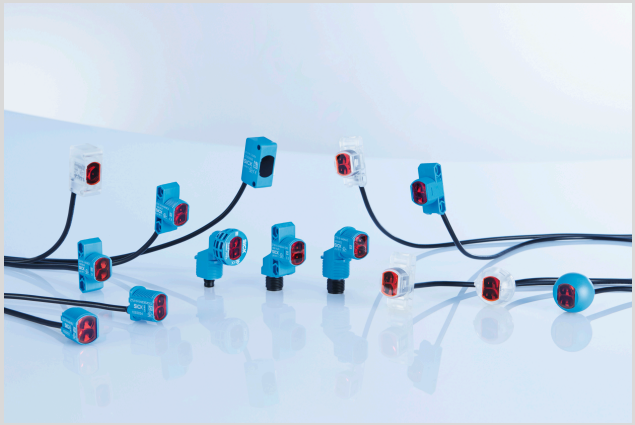
OPERATING INSTRUCTION

ZLD18 / ZLE18

Cylindrical photoelectric sensors

SICK
Sensor Intelligence.



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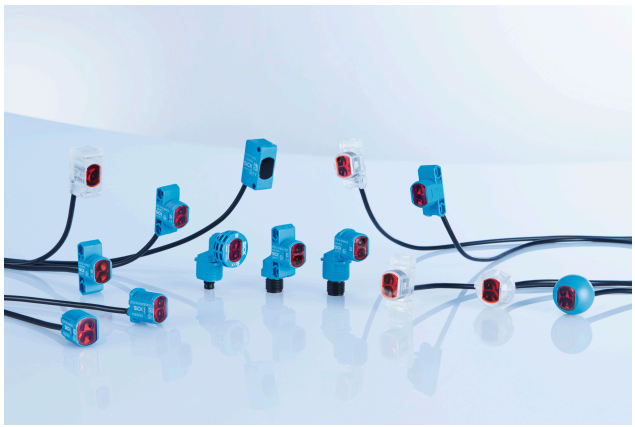

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Described product

Z18 SimpleSense

ZLD18 / ZLE18

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 ZLD18 / ZLE18 is an opto-electronic photoelectric retro-reflective sensor (referred to as “sensor” in the following) for the optical, non-contact detection of objects, animals, and persons. A reflector is required for this product to function. 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

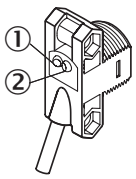


Figure 1: Status indicators

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

5 Mounting

Mount the sensor and the reflector using suitable mounting brackets (see the SICK range of accessories). Align the sensor and reflector with each other.

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.

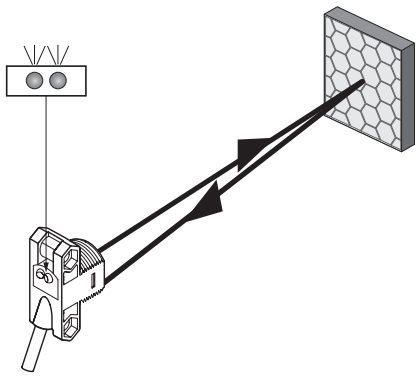
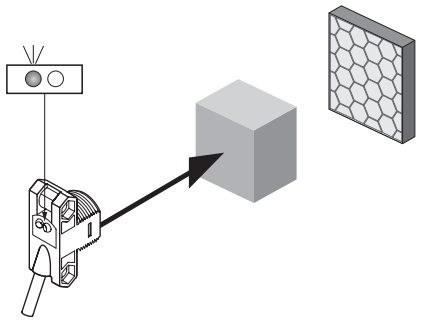
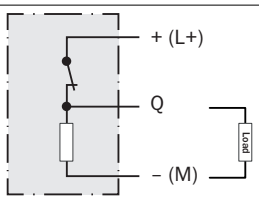
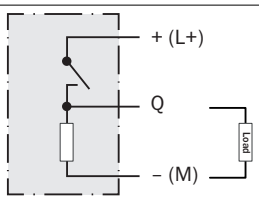
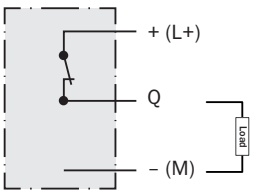
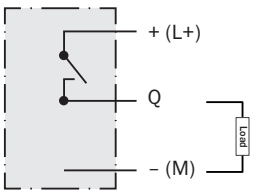
Explanation of connection terminology used in Tables 1-3:

BN = Brown
WH = White
BU = Blue
BK = Black
n. c. = no connection
Q1 = switching output 1
Q2 = switching output 2
L+ = supply voltage (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 1: Output Operation

ZLD18 / ZLE18 -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)		

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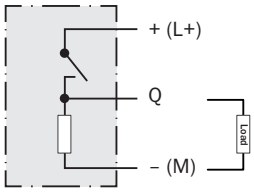
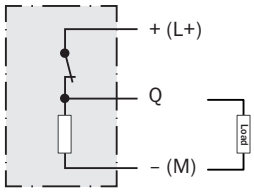
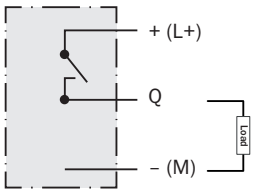
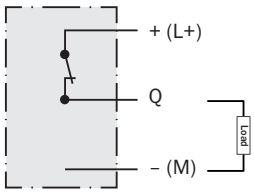
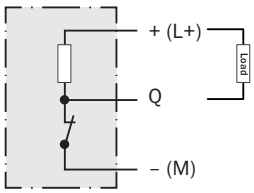
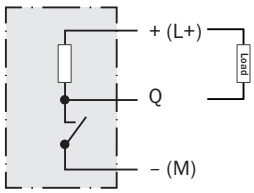
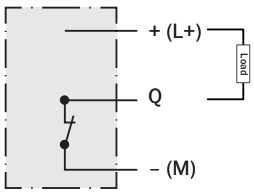
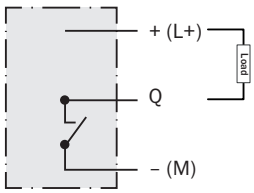
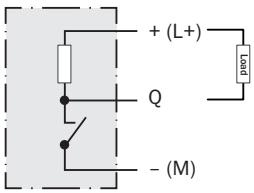
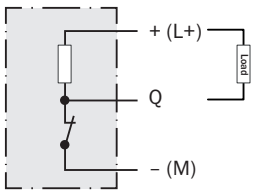
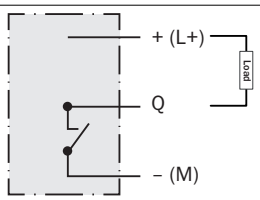
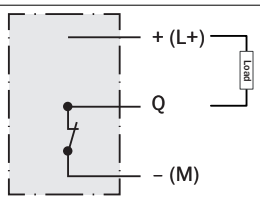
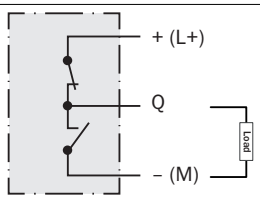
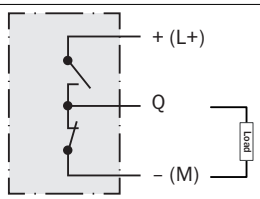
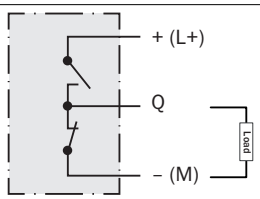
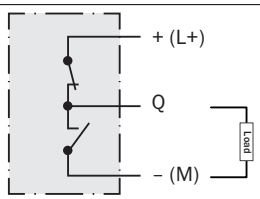
Subject to change without notice

-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 2: Alarm/Health Operation

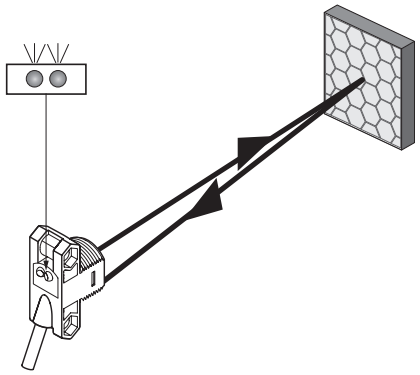
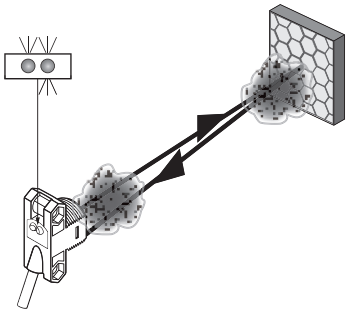
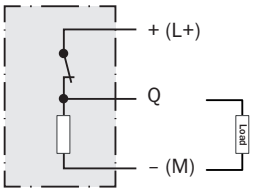
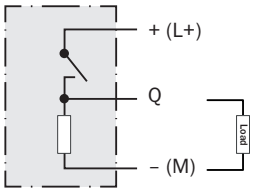
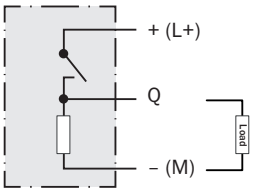
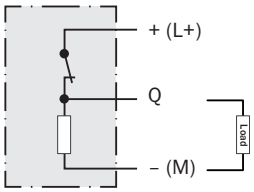
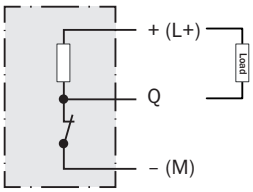
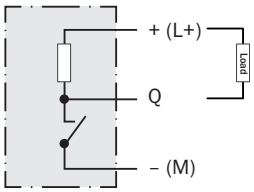
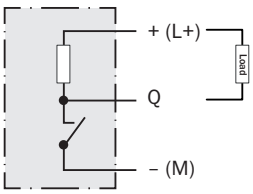
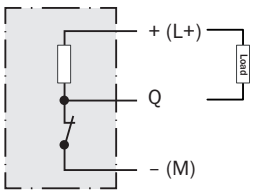
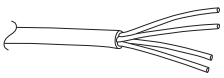
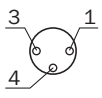
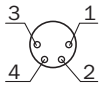
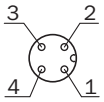
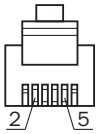
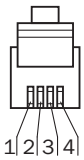
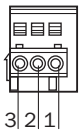
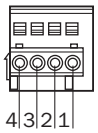
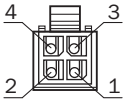
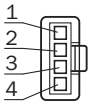
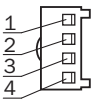
ZLD18 / ZLE18 -xx_xxx = Q2 output Health/Alarm is always the Q2 output		
-xxRxxx Health, PNP (≤ 100 mA)		
-xxTxxx Alarm, PNP (≤ 100 mA)		
-xxQxxx Health, NPN (≤ 100 mA)		
-xxSxxx Alarm, NPN (≤ 100 mA)		

Table 3: 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

7 Commissioning

1 **Alignment**

ZLD18-xxxxx2, ZLD18-xxxxx8, ZLE18-xxxxx2, ZLE18-xxxxx8: align the sensor with a suitable reflector. Select the position so that the red emitted light beam hits the center of the reflector. The sensor must have a clear view of the reflector, with no object in the path of the beam [see figure 2]. Ensure that the optical openings of the sensor and reflector are completely clear.

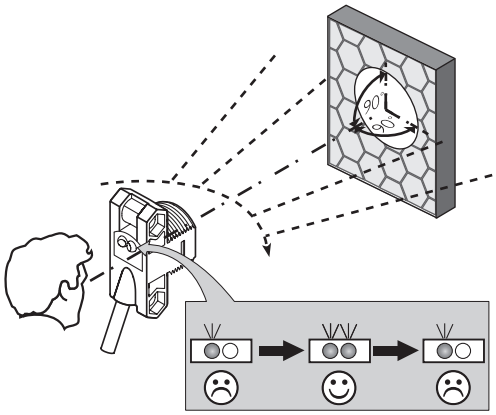
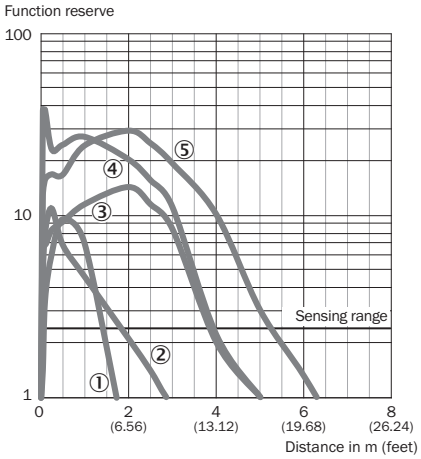


Figure 2: Alignment

2 **Sensing range**

Adjust the distance between the sensor and the reflector according to the corresponding diagram [see figure 3] (x = sensing range, y = operating reserve).

After alignment is complete, move a non-transparent object into the path of the beam. Use table 1 to check the function. If the switching output fails to behave in accordance with table 1, check the application conditions.



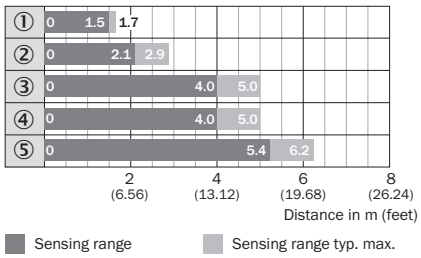


Figure 3: Characteristic curve

Figure 4: Bar graph

① PL23FT
② PL20A
③ P250
④ PL40A
⑤ PL80A

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, contaminated optical surface(s), and/or insufficient light remission from the target. The sensor may be equipped with a Health or Alarm output, which provide a discrete signal when the sensor is operating in the marginal condition. Refer to table 2 for additional detail on Health/Alarm output operation.

8 Troubleshooting

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

Table 4: Troubleshooting

LED indicator/fault pattern	Cause	Measures
Yellow LED does not light up even though the light beam is aligned to the reflector 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
Yellow LED flashes; if Alarm / Health is present then take note of the corresponding output signal	Sensor is still ready for operation, but the operating conditions are not ideal	Check the operating conditions: Fully align the beam of light (light spot) with the object / Clean the optical surfaces
Signal interruptions when object is detected	Depolarizing property of the object surface (e.g., tape), reflection	Change the position of the sensor

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

	ZLD18-xxxxx2	ZLD18-xxxxx8	ZLE18-xxxxx2	ZLE18-xxxxx8
Polarization	✓	✓	-	-
Sensing range (with reflector PL80A)	6.8 m	4.2 m	7.9 m	5.0 m
Sensing range max. (with reflector PL80A)	7.8 m	5.0 m	9.0 m	6.2 m
Light spot diameter/distance	11 mm / 500 mm	63 x 55 mm / 500 mm	11 mm / 500 mm	63 x 55 mm / 500 mm
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	500 Hz[2)]	500 Hz[2)]	500 Hz[2)]	500 Hz[2)]
Max. response time	1 ms[3)]	1 ms[3)]	1 ms[3)]	1 ms[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 5: Dimensional drawings

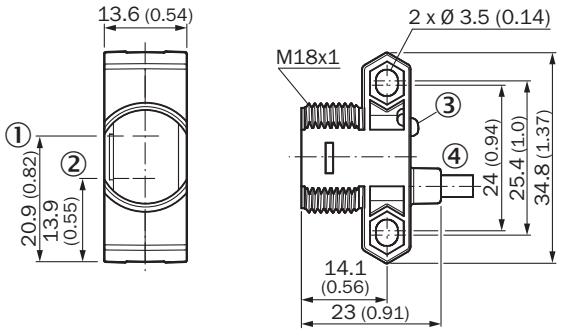


Figure 5: ZLx18-1xxxxx / ZLx18-Axxxxx, cable

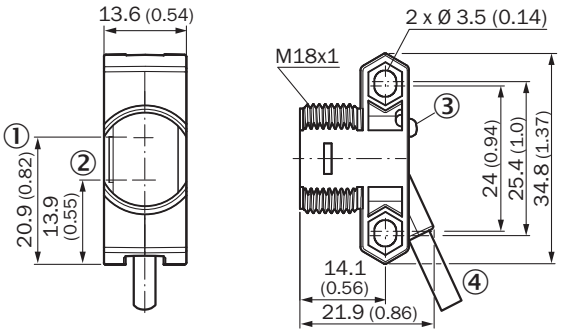


Figure 6: ZLx18-2xxxxx / ZLx18-Bxxxxx, cable

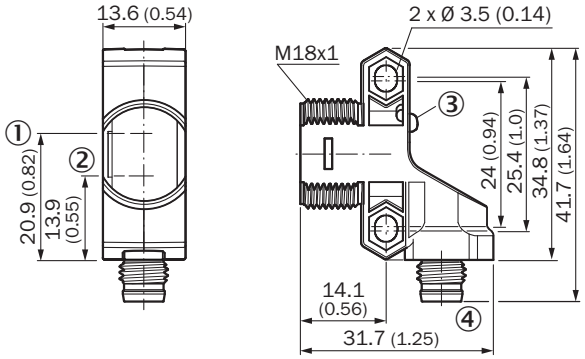


Figure 7: ZLx18-2xx5Ax / ZLx18-Bxx5Ax connector

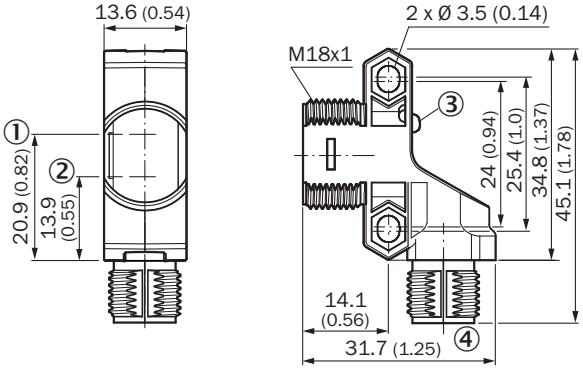


Figure 8: ZLx18-2xx4Ax / ZLx18-Bxx4Ax

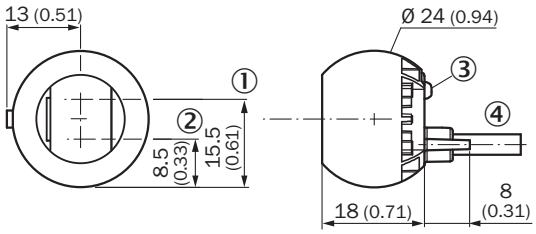


Figure 9: ZLx18-3xxxxx / ZLx18-Cxxxxx, cable

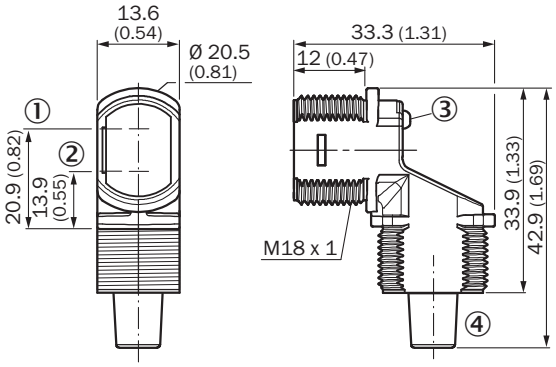


Figure 10: ZLx18-4xxxxx / ZLx18-Dxxxxx, cable

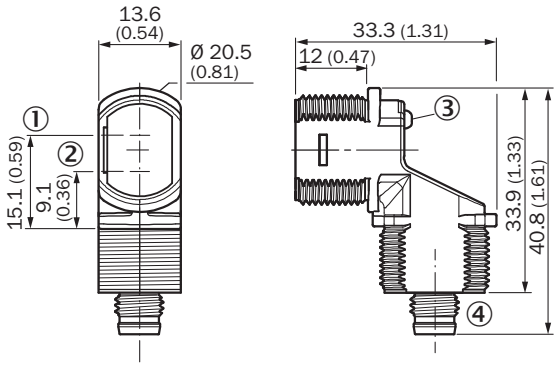


Figure 11: ZLx18-4xx5Ax / ZLx18-Dxx5Ax

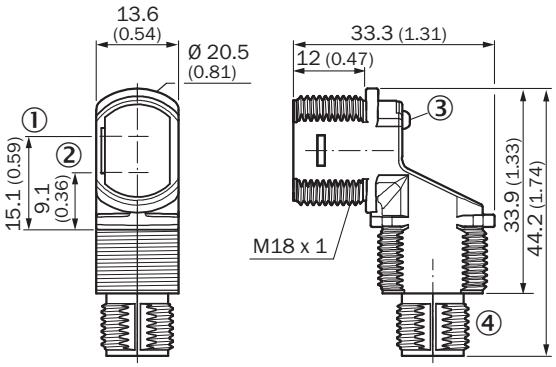


Figure 12: ZLx18-4xx4Ax / ZLx18-Dxx4Ax

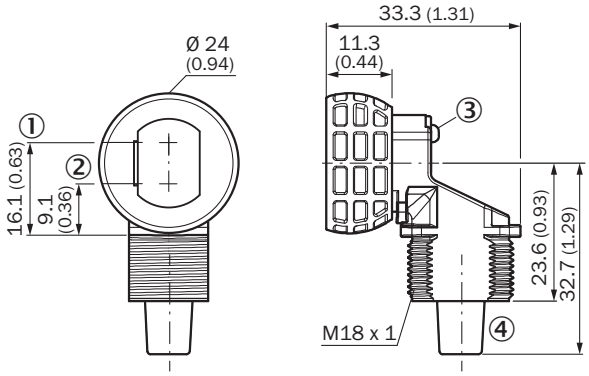


Figure 13: ZLx18-5xxxxx / ZLx18-Exxxxx, cable

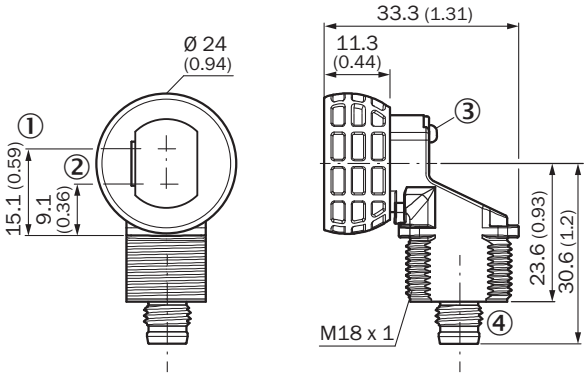


Figure 14: ZLx18-5xx5Ax / ZLx18-Exx5Ax

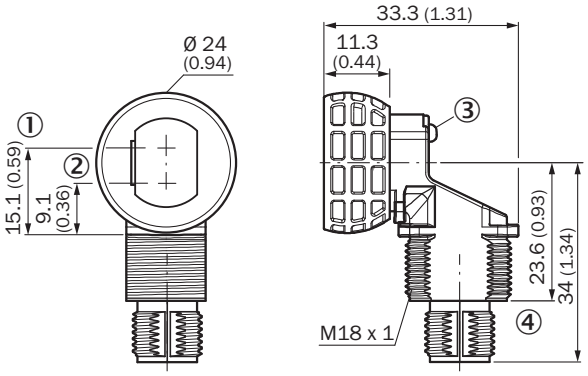


Figure 15: ZLx18-5xx4Ax / ZLx18-Exx4Ax

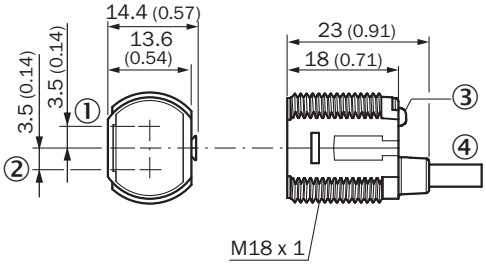


Figure 16: ZLx18-6xxxxx / ZLx18-Fxxxxx, cable

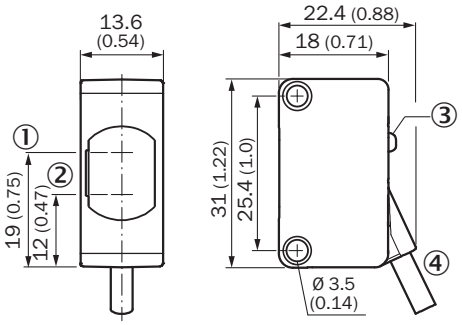


Figure 17: ZLx18-7xxxxx / ZLx18-Gxxxxx, cable

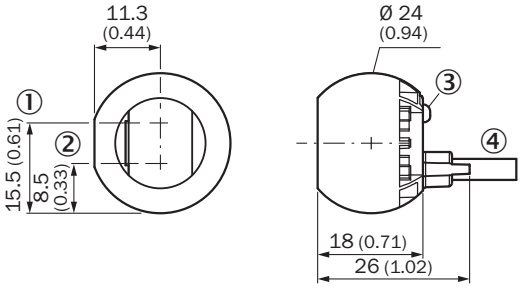


Figure 18: ZLx18-8xxxxx / ZLx18-Hxxxxx, cable

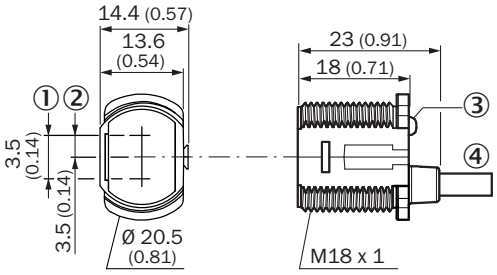


Figure 19: ZLx18-9xxxxx / ZLx18-Jxxxxx, cable

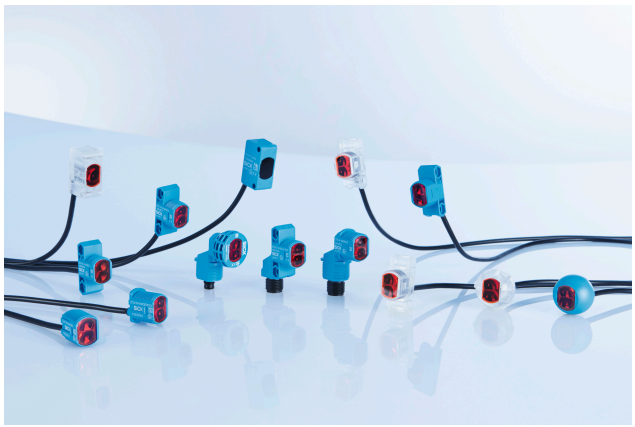
① optical axis, sender
② optical axis, receiver
③ LED status indicators
④ connection / strain relief

BETRIEBSANLEITUNG

ZLD18 / ZLE18

Rund-Lichttaster und Lichtschranken

SICK
Sensor Intelligence.



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Beschriebenes Produkt

Z18 SimpleSense

ZLD18 / ZLE18

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 ZLD18 / ZLE18 ist eine opto-elektronische Reflexions-Lichtschranke (im Folgenden Sensor genannt) und wird zum optischen, berührungslosen Erfassen von Sachen, Tieren und Personen eingesetzt. Zur Funktion wird ein Reflektor benötigt. Bei jeder anderen Verwendung und bei Veränderungen am Produkt verfällt jeglicher Gewährleistungsanspruch gegenüber der SICK AG.

15 Betriebs- und Statusanzeigen

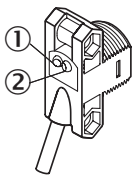


Abbildung 20: Anzeigeelemente

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

16 Montage

Sensor und Reflektor an geeignete Befestigungswinkel montieren (siehe SICK-Zubehör-Programm). Sensor und Reflektor zueinander ausrichten.

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.

