentation ( $U_v$ )  
 M = poids  
 L.ON = commutation claire  
 D.ON = commutation sombre

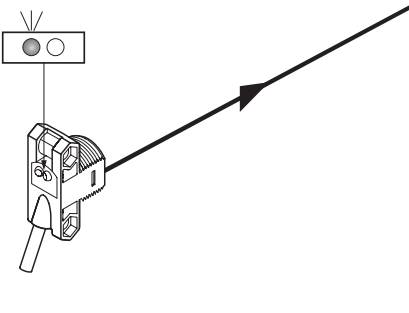
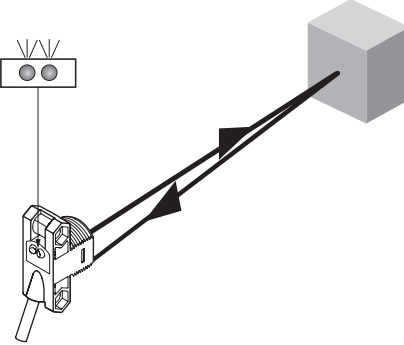
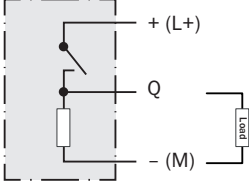
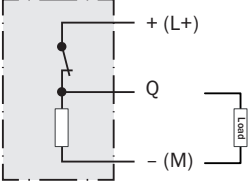
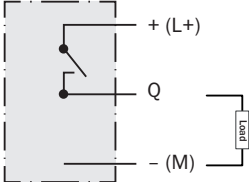
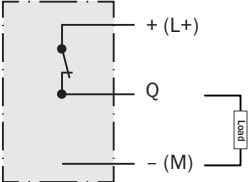
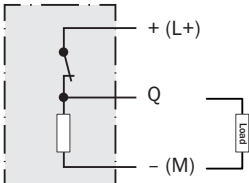
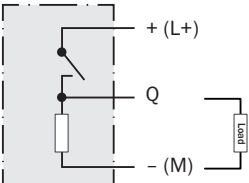
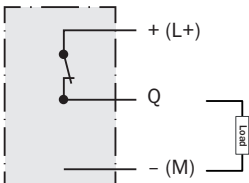
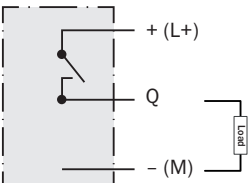
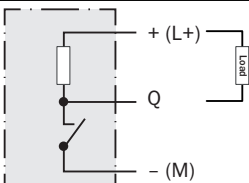
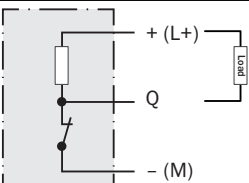
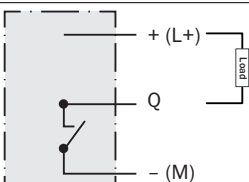
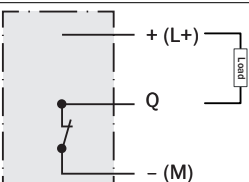


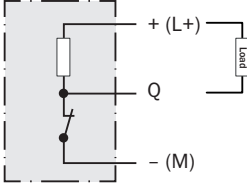
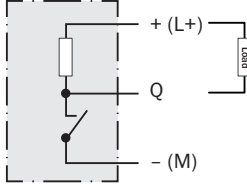
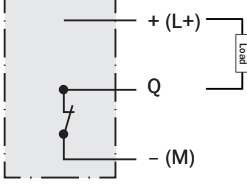
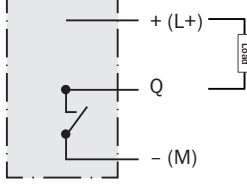
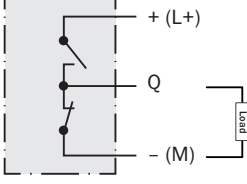
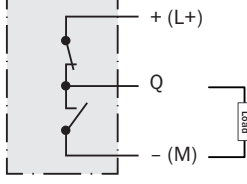
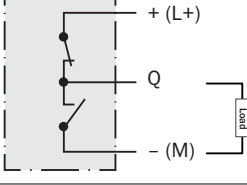
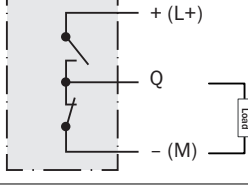
### REMARQUE

Les sorties du capteur sont livrées équipées avec un réglage par défaut activation temporaire ou désactivation temporaire. Cela est indiqué par un suffixe Txx à la fin du numéro du modèle (Zxx18-xxxxxTxx).

Détails sur la connexion et la sortie :

Tableau 11: Fonctionnement de la sortie

<p>ZTx18                  -x_xxxx = sortie Q1                  -xx_xxx = sortie Q2</p>		
<p>-xPxxxx                  -x8xxxx                  -xxPxxx                  L.ON, PNP : Q (≤ 100 mA)</p>		
<p>-xHxxxx                  -x4xxxx                  -xxHxxx                  L.ON, PNP collecteur ouvert Q (≤ 100 mA)</p>		
<p>-xFxxxx                  -x2xxxx                  -xxFxxx                  D.ON, PNP : Q (≤ 100 mA)</p>		
<p>-xKxxxx                  -x6xxxx                  -xxKxxx                  D.ON, PNP collecteur ouvert Q (≤ 100 mA)</p>		
<p>-xNxxxx                  -x7xxxx                  -xxNxxx                  L.ON, NPN : Q (≤ 100 mA)</p>		
<p>-xGxxxx                  -x3xxxx                  -xxGxxx                  L.ON, NPN collecteur ouvert Q (≤ 100 mA)</p>		

<p>-xExxxx -x1xxxx -xxExxx D.ON, NPN : Q (≤ 100 mA)</p>		
<p>-xJxxxx -x5xxxx -xxJxxx D.ON, NPN collecteur ouvert Q (≤ 100 mA)</p>		
<p>-xAxxxx -XRxxxx -xxAxxx L.ON, symétrique (≤ 100 mA)<sup>1</sup></p>		
<p>-xBxxxx -xSxxxx -xxBxxx D.ON, symétrique (≤ 100 mA)<sup>1</sup></p>		

<sup>1</sup> Diagramme sortie PNP représenté ; NPN également possible en raccordant la charge à + (L+) et Q

Tableau 12: Mode alarme/santé

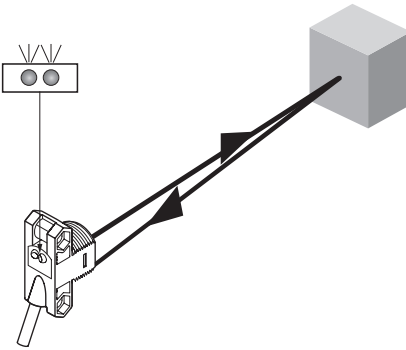
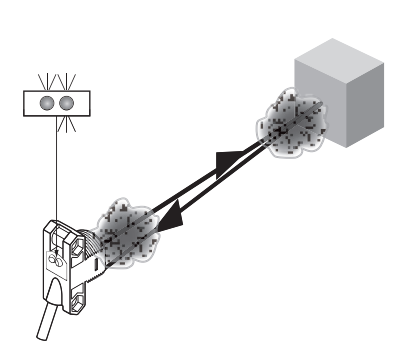
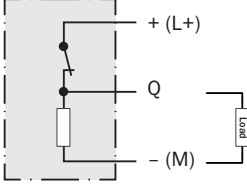
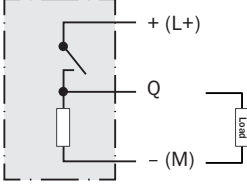
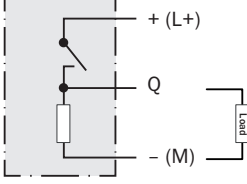
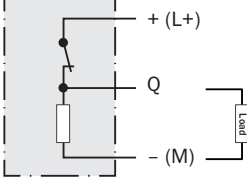
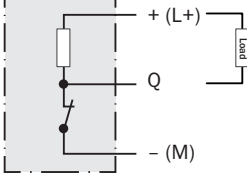
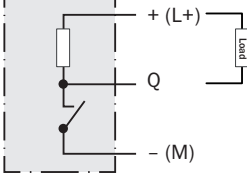
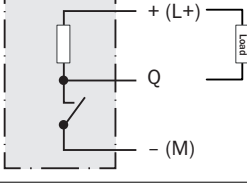
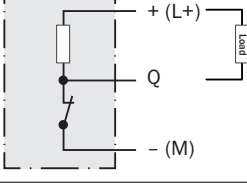
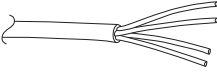


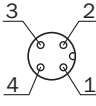
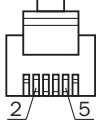
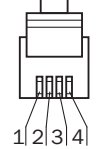
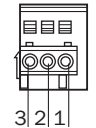
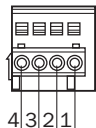
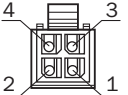
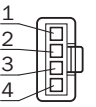
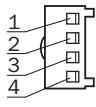
<p>ZTx18 -xx_xxx = sortie Q2 Santé/alarme est toujours sur la sortie Q2</p>		
<p>-xxRxxx Santé, PNP (<math>\leq 100</math> mA)</p>		
<p>-xxTxxx Alarme, PNP (<math>\leq 100</math> mA)</p>		
<p>-xxQxxx Santé, NPN (<math>\leq 100</math> mA)</p>		
<p>-xxSxxx Alarme, NPN (<math>\leq 100</math> mA)</p>		

Tableau 13: Brochage des connexions

Zxx18	Diagramme	Broche 1	Broche 2	Broche 3	Broche 4	Broche 5	Broche 6
-xxx1xx	 0,14 mm <sup>2</sup> AWG26	+ (L+) BN (mar- ron)	Q2 WH (blanc)	- (M) BU (bleu)	Q1 BK (noir)	-	-
-xxx2xx M8, 3p		+ (L+) (BN mar- ron)	-	- (M) (BU bleu)	Q1 (BK noir)	-	-
xxx3xx / -xxx5xx M8, 4p		+ (L+) (BN mar- ron)	Q2 (WH blanc)	- (M) (BU bleu)	Q1 (BK noir)	-	-

-xxx4xx M12, 4p		+ (L+) (BN mar- ron)	Q2 (WH blanc)	- (M) (BU bleu)	Q1 (BK noir)	-	-
-xxxAxx RJ12		n. c.	+ (L+) (BN mar- ron)	Q1 (BK noir)	Q2 (WH blanc)	- (M) (BU bleu)	n. c.
-xxxBxx RJ9		+ (L+) (BN mar- ron)	Q2 (WH blanc)	- (M) (BU bleu)	Q1 (BK noir)	-	-
-xxxCxx Wago 733-103		+ (L+) (BN mar- ron)	Q1 (BK noir)	- (M) (BU bleu)	-	-	-
-xxxDxx Wago 733-104		+ (L+) (BN mar- ron)	Q2 (WH blanc)	- (M) (BU bleu)	Q1 (BK noir)	-	-
-xxxExx Molex 23025-0400 (2x2)		Q1 (BK noir)	Q2 (WH blanc)	+ (L+) (BN mar- ron)	- (M) (BU bleu)	-	-
-xxxFxx Tyco 1445022-4 (1x4)		+ (L+) (BN mar- ron)	Q2 (WH blanc)	- (M) (BU bleu)	Q1 (BK noir)	-	-
-xxxGxx Wuerth 61900411621 (1x4)		+ (L+) (BN mar- ron)	Q2 (WH blanc)	- (M) (BU bleu)	Q1 (BK noir)	-	-

1) Vue frontale des connecteurs

## 29 Mise en service

### 1 Alignement

ZTB18-xxxx2 : 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 [voir [illustration 41](#)].

ZTB18-xxxx1 : aligner le capteur sur l'objet. Choisir la position de sorte que le faisceau infrarouge (invisible) touche l'objet en plein centre. Seules les LED permettent de savoir si l'alignement est correct. Voir [illustration 41](#) et [tableau 11](#). S'assurer que l'ouverture optique (vitre frontale) du capteur est parfaitement dégagée.

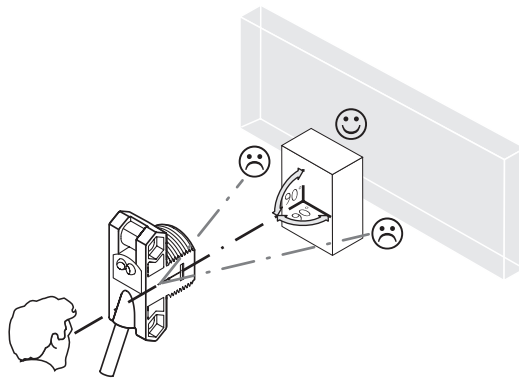


Illustration 41: Alignement

## 2 Distance de commutation

Contrôler les conditions d'application : le ZTB18 est disponible dans deux versions de distances de commutation déterminées (sur blanc, 90 %) :

- 50 mm (ZTB18-xxxxxD02)
- 100 mm (ZTB18-xxxxxD04)

Ajuster la position de montage de manière à ce que la distance de commutation et l'arrière-plan se trouvent au sein des spécifications. Voir [voir illustration 42, page 40](#).



### REMARQUE

Veuillez noter la distance minimale de 5 mm.

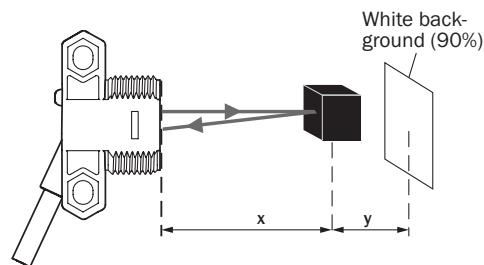


Illustration 42: Distance de commutation sur du noir

Distance de commutation sur du noir, 6 % :

- ZTB18-xxxxxD02 :  $x = 47$  mm,  $y = 4$  mm
- ZTB18-xxxxxD04 :  $x = 93$  mm,  $y = 8$  mm

Utiliser [voir tableau 11, page 36](#) pour contrôler le fonctionnement. Si la sortie de commutation ne se comporte pas selon les indications de [voir tableau 11, page 36](#), contrôler les conditions d'application.

## 3 Réglage de la distance de commutation

Impossible de régler le capteur : le capteur a été adapté par défaut à une distance de commutation maximale et est opérationnel.

## 4 Fonctionnement avec réception de lumière marginale

Le capteur fournira une notification d'alerte avant la panne par l'afficheur à LED qui clignote en orange si l'appareil fonctionne avec une réception de lumière marginale. Cela pourrait résulter d'un alignement incorrect, des surfaces optiques contaminées, et/ou d'une rémission de la lumière insuffisante de la cible. Le capteur pourrait être équipé d'une sortie Santé ou Alarme qui émet un signal discret lorsque le capteur fonctionne dans des conditions limitées. Voir [tableau 12](#) pour des détails supplémentaires sur le fonctionnement de la sortie Santé/Alarme.



## 30 Élimination des défauts

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

Tableau 14: Suppression des défauts

LED d'état / image du défaut	Cause	Mesure
LED jaune ne s'allume pas alors que l'émetteur est aligné sur l'objet et l'objet se trouve au sein de la plage réglée.	Pas de tension ou tension inférieure aux valeurs limites	Contrôler l'alimentation électrique, contrôler tous les branchements électriques (câbles et connexions)
	Coupures d'alimentation électrique	S'assurer que l'alimentation électrique est stable et ininterrompue
	Le capteur est défectueux	Si l'alimentation électrique est en bon état, remplacer le capteur
LED jaune clignote ; si alarme/santé est présent, veuillez prendre en compte le signal de sortie correspondant	Le capteur est toujours opérationnel, mais les conditions de fonctionnement ne sont pas idéales	Vérifier les conditions de fonctionnement : aligner complètement le faisceau de lumière (spot lumineux) sur l'objet/nettoyer les surfaces optiques
La LED jaune s'allume, pas d'objet dans la trajectoire du faisceau	Disperser rémission d'arrière-plan	Vérifier l'arrière-plan pour des objets hautement réfléchissants et essayez de bloquer depuis les champs de vue du capteur
L'objet est dans la trajectoire du faisceau, la LED jaune ne s'allume pas	La rémission de l'objet est trop faible	Réduire la distance entre le capteur et l'objet. Attention, l'objet n'a peut-être pas assez de rémission pour la détection.

## 31 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.

## 32 Maintenance

SICK recommande la maintenance régulière suivante :

- Nettoyage des surfaces optiques extérieures
- Vérification des raccordements vissés et des connexions

Aucune modification ne doit être apportée aux appareils.

Sujet à modification sans préavis. Les caractéristiques du produit spécifiques et les caractéristiques techniques ne constituent pas des garanties écrites.

### 33 Caractéristiques techniques

	ZTB18-xxxxxD02	ZTB18-xxxxxD04
Distance de commutation min.	5 mm	5 mm
Distance de commutation	50 mm	100 mm
Portée max.	50 mm <sup>1)</sup>	100 mm <sup>1)</sup>
Diamètre spot / distance	8 mm / 100 mm	8 mm / 100 mm
Tension d'alimentation $U_V$	DC 10 ... 30 V <sup>2)</sup>	DC 10 ... 30 V <sup>2)</sup>
Courant de sortie $I_{max}$	≤ 100 mA	≤ 100 mA
Commutation max.	500 Hz <sup>3)</sup>	500 Hz <sup>3)</sup>
Temps de réponse max.	≤ 1 ms <sup>4)</sup>	≤ 1 ms <sup>4)</sup>
Indice de protection	IP67	IP67
Classe de protection	III	III
Protections électriques	A, B, D <sup>6)</sup>	A, B, D <sup>6)</sup>
Température de service	-40 °C ... +55 °C	-40 °C ... +55 °C

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

2) Valeurs limites ; fonctionnement sur réseau protégé contre les courts-circuits max. 8 A ; ondulation résiduelle max. 5 V<sub>cc</sub>

3) Pour un rapport clair/sombre de 1:1

4) Temps de propagation du signal sur charge ohmique

6) A = raccordements  $U_V$  protégés contre les inversions de polarité

B = entrées et sorties protégées contre les inversions de polarité

D = sorties protégées contre les courts-circuits et les surcharges

#### 33.1 Plans cotés

Tableau 15: Plans cotés

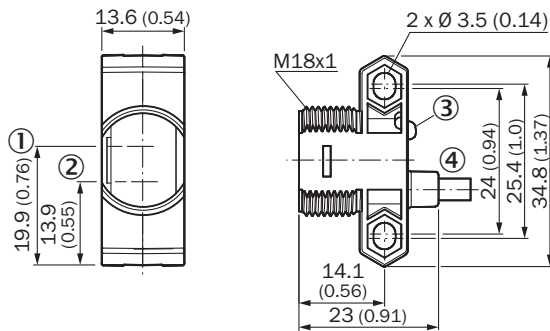


Illustration 43: ZTx18-1xxxxx/ZTx18-Axxxxx

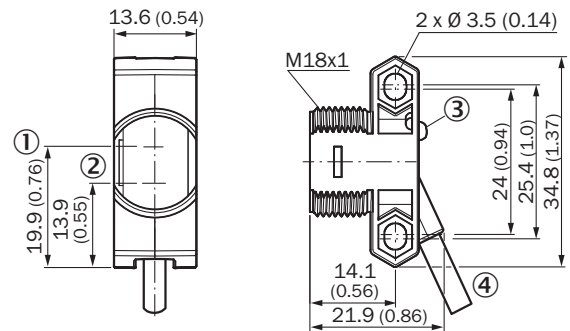


Illustration 44: ZTx18-2xxxxx/ZTx18-Bxxxxx, câble

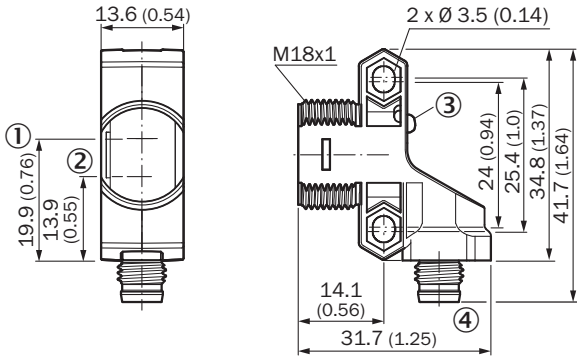


Illustration 45: ZTx18-2xxxxx/ZTx18-Bxxxxx, connecteur M8

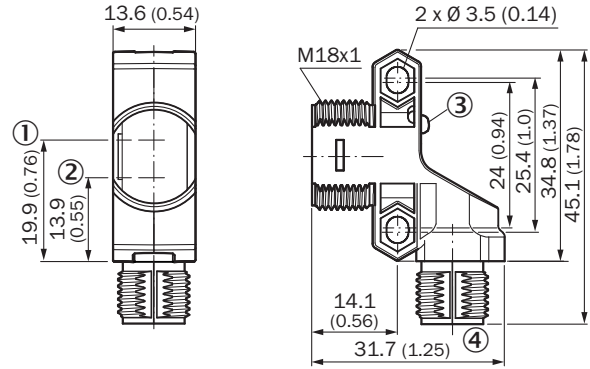


Illustration 46: ZTx18-2xxxxx/ZTx18-Bxxxxx, connecteur M12

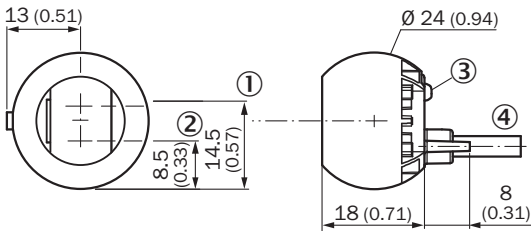


Illustration 47: ZTx18-3xxxxx/ZTx18-Cxxxxx

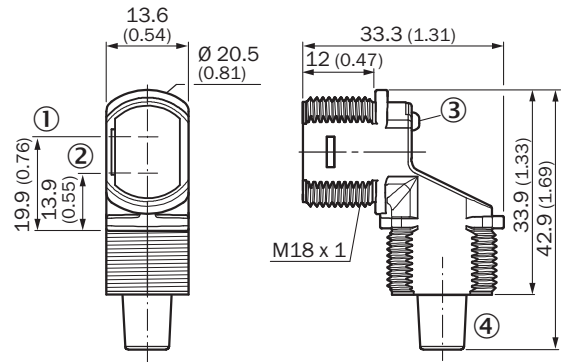


Illustration 48: ZTx18-4xxxxx/ZTx18-Dxxxxx, câble

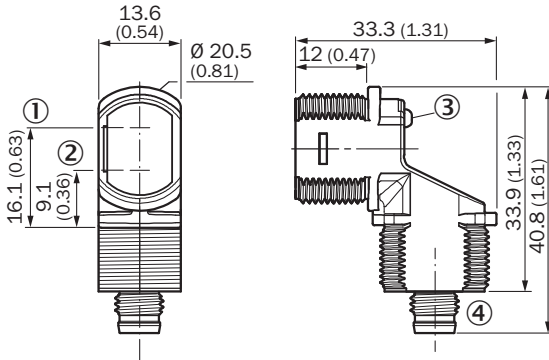


Illustration 49: ZTx18-4xxxxx/ZTx18-Dxxxxx, connecteur M8

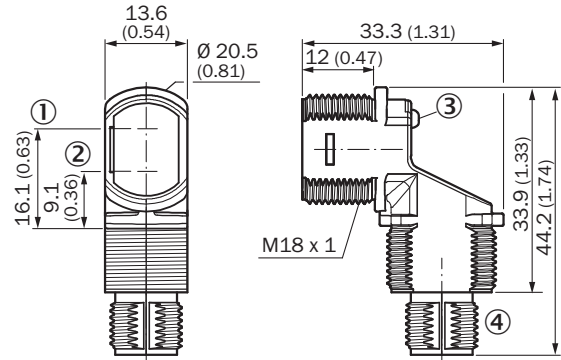


Illustration 50: ZTx18-4xxxxx/ZTx18-Dxxxxx, connecteur M12

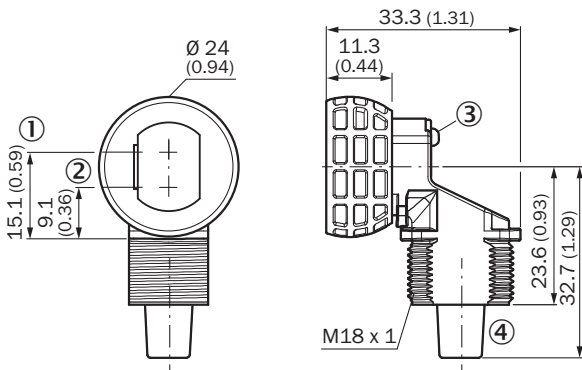


Illustration 51: ZTx18-5xxxxx/ZTx18-Exxxxx, câble

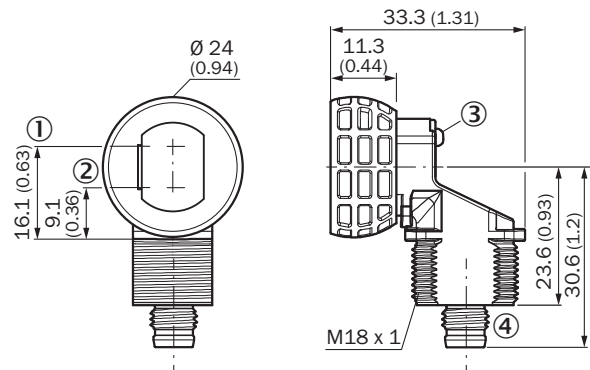


Illustration 52: ZTx18-5xxxxx/ZTx18-Exxxxx, connecteur M8

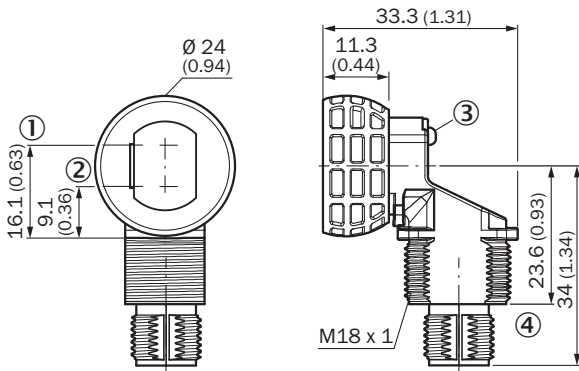


Illustration 53: ZTx18-5xxxxx/ZTx18-Exxxxx, connecteur M12

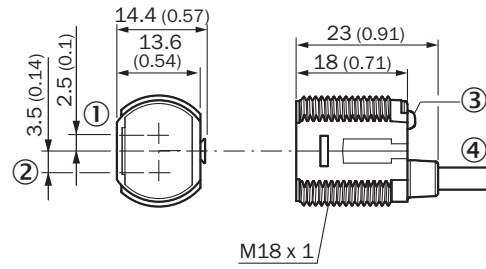


Illustration 54: ZTx18-6xxxxx/ZTx18-Fxxxxx

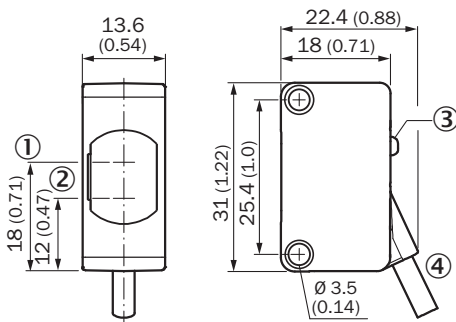


Illustration 55: ZTx18-7xxxxx/ZTx18-Gxxxxx

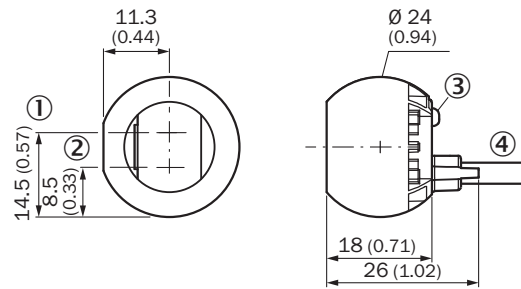


Illustration 56: ZTx18-8xxxxx/ZTx18-Hxxxxx

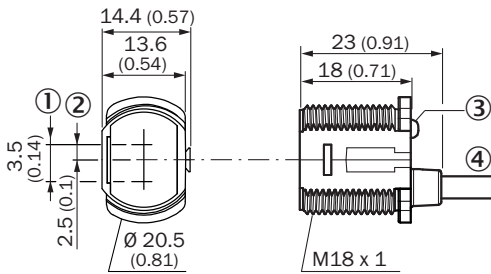


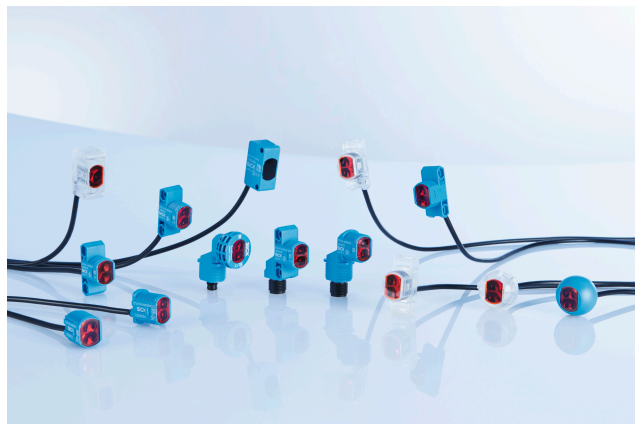
Illustration 57: ZTx18-9xxxxx/ZTx18-Jxxxxx

- ① axe optique, émetteur
- ② axe optique, récepteur
- ③ Afficheur d'état à LED
- ④ raccordement/serre-câble

# ZTB18

Sensori fotoelettrici cilindrici

**SICK**  
Sensor Intelligence.



de  
en  
es  
fr  
it  
ja  
pt  
ru  
zh

## Descrizione prodotto

Z18 SimpleSense

ZTB18

## Produttore

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

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## 34 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.

