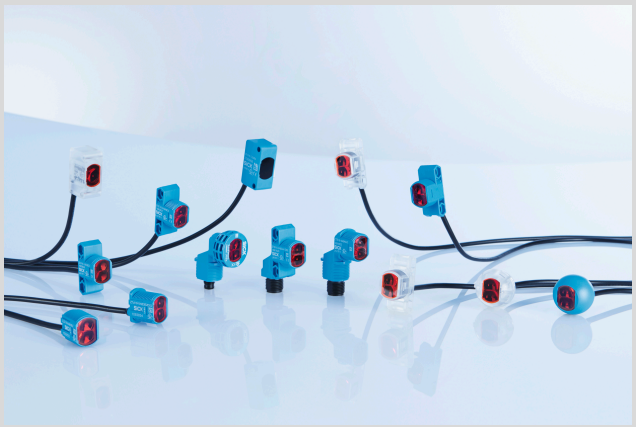
OPERATING INSTRUCTION

ZSE18

Cylindrical photoelectric sensors

SICK
Sensor Intelligence.



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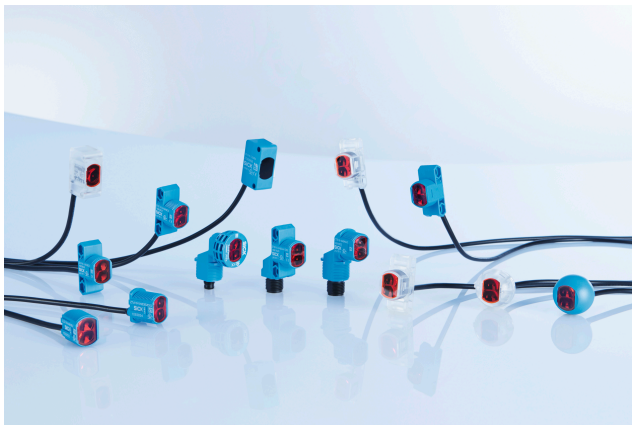

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Described product

Z18 SimpleSense

ZSE18

Manufacturer

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

Legal information

Original document

This document is an original document of SICK AG.

Contents

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 ZSE18 is an opto-electronic through-beam photoelectric sensor (referred to as “sensor” in the following) for the optical, non-contact detection of objects, animals, and persons. A sender (ZSO18) and a receiver (ZEO18) are required for operation. 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

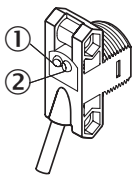

Figure 1: Status indicators

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

5 Mounting

Mount sensors (sender and receiver) using suitable mounting brackets (see the SICK range of accessories). Align the sender and receiver with each other.

NOTE

When mounting through beam photoelectric sensors adjacent to each other, alternate the sender (ZSO18) and receiver (ZEO18) arrangement every other pair. Also ensure that there is sufficient distance between pairs based on the sender (ZSO18) light spot diameter. Refer to figure 2 and table 1.

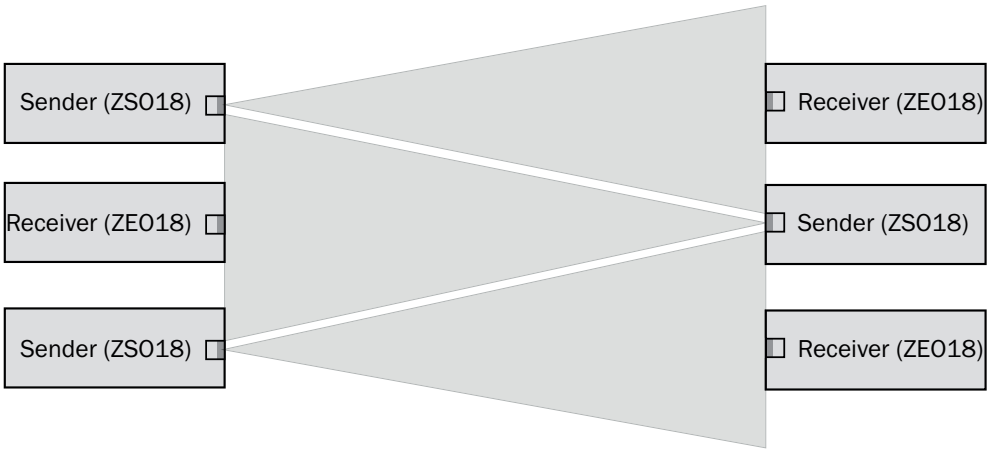

Figure 2: Arrangement of several through-beam photoelectric sensors

Table 1: Light spot diameter

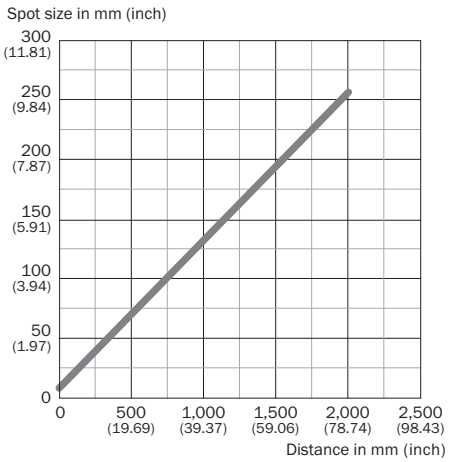

Figure 3: ZSE18-xxxxx3

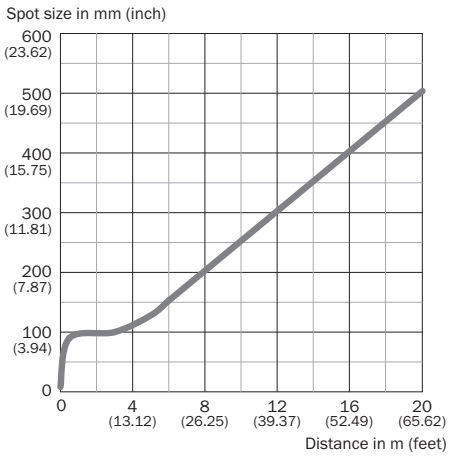

Figure 4: ZSE18-xxxxx8

6 Electrical installation

The sensors must be connected in a voltage-free state (U_V = 0 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 V) once all electrical connections have been established.

Explanation of connection terminology used in Tables 2-5:

BN = Brown
WH = White
BU = Blue

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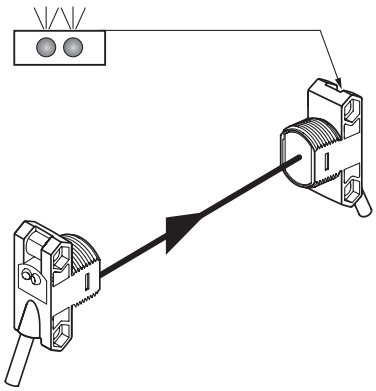
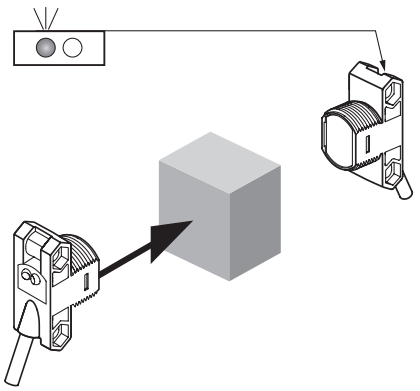
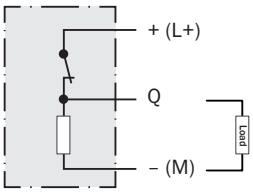
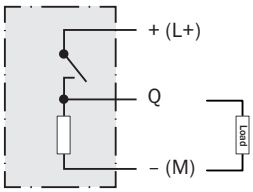
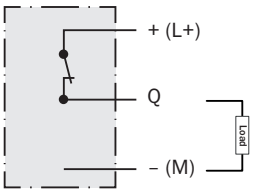
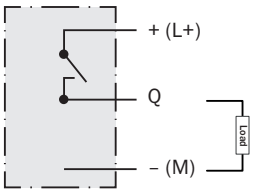
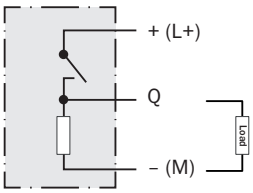
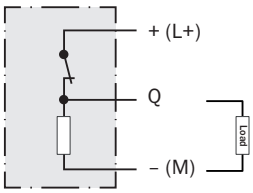
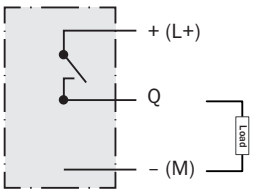
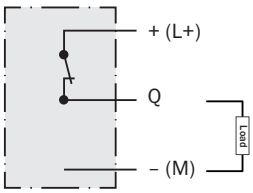
Subject to change without notice

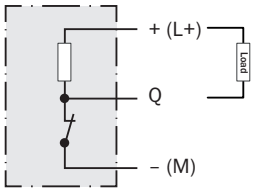
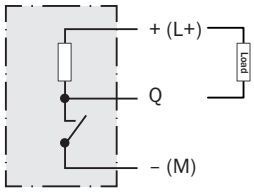
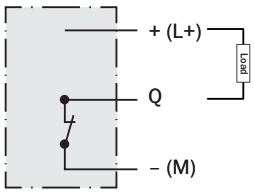
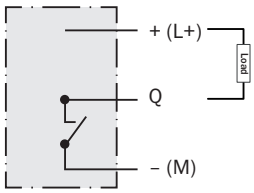
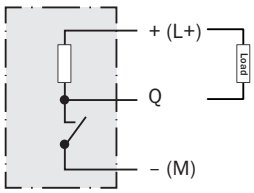
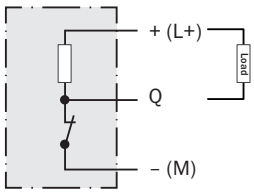
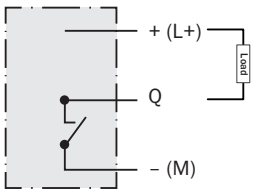
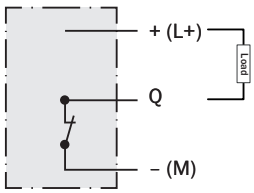
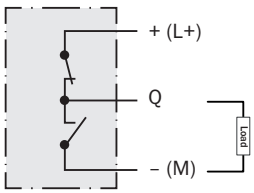
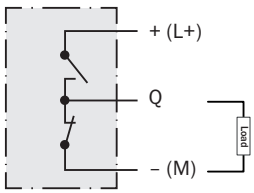
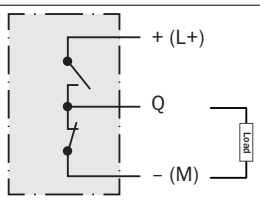
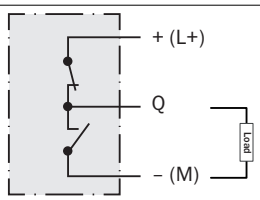
BK = Black
n. c. = no connection
Q1 = switching output 1
Q2 = switching output 2
L+ = supply voltage (Uv)
M = common
L.ON = light operate
D.ON = dark operate

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-xxxxxxTxx).

Connection and Output detail:

Table 2: Output Operation

ZSE18 / ZE018 -x_xxxx = Q1 output -xx_xxx = Q2 output		
-xPxxxx -x8xxxx -xxPxxx L.ON, PNP: Q (≤ 100 mA)		
-xHxxxx -x4xxxx -xxHxxx L.ON, PNP Open Collector Q (≤ 100 mA)		
-xFxxxx -x2xxxx -xxFxxx D.ON, PNP: Q (≤ 100 mA)		
-xKxxxx -x6xxxx -xxKxxx D.ON, PNP Open Collector Q (≤ 100 mA)		

-xNxxxx -x7xxxx -xxNxxx L.ON, NPN: Q (≤ 100 mA)		
-xGxxxx -x3xxxx -xxGxxx L.ON, NPN Open Collector Q (≤ 100 mA)		
-xExxxx -x1xxxx -xxExxx D.ON, NPN: Q (≤ 100 mA)		
-xJxxxx -x5xxxx -xxJxxx D.ON, NPN Open Collector Q (≤ 100 mA)		
-xAxxxx -XRxxxx -xxAxxx L.ON, Push-pull (≤ 100 mA)[1]		
-xBxxxx -xSxxxx -xxBxxx D.ON, Push-pull (≤ 100 mA)[1]		

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

Table 3: Alarm/Health Operation

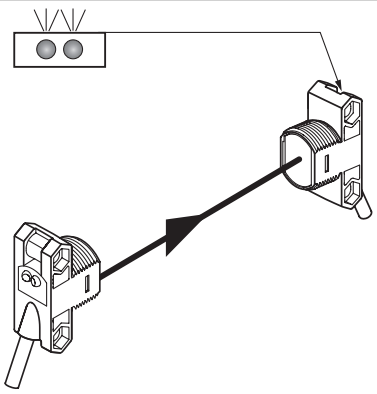
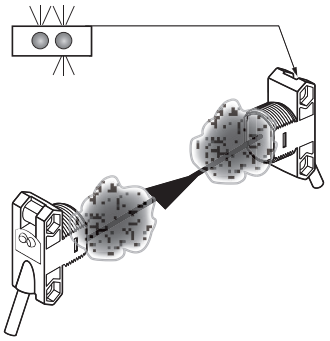
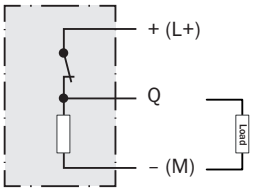
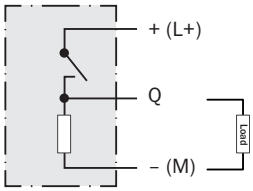
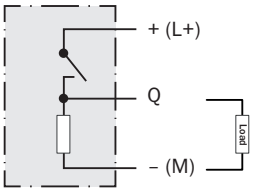
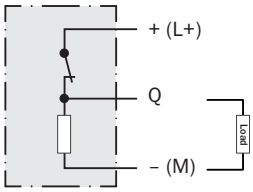
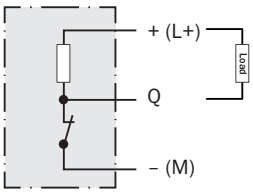
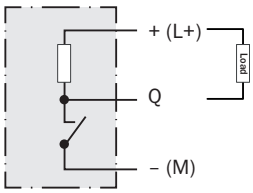
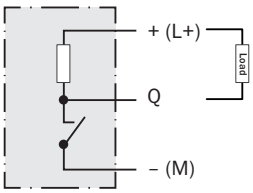
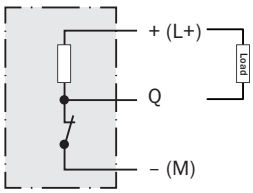
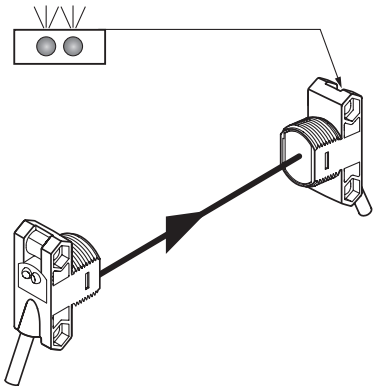
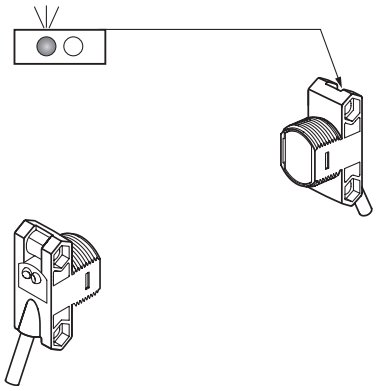
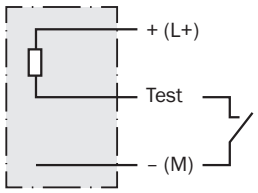
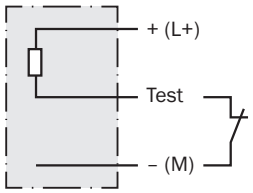
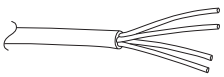
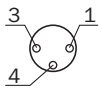
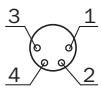
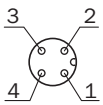
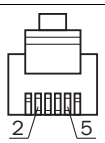
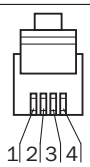
ZSE18 / ZE018 -xx_xxx = Q2 output Health/Alarm is always the Q2 output		
-xxRxxx Health, PNP (≤ 100 mA)		
-xxTxxx Alarm, PNP (≤ 100 mA)		
-xxQxxx Health, NPN (≤ 100 mA)		
-xxSxxx Alarm, NPN (≤ 100 mA)		

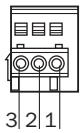
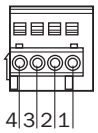
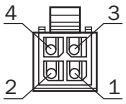
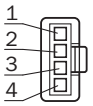
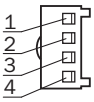
Table 4: Test Input

ZSE18 / ZE018 -x_xxxx = Q1[1] Test Input is always on Q1		
-xRxxxx -xSxxxx -x1xxxx -x2xxxx -x3xxxx -x4xxxx -x5xxxx -x6xxxx -x7xxxx -x8xxxx Test Input, NPN (≤ 1 mA)		

1 Variants ZSE18 / ZS018 -xAxxxx ... -xPxxxx do not have a Test Input

Table 5: Connection Pinout

Zxx18	Diagram	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6
-xxx1xx	 0.14 mm² 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)	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
2) ZSO18 will always be n.c. for Q2

7 Commissioning

1 **Alignment**

ZSE18-xxxxx2, -xxxxx8: align the sender (ZSO18) with the receiver (ZEO18). Select the position so that the red emitted light beam hits the receiver. Tip: Use white paper as a reflector for the sender as an alignment aid. The sender must have a clear view of the receiver, with no object in the path of the beam [see figure 5]. Ensure that the optical openings (front screen) of the sensors are completely clear.

ZSE18-xxxxx1, -xxxxx3: align the sender (ZSO18) with the receiver (ZEO18). Select the position so that the infrared light (not visible) hits the receiver. The correct alignment can only be detected via the LED indicators on the receiver. See figure 5 and table 2. The sender must have a clear view of the receiver, with no object in the path of the beam. Ensure that the optical openings (front screen) of the sensors are completely clear.

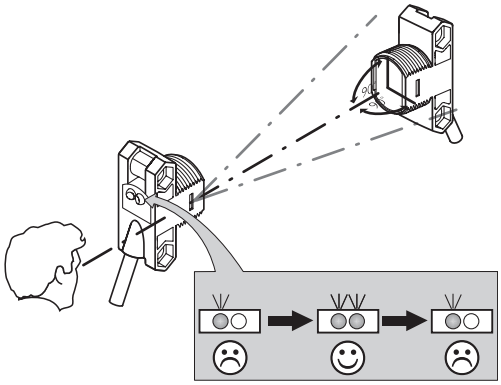


Figure 5: Alignment

2 **Sensing range**

Observe the application conditions: Adjust the distance between the sender and the receiver according to the corresponding diagram [see figure 6 and see figure 7, page 13] (x = sensing range, y = operating reserve).

When mounting through beam photoelectric sensors adjacent to each other, alternate the sender (ZS018) and receiver (ZE018) arrangement every other pair. Also ensure that there is sufficient distance between pairs based on the sender (ZS018) light spot diameter. By doing this, mutual interference can be prevented [see figure 2].

Use table 2 to check the function. If the switching output fails to behave in accordance with table 2, check the application conditions.

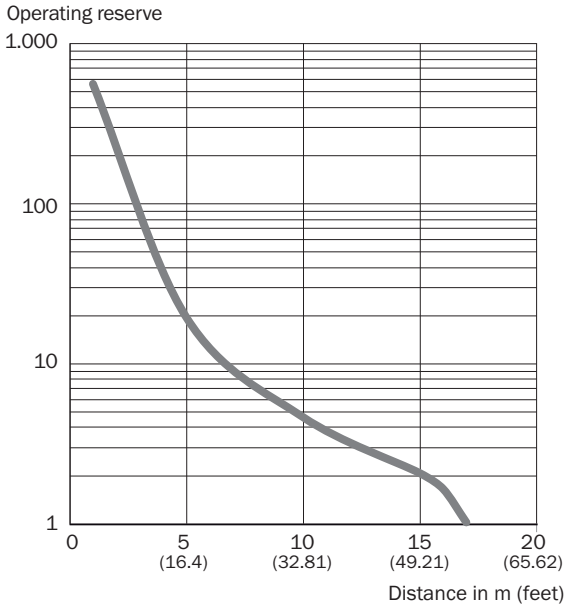


Figure 6: Characteristic curve, ZSE18-xxxxx3

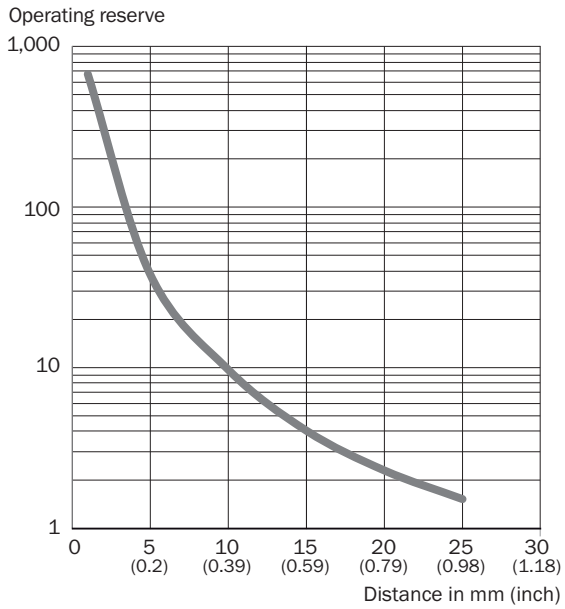


Figure 7: Characteristic curve, ZSE18-xxxxx8

3 **Sensitivity setting**
Sensor not possible to be set: The sensor has been adjusted by the factory to provide maximum sensitivity 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 or contaminated optical surface(s). 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 3 for additional detail on Health/Alarm output operation.

8 Troubleshooting

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

Table 6: Troubleshooting

LED indicator/fault pattern	Cause	Measures
Yellow LED does not light up even though the sender is aligned to the receiver and there is no object in the path of the beam	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
No object in beam path, no output signal	Test input (Test) is not connected properly	Check connection of the test input. When using female cable connectors with LED indicators, make sure the test input is assigned correspondingly.
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 sender and receiver / Clean the optical surfaces

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

	ZSE18-xxxxx1	ZSE18-xxxxx3	ZSE18-xxxxx2	ZSE18-xxxxx8
Sensing range		15 m		20 m
Sensing range max.		17 m		22 m
Light spot diameter/distance		256 mm / 2 m // 1248 mm / 10 m		95 mm / 2m // 253 mm / 10 m
Supply voltage V_S	DC 10 ... 30 V[1]	DC 10 ... 30 V[1]	DC 10 ... 30 V[1]	DC 10 ... 30 V[1]
Output current $I_{max.}$	≤ 100 mA	≤ 100 mA	≤ 100 mA	≤ 100 mA
Max. switching frequency	1000 Hz[2]	1000 Hz[2]	1000 Hz[2]	1000 Hz[2]
Max. response time	≤ 500 µs[3]	≤ 500 µs[3]	≤ 500 µs[3]	≤ 500 µs[3]
Enclosure rating	IP67	IP67	IP67	IP67
Protection class	III	III	III	III
Circuit protection	A, B, D[4]	A, B, D[4]	A, B, D[4]	A, B, D[4]
Ambient operating temperature	–40 °C ... +55 °C	–40 °C ... +55 °C	–40 °C ... +55 °C	–40 °C ... +55 °C

1) Limit value; operation in short-circuit protection mains max. 8 A; residual ripple max. 5 V_{ss}
2) With light / dark ratio 1:1
3) Signal transit time with resistive load
4) 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 7: Dimensional drawings

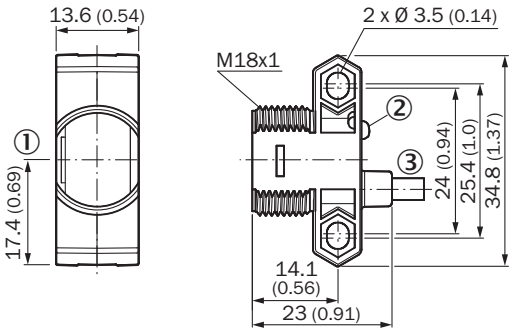


Figure 8: ZSE18-1xxxxx / ZSE18-Axxxxx

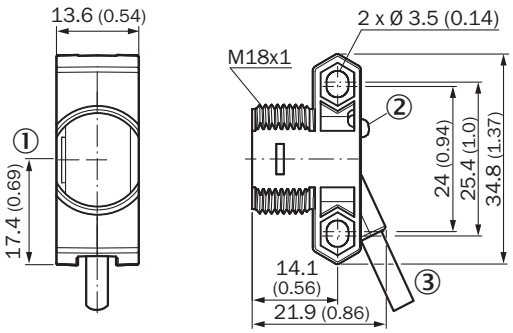


Figure 9: ZSE18-2xxxxx / ZSE18-Bxxxxx, cable

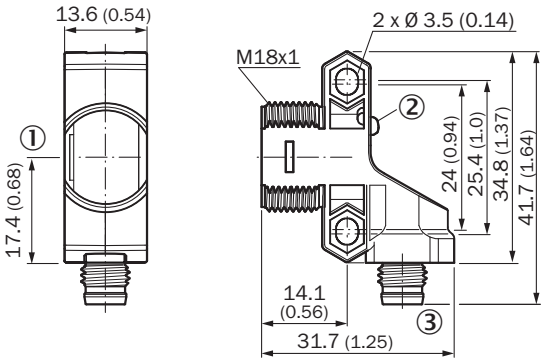


Figure 10: ZSE18-2xxxxx / ZSE18-Bxxxxx, M8 connector

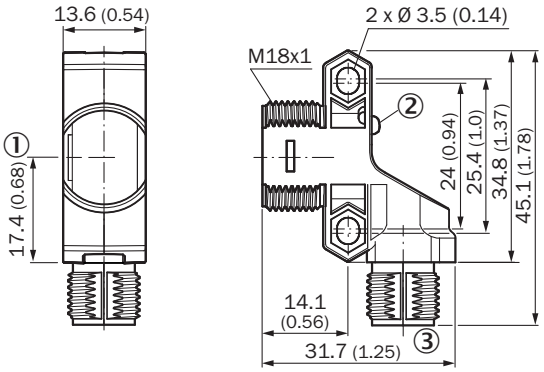


Figure 11: ZSE18-2xxxxx / ZSE18-Bxxxxx, M12 connector

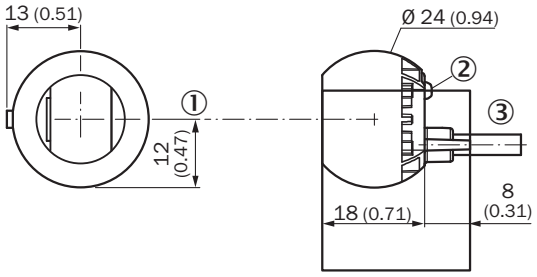


Figure 12: ZSE18-3xxxxx / ZTx18-Cxxxxx

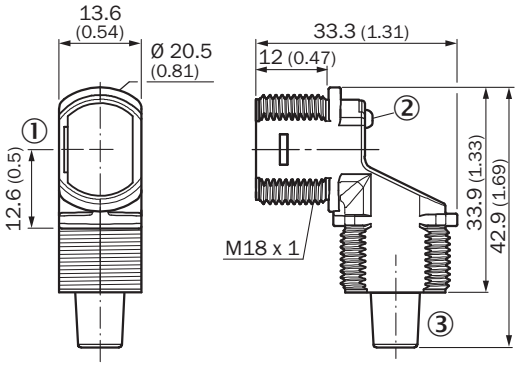


Figure 13: ZSE18-4xxxxx / ZSE18-Dxxxxx, cable

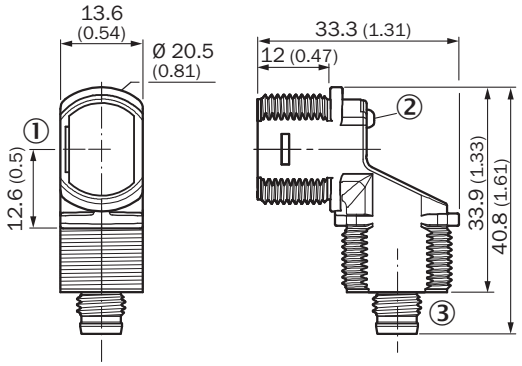


Figure 14: ZSE18-4xxxxx / ZSE18-Dxxxxx, M8 connector

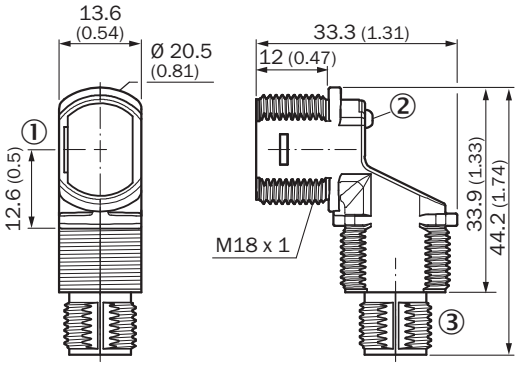


Figure 15: ZSE18-4xxxxx / ZSE18-Dxxxxx, M12 connector

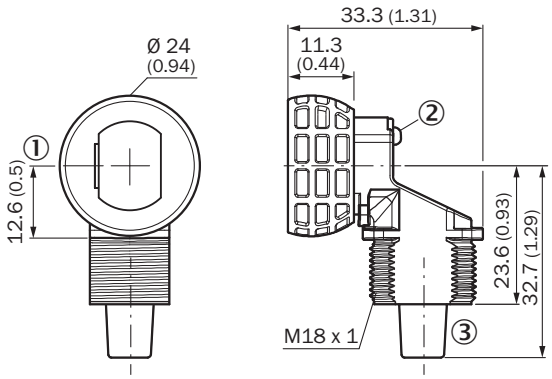


Figure 16: ZSE18-5xxxxx / ZSE18-Exxxxx, cable

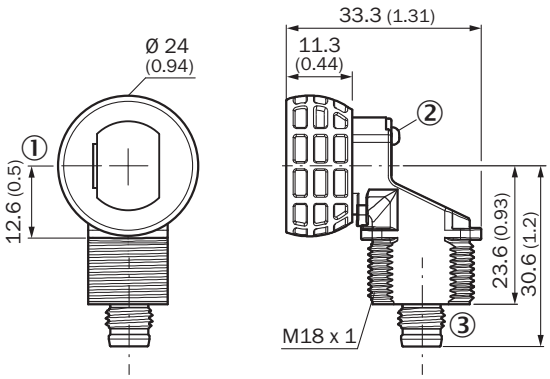


Figure 17: ZSE18-5xxxxx / ZSE18-Exxxxx, M8 connector

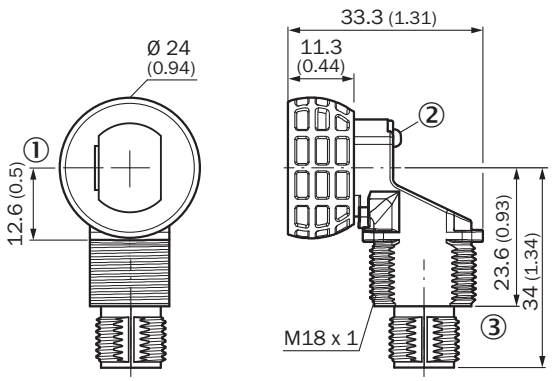


Figure 18: ZSE18-5xxxxx / ZSE18-Exxxxx, M12 connector

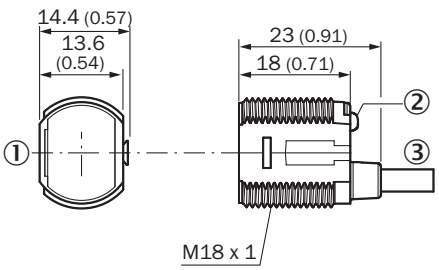


Figure 19: ZSE18-6xxxxx / ZSE18-Fxxxxx

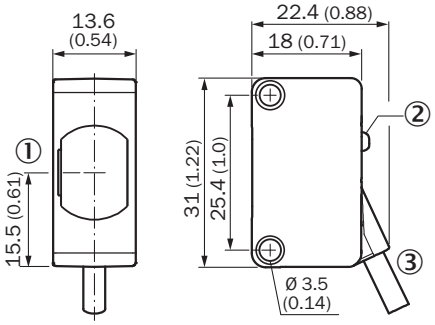


Figure 20: ZSE18-7xxxxx / ZSE18-Gxxxxx

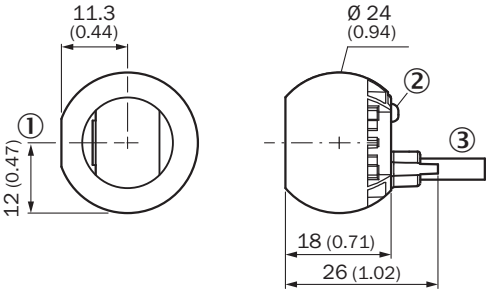


Figure 21: ZSE18-8xxxxx / ZSE18-Hxxxxx

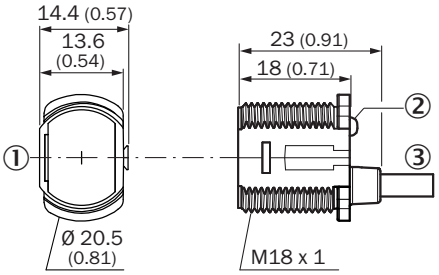


Figure 22: ZSE18-9xxxxx / ZSE18-Jxxxxx

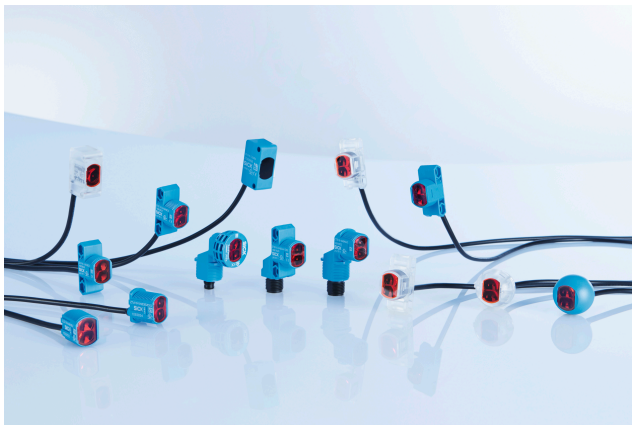
① optical axis
② LED status indicators
③ connection / strain relief

BETRIEBSANLEITUNG

ZSE18

Rund-Lichttaster und Lichtschranken

SICK
Sensor Intelligence.



de
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zh

Beschriebenes Produkt

Z18 SimpleSense

ZSE18

Hersteller

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

Rechtliche Hinweise

Originaldokument

Dieses Dokument ist ein Originaldokument der SICK AG.

Inhalt

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 ZSE18 ist eine opto-elektronische Einweg-Lichtschranke (im Folgenden Sensor genannt) und wird zum optischen, berührungslosen Erfassen von Sachen, Tieren und Personen eingesetzt. Zum Betrieb ist ein Sender (ZSO18) und ein Empfänger (ZSE18) erforderlich. Bei jeder anderen Verwendung und bei Veränderungen am Produkt verfällt jeglicher Gewährleistungsanspruch gegenüber der SICK AG.

15 Betriebs- und Statusanzeigen

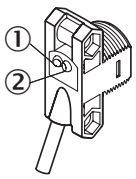


Abbildung 23: Anzeigeelemente

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

16 Montage

Sensoren (Sender und Empfänger) an geeignete Befestigungswinkel montieren (siehe SICK-Zubehör-Programm). Sender und Empfänger zueinander ausrichten.

HINWEIS

Bei Montage mehrerer Einweg-Lichtschranken nebeneinander die Anordnung des Senders (ZSO18) und Empfängers (ZEO18) bei jedem zweiten Paar tauschen. Außerdem basierend auf dem Lichtfleckdurchmesser des Senders (ZSO18) einen ausreichend großen Abstand zwischen den Paaren einhalten. Siehe Abbildung 24 und Tabelle 8.

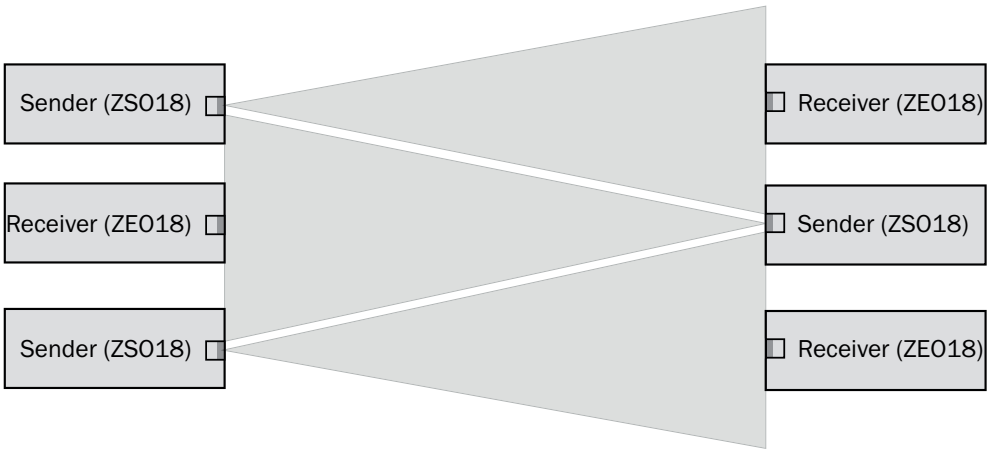


Abbildung 24: Anordnung mehrerer Einweg-Lichtschranken

Tabelle 8: Lichtfleckdurchmesser

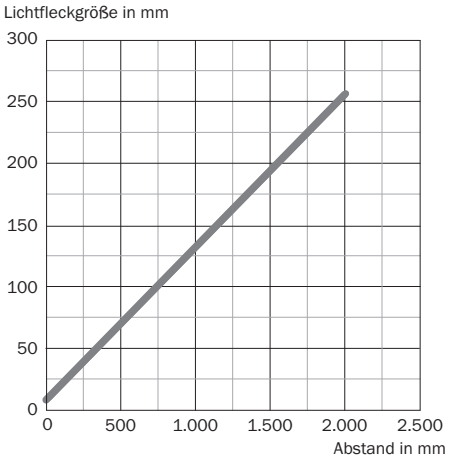


Abbildung 25: ZSE18-xxxxx3

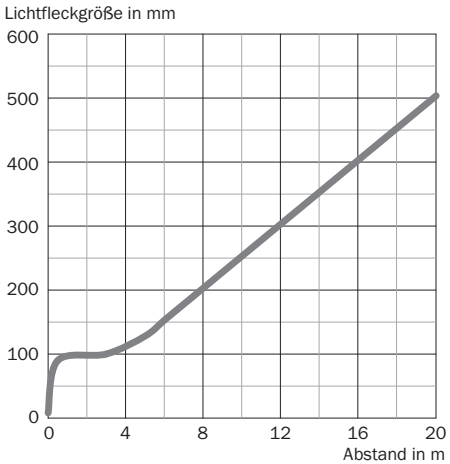


Abbildung 26: ZSE18-xxxxx8

17 Elektrische Installation

Anschluss der Sensoren muss spannungsfrei (U_V = 0 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 V) anlegen bzw. einschalten.

