

Photoelectric proximity sensor Operating instructions

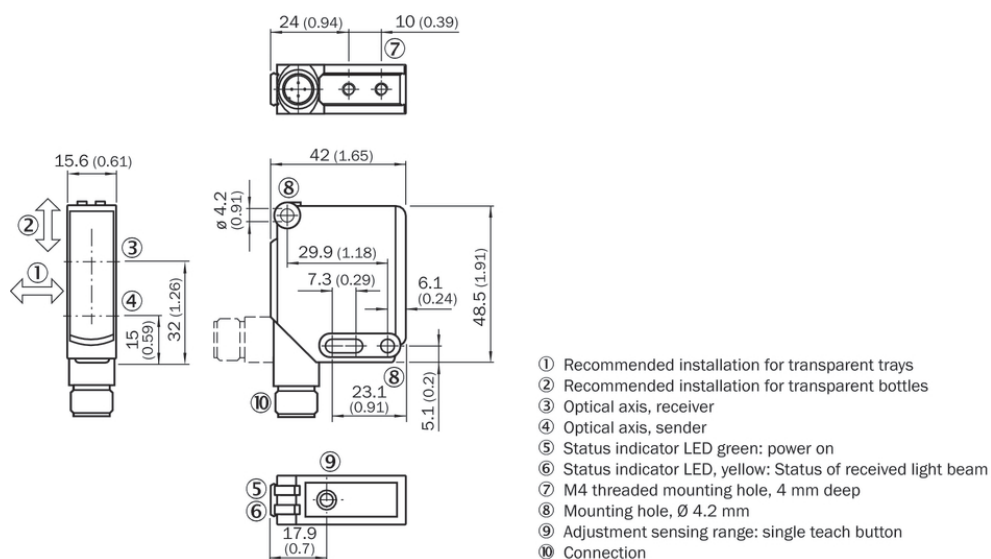
2 Safety notes

- 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.
- 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 WTF12G-3 is an opto-electronic photoelectric proximity sensor (referred to as "sensor" in the following) for the optical, non-contact detection of objects, animals, and persons. If the product is used for any other purpose or modified in any way, any warranty claim against SICK AG shall become void.

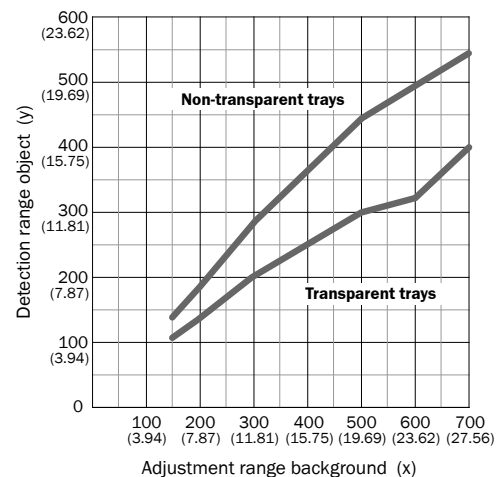
Photoelectric proximity sensor with foreground suppression with additional option for the detection of transparent objects



4 Commissioning

Check the application conditions: Adjust the sensing range and distance to the object or background according to the corresponding diagram [H/F]. (x = Distance sensor to stable background, y = maximum distance between sensor and object). The minimum distance (= y) for reliable object detection can be determined from diagram [H] as follows:

Example: x = 500 mm, y = 300 mm. That is, when it is the object to be detected is a transparent tray and the background is positioned at a distance of 500 mm from the sensor, the distance between sensor and object must not exceed 300 mm.

**Legend:**

x: Sensing range max. in mm (adjustment range background)
 = Distance sensor / background

y: Sensing range in mm (detection range object)
 = Maximum distance sensor / front edge of the object

Minimum distance sensor / background : 150 mm*

*) Referring to the background with 90 % remission equivalent to standard white DIN 5033 (i.e. glass-bead blasted stainless steel). The use of a shiny background can increase the minimum distance to the background (i.e. brushed and pickled stainless steel, minimum distance sensor to background: 300 mm).

Image 1: H

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

Note the sensor's maximum permissible tightening torque of 2.0 Nm.

Note the preferred direction of the object relative to the sensor.

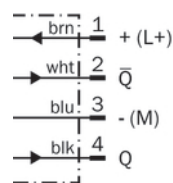
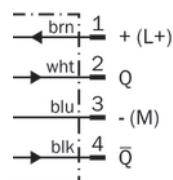
To ensure maximum detection reliability, the following installations are recommended for the mounting of sensors for detecting transparent objects:

Detection of transparent trays: vertical mounting

Detection of transparent bottles: horizontal mounting

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 2: B: WTF12G-3P/Nxxxx****Image 3: B: WTF12G-3Kxxxx**

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):

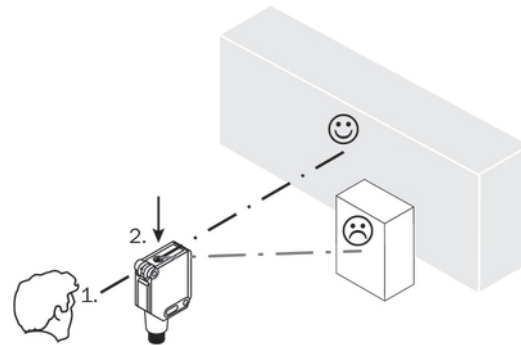
Switching outputs Q and /Q (according to Graphic B):

WTF12G-3P (PNP: load -> M)

WTF12G-3K (PNP: load -> M)

WTF12G-3N (NPN: load -> L+)

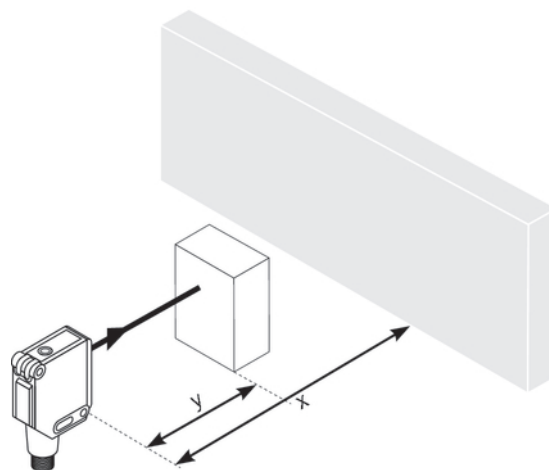
Align the sensor with a fixed background. You must ensure that the optical opening (front screen) of the sensor is completely clear [E].



1. step: alignment

2. step: teach-in

Image 4: E: 1. Step: alignment / 2. Step: teach-in



Sensor with teach-in pushbutton:

The sensor requires teaching-in in order to detect transparent objects.

The sensing range is adjusted to the background by pressing the teach-in pushbutton, see Graphic E. Do not actuate the teach-in pushbutton with a sharp implement. The yellow LED lights up continuously if the teach-in procedure was successful. If it flashes, either adjust the distance to the background or tilt the sensor. Repeat the adjustment process.

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.

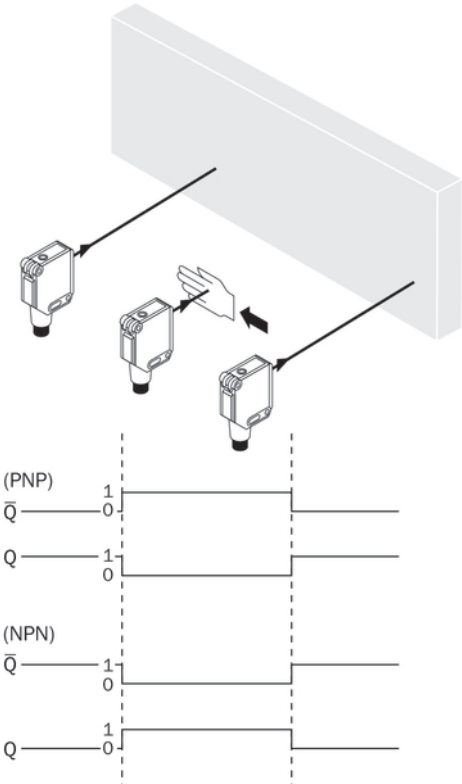


Image 5: C

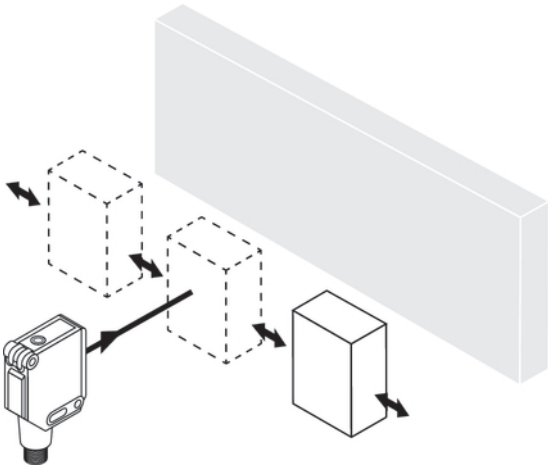


Image 6: G

5 Teach modes

Teach-in mode for objects / Teach-in mode for objects	Teach-in time / Teach-in time	Alignment / Alignment	LED indicator / LED Indicator	Results / Results
	< 2 s			No change in func- tion / No change in func- tion

Teach-in mode for objects / <i>Teach-in mode for objects</i>	Teach-in time / <i>Teach-in time</i>	Alignment / <i>Alignment</i>	LED indicator / <i>LED indicator</i>	Results / <i>Results</i>
Single teach-in pushbutton / <i>Single teach-in pushbutton</i>	> 2 to < 5 s	Sensor to back-ground / <i>Sensor to back-ground</i>		Sensing range is set to background, oncoming objects between sensor and background are detected / <i>Sensing range is set to background, oncoming objects between sensor and background are detected</i>

6 Fault diagnosis

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

7 Table

LED indicator / <i>LED indicator</i>	Cause / <i>Cause</i>	Measures / <i>Measures</i>
Green LED does not light up / <i>Green LED does not light up</i>	No voltage or voltage below the limit values / <i>No voltage or voltage below the limit values</i>	Check the power supply, check all electrical connections (cables and plug connections) / <i>Check the power supply, check all electrical connections (cables and plug connections)</i>
Green LED does not light up / <i>Green LED does not light up</i>	Voltage interruptions / <i>Voltage interruptions</i>	Ensure there is a stable power supply without interruptions / <i>Ensure there is a stable power supply without interruptions</i>
Green LED does not light up / <i>Green LED does not light up</i>	Sensor is faulty / <i>Sensor is faulty</i>	If the power supply is OK, replace the sensor / <i>If the power supply is OK, replace the sensor</i>
Yellow LED flashes / <i>Yellow LED flashes</i>	Sensor is still ready for operation, but the operating conditions are not ideal / <i>Sensor is still ready for operation, but the operating conditions are not ideal</i>	Check the operating conditions: Fully align the beam of light (light spot) with the background / Clean the optical surfaces / Readjust the sensitivity (teach-in) / Check sensing range and adjust if necessary, see Graphic E / Check the characteristics of the background in accordance with the specifications, see Graphic E / <i>Check the operating conditions: Fully align the beam of light (light spot) with the background / Clean the optical surfaces / Readjust the sensitivity (teach-in) / Check sensing range and adjust if necessary, see Graphic E / Check the characteristics of the background in accordance with the specifications, see Graphic E</i>

LED indicator / <i>LED indicator</i>	Cause / <i>Cause</i>	Measures / <i>Measures</i>
Yellow LED flashes (only briefly) / <i>Yellow LED flashes (only briefly)</i>	Teach-in mode / <i>Teach-in mode</i>	Check the teach-in mode / <i>Check the teach-in mode</i>

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-Lichttaster Betriebsanleitung

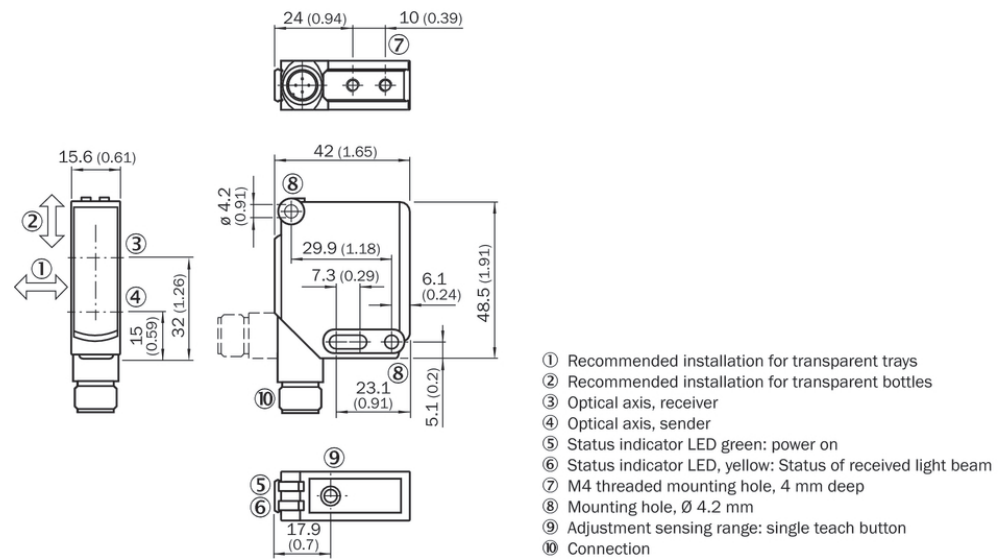
12 Sicherheitshinweise

- 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.
- Gerät bei Inbetriebnahme vor Feuchte und Verunreinigung schützen.
- Diese Betriebsanleitung enthält Informationen, die während des Lebenszyklus des Sensors notwendig sind.