## 35 Indicazioni sull'omologazione UL

Tipi di custodie blu (Zxx18-1xxxxx ... Zxx18-9xxxxx):

- Type 1 enclosure

Tipi di custodie trasparenti (Zxx18-Axxxxx ... Zxx18-Jxxxxx):

- Type 1 enclosure
- Class 2 power supply required

## 36 Uso conforme

ZTB18 è un sensore fotoelettrico optoelettronico di prossimità con soppressione dello sfondo (di seguito denominato "sensore") per il rilevamento ottico senza contatto di oggetti, animali e persone. In caso di utilizzo del prodotto per scopi diversi da quello previsto e in caso di modifiche apportate allo stesso, decade qualsiasi rivendicazione di garanzia nei confronti di SICK AG.

## 37 Indicatori di uso e di funzionamento

Sensori fotoelettrici energetici con soppressione dello sfondo.

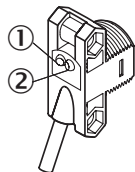


Figura 58: Indicatori di stato

- ① Indicatore LED (verde): corrente
- ② Indicatore LED (arancione): luce ricevuta

## 38 Montaggio

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

Osservare l'orientamento preferito del sensore rispetto alla direzione di movimento dell'oggetto; fare riferimento a [figura 59](#).

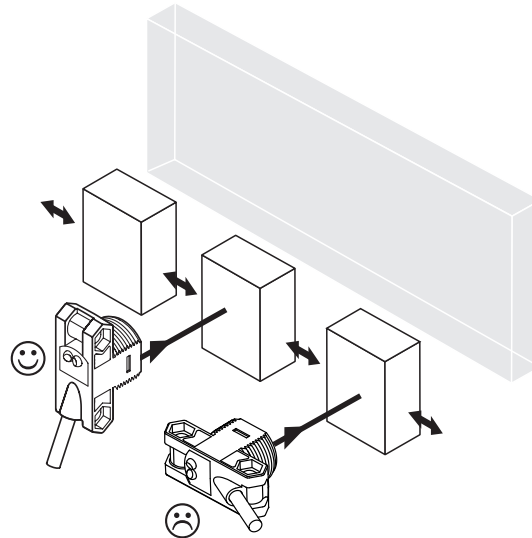


Figura 59: Orientamento del sensore rispetto alla direzione dell'oggetto

## 39 Installazione elettrica

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

- Collegamento a spina: assegnazione pin
- Cavo: colore filo

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

Spiegazione della terminologia di collegamento utilizzata nelle tabelle 1-3:

BN = marrone

WH = bianco

BU = blu

BK = nero

n. c. = non collegato

Q1 = uscita di commutazione 1

Q2 = uscita di commutazione 2

L+ = tensione di alimentazione ( $V_S$ )

M = peso

L.ON = light operate (funzionamento light on)

D.ON = dark operate (funzionamento dark on)

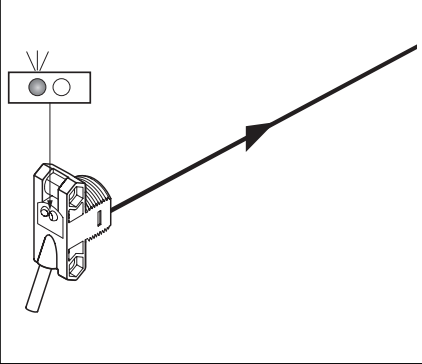
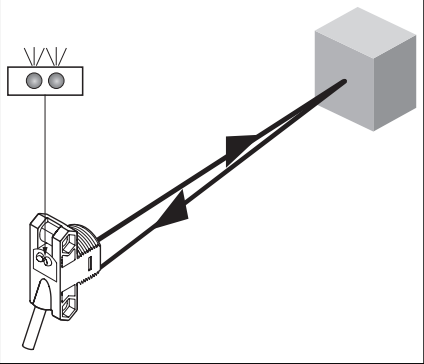
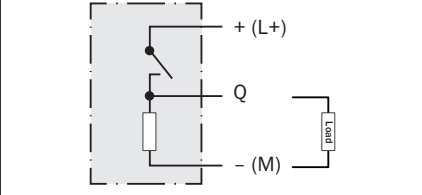
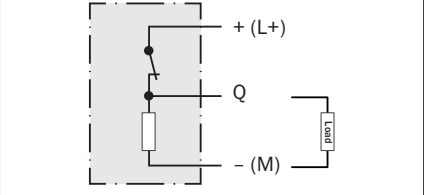
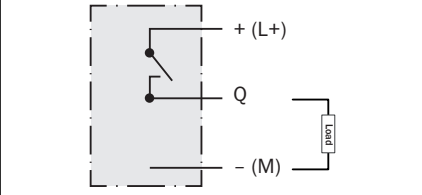
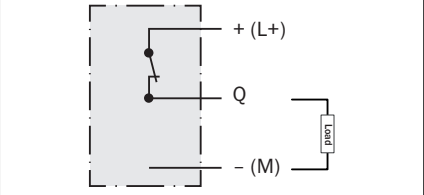
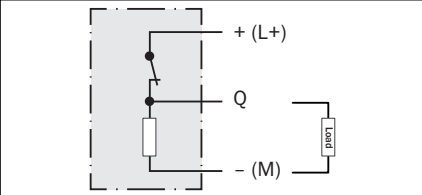
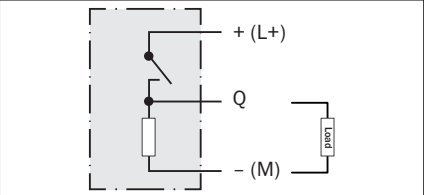
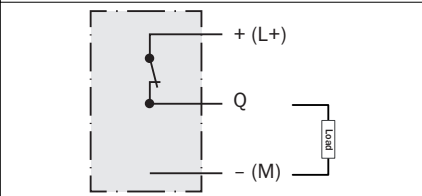
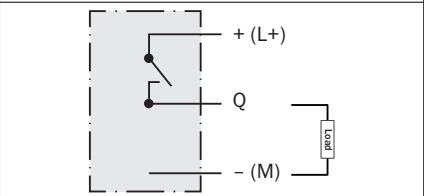
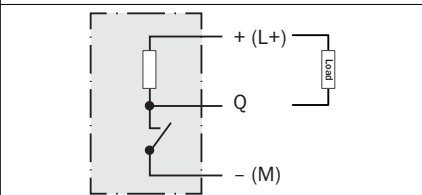
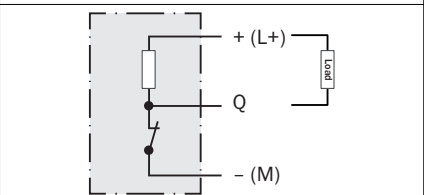
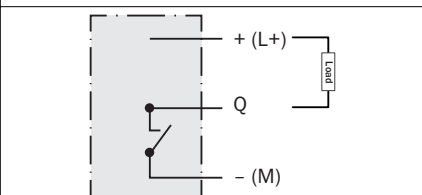
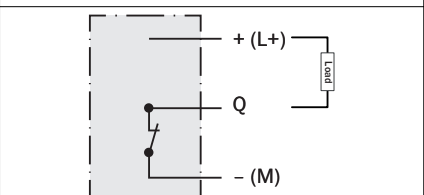


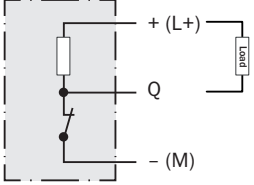
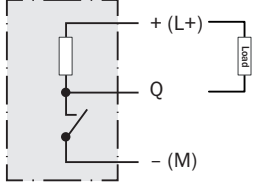
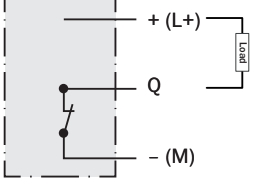
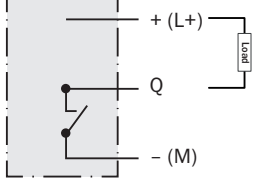
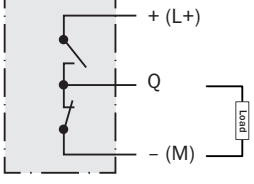
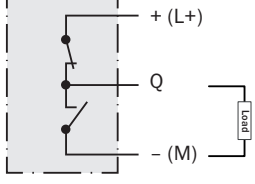
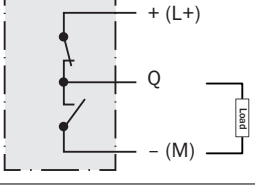
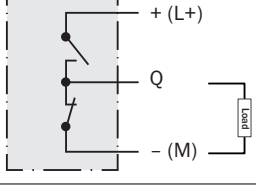
### INDICAZIONE

Le uscite del sensore possono essere dotate di un ritardo di accensione e/o di spegnimento impostato in fabbrica. Questo è indicato da un suffisso Txx alla fine del numero di modello (Zxx18-xxxxxTxx).

Dettagli del collegamento e dell'uscita:

Tabella 16: uscita DC

<p>ZTx18                  -x_xxxx = uscita Q1                  -xx_xxx = uscita Q2</p>		
<p>-xPxxxx                  -x8xxxx                  -xxPxxx                  L.ON, PNP: Q (≤ 100 mA)</p>		
<p>-xHxxxx                  -x4xxxx                  -xxHxxx                  L.ON, PNP Open Collector Q (≤ 100 mA)</p>		
<p>-xFxxxx                  -x2xxxx                  -xxFxxx                  D.ON, PNP: Q (≤ 100 mA)</p>		
<p>-xKxxxx                  -x6xxxx                  -xxKxxx                  D.ON, PNP Open Collector Q (≤ 100 mA)</p>		
<p>-xNxxxx                  -x7xxxx                  -xxNxxx                  L.ON, NPN: Q (≤ 100 mA)</p>		
<p>-xGxxxx                  -x3xxxx                  -xxGxxx                  L.ON, NPN Open Collector Q (≤ 100 mA)</p>		

<p>-xExxxx -x1xxxx -xxExxx D.ON, NPN: Q (<math>\leq 100</math> mA)</p>		
<p>-xJxxxx -x5xxxx -xxJxxx D.ON, NPN Open Collector Q (<math>\leq 100</math> mA)</p>		
<p>-xAxxxx -XRxxxx -xxAxxx L.ON, Push-pull (<math>\leq 100</math> mA)<sup>1</sup></p>		
<p>-xBxxxx -xSxxxx -xxBxxx D.ON, Push-pull (<math>\leq 100</math> mA)<sup>1</sup></p>		



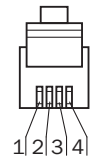
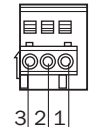
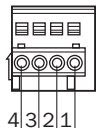
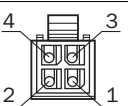
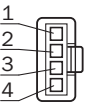
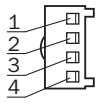
<sup>1</sup> Diagramma uscita PNP raffigurato; NPN possibile anche collegando il carico a + (L+) e Q

Tabella 17: Funzionamento Allarme/Salute

<p>ZTx18 -xx_xxx = uscita Q2 Salute/Allarme è sempre l'uscita Q2</p>		
<p>-xxRxxx Salute, PNP (<math>\leq 100</math> mA)</p>		
<p>-xxTxxx Allarme, PNP (<math>\leq 100</math> mA)</p>		
<p>-xxQxxx Salute, NPN (<math>\leq 100</math> mA)</p>		
<p>-xxSxxx Allarme, NPN (<math>\leq 100</math> mA)</p>		

Tabella 18: collegamento DC

Zxx18	Diagramma	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6
-xxx1xx	 0,14 mm <sup>2</sup> AWG26	+ (L+) BN	Q2 WH	- (M) BU	Q1 BK	-	-
-xxx2xx M8, 3p		+ (L+) (BN)	-	- (M) (BU)	Q1 (BK)	-	-
-xxx3xx/-xxx5xx M8, 4p		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-

-xxx4xx M12, 4p		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-
-xxxAxx RJ12		n. c.	+ (L+) (BN)	Q1 (BK)	Q2 (WH)	- (M) (BU)	n. c.
-xxxBxx RJ9		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-
-xxxCxx Wago 733-103		+ (L+) (BN)	Q1 (BK)	- (M) (BU)	-	-	-
-xxxDxx Wago 733-104		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-
-xxxExx Molex 23025-0400 (2x2)		Q1 (BK)	Q2 (WH)	+ (L+) (BN)	- (M) (BU)	-	-
-xxxFxx Tyco 1445022-4 (1x4)		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-
-xxxGxx Wuerth 61900411621 (1x4)		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-

1) Vista anteriore dei connettori

## 40 Messa in servizio

### 1 Allineamento

ZTB18-xxxx2: orientare il sensore sull'oggetto. Scegliere la posizione in modo tale che il raggio di luce rosso emesso colpisca il centro dell'oggetto. Fare attenzione che l'apertura ottica del sensore (frontalino) sia completamente libera [vedi [figura 60](#)].

ZTB18-xxxx1: orientare il sensore sull'oggetto. Scegliere la posizione in modo tale che la luce infrarossa (non visibile) colpisca il centro dell'oggetto. L'orientamento corretto può essere rilevato solo tramite l'indicatore LED. A tale proposito vedi [figura 60](#) e [tabella 16](#). Si deve fare attenzione che l'apertura ottica del sensore (frontalino) sia completamente libera.

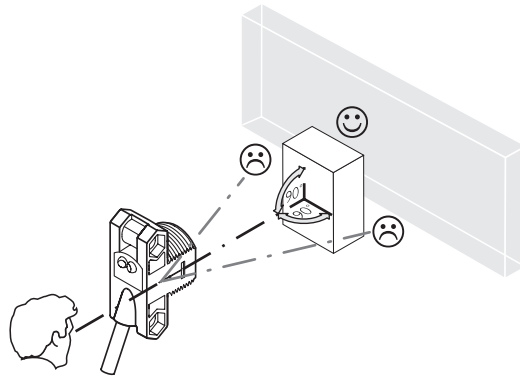


Figura 60: Allineamento

## 2 Distanza di lavoro

Controllare le condizioni di applicazione: il ZTB18 è disponibile in due versioni con distanza di lavoro fissa (su bianco, 90%):

- 50 mm (ZTB18-xxxxxD02)
- 100 mm (ZTB18-xxxxxD04)

Regolare la posizione di montaggio in modo tale che la distanza di lavoro e lo sfondo siano conformi alle specifiche. Consultare [v. figura 61, pagina 55](#).



### INDICAZIONE

Osservare l'intervallo minimo di 5 mm.

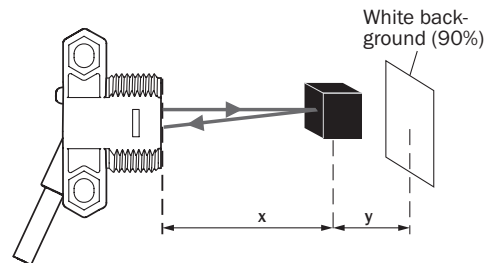


Figura 61: Distanza di lavoro su nero

Distanza di lavoro su nero, 6%:

- ZTB18-xxxxxD02:  $x = 47$  mm,  $y = 4$  mm
- ZTB18-xxxxxD04:  $x = 93$  mm,  $y = 8$  mm

Utilizzare [v. tabella 16, pagina 51](#) per verificare il funzionamento. Se l'uscita di commutazione non si comporta in conformità con [v. tabella 16, pagina 51](#), controllare le condizioni di applicazione.

## 3 Regolazione della distanza di lavoro

Impostazione del sensore non consentita: il sensore è stato regolato sulla distanza di lavoro massima in fabbrica ed è pronto per il funzionamento.

## 4 Funzionamento con ricezione della luce marginale

Il sensore invia una notifica di preallarme tramite indicatore LED arancione lampeggiante durante il funzionamento con ricezione della luce marginale. Questo può essere dovuto ad un allineamento errato, a superfici ottiche contaminate e/o ad un'insufficiente remissione di luce dal target. Il sensore può essere dotato di un'uscita Salute o Allarme, che emette un segnale discreto quando il sensore funziona in condizioni marginali. Consultare [tabella 17](#) per maggiori dettagli sul funzionamento dell'uscita Salute/Allarme.

## 41 Eliminazione difetti

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

Tabella 19: Individuazione ed eliminazione dei guasti

Indicatore LED / figura di errore	Causa	Provvedimento
Il LED giallo non si accende anche se l'emettitore è allineato all'oggetto e l'oggetto si trova all'interno della distanza di lavoro impostata	nessuna tensione o tensione al di sotto del valore soglia	Verificare la tensione di alimentazione e/o il collegamento elettrico
	Interruzioni di tensione	Assicurarsi che ci sia un'alimentazione di tensione stabile
	Il sensore è guasto	Se l'alimentazione di tensione è regolare, allora chiedere una sostituzione del sensore
Il LED giallo lampeggia; se è presente Allarme/Salute, annotare il segnale in uscita corrispondente	Il sensore è ancora pronto per il funzionamento, ma le condizioni di esercizio non sono ideali	Controllare le condizioni di esercizio: allineare completamente il fascio di luce (punto luminoso) all'oggetto/pulire le superfici ottiche
il LED giallo si accende, nessun oggetto nella traiettoria del raggio	Remissione isolata dello sfondo	Controllare lo sfondo per individuare oggetti altamente riflettenti e tentare di rimuoverli dal campo visivo del sensore
L'oggetto è nella traiettoria del raggio, il LED giallo non si accende	Remissione oggetto insufficiente	Ridurre la distanza tra sensore e oggetto. Tenere presente che l'oggetto potrebbe non avere una remissione sufficiente per il rilevamento.

## 42 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.



## 43 Manutenzione

SICK raccomanda di eseguire i seguenti interventi di manutenzione regolari:

- Pulire le superfici ottiche esterne
- Controllare i collegamenti a vite e a spina

I dispositivi non devono essere sottoposti a modifiche.

Contenuti soggetti a modifiche senza preavviso. Le caratteristiche specifiche del prodotto e i dati tecnici non sono garanzie scritte.

44 Dati tecnici

	ZTB18-xxxxxD02	ZTB18-xxxxxD04
Distanza di lavoro min.	5 mm	5 mm
Distanza di commutazione	50 mm	100 mm
Distanza max. di commutazione	50 mm <sup>1)</sup>	100 mm <sup>1)</sup>
Diametro punto luminoso/distanza	8 mm / 100 mm	8 mm / 100 mm
Tensione di alimentazione U <sub>v</sub>	DC 10 ... 30 V <sup>2)</sup>	DC 10 ... 30 V <sup>2)</sup>
Corrente di uscita I <sub>max</sub>	≤ 100 mA	≤ 100 mA
Sequenza di commutazione max.	500 Hz <sup>3)</sup>	500 Hz <sup>3)</sup>
Tempo di reazione max.	≤ 1 ms <sup>4)</sup>	≤ 1 ms <sup>4)</sup>
Tipo di protezione	IP67	IP67
Classe di protezione	III	III
Commutazioni di protezione	A, B, D <sup>6)</sup>	A, B, D <sup>6)</sup>
Temperatura ambientale di funzionamento	-40 °C ... +55 °C	-40 °C ... +55 °C

- 1) Oggetto con il 90% di remissione (riferito al bianco standard DIN 5033)
- 2) Valori limite; funzionamento in rete protetta da cortocircuito max. 8 A; ondulazione residua max. 5 V<sub>ss</sub>
- 3) Con rapporto chiaro / scuro 1:1
- 4) Durata segnale con carico ohmico
- 6) A = U<sub>v</sub>-Allacciamenti protetti dall'inversione di polarità  
 B = entrate e uscite protette da polarità inversa  
 D = uscite protette da sovracorrente e da cortocircuito.

