OPERATING INSTRUCTION

GRL18

Operating Instruction
DE/EN/FR/PT/IT/ES/ZH/JA/RU

8016955

SICK
Sensor Intelligence.

Photoelectric retro-reflective sensor

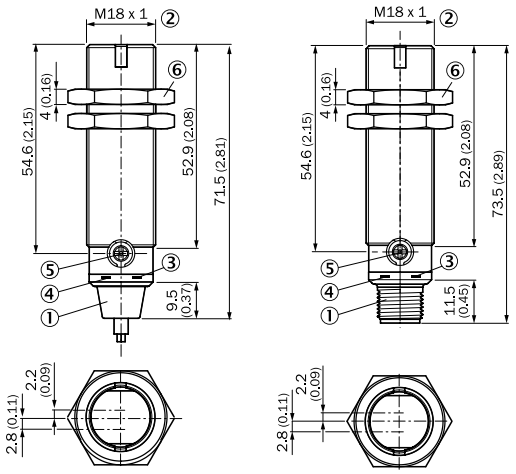
Operating instructions

2 Safety notes

- Read the operating instructions before commissioning.
- Connection, mounting, and setting may only be performed by trained specialists.
- Not a safety component in accordance with the EU Machinery Directive. Only for use in applications in accordance with NFPA 79. UL-listed adapters with connecting cables are available. Enclosure type 1
- When commissioning, protect the device from moisture and contamination.
- These operating instructions contain information required during the life cycle of the sensor.

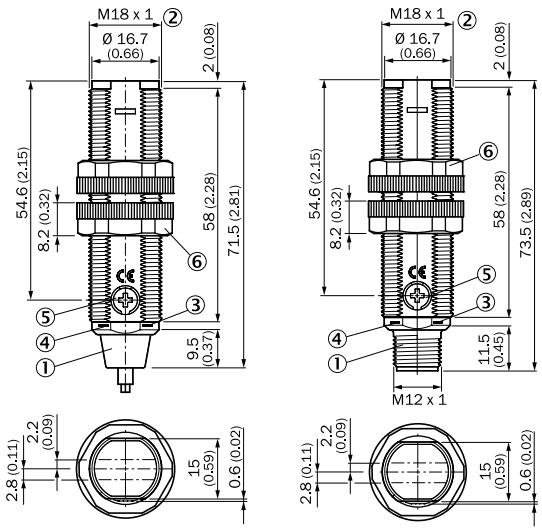
3 Correct use

The GRL18 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.



① Connection cable 2 m / Connector M12, 4-pin
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control; Potentiometer 270°
⑥ 24_x: fastening nuts (2 x); 24 mm hex, metal

Image 1: GRL18-xxxx2



① Connection cable 2 m / Connector M12, 4-pin
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control; Potentiometer 270°
⑥ 11_x: fastening nuts (2 x); width across 22, plastic

Image 2: GRL18-xxxx7

4 Commissioning

1 Adjust the distance between the sensor and the reflector according to the corresponding diagram (x = sensing range, y = operating reserve).

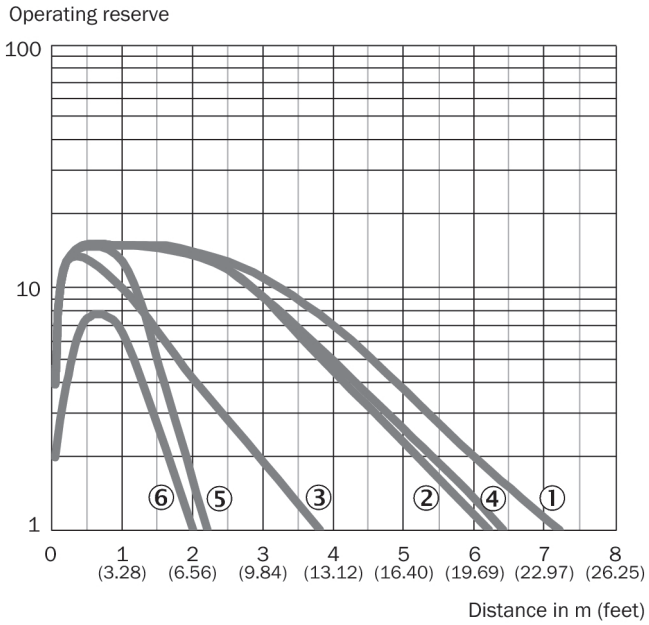


Image 3: H

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

Observe the maximum permissible tightening torque of the sensor of 2.0 Nm for metal/0.9 Nm for plastic [K].

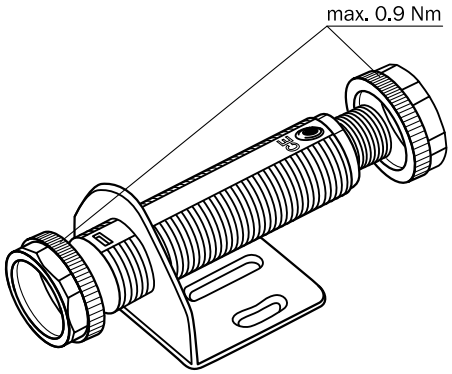


Image: K: GRL18-x24x7

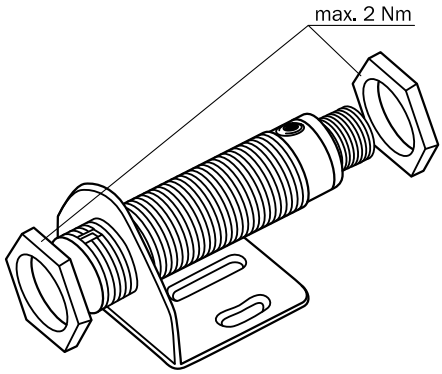


Image: K: GRL18-x24x2

3 The sensors must be connected in a voltage-free state (V_S = 0 V). The information in the graphics [B] must be observed, depending on the type of connection:

- Male connector connection: pin assignment
- Cable: core color

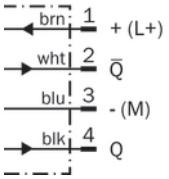


Image: B: GRL18-x24xx

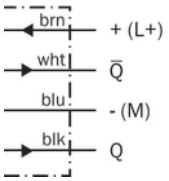


Image: B: GRL18-x11xx

Only apply voltage/switch on the power supply (V_S > 0 V) once all electrical connections have been completed. The green LED indicator lights up on the sensor.

Explanations of the connection diagram (Graphic B):

Switching outputs Q and /Q (according to Graphic B):

GRL18-P (PNP: load -> M)

GRL18-N (NPN: load -> L+)

4 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 E]. You must ensure that the optical openings of the sensor and reflector are completely clear.

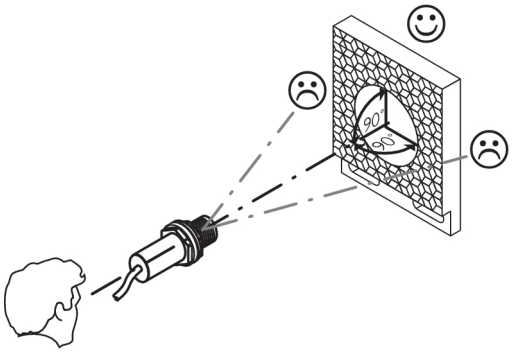


Image 4: E

5 Sensor with potentiometer:

The sensitivity is adjusted with the potentiometer (type: 270°). Clockwise rotation: operating reserve increased; counterclockwise rotation: operating reserve reduced. We recommend setting the potentiometer to "Maximum." A lower operating reserve may be necessary for depolarizing surfaces.

The sensor is adjusted and ready for operation. Refer to Graphics C and G to check the function. If the switching output fails to behave in accordance with Graphic C, check application conditions. See section Fault diagnosis.

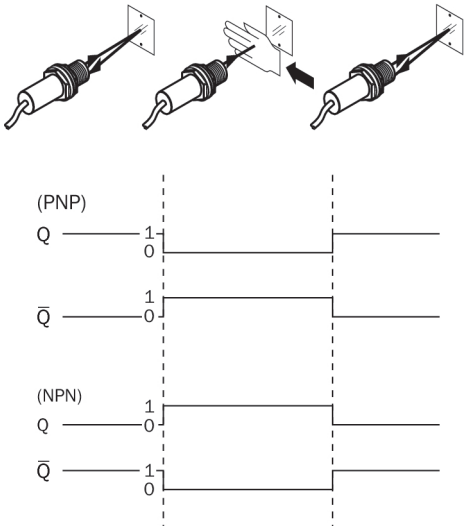


Image 5: C

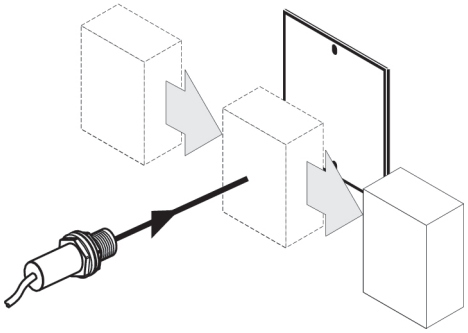


Image 6: G

6 Fault diagnosis

Table 7 indicates which measures are to be taken if the sensor stops working.

7 Tab_Fault diagnosis

LED indicator/fault pattern / ***LED indicator/fault pattern***	**Cause /** ***Cause***	**Measures /** ***Measures***
Green LED does not light up / *Green LED does not light up*	No voltage or voltage below the limit values / *No voltage or voltage below the limit values*	Check the power supply, check all electrical connections (cables and plug connections) / *Check the power supply, check all electrical connections (cables and plug connections)*
Green LED does not light up / *Green LED does not light up*	Voltage interruptions / *Voltage interruptions*	Ensure there is a stable power supply without interruptions / *Ensure there is a stable power supply without interruptions*
Green LED does not light up / *Green LED does not light up*	Sensor is faulty / *Sensor is faulty*	If the power supply is OK, replace the sensor / *If the power supply is OK, replace the sensor*

LED indicator/fault pattern / *LED indicator/fault pattern*	Cause / *Cause*	Measures / *Measures*
Yellow LED flashes / *Yellow LED flashes*	Sensor is still ready for operation, but the operating conditions are not ideal / *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 reflector / Clean the optical surfaces (sensor and reflector) / Readjust the sensitivity (potentiometer) / If the potentiometer is set to the max. sensing range: Reduce the distance between the sensor and the reflector, and check the reflector type against Graphic E / Reflector is not suitable for the application in question (we recommend only using SICK reflectors) / Check sensing range and adjust if necessary, see Graphic E / Distance between the sensor and the reflector is too long / *Check the operating conditions: Fully align the beam of light (light spot) with the reflector / Clean the optical surfaces (sensor and reflector) / Readjust the sensitivity (potentiometer) / If the potentiometer is set to the max. sensing range: Reduce the distance between the sensor and the reflector, and check the reflector type against Graphic E / Reflector is not suitable for the application in question (we recommend only using SICK reflectors) / Check sensing range and adjust if necessary, see Graphic E / Distance between the sensor and the reflector is too long*
Signal interruptions when object is detected / *Signal interruptions when object is detected*	Depolarizing property of the object surface (e.g., tape), reflection / *Depolarizing property of the object surface (e.g., tape), reflection*	Reduce sensitivity or change the position of the sensor / *Reduce sensitivity or change the position of the sensor*

8 Disassembly and disposal

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

9 Maintenance

SICK sensors are maintenance-free.

We recommend doing the following regularly:

1. Clean the external lens surfaces
2. 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.

Reflexions-Lichtschranke
Betriebsanleitung

12 Sicherheitshinweise

- Vor der Inbetriebnahme die Betriebsanleitung lesen.
- Anschluss, Montage und Einstellung nur durch Fachpersonal.
- Kein Sicherheitsbauteil gemäß EU-Maschinenrichtlinie. Nur zur Verwendung in Anwendungen gemäß NFPA 79. Von UL gelistete Adapter mit Anschlusskabeln sind verfügbar. Enclosure type 1
- Gerät bei Inbetriebnahme vor Feuchte und Verunreinigung schützen.
- Diese Betriebsanleitung enthält Informationen, die während des Lebenszyklus des Sensors notwendig sind.

13 Bestimmungsgemäße Verwendung

Die GRL18 ist eine optoelektronische 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.

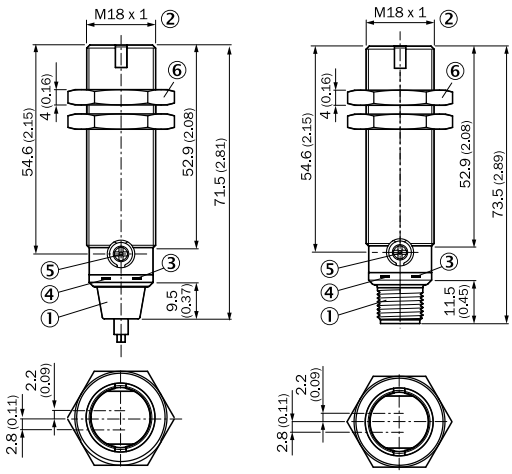


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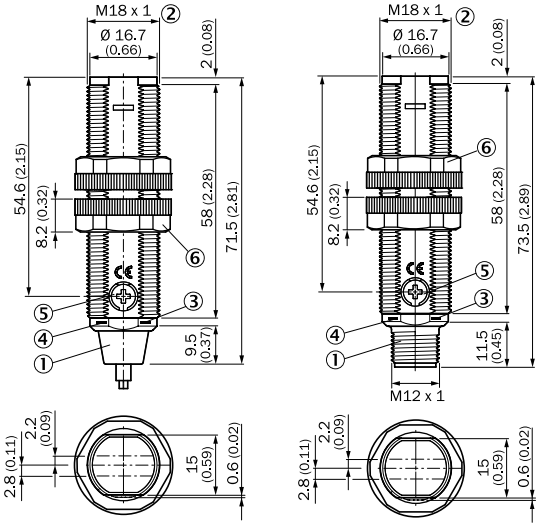
Abb. 7: GRL18-xxxx2



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⑥ 11_x: fastening nuts (2 x); width across 22, plastic

Abb. 8: GRL18-xxxx7

14 Inbetriebnahme

1 Distanz zwischen Sensor und Reflektor mit dem zugehörigen Diagramm [vgl. H] abgleichen (x = Schaltabstand, y = Funktionsreserve).

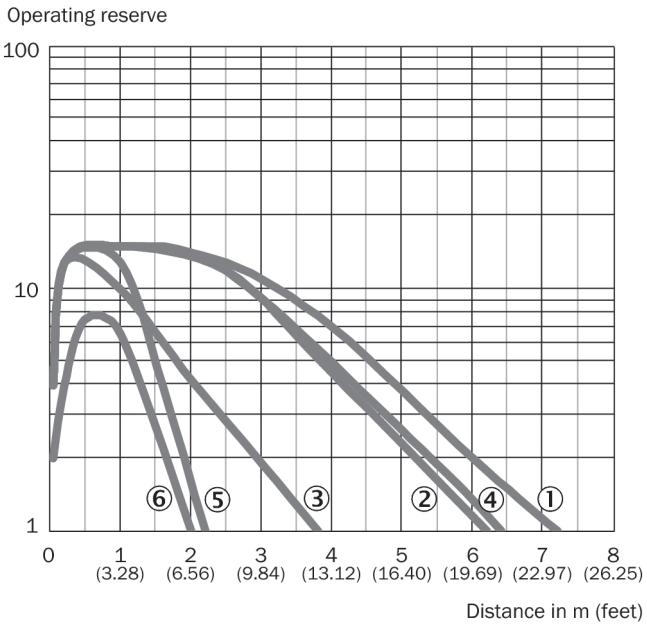


Abb. 9: H

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

Maximal zulässiges Anzugsdrehmoment des Sensors von 2,0 Nm für Metall / 0,9 Nm für Kunststoff beachten [vgl. K].

