



# WFS3-40B41CA00

WFS

FORK SENSORS

**SICK**  
Sensor Intelligence.



## Ordering information

Type	part no.
WFS3-40B41CA00	6058649

Other models and accessories → [www.sick.com/WFS](http://www.sick.com/WFS)

Illustration may differ



## Detailed technical data

## Features

<b>Functional principle</b>	Optical detection principle
<b>Dimensions (W x H x D)</b>	10 mm x 25 mm x 64.3 mm
<b>Fork width</b>	3 mm
<b>Fork depth</b>	42 mm
<b>Minimum detectable object (MDO)</b>	Gap between Labels / Size of labels: 2 mm <sup>1)</sup>
<b>Label detection</b>	✓
<b>Light source</b>	LED, infrared, Infrared light
<b>Adjustment</b>	Teach-in button, cable (Teach-in, sensitivity, light/dark switching, key lock, Teach-in dynamic)
<b>Teach-in mode</b>	1-point teach-in 2-point teach-in Teach-in dynamic

<sup>1)</sup> Depends on the label thickness.

## Mechanics/electronics

<b>Supply voltage</b>	10 V DC ... 30 V DC
<b>Ripple</b>	< 10 %
<b>Current consumption</b>	20 mA <sup>1)</sup>
<b>Switching frequency</b>	15 kHz
<b>Response time</b>	≤ 46 µs <sup>2)</sup>

<sup>1)</sup> Without load.

<sup>2)</sup> Signal transit time with resistive load.

<b>Stability of response time</b>	± 20 µs
<b>Jitter</b>	17 µs
<b>Switching output</b>	Push-pull: PNP/NPN
<b>Switching output (voltage)</b>	Push-pull: PNP/NPN High = $U_V$ - < 2 V/Low: ≤ 2 V
<b>Switching mode</b>	Light/dark switching
<b>Output current <math>I_{max.}</math></b>	100 mA
<b>Input, teach-in (ET)</b>	Teach: $U > 5$ V ... < $U_V$ Run: $U < 4$ V
<b>Initialization time</b>	40 ms
<b>Time delay</b>	Switch-off delay, 0 ms / 8 ms / 16 ms / 32 ms / 65 ms / 130 ms / 260 ms / 520 ms, adjustable via IO-Link (0 ms = default)
<b>Connection type</b>	Male connector M8, 4-pin
<b>Protection class</b>	III
<b>Circuit protection</b>	$U_V$ connections, reverse polarity protected Output Q short-circuit protected Interference pulse suppression
<b>Enclosure rating</b>	IP65
<b>Weight</b>	Approx. 36 g
<b>Housing material</b>	PA (glass-fiber reinforced)

1) Without load.

2) Signal transit time with resistive load.

#### Safety-related parameters

<b>MTTF<sub>D</sub></b>	97 years
<b>DC<sub>avg</sub></b>	0 %

#### Communication interface

<b>IO-Link</b>	✓, IO-Link V1.1
VendorID	26
DeviceID HEX	8000AE
DeviceID DEC	8388782
<b>Cycle time</b>	2.3 ms
<b>Process data structure A</b>	Bit 0 = switching signal $Q_{L1}$ Bit 1 = switching signal $Q_{L2}$ Bit 2 = not used Bit 3 = Teach busy Bit 4 ... 15 = empty
<b>Process data structure B</b>	Bit 0 = switching signal $Q_{L1}$ Bit 1 = Quality of Run Alarm Bit 2 = not used Bit 3 = Teach busy Bit 4 ... 15 = empty
<b>Process data structure C</b>	Bit 0 = switching signal $Q_{L1}$ Bit 1 = switching signal $Q_{L2}$ Bit 2 = not used Bit 3 = Teach busy Bit 4 ... 5 = empty Bit 6 ... 15 = measuring value
<b>Process data structure D</b>	Bit 0 = switching signal $Q_{L1}$ Bit 1 = Quality of Run Alarm

	Bit 2 = not used Bit 3 = Teach busy Bit 4 ... 5 = empty Bit 6 ... 15 = measuring value
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## Ambient data

<b>Ambient operating temperature</b>	-20 °C ... +60 °C <sup>1)</sup>
<b>Ambient temperature, storage</b>	-30 °C ... +80 °C
<b>Ambient light immunity</b>	≤ 10,000 lx
<b>Shock load</b>	According to EN 60068-2-27
<b>UL File No.</b>	NRKH.E191603

<sup>1)</sup> Do not bend below 0 °C.

