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Product data sheet




# WF5-40B416

WF

FORK SENSORS

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Sensor Intelligence.

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# WF5-40B416 | WF

FORK SENSORS



Illustration may differ

## Ordering information

| Type | Part no. |
|---|---|
| WF5-40B416 | 6028451 |

Other models and accessories → www.sick.com/WF

## Detailed technical data

### Features

| | |
|---|---|
| **Functional principle** | Fork sensor |
| **Functional principle detail** | Optical detection principle |
| **Dimensions (W x H x D)** | 10 mm x 35 mm x 57 mm |
| **Fork width** | 5 mm |
| **Fork depth** | 42 mm |
| **Minimum detectable object (MDO)** | 0.2 mm |
| **Light source** | LED, infrared |
| **Wave length** | 850 nm |
| **Adjustment** | Plus/minus button (Teach-in, sensitivity, light/dark switching, key lock) |
| **Teach-in mode** | 2-point teach-in |
| **Output function** | Light/darkswitching, selectable via button |

### Mechanics/electronics

| | |
|---|---|
| **Switching frequency** | 10 kHz [1] |
| **Response time** | 100 µs |
| **Stability of response time** | ± 20 µs |
| **Jitter** | 40 µs |
| **Switching output** | PNP/NPN |
| **Switching output (voltage)** | PNP: HIGH = $U_V$ ≤ 2 V / LOW approx. 0 V<br>NPN: HIGH = approx. $U_V$ / LOW ≤ 2 V |
| **Switching mode** | Light/dark switching |
| **Output current $I_{max.}$** | 100 mA |
| **Connection type** | Male connector M8, 4-pin |

[1] With light/dark ratio 1:1.
[2] Reference voltage DC 50 V.
[3] Depending on fork width.

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| | |
|---|---|
| **Protection class** | III [2] |
| **Circuit protection** | $U_V$ connections, reverse polarity protected<br>Output Q short-circuit protected<br>Interference pulse suppression |
| **Enclosure rating** | IP65 |
| **Weight** | Approx. 36 g ... 160 g [3] |
| **Housing material** | Metal, Aluminum |

[1] With light/dark ratio 1:1.
[2] Reference voltage DC 50 V.
[3] Depending on fork width.

## Safety-related parameters

| | |
|---|---|
| **$MTTF_D$** | 97 years |
| **$DC_{avg}$** | 0 % |

## Ambient data

| | |
|---|---|
| **Ambient light immunity** | ≤ 10,000 lx |
| **Shock load** | According to EN 60068-2-27 |
| **UL File No.** | NRKH.E191603 |

## Classifications

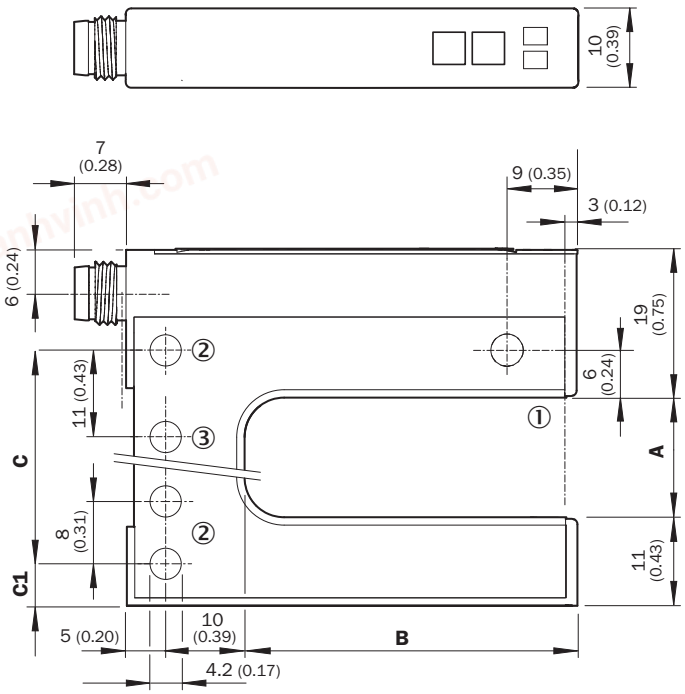
| | |
|---|---|
| **ECLASS 5.0** | 27270909 |
| **ECLASS 5.1.4** | 27270909 |
| **ECLASS 6.0** | 27270909 |
| **ECLASS 6.2** | 27270909 |
| **ECLASS 7.0** | 27270909 |
| **ECLASS 8.0** | 27270909 |
| **ECLASS 8.1** | 27270909 |
| **ECLASS 9.0** | 27270909 |
| **ECLASS 10.0** | 27270909 |
| **ECLASS 11.0** | 27270909 |
| **ECLASS 12.0** | 27270909 |
| **ETIM 5.0** | EC002720 |
| **ETIM 6.0** | EC002720 |
| **ETIM 7.0** | EC002720 |
| **ETIM 8.0** | EC002720 |
| **UNSPSC 16.0901** | 39121528 |