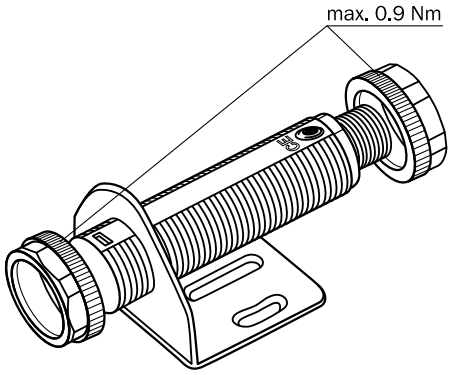


Abb.: K: GRL18-x24x7

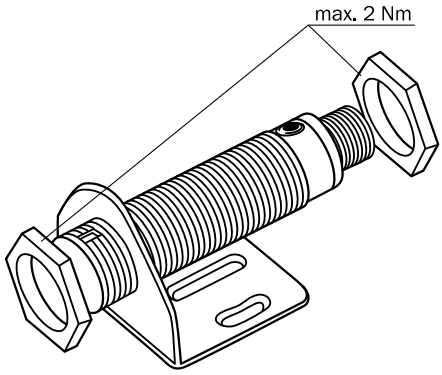


Abb.: K: GRL18-x24x2

3 Anschluss der Sensoren muss spannungsfrei (V_S = 0 V) erfolgen. Je nach Anschlussart sind die Informationen in den Grafiken [vgl. B] zu beachten:

- Steckeranschluss: Pinbelegung
- Leitung: Adernfarbe

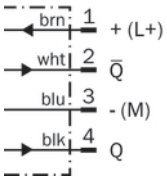


Abb.: B: GRL18-x24xx

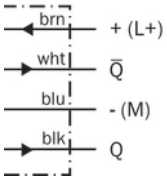


Abb.: B: GRL18-x11xx

Erst nach Anschluss aller elektrischen Verbindungen die Spannungsversorgung (V_S > 0 V) anlegen bzw. einschalten. Am Sensor leuchtet die grüne Anzeige-LED.

Erläuterungen zum Anschlussschema (Grafik B):

Schaltausgänge Q bzw. /Q (gemäß Grafik B):

GRL18-P (PNP: Last -> M)

GRL18-N (NPN: Last -> L+)

4 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 [vgl. E]. Es ist darauf zu achten, dass die optischen Öffnungen von Sensor und Reflektor vollständig frei sind.

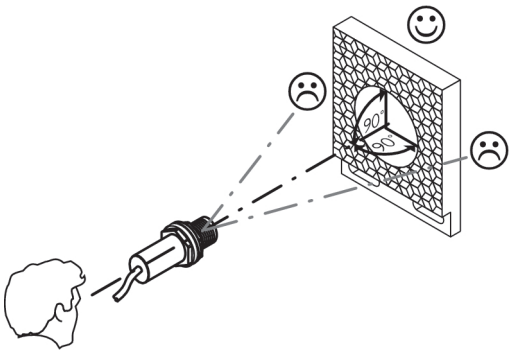
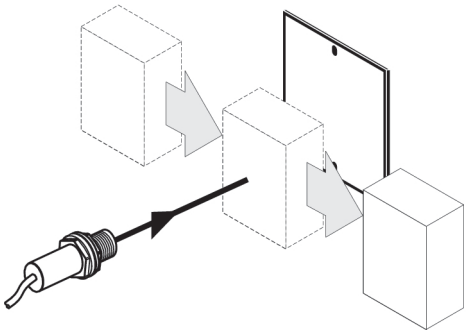


Abb. 10: E

5



Sensor mit Potentiometer:

Mit dem Potentiometer (Art: 270°) wird die Empfindlichkeit eingestellt. Drehung nach rechts: Erhöhung der Funktionsreserve, Drehung nach links: Verringerung der Funktionsreserve. Wir empfehlen, das Potentiometer auf "Maximal" zu stellen. Bei depolarisierenden Oberflächen kann eine geringere Funktionsreserve empfehlenswert sein.

Sensor ist eingestellt und betriebsbereit. Zur Überprüfung der Funktion Grafik C und G heranziehen. Verhält sich der Schaltausgang nicht gemäß Grafik C, Einsatzbedingungen prüfen. Siehe Abschnitt Fehlerdiagnose.

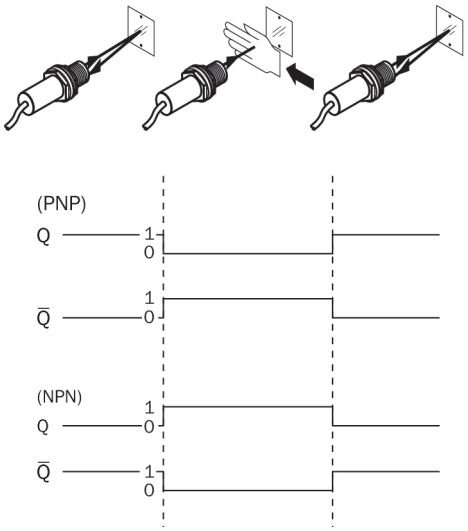


Abb. 11: C

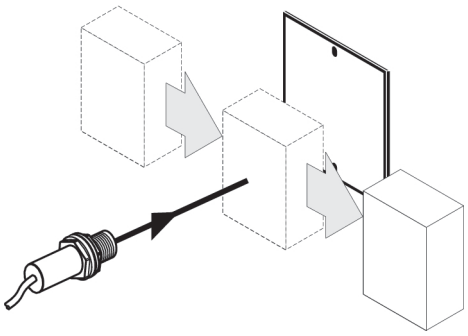


Abb. 12: G

16 Fehlerdiagnose

Tabelle 17 zeigt, welche Maßnahmen durchzuführen sind, wenn die Funktion des Sensors nicht mehr gegeben ist.

17 Tab_Fehlerdiagnose

Anzeige-LED / Fehlerbild / ***LED indicator/fault pattern***	**Ursache /** ***Cause***	**Maßnahme /** ***Measures***
grüne LED leuchtet nicht / *Green LED does not light up*	keine Spannung oder Spannung unterhalb der Grenzwerte / *No voltage or voltage below the limit values*	Spannungsversorgung prüfen, den gesamten elektrischen Anschluss prüfen (Leitungen und Steckerverbindungen) / *Check the power supply, check all electrical connections (cables and plug connections)*
grüne LED leuchtet nicht / *Green LED does not light up*	Spannungsunterbrechungen / *Voltage interruptions*	Sicherstellen einer stabilen Spannungsversorgung ohne Unterbrechungen / *Ensure there is a stable power supply without interruptions*
grüne LED leuchtet nicht / *Green LED does not light up*	Sensor ist defekt / *Sensor is faulty*	Wenn Spannungsversorgung in Ordnung ist, dann Sensor austauschen / *If the power supply is OK, replace the sensor*

Anzeige-LED / Fehlerbild / *LED indicator/fault pattern*	Ursache / *Cause*	Maßnahme / *Measures*
gelbe LED blinkt / *Yellow LED flashes*	Sensor ist noch betriebsbereit, aber die Betriebsbedingungen sind nicht optimal / *Sensor is still ready for operation, but the operating conditions are not ideal*	Betriebsbedingungen prüfen: Lichtstrahl (Lichtfleck) vollständig auf den Reflektor ausrichten / Reinigung der optischen Flächen (Sensor und Reflektor) / Empfindlichkeit (Potentiometer) neu einstellen / falls Potentiometer auf max. Schaltabstand eingestellt: Abstand zwischen Sensor und Reflektor verringern sowie Reflektortyp mit Grafik E überprüfen / Reflektor eignet sich nicht für gewählte Applikation (wir empfehlen, ausschließlich SICK-Reflektoren zu verwenden) / Schaltabstand überprüfen und ggfs. anpassen, siehe Grafik E / Abstand zwischen Sensor und Reflektor ist zu groß / *Check the operating conditions: Fully align the beam of light (light spot) with the reflector / Clean the optical surfaces (sensor and reflector) / Readjust the sensitivity (potentiometer) / If the potentiometer is set to the max. sensing range: Reduce the distance between the sensor and the reflector, and check the reflector type against Graphic E / Reflector is not suitable for the application in question (we recommend only using SICK reflectors) / Check sensing range and adjust if necessary, see Graphic E / Distance between the sensor and the reflector is too long*
Signalunterbrechungen bei Objektdetektion / *Signal interruptions when object is detected*	Depolarisierende Eigenschaft der Objektoberfläche (z. B. Folie), Umspiegelung / *Depolarizing property of the object surface (e.g., tape), reflection*	Empfindlichkeit reduzieren oder Sensorposition verändern / *Reduce sensitivity or change the position of the sensor*

18 Demontage und Entsorgung

Die Entsorgung des Sensors hat gemäß den länderspezifisch anwendbaren Vorschriften zu erfolgen. Für die enthaltenen Wertstoffe (insbesondere Edelmetalle) ist im Rahmen der Entsorgung eine Verwertung anzustreben.

19 Wartung

SICK-Sensoren sind wartungsfrei.

Wir empfehlen, in regelmäßigen Abständen

1. die optischen Grenzflächen zu reinigen
2. Verschraubungen und Steckverbindungen zu überprüfen

Veränderungen an Geräten dürfen nicht vorgenommen werden.

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

22 Consignes de sécurité

- Lire la notice d'instruction avant la mise en service.
- Confier le raccordement, le montage et le réglage uniquement à un personnel spécialisé.
- Il ne s'agit pas d'un composant de sécurité au sens de la directive machines CE. Utilisation uniquement pour des applications selon la NFPA 79 Des adaptateurs listés UL avec câbles de connexion sont disponibles. Enclosure type 1
- Protéger l'appareil contre l'humidité et les impuretés lors de la mise en service.
- Cette notice d'instruction contient des informations nécessaires pendant toute la durée de vie du capteur.

23 Utilisation conforme

GRL18 est une barrière réflexe optoélectronique (appelée capteur dans ce document) qui permet la détection optique sans contact d'objets, d'animaux et de personnes. Un réflecteur est nécessaire à son fonctionnement. Toute autre utilisation ou modification du produit annule la garantie de SICK AG.

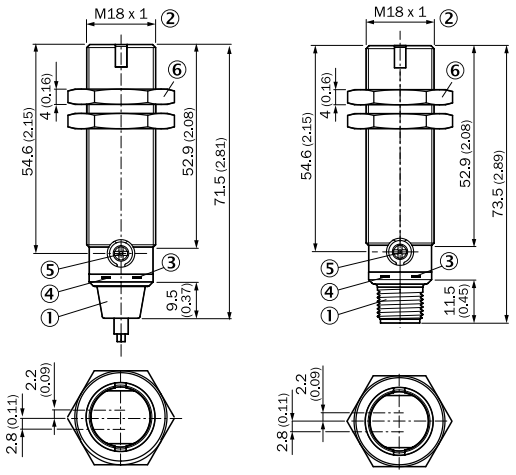


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Image 13: GRL18-xxxx2

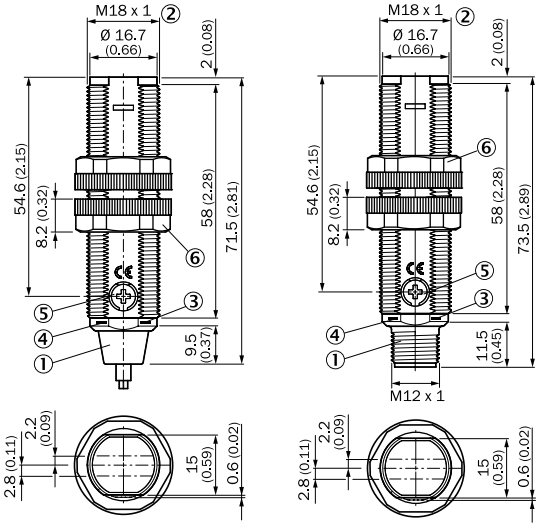

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Image 14: GRL18-xxxx7

24 Mise en service

1 Comparer la distance entre le capteur et le réflecteur avec le diagramme [voir H] correspondant (x = portée, y = réserve de fonctionnement).

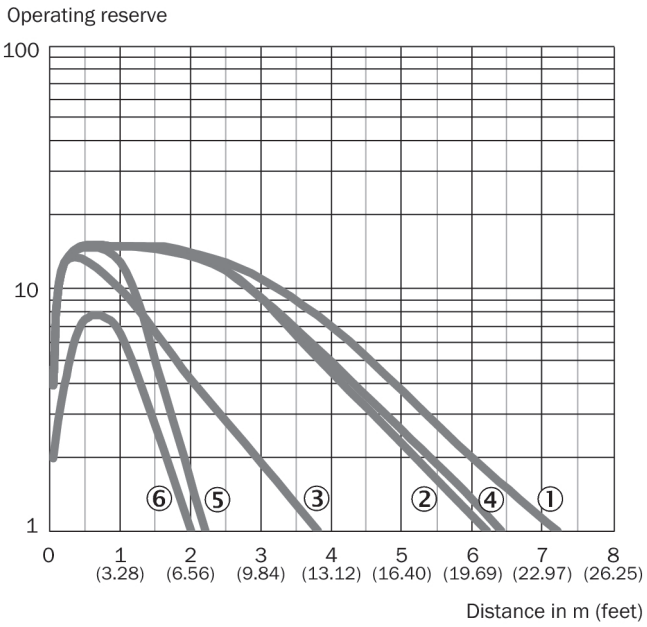

Image 15: H

2 Monter le capteur et le réflecteur sur des équerres de fixation adaptées (voir la gamme d'accessoires SICK). Aligner le capteur sur le réflecteur.

Respecter le couple de serrage maximal admissible du capteur de 2,0 Nm pour métal / 0,9 Nm pour plastique [voir K].

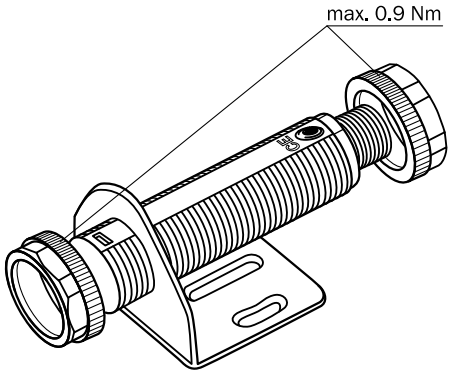

Image: K: GRL18-x24x7

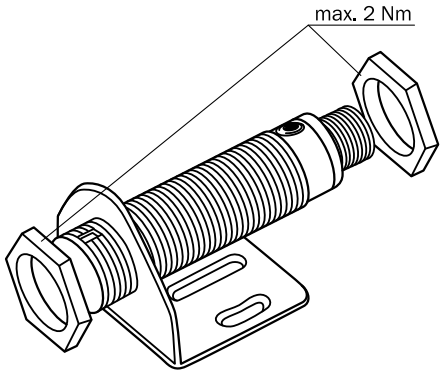

Image: K: GRL18-x24x2

3 Le raccordement des capteurs doit s'effectuer hors tension (V_S = 0 V). Selon le mode de raccordement, respecter les informations contenues dans les schémas [B] :

- Raccordement du connecteur : affectation des broches
- Câble : couleur des fils

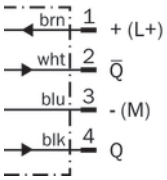

Image: B: GRL18-x24xx

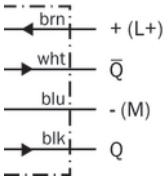

Image: B: GRL18-x11xx

Après avoir terminé tous les raccordements électriques, enclencher l'alimentation électrique (V_S > 0 V). La DEL verte s'allume sur le capteur.