13 Bestimmungsgemäße Verwendung

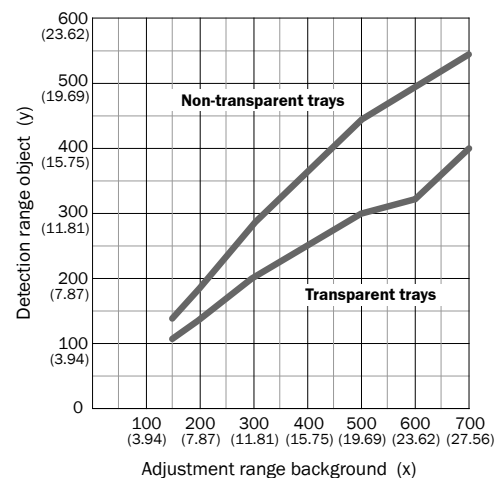
Die WTF12G-3 ist ein optoelektronischer Reflexions-Lichttaster (im Folgenden Sensor genannt) und wird zum optischen, berührungslosen Erfassen von Sachen, Tieren und Personen eingesetzt. Bei jeder anderen Verwendung und bei Veränderungen am Produkt verfällt jeglicher Gewährleistungsanspruch gegenüber der SICK AG.

Reflexionslichttaster mit Vordergrundausbldung mit Zusatzoption zur Erkennung transparenter Objekte



14 Inbetriebnahme

Einsatzbedingungen prüfen: Schaltabstand und Distanz zum Objekt bzw. Hintergrund mit dem zugehörigen Diagramm [vgl. H/F] abgleichen. (x = Abstand Sensor zum stabilen Hintergrund, y = Maximalabstand zwischen Sensor und Objekt). Die maximale Distanz (= y) für die zuverlässige Objekterkennung kann aus dem Diagramm [vgl. H] wie folgt ermittelt werden:
Beispiel: x = 500 mm, y = 300 mm. D. h. wenn es sich bei dem zu detektierenden Objekt um ein transparentes Tray handelt und der Hintergrund 500 mm vom Sensor entfernt liegt, darf der Abstand zwischen Sensor und Objekt maximal 300 mm betragen.



Legend:

x: Sensing range max. in mm (adjustment range background)
= Distance sensor / background

y: Sensing range in mm (detection range object)
= Maximum distance sensor / front edge of the object

Minimum distance sensor / background : 150 mm*

*) Referring to the background with 90 % remission equivalent to standard white DIN 5033 (i.e. glass-bead blasted stainless steel). The use of a shiny background can increase the minimum distance to the background (i.e. brushed and pickled stainless steel, minimum distance sensor to background: 300 mm).

Abb. 7: H

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

Maximal zulässiges Anzugsdrehmoment des Sensors von 2.0 Nm beachten.

Vorzugsrichtung des Objektes zum Sensor beachten [vgl. A].

Um eine größtmögliche Detektionssicherheit zu gewährleisten, sind bei der Montage des Sensors folgende Installationen zur Detektion transparenter Objekte empfohlen:

Detektion von transparenten Trays: vertikaler Einbau

Detektion von transparenten Flaschen: horizontaler Einbau

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

- Steckeranschluss: Pinbelegung
- Leitung: Adernfarbe

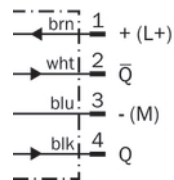


Abb. 8: B: WTF12G-3P/Nxxx

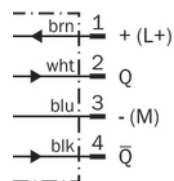


Abb. 9: B: WTF12G-3Kxxx

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

Erläuterungen zum Anschlussschema (Grafik B):

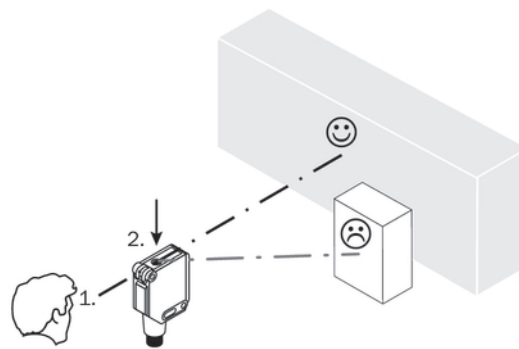
Schaltausgänge Q bzw. /Q (gemäß Grafik B):

WTF12G-3P (PNP: Last -> M)

WTF12G-3K (PNP: Last -> M)

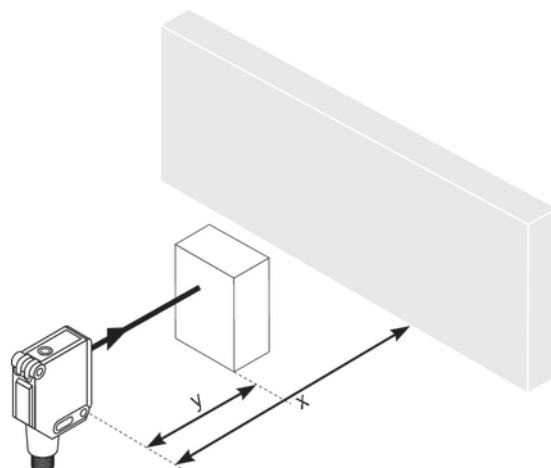
WTF12G-3N (NPN: Last -> L+)

Sensor auf feststehenden Hintergrund ausrichten. Es ist darauf zu achten, dass die optische Öffnung (Frontscheibe) des Sensors vollständig frei ist [vgl. E].



1. step: alignment
2. step: teach-in

Abb. 10: E: 1. Step: alignment / 2. Step: teach-in



Sensor mit Teach-in-Taste:

Zur Erkennung transparenter Objekte ist ein Teachen des Sensors erforderlich.

Durch Drücken der Teach-in-Taste wird der Schaltabstand auf den Hintergrund eingestellt, siehe Grafik E. Teach-in-Taste nicht mit spitzen Gegenständen betätigen. Bei erfolgreichem Teach-Vorgang leuchtet die gelbe Anzeige-LED konstant. Blinkt diese, muss entweder der Abstand zum Hintergrund angepasst oder der Sensor verkippt werden. Einstellung wiederholen.

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.

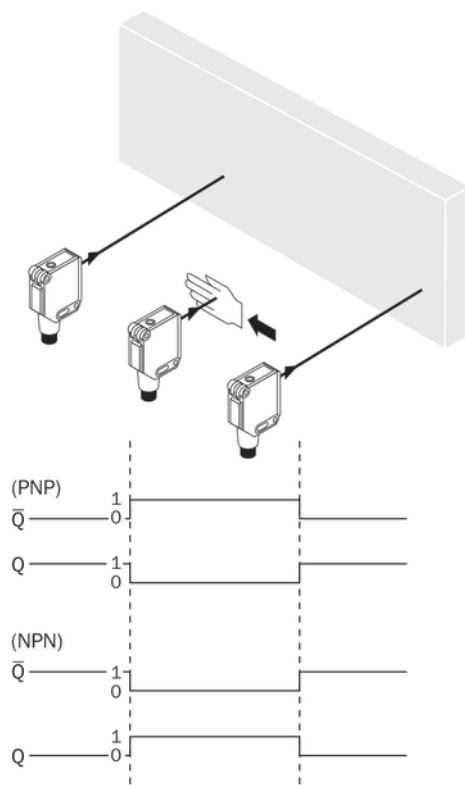


Abb. 11: C

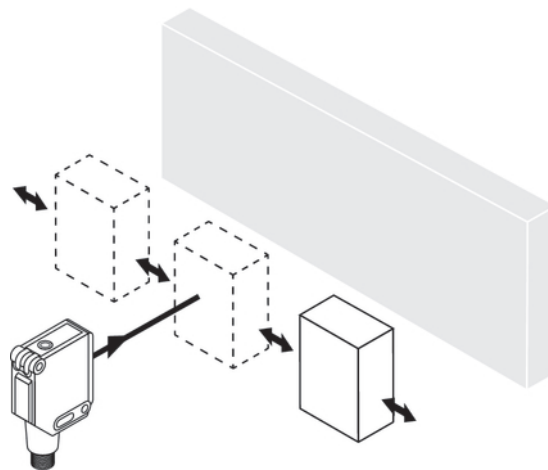


Abb. 12: G

Teach-in-Modus für Objekte / <i>Teach-in mode for objects</i>	Teach-in-Zeit / <i>Teach-in time</i>	Ausrichtung / <i>Alignment</i>	Anzeige-LED / <i>LED indicator</i>	Ergebnis / <i>Results</i>
	< 2 s			keine Funktionsänderung / <i>No change in function</i>
Einfach-Teach-in-Taste / <i>Single teach-in pushbutton</i>	> 2 ... < 5 s	Sensor auf Hintergrund / <i>Sensor to background</i>	☀	Schaltabstand wird auf Hintergrund eingestellt, einfallende Objekte zwischen Sensor und Hintergrund werden erkannt / <i>Sensing range is set to background, oncoming objects between sensor and background are detected</i>

16 Fehlerdiagnose

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

17 Tabelle

Anzeige-LED / <i>LED indicator</i>	Ursache / <i>Cause</i>	Maßnahme / <i>Measures</i>
grüne LED leuchtet nicht / <i>Green LED does not light up</i>	keine Spannung oder Spannung unterhalb der Grenzwerte / <i>No voltage or voltage below the limit values</i>	Spannungsversorgung prüfen, den gesamten elektrischen Anschluss prüfen (Leitungen und Steckerverbindungen) / <i>Check the power supply, check all electrical connections (cables and plug connections)</i>

Anzeige-LED / LED indicator	Ursache / Cause	Maßnahme / Measures
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
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 Hintergrund ausrichten / Reinigung der optischen Flächen / Empfindlichkeit (Teach) neu einstellen / Schaltabstand überprüfen und ggfs. anpassen, siehe Grafik E / Überprüfung der Beschaffenheit des Hintergrundes, gemäß Spezifikation, siehe Grafik E / Check the operating conditions: Fully align the beam of light (light spot) with the background / Clean the optical surfaces / Readjust the sensitivity (teach-in) / Check sensing range and adjust if necessary, see Graphic E / Check the characteristics of the background in accordance with the specifications, see Graphic E
gelbe LED blinkt (nur kurz) / Yellow LED flashes (only briefly)	Teach-Modus / Teach-in mode	Teach-Modus überprüfen / Check the teach-in mode

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.