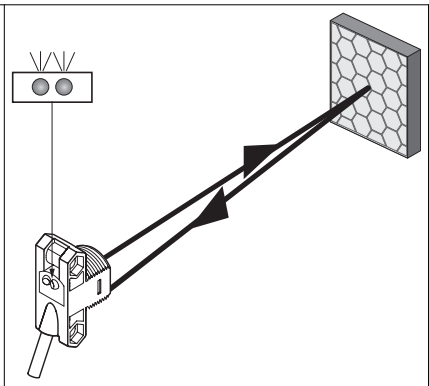
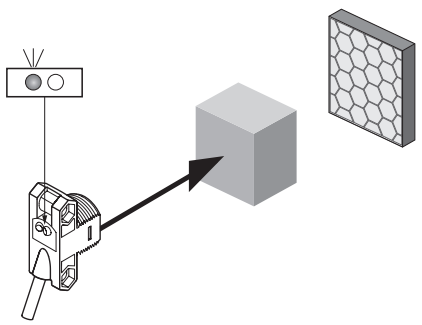
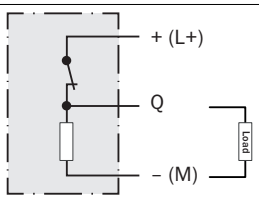
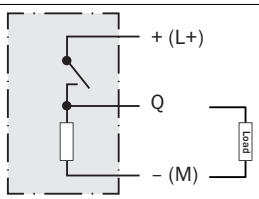
Erläuterung der in Tabelle 1 bis 3 verwendeten Anschlussterminologie:

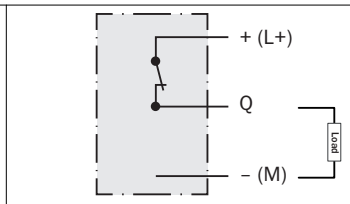
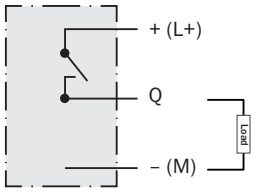
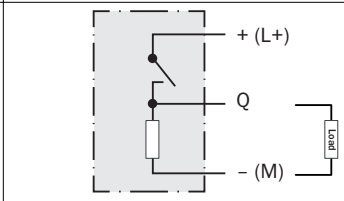
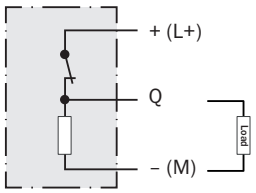
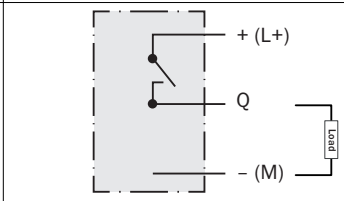
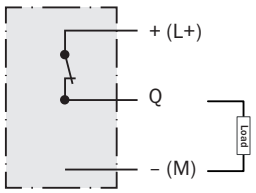
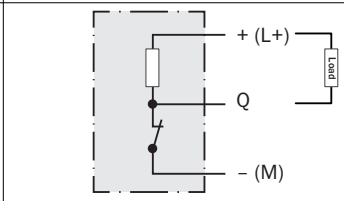
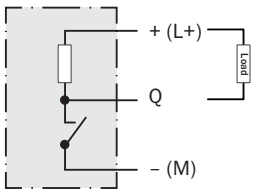
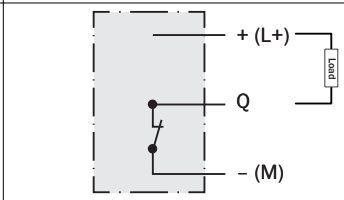
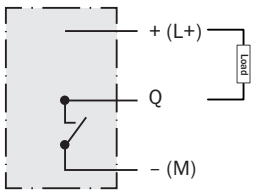
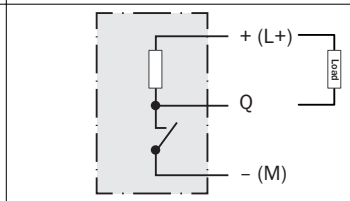
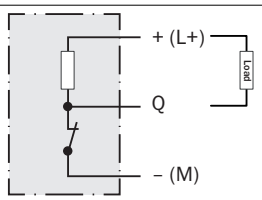
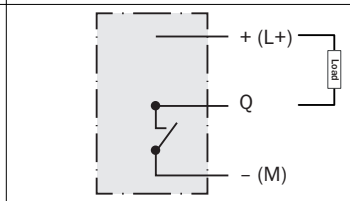
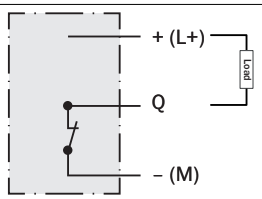
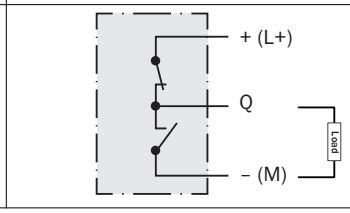
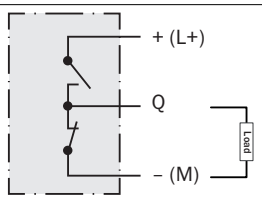
BN = braun
WH = weiß
BU = blau
BK = schwarz
n. c. = nicht angeschlossen
Q1 = Schaltausgang 1
Q2 = Schaltausgang 2
L+ = Versorgungsspannung (U_V)
M = Masse
L.ON = hellschaltend
D.ON = dunkelschaltend

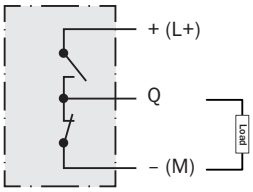
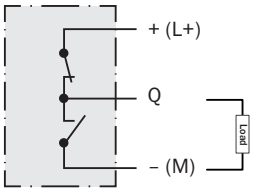
HINWEIS
Die Sensorausgänge sind möglicherweise mit einer werkseitig eingestellten EIN- und/oder AUS-Verzögerung ausgestattet. Dies ist am Suffix Txx am Ende der Modellnummer erkennbar (Zxx18-xxxxxxTxx).

Anschluss- und Ausgangsdetails:

Tabelle 6: Ausgangsfunktion

ZLD18 / ZLE18 -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 7: Alarm/Health-Betrieb

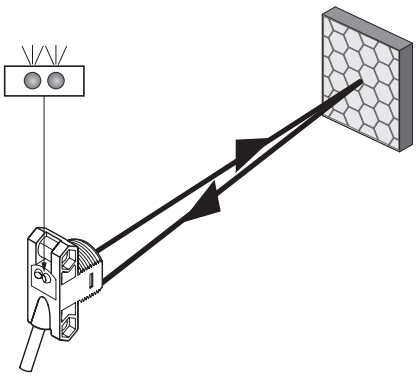
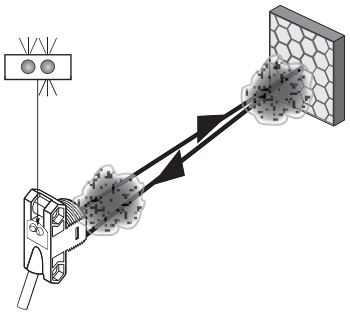
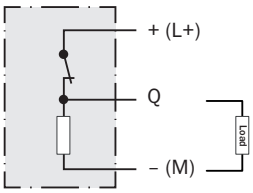
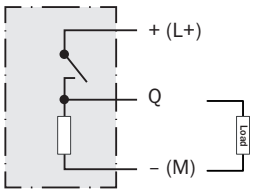
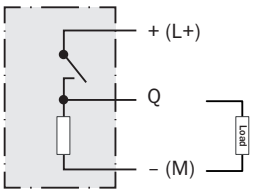
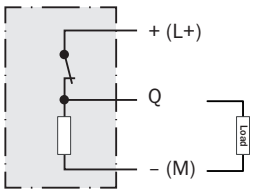
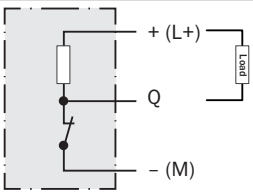
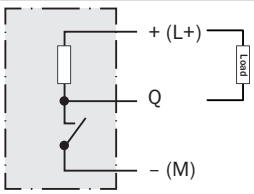
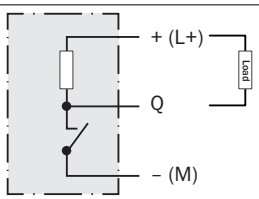
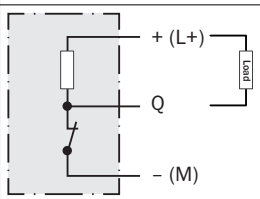
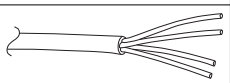
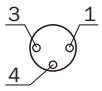
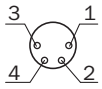
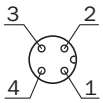
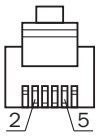
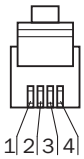
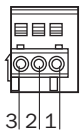
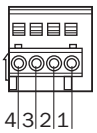
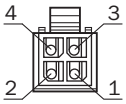
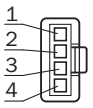
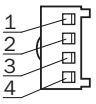
ZLD18 / ZLE18 -xx_xxx = Ausgang Q2 Health/Alarm ist stets der Ausgang Q2		
-xxRxxx Health, PNP (≤ 100 mA)		
-xxTxxx Alarm, PNP (≤ 100 mA)		
-xxQxxx Health, NPN (≤ 100 mA)		
-xxSxxx Alarm, NPN (≤ 100 mA)		

Tabelle 8: 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

18 Inbetriebnahme

1 **Ausrichtung**

ZLD18-xxxxx2, ZLD18-xxxxx8, ZLE18-xxxxx2, ZLE18-xxxxx8: Sensor auf geeigneten Reflektor ausrichten. Positionierung so wählen, dass der rote Sendelichtstrahl in der Mitte des Reflektors auftrifft. Der Sensor muss freie Sicht auf den Reflektor haben, es darf sich kein Objekt im Strahlengang befinden [siehe Abbildung 21]. Es ist darauf zu achten, dass die optischen Öffnungen von Sensor und Reflektor vollständig frei sind.
Sensor auf geeigneten Reflektor ausrichten. Positionierung so wählen, dass das Infrarotlicht (nicht sichtbar) in der Mitte des Reflektors auftrifft. Die korrekte Ausrichtung kann nur über die Anzeige-LEDs erkannt werden. Siehe dazu Abbildung 21]. Der Sensor muss freie Sicht auf den Reflektor haben, es darf sich kein Objekt im Strahlengang befinden. Es ist darauf zu achten, dass die optischen Öffnungen von Sensor und Reflektor vollständig frei sind.

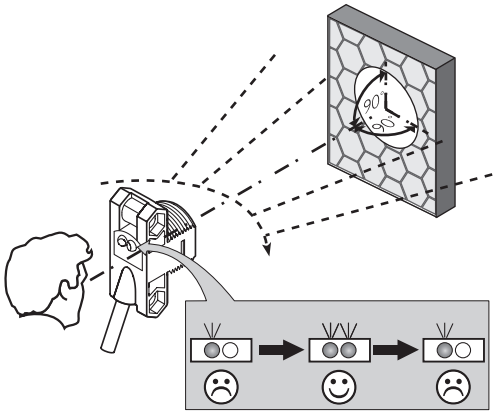
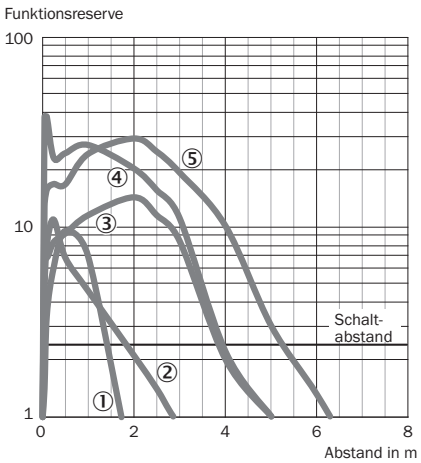


Abbildung 21: Ausrichtung

2 **Schaltabstand**

Den Abstand zwischen Sensor und Reflektor gemäß dem entsprechenden Diagramm anpassen [siehe Abbildung 22] (x = Schaltabstand, y = Funktionsreserve).

Nach der Ausrichtung ein nicht transparentes Objekt im Strahlengang platzieren. Mithilfe von Tabelle 6 die Funktion überprüfen. Wenn sich der Schaltausgang nicht entsprechend Tabelle 6 verhält, die Einsatzbedingungen prüfen.



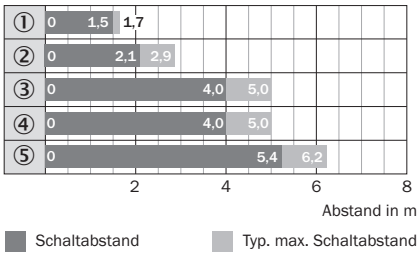


Abbildung 22: Kennlinie

Abbildung 23: Balkenanzeige

① PL23FT
② PL20A
③ P250
④ PL40A
⑤ PL80A

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, verschmutzter Optikflächen und/oder einer unzureichenden Lichtremission vom Objekt sein. Der Sensor verfügt möglicherweise über einen Health- oder Alarmausgang, der ein diskretes Signal ausgibt, wenn der Sensor unter dieser Grenzbedingung betrieben wird. Siehe Tabelle 7 für nähere Einzelheiten zur Funktion des Health-/Alarmausgangs.

19 Störungsbehebung

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

Tabelle 9: Stöhrungsbehebung

Anzeige-LED / Fehlerbild	Ursache	Maßnahme
gelbe LED leuchtet nicht, obwohl der Lichtstrahl auf den Reflektor ausgerichtet ist und kein Objekt im Strahlengang ist	keine Spannung oder Spannung unterhalb der Grenzwerte	Spannungsversorgung prüfen, den gesamten elektrischen Anschluss prüfen (Leitungen und Steckerverbindungen)
	Spannungsunterbrechungen	Sicherstellen einer stabilen Spannungsversorgung ohne Unterbrechungen
	Sensor ist defekt	Wenn Spannungsversorgung in Ordnung ist, dann Sensor austauschen
Gelbe LED blinkt; wenn Alarm/ Health vorhanden ist, das entsprechende Ausgangssignal beachten	Sensor ist dennoch betriebsbereit, doch die Betriebsbedingungen sind nicht ideal	Betriebsbedingungen prüfen: Den Lichtstrahl (Lichtfleck) vollständig am Objekt ausrichten/Optikflächen reinigen.
Signalunterbrechungen bei Objektdetektion	Depolarisierende Eigenschaft der Objektoberfläche (z. B. Folie), Umspiegelung	Position des Sensors verändern

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

	ZLD18-xxxxx2	ZLD18-xxxxx8	ZLE18-xxxxx2	ZLE18-xxxxx8
Polarisation	✓	✓	-	-
Schaltabstand (mit Reflektor PL80A)	6.8 m	4.2 m	7.9 m	5.0 m
Schaltabstand max. (mit Reflektor PL80A)	7.8 m	5.0 m	9.0 m	6.2 m
Lichtfleckdurchmesser/Entfernung	11 mm / 500 mm	63 x 55 mm / 500 mm	11 mm / 500 mm	63 x 55 mm / 500 mm
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.	500 Hz[2]	500 Hz[2]	500 Hz[2]	500 Hz[2]
Ansprechzeit max.	1 ms[3]	1 ms[3]	1 ms[3]	1 ms[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 10: Maßzeichnungen

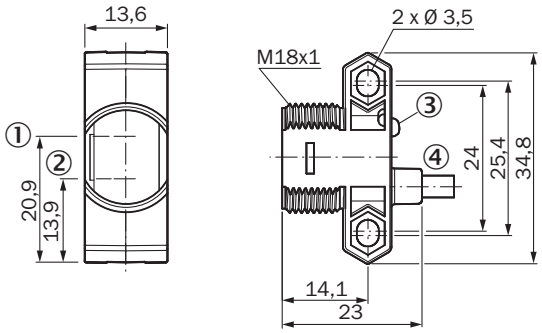


Abbildung 24: ZLx18-1xxxxx/ZLx18-Axxxxx, Leitung

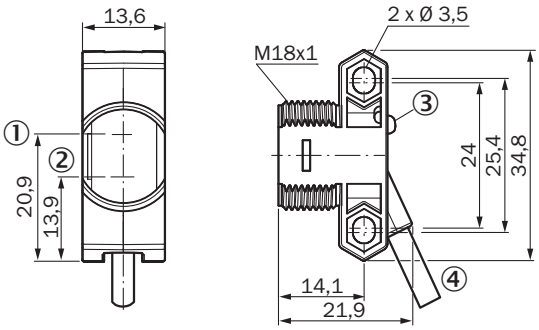


Abbildung 25: ZLx18-2xxxxx/ZLx18-Bxxxxx, Leitung

8021946 | SICK
Subject to change without notice

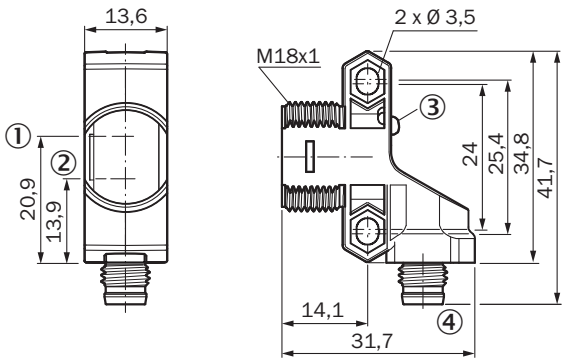


Abbildung 26: ZLx18-2xx5Ax/ZLx18-Bxx5Ax, Steckverbinder

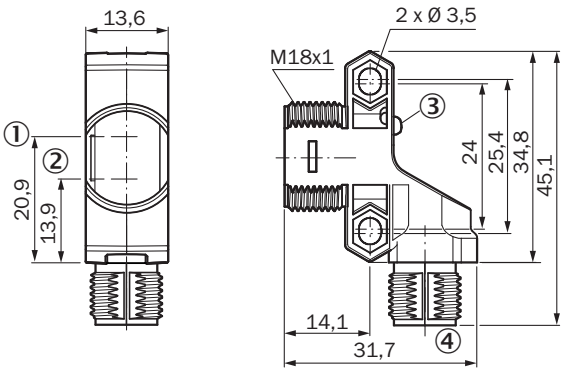


Abbildung 27: ZLx18-2xx4Ax/ZLx18-Bxx4Ax

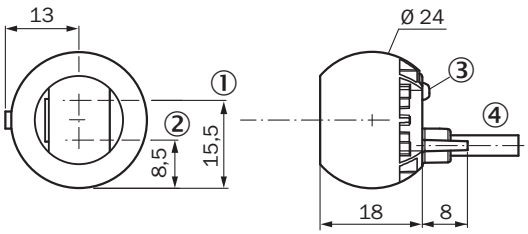


Abbildung 28: ZLx18-3xxxxx/ZLx18-Cxxxxx, Leitung

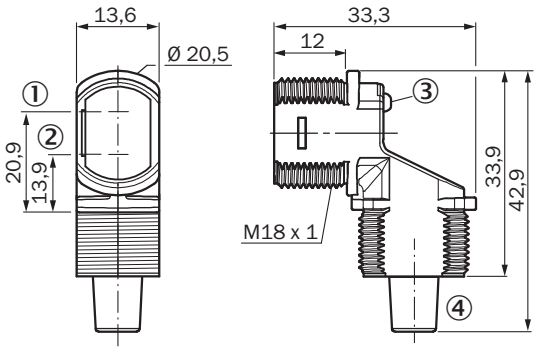


Abbildung 29: ZLx18-4xxxxx/ZLx18-Dxxxxx, Leitung

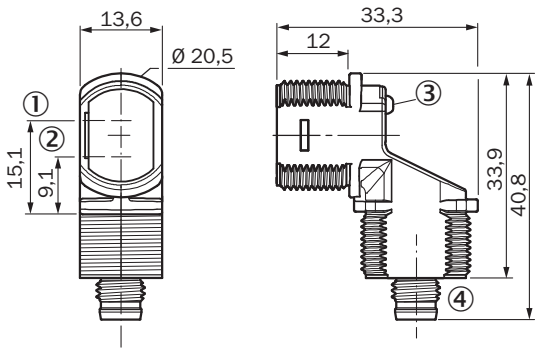


Abbildung 30: ZLx18-4xx5Ax/ZLx18-Dxx5Ax

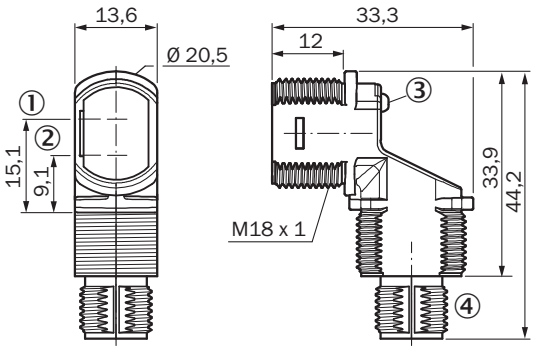


Abbildung 31: ZLx18-4xx4Ax/ZLx18-Dxx4Ax

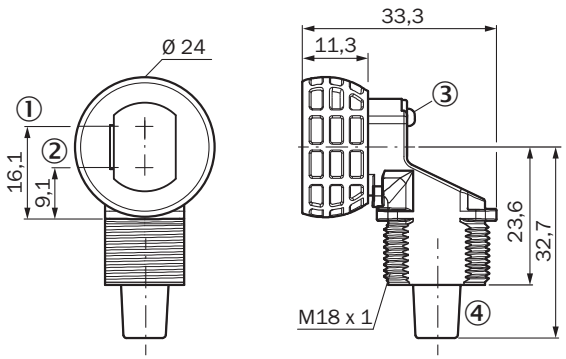


Abbildung 32: ZLx18-5xxxxx/ZLx18-Exxxxx, Leitung

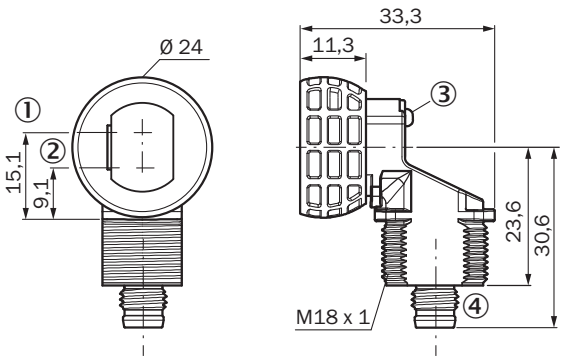


Abbildung 33: ZLx18-5xx5Ax/ZLx18-Exx5Ax

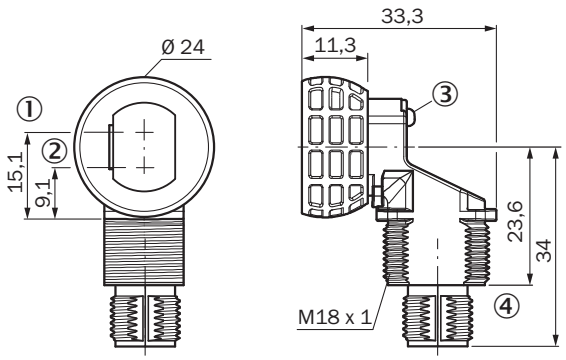


Abbildung 34: ZLx18-5xx4Ax/ZLx18-Exx4Ax

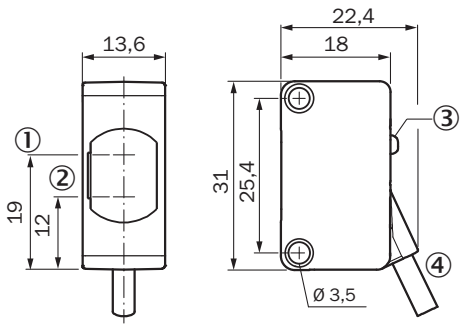


Abbildung 36: ZLx18-7xxxxx/ZLx18-Gxxxxx, Leitung

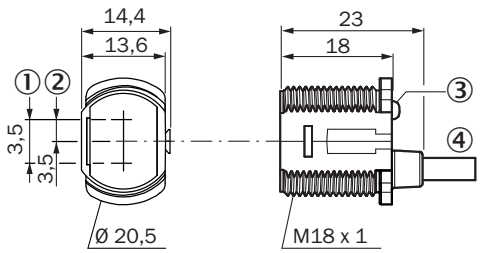


Abbildung 38: ZLx18-9xxxxx/ZLx18-Jxxxxx, Leitung

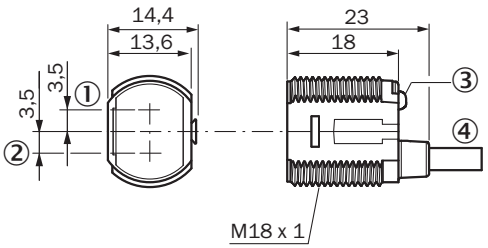


Abbildung 35: ZLx18-6xxxxx/ZLx18-Fxxxxx, Leitung

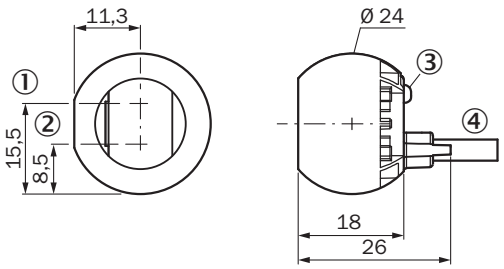


Abbildung 37: ZLx18-8xxxxx/ZLx18-Hxxxxx, Leitung

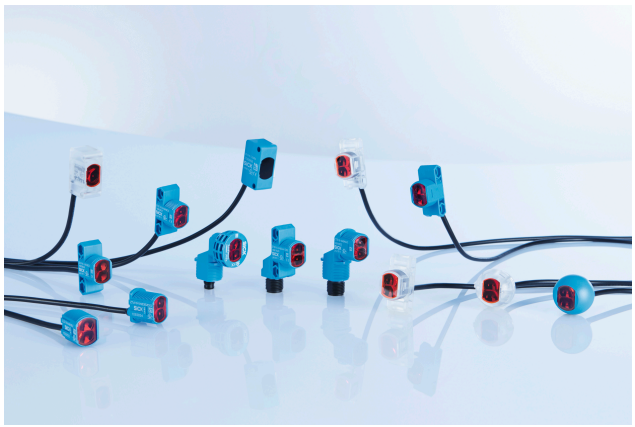
① Optikachse, Sender
② Optikachse, Empfänger
③ LED-Statusanzeigen
④ Anschluss/Zugentlastung

NOTICE D'INSTRUCTION

ZLD18 / ZLE18

Capteurs photoélectriques cylindriques

SICK
Sensor Intelligence.



de
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ja
pt
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zh

Produit décrit

Z18 SimpleSense

ZLD18 / ZLE18

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 ZLD18 / ZLE18 est un capteur photoélectrique de proximité opto-électronique rétro-réfléchissant (appelé ci-dessous « capteur ») qui est utilisé pour la détection d'objets optique d'objets, d'animaux et de personnes sans contact. Un réflecteur est nécessaire pour faire fonctionner ce produit. 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

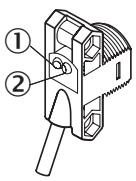


Illustration 39: Afficheurs d'état

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

27 Montage

Monter le capteur et le réflecteur sur une équerre de fixation (voir la gamme d'accessoires SICK). Aligner le capteur sur le réflecteur.

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).

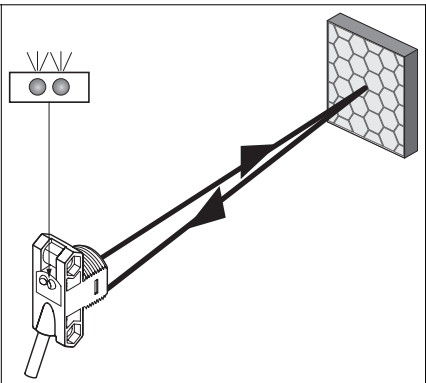
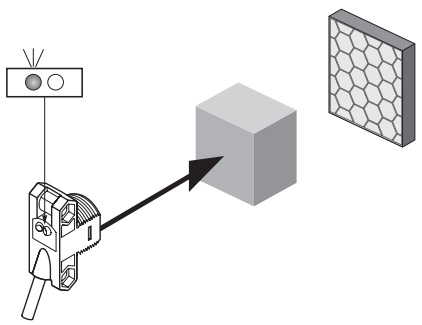
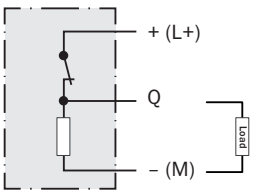
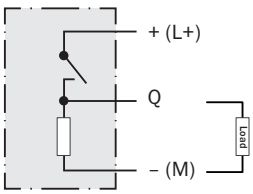
Explication de la terminologie de raccordement utilisée aux tableaux 1 à 3 :

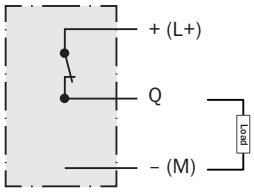
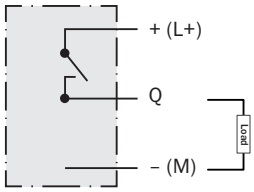
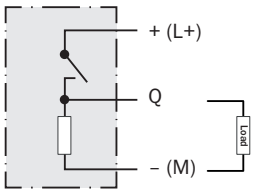
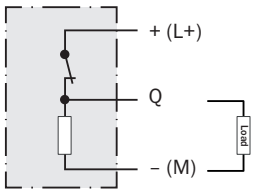
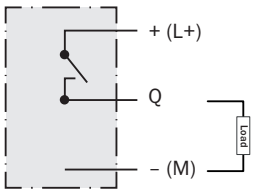
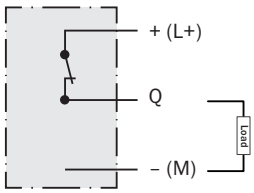
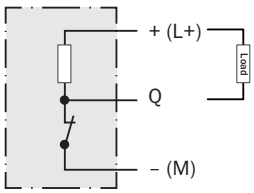
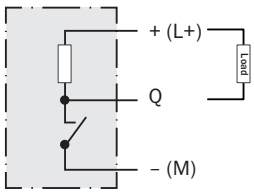
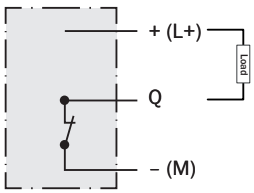
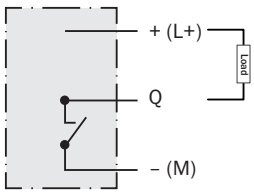
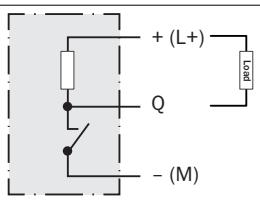
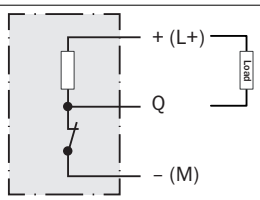
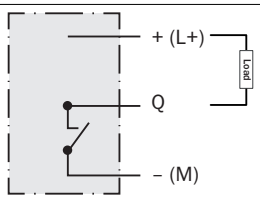
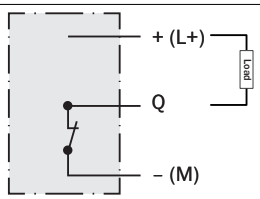
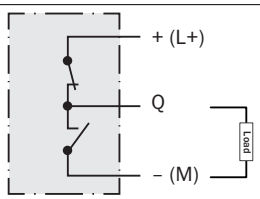
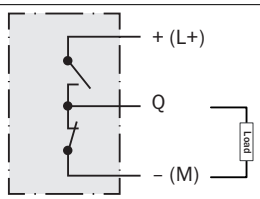
BN = Brown (Marron)
WH = White (Blanc)
BU = Blue (Bleu)
BK = Black (Noir)
n. c. = non connecté
Q1 = sortie de commutation 1
Q2 = sortie de commutation 2
L+ = tension d'alimentation (U_V)
M = poids
L.ON = commutation claire
D.ON = commutation sombre

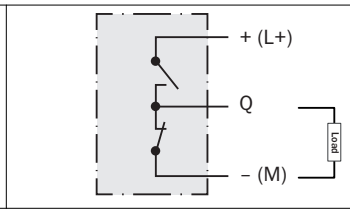
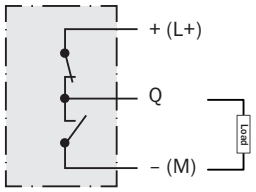
REMARQUE
Les sorties du capteur sont livrées équipées avec un réglage par défaut activation temporisée ou désactivation temporisée. Cela est indiqué par un suffixe Txx à la fin du numéro du modèle (Zxx18-xxxxxxTxx).