Explications relatives au schéma de raccordement (schéma B) :

Sorties de commutation Q ou /Q (selon le schéma B) :

GRL18-P (PNP : charge -> M)

GRL18-N (NPN : charge -> L+)

4 Aligner le capteur sur un réflecteur adéquat. Sélectionner la position de sorte que le faisceau lumineux émis rouge touche le réflecteur en plein milieu. 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 E]. S'assurer que les ouvertures optiques du capteur et du réflecteur sont parfaitement dégagées.

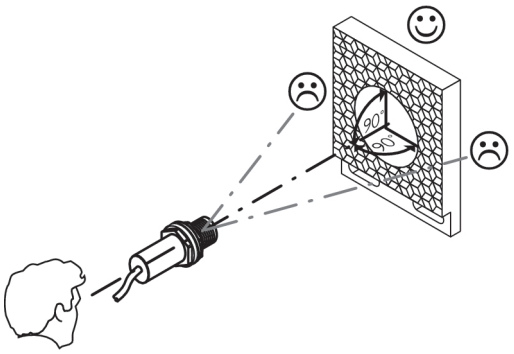

Image 16: E

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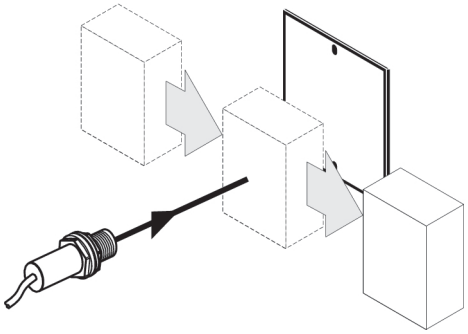


Capteur avec potentiomètre :

Le potentiomètre (réf. : 270°) permet de régler la sensibilité. Rotation vers la droite : augmentation de la réserve de fonctionnement, rotation vers la gauche : réduction de la réserve de fonctionnement. Nous recommandons de régler le potentiomètre sur "Maximum". En cas de surface dépolarisante, il est recommandé de prévoir une réserve de fonctionnement plus faible.

Le capteur est réglé et prêt à être utilisé. Pour contrôler le fonctionnement, utiliser les schémas C et G. Si la sortie de commutation ne se comporte pas comme indiqué sur le schéma C, vérifier les conditions d'utilisation. Voir la section consacrée au diagnostic.

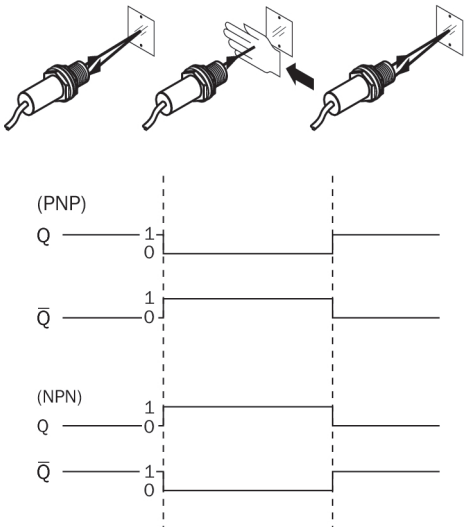


Image 17: C

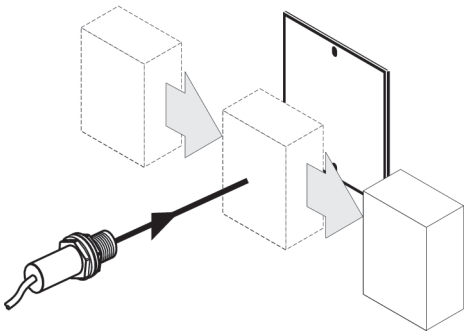


Image 18: G

26 Diagnostic

Le tableau 27 présente les mesures à appliquer si le capteur ne fonctionne plus.

27 Tab_Diagnostic

LED d'état / image du défaut / ***LED indicator/fault pattern***	**Cause /** ***Cause***	**/** ***Measures***
La LED verte ne s'allume pas / *Green LED does not light up*	Pas de tension ou tension inférieure aux valeurs limites / *No voltage or voltage below the limit values*	Contrôler l'alimentation électrique, contrôler tous les branchements électriques (câbles et connexions) / *Check the power supply, check all electrical connections (cables and plug connections)*
La LED verte ne s'allume pas / *Green LED does not light up*	Coupures d'alimentation électrique / *Voltage interruptions*	S'assurer que l'alimentation électrique est stable et ininterrompue / *Ensure there is a stable power supply without interruptions*
La LED verte ne s'allume pas / *Green LED does not light up*	Le capteur est défectueux / *Sensor is faulty*	Si l'alimentation électrique est en bon état, remplacer le capteur / *If the power supply is OK, replace the sensor*

LED d'état / image du défaut / ***LED indicator/fault pattern***	**Cause /** ***Cause***	**/** ***Measures***
La LED jaune clignote / *Yellow LED flashes*	Le capteur est encore opérationnel, mais les conditions d'utilisation ne sont pas idéales / *Sensor is still ready for operation, but the operating conditions are not ideal*	Vérifier les conditions d'utilisation : Diriger le faisceau lumineux (spot lumineux) entièrement sur le réflecteur / Nettoyage des surfaces optiques (capteur et réflecteur) / Régler à nouveau la sensibilité (potentiomètre) / Si le potentiomètre est réglé sur la portée max. : réduire la distance entre le capteur et le réflecteur et contrôler le type de réflecteur avec le schéma E / Le réflecteur ne convient pas à l'application sélectionnée (nous recommandons d'utiliser exclusivement des réflecteurs SICK) / Contrôler la portée et éventuellement l'adapter, voir le schéma E / La distance entre le capteur et le réflecteur est trop grande / *Check the operating conditions: Fully align the beam of light (light spot) with the reflector / Clean the optical surfaces (sensor and reflector) / Readjust the sensitivity (potentiometer) / If the potentiometer is set to the max. sensing range: Reduce the distance between the sensor and the reflector, and check the reflector type against Graphic E / Reflector is not suitable for the application in question (we recommend only using SICK reflectors) / Check sensing range and adjust if necessary, see Graphic E / Distance between the sensor and the reflector is too long*
Coupures de signal lors de détection d'objet / *Signal interruptions when object is detected*	Propriété dépolarisante de la surface de l'objet (par ex. film), réflexions / *Depolarizing property of the object surface (e.g., tape), reflection*	Réduire la sensibilité ou changer la position du capteur / *Reduce sensitivity or change the position of the sensor*

28 Démontage et mise au rebut

La mise au rebut du capteur doit respecter la réglementation nationale en vigueur. Dans le cadre de la mise au rebut, veiller à recycler les matériaux (notamment les métaux précieux).

29 Maintenance

Les capteurs SICK ne nécessitent aucune maintenance.

Nous vous recommandons de procéder régulièrement

1. au nettoyage des surfaces optiques
2. au contrôle des vissages et des connexions enfichables

Ne procéder à aucune modification sur les appareils.

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

32 Notas de segurança

- Ler as instruções de operação antes da colocação em funcionamento.
- A conexão, a montagem e o ajuste devem ser executados somente por pessoal técnico qualificado.
- Os componentes de segurança não se encontram em conformidade com a Diretiva Europeia de Máquinas. Somente na utilização em aplicações de acordo com NFPA 79. Estão disponíveis adaptadores listados pela UL com cabos de conexão. Enclosure type 1
- Durante o funcionamento, manter o aparelho protegido contra impurezas e umidade.
- Este manual de instruções contém informações necessárias para toda a vida útil do sensor.

33 Especificações de uso

O GRL18 é uma barreira de luz de reflexão optoeletrônica (doravante denominada "sensor") utilizada para a detecção óptica, sem contato, de objetos, animais e pessoas. É necessário um refletor para o funcionamento. Qualquer utilização diferente ou alterações do produto provocam a perda da garantia da SICK AG.

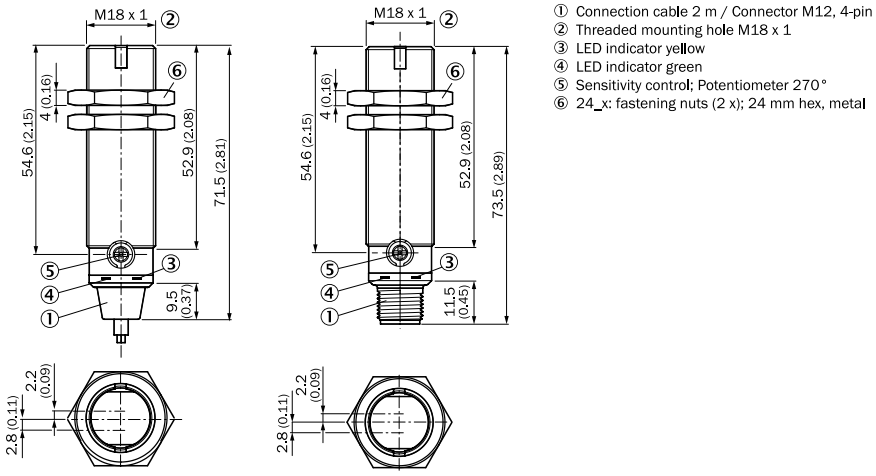
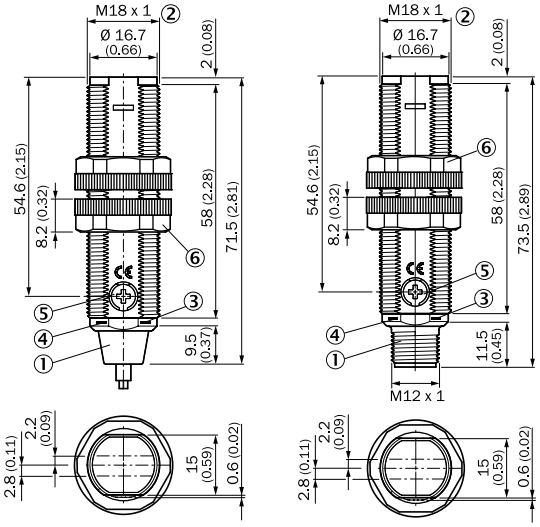


Image 19: GRL18-xxxx2



① Connection cable 2 m / Connector M12, 4-pin
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control; Potentiometer 270°
⑥ 11_x: fastening nuts (2 x); width across 22, plastic

Image 20: GRL18-xxxx7

34 Colocação em funcionamento

1 Equiparar a distância entre o sensor e o refletor com o respectivo diagrama [cp. H] (x = distância de comutação, y = reserva de função).

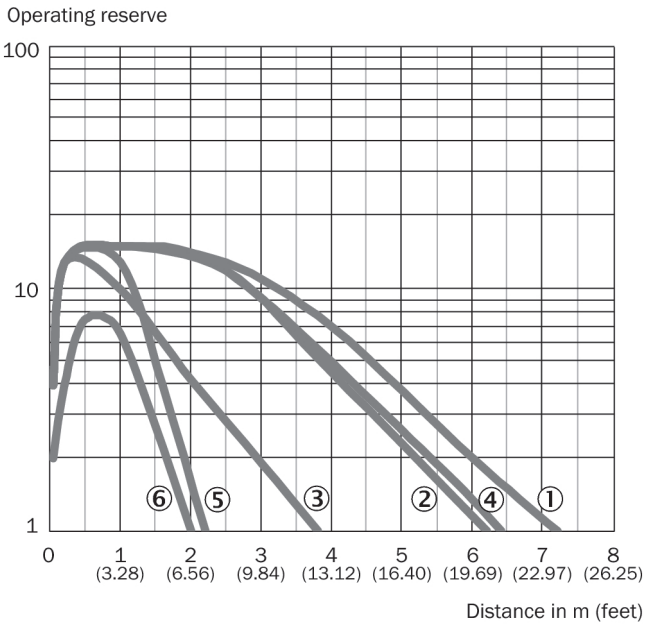


Image 21: H

2 Montar o sensor e o refletor em cantoneiras de fixação adequadas (ver linha de acessórios da SICK). Alinhar o sensor e o refletor entre si.

Observar o torque de aperto máximo permitido do sensor de 2,0 Nm para metal / 0,9 Nm para plástico [cp. K].

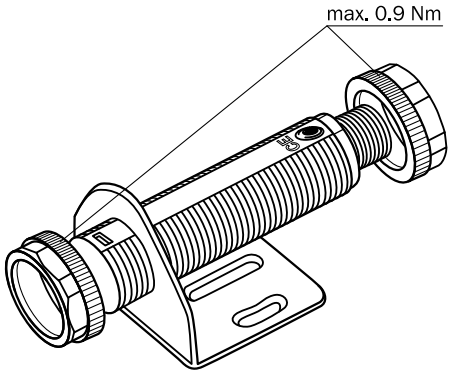


Image: K: GRL18-x24x7

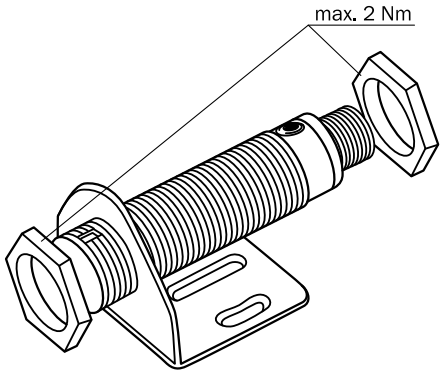


Image: K: GRL18-x24x2

3 A conexão dos sensores deve ser realizada em estado desenergizado (V_S = 0 V). Conforme o tipo de conexão, devem ser observadas as informações contidas nos gráficos [cp. B]:

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

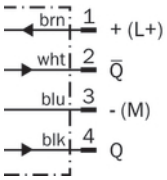


Image: B: GRL18-x24xx

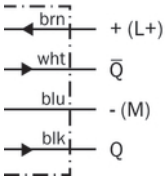


Image: B: GRL18-x11xx

Instalar ou ligar a alimentação de tensão (V_S > 0 V) somente após a conclusão de todas as conexões elétricas. O indicador LED verde está aceso no sensor.

Explicações relativas ao esquema de conexões (Gráfico B):

Saídas de comutação Q ou /Q (conforme o gráfico B):

GRL18-P (PNP: carga -> M)

GRL18-N (NPN: carga -> L+)

4 Alinhar o sensor ao refletor adequado. Posicionar, de forma que o feixe da luz de emissão vermelha incida sobre o centro do refletor. O espaço entre o sensor e o refletor deve estar desimpedido; não pode haver objetos no caminho óptico [cp. E]. Certificar-se de que as aberturas ópticas do sensor e do refletor estejam completamente livres.

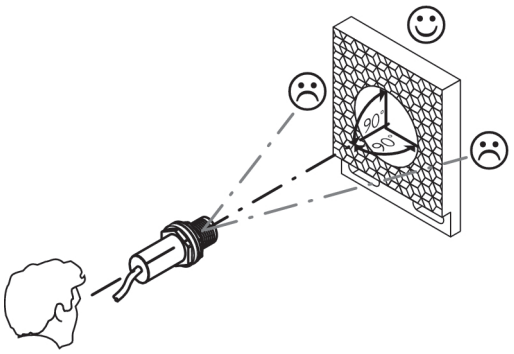


Image 22: E

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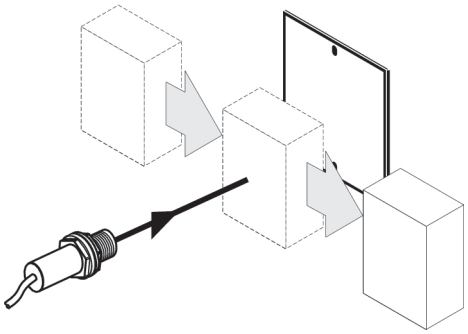


Sensor com potenciômetro:

O potenciômetro (tipo: 270°) permite o ajuste da sensibilidade. Giro para direita: aumento da reserva de função; giro para esquerda: redução da reserva de função. Recomendamos ajustar o potenciômetro para "Máximo". Para superfícies despolarizantes, pode ser recomendável uma reserva de função menor.