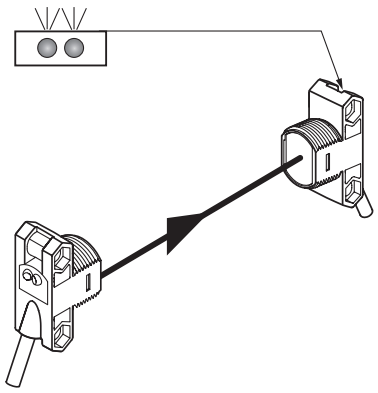
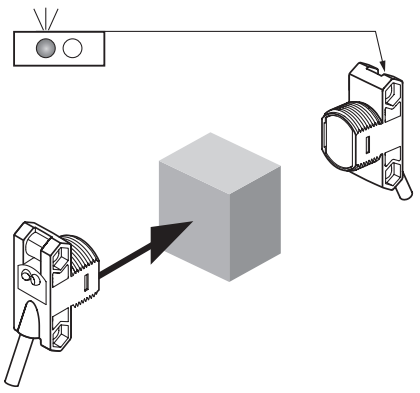
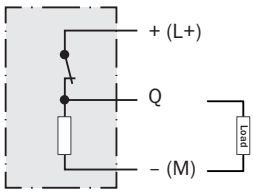
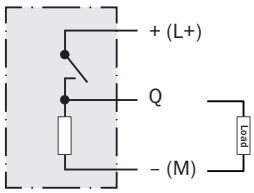
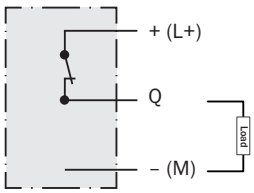
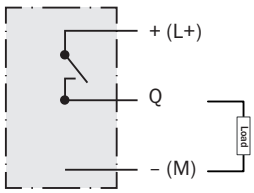
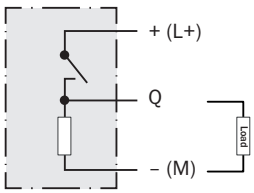
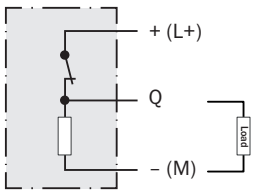
Erläuterung der in Tabelle 2 bis 5 verwendeten Anschlussterminologie:

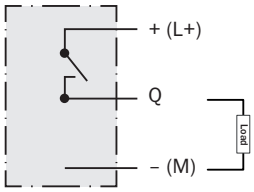
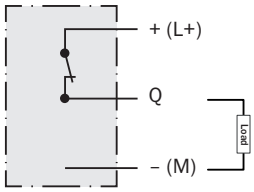
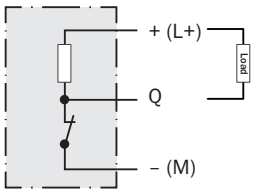
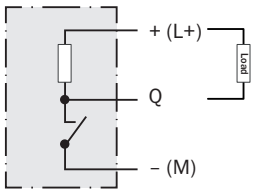
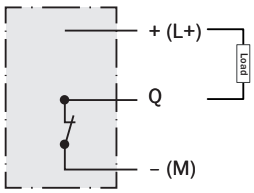
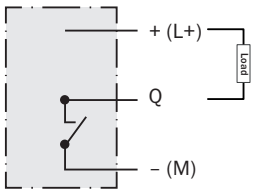
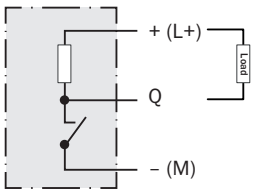
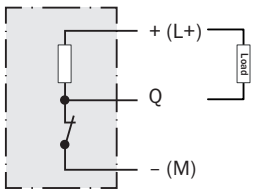
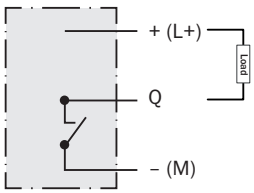
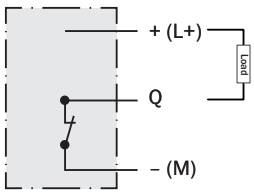
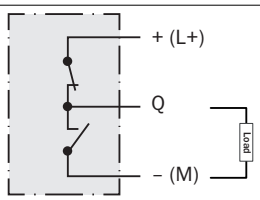
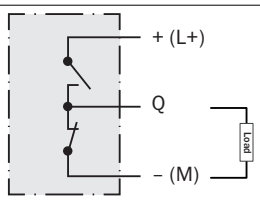
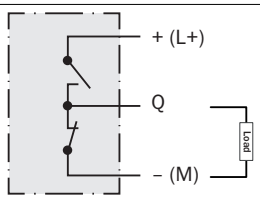
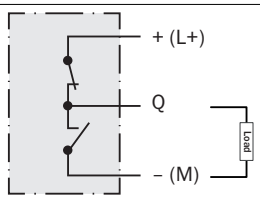
BN = braun
WH = weiß
BU = blau
BK = schwarz
n. c. = nicht angeschlossen
Q1 = Schaltausgang 1
Q2 = Schaltausgang 2
L+ = Versorgungsspannung (U_V)
M = Masse
L.ON = hellschaltend
D.ON = dunkelschaltend

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 9: Ausgangsfunktion

ZSE18 / ZE018 -x_xxxx = Ausgang Q1 -xx_xxx = Ausgang Q2		
-xPxxxx -x8xxxx -xxPxxx L.ON, PNP: Q (≤ 100 mA)		
-xHxxxx -x4xxxx -xxHxxx L.ON, PNP Open Collector Q (≤ 100 mA)		
-xFxxxx -x2xxxx -xxFxxx D.ON, PNP: Q (≤ 100 mA)		

-xKxxxx -x6xxxx -xxKxxx D.ON, PNP Open Collector Q (≤ 100 mA)		
-xNxxxx -x7xxxx -xxNxxx L.ON, NPN: Q (≤ 100 mA)		
-xGxxxx -x3xxxx -xxGxxx L.ON, NPN Open Collector Q (≤ 100 mA)		
-xExxxx -x1xxxx -xxExxx D.ON, NPN: Q (≤ 100 mA)		
-xJxxxx -x5xxxx -xxJxxx D.ON, NPN Open Collector Q (≤ 100 mA)		
-xAxxxx -XRxxxx -xxAxxx L.ON, Push-pull (≤ 100 mA)[1]		
-xBxxxx -xSxxxx -xxBxxx D.ON, Push-pull (≤ 100 mA)[1]		

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

Tabelle 10: Alarm/Health-Betrieb

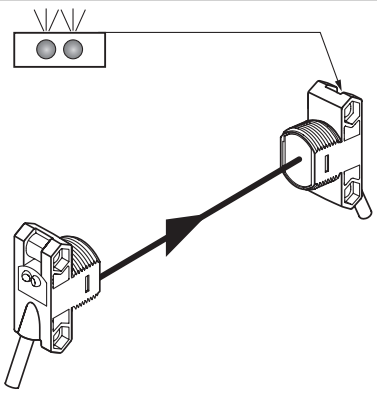
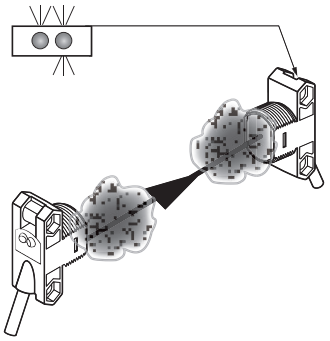
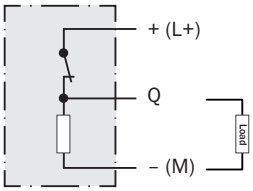
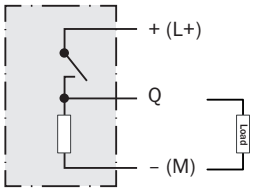
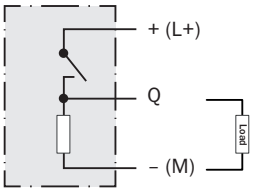
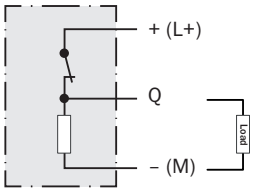
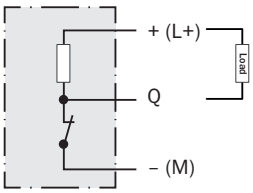
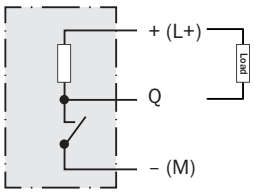
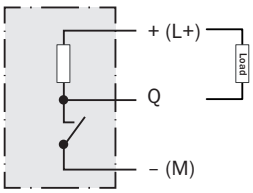
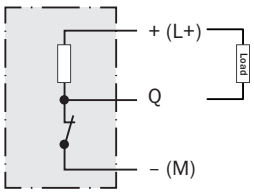
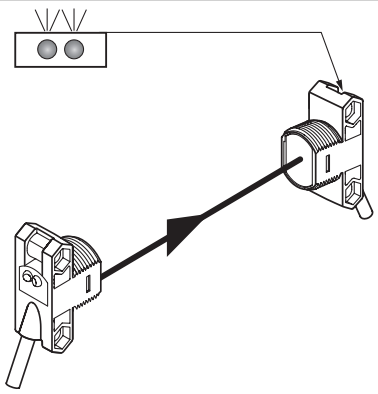
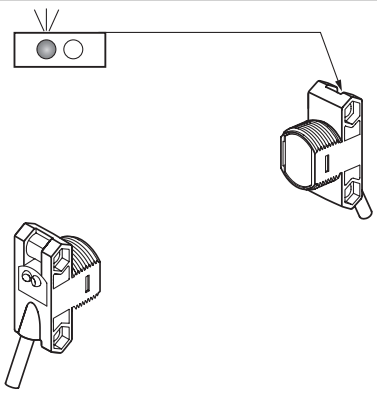
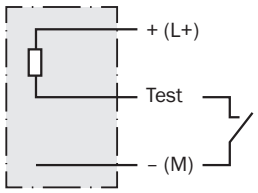
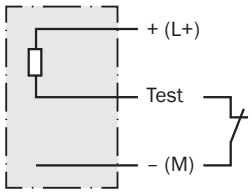
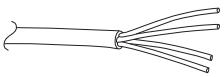
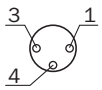
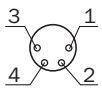
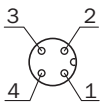
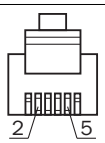
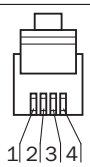
ZSE18 / ZE018 -xx_xxx = Ausgang Q2 Health/Alarm ist stets der Ausgang Q2		
-xxRxxx Health, PNP (≤ 100 mA)		
-xxTxxx Alarm, PNP (≤ 100 mA)		
-xxQxxx Health, NPN (≤ 100 mA)		
-xxSxxx Alarm, NPN (≤ 100 mA)		

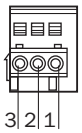
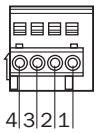
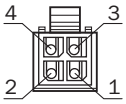
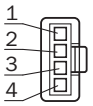
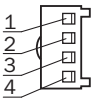
Tabelle 11: Testeingang

ZSE18 / ZE018 -x_xxxx = Q1[1] Der Testeingang ist stets am Q1		
-xRxxxx -xSxxxx -x1xxxx -x2xxxx -x3xxxx -x4xxxx -x5xxxx -x6xxxx -x7xxxx -x8xxxx Testeingang, NPN (≤ 1 mA)		

1 Die Varianten ZSE18/ZS018 -xAxxxx ... -xPxxxx haben keinen Testeingang.

Tabelle 12: Anschlussbelegung

Zxx18	Schema	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6
-xxx1xx	 0,14 mm² 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
2) ZS018 ist stets n. c. für Q2

18 Inbetriebnahme

1 **Ausrichtung**

ZSE18-xxxxx2, -xxxxx8: Den Sender (ZS018) auf den Empfänger (ZE018) ausrichten. Positionierung so wählen, dass der rote Sendelichtstrahl auf den Empfänger auftrifft. Tipp: Weißes Papier oder Reflektor als Ausrichthilfe verwenden. Der Sender muss freie Sicht auf den Empfänger haben, es darf sich kein Objekt im Strahlengang befinden [siehe Abbildung 27]. Es ist darauf zu achten, dass die optischen Öffnungen (Frontscheiben) der Sensoren vollständig frei sind.

ZSE18-xxxxx1, -xxxxx3: Den Sender (ZS018) auf den Empfänger (ZE018) ausrichten. Positionierung so wählen, dass das Infrarotlicht (nicht sichtbar) auf den Empfänger auftrifft. Die korrekte Ausrichtung kann nur über die Anzeige-LEDs erkannt werden. Siehe dazu Abbildung 27 und Tabelle 9. Der Sender muss freie Sicht auf den Empfänger haben, es darf sich kein Objekt im Strahlengang befinden. Es ist darauf zu achten, dass die optischen Öffnungen (Frontscheiben) der Sensoren vollständig frei sind.

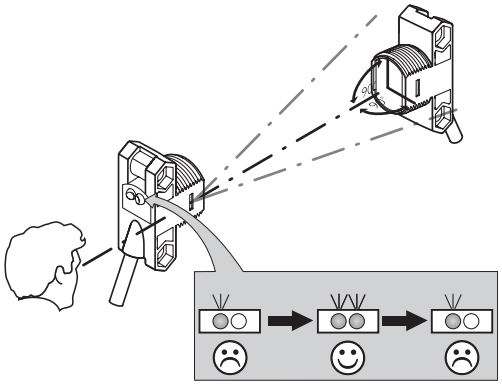


Abbildung 27: Ausrichtung

2 **Schaltabstand**

Die Einsatzbedingungen prüfen: Den Abstand zwischen Sender und Empfänger gemäß dem entsprechenden Diagramm anpassen [siehe Abbildung 28 und siehe Abbildung 29, Seite 29] (x = Schaltabstand, y = Funktionsreserve).

Bei Montage mehrerer Einweg-Lichtschranken nebeneinander empfehlen wir, die Anordnung des Senders (ZS018) und Empfängers (ZE018) bei jedem zweiten Paar zu tauschen, bzw. genügend Abstand zwischen den Einweg-Lichtschranken einzuhalten, hierzu den Lichtfleckdurchmesser des Senders (ZS018) beachten. Auf diese Weise kann eine gegenseitige Beeinflussung verhindert werden [siehe Abbildung 24].

Mithilfe von Tabelle 9 die Funktion überprüfen. Wenn sich der Schaltausgang nicht entsprechend Tabelle 9 verhält, die Einsatzbedingungen prüfen.

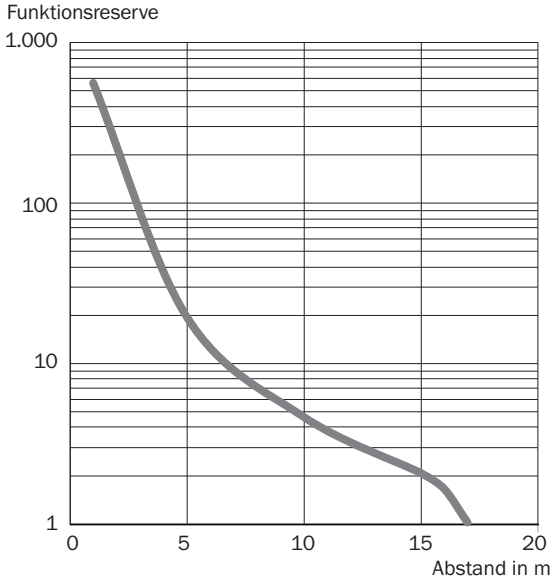


Abbildung 28: Kennlinie, ZSE18-xxxxx3

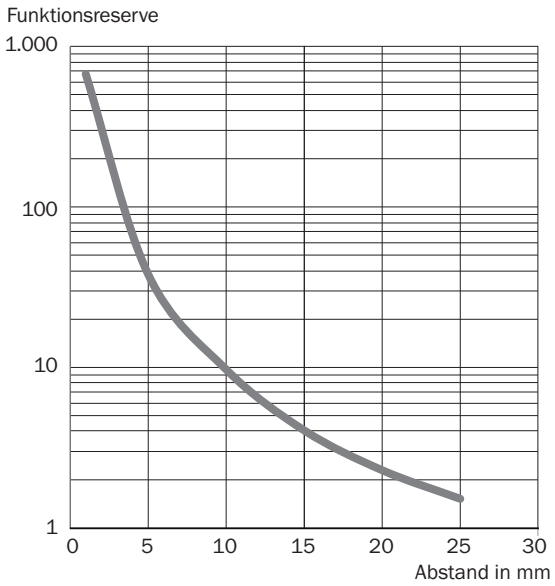


Abbildung 29: Kennlinie, ZSE18-xxxxx8

3 **Empfindlichkeitseinstellung**
Sensor kann nicht eingestellt werden: Der Sensor wurde werkseitig auf maximale Empfindlichkeit 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 oder verschmutzter Optikflächen 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 10 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 13: Stöhrungsbehebung

Anzeige-LED / Fehlerbild	Ursache	Maßnahme
Gelbe LED leuchtet nicht, obwohl der Sender am Empfänger ausgerichtet ist und sich kein Objekt im Strahlweg 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
Kein Objekt im Strahlweg, kein Ausgangssignal	Testeingang (Test) ist nicht korrekt angeschlossen	Anschluss des Testeingangs prüfen. Bei Verwendung von Leitungsdosen mit LED-Anzeigen ist darauf zu achten, dass der Testeingang entsprechend belegt wird.

Anzeige-LED / Fehlerbild	Ursache	Maßnahme
Gelbe LED blinkt; wenn Alarm/ Health vorhanden ist, das entsprechende Ausgangssignal beachten	Sensor ist dennoch betriebsbereit, doch die Betriebsbedingungen sind nicht ideal	Betriebsbedingungen prüfen: Sender und Empfänger vollständig aneinander ausrichten/Optikflächen reinigen.

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

	ZSE18-xxxxx1	ZSE18-xxxxx3	ZSE18-xxxxx2	ZSE18-xxxxx8
Schaltabstand		15 m		20 m
Schaltabstand max.		17 m		22 m
Lichtfleckdurchmesser/Entfernung		256 mm / 2 m // 1248 mm / 10 m		95 mm / 2m // 253 mm / 10 m
Versorgungsspannung U_V	DC 10 ... 30 V[1]	DC 10 ... 30 V[1]	DC 10 ... 30 V[1]	DC 10 ... 30 V[1]
Ausgangsstrom $I_{max.}$	≤ 100 mA	≤ 100 mA	≤ 100 mA	≤ 100 mA
Schaltfolge max.	1000 Hz[2]	1000 Hz[2]	1000 Hz[2]	1000 Hz[2]
Ansprechzeit max.	≤ 500 µs[3]	≤ 500 µs[3]	≤ 500 µs[3]	≤ 500 µs[3]
Schutzart	IP67	IP67	IP67	IP67
Schutzklasse	III	III	III	III
Schutzschaltungen	A, B, D[4]	A, B, D[4]	A, B, D[4]	A, B, D[4]
Betriebsumgebungstemperatur	–40 °C ... +55 °C	–40 °C ... +55 °C	–40 °C ... +55 °C	–40 °C ... +55 °C

1) Grenzwerte; Betrieb im kurzschlussgeschützten Netz max. 8 A; Restwelligkeit max. 5 V_{ss}
2) Mit Hell- / Dunkelverhältnis 1:1
3) Signallaufzeit bei ohmscher Last
4) A = U_V-Anschlüsse verpolsicher
B = Ein- und Ausgänge verpolsicher
D = Ausgänge überstrom- und kurzschlussfest

22.1 Maßzeichnungen

Tabelle 14: Maßzeichnungen

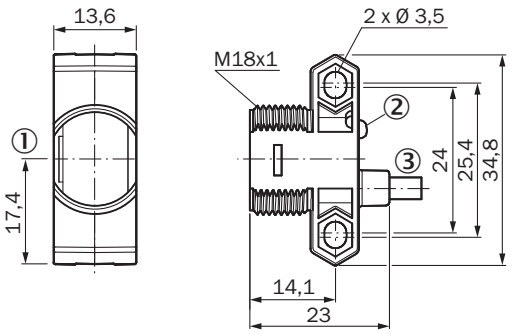


Abbildung 30: ZSE18-1xxxxx/ZSE18-Axxxxx

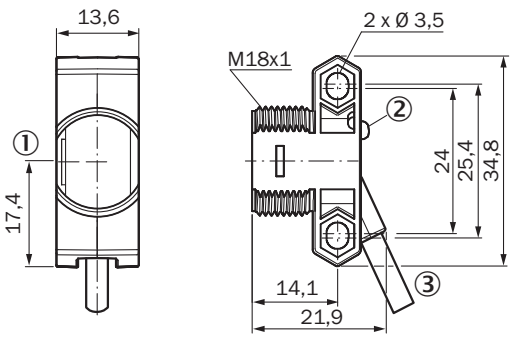


Abbildung 31: ZSE18-2xxxxx/ZSE18-Bxxxxx, Leitung

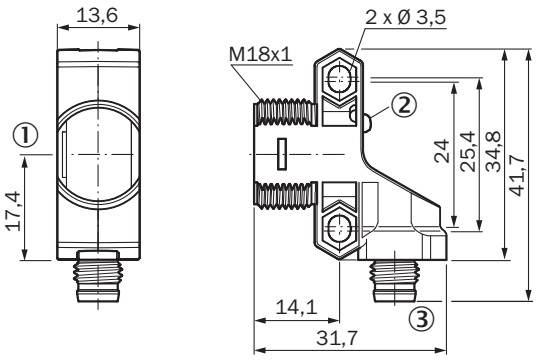


Abbildung 32: ZSE18-2xxxxx/ZSE18-Bxxxxx, M8-Steckverbinder

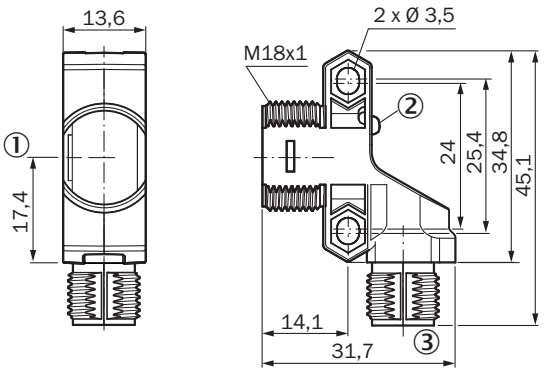


Abbildung 33: ZSE18-2xxxxx/ZSE18-Bxxxxx, M12-Steckverbinder

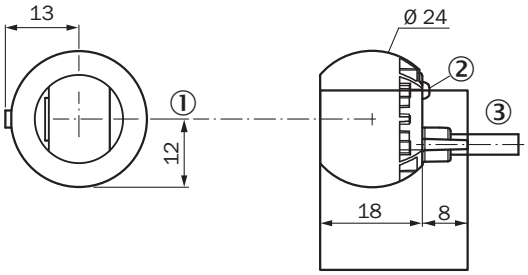


Abbildung 34: ZSE18-3xxxxx/ZTx18-Cxxxxx

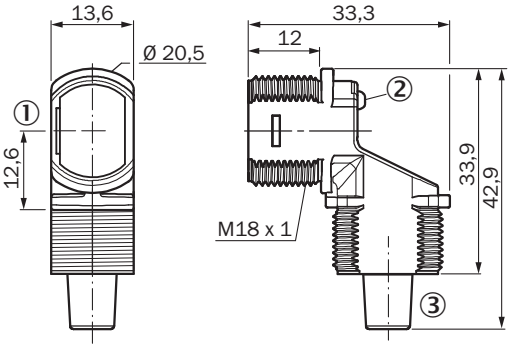


Abbildung 35: ZSE18-4xxxxx/ZSE18-Dxxxxx, Leitung

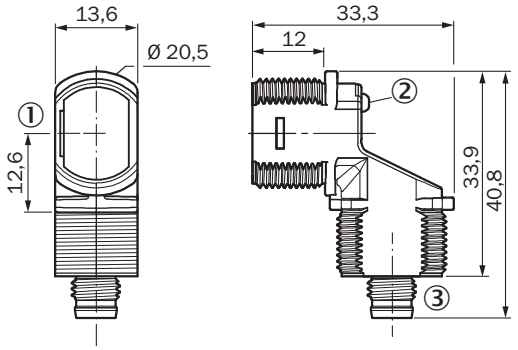


Abbildung 36: ZSE18-4xxxxx/ZSE18-Dxxxxx, M8-Steckverbinder

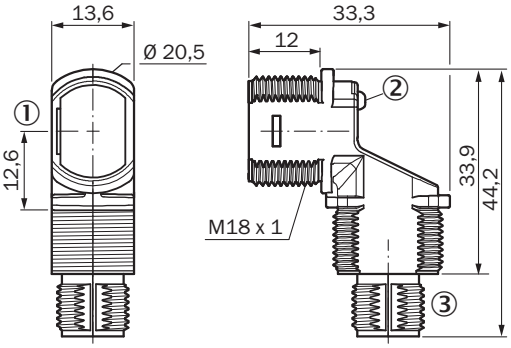


Abbildung 37: ZSE18-4xxxxx/ZSE18-Dxxxxx, M12-Steckverbinder

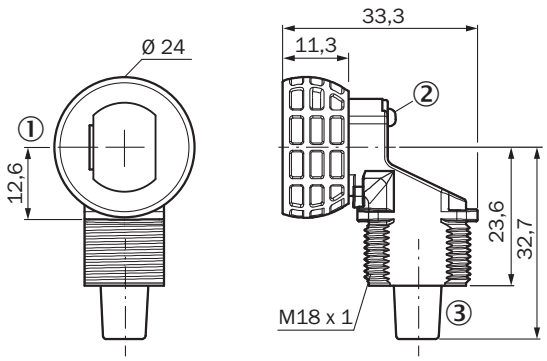


Abbildung 38: ZSE18-5xxxxx/ZSE18-Exxxxx, Leitung

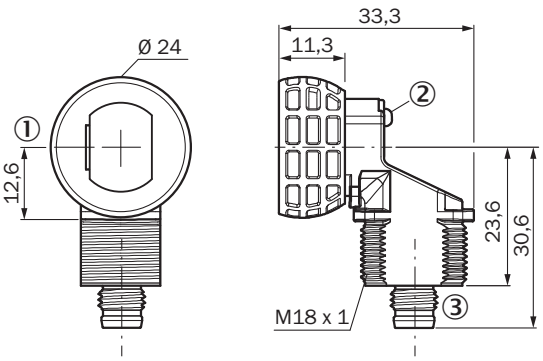


Abbildung 39: ZSE18-5xxxxx/ZSE18-Exxxxx, M8-Steckverbinder

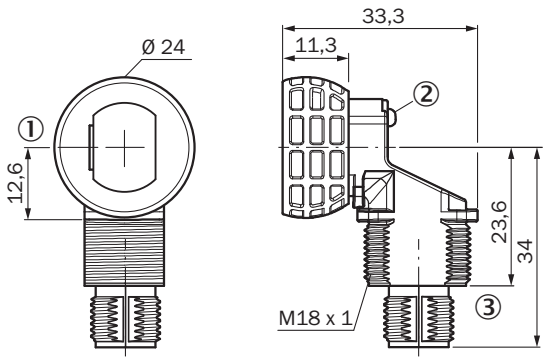


Abbildung 40: ZSE18-5xxxxx/ZSE18-Exxxxx, M12-Steckverbinder

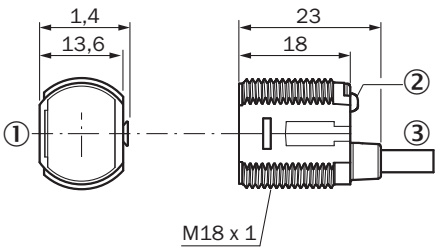


Abbildung 41: ZSE18-6xxxxx/ZSE18-Fxxxxx

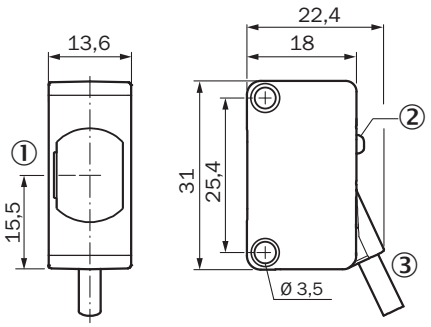


Abbildung 42: ZSE18-7xxxxx/ZSE18-Gxxxxx

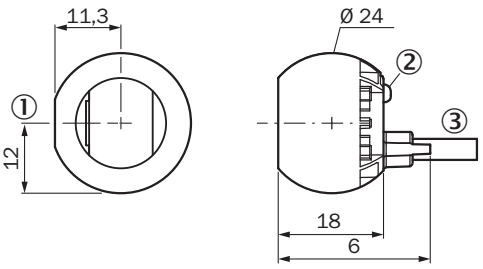


Abbildung 43: ZSE18-8xxxxx/ZSE18-Hxxxxx

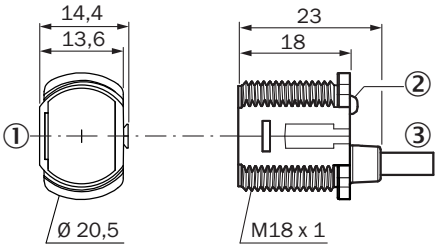


Abbildung 44: ZSE18-9xxxxx/ZSE18-Jxxxxx

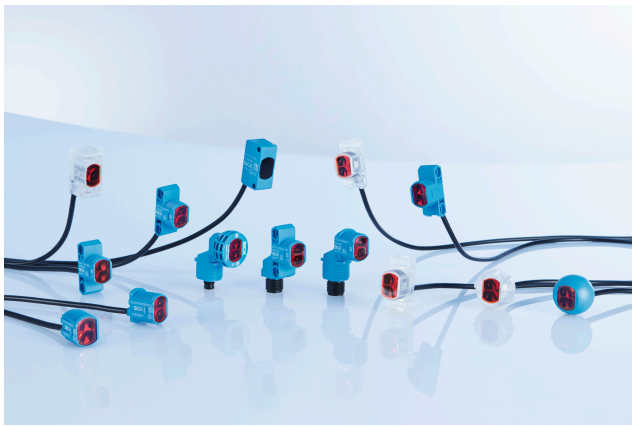
① Optikachse
② LED-Statusanzeigen
③ Anschluss/Zugentlastung

NOTICE D'INSTRUCTION

ZSE18

Capteurs photoélectriques cylindriques

SICK
Sensor Intelligence.



de
en
es
fr
it
ja
pt
ru
zh

Produit décrit

Z18 SimpleSense

ZSE18

Fabricant

SICK AG
Erwin-Sick-Straße 1
79183 Waldkirch
Allemagne

Remarques juridiques

Document original

Ce document est un document original de SICK AG.

Contenu

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 ZSE18 est une barrière émetteur-récepteur opto-électronique (appelé ci-dessous « capteur ») qui est utilisé pour la détection d'objets optique d'objets, d'animaux et de personnes sans contact. Un émetteur (ZSO18) et un récepteur (ZEO18) sont nécessaires pour son fonctionnement. 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

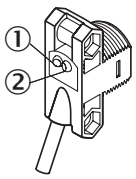


Illustration 45: Afficheurs d'état

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

27 Montage

Monter les capteurs (émetteur et récepteur) sur une équerre de fixation (voir la gamme d'accessoires SICK). Aligner l'émetteur et sur le récepteur.

REMARQUE

Lors du montage des barrières émetteurs-récepteurs les unes à côté des autres, alterner le couple émetteur (ZS018) et récepteur (ZE018) à chaque paire. Également s'assurer qu'il y ait suffisamment d'écart entre les paires basées sur le diamètre de spot lumineux de l'émetteur (ZS018). Voir illustration 46 et tableau 15.

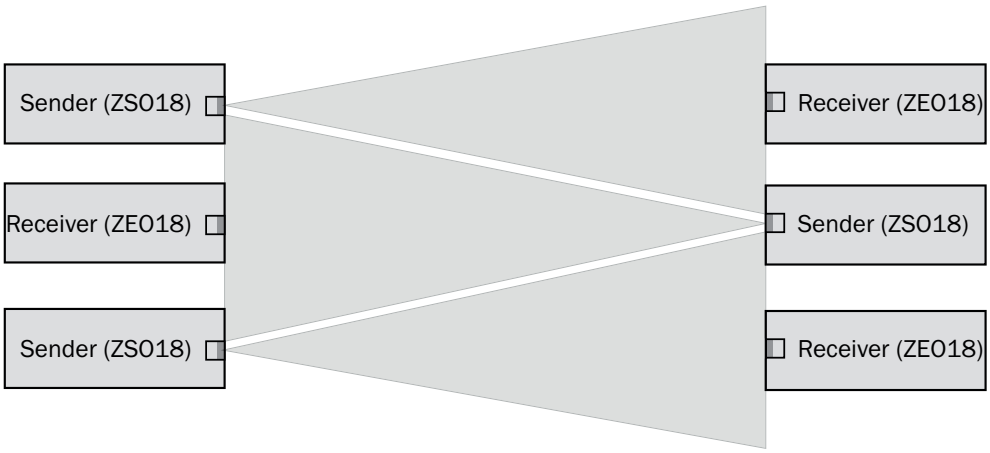


Illustration 46: Disposition de plusieurs barrières émetteur-récepteur

Tableau 15: Diamètre du spot lumineux

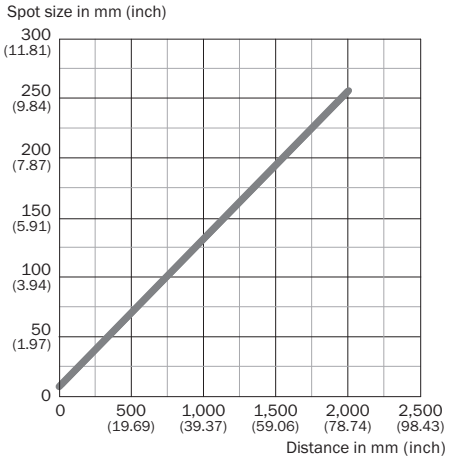


Illustration 47: ZSE18-xxxxx3

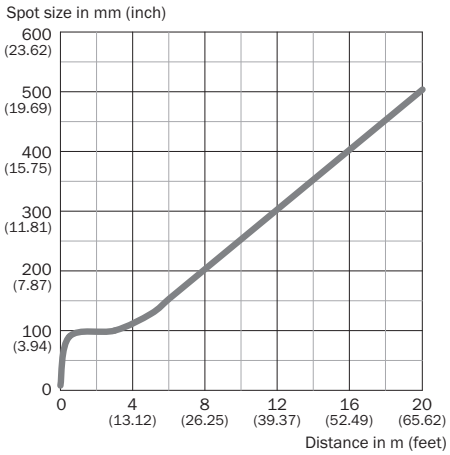


Illustration 48: ZSE18-xxxxx8

28 Installation électrique

Le raccordement des capteurs doit s'effectuer hors tension (U_V = 0 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 V).

