

## ENGLISH

### Fork Sensor

with invisible infrared light

#### Operating Instructions

#### Safety Specifications

- Read the operating instructions before starting operation.
- Connection, assembly, and settings only by competent technicians.
- Protect the device against moisture and soiling when operating.
- No safety component in accordance with EU machine guidelines.

#### Proper Use

The WFS Fork Sensor is an optoelectronic sensor, which works with a sender and receiver unit. It is used for optical, non-contact detection of objects, labels and marks.

#### Starting Operation

- 1** Mode L = light-switching: When light is received, output Q is active (e.g. only substrate) = factory setting.  
Mode D = dark-switching: When the light beam is interrupted, output Q is active (e.g. label and substrate).
- 2** Connect and secure cable receptacle tension-free. The following apply for connection in **B**: brn = brown, blu = blue, blk = black, wht = white. Connect cables.
- 3** Mount sensor to suitable holders and align it roughly. Move the material to be scanned in a taut state and flutter-free through the fork opening. Connect sensor to operating voltage (see type label).

#### 4a Dynamic teach-in (recommended)

**Start teach-in:** Press "+" and "-" pushbuttons simultaneously for > 1 s and then let go. Red LED blinks at about 8 Hz. Move several labels with substrate (objects to be detected) through the sensor.  
**Quit teach-in:** Press "-" pushbutton. The switching threshold is set. Function indicator (red LED) goes out. If the red function indicator flashes 3 times, the set threshold is in the lower tolerance range. Check the function of the sensor. The function indicator (yellow LED) displays the output state of the sensor. If necessary, the teach-in procedure can be repeated, or the "±" pushbuttons can be used for fine adjustment.

#### 4b Manual setting of the switching threshold/fine adjustment (via "+" and "-" pushbuttons)

Single pressure = fine adjustment (red LED flashes per push of button); holding the button pressed = quick adjustment (red LED flashes until minimum or maximum is reached).

**In Mode L = bright:** The yellow function indicator illuminates when the light received is at its optimum level. If it does not light up, too little is being received: Increase sensitivity using the "+" pushbutton.

#### 4c Static teach-in on substrate or label

The switching threshold can, if required, be taught in statically (without material movement).  
**Start teach-in:** Press "+" and "-" pushbuttons simultaneously for > 1 s and then let go. Red LED blinks at about 8 Hz.

**Quit teach-in:** Press "-" pushbutton; switching threshold is set. Function indicator (red LED) goes out. The red function indicator flashes 3 times. The threshold is set in the lower tolerance range. Check the function of the sensor. The function indicator (yellow LED) displays the output state of the sensor. If necessary, the teach-in procedure can be repeated, or the "±" pushbuttons can be used for fine adjustment.

**4d ET input external teach:** for programming the switching threshold via external signal. Red LED blinks at about 4 Hz. Can be used to readjust the switching threshold via the control while the process is running.

**4e Monitoring detection L = light-switching:** Bring the substrate (gap between labels) into the beam path. The function indicator (yellow) must light up. Then bring the label and substrate into the beam path. The function indicator (yellow) must go out. If it does not go out, reduce the sensitivity with the "-" pushbutton until it goes out.

**5** Press both the "+" and "-" pushbuttons together for 3 s to lock the device to prevent unintentional actuation.

**6** Press both the "+" and "-" pushbuttons together for 6 s to toggle between light and dark switching.

#### Switching threshold adaptation

Only, the first teach-in procedure after switching on is permanently stored. Teach-in can be repeated cyclically.

#### Note

Teach-in does not affect the sensor function; output Q switches. A new switching threshold is set after the teach-in is quit.

#### Maintenance

SICK sensors do not require any maintenance. We recommend that you clean the external lens surfaces and check the screw connections and plug-in connections at regular intervals.

