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DATA SHEET

WF50-40B41CA71

WF
Fork sensors

SICK Sensor Intelligence

Illustration may differ

FORK SENSORS

WF50-40B41CA71

ORDERING INFORMATION

Type	part no.
WF50-40B41CA71	6059834

Further device versions and accessories at www.sick.com/WF

DETAILED TECHNICAL DATA

FEATURES

Functional principle	Optical detection principle
Dimensions (W x H x D)	10 mm x 80 mm x 57 mm
Fork width	50 mm
Fork depth	42 mm
Light source	LED, Infrared light
Label detection	✓
Minimum detectable object (MDO)	0.2 mm
Adjustment	Teach-in button, cable (Teach-in, sensitivity, light/dark switching, key lock, Teach-in dynamic)
Teach-in mode	1-point teach-in 2-point teach-in Teach-in dynamic
Output function	Light/darkswitching, selectable via button
Safety-related parameters	
$MTTF_D$	97 years
DC_{avg}	0 %

INTERFACES

IO-Link	✓ , IO-Link V1.1
VendorID	26
DeviceID HEX	8000B0
DeviceID DEC	8388784
Cycle time	2.3 ms
Process data structure A	Bit 0 = switching signal Q_{L1} Bit 1 = switching signal Q_{L2} Bit 2 = not used Bit 3 = Teach busy Bit 4 ... 15 = empty
Process data structure 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
Process data structure C	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
Process data structure D	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
Process data structure E	Bit 0 = switching signal Q_{L1} (AFC Q1 Output) Bit 1 = switching signal Q_{L2} (AFC Q2 Output) Bit 2 ... 15 = counting value

ELECTRONICS

Supply voltage	10 V DC ... 30 V DC
Ripple	< 10 %
Current consumption	20 mA [1]
Initialization time	40 ms
Switching frequency	15 kHz
Response time	≤ 46 µs
Stability of response time	± 20 µs
Jitter	17 µs
Switching output	Push-pull: PNP/NPN
Switching output (voltage)	Push-pull: PNP/NPN High = U_V - < 2 V/Low: ≤ 2 V
Switching mode	Light/dark switching
Output current $I_{max.}$	100 mA
Input, teach-in (ET)	Teach: U > 5 V ... < U_V Run: U < 4 V
Time delay	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)
Protection class	III [2]
Circuit protection	U_V connections, reverse polarity protected Output Q short-circuit protected Interference pulse suppression
Connection type	Male connector M8, 4-pin

[1] Without load.

[2] Reference voltage DC 50 V.

MECHANICS

Housing material	Aluminum
Weight	Approx. 36 g ... 160 g [1]

[1] Depending on fork width.

AMBIENT DATA

Ambient operating temperature	–20 °C ... +60 °C [1]

[1] Do not bend below 0 °C.

Ambient temperature, storage	–30 °C ... +80 °C
Ambient light immunity	≤ 10,000 lx
Shock load	According to EN 60068-2-27
Enclosure rating	IP65
UL File No.	NRKH.E191603

[1] Do not bend below 0 °C.

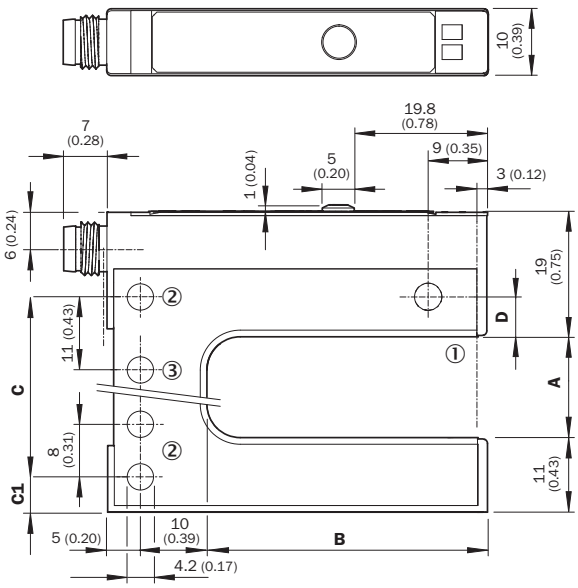
SMART TASK

Smart Task name	Counter + debouncing

CERTIFICATES

EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
Moroccan declaration of conformity	✓
China RoHS	✓
China Compulsory Product Certification (CCC) exempt	✓
cULus certificate	✓
IO-Link certificate	✓
Photobiological safety (IEC EN 62471)	✓
Information according to Art. 3 of Data Act (Regulation EU 2023/2854)	✓