Détecteur en réflexion directe
Notice d'instruction

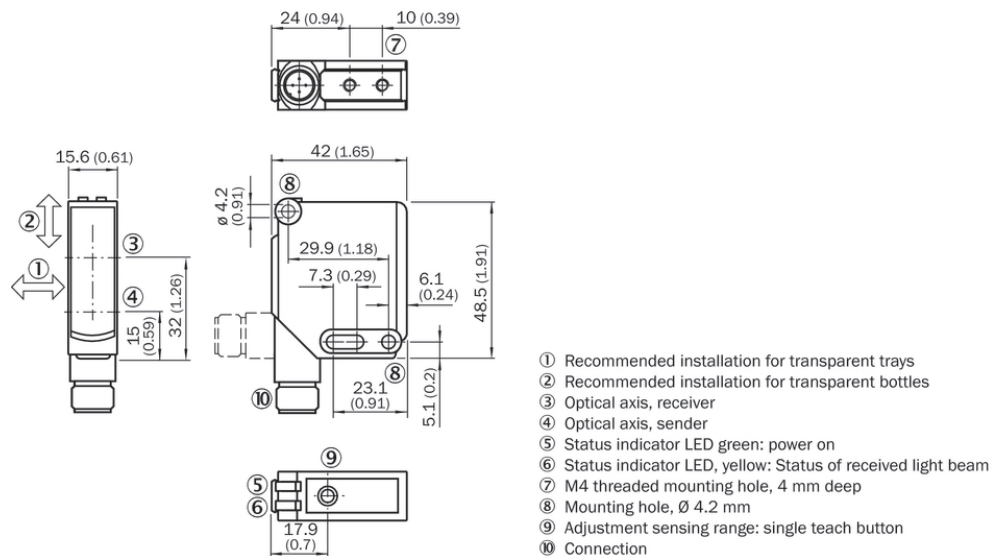
22 Consignes de sécurité

- 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
- 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

Le WTF12G-3 est un détecteur optoélectronique en réflexion directe (appelé capteur dans ce document) qui permet la détection optique sans contact d'objets, d'animaux et de personnes. Toute autre utilisation ou modification du produit annule la garantie de SICK AG.

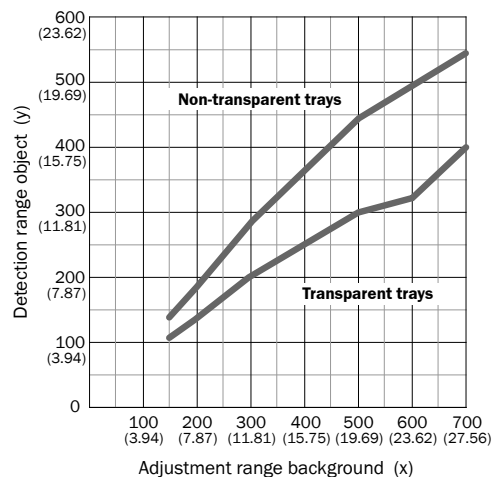
Détecteur en réflexion directe avec élimination de premier plan avec option détection d'objets transparents



24 Mise en service

Vérifier les conditions d'utilisation : comparer la portée et la distance avec l'objet ou l'arrière-plan à l'aide du diagramme [H/F] correspondant. (x = distance entre capteur et arrière-plan stable, y = distance maximale entre capteur et objet) La distance maximale (= y) pour une détection fiable de l'objet peut être calculée à partir du diagramme [H] comme suit :

Exemple : x = 500 mm, y = 300 mm. C'est-à-dire que lorsqu'il s'agit de détecter un bac transparent et que l'arrière-plan se trouve éloigné de 500 mm du capteur, la distance entre capteur et objet peut être au maximum de 300 mm.



Legend:

x: Sensing range max. in mm (adjustment range background)
= Distance sensor / background

y: Sensing range in mm (detection range object)
= Maximum distance sensor / front edge of the object

Minimum distance sensor / background : 150 mm*

*) Referring to the background with 90 % remission equivalent to standard white DIN 5033 (i.e. glass-bead blasted stainless steel). The use of a shiny background can increase the minimum distance to the background (i.e. brushed and pickled stainless steel, minimum distance sensor to background: 300 mm).

Image 13: H

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

Respecter le couple de serrage maximum autorisé du capteur de 2.0 Nm

Tenir compte de la direction préférentielle de l'objet par rapport au capteur [voir A].

Pour garantir la plus grande fiabilité possible de détection, les montages suivants des capteurs sont recommandés pour détecter des objets transparents :

détection de plateaux transparents : montage vertical

détection de bouteilles transparentes : montage horizontal

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

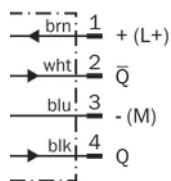


Image 14: B: WTF12G-3P/Nxxx

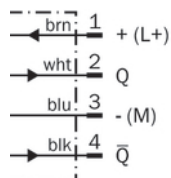


Image 15: B: WTF12G-3Kxxx

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) :

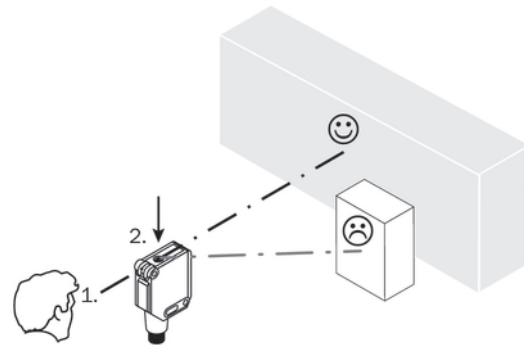
Sorties de commutation Q ou /Q (selon le schéma B) :

WTF12G-3P (PNP : charge -> M)

WTF12G-3K (PNP : charge -> M)

WTF12G-3N (NPN : charge -> L+)

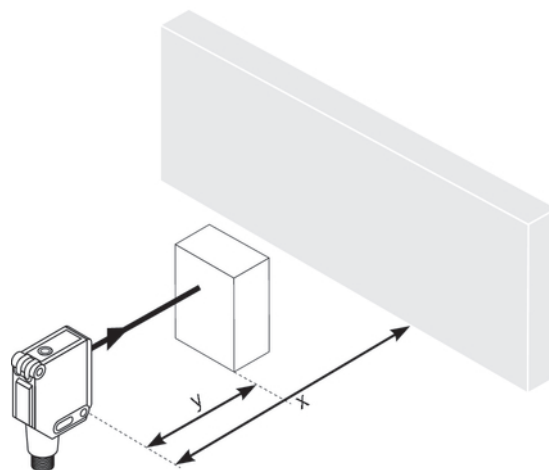
Aligner le capteur sur un arrière-plan fixe. S'assurer que l'ouverture optique (vitre frontale) du capteur est parfaitement dégagée [voir E].



1. step: alignment

2. step: teach-in

Image 16: E = 1. Etape : alignement / 2. Etape : apprentissage



Capteur avec touche apprentissage :

L'apprentissage du capteur est nécessaire pour la détection d'objets transparents.

La portée est réglée sur l'arrière-plan en appuyant sur la touche d'apprentissage, voir le schéma E. Ne pas appuyer sur la touche apprentissage avec des objets pointus. Lorsque le processus d'apprentissage est réussi, la DEL témoin jaune s'allume en continu. Si elle clignote, il faut soit adapter la distance à l'arrière-plan, soit incliner le capteur. Recommencer le réglage.

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.

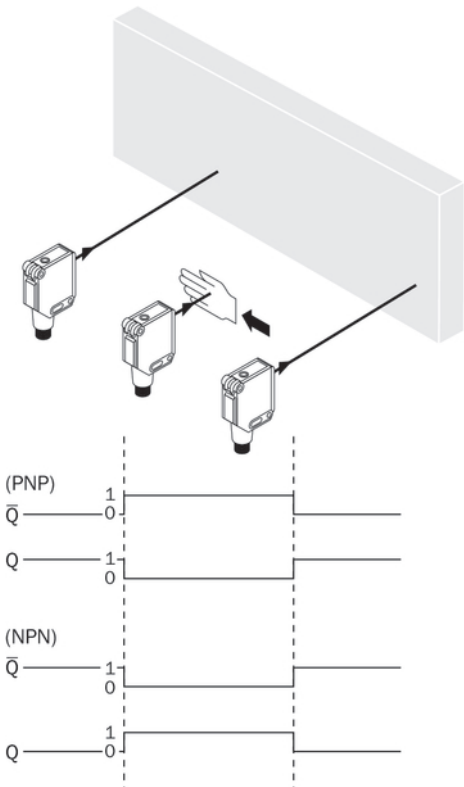


Image 17: C

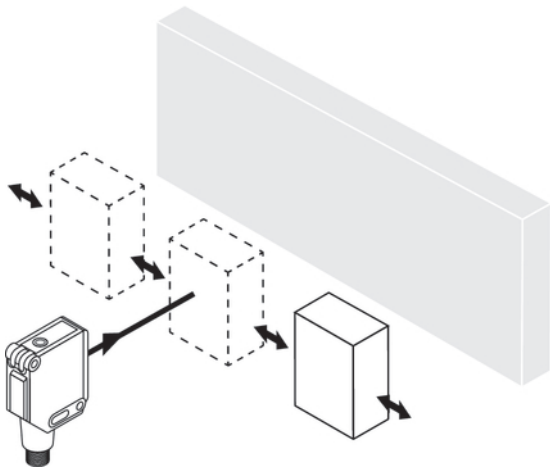


Image 18: G

25 Modes d'apprentissage

Mode d'apprentissage pour les objets / Teach-in mode for objects	Durée d'apprentissage / Teach-in time	Alignement / Alignment	DEL témoin / LED Indicator	Résultat / Results
	< 2 s			Pas de modification du fonctionnement / No change in function

Mode d'apprentissage pour les objets / <i>Teach-in mode for objects</i>	Durée d'apprentissage / <i>Teach-in time</i>	Alignement / <i>Alignment</i>	DEL témoin / <i>LED indicator</i>	Résultat / <i>Results</i>
Touche d'apprentissage simple / <i>Single teach-in pushbutton</i>	> 2 ... < 5 s	Capteur sur l'arrière-plan / <i>Sensor to background</i>		La portée est réglée sur l'arrière-plan, les objets arrivant entre capteur et arrière-plan seront détectés / <i>Sensing range is set to background, oncoming objects between sensor and background are detected</i>

26 Diagnostic

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

27 Tableau

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

DEL témoin / LED indicator	Cause / Cause	Mesure / Measures
La DEL 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 l'arrière-plan / Nettoyage des surfaces optiques / Régler à nouveau la sensibilité (apprentissage) / Contrôler la portée et éventuellement l'adapter, voir le schéma E / Contrôler la nature de l'arrière-plan selon les spécifications, voir schéma E / Check the operating conditions: Fully align the beam of light (light spot) with the background / Clean the optical surfaces / Readjust the sensitivity (teach-in) / Check sensing range and adjust if necessary, see Graphic E / Check the characteristics of the background in accordance with the specifications, see Graphic E
La DEL jaune clignote (impulsions courtes) / Yellow LED flashes (only briefly)	Mode apprentissage / Teach-in mode	Contrôler le mode apprentissage / Check the teach-in mode

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 les caractéristiques techniques fournies ne sont pas une déclaration de garantie.

Interruptor fotoelétrico de reflexão Manual de instruções

32 Notas de segurança

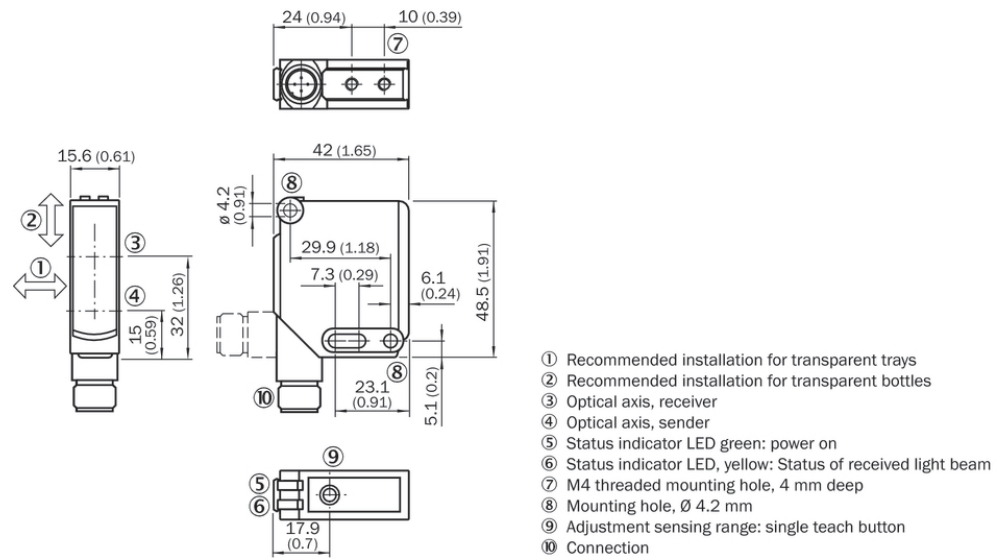
- Ler as instruções de operação antes da colocação em funcionamento.
- A conexão, a montagem e o ajuste devem ser executados somente por pessoal técnico qualificado.
- Os componentes de segurança não se encontram em conformidade com a Diretiva Europeia de Máquinas. Somente na utilização em aplicações de acordo com NFPA 79.