O sensor está ajustado e operacional. Utilizar os gráficos C e G para verificar o funcionamento. Se a saída de comutação não se comportar de acordo com o gráfico C, verificar as condições de uso. Ver seção Diagnóstico de erros.

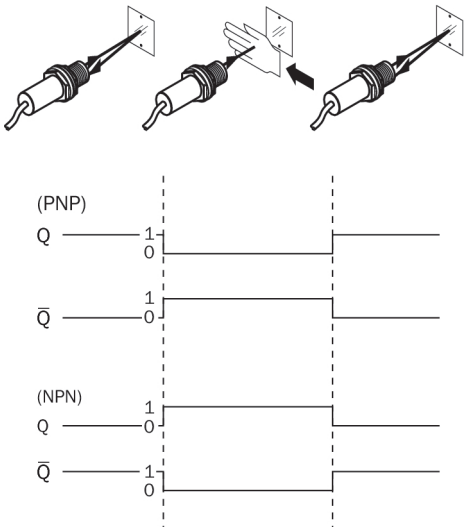


Image 23: C

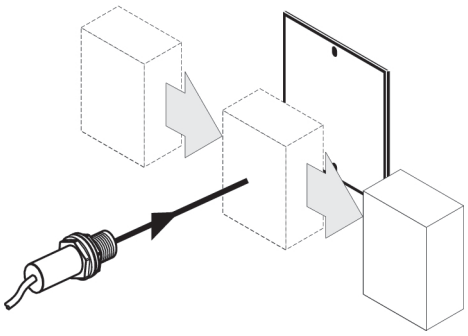


Image 24: G

36 Diagnóstico de erros

A tabela 37 mostra as medidas a serem executadas, quando o sensor não estiver funcionando.

37 Tab_Diagnóstico de erros

Indicador LED / padrão de erro / ***LED indicator/fault pattern***	**Causa /** ***Cause***	**Medida /** ***Measures***
LED verde apagado / *Green LED does not light up*	Sem tensão ou tensão abaixo dos valores-limite / *No voltage or voltage below the limit values*	Verificar a alimentação de tensão, verificar toda a conexão elétrica (cabos e conectores) / *Check the power supply, check all electrical connections (cables and plug connections)*
LED verde apagado / *Green LED does not light up*	Interrupções de tensão / *Voltage interruptions*	Assegurar uma alimentação de tensão estável sem interrupções / *Ensure there is a stable power supply without interruptions*
LED verde apagado / *Green LED does not light up*	Sensor está com defeito / *Sensor is faulty*	Se a alimentação de tensão estiver em ordem, substituir o sensor / *If the power supply is OK, replace the sensor*

Indicador LED / padrão de erro / ***LED indicator/fault pattern***	**Causa /** ***Cause***	**Medida /** ***Measures***
LED amarelo intermitente / *Yellow LED flashes*	Sensor ainda está operacional, mas as condições de operação não são ideais / *Sensor is still ready for operation, but the operating conditions are not ideal*	Verificar as condições de operação: Alinhar o feixe de luz (ponto de luz) completamente ao refletor / Limpeza das superfícies ópticas (sensor e refletor) / reajustar a sensibilidade (potenciômetro) / Se o potenciômetro estiver ajustado para a máx. distância de comutação: reduzir a distância entre o sensor e o refletor e verificar o tipo de refletor com o gráfico E / Refletor não é adequado para a aplicação selecionada (recomendamos utilizar apenas refletores SICK) / Verificar e, se necessário, adaptar a distância de comutação, ver gráfico E / Distância entre sensor e refletor é grande demais / *Check the operating conditions: Fully align the beam of light (light spot) with the reflector / Clean the optical surfaces (sensor and reflector) / Readjust the sensitivity (potentiometer) / If the potentiometer is set to the max. sensing range: Reduce the distance between the sensor and the reflector, and check the reflector type against Graphic E / Reflector is not suitable for the application in question (we recommend only using SICK reflectors) / Check sensing range and adjust if necessary, see Graphic E / Distance between the sensor and the reflector is too long*
Interrupções de sinal na detecção de objetos / *Signal interruptions when object is detected*	Propriedade despolarizante da superfície do objeto (por ex., película), reflexos de superfície / *Depolarizing property of the object surface (e.g., tape), reflection*	Reduzir a sensibilidade ou modificar a posição do sensor / *Reduce sensitivity or change the position of the sensor*

38 Desmontagem e descarte

O descarte do sensor deve ser efetuado de acordo com as normas aplicáveis específicas de cada país. No âmbito do descarte, deve-se procurar o aproveitamento dos materiais recicláveis contidos (principalmente dos metais nobres).

39 Manutenção

Os sensores SICK não requerem manutenção.

Recomendamos que se efetue em intervalos regulares

1. uma limpeza das superfícies ópticas
2. uma verificação das conexões roscadas e dos conectores

Não são permitidas modificações no aparelho.

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

42 Avvertenze sulla sicurezza

- Prima della messa in funzionamento leggere le istruzioni per l'uso.
- Allacciamento, montaggio e regolazione solo a cura di personale tecnico specializzato.
- Nessun componente di sicurezza ai sensi della direttiva macchine UE. Solo per l'utilizzo in applicazioni ai sensi di NFPA 79. Sono a disposizione adattatori con cavo di connessione dell-'elenco UL. Enclosure type 1
- Alla messa in funzionamento proteggere l'apparecchio dall'umidità e dalla sporcizia.
- Queste istruzioni per l'uso contengono le informazioni che sono necessarie durante il ciclo di vita del sensore fotoelettrico. deTec4 core

43 Uso conforme alle prescrizioni

La GRL18 è un relè fotoelettrico a riflessione optoelettronica (di seguito nominato sensore) utilizzato per il rilevamento ottico senza contatto di oggetti, animali e persone. Per il funzionamento è necessario un riflettore. Se viene utilizzata diversamente e in caso di modifiche sul prodotto, decade qualsiasi diritto alla garanzia nei confronti di SICK.

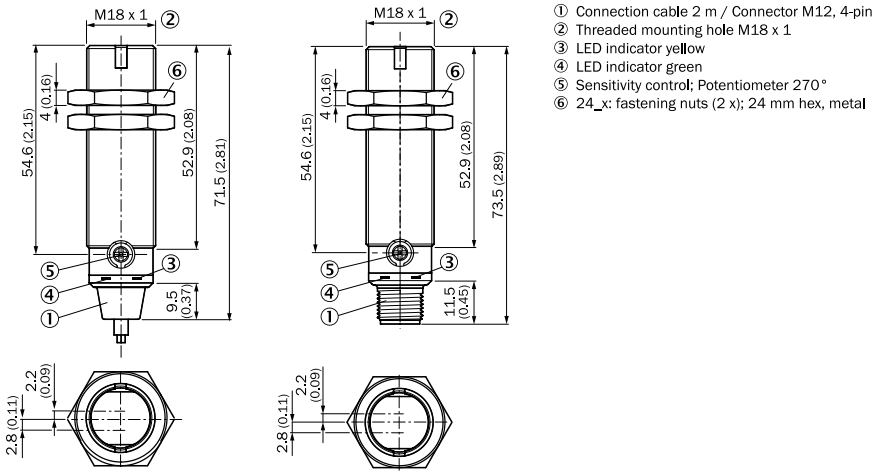
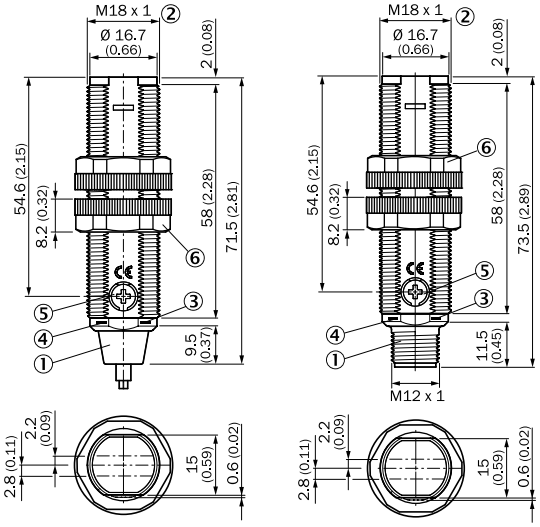


Image 25: GRL18-xxxx2



① Connection cable 2 m / Connector M12, 4-pin
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control; Potentiometer 270°
⑥ 11_x: fastening nuts (2 x); width across 22, plastic

Image 26: GRL18-xxxx7

44 Messa in funzionamento

1 Predisporre la distanza tra sensore e riflettore in base al relativo diagramma (x = distanza di commutazione, y = riserva di funzionamento) [cfr. H] .

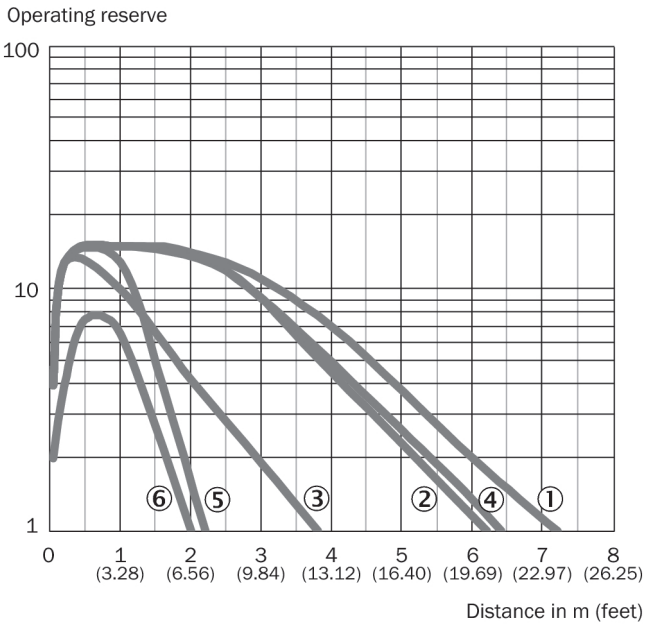


Image 27: H

2 Montare il sensore e il riflettore su dei punti di fissaggio adatti (vedi il programma per accessori SICK). Orientare reciprocamente il sensore e il rispettivo riflettore.

Rispettare il momento torcente massimo consentito del sensore di 2,0 Nm per il metallo / 0,9 Nm per la plastica [cfr. K].

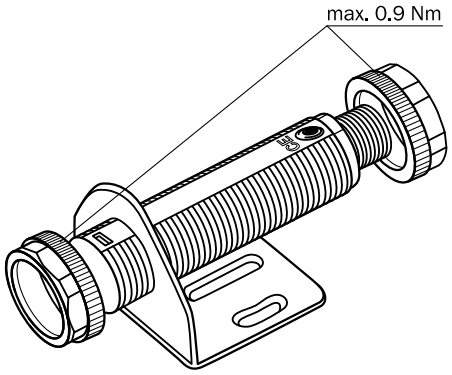


Image: K: GRL18-x24x7

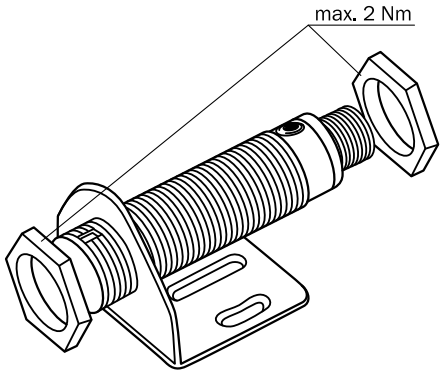


Image: K: GRL18-x24x2

3 Il collegamento dei sensori deve avvenire in assenza di tensione (V_S = 0 V). In base al tipo di collegamento si devono rispettare le informazioni nei grafici [cfr. B]:

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

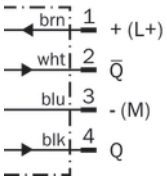


Image: B: GRL18-x24xx

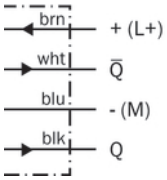


Image: B: GRL18-x11xx

Solamente in seguito alla conclusione di tutti i collegamenti elettrici, ripristinare o accendere l'alimentazione di tensione (V_S > 0 V). Sul sensore si accende l'indicatore LED verde.

Spiegazioni dello schema di collegamento (grafico B):

Uscite di commutazione Q ovvero /Q (conformemente al grafico B):

GRL18-P (PNP: carico -> M)

GRL18-N (NPN: carico -> L+)

4 Orientare il sensore sul relativo riflettore. 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 [cfr. E]. Si deve fare attenzione che le aperture ottiche del sensore e del riflettore siano completamente libere.

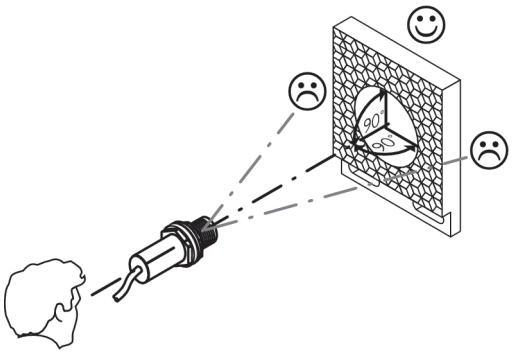


Image 28: E

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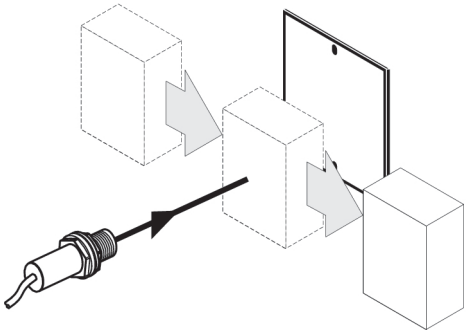


Sensore con potenziometro:

Con il potenziometro (tipo: 270°) si imposta la sensibilità. Rotazione verso destra: innalzamento della riserva della soglia operativa, rotazione verso sinistra: riduzione della soglia operativa Si consiglia di impostare il potenziometro su "massimo". In caso di superfici depolarizzanti può essere consigliabile una riserva di funzionamento inferiore.

Il sensore è impostato e pronto per il funzionamento. Per verificare il funzionamento, osservare i grafici C e G. Se l'uscita di commutazione non si comporta conformemente al grafico C, verificare le condizioni d'impiego. Vedi paragrafo diagnostica delle anomalie.

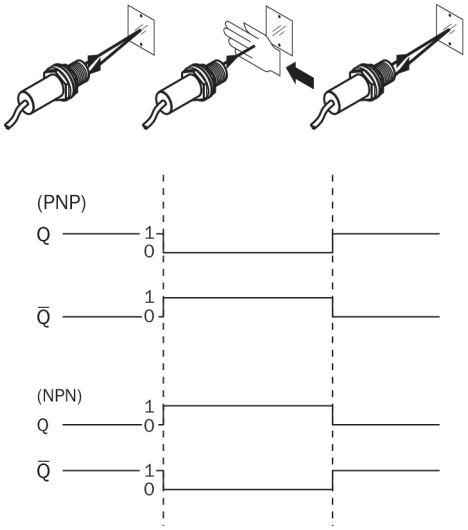


Image 29: C

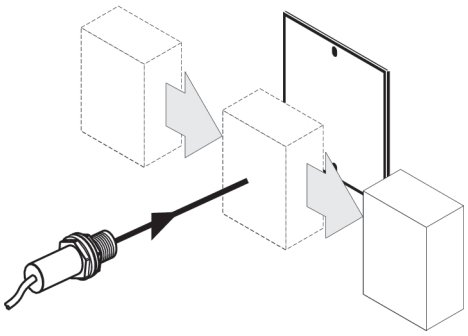


Image 30: G

46 Diagnostica delle anomalie

Tabella 47 mostra quali provvedimenti si devono adottare quando il sensore non funziona più.