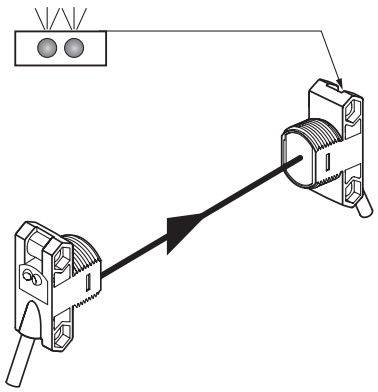
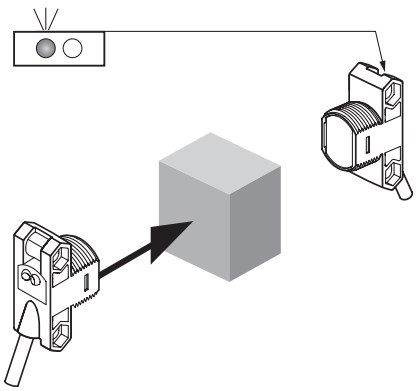
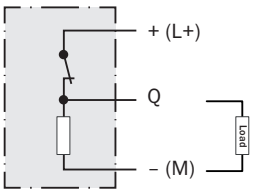
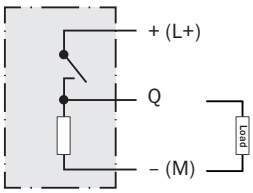
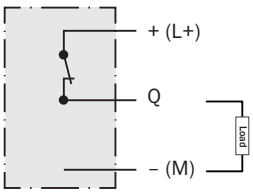
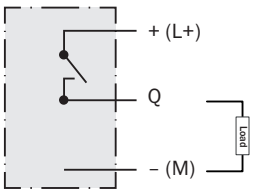
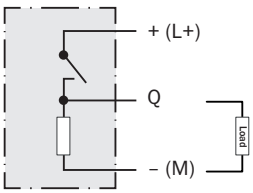
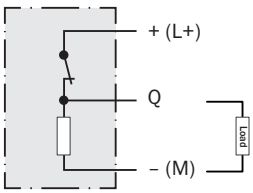
Explication de la terminologie de raccordement utilisée aux tableaux 2 à 5 :

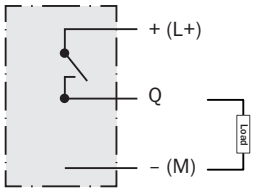
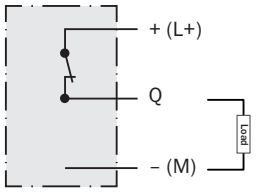
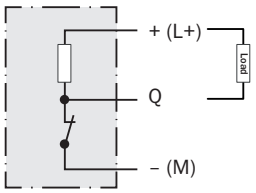
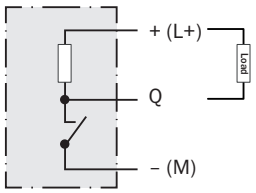
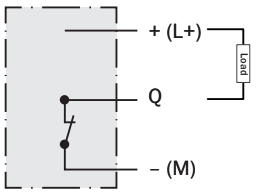
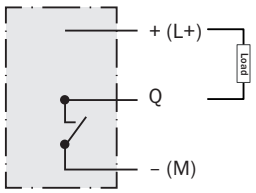
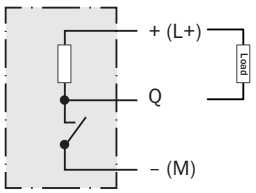
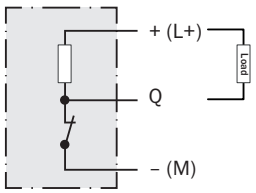
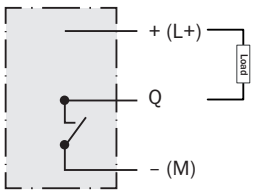
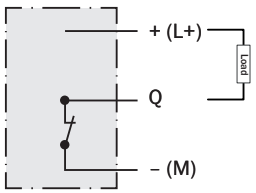
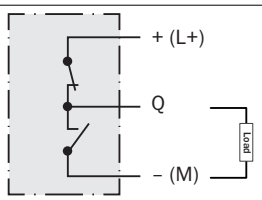
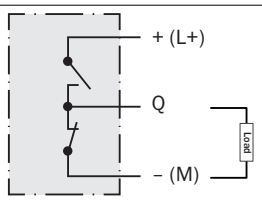
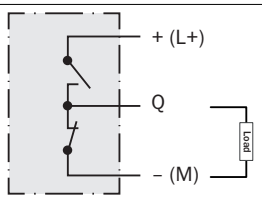
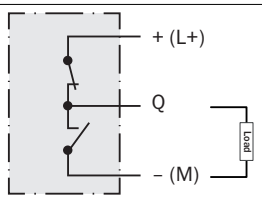
BN = Brown (Marron)
WH = White (Blanc)
BU = Blue (Bleu)
BK = Black (Noir)
n. c. = non connecté
Q1 = sortie de commutation 1
Q2 = sortie de commutation 2
L+ = tension d'alimentation (U_V)
M = poids
L.ON = commutation claire
D.ON = commutation sombre

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

Détails sur la connexion et la sortie :

Tableau 16: Fonctionnement de la sortie

ZSE18 / ZE018 -x_xxxx = sortie Q1 -xx_xxx = sortie Q2		
-xPxxxx -x8xxxx -xxPxxx L.ON, PNP : Q (≤ 100 mA)		
-xHxxxx -x4xxxx -xxHxxx L.ON, PNP collecteur ouvert Q (≤ 100 mA)		
-xFxxxx -x2xxxx -xxFxxx D.ON, PNP : Q (≤ 100 mA)		

-xKxxxx -x6xxxx -xxKxxx D.ON, PNP collecteur ouvert Q (≤ 100 mA)		
-xNxxxx -x7xxxx -xxNxxx L.ON, NPN : Q (≤ 100 mA)		
-xGxxxx -x3xxxx -xxGxxx L.ON, NPN collecteur ouvert Q (≤ 100 mA)		
-xExxxx -x1xxxx -xxExxx D.ON, NPN : Q (≤ 100 mA)		
-xJxxxx -x5xxxx -xxJxxx D.ON, NPN collecteur ouvert Q (≤ 100 mA)		
-xAxxxx -XRxxxx -xxAxxx L.ON, symétrique (≤ 100 mA)[1]		
-xBxxxx -xSxxxx -xxBxxx D.ON, symétrique (≤ 100 mA)[1]		

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

Tableau 17: Mode alarme/santé

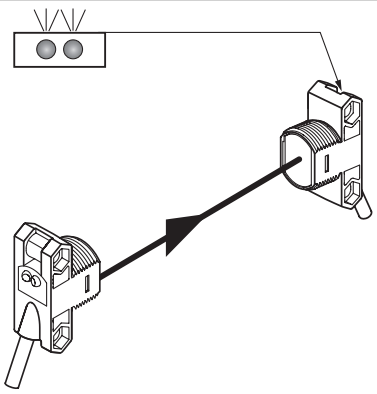
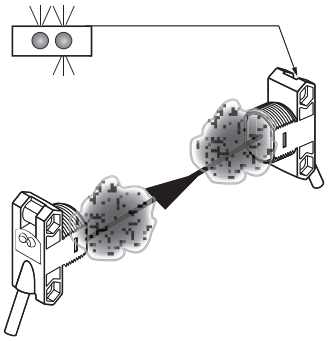
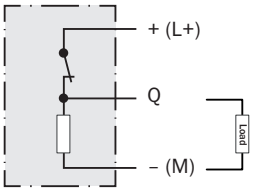
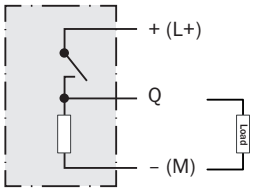
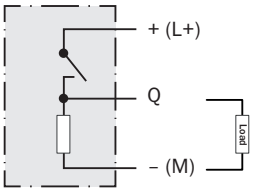
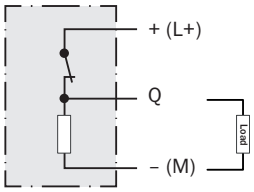
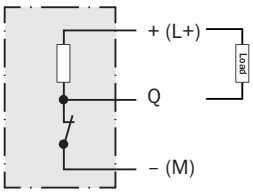
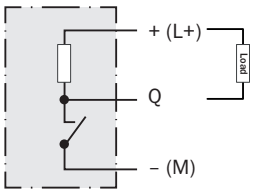
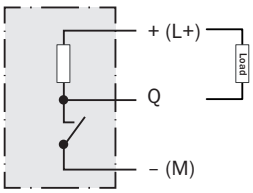
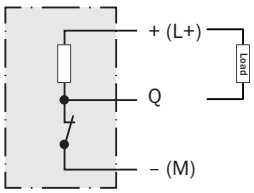
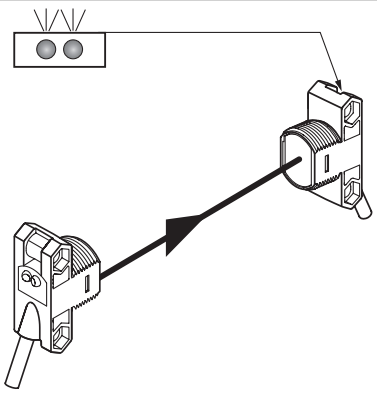
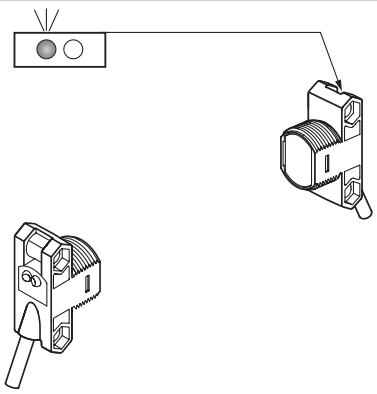
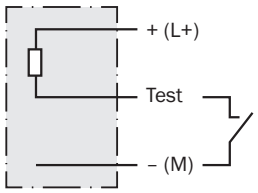
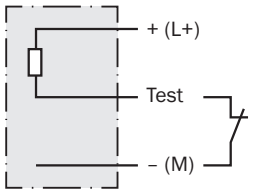
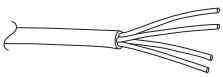
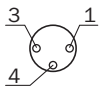
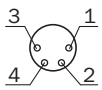
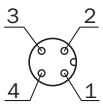
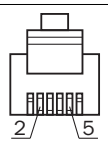
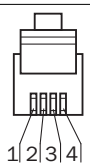
ZSE18 / ZE018 -xx_xxx = sortie Q2 Santé/alarme est toujours sur la sortie Q2		
-xxRxxx Santé, PNP (≤ 100 mA)		
-xxTxxx Alarme, PNP (≤ 100 mA)		
-xxQxxx Santé, NPN (≤ 100 mA)		
-xxSxxx Alarme, NPN (≤ 100 mA)		

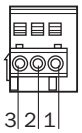
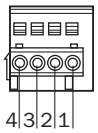
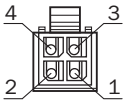
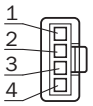
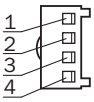
Tableau 18: Entrées de test

ZSE18 / ZE018 -x_xxxx = Q1[1] Entrée de test est toujours Q1		
-XRxxxx -xSxxxx -x1xxxx -x2xxxx -x3xxxx -x4xxxx -x5xxxx -x6xxxx -x7xxxx -x8xxxx Entrée de test, NPN (≤ 1 mA)		

1 Les variantes ZSE18 / ZS018 -xAxxxx ... -xPxxxx n'ont pas d'entrée de test

Tableau 19: Brochage des connexions

Zxx18	Diagramme	Broche 1	Broche 2	Broche 3	Broche 4	Broche 5	Broche 6
-xxx1xx	 0,14 mm² AWG26	+ (L+) BN (marron)	Q2 WH (blanc)	- (M) BU (bleu)	Q1 BK (noir)	-	-
-xxx2xx M8, 3p		+ (L+) (BN marron)	-	- (M) (BU bleu)	Q1 (BK noir)	-	-
xxx3xx / -xxx5xx M8, 4p		+ (L+) (BN marron)	Q2 (WH blanc)	- (M) (BU bleu)	Q1 (BK noir)	-	-
-xxx4xx M12, 4p		+ (L+) (BN marron)	Q2 (WH blanc)	- (M) (BU bleu)	Q1 (BK noir)	-	-
-xxxAxx RJ12		n. c.	+ (L+) (BN marron)	Q1 (BK noir)	Q2 (WH blanc)	- (M) (BU bleu)	n. c.
-xxxBxx RJ9		+ (L+) (BN marron)	Q2 (WH blanc)	- (M) (BU bleu)	Q1 (BK noir)	-	-

-xxxCxx Wago 733-103		+ (L+) (BN marron)	Q1 (BK noir)	- (M) (BU bleu)	-	-	-
-xxxDxx Wago 733-104		+ (L+) (BN marron)	Q2 (WH blanc)	- (M) (BU bleu)	Q1 (BK noir)	-	-
-xxxExx Molex 23025-0400 (2x2)		Q1 (BK noir)	Q2 (WH blanc)	+ (L+) (BN marron)	- (M) (BU bleu)	-	-
-xxxFxx Tyco 1445022-4 (1x4)		+ (L+) (BN marron)	Q2 (WH blanc)	- (M) (BU bleu)	Q1 (BK noir)	-	-
-xxxGxx Wuerth 61900411621 (1x4)		+ (L+) (BN marron)	Q2 (WH blanc)	- (M) (BU bleu)	Q1 (BK noir)	-	-

1) Vue frontale des connecteurs
2) ZSO18 sera toujours n.c. pour Q2

29 Mise en service

1 **Alignement**

ZSE18-xxxxx2, -xxxxx8 : aligner l'émetteur (ZSO18) avec le récepteur (ZEO18). Choisir la position de sorte que le faisceau lumineux émis rouge touche le récepteur. Conseil : utiliser un morceau de papier blanc ou le réflecteur comme outil d'alignement. L'émetteur doit disposer d'un champ de vision dégagé sur le récepteur, il ne doit donc y avoir aucun objet dans la trajectoire du faisceau [voir illustration 49]. S'assurer que les ouvertures optiques (vitres frontales) des capteurs sont parfaitement dégagées.

ZSE18-xxxxx1, -xxxxx3 : aligner l'émetteur (ZSO18) avec le récepteur (ZEO18). Choisir la position de sorte que le faisceau infrarouge (invisible) touche le récepteur. Seules les LED permettent de savoir si l'alignement est correct. Voir illustration 49 et tableau 16. L'émetteur doit disposer d'un champ de vision dégagé sur le récepteur, il ne doit donc y avoir aucun objet dans la trajectoire du faisceau. S'assurer que les ouvertures optiques (vitres frontales) des capteurs sont parfaitement dégagées.

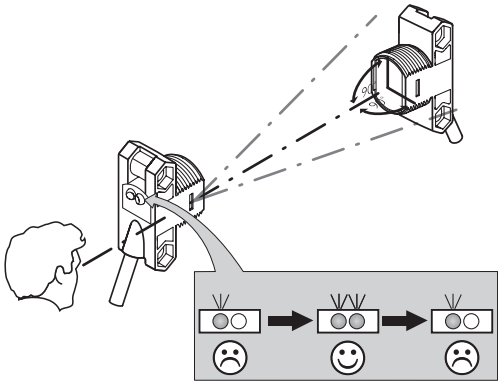


Illustration 49: Alignement

2 **Distance de commutation**

Respecter les conditions d'application : ajuster la distance entre l'émetteur et le récepteur selon le schéma correspondant [voir illustration 50 et voir illustration 51, page 45] (x = distance de commutation, y = réserve de fonctionnement).
Lors du montage des barrières émetteurs-récepteurs les unes à côté des autres, alterner le couple émetteur (ZSO18) et récepteur (ZEO18) à chaque paire. Également s'assurer qu'il y ait suffisamment d'écart entre les paires basées sur le diamètre de spot lumineux de l'émetteur (ZSO18). Cette action peut empêcher l'interférence mutuelle [voir illustration 46].
Utiliser tableau 16 pour contrôler le fonctionnement. Si la sortie de commutation ne se comporte pas selon les indications de tableau 16, contrôler les conditions d'application.

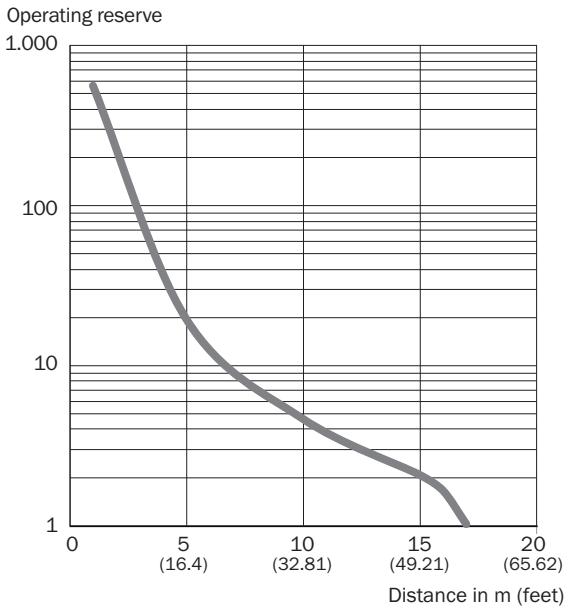


Illustration 50: Courbe caractéristique, ZSE18-xxxxx3

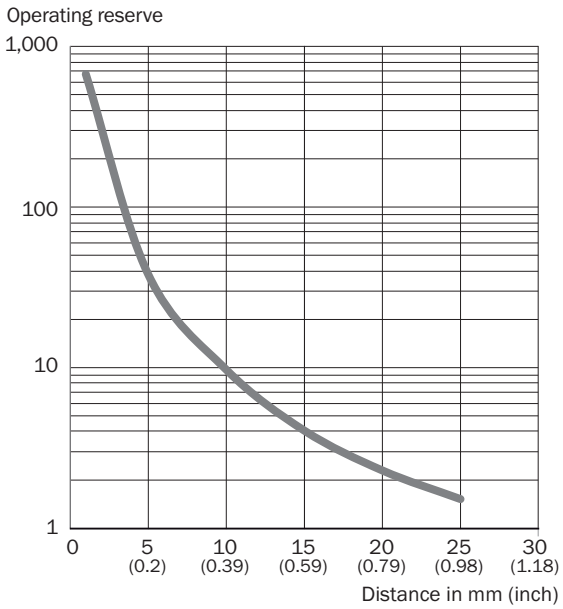


Illustration 51: Courbe caractéristique, ZSE18-xxxxx8

3 **Réglage de la sensibilité**
Impossible de régler le capteur : le capteur a été ajusté par défaut afin d'assurer une sensibilité 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 ou des surfaces optiques contaminées. 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 17 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 20: Suppression des défauts

LED d'état / image du défaut	Cause	Mesure
LED jaune ne s'allume pas alors que l'émetteur est aligné sur le récepteur et qu'il n'y a pas d'objet dans la trajectoire du faisceau	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
Aucun objet dans trajectoire du faisceau, aucun signal de sortie	L'entrée test (Test) n'est pas correctement raccordée	Contrôler le raccordement de l'entrée test. Si des connecteurs femelles avec affichages LED sont utilisés, s'assurer que l'entrée test est correctement affectée.

LED d'état / image du défaut	Cause	Mesure
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 l'émetteur et le récepteur/nettoyer les surfaces optiques

31 Démontage et mise au rebut

Le capteur doit être mis au rebut selon les régulations 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 régulations.

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

	ZSE18-xxxxx1	ZSE18-xxxxx3	ZSE18-xxxxx2	ZSE18-xxxxx8
Distance de commutation		15 m		20 m
Portée max.		17 m		22 m
Diamètre spot / distance		256 mm / 2 m // 1248 mm / 10 m		95 mm / 2m // 253 mm / 10 m
Tension d'alimentation U_V	DC 10 ... 30 V[1]	DC 10 ... 30 V[1]	DC 10 ... 30 V[1]	DC 10 ... 30 V[1]
Courant de sortie $I_{max.}$	≤ 100 mA	≤ 100 mA	≤ 100 mA	≤ 100 mA
Commutation max.	1000 Hz[2]	1000 Hz[2]	1000 Hz[2]	1000 Hz[2]
Temps de réponse max.	≤ 500 µs[3]	≤ 500 µs[3]	≤ 500 µs[3]	≤ 500 µs[3]
Indice de protection	IP67	IP67	IP67	IP67
Classe de protection	III	III	III	III
Protections électriques	A, B, D[4]	A, B, D[4]	A, B, D[4]	A, B, D[4]
Température de service	–40 °C ... +55 °C	–40 °C ... +55 °C	–40 °C ... +55 °C	–40 °C ... +55 °C

1) Valeurs limites ; fonctionnement sur réseau protégé contre les courts-circuits max. 8 A ; ondulation résiduelle max. 5 V_{cc}
2) Pour un rapport clair/sombre de 1:1
3) Temps de propagation du signal sur charge ohmique
4) 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 21: Plans cotés

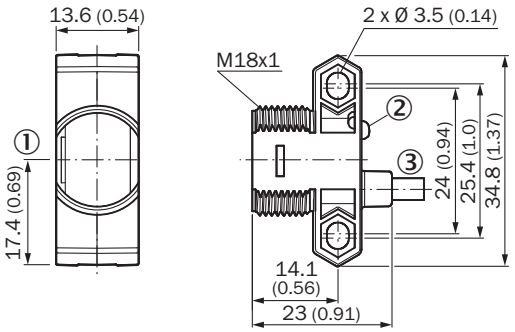


Illustration 52: ZSE18-1xxxxx/ZSE18-Axxxxx

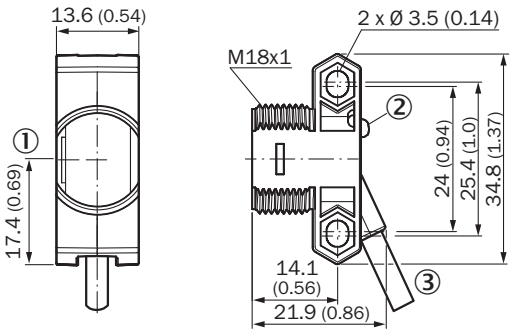


Illustration 53: ZSE18-2xxxxx/ZSE18-Bxxxxx, câble

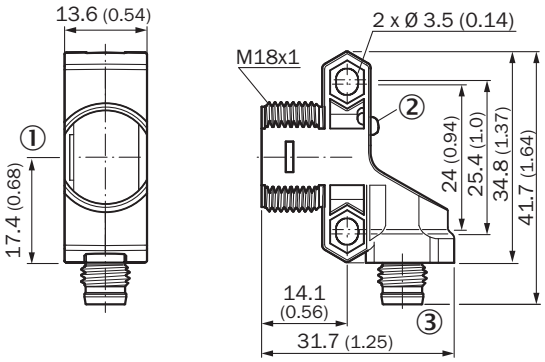


Illustration 54: ZSE18-2xxxxx/ZSE18-Bxxxxx, connecteur M8

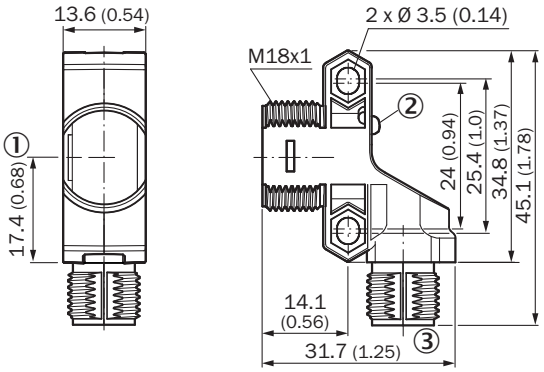


Illustration 55: ZSE18-2xxxxx/ZSE18-Bxxxxx, connecteur M12

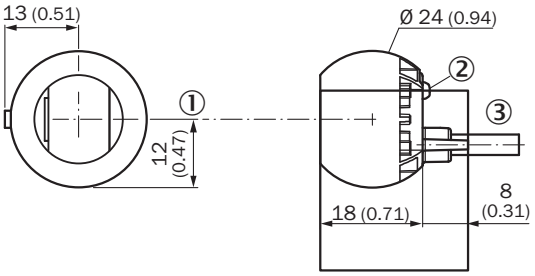


Illustration 56: ZSE18-3xxxxx / ZTx18-Cxxxxx

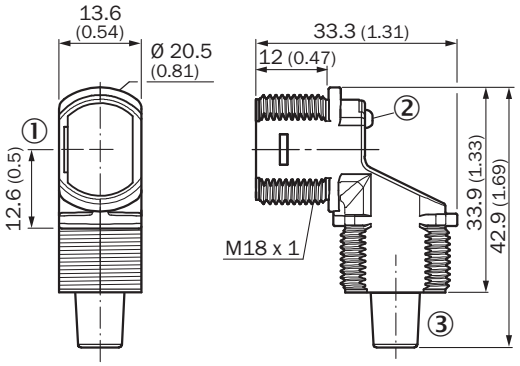


Illustration 57: ZSE18-4xxxxx/ZSE18-Dxxxxx, câble

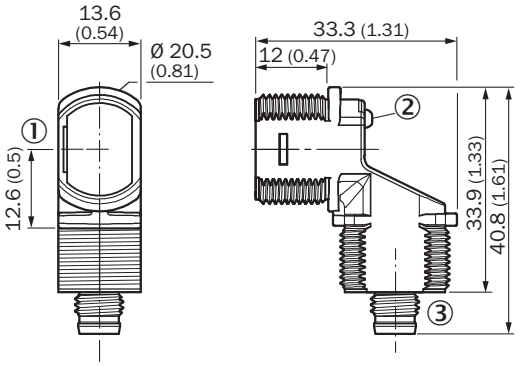


Illustration 58: ZSE18-4xxxxx/ZSE18-Dxxxxx, connecteur M8

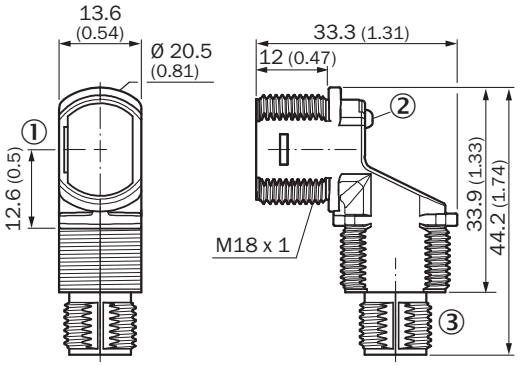


Illustration 59: ZSE18-4xxxxx/ZSE18-Dxxxxx, connecteur M12

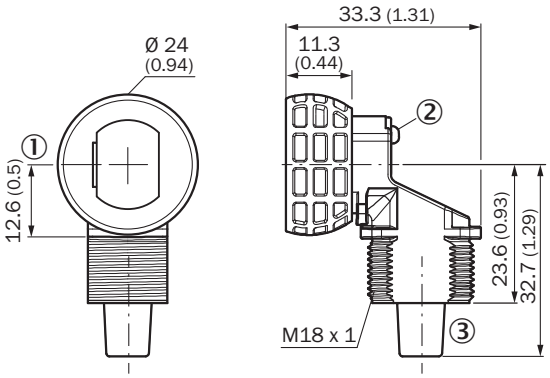


Illustration 60: ZSE18-5xxxxx/ZSE18-Exxxxx, câble

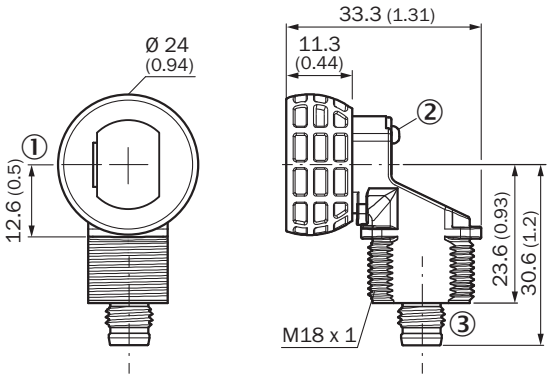


Illustration 61: ZSE18-5xxxxx/ZSE18-Exxxxx, connecteur M8

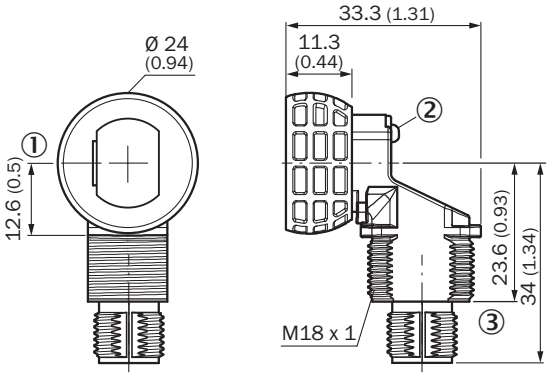


Illustration 62: ZSE18-5xxxxx/ZSE18-Exxxxx, connecteur M12

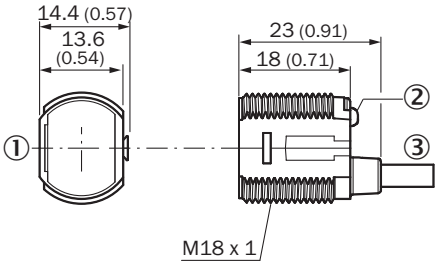


Illustration 63: ZSE18-6xxxxx/ZSE18-Fxxxxx

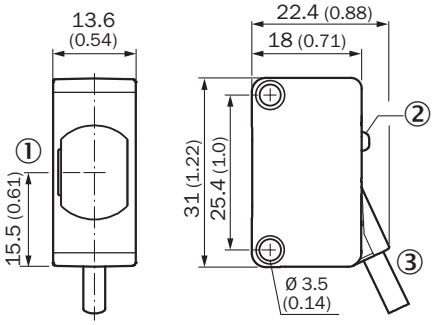


Illustration 64: ZSE18-7xxxxx/ZSE18-Gxxxxx

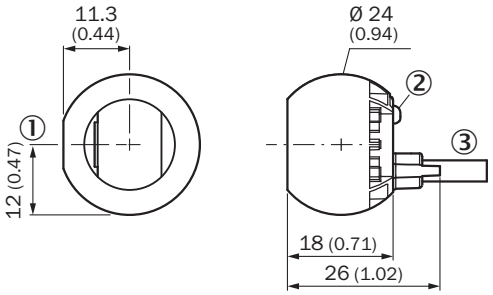


Illustration 65: ZSE18-8xxxxx/ZSE18-Hxxxxx

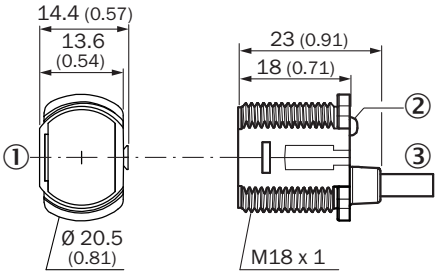


Illustration 66: ZSE18-9xxxxx/ZSE18-Jxxxxx

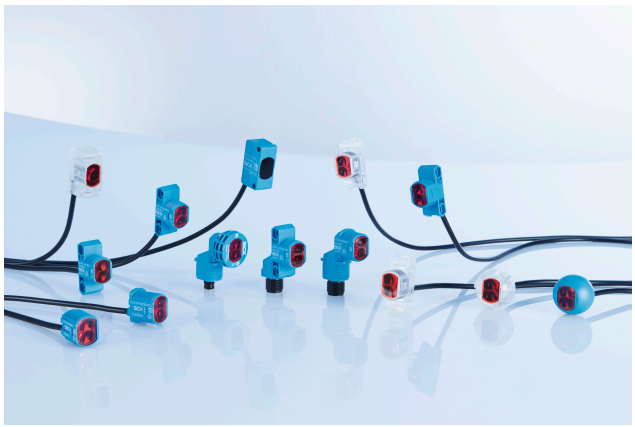
① axe optique
② Afficheur d'état à LED
③ raccordement/serre-câble

ISTRUZIONI PER L'USO

ZSE18

Sensori fotoelettrici cilindrici

SICK
Sensor Intelligence.



de
en
es
fr
it
ja
pt
ru
zh

Descrizione prodotto

Z18 SimpleSense

ZSE18

Produttore

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

Note legali

Documento originale

Questo documento è un originale della ditta SICK AG.

Indice

8021945 | SICK
Subject to change without notice

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

ZSE18 è un sensore fotoelettrico optoelettronico a sbarramento (di seguito denominato "sensore") per il rilevamento ottico senza contatto di oggetti, animali e persone. Il funzionamento richiede un emettitore (ZSO18) e un ricevitore (ZEO18). 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

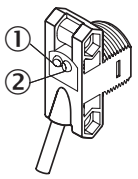


Figura 67: Indicatori di stato

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

38 Montaggio

Montare i sensori (emettitore e ricevitore) su delle staffe di fissaggio adatte (vedi il programma per accessori SICK). Orientare reciprocamente l'emettitore e il rispettivo ricevitore.

INDICAZIONE

Se i sensori fotoelettrici a sbarramento vengono montati l'uno accanto all'altro, alternare la disposizione di emettitore (ZS018) e ricevitore (ZE018) ad ogni coppia. Assicurare inoltre una distanza sufficiente tra le coppie in base al diametro del punto luminoso dell'emettitore (ZS018). Consultare figura 68 e tabella 22.

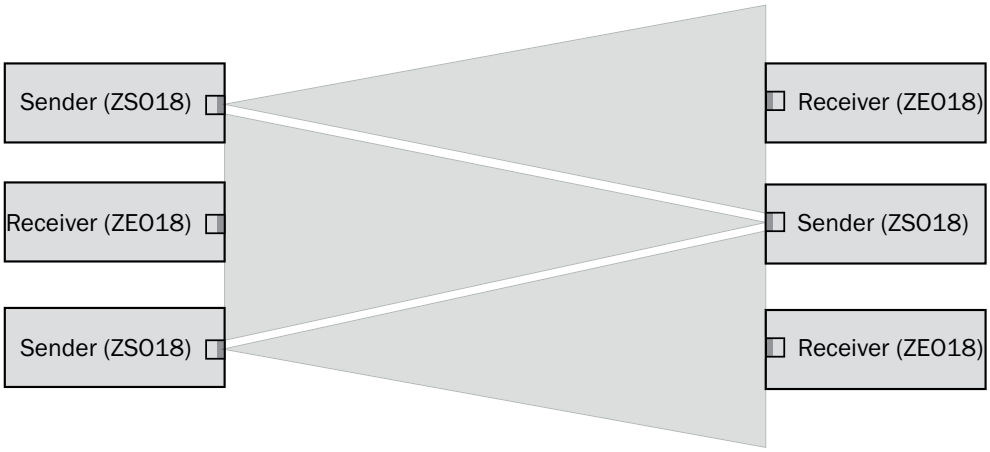


Figura 68: Disposizione di diversi sensori fotoelettrici a sbarramento

Tabella 22: Diametro del punto luminoso

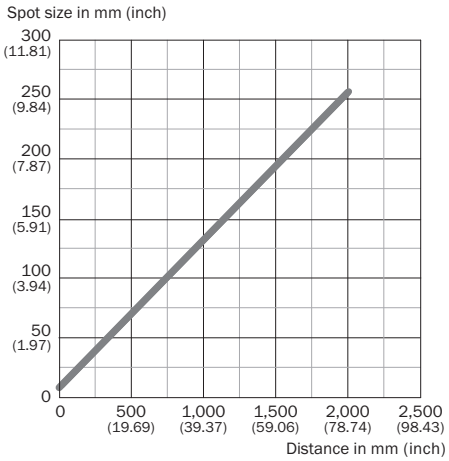


Figura 69: ZSE18-xxxxx3

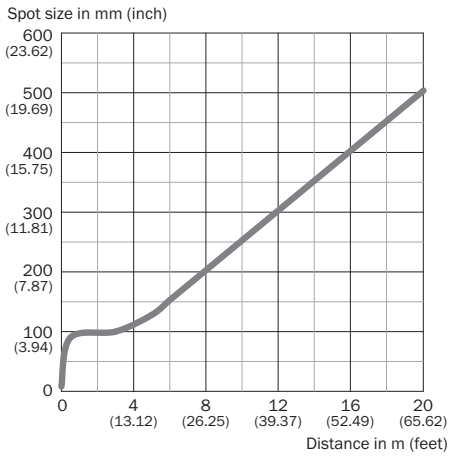


Figura 70: ZSE18-xxxxx8

39 Installazione elettrica

Il collegamento dei sensori deve avvenire in assenza di tensione (V_S = 0 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 V).

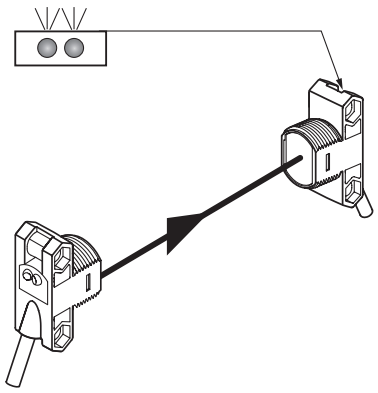
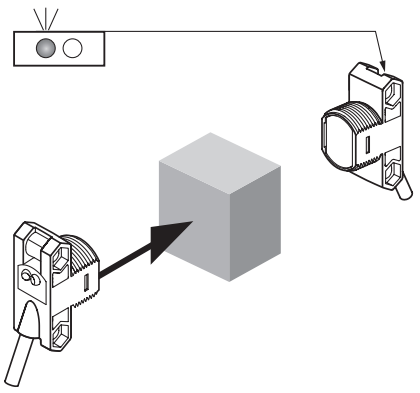
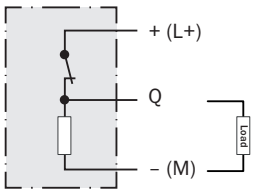
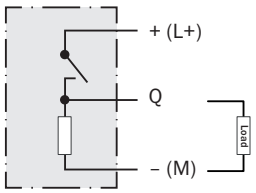
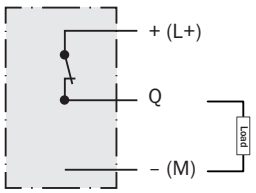
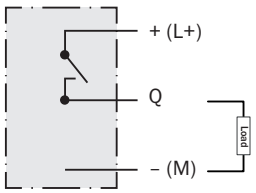
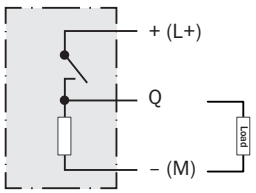
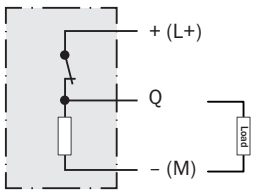
Spiegazione della terminologia di collegamento utilizzata nelle tabelle 2-5:

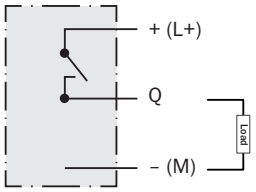
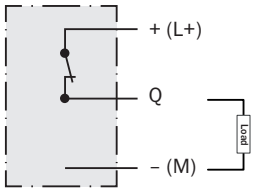
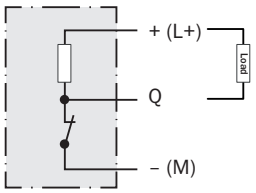
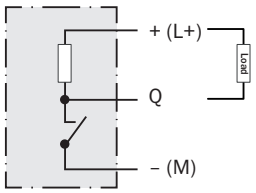
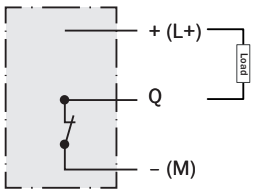
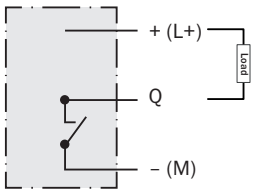
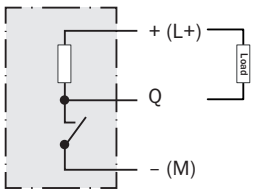
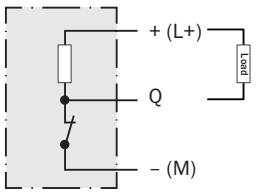
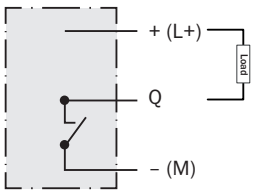
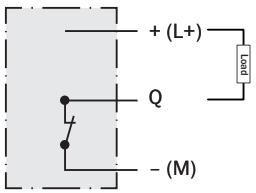
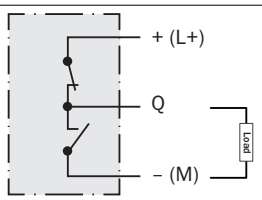
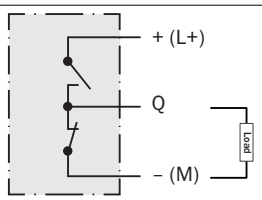
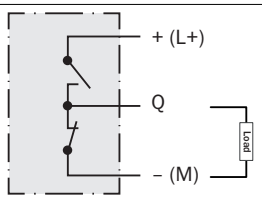
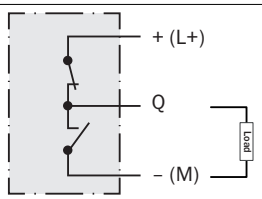
BN = marrone
WH = bianco
BU = blu
BK = nero
n. c. = non collegato
Q1 = uscita di commutazione 1
Q2 = uscita di commutazione 2
L+ = tensione di alimentazione (V_S)
M = peso
L.ON = light operate (funzionamento light on)
D.ON = dark operate (funzionamento dark on)

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-xxxxxxTxx).