## DEUTSCH

### Gabelsensor

mit unsichtbarem Infrarotlicht

#### Betriebsanleitung

#### Sicherheitshinweise

- Vor der Inbetriebnahme die Betriebsanleitung lesen.
- Anschluss, Montage und Einstellung nur durch Fachpersonal.
- Gerät bei Inbetriebnahme vor Feuchte und Verunreinigung schützen.
- Kein Sicherheitsbauteil gemäß EU-Maschinenrichtlinie.

#### Bestimmungsgemäße Verwendung

Der Gabel-Sensor WFS ist ein optoelektronischer Sensor, der mit einer Sende- und Empfangseinheit arbeitet. Er wird zum optischen, berührungslosen Erfassen von Objekten, Etiketten und Marken eingesetzt.

#### Inbetriebnahme

- 1** Modus L = hellschaltend: Bei Lichtempfang ist der Ausgang Q aktiv (z. B. nur Trägermaterial) = Werkseinstellung.  
Modus D = dunkelschaltend: Bei Lichtunterbrechung ist der Ausgang Q aktiv (z. B. Etikett und Trägermaterial).
- 2** Leitungsdose spannungsfrei aufstecken und festschrauben. Für Anschluss in **B** gilt: brn = braun, blu = blau, blk = schwarz, wht = weiß; Leitungen anschließen.
- 3** Sensor mit Befestigungsbohrungen an geeignete Halter montieren und grob ausrichten. Das Testmaterial im gespannten Zustand und flatterfrei durch die Gabelöffnung bewegen. Sensor an Betriebsspannung legen (s. Typenaufdruck).

#### 4a Dynamischer Teach-in (Empfohlen)

**Start Teach-in:** "+"- und "-"-Taste gleichzeitig für > 1 s drücken und danach loslassen. Rote LED blinkt mit ca. 8 Hz. Mehrere Etiketten mit Trägermaterial (zu detektierende Objekte) durch den Sensor bewegen.  
**Beenden Teach-in:** "-"-Taste betätigen. Schaltschwelle wird gesetzt. Funktionsanzeige (rote LED) erlischt. Blinkt die rote Funktionsanzeige 3-mal, ist die gesetzte Schwelle im unteren Toleranzbereich. Überprüfen Sie die Funktion des Sensors. Die Funktionsanzeige (gelbe LED) zeigt den Schaltzustand des Sensors an. Bei Bedarf kann der Teach-in-Vorgang wiederholt, oder „±“-Tasten zur Feineinstellung benutzt werden.



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# SENSICK WFS

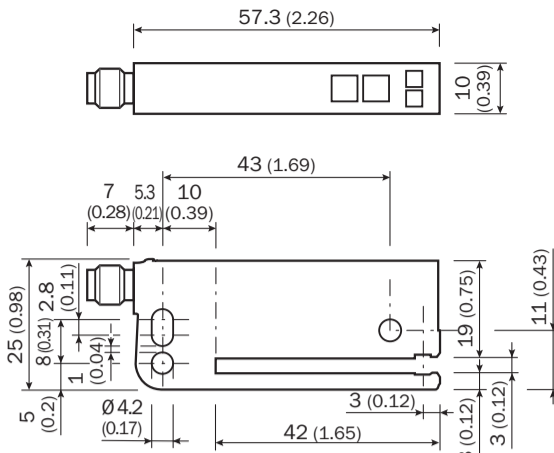
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Please find detailed addresses and additional representatives and agencies in all major industrial nations at [www.sick.com](http://www.sick.com)

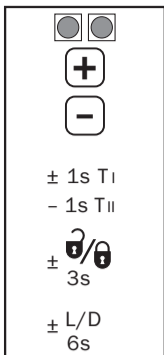
BE 11637

Subject to change without notice  
Irrtümer und Änderungen vorbehalten  
Sujet à modification sans préavis  
Alterações poderão ser feitas sem prévio aviso  
Med forbehold for ændringer og fejl  
Contenuti soggetti a modifiche senza preavviso  
Wizjingen en correcties voorbehouden  
Sujeto a cambio sin previo aviso  
如有更改，不另行通知