Détails sur la connexion et la sortie :

Tableau 11: Fonctionnement de la sortie

ZLD18 / ZLE18 -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 12: Mode alarme/santé

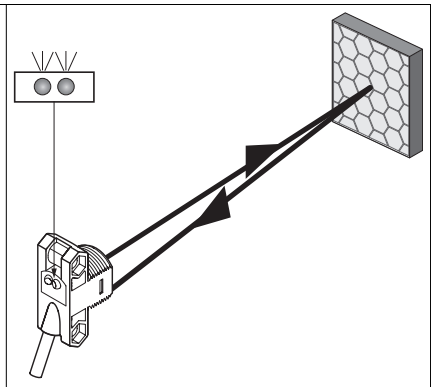
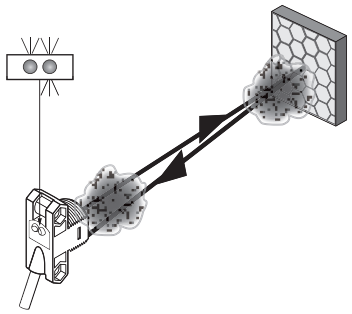
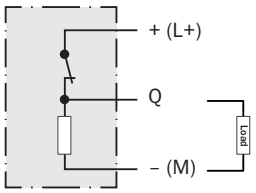
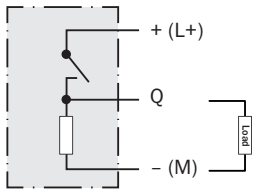
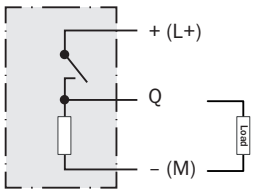
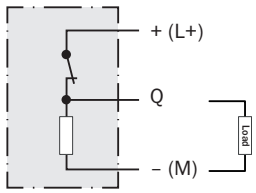
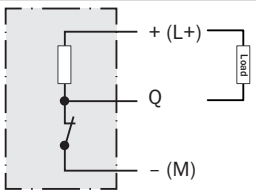
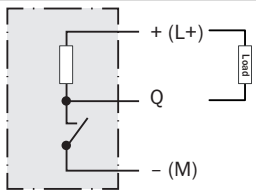
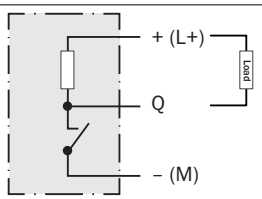
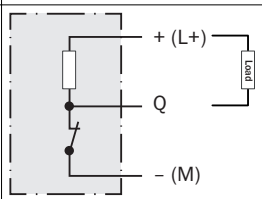
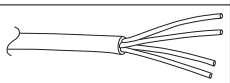
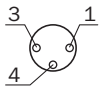
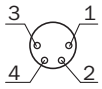
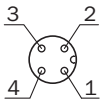
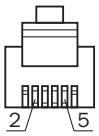
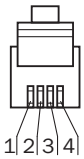
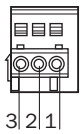
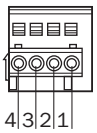
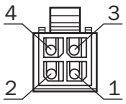
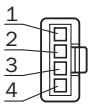
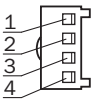
ZLD18 / ZLE18 -xx_xxx = sortie Q2 Santé/alarme est toujours sur la sortie Q2		
-xxRxxx Santé, PNP (≤ 100 mA)		
-xxTxxx Alarme, PNP (≤ 100 mA)		
-xxQxxx Santé, NPN (≤ 100 mA)		
-xxSxxx Alarme, NPN (≤ 100 mA)		

Tableau 13: 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

29 Mise en service

1 **Alignement**

ZLD18-xxxxx2, ZLD18-xxxxx8, ZLE18-xxxxx2, ZLE18-xxxxx8 : aligner le capteur avec un réflecteur adapté. Choisir la position de sorte que le faisceau lumineux émis rouge touche le réflecteur en plein centre. Le capteur doit disposer d'un champ de vision dégagé sur le réflecteur, il ne doit donc y avoir aucun objet dans la trajectoire du faisceau [voir illustration 40]. S'assurer que les ouvertures optiques du capteur et du réflecteur sont parfaitement dégagées.

Aligner le capteur sur un réflecteur adapté. Sélectionner la position de sorte que le faisceau infrarouge (invisible) touche le réflecteur en plein milieu. Seules les LED permettent de savoir si l'alignement est correct. Voir illustration 40]. Le capteur doit disposer d'un champ de vision dégagé sur le réflecteur, il ne doit donc y avoir aucun objet dans la trajectoire du faisceau. S'assurer que les ouvertures optiques du capteur et du réflecteur sont parfaitement dégagées.

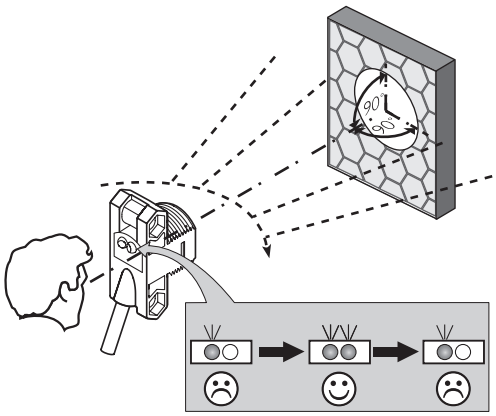


Illustration 40: Alignement

2 **Distance de commutation**

Ajuster la distance entre le capteur et le réflecteur selon le schéma correspondant [voir illustration 41] (x = distance de commutation, y = réserve de fonctionnement).

Une fois l'alignement terminé, déplacer un objet non transparent dans la trajectoire du faisceau. Utiliser tableau 11 pour contrôler le fonctionnement. Si la sortie de commutation ne se comporte pas selon les indications de tableau 11, contrôler les conditions d'application.

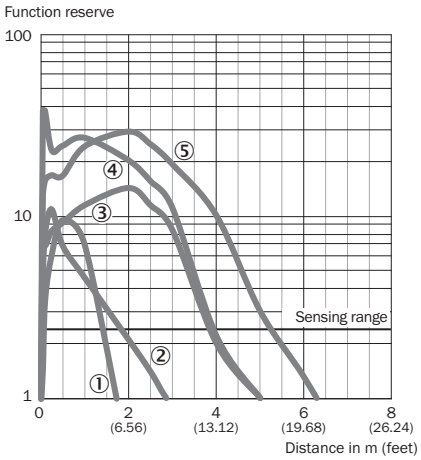


Illustration 41: Courbe caractéristique

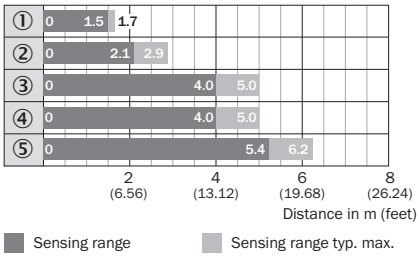


Illustration 42: Afficheur bargraph

① PL23FT
② PL20A
③ P250
④ PL40A
⑤ PL80A

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, des surfaces optiques contaminées, et/ou d'une rémission de la lumière insuffisante de la cible. Le capteur pourrait être équipé d'une sortie Santé ou Alarme qui émet un signal discret lorsque le capteur fonctionne dans des conditions limitées. Voir tableau 12 pour des détails supplémentaires sur le fonctionnement de la sortie Santé/Alarme.

30 Élimination des défauts

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

Tableau 14: Suppression des défauts

LED d'état / image du défaut	Cause	Mesure
LED jaune ne s'allume pas, bien que le faisceau lumineux soit aligné sur le réflecteur et qu'aucun objet ne se trouve 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
LED jaune clignote ; si alarme/santé est présent, veuillez prendre en compte le signal de sortie correspondant	Le capteur est toujours opérationnel, mais les conditions de fonctionnement ne sont pas idéales	Vérifier les conditions de fonctionnement : aligner complètement le faisceau de lumière (spot lumineux) sur l'objet/nettoyer les surfaces optiques
Coupures de signal lors de détection d'objet	Propriété dépolarisante de la surface de l'objet (par ex. film), réflexions	Modifiez la position du capteur

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

	ZLD18-xxxxx2	ZLD18-xxxxx8	ZLE18-xxxxx2	ZLE18-xxxxx8
Polarisation	✓	✓	-	-
Portée (avec réflecteur PL80A)	6.8 m	4.2 m	7.9 m	5.0 m
Portée max. (avec réflecteur PL80A)	7.8 m	5.0 m	9.0 m	6.2 m
Diamètre spot / distance	11 mm / 500 mm	63 x 55 mm / 500 mm	11 mm / 500 mm	63 x 55 mm / 500 mm
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.	500 Hz[2)]	500 Hz[2)]	500 Hz[2)]	500 Hz[2)]
Temps de réponse max.	1 ms[3)]	1 ms[3)]	1 ms[3)]	1 ms[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 15: Plans cotés

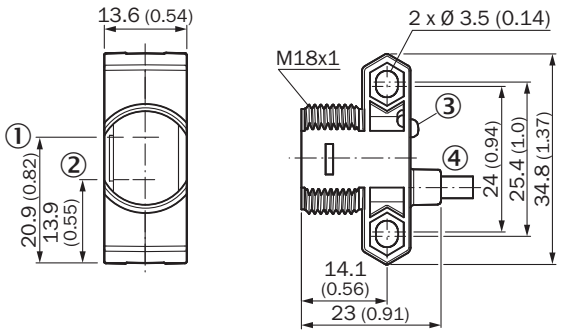


Illustration 43: ZLx18-1xxxxx/ZLx18-Axxxxx, câble

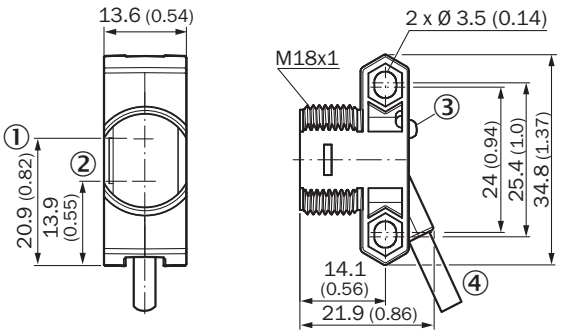


Illustration 44: ZLx18-2xxxxx/ZLx18-Bxxxxx, câble

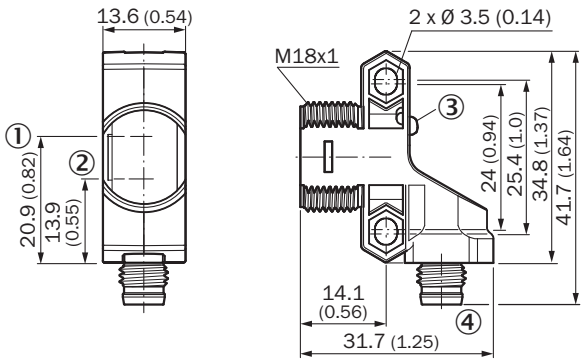


Illustration 45: ZLx18-2xx5Ax/ZLx18-Bxx5Ax connecteur

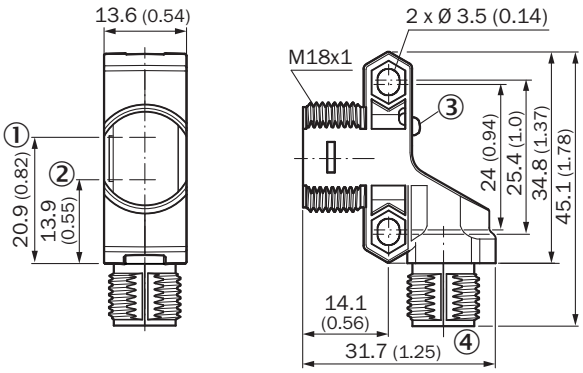


Illustration 46: ZLx18-2xx4Ax/ZLx18-Bxx4Ax

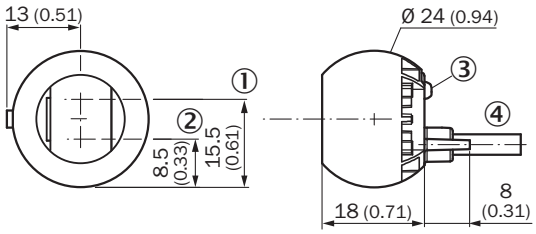


Illustration 47: ZLx18-3xxxxx/ZLx18-Cxxxxx, câble

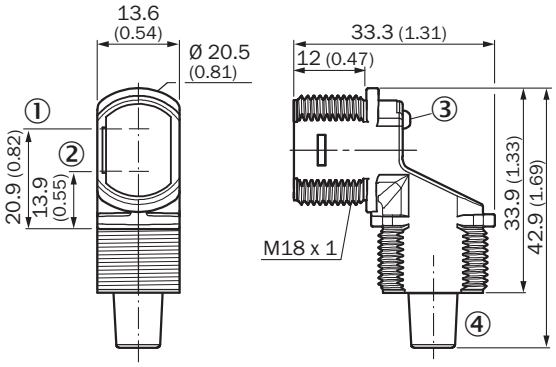


Illustration 48: ZLx18-4xxxxx/ZLx18-Dxxxxx, câble

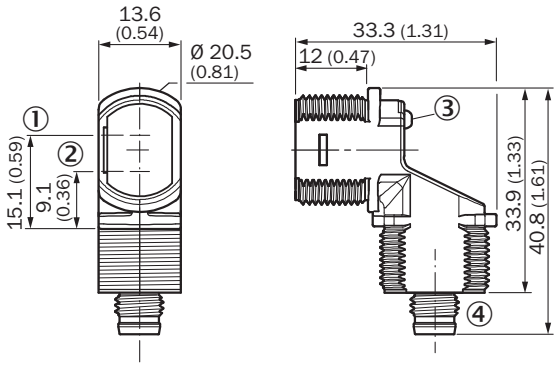


Illustration 49: ZLx18-4xx5Ax/ZLx18-Dxx5Ax

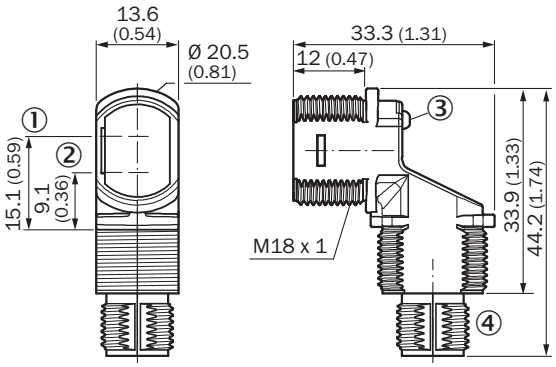


Illustration 50: ZLx18-4xx4Ax/ZLx18-Dxx4Ax

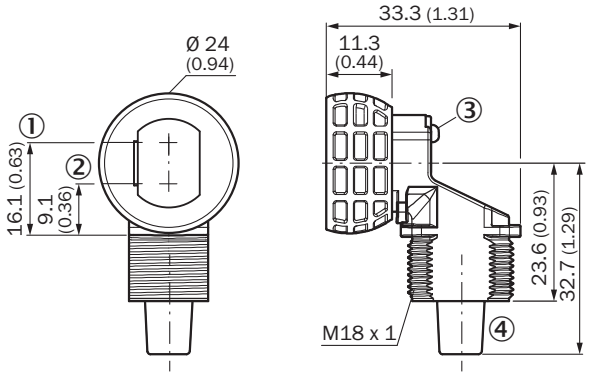


Illustration 51: ZLx18-5xxxxx/ZLx18-Exxxxx, câble

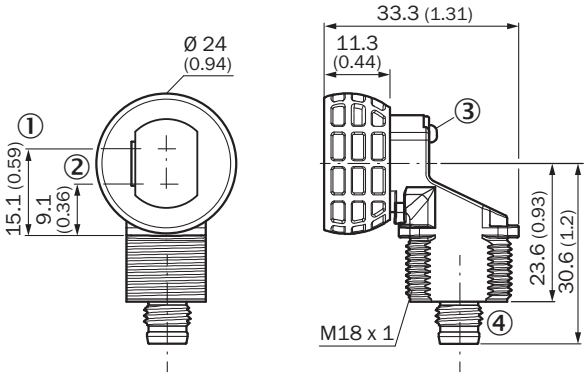


Illustration 52: ZLx18-5xx5Ax/ZLx18-Exx5Ax

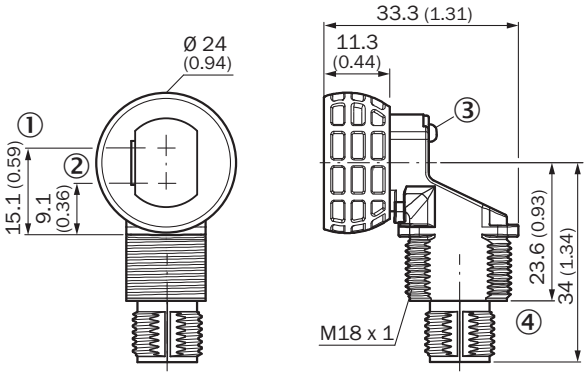


Illustration 53: ZLx18-5xx4Ax/ZLx18-Exx4Ax

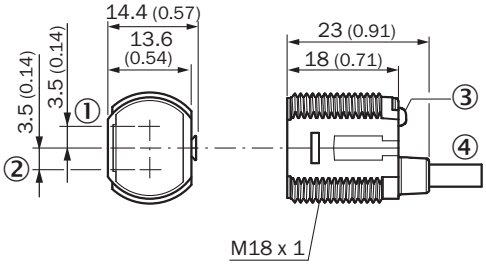


Illustration 54: ZLx18-6xxxxx/ZLx18-Fxxxxx, câble

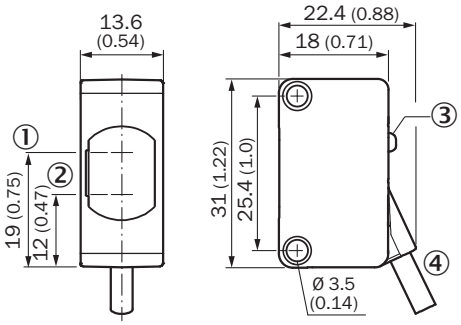


Illustration 55: ZLx18-7xxxxx/ZLx18-Gxxxxx, câble

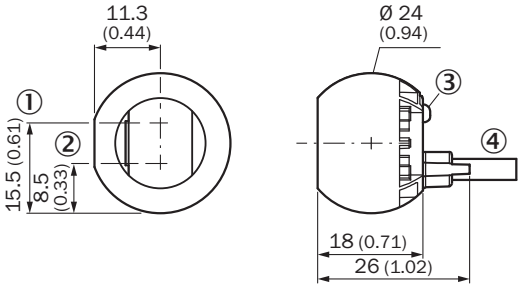


Illustration 56: ZLx18-8xxxxx/ZLx18-Hxxxxx, câble

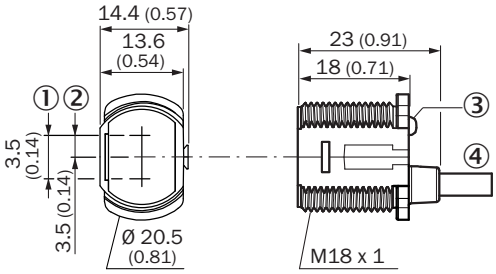


Illustration 57: ZLx18-9xxxxx/ZLx18-Jxxxxx, câble

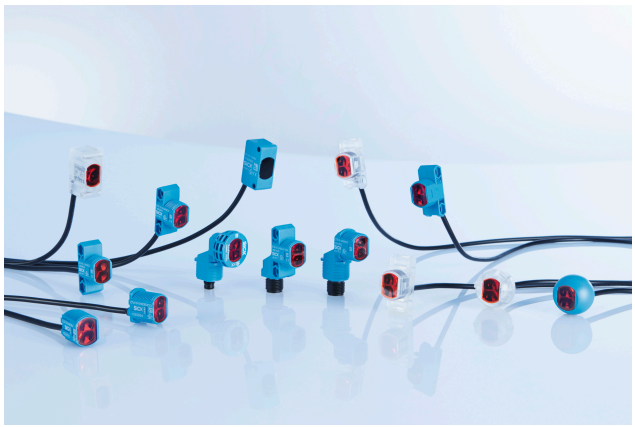
① axe optique, émetteur
② axe optique, récepteur
③ Afficheur d'état à LED
④ Raccordement/serre-câble

ISTRUZIONI PER L'USO

ZLD18 / ZLE18

Sensori fotoelettrici cilindrici

SICK
Sensor Intelligence.



de
en
es
fr
it
ja
pt
ru
zh

Descrizione prodotto

Z18 SimpleSense

ZLD18 / ZLE18

Produttore

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

Note legali

Documento originale

Questo documento è un originale della ditta SICK AG.

Indice

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

ZLD18 / ZLE18 è un sensore fotoelettrico optoelettronico retroriflettente (di seguito denominato "sensore") per il rilevamento ottico senza contatto di oggetti, animali e persone. Il funzionamento di questo prodotto richiede un riflettore. 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

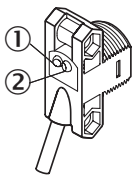


Figura 58: Indicatori di stato

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

38 Montaggio

Montare il sensore e il riflettore su staffe di fissaggio adatte (vedere il catalogo degli accessori SICK). Orientare reciprocamente il sensore e il rispettivo riflettore.

8021946 | SICK
Subject to change without notice

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).

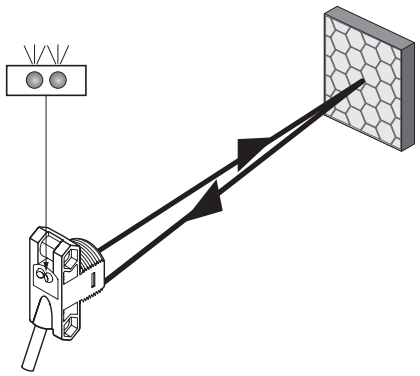
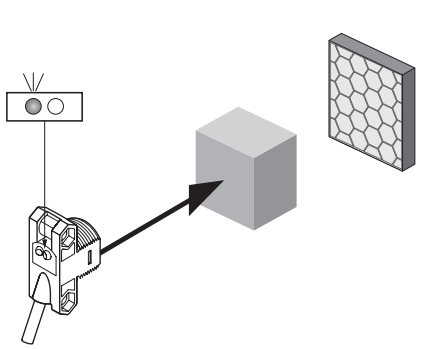
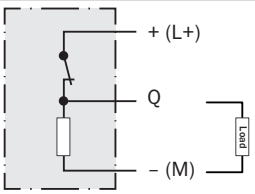
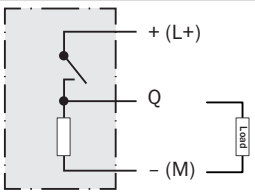
Spiegazione della terminologia di collegamento utilizzata nelle tabelle 1-3:

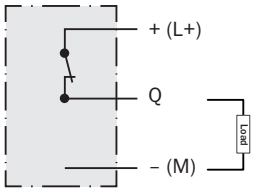
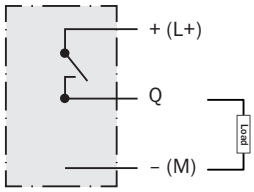
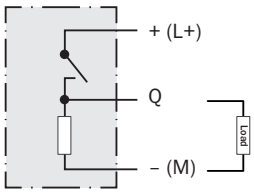
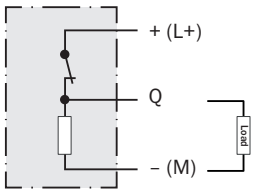
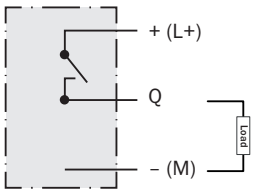
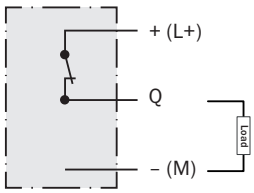
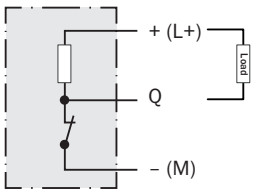
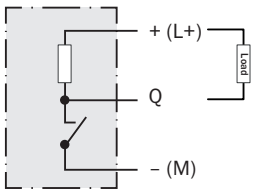
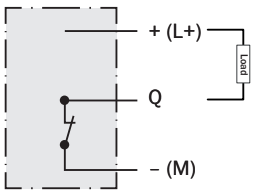
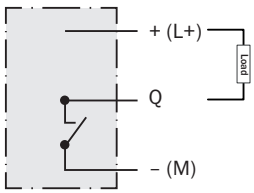
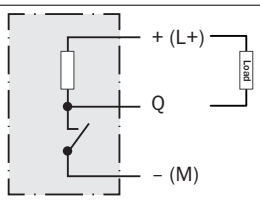
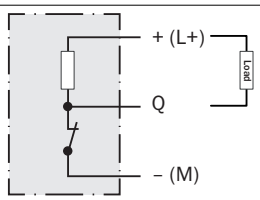
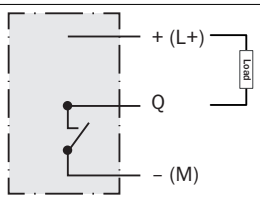
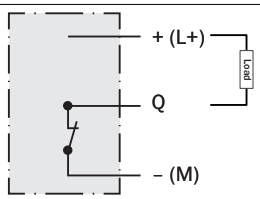
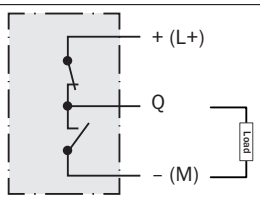
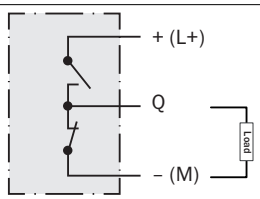
BN = marrone
WH = bianco
BU = blu
BK = nero
n. c. = non collegato
Q1 = uscita di commutazione 1
Q2 = uscita di commutazione 2
L+ = tensione di alimentazione (V_S)
M = peso
L.ON = light operate (funzionamento light on)
D.ON = dark operate (funzionamento dark on)

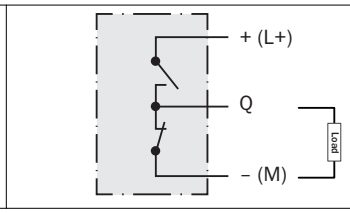
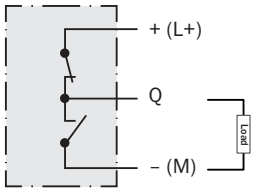
INDICAZIONE
Le uscite del sensore possono essere dotate di un ritardo di accensione e/o di spegnimento impostato in fabbrica. Questo è indicato da un suffisso Txx alla fine del numero di modello (Zxx18-xxxxxxTxx).

Dettagli del collegamento e dell'uscita:

Tabella 16: uscita DC

ZLD18 / ZLE18 -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 17: Funzionamento Allarme/Salute

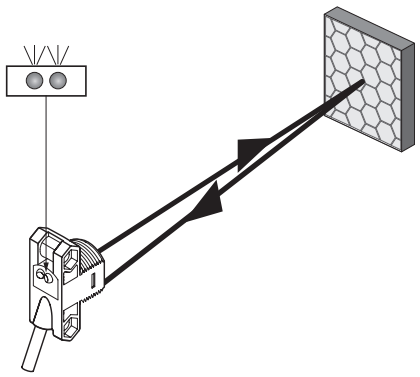
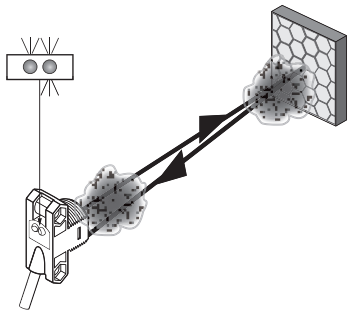
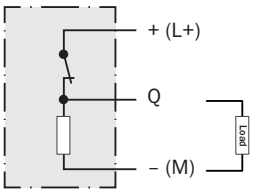
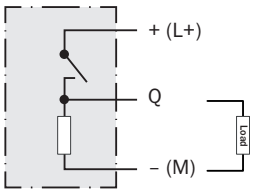
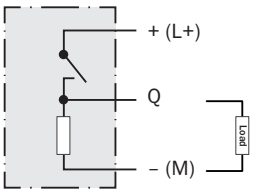
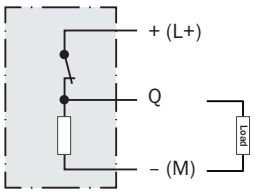
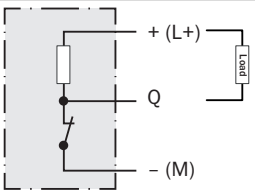
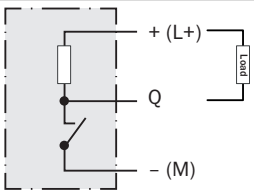
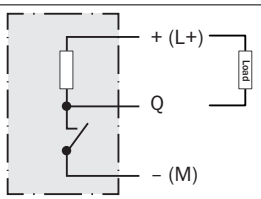
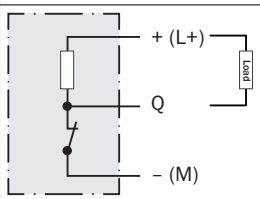
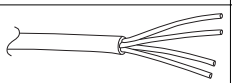
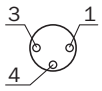
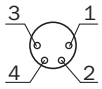
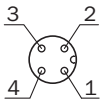
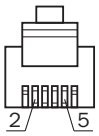
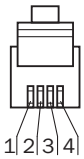
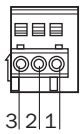
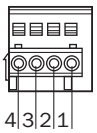
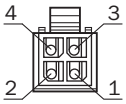
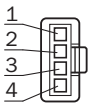
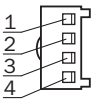
ZLD18 / ZLE18 -xx_xxx = uscita Q2 Salute/Allarme è sempre l'uscita Q2		
-xxRxxx Salute, PNP (≤ 100 mA)		
-xxTxxx Allarme, PNP (≤ 100 mA)		
-xxQxxx Salute, NPN (≤ 100 mA)		
-xxSxxx Allarme, NPN (≤ 100 mA)		

Tabella 18: 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

40 Messa in servizio

1 **Allineamento**

ZLD18-xxxxx2, ZLD18-xxxxx8, ZLE18-xxxxx2, ZLE18-xxxxx8: orientare il sensore ad un riflettore idoneo. Scegliere la posizione in modo tale che il raggio di luce rosso emesso colpisca il centro del riflettore. Il sensore deve avere una visuale libera sul riflettore, non ci deve essere nessun oggetto nella traiettoria del raggio [vedi figura 59]. Si deve fare attenzione affinché le aperture ottiche del sensore e del riflettore siano completamente libere.
Orientare il sensore ad un riflettore idoneo. Scegliere la posizione in modo tale che la luce infrarossa (non visibile) colpisca il centro del riflettore. L'orientamento corretto può essere rilevato solo tramite l'indicatore LED. Vedere figura 59]. Il sensore deve avere una visuale libera sul riflettore, non ci deve essere nessun oggetto nella traiettoria del raggio. Si deve fare attenzione affinché le aperture ottiche del sensore e del riflettore siano completamente libere.