Dettagli del collegamento e dell'uscita:

Tabella 23: uscita DC

ZSE18 / ZE018 -x_xxxx = uscita Q1 -xx_xxx = uscita Q2		
-xPxxxx -x8xxxx -xxPxxx L.ON, PNP: Q (≤ 100 mA)		
-xHxxxx -x4xxxx -xxHxxx L.ON, PNP Open Collector Q (≤ 100 mA)		
-xFxxxx -x2xxxx -xxFxxx D.ON, PNP: Q (≤ 100 mA)		

-xKxxxx -x6xxxx -xxKxxx D.ON, PNP Open Collector Q (≤ 100 mA)		
-xNxxxx -x7xxxx -xxNxxx L.ON, NPN: Q (≤ 100 mA)		
-xGxxxx -x3xxxx -xxGxxx L.ON, NPN Open Collector Q (≤ 100 mA)		
-xExxxx -x1xxxx -xxExxx D.ON, NPN: Q (≤ 100 mA)		
-xJxxxx -x5xxxx -xxJxxx D.ON, NPN Open Collector Q (≤ 100 mA)		
-xAxxxx -XRxxxx -xxAxxx L.ON, Push-pull (≤ 100 mA)[1]		
-xBxxxx -xSxxxx -xxBxxx D.ON, Push-pull (≤ 100 mA)[1]		

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

Tabella 24: Funzionamento Allarme/Salute

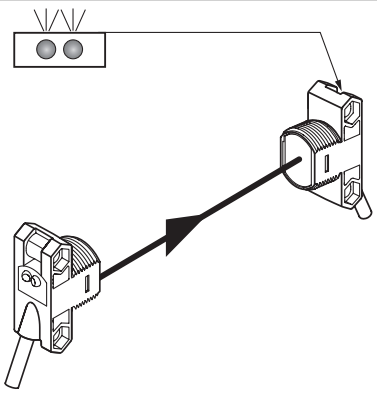
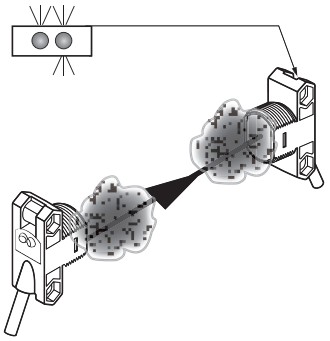
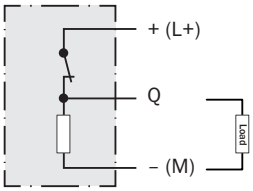
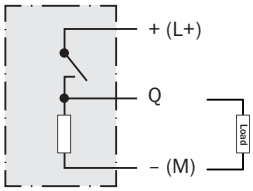
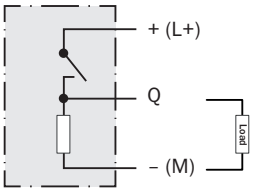
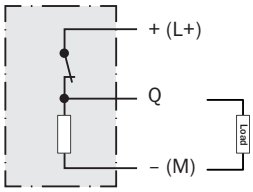
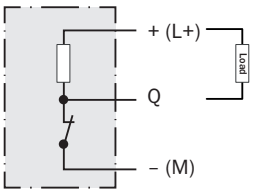
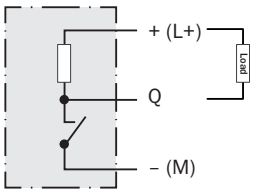
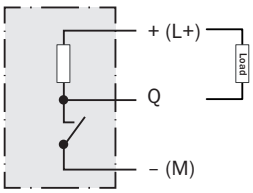
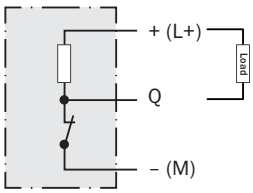
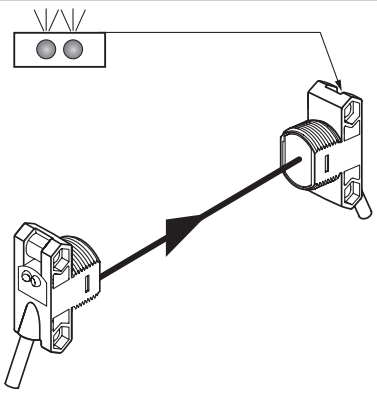
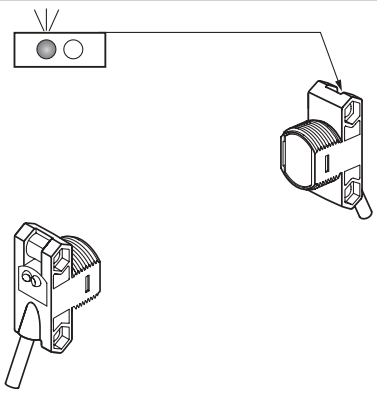
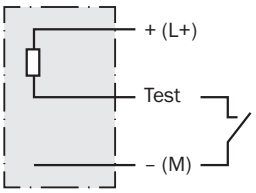
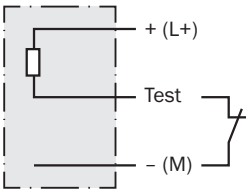
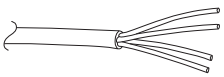
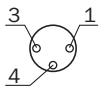
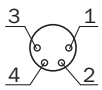
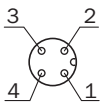
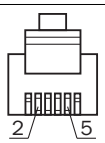
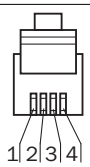
ZSE18 / ZE018 -xx_xxx = uscita Q2 Salute/Allarme è sempre l'uscita Q2		
-xxRxxx Salute, PNP (≤ 100 mA)		
-xxTxxx Allarme, PNP (≤ 100 mA)		
-xxQxxx Salute, NPN (≤ 100 mA)		
-xxSxxx Allarme, NPN (≤ 100 mA)		

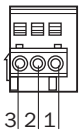
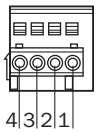
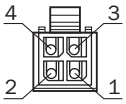
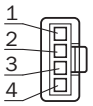
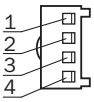
Tabella 25: Ingresso di test

ZSE18 / ZE018 -x_xxxx = Q1[1] L'ingresso di test è sempre su Q1		
-xRxxxx -xSxxxx -x1xxxx -x2xxxx -x3xxxx -x4xxxx -x5xxxx -x6xxxx -x7xxxx -x8xxxx Ingresso di test, NPN (≤ 1 mA)		

1 Varianti ZSE18 / ZS018 -xAxxxx ... -xPxxxx non hanno un ingresso di test

Tabella 26: collegamento DC

Zxx18	Diagramma	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6
-xxx1xx	 0,14 mm² 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
2) ZSO18 sarà sempre n.c. per Q2

40 Messa in servizio

1 **Allineamento**

ZSE18-xxxxx2, -xxxxx8: orientare l'emettitore (ZSO18) al ricevitore (ZEO18). Scegliere la posizione in modo tale che il raggio di luce rosso emesso colpisca il ricevitore. Suggerimento: usare carta bianca o il riflettore come ausilio per l'orientamento. L'emettitore deve avere una visuale libera sul ricevitore, non ci deve essere nessun oggetto nella traiettoria del raggio [vedi figura 71]. Fare attenzione che le aperture ottiche dei sensori (frontalini) siano completamente libere.

ZSE18-xxxxx1, -xxxxx3: orientare l'emettitore (ZSO18) al ricevitore (ZEO18). Scegliere la posizione in modo tale che la luce infrarossa (non visibile) colpisca il ricevitore. L'orientamento corretto può essere rilevato solo tramite l'indicatore LED. A tale proposito vedi figura 71 e tabella 23. L'emettitore deve avere una visuale libera sul ricevitore, non ci deve essere nessun oggetto nella traiettoria del raggio. Fare attenzione che le aperture ottiche dei sensori (frontalini) siano completamente libere.

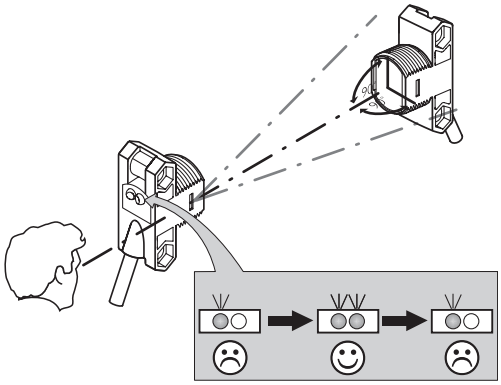


Figura 71: Allineamento

2 **Distanza di lavoro**

Osservare le condizioni di applicazione: regolare la distanza tra l'emettitore e il ricevitore in base al diagramma corrispondente [vedi figura 72 e v. figura 73, pagina 61] (x = distanza di lavoro, y = riserva operativa).

Se i sensori fotoelettrici a sbarramento vengono montati l'uno accanto all'altro, alternare la disposizione di emettitore (ZSO18) e ricevitore (ZEO18) ad ogni coppia. Assicurare inoltre una distanza sufficiente tra le coppie in base al diametro del punto luminoso dell'emettitore (ZSO18). In tal modo si possono evitare interferenze reciproche [vedere figura 68].

Utilizzare tabella 23 per verificare il funzionamento. Se l'uscita di commutazione non si comporta in conformità con tabella 23, controllare le condizioni di applicazione.

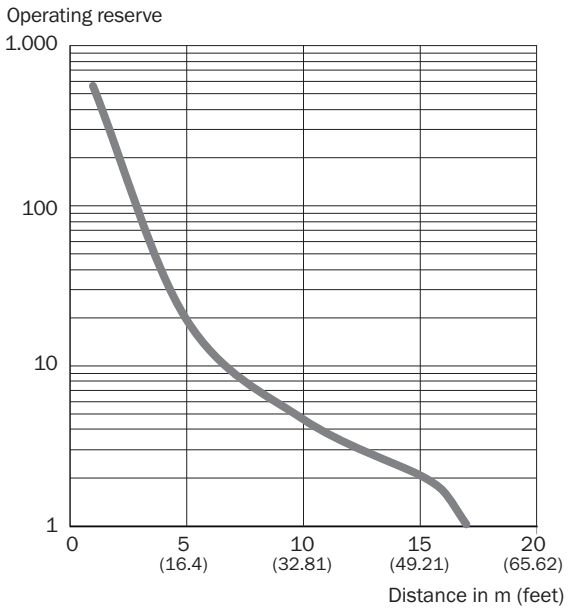


Figura 72: Curva caratteristica, ZSE18-xxxxx3

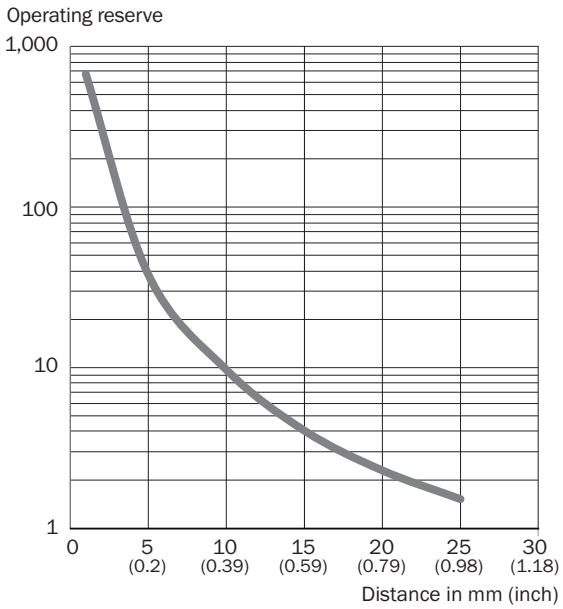


Figura 73: Curva caratteristica, ZSE18-xxxxx8

3 **Regolazione della sensibilità**
Impossibile impostare il sensore: il sensore è stato regolato in fabbrica per garantire la massima sensibilità 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 o a superfici ottiche contaminate. 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 24 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 27: Individuazione ed eliminazione dei guasti

Indicatore LED / figura di errore	Causa	Provvedimento
Il LED giallo non si accende anche se l'emettitore è allineato al ricevitore e nel percorso del fascio di luce non vi sono oggetti	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
Nessun oggetto nel percorso del fascio di luce, nessun segnale in uscita	L'entrata di prova (Test) non è collegata correttamente	Controllare il collegamento dell'entrata di test. Per l'utilizzo di connettori femmina precablati con indicatori LED si deve prestare attenzione che l'entrata di test sia adeguatamente occupata.

Indicatore LED / figura di errore	Causa	Provvedimento
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 l'emettitore e il ricevitore/pulire le superfici ottiche

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

	ZSE18-xxxxx1	ZSE18-xxxxx3	ZSE18-xxxxx2	ZSE18-xxxxx8
Distanza di commutazione		15 m		20 m
Distanza max. di commutazione		17 m		22 m
Diametro punto luminoso/ distanza		256 mm / 2 m // 1248 mm / 10 m		95 mm / 2m // 253 mm / 10 m
Tensione di alimentazione U_V	DC 10 ... 30 V[1]	DC 10 ... 30 V[1]	DC 10 ... 30 V[1]	DC 10 ... 30 V[1]
Corrente di uscita $I_{max.}$	≤ 100 mA	≤ 100 mA	≤ 100 mA	≤ 100 mA
Sequenza di commutazione max.	1000 Hz[2]	1000 Hz[2]	1000 Hz[2]	1000 Hz[2]
Tempo di reazione max.	≤ 500 µs[3]	≤ 500 µs[3]	≤ 500 µs[3]	≤ 500 µs[3]
Tipo di protezione	IP67	IP67	IP67	IP67
Classe di protezione	III	III	III	III
Commutazioni di protezione	A, B, D[4]	A, B, D[4]	A, B, D[4]	A, B, D[4]
Temperatura ambientale di funzionamento	–40 °C ... +55 °C	–40 °C ... +55 °C	–40 °C ... +55 °C	–40 °C ... +55 °C

1) Valori limite; funzionamento in rete protetta da cortocircuito max. 8 A; ondulazione residua max. 5 V_{ss}
2) Con rapporto chiaro / scuro 1:1
3) Durata segnale con carico ohmico
4) A = U_V-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 28: Disegni quotati

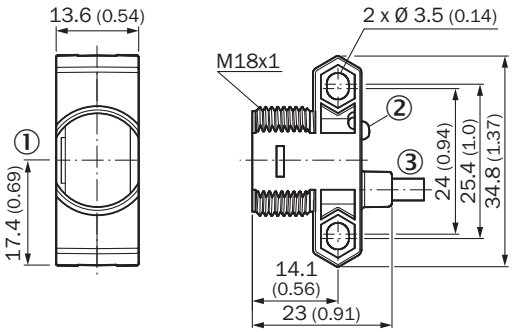


Figura 74: ZSE18-1xxxxx/ZSE18-Axxxxx

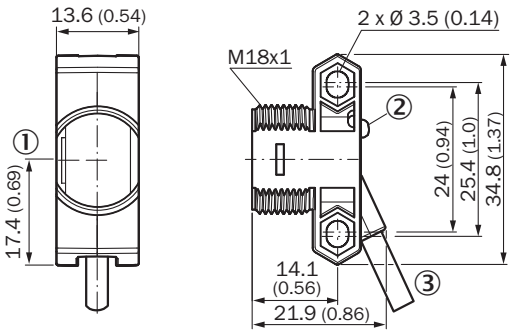


Figura 75: ZSE18-2xxxxx/ZSE18-Bxxxxx, cavo

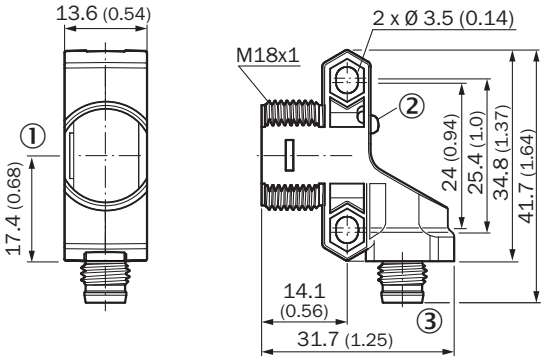


Figura 76: ZSE18-2xxxxx/ZSE18-Bxxxxx, connettore M8

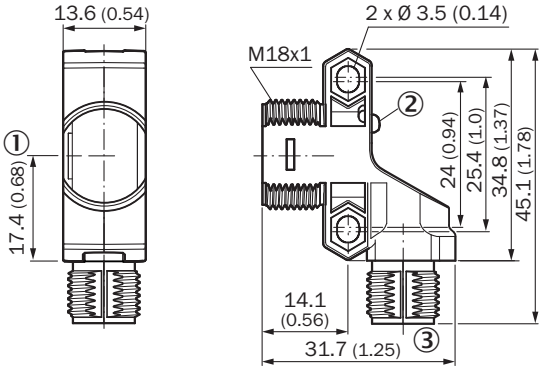


Figura 77: ZSE18-2xxxxx/ZSE18-Bxxxxx, connettore M12

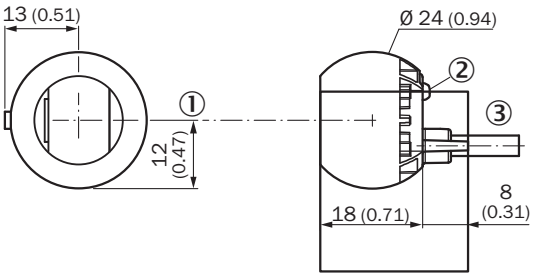


Figura 78: ZSE18-3xxxxx/ZTx18-Cxxxxx

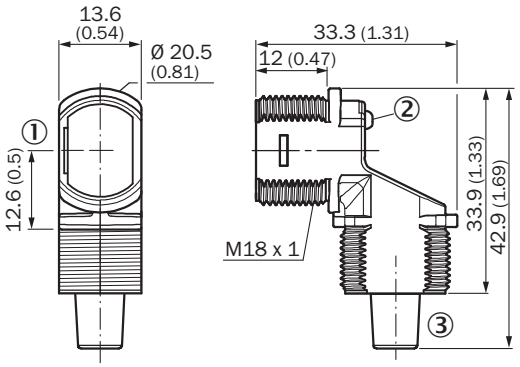


Figura 79: ZSE18-4xxxxx/ZSE18-Dxxxxx, cavo

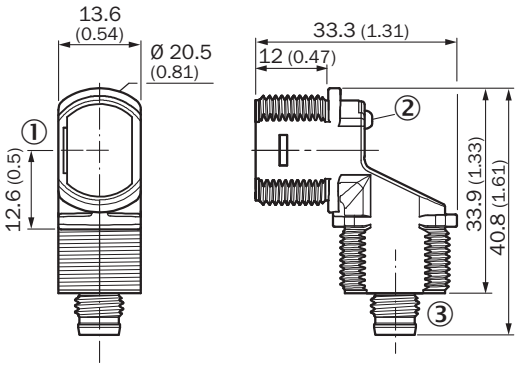


Figura 80: ZSE18-4xxxxx/ZSE18-Dxxxxx, connettore M8

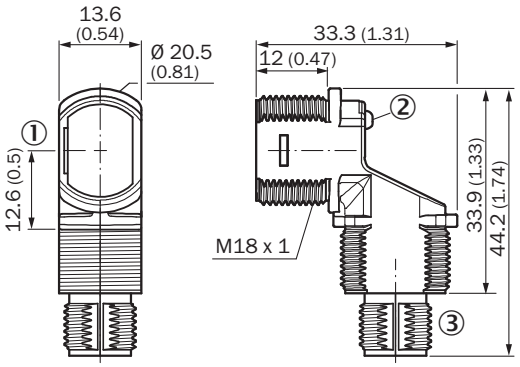


Figura 81: ZSE18-4xxxxx/ZSE18-Dxxxxx, connettore M12

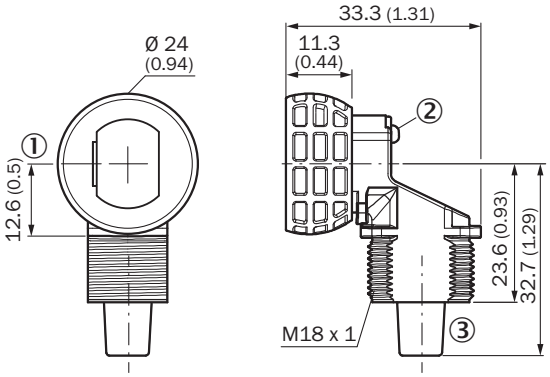


Figura 82: ZSE18-5xxxxx/ZSE18-Exxxxx, cavo

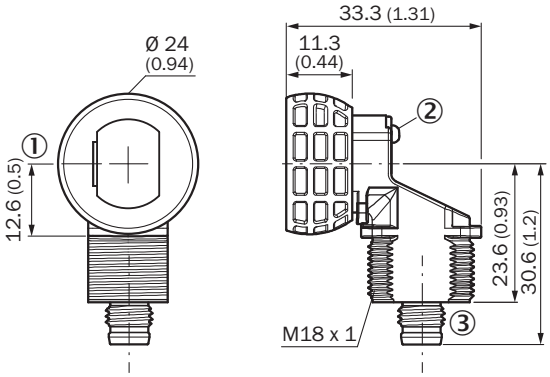


Figura 83: ZSE18-5xxxxx/ZSE18-Exxxxx, connettore M8

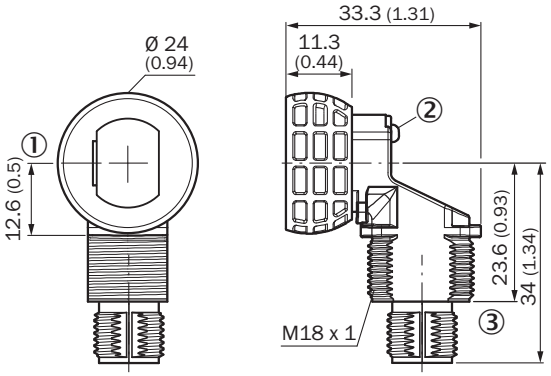


Figura 84: ZSE18-5xxxxx/ZSE18-Exxxxx, connettore M12

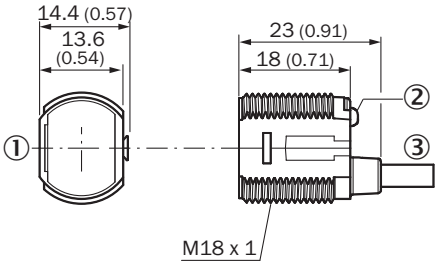


Figura 85: ZSE18-6xxxxx/ZSE18-Fxxxxx

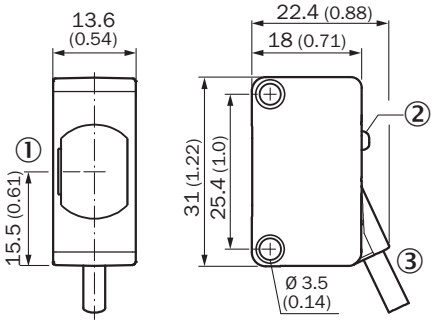


Figura 86: ZSE18-7xxxxx/ZSE18-Gxxxxx

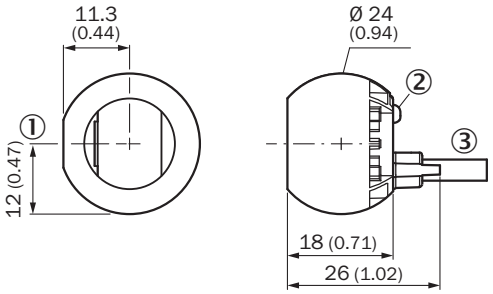


Figura 87: ZSE18-8xxxxx/ZSE18-Hxxxxx

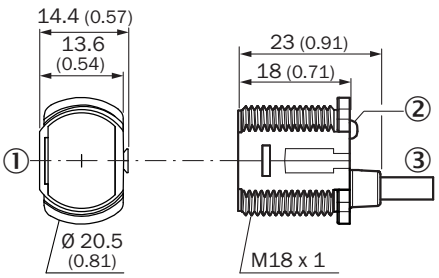


Figura 88: ZSE18-9xxxxx/ZSE18-Jxxxxx

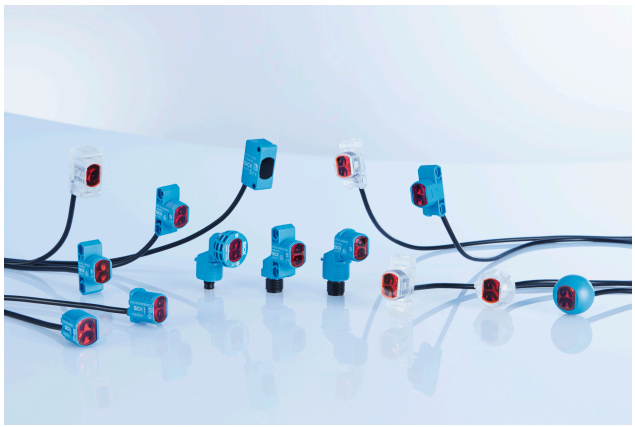
① asse ottico
② indicatori di stato a LED
③ collegamento/scarico della trazione

MANUAL DE INSTRUÇÕES

ZSE18

Sensores fotoelétricos cilíndricos

SICK
Sensor Intelligence.



de
en
es
fr
it
ja
pt
ru
zh

Produto descrito

Z18 SimpleSense

ZSE18

Fabricante

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

Notas legais

Documento original

Este é um documento original da SICK AG.

Índice

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 ZSE18 é uma barreira de luz unidirecional opto-eletrônica (referida como “sensor” daqui em diante) para detecção óptica sem contato de objetos, animais e pessoas. Um emissor (ZS018) e um receptor (ZE018) são necessários para operação. 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

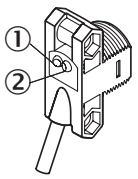


Figura 89: Indicadores de operação

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

49 Montagem

Montar os sensores (emissor e receptor) em uma cantoneira de fixação adequada (ver a linha de acessórios SICK). Alinhar o emissor e o receptor entre si.

NOTA

Ao montar barreiras de luz unidirecionais adjacentes entre si, alterne o arranjo emissor (ZSO18) e o receptor (ZEO18) a cada par. Certifique-se também de que haja distância suficiente entre os pares baseado no diâmetro do ponto de luz do emissor (ZSO18). Consulte.figura 90 e tabela 29.

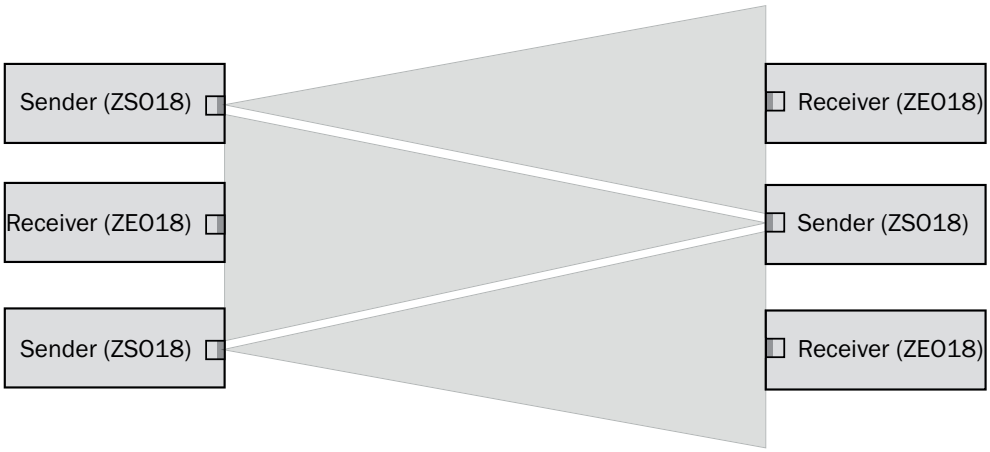


Figura 90: Arranjo de vários sensores fotoelétricos unidirecionais

Tabela 29: Diâmetro de ponto de luz

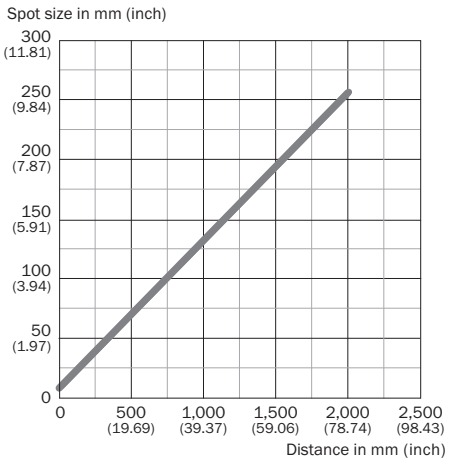


Figura 91: ZSE18-xxxxx3

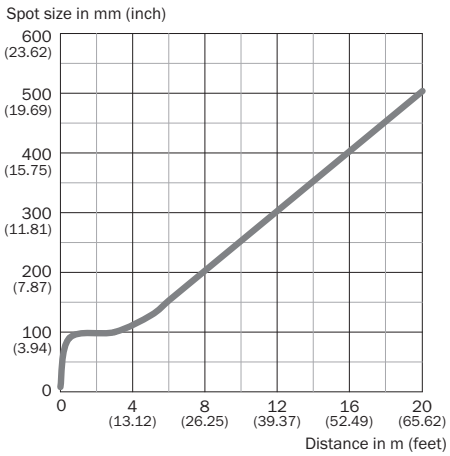


Figura 92: ZSE18-xxxxx8

50 Instalação elétrica

A conexão dos sensores deve ser realizada em estado desenergizado (V_S = 0 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 V) somente após realizar todas as conexões elétricas.

Explicação da terminologia de conexão usada nas Tabelas 2-5:

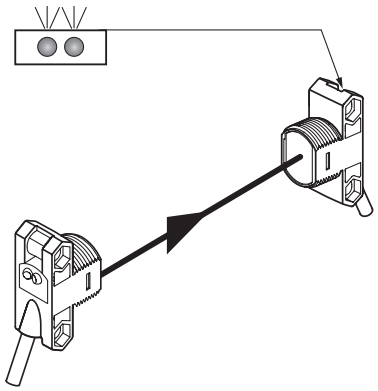
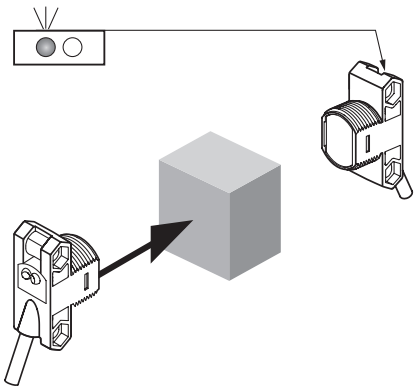
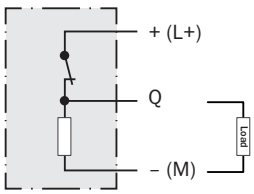
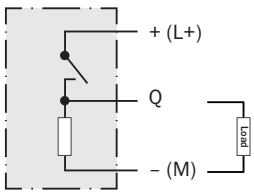
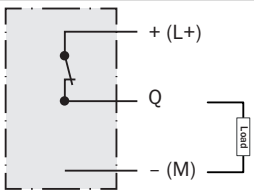
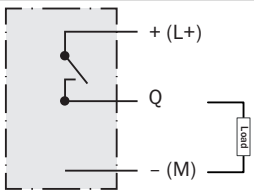
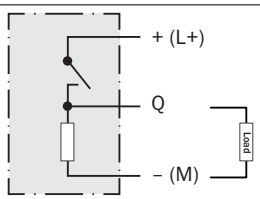
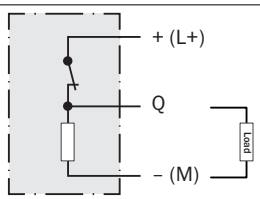
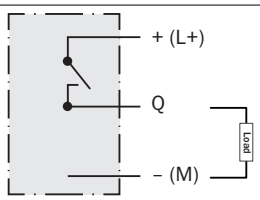
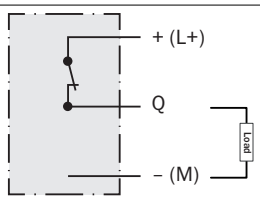
BN = Brown (Marrom)
WH = White (Branco)
BU = Blue (Azul)

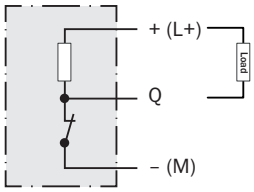
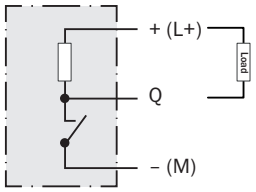
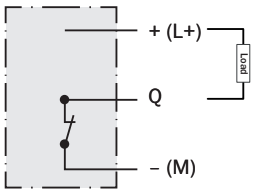
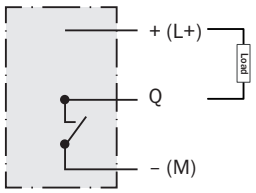
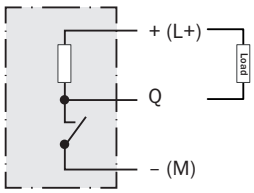
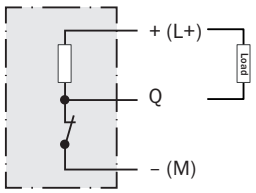
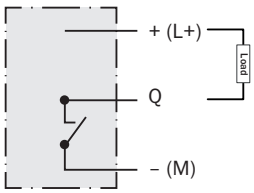
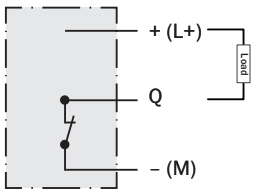
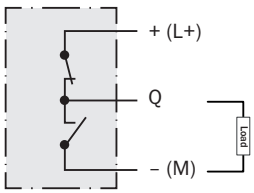
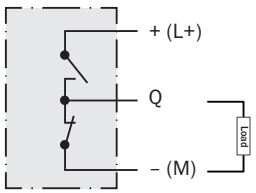
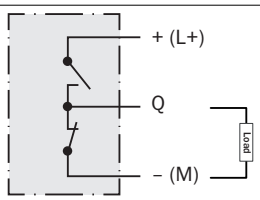
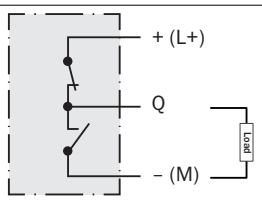
BK = Black (Preto)
n. c. = não conectado
Q1 = saída de comutação 1
Q2 = saída de comutação 2
L+ = tensão de alimentação (V_S)
M = peso
L.ON = comutação por luz
D.ON = comutação por sombra

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 30: Operação de saída

ZSE18 / ZE018 -x_xxxx = saída Q1 -xx_xxx = saída Q2		
-xPxxxx -x8xxxx -xxPxxx L.ON, PNP: Q (≤ 100 mA)		
-xHxxxx -x4xxxx -xxHxxx L.ON, PNP Abrir Coletor Q (≤ 100 mA)		
-xFxxxx -x2xxxx -xxFxxx D.ON, PNP: Q (≤ 100 mA)		
-xKxxxx -x6xxxx -xxKxxx D.ON, PNP Abrir Coletor Q (≤ 100 mA)		

-xNxxxx -x7xxxx -xxNxxx L.ON, NPN: Q (≤ 100 mA)		
-xGxxxx -x3xxxx -xxGxxx L.ON, NPN Abrir Coletor Q (≤ 100 mA)		
-xExxxx -x1xxxx -xxExxx D.ON, NPN: Q (≤ 100 mA)		
-xJxxxx -x5xxxx -xxJxxx D.ON, NPN Abrir Coletor Q (≤ 100 mA)		
-xAxxxx -XRxxxx -xxAxxx L.ON, Empurrar-Puxar (≤ 100 mA)[1]		
-xBxxxx -xSxxxx -xxBxxx D.ON, Empurrar-Puxar (≤ 100 mA)[1]		

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

Tabela 31: Operação Alarme/Saúde

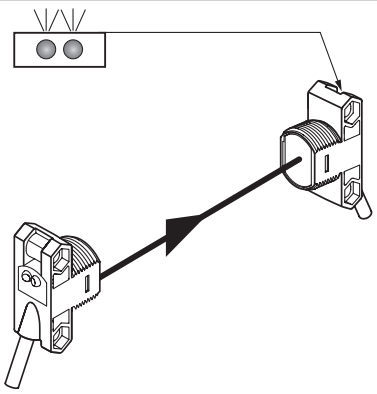
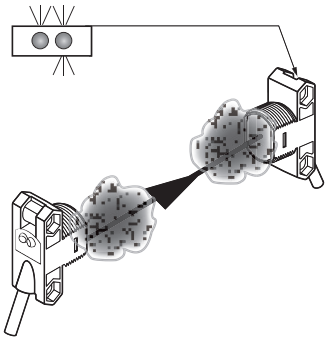
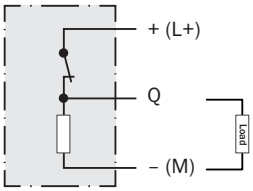
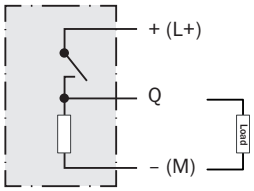
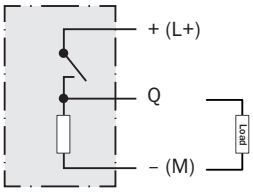
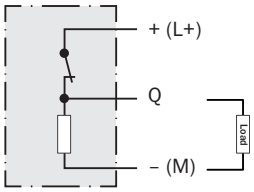
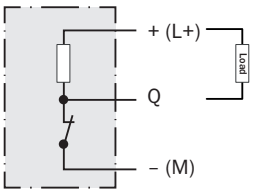
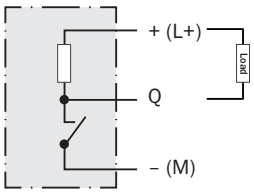
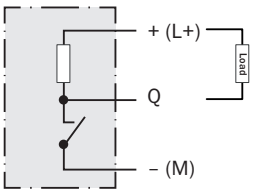
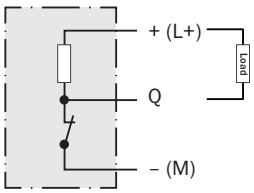
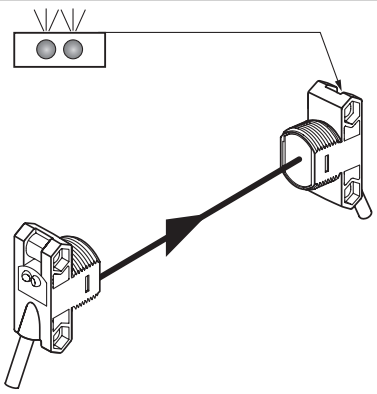
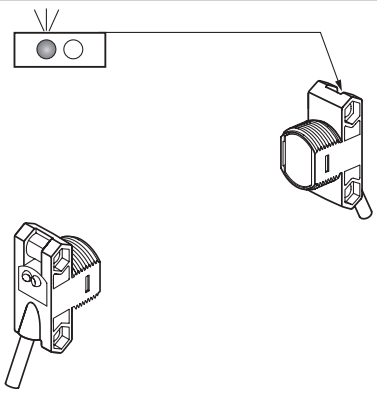
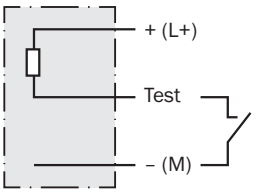
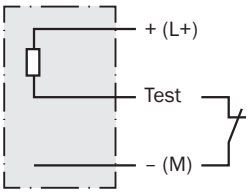
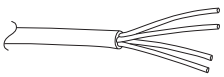
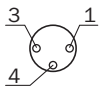
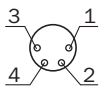
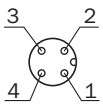
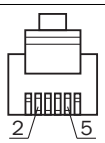
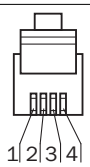
ZSE18 / ZE018 -xx_xxx = saída Q2 Saúde/Alarme é sempre a saída Q2		
-xxRxxx Saúde, PNP (≤ 100 mA)		
-xxTxxx Alarme, PNP (≤ 100 mA)		
-xxQxxx Saúde, PNP (≤ 100 mA)		
-xxSxxx Alarme, NPN (≤ 100 mA)		

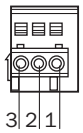
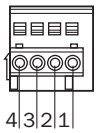
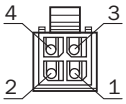
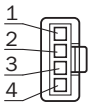
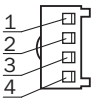
Tabela 32: Entrada de Teste

ZSE18 / ZE018 -x_xxxx = Q1[1] Entrada de Teste é sempre em Q1		
-xRxxxx -xSxxxx -x1xxxx -x2xxxx -x3xxxx -x4xxxx -x5xxxx -x6xxxx -x7xxxx -x8xxxx Entrada de Teste, NPN (≤ 1 mA)		

1 Variantes ZSE18 / ZSO18 -xAxxxx ... -xPxxxx não têm uma Entrada de Teste

Tabela 33: Pinagem de conexão

Zxx18	Diagrama	Pino 1	Pino 2	Pino 3	Pino 4	Pino 5	Pino 6
-xxx1xx	 0,14 mm² 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 conectores
2) ZSO18 sempre será n.c. para Q2

51 Colocação em operação

1 **Alinhamento**

ZSE18-xxxxx2, -xxxxx8: alinhe o emissor (ZSO18) com o receptor (ZEO18). Selecionar o posicionamento de forma que o feixe da luz de emissão vermelho incida sobre o receptor. Dica: Utilizar um artigo técnico ou o refletor para auxiliar o alinhamento. O espaço entre o emissor e o receptor deve estar livre; não pode haver objetos no caminho óptico [ver figura 93]. Certificar-se de que as aberturas ópticas (vidros frontais) dos sensores refletor estejam completamente livres.