47 Tabulatore_diagnostica delle anomalie

Indicatore LED / figura di errore / ***LED indicator/fault pattern***	**Causa /** ***Cause***	**Provvedimento /** ***Measures***
Il LED verde non si accende / *Green LED does not light up*	nessuna tensione o tensione al di sotto del valore soglia / *No voltage or voltage below the limit values*	Verificare la tensione di alimentazione e/o il collegamento elettrico / *Check the power supply, check all electrical connections (cables and plug connections)*
Il LED verde non si accende / *Green LED does not light up*	Interruzioni di tensione / *Voltage interruptions*	Assicurarsi che ci sia un'alimentazione di tensione stabile / *Ensure there is a stable power supply without interruptions*
Il LED verde non si accende / *Green LED does not light up*	Il sensore è guasto / *Sensor is faulty*	Se l'alimentazione di tensione è regolare, allora chiedere una sostituzione del sensore / *If the power supply is OK, replace the sensor*

Indicatore LED / figura di errore / *LED indicator/fault pattern*	Causa / *Cause*	Provvedimento / *Measures*
il LED giallo lampeggia / *Yellow LED flashes*	Il sensore è ancora pronto per il funzionamento, ma le condizioni di esercizio non sono ottimali / *Sensor is still ready for operation, but the operating conditions are not ideal*	Controllare le condizioni di esercizio: Dirigere il raggio di luce (il punto luminoso) completamente sul riflettore / Pulizia delle superfici ottiche (Sensore e riflettore) / Sensibilità (potenziometro) / se il potenziometro è impostato sulla distanza di commutazione massima: diminuire la distanza tra sensore e riflettore e verificare nuovamente il tipo di riflettore con il grafico E / se il riflettore non è adatto per l'applicazione selezionata (si consiglia, di usare esclusivamente riflettori SICK) / Controllare la distanza di commutazione e, se necessario, adattarla, vedi grafico E / La distanza tra sensore e riflettore è troppo grande / *Check the operating conditions: Fully align the beam of light (light spot) with the reflector / Clean the optical surfaces (sensor and reflector) / Readjust the sensitivity (potentiometer) / If the potentiometer is set to the max. sensing range: Reduce the distance between the sensor and the reflector, and check the reflector type against Graphic E / Reflector is not suitable for the application in question (we recommend only using SICK reflectors) / Check sensing range and adjust if necessary, see Graphic E / Distance between the sensor and the reflector is too long*
Interruzioni di segnale al momento del rilevamento dell'oggetto / *Signal interruptions when object is detected*	Proprietà depolarizzante della superficie dell'oggetto (ad es. pellicola), riflesso / *Depolarizing property of the object surface (e.g., tape), reflection*	Ridurre la sensibilità o variare la posizione del sensore / *Reduce sensitivity or change the position of the sensor*

48 Smontaggio e smaltimento

Lo smaltimento del sensore deve avvenire conformemente alle direttive previste specificatamente dal paese. Per i materiali riciclabili in esso contenuti (in particolare metalli nobili) si auspica un riciclaggio nell'ambito dello smaltimento.

49 Manutenzione

I sensori SICK sono esenti da manutenzione.

A intervalli regolari si consiglia di

1. pulire le superfici limite ottiche
2. Verificare i collegamenti a vite e gli innesti a spina

Non è consentito effettuare modifiche agli apparecchi.

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

Barrera fotoeléctrica de reflexión

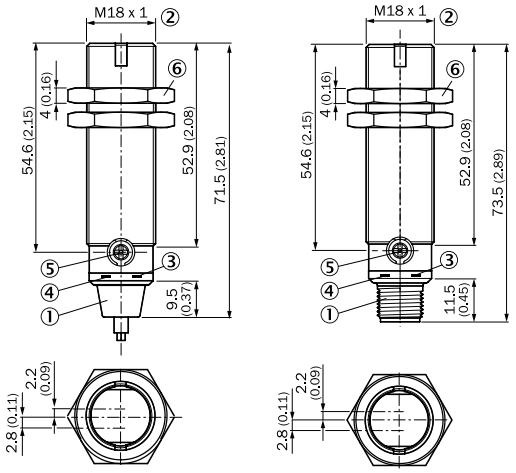
Instrucciones de uso

52 Instrucciones de seguridad

- Lea las instrucciones de uso antes de efectuar la puesta en servicio.
- La conexión, el montaje y el ajuste deben ser efectuados exclusivamente por técnicos especialistas.
- No se trata de un componente de seguridad según la Directiva de máquinas de la UE. Solo para utilizar en aplicaciones según NFPA 79. Se encuentran disponibles adaptadores con cables de conexión listados por UL. Enclosure type 1
- Proteja el equipo contra la humedad y la suciedad durante la puesta en servicio.
- Las presentes instrucciones de uso contienen información que puede serle necesaria durante todo el ciclo de vida del sensor.

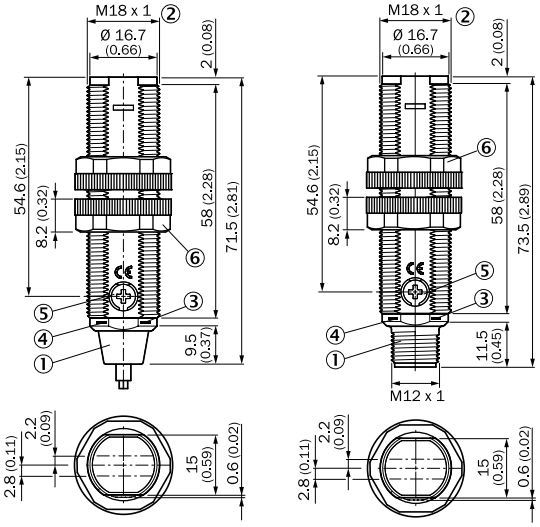
53 Uso conforme a lo previsto

La GRL18 es una barrera optoelectrónica de reflexión (en lo sucesivo llamada sensor) empleada para la detección óptica y sin contacto de objetos, animales y personas. Para que funcione es necesario un reflector. Cualquier uso diferente al previsto o modificación en el producto invalidará la garantía por parte de SICK AG.



① Connection cable 2 m / Connector M12, 4-pin
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control; Potentiometer 270°
⑥ 24_x: fastening nuts (2 x); 24 mm hex, metal

Image 31: GRL18-xxxx2



① Connection cable 2 m / Connector M12, 4-pin
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control; Potentiometer 270°
⑥ 11_x: fastening nuts (2 x); width across 22, plastic

Image 32: GRL18-xxxx7

54 Puesta en servicio

1 Comparar la distancia entre el sensor y el reflector con el diagrama correspondiente [véase fig. H] (x = distancia de conmutación, y = reserva de funcionamiento).

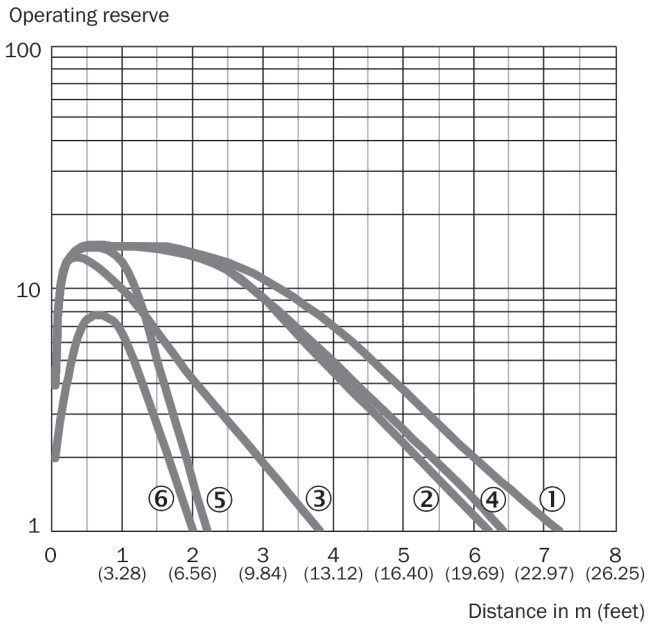


Image 33: H

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

Respetar el par de apriete máximo admisible del sensor de 2,0 Nm para metal y 0,9 Nm para plástico [véase K].

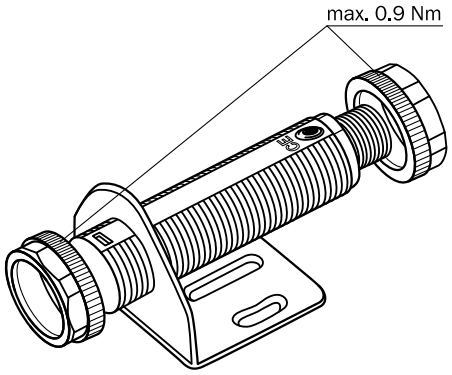


Image: K: GRL18-x24x7

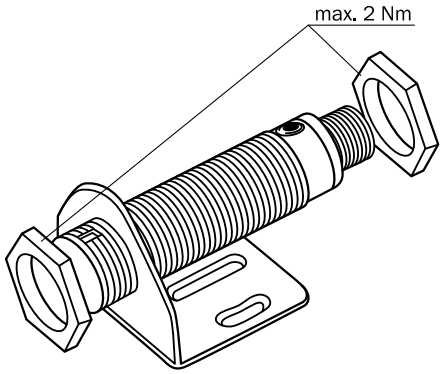


Image: K: GRL18-x24x2

3 Los sensores deben conectarse sin tensión (V_S = 0 V). Debe tenerse en cuenta la información de las figuras [B] en función de cada tipo de conexión:

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

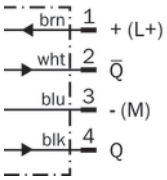


Image: B: GRL18-x24xx

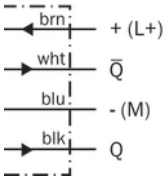


Image: B: GRL18-x11xx

No conectar o aplicar la fuente de alimentación (V_S > 0 V) hasta que no se hayan realizado todas las conexiones eléctricas. En el sensor se ilumina el LED indicador verde.

Explicaciones relativas al esquema de conexión (figura B)

Salidas conmutadas Q o /Q (según figura B):

GRL18-P (PNP: carga -> M)

GRL18-N (NPN: carga -> L+)

4 Oriente el sensor hacia el reflector adecuado. Seleccione una posición que permita que el haz de luz roja del transmisor 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 E]. Hay que procurar que las aperturas ópticas del sensor y del reflector estén completamente libres.

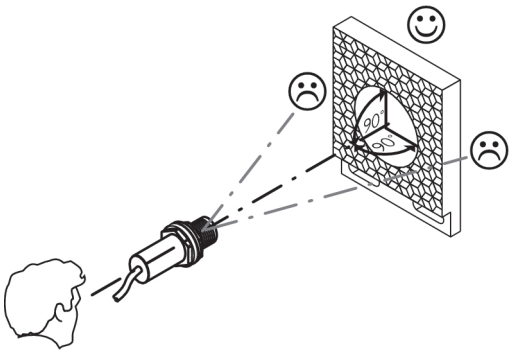


Image 34: E

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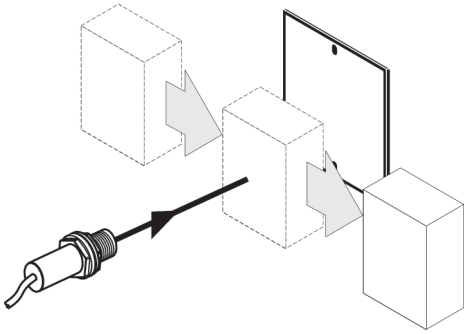


Sensor con potenciómetro:

Con el potenciómetro (tipo: 270°) se ajusta la sensibilidad. Giro hacia la derecha: aumenta la reserva de funcionamiento; giro hacia la izquierda: se reduce la reserva de funcionamiento. Recomendamos poner el potenciómetro a su nivel "máximo". En superficies despolarizantes puede ser recomendable una reserva de funcionamiento más pequeña.

El sensor está ajustado y listo para su uso. Para verificar el funcionamiento, véanse las figuras C y G. Si la salida conmutada no se comporta según la figura C, comprobar las condiciones de aplicación. Véase la sección "Diagnóstico de fallos".

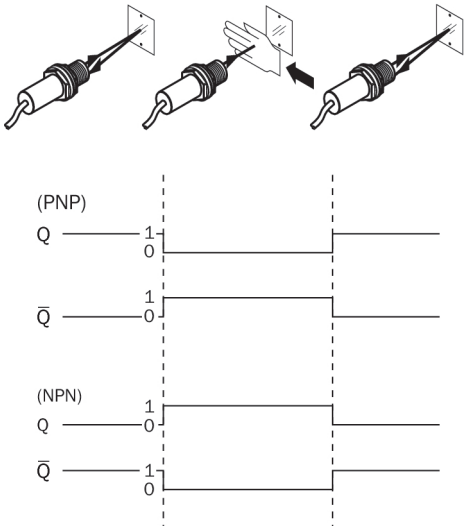


Image 35: C

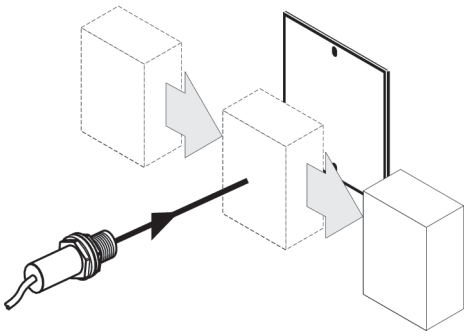


Image 36: G

56 Diagnóstico de fallos

La tabla 57 muestra las acciones que hay que tomar cuando ya no está indicado el funcionamiento del sensor.

57 Tabla_Diagnóstico de fallos

LED indicador / imagen de error / ***LED indicator/fault pattern***	**Causa /** ***Cause***	**Acción /** ***Measures***
El LED verde no se ilumina / *Green LED does not light up*	Sin tensión o tensión por debajo de los valores límite / *No voltage or voltage below the limit values*	Comprobar la fuente de alimentación, comprobar toda la conexión eléctrica (cables y conectores) / *Check the power supply, check all electrical connections (cables and plug connections)*
El LED verde no se ilumina / *Green LED does not light up*	Interrupciones de tensión / *Voltage interruptions*	Asegurar una fuente de alimentación estable sin interrupciones de tensión / *Ensure there is a stable power supply without interruptions*
El LED verde no se ilumina / *Green LED does not light up*	El sensor está defectuoso / *Sensor is faulty*	Si la fuente de alimentación no tiene problemas, cambiar el sensor / *If the power supply is OK, replace the sensor*

LED indicador / imagen de error / ***LED indicator/fault pattern***	**Causa /** ***Cause***	**Acción /** ***Measures***
El LED amarillo parpadea / *Yellow LED flashes*	El sensor aún está operativo, pero las condiciones de servicio no son óptimas / *Sensor is still ready for operation, but the operating conditions are not ideal*	Comprobar las condiciones de servicio: Alinear el haz de luz (punto de luz) completamente con el reflector / Limpieza de las superficies ópticas (sensor y reflector) / Reajustar la sensibilidad (potenciómetro) / Si el potenciómetro está ajustado a la máxima distancia de conmutación, reducir la distancia entre el sensor y el reflector y comprobar el tipo de reflector con la figura E / El reflector no es adecuado para la aplicación seleccionada (recomendamos utilizar exclusivamente reflectores SICK) / Comprobar la distancia de conmutación y, si es necesario, adaptarla, véase figura E La distancia entre el sensor y el reflector es excesiva / *Check the operating conditions: Fully align the beam of light (light spot) with the reflector / Clean the optical surfaces (sensor and reflector) / Readjust the sensitivity (potentiometer) / If the potentiometer is set to the max. sensing range: Reduce the distance between the sensor and the reflector, and check the reflector type against Graphic E / Reflector is not suitable for the application in question (we recommend only using SICK reflectors) / Check sensing range and adjust if necessary, see Graphic E / Distance between the sensor and the reflector is too long*
Interrupciones de la señal al detectar objetos / *Signal interruptions when object is detected*	Propiedad despolarizante de la superficie del objeto (p. ej., lámina plástica), reflexión / *Depolarizing property of the object surface (e.g., tape), reflection*	Reducir la sensibilidad o modificar la posición del sensor / *Reduce sensitivity or change the position of the sensor*

58 Desmontaje y eliminación

El sensor tiene que eliminarse siguiendo la normativa aplicable específica de cada país. Los materiales valiosos que contenga (especialmente metales nobles) deben ser eliminados considerando la opción del reciclaje.