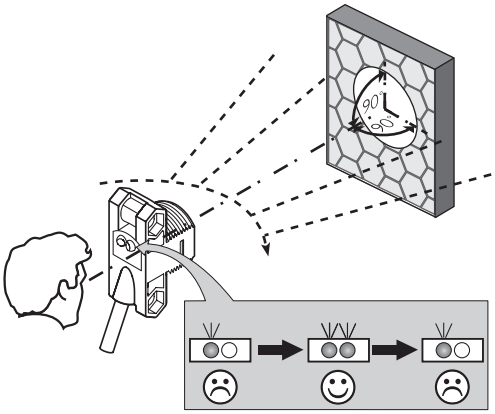
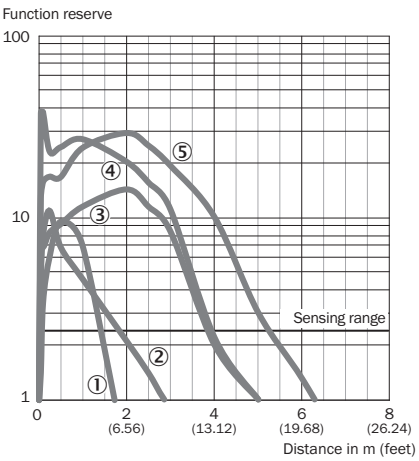


Figura 59: Allineamento

2 **Distanza di lavoro**

Regolare la distanza tra il sensore e il riflettore in base al diagramma corrispondente [vedi figura 60] (x = distanza di lavoro, y = riserva operativa).

Dopo aver completato l'allineamento, spostare un oggetto non trasparente sul percorso del raggio. Utilizzare tabella 16 per verificare il funzionamento. Se l'uscita di commutazione non si comporta in conformità con tabella 16, controllare le condizioni di applicazione.



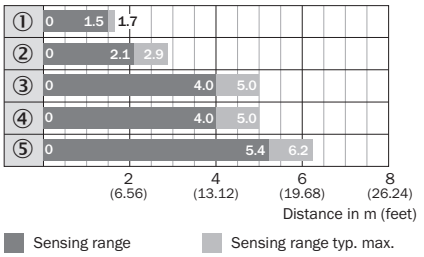


Figura 60: Curva caratteristica

Figura 61: Bar graph

① PL23FT
② PL20A
③ P250
④ PL40A
⑤ PL80A

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, a superfici ottiche contaminate e/o ad un'insufficiente remissione di luce dal target. Il sensore può essere dotato di un'uscita Salute o Allarme, che emette un segnale discreto quando il sensore funziona in condizioni marginali. Consultare tabella 17 per maggiori dettagli sul funzionamento dell'uscita Salute/Allarme.

41 Eliminazione difetti

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

Tabella 19: Individuazione ed eliminazione dei guasti

Indicatore LED / figura di errore	Causa	Provvedimento
Il LED giallo non è acceso anche se il raggio luminoso è orientato verso il riflettore e nessun oggetto si trova sulla traiettoria del raggio	nessuna tensione o tensione al di sotto del valore soglia	Verificare la tensione di alimentazione e/o il collegamento elettrico
	Interruzioni di tensione	Assicurarsi che ci sia un'alimentazione di tensione stabile
	Il sensore è guasto	Se l'alimentazione di tensione è regolare, allora chiedere una sostituzione del sensore
Il LED giallo lampeggia; se è presente Allarme/Salute, annotare il segnale in uscita corrispondente	Il sensore è ancora pronto per il funzionamento, ma le condizioni di esercizio non sono ideali	Controllare le condizioni di esercizio: allineare completamente il fascio di luce (punto luminoso) all'oggetto/pulire le superfici ottiche
Interruzioni di segnale al momento del rilevamento dell'oggetto	Proprietà depolarizzante della superficie dell'oggetto (ad es. pellicola), riflesso	Modificare la posizione del sensore

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

	ZLD18-xxxxx2	ZLD18-xxxxx8	ZLE18-xxxxx2	ZLE18-xxxxx8
Polarizzazione	✓	✓	-	-
Distanza di commutazione (con riflettore PL80A)	6.8 m	4.2 m	7.9 m	5.0 m
Distanza max. di commutazione (con riflettore PL80A)	7.8 m	5.0 m	9.0 m	6.2 m
Diametro punto luminoso/ distanza	11 mm / 500 mm	63 x 55 mm / 500 mm	11 mm / 500 mm	63 x 55 mm / 500 mm
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.	500 Hz[2]	500 Hz[2]	500 Hz[2]	500 Hz[2]
Tempo di reazione max.	1 ms[3]	1 ms[3]	1 ms[3]	1 ms[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 20: Disegni quotati

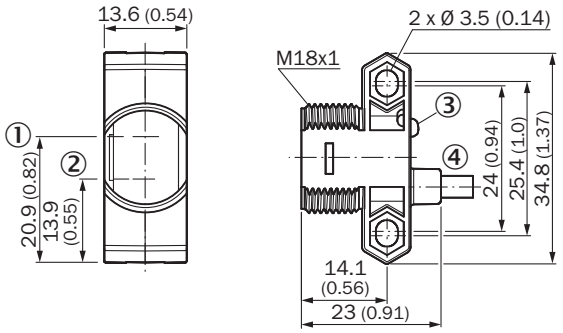


Figura 62: ZLx18-1xxxxx/ZLx18-Axxxxx, cavo

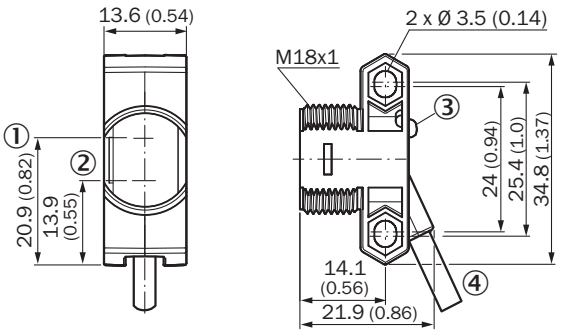


Figura 63: ZLx18-2xxxxx/ZLx18-Bxxxxx, cavo

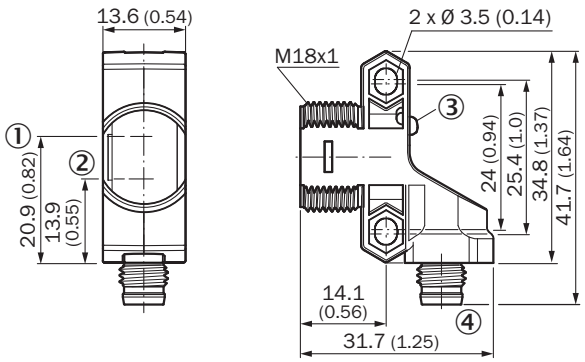


Figura 64: ZLx18-2xx5Ax/ZLx18-Bxx5Ax connettore

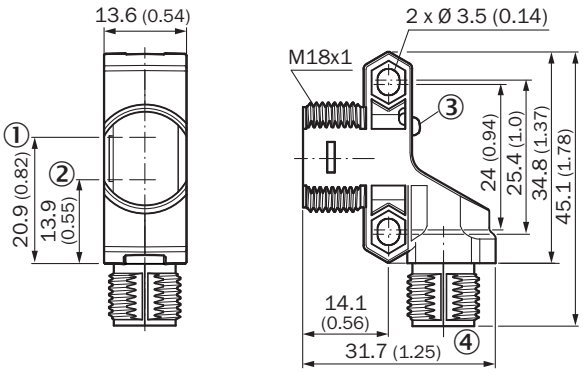


Figura 65: ZLx18-2xx4Ax/ZLx18-Bxx4Ax

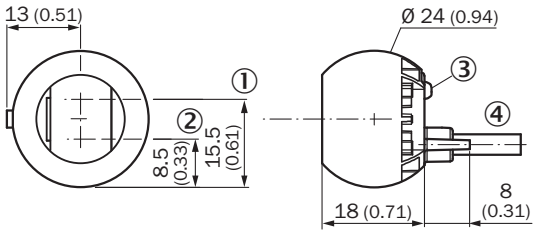


Figura 66: ZLx18-3xxxxx/ZLx18-Cxxxxx, cavo

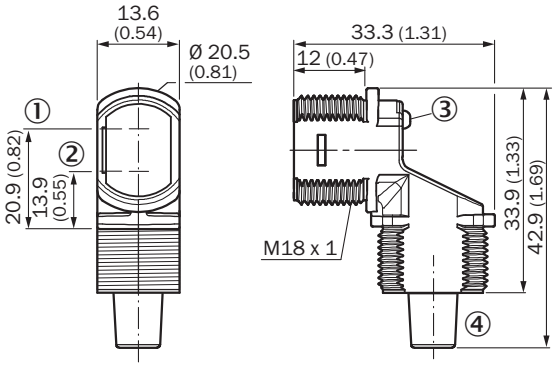


Figura 67: ZLx18-4xxxxx/ZLx18-Dxxxxx, cavo

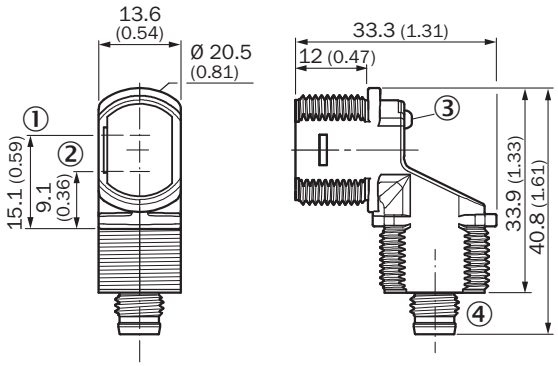


Figura 68: ZLx18-4xx5Ax/ZLx18-Dxx5Ax

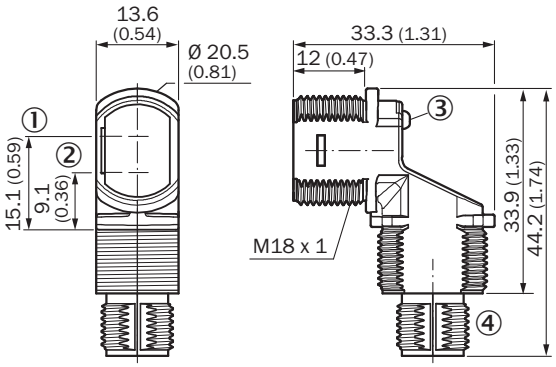


Figura 69: ZLx18-4xx4Ax/ZLx18-Dxx4Ax

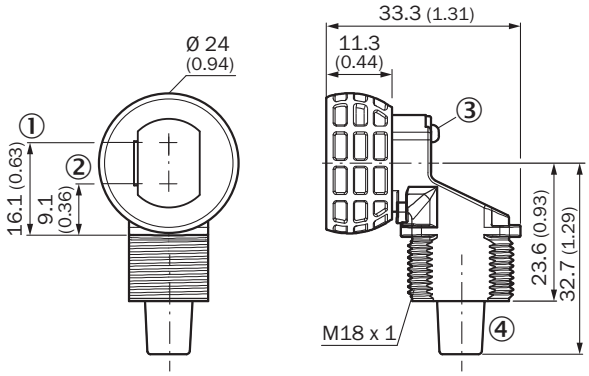


Figura 70: ZLx18-5xxxxx/ZLx18-Exxxxx, cavo

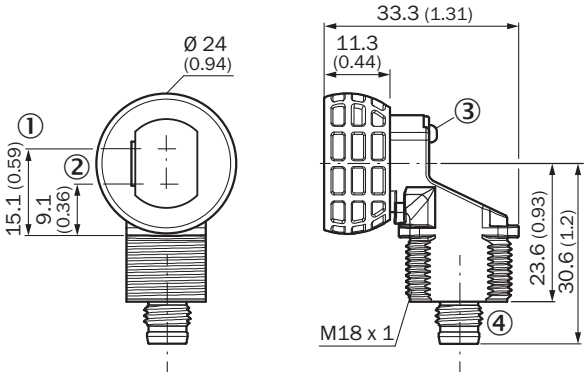


Figura 71: ZLx18-5xx5Ax/ZLx18-Exx5Ax

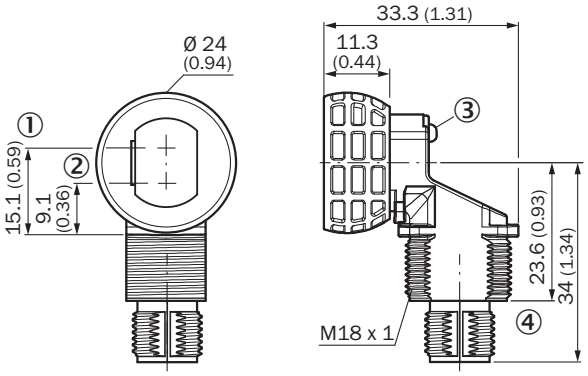


Figura 72: ZLx18-5xx4Ax/ZLx18-Exx4Ax

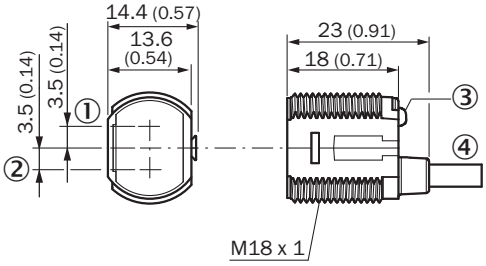


Figura 73: ZLx18-6xxxxx/ZLx18-Fxxxxx, cavo

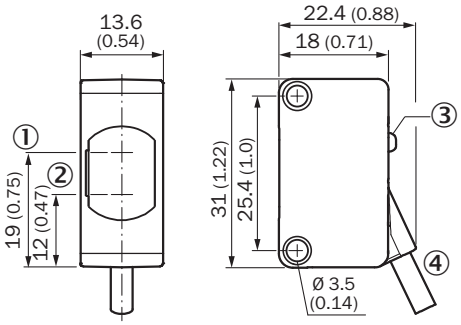


Figura 74: ZLx18-7xxxxx/ZLx18-Gxxxxx, cavo

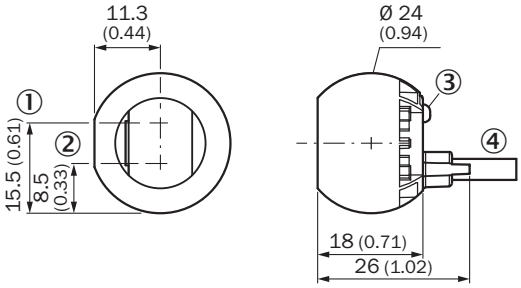


Figura 75: ZLx18-8xxxxx/ZLx18-Hxxxxx, cavo

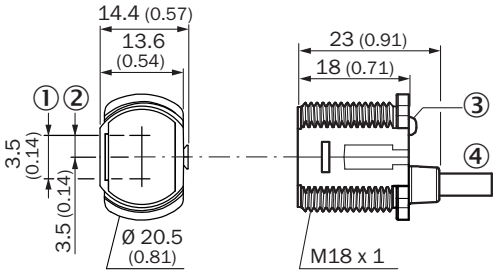


Figura 76: ZLx18-9xxxxx/ZLx18-Jxxxxx, cavo

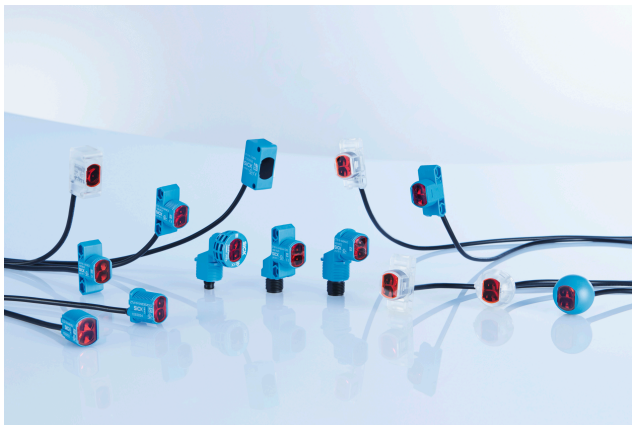
① asse ottico, emettitore
② asse ottico, ricevitore
③ indicatori di stato a LED
④ collegamento/scarico della trazione

MANUAL DE INSTRUÇÕES

ZLD18 / ZLE18

Sensores fotoelétricos cilíndricos

SICK
Sensor Intelligence.



de
en
es
fr
it
ja
pt
ru
zh

Produto descrito

Z18 SimpleSense

ZLD18 / ZLE18

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 ZLD18 / ZLE18 é um sensor retrorreflexivo fotoelétrico opto-eletrônico (referido como “sensor” daqui em diante) para detecção óptica sem contato de objetos, animais e pessoas. Um refletor é necessário para que esse produto funcione. 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

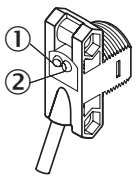


Figura 77: Indicadores de operação

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

49 Montagem

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

8021946 | SICK
Subject to change without notice

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.

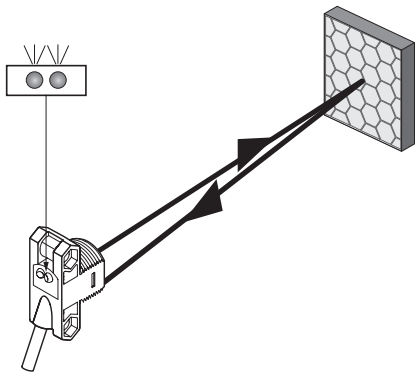
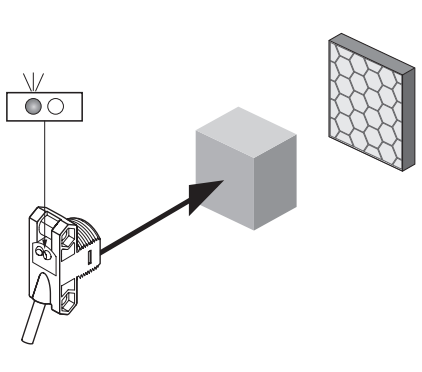
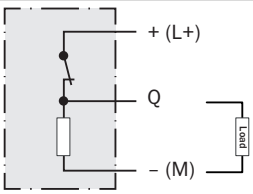
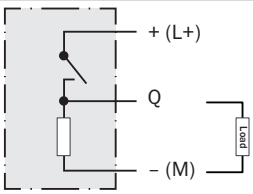
Explicação da terminologia de conexão usada nas Tabelas 1-3:

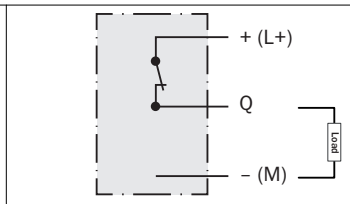
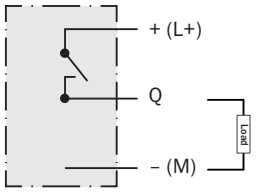
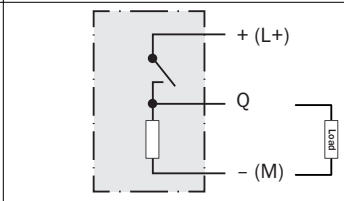
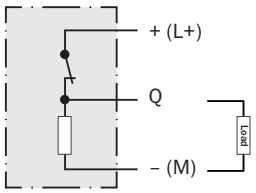
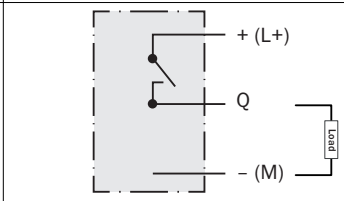
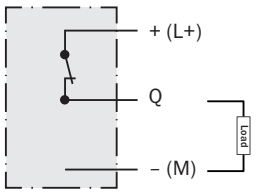
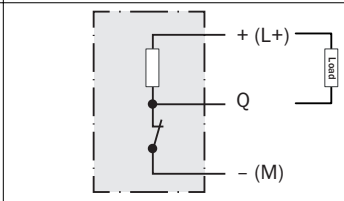
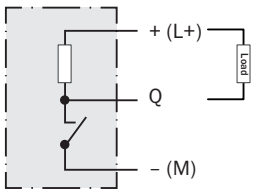
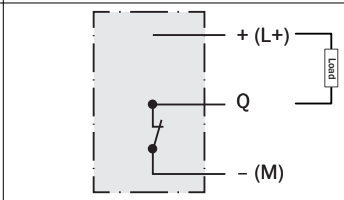
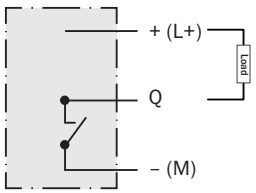
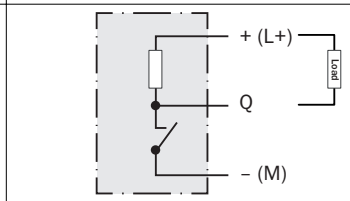
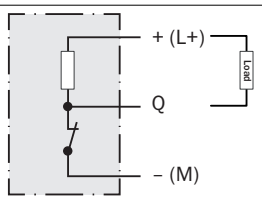
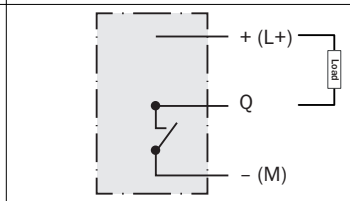
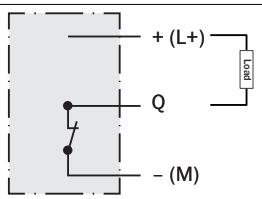
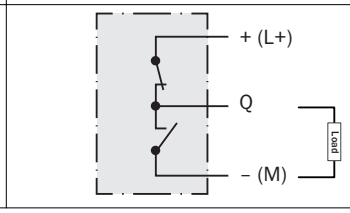
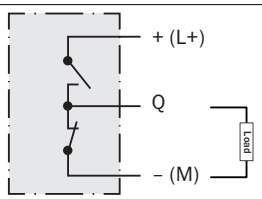
BN = Brown (Marrom)
WH = White (Branco)
BU = Blue (Azul)
BK = Black (Preto)
n. c. = não conectado
Q1 = saída de comutação 1
Q2 = saída de comutação 2
L+ = tensão de alimentação (V_S)
M = peso
L.ON = comutação por luz
D.ON = comutação por sombra

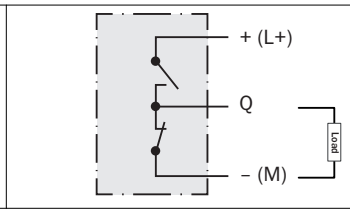
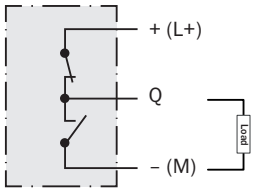
NOTA
As saídas do sensor podem vir equipadas com um conjunto de fábrica atraso ON e/ou atraso OFF. Isso é indicado por um sufixo Txx no final do Número de Modelo (Zxx18--xxxxxTxx).

Detalhe de conexão e saída:

Tabela 21: Operação de saída

ZLD18 / ZLE18 -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 22: Operação Alarme/Saúde

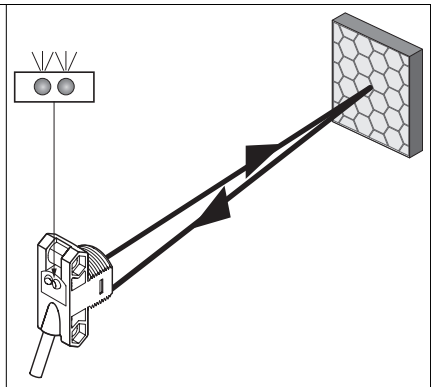
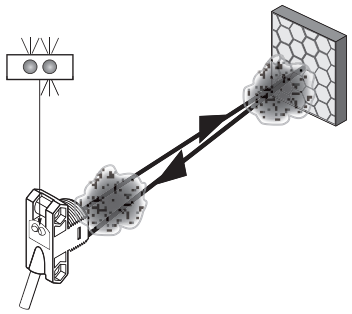
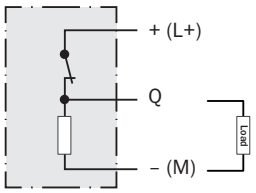
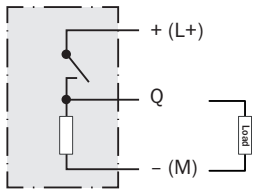
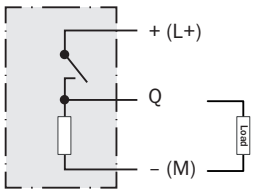
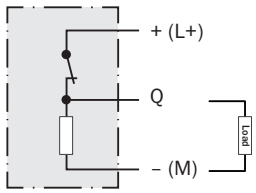
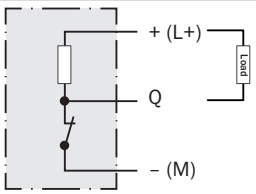
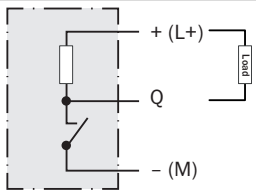
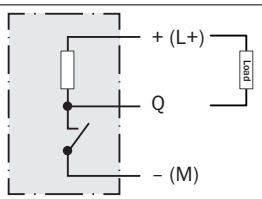
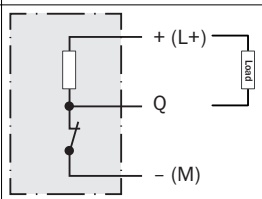
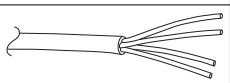
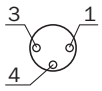
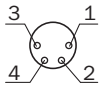
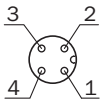
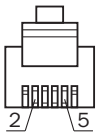
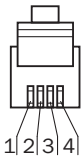
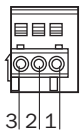
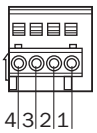
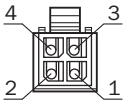
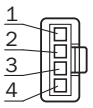
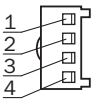
ZLD18 / ZLE18 -xx_xxx = saída Q2 Saúde/Alarme é sempre a saída Q2		
-xxRxxx Saúde, PNP (≤ 100 mA)		
-xxTxxx Alarme, PNP (≤ 100 mA)		
-xxQxxx Saúde, PNP (≤ 100 mA)		
-xxSxxx Alarme, NPN (≤ 100 mA)		

Tabela 23: 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

51 Colocação em operação

1 **Alinhamento**

ZLD18-xxxxx2, ZLD18-xxxxx8, ZLE18-xxxxx2, ZLE18-xxxxx8: alinhe o sensor com um refletor adequado. Selecionar o posicionamento de forma que o feixe da luz de emissão vermelho incida sobre o centro do refletor. O espaço entre o refletor e o sensor deve estar livre; não pode haver nenhum objeto posicionado na trajetória do raio luminoso [ver figura 78]. Certificar-se de que as aberturas ópticas do sensor e do refletor estejam completamente livres.

Alinhar o sensor ao refletor adequado. Posicionar, de forma que a luz infravermelha (invisível) incida sobre o centro do refletor. O alinhamento correto só pode ser verificado através dos indicadores LED. Ver figura 78]. O espaço entre o refletor e o sensor deve estar livre; não pode haver nenhum objeto posicionado na trajetória do raio luminoso. Certificar-se de que as aberturas ópticas do sensor e do refletor estejam completamente livres.

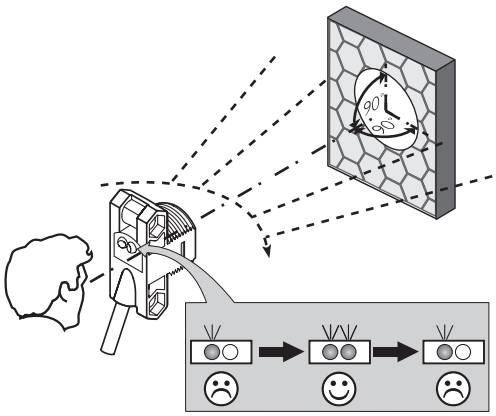
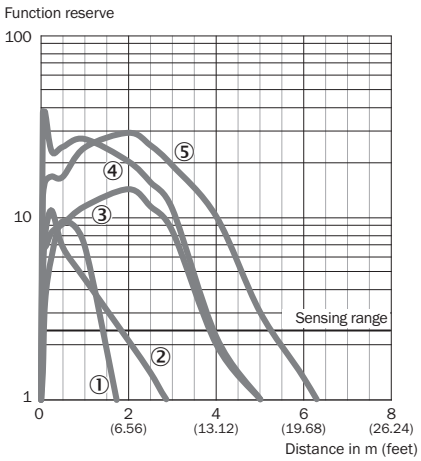


Figura 78: Alinhamento

2 **Alcance de detecção**

Ajuste a distância entre o sensor e o refletor de acordo com o diagrama correspondente [veja figura 79] (x = distância de comutação, y = reserva operacional).