DIMENSIONAL DRAWING

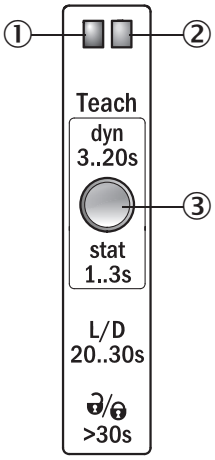


Dimensions in mm (inch)

Dimensions in mm (inch)

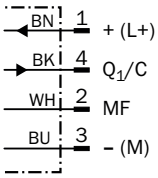
	A Gabelweite/Fork width	B Gabeltiefe/Fork depth	C	C1	D
WF2	2 (0.08)	42/59/95 (1.65/2.32/3.74)	14 (0.55)	5 (0.20)	6 (0.24)
WF5	5 (0.20)	42/59/95 (1.65/2.32/3.74)	14 (0.55)	6.5 (0.26)	4.5 (0.17)
WF15	15 (0.59)	42/59/95 (1.65/2.32/3.74)	27 (1.06)	5 (0.20)	6 (0.24)
WF30	30 (1.18)	42/59/95 (1.65/2.32/3.74)	42 (1.65)	5 (0.20)	6 (0.24)
WF50	50 (1.97)	42/59/95 (1.65/2.32/3.74)	51 (2.01)	16 (0.63)	6 (0.24)
WF80	80 (3.15)	42/59/95 (1.65/2.32/3.74)	81 (3.19)	16 (0.63)	6 (0.24)
WF120	120 (4.72)	42/59/95 (1.65/2.32/3.74)	121 (4.76)	16 (0.63)	6 (0.24)

ADJUSTMENTS ADJUSTMENT: TEACH-IN VIA TEACH-IN BUTTON (WFXX-B41CXX)



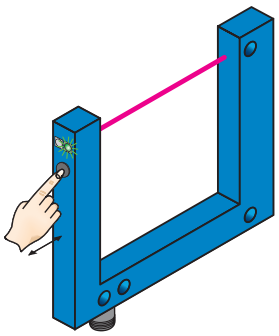
① Function signal indicator (yellow), switching output
② Function signal indicator (green)
③ Teach-in button and function button

CONNECTION DIAGRAM CD-273



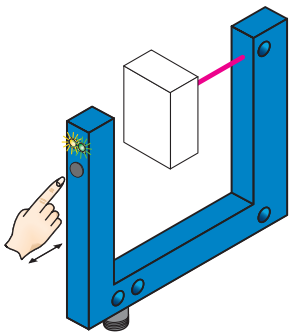
CONCEPT OF OPERATION TEACH-IN VIA TEACH-IN BUTTON (WFXX-B41CXX)

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 suc-cessful, 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.

Further information as well as suitable accessories, example applications and downloads such as CAD di-mensional models, operating instructions and software can be found at www.sick.com/6059834

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SICK AT A GLANCE

SICK is a leading global technology company for intelligent sensors and integrated solutions in industrial automation. Our technologies set benchmarks, making your industrial processes more efficient, safer and more sustainable – both in logistics and manufacturing operations.

SICK combines sensor intelligence with industry expertise and certified consulting services. We provide the ideal foundation for scalable as well as tailor-made automation solutions and create added value along the entire value chain. Our close partnerships with our customers are more than just a promise: Together, we optimize productivity, improve quality, protect health and safety, and help build a sustainable future. All with empathy and trust.

Since 1946, we have been developing innovative technologies with passion and a pioneering spirit. With a global network in around 40 countries, SICK has a global presence and is always close by. The company's headquarters are located in Waldkirch near Freiburg, Germany. Our customers benefit from our understanding of both local and global requirements, which enables us to deliver tailor-made solutions

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