ZSE18-xxxxx1, -xxxxx3: alinhe o emissor (ZSO18) com o receptor (ZEO18). Selecionar o posicionamento de forma que a luz infravermelha (invisível) incida sobre o receptor. O alinhamento correto só pode ser verificado através dos indicadores LED. Ver figura 93 e tabela 30. O espaço entre o emissor e o receptor deve estar desimpedido; não pode haver objetos no caminho óptico. Certificar-se de que as aberturas ópticas (vidros frontais) dos sensores refletor estejam completamente livres.

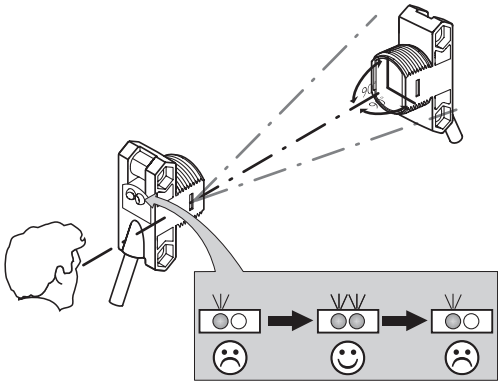


Figura 93: Alinhamento

2 **Alcance de detecção**

Observe as condições de aplicação: Ajuste a distância entre o emissor e o receptor de acordo com o diagrama correspondente [veja figura 94 e ver figura 95, página 77] (x = distância de comutação, y = reserva operacional).

Ao montar barreiras de luz unidirecionais adjacentes entre si, alterne o arranjo emissor (ZSO18) e o receptor (ZE018) a cada par. Certifique-se também de que haja distância suficiente entre os pares baseado no diâmetro do ponto de luz do emissor (ZSO18). Ao fazer isso, a interferência mútua pode ser evitada [veja figura 90].

Use tabela 30 para verificar a função. Se a saída de comutação falhar em se comportar de acordo com tabela 30, verifique as condições da aplicação.

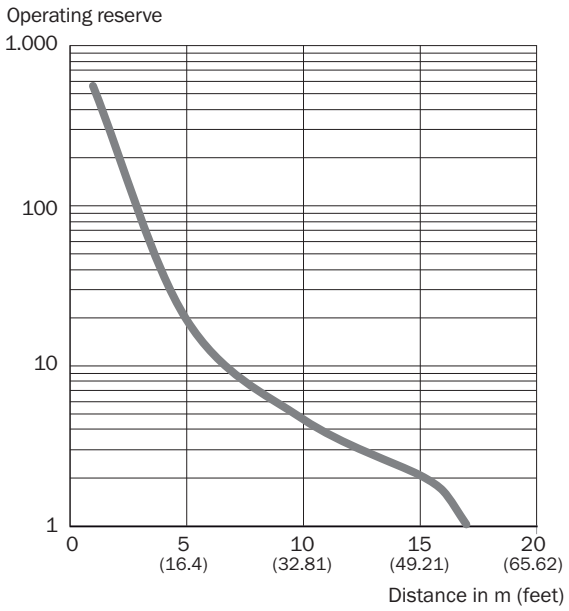


Figura 94: Curva característica, ZSE18-xxxxx3

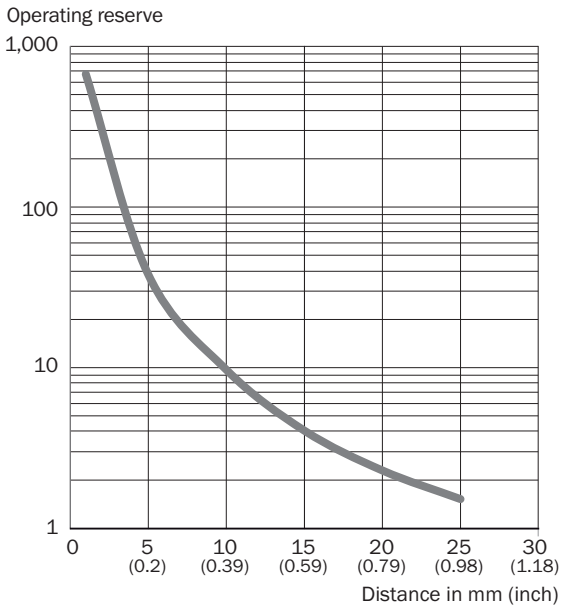


Figura 95: Curva característica, ZSE18-xxxxx8

3 **Configuração de sensibilidade**
Sensor impossível de ser configurado: O sensor foi ajustado pela fábrica para oferecer máxima sensibilidade 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 ou superfície(s) óptica(s) contaminada(s). 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 31 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 34: Solução de problemas

Indicador LED / padrão de erro	Causa	Medida
LED amarelo não acende mesmo que o emissor esteja alinhado ao receptor e que não haja objeto algum no caminho do feixe	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
Nenhum objeto no caminho do feixe, sem sinal de saída	Entrada de teste (Test) não está conectada corretamente	Verificar a conexão da entrada de teste. Se forem usados conectores fêmea do cabo com indicações de LED, deve-se observar que a entrada de teste seja respectivamente ocupada.

Indicador LED / padrão de erro	Causa	Medida
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 emissor e receptor/ Limpe as superfícies ópticas

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 o 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

	ZSE18-xxxxx1	ZSE18-xxxxx3	ZSE18-xxxxx2	ZSE18-xxxxx8
Distância de comutação		15 m		20 m
Distância de comutação máx.		17 m		22 m
Diâmetro do ponto de luz/ distância		256 mm / 2 m // 1248 mm / 10 m		95 mm / 2m // 253 mm / 10 m
Tensão de alimentação U_V	DC 10 ... 30 V[1]	DC 10 ... 30 V[1]	DC 10 ... 30 V[1]	DC 10 ... 30 V[1]
Corrente de saída $I_{max.}$	≤ 100 mA	≤ 100 mA	≤ 100 mA	≤ 100 mA
Sequência máx. de comutação	1000 Hz[2]	1000 Hz[2]	1000 Hz[2]	1000 Hz[2]
Tempo máx. de resposta	≤ 500 µs[3]	≤ 500 µs[3]	≤ 500 µs[3]	≤ 500 µs[3]
Tipo de proteção	IP67	IP67	IP67	IP67
Classe de proteção	III	III	III	III
Circuitos de proteção	A, B, D[4]	A, B, D[4]	A, B, D[4]	A, B, D[4]
Temperatura ambiente de funcionamento	–40 °C ... +55 °C	–40 °C ... +55 °C	–40 °C ... +55 °C	–40 °C ... +55 °C

1) Valores limite; funcionamento com rede à prova de curto-circuito máx. 8 A; ondulação residual máx. 5 V_{ss}
2) Com proporção sombra/luz 1:1
3) Tempo de funcionamento do sinal com carga ôhmica
4) A = conexões protegidas contra inversão de pólos U_V
B = Entradas e saídas protegidas contra polaridade inversa
D = Saídas protegidas contra sobrecorrente e curto-circuito

55.1 Desenhos dimensionais

Tabela 35: Desenhos dimensionais

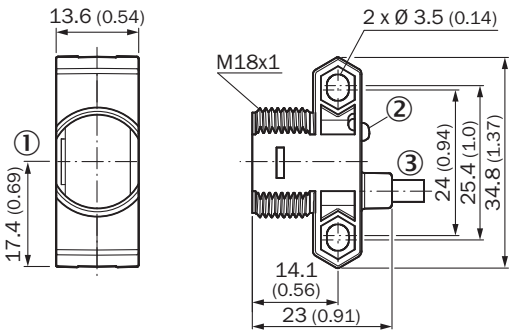


Figura 96: ZSE18-1xxxxx/ZSE18-Axxxxx

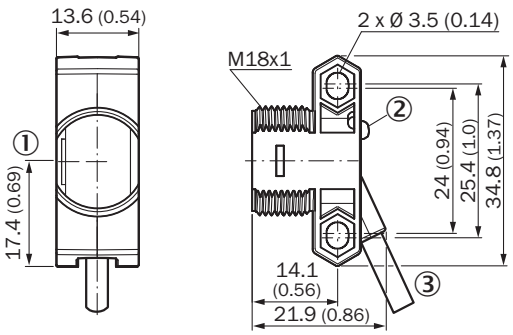


Figura 97: ZSE18-2xxxxx/ZSE18-Bxxxxx, cabo

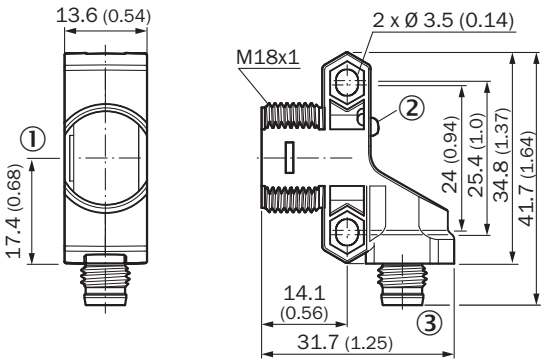


Figura 98: ZSE18-2xxxxx/ZSE18-Bxxxxx, conector M8

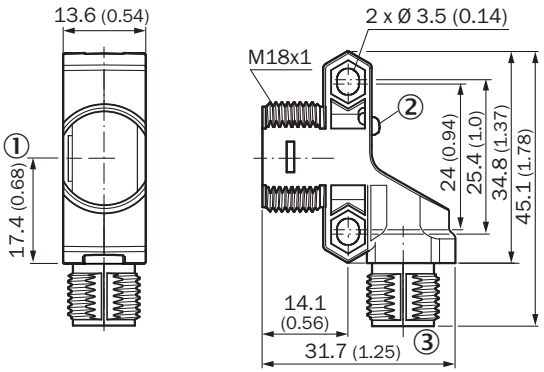


Figura 99: ZSE18-2xxxxx/ZSE18-Bxxxxx, conector M12

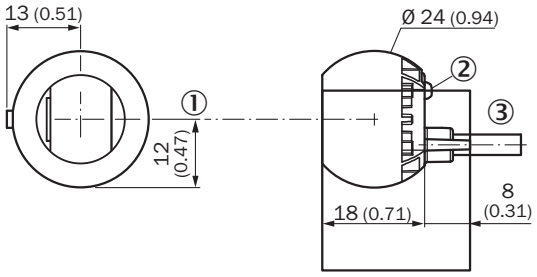


Figura 100: ZSE18-3xxxxx/ZTx18-Cxxxxx

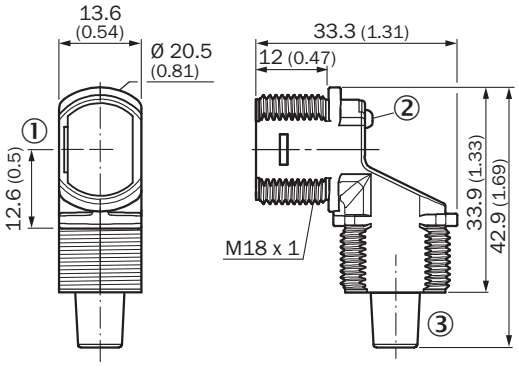


Figura 101: ZSE18-4xxxxx/ZSE18-Dxxxxx, cabo

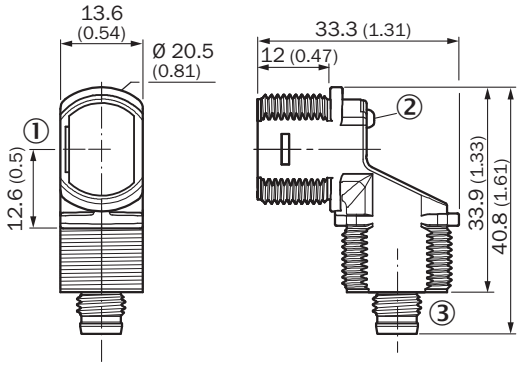


Figura 102: ZSE18-4xxxxx/ZSE18-Dxxxxx, conector M8

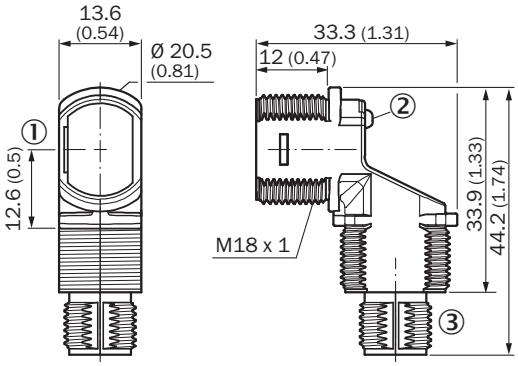


Figura 103: ZSE18-4xxxxx/ZSE18-Dxxxxx, conector M12

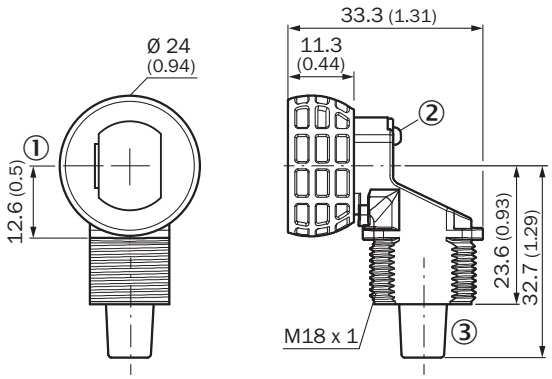


Figura 104: ZSE18-5xxxxx/ZSE18-Exxxxx, cabo

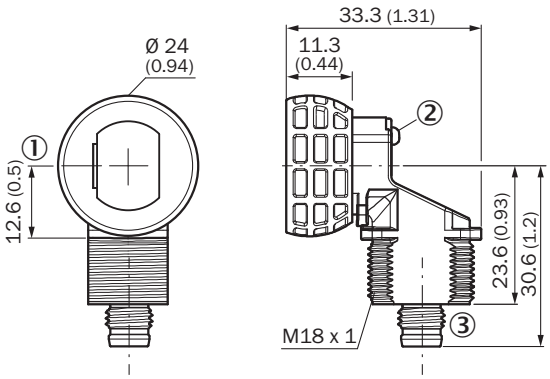


Figura 105: ZSE18-5xxxxx/ZSE18-Exxxxx, conector M8

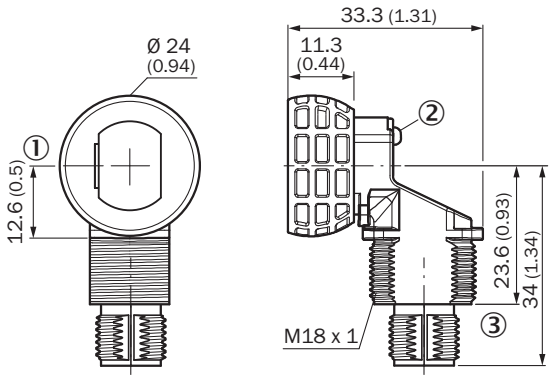


Figura 106: ZSE18-5xxxxx/ZSE18-Exxxxx, conector M12

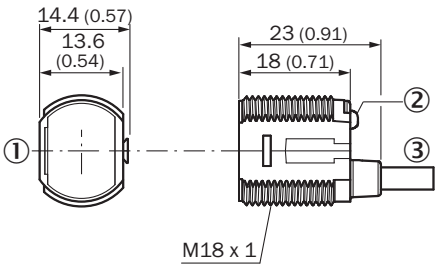


Figura 107: ZSE18-6xxxxx/ZSE18-Fxxxxx

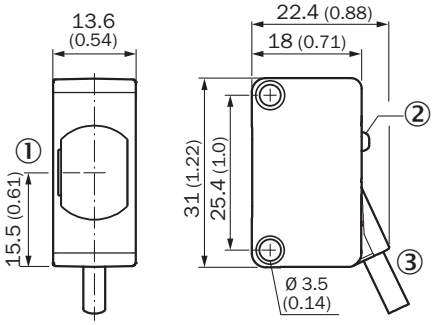


Figura 108: ZSE18-7xxxxx/ZSE18-Gxxxxx

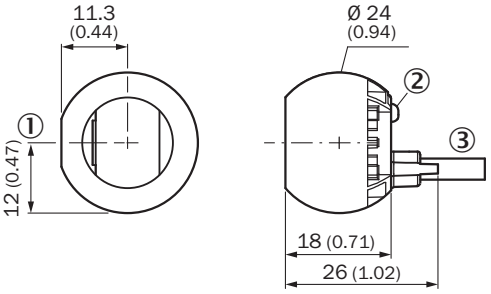


Figura 109: ZSE18-8xxxxx/ZSE18-Hxxxxx

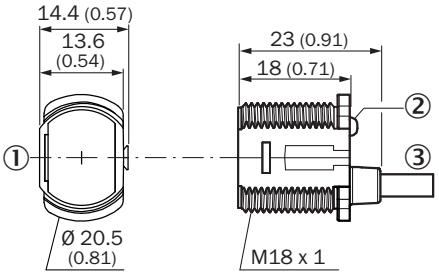


Figura 110: ZSE18-9xxxxx/ZSE18-Jxxxxx

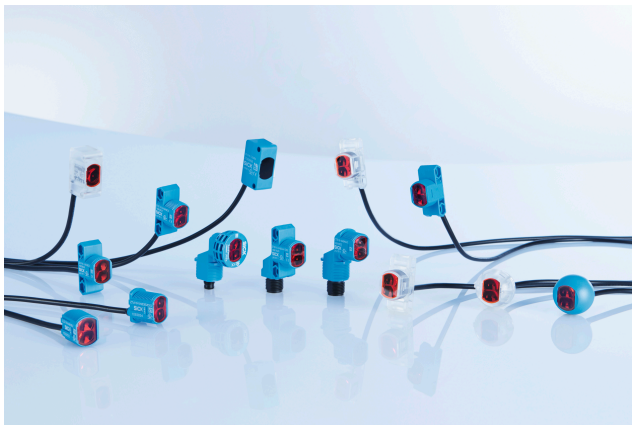
① eixo óptico
② Indicadores de operação de LED
③ conexão/alívio de tensão

INSTRUCCIONES DE USO

ZSE18

Fotocélulas cilíndricas

SICK
Sensor Intelligence.



de
en
es
fr
it
ja
pt
ru
zh

Producto descrito

Z18 SimpleSense

ZSE18

Fabricante

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

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Documento original

Este es un documento original de SICK AG.

Índice

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 ZSE18 es una barrera emisor-receptor optoelectrónica (denominada “sensor” en adelante) para la detección óptica y sin contacto de objetos, animales y personas. Para que pueda funcionar, se necesita un emisor (ZS018) y un receptor (ZE018). 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

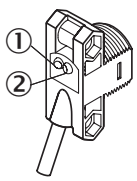


Figura 111: Indicadores de servicio

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

60 Montaje

Montar los sensores (emisor y receptor) en escuadras de fijación adecuadas (véase el programa de accesorios SICK). Alinear el emisor y el receptor entre sí.

INDICACIÓN

Al instalar barreras emisor-receptor adyacentes entre sí, se debe alternar la disposición del emisor (ZS018) y el receptor (ZE018) de cada pareja. También debe asegurarse de que haya suficiente distancia entre las parejas de acuerdo con el diámetro del spot del emisor (ZS018). Consulte figura 112 y tabla 36.

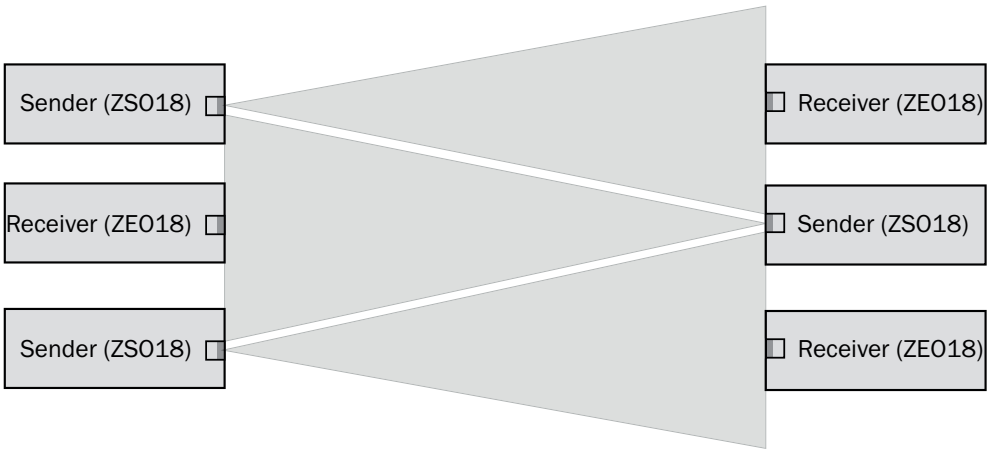


Figura 112: Disposición de varias barreras emisor-receptor

Tabla 36: Diámetro del spot

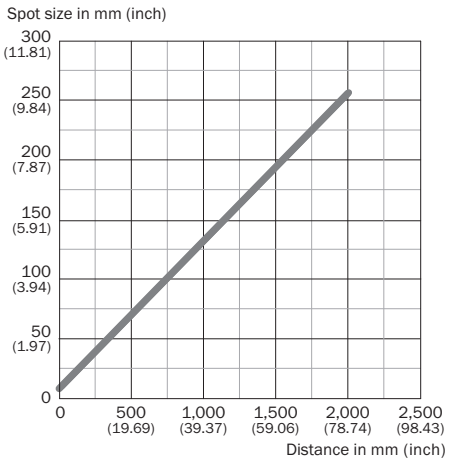


Figura 113: ZSE18-xxxxx3

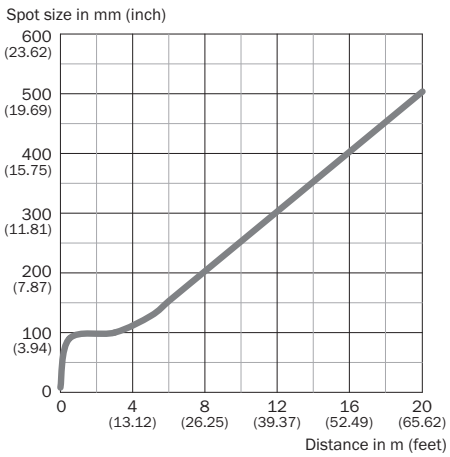


Figura 114: ZSE18-xxxxx8

61 Instalación eléctrica

Los sensores deben conectarse sin tensión (V_S = 0 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 V) hasta que no se hayan finalizado todas las conexiones eléctricas.

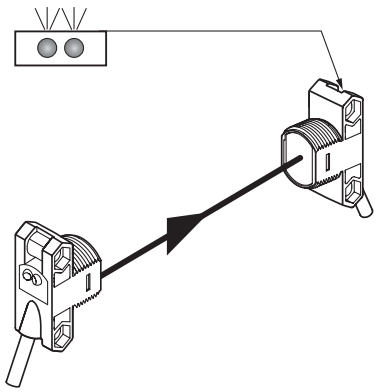
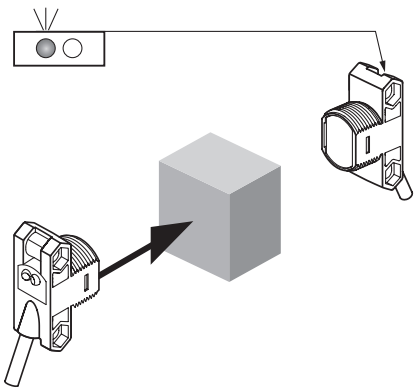
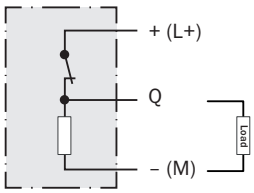
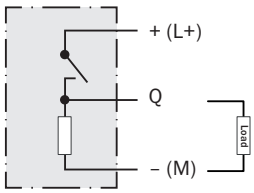
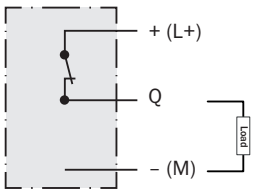
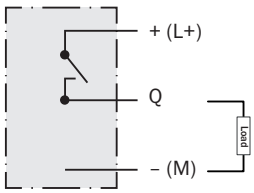
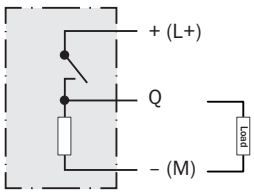
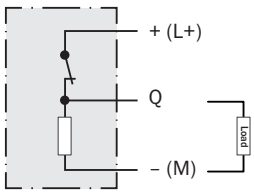
Leyenda de la terminología de conexión de las Tablas 2-5:

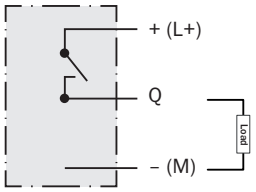
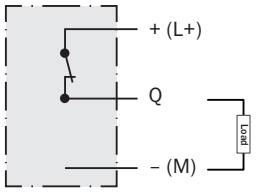
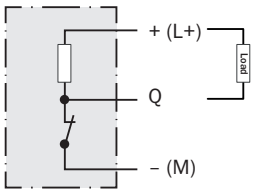
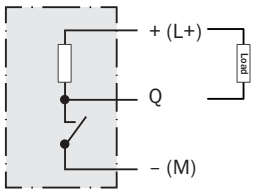
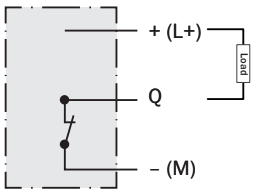
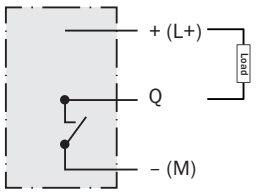
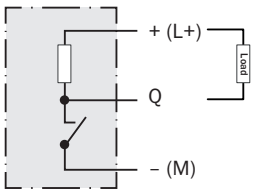
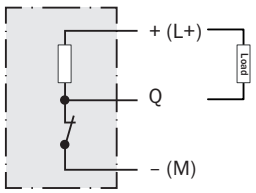
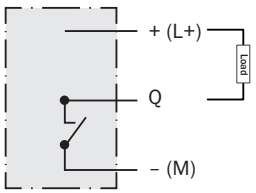
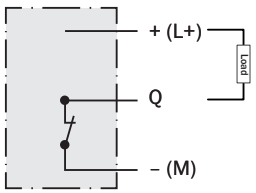
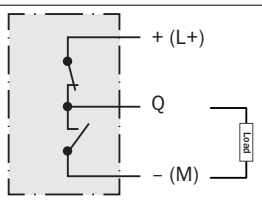
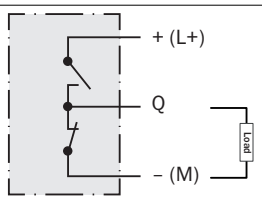
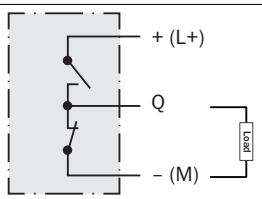
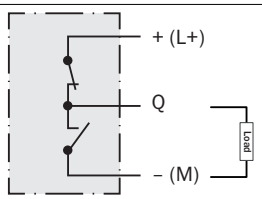
BN = Brown (Marrón)
WH = White (Blanco)
BU = Blue (Azul)
BK = Black (Negro)
n. c. = No conectado
Q1 = Salida conmutada 1
Q2 = Salida conmutada 2
L+ = Tensión de alimentación V_S
M = Peso
L.ON = Conmutación en claro
D.ON = Conmutación en oscuro

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-xxxxxxTxx).

Detalles de la conexión y la salida:

Tabla 37: Operación de salida

ZSE18 / ZE018 -x_xxxx = Salida Q1 -xx_xxx = Salida Q2		
-xPxxxx -x8xxxx -xxPxxx L.ON, PNP: Q (≤ 100 mA)		
-xHxxxx -x4xxxx -xxHxxx L.ON, PNP colector abierto Q (≤ 100 mA)		
-xFxxxx -x2xxxx -xxFxxx D.ON, PNP: Q (≤ 100 mA)		

-xKxxxx -x6xxxx -xxKxxx D.ON, PNP colector abierto Q (≤ 100 mA)		
-xNxxxx -x7xxxx -xxNxxx L.ON, NPN: Q (≤ 100 mA)		
-xGxxxx -x3xxxx -xxGxxx L.ON, NPN colector abierto Q (≤ 100 mA)		
-xExxxx -x1xxxx -xxExxx D.ON, NPN: Q (≤ 100 mA)		
-xJxxxx -x5xxxx -xxJxxx D.ON, NPN colector abierto Q (≤ 100 mA)		
-xAxxxx -XRxxxx -xxAxxx L.ON, Push-pull (≤ 100 mA)[1]		
-xBxxxx -xSxxxx -xxBxxx D.ON, Push-pull (≤ 100 mA)[1]		

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

Tabla 38: Funcionamiento de la señal Alarm/Health

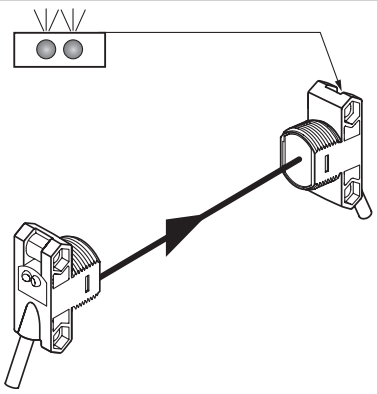
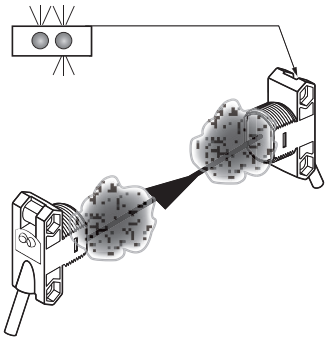
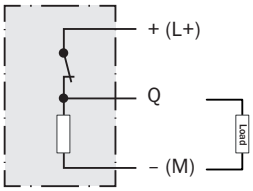
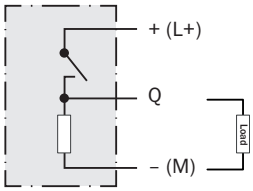
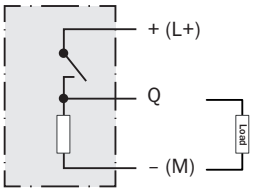
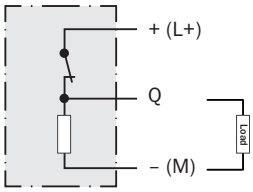
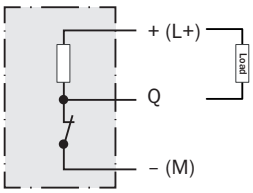
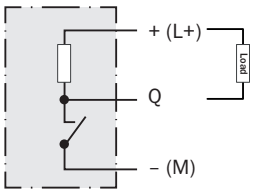
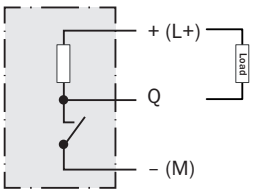
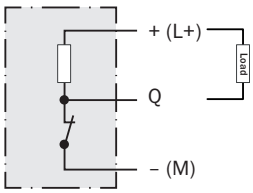
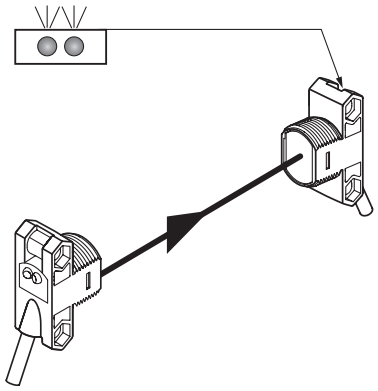
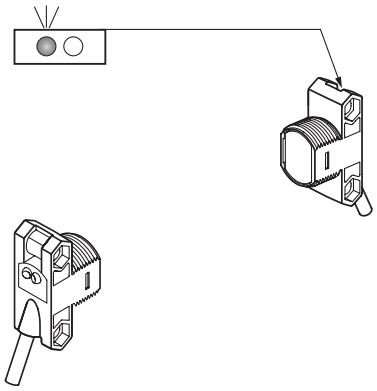
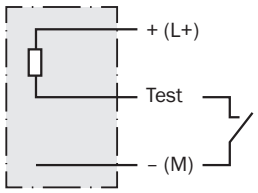
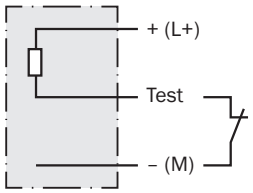
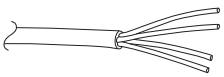
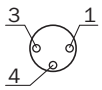
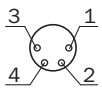
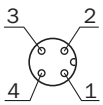
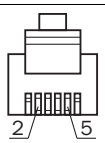
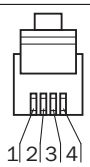
ZSE18 / ZE018 -xx_xxx = Salida Q2 La señal Alarm/Health siempre tiene lugar en la salida Q2		
-xxRxxx Health, PNP (≤ 100 mA)		
-xxTxxx Alarm, PNP (≤ 100 mA)		
-xxQxxx Health, NPN (≤ 100 mA)		
-xxSxxx Alarm, NPN (≤ 100 mA)		

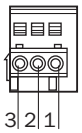
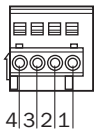
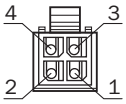
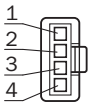
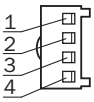
Tabla 39: Entrada de prueba

ZSE18 / ZE018 -x_xxxx = Q1[1] La entrada de prueba siempre tiene lugar en Q1		
-xRxxxx -xSxxxx -x1xxxx -x2xxxx -x3xxxx -x4xxxx -x5xxxx -x6xxxx -x7xxxx -x8xxxx Entrada de prueba, NPN (≤ 1 mA)		

1 Las variantes ZSE18 / ZS018 -xAxxxx ... -xPxxxx no tienen entrada de prueba

Tabla 40: Disposición de los pines de conexión

Zxx18	Diagrama	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6
-xxx1xx	 0,14 mm² 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
2) ZSO18 siempre es sin conexión para Q2

62 Puesta en servicio

1 **Alineación**

ZSE18-xxxxx2, -xxxxx8: alinear el emisor (ZSO18) con el receptor (ZEO18). Seleccione una posición que permita que el haz de luz roja del emisor incida en el receptor. Recomendación: utilice papel blanco o un reflector como ayuda de alineación. El emisor debe tener una visión despejada del receptor, no puede haber ningún objeto en la trayectoria del haz [véase figura 115]. Hay que procurar que las aperturas ópticas (pantallas frontales) de los sensores estén completamente libres.

ZSE18-xxxxx1, -xxxxx3: alinear el emisor (ZSO18) con el receptor (ZEO18). Seleccione una posición que permita que la luz infrarroja (no visible) incida en el receptor. La alineación correcta solo se puede reconocer mediante los LED indicadores. Véase a este respecto figura 115 y tabla 37. El emisor debe tener una visión despejada del receptor, no puede haber ningún objeto en la trayectoria del haz. Hay que procurar que las aperturas ópticas (pantallas frontales) de los sensores estén completamente libres.

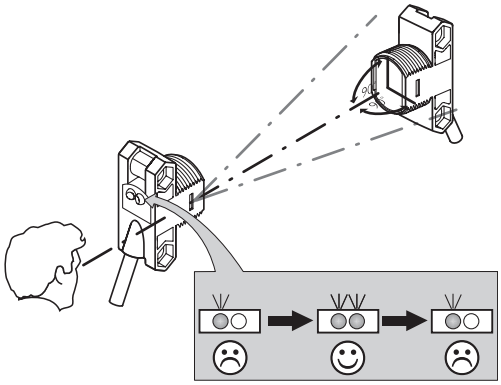


Figura 115: Alineación

2 **Distancia de conmutación**

Tenga en cuenta las condiciones de aplicación: ajuste la distancia entre el emisor y el receptor de acuerdo con el diagrama correspondiente [véase figura 116 y véase figura 117, página 93] (x = distancia de conmutación, y = reserva de funcionamiento).
Al instalar barreras emisor-receptor adyacentes entre sí, se debe alternar la disposición del emisor (ZS018) y el receptor (ZE018) de cada pareja. También debe asegurarse de que haya suficiente distancia entre las parejas de acuerdo con el diámetro del spot del emisor (ZS018). Esto permite evitar interferencias mutuas [véase figura 112].
Utilice tabla 37 para comprobar el funcionamiento. Si la salida conmutada no se comporta de acuerdo con tabla 37, compruebe las condiciones de aplicación.