- 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

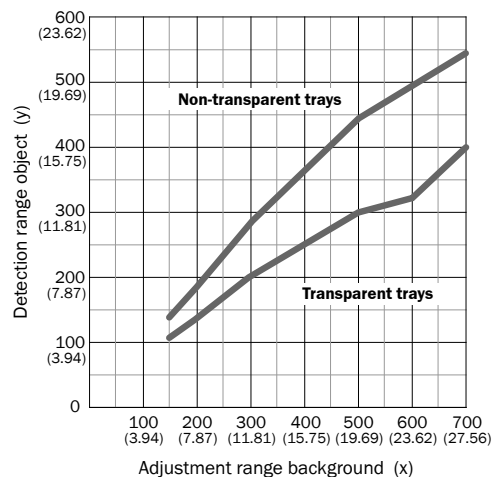
O WTF12G-3 é um sensor optoeletrônico de reflexão (doravante denominado "sensor") utilizado para a detecção óptica, sem contato, de objetos, animais e pessoas. Qualquer utilização diferente ou alterações do produto provocam a perda da garantia da SICK AG.

sensor de luz de reflexão com supressão de primeiro plano com opção adicional para a detecção de objetos transparentes



34 Colocação em funcionamento

Verificar as condições de uso: equiparar a distância de comutação e distância até o objeto ou plano de fundo, com o respectivo diagrama [cp. H/F]. (x = distância do sensor ao fundo estável, y = distância máxima entre sensor e objeto). A distância máxima (= y) para a detecção confiável do objeto pode ser determinada com base no diagrama [cp. H] como a seguir:
 exemplo: x = 500 mm, y = 300 mm. Isto significa que se o objeto a ser detectado for um Tray transparente e o fundo estiver 500 mm distante do sensor, a distância entre o sensor e o objeto deve ser no máximo de 300 mm.



Legend:

x: Sensing range max. in mm (adjustment range background)
= Distance sensor / background

y: Sensing range in mm (detection range object)
= Maximum distance sensor / front edge of the object

Minimum distance sensor / background : 150 mm*

*) Referring to the background with 90 % remission equivalent to standard white DIN 5033 (i.e. glass-bead blasted stainless steel). The use of a shiny background can increase the minimum distance to the background (i.e. brushed and pickled stainless steel, minimum distance sensor to background: 300 mm).

Image 19: H

Montar o sensor numa cantoneira de fixação adequada (ver linha de acessórios da SICK).

Observar o torque de aperto máximo permitido de 2.0 Nm para o sensor.

Observar a direção preferencial do objeto em relação ao sensor [cp. A].

Para garantir a maior segurança de detecção possível, para a montagem do sensor são recomendadas as seguintes instalações para a detecção de objetos transparentes:

Detecção de Trays transparentes: montagem vertical

Detecção de garrafas transparentes: montagem horizontal

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

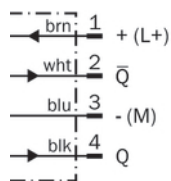


Image 20: B: WTF12G-3P/Nxxx

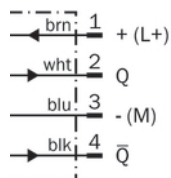


Image 21: B: WTF12G-3Kxxx

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):

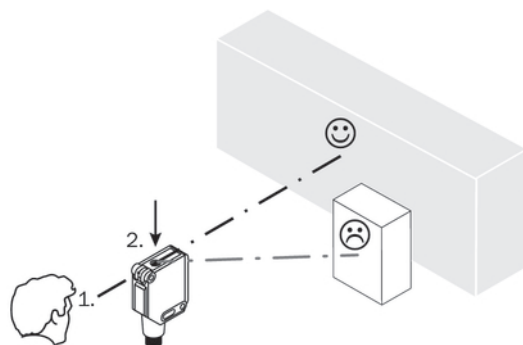
Saídas de comutação Q ou /Q (conforme o gráfico B):

WTF12G-3P (PNP: carga -> M)

WTF12G-3K (PNP: carga -> M)

WTF12G-3N (NPN: carga -> L+)

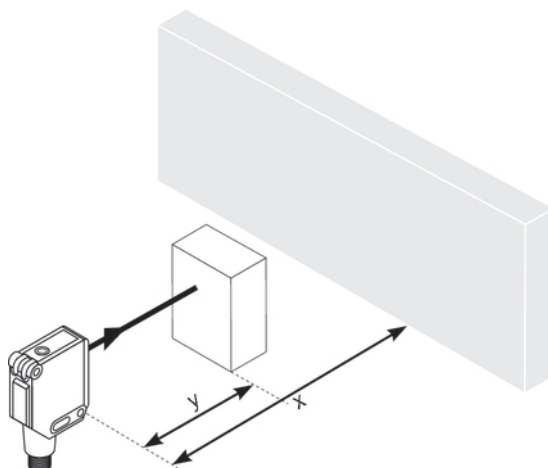
Alinhar o sensor ao plano de fundo fixo. Certificar-se de que a abertura óptica (vidro frontal) do sensor esteja completamente livre [cp. E].



1. step: alignment

2. step: teach-in

Image 22: E: 1. Step: alignment / 2. Step: teach-in



Sensor com tecla Teach-in:

Para a detecção de objetos transparentes, é necessário um processo de teach do sensor.

O ajuste da distância de comutação no fundo é efetuado apertando a tecla Teach-in, ver gráfico E. Não acionar a tecla Teach-in com objetos pontiagudos. Com um procedimento Teach bem sucedido, o LED amarelo acende permanentemente. Se este piscar, a distância ao fundo deve ser adaptada ou o sensor deve ser inclinado. Repetir a configuração.

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.

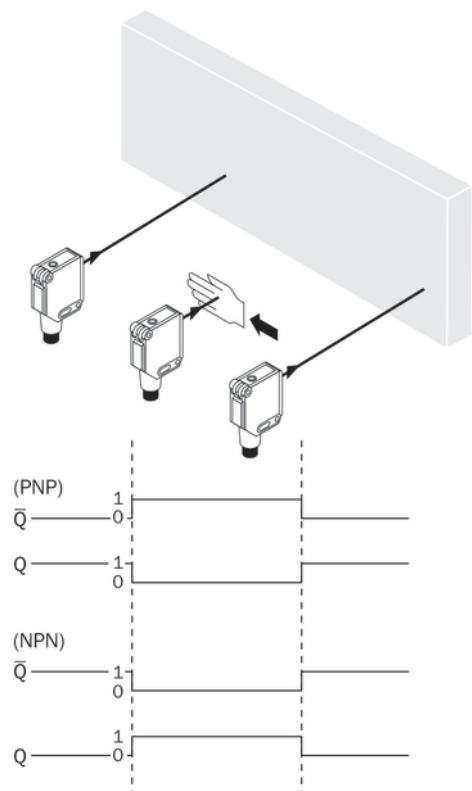


Image 23: C

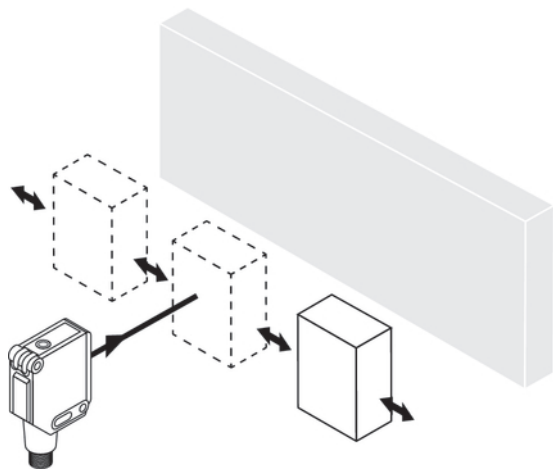


Image 24: G

35 **Modos Teach**

Modo Teach-in para objetos / Teach-in mode for objects	Tempo de Teach-in / Teach-in time	Alinhamento / Alignment	Indicador LED / LED Indicator	Resultado / Results
	< 2 s			Nenhuma alteração de função / No change in function

Modo Teach-in para objetos / <i>Teach-in mode for objects</i>	Tempo de Teach-in / <i>Teach-in time</i>	Alinhamento / <i>Alignment</i>	Indicador LED / <i>LED indicator</i>	Resultado / <i>Results</i>
Tecla de Teach-in simples / <i>Single teach-in pushbutton</i>	> 2 ... < 5 s	Sensor no fundo / <i>Sensor to back-ground</i>		A distância de comutação é ajustado no fundo, os objetos que entram são detectados entre o sensor e o fundo / <i>Sensing range is set to background, oncoming objects between sensor and background are detected</i>

36 Diagnóstico de erros

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

37 Tabela

Indicador LED / <i>LED indicator</i>	Causa / <i>Cause</i>	Medida / <i>Measures</i>
LED verde apagado / <i>Green LED does not light up</i>	Sem tensão ou tensão abaixo dos valores-limite / <i>No voltage or voltage below the limit values</i>	Verificar a alimentação de tensão, verificar toda a conexão elétrica (cabos e conectores) / <i>Check the power supply, check all electrical connections (cables and plug connections)</i>
LED verde apagado / <i>Green LED does not light up</i>	Interrupções de tensão / <i>Voltage interruptions</i>	Assegurar uma alimentação de tensão estável sem interrupções / <i>Ensure there is a stable power supply without interruptions</i>
LED verde apagado / <i>Green LED does not light up</i>	Sensor está com defeito / <i>Sensor is faulty</i>	Se a alimentação de tensão estiver em ordem, substituir o sensor / <i>If the power supply is OK, replace the sensor</i>
LED amarelo intermitente / <i>Yellow LED flashes</i>	Sensor ainda está operacional, mas as condições de operação não são ideais / <i>Sensor is still ready for operation, but the operating conditions are not ideal</i>	Verificar as condições de operação: Alinhar o feixe de luz (ponto de luz) completamente ao fundo / Limpeza das superfícies ópticas / reajustar a sensibilidade (Teach) / Verificar e, se necessário, adaptar a distância de comutação, ver gráfico E / Verificação da composição do fundo, de acordo com a especificação, ver gráfico E / <i>Check the operating conditions: Fully align the beam of light (light spot) with the background / Clean the optical surfaces / Readjust the sensitivity (teach-in) / Check sensing range and adjust if necessary, see Graphic E / Check the characteristics of the background in accordance with the specifications, see Graphic E</i>

Indicador LED / LED indicator	Causa / Cause	Medida / Measures
LED amarelo intermitente (apenas rapidamente) / Yellow LED flashes (only briefly)	Modo Teach / Teach-in mode	Verificar o modo Teach / Check the teach-in mode

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.

Sensore di luce a riflessione Istruzioni per l'uso

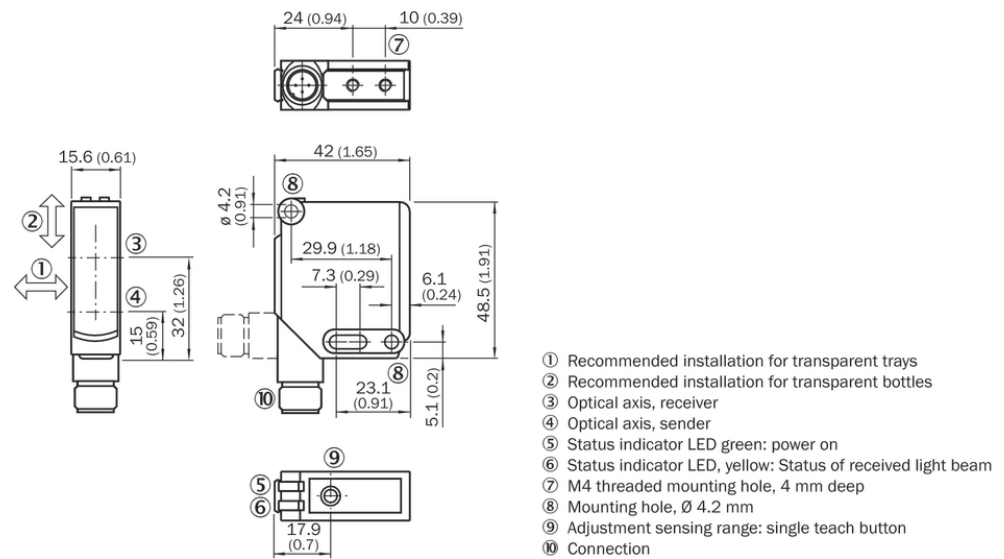
42 Avvertenze sulla sicurezza

- 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.
- Alla messa in funzione 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 relè fotoelettrico.