Após o alinhamento estar concluído, mova um objeto não transparente para o caminho do feixe. Use tabela 21 para verificar a função. Se a saída de comutação falhar em se comportar de acordo com tabela 21, verifique as condições da aplicação.



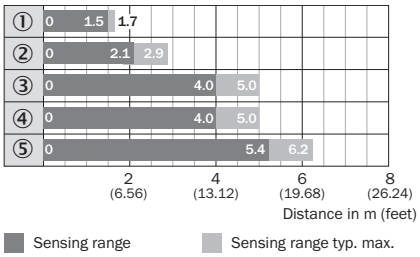


Figura 79: Curva característica

Figura 80: Gráfico de barras

① PL23FT
② PL20A
③ P250
④ PL40A
⑤ PL80A

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, superfície(s) óptica(s) contaminada(s), e/ou remissão de luz insuficiente do alvo. O sensor pode ser equipado com uma saída Saúde ou Alarme, a qual oferece um sinal discreto quando o sensor está operando na condição marginal. Consulte tabela 22 para detalhes adicionais sobre operação de saída Saúde/Alarme.

52 Eliminação de falhas

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

Tabela 24: Solução de problemas

Indicador LED / padrão de erro	Causa	Medida
O LED amarelo não está aceso, embora o feixe de luz esteja alinhado sobre o refletor e não haja objeto 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
LED amarelo pisca; se Alarme/Saúde estiver presente, então anote o sinal de saída correspondente	Sensor ainda está pronto para operação, mas as condições de operação não são as ideais	Verifique as condições de operação: Alinhe completamente o feixe de luz (ponto de luz) com o objeto/Limpe as superfícies ópticas
Interrupções de sinal na detecção de objetos	Propriedade despolarizante da superfície do objeto (por ex., película), reflexos de superfície	Altere a posição do sensor

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

	ZLD18-xxxxx2	ZLD18-xxxxx8	ZLE18-xxxxx2	ZLE18-xxxxx8
Polarização	✓	✓	-	-
Distância de comutação (com refletor PL80A)	6.8 m	4.2 m	7.9 m	5.0 m
Distância de comutação máx. (com refletor PL80A)	7.8 m	5.0 m	9.0 m	6.2 m
Diâmetro do ponto de luz/ distância	11 mm / 500 mm	63 x 55 mm / 500 mm	11 mm / 500 mm	63 x 55 mm / 500 mm
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	500 Hz[2]	500 Hz[2]	500 Hz[2]	500 Hz[2]
Tempo máx. de resposta	1 ms[3]	1 ms[3]	1 ms[3]	1 ms[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 25: Desenhos dimensionais

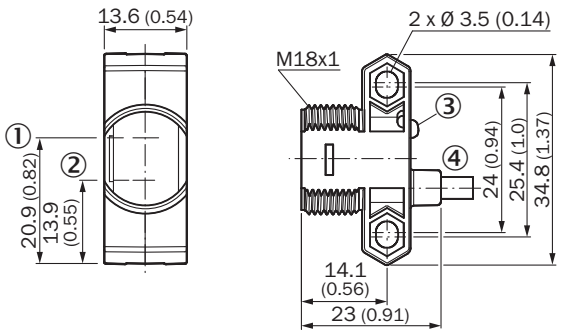


Figura 81: ZLx18-1xxxxx/ZLx18-Axxxxx, cabo

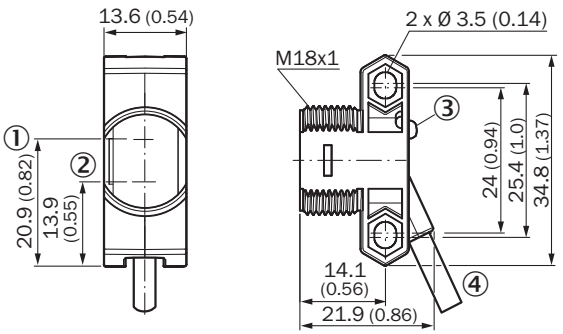


Figura 82: ZLx18-2xxxxx/ZLx18-Bxxxxx, cabo

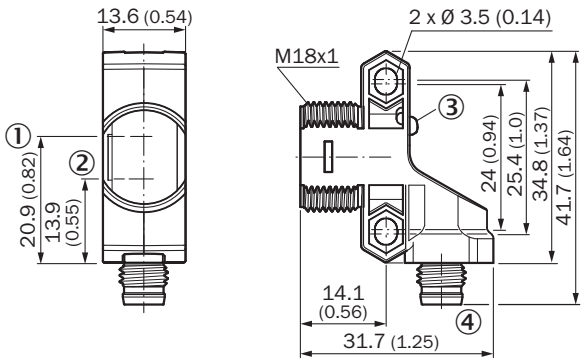


Figura 83: ZLx18-2xx5Ax/ZLx18-Bxx5Ax conector

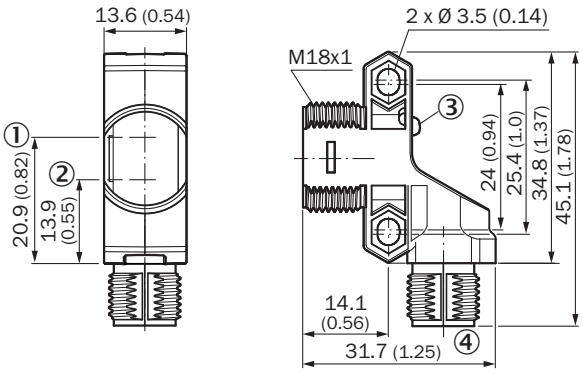


Figura 84: ZLx18-2xx4Ax/ZLx18-Bxx4Ax

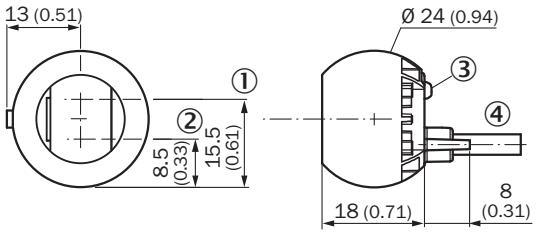


Figura 85: ZLx18-3xxxxx/ZLx18-Cxxxxx, cabo

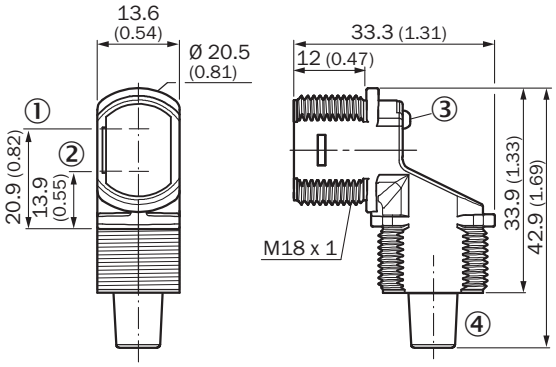


Figura 86: ZLx18-4xxxxx/ZLx18-Dxxxxx, cabo

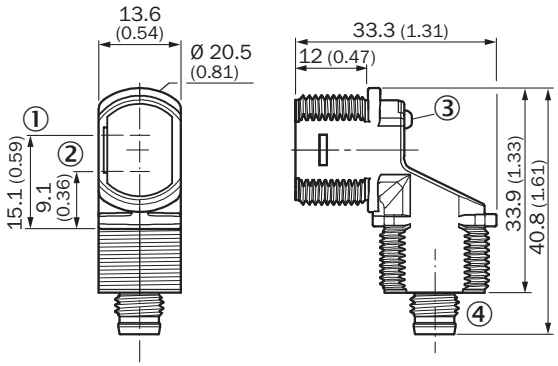


Figura 87: ZLx18-4xx5Ax/ZLx18-Dxx5Ax

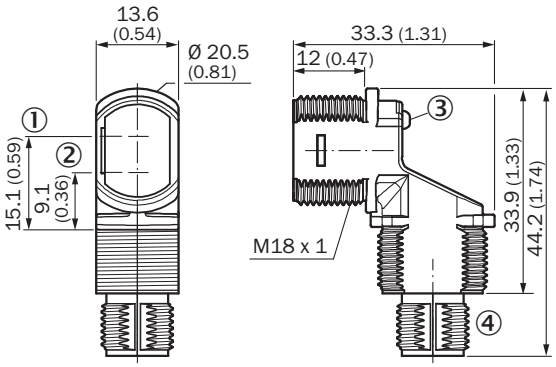


Figura 88: ZLx18-4xx4Ax/ZLx18-Dxx4Ax

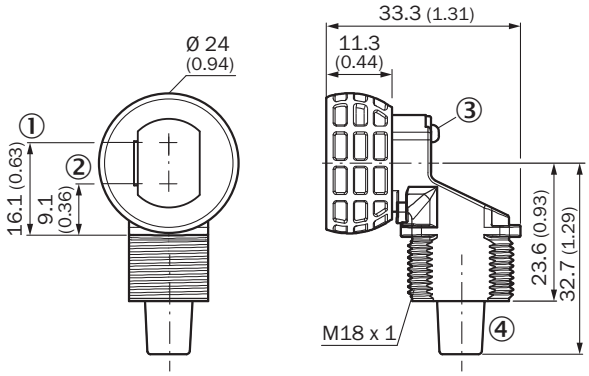


Figura 89: ZLx18-5xxxxx/ZLx18-Exxxxx, cabo

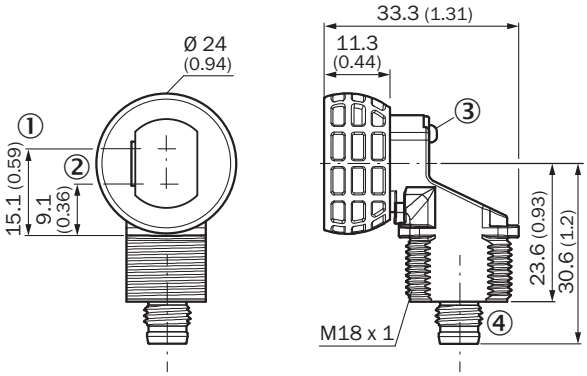


Figura 90: ZLx18-5xx5Ax/ZLx18-Exx5Ax

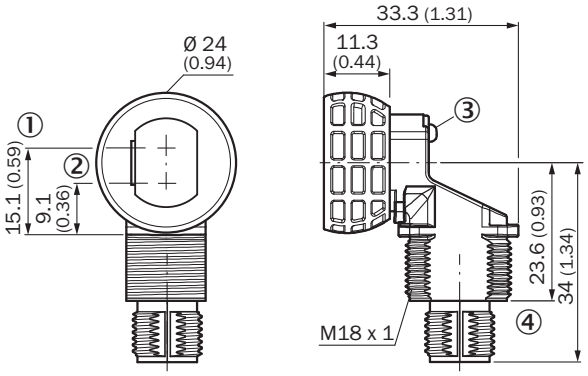


Figura 91: ZLx18-5xx4Ax/ZLx18-Exx4Ax

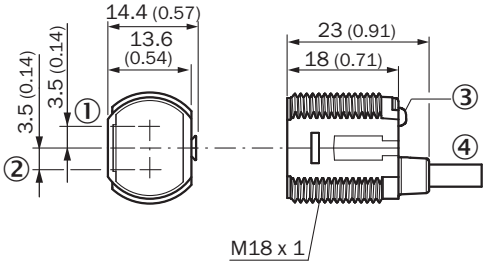


Figura 92: ZLx18-6xxxxx/ZLx18-Fxxxxx, cabo

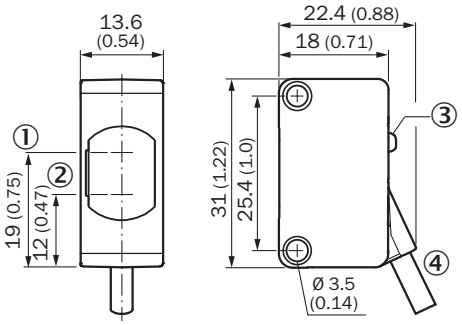


Figura 93: ZLx18-7xxxxx/ZLx18-Gxxxxx, cabo

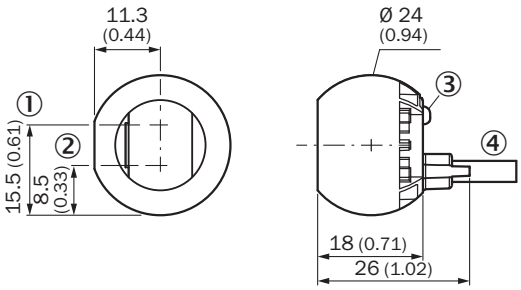


Figura 94: ZLx18-8xxxxx/ZLx18-Hxxxxx, cabo

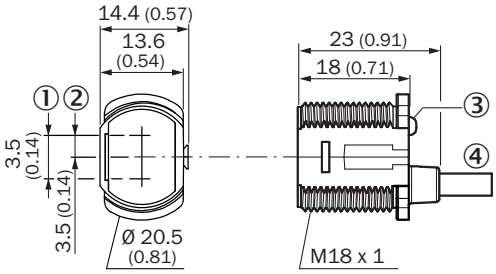


Figura 95: ZLx18-9xxxxx/ZLx18-Jxxxxx, cabo

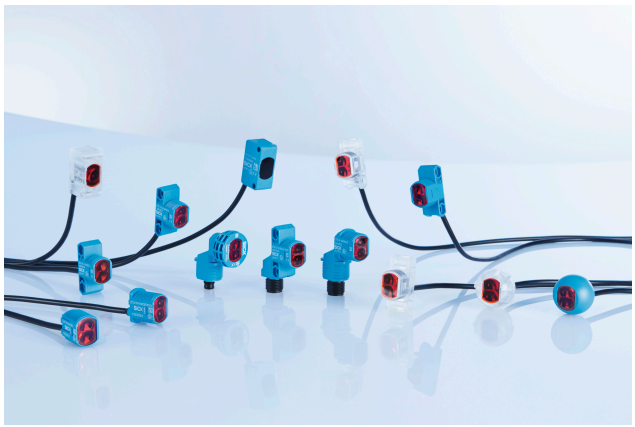
① eixo óptico, emissor
② eixo óptico, receptor
③ Indicadores de operação de LED
④ conexão/alívio de tensão

INSTRUCCIONES DE USO

ZLD18 / ZLE18

Fotocélulas cilíndricas

SICK
Sensor Intelligence.



de
en
es
fr
it
ja
pt
ru
zh

Producto descrito

Z18 SimpleSense

ZLD18 / ZLE18

Fabricante

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

Información legal

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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 ZLD18 / ZLE18 es una fotocélula retrorreflectiva optoelectrónica (denominada “sensor” en adelante) para la detección óptica y sin contacto de objetos, animales y personas. Para que pueda funcionar, este producto necesita un reflector. 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

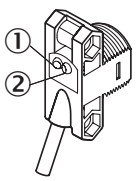


Figura 96: Indicadores de servicio

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

60 Montaje

Montar el sensor y el reflector en escuadras de fijación adecuadas (véase el programa de accesorios SICK). Alinear el sensor y el reflector entre sí.

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.

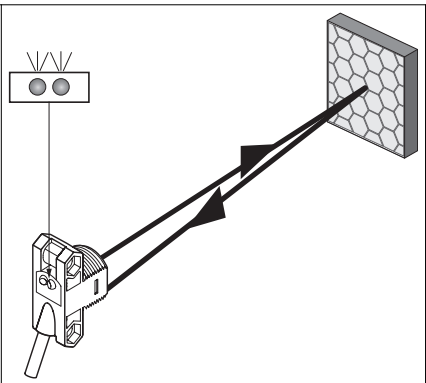
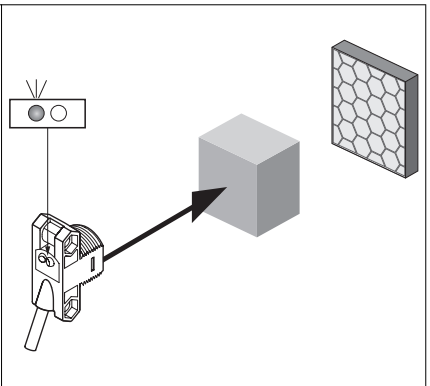
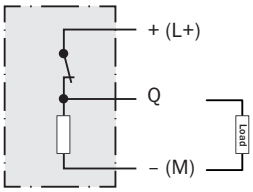
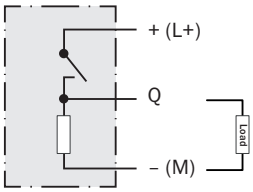
Leyenda de la terminología de conexión de las Tablas 1-3:

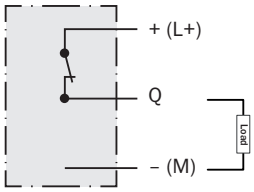
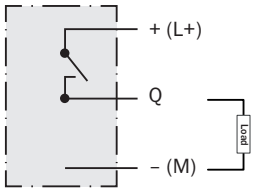
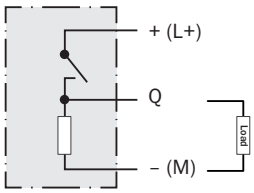
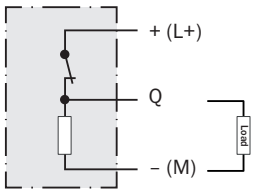
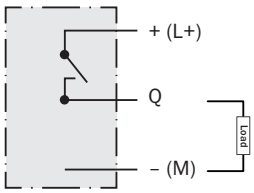
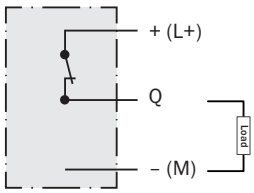
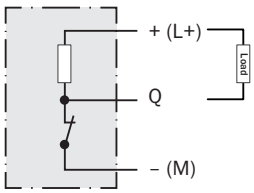
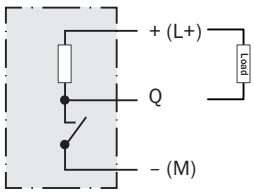
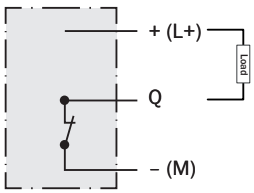
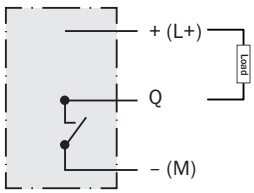
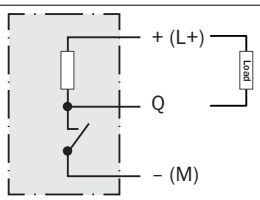
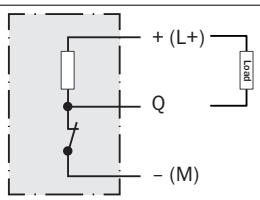
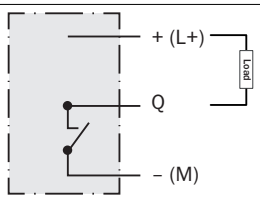
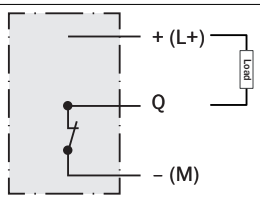
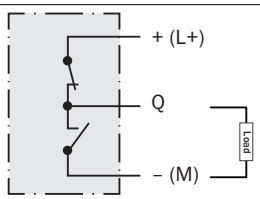
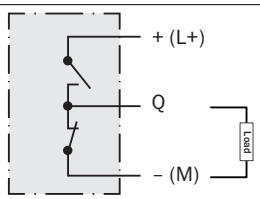
BN = Brown (Marrón)
WH = White (Blanco)
BU = Blue (Azul)
BK = Black (Negro)
n. c. = No conectado
Q1 = Salida conmutada 1
Q2 = Salida conmutada 2
L+ = Tensión de alimentación V_S
M = Peso
L.ON = Conmutación en claro
D.ON = Conmutación en oscuro

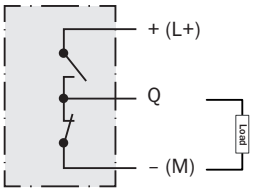
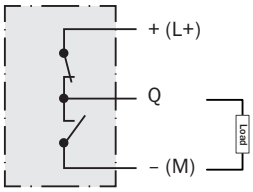
INDICACIÓN
Las salidas del sensor pueden estar equipadas con un retardo de activación y/o de desactivación ajustado de fábrica. Ello se indica por medio del sufijo Txx al final del número de modelo (Zxx18-xxxxxxTxx).

Detalles de la conexión y la salida:

Tabla 26: Operación de salida

ZLD18 / ZLE18 -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 27: Funcionamiento de la señal Alarm/Health

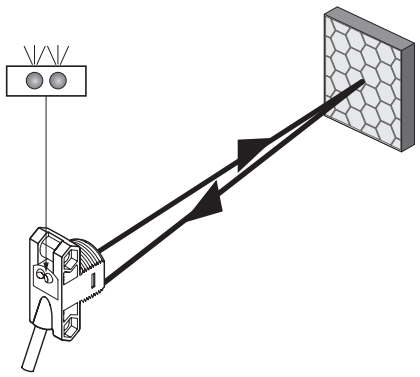
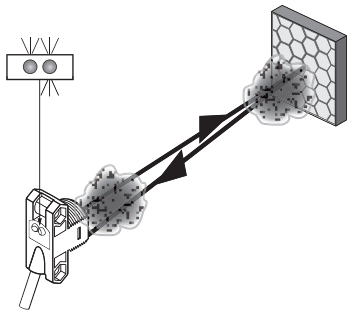
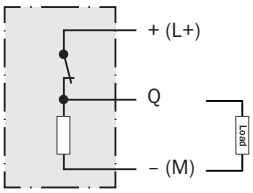
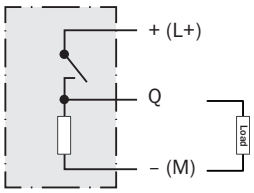
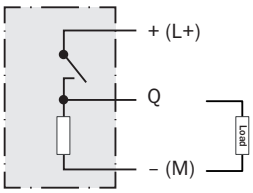
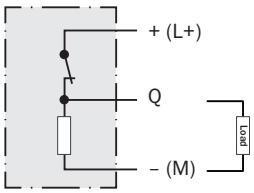
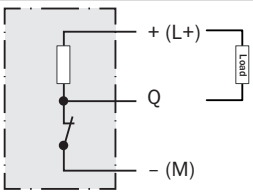
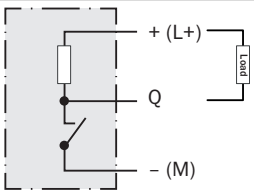
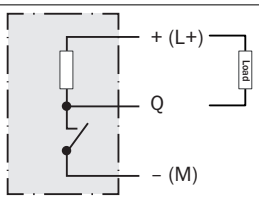
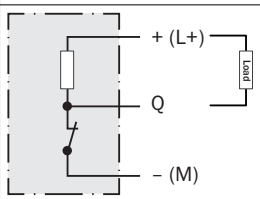
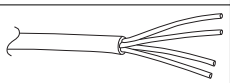
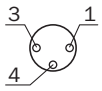
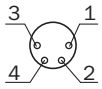
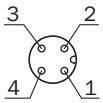
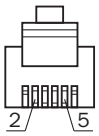
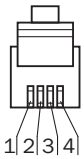
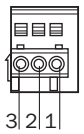
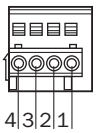
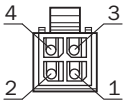
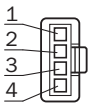
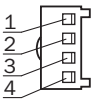
ZLD18 / ZLE18 -xx_xxx = Salida Q2 La señal Alarm/Health siempre tiene lugar en la salida Q2		
-xxRxxx Health, PNP (≤ 100 mA)		
-xxTxxx Alarm, PNP (≤ 100 mA)		
-xxQxxx Health, NPN (≤ 100 mA)		
-xxSxxx Alarm, NPN (≤ 100 mA)		

Tabla 28: 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

62 Puesta en servicio

1 **Alineación**

ZLD18-xxxxx2, ZLD18-xxxxx8, ZLE18-xxxxx2, ZLE18-xxxxx8: alinear el sensor hacia el reflector adecuado. Seleccione una posición que permita que el haz de luz roja del emisor incida en el centro del reflector. El sensor debe tener una visión despejada del reflector, no puede haber ningún objeto en la trayectoria del haz [véase figura 97]. Hay que procurar que las aperturas ópticas del sensor y del reflector estén completamente libres.
Alinear el sensor hacia un reflector adecuado. Seleccione una posición que permita que la luz infrarroja (no visible) incida en el centro del reflector. La alineación correcta solo se puede reconocer mediante los LED indicadores. Véase a este respecto figura 97]. El sensor debe tener una visión despejada del reflector, no puede haber ningún objeto en la trayectoria del haz. Hay que procurar que las aperturas ópticas del sensor y del reflector estén completamente libres.

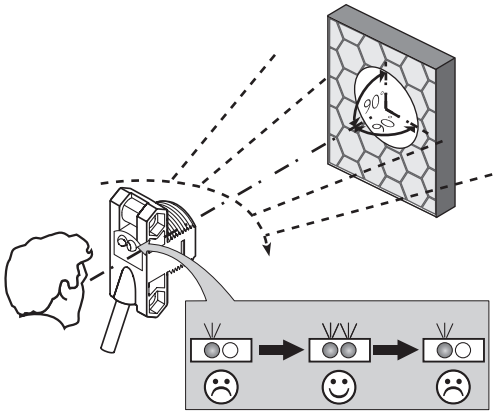
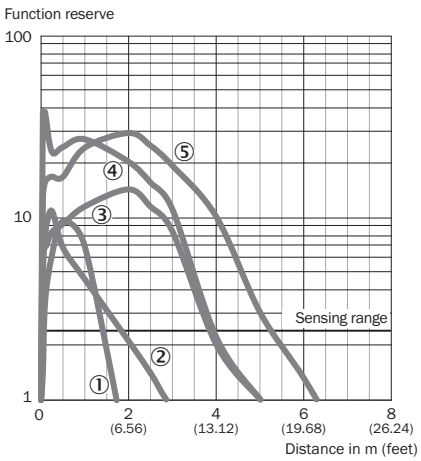


Figura 97: Alineación

2 **Distancia de conmutación**

Ajuste la distancia entre el sensor y el reflector de acuerdo con el diagrama correspondiente [véase figura 98] (x = distancia de conmutación, y = reserva de funcionamiento).

Una vez finalizada la alineación, coloque un objeto no transparente en la trayectoria del haz. Utilice tabla 26 para comprobar el funcionamiento. Si la salida conmutada no se comporta de acuerdo con tabla 26, compruebe las condiciones de aplicación.



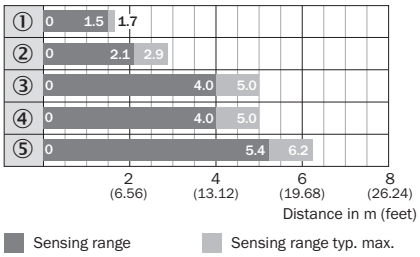


Figura 99: Indicador de barras

Figura 98: Curva característica

① PL23FT
② PL20A
③ P250
④ PL40A
⑤ PL80A

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, suciedad en las superficies ópticas y/o una reflectancia de luz insuficiente en el objetivo. El sensor puede estar equipado con una salida Health o Alarm, las cuales proporcionan una señal discreta cuando el sensor funciona en condiciones marginales. Consulte tabla 27 para obtener más información sobre el funcionamiento de la salida Health/Alarm.