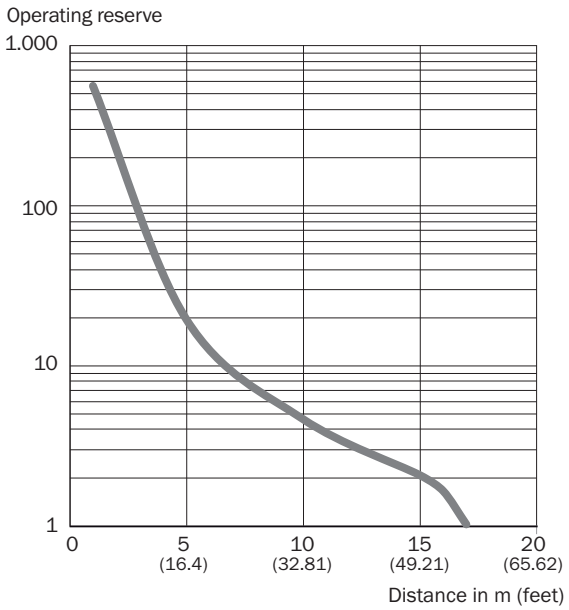


Figura 116: Curva característica, ZSE18-xxxxx3

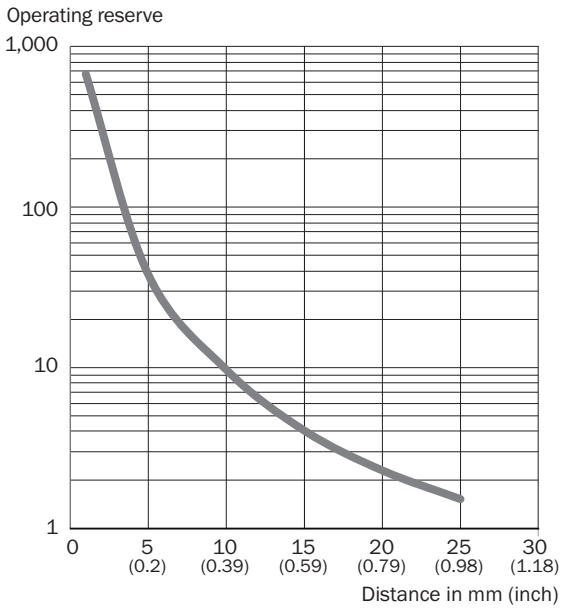


Figura 117: Curva característica, ZSE18-xxxxx8

3 **Ajuste de sensibilidad**
No es posible ajustar el sensor: el sensor se ha ajustado en fábrica para proporcionar la máxima sensibilidad 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 o de suciedad en las superficies ópticas. 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 38 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 41: 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 receptor y no hay ningún objeto en la trayectoria del haz	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
Ningún objeto en la trayectoria del haz, no hay señal de salida	La entrada de prueba (Test) no está correctamente conectada	Verificar la conexión de la entrada de prueba. Si se usan tomas de red con indicadores LED, se debe prestar atención

LED indicador / imagen de error	Causa	Acción
		a que la entrada de prueba esté ocupada de forma correspondiente.
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 emisor y el receptor/limpie las superficies ópticas

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

	ZSE18-xxxxx1	ZSE18-xxxxx3	ZSE18-xxxxx2	ZSE18-xxxxx8
Distancia de conmutación		15 m		20 m
Distancia de conmutación máx.		17 m		22 m
Diámetro del punto luminoso/ distancia		256 mm / 2 m // 1248 mm / 10 m		95 mm / 2m // 253 mm / 10 m
Tensión de alimentación U_V	DC 10 ... 30 V[1]	DC 10 ... 30 V[1]	DC 10 ... 30 V[1]	DC 10 ... 30 V[1]
Intensidad de salida $I_{max.}$	≤ 100 mA	≤ 100 mA	≤ 100 mA	≤ 100 mA
Secuencia de conmutación máx.	1000 Hz[2]	1000 Hz[2]	1000 Hz[2]	1000 Hz[2]
Tiempo de respuesta máx.	≤ 500 µs[3]	≤ 500 µs[3]	≤ 500 µs[3]	≤ 500 µs[3]
Tipo de protección	IP67	IP67	IP67	IP67
Clase de protección	III	III	III	III
Circuitos de protección	A, B, D[4]	A, B, D[4]	A, B, D[4]	A, B, D[4]
Temperatura ambiente de servicio	–40 °C ... +55 °C	–40 °C ... +55 °C	–40 °C ... +55 °C	–40 °C ... +55 °C

1) Valores límite; funcionamiento en red protegida contra cortocircuitos máx. 8 A; ondulación residual máx. 5 V_{ss}
2) Con una relación claro/oscuro de 1:1
3) Duración de la señal con carga óhmica
4) A = U_V 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 42: Dibujos acotados

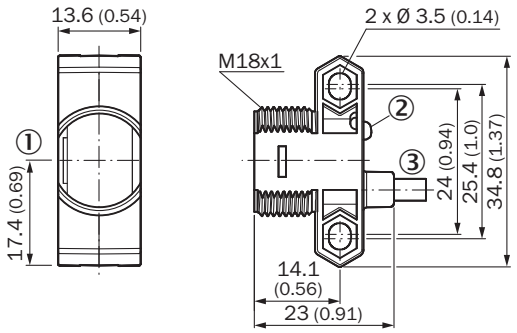


Figura 118: ZSE18-1xxxxx/ZSE18-Axxxxx

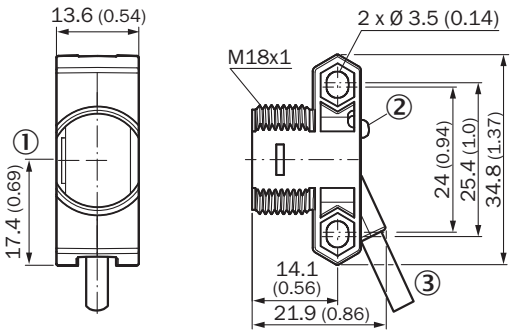


Figura 119: ZSE18-2xxxxx/ZSE18-Bxxxxx, cable

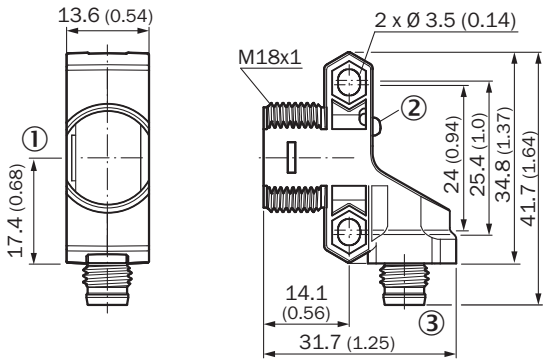


Figura 120: ZSE18-2xxxxx/ZSE18-Bxxxxx, conector M8

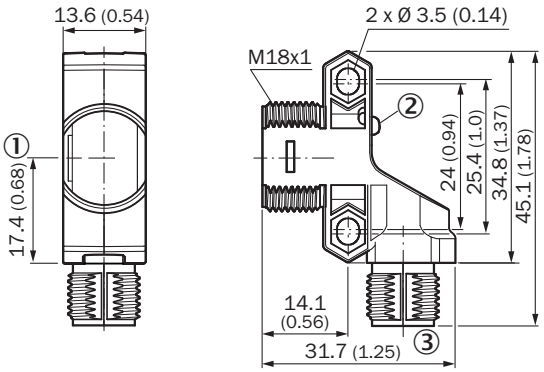


Figura 121: ZSE18-2xxxxx/ZSE18-Bxxxxx, conector M12

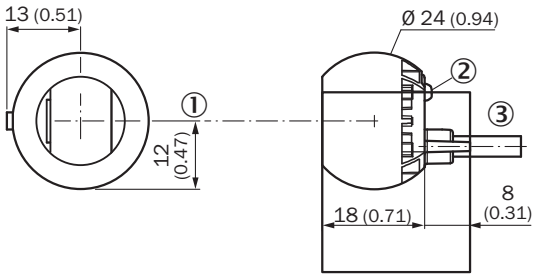


Figura 122: ZSE18-3xxxxx/ZTx18-Cxxxxx

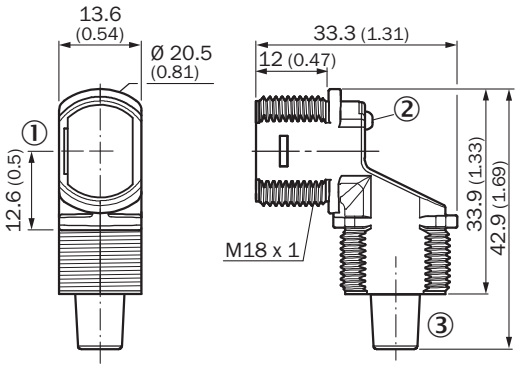


Figura 123: ZSE18-4xxxxx/ZSE18-Dxxxxx, cable

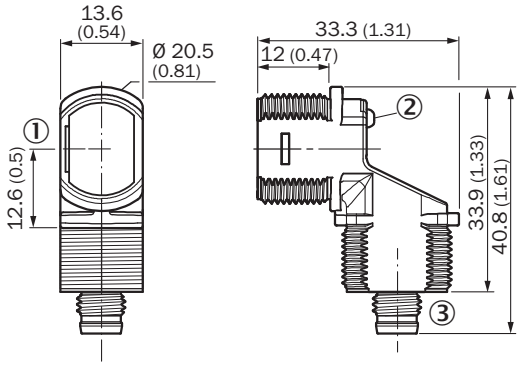


Figura 124: ZSE18-4xxxxx/ZSE18-Dxxxxx, conector M8

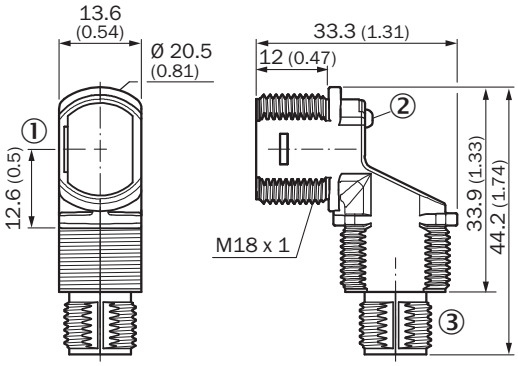


Figura 125: ZSE18-4xxxxx/ZSE18-Dxxxxx, conector M12

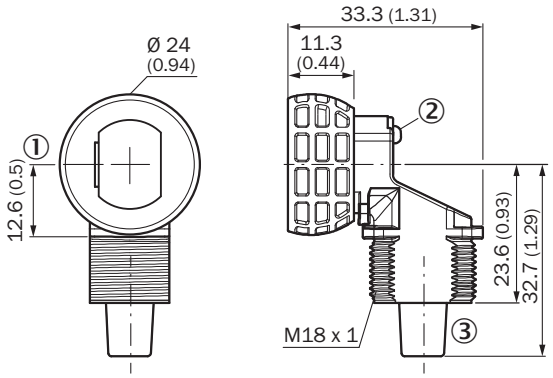


Figura 126: ZSE18-5xxxxx/ZSE18-Exxxxx, cable

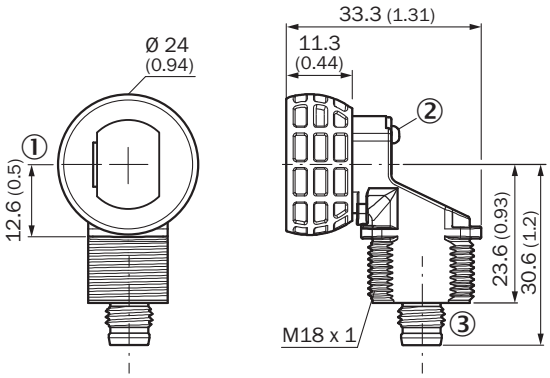


Figura 127: ZSE18-5xxxxx/ZSE18-Exxxxx, conector M8

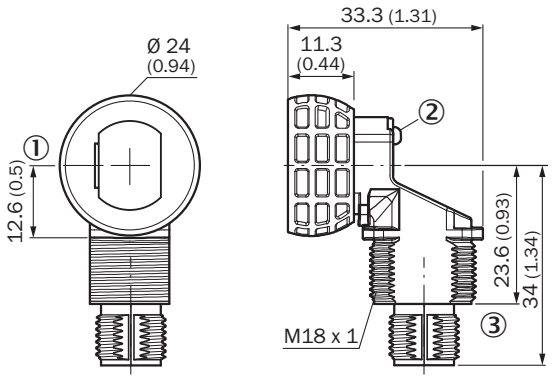


Figura 128: ZSE18-5xxxxx/ZSE18-Exxxxx, conector M12

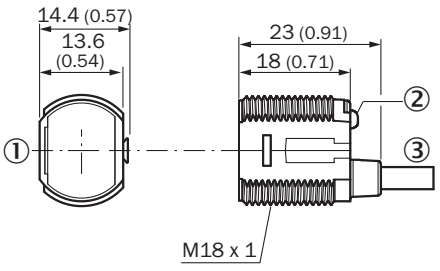


Figura 129: ZSE18-6xxxxx/ZSE18-Fxxxxx

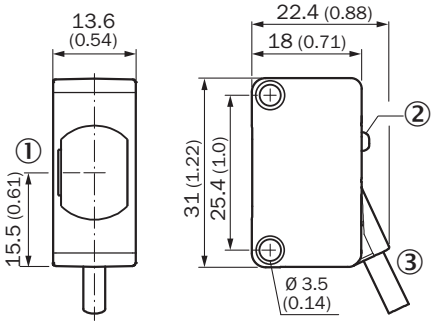


Figura 130: ZSE18-7xxxxx/ZSE18-Gxxxxx

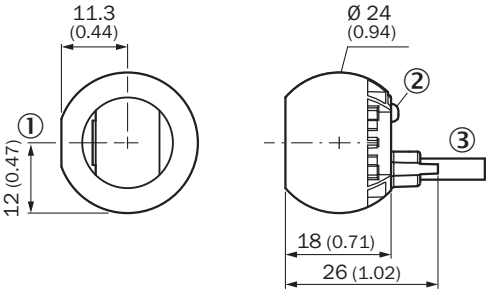


Figura 131: ZSE18-8xxxxx/ZSE18-Hxxxxx

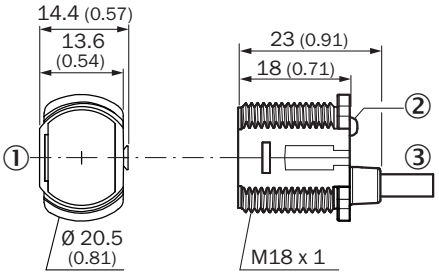


Figura 132: ZSE18-9xxxxx/ZSE18-Jxxxxx

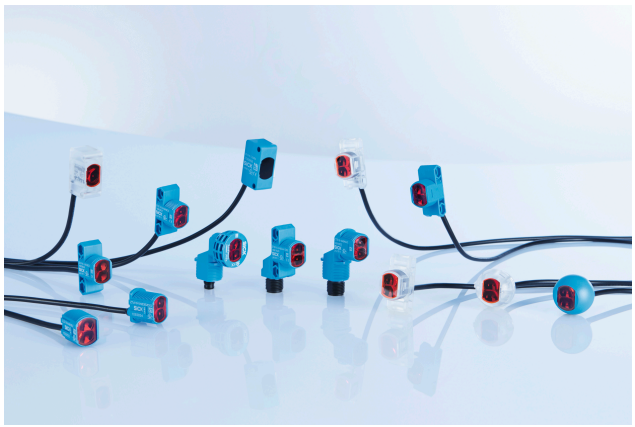
① eje óptico
② Indicadores LED de servicio
③ conexión/alivio de tensión

操作指南

ZSE18

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

ZSE18

制造商

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

法律信息

原始文档

本文档为西克股份公司的原始文档。

内容

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

ZSE18 是对射式光电传感器（以下称为“传感器”），用于物体、动物和人的非接触式光学检测。需要发射器 (ZSO18) 和接收器 (ZEO18) 才能运行。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

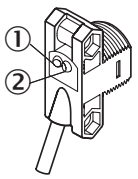


插图 133: 状态指示灯

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（发射器和接收器）安装在合适的安装支架上（参见 SICK 配件目录）。相互对准发射器和接收器。

提示
当彼此相邻地安装对射式光电传感器时，每隔一对交替布置发射器 (ZSO18) 和接收器 (ZEO18)。此外，根据发射器 (ZSO18) 光点直径，确保各对之间有足够的距离。请参阅 插图 134 和 表格 43.

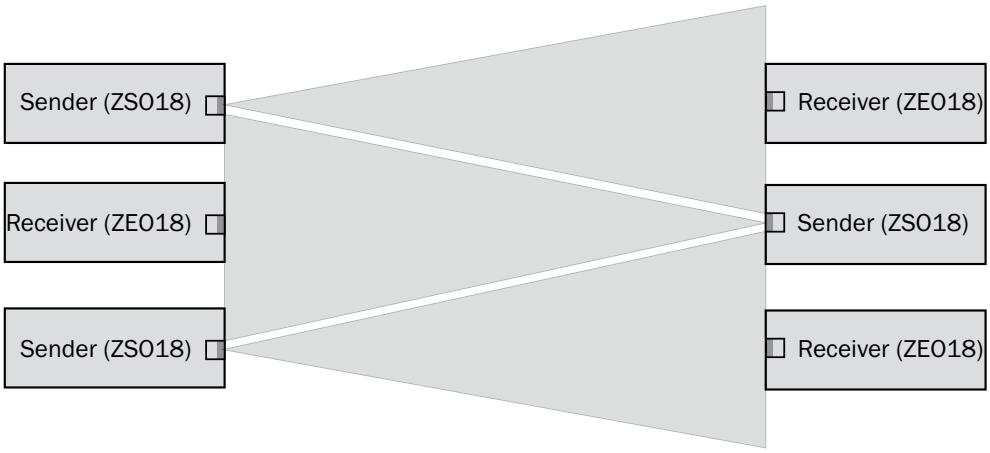


插图 134: 多个对射式光电传感器的布置

表格 43: 光点直径

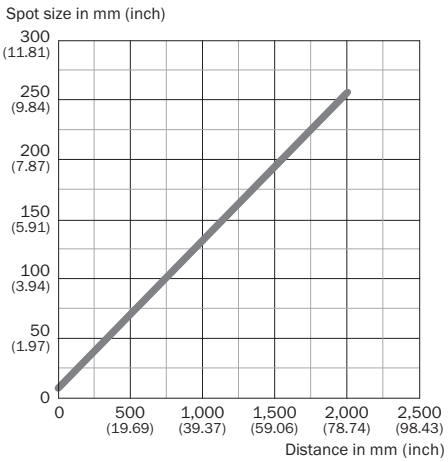


插图 135: ZSE18-xxxxx3

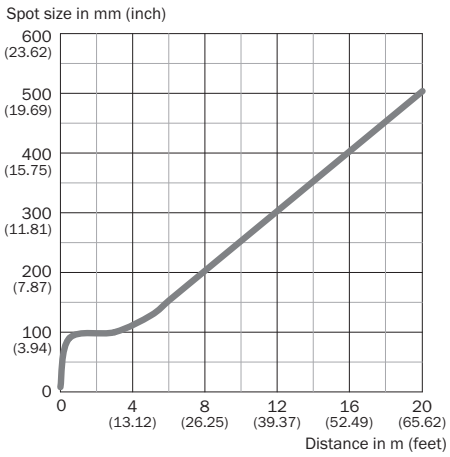


插图 136: ZSE18-xxxxx8

72 电气安装

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

- 插头连接：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 V）。

表 2-5 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

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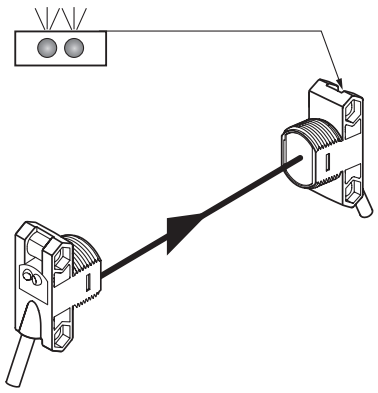
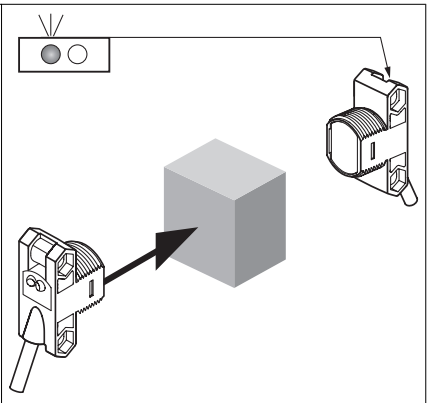
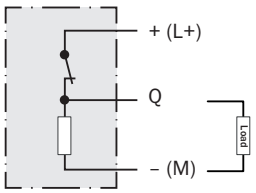
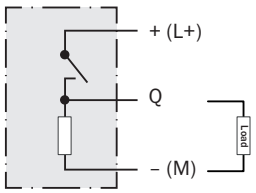
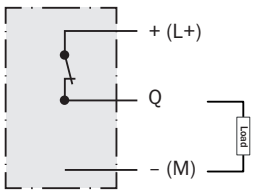
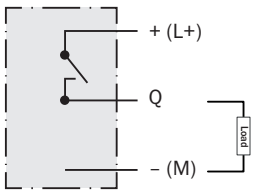
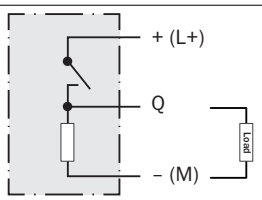
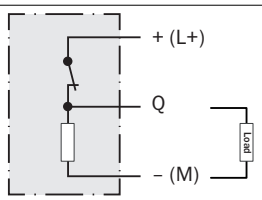
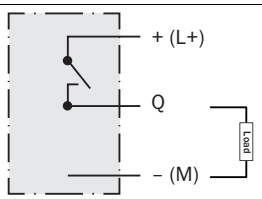
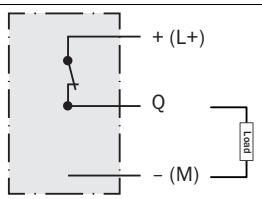
Subject to change without notice

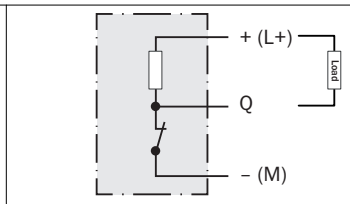
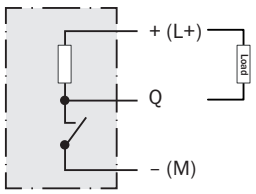
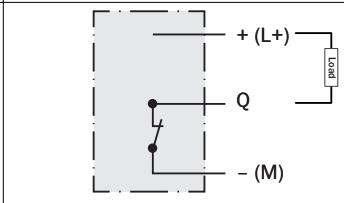
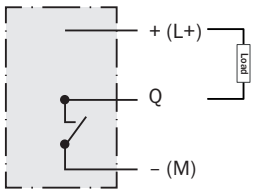
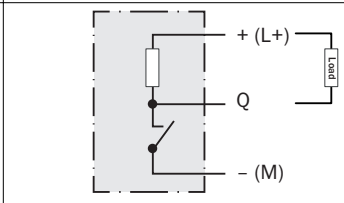
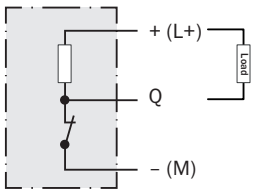
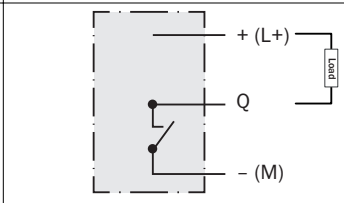
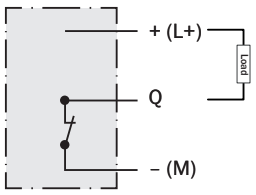
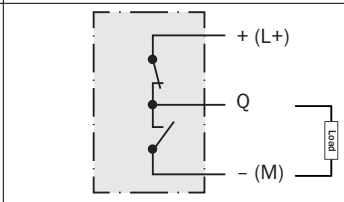
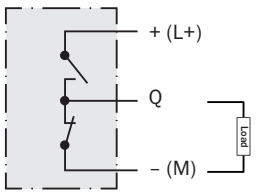
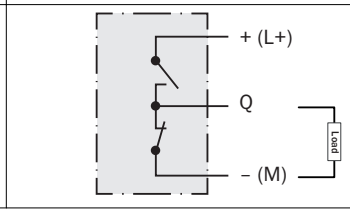
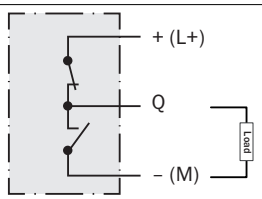
Q2 = 开关输出端 2
L+ = 供电电压 (U_V)
M = 接地
L.ON = 亮动
D.ON = 暗动

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:

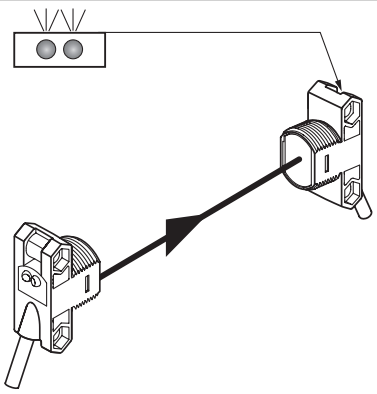
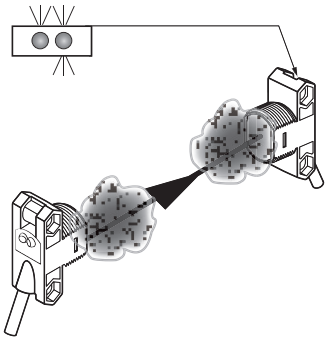
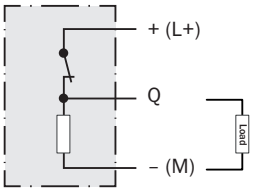
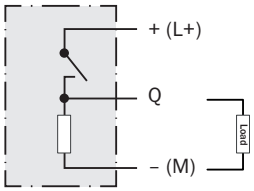
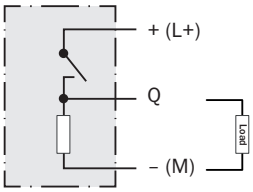
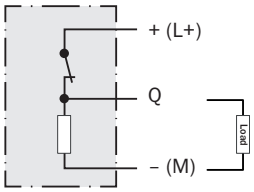
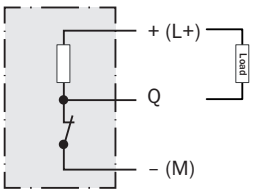
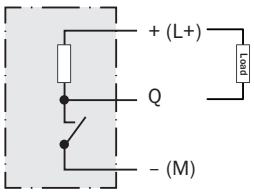
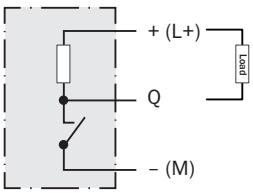
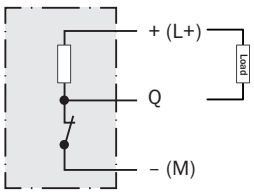
表格 44: 输出操作

ZSE18 / ZEO18 -x_xxxx = Q1 输出端 -xx_xxx = Q2 输出端		
-xPxxxx -x8xxxx -xxPxxx L.ON，PNP：Q (≤ 100 mA)		
-xHxxxx -x4xxxx -xxHxxx L.ON，PNP 集电极开路 Q (≤ 100 mA)		
-xFxxxx -x2xxxx -xxFxxx D.ON，PNP：Q (≤ 100 mA)		
-xKxxxx -x6xxxx -xxKxxx D.ON，PNP 集电极开路 Q (≤ 100 mA)		

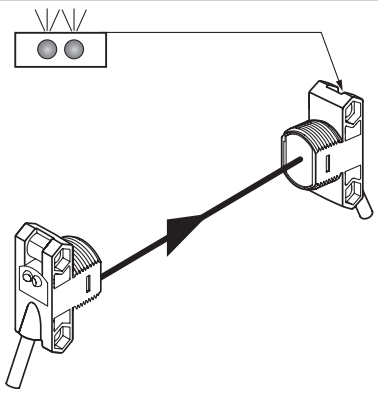
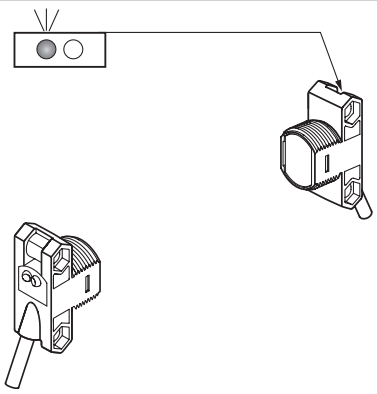
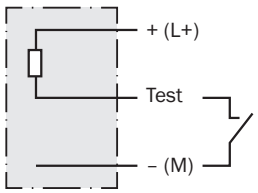
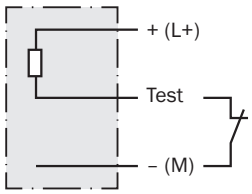
-xNxxxx -x7xxxx -xxNxxx L.ON，NPN：Q (≤ 100 mA)		
-xGxxxx -x3xxxx -xxGxxx L.ON，NPN 集电极开路 Q (≤ 100 mA)		
-xExxxx -x1xxxx -xxExxx D.ON，NPN：Q (≤ 100 mA)		
-xJxxxx -x5xxxx -xxJxxx D.ON，NPN 集电极开路 Q (≤ 100 mA)		
-xAxxxx -XRxxxx -xxAxxx L.ON，推挽 (≤ 100 mA)[1]		
-xBxxxx -xSxxxx -xxBxxx D.ON，推挽 (≤ 100 mA)[1]		

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

表格 45: 报警/运行状况操作

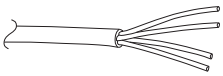
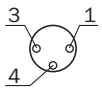
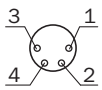
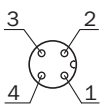
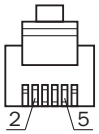
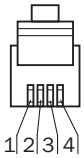
ZSE18 / ZEO18 -xx_xxx = Q2 输出端 运行状况/报警始终为 Q2 输出端		
-xxRxxx 运行状况，PNP (≤ 100 mA)		
-xxTxxx 报警，PNP (≤ 100 mA)		
-xxQxxx 运行状况，NPN (≤ 100 mA)		
-xxSxxx 报警，NPN (≤ 100 mA)		

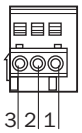
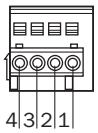
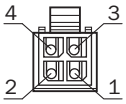
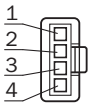
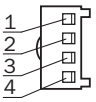
表格 46: 测试输入端

ZSE18 / ZEO18 -x_xxxx = Q1[1] 测试输入端始终在 Q1 上		
-xRxxxx -xSxxxx -x1xxxx -x2xxxx -x3xxxx -x4xxxx -x5xxxx -x6xxxx -x7xxxx -x8xxxx 测试输入端，NPN (≤ 1 mA)		

[1] 型号 ZSE18 / ZSO18 -xAxxxx ... -xPxxxx 没有测试输入端

表格 47: 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 mm² 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
2) ZSO18 对于 Q2 将一直是未连接（n.c.）状态

73 调试

1 **对准**

ZSE18-xxxxx2、-xxxxx8：将发射器 (ZSO18) 与接收器 (ZEO18) 对准。选择定位，确保红色发射光束射中接收器。提示：可使用白纸或反射器作为校准参考。发射器应无遮挡地观察到接收器，光路中不得有任何物体 [参见 插图 137]。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。

ZSE18-xxxxx1、-xxxxx3：将发射器 (ZSO18) 与接收器 (ZEO18) 对准。选择定位，确保红外光（不可见光）射中接收器。仅可通过 LED 指示灯辨别校准是否正确。为此，请参见 插图 137 和 表格 44。发射器应无遮挡地观察到接收器，光路中不得有任何物体。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。

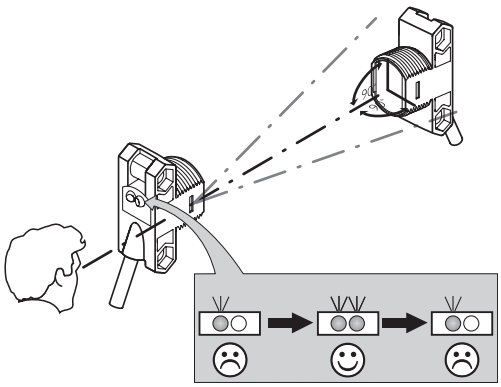


插图 137: 对准

2 **触发感应距离**

观察应用状况：根据相应图表 [参见 插图 138 和 参见 插图 139, 第 108 页]（x = 触发感应距离，y = 运行备用），调整发射器和接收器之间的距离。

当彼此相邻地安装对射式光电传感器时，每隔一对交替布置发射器 (ZSO18) 和接收器 (ZEO18)。 此外，根据发射器 (ZSO18) 光点直径，确保各对之间有足够的距离。这样可以避免相互干扰 [参见 插图 134]。

使用 表格 44 检查功能。如果开关量输出与 表格 44 不符，检查应用状况。

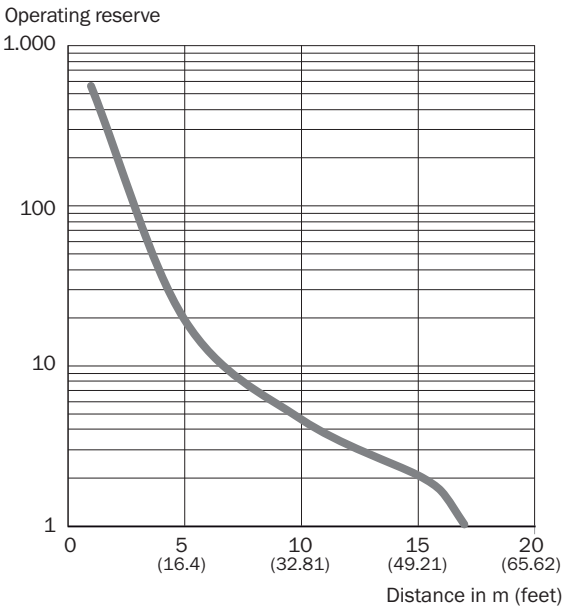


插图 138: 特性曲线，ZSE18-xxxxx3

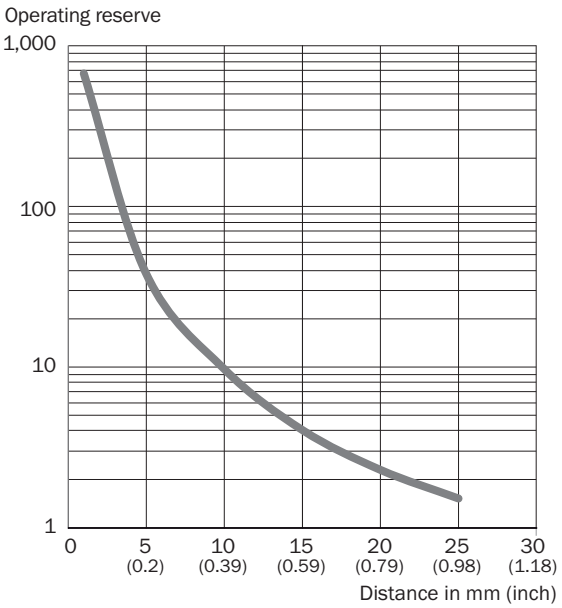


插图 139: 特性曲线，ZSE18-xxxxx8

3 **灵敏度设置**

传感器无法设置：传感器已由厂方调整，以提供最大灵敏度并准备好运行。

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或光学表面污染造成的结果。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 45 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 48: 故障诊断

LED 指示灯 / 故障界面	原因	措施
即使发射器与接收器对准并且光束路径中没有物体，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
光束路径中没有物体，没有输出信号	未正确连接测试输入端 (Test)	检查测试输入端接口。在使用带 LED 指示灯的电缆插口时须注意，测试输入端应进行相应的分配。
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：将发射器与接收器完全对准/清洁光学表面

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

	ZSE18-xxxxx1	ZSE18-xxxxx3	ZSE18-xxxxx2	ZSE18-xxxxx8
开关距离		15 m		20 m
最大开关距离		17 m		22 m
光斑直径/距离		256 mm / 2 m // 1248 mm / 10 m		95 mm / 2m // 253 mm / 10 m
供电电压 U_V	DC 10 ... 30 V[1]	DC 10 ... 30 V[1]	DC 10 ... 30 V[1]	DC 10 ... 30 V[1]
输出电流 $I_{max.}$	≤ 100 mA	≤ 100 mA	≤ 100 mA	≤ 100 mA
最大开关操作顺序	1000 Hz[2]	1000 Hz[2]	1000 Hz[2]	1000 Hz[2]
最长响应时间	≤ 500 µs[3]	≤ 500 µs[3]	≤ 500 µs[3]	≤ 500 µs[3]
防护类型	IP67	IP67	IP67	IP67
防护等级	III	III	III	III
保护电路	A, B, D[4]	A, B, D[4]	A, B, D[4]	A, B, D[4]
工作环境温度	–40 °C ... +55 °C	–40 °C ... +55 °C	–40 °C ... +55 °C	–40 °C ... +55 °C

1) 极限值：在防短路电网中运行，最大 8 A；最大余波 5 V_{ss}
2) 明暗比为 1:1
3) 信号传输时间（电阻负载时）
4) 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 49: 尺寸图