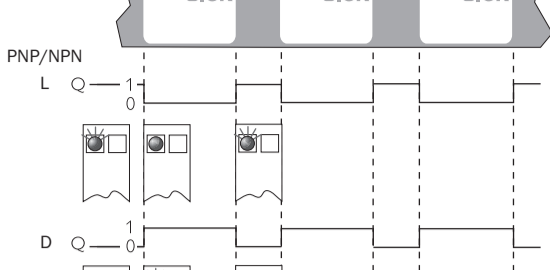
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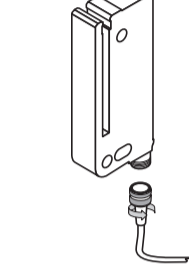
All dimensions in mm (inch)



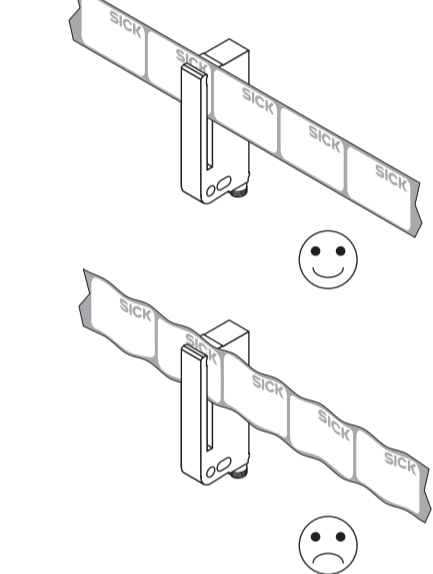
## 1



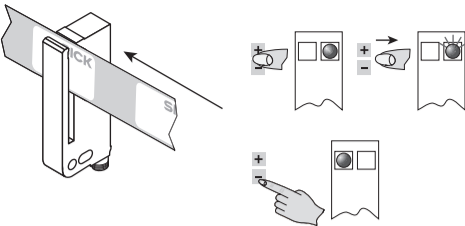
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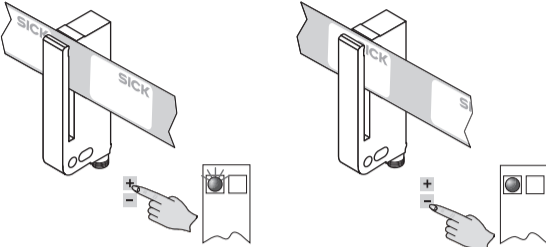
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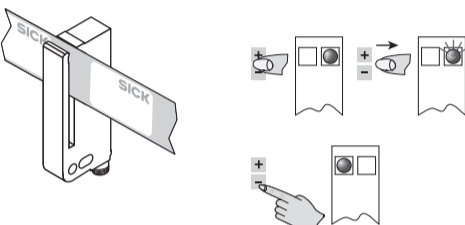
## 4a