63 Resolución de problemas

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

Tabla 29: Resolución de problemas

LED indicador / imagen de error	Causa	Acción
El LED amarillo no se ilumina a pesar de que el haz luminoso está orientado hacia el reflector 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
El LED amarillo parpadea; si hay presente una señal Alarm/Health, anote la señal de salida correspondiente	El sensor continúa preparado para funcionar, pero las condiciones de servicio no son óptimas.	Compruebe las condiciones de funcionamiento: alinee completamente el haz de luz (spot) con el objeto/limpie las superficies ópticas
Interrupciones de la señal al detectar objetos	Propiedad despolarizante de la superficie del objeto (p. ej., lámina plástica), reflexión	Cambie la posición del sensor

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

	ZLD18-xxxxx2	ZLD18-xxxxx8	ZLE18-xxxxx2	ZLE18-xxxxx8
Polarización	✓	✓	-	-
Distancia de conmutación (con reflector PL80A)	6.8 m	4.2 m	7.9 m	5.0 m
Distancia de conmutación máx. (con reflector PL80A)	7.8 m	5.0 m	9.0 m	6.2 m
Diámetro del punto luminoso/ distancia	11 mm / 500 mm	63 x 55 mm / 500 mm	11 mm / 500 mm	63 x 55 mm / 500 mm
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.	500 Hz[2]	500 Hz[2]	500 Hz[2]	500 Hz[2]
Tiempo de respuesta máx.	1 ms[3]	1 ms[3]	1 ms[3]	1 ms[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 30: Dibujos acotados

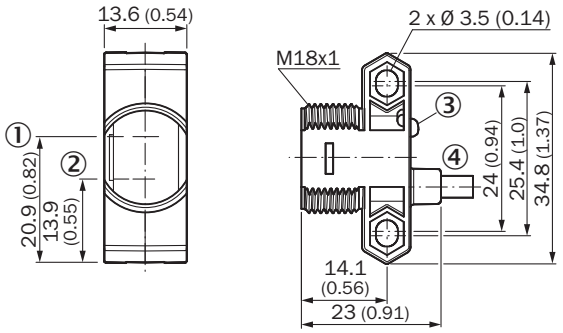


Figura 100: ZLx18-1xxxxx/ZLx18-Axxxxx, cable

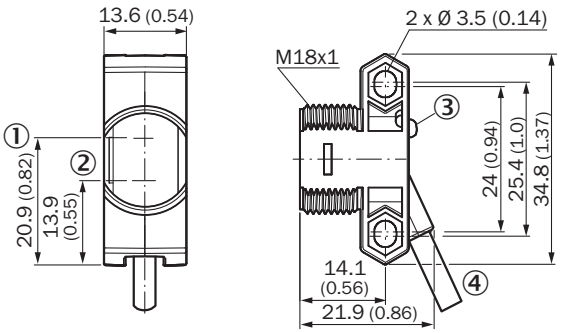


Figura 101: ZLx18-2xxxxx/ZLx18-Bxxxxx, cable

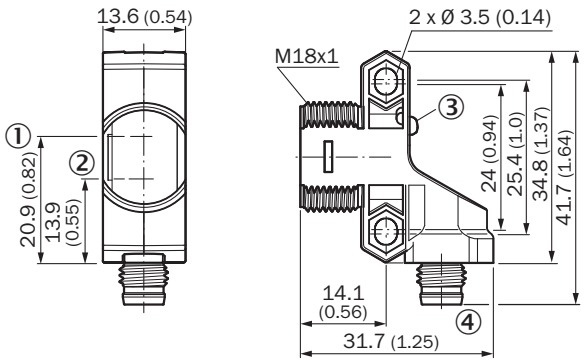


Figura 102: ZLx18-2xx5Ax/ZLx18-Bxx5Ax, conector

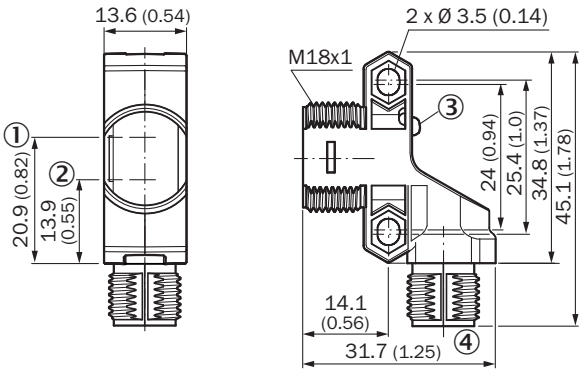


Figura 103: ZLx18-2xx4Ax/ZLx18-Bxx4Ax

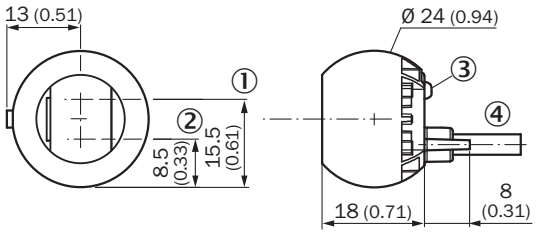


Figura 104: ZLx18-3xxxxx/ZLx18-Cxxxxx, cable

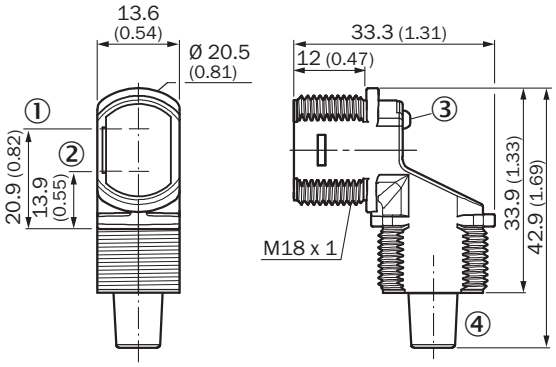


Figura 105: ZLx18-4xxxxx/ZLx18-Dxxxxx, cable

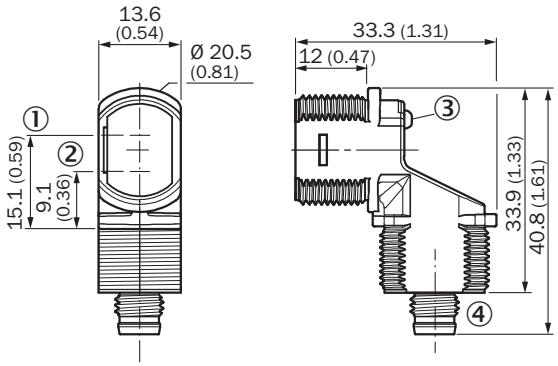


Figura 106: ZLx18-4xx5Ax/ZLx18-Dxx5Ax

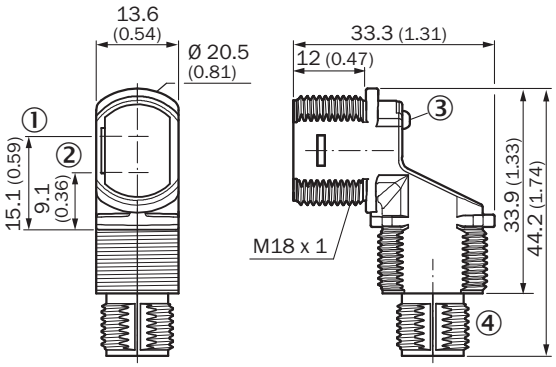


Figura 107: ZLx18-4xx4Ax/ZLx18-Dxx4Ax

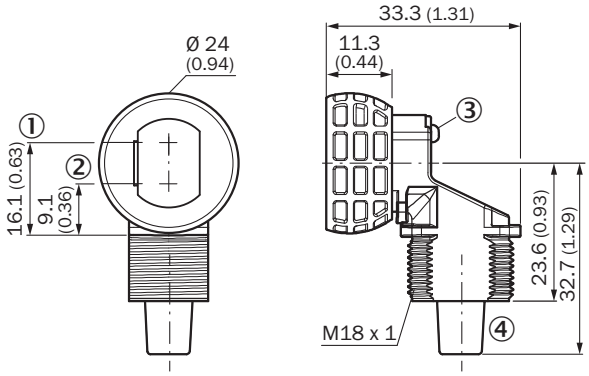


Figura 108: ZLx18-5xxxxx/ZLx18-Exxxxx, cable

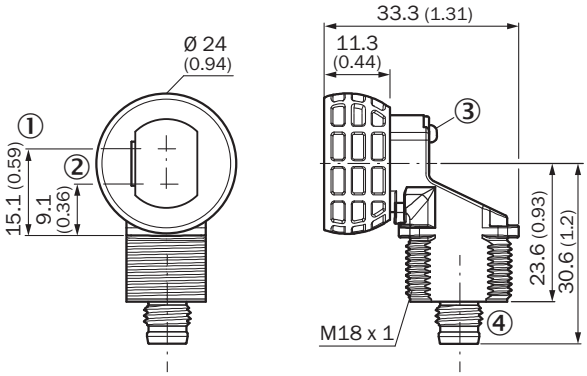


Figura 109: ZLx18-5xx5Ax/ZLx18-Exx5Ax

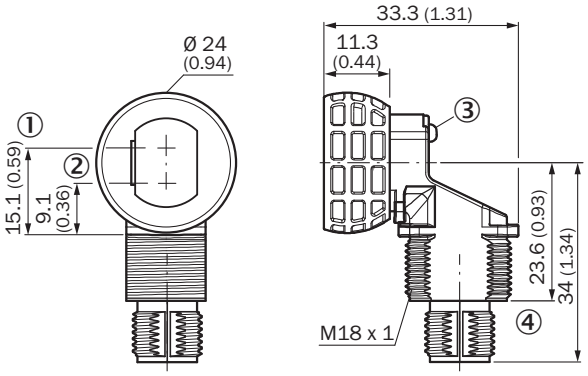


Figura 110: ZLx18-5xx4Ax/ZLx18-Exx4Ax

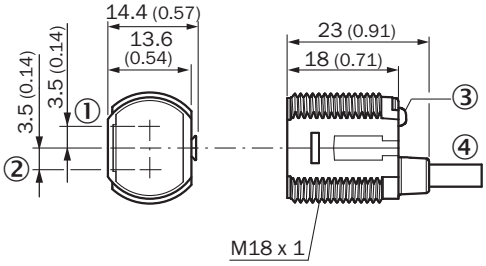


Figura 111: ZLx18-6xxxxx/ZLx18-Fxxxxx, cable

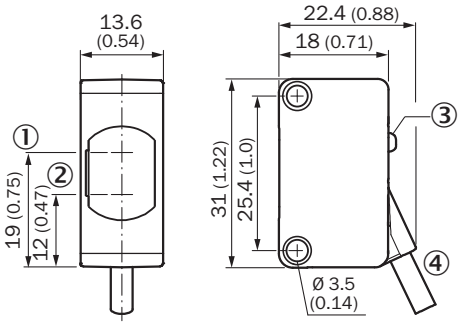


Figura 112: ZLx18-7xxxxx/ZLx18-Gxxxxx, cable

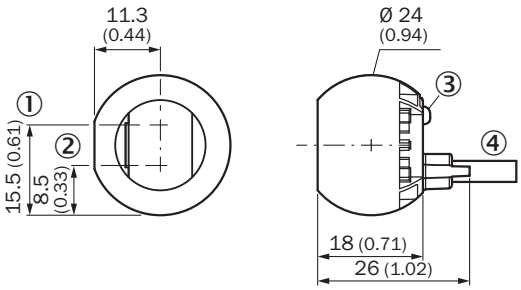


Figura 113: ZLx18-8xxxxx/ZLx18-Hxxxxx, cable

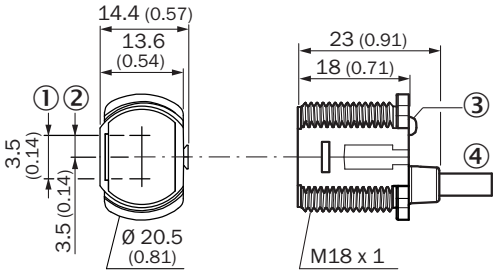


Figura 114: ZLx18-9xxxxx/ZLx18-Jxxxxx, cable

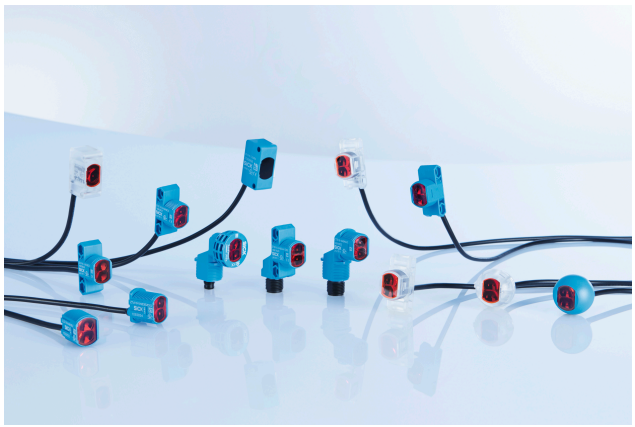
① eje óptico, emisor
② eje óptico, receptor
③ Indicadores LED de servicio
④ conexión/alivio de tensión

操作指南

ZLD18 / ZLE18

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

ZLD18 / ZLE18

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

ZLD18 / ZLE18 是回归反射式光电传感器（以下称为“传感器”），用于物体、动物和人的非接触式光学检测。该产品需要反射器才能运行。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

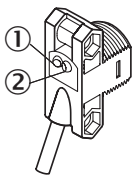


插图 115: 状态指示灯

① LED 指示灯（绿色）：电源
② LED 指示灯（橙色）：已接收光

71 安装

将传感器和反射器安装在合适的安装支架上（参见 SICK 附件说明书）。相互对准传感器和反射器。

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：

8021946 | SICK
Subject to change without notice

– 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）。

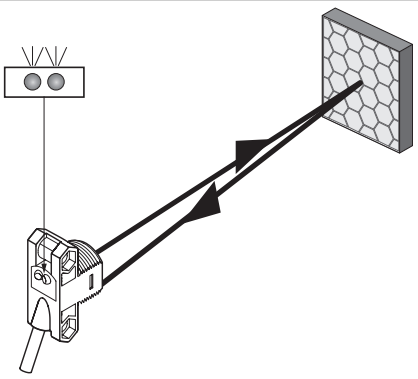
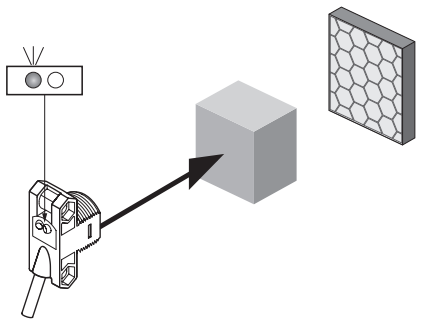
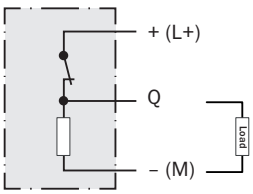
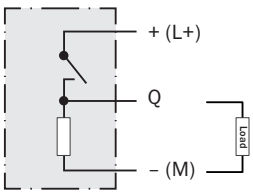
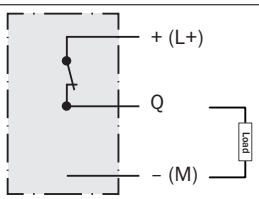
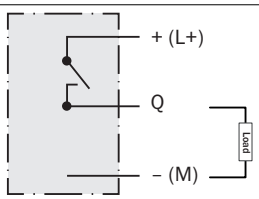
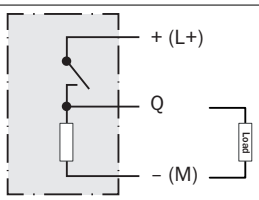
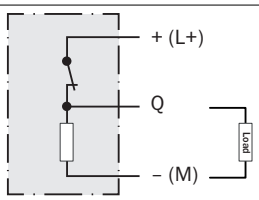
表 1-3 中所用连接术语的说明：

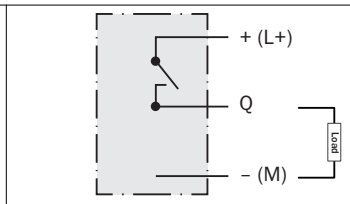
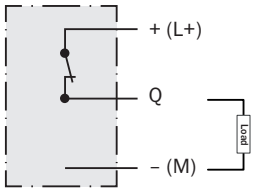
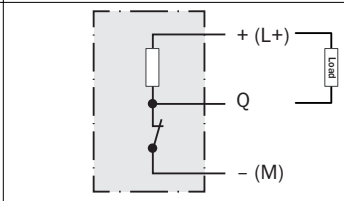
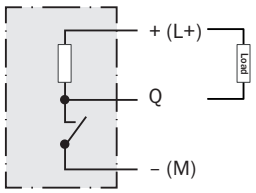
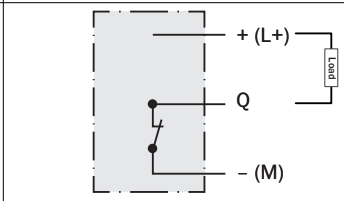
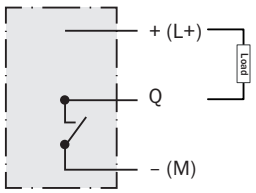
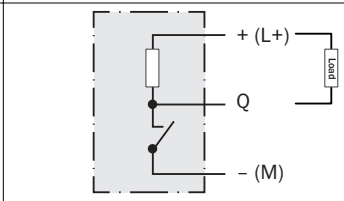
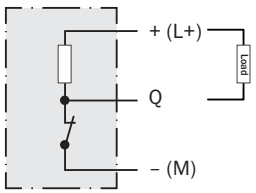
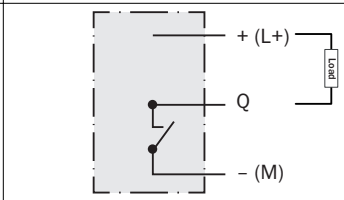
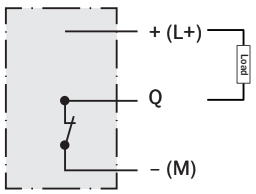
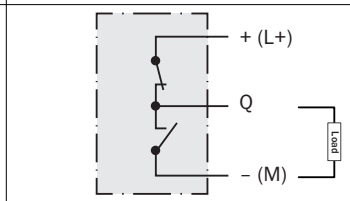
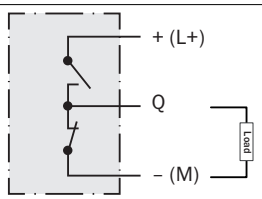
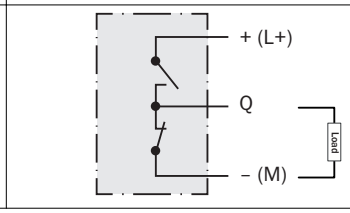
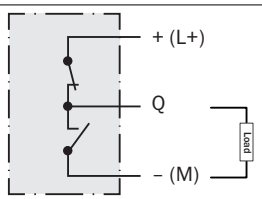
BN = 棕色
WH = 白色
BU = 蓝色
BK = 黑色
n. c.= 未连接
Q1 = 开关输出端 1
Q2 = 开关输出端 2
L+ = 供电电压 (U_V)
M = 接地
L.ON = 亮动
D.ON = 暗动

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

连接和输出详情：

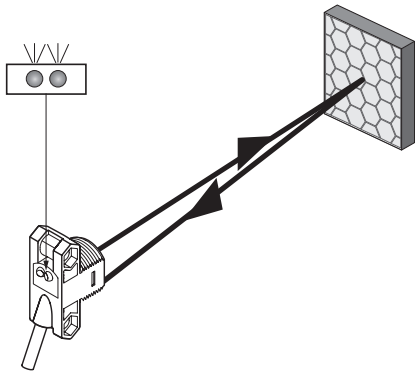
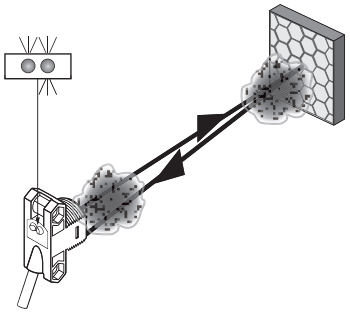
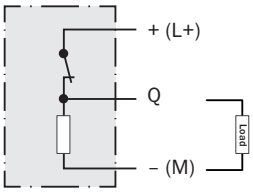
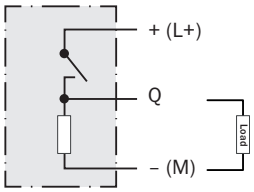
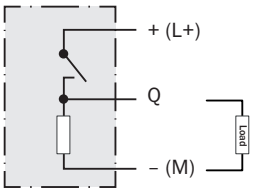
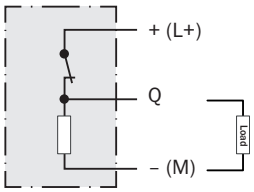
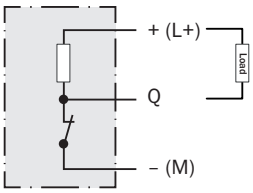
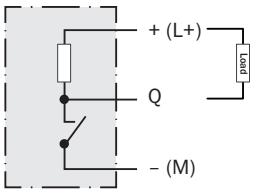
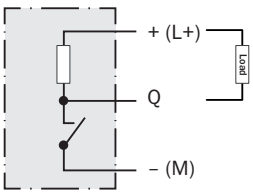
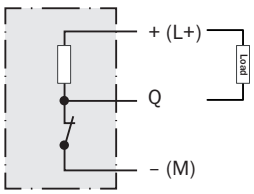
表格 31: 输出操作

ZLD18 / ZLE18 -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)		

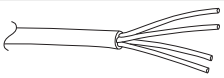
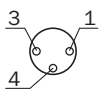
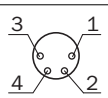
-xKxxxx -x6xxxx -xxKxxx D.ON，PNP 集电极开路 Q (≤ 100 mA)		
-xNxxxx -x7xxxx -xxNxxx L.ON，NPN：Q (≤ 100 mA)		
-xGxxxx -x3xxxx -xxGxxx L.ON，NPN 集电极开路 Q (≤ 100 mA)		
-xExxxx -x1xxxx -xxExxx D.ON，NPN：Q (≤ 100 mA)		
-xJxxxx -x5xxxx -xxJxxx D.ON，NPN 集电极开路 Q (≤ 100 mA)		
-xAxxxx -XRxxxx -xxAxxx L.ON，推挽 (≤ 100 mA)[1]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

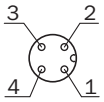
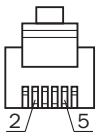
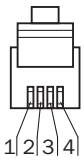
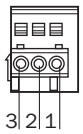
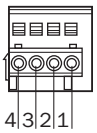
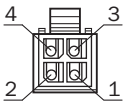
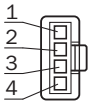
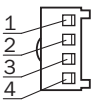
1 PNP 输出图示；通过将负荷连接至 + (L+) 和 Q，也可是 NPN

表格 32: 报警/运行状况操作

ZLD18 / ZLE18 -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 33: 接口引脚分配

Zxx18	图表	引脚 1	引脚 2	引脚 3	引脚 4	引脚 5	引脚 6
-xxx1xx	 0.14 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

73 调试

1 **对准**

ZLD18-xxxxx2、ZLD18-xxxxx8、ZLE18-xxxxx2、ZLE18-xxxxx8：将传感器与合适的反射器对准。选择定位，确保红色发射光束射中反射器的中间。传感器应无遮挡地观察到反射器，光路中不得有任何物体 [参见 插图 116]。此时应注意传感器和反射器的光学开口处应无任何遮挡。

将传感器对准合适的反射器。选择定位，确保红外光（不可见光）落在反射器的中间。仅可通过 LED 指示灯辨别校准是否正确。为此，请参见 插图 116].传感器发出的光源应无遮挡地到达反射器，光路中不得有任何物体。此时应注意传感器和反射器的光学开口处应无任何遮挡。

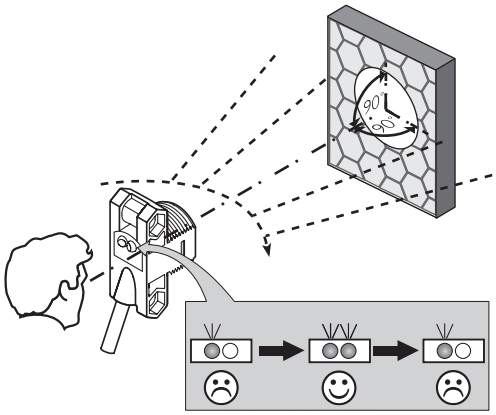
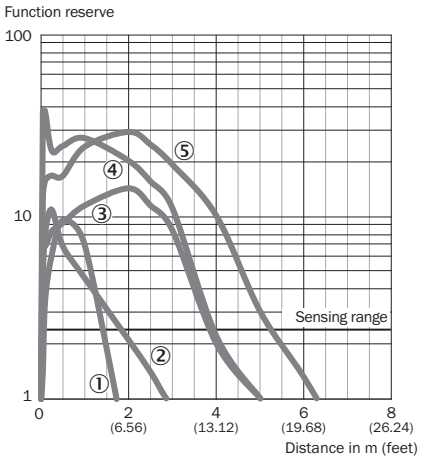


插图 116: 对准

2 **触发感应距离**

根据相应图表 [参见 插图 117]（x = 触发感应距离，y = 运行备用），调整传感器和反射器之间的距离。

完全对准后，将不透明的物体移动到光束的路径中。使用 表格 31 检查功能。如果开关量输出与 表格 31 不符，检查应用状况。



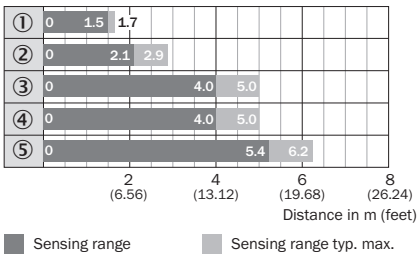


插图 117: 特性曲线

插图 118: 条形图

① PL23FT
② PL20A
③ P250
④ PL40A
⑤ PL80A

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、光学表面污染和/或来自目标的光反射比不足造成的结果。传感器可配备运行状况或报警输出端，当传感器在边缘条件下运行时，它会提供离散信号。请参阅 表格 32 获取关于运行状况/报警输出端运行的更多详细信息。

74 故障排除

故障排除表格中罗列了传感器无法执行某项功能时应采取的各项措施。

表格 34: 故障诊断

LED 指示灯 / 故障界面	原因	措施
虽然光束已对准反射器且光路中没有任何物体，但黄色 LED 未亮起	无电压或电压低于极限值	检查电源，检查整体电气连接（导线和插头连接）
	电压中断	确保电源稳定无中断
	传感器损坏	如果电源正常，则更换传感器
黄色 LED 闪烁；如果存在报警/运行状况，则记下相应的输出信号	传感器仍然已经准备好运行，但运行条件并不理想	检查运行条件：将光束（光点）与物体完全对准/清洁光学表面
探测物体时信号中断	物体表面的去极化特性（例如：薄膜），折射	更改传感器位置

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

	ZLD18-xxxxx2	ZLD18-xxxxx8	ZLE18-xxxxx2	ZLE18-xxxxx8
极化	✓	✓	-	-
开关距离（带反射器 PL80A）	6.8 m	4.2 m	7.9 m	5.0 m
最大开关距离（带反射器 PL80A）	7.8 m	5.0 m	9.0 m	6.2 m
光斑直径/距离	11 mm / 500 mm	63 x 55 mm / 500 mm	11 mm / 500 mm	63 x 55 mm / 500 mm
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	500 Hz[2]	500 Hz[2]	500 Hz[2]	500 Hz[2]
最长响应时间	1 ms[3]	1 ms[3]	1 ms[3]	1 ms[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 35: 尺寸图