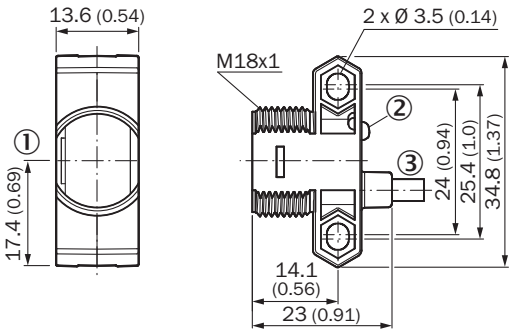


插图 140: ZSE18-1xxxxx/ZSE18-Axxxxx

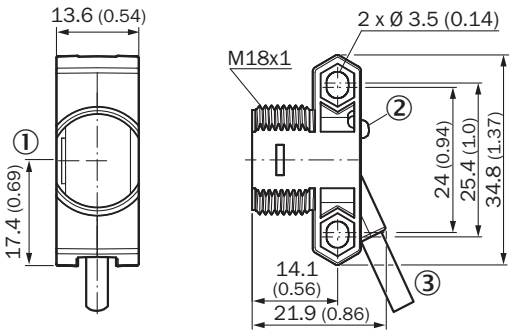


插图 141: ZSE18-2xxxxx/ZSE18-Bxxxxx，电缆

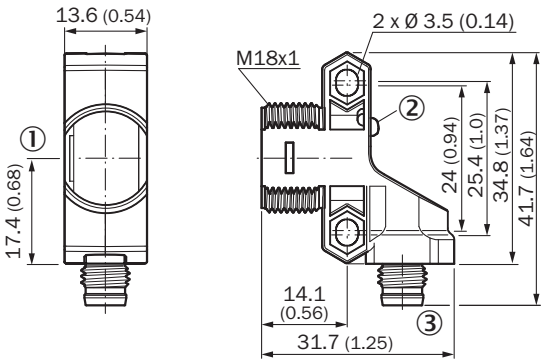


插图 142: ZSE18-2xxxxx/ZSE18-Bxxxxx，M8 连接器

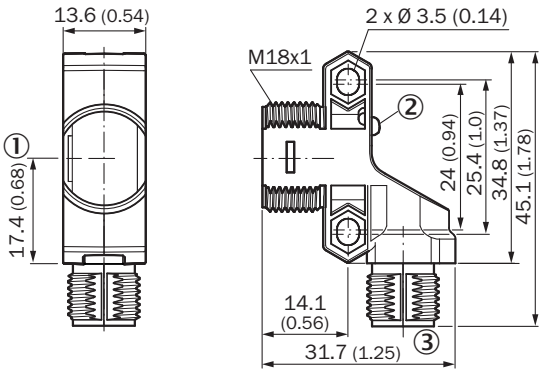


插图 143: ZSE18-2xxxxx/ZSE18-Bxxxxx，M12 连接器

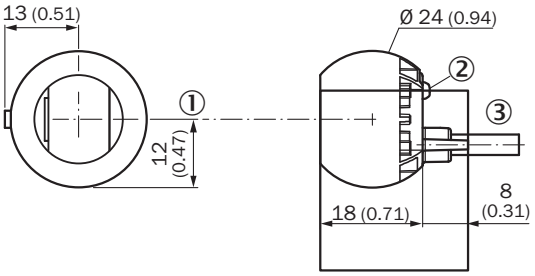


插图 144: ZSE18-3xxxxx/ZTx18-Cxxxxx

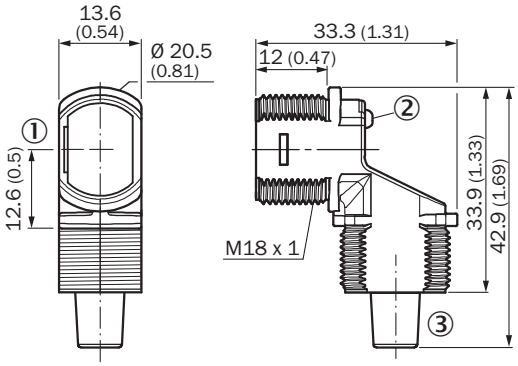


插图 145: ZSE18-4xxxxx/ZSE18-Dxxxxx，电缆

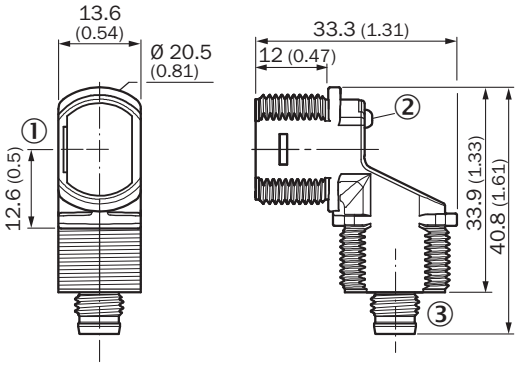


插图 146: ZSE18-4xxxxxZSE18-Dxxxxx，M8 连接器

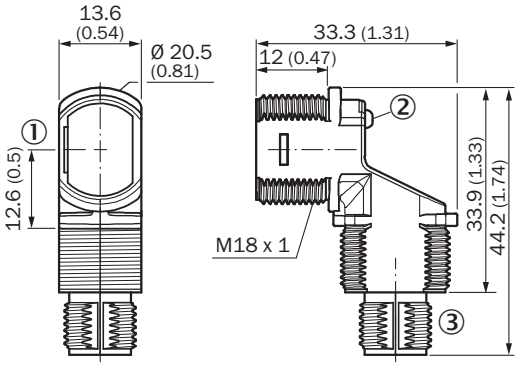


插图 147: ZSE18-4xxxxx/ZSE18-Dxxxxx，M12 连接器

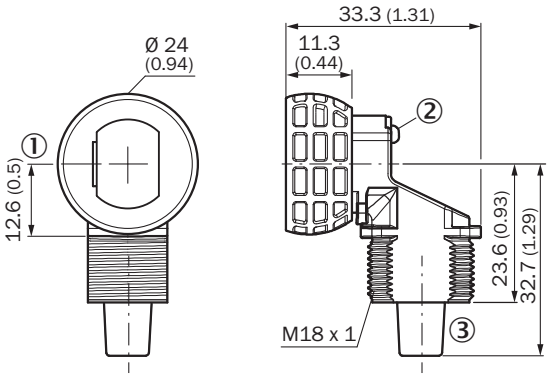


插图 148: ZSE18-5xxxxx/ZSE18-Exxxxx，电缆

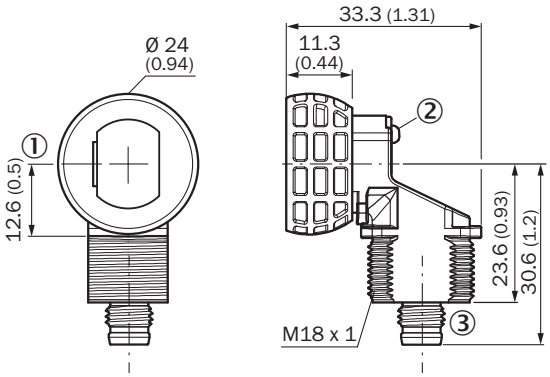


插图 149: ZSE18-5xxxxx/ZSE18-Exxxxx，M8 连接器

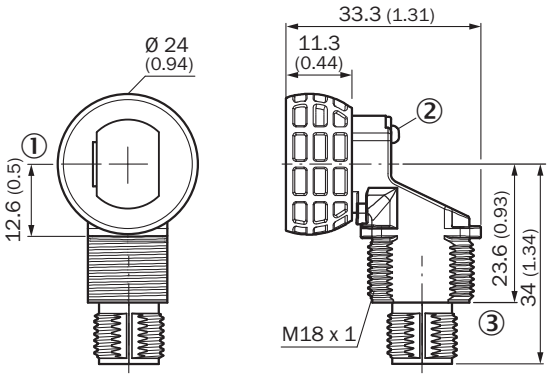


插图 150: ZSE18-5xxxxx/ZSE18-Exxxxx，M12 连接器

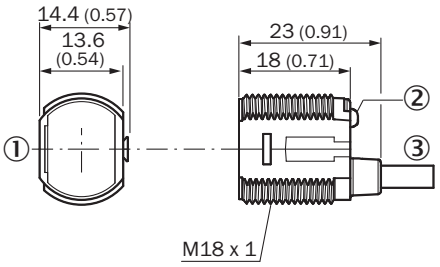


插图 151: ZSE18-6xxxxx/ZSE18-Fxxxxx

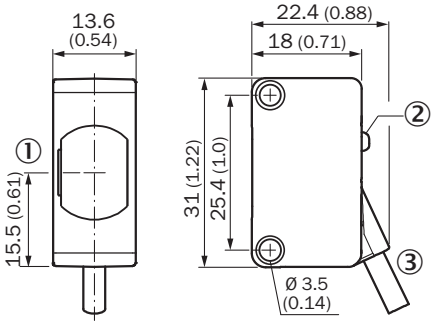


插图 152: ZSE18-7xxxxx/ZSE18-Gxxxxx

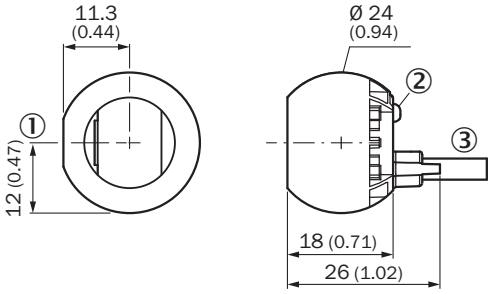


插图 153: ZSE18-8xxxxx/ZSE18-Hxxxxx

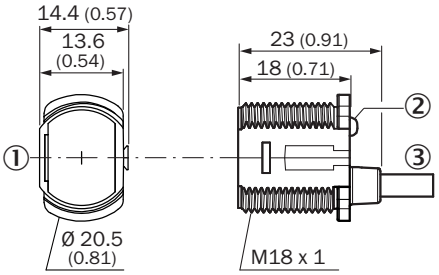


插图 154: ZSE18-9xxxxx/ZSE18-Jxxxxx

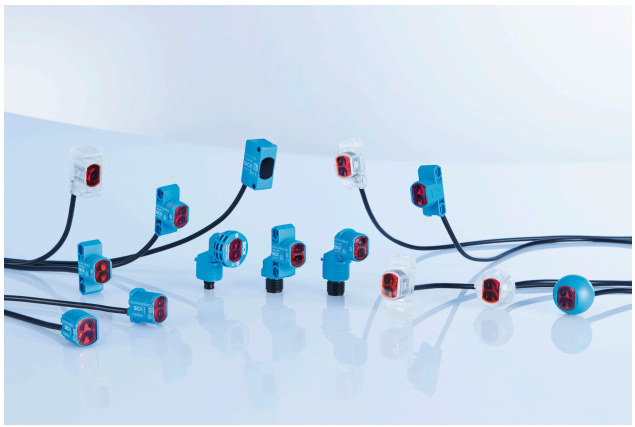
① 光轴
② LED 状态指示灯
③ 接口/应变消除

取扱説明書

ZSE18

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

ZSE18

メーカー

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

法律情報

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。

コンテンツ

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

ZSE18 は透過形光電スイッチ（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。動作には投光器（ZSO18）および受光器（ZEO18）が必要です。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

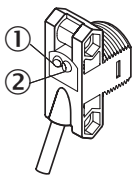


図 155: ステータス表示灯

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 (投光器と受光器) 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)。投光器と受光器を互いに方向調整します。

8021945 | SICK
Subject to change without notice

注意事項
透過形光電スイッチを互いに隣接させて取り付ける場合は、投光器（ZSO18）と受光器（ZEO18）をひとつおきに交互になるよう配置します。また、投光器（ZSO18）の光軸スポットの直径に基づき、ペアの間に十分な間隔を設けるようにしてください。図 156 および表 50 を参照してください。

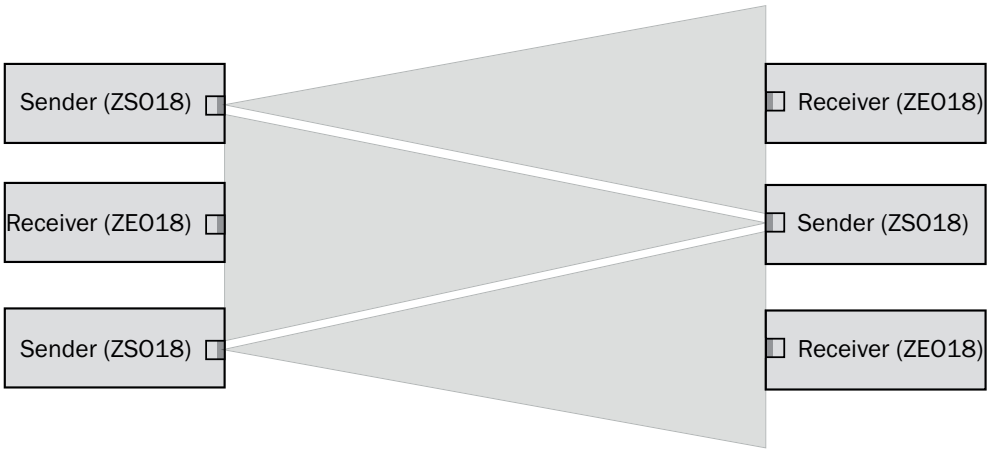


図 156: 複数の透過形光電スイッチの配置

表 50: 光軸スポットの直径

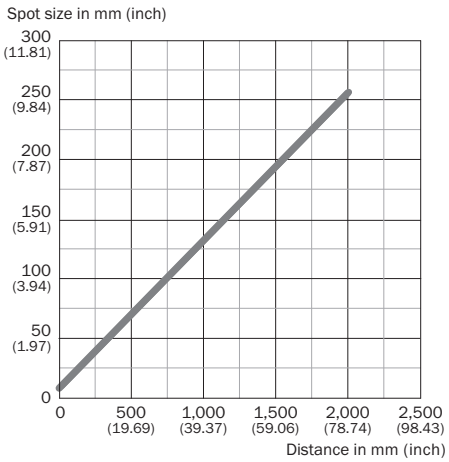


図 157: ZSE18-xxxxx3

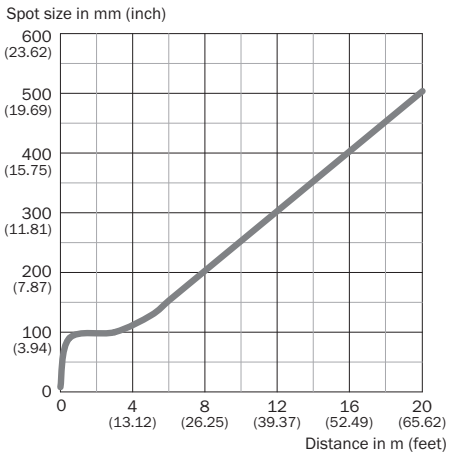


図 158: ZSE18-xxxxx8

83 電気的接続

センサの接続は無電圧 (V_S = 0 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 V) を印加、あるいは電源を入れてください。

表 2～5 で使用されている接続用語の説明：

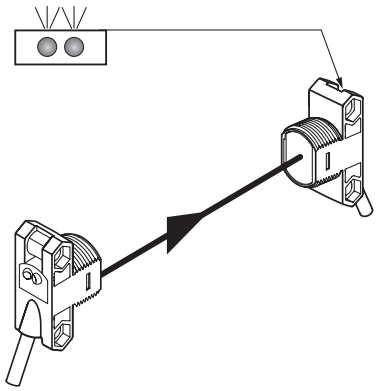
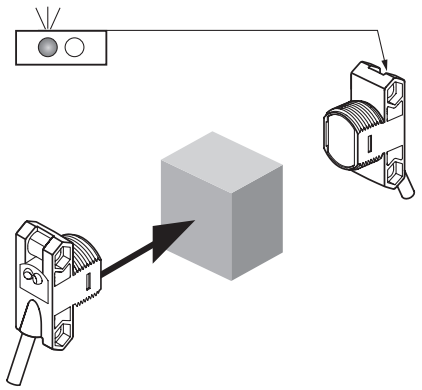
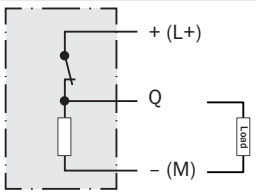
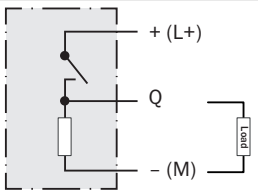
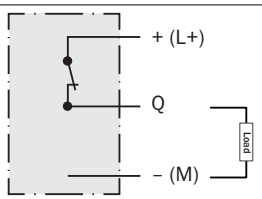
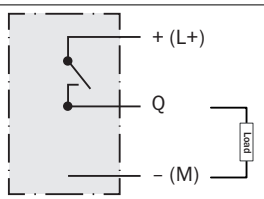
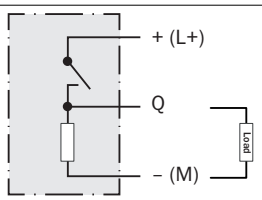
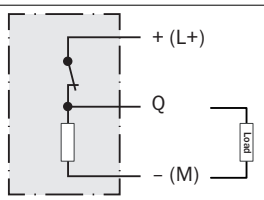
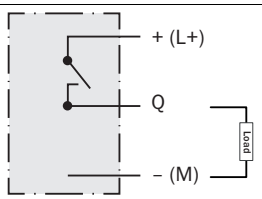
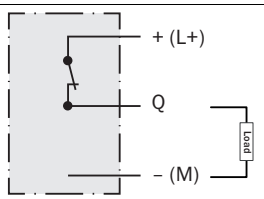
BN = 茶色
WH = 白色
BU = 青色

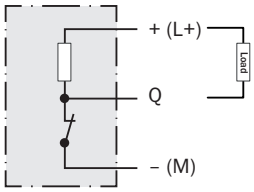
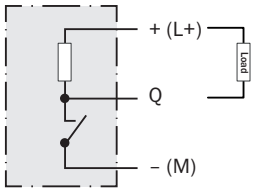
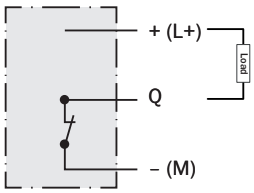
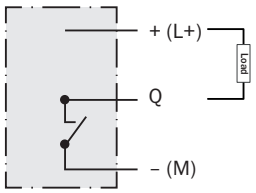
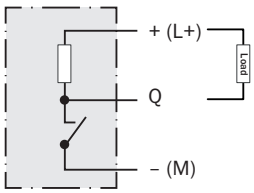
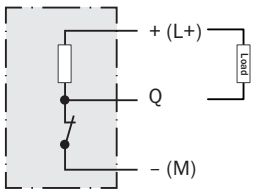
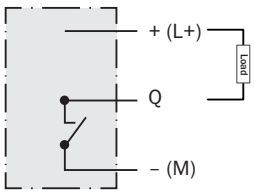
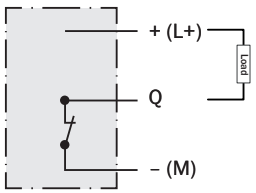
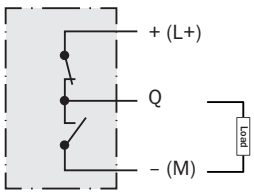
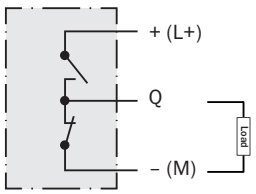
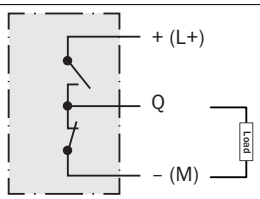
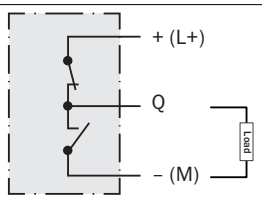
BK = 黒色
n. c. = 未接続
Q1 = スイッチング出力 1
Q2 = スイッチング出力 2
L+ = 供給電圧 (V_S)
M = 共通
L.ON = 入光時オン
D.ON = 遮光時オン

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 51: 出力動作

ZSE18 / ZEO18 -x_xxxx = Q1 出力 -xx_xxx = Q2 出力		
-xPxxxx -x8xxxx -xxPxxx L.ON、PNP：Q（≤ 100 mA）		
-xHxxxx -x4xxxx -xxHxxx L.ON、PNP オープンコレクタ Q（≤ 100 mA）		
-xFxxxx -x2xxxx -xxFxxx D.ON、PNP：Q（≤ 100 mA）		
-xKxxxx -x6xxxx -xxKxxx D.ON、PNP オープンコレクタ Q（≤ 100 mA）		

-xNxxxx -x7xxxx -xxNxxx L.ON、NPN：Q（≤ 100 mA）		
-xGxxxx -x3xxxx -xxGxxx L.ON、NPN オープンコレクタ Q（≤ 100 mA）		
-xExxxx -x1xxxx -xxExxx D.ON、NPN：Q（≤ 100 mA）		
-xJxxxx -x5xxxx -xxJxxx D.ON、NPN オープンコレクタ Q（≤ 100 mA）		
-xAxxxx -XRxxxx -xxAxxx L.ON、プッシュプル（≤ 100 mA）[1]		
-xBxxxx -xSxxxx -xxBxxx D.ON、プッシュプル（≤ 100 mA）[1]		

[1] 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 52: アラーム/ヘルス動作

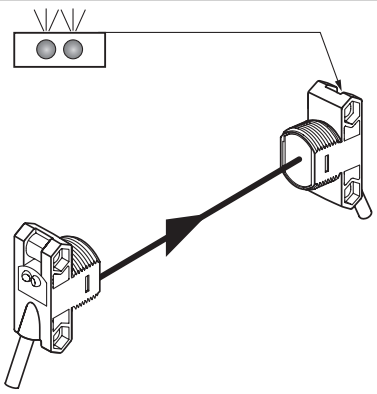
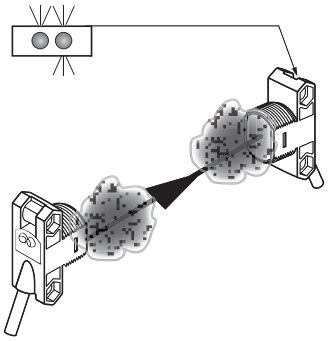
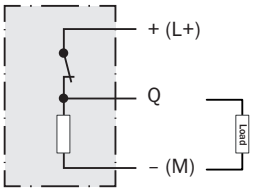
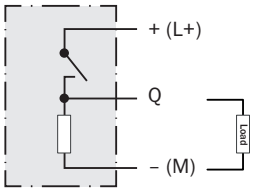
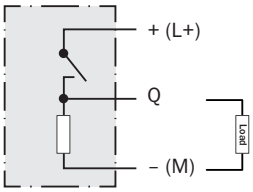
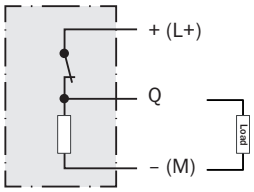
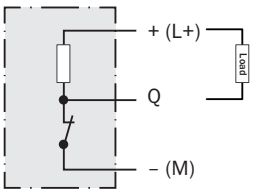
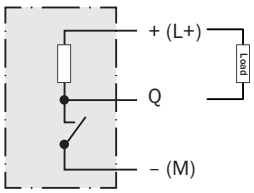
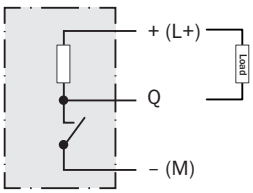
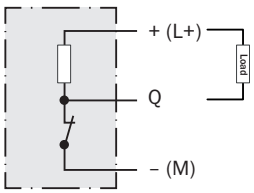
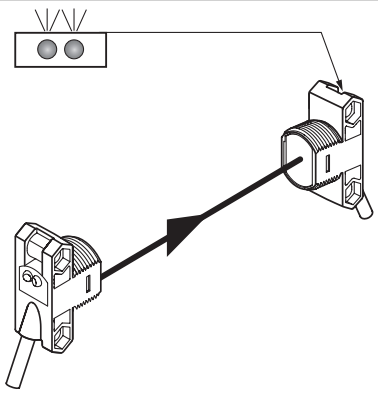
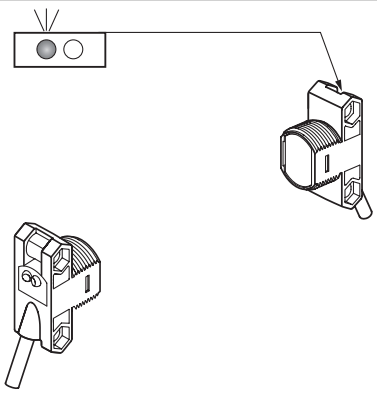
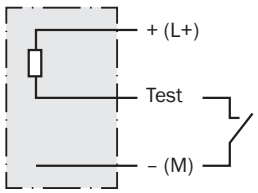
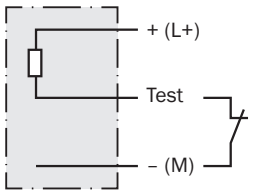
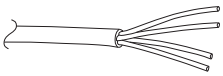
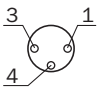
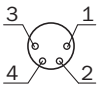
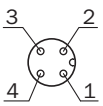
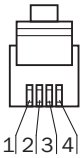
ZSE18 / ZEO18 -xx_xxx = Q2 出力 アラーム/ヘルスは常に Q2 出力です		
-xxRxxx ヘルス、PNP（≤ 100 mA）		
-xxTxxx アラーム、PNP（≤ 100 mA）		
-xxQxxx ヘルス、NPN（≤ 100 mA）		
-xxSxxx アラーム、NPN（≤ 100 mA）		

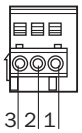
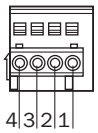
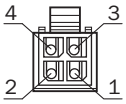
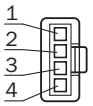
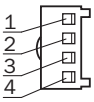
表 53: テスト入力

ZSE18 / ZEO18 -x_xxxx = Q1[1] テスト入力は常に Q1 となります		
-xRxxxx -xSxxxx -x1xxxx -x2xxxx -x3xxxx -x4xxxx -x5xxxx -x6xxxx -x7xxxx -x8xxxx テスト入力、NPN（≤ 1 mA）		

1 モデル ZSE18 / ZSO18 -xAxxxx ... -xPxxxx にはテスト入力がありません

表 54: 接続ピン配列

Zxx18	図	ピン 1	ピン 2	ピン 3	ピン 4	ピン 5	ピン 6
-xxx1xx	 0.14 mm² 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
2) ZSO18 は、Q2 は必ず n.c となります

84 コミッショニング

1 **光軸調整**

ZSE18-xxxxx2、-xxxxx8：投光器（ZSO18）を受光器（ZEO18）の方向に合わせます。赤色の投光軸が受光器に照射されるように、位置決めします。ヒント: 白紙またはリフレクタを光軸調整の補助手段として使用してください。投光器から受光器への視界が遮られたり、光路に対象物があってはなりません [図 159 参照]。センサの光開口部 (フロントカバー) が全く遮られないよう注意してください。

ZSE18-xxxxx1、-xxxxx3：投光器（ZSO18）を受光器（ZEO18）の方向に合わせます。赤外光 (不可視) が受光器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 159 と表 51 を参照。投光器から受光器への視界が遮られたり、光路に対象物があってはなりません。センサの光開口部 (フロントカバー) が全く遮られないよう注意してください。

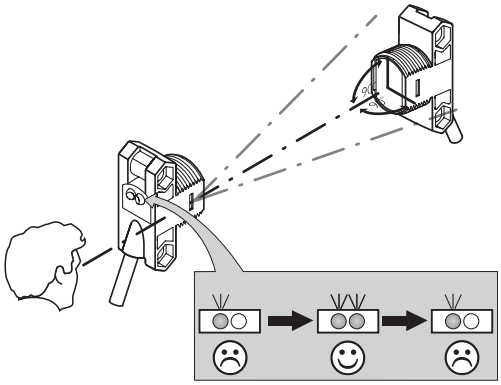


図 159: 光軸調整

2 **検出距離**

使用条件に従ってください：対応する図 [H/F] に従って、投光器と受光器の間隔を設定します図 160 [およびを参照参照 図 161, ページ 124] (x = 検出距離、y = 予備能)。透過形光電スイッチを互いに隣接させて取り付ける場合は、投光器（ZSO18）と受光器（ZEO18）をひとつおきに交互になるよう配置します。 また、投光器（ZSO18）の光軸スポットの直径に基づき、ペアの間に十分な間隔を設けるようにしてください。それにより相互干渉を防止することができます [を参照図 156]。

機能を確認するには、表 51 を使用してください。スイッチング出力が表 51 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。

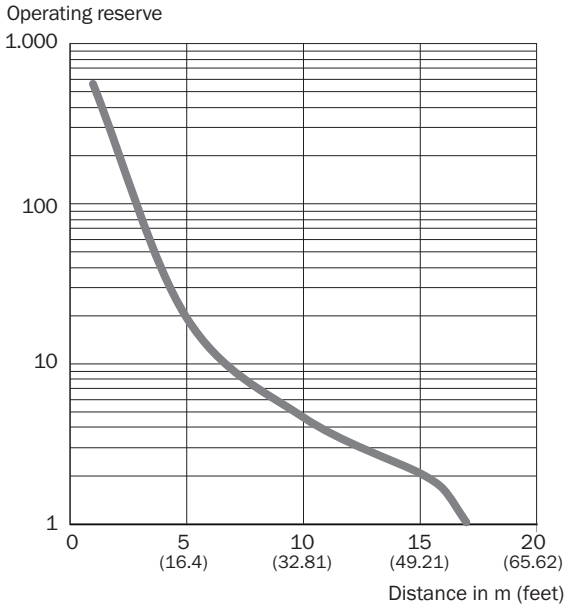


図 160: 特性曲線、ZSE18-xxxxx3

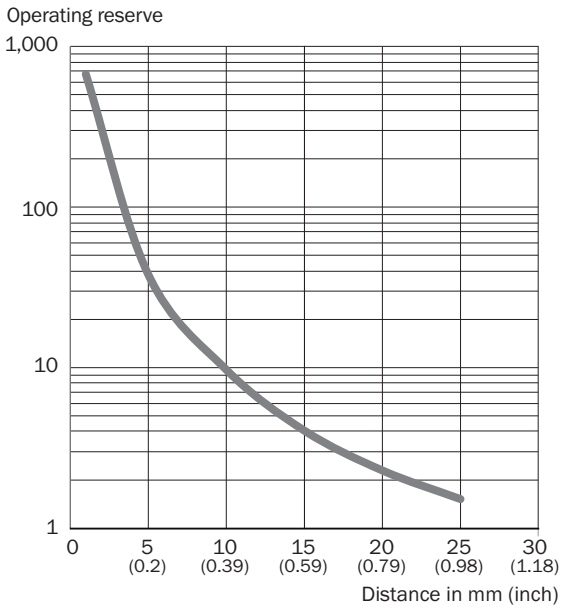


図 161: 特性曲線、ZSE18-xxxxx8

3 **感度設定**
センサは設定できません：センサは、最大の感度を提供す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、整列不良または光学面の汚れが考えられます。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 52 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 55: 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
投光器が受光器に合っており、光軸に対象物がないにもかかわらず、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
光軸に対象物がなく、出力信号がない	テスト入力（Test）が正しく接続されていない	テスト入力の接続を点検します。LED 表示灯付きのメスケーブルコネクタを使用する場合、テスト入力が適切に割り当てられていることに注意してください。
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す	動作条件をチェックし、投光器と受光器を完全に合わせます。また、光学面を清掃します

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Subject to change without notice

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

	ZSE18-xxxxx1	ZSE18-xxxxx3	ZSE18-xxxxx2	ZSE18-xxxxx8
検出範囲		15 m		20 m
最大検出範囲		17 m		22 m
光点のスポット径/距離		256 mm / 2 m // 1248 mm / 10 m		95 mm / 2m // 253 mm / 10 m
供給電圧 U_V	DC 10 ... 30 V[1]	DC 10 ... 30 V[1]	DC 10 ... 30 V[1]	DC 10 ... 30 V[1]
出力電流 $I_{max.}$	≤ 100 mA	≤ 100 mA	≤ 100 mA	≤ 100 mA
最大スイッチング周波数	1000 Hz[2]	1000 Hz[2]	1000 Hz[2]	1000 Hz[2]
最大応答時間	≤ 500 µs[3]	≤ 500 µs[3]	≤ 500 µs[3]	≤ 500 µs[3]
保護等級	IP67	IP67	IP67	IP67
保護クラス	III	III	III	III
回路保護	A, B, D[4]	A, B, D[4]	A, B, D[4]	A, B, D[4]
周辺温度 (作動中)	–40 °C ... +55 °C	–40 °C ... +55 °C	–40 °C ... +55 °C	–40 °C ... +55 °C

1) 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_{ss}
2) ライト/ダークの比率 1:1
3) 負荷のある信号経過時間
4) A = U_V 電源電圧逆接保護
B = 出入力 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 56: 外形寸法図

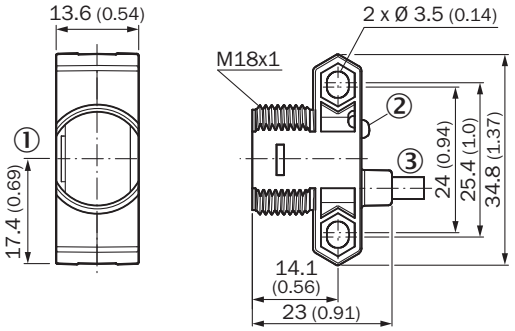


図 162: ZSE18-1xxxxx/ZSE18-Axxxxx

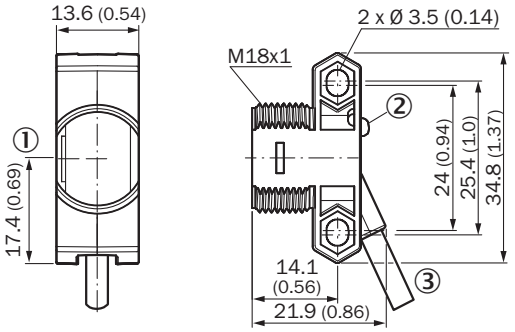


図 163: ZSE18-2xxxxx/ZSE18-Bxxxxx、ケーブル

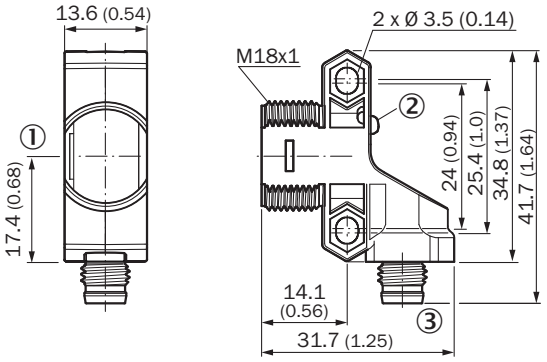


図 164: ZSE18-2xxxxx/ZSE18-Bxxxxx、M8 コネクタ

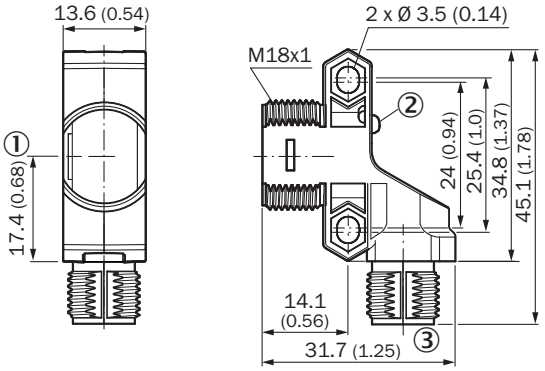


図 165: ZSE18-2xxxxx/ZSE18-Bxxxxx、M12 コネクタ

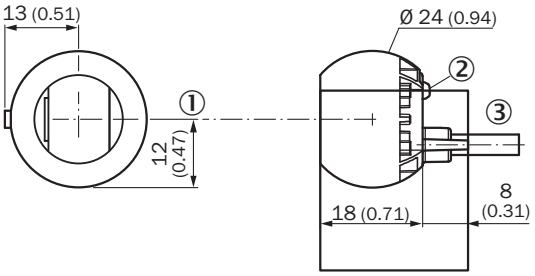


図 166: ZSE18-3xxxxx/ZTx18-Cxxxxx

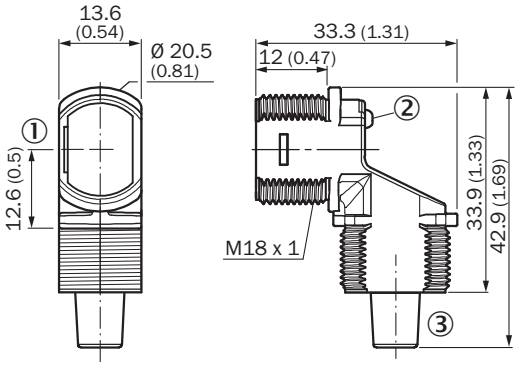


図 167: ZSE18-4xxxxx/ZSE18-Dxxxxx、ケーブル

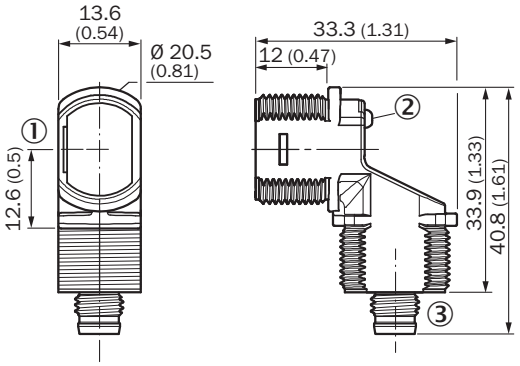


図 168: ZSE18-4xxxxx/ZSE18-Dxxxxx、M8 コネクタ

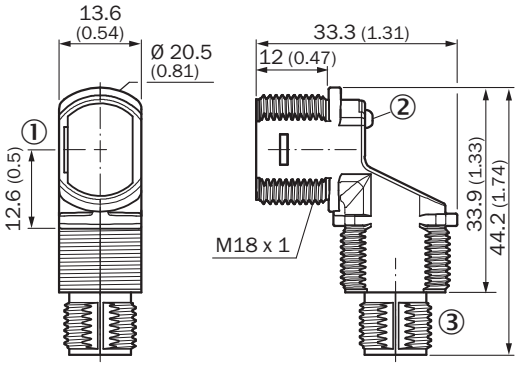


図 169: ZSE18-4xxxxx/ZSE18-Dxxxxx、M12 コネクタ

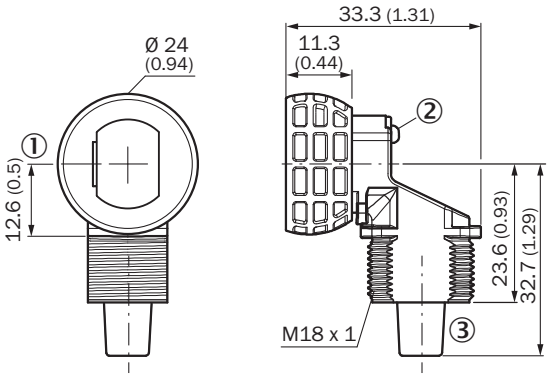


図 170: ZSE18-5xxxxx/ZSE18-Exxxxx、ケーブル

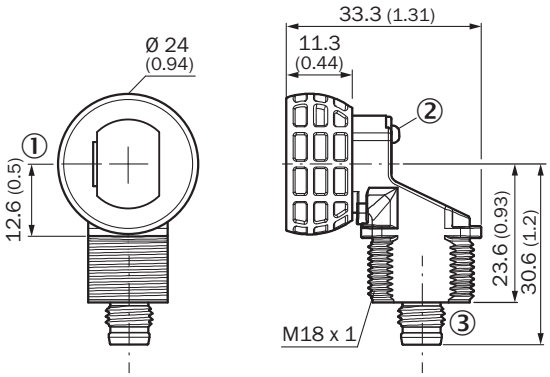


図 171: ZSE18-5xxxxx/ZSE18-Exxxxx、M8 コネクタ

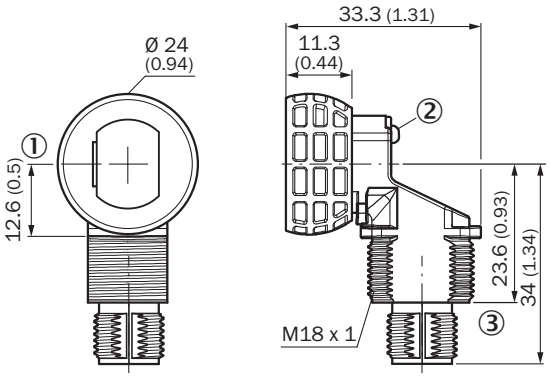


図 172: ZSE18-5xxxxx/ZSE18-Exxxxx、M12 コネクタ

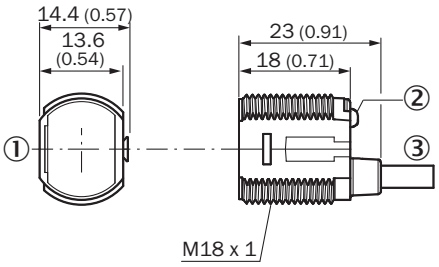


図 173: ZSE18-6xxxxx/ZSE18-Fxxxxx

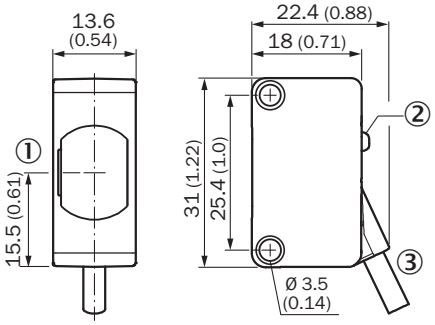


図 174: ZSE18-7xxxxx/ZSE18-Gxxxxx

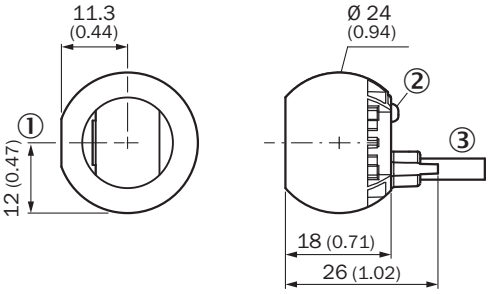


図 175: ZSE18-8xxxxx/ZSE18-Hxxxxx

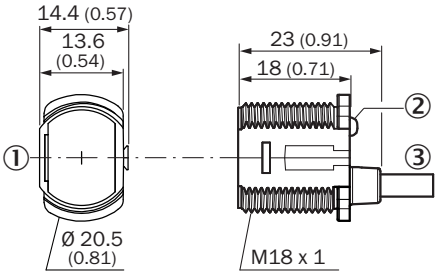


図 176: ZSE18-9xxxxx/ZSE18-Jxxxxx

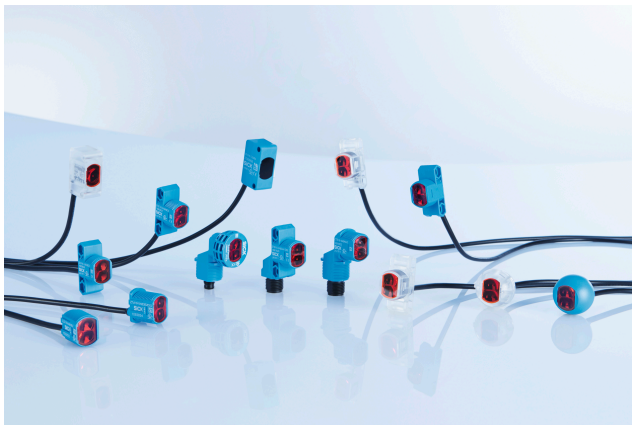
① 光学軸
② LED ステータス表示灯
③ 接続/張力緩和

ИНСТРУКЦИЯ ПО ЭКСПЛУАТАЦИИ

ZSE18

Цилиндрические фотоэлектрические датчики

SICK
Sensor Intelligence.



de
en
es
fr
it
ja
pt
ru
zh

Описание продукта

Z18 SimpleSense

ZSE18

Изготовитель

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

Правовые примечания

Оригинальный документ

Настоящий документ является оригинальным документом SICK AG.