44.1 Disegni quotati

Tabella 20: Disegni quotati

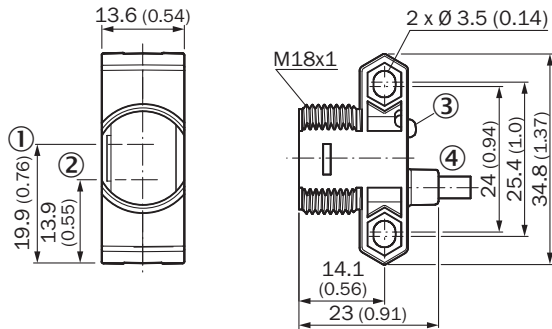


Figura 62: ZTx18-1xxxx/ZTx18-Axxxx

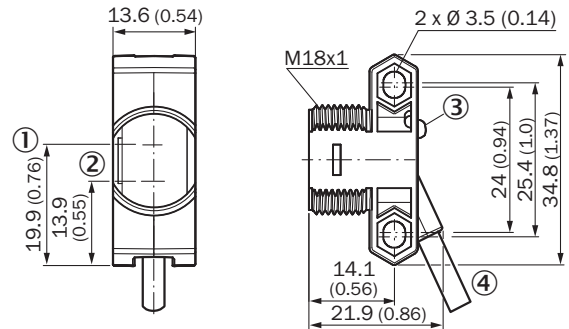


Figura 63: ZTx18-2xxxx/ZTx18-Bxxxx, cavo

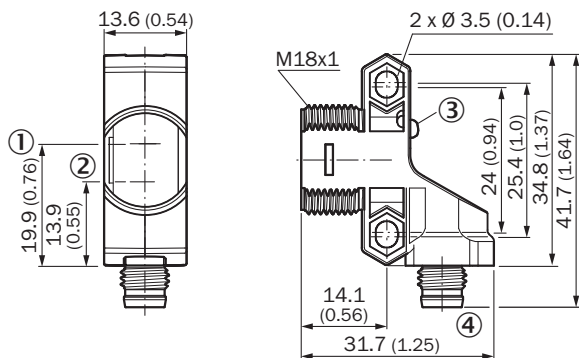


Figura 64: ZTx18-2xxxx/ZTx18-Bxxxx, connettore M8

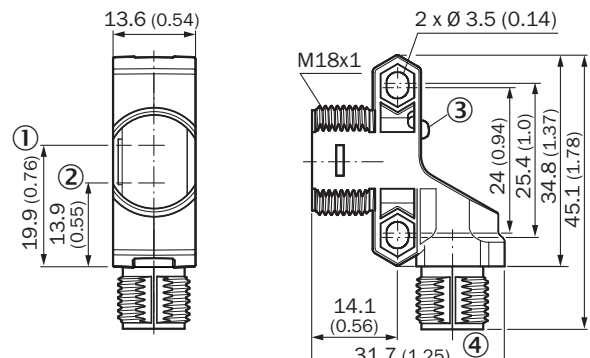


Figura 65: ZTx18-2xxxx/ZTx18-Bxxxx, connettore M12

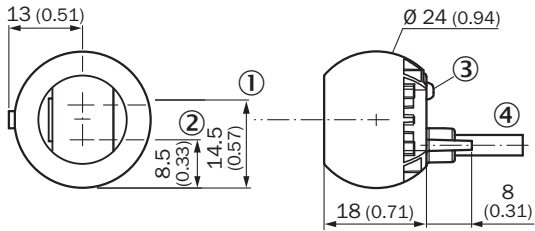


Figura 66: ZTx18-3xxxx/ZTx18-Cxxxx

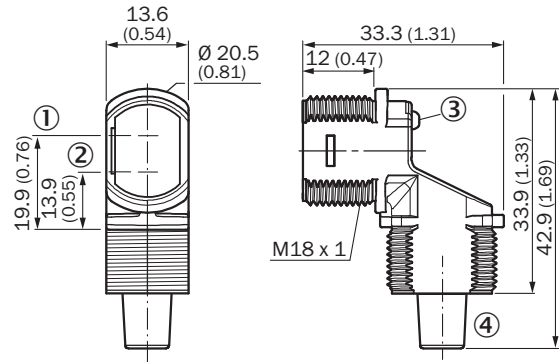


Figura 67: ZTx18-4xxxx/ZTx18-Dxxxx, cavo

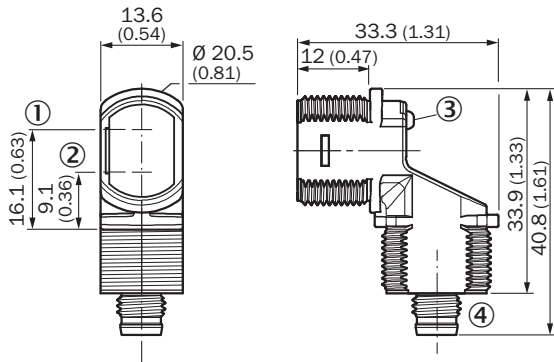


Figura 68: ZTx18-4xxxx/ZTx18-Dxxxx, connettore M8

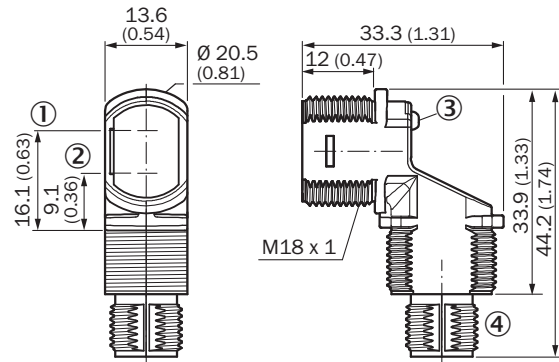


Figura 69: ZTx18-4xxxx/ZTx18-Dxxxx, connettore M12

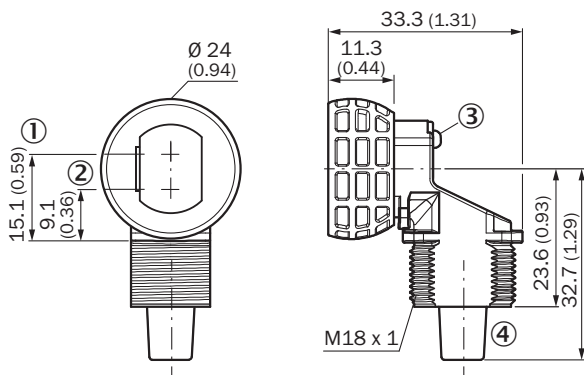


Figura 70: ZTx18-5xxxx/ZTx18-Exxxx, cavo

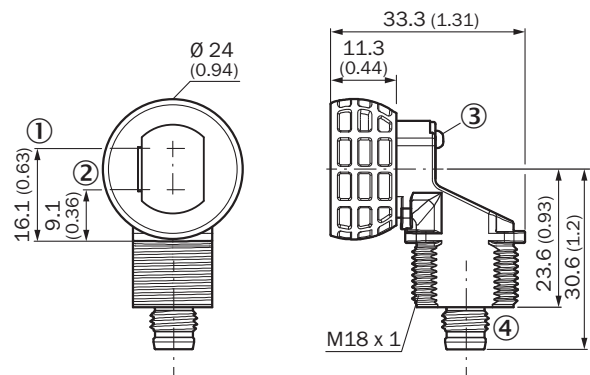


Figura 71: ZTx18-5xxxx/ZTx18-Exxxx, connettore M8

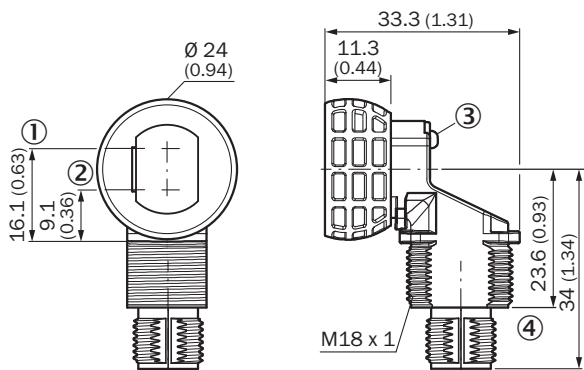


Figura 72: ZTx18-5xxxx/ZTx18-Exxxx, connettore M12

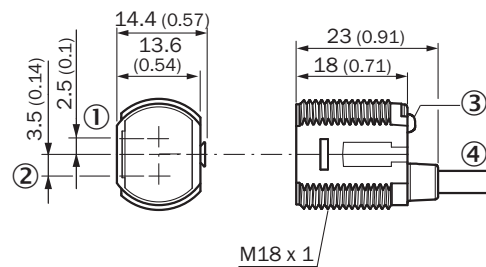


Figura 73: ZTx18-6xxxx/ZTx18-Fxxxx

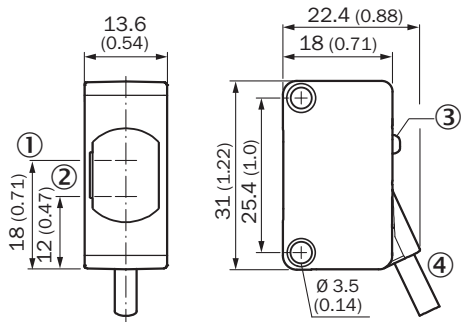


Figura 74: ZTx18-7xxxx/ZTx18-Gxxxx

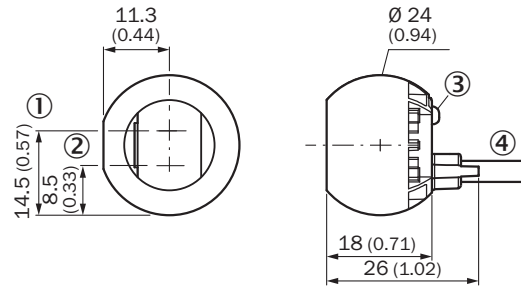


Figura 75: ZTx18-8xxxx/ZTx18-Hxxxx

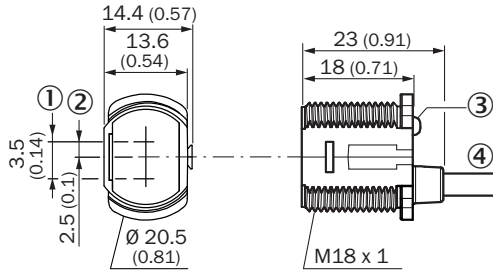


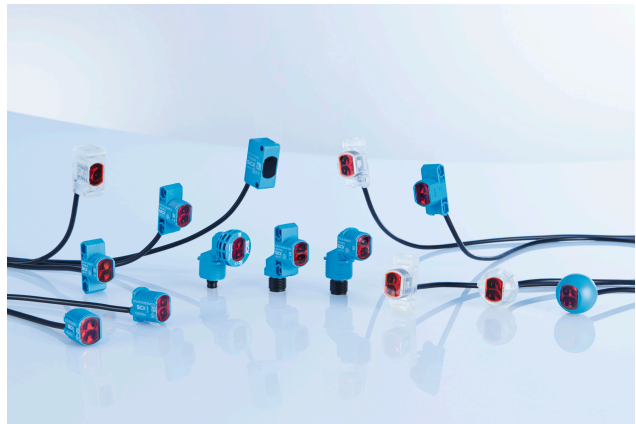
Figura 76: ZTx18-9xxxx/ZTx18-Jxxxx

- ① asse ottico, emettitore
- ② asse ottico, ricevitore
- ③ indicatori di stato a LED
- ④ collegamento/scarico della trazione

# ZTB18

Sensores fotoelétricos cilíndricos

**SICK**  
Sensor Intelligence.



de  
en  
es  
fr  
it  
ja  
pt  
ru  
zh

**Produto descrito**

Z18 SimpleSense  
ZTB18

**Fabricante**

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

**Notas legais**

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### 45 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.

### 46 Indicações sobre a homologação UL

Tipos de carcaça azul (Zxx18-1xxxxx ... Zxx18-9xxxxx):

- Type 1 enclosure

Tipos de carcaça transparente (Zxx18-1xxxxx ... Zxx18-9xxxxx):

- Type 1 enclosure
- Class 2 power supply required

### 47 Uso pretendido

O ZTB18 é um sensor de proximidade de supressão do fundo fotoelétrico opto-eletrônico (referido como “sensor” daqui em diante) para detecção óptica sem contato de objetos, animais e pessoas. Se o produto for utilizado para qualquer outro propósito ou modificado de qualquer maneira, qualquer reivindicação de garantia contra a SICK AG se tornará nula.

### 48 Indicar de operação

Sensor de proximidade fotoelétrico com supressão do fundo.

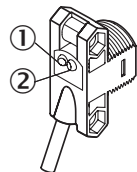


Figura 77: Indicadores de operação

- ① Indicador de LED (verde): energia
- ② Indicador de LED (laranja): luz recebida



## 49 Montagem

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

Note a orientação preferível do sensor relativa à direção do movimento do objeto, consulte [figura 78](#).

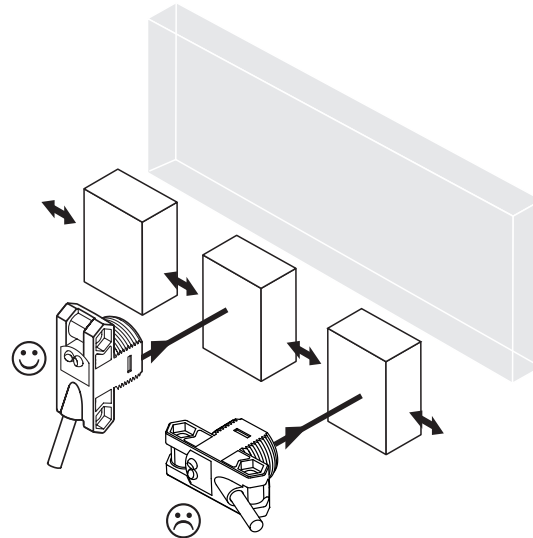


Figura 78: Orientação do sensor relativa à direção do objeto

## 50 Instalação elétrica

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

- Conector: Pin-out
- Cabo: cor dos fios

Instalar ou ligar a alimentação de tensão ( $V_S > 0\text{ V}$ ) somente após realizar todas as conexões elétricas.

Explicação da terminologia de conexão usada nas Tabelas 1-3:

- BN = Brown (Marrom)
- WH = White (Branco)
- BU = Blue (Azul)
- BK = Black (Preto)
- n. c. = não conectado
- Q1 = saída de comutação 1
- Q2 = saída de comutação 2
- L+ = tensão de alimentação ( $V_S$ )
- M = peso
- L.ON = comutação por luz
- D.ON = comutação por sombra

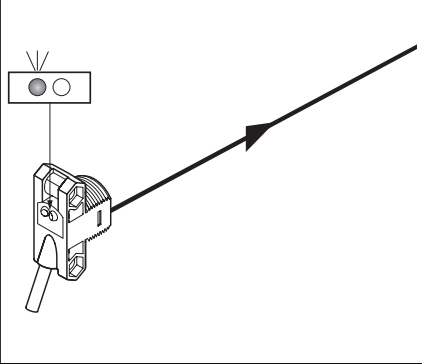
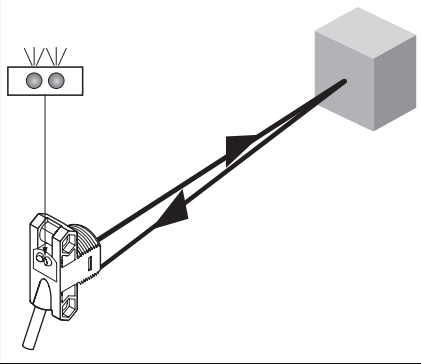
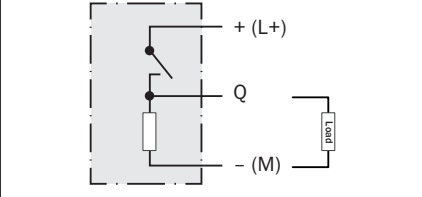
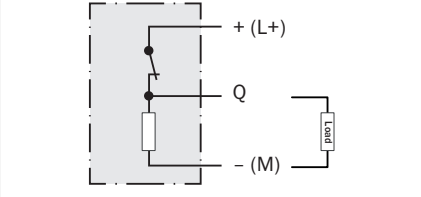
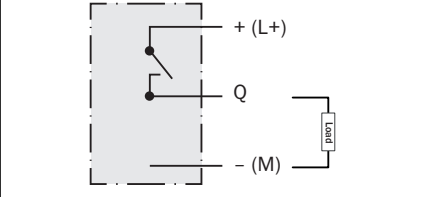
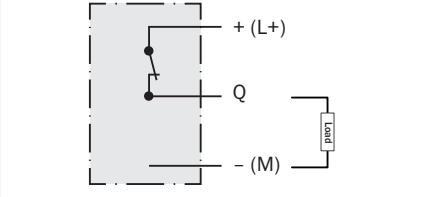
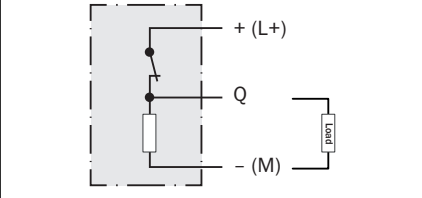
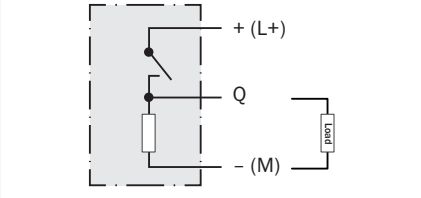
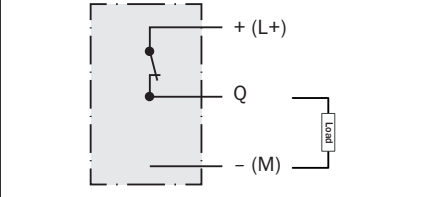
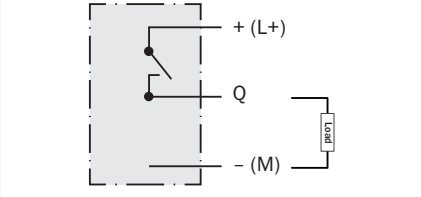
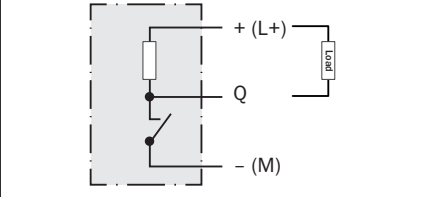
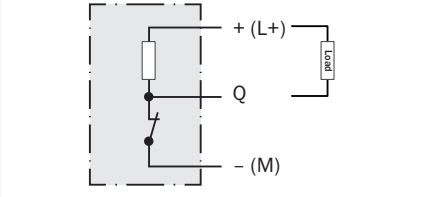
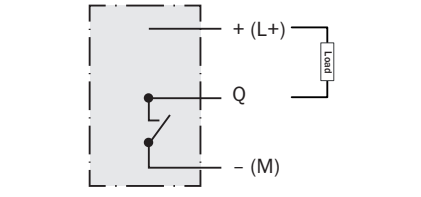
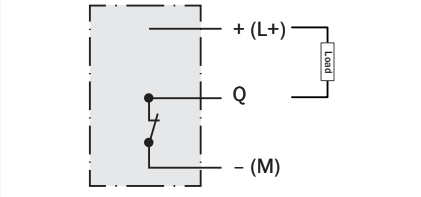


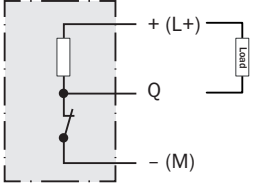
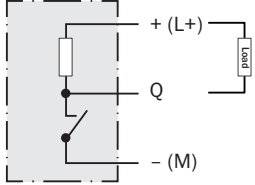
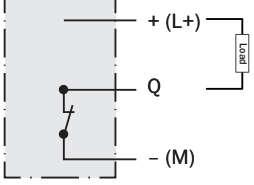
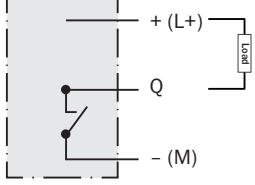
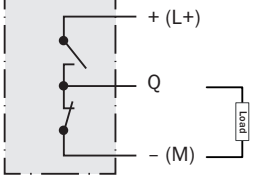
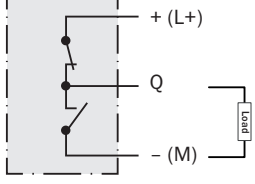
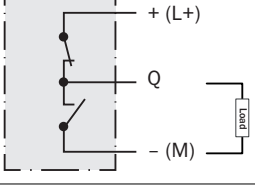
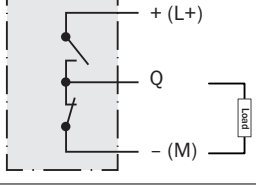
### NOTA

As saídas do sensor podem vir equipadas com um conjunto de fábrica atraso ON e/ou atraso OFF. Isso é indicado por um sufixo Txx no final do Número de Modelo (Zxx18-xxxxxTxx).

Detalhe de conexão e saída:

Tabela 21: Operação de saída

<p>ZTx18                  -x_xxxx = saída Q1                  -xx_xxx = saída Q2</p>		
<p>-xPxxxx                  -x8xxxx                  -xxPxxx                  L.ON, PNP: Q (≤ 100 mA)</p>		
<p>-xHxxxx                  -x4xxxx                  -xxHxxx                  L.ON, PNP Abrir Coletor Q (≤ 100 mA)</p>		
<p>-xFxxxx                  -x2xxxx                  -xxFxxx                  D.ON, PNP: Q (≤ 100 mA)</p>		
<p>-xKxxxx                  -x6xxxx                  -xxKxxx                  D.ON, PNP Abrir Coletor Q (≤ 100 mA)</p>		
<p>-xNxxxx                  -x7xxxx                  -xxNxxx                  L.ON, NPN: Q (≤ 100 mA)</p>		
<p>-xGxxxx                  -x3xxxx                  -xxGxxx                  L.ON, NPN Abrir Coletor Q (≤ 100 mA)</p>		

<p>-xExxxx -x1xxxx -xxExxx D.ON, NPN: Q (<math>\leq 100</math> mA)</p>		
<p>-xJxxxx -x5xxxx -xxJxxx D.ON, NPN Abrir Coletor Q (<math>\leq 100</math> mA)</p>		
<p>-xAxxxx -XRxxxx -xxAxxx L.ON, Empurrar-Puxar (<math>\leq 100</math> mA)<sup>1</sup></p>		
<p>-xBxxxx -xSxxxx -xxBxxx D.ON, Empurrar-Puxar (<math>\leq 100</math> mA)<sup>1</sup></p>		

<sup>1</sup> Diagrama de saída PNP retratado; NPN também é possível conectando a Carga a + (L+) e Q

Tabela 22: Operação Alarme/Saúde

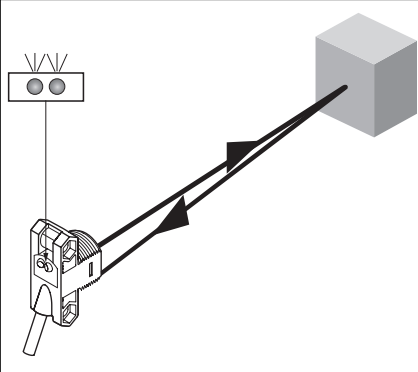
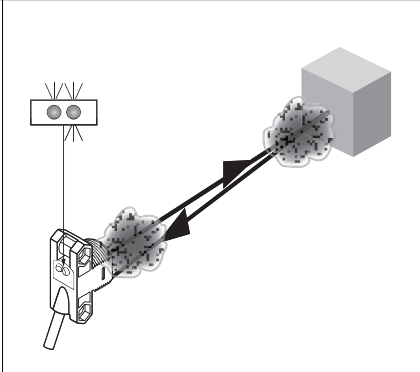
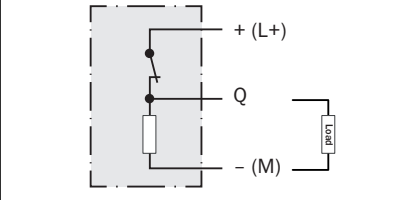
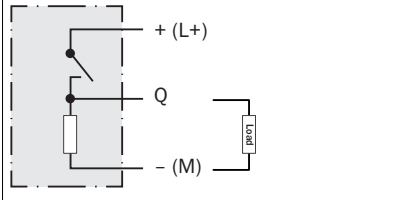
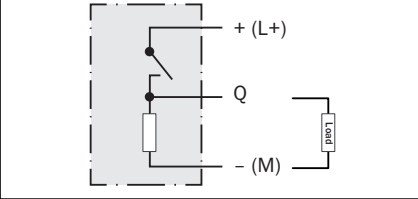
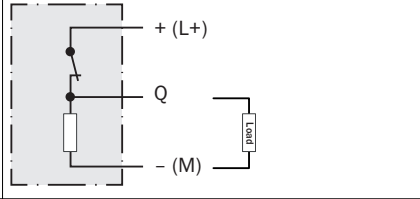
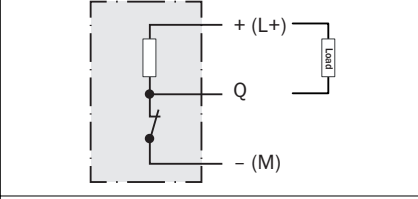
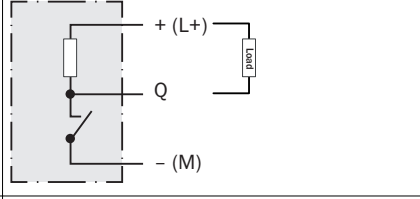
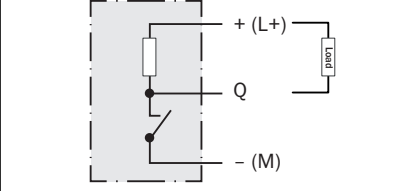
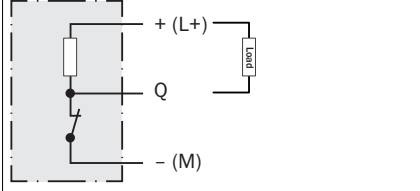
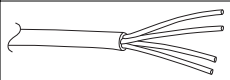
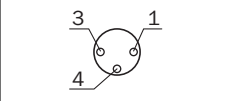
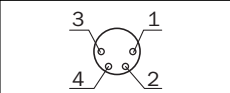
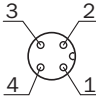
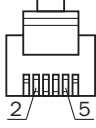
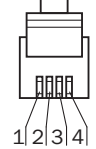
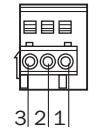
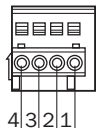
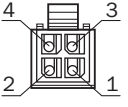
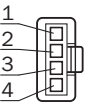
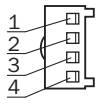
<p>ZTx18 -xx_XXX = saída Q2 Saúde/Alarme é sempre a saída Q2</p>		
<p>-xxRxxx Saúde, PNP (<math>\leq 100</math> mA)</p>		
<p>-xxTxxx Alarme, PNP (<math>\leq 100</math> mA)</p>		
<p>-xxQxxx Saúde, PNP (<math>\leq 100</math> mA)</p>		
<p>-xxSxxx Alarme, NPN (<math>\leq 100</math> mA)</p>		

Tabela 23: Pinagem de conexão

Zxx18	Diagrama	Pino 1	Pino 2	Pino 3	Pino 4	Pino 5	Pino 6
-xxx1xx	 0,14 mm <sup>2</sup> AWG26	+ (L+) BN	Q2 WH	- (M) BU	Q1 BK	-	-
-xxx2xx M8, 3p		+ (L+) (BN)	-	- (M) (BU)	Q1 (BK)	-	-
-xxx3xx/-xxx5xx M8, 4p		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-

-xxx4xx M12, 4p		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-
-xxxÁxx RJ12		n. c.	+ (L+) (BN)	Q1 (BK)	Q2 (WH)	- (M) (BU)	n. c.
-xxxBxx RJ9		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-
-xxxCxx Wago 733-103		+ (L+) (BN)	Q1 (BK)	- (M) (BU)	-	-	-
-xxxDxx Wago 733-104		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-
-xxxExx Molex 23025-0400 (2x2)		Q1 (BK)	Q2 (WH)	+ (L+) (BN)	- (M) (BU)	-	-
-xxxFxx Tyco 1445022-4 (1x4)		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-
-xxxGxx Wuerth 61900411621 (1x4)		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-

1) Vista frontal de conectores

## 51 Colocação em operação

### 1 Alinhamento

ZTB18-xxxx2: 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 [ver [figura 79](#)].

ZTB18-xxxx1: alinhar o sensor ao objeto. Selecionar o posicionamento de forma que a luz infravermelha (invisível) incida sobre o centro do objeto. O alinhamento correto só pode ser verificado através dos indicadores LED. Ver [figura 79](#) e [tabela 21](#). Certificar-se de que a abertura óptica (vidro frontal) do sensor esteja completamente livre.

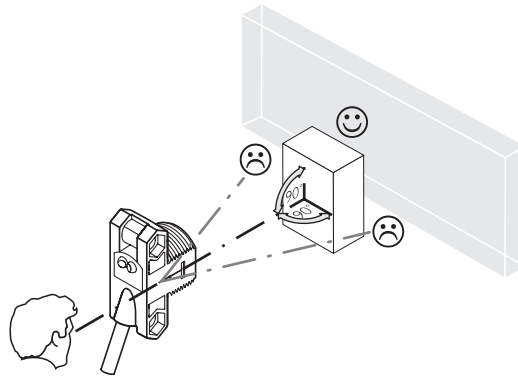


Figura 79: Alinhamento

**2 Alcance de detecção**

Verifique as condições da aplicação: O ZTB18 está disponível em duas versões de alcance de detecção fixo (em branco, 90%):

- 50 mm (ZTB18-xxxxxD02)
- 100 mm (ZTB18-xxxxxD04)

Ajuste a posição de montagem para que o alcance de detecção e o fundo estejam dentro da especificação. Consulte [ver figura 80, página 70](#).



**NOTA**

Por favor, observe o alcance mínimo de 5 mm.

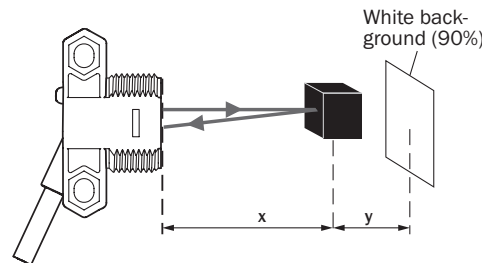


Figura 80: Alcance de detecção em preto

Alcance de detecção em preto, 6%:

- ZTB18-xxxxxD02:  $x = 47$  mm,  $y = 4$  mm
- ZTB18-xxxxxD04:  $x = 93$  mm,  $y = 8$  mm

Use [ver tabela 21, página 66](#) para verificar a função. Se a saída de comutação falhar em se comportar de acordo com [ver tabela 21, página 66](#), verifique as condições da aplicação.

**3 Configuração de alcance de detecção**

Sensor incapaz de ser configurado: O sensor foi ajustado para máxima distância de comutação pela fábrica e está pronto para operação.

**4 Operação com recepção de luz marginal**

O sensor oferecerá uma notificação pré-falha piscando o indicador de LED laranja quando operar com recepção de luz marginal. Isso pode ser o resultado de alinhamento incorreto, superfície(s) óptica(s) contaminada(s), e/ou remissão de luz insuficiente do alvo. O sensor pode ser equipado com uma saída Saúde ou Alarme, a qual oferece um sinal discreto quando o sensor está operando na condição marginal. Consulte [tabela 22](#) para detalhes adicionais sobre operação de saída Saúde/Alarme.