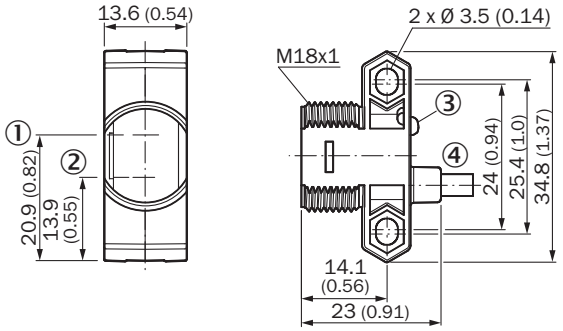


插图 119: ZLx18-1xxxxx/ZLx18-Axxxxx，电缆

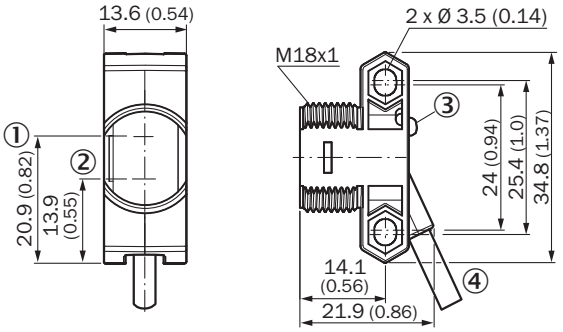


插图 120: ZLx18-2xxxxx/ZLx18-Bxxxxx，电缆

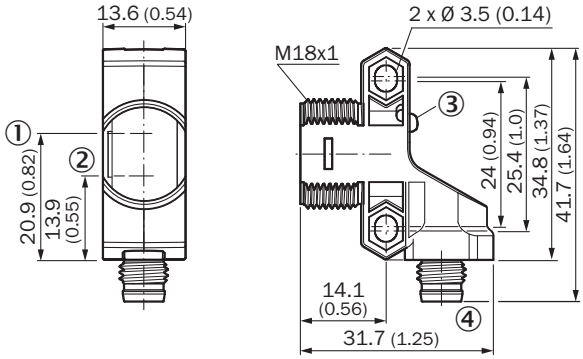


插图 121: ZLx18-2xx5Ax/ZLx18-Bxx5Ax 连接器

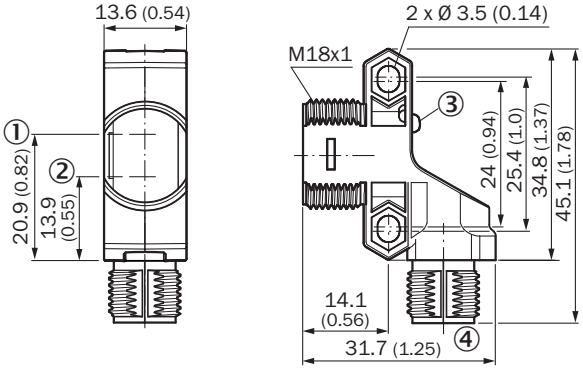


插图 122: ZLx18-2xx4Ax/ZLx18-Bxx4Ax

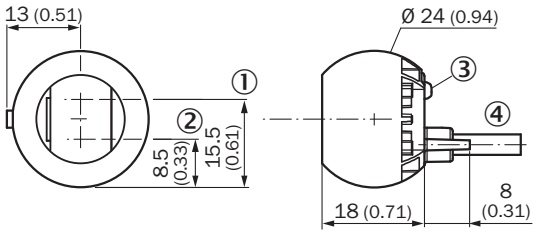


插图 123: ZLx18-3xxxxx/ZLx18-Cxxxxx，电缆

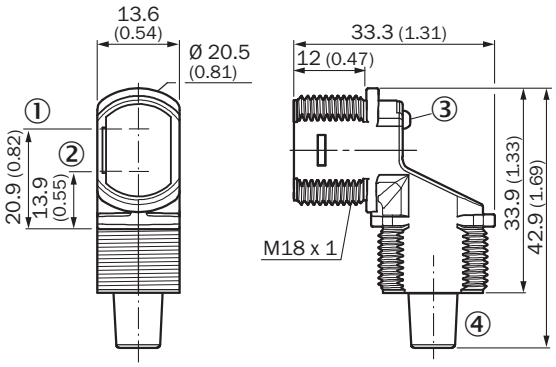


插图 124: ZLx18-4xxxxx/ZLx18-Dxxxxx，电缆

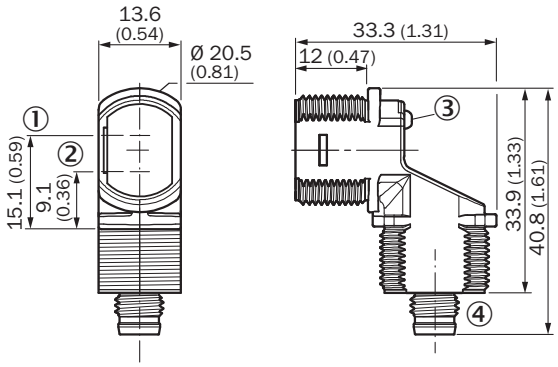


插图 125: ZLx18-4xx5Ax/ZLx18-Dxx5Ax

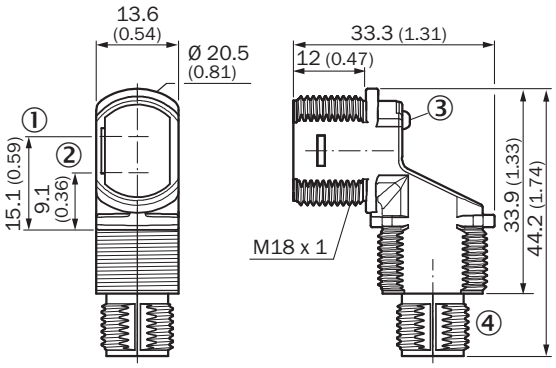


插图 126: ZLx18-4xx4Ax/ZLx18-Dxx4Ax

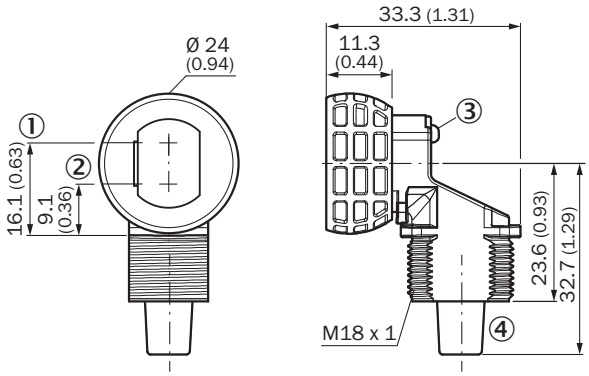


插图 127: ZLx18-5xxxxx/ZLx18-Exxxxx，电缆

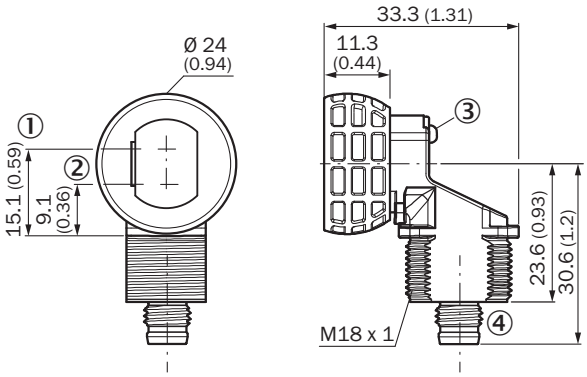


插图 128: ZLx18-5xx5Ax/ZLx18-Exx5Ax

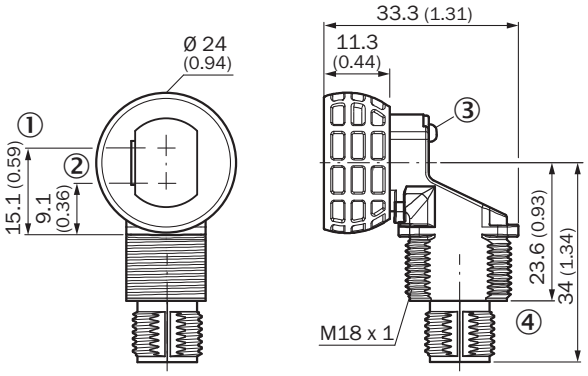


插图 129: ZLx18-5xx4Ax/ZLx18-Exx4Ax

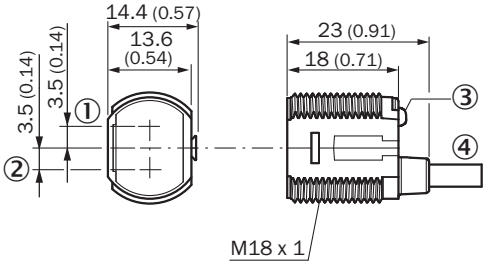


插图 130: ZLx18-6xxxxx/ZLx18-Fxxxxx，电缆

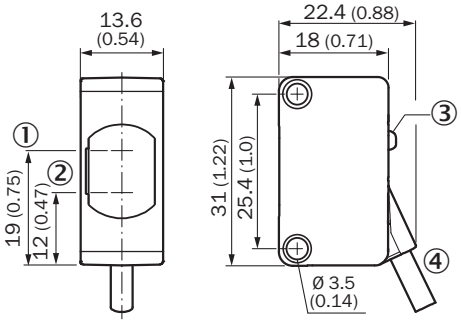


插图 131: ZLx18-7xxxxx/ZLx18-Gxxxxx，电缆

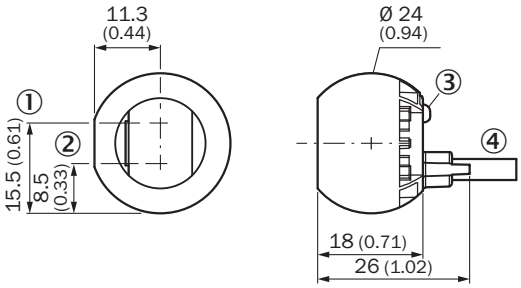


插图 132: ZLx18-8xxxxx/ZLx18-Hxxxxx，电缆

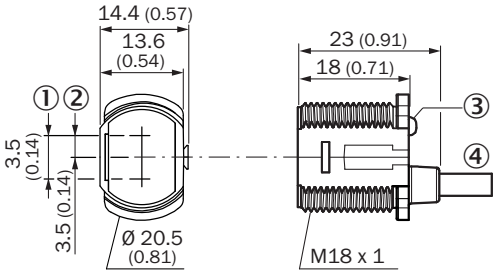


插图 133: ZLx18-9xxxxx/ZLx18-Jxxxxx，电缆

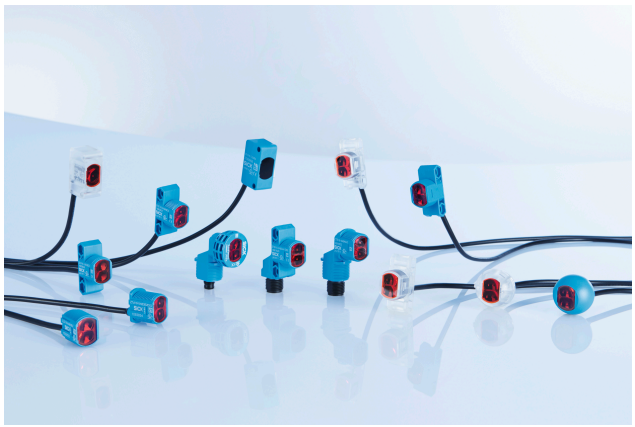
① 光轴，发射器
② 光轴，接收器
③ LED 状态指示灯
④ 接口/应变消除

取扱説明書

ZLD18 / ZLE18

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

ZLD18 / ZLE18

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

ZLD18 / ZLE18 はリフレクタ形光電センサ（以下「センサ」）で、物体、動物または人物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。この製品が機能するためにはリフレクタが必要です。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

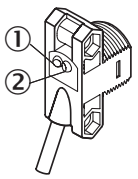


図 134: ステータス表示灯

① LED 表示灯（緑色）：電源
② LED 表示灯（オレンジ色）：受光

82 取付

センサとリフレクタを適切な取付ブラケットに取り付けます (SICK 付属品カタログを参照)。センサとリフレクタの位置を互いに合わせます。

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。

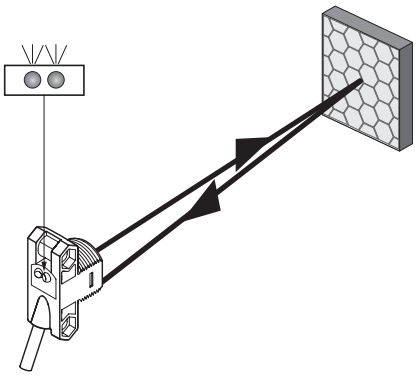
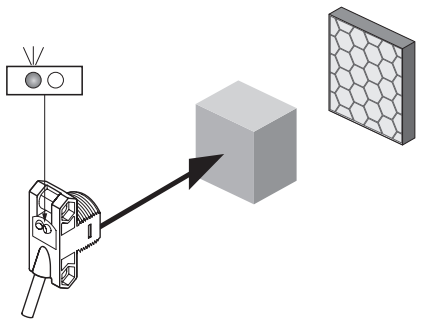
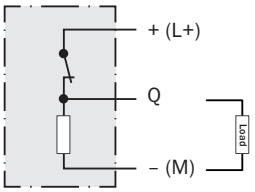
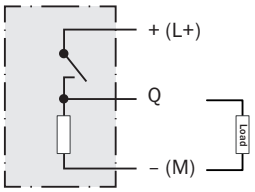
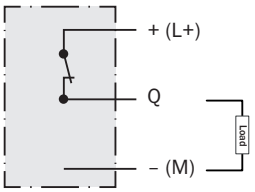
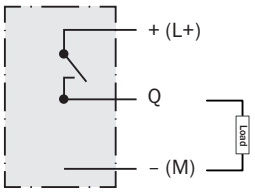
表 1～3 で使用されている接続用語の説明：

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

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

接続と出力の詳細：

表 36: 出力動作

ZLD18 / ZLE18 -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）		

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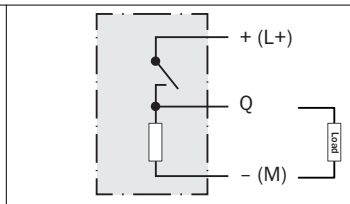
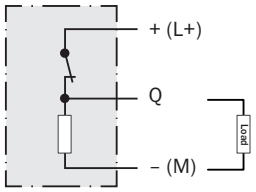
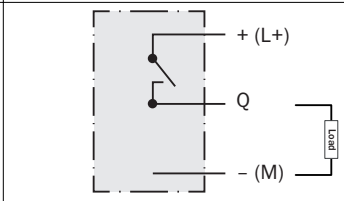
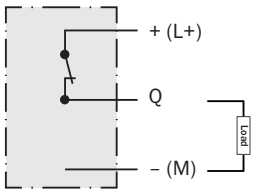
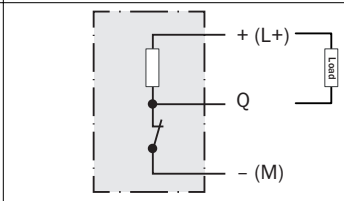
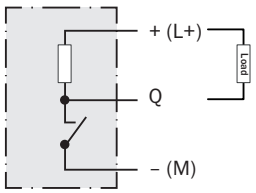
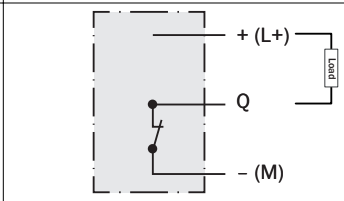
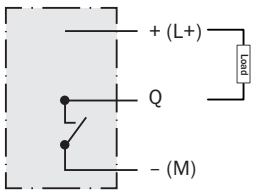
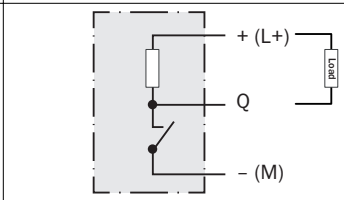
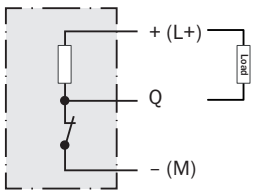
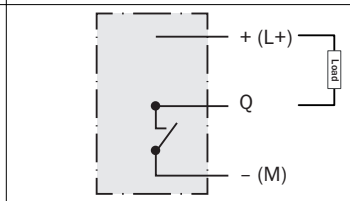
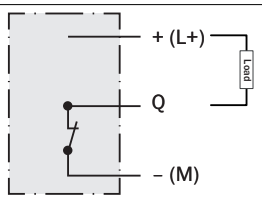
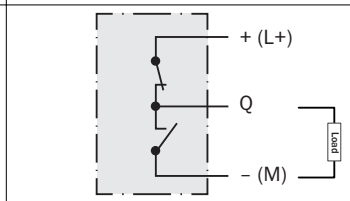
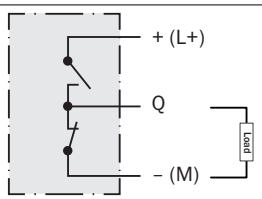
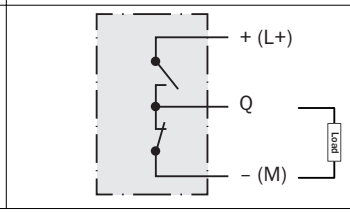
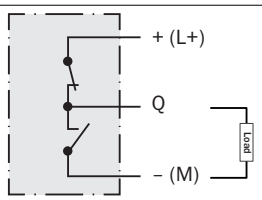
-xFxxxx -x2xxxx -xxFxxx D.ON、PNP：Q（≤ 100 mA）		
-xKxxxx -x6xxxx -xxKxxx D.ON、PNP オープンコレクタ Q（≤ 100 mA）		
-xNxxxx -x7xxxx -xxNxxx L.ON、NPN：Q（≤ 100 mA）		
-xGxxxx -x3xxxx -xxGxxx L.ON、NPN オープンコレクタ Q（≤ 100 mA）		
-xExxxx -x1xxxx -xxExxx D.ON、NPN：Q（≤ 100 mA）		
-xJxxxx -x5xxxx -xxJxxx D.ON、NPN オープンコレクタ Q（≤ 100 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 37: アラーム/ヘルス動作

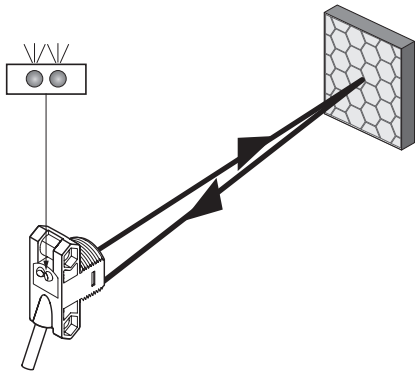
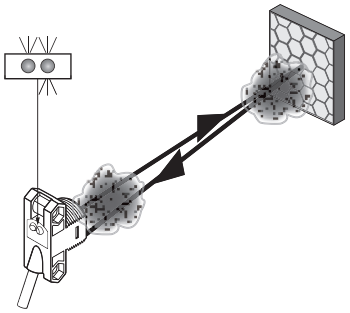
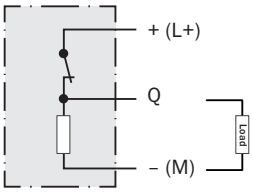
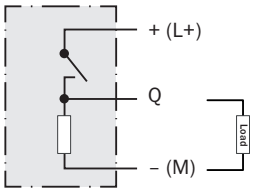
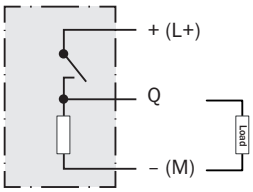
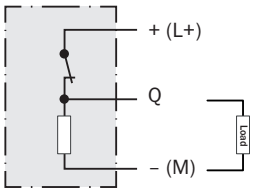
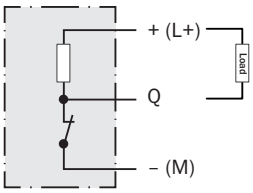
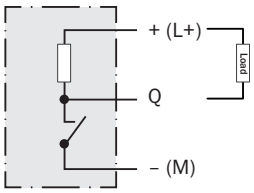
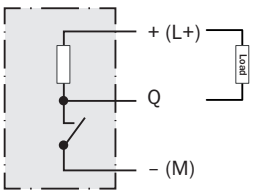
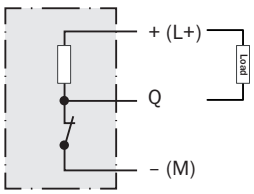
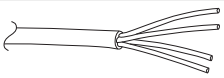
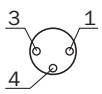
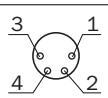
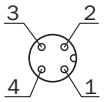
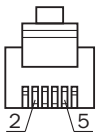
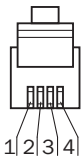
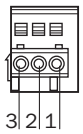
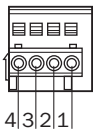
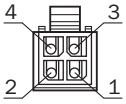
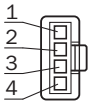
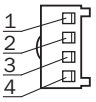
ZLD18 / ZLE18 -xx_xxx = Q2 出力 アラーム/ヘルスは常に Q2 出力です		
-xxRxxx ヘルス、PNP（≤ 100 mA）		
-xxTxxx アラーム、PNP（≤ 100 mA）		
-xxQxxx ヘルス、NPN（≤ 100 mA）		
-xxSxxx アラーム、NPN（≤ 100 mA）		

表 38: 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

84 コミッショニング

1 **光軸調整**

ZLD18-xxxxx2、ZLD18-xxxxx8、ZLE18-xxxxx2、ZLE18-xxxxx8：センサを適切なリフレクタに合わせます。赤色の投光軸がリフレクタの中央に照射されるように位置決めします。センサからリフレクタ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 135 参照]。センサおよびリフレクタの光学的開口の視界を遮るものが一切ないことを確認してください。

センサを適切なリフレクタに合わせて光軸調整します。赤外線 (不可視) がリフレクタの中央に照射されるように位置決めします。光軸調整が正しいかどうかは、LED 表示灯によってのみ確認できます。これについては、図 135].センサでの読み取りを可能

にするため、リフレクタが遮られたり、照射経路に対象物があってはなりません。センサおよびリフレクタの光学的開口の視界を遮るものが一切ないことを確認してください。

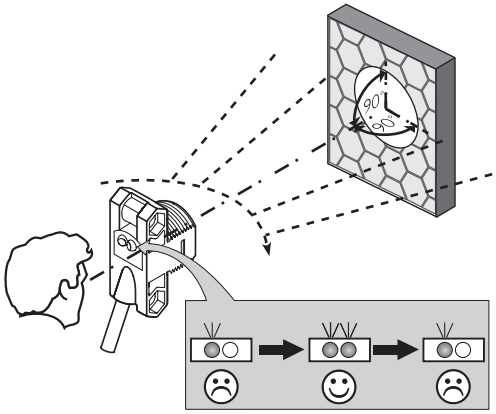
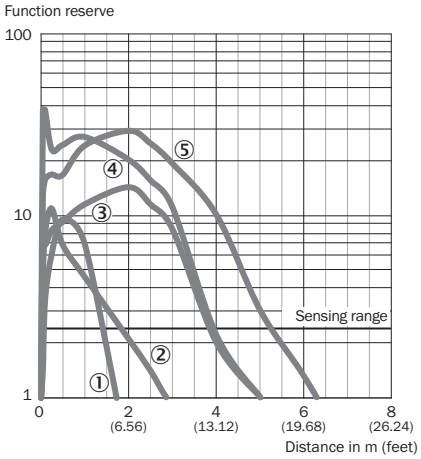


図 135: 光軸調整

2 **検出距離**

対応する図に従って、センサとリフレクタの間隔を調整します [を参照図 136]（x = 検出距離、y = 予備能）。

光軸調整完了後、非透明な対象物を光軸内に移動させます。機能を確認するには、表 36 を使用してください。スイッチング出力が表 36 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。



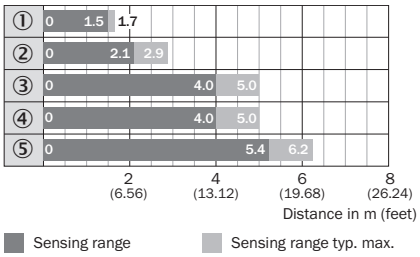


図 136: 特性曲線

図 137: 棒グラフ

① PL23FT
② PL20A
③ P250
④ PL40A
⑤ PL80A

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、光学面の汚れ、対象物からの光反射の不足などが考えられます。センサにはヘルスまたはアラーム出力が搭載されている場合があり、センサが限界条件で動作すると離散的信号が提供されます。ヘルス/アラーム出力の動作に関する詳細については、表 37 を参照してください。

85 トラブルシューティング

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

表 39: トラブルシューティング

LED 表示灯/故障パターン	原因	対策
光軸がリフレクタに合わせて調整され、光軸上に物体が何もないにもかかわらず、黄色 LED が点灯しない	無電圧、または電圧が限界値以下	電源を確認し、すべての電気接続（ケーブルおよびプラグ接続）を確認します
	電圧がきていない又は不安定	安定した電源電圧が供給されていることを確認します
	センサの異常	電源に問題がなければ、センサを交換します
黄色い LED が点滅する。アラーム/ヘルスが存在する場合は対応する出力信号をチェックしてください	センサは操作可能状態ですが、動作条件に問題があります	動作条件をチェックし、投光光軸（光軸スポット）を対象物に完全に合わせます。また、光学面を清掃します
対象物検出時の出力信号が不安定	反射に偏りのある対象物表面（例：テープ等）からの反射光を無くします	センサの位置を変えてください

86 分解および廃棄

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

注意事項

バッテリー、電気および電子デバイスの廃棄

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

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

87 メンテナンス

SICK は、次の定期的メンテナンスを推奨します。

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

機器を改造することは禁止されています。

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

88 技術データ

	ZLD18-xxxxx2	ZLD18-xxxxx8	ZLE18-xxxxx2	ZLE18-xxxxx8
偏光	✓	✓	-	-
検出範囲（リフレクタを用いた場合 PL80A）	6.8 m	4.2 m	7.9 m	5.0 m
最大検出範囲（リフレクタを用いた場合 PL80A）	7.8 m	5.0 m	9.0 m	6.2 m
光点のスポット径/距離	11 mm / 500 mm	63 x 55 mm / 500 mm	11 mm / 500 mm	63 x 55 mm / 500 mm
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	500 Hz[2)]	500 Hz[2)]	500 Hz[2)]	500 Hz[2)]
最大応答時間	1 ms[3)]	1 ms[3)]	1 ms[3)]	1 ms[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 40: 外形寸法図

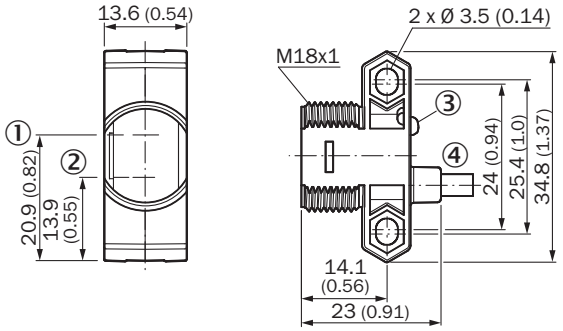


図 138: ZLx18-1xxxxx/ZLx18-Axxxxx、ケーブル

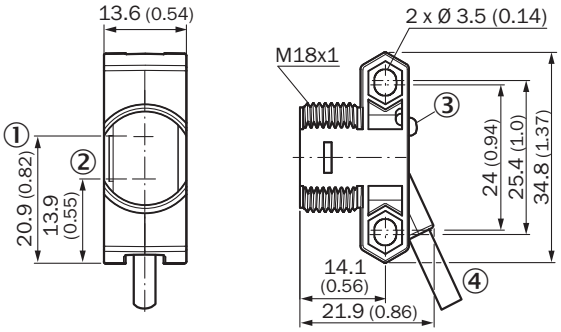


図 139: ZLx18-2xxxxx/ZLx18-Bxxxxx、ケーブル

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Subject to change without notice

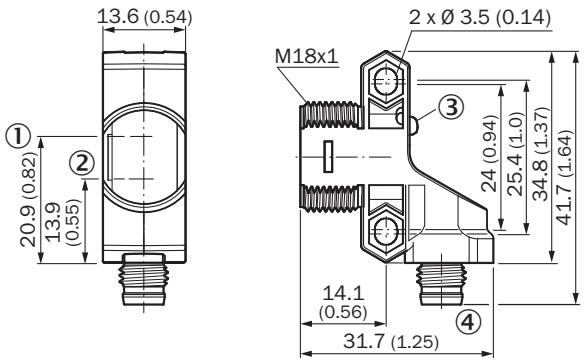


図 140: ZLx18-2xx5Ax/ZLx18-Bxx5Ax コネクタ

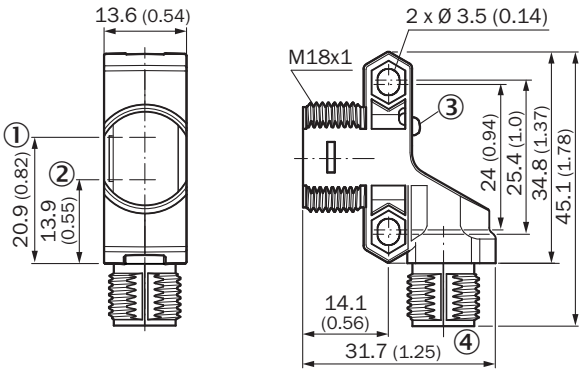


図 141: ZLx18-2xx4Ax/ZLx18-Bxx4Ax

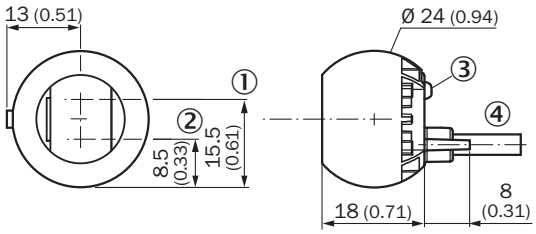


図 142: ZLx18-3xxxxx/ZLx18-Cxxxxx、ケーブル

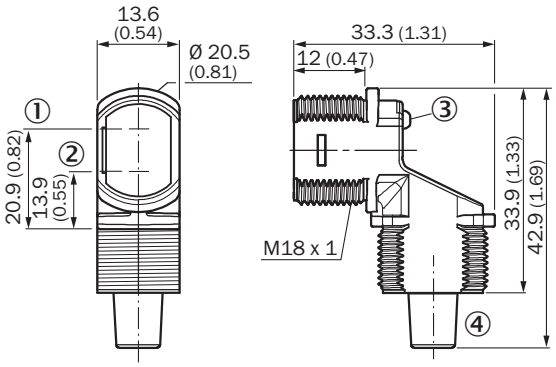


図 143: ZLx18-4xxxxx/ZLx18-Dxxxxx、ケーブル

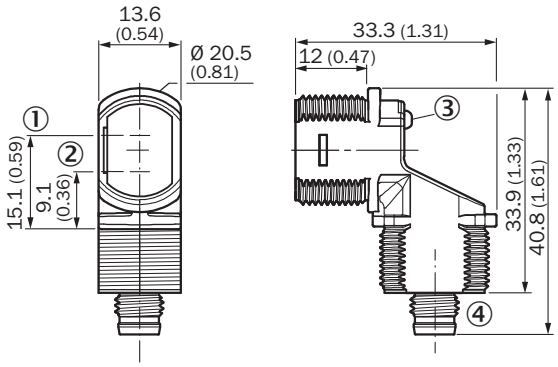


図 144: ZLx18-4xx5Ax/ZLx18-Dxx5Ax

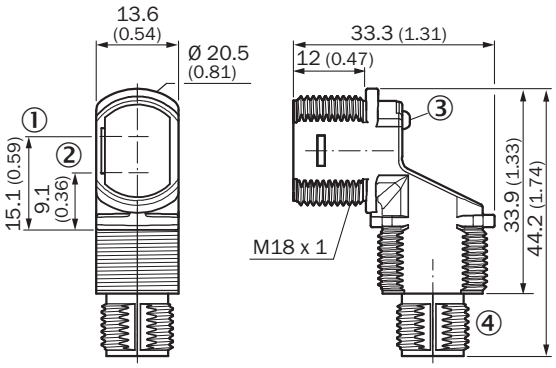


図 145: ZLx18-4xx4Ax/ZLx18-Dxx4Ax

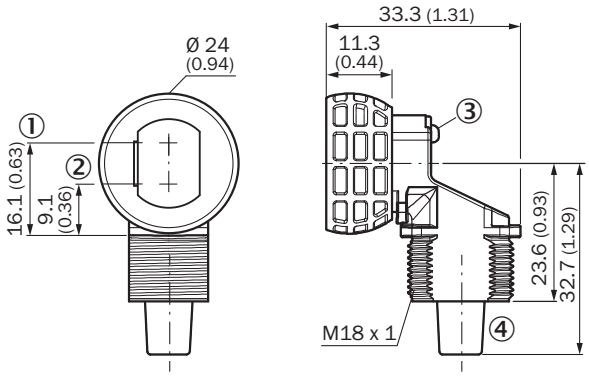


図 146: ZLx18-5xxxxx/ZLx18-Exxxxx、ケーブル

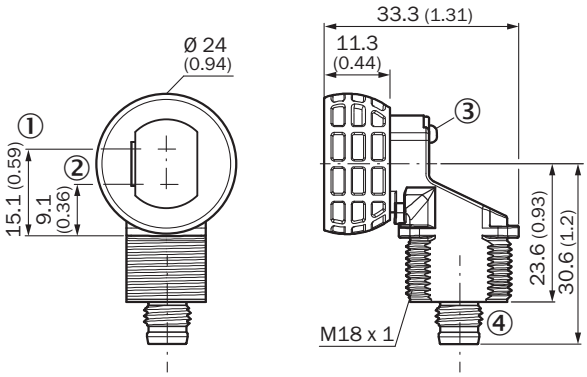


図 147: ZLx18-5xx5Ax/ZLx18-Exx5Ax

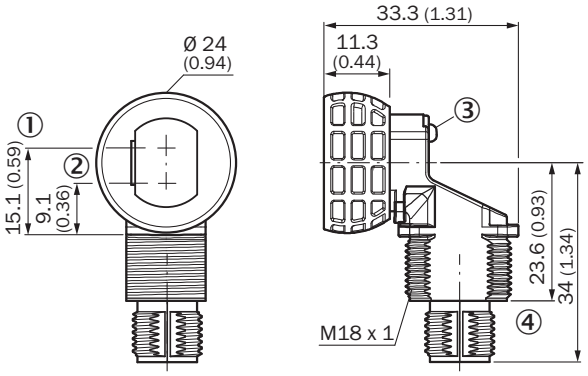


図 148: ZLx18-5xx4Ax/ZLx18-Exx4Ax

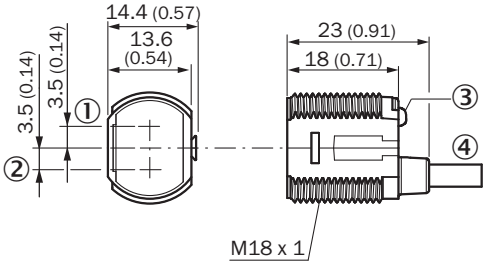


図 149: ZLx18-6xxxxx/ZLx18-Fxxxxx、ケーブル

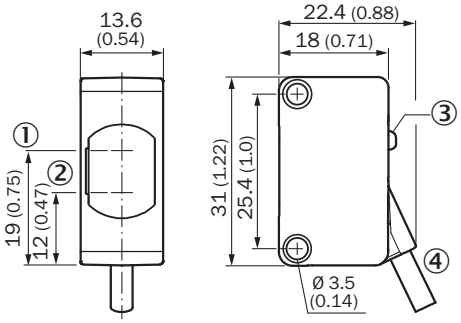


図 150: ZLx18-7xxxxx/ZLx18-Gxxxxx、ケーブル

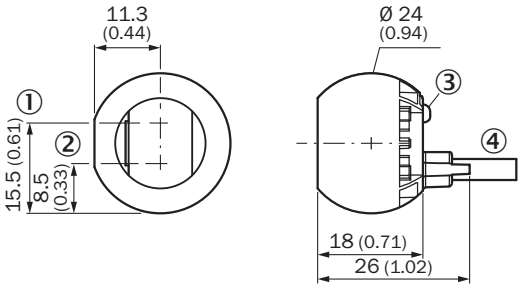


図 151: ZLx18-8xxxxx/ZLx18-Hxxxxx、ケーブル

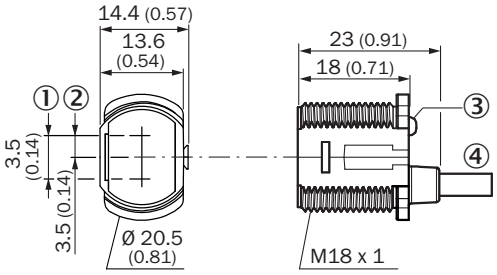


図 152: ZLx18-9xxxxx/ZLx18-Jxxxxx、ケーブル

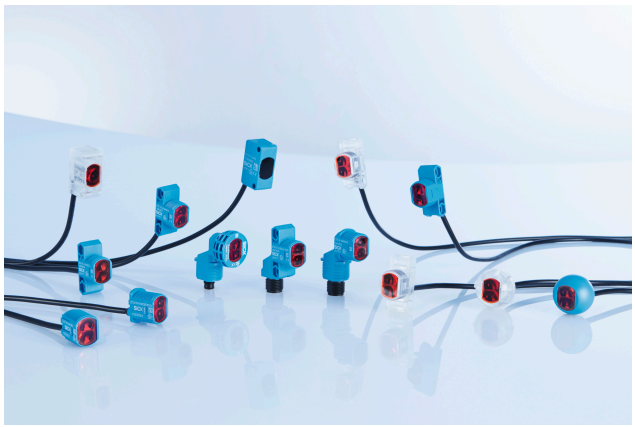
① 光学軸、投光器
② 光学軸、受光器
③ LED ステータス表示灯
④ 接続/張力緩和

ИНСТРУКЦИЯ ПО ЭКСПЛУАТАЦИИ

ZLD18 / ZLE18

Цилиндрические фотоэлектрические датчики

SICK
Sensor Intelligence.



de
en
es
fr
it
ja
pt
ru
zh

Описание продукта

Z18 SimpleSense

ZLD18 / ZLE18

Изготовитель

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

Правовые примечания

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Товарные знаки, упомянутые в данном документе, являются собственностью соответствующего владельца.