43 Uso conforme alle prescrizioni

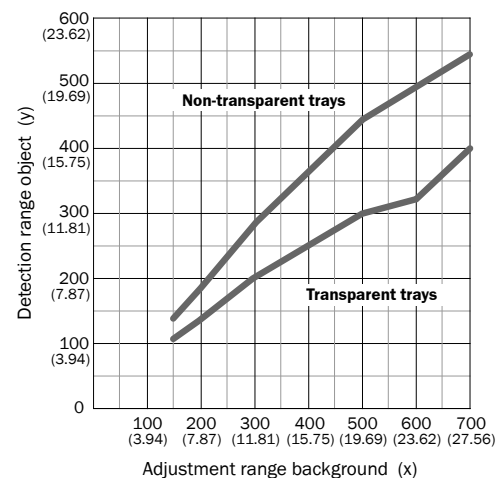
La WTF12G-3 è una fotocellula a riflessione optoelettronica (di seguito nominato sensore) utilizzata per il rilevamento ottico senza contatto di oggetti, animali e persone. Se viene utilizzata diversamente e in caso di modifiche sul prodotto, decade qualsiasi diritto alla garanzia nei confronti di SICK.

Relè fotoelettrico a riflessione con soppressione del primo piano con opzione supplementare per il riconoscimento degli oggetti trasparenti



44 Messa in funzionamento

Verificare le condizioni d'impiego: predisporre la distanza di commutazione e la distanza dall'oggetto o dallo sfondo in base al relativo diagramma [cfr. H/F]. (x = distanza del sensore dallo sfondo stabile, y = distanza massima tra il sensore e l'oggetto). La distanza massima (= y) per il rilevamento affidabile dell'oggetto può essere rilevata dal diagramma [cfr. H] come segue:
Esempio: x = 500 mm, y = 300 mm. Questo significa che, se l'oggetto di rilevare è un vassoio trasparente e lo sfondo dista 500 mm dal sensore, la distanza tra il sensore e l'oggetto può essere al massimo 300 mm.



Legend:

x: Sensing range max. in mm (adjustment range background)
= Distance sensor / background

y: Sensing range in mm (detection range object)
= Maximum distance sensor / front edge of the object

Minimum distance sensor / background : 150 mm*

* Referring to the background with 90 % remission equivalent to standard white DIN 5033 (i.e. glass-bead blasted stainless steel). The use of a shiny background can increase the minimum distance to the background (i.e. brushed and pickled stainless steel, minimum distance sensor to background: 300 mm).

Image 25: H

Montare il sensore su un punto di fissaggio adatto (vedi il programma per accessori SICK).

Rispettare il momento torcente massimo consentito del sensore di 2.0 Nm.

Rispettare la direzione preferenziale dell'oggetto in relazione al sensore [cfr. A].

Per garantire la massima sicurezza di rilevamento possibile, nel montaggio del sensore sono consigliate le seguenti installazioni per il rilevamento di oggetti trasparenti:

Rilevamento di vassoi trasparenti: montaggio verticale

Rilevamento di superfici trasparenti: montaggio orizzontale

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

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

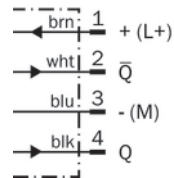


Image 26: B: WTF12G-3P/Nxxxx

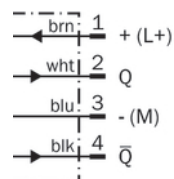


Image 27: B: WTF12G-3Kxxxx

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

Spiegazioni dello schema di collegamento (grafico B):

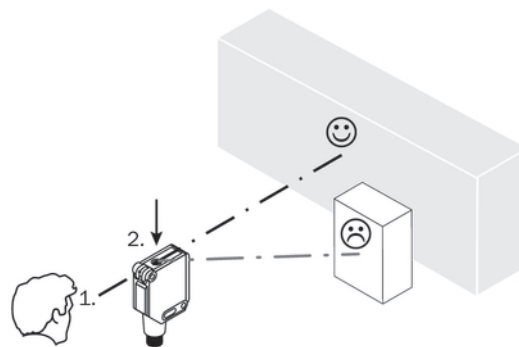
Uscite di commutazione Q ovvero /Q (conformemente al grafico B):

WTF12G-3P (PNP: carico -> M)

WTF12G-3K (PNP: carico -> M)

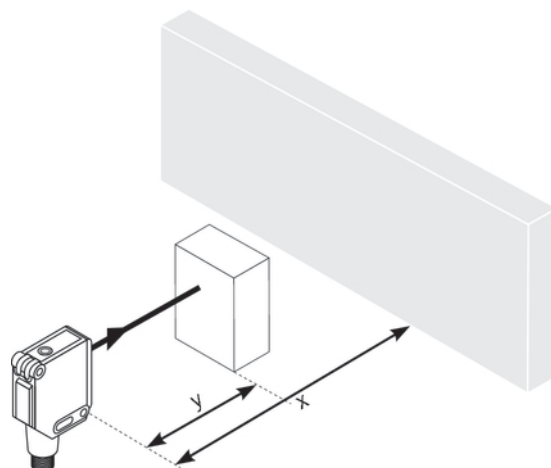
WTF12G-3N (NPN: carico -> L+)

Orientare il sensore sul rispettivo sfondo fisso. Fare attenzione che l'apertura ottica del sensore (finestrella frontale) sia completamente libera [cfr. E].



1. step: alignment
2. step: teach-in

Image 28: E: 1. Step: alignment / 2. Step: teach-in



Sensore con tasto Teach-in:

Per il riconoscimento degli oggetti trasparenti è necessaria una regolazione Teach del sensore.

Premendo il tasto Teach-in viene impostata la distanza di commutazione sullo sfondo, vedi grafico E. Non azionare il tasto Teach-in con oggetti appuntiti. Se la procedura Teach ha successo, l'indicatore LED giallo resta costantemente illuminato. Se lampeggia, occorre adattare la distanza dallo sfondo oppure inclinare il sensore. Ripetere l'impostazione.

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.

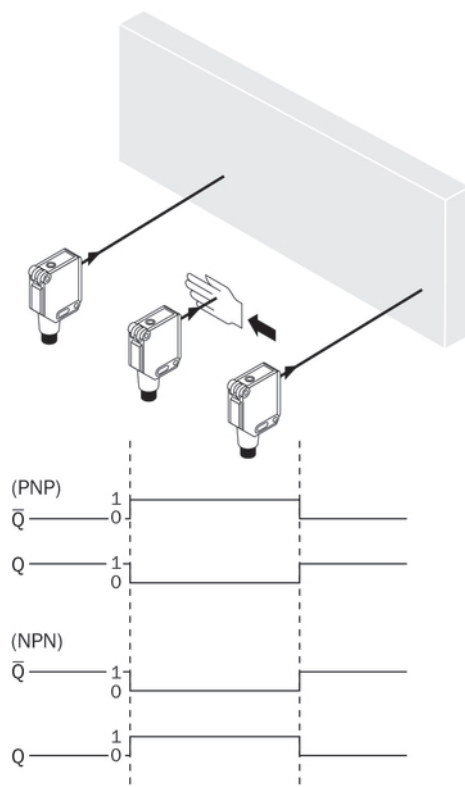


Image 29: C

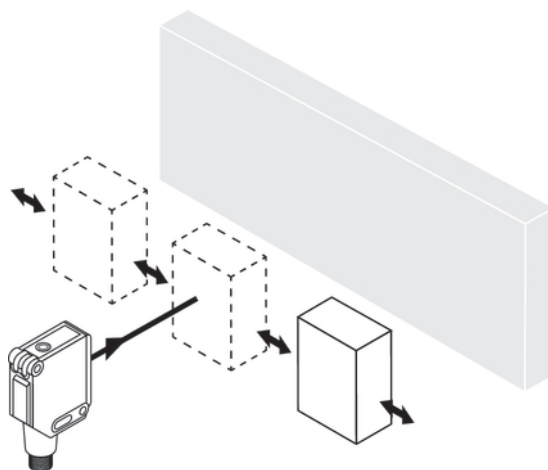


Image 30: G

45 Modalità Teach

Modalità Teach-in per oggetti / Teach-in mode for objects	Tempo Teach-in / Teach-in time	Direzione / Alignment	Indicatore - LED / LED indicator	Risultato / Results
	< 2 s			Nessun cambiamento di funzionamento / No change in function
Pulsante Tech-in semplice / Single teach-in pushbutton	> 2 ... < 5 s	Sensore sullo sfondo / Sensor to background	☀	La distanza di commutazione viene impostata sullo sfondo, gli oggetti in ingresso vengono riconosciuti tra il sensore e lo sfondo / Sensing range is set to background, oncoming objects between sensor and background are detected

46 Diagnostica delle anomalie

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

47 Tabella

Indicatore - LED / LED indicator	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 l'alimentazione di tensione, il completo collegamento elettrico (conduttori e collegamenti a spina) / Check the power supply, check all electrical connections (cables and plug connections)

Indicatore - LED / LED indicator	Causa / Cause	Provvedimento / Measures
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 senza interruzioni / 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 cambiare il sensore / If the power supply is OK, replace the sensor
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 sullo sfondo / Pulizia delle superfici ottiche / Sensibilità reimpostare il (Teach) / Controllare la distanza di commutazione e, se necessario, adattarla, vedi grafico E / Controllo della tipologia di sfondo, conformemente alle specifiche, vedi grafico E / Check the operating conditions: Fully align the beam of light (light spot) with the background / Clean the optical surfaces / Readjust the sensitivity (teach-in) / Check sensing range and adjust if necessary, see Graphic E / Check the characteristics of the background in accordance with the specifications, see Graphic E
il LED giallo lampeggia (solo brevemente) / Yellow LED flashes (only briefly)	Modalità Teach / Teach-in mode	Verificare la modalità Teach / Check the teach-in mode

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.

Sensor fotoeléctrico de reflexión
Instrucciones de servicio

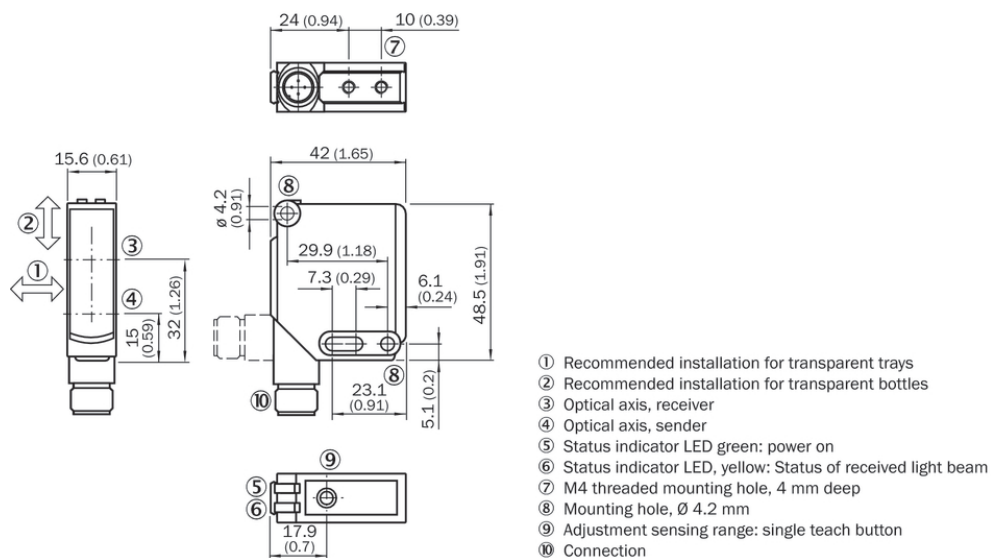
52 Indicaciones de seguridad

- Lea las instrucciones de servicio 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.
- Proteja el equipo contra la humedad y la suciedad durante la puesta en servicio.
- Las presentes instrucciones de servicio contienen información que puede serle necesaria durante todo el ciclo de vida del sensor.

53 Uso conforme a lo previsto

El WTF12G-3 es un sensor optoelectrónico de reflexión (en lo sucesivo llamado sensor) empleado para la detección óptica y sin contacto de objetos, animales y personas. Cualquier uso diferente al previsto o modificación en el producto invalidará la garantía por parte de SICK AG.