## 52 Eliminação de falhas

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

Tabela 24: Solução de problemas

Indicador LED / padrão de erro	Causa	Medida
LED amarelo não acende mesmo que o emissor esteja alinhado ao objeto e o objeto esteja dentro do alcance de detecção definido	Sem tensão ou tensão abaixo dos valores-limite	Verificar a alimentação de tensão, verificar toda a conexão elétrica (cabos e conectores)
	Interrupções de tensão	Assegurar uma alimentação de tensão estável sem interrupções
	Sensor está com defeito	Se a alimentação de tensão estiver em ordem, substituir o sensor
LED amarelo pisca; se Alarme/Saúde estiver presente, então anote o sinal de saída correspondente	Sensor ainda está pronto para operação, mas as condições de operação não são as ideais	Verifique as condições de operação: Alinhe completamente o feixe de luz (ponto de luz) com o objeto/Limpe as superfícies ópticas
LED amarelo aceso, nenhum objeto no caminho óptico	Remissão do fundo perdida	Verifique se há objetos altamente reflexivos no fundo e tente removê-los com campo de visão dos sensores
Objeto está no caminho óptico, LED amarelo apagado	Remissão de objeto está muito baixa	Reduza a distância entre o sensor e o objeto. Note que o objeto pode não ter luminosidade suficiente para detecção.

## 53 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.

## 54 Manutenção

SICK recomenda a manutenção regular a seguir:

- Limpe as superfícies ópticas externas
- Verifique as conexões a parafuso e as conexões de plug-in

Nenhuma modificação pode ser feita nos dispositivos.

Sujeito a alterações sem aviso prévio. Propriedades de produto e dados técnicos especificados não são garantias por escrito.



55 Dados técnicos

	ZTB18-xxxxxD02	ZTB18-xxxxxD04
Alcance de detecção min.	5 mm	5 mm
Distância de comutação	50 mm	100 mm
Distância de comutação máx.	50 mm <sup>1)</sup>	100 mm <sup>1)</sup>
Diâmetro do ponto de luz/distância	8 mm / 100 mm	8 mm / 100 mm
Tensão de alimentação U <sub>v</sub>	DC 10 ... 30 V <sup>2)</sup>	DC 10 ... 30 V <sup>2)</sup>
Corrente de saída I <sub>max</sub>	≤ 100 mA	≤ 100 mA
Sequência máx. de comutação	500 Hz <sup>3)</sup>	500 Hz <sup>3)</sup>
Tempo máx. de resposta	≤ 1 ms <sup>4)</sup>	≤ 1 ms <sup>4)</sup>
Tipo de proteção	IP67	IP67
Classe de proteção	III	III
Circuitos de proteção	A, B, D <sup>6)</sup>	A, B, D <sup>6)</sup>
Temperatura ambiente de funcionamento	-40 °C ... +55 °C	-40 °C ... +55 °C

- 1) Objeto a ser detectado com 90% de luminância (com base no padrão branco DIN 5033)
- 2) Valores limite; funcionamento com rede à prova de curto-circuito máx. 8 A; ondulação residual máx. 5 V<sub>ss</sub>
- 3) Com proporção sombra/luz 1:1
- 4) Tempo de funcionamento do sinal com carga ôhmica
- 6) A = conexões protegidas contra inversão de pólos U<sub>v</sub>  
 B = Entradas e saídas protegidas contra polaridade inversa  
 D = Saídas protegidas contra sobrecorrente e curto-circuito

55.1 Desenhos dimensionais

Tabela 25: Desenhos dimensionais

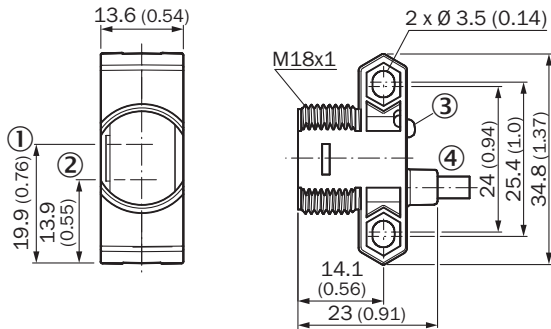


Figura 81: ZTx18-1xxxx/ZTx18-Axxxx

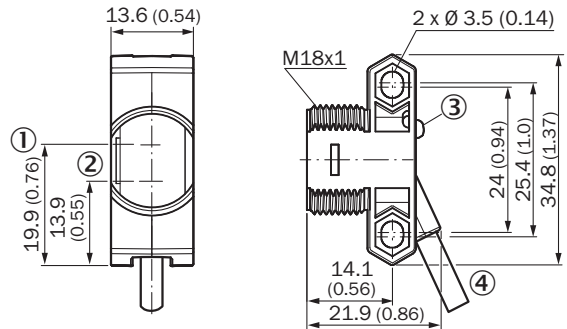


Figura 82: ZTx18-2xxxx/ZTx18-Bxxxx, cabo

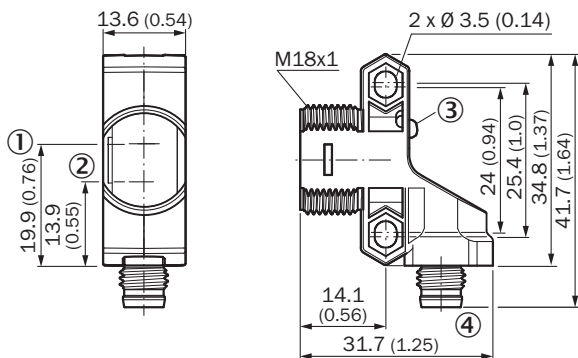


Figura 83: ZTx18-2xxxx/ZTx18-Bxxxx, conector M8

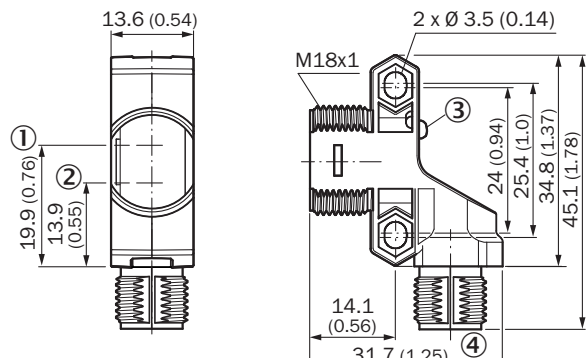


Figura 84: ZTx18-2xxxx/ZTx18-Bxxxx, conector M12

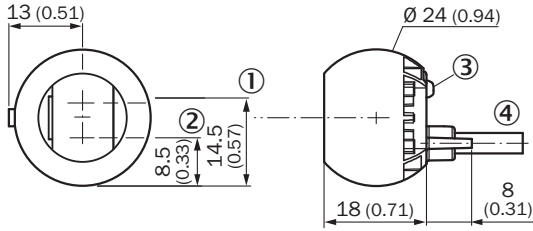


Figura 85: ZTx18-3xxxx/ZTx18-Cxxxx

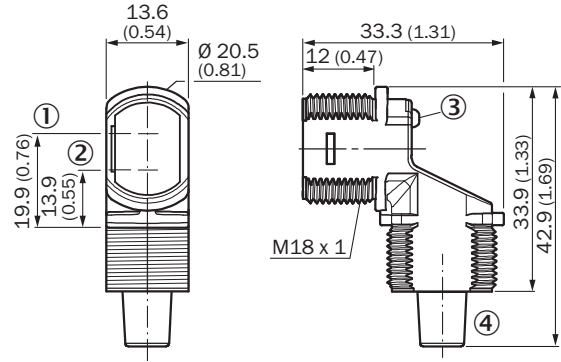


Figura 86: ZTx18-4xxxx/ZTx18-Dxxxx, cabo

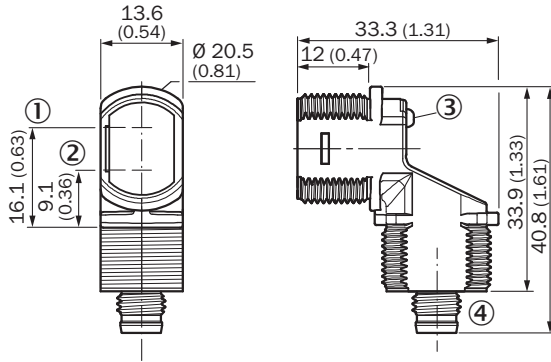


Figura 87: ZTx18-4xxxx/ZTx18-Dxxxx, conector M8

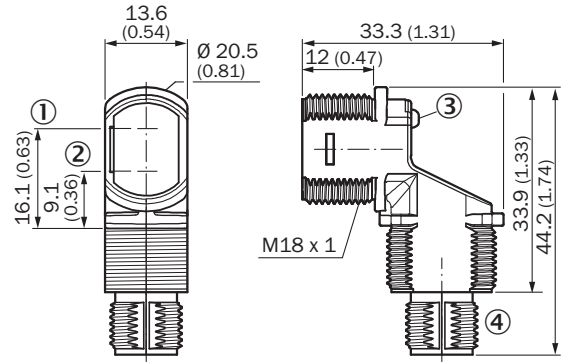


Figura 88: ZTx18-4xxxx/ZTx18-Dxxxx, conector M12

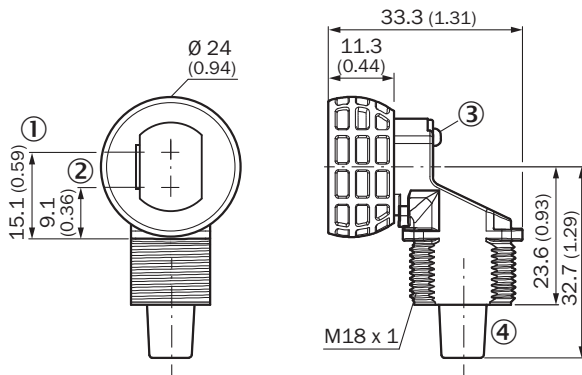


Figura 89: ZTx18-5xxxx/ZTx18-Exxxx, cabo

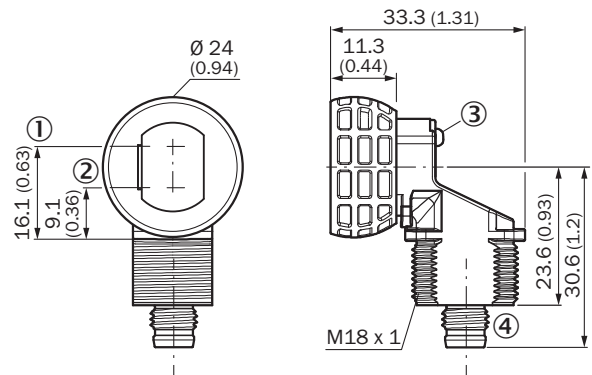


Figura 90: ZTx18-5xxxx/ZTx18-Exxxx, conector M8

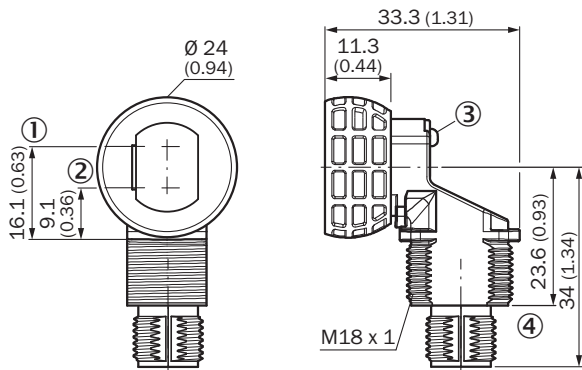


Figura 91: ZTx18-5xxxx/ZTx18-Exxxx, conector M12

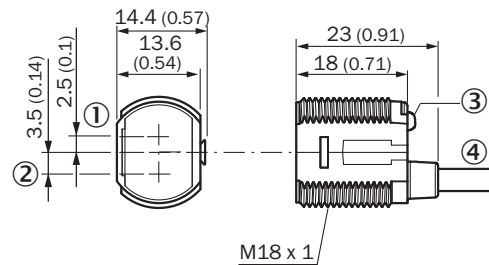


Figura 92: ZTx18-6xxxx/ZTx18-Fxxxx

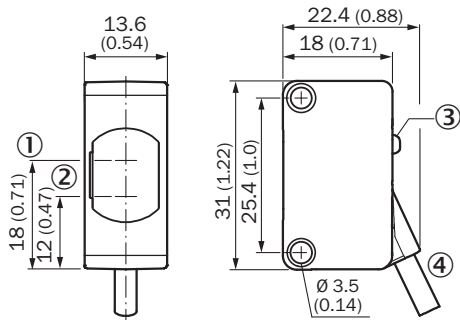


Figura 93: ZTx18-7xxxx/ZTx18-Gxxxx

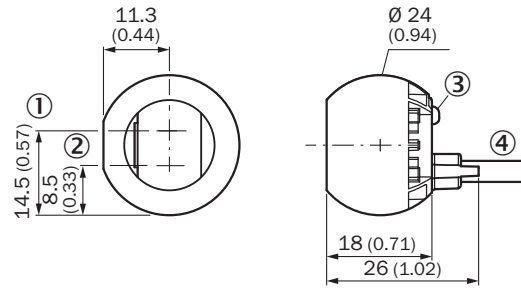


Figura 94: ZTx18-8xxxx/ZTx18-Hxxxx

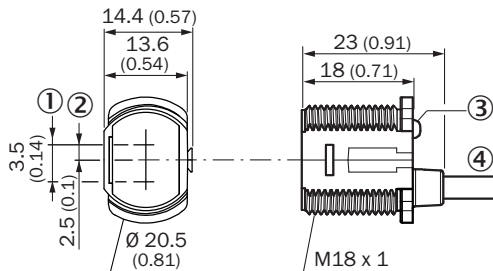


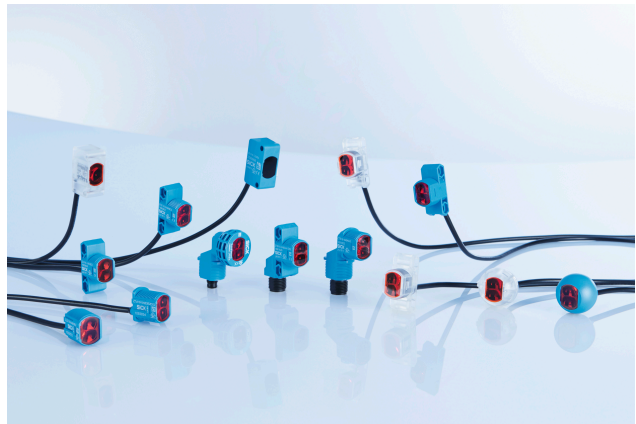
Figura 95: ZTx18-9xxxx/ZTx18-Jxxxx

- ① eixo óptico, emissor
- ② eixo óptico, receptor
- ③ Indicadores de operação de LED
- ④ conexão/alívio de tensão

# ZTB18

Fotocélulas cilíndricas

**SICK**  
Sensor Intelligence.



de  
en  
es  
fr  
it  
ja  
pt  
ru  
zh

### Producto descrito

Z18 SimpleSense  
ZTB18

### Fabricante

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

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## 56 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.

## 57 Indicaciones sobre la homologación UL

Tipos de carcasa azules (Zxx18-1xxxxx ... Zxx18-9xxxxx):

- Type 1 enclosure

Tipos de carcasa transparentes (Zxx18-Axxxxx ... Zxx18-Jxxxxx):

- Type 1 enclosure
- Class 2 power supply required

## 58 Uso conforme a lo previsto

El ZTB18 es un sensor de proximidad fotoeléctrico optoelectrónico con supresión de fondo (denominado “sensor” en adelante) para la detección óptica y sin contacto de objetos, animales y personas. Si el producto se utiliza con algún otro propósito o se modifica de cualquier manera, todas las reclamaciones de garantía que se presenten a SICK AG quedarán invalidadas.

## 59 Indicadores de servicio y funcionamiento

Sensor de proximidad fotoeléctrico con supresión de fondo.

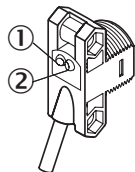


Figura 96: Indicadores de servicio

- ① Indicador LED (verde): alimentación
- ② Indicador LED (naranja): luz recibida

## 60 Montaje

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

Tenga en cuenta la orientación del sensor respecto a la dirección de movimiento del objeto, consulte [figura 97](#).

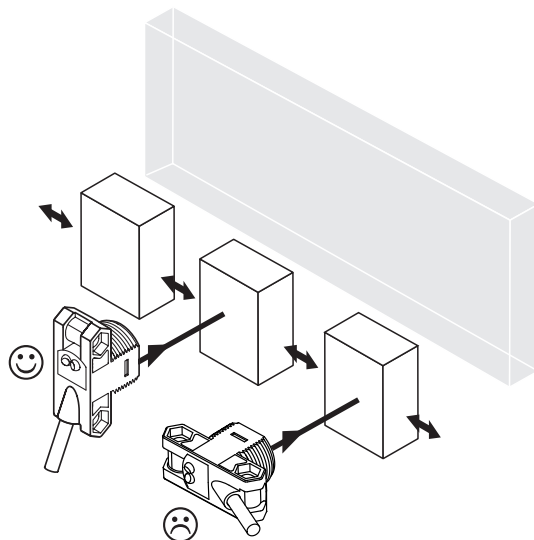


Figura 97: Orientación del sensor respecto a la dirección del objeto

## 61 Instalación eléctrica

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

- Conexión de enchufes: asignación de terminales
- Cable: color del hilo

No aplicar ni conectar la fuente de alimentación ( $V_S > 0\text{ V}$ ) hasta que no se hayan finalizado todas las conexiones eléctricas.

Leyenda de la terminología de conexión de las Tablas 1-3:

BN = Brown (Marrón)  
 WH = White (Blanco)  
 BU = Blue (Azul)  
 BK = Black (Negro)  
 n. c. = No conectado  
 Q1 = Salida conmutada 1  
 Q2 = Salida conmutada 2  
 L+ = Tensión de alimentación  $V_S$   
 M = Peso  
 L.ON = Conmutación en claro  
 D.ON = Conmutación en oscuro



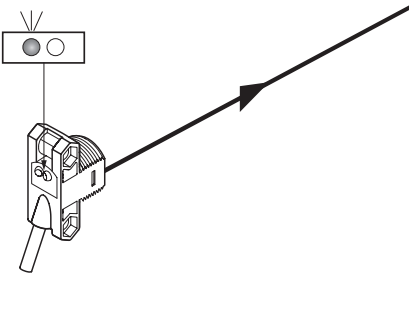
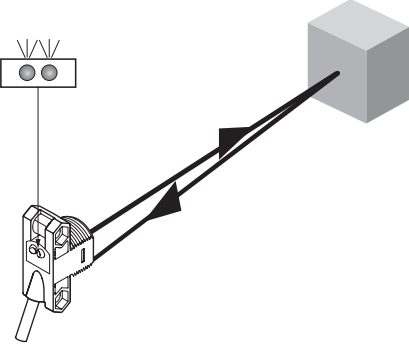
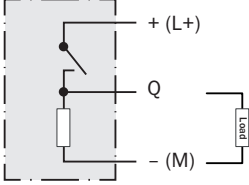
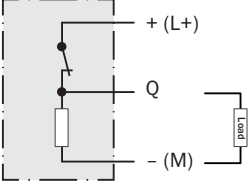
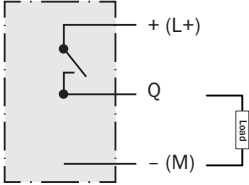
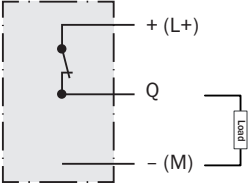
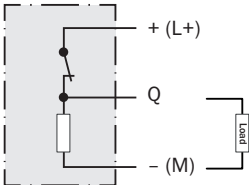
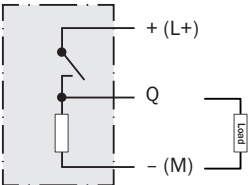
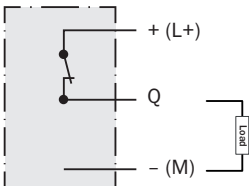
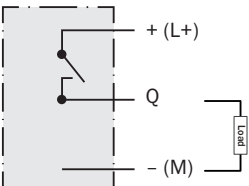
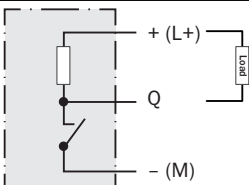
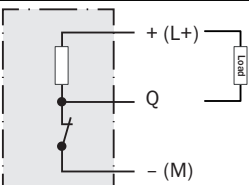
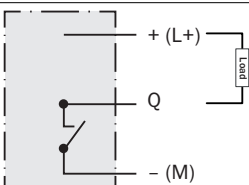
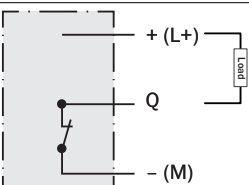
### INDICACIÓN

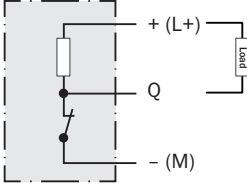
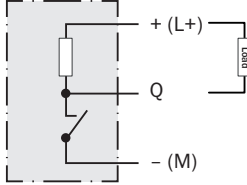
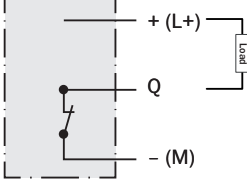
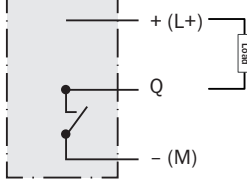
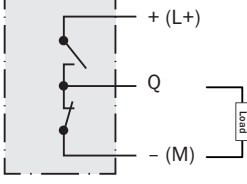
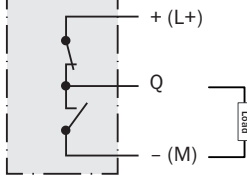
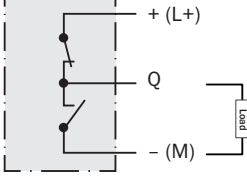
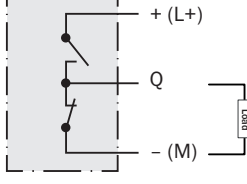
Las salidas del sensor pueden estar equipadas con un retardo de activación y/o de desactivación ajustado de fábrica. Ello se indica por medio del sufijo Txx al final del número de modelo (Zxx18-xxxxxTxx).



Detalles de la conexión y la salida:

Tabla 26: Operación de salida

<p>ZTx18                  -x_xxxx = Salida Q1                  -xx_xxx = Salida Q2</p>		
<p>-xPxxxx                  -x8xxxx                  -xxPxxx                  L.ON, PNP: Q (≤ 100 mA)</p>		
<p>-xHxxxx                  -x4xxxx                  -xxHxxx                  L.ON, PNP colector abierto Q (≤ 100 mA)</p>		
<p>-xFxxxx                  -x2xxxx                  -xxFxxx                  D.ON, PNP: Q (≤ 100 mA)</p>		
<p>-xKxxxx                  -x6xxxx                  -xxKxxx                  D.ON, PNP colector abierto Q (≤ 100 mA)</p>		
<p>-xNxxxx                  -x7xxxx                  -xxNxxx                  L.ON, NPN: Q (≤ 100 mA)</p>		
<p>-xGxxxx                  -x3xxxx                  -xxGxxx                  L.ON, NPN colector abierto Q (≤ 100 mA)</p>		

<p>-xExxx -x1xxx -xxExxx D.ON, NPN: Q (≤ 100 mA)</p>		
<p>-xJxxx -x5xxx -xxJxxx D.ON, NPN colector abierto Q (≤ 100 mA)</p>		
<p>-xAxxx -XRxxx -xxAxxx L.ON, Push-pull (≤100 mA)<sup>1</sup></p>		
<p>-xBxxx -xSxxx -xxBxxx D.ON, Push-pull (≤ 100 mA)<sup>1</sup></p>		

<sup>1</sup> Diagrama de salida PNP ilustrado; NPN también es posible conectando la carga a + (L+) y Q

Tabla 27: Funcionamiento de la señal Alarm/Health

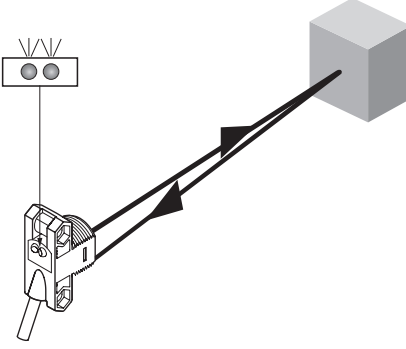
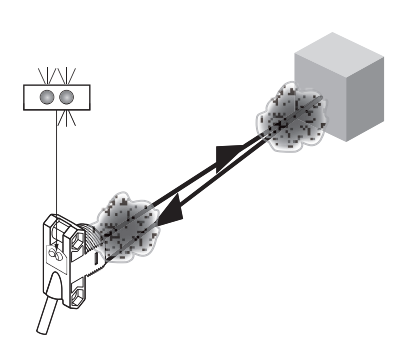
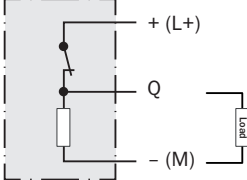
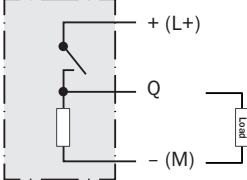
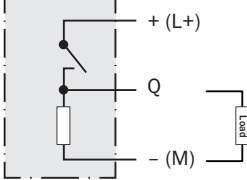
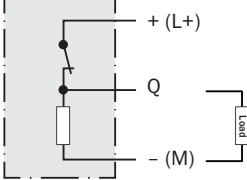
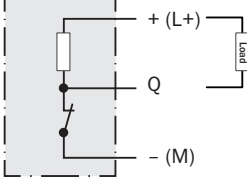
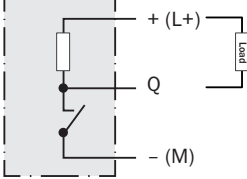
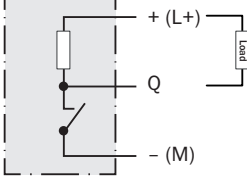
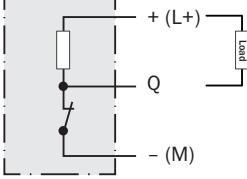
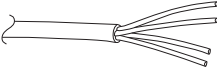
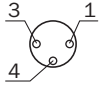
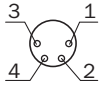
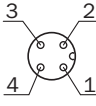
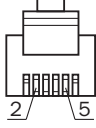
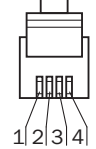
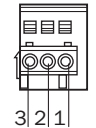
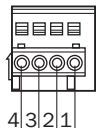
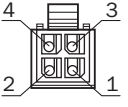
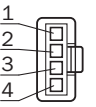
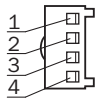
<p>ZTx18 -xx_xxx = Salida Q2 La señal Alarm/Health siempre tiene lugar en la salida Q2</p>		
<p>-xxRxxx Health, PNP (<math>\leq 100</math> mA)</p>		
<p>-xxTxxx Alarm, PNP (<math>\leq 100</math> mA)</p>		
<p>-xxQxxx Health, NPN (<math>\leq 100</math> mA)</p>		
<p>-xxSxxx Alarm, NPN (<math>\leq 100</math> mA)</p>		

Tabla 28: Disposición de los pines de conexión

Zxx18	Diagrama	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6
-xxx1xx	 0,14 mm <sup>2</sup> AWG26	+ (L+) BN	Q2 WH	- (M) BU	Q1 BK	-	-
-xxx2xx M8, 3p		+ (L+) (BN)	-	- (M) (BU)	Q1 (BK)	-	-
-xxx3xx/-xxx5xx M8, 4p		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-

-xxx4xx M12, 4p		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-
-xxxAxx RJ12		n. c.	+ (L+) (BN)	Q1 (BK)	Q2 (WH)	- (M) (BU)	n. c.
-xxxBxx RJ9		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-
-xxxCxx Wago 733-103		+ (L+) (BN)	Q1 (BK)	- (M) (BU)	-	-	-
-xxxDxx Wago 733-104		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-
-xxxExx Molex 23025-0400 (2x2)		Q1 (BK)	Q2 (WH)	+ (L+) (BN)	- (M) (BU)	-	-
-xxxFxx Tyco 1445022-4 (1x4)		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-
-xxxGxx Wuerth 61900411621 (1x4)		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-

1) Vista frontal de los conectores

## 62 Puesta en servicio

### 1 Alineación

ZTB18-xxxx2: alinear 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 [véase [figura 98](#)].  
 ZTB18-xxxx1: alinear el sensor hacia un objeto. Seleccione una posición que permita que la luz infrarroja (no visible) incida en el centro del objeto. La alineación correcta solo se puede reconocer mediante los LED indicadores. Véase a este respecto [figura 98](#) y [tabla 26](#). Hay que procurar que la apertura óptica (pantalla frontal) del sensor esté completamente libre.