## Smart Task

<b>Smart Task name</b>	Base logics
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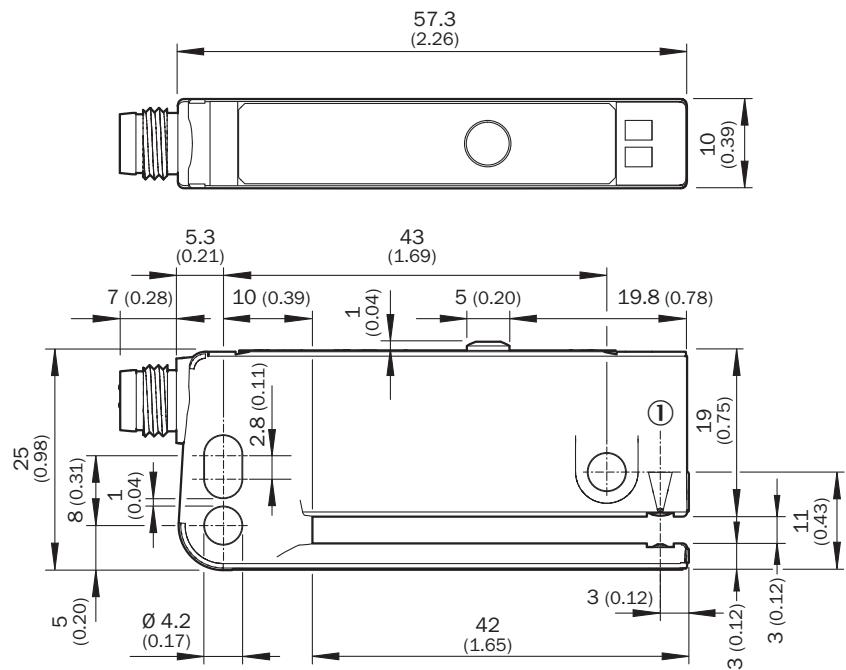
## Certificates

<b>EU declaration of conformity</b>	✓
<b>UK declaration of conformity</b>	✓
<b>ACMA declaration of conformity</b>	✓
<b>Moroccan declaration of conformity</b>	✓
<b>China-RoHS</b>	✓
<b>cULus certificate</b>	✓
<b>IO-Link</b>	✓
<b>Photobiological safety (IEC EN 62471)</b>	✓

## Classifications

<b>ECLASS 5.0</b>	27270909
<b>ECLASS 5.1.4</b>	27270909
<b>ECLASS 6.0</b>	27270909
<b>ECLASS 6.2</b>	27270909
<b>ECLASS 7.0</b>	27270909
<b>ECLASS 8.0</b>	27270909
<b>ECLASS 8.1</b>	27270909
<b>ECLASS 9.0</b>	27270909
<b>ECLASS 10.0</b>	27270909
<b>ECLASS 11.0</b>	27270909
<b>ECLASS 12.0</b>	27270909
<b>ETIM 5.0</b>	EC002720
<b>ETIM 6.0</b>	EC002720
<b>ETIM 7.0</b>	EC002720
<b>ETIM 8.0</b>	EC002720
<b>UNSPSC 16.0901</b>	39121528

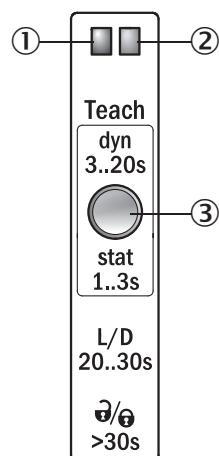
Dimensional drawing



Dimensions in mm (inch)

① Optical axis

Adjustments Adjustment: teach-in via Teach-in button (WFxx-B41Cxx)

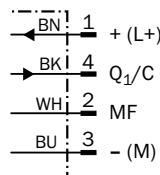


① Function signal indicator (yellow), switching output

② Function signal indicator (green)