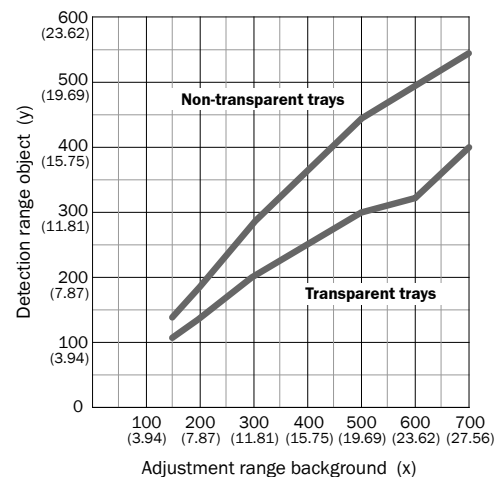
Sensor fotoeléctrico de reflexión con supresión del primer plano con opción adicional para detectar objetos transparentes



54 Puesta en servicio

Comprobar las condiciones de aplicación: comparar la distancia de conmutación y la distancia respecto al objeto o al fondo con el diagrama correspondiente [véase fig. H/F]. (x = distancia del sensor con respecto al fondo estable, y = distancia máxima entre el sensor y el objeto). La distancia máxima (= y) para detectar el objeto con fiabilidad puede calcularse a partir del diagrama [véase fig. H] del modo siguiente:

Ejemplo: x = 500 mm, y = 300 mm. Es decir, cuando el objeto que se ha de detectar es una bandeja transparente y el fondo está a una distancia de 500 mm del sensor, entre el sensor y el objeto debe haber una distancia máxima de 300 mm.

**Legend:**

x: Sensing range max. in mm (adjustment range background)
 = Distance sensor / background

y: Sensing range in mm (detection range object)
 = Maximum distance sensor / front edge of the object

Minimum distance sensor / background : 150 mm*

*) Referring to the background with 90 % remission equivalent to standard white DIN 5033 (i.e. glass-bead blasted stainless steel). The use of a shiny background can increase the minimum distance to the background (i.e. brushed and pickled stainless steel, minimum distance sensor to background: 300 mm).

Image 31: H

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

Respetar el par de apriete máximo admisible del sensor de 2.0 Nm.

Respetar la orientación preferente del objeto con respecto al sensor. [véase fig. A].

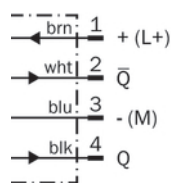
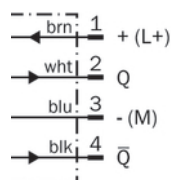
Para garantizar la máxima seguridad de detección, se recomienda que, al montar el sensor, se realicen los siguientes tipos de instalación para detectar objetos transparentes:

Detección de bandejas transparentes: montaje vertical

Detección de botellas transparentes: montaje horizontal

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 32: B: WTF12G-3P/Nxxx****Image 33: B: WTF12G-3Kxxx**

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)

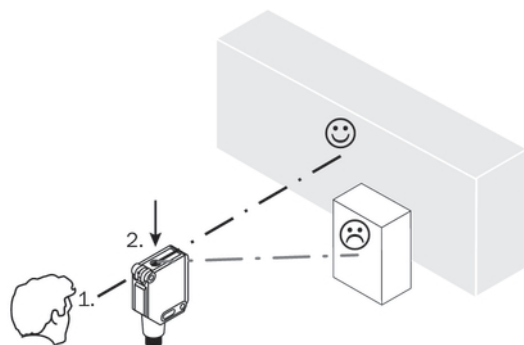
Salidas conmutadas Q o /Q (según figura B):

WTF12G-3P (PNP: carga -> M)

WTF12G-3K (PNP: carga -> M)

WTF12G-3N (NPN: carga -> L+)

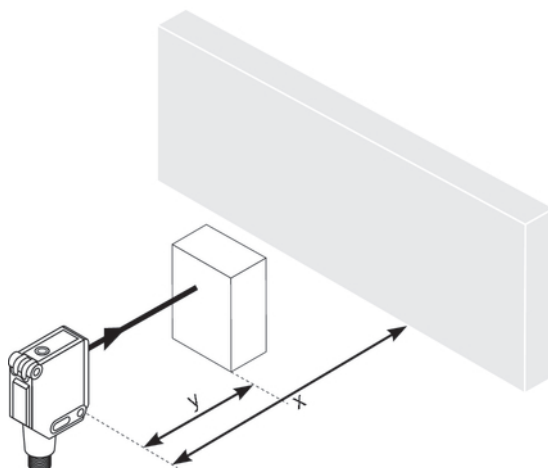
Orienta el sensor hacia el fondo fijo. Hay que procurar que la apertura óptica (pantalla frontal) del sensor esté completamente libre [véase figura E].



1. step: alignment

2. step: teach-in

Image 34: E: Paso 1: alineación / Paso 2: aprendizaje (Teach-in)



Sensor con botón de aprendizaje:

Para detectar objetos transparentes, se requiere enseñar al sensor.

Pulsando el botón de aprendizaje, se ajusta la distancia de conmutación sobre el fondo, véase figura E. No accione el botón de aprendizaje con objetos puntiagudos. Si el procedimiento de aprendizaje ha tenido éxito, el LED indicador amarillo está constantemente iluminado. Si parpadea, se debe adaptar la distancia con respecto al fondo o inclinar el sensor. Repetir el ajuste.

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".

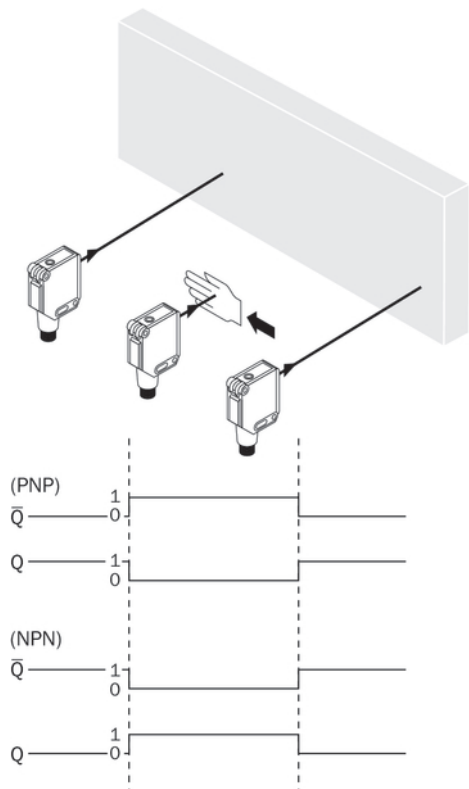


Image 35: C

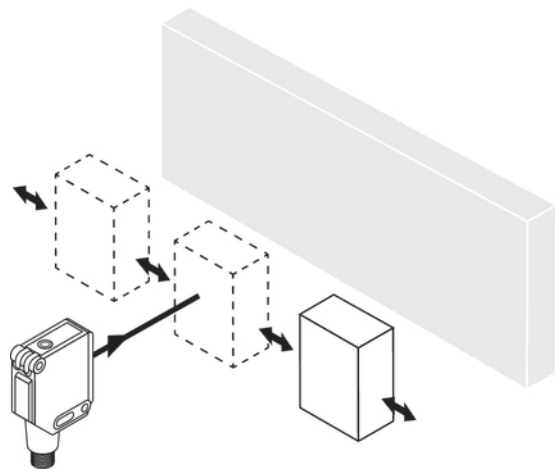


Image 36: G

55

Modos de aprendizaje

Modo de aprendizaje (Teach-in) para objetos / Teach-in mode for objects	Tiempo de aprendizaje (Teach-in) / Teach-in time	Alineación / Alignment	LED indicador / LED Indicator	Resultado / Results
	< 2 s			Sin cambio de funciones / No change in function

Modo de aprendizaje (Teach-in) para objetos / <i>Teach-in mode for objects</i>	Tiempo de aprendizaje (Teach-in) / <i>Teach-in time</i>	Alineación / <i>Alignment</i>	LED indicador / <i>LED indicator</i>	Resultado / <i>Results</i>
Botón de aprendizaje (Teach-in) simple / <i>Single teach-in pushbutton</i>	> 2 - < 5 s	Sensor hacia fondo / <i>Sensor to background</i>		La distancia de conmutación se ajusta sobre el fondo; los objetos que se introducen entre el sensor y el fondo serán detectados / <i>Sensing range is set to background, oncoming objects between sensor and background are detected</i>

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 de diagnóstico de fallos

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

LED indicador / LED indicator	Causa / Cause	Acción / Measures
El LED amarillo parpadea / Yellow LED flashes	El sensor aún está operativo, pero las condiciones de servicio no son óptimas / <i>Sensor is still ready for operation, but the operating conditions are not ideal</i>	Comprobar las condiciones de servicio: Alinear el haz de luz (punto de luz) completamente con el fondo / Limpieza de las superficies ópticas / Reajustar la sensibilidad (aprendizaje) / Comprobar la distancia de conmutación y, si es necesario, adaptarla, véase figura E / Comprobar la naturaleza del fondo, según especificación, véase figura E / <i>Check the operating conditions: Fully align the beam of light (light spot) with the background / Clean the optical surfaces / Readjust the sensitivity (teach-in) / Check sensing range and adjust if necessary, see Graphic E / Check the characteristics of the background in accordance with the specifications, see Graphic E</i>
El LED amarillo parpadea (solo brevemente) / Yellow LED flashes (only briefly)	Modo de aprendizaje (Teach) / Teach-in mode	Comprobar el modo de aprendizaje / Check the teach-in mode

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.

反射式光电传感器 操作说明

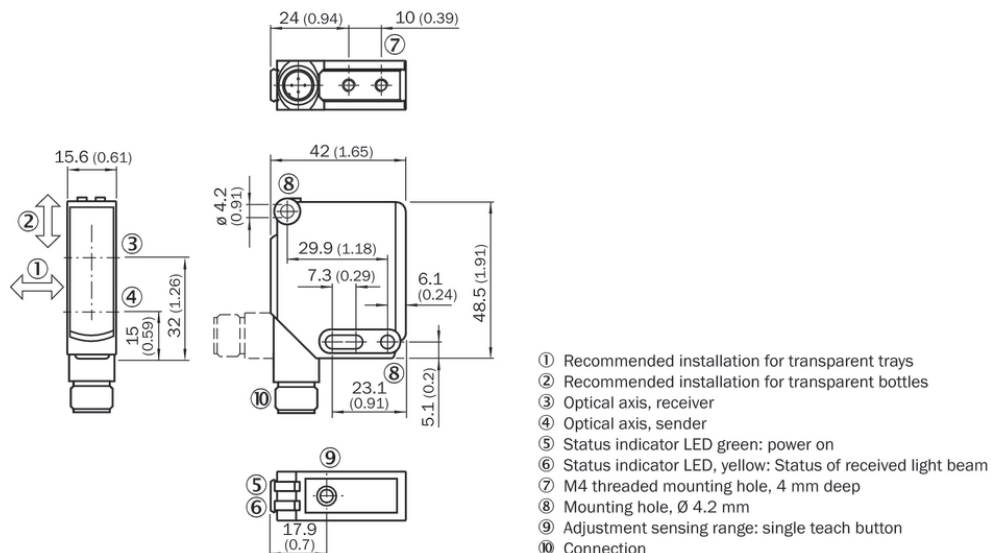
62 安全须知

- 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。
- 调试设备时应防止其受潮或脏污。
- 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 规定用途

WTF12G-3 是一种光电反射式光电传感器（下文简称为“传感器”），用于物体、动物和人体的非接触式光学检测。如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。

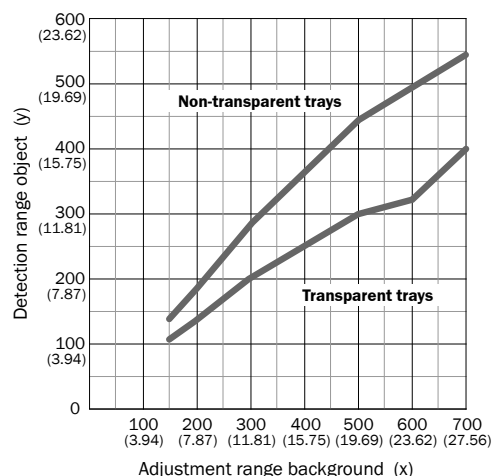
带前景抑制功能的反射式光电传感器 配有可识别透明物体的选配件



64 调试

检查使用条件：使用随附的图表 [参照 H/F] 调整开关距离和物体或背景距离。（ x = 传感器与稳定背景的间距， y = 传感器和物体之间的最大间距）。根据图表 [参照 H] 按如下方法确定可靠的识别物体的最大距离 (= y)：

示例： $x = 500 \text{ mm}$ ， $y = 300 \text{ mm}$ 。即，当待检测物体为透明托盘时且背景距离传感器 500 mm 时，传感器和物体间的最大间距应为 300 mm。



Legend:

x : Sensing range max. in mm (adjustment range background)
= Distance sensor / background

y : Sensing range in mm (detection range object)
= Maximum distance sensor / front edge of the object

Minimum distance sensor / background : 150 mm*

*) Referring to the background with 90 % remission equivalent to standard white DIN 5033 (i.e. glass-bead blasted stainless steel). The use of a shiny background can increase the minimum distance to the background (i.e. brushed and pickled stainless steel, minimum distance sensor to background: 300 mm).