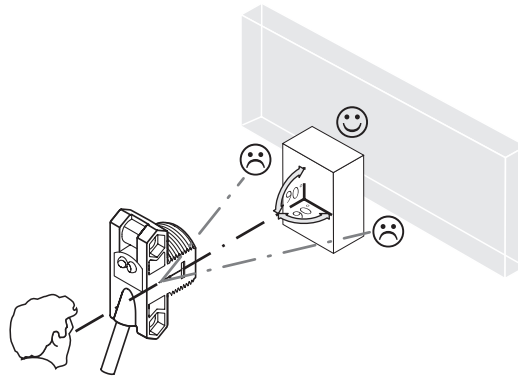


Figura 98: Alineación

## 2 Distancia de conmutación

Compruebe las condiciones de aplicación: el ZTB18 está disponible en dos versiones de distancia de conmutación (en blanco, 90%):

- 50 mm (ZTB18-xxxxxD02)
- 100 mm (ZTB18-xxxxxD04)

Ajuste la posición de montaje de manera que la distancia de conmutación y el fondo estén dentro de las especificaciones. Consulte [véase figura 99, página 85](#).



### INDICACIÓN

Preste atención a la distancia mínima de 5 mm.

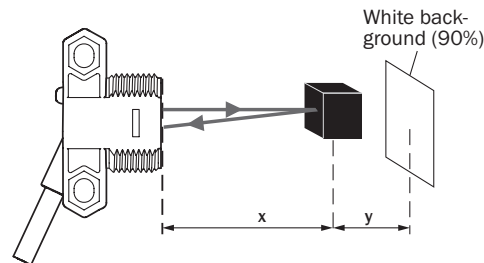


Figura 99: Distancia de conmutación sobre negro

Distancia de conmutación sobre negro, 6%:

- ZTB18-xxxxxD02:  $x = 47$  mm,  $y = 4$  mm
- ZTB18-xxxxxD04:  $x = 93$  mm,  $y = 8$  mm

Utilice [véase tabla 26, página 81](#) para comprobar el funcionamiento. Si la salida conmutada no se comporta de acuerdo con [véase tabla 26, página 81](#), compruebe las condiciones de aplicación.

## 3 Ajuste de la distancia de conmutación

No es posible ajustar el sensor: el sensor se ha ajustado en fábrica a la distancia de conmutación máxima y está preparado para el funcionamiento.

## 4 Funcionamiento con recepción de luz marginal

En condiciones de funcionamiento con recepción de luz marginal, el indicador LED naranja del sensor parpadea para informar de una situación de fallo previo. Esta condición puede ser resultado de una alineación incorrecta, suciedad en las superficies ópticas y/o una reflectancia de luz insuficiente en el objetivo. El sensor puede estar equipado con una salida Health o Alarm, las cuales proporcionan una señal discreta cuando el sensor funciona en condiciones marginales. Consulte [tabla 27](#) para obtener más información sobre el funcionamiento de la salida Health/Alarm.

## 63 Resolución de problemas

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

Tabla 29: Resolución de problemas

LED indicador / imagen de error	Causa	Acción
El LED amarillo no se ilumina pese a que el emisor está alineado con el objeto y el objeto está dentro de la distancia de conmutación ajustada	Sin tensión o tensión por debajo de los valores límite	Comprobar la fuente de alimentación, comprobar toda la conexión eléctrica (cables y conectores)
	Interrupciones de tensión	Asegurar una fuente de alimentación estable sin interrupciones de tensión
	El sensor está defectuoso	Si la fuente de alimentación no tiene problemas, cambiar el sensor
El LED amarillo parpadea; si hay presente una señal Alarm/Health, anote la señal de salida correspondiente	El sensor continúa preparado para funcionar, pero las condiciones de servicio no son óptimas.	Compruebe las condiciones de funcionamiento: alinee completamente el haz de luz (spot) con el objeto/limpie las superficies ópticas
El LED amarillo se ilumina, no hay ningún objeto en la trayectoria del haz	Reflectancia de fondo dispersa	Compruebe si hay objetos con un alto grado de reflectancia en el fondo e intente eliminarlos del campo visual de los sensores
El objeto se encuentra en la trayectoria del haz, el LED amarillo no se ilumina	Reflectancia del objeto demasiado baja	Reduzca la distancia entre el sensor y el objeto. Tenga en cuenta que el objeto podría no tener suficiente reflectancia para que se detecte.

## 64 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.

## 65 Mantenimiento

SICK recomienda las siguientes actividades de mantenimiento periódico:

- Limpie las superficies ópticas externas
- Compruebe las uniones atornilladas y las conexiones enchufables

No se deben realizar modificaciones en los dispositivos.

Sujeto a cambio sin previo aviso. Las propiedades del producto y los datos técnicos especificados no constituyen una garantía por escrito.

66 Datos técnicos

	ZTB18-xxxxxD02	ZTB18-xxxxxD04
Distancia de conmutación mín.	5 mm	5 mm
Distancia de conmutación	50 mm	100 mm
Distancia de conmutación máx.	50 mm <sup>1)</sup>	100 mm <sup>1)</sup>
Diámetro del punto luminoso/distancia	8 mm / 100 mm	8 mm / 100 mm
Tensión de alimentación U <sub>v</sub>	DC 10 ... 30 V <sup>2)</sup>	DC 10 ... 30 V <sup>2)</sup>
Intensidad de salida I <sub>max.</sub>	≤ 100 mA	≤ 100 mA
Secuencia de conmutación máx.	500 Hz <sup>3)</sup>	500 Hz <sup>3)</sup>
Tiempo de respuesta máx.	≤ 1 ms <sup>4)</sup>	≤ 1 ms <sup>4)</sup>
Tipo de protección	IP67	IP67
Clase de protección	III	III
Circuitos de protección	A, B, D <sup>6)</sup>	A, B, D <sup>6)</sup>
Temperatura ambiente de servicio	-40 °C ... +55 °C	-40 °C ... +55 °C

- 1) Material con un 90% de reflexión (sobre el blanco estándar según DIN 5033)
- 2) Valores límite; funcionamiento en red protegida contra cortocircuitos máx. 8 A; ondulación residual máx. 5 V<sub>ss</sub>
- 3) Con una relación claro/oscuro de 1:1
- 4) Duración de la señal con carga óhmica
- 6) A = U<sub>v</sub> protegidas contra polarización inversa  
 B = Entradas y salidas protegidas contra polarización incorrecta  
 D=Salidas a prueba de sobrecorriente y cortocircuitos.

66.1 Dibujos acotados

Tabla 30: Dibujos acotados

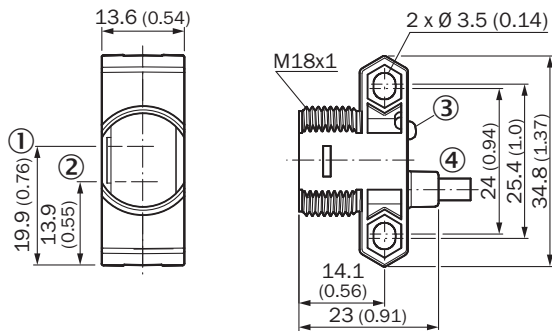


Figura 100: ZTx18-1xxxx/ZTx18-Axxxx

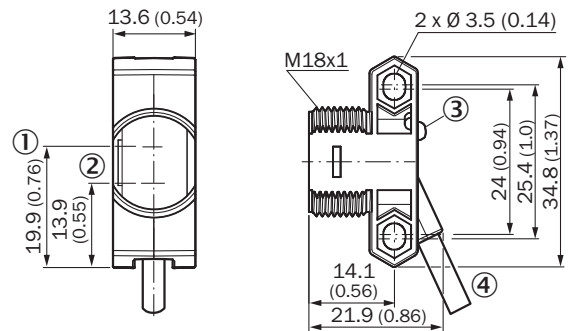


Figura 101: ZTx18-2xxxx/ZTx18-Bxxxx, cable

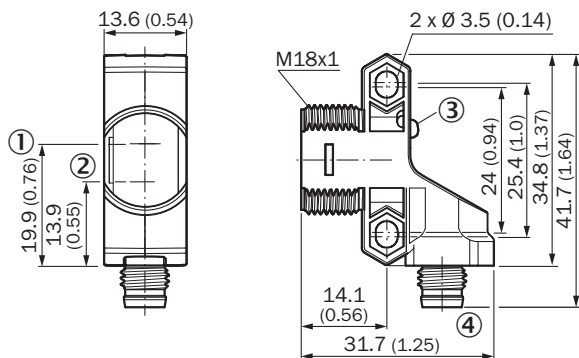


Figura 102: ZTx18-2xxxx/ZTx18-Bxxxx, conector M8

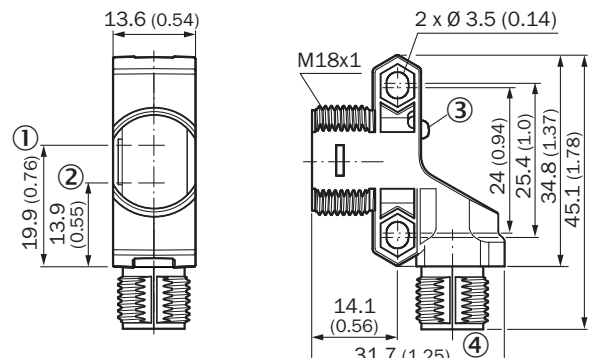


Figura 103: ZTx18-2xxxx/ZTx18-Bxxxx, conector M12



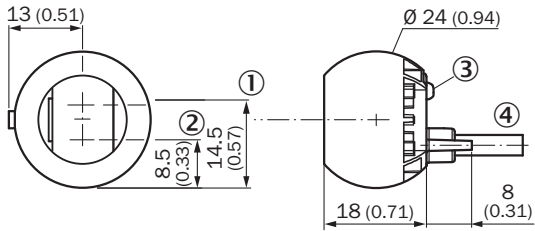


Figura 104: ZTx18-3xxxxx/ZTx18-Cxxxxx

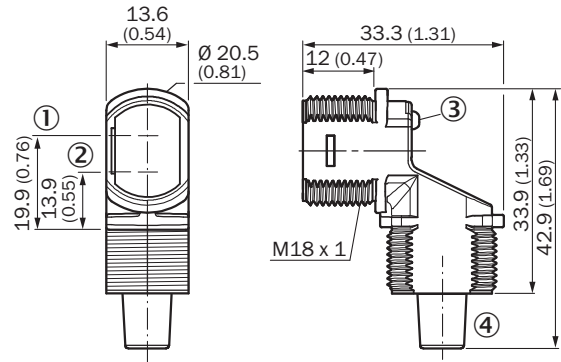


Figura 105: ZTx18-4xxxxx/ZTx18-Dxxxxx, cable

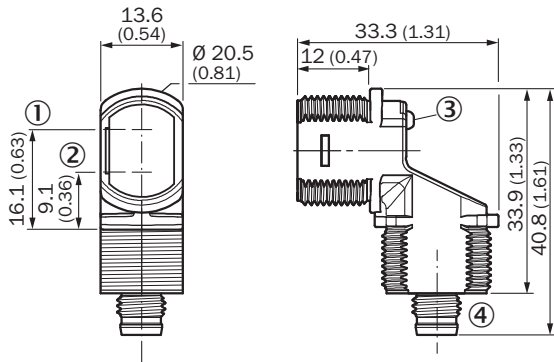


Figura 106: ZTx18-4xxxxx/ZTx18-Dxxxxx, conector M8

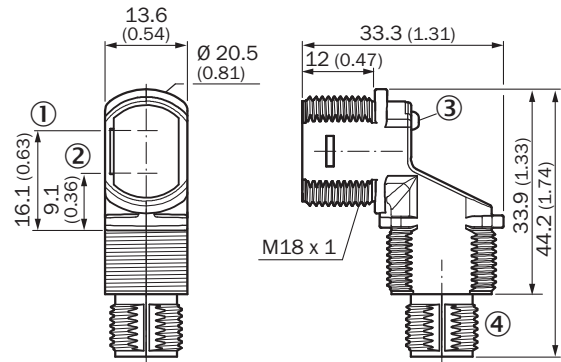


Figura 107: ZTx18-4xxxxx/ZTx18-Dxxxxx, conector M12

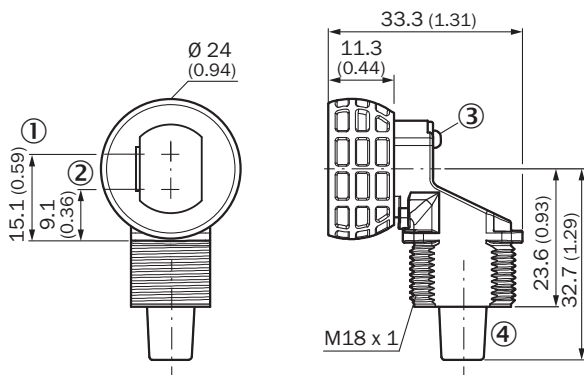


Figura 108: ZTx18-5xxxxx/ZTx18-Exxxxx, cable

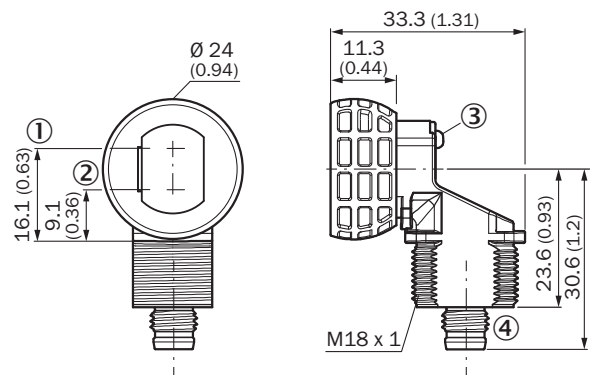


Figura 109: ZTx18-5xxxxx/ZTx18-Exxxxx, conector M8

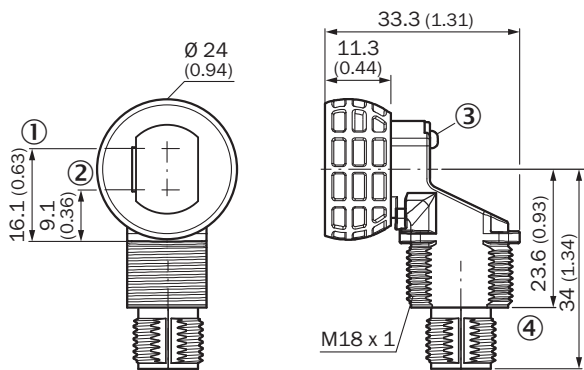


Figura 110: ZTx18-5xxxxx/ZTx18-Exxxxx, conector M12

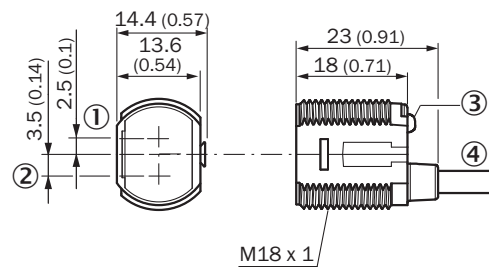


Figura 111: ZTx18-6xxxxx/ZTx18-Fxxxxx

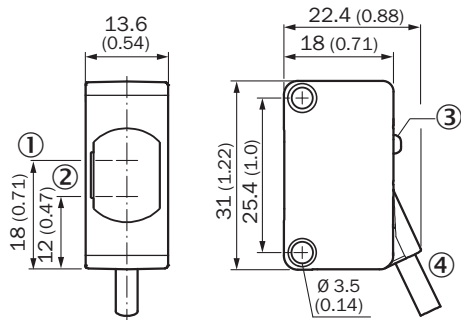


Figura 112: ZTx18-7xxxx/ZTx18-Gxxxx

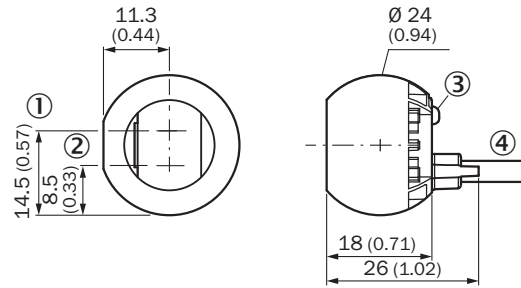


Figura 113: ZTx18-8xxxx/ZTx18-Hxxxx

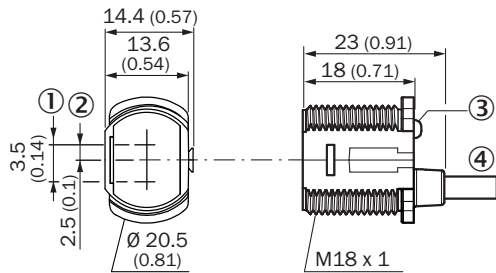


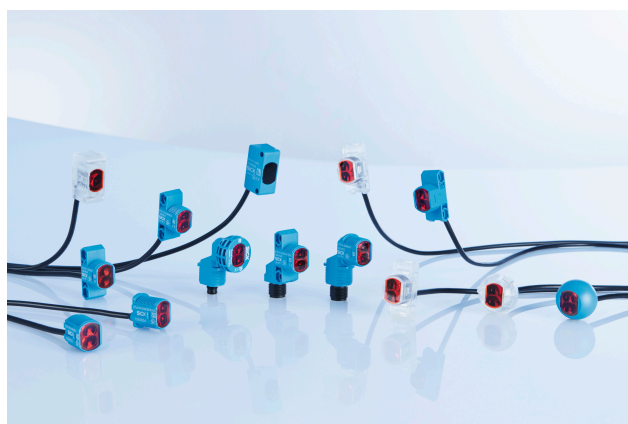
Figura 114: ZTx18-9xxxx/ZTx18-Jxxxx

- ① eje óptico, emisor
- ② eje óptico, receptor
- ③ Indicadores LED de servicio
- ④ conexión/alivio de tensión

# ZTB18

## 圆柱形光电传感器

**SICK**  
Sensor Intelligence.



de  
en  
es  
fr  
it  
ja  
pt  
ru  
zh

## 所说明的产品

Z18 SimpleSense

ZTB18

## 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 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。

## 68 关于 UL 认证的提示

蓝色外壳类型 (Zxx18-1xxxxx ... Zxx18-9xxxxx) :

- Type 1 enclosure

清澈外壳类型 (Zxx18-Axxxxx ... Zxx18-Jxxxxx) :

- Type 1 enclosure
- Class 2 power supply required

## 69 设计用途

ZTB18 是背景抑制型漫反射式光电传感器（以下称为“传感器”），用于物体、动物和人的非接触式光学检测。如果产品用于任何其他用途或以任何方式改动，则针对 SICK AG 的任何质保申诉将视为无效。

## 70 运行和状态指示灯

带有背景抑制功能的漫反射式光电传感器

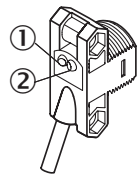


插图 115: 状态指示灯

- ① LED 指示灯（绿色）：电源
- ② LED 指示灯（橙色）：已接收光

## 71 安装

将传感器安装在合适的安装支架上（参见 SICK 配件目录）。  
注意传感器相对于物体运动方向的优选取向，请参阅 [插图 116](#)。

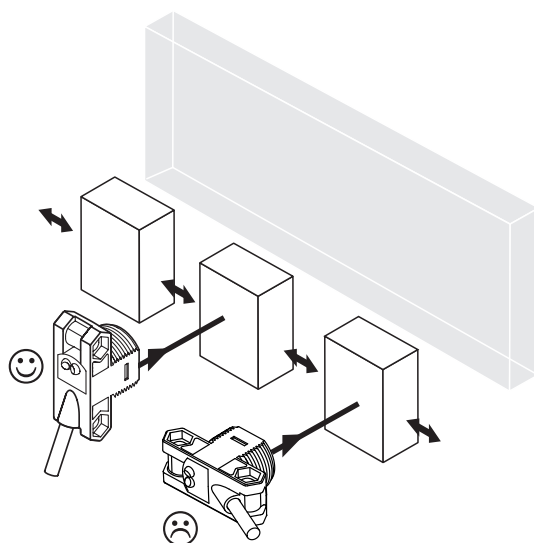


插图 116: 相对于物体方向的传感器取向

## 72 电气安装

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

- 插头连接: 引线分配
- 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 ( $U_V > 0\text{ V}$ ) 。

表 1-3 中所用连接术语的说明:

BN = 棕色  
 WH = 白色  
 BU = 蓝色  
 BK = 黑色  
 n. c.= 未连接  
 Q1 = 开关输出端 1  
 Q2 = 开关输出端 2  
 L+ = 供电电压 ( $U_V$ )  
 M = 接地  
 L.ON = 亮动  
 D.ON = 暗动

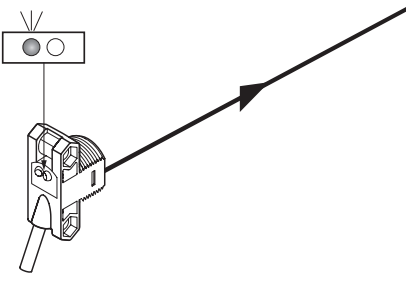
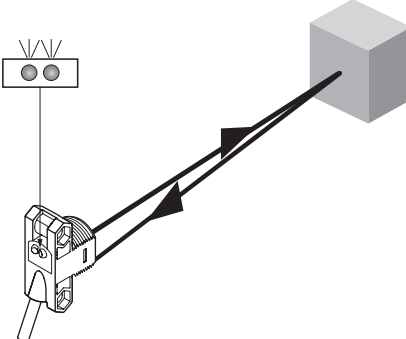
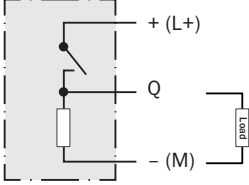
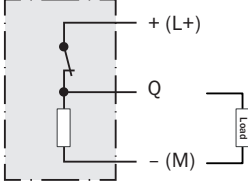
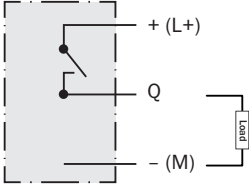
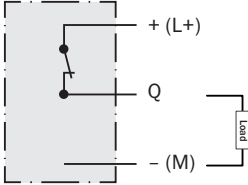
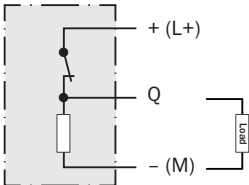
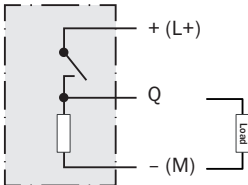
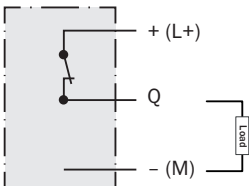
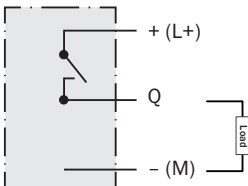
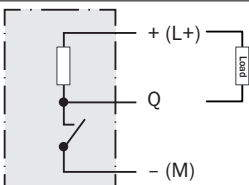
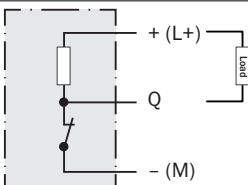
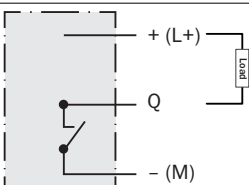
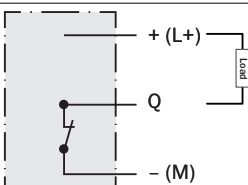


### 提示

传感器输出端可能采用出厂设置 ON 延迟和/或 OFF 延迟。通过型号 (Zxx18-xxxxxxTxx) 末尾的 Txx 后缀对此进行指示。

连接和输出详情:

表格 31: 输出操作

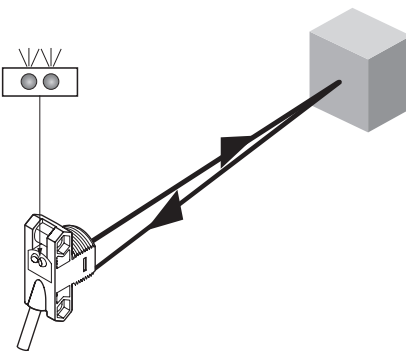
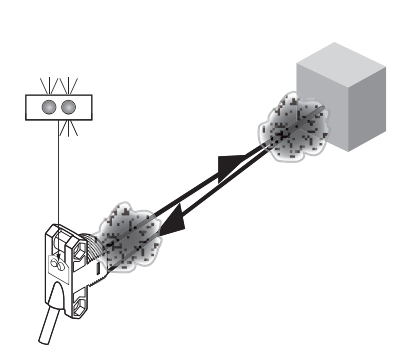
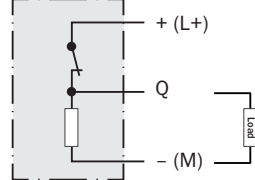
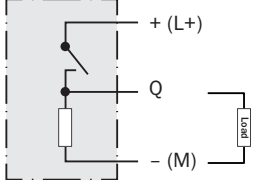
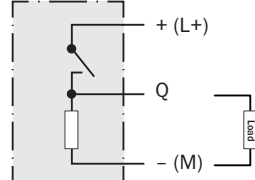
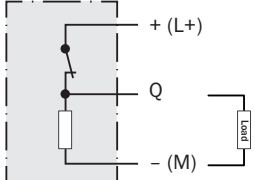
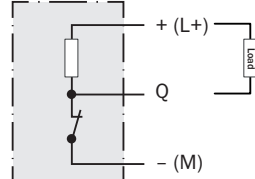
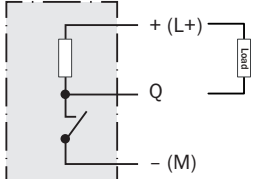
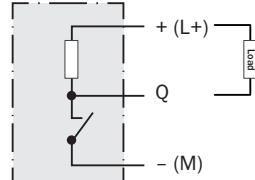
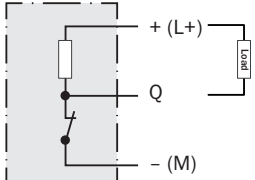
<p>ZTx18                  -x_xxxx = Q1 输出端                  -xx_xxx = Q2 输出端</p>		
<p>-xPxxxx                  -x8xxxx                  -xxPxxx                  L.ON, PNP: Q (<math>\leq 100</math> mA)</p>		
<p>-xHxxxx                  -x4xxxx                  -xxHxxx                  L.ON, PNP 集电极开路 Q (<math>\leq 100</math> mA)</p>		
<p>-xFxxxx                  -x2xxxx                  -xxFxxx                  D.ON, PNP: Q (<math>\leq 100</math> mA)</p>		
<p>-xKxxxx                  -x6xxxx                  -xxKxxx                  D.ON, PNP 集电极开路 Q (<math>\leq 100</math> mA)</p>		
<p>-xNxxxx                  -x7xxxx                  -xxNxxx                  L.ON, NPN: Q (<math>\leq 100</math> mA)</p>		
<p>-xGxxxx                  -x3xxxx                  -xxGxxx                  L.ON, NPN 集电极开路 Q (<math>\leq 100</math> mA)</p>		