59 Mantenimiento

Los sensores SICK no precisan mantenimiento.

A intervalos regulares, recomendamos:

1. Limpiar las superficies ópticas externas
2. Comprobar las uniones roscadas y las conexiones.

No se permite realizar modificaciones en los aparatos.

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

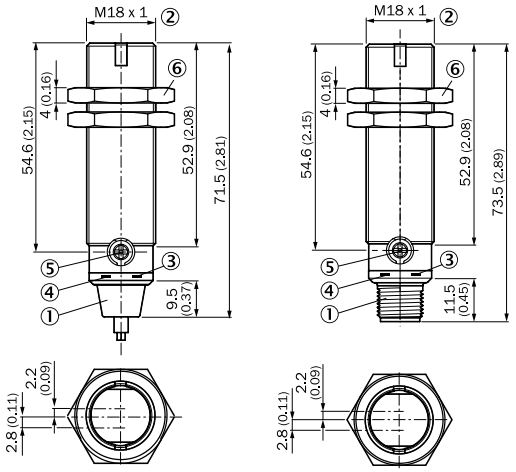
镜反射式光电传感器
操作说明

62 安全须知

- **调试**前**请阅读**操作**说**明。
- **仅**允**许**由**专业**人**员进**行接**线**、安装和**设**置。
- 本**设备**非欧盟机械指令中定**义**的安全部件。**仅**限用于符合 NFPA 79 的**应**用。可用 UL 所列出的含**连**接**线缆**的**连**接器. Enclosure type 1
- **调试**前防止**设备**受潮或**污**染。
- 本操作**说**明中包含了**传**感器生命周期中必需的各**项**信息。

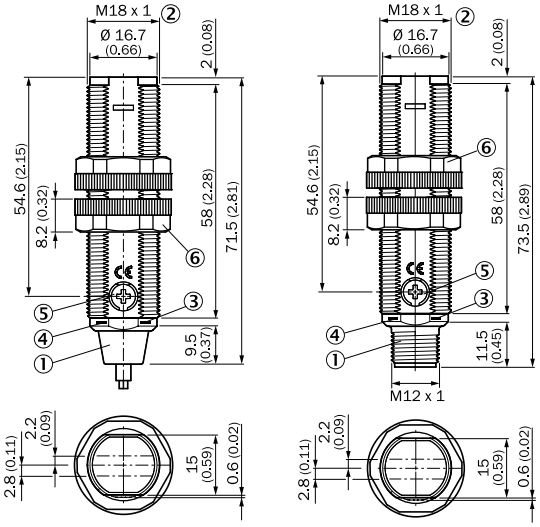
63 拟定用途

GRL18 是一种光**电**反射式光**栅**（下文**简**称**为**“**传**感器”），用于物体、**动**物和人体的非接触式光学**检测**。配**备**反射**镜**或者胶**贴**。如果**滥**用本**产**品或擅自更改**产**品，则 SICK AG 公司所作之**质**保承**诺**均将失效。



① Connection cable 2 m / Connector M12, 4-pin
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control; Potentiometer 270°
⑥ 24_x: fastening nuts (2 x); 24 mm hex, metal

Image 37: GRL18-xxxx2



① Connection cable 2 m / Connector M12, 4-pin
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control; Potentiometer 270°
⑥ 11_x: fastening nuts (2 x); width across 22, plastic

Image 38: GRL18-xxxx7

64 调试

1 使用随附的图表 [参照 H] 调整发射器和反射器之间的距离（x = 开关距离，y = 信号冗余）。

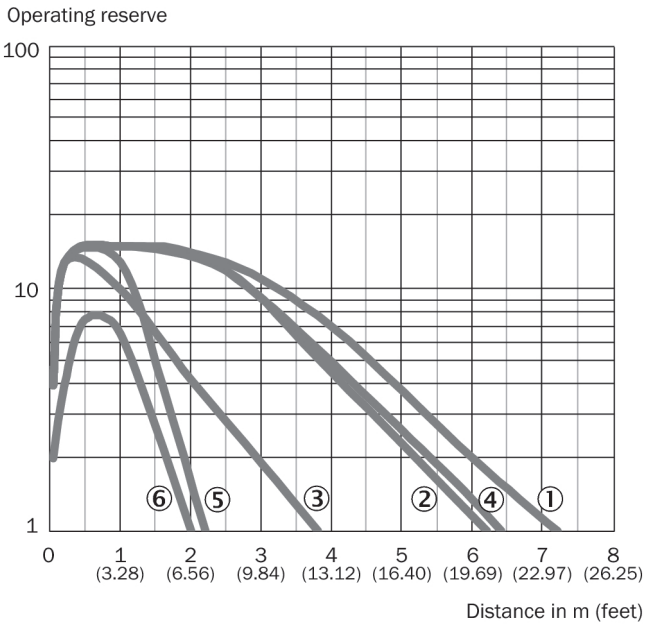


Image 39: H

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

传感器金属部件的拧紧扭矩为 2.0 NM，塑料部件的拧紧扭矩为 0.9 NM [根据 K]。

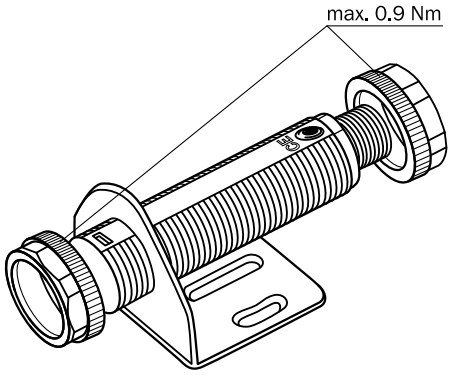


Image: K: GRL18-x24x7

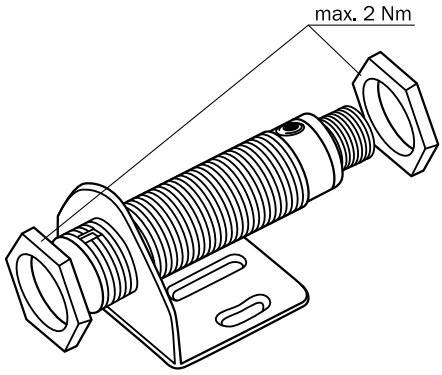


Image: K: GRL18-x24x2

3 必须在无**电压**状**态** (V_S = 0 V) **连**接**传**感器。依据不同**连**接**类**型，注意**图** [参照 B] 中的信息：

- 插**头连**接：引**线**分配
- **导线**：芯**线颜**色

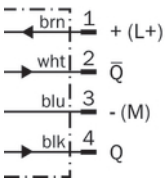


Image: B: GRL18-x24xx

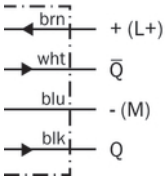


Image: B: GRL18-x11xx

完成所有**电**子**连**接后，才敷**设**或接通**电**源 (V_S > 0 V)。**传**感器上的**绿**色 LED 指示灯亮起。

接**线图**（**图** B）**说**明：

开关**输**出端 Q 或 /Q（根据**图** B）：

GRL18-P（PNP：**负载** -> M）

GRL18-N（NPN：**负载** -> L+）

4 将**传**感器**对**准合适的反射器。**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 [参照 E]。此**时应**注意**传**感器和反射器的光学开口**处应**无任何遮**挡**。

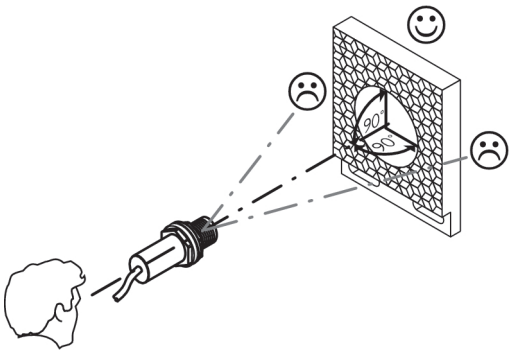


Image 40: E

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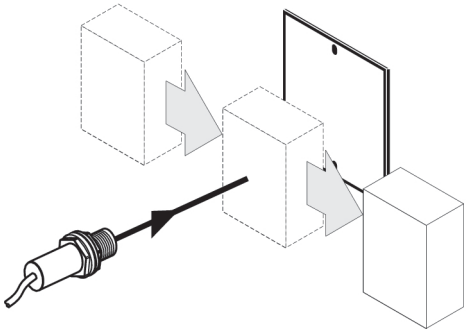


配电位计的传感器：

使用电位计（型号：270°）设置灵敏度。向右旋转：提高信号冗余，向左旋转：降低信号冗余。我们建议将电位计调为“最大”。针对去极化表面，建议采用较低的信号冗余。

传感器已设置并准备就绪。参照图 C 和 G 检查功能。如果开关输出端的动作不符合图 C，则须检查使用条件。参见故障诊断章节。

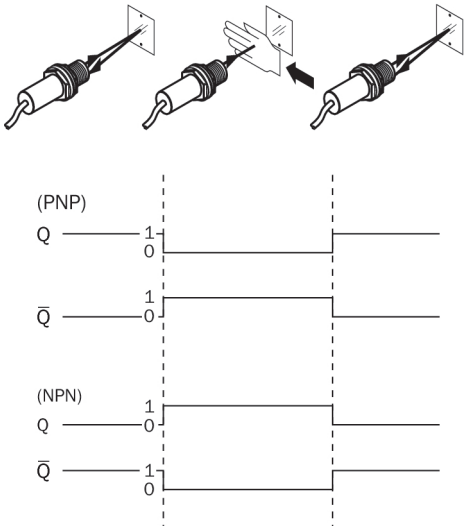


Image 41: C

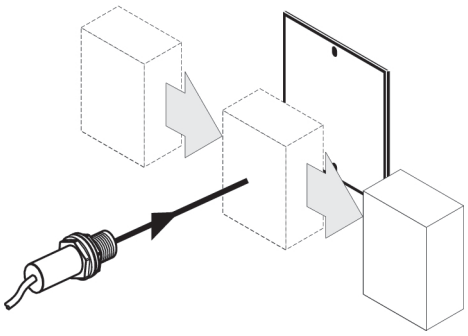


Image 42: G

66 故障诊断

表 67 中罗列了传感器无法执行某项功能时应采取的各项措施。

67 表_故障诊断

LED 指示灯 / 故障界面 / *LED indicator/fault pattern*	原因 / *Cause*	措施 / *Measures*
绿色 LED 未亮起 / *Green LED does not light up*	无电压或电压低于极限值 / *No voltage or voltage below the limit values*	检查电源，检查整体电气连接（导线和插头连接） / *Check the power supply, check all electrical connections (cables and plug connections)*
绿色 LED 未亮起 / *Green LED does not light up*	电压中断 / *Voltage interruptions*	确保电源稳定无中断 / *Ensure there is a stable power supply without interruptions*
绿色 LED 未亮起 / *Green LED does not light up*	传感器损坏 / *Sensor is faulty*	如果电源正常，则更换传感器 / *If the power supply is OK, replace the sensor*

LED 指示灯 / 故障界面 / *LED indicator/fault pattern*	原因 / *Cause*	措施 / *Measures*
, 黄色 LED 闪烁 / *Yellow LED flashes*	尽管传感器准备就绪，但运行条件不佳 / *Sensor is still ready for operation, but the operating conditions are not ideal*	检查运行条件： 光束（光斑）完全对准反射器 / 清洁光学表面（传感器和反射器） / 重新设置灵敏度（电位计） / 如果已将电位计设置到最大开关距离：减小传感器和反射器之间的间距并使用图 E 检查反射器类型 / 反射器不适用于所选应用（我们建议仅使用 SICK 反射器） / 检查开关距离，必要时调整；参见图 E / 传感器和反射器之间的间距过大 / *Check the operating conditions: Fully align the beam of light (light spot) with the reflector / Clean the optical surfaces (sensor and reflector) / Readjust the sensitivity (potentiometer) / If the potentiometer is set to the max. sensing range: Reduce the distance between the sensor and the reflector, and check the reflector type against Graphic E / Reflector is not suitable for the application in question (we recommend only using SICK reflectors) / Check sensing range and adjust if necessary, see Graphic E / Distance between the sensor and the reflector is too long*
探测物体时信号中断 / *Signal interruptions when object is detected*	物体表面的去极化特性（例如：薄膜）， 折射 / *Depolarizing property of the object surface (e.g., tape), reflection*	降低灵敏度或更改传感器位置 / *Reduce sensitivity or change the position of the sensor*

68 拆卸和废弃处理

必须根据当地特定的法律法规废弃处理传感器。如果其中含有可回收材料（尤其是贵金属）， 则必须在废弃处理时回收利用。

69 保养

SICK 传感器无需保养。

我们建议， 定期：

1. 清洁镜头检测面
2. 检查螺栓连接和插头连接

不得对设备进行任何改装。

如有更改,不另行通知。所给出的产品特性和技术参数并非质保声明。

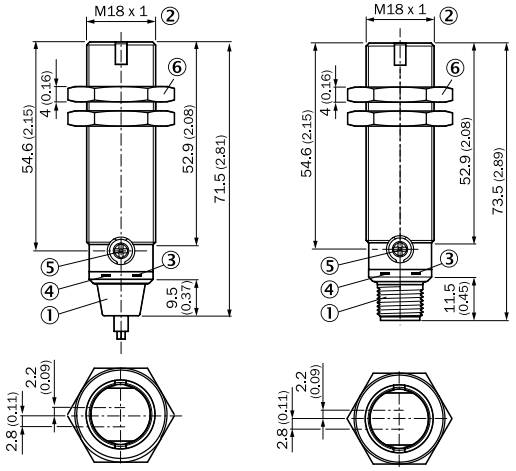
リフレクタ形光電センサ
取扱説明書

72 安全上の注意事項

- ご使用前に必ず取扱説明書をお読みください。
- 本製品の接続・取り付け・設定は、訓練を受けた技術者が行って下さい。
- 本製品は、EU の機械指令を満たす人体保護の為の安全コンポーネントではありません。NFPA 79 に準拠した用途にのみ使用してください。接続ケーブル付き UL 規格のアダプタも使用できます。 Enclosure type 1
- 使用開始前に、湿気や汚れから機器を保護して下さい。
- 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。

