



# WFL2-40B41CA00

WFL

**FORK SENSORS**

**SICK**  
Sensor Intelligence.



Illustration may differ



## Ordering information

Type	Part no.
WFL2-40B41CA00	6058620

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

## Detailed technical data

### Features

<b>Functional principle</b>	Optical detection principle
<b>Dimensions (W x H x D)</b>	10 mm x 40.5 mm x 47 mm
<b>Housing design (light emission)</b>	Fork shaped
<b>Fork width</b>	2 mm
<b>Fork depth</b>	42 mm
<b>Minimum detectable object (MDO)</b>	0.05 mm
<b>Light source</b>	Laser, visible red light
<b>Wave length</b>	670 nm
<b>Laser class</b>	I
<b>Adjustment</b>	Teach-in button (Teach-in, sensitivity, light/dark switching, key lock) Cable (dynamic Teach-in)
<b>Teach-in mode</b>	1-point teach-in 2-point teach-in Dynamic Teach-in
<b>Output function</b>	Light/darkswitching, selectable via button

### Interfaces

<b>IO-Link functions</b>	Standard
<b>Advanced functions</b>	— <sup>1)</sup>
<b>Fieldbus, industrial network</b>	IO-Link
<b>Type of fieldbus integration</b>	Integrated in the device

<sup>1)</sup> On request also available with advanced functions A70 or A71.

## Mechanics/electronics

<b>Supply voltage</b>	10 V DC ... 30 V DC <sup>1)</sup>
<b>Ripple</b>	< 10 % <sup>2)</sup>
<b>Power consumption</b>	40 mA <sup>3)</sup>
<b>Switching frequency</b>	11 kHz <sup>4)</sup>
<b>Response time</b>	60 µs <sup>5)</sup>
<b>Stability of response time</b>	± 20 µs
<b>Jitter</b>	22 µs
<b>Switching output</b>	PUSH/PULL
<b>Switching output (voltage)</b>	Push/Pull: High = V <sub>S</sub> - < 2 V / Low: ≤ 2 V
<b>Switching output</b>	Light/dark switching
<b>Output current I<sub>max</sub></b>	100 mA
<b>Input, teach-in (ET)</b>	Teach: U > 5 V ... < U <sub>V</sub> Run: U < 4 V
<b>Initialization time</b>	40 ms
<b>Connection type</b>	Male connector M8, 4-pin
<b>Ambient light immunity</b>	Sunlight: ≤ 10,000 lx
<b>Protection class</b>	III <sup>6)</sup>
<b>Circuit protection</b>	U <sub>V</sub> connections, reverse polarity protected Output Q short-circuit protected Interference pulse suppression
<b>Enclosure rating</b>	IP65
<b>Weight</b>	Approx. 36 g ... 160 g <sup>7)</sup>
<b>Housing material</b>	Aluminum

<sup>1)</sup> Limit values, reverse-polarity protected, operation in short-circuit protected network: max. 8 A.

<sup>2)</sup> May not exceed or fall below U<sub>V</sub> tolerances.

<sup>3)</sup> Without load.

<sup>4)</sup> With light/dark ratio 1:1.

<sup>5)</sup> Signal transit time with resistive load.

<sup>6)</sup> Reference voltage DC 50 V.

<sup>7)</sup> Depending on fork width.

## Ambient data

<b>Ambient operating temperature</b>	-20 °C ... +50 °C <sup>1)</sup>
<b>Ambient storage temperature</b>	-30 °C ... +80 °C
<b>Shock load</b>	According to EN 60068-2-27

<sup>1)</sup> Do not bend below 0 °C.

## Classifications

<b>ECI@ss 5.0</b>	27270909
<b>ECI@ss 5.1.4</b>	27270909
<b>ECI@ss 6.0</b>	27270909
<b>ECI@ss 6.2</b>	27270909
<b>ECI@ss 7.0</b>	27270909

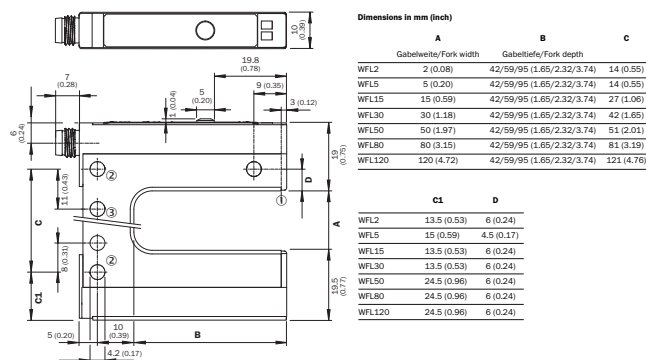
<b>ECI@ss 8.0</b>	27270909
<b>ECI@ss 8.1</b>	27270909
<b>ECI@ss 9.0</b>	27270909
<b>ETIM 5.0</b>	EC002720
<b>ETIM 6.0</b>	EC002720
<b>UNSPSC 16.0901</b>	39121528