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



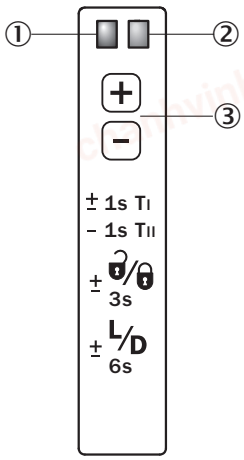

① Optical axis
② Mounting hole, Ø 4.2 mm
③ WF50/80/120 only

**Dimensions in mm (inch)**

| | A<br>Fork width | B<br>Fork depth | C | C1 |
|---|---|---|---|---|
| **WF2** | 2<br>(0.08) | 42/59/95<br>(1.65/2.32/3.74) | 14<br>(0.55) | 5<br>(0.20) |
| **WF5** | 5<br>(0.20) | 42/59/95<br>(1.65/2.32/3.74) | 14<br>(0.55) | 6.5<br>(0.20) |
| **WF15** | 15<br>(0.59) | 42/59/95<br>(1.65/2.32/3.74) | 27<br>(1.06) | 5<br>(0.20) |
| **WF30** | 30<br>(1.18) | 42/59/95<br>(1.65/2.32/3.74) | 42<br>(1.65) | 5<br>(0.20) |
| **WF50** | 50<br>(1.97) | 42/59/95<br>(1.65/2.32/3.74) | 51<br>(2.01) | 16<br>(0.63) |
| **WF80** | 80<br>(3.15) | 42/59/95<br>(1.65/2.32/3.74) | 81<br>(3.19) | 16<br>(0.63) |
| **WF120** | 120<br>(4.72) | 42/59/95<br>(1.65/2.32/3.74) | 121<br>(4.76) | 16<br>(0.63) |

## Adjustments

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



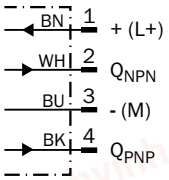

① Function signal indicator (yellow), switching output
② Function indicator (red)
③ “+”/“–” buttons and function button

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## Connection diagram

Cd-086

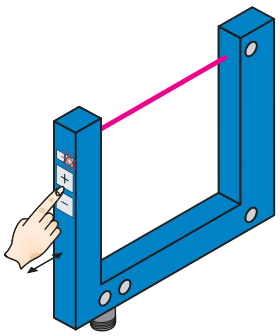



## Concept of operation

Teach-in via plus/minus buttons (WFxx-B416)

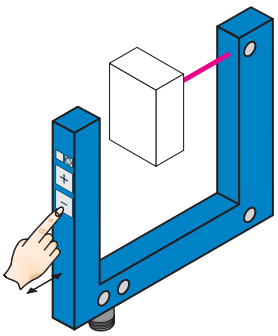
**The switching threshold is set automatically. Fine adjustment is possible using the “+”/“–” buttons.**

**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: $\overline{Q}$ = light switching.

## Recommended accessories

Other models and accessories ➜ www.sick.com/WF

| | Brief description | Type | Part no. |
|---|---|---|---|
| Plug connectors and cables | | | |
|  | • **Connection type head A:** Female connector, M8, 4-pin, straight, A-coded<br>• **Connection type head B:** Flying leads<br>• **Signal type:** Sensor/actuator cable<br>• **Cable:** 5 m, 4-wire, PVC<br>• **Description:** Sensor/actuator cable, unshielded<br>• **Application:** Zones with chemicals | YF8U14-050VA3XLEAX | 2095889 |
|  | • **Connection type head A:** Male connector, M8, 4-pin, straight<br>• **Description:** Unshielded<br>• **Connection systems:** Screw-type terminals<br>• **Permitted cross-section:** 0.14 mm² ... 0.5 mm² | STE-0804-G | 6037323 |

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# 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



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