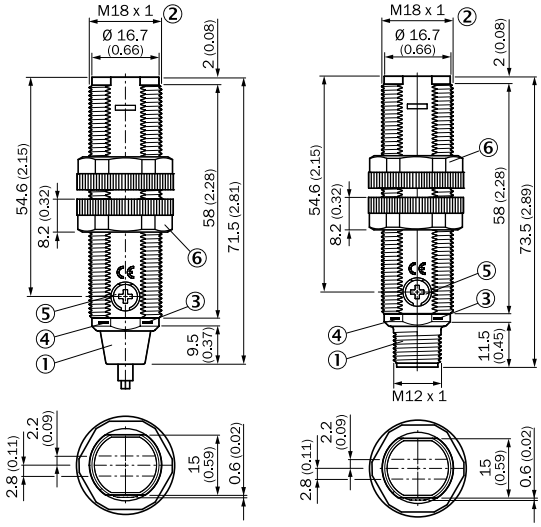
73 正しいご使用方法

GRL18 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知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。本製品が本来の使用用途以外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。



① Connection cable 2 m / Connector M12, 4-pin
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control; Potentiometer 270°
⑥ 24_x: fastening nuts (2 x); 24 mm hex, metal

Image 43: GRL18-xxxx2



① Connection cable 2 m / Connector M12, 4-pin
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control; Potentiometer 270°
⑥ 11_x: fastening nuts (2 x); width across 22, plastic

Image 44: GRL18-xxxx7

74 コミッショニング

1 対応する図に従って、センサとリフレクタ間の距離を調整します（x = 検出範囲、y = 動作余裕度）。

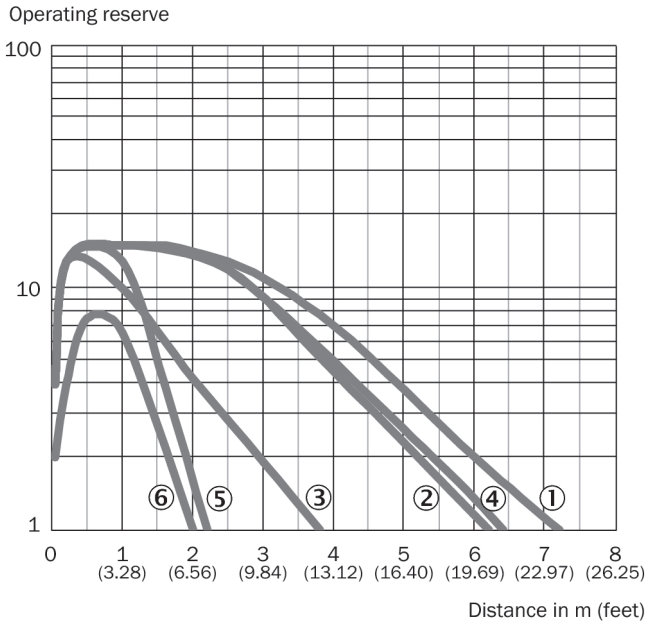


Image 45: H

2 適切なブラケットを使用してセンサとリフレクタを取り付けます（SICK 付属品カタログを参照）。センサとリフレクタを互いに方向調整します。

センサの最大許容締付トルク 2.0 Nm（金属）／0.9 Nm（プラスチック）に注意してください [K]。

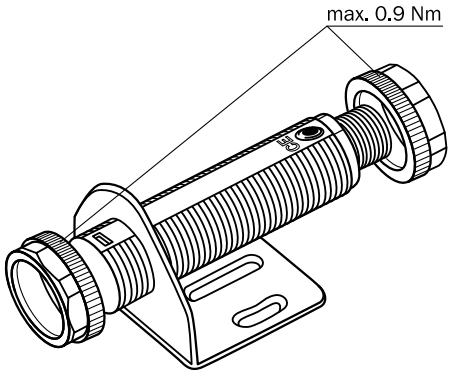


Image: K: GRL18-x24x7

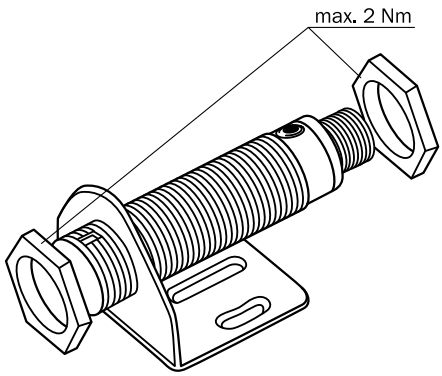


Image: K: GRL18-x24x2

3 センサの接続は必ず無電圧状態（V_S = 0 V）で行ってください。接続タイプに応じて、図 [B] の情報に注意する必要があります：

- オスコネクタ接続：ピン割り当て
- ケーブル：芯の色

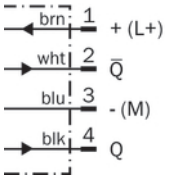


Image: B: GRL18-x24xx

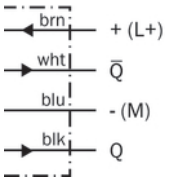


Image: B: GRL18-x11xx

まずすべての電気接続を確立してから、電源（V_S > 0 V）をオンにしてください。緑色の LED 表示灯がセンサ上で点灯します。

接続図の説明（図 B）。

スイッチング出力 Q および /Q（図 B に準拠）：

GRL18-P（PNP：負荷 -> M）

GRL18-N（NPN：負荷 -> L+）

4 適切なリフレクタの中心にセンサの投光スポットを合わせます。赤色光投光スポットがリフレクタの中央に照射されるように位置を調整します。センサからリフレクタへの視界が遮られたり、光軸に対象物がないようにして下さい [E を参照]。センサおよびリフレクタの光学的開口部分に視界を遮るものが一切ないことを確認して下さい。

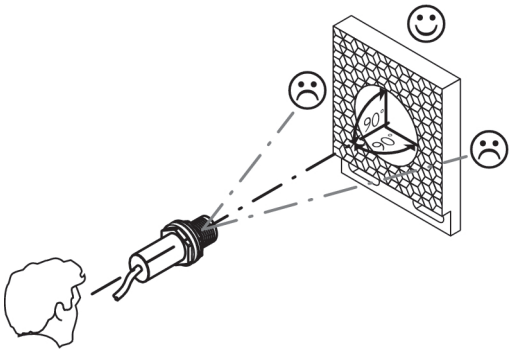
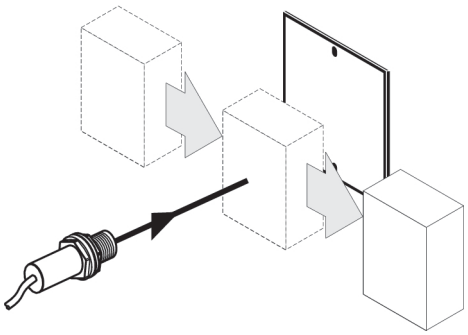


Image 46: E

5



感度調整ボリューム付きセンサ：

感度は感度調整ボリューム（タイプ：270°）で調整します。右回転：検出感度増加；左回転：検出感度減少。感度調整ボリュームを「最大」に設定することをお勧めします。反射が極端に悪い対象物の表面を検出する際は、低い動作余裕度が必要となる場合もあります。

センサは調整済みで、操作できる状態です。図 C および G を参照し、機能点検してください。スイッチング出力が図 C のように動作しない場合、使用条件を確認して下さい。故障診断の項を参照してください。

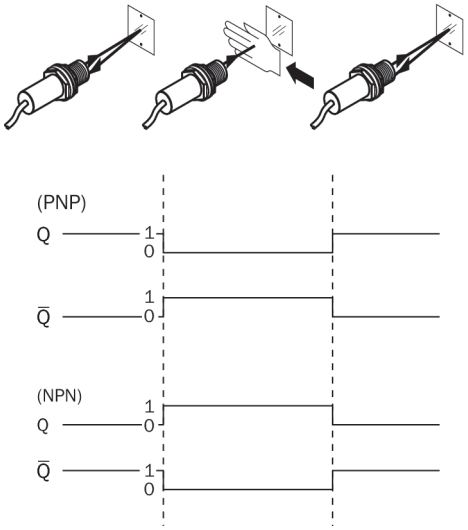


Image 47: C

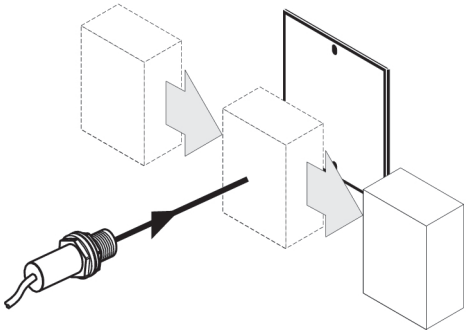


Image 48: G

76 故障診断

表 77 には、センサが動作しなくなった場合の対策が示されています。

77 Tab_エラー診断

LED 表示灯/故障パターン / ***LED indicator/fault pattern***	原因 / ***Cause***	対策 / ***Acción***
緑色の LED が点灯しない / *Green LED does not light up*	無電圧、または電圧が限界値以下 / *No voltage or voltage below the limit values*	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 / *Check the power supply, check all electrical connections (cables and plug connections)*

LED 表示灯/故障パターン / *LED indicator/fault pattern*	原因 / *Cause*	対策 / *Acción*
緑色の LED が点灯しない / *Green LED does not light up*	電圧がきていない又は不安定 / *Voltage interruptions*	安定した電源電圧が供給されていることを確認します / *Ensure there is a stable power supply without interruptions*
緑色の LED が点灯しない / *Green LED does not light up*	センサの異常 / *Sensor is faulty*	電源に問題がなければ、センサを交換します / *If the power supply is OK, replace the sensor*
黄色い LED が点滅 / *Yellow LED flashes*	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 / *Sensor is still ready for operation, but the operating conditions are not ideal*	動作条件を確認します： 投光光軸（投光スポット）をリフレクタの中心に合わせます / 光学面を清掃する （センサおよびリフレクタ） / 感度を再調整する（感度調整ボリューム） / 感度調整ボリュームが最大感度に設定されている場合：センサとリフレクタの間隔を狭めて、リフレクタのタイプを図 E と照合して確認します / このリフレクタは本アプリケーションに適していません（SICK 製リフレクタのみ使用することをお勧めします） / 検出範囲を確認し必要に応じて調整します、図 E を参照 / センサとリフレクタの間隔が長すぎる / *Check the operating conditions: Fully align the beam of light (light spot) with the reflector / Clean the optical surfaces (sensor and reflector) / Readjust the sensitivity (potentiometer) / If the potentiometer is set to the max. sensing range: Reduce the distance between the sensor and the reflector, and check the reflector type against Graphic E / Reflector is not suitable for the application in question (we recommend only using SICK reflectors) / Check sensing range and adjust if necessary, see Graphic E / Distance between the sensor and the reflector is too long*
対象物検出時の出力信号が不安定 / *Signal interruptions when object is detected*	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 / *Depolarizing property of the object surface (e.g., tape), reflection*	感度を下げるか、またはセンサの位置を変えて下さい / *Reduce sensitivity or change the position of the sensor*

78 解体および廃棄

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）。

79 メンテナンス

SICK センサはメンテナンスフリーです。

定期的に以下を行うことをお勧めしています：

1. 外部レンズの表面を清掃する
2. 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。指定された製品特性および技術データは保証書ではありません。

Отражательный фоторелейный барьер

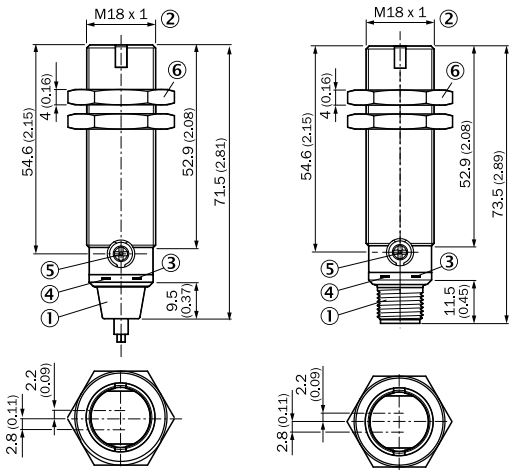
Руководство по эксплуатации

82 Указания по безопасности

- Перед вводом в эксплуатацию изучите руководство по эксплуатации.
- Подключение, монтаж и установку поручать только специалистам.
- Не является оборудованием для обеспечения безопасности в соответствии с директивой ЕС «Машины и машинное оборудование». Только для использования в областях применения согласно NFPA 79. Адаптеры с соединительными кабелями из списка UL доступны. Enclosure type 1
- При вводе в эксплуатацию защищать устройство от попадания грязи и влаги.
- Данное руководство по эксплуатации содержит информацию, которая необходима во время всего жизненного цикла сенсора.

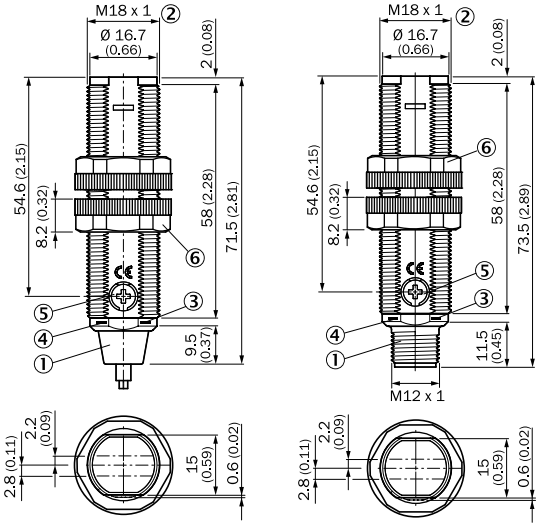
83 Использование по назначению

GRL18 является оптоэлектронным отражательным световым барьером (в дальнейшем называемым "сенсор") и используется для оптической бесконтактной регистрации вещей, животных и людей. Для функционирования необходим отражатель. При ином использовании и при внесении изменений в изделие подача любых гарантийных претензий к SICK AG исключена.



① Connection cable 2 m / Connector M12, 4-pin
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control; Potentiometer 270°
⑥ 24_x: fastening nuts (2 x); 24 mm hex, metal

Image 49: GRL18-xxxx2



① Connection cable 2 m / Connector M12, 4-pin
② Threaded mounting hole M18 x 1
③ LED indicator yellow
④ LED indicator green
⑤ Sensitivity control; Potentiometer 270°
⑥ 11_x: fastening nuts (2 x); width across 22, plastic

Image 50: GRL18-xxxx7

84 Ввод в эксплуатацию

1 Скорректировать дистанцию между сенсором и отражателем с помощью соответствующей диаграммы (x = дистанция переключения, y = функциональный резерв).

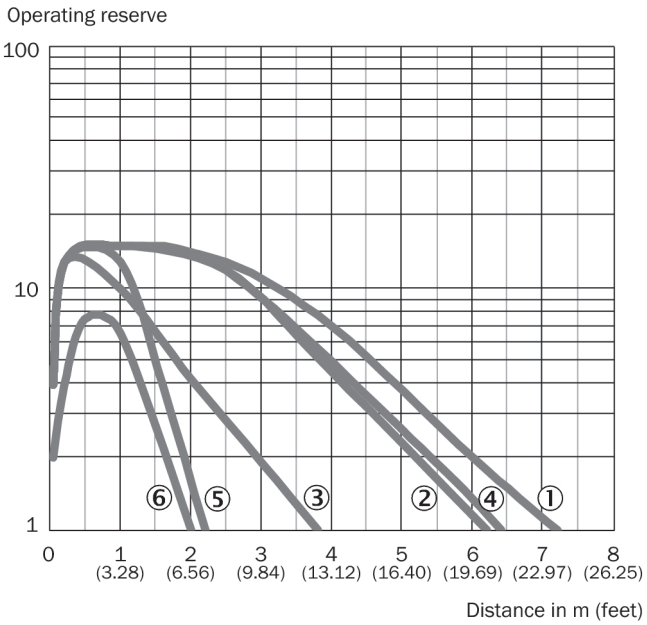


Image 51: H

2 Установите сенсор и отражатель на подходящем крепежном уголке (см. программу принадлежностей от SICK). Выровняйте сенсор и отражатель друг относительно друга.