## Communication interface

<b>Communication interface</b>	IO-Link V1.1
<b>Communication Interface detail</b>	COM2 (38,4 kBaud)
<b>Cycle time</b>	2.3 ms
<b>Process data length</b>	16 Bit
<b>Process data structure A</b>	Bit 0 = switching signal Q <sub>L1</sub> Bit 1 = switching signal Q <sub>L2</sub> Bit 2 = not used Bit 3 = Teach busy Bit 4 ... 15 = empty
<b>Process data structure B</b>	Bit 0 = switching signal Q <sub>L1</sub> 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 <sub>L1</sub> Bit 1 = switching signal Q <sub>L2</sub> 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 <sub>L1</sub> Bit 1 = Quality of Run Alarm Bit 2 = not used Bit 3 = Teach busy Bit 4 ... 5 = empty Bit 6 ... 15 = measuring value

## Dimensional drawing (Dimensions in mm (inch))

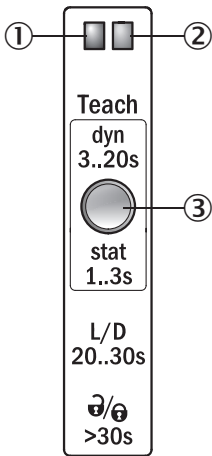
## WFL teach-in button



- ① Optical axis
- ② Mounting hole, Ø 4.2 mm
- ③ WFL50/80/120 only

Adjustments

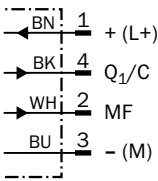
Adjustment: teach-in via Teach-in button (WFxx-B41Cxx)



- ① Function signal indicator (yellow), switching output
- ② Function signal indicator (green)
- ③ Teach-in button and function button

Connection diagram

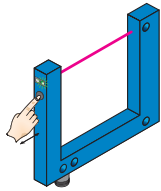
cd-273



### Concept of operation

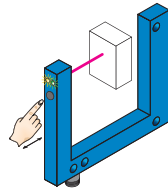
Teach-in via Teach-in button (WFxx-B41Cxx)

#### 1. Start teach-in: Position the background or object between the fork



Press the teach-in button for 3 - 20 s. With the pushbutton pressed down, move several objects with carrier material (label objects to be detected) through the sensor. The yellow LED flashes at 3 Hz during the teach-in procedure. Recommendation: Move at least 3 objects 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 background and object. 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/WFL](http://www.sick.com/WFL)

	Brief description	Type	Part no.
Modules and gateways			
	EtherCAT IO-Link Master, IO-Link V1.1, Port Class A, power supply via 7/8" cable 24 V / 8 A, fieldbus connection via M12 cable	IOLG2EC-03208R01 (IO-Link Master)	6053254
	EtherNet/IP IO-Link Master, IO-Link V1.1, Port Class A, power supply via 7/8" cable 24 V / 8 A, fieldbus connection via M12-cable	IOLG2EI-03208R01 (IO-Link Master)	6053255
	PROFINET IO-Link Master, IO-Link V1.1, Port Class A, power supply via 7/8" cable 24 V / 8 A, fieldbus connection via M12 cable	IOLG2PN-03208R01 (IO-Link Master)	6053253
Plug connectors and cables			
	Head A: female connector, M8, 4-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 2 m	YF8U14-020VA3XLEAX	2095888
	Head A: female connector, M8, 4-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 5 m	YF8U14-050VA3XLEAX	2095889
	Head A: female connector, M8, 4-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 10 m	YF8U14-100VA3XLEAX	2095890

	Brief description	Type	Part no.
    	Head A: female connector, M8, 4-pin, angled, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 2 m	YG8U14-020VA3XLEAX	2095962
	Head A: female connector, M8, 4-pin, angled, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 5 m	YG8U14-050VA3XLEAX	2095963
	Head A: female connector, M8, 4-pin, angled, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 10 m	YG8U14-100VA3XLEAX	2095964
	Head A: female connector, M8, 4-pin, straight Head B: - Cable: unshielded	DOS-0804-G	6009974
	Head A: female connector, M8, 4-pin, angled Head B: - Cable: unshielded	DOS-0804-W	6009975

## 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)