



# WFL2-60B416

WFL

**FORK SENSORS**

**SICK**  
Sensor Intelligence.



Illustration may differ



### Ordering information

Type	part no.
WFL2-60B416	6036828

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 74 mm
<b>Fork width</b>	2 mm
<b>Fork depth</b>	59 mm
<b>Light source</b>	Laser, visible red light
<b>Minimum detectable object (MDO)</b>	0.05 mm
<b>Adjustment</b>	Plus/minus button (Teach-in, sensitivity, light/dark switching)
<b>Teach-in mode</b>	2-point teach-in
<b>Safety-related parameters</b>	
	MTTF <sub>D</sub> 80 years
	DC <sub>avg</sub> 0 %

#### Electronics

<b>Supply voltage</b>	10 V DC ... 30 V DC
<b>Ripple</b>	< 10 %
<b>Current consumption</b>	40 mA <sup>1)</sup>
<b>Initialization time</b>	100 ms
<b>Switching frequency</b>	10 kHz
<b>Response time</b>	≤ 100 μs
<b>Stability of response time</b>	± 20 μs
<b>Jitter</b>	40 μs

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

<sup>2)</sup> Reference voltage DC 50 V.

<b>Switching output</b>	PNP/NPN
<b>Switching output (voltage)</b>	PNP: HIGH = $U_V \leq 2 \text{ V}$ / LOW approx. 0 V NPN: HIGH = approx. $U_V$ / LOW $\leq 2 \text{ V}$
<b>Switching mode</b>	Light/dark switching
<b>Output current <math>I_{\text{max}}</math></b>	100 mA
<b>Protection class</b>	III <sup>2)</sup>
<b>Circuit protection</b>	$U_V$ connections, reverse polarity protected Output Q short-circuit protected Interference pulse suppression
<b>Connection type</b>	Male connector M8, 4-pin

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

<sup>2)</sup> Reference voltage DC 50 V.

## Mechanics

<b>Housing material</b>	Aluminum
<b>Weight</b>	Approx. 36 g ... 160 g <sup>1)</sup>

<sup>1)</sup> Depending on fork width.

## Ambient data

<b>Ambient operating temperature</b>	-20 °C ... +50 °C
<b>Ambient temperature, storage</b>	-30 °C ... +80 °C
<b>Ambient light immunity</b>	$\leq 10,000 \text{ lx}$
<b>Shock load</b>	According to EN 60068-2-27
<b>Enclosure rating</b>	IP65

## Certificates

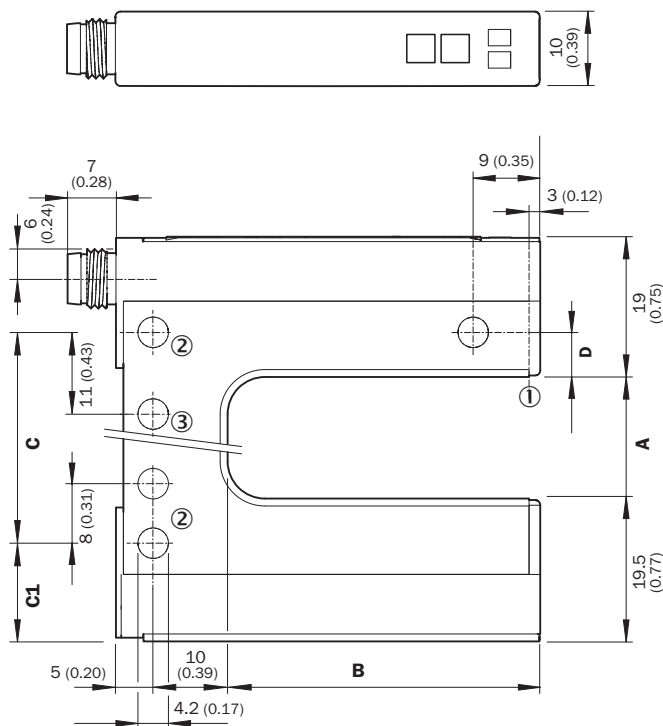
<b>EU declaration of conformity</b>	✓
<b>UK declaration of conformity</b>	✓
<b>ACMA declaration of conformity</b>	✓
<b>Moroccan declaration of conformity</b>	✓
<b>China RoHS</b>	✓
<b>cULus certificate</b>	✓
<b>Laser safety (IEC 60825-1) declaration of manufacturer</b>	✓