Содержание

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

ZSE18 оптоэлектронный, фотоэлектрический датчик со сквозным лучом (далее «датчик») для оптического, бесконтактного обнаружения объектов, животных и людей. Для работы требуются передатчик (ZSO18) и приемное устройство (ZEO18). 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

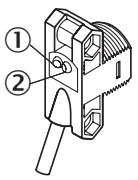


Рисунок 177: Индикаторы состояния

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

93 Монтаж

Установите датчики (передатчик и приёмник) на подходящем крепёжном уголке (см. программу принадлежностей от SICK). Выровняйте передатчик и приёмник друг относительно друга.

УКАЗАНИЕ

При монтаже фотоэлектрических датчиков со сквозным лучом рядом друг к другу, чередуйте расположение передатчика (ZS018) и приемного устройства (ZE018) через каждую другую пару. Также убедитесь в наличии достаточного расстояния между парами в зависимости от диаметра светового пятна датчика (ZS018). См. рисунок 178 и таблица 57.

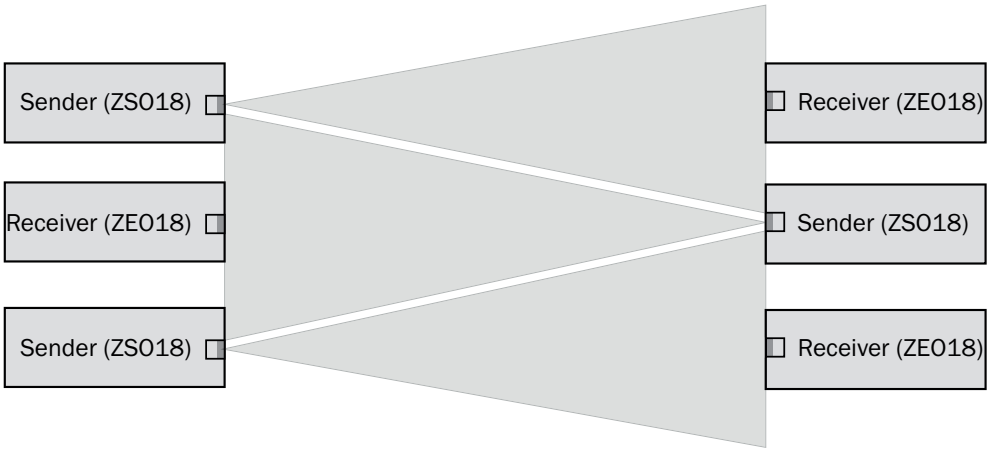


Рисунок 178: Расположение нескольких датчиков со сквозным лучом

Таблица 57: Диаметр светового пятна

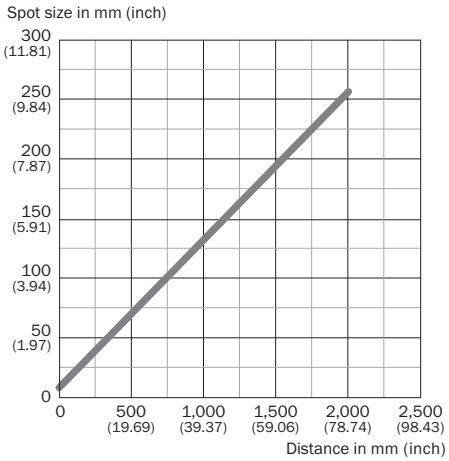


Рисунок 179: ZSE18-xxxxx3

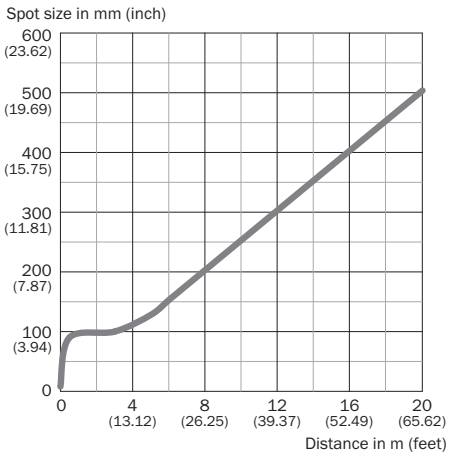


Рисунок 180: ZSE18-xxxxx8

94 Электрическое подключение

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

- Штепсельный разъём: расположение выводов
- Кабель: цвет жилы

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

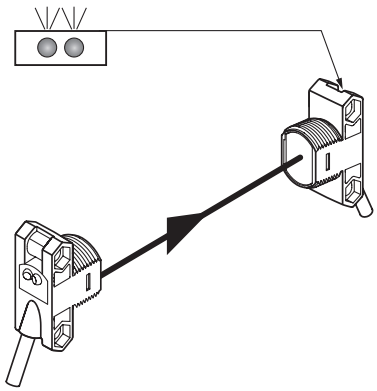
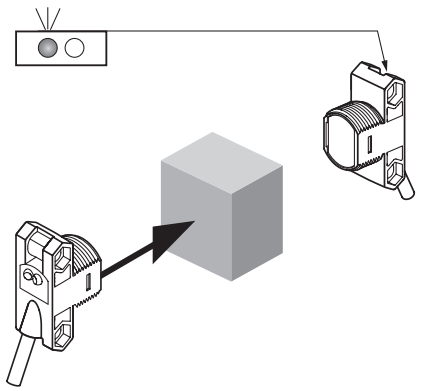
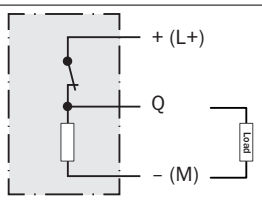
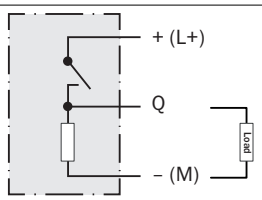
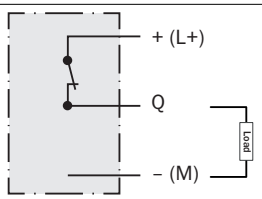
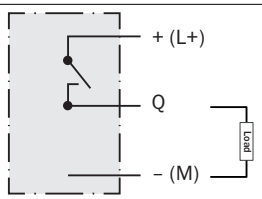
Объяснение терминологии соединений, используемой в таблицах 2-5:

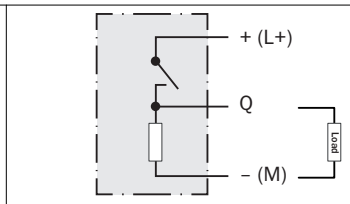
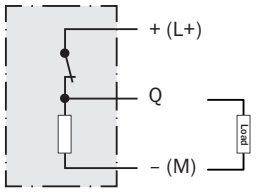
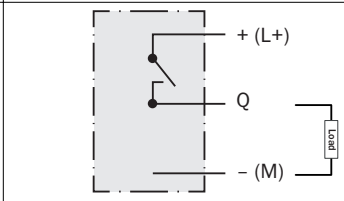
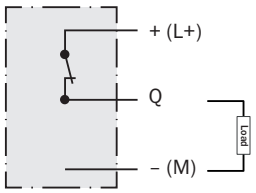
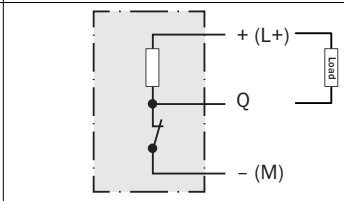
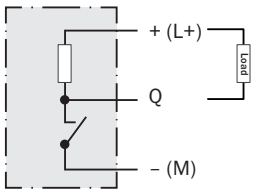
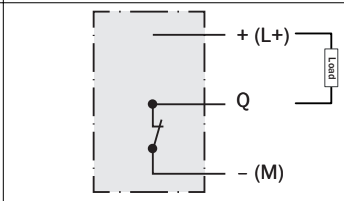
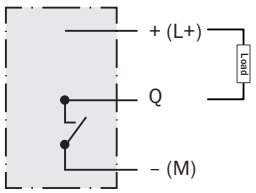
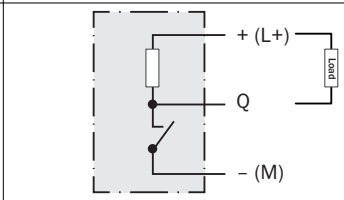
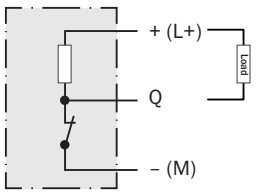
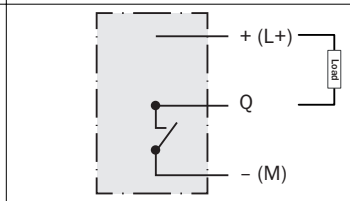
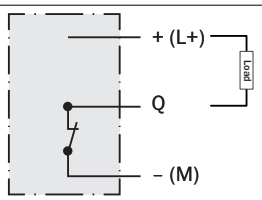
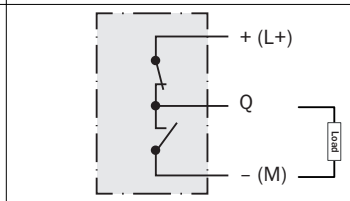
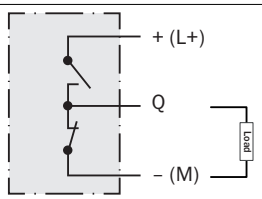
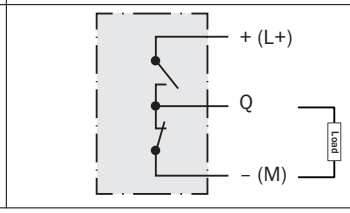
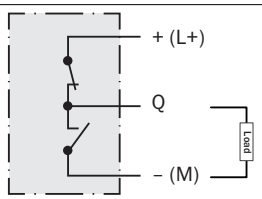
BN = Brown (Коричневый)
WH = White (Белый)
BU = Blue (Синий)
BK = Black (Черный)
n. c. = не подключен
Q1 = переключающий выход 1
Q2 = переключающий выход 2
L+ = питающее напряжение (V_S)
M = вес
L.ON = активация при наличии отраженного света
D.ON = активация при отсутствии отраженного света

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-xxxxxxTxx).

Детали подключения и вывода:

Таблица 58: Операция вывода

ZSE18 / ZE018 -x_xxxx = Q1 выход -xx_xxx = Q2 выход		
-xPxxxx -x8xxxx -xxPxxx L.ON, PNP: Q (≤ 100 мА)		
-xHxxxx -x4xxxx -xxHxxx L.ON, PNP Открытый коллектор Q (≤ 100 мА)		

-xFxxxx -x2xxxx -xxFxxx D.ON, PNP: Q (≤ 100 мА)		
-xKxxxx -x6xxxx -xxKxxx D.ON, PNP Открытый коллектор Q (≤ 100 мА)		
-xNxxxx -x7xxxx -xxNxxx L.ON, NPN: Q (≤ 100 мА)		
-xGxxxx -x3xxxx -xxGxxx L.ON, NPN Открытый коллектор Q (≤ 100 мА)		
-xExxxx -x1xxxx -xxExxx D.ON, NPN: Q (≤ 100 мА)		
-xJxxxx -x5xxxx -xxJxxx D.ON, NPN Открытый коллектор Q (≤ 100 мА)		
-xAxxxx -XRxxxx -xxAxxx L.ON, Двухтактный (≤ 100 мА)[1]		
-xBxxxx -xSxxxx -xxBxxx D.ON, Двухтакный (≤ 100 мА)[1]		

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

Таблица 59: Операция сигнала тревоги/рабочего состояния

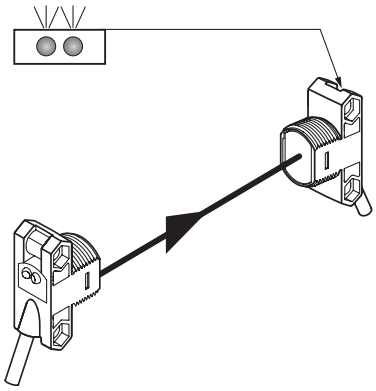
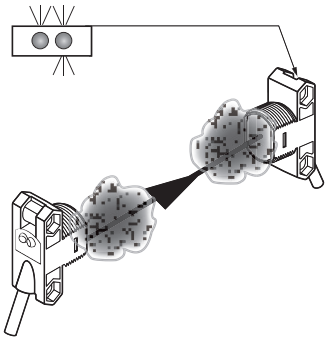
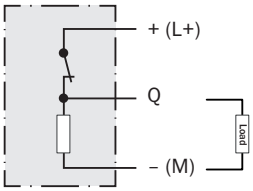
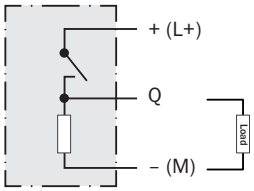
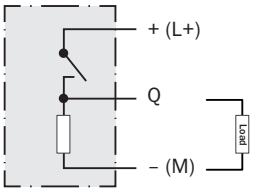
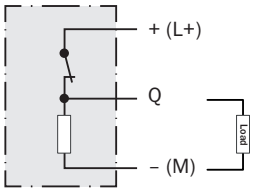
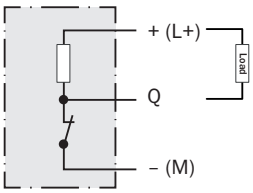
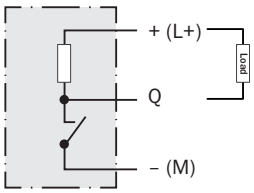
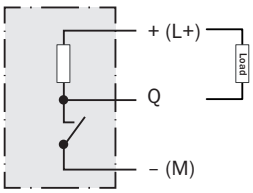
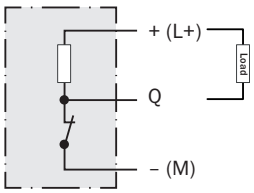
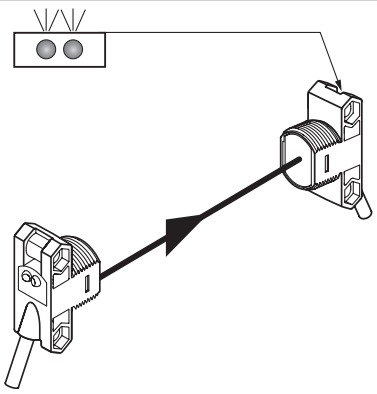
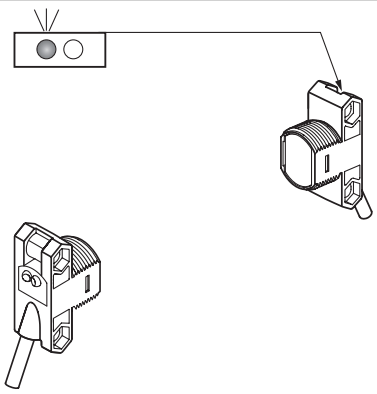
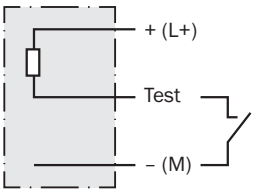
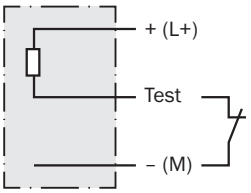
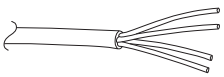
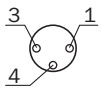
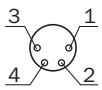
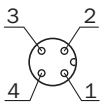
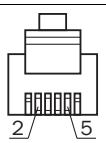
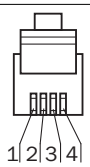
ZSE18 / ZE018 -xx_xxx = Q2 выход Рабочее состояния/сигнал тревоги - это всегда вывод Q2		
-xxRxxx Рабочее состояние, PNP (≤ 100 мА)		
-xxTxxx Сигнал тревоги, PNP (≤ 100 мА)		
-xxQxxx Рабочее состояние, NPN (≤ 100 мА)		
-xxSxxx Сигнал тревоги, NPN (≤ 100 мА)		

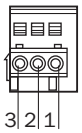
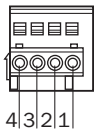
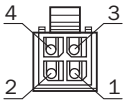
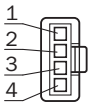
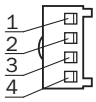
Таблица 60: Испытательный ввод

ZSE18 / ZE018 -x_xxxx = Q1[1] Испытательный ввод всегда на Q1		
-xRxxxx -xSxxxx -x1xxxx -x2xxxx -x3xxxx -x4xxxx -x5xxxx -x6xxxx -x7xxxx -x8xxxx Испытательный ввод, NPN (≤ 1 мА)		

1 Версии ZSE18 / ZS018 -xAxxxx ... -xPxxxx не имеют испытательный ввод

Таблица 61: Выводные контакты соединения

Zxx18	Схема	Контакт 1	Контакт 2	Контакт 3	Контакт 4	Контакт 5	Контакт 6
-xxx1xx	 0,14 мм² 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)	-	-

-xxxCxx Съемная клммная колодка Wago 733-103		+ (L+) (BN)	Q1 (BK)	- (M) (BU)	-	-	-
-xxxDxx Съемная клммная колодка 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) Вид разъемов спереди
2) ZSO18 всегда будет без подключения к Q2

95 Ввод в эксплуатацию

1 **Регулировка**

ZSE18-xxxxx2, -xxxxx8: выравнивание передатчика (ZSO18) по отношению к приемному устройству (ZEO18). Выберите такую позицию, чтобы красный луч передатчика попадал на приёмник. Совет: в качестве приспособления для выверки используйте лист белой бумаги или отражатель. Луч датчика должен свободно доходить до отражателя, нахождение каких-либо объектов на пути луча не допускается [см. рисунок 181]. Необходимо следить за тем, чтобы оптические отверстия (передние стекла) датчиков были совершенно свободными.

ZSE18-xxxxx1, -xxxxx3: выравнивание передатчика (ZSO18) по отношению к приемному устройству (ZEO18). Выберите такую позицию, чтобы инфракрасный луч (он не виден) попадал на приемник. Правильность выверки можно определить с помощью светодиодных индикаторов. См. рисунок 181 и таблица 58. Передатчик должен иметь свободную траекторию до приёмника, нахождение объектов на пути луча не допускается. Необходимо следить за тем, чтобы оптические отверстия (передние стекла) датчиков были совершенно свободными.

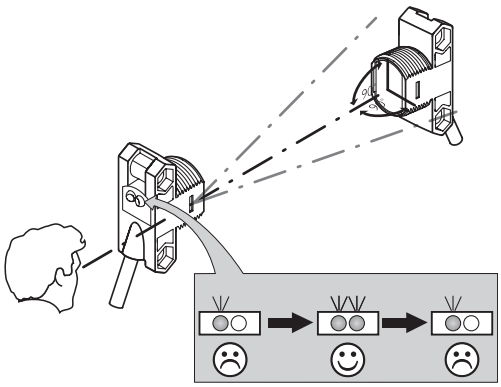


Рисунок 181: Регулировка

2 **Расстояние срабатывания**

Контролируйте условия применения: Отрегулируйте расстояние между передатчиком и приемным устройством согласно соответствующей схеме [см. рисунок 182 и см. рисунок 183, страница 140] (x = расстояние срабатывания, y = функциональный резерв).

При монтаже фотоэлектрических датчиков со сквозным лучом рядом друг к другу, чередуйте расположение передатчика (ZS018) и приемного устройства (ZE018) через каждую другую пару. Также убедитесь в наличии достаточного расстояния между парами в зависимости от диаметра светового пятна датчика (ZS018). Благодаря этому предотвращаются взаимные помехи [см.рисунок 178].

Используйте таблица 58 для проверки функции. Если переключающий выход не ведет себя в соответствии с таблица 58, проверьте условия эксплуатации.

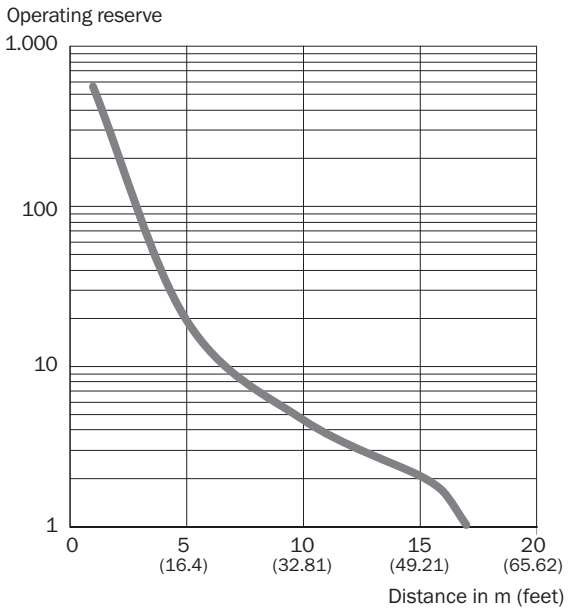


Рисунок 182: Характеристическая кривая, ZSE18-xxxxx3

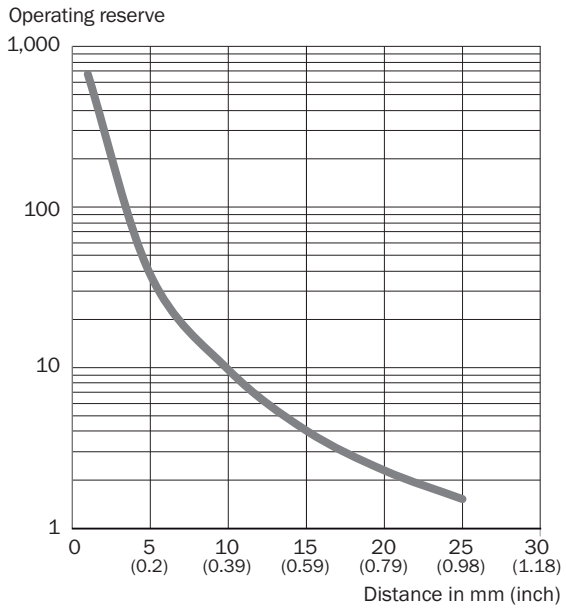


Рисунок 183: Характеристическая кривая, ZSE18-xxxxx8

3 **Настройка чувствительности**
Датчик невозможно установить: датчик отрегулирован на заводе, чтобы обеспечить максимальную чувствительность, и готов к работе.

4 **Работа с приемом предельного светового излучения**
Датчик передаст уведомление перед отказом, когда замигает светодиодный индикатор оранжевого цвета при работе с приемом предельного светового излучения. Это может быть результатом неправильного выравнивания, загрязненной оптической поверхности(поверхностей). Датчик может оборудоваться выводом рабочего состояния или сигнала тревоги, что обеспечивает дискретный сигнал при работе датчика в дискретном режиме. См. таблица 59 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 62: Поиск и устранение неисправностей

Светодиодный индикатор / картина неисправности	**Причина**	**Меры по устранению**
Желтый светодиод не загорается, даже если выравнивание передатчика на приемное устройство, и на пути луча нет никаких предметов	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
Нет предметов на пути луча, отсутствует выходной сигнал	Тестовый вход (Test) неверно подключен	Проверить подключение тестового входа. При использовании розеток со светодиодными

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Subject to change without notice

Светодиодный индикатор / картина неисправности	Причина	Меры по устранению
		индикаторами следите за правильным подключением тестового входа.
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 передачтик и приемное устройство/Очистите оптические поверхности

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.

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

	ZSE18-xxxxx1	ZSE18-xxxxx3	ZSE18-xxxxx2	ZSE18-xxxxx8
Расстояние срабатывания		15 m		20 m
Расстояние срабатывания, макс.		17 m		22 m
Диаметр светового пятна/ расстояние		256 mm / 2 m // 1248 mm / 10 m		95 mm / 2m // 253 mm / 10 m
Напряжение питания U_V	DC 10 ... 30 V[1]	DC 10 ... 30 V[1]	DC 10 ... 30 V[1]	DC 10 ... 30 V[1]
Выходной ток $I_{макс.}$	≤ 100 mA	≤ 100 mA	≤ 100 mA	≤ 100 mA
Частота срабатывания макс.	1000 Hz[2]	1000 Hz[2]	1000 Hz[2]	1000 Hz[2]
Время отклика макс.	≤ 500 µs[3]	≤ 500 µs[3]	≤ 500 µs[3]	≤ 500 µs[3]
Класс защиты	IP67	IP67	IP67	IP67
Класс защиты	III	III	III	III
Схемы защиты	A, B, D[4]	A, B, D[4]	A, B, D[4]	A, B, D[4]
Диапазон рабочих температур	–40 °C ... +55 °C	–40 °C ... +55 °C	–40 °C ... +55 °C	–40 °C ... +55 °C

1) Предельные значения: эксплуатация в защищенной от короткого замыкания сети макс. 8 A; остаточная волнистость макс. 5 B_{ss}
2) Соотношение светлых и темных участков изображения 1:1
3) Продолжительность сигнала при омической нагрузке
4) 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 63: Масштабные чертежи

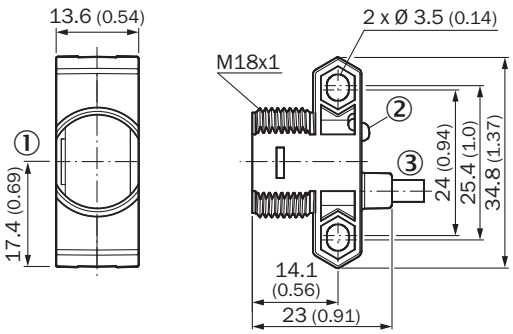

Рисунок 184: ZSE18-1xxxxx/ZSE18-Axxxxx

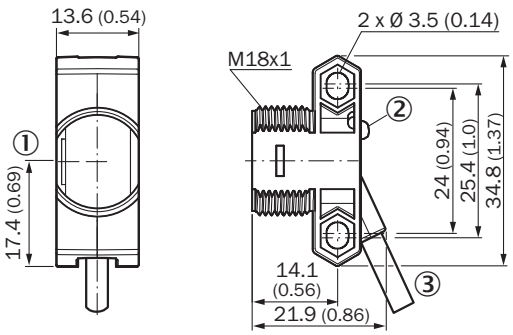

Рисунок 185: ZSE18-2xxxxx/ZSE18-Bxxxxx, кабель

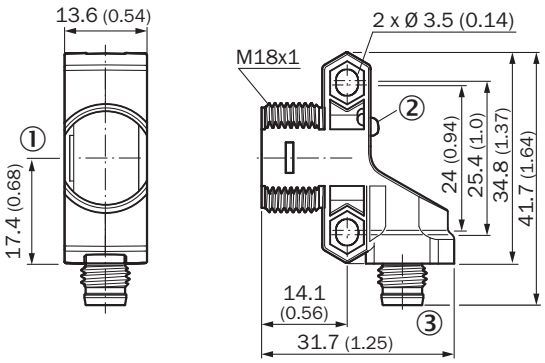

Рисунок 186: ZSE18-2xxxxx/ZSE18-Bxxxxx, M8 разъем

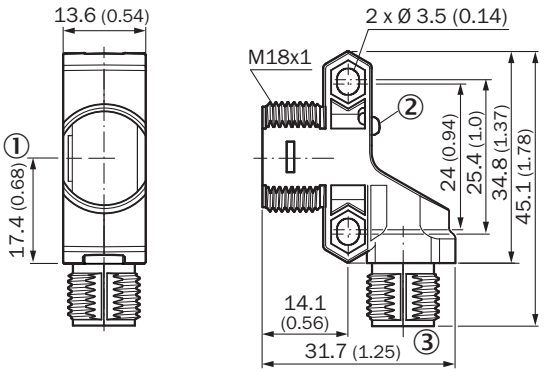

Рисунок 187: ZSE18-2xxxxx/ZSE18-Bxxxxx, M12 разъем

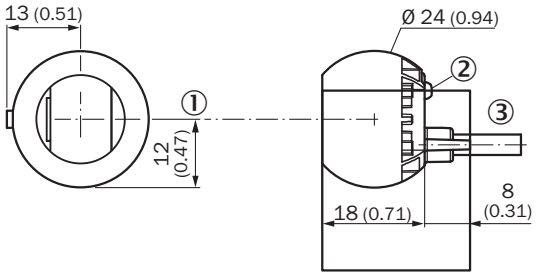

Рисунок 188: ZSE18-3xxxxx/ZTx18-Cxxxxx

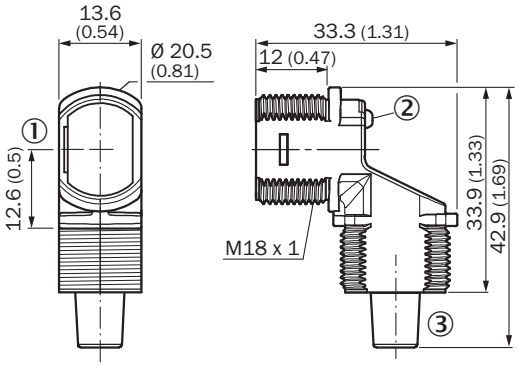

Рисунок 189: ZSE18-4xxxxx/ZSE18-Dxxxxx, кабель

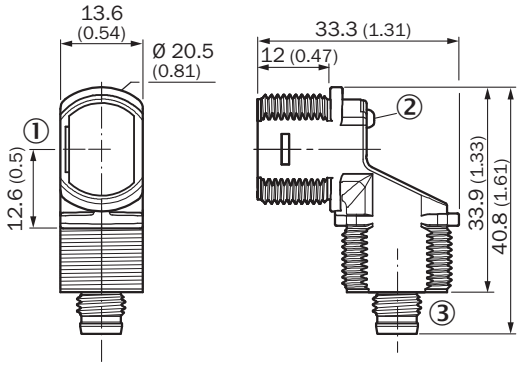

Рисунок 190: ZSE18-4xxxxx/ZSE18-Dxxxxx, M8 разъем

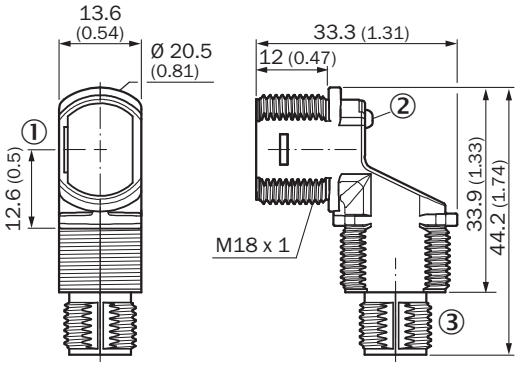

Рисунок 191: ZSE18-4xxxxx/ZSE18-Dxxxxx, M12 разъем

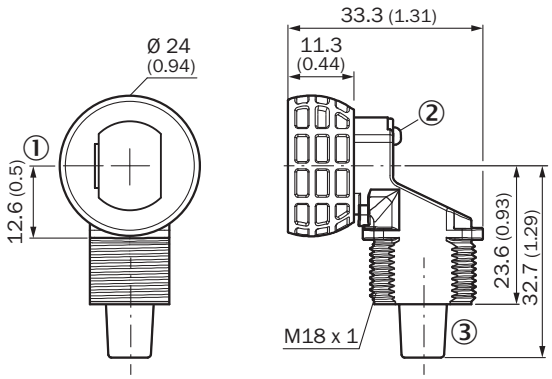

Рисунок 192: ZSE18-5xxxxx/ZSE18-Exxxxx, кабель

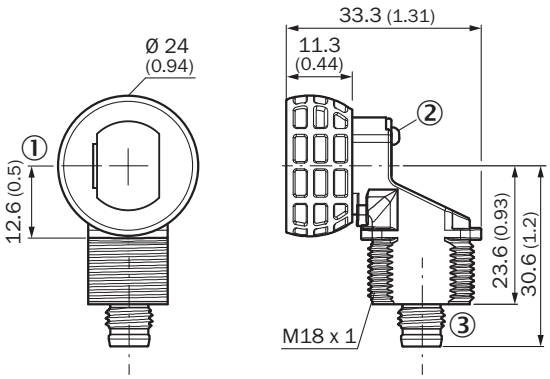

Рисунок 193: ZSE18-5xxxxx/ZSE18-Exxxxx, M8 разъем

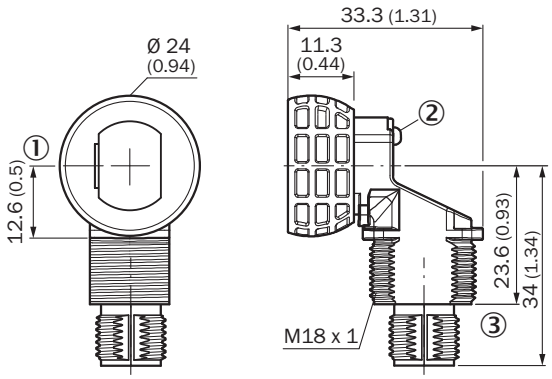

Рисунок 194: ZSE18-5xxxxx/ZSE18-Exxxxx, M12 разъем

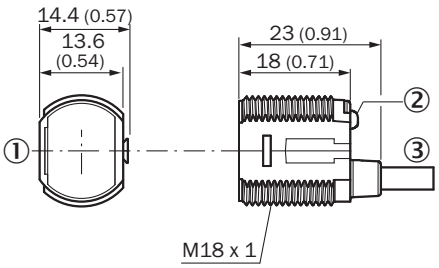

Рисунок 195: ZSE18-6xxxxx/ZSE18-Fxxxxx

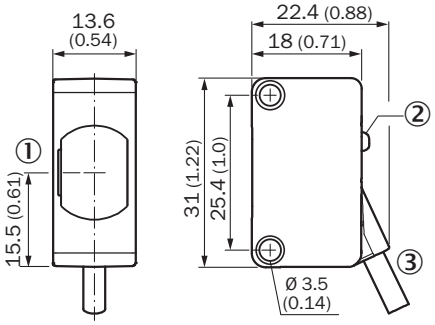

Рисунок 196: ZSE18-7xxxxx/ZSE18-Gxxxxx

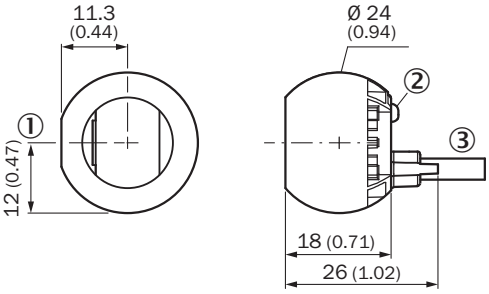

Рисунок 197: ZSE18-8xxxxx/ZSE18-Hxxxxx

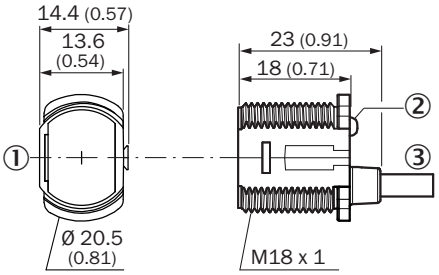

Рисунок 198: ZSE18-9xxxxx/ZSE18-Jxxxxx

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