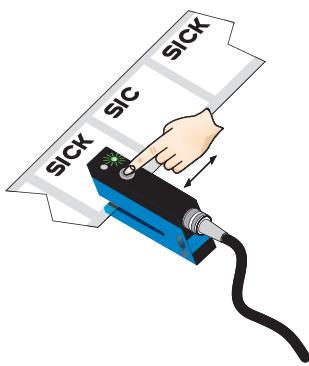
③ Teach-in button and function button

## Connection diagram Cd-273



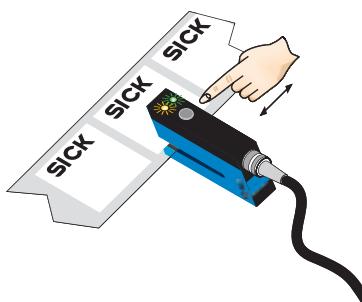
## Concept of operation Teach-in dynamic via Teach-in button

**1. Start teach-in: Position carrier or label between the fork**



Press the teach-in button for 3 - 20 s. With the pushbutton pressed down, move several label with carrier material (label) through the sensor. The yellow LED flashes at 3 Hz during the teach-in procedure. Recommendation: Move at least 3 label + carrier through the sensor.

**2. End teach-in:**



Release the teach-in button for < 20 s. If teach-in is successful, the function indicator (yellow LED) directly indicates the output state of the sensor. The switching threshold is now optimally set between carrier and label. The best possible operational safety is provided.

**Note****Fine adjustment**

In order to obtain a higher operating reserve, a fine adjustment can be carried out after successful teach-in. For this purpose, the switching threshold is set close to the taught-in object. The teach-in button must be pressed and released within 10 s of successful teach-in. Successful setting is signaled by flashing twice at 1 Hz.

**Light/dark switching**

- You can change between light switching and dark switching by pressing the teach-in button for 20 - 30 s.

**Pushbutton lock**

- The device can be locked against unintended operation by pressing the teach-in button for > 30 s.
- The device can be unlocked by pressing the teach-in button again for > 30 s.

## Recommended accessories

Other models and accessories → [www.sick.com/WFS](http://www.sick.com/WFS)

	Brief description	Type	part no.
Mounting systems			
	<ul style="list-style-type: none"><li><b>Description:</b> WFS mounting rod, straight, including 2 x fixing screws</li><li><b>Material:</b> Steel</li><li><b>Details:</b> Aluminum</li></ul>	BEF-M12GF-A	2059414
connectors and cables			
	<ul style="list-style-type: none"><li><b>Connection type head A:</b> Male connector, M8, 4-pin, straight, A-coded</li><li><b>Description:</b> Unshielded</li><li><b>Connection systems:</b> Screw-type terminals</li><li><b>Permitted cross-section:</b> 0.14 mm<sup>2</sup> ... 0.5 mm<sup>2</sup></li></ul>	STE-0804-G	6037323
	<ul style="list-style-type: none"><li><b>Connection type head A:</b> Female connector, M8, 4-pin, straight, A-coded</li><li><b>Connection type head B:</b> Flying leads</li><li><b>Signal type:</b> Sensor/actuator cable</li><li><b>Cable:</b> 5 m, 4-wire, PVC</li><li><b>Description:</b> Sensor/actuator cable, unshielded</li><li><b>Application:</b> Zones with chemicals, Uncontaminated zones</li></ul>	YF8U14-050VA3XLEAX	2095889
	<ul style="list-style-type: none"><li><b>Connection type head A:</b> Female connector, M8, 4-pin, straight, A-coded</li><li><b>Connection type head B:</b> Male connector, M12, 4-pin, straight, A-coded</li><li><b>Signal type:</b> Sensor/actuator cable</li><li><b>Cable:</b> 5 m, 4-wire, PVC</li><li><b>Description:</b> Sensor/actuator cable, unshielded</li><li><b>Application:</b> Zones with chemicals, Uncontaminated zones</li></ul>	YF8U14-050VA3M2A14	2096609
network devices			
		IOLA2US-01101 (SiLink2 Master)	1061790
		SIG200-0A0412200	1089794
		SIG200-0A0G12200	1102605

## SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

**For us, that is "Sensor Intelligence."**

## WORLDWIDE PRESENCE:

Contacts and other locations [www.sick.com](http://www.sick.com)