Image 37: H

将传感器安装在合适的安装托架上（参见 SICK 附件说明书）。

注意传感器的最大允许拧紧扭矩为 2.0 Nm。

以传感器为参照物，注意物体的优先方向 [参照 A]。

为尽可能确保检测可靠性，在安装传感器时建议采用下列安装，探测透明物体：

检测透明托盘：垂直安装

检测透明瓶子：水平安装

必须在无电压状态 ($V_S = 0\text{ V}$) 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

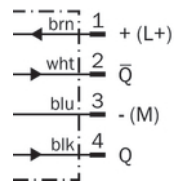


Image 38: B: WTF12G-3P/Nxxxx

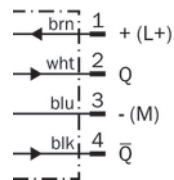


Image 39: B: WTF12G-3Kxxxx

完成所有电子连接后，才敷设或接通电源 ($V_S > 0\text{ V}$)。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）：

WTF12G-3P（PNP：负载 -> M）

WTF12G-3K（PNP：负载 -> M）

WTF12G-3N（NPN：负载 -> L+）

将传感器对准固定背景。此时，应注意传感器的光学开口（前部玻璃）处应无任何遮挡 [参照 E]。

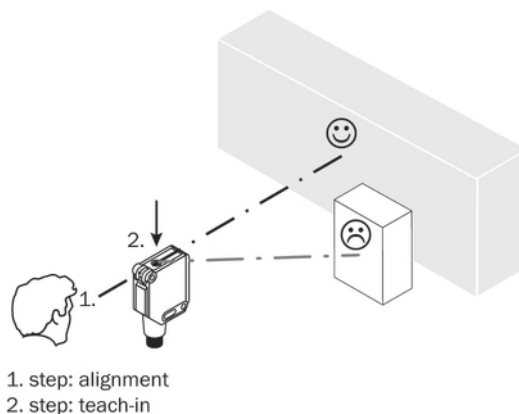
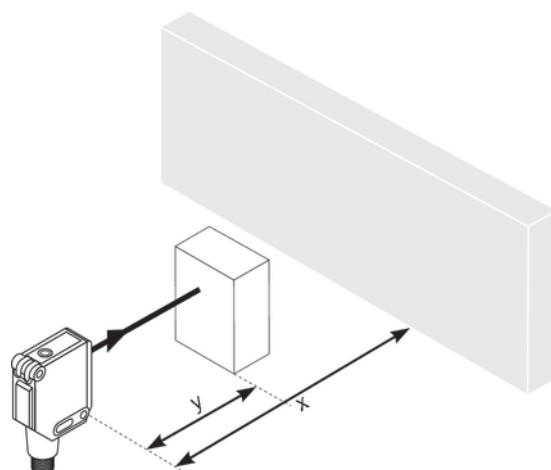


Image 40: E：1.步骤：校准/2.步骤：示教



带示教按键的传感器：

如需识别透明物体，则须传感器示教功能。

通过按下示教按键，可设置到背景的开关距离，参见图 E。不得使用尖锐物品操作示教按键。示教过程顺利时，黄色 LED 将持续亮起。若该指示灯闪烁，则必须调整到背景的距离或倾斜传感器。重复完成。

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。

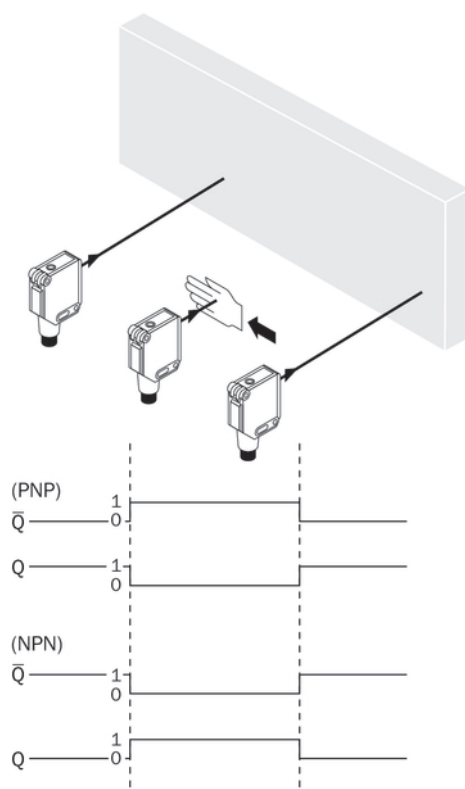


Image 41: C

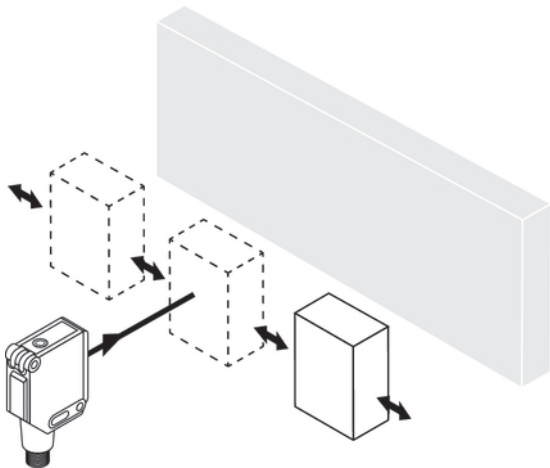


Image 42: G

65 示教模式

物体示教模式 / Teach-in mode for objects	示教时间 / Teach-in time	校准 / Alignment	LED 指示灯 / LED indicator	结果 / Results
	< 2 s			无功能变化 / No change in func- tion
单示教按键 / Single teach-in pushbutton	> 2 ... < 5 s	指向背景的传感器 / Sensor to back- ground	●	根据背景调整开关 距离，识别从传感 器和背景之间移入 的物体 / Sensing range is set to background, oncoming objects between sensor and background are detected

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

LED 指示灯 / LED indicator	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 / LED indicator	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) 完全对准背景 / 清洁光学表面 / 重新设置灵敏度 (示教) / 检查开关距离, 必要时调整; 参见图 E / 根据规格检查背景特性, 参见图 E / Check the operating conditions: Fully align the beam of light (light spot) with the background / Clean the optical surfaces / Readjust the sensitivity (teach-in) / Check sensing range and adjust if necessary, see Graphic E / Check the characteristics of the background in accordance with the specifications, see Graphic E
黄色 LED 闪烁 (非常短暂) / Yellow LED flashes (only briefly)	示教模式 / Teach-in mode	检查示教模式 / Check the teach-in mode

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。

Отражательный световой датчик Руководство по эксплуатации

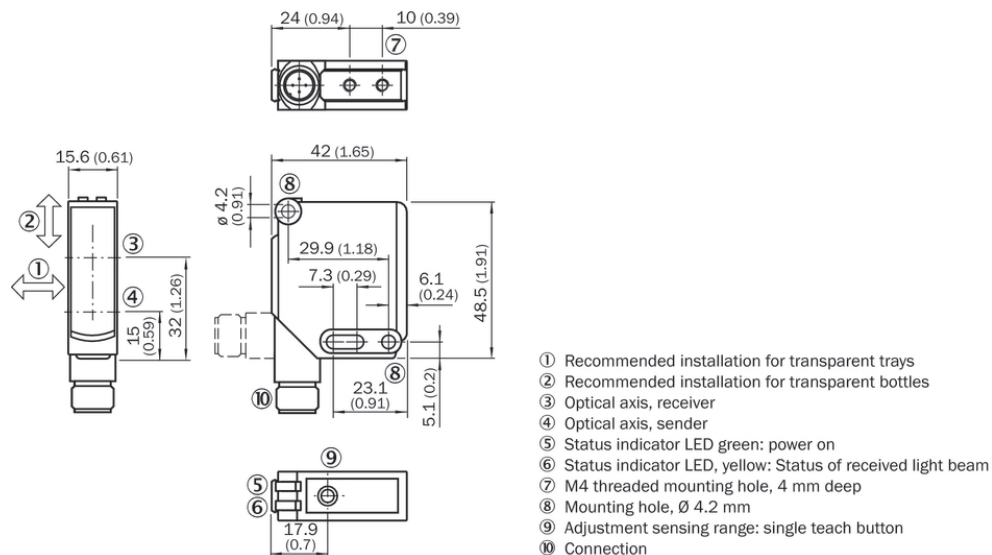
72 Указания по безопасности

- 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.
- 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.

73 Использование по назначению

WTF12G-3 является оптоэлектронным отражательным световым датчиком (в дальнейшем называемым "сенсор") и используется для оптической бесконтактной регистрации вещей, животных и людей. При ином использовании и при внесении изменений в изделие подача любых гарантийных претензий к SICK AG исключена.

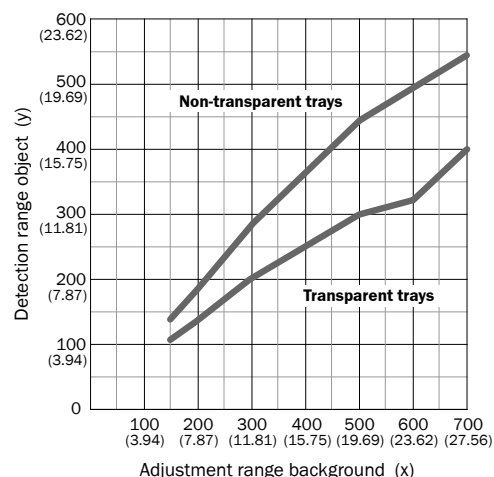
Отражательный световой датчик с подавлением переднего фона с дополнительной опцией распознавания прозрачных объектов



74 Ввод в эксплуатацию

Проверить условия применения: скорректировать дистанцию переключения и дистанцию до объекта или же фона с помощью соответствующей диаграммы [см. Н/Ф]. (x = расстояние от сенсора до стабильного фона, y = максимальное расстояние между сенсором и объектом). Максимальную дистанцию (= y) для надежного распознавания объекта можно определить по диаграмме [см. Н] следующим образом:

Пример: x = 500 мм, y = 300 мм. То есть, если детектируемый объект представляет собой прозрачный лоток, и фон находится на расстоянии 500 мм от сенсора, то максимальное расстояние между сенсором и объектом должно составлять 300 мм.



Legend:

x: Sensing range max. in mm (adjustment range background)
= Distance sensor / background

y: Sensing range in mm (detection range object)
= Maximum distance sensor / front edge of the object

Minimum distance sensor / background : 150 mm*

*) Referring to the background with 90 % remission equivalent to standard white DIN 5033 (i.e. glass-bead blasted stainless steel). The use of a shiny background can increase the minimum distance to the background (i.e. brushed and pickled stainless steel, minimum distance sensor to background: 300 mm).

Image 43: H

Установите сенсор на подходящем крепежном уголке (см. программу принадлежностей от SICK).

Выдерживайте максимально допустимый момент затяжки сенсора в 2.0 Нм.

Учитывайте предпочтительное направление объекта относительно сенсора [см. A].

Для обеспечения максимально возможной надежности детектирования при монтаже сенсора рекомендуются следующие способы монтажа для детектирования прозрачных объектов:

детектирование прозрачных лотков: вертикальный монтаж

детектирование прозрачных бутылок: горизонтальный монтаж

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

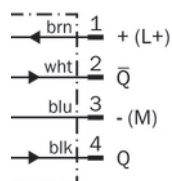


Image 44: B: WTF12G-3P/Nxxx

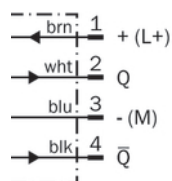


Image 45: B: WTF12G-3Kxxx

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 В):

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

WTF12G-3P (PNP: нагрузка -> M)

WTF12G-3K (PNP: нагрузка -> M)

WTF12G-3N (NPN: нагрузка -> L+)

Направьте сенсор на неподвижный фон. Оптическое отверстие (фронтальное стекло) на сенсоре должно быть полностью свободным [см. Е].