## 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 WFL - Plus/minus buttons



Dimensions in mm (inch)

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

### Dimensions in mm (inch)

	<b>A</b> Fork width	<b>B</b> Fork depth	<b>C</b>	<b>C1</b>	<b>D</b>
<b>WFL2</b>	2 (0.08)	42/59/95 (1.65/2.32/3.74)	14 (0.55)	13.5 (0.53)	6 (0.24)
<b>WFL5</b>	5 (0.20)	42/59/95 (1.65/2.32/3.74)	14 (0.55)	15 (0.59)	4.5 (0.18)
<b>WFL15</b>	15 (0.59)	42/59/95 (1.65/2.32/3.74)	27 (1.06)	13.5 (0.53)	6 (0.24)
<b>WFL30</b>	30 (1.18)	42/59/95 (1.65/2.32/3.74)	42 (1.65)	13.5 (0.53)	6 (0.24)
<b>WFL50</b>	50 (1.97)	42/59/95 (1.65/2.32/3.74)	51 (2.01)	24.5 (0.96)	6 (0.24)
<b>WFL80</b>	80 (3.15)	42/59/95 (1.65/2.32/3.74)	81 (3.19)	24.5 (0.96)	6 (0.24)
<b>WFL120</b>	120 (4.72)	42/59/95 (1.65/2.32/3.74)	121 (4.76)	24.5 (0.96)	6 (0.24)

Adjustments Adjustment: teach-in via plus/minus buttons (WFxx-B416)



- ① Function signal indicator (yellow), switching output
- ② Function indicator (red)
- ③ “+”/“-” buttons and function button

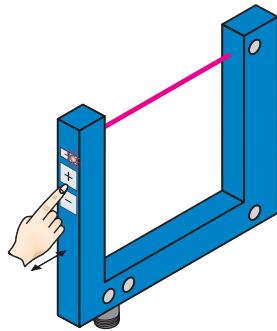
Connection diagram Cd-086



### Concept of operation Teach-in

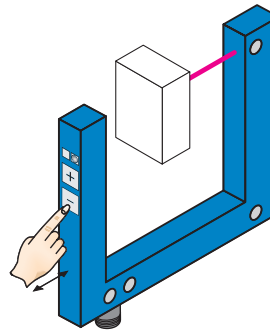
The switching threshold is set automatically. Fine adjustment is possible using the “+”/“–” buttons.

#### 1. No object or substrate in the beam path



Press the “+” and “–” buttons together and hold for 1 second. The red function indicator flashes slowly.





#### 2. Object or label in the beam path



Press the “–” button for 1 second. Red function indicator goes out.



#### Notes

Material speed = 0 (machine at a standstill).

-  Once teach-in process is complete, the switching threshold can be adjusted at any time using the “+” or “–” button. To make minor adjustments, press the “+” or “–” button once.
-  To configure settings quickly, keep the “+” or “–” button pressed for longer.
-  Press both the “+” and “–” buttons together (3 seconds) to lock the device and prevent unintentional actuation.
-  Press both the “+” and “–” buttons together (6 seconds) to define the switching function (light/dark switching). Standard setting:  $\bar{Q}$  = light switching.

### Recommended accessories

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

	Brief description	Type	part no.
connectors and cables			
	<ul style="list-style-type: none"> <li>• <b>Description:</b> Unshielded</li> <li>• <b>Connection type head A:</b> Male connector, M8, 4-pin, straight, A-coded</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>Description:</b> Sensor/actuator cable, unshielded</li> <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>Application:</b> Untaminated zones, Zones with chemicals</li> </ul>	YF8U14-050VA3XLEAX	2095889

## 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)