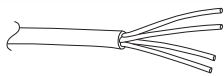
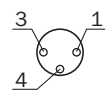
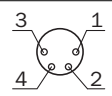
<p>-xExxxx -x1xxxx -xxExxx D.ON, NPN: Q (<math>\leq 100</math> mA)</p>		
<p>-xJxxxx -x5xxxx -xxJxxx D.ON, NPN 集电极开路 Q (<math>\leq 100</math> mA)</p>		
<p>-xAxxxx -XRxxxx -xxAxxx L.ON, 推挽 (<math>\leq 100</math> mA)<sup>1</sup></p>		
<p>-xBxxxx -xSxxxx -xxBxxx D.ON, 推挽 (<math>\leq 100</math> mA)<sup>1</sup></p>		

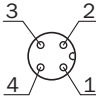
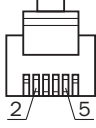
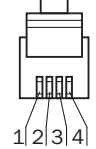
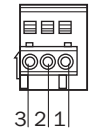
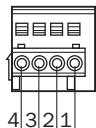
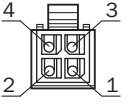
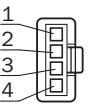
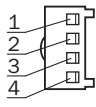
<sup>1</sup> PNP 输出图示; 通过将负荷连接至 + (L+) 和 Q, 也可是 NPN

表格 32: 报警/运行状况操作

<p>ZTx18 -xx_XXX = Q2 输出端 运行状况/报警始终为 Q2 输出端</p>		
<p>-xxRxxx 运行状况, PNP (<math>\leq 100</math> mA)</p>		
<p>-xxTxxx 报警, PNP (<math>\leq 100</math> mA)</p>		
<p>-xxQxxx 运行状况, NPN (<math>\leq 100</math> mA)</p>		
<p>-xxSxxx 报警, NPN (<math>\leq 100</math> mA)</p>		

表格 33: 接口引脚分配

Zxx18	图表	引脚 1	引脚 2	引脚 3	引脚 4	引脚 5	引脚 6
-xxx1xx	 0.14 mm <sup>2</sup> AWG26	+ (L+) BN	Q2 WH	- (M) BU	Q1 BK	-	-
-xxx2xx M8, 3p		+ (L+) (BN)	-	- (M) (BU)	Q1 (BK)	-	-
-xxx3xx / -xxx5xx M8, 4p		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-

-xxx4xx M12, 4p		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-
-xxxAxx RJ12		n. c.	+ (L+) (BN)	Q1 (BK)	Q2 (WH)	- (M) (BU)	n. c.
-xxxBxx RJ9		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-
-xxxCxx Wago 733-103		+ (L+) (BN)	Q1 (BK)	- (M) (BU)	-	-	-
-xxxDxx Wago 733-104		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-
-xxxExx Molex 23025-0400 (2x2)		Q1 (BK)	Q2 (WH)	+ (L+) (BN)	- (M) (BU)	-	-
-xxxFxx Tyco 1445022-4 (1x4)		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-
-xxxGxx Wuerth 61900411621 (1x4)		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-

1) 连接器前视图

## 73 调试

### 1 对准

ZTB18-xxxxx2: 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 [参见插图 117]。

ZTB18-xxxxx1: 将传感器对准物体。选择定位，确保红外光（不可见光）射中物体的中间。仅可通过 LED 指示灯辨别校准是否正确。为此，请参见插图 117 和表格 31。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。

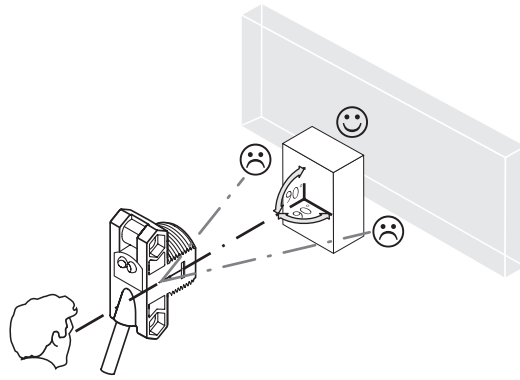


插图 117: 对准

## 2 触发感应距离

检查应用状况: ZTB18 提供两种固定触发感应距离 (白色背景上, 90%) 版本:

- 50 mm (ZTB18-xxxxxD02)
- 100 mm (ZTB18-xxxxxD04)

调整安装位置, 使触发感应距离和背景符合规范。请参阅 [参见插图 118, 第 100 页](#)。



### 提示

请注意 5 mm 的最小距离。

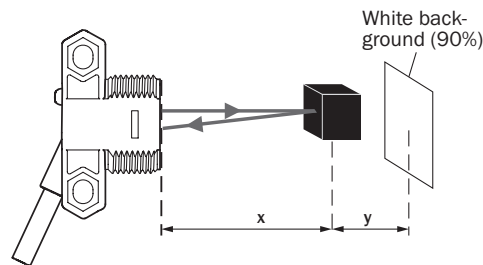


插图 118: 黑色背景上的触发感应距离

黑色背景上的触发感应距离, 6%:

- ZTB18-xxxxxD02:  $x = 47 \text{ mm}$ ,  $y = 4 \text{ mm}$
- ZTB18-xxxxxD04:  $x = 93 \text{ mm}$ ,  $y = 8 \text{ mm}$

使用 [参见表格 31, 第 96 页](#) 检查功能。如果开关量输出与 [参见表格 31, 第 96 页](#) 不符, 检查应用状况。

## 3 触发感应距离设置

传感器无法设置: 传感器已由厂方调整到最大触发感应距离, 并准备好运行。

## 4 通过边缘光接收运行

当通过边缘光接收运行时, 传感器将通过闪烁橙色 LED 指示灯来提供预期故障通知。这可能是未准确对准、光学表面污染和/或来自目标的光反射比不足造成的结果。传感器可配备运行状况或报警输出端, 当传感器在边缘条件下运行时, 它会提供离散信号。请参阅 [表格 32](#) 获取关于运行状况/报警输出端运行的更多详细信息。

## 74 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。

表格 34: 故障诊断

LED 指示灯 / 故障界面	原因	措施
即使发射器与物体对准并且物体在设定的触发感应距离内, 黄色 LED 也不会亮起	无电压或电压低于极限值	检查电源, 检查整体电气连接 (导线和插头连接)
	电压中断	确保电源稳定无中断
	传感器损坏	如果电源正常, 则更换传感器
黄色 LED 闪烁; 如果存在报警/运行状况, 则记下相应的输出信号	传感器仍然已经准备好运行, 但运行条件并不理想	检查运行条件: 将光束 (光点) 与物体完全对准/清洁光学表面
黄色 LED 亮起, 光路中无物体	散射背景反射	检查高反射物体的背景并尝试遮挡传感器视场
光路中有物体, 黄色 LED 未亮起	物体反射比过低	减小传感器与物体之间的距离。注意物体可能没有足够的反射比来进行检测。

## 75 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。

## 76 维护

SICK 建议进行以下定期维护:

- 清洁外部光学表面
- 检查螺栓连接和插入式连接

不可对设备进行任何修改。

如有更改, 恕不另行通知。具体的产品属性和技术数据并非书面保证。

## 77 技术数据

	ZTB18-xxxxxD02	ZTB18-xxxxxD04
最小触发感应距离	5 mm	5 mm
开关距离	50 mm	100 mm
最大开关距离	50 mm <sup>1)</sup>	100 mm <sup>1)</sup>
光斑直径/距离	8 mm / 100 mm	8 mm / 100 mm
供电电压 $U_V$	DC 10 ... 30 V <sup>2)</sup>	DC 10 ... 30 V <sup>2)</sup>
输出电流 $I_{max}$	$\leq 100$ mA	$\leq 100$ mA
最大开关操作顺序	500 Hz <sup>3)</sup>	500 Hz <sup>3)</sup>
最长响应时间	$\leq 1$ ms <sup>4)</sup>	$\leq 1$ ms <sup>4)</sup>
防护类型	IP67	IP67
防护等级	III	III
保护电路	A, B, D <sup>6)</sup>	A, B, D <sup>6)</sup>
工作环境温度	-40 °C ... +55 °C	-40 °C ... +55 °C

- 1) 具有 90 % 反射比的扫描对象 (指 DIN 5033 规定的标准白)  
 2) 极限值: 在防短路电网中运行, 最大 8 A; 最大余波 5  $V_{ss}$   
 3) 明暗比为 1:1  
 4) 信号传输时间 (电阻负载时)  
 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  
 D = 抗过载电流和抗短路输出端

## 77.1 尺寸图

表格 35: 尺寸图

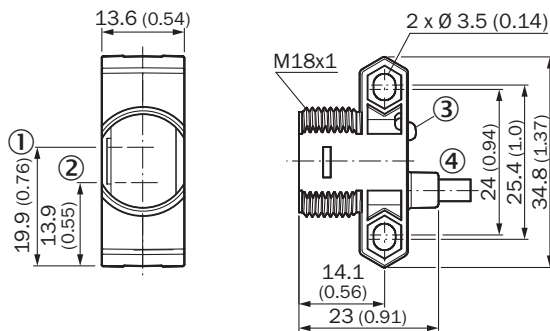


插图 119: ZTx18-1xxxxx/ZTx18-Axxxxx

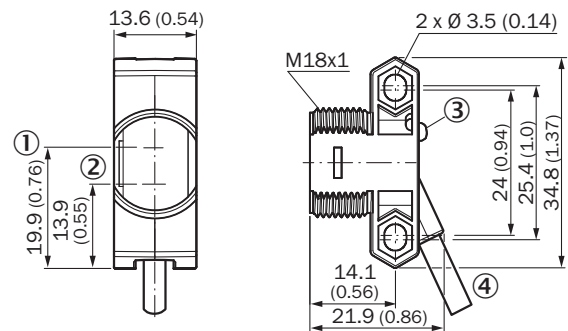


插图 120: ZTx18-2xxxxx/ZTx18-Bxxxxx, 电缆

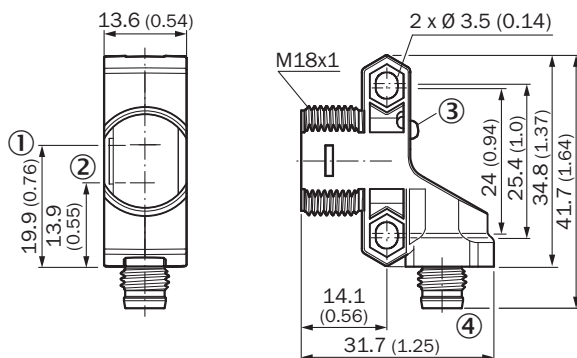


插图 121: ZTx18-2xxxxx/ZTx18-Bxxxxx, M8 连接器

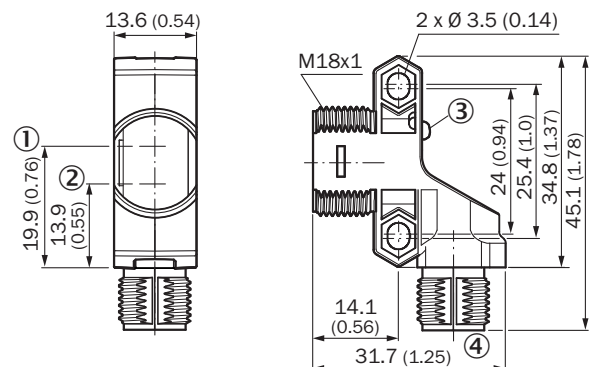


插图 122: ZTx18-2xxxxx/ZTx18-Bxxxxx, M12 连接器

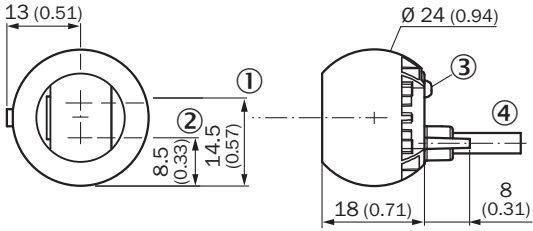


插图 123: ZTx18-3xxxxx/ZTx18-Cxxxxx

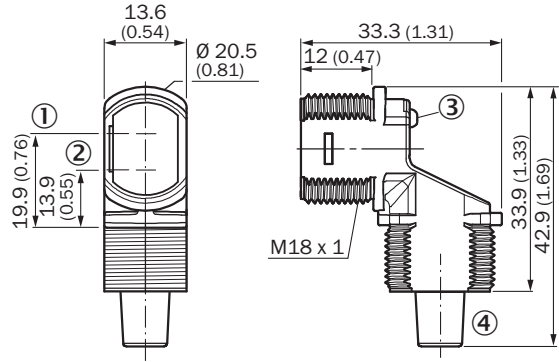


插图 124: ZTx18-4xxxxx/ZTx18-Dxxxxx, 电缆

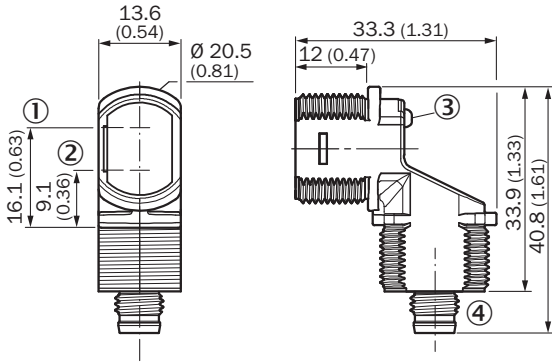


插图 125: ZTx18-4xxxxx/ZTx18-Dxxxxx, M8 连接器

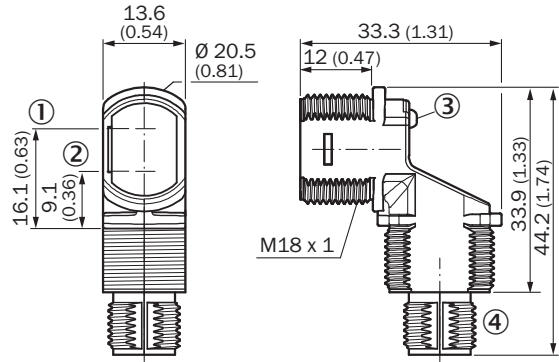


插图 126: ZTx18-4xxxxx/ZTx18-Dxxxxx, M12 连接器

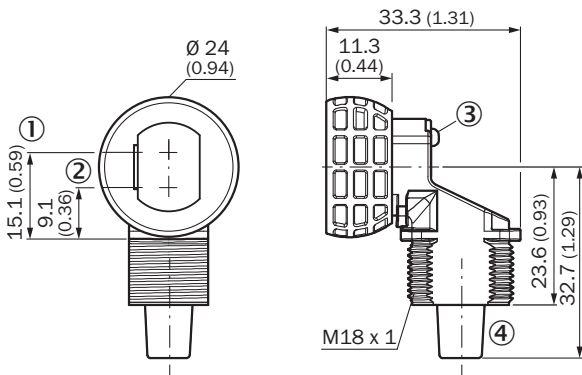


插图 127: ZTx18-5xxxxx/ZTx18-Exxxxx, 电缆

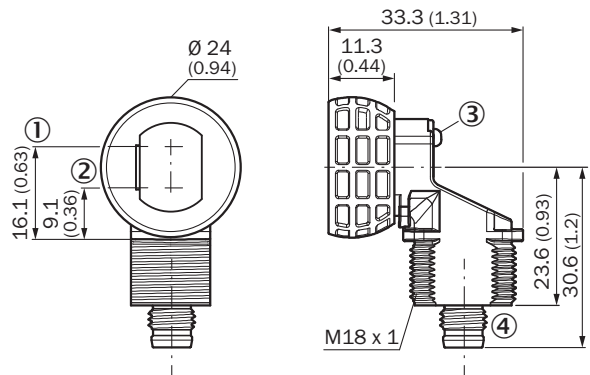


插图 128: ZTx18-5xxxxx/ZTx18-Exxxxx, M8 连接器

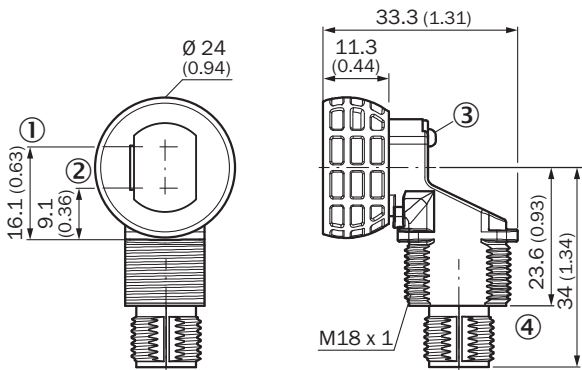


插图 129: ZTx18-5xxxxx/ZTx18-Exxxxx, M12 连接器

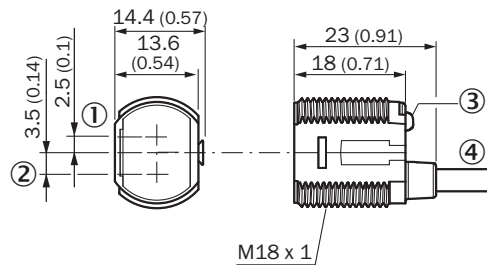


插图 130: ZTx18-6xxxxx/ZTx18-Fxxxxx

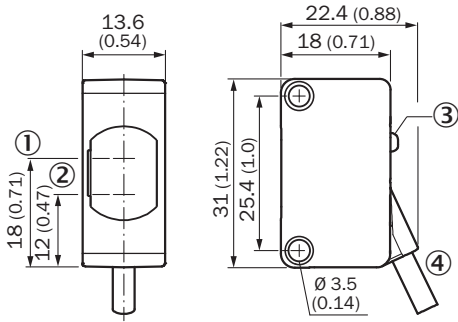


插图 131: ZTx18-7xxxx/ZTx18-Gxxxx

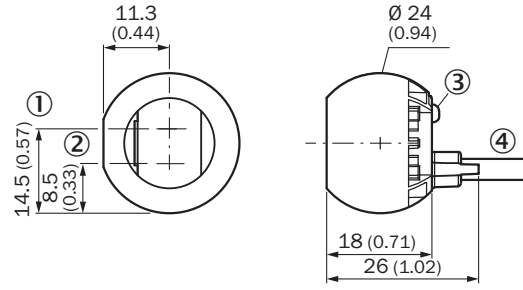


插图 132: ZTx18-8xxxx/ZTx18-Hxxxx

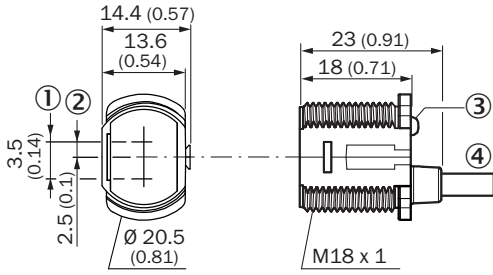


插图 133: ZTx18-9xxxx/ZTx18-Jxxxx

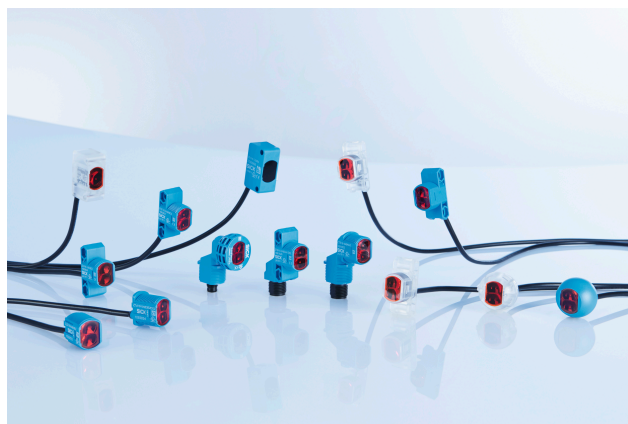
- ① 光轴, 发射器
- ② 光轴, 接收器
- ③ LED 状态指示灯
- ④ 接口/应变消除



# ZTB18

シリンダ形光電スイッチ

**SICK**  
Sensor Intelligence.



de  
en  
es  
fr  
it  
ja  
pt  
ru  
zh

## 説明されている製品

Z18 SimpleSense

ZTB18

## メーカー

SICK AG

Erwin-Sick-Str.1

79183 Waldkirch

Germany

## 法律情報

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## オリジナルドキュメント




このドキュメントは SICK AG のオリジナルドキュメントです。



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## 78 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。

## 79 UL 認証に関する注意事項

青い筐体タイプ (Zxx18-1xxxxx ... Zxx18-9xxxxx):

- ・ Type 1 enclosure

透明の筐体タイプ (Zxx18-Axxxxx ... Zxx18-Jxxxxx):

- ・ Type 1 enclosure
- ・ Class 2 power supply required

## 80 用途

ZTB18 はオプトエレクトロニクス光電式背景抑制近接センサ（以下「センサ」）で、物体、動物または人などを光学的技術により非接触で検出するための装置です。本製品が他の目的に使用されたり、何らかの方法で改造された場合、SICK AG に対するいかなる保証要求も無効になります。

## 81 動作およびステータス表示灯

背景抑制付きリフレクタ形光電センサ

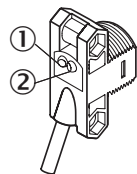


図 134: ステータス表示灯

- ① LED 表示灯（緑色）：電源
- ② LED 表示灯（オレンジ色）：受光

## 82 取付

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)。

対象物の動く方向に対して、センサの向きが検出可能な方向であることを確認してください。図 135 を参照してください。

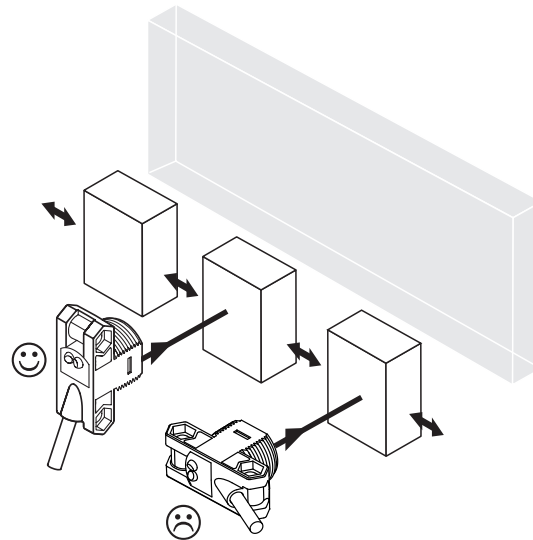


図 135: 対象物の向きに対するセンサの方向

## 83 電氣的接続

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: ピン配置
- 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。

表 1~3 で使用されている接続用語の説明:

BN = 茶色  
 WH = 白色  
 BU = 青色  
 BK = 黒色  
 n. c. = 未接続  
 Q1 = スイッチング出力 1  
 Q2 = スイッチング出力 2  
 L+ = 供給電圧 ( $V_S$ )  
 M = 共通  
 L.ON = 入光時オン  
 D.ON = 遮光時オン

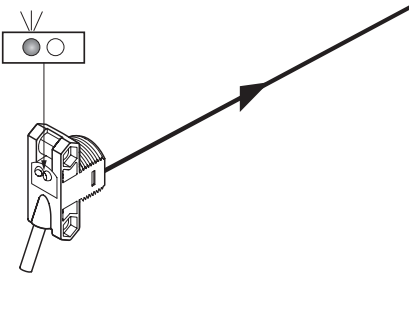
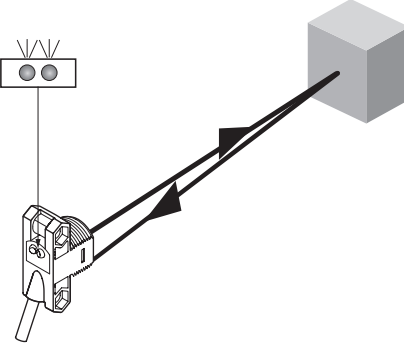
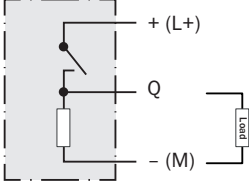
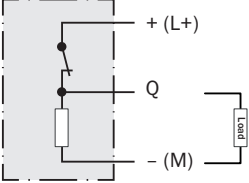
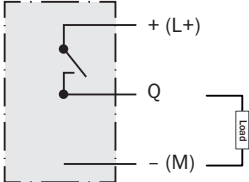
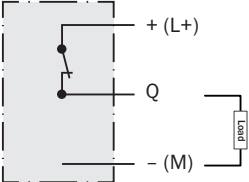
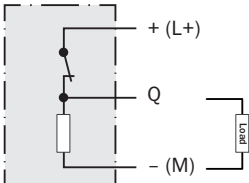
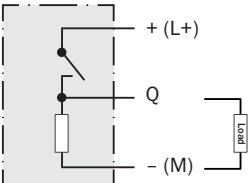
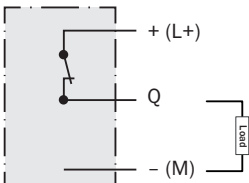
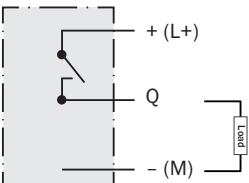
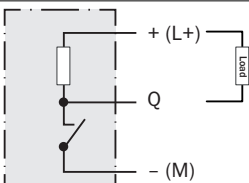
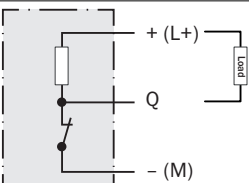
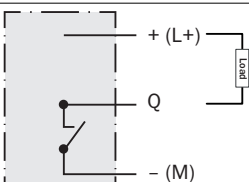
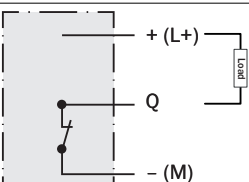