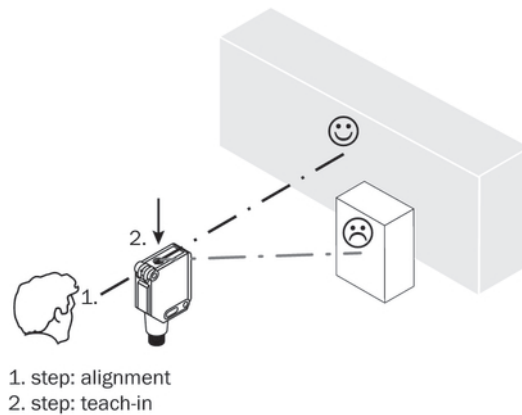
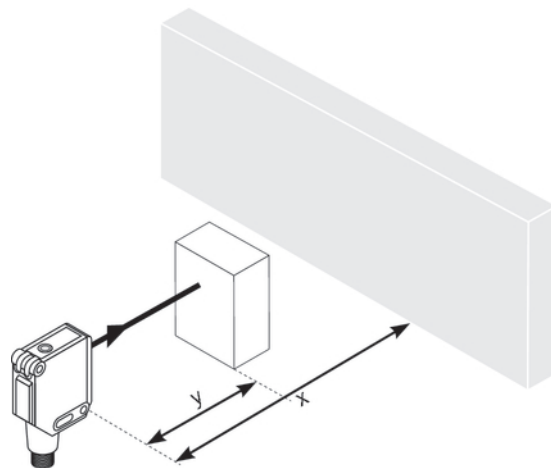


Image 46: E: 1. Step: alignment / 2. Step: teach-in



Сенсор с кнопкой калибровки:

Для распознавания прозрачных объектов требуется калибровка сенсора.

Путем нажатия кнопки калибровки дистанция срабатывания устанавливается на основании, см. график Е. Не нажимайте кнопку калибровки острыми предметами. При успешном процессе калибровки желтый светодиод горит постоянно. Если он мигает, то либо нужно подобрать расстояние до фона, либо опрокинуть сенсор. Повторить регулировку.

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

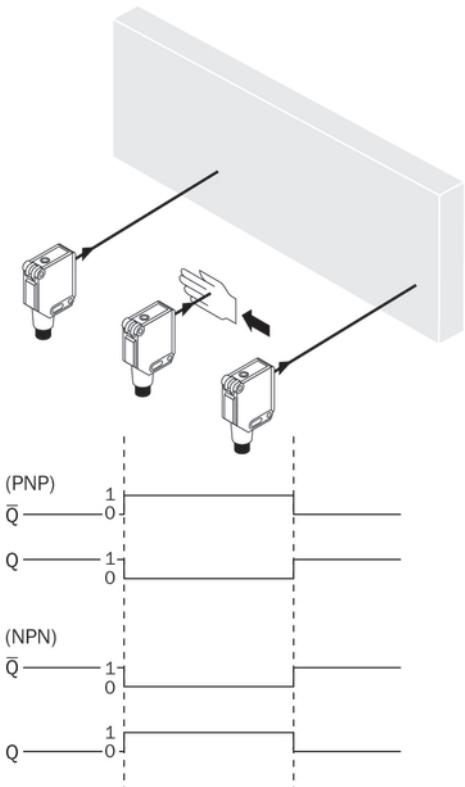


Image 47: C

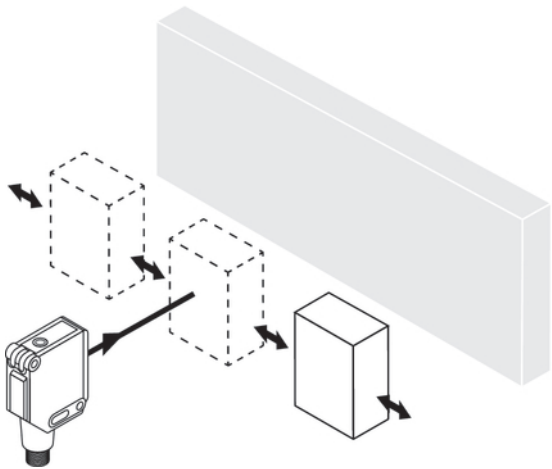


Image 48: G

75 Режим калибровки

Режим калибровки для объектов / <i>Teach-in mode for objects</i>	Калибровка времени / <i>Teach-in time</i>	Выравнивание / <i>Alignment</i>	Светодиодный индикатор / <i>LED indicator</i>	Результат / <i>Results</i>
	< 2 с			без изменения функционирования / <i>No change in function</i>

Режим калибровки для объектов / <i>Teach-in mode for objects</i>	Калибровка времени / <i>Teach-in time</i>	Выравнивание / <i>Alignment</i>	Светодиодный индикатор / <i>LED indicator</i>	Результат / <i>Results</i>
Кнопка Teach-in простой калибровки / <i>Single teach-in pushbutton</i>	> 2 ... < 5 с	Сенсор направлен на фон / <i>Sensor to back-ground</i>		Расстояние срабатывания регулируется на фон, вводимые между сенсором и фоном объекты распознаются / <i>Sensing range is set to background, oncoming objects between sensor and background are detected</i>

76 Диагностика неисправностей

В таблице 77 показано, какие меры нужно предпринять, если сенсоры не работают.

77 Таблице

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

Светодиодный индикатор / <i>LED indicator</i>	Причина / <i>Cause</i>	Меры по устранению / <i>Measures</i>
желтый светодиод мигает / <i>Yellow LED flashes</i>	Сенсор пока еще готов к работе, но эксплуатационные условия неоптимальны / <i>Sensor is still ready for operation, but the operating conditions are not ideal</i>	Проверка эксплуатационных условий: Полностью сориентировать световой луч (световое пятно) на основание / чистка оптических поверхностей / заново настроить чувствительность (Teach) / проверить и, при необходимости, скорректировать дистанцию срабатывания, см. график E / проверка свойств основания согласно спецификации, см. график E / <i>Check the operating conditions: Fully align the beam of light (light spot) with the background / Clean the optical surfaces / Readjust the sensitivity (teach-in) / Check sensing range and adjust if necessary, see Graphic E / Check the characteristics of the background in accordance with the specifications, see Graphic E</i>
желтый светодиод мигает (лишь кратковременно) / <i>Yellow LED flashes (only briefly)</i>	Режим калибровки / <i>Teach-in mode</i>	Проверить режим калибровки / <i>Check the teach-in mode</i>

78 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).

79 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.

								WTF12G-3
Sensing range	Schaltab-stand	Distance de commutation	Distância de comutação	Distanza di commutazione	Distancia de conmutación	开关距离	Расстояние срабатывания	0 ... 400 mm (detection range transparent objects)
Sensing range max.	Schaltab-stand max.	Portée max.	Distância de comutação máx.	Distanza max. di commutazione	Distancia de conmutación máx.	最大开关距离	Расстояние срабатывания, макс.	150 ... 700 mm (adjustment range background) ¹
Light spot diameter/distance	Lichtfleck-durchmesser/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	Диаметр светового пятна/расстояние	8 mm / 300 mm

								WTF12G-3
Supply voltage U_V	Versorgungs- spannung U_V	Tension d'alim- entation U_V	Tensão de ali- mentação U_V	Tensione di alimenta- zione U_V	Tensión de alimentación U_V	供电电压 U_V	Напряжение питания U_V	DC 10 ... 30 V2
Output current $I_{max.}$	Ausgangs- strom $I_{max.}$	Courant de sortie $I_{max.}$	Corrente de saída $I_{max.}$	Corrente di uscita $I_{max.}$	Intensidad de salida $I_{max.}$	输出电流 $I_{max.}$	Выходной ток $I_{max.}$	100 mA
Max. switching frequency	Schaltfolge max.	Commutation max.	Sequência máx. de comutação	Sequenza di commuta- zione max.	Secuencia de conmutación máx.	最大开关操 作顺序	Частота срабатывани я макс.	250 Hz3
Response time	Ansprechzeit	Temps de réponse	Tempo de resposta	Tempo di rea- zione	Tiempo de respuesta	响应时间	Время отклика	2 ms4
Enclosure rating	Schutzart	Indice de pro- tection	Tipo de prote- ção	Tipo di prote- zione	Tipo de pro- tección	防护类型	Класс защиты	IP66,IP67
Protection class	Schutzklasse	Classe de protection	Classe de proteção	Classe di pro- tezione	Clase de pro- tección	防护等级	Класс защиты	II
Circuit protec- tion	Schutzschal- tungen	Protections électriques	Circuitos de proteção	Commutazi- oni di prote- zione	Circuitos de protección	保护电路	Схемы защиты	A,C,D5

- Background with 90 % remission (based on standard white DIN 5033)
Hintergrund mit 90 % Remission (bezogen auf Standard-Weiß DIN 5033)
Arrière-plan avec 90 % de réémission (par rapport au blanc standard selon DIN 5033)
Fundo a ser detectado com 90% de luminância (com base no padrão branco DIN 5033)
Sfondo con il 90% di remissione (riferito al bianco standard DIN 5033)
Fondo con un 90% de reflexión (sobre el blanco estándar según DIN 5033)
具有 90 % 反射比的扫描对象 (指 DIN 5033 规定的标准白)
Фон с ремиссией 90 % (на основе стандарта белого DIN 5033)
- Limit value: operation in short-circuit protection mains max. 8 A; residual ripple max. 5 V_{SS}
Grenzwerte: Betrieb im kurzschlussgeschützten Netz max. 8 A; Restwelligkeit max. 5 V_{SS}
Valeurs limites : fonctionnement sur réseau protégé contre les courts-circuits max. 8 A ; ondulation résiduelle max. 5 V_{CC}
Valores limite: funcionamento com rede à prova de curto-circuito máx. 8 A; ondulação residual máx. 5 V_{SS}
Valori limite: funzionamento in rete protetta da cortocircuito max. 8 A; ondulazione residua max. 5 V_{SS}
Valores límite: funcionamiento en red protegida contra cortocircuitos máx. 8 A; ondulación residual máx. 5 V_{SS}
极限值 : 在防短路电网中运行, 最大 8 A ; 最大余波 5 V_{SS}
Граничные значения: эксплуатация в сети с защитой от короткого замыкания макс. 8 A; остаточная пульсация макс. 5 V_{SS}
- With light / dark ratio 1:1
Mit Hell- / Dunkelverhältnis 1:1
Pour un rapport clair/sombre de 1:1
Com proporção sombra/luz 1:1
Con rapporto chiaro / scuro 1:1
Con una relación claro/oscurito de 1:1
明暗比为 1:1
Соотношение светлых и темных участков 1:1
- Signal transit time with resistive load
Signallaufzeit bei ohmscher Last
Temps de propagation du signal sur charge ohmique
Tempo de funcionamento do sinal com carga ôhmica
Durata segnale con carico ohmico
Duración de la señal con carga ôhmica
信号传输时间 (电阻负载时)
Продолжительность сигнала при омической нагрузке

								WTF12G-3
Ambient operating temperature	Betriebsumgebungstemperatur	Température ambiante de service	Temperatura ambiente de funcionamiento	Temperatura ambientale di funzionamento	Temperatura ambiente de servicio	工作环境温度	Диапазон рабочих температур	-40 ... +60 °C

5 A = U_V-connections reverse polarity protected

C = Interference suppression

D = outputs overcurrent and short-circuit protected

A = U_V-Anschlüsse verpolsicher

C = Störimpulsunterdrückung

D = Ausgänge überstrom- und kurzschlussfest

A = raccordements U_V protégés contre les inversions de polarité

C = Suppression des impulsions parasites

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

A = conexões protegidas contra inversão de pólos U_V

C = Supressão de impulsos parasitas

D = Saídas protegidas contra sobrecorrente e curto-circuito

A = U_V-Allacciamenti protetti dall'inversione di polarità

C = Soppressione impulsi di disturbo

D = uscite protette da sovracorrente e da cortocircuito.

Conexiones A = U_V protegidas contra polarización inversa

C = Supresión de impulsos parásitos

D=Salidas a prueba de sobrecorriente y cortocircuitos.

A = U_V 接口（已采取反极性保护措施）

C = 抑制干扰脉冲

D = 抗过载电流和抗短路输出端

A = подключение УФ с защитой от смещения полярности

C = Подавление импульсов помех

D = Выходы с защитой о превышении тока и короткого замыкания