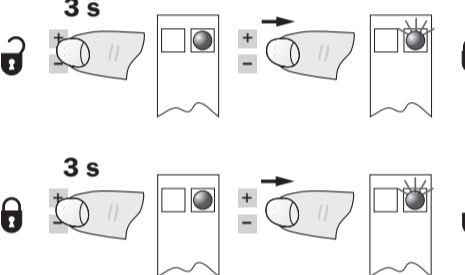
## 4b 4e



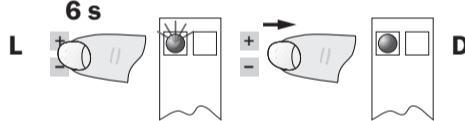
## 4c



## 5



## 6



WFS	xxPxxx	xxNxxx			
Fork width	Gabelweite	Passage	Distancia de detección	Gaffelbreite	3 mm
Supply voltage $V_s$	Versorgungsspannung $U_s$	Tension d'alimentation $U_s$	Tensão de força $U_s$	Forsyningsspænding $U_s$	10 ... 30 V DC
Output current $I_{max}^{(1)}$	Ausgangsstrom $I_{max}^{(1)}$	Courant de sortie $I_{max}^{(1)}$	Corrente de saída $I_{max}^{(1)}$	Udgangsstrøm $I_{max}^{(1)}$	100 mA
Switching output	Schaltausgang	Sortie de commutation	Saída de conexão	Koblingsudgang	PNP
Initialisation time	Initialisierungszeit	Temps d'initialisation	Tempo de inicialização	Initialiseringstid	100 ms
Response time $t_2$	Ansprechzeit $t_2$	Temps de réponse $t_2$	Tempo de reação $t_2$	Responstid $t_2$	50 µs
Teach-in input (ET)	Eingang Teach-in (ET)	Entrée apprentissage (ET)	Indgang teach-in (ET)		Teach: U > 5 V ... < U <sub>RUN</sub> : U < 4 V
Smallest detectable object	Kleinste detektierbares Objekt	Plus petit objet détectable	O mais pequeno objecto detectado	Mindste detekterbare objekt	Teach: U < (U <sub>R</sub> - 6 V) RUN: U > (U <sub>R</sub> - 5 V)
Enclosure rating	Schutzart	Type de protection	Tipo de proteção	Tætheddsgrad	2 mm <sup>3)</sup>
Protection class	Schutzklasse	Classe de protection	Classe de proteção	Beskyttelsesklasse	IP 65
Circuit protection <sup>4)</sup>	Schutzschaltungen <sup>4)</sup>	Circuits de protection <sup>4)</sup>	Circuitos protectores <sup>4)</sup>	Beskyttelseskoblinger <sup>4)</sup>	III
Ambient operating temperature	Betriebsumgebungstemperatur	Température ambiante	Temperatura ambiente de operação	Driftsomgivelsestemperatur	A, B, C
<sup>1)</sup> Minimum output current 0,3 mA	<sup>1)</sup> Minimaler Ausgangsstrom 0,3 mA	<sup>1)</sup> Courant de sortie minimal 0,3 mA	<sup>1)</sup> Corrente mínima de saída 0,3 mA	<sup>1)</sup> Minimal udgangsstrøm 0,3 mA	-20 ... + 60 °C
<sup>2)</sup> With light/dark ratio 1:1	<sup>2)</sup> Bei Hell-/Dunkelverhältnis 1:1	<sup>2)</sup> Pour un rapport clair/sombre de 1 : 1	<sup>2)</sup> No caso de uma relação claro-escuro de 1:1	<sup>2)</sup> Ved lys-mørk-forholdet 1:1	
<sup>3)</sup> Gap between labels	<sup>3)</sup> Spalt zwischen Etiketten	<sup>3)</sup> Interspice entre étiquettes	<sup>3)</sup> Fenda entre etiquetas	<sup>3)</sup> Spalte mellem etiketter	
<sup>4)</sup> A = V <sub>s</sub> , connections reverse polarity protected	<sup>4)</sup> A = U <sub>s</sub> , Anschlüsse verpolsicher	<sup>4)</sup> A = Raccordements U <sub>s</sub> , protégés contre les inversions de polarité	<sup>4)</sup> A = Conexões U <sub>s</sub> , protegidas contra inversão de polos	<sup>4)</sup> A = U <sub>s</sub> -tilslutninger med	
<sup>4)</sup> B = Outputs protected against short circuits	<sup>4)</sup> B = Ausgänge kurzschlussfest	<sup>4)</sup> B = Sorties protégées contre les courts-circuits	<sup>4)</sup> B = Saídas protegidas contra curto circuito	<sup>4)</sup> B = Udgange kortslutningsresistent	