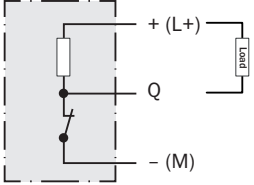
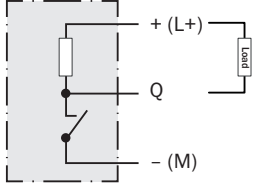
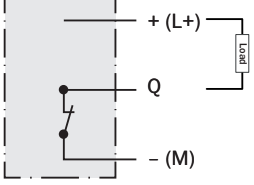
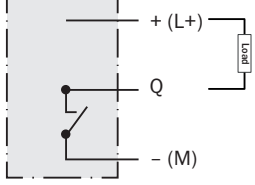
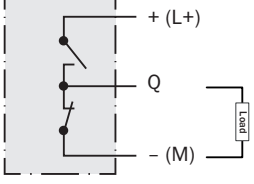
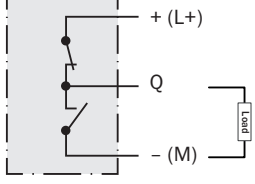
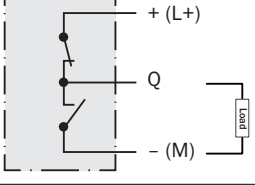
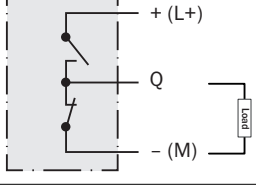
### 注意事項

センサ出力には、工場でオン遅延/オフ遅延が設定されている場合があります。これは、モデル番号末尾の Txx という接尾辞 (Zxx18-xxxxxxTxx) で示されます。

接続と出力の詳細：

表 36: 出力動作

<p>ZTx18                  -x_XXXX = Q1 出力                  -xx_XXX = Q2 出力</p>		
<p>-xPxXXX                  -x8XXXX                  -xxPXXX                  L.ON、PNP : Q (≤ 100 mA)</p>		
<p>-xHXXXX                  -x4XXXX                  -xxHXXX                  L.ON、PNP オープンコレクタ Q (≤ 100 mA)</p>		
<p>-xFXXXX                  -x2XXXX                  -xxFXXX                  D.ON、PNP : Q (≤ 100 mA)</p>		
<p>-xKXXXX                  -x6XXXX                  -xxKXXX                  D.ON、PNP オープンコレクタ Q (≤ 100 mA)</p>		
<p>-xNXXXX                  -x7XXXX                  -xxNXXX                  L.ON、NPN : Q (≤ 100 mA)</p>		
<p>-xGXXXX                  -x3XXXX                  -xxGXXX                  L.ON、NPN オープンコレクタ Q (≤ 100 mA)</p>		

<p>-xExxxx -x1xxxx -xxExxx D.ON、NPN : Q ( ≤ 100 mA)</p>		
<p>-xJxxxx -x5xxxx -xxJxxx D.ON、NPN オープンコレクタ Q ( ≤ 100 mA)</p>		
<p>-xAxxxx -XRxxxx -xxAxxx L.ON、プッシュプル ( ≤ 100 mA ) <sup>1</sup></p>		
<p>-xBxxxx -xSxxxx -xxBxxx D.ON、プッシュプル ( ≤ 100 mA ) <sup>1</sup></p>		

<sup>1</sup> 記載されているPNP出力図については、負荷を + (L+) および Q に接続することで、NPN も可能です

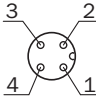
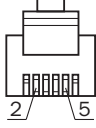
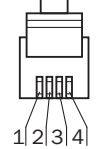
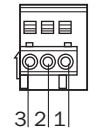
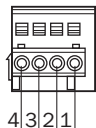
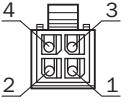
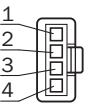
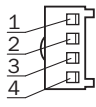
表 37: アラーム/ヘルス動作

<p>ZTx18 -xx_xxx = Q2 出力 アラーム/ヘルスは常に Q2 出力です</p>		
<p>-xxRxxx ヘルス、PNP (≤ 100 mA)</p>		
<p>-xxTxxx アラーム、PNP (≤ 100 mA)</p>		
<p>-xxQxxx ヘルス、NPN (≤ 100 mA)</p>		
<p>-xxSxxx アラーム、NPN (≤ 100 mA)</p>		

表 38: 接続ピン配列

Zxx18	☒	ピン 1	ピン 2	ピン 3	ピン 4	ピン 5	ピン 6
-xxx1xx	 0.14 mm <sup>2</sup> AWG26	+ (L+) BN	Q2 WH	- (M) BU	Q1 BK	-	-
-xxx2xx M8、3p		+ (L+) (BN)	-	- (M) (BU)	Q1 (BK)	-	-
-xxx3xx/-xxx5xx M8、4p		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-



-xxx4xx M12、4p		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-
-xxxAxx RJ12		n. c.	+ (L+) (BN)	Q1 (BK)	Q2 (WH)	- (M) (BU)	n. c.
-xxxBxx RJ9		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-
-xxxCxx Wago 733-103		+ (L+) (BN)	Q1 (BK)	- (M) (BU)	-	-	-
-xxxDxx Wago 733-104		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-
-xxxExx Molex 23025-0400 (2x2)		Q1 (BK)	Q2 (WH)	+ (L+) (BN)	- (M) (BU)	-	-
-xxxFxx Tyco 1445022-4 (1x4)		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-
-xxxGxx Wuerth 61900411621 (1x4)		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-

1) コネクタの前面図

## 84 コミッショニング

### 1 光軸調整

ZTB18-xxxxx2: 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)が全く遮らざれることがないように注意してください [図 136 を参照]。

ZTB18-xxxxx1: センサを対象物に合わせて光軸調整します。赤外線(不可視)が対象物の中央に照射されるように位置決めします。光軸調整が正しいかどうかは、LED表示灯によってのみ確認できます。これについては、図 136 と表 36 を参照。センサの光開口(フロントカバー)が全く遮らざれることがないように注意してください。

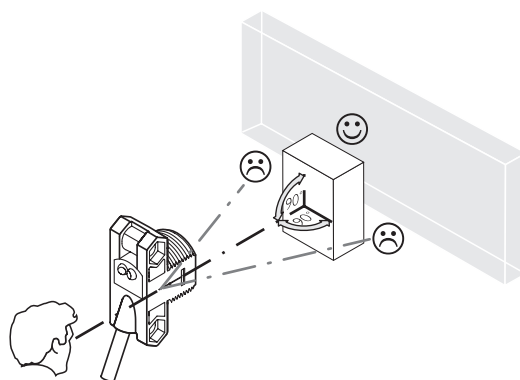


図 136: 光軸調整

## 2 検出距離

使用条件を確認してください：ZTB18 では、2つの固定検出距離（白色、90%）のバージョンをご利用いただけます。

- ・ 50 mm (ZTB18-xxxxxxD02)
- ・ 100 mm (ZTB18-xxxxxxD04)

検出距離と背景が仕様内になるよう取付位置を調整します。参照 図 137, ページ 114 を参照してください。



### 注意事項

最小範囲は 5 mm となりますのでご注意ください。

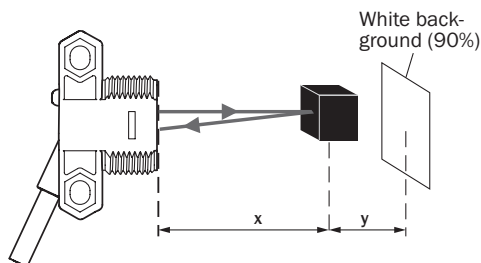


図 137: 黒での検出距離

黒、6%での検出距離：

- ・ ZTB18-xxxxxxD02 :  $x = 47$  mm,  $y = 4$  mm
- ・ ZTB18-xxxxxxD04 :  $x = 93$  mm,  $y = 8$  mm

機能を確認するには、参照 表 36, ページ 110 を使用してください。スイッチング出力が参照 表 36, ページ 110 のように動作しない場合は、使用条件を確認してください。

## 3 検出距離の設定

センサは設定できません：センサは、最大の検出距離となるよう工場によって調整済みであり、動作可能な状態にあります。

## 4 限界受光による動作

センサは、限界受光による動作時、オレンジ色の LED 表示灯の点滅により、エラー発生前の通知を行います。この原因として、整列不良、光学面の汚れ、対象物からの光反射の不足などが考えられます。センサにはヘルスまたはアラーム出力が搭載されている場合があり、センサが限界条件で動作すると離散的信号が提供されます。ヘルス/アラーム出力の動作に関する詳細については、表 37 を参照してください。

## 85 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。

表 39: トラブルシューティング

LED 表示灯/故障パターン	原因	対策
投光器が対象物に合っており、対象物が設定された検出距離内にあるにもかかわらず、黄色い LED が点灯しない	無電圧、または電圧が限界値以下	電源を確認し、すべての電気接続（ケーブルおよびプラグ接続）を確認します
	電圧がきていない又は不安定	安定した電源電圧が供給されていることを確認します
	センサの異常	電源に問題がなければ、センサを交換します
黄色い LED が点滅する。アラーム/ヘルスが存在する場合は対応する出力信号をチェックしてください	センサは操作可能状態ですが、動作条件に問題がありません	動作条件をチェックし、投光光軸（光軸スポット）を対象物に完全に合わせます。また、光学面を清掃します
黄色い LED が点灯、光軸に対象物がない	背景の反射が逸れています	背景に高反射性の物体がないか確認し、センサの視界に入らないようにします
対象物は光軸にある、黄色い LED は点灯しない	物体の反射率が低すぎます	センサと物体の間隔を短くします。対象物の反射率が検出には不十分である可能性がありますので注意してください。

## 86 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。

## 87 メンテナンス

SICK は、次の定期的メンテナンスを推奨します。

- ・ 外部光学面を清掃する
- ・ ねじ接続およびコネクタプラグの接続状態を点検する

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。記載された製品特性および技術データは保証値ではありません。

88 技術データ

	ZTB18-xxxxxD02	ZTB18-xxxxxD04
最小検出距離	5 mm	5 mm
検出範囲	50 mm	100 mm
最大検出範囲	50 mm <sup>1)</sup>	100 mm <sup>1)</sup>
光点のスポット径/距離	8 mm / 100 mm	8 mm / 100 mm
供給電圧 $U_V$	DC 10 ... 30 V <sup>2)</sup>	DC 10 ... 30 V <sup>2)</sup>
出力電流 $I_{max}$	≤ 100 mA	≤ 100 mA
最大スイッチング周波数	500 Hz <sup>3)</sup>	500 Hz <sup>3)</sup>
最大応答時間	≤ 1 ms <sup>4)</sup>	≤ 1 ms <sup>4)</sup>
保護等級	IP67	IP67
保護クラス	III	III
回路保護	A, B, D <sup>6)</sup>	A, B, D <sup>6)</sup>
周辺温度 (作動中)	-40 °C ... +55 °C	-40 °C ... +55 °C

- 1) 反射率 90 % の対象物 (DIN 5033 に準拠した白色)
- 2) 限界値：短絡保護の操作は最大 8 A；残留リップルは最大 5 V<sub>ss</sub>
- 3) ライト/ダークの比率 1:1
- 4) 負荷のある信号経過時間
- 6) A =  $U_V$  電源電圧逆接保護  
 B = 出力 逆接保護  
 D = 出力の過電流保護および短絡保護

88.1 外形寸法図

表 40: 外形寸法図

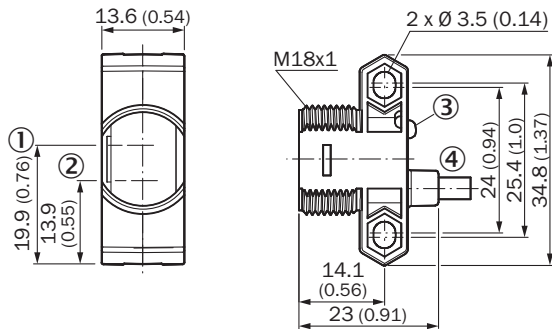


図 138: ZTx18-1xxxxx/ZTx18-Axxxxx

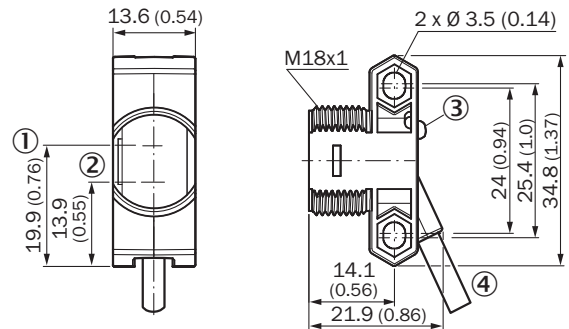


図 139: ZTx18-2xxxxx/ZTx18-Bxxxxx, ケーブル

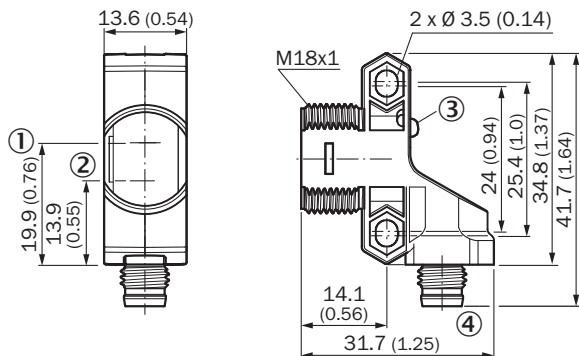


図 140: ZTx18-2xxxxx/ZTx18-Bxxxxx, M8 コネクタ

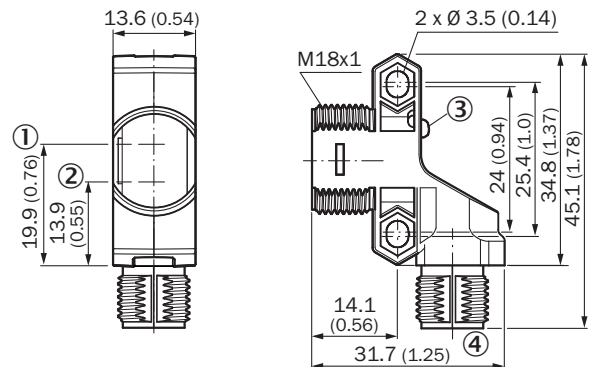


図 141: ZTx18-2xxxxx/ZTx18-Bxxxxx, M12 コネクタ

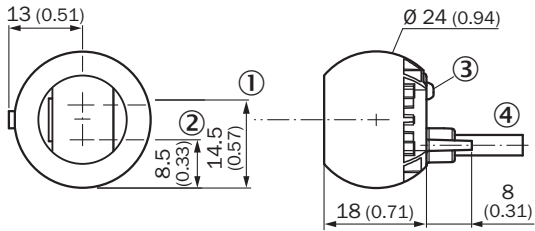


図 142: ZTx18-3xxxxx/ZTx18-Cxxxxx

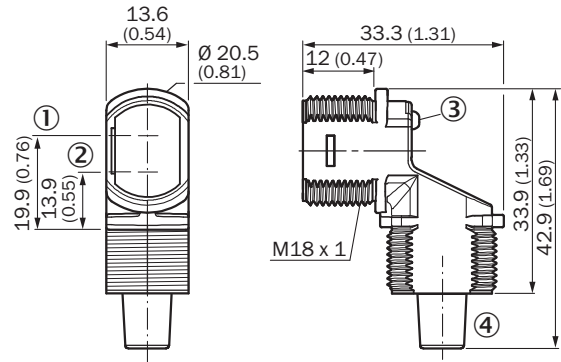


図 143: ZTx18-4xxxxx/ZTx18-Dxxxxx, ケーブル

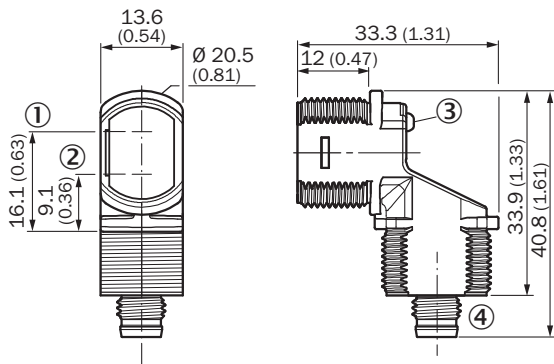


図 144: ZTx18-4xxxxx/ZTx18-Dxxxxx, M8 コネクタ

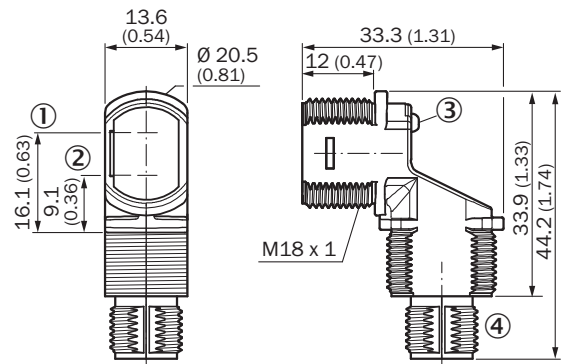


図 145: ZTx18-4xxxxx/ZTx18-Dxxxxx, M12 コネクタ

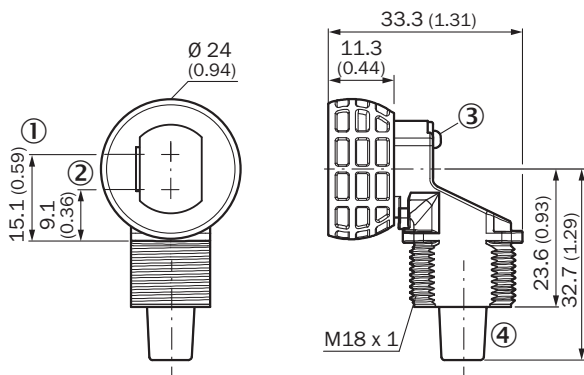


図 146: ZTx18-5xxxxx/ZTx18-Exxxxx, ケーブル

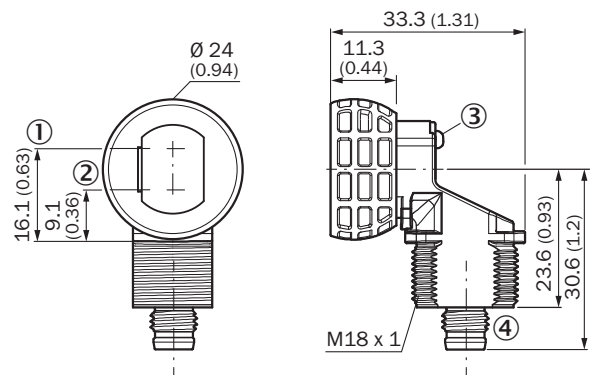


図 147: ZTx18-5xxxxx/ZTx18-Exxxxx, M8 コネクタ

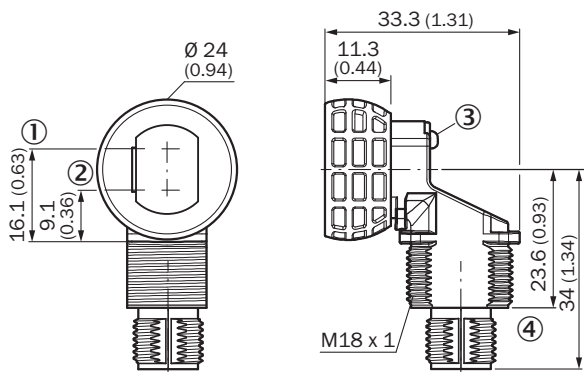


図 148: ZTx18-5xxxxx/ZTx18-Exxxxx, M12 コネクタ

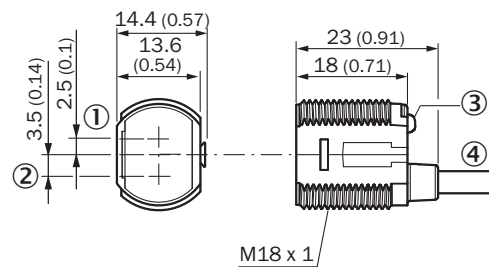


図 149: ZTx18-6xxxxx/ZTx18-Fxxxxx

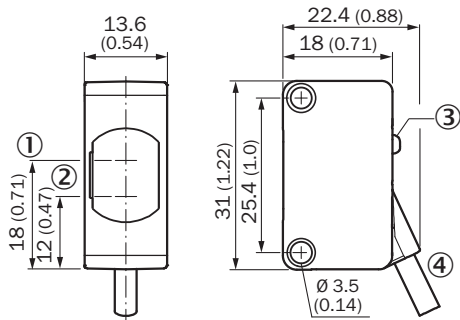


図 150: ZTx18-7xxxxx/ZTx18-Gxxxxx

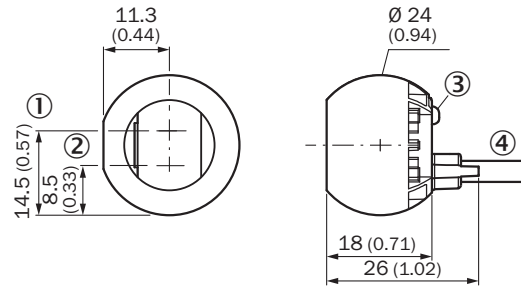


図 151: ZTx18-8xxxxx/ZTx18-Hxxxxx

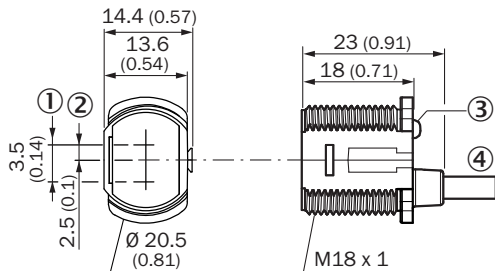


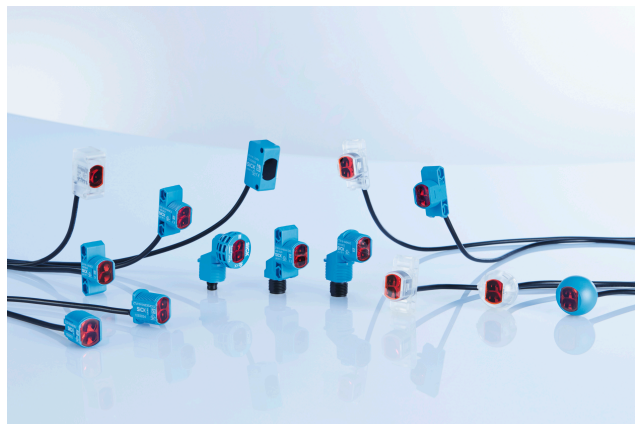
図 152: ZTx18-9xxxxx/ZTx18-Jxxxxx

- ① 光学軸、投光器
- ② 光学軸、受光器
- ③ LED ステータス表示灯
- ④ 接続/張力緩和

# ZTB18

Цилиндрические фотоэлектрические датчики

**SICK**  
Sensor Intelligence.



de  
en  
es  
fr  
it  
ja  
pt  
ru  
zh

### Описание продукта

Z18 SimpleSense

ZTB18

### Изготовитель

SICK AG  
Erwin-Sick-Str. 1  
79183 Waldkirch  
Deutschland (Германия)

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## 89 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.

## 90 Указания по допуску к эксплуатации UL

Типы корпусов синего цвета (Zxx18-1xxxxx ... Zxx18-9xxxxx):

- Type 1 enclosure

Типы прозрачных корпусов (Zxx18-Axxxxx ... Zxx18-Jxxxxx):

- Type 1 enclosure
- Class 2 power supply required

## 91 Использование по назначению

ZTB18 оптоэлектронный, фотоэлектрический датчик приближения с подавлением фона (далее «датчик») для оптического, бесконтактного обнаружения объектов, животных и людей. Если изделие использовано для любой другой цели или модифицировано любым способом, то любая гарантийная рекламация против компании SICK AG станет недействительной.

## 92 Эксплуатация и индикаторы состояния

Фотоэлектрический датчик приближения с подавлением заднего фона.

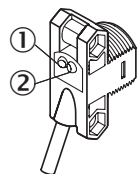


Рисунок 153: Индикаторы состояния

- ① Светодиодный индикатор (зеленый): питание
- ② Светодиодный индикатор (оранжевый): прием света

## 93 Монтаж

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

Обратите внимание на предпочтительную ориентацию датчика по отношению к направлению движения объекта, см. [рисунки 154](#).

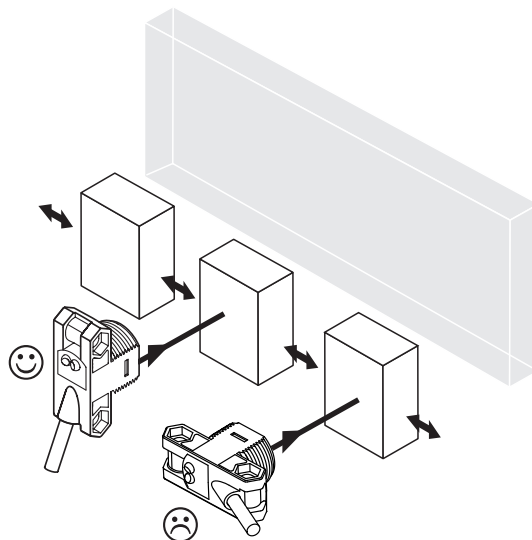


Рисунок 154: Ориентация датчика по отношению к направлению объекта

## 94 Электрическое подключение

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

- Штепсельный разъём: расположение выводов
- Кабель: цвет жилы

Подавать напряжение питания и включать источник напряжения только после завершения подключения всех электрических соединений ( $U_V > 0 \text{ V}$ ).