Выдерживайте максимально допустимый момент затяжки сенсора в 2,0 Нм для металла / 0,9 Нм для пластмассы [см. K].

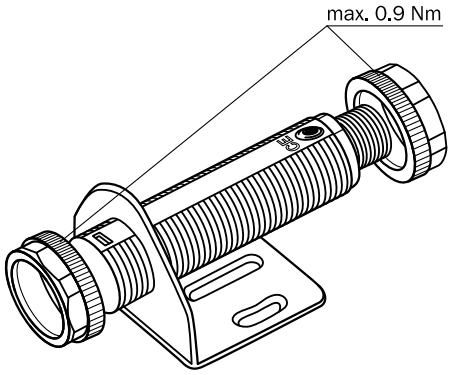


Image: K: GRL18-x24x7

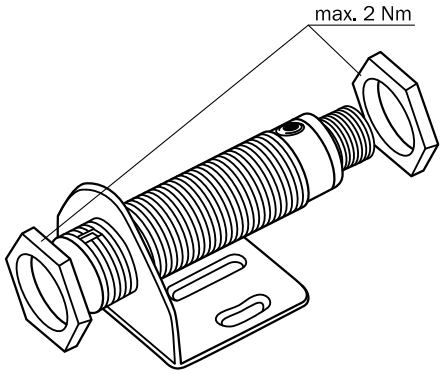


Image: K: GRL18-x24x2

3 Подключайте сенсоры при отключенном напряжении питания (V_S = 0 В). В зависимости от типа подключения следует принять во внимание информацию с графиков [см. B]:

- Штекерный разъем: назначение контактов
- Проводник: цвет жилы

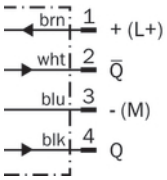


Image: B: GRL18-x24xx

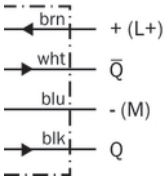


Image: B: GRL18-x11xx

Подавайте и включайте напряжение питания только после завершения подключения всех электрических соединений (V_S > 0 В). На сенсоре включается зеленый светодиодный индикатор.

Пояснения к схеме электрических соединений (график B):

Коммутирующие выходы Q или /Q (согласно графику B):

GRL18-P (PNP: нагрузка -> M)

GRL18-N (NPN: нагрузка -> L+)

4 Направьте сенсор на подходящий отражатель. Выберите такую позицию, чтобы красный луч передатчика попадал в центр отражателя. Сенсор должен иметь свободную траекторию до отражателя, нахождение объектов на пути луча не допускается [см. E]. Оптические отверстия на сенсоре и отражателе должны быть свободными.

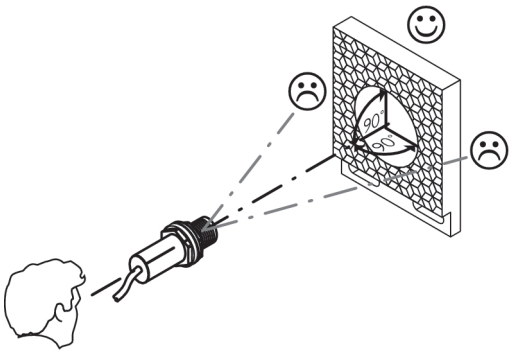
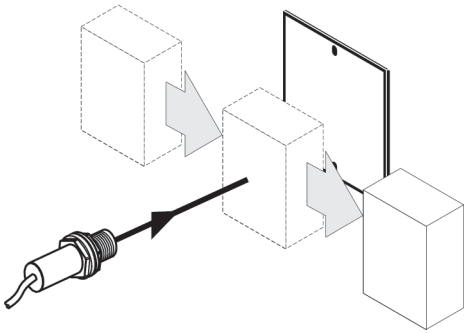


Image 52: E

5



Сенсор с потенциометром:

С помощью потенциометра (тип: 270°) регулируется чувствительность. Вращение вправо: увеличение функционального резерва, вращение влево: уменьшение функционального резерва. Рекомендуется устанавливать потенциометр на "Maximal". На деполяризующих поверхностях можно рекомендовать использование уменьшенного функционального резерва.

Сенсор настроен и готов к эксплуатации. Для проверки функционирования воспользуйтесь графиками C и G. Если характер поведения коммутирующего выхода не соответствует графику C, проверить условия применения. См. раздел "Диагностика неисправностей".

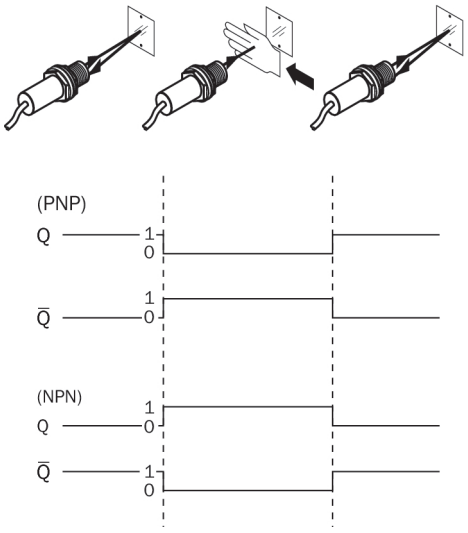


Image 53: C

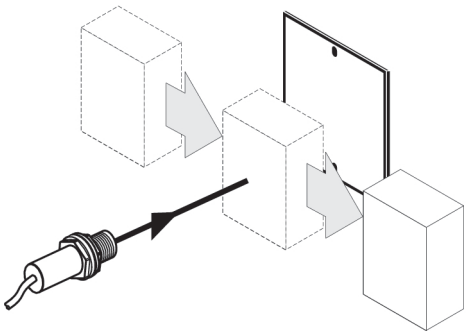


Image 54: G

86 Диагностика неисправностей

В таблице 87 показано, какие меры нужно предпринять, если сенсоры не работают.

87 Таб_диагностики неисправностей

Светодиодный индикатор / картина неисправности / ***LED indicator/fault pattern***	**Причина /** ***Cause***	**Меры по устранению /** ***Measures***
зеленый светодиод не горит / *Green LED does not light up*	нет напряжения питания или оно ниже нижнего предельного значения / *No voltage or voltage below the limit values*	Проверить напряжения питания, всю схему электроподключения (проводку и разъемные соединения) / *Check the power supply, check all electrical connections (cables and plug connections)*
зеленый светодиод не горит / *Green LED does not light up*	Пропадание напряжения питания / *Voltage interruptions*	Обеспечить надежную подачу напряжения питания без его пропадания / *Ensure there is a stable power supply without interruptions*
зеленый светодиод не горит / *Green LED does not light up*	Сенсор неисправен / *Sensor is faulty*	Если напряжение питания в порядке, то заменить сенсор / *If the power supply is OK, replace the sensor*

Светодиодный индикатор / картина неисправности / ***LED indicator/fault pattern***	**Причина /** ***Cause***	**Меры по устранению /** ***Measures***
желтый светодиод мигает / *Yellow LED flashes*	Сенсор пока еще готов к работе, но эксплуатационные условия неоптимальны / *Sensor is still ready for operation, but the operating conditions are not ideal*	Проверка эксплуатационных условий: Полностью сориентировать световой луч (световое пятно) на отражатель / чистка оптических поверхностей (сенсор и отражатель) /заново настроить чувствительность (потенциометром) / если потенциометр уже установлен на макс. дистанцию переключения: уменьшить расстояние между сенсором и отражателем, а также проверить тип отражателя с помощью графика E / отражатель не подходит для выбранного применения (рекомендуется использовать исключительно отражатели SICK) /проверить и, при необходимости, скорректировать дистанцию срабатывания, см. график E / слишком велико расстояние между сенсором и отражателем / *Check the operating conditions: Fully align the beam of light (light spot) with the reflector / Clean the optical surfaces (sensor and reflector) / Readjust the sensitivity (potentiometer) / If the potentiometer is set to the max. sensing range: Reduce the distance between the sensor and the reflector, and check the reflector type against Graphic E / Reflector is not suitable for the application in question (we recommend only using SICK reflectors) / Check sensing range and adjust if necessary, see Graphic E / Distance between the sensor and the reflector is too long*
Пропадание сигнала при детектировании объекта / *Signal interruptions when object is detected*	Деполяризующие свойства поверхности объекта (например, пленка), переотражение / *Depolarizing property of the object surface (e.g., tape), reflection*	Уменьшить чувствительность или изменить позицию сенсора / *Reduce sensitivity or change the position of the sensor*

88 Демонтаж и утилизация

Утилизацию сенсоров следует проводить согласно национальным предписаниям по утилизации. Следует стремиться к повторному использованию содержащихся в них материалов (прежде всего, драгоценных металлов).

89 Техобслуживание

Датчики SICK не нуждаются в техобслуживании.

Рекомендуется регулярно

1. очищать оптические ограничивающие поверхности
2. проверять прочность резьбовых и штекерных соединений

Запрещается вносить изменения в устройства.

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

								GRL18-xxx3x
Sensing range (with reflector PL80A)	Schaltabstand (mit Reflektor PL80A)	Portée (avec réflecteur PL80A)	Distância de comutação (com refletor PL80A)	Distanza di commutazione (con riflettore PL80A)	Distancia de conmutación (con reflector PL80A)	开关距离（带反射器 PL80A）	最大検出範囲	0.06 ... 7.2 m
Sensing range max. (with reflector PL80A)	Schaltabstand max. (mit Reflektor PL80A)	Portée max. (avec réflecteur PL80A)	Distância de comutação máx. (com refletor PL80A)	Distanza max. di commutazione (con riflettore PL80A)	Distancia de conmutación máx. (con reflector PL80A)	最大开关距离（带反射器 PL80A）	最大検出範囲（リフレクタを用いた場合 PL80A）	
Light spot diameter/ distance	Lichtfleckdurchmesser/Entfernung	Diamètre spot / distance	Diâmetro do ponto de luz/ distância	Diametro punto luminoso/ distanza	Diámetro del punto luminoso/distancia	光斑直径/距离	光点のスポット径/距離	175 mm / 7 m
Supply voltage U_V	Versorgungsspannung U_V	Tension d'alimentation U_V	Tensão de alimentação U_V	Tensione di alimentazione U_V	Tensión de alimentación U_V	供**电电压** U_V	供給電圧 U_V	DC 10 ... 30 V[1]
Output current $I_{max.}$	Ausgangsstrom $I_{max.}$	Courant de sortie $I_{max.}$	Corrente de saída $I_{max.}$	Corrente di uscita $I_{max.}$	Intensidad de salida $I_{max.}$	**输**出**电**流 $I_{max.}$	出力電流 $I_{max.}$	100 mA[2]
Max. switching frequency	Schaltfolge max.	Commutation max.	Sequência máx. de comutação	Sequenza di commutazione max.	Secuencia de conmutación máx.	最大开关操作**顺**序	最大スイッチング周波数	1,000 / s[3]
Response time	Ansprechzeit	Temps de réponse	Tempo de resposta	Tempo di reazione	Tiempo de respuesta	响**应时间**	応答時間	<0.5 ms[4]
Enclosure rating	Schutzart	Indice de protection	Tipo de proteção	Tipo di protezione	Tipo de protección	防**护类**型	保護等級	IP 67
Protection class	Schutzklasse	Classe de protection	Classe de proteção	Classe di protezione	Clase de protección	防**护**等**级**	保護クラス	III
Circuit protection	Schutzschaltungen	Protections électriques	Circuitos de proteção	Commutazioni di protezione	Circuitos de protección	保**护电**路	回路保護	A,B,D[5]
Ambient operating temperature	Betriebsumgebungstemperatur	Température de service	Temperatura ambiente de funcionamento	Temperatura ambientale di funzionamento	Temperatura ambiente de servicio	工作**环**境温度	周辺温度 (作動中)	-25 °C ... + 55 °C[6]
1) Limit value: operation in short-circuit protection mains max. 8 A; residual ripple max. 5 Vss 2) When UV > 24 V and ambient temperature > 49 °C IAmax. = 50 mA. 3) With light / dark ratio 1:1	1) Grenzwerte: Betrieb im kurzschlussgeschützten Netz max. 8 A; Restwelligkeit max. 5 Vss 2) Bei UV > 24 V und Umgebungstemperatur > 49 °C IAmax. = 50 mA.	1) Valeurs limites : fonctionnement sur réseau protégé contre les courts-circuits max. 8 A ; ondulation résiduelle max. 5 Vcc 2) Pour Uv > 24 V ou température ambiante >	1) Valores limite: funcionamento com rede à prova de curto-circuito máx. 8 A; ondulação residual máx. 5 Vss 2) Com UV > 24 V e temperatura ambiente > 49 °C IAmax. = 50 mA.	1) Valori limite: funzionamento in rete protetta da cortocircuito max. 8 A; ondulazione residua max. 5 Vss 2) Con UV > 24 V e temperatura d'ambiente > 49 °C IAmax. = 50 mA.	1) Valores límite: funcionamiento en red protegida contra cortocircuitos máx. 8 A; ondulación residual máx. 5 Vss 2) Con UV > 24 V y temperatura ambiente > 49 °C IAmax. = 50 mA.	1) 极限**值**：在防短路**电**网中运行，最大 8 A；最大余波 5 Vss 2) UV > 24 V，且**环**境温度 > 49 °C IAmax.= 50 mA。 3) 明暗比**为** 1:1 4) 信号**传输时间**（**电**阻**负载时**）	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 Vss 2) UV > 24 V、および周囲温度 > 49 °C IAmax.= 50 mA の場合。 3) ライト/ダークの比率 1:1	

								GRL18-xxx3x
4) Signal transit time with resistive load 5) A = UV-connections reverse polarity protected B = inputs and output reverse-polarity protected D = outputs overcurrent and short-circuit protected 6) When UV 24 V and IA < 50 mA	3) Mit Hell- / Dunkelverhältnis 1:1 4) Signallaufzeit bei ohmscher Last 5) A = UV-Anschlüsse verpolsicher B = Ein- und Ausgänge verpolsicher D = Ausgänge überstrom- und kurzschlussfest 6) Bei UV 24 V und IA < 50 mA	49 °C, IAmax. = 50 mA. 3) Pour un rapport clair/sombre de 1:1 4) Temps de propagation du signal sur charge ohmique 5) A = raccordements UV 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 6) Pour Uv 24 V et IA < 50 mA	3) Com proporção sombra/luz 1:1 4) Tempo de funcionamento do sinal com carga ôhmica 5) A = conexões protegidas contra inversão de pólos UV B = Entradas e saídas protegidas contra polaridade inversa D = Saídas protegidas contra sobrecorrente e curto-circuito 6) Com UV 24 V e IA < 50 mA	3) Con rapporto chiaro / scuro 1:1 4) Durata segnale con carico ohmico 5) A = UV-Allacciamenti protetti dall-'inversione di polarità B = entrate e uscite protette da polarità inversa D = uscite protette da sovracorrente e da cortocircuito. 6) Con UV 24 V e IA < 50 mA	3) Con una relación claro/oscuro de 1:1 4) Duración de la señal con carga óhmica 5) Conexiones A = UV protegidas contra polarización inversa B = Entradas y salidas protegidas contra polarización incorrecta D=Salidas a prueba de sobrecorriente y cortocircuitos. 6) Con UV 24 V e IA < 50 mA	5) A = UV 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 6) 当 UV 24 V 和 IA < 50 mA 时	4) 負荷のある信号経過時間 5) A = UV 接続は逆接保護 B = 入力および出力は逆接保護 D = 出力過電流および短絡保護 6) UV 24 V、IA < 50 mA の場合	