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

ZLD18 / ZLE18 оптоэлектронный, фотоэлектрический, светоотражающий датчик (далее «датчик») для оптического, бесконтактного обнаружения объектов, животных и людей. Требуется отражатель для работы данного изделия. 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

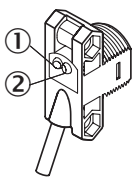


Рисунок 153: Индикаторы состояния

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

93 Монтаж

Установите датчик и отражатель на подходящем крепёжном уголке (см. программу принадлежностей от SICK). Выровняйте датчик и отражатель друг относительно друга.

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).

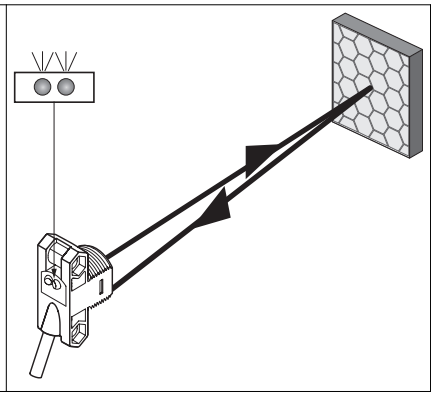
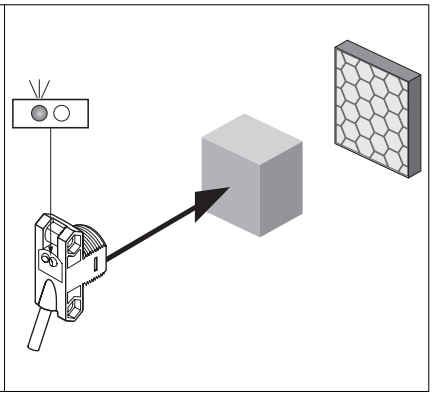
Объяснение терминологии соединений, используемой в таблицах 1-3:

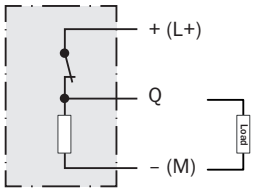
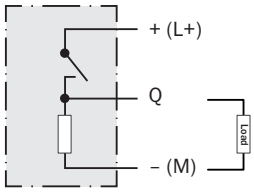
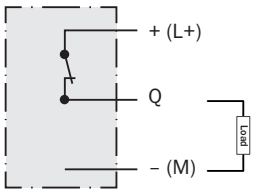
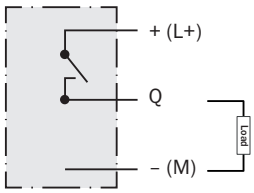
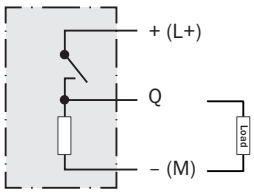
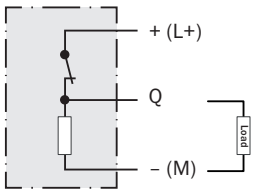
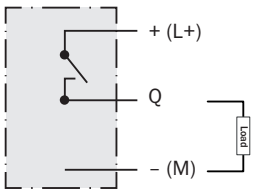
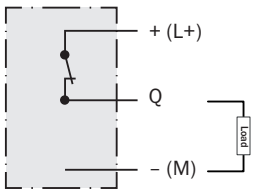
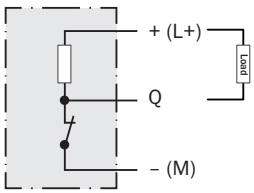
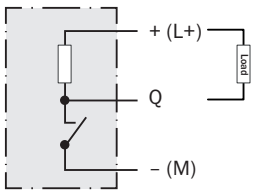
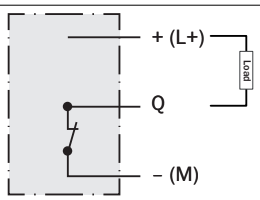
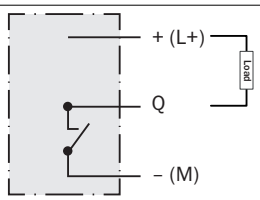
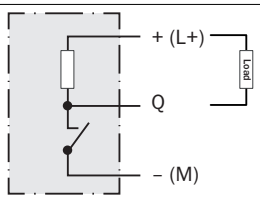
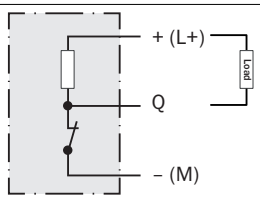
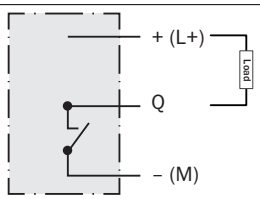
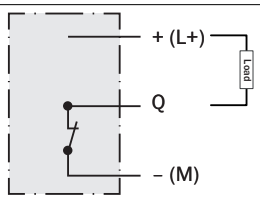
BN = Brown (Коричневый)
WH = White (Белый)
BU = Blue (Синий)
BK = Black (Черный)
n. c. = не подключен
Q1 = переключающий выход 1
Q2 = переключающий выход 2
L+ = питающее напряжение (V_S)
M = вес
L.ON = активация при наличии отраженного света
D.ON = активация при отсутствии отраженного света

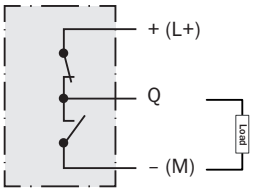
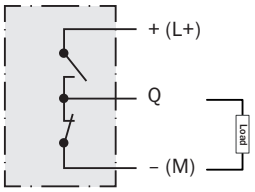
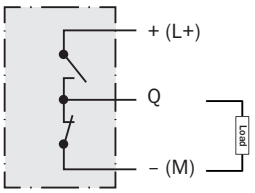
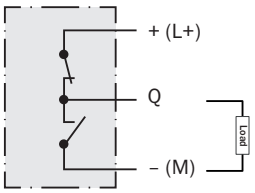
УКАЗАНИЕ
Выводы датчика могут поставляться с заводской настройкой на задержку по ВКЛ и/или ВЫКЛ. На это указывает суффикс Txx suffix на конце номера модели (Zxx18-xxxxxxTxx).

Детали подключения и вывода:

Таблица 41: Операция вывода

ZLD18 / ZLE18 -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 42: Операция сигнала тревоги/рабочего состояния

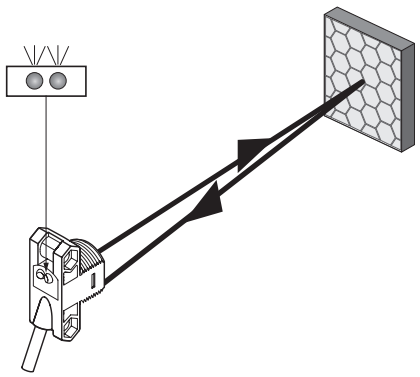
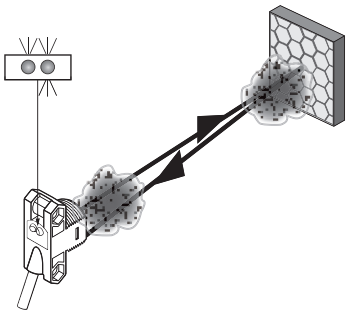
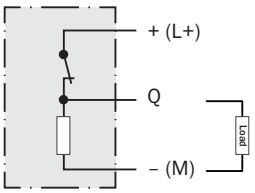
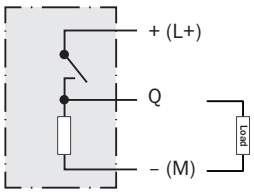
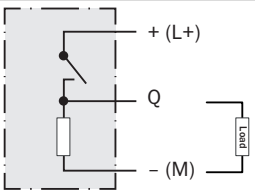
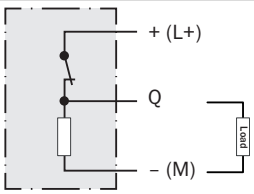
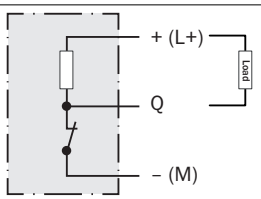
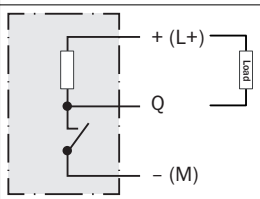
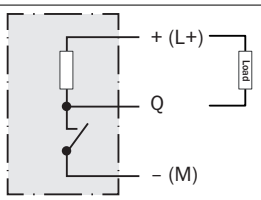
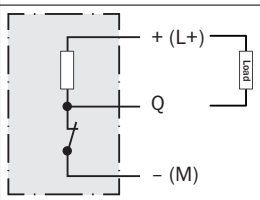
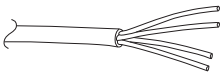
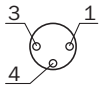
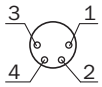
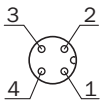
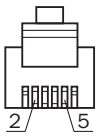
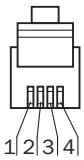
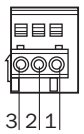
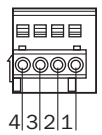
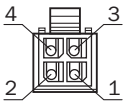
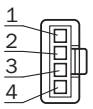
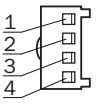
ZLD18 / ZLE18 -xx_xxx = Q2 выход Рабочее состояния/сигнал тревоги - это всегда вывод Q2		
-xxRxxx Рабочее состояние, PNP (≤ 100 мА)		
-xxTxxx Сигнал тревоги, PNP (≤ 100 мА)		
-xxQxxx Рабочее состояние, NPN (≤ 100 мА)		
-xxSxxx Сигнал тревоги, NPN (≤ 100 мА)		

Таблица 43: 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

95 Ввод в эксплуатацию

1 **Регулировка**

ZLD18-xxxxx2, ZLD18-xxxxx8, ZLE18-xxxxx2, ZLE18-xxxxx8: выравнивание датчика по отношению к соответствующему отражателю. Выберите такую позицию, чтобы красный луч передатчика попадал в центр отражателя. Луч датчика должен свободно доходить до отражателя, нахождение каких-либо объектов на пути луча не допускается. [см. рисунок 154]. Необходимо следить за тем, чтобы оптические отверстия на датчике и отражателе были совершенно свободными.

Направьте датчик на подходящий отражатель. Выберите такую позицию, чтобы инфракрасный луч (не виден) попадал в центр отражателя. Правильность выверки можно определить с помощью светодиодных индикаторов. См. рисунок 154]. Луч датчика должен свободно доходить до отражателя, нахождение каких-либо объектов на пути луча не допускается. Необходимо следить за тем, чтобы оптические отверстия на датчике и отражателе были совершенно свободными.

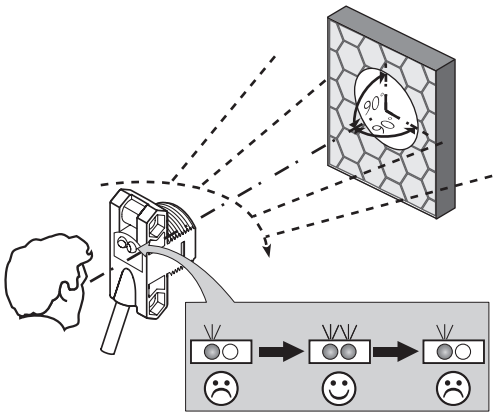


Рисунок 154: Регулировка

2 **Расстояние срабатывания**

Отрегулируйте расстояние между датчиком и отражателем, следуя соответствующей схеме [см. рисунок 155] (x = расстояние срабатывания, y = рабочий резерв).

После завершения регулировки расположите непрозрачный объект на пути луча. Используйте таблица 41 для проверки функции. Если переключающий выход не ведет себя в соответствии с таблица 41, проверьте условия эксплуатации.

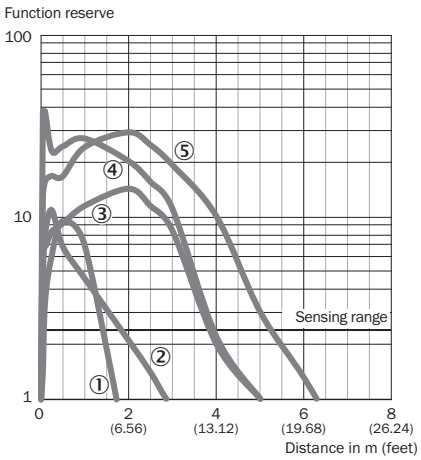


Рисунок 155: Характеристическая кривая

① PL23FT
② PL20A
③ P250
④ PL40A
⑤ PL80A

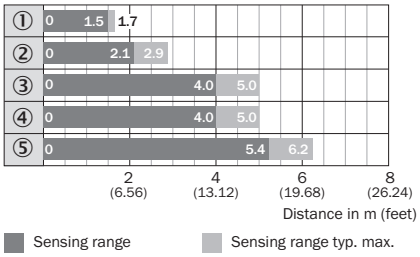


Рисунок 156: Шкальный индикатор

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) и / или недостаточного затухания света от целевого объекта. Датчик может оборудоваться выводом рабочего состояния или сигнала тревоги, что обеспечивает дискретный сигнал при работе датчика в дискретном режиме. См. таблица 42 дополнительные подробности по операции вывода рабочего состояния/сигнала тревоги.

96 Устранение неисправностей

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

Таблица 44: Поиск и устранение неисправностей

Светодиодный индикатор / картина неисправности	Причина	Меры по устранению
желтый светодиод не горит, хотя световой луч выверен по одной оси с отражателем и на траектории луча нет никакого объекта	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

Светодиодный индикатор / картина неисправности	Причина	Меры по устранению
Мигает желтый светодиод; если есть сигнал тревоги/ рабочее состояние, тогда обратите внимание на соответствующий выходной сигнал	Датчик все еще готов к эксплуатации, но эксплуатационные условия не самые лучшие	Проверьте эксплуатационные условия: Выровняйте луч света (световое пятно) по отношению к объекту/ Очистите оптические поверхности
Пропадание сигнала при детектировании объекта	Деполяризующие свойства поверхности объекта (например, пленка), переотражение	Измените положение датчика

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

	ZLD18-xxxxx2	ZLD18-xxxxx8	ZLE18-xxxxx2	ZLE18-xxxxx8
Поляризация	✓	✓	-	-
Расстояние срабатывания (с отражателем PL80A)	6.8 m	4.2 m	7.9 m	5.0 m
Расстояние срабатывания, макс. (с отражателем PL80A)	7.8 m	5.0 m	9.0 m	6.2 m
Диаметр светового пятна/ расстояние	11 mm / 500 mm	63 x 55 mm / 500 mm	11 mm / 500 mm	63 x 55 mm / 500 mm
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.	500 Hz[2)]	500 Hz[2)]	500 Hz[2)]	500 Hz[2)]
Время отклика макс.	1 ms[3)]	1 ms[3)]	1 ms[3)]	1 ms[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 45: Масштабные чертежи

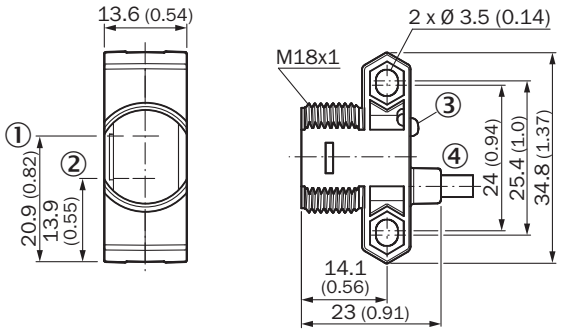


Рисунок 157: ZLx18-1xxxxx/ZLx18-Axxxxx, кабель

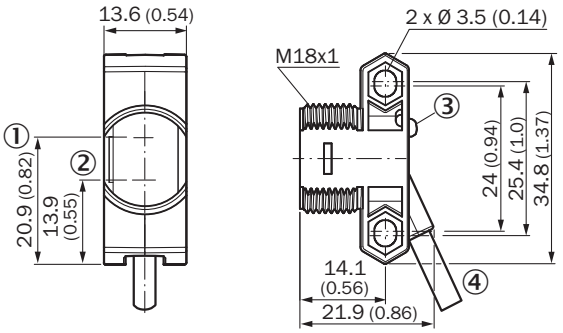


Рисунок 158: ZLx18-2xxxxx/ZLx18-Bxxxxx, кабель

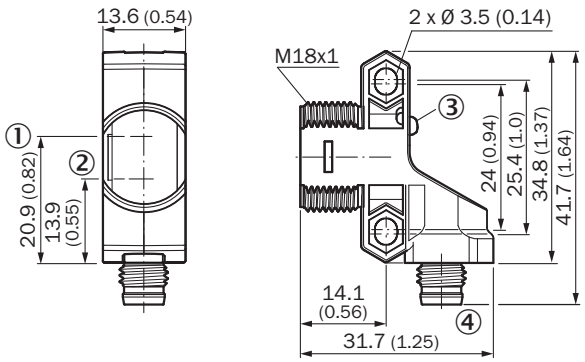


Рисунок 159: ZLx18-2xx5Ax/ZLx18-Bxx5Ax разъем

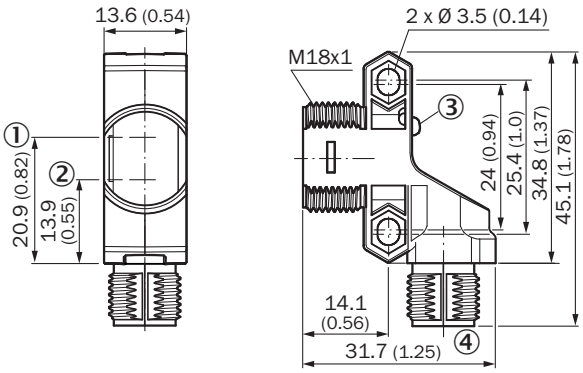


Рисунок 160: ZLx18-2xx4Ax/ZLx18-Bxx4Ax

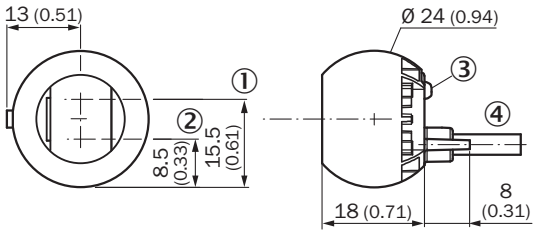


Рисунок 161: ZLx18-3xxxxx/ZLx18-Cxxxxx, кабель

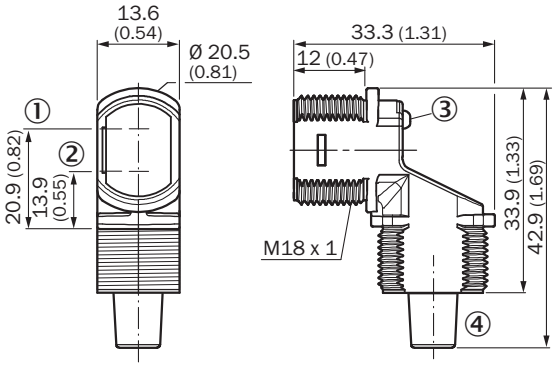


Рисунок 162: ZLx18-4xxxxx/ZLx18-Dxxxxx, кабель

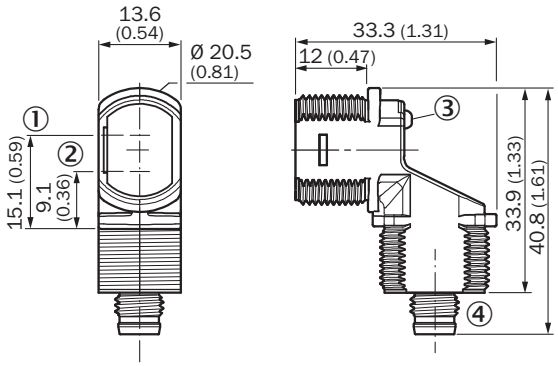


Рисунок 163: ZLx18-4xx5Ax/ZLx18-Dxx5Ax

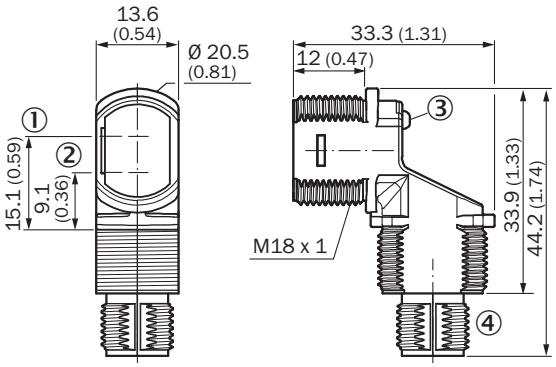


Рисунок 164: ZLx18-4xx4Ax/ZLx18-Dxx4Ax

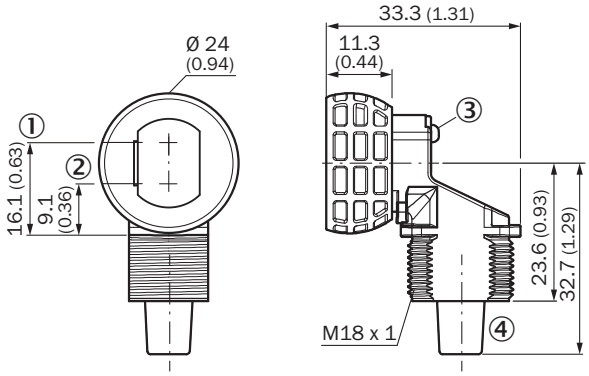


Рисунок 165: ZLx18-5xxxxx/ZLx18-Exxxxx, кабель

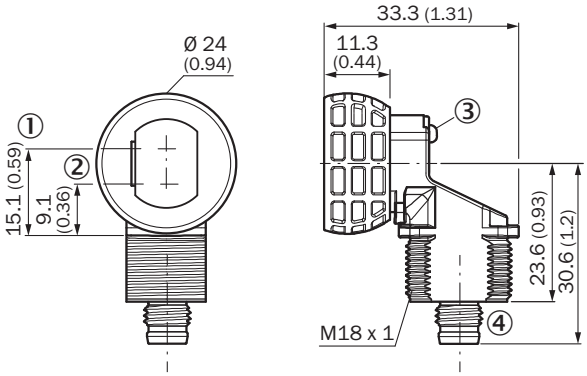


Рисунок 166: ZLx18-5xx5Ax/ZLx18-Exx5Ax

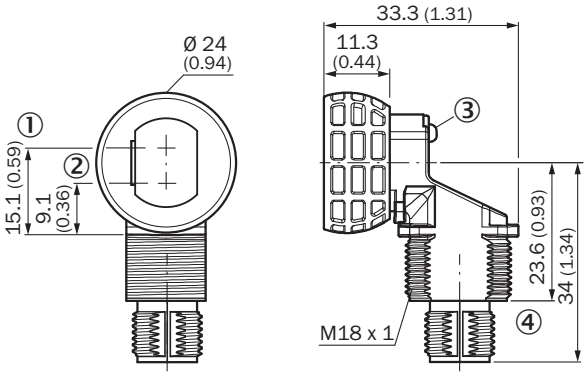


Рисунок 167: ZLx18-5xx4Ax/ZLx18-Exx4Ax

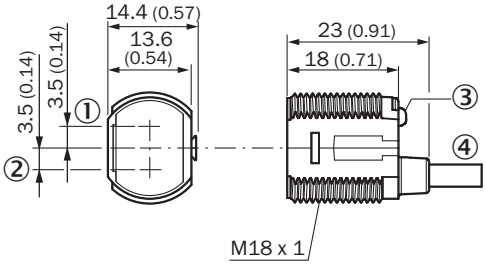


Рисунок 168: ZLx18-6xxxxx/ZLx18-Fxxxxx, кабель

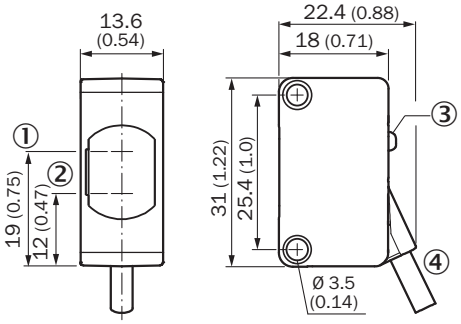


Рисунок 169: ZLx18-7xxxxx/ZLx18-Gxxxxx, кабель

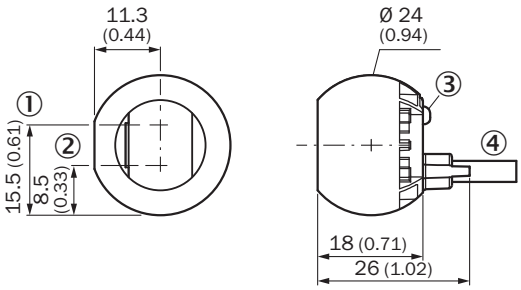


Рисунок 170: ZLx18-8xxxxx/ZLx18-Hxxxxx, кабель

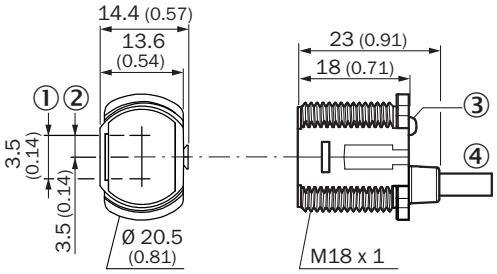


Рисунок 171: ZLx18-9xxxxx/ZLx18-Jxxxxx, кабель

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

Australia
Phone +61 (3) 9457 0600
1800 33 48 02 – tollfree
E-Mail sales@sick.com.au

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E-Mail office@sick.at

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Phone +32 (0) 2 466 55 66
E-Mail info@sick.be

Brazil
Phone +55 11 3215-4900
E-Mail comercial@sick.com.br

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