Объяснение терминологии соединений, используемой в таблицах 1-3:

BN = Brown (Коричневый)

WH = White (Белый)

BU = Blue (Синий)

BL = Black (Черный)

n. c. = не подключен

Q1 = переключающий выход 1

Q2 = переключающий выход 2

L+ = питающее напряжение ( $V_S$ )

M = вес

L.ON = активация при наличии отраженного света

D.ON = активация при отсутствии отраженного света

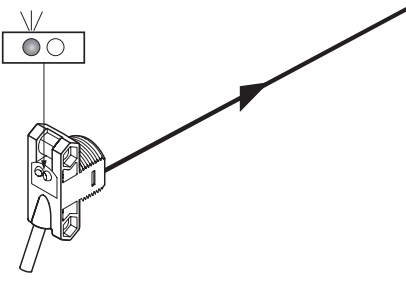
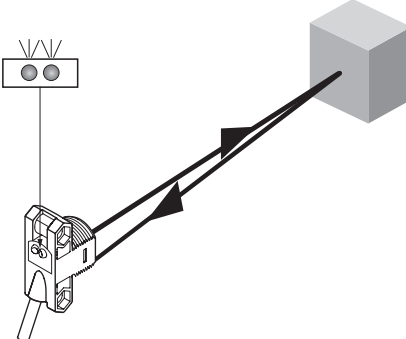
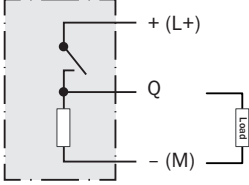
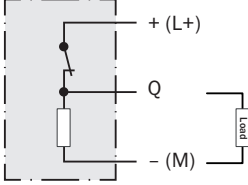
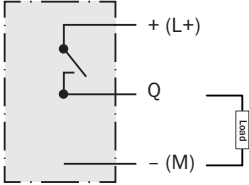
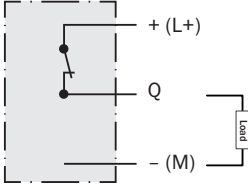
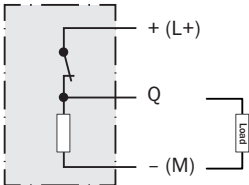
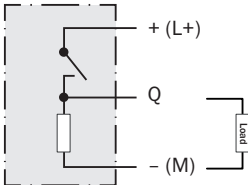
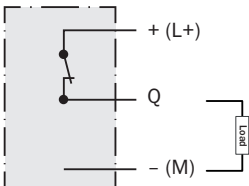
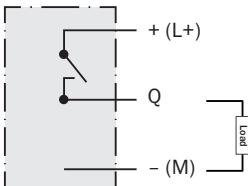
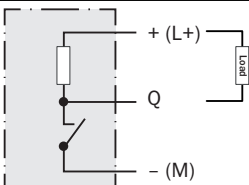
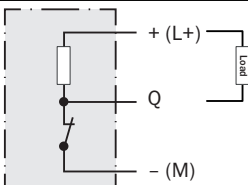
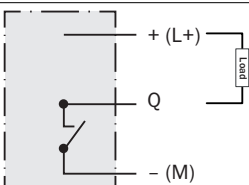
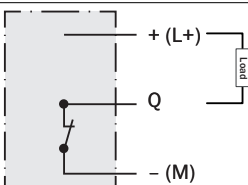


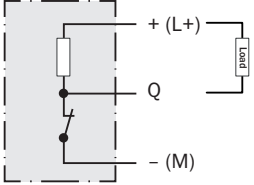
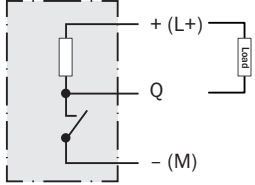
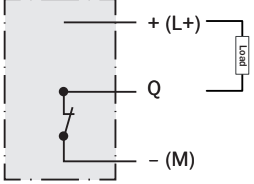
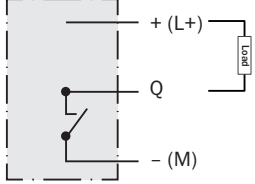
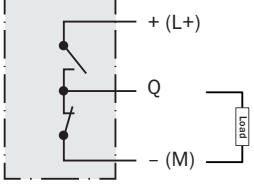
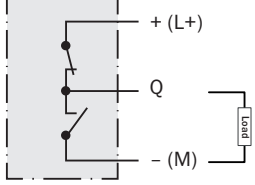
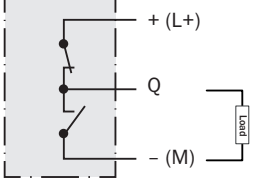
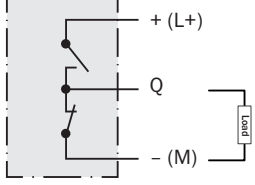
### УКАЗАНИЕ

Выводы датчика могут поставляться с заводской настройкой на задержку по ВКЛ и/или ВЫКЛ. На это указывает суффикс Txx suffix на конце номера модели (Zxx18-xxxxxTxx).

Детали подключения и вывода:

Таблица 41: Операция вывода

<p>ZTx18                  -x_xxxx = Q1 ВЫХОД                  -xx_xxx = Q2 ВЫХОД</p>		
<p>-xPx18                  -x8xxx                  -xxPx18                  L.ON, PNP: Q (≤ 100 mA)</p>		
<p>-xHxxx                  -x4xxx                  -xxHxxx                  L.ON, PNP Открытый коллектор Q (≤ 100 mA)</p>		
<p>-xFxxx                  -x2xxx                  -xxFxxx                  D.ON, PNP: Q (≤ 100 mA)</p>		
<p>-xKxxx                  -x6xxx                  -xxKxxx                  D.ON, PNP Открытый коллектор Q (≤ 100 mA)</p>		
<p>-xNxxx                  -x7xxx                  -xxNxxx                  L.ON, NPN: Q (≤ 100 mA)</p>		
<p>-xGxxx                  -x3xxx                  -xxGxxx                  L.ON, NPN Открытый коллектор Q (≤ 100 mA)</p>		

<p>-xExxxx -x1xxxx -xxExxx D.ON, NPN: Q (≤ 100 mA)</p>		
<p>-xJxxxx -x5xxxx -xxJxxx D.ON, NPN Открытый коллектор Q (≤ 100 mA)</p>		
<p>-xAxxxx -XRxxxx -xxAxxx L.ON, двухтактный (≤100 mA)<sup>1</sup></p>		
<p>-xBxxxx -xSxxxx -xxBxxx D.ON, Двухтактный (≤ 100 mA)<sup>1</sup></p>		

<sup>1</sup> Изображена схема вывода PNP; NPN также возможно через подключение нагрузки к + (L+) и Q

Таблица 42: Операция сигнала тревоги/рабочего состояния

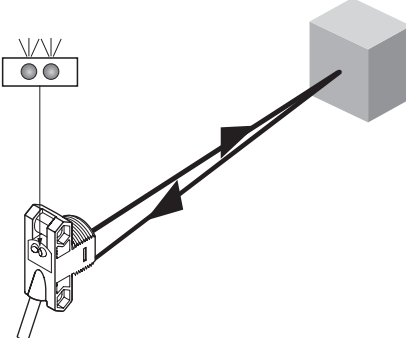
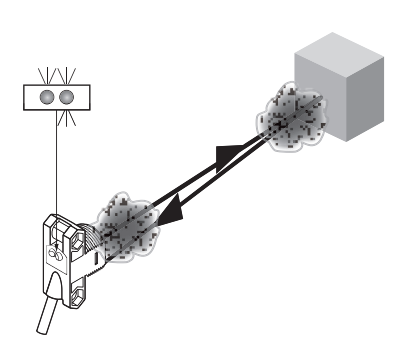
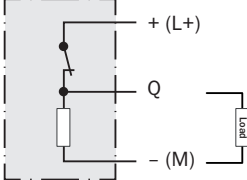
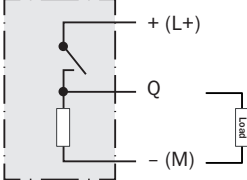
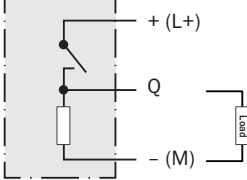
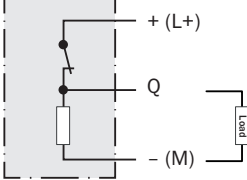
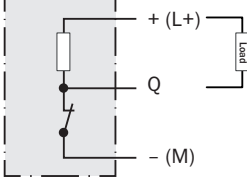
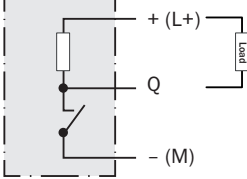
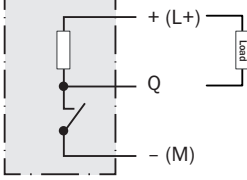
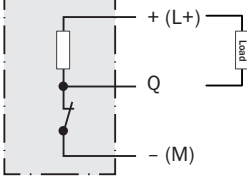
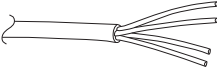


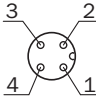
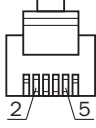
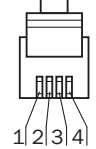
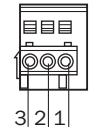
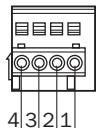
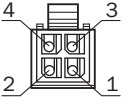
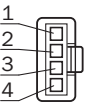
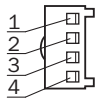
<p>ZTx18 -xx_xxx = Q2 выход Рабочее состояние/сигнал тревоги - это всегда вывод Q2</p>		
<p>-xxRxxx Рабочее состояние, PNP (<math>\leq 100</math> mA)</p>		
<p>-xxTxxx Сигнал тревоги, PNP (<math>\leq 100</math> mA)</p>		
<p>-xxQxxx Рабочее состояние, NPN (<math>\leq 100</math> mA)</p>		
<p>-xxSxxx Сигнал тревоги, NPN (<math>\leq 100</math> mA)</p>		

Таблица 43: Выводные контакты соединения

Zxx18	Схема	Контакт 1	Контакт 2	Контакт 3	Контакт 4	Контакт 5	Контакт 6
-xxx1xx	 0,14 мм <sup>2</sup> AWG26	+ (L+) BN	Q2 WH	- (M) BU	Q1 BK	-	-
-xxx2xx M8, 3p		+ (L+) (BN)	-	- (M) (BU)	Q1 (BK)	-	-
-xxx3xx/-xxx5xx M8, 4p		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-

-xxx4xx M12, 4p		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-
-xxxAxx RJ12		не подключен	+ (L+) (BN)	Q1 (BK)	Q2 (WH)	- (M) (BU)	не подключен
-xxxBxx RJ9		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-
-xxxСxx Съемная клеммная колонка Wago 733-103		+ (L+) (BN)	Q1 (BK)	- (M) (BU)	-	-	-
-xxxDxx Съемная клеммная колонка Wago 733-104		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-
-xxxЕxx Molex 23025-0400 (2x2)		Q1 (BK)	Q2 (WH)	+ (L+) (BN)	- (M) (BU)	-	-
-xxxFxx Тусо 1445022-4 (1x4)		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-
-xxxGxx Wuerth 61900411621 (1x4)		+ (L+) (BN)	Q2 (WH)	- (M) (BU)	Q1 (BK)	-	-

1) Вид разъемов спереди

## 95 Ввод в эксплуатацию

### 1 Регулировка

ZTB18-xxxxx2: направить датчик на объект. Выберите такую позицию, чтобы красный луч передатчика попал в центр объекта. Оптическое отверстие (фронтальное стекло) на датчике должно быть полностью свободным [см. [рисунок 155](#)].

ZTB18-xxxxx1: направить датчик на объект. Выберите такую позицию, чтобы инфракрасный луч передатчика (он не виден) попал в центр объекта. Правильность выверки можно определить с помощью светодиодных индикаторов. См. [рисунок 155](#) и [таблица 41](#). Оптическое отверстие (фронтальное стекло) на датчике должно быть полностью свободным.

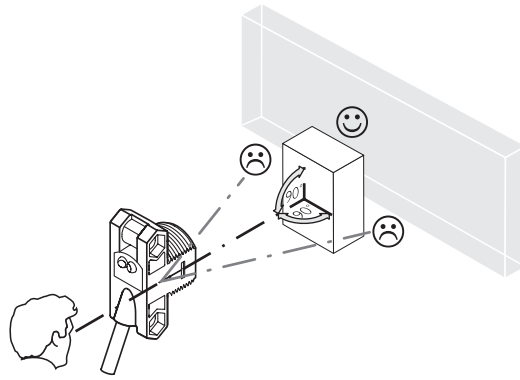


Рисунок 155: Регулировка

## 2 Расстояние срабатывания

Проверьте условия применения: ZTB18 доступно в двух фиксированных расстояниях срабатывания (на белом, 90 %):

- 50 мм (ZTB18-xxxxxD02)
- 100 мм (ZTB18-xxxxxD04)

Отрегулируйте монтажное положение, так чтобы расстояние срабатывания и фон находились в рамках спецификации. См. [рисунки 156, страница 128](#).



### УКАЗАНИЕ

Обратите внимание на минимальное расстояние 5 мм.

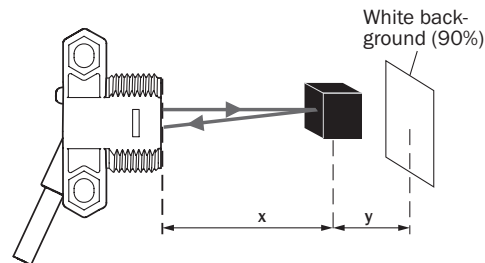


Рисунок 156: Расстояние срабатывания на черном

Расстояние срабатывания на черном, 6 %:

- ZTB18-xxxxxD02:  $x = 47$  мм,  $y = 4$  мм
- ZTB18-xxxxxD04:  $x = 93$  мм,  $y = 8$  мм

Используйте [см. таблицу 41, страница 124](#) для проверки функции. Если переключатель не ведет себя в соответствии с [см. таблицу 41, страница 124](#), проверьте условия эксплуатации.

## 3 Настройка расстояния срабатывания

Датчик невозможно установить: датчик отрегулирован на максимальное расстояние срабатывания на заводе и готов к работе.

## 4 Работа с приемом предельного светового излучения

Датчик передаст уведомление перед отказом, когда мигает светодиодный индикатор оранжевого цвета при работе с приемом предельного светового излучения. Это может быть результатом неправильного выравнивания, загрязненной оптической поверхности(поверхностей) и / или недостаточного затухания света от целевого объекта. Датчик может оборудоваться выводом рабочего состояния или сигнала тревоги, что обеспечивает дискретный сигнал при работе датчика в дискретном режиме. См. [таблица 42](#) дополнительные подробности по операции вывода рабочего состояния/сигнала тревоги.



## 96 Устранение неисправностей

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

Таблица 44: Поиск и устранение неисправностей

Светодиодный индикатор / картина неисправности	Причина	Меры по устранению
Желтый светодиод не загорается, даже если выравнивание передатчика на объект, и объект находится в пределах установленного расстояния срабатывания	нет напряжения питания или оно ниже нижнего предельного значения	Проверить напряжения питания, всю схему электроподключения (проводку и разъемные соединения)
	Пропадание напряжения питания	Обеспечить надежную подачу напряжения питания без его пропадания
	Сенсор неисправен	Если напряжение питания в порядке, то заменить сенсор
Мигает желтый светодиод; если есть сигнал тревоги/ рабочее состояние, тогда обратите внимание на соответствующий выходной сигнал	Датчик все еще готов к эксплуатации, но эксплуатационные условия не самые лучшие	Проверьте эксплуатационные условия: Выровняйте луч света (световое пятно) по отношению к объекту/ Очистите оптические поверхности
желтый светодиод горит, объект на пути луча отсутствует	Рассеянное ослабление фона	Проверьте фон на наличие предметов с высокой отражающей способностью и попытайтесь блокировать из поля зрения датчиков
Объект на пути луча, желтый светодиод не горит	Очень низкое ослабление предметов	Уменьшите расстояние между датчиком и объектом. Обратите внимание на то, что предмет может не иметь достаточного ослабления для обнаружения.

## 97 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.

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## 98 Техническое обслуживание

Компания SICK рекомендует следующее регулярное техническое обслуживание:

- Очистите внешние оптические поверхности
- Проверьте винтовые и штекерные соединения

Запрещается производить любые изменения на устройствах.

Может быть изменено производителем без предварительного уведомления.

Указанные свойства изделия и технические данные не являются письменными гарантиями.

## 99 Технические характеристики

	ZTb18-xxxxxD02	ZTb18-xxxxxD04
Расстояния срабатывания мин.	5 мм	5 мм
Расстояние срабатывания	50 mm	100 mm
Расстояние срабатывания, макс.	50 mm <sup>1)</sup>	100 mm <sup>1)</sup>
Диаметр светового пятна/расстояние	8 mm / 100 mm	8 mm / 100 mm
Напряжение питания $U_V$	DC 10 ... 30 V <sup>2)</sup>	DC 10 ... 30 V <sup>2)</sup>
Выходной ток $I_{\text{макс.}}$	$\leq 100$ mA	$\leq 100$ mA
Частота срабатывания макс.	500 Hz <sup>3)</sup>	500 Hz <sup>3)</sup>
Время отклика макс.	$\leq 1$ ms <sup>4)</sup>	$\leq 1$ ms <sup>4)</sup>
Класс защиты	IP67	IP67
Класс защиты	III	III
Схемы защиты	A, B, D <sup>6)</sup>	A, B, D <sup>6)</sup>
Диапазон рабочих температур	-40 °C ... +55 °C	-40 °C ... +55 °C

- 1) Сканируемый объект – ремиссия 90 % (относительно стандартного белого по DIN 5033)
- 2) Предельные значения: эксплуатация в защищенной от короткого замыкания сети макс. 8 А; остаточная волнистость макс. 5 В<sub>ss</sub>
- 3) Соотношение светлых и темных участков изображения 1:1
- 4) Продолжительность сигнала при омической нагрузке
- 6) A =  $U_V$ -подключения с защитой от перепутывания полюсов  
 B = входы и выходы с защитой от перепутывания полюсов  
 D = выходы защищены от перенапряжения и короткого замыкания

### 99.1 Масштабные чертежи

Таблица 45: Масштабные чертежи

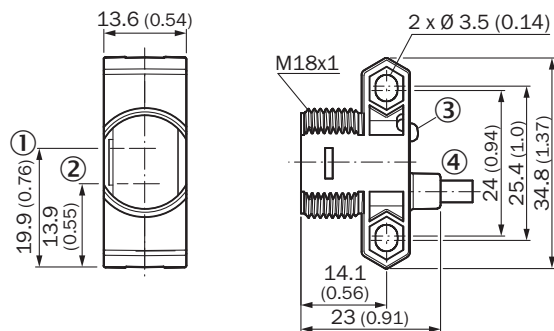


Рисунок 157: ZTx18-1xxxx/ZTx18-Axxxx

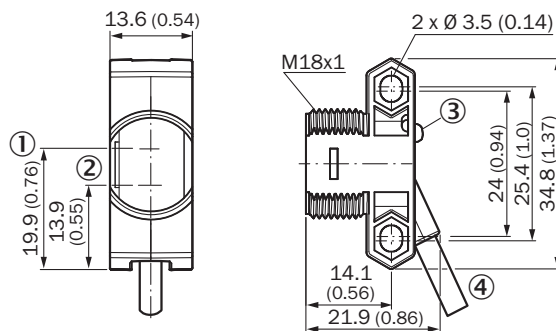


Рисунок 158: ZTx18-2xxxx/ZTx18-Bxxxx, кабель

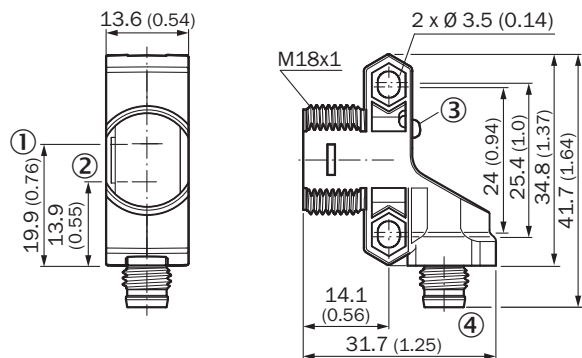


Рисунок 159: ZTx18-2xxxx/ZTx18-Bxxxx, M8 разъем

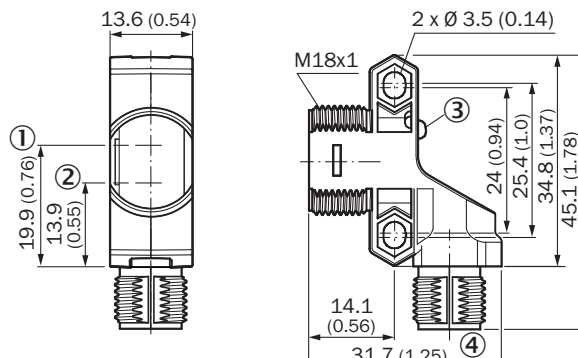


Рисунок 160: ZTx18-2xxxx/ZTx18-Bxxxx, M12 разъем

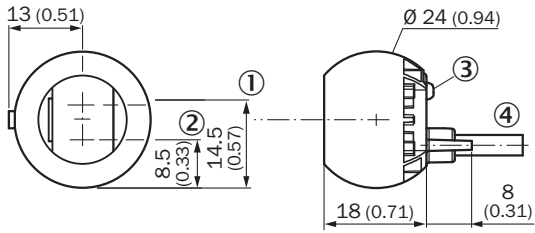


Рисунок 161: ZTx18-3xxxx/ZTx18-Cxxxx

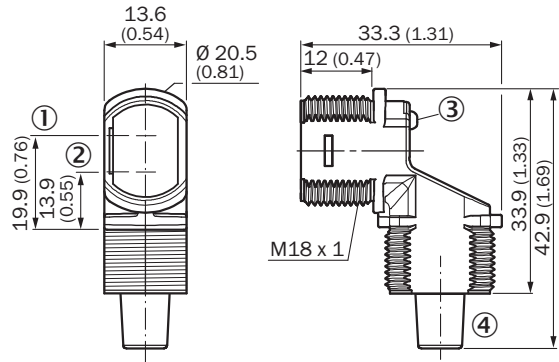


Рисунок 162: ZTx18-4xxxx/ZTx18-Dxxxx, кабель

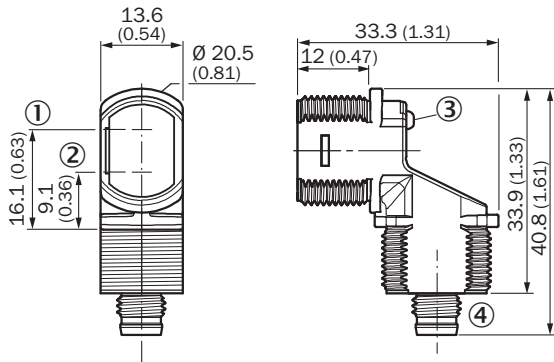


Рисунок 163: ZTx18-4xxxx/ZTx18-Dxxxx, M8 разъем

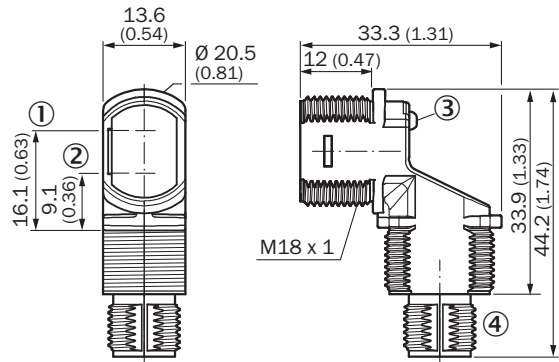


Рисунок 164: ZTx18-4xxxx/ZTx18-Dxxxx, M12 разъем

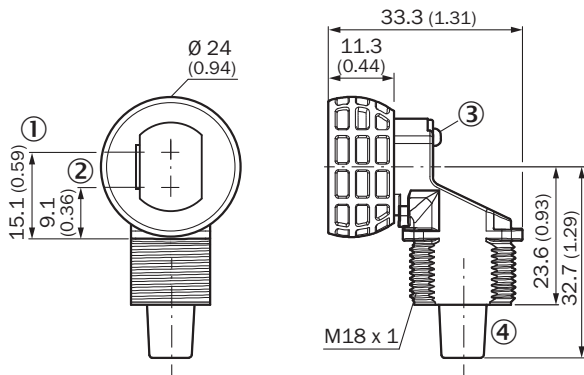


Рисунок 165: ZTx18-5xxxx/ZTx18-Exxxx, кабель

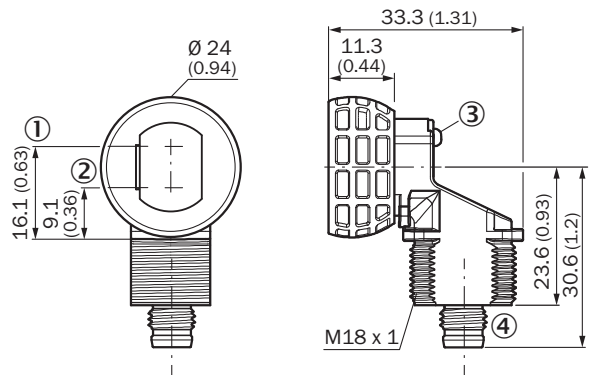


Рисунок 166: ZTx18-5xxxx/ZTx18-Exxxx, M8 разъем

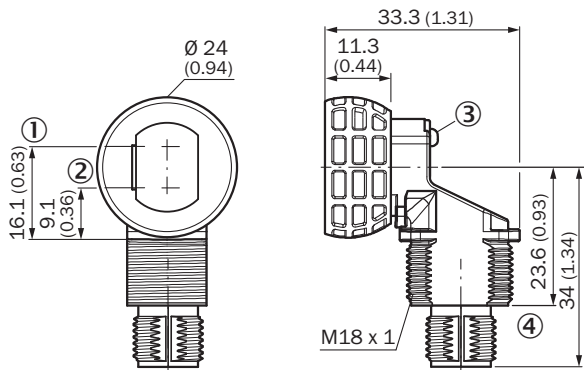


Рисунок 167: ZTx18-5xxxx/ZTx18-Exxxx, M12 разъем

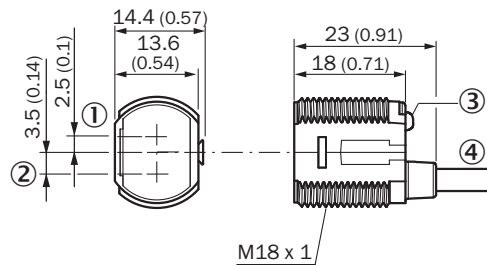


Рисунок 168: ZTx18-6xxxx/ZTx18-Fxxxx

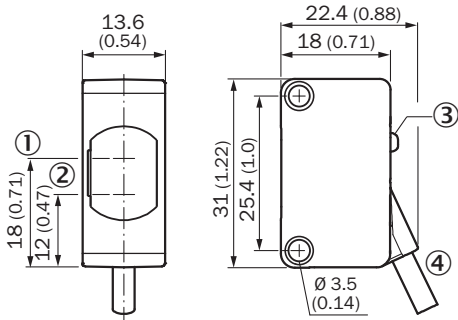


Рисунок 169: ZTx18-7xxxx/ZTx18-Gxxxx

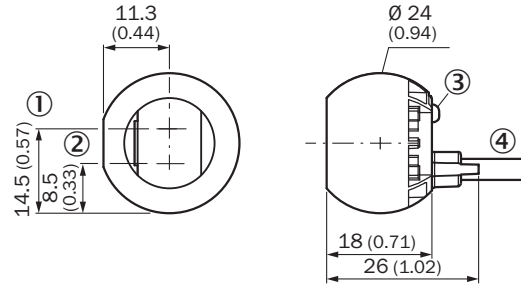


Рисунок 170: ZTx18-8xxxx/ZTx18-Hxxxx

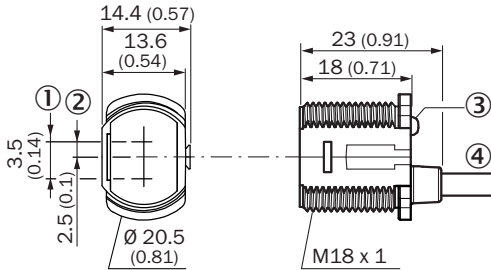


Рисунок 171: ZTx18-9xxxx/ZTx18-Jxxxx

- ① оптическая ось, передатчик
- ② оптическая ось, приемник
- ③ Индикаторы состояния светодиодов
- ④ соединение/кабельный зажим

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