<sup>4)</sup> C = Interference pulse suppression	<sup>4)</sup> C = Störimpulsunterdrückung	<sup>4)</sup> C = Suppression des impulsions parasites	<sup>4)</sup> C = Supressão de impulsos parasitas	<sup>4)</sup> C = Støjimpulsundertrykkelse	
WFS	xxPxxx	xxNxxx	xxPxxx	xxNxxx	
Invaco	Vorkafstand	Distancia de detección	叉形宽度	3 mm	
Tensione di alimentazione $U_s$	Voedingsspanning $U_s$	Tension d'alimentation $U_s$	电源电压 $U_s$	10 ... 30 V DC	
Corrente di uscita max. $I_{max}^{(1)}$	Uitgangsstrøm $I_{max}^{(1)}$	Corriente de saída $I_{max}^{(1)}$	输出电流 $I_{max}^{(1)}$	100 mA	
Uscita di commutazione	Schakeluitgang	Sortie de commutation	开关输出	PNP	
Tempo di inializzazione	Initialiseringsstid	Tempo de inicialización	初始启动时间	100 ms	
Tempo di risposta $t_2$	Aansprektijd $t_2$	Tempo de reacción $t_2$	触发时间 $t_2$	50 µs	
Ingresso Teach-in (ET)	Ingang teach-in (ET)	Entrada Teach-in (ET)	示教输入 (ET)	Teach: U > 5 V ... < U <sub>RUN</sub> : U < 4 V	
Objeto minimo rilevabile	Kleinste detecteerbaar object	Objeto minimo detectable	可被感知的最小的物件	Teach: U < (U <sub>R</sub> - 6 V) RUN: U > (U <sub>R</sub> - 5 V)	
Tipo di protezione	Beveiligingswijze	Tipo de protección	保护种类	2 mm <sup>3)</sup>	
Classe di protezione	Beveiligingsklasse	Protección clase	保护级别	IP 65	
Commutazioni di protezione <sup>4)</sup>	Beveiligingsschakelingen <sup>4)</sup>	Circuitos de protección <sup>4)</sup>	保护电路 <sup>4)</sup>	III	
Temperatura ambiente circostante	Bedrijfsomgevingstemperatuur	Temperatura ambiente de servicio	工作环境 - 温度	A, B, C	
<sup>1)</sup> Corrente d'uscita minimale 0,3 mA	<sup>1)</sup> Minimale uitgangsstrøm 0,3 mA	<sup>1)</sup> Corriente mínima de saída 0,3 mA	<sup>1)</sup> 最小输出电流 0,3 mA	-20 ... + 60 °C	
<sup>2)</sup> Con un rapporto chiaro-scuro 1:1	<sup>2)</sup> Bij licht-donkerverhouding 1:1	<sup>2)</sup> En caso de relación claro - oscuro	<sup>2)</sup> 暗 - 亮比为 1:1		
<sup>3)</sup> Fessura tra etichette	<sup>3)</sup> Spleet tussen etiketten	<sup>3)</sup> Ranura entre etiquetas de 1:1	<sup>3)</sup> 标签 (或长度)		
<sup>4)</sup> A = U <sub>s</sub> , collegamenti con protez. contro inversione di poli	<sup>4)</sup> A = U <sub>s</sub> -aansluitingen beveiligd tegen verkeerd polen	<sup>4)</sup> A = Conexiones U <sub>s</sub> a prueba de inversión de polaridad	<sup>4)</sup> A = U <sub>s</sub> -接头防反接		
<sup>4)</sup> B = Uscite a prova di corto circuito	<sup>4)</sup> B = Uscite a prova di corto circuito	<sup>4)</sup> B = Salidas resistentes al cortocircuito	<sup>4)</sup> B = 输出端抗过流 - 及短路		
<sup>4)</sup> C = Soppressione impulsi di disturbo	<sup>4)</sup> C = Suppression impulsu di disturbo	<sup>4)</sup> C = Represión de impulso de interferencia	<sup>4)</sup> C = 消除干扰脉冲		

**Wartung**  
SICK-Sensoren sind wartungsfrei. Wir empfehlen in regelmäßigen Abständen:  
- die optischen Grenzflächen zu reinigen,  
- Verschraubungen und Steckverbindungen zu überprüfen.

