Online data sheet

WFL2-60B41CA00

WFL

FORK SENSORS

SICK
Sensor Intelligence.

Illustration may differ

Ordering information

Type	Part no.
WFL2-60B41CA00	6058627

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

Detailed technical data

Features

Functional principle	Optical detection principle
Dimensions (W x H x D)	10 mm x 40.5 mm x 74 mm
Housing design (light emission)	Fork shaped
Fork width	2 mm
Fork depth	59 mm
Minimum detectable object (MDO)	0.05 mm
Light source	Laser, visible red light
Wave length	670 nm
Laser class	I
Adjustment	Teach-in button (Teach-in, sensitivity, light/dark switching, key lock) Cable (dynamic Teach-in)
Teach-in mode	1-point teach-in 2-point teach-in Dynamic Teach-in
Output function	Light/darkswitching, selectable via button

Interfaces

IO-Link functions	Standard
Advanced functions	_ [1)]
Fieldbus, industrial network	IO-Link
Type of fieldbus integration	Integrated in the device

[1)] On request also availible with advanced funktions A70 or A71.

Mechanics/electronics

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

[1] Limit values, reverse-polarity protected, operation in short-circuit protected network: max. 8 A.
[2] May not exceed or fall below U_V tolerances.
[3] Without load.
[4] With light/dark ratio 1:1.
[5] Signal transit time with resistive load.
[6] Reference voltage DC 50 V.
[7] Depending on fork width.

Ambient data

Ambient operating temperature	–20 °C ... +50 °C [1]
Ambient storage temperature	–30 °C ... +80 °C
Shock load	According to EN 60068-2-27

[1] Do not bend below 0 °C.

Classifications

ECl@ss 5.0	27270909
ECl@ss 5.1.4	27270909
ECl@ss 6.0	27270909
ECl@ss 6.2	27270909
ECl@ss 7.0	27270909

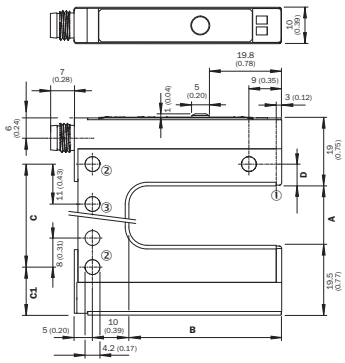
ECl@ss 8.0	27270909
ECl@ss 8.1	27270909
ECl@ss 9.0	27270909
ETIM 5.0	EC002720
ETIM 6.0	EC002720
UNSPSC 16.0901	39121528

Communication interface

Communication interface	IO-Link V1.1
Communication Interface detail	COM2 (38,4 kBaud)
Cycle time	2.3 ms
Process data length	16 Bit
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

Dimensional drawing (Dimensions in mm (inch))

WFL teach-in button



Dimensions in mm (inch)

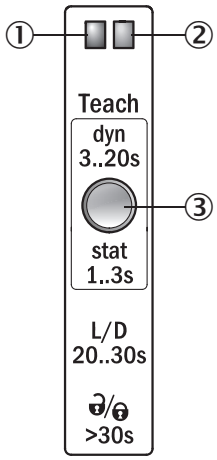
	A Gabelweite/Fork width	B Gabeltiefe/Fork depth	C
WFL2	2 (0.08)	42/59/95 (1.65/2.32/3.74)	14 (0.55)
WFL5	5 (0.20)	42/59/95 (1.65/2.32/3.74)	14 (0.55)
WFL15	15 (0.59)	42/59/95 (1.65/2.32/3.74)	27 (1.06)
WFL30	30 (1.18)	42/59/95 (1.65/2.32/3.74)	42 (1.65)
WFL50	50 (1.97)	42/59/95 (1.65/2.32/3.74)	51 (2.01)
WFL80	80 (3.15)	42/59/95 (1.65/2.32/3.74)	81 (3.19)
WFL120	120 (4.72)	42/59/95 (1.65/2.32/3.74)	121 (4.76)

	C1	D
WFL2	13.5 (0.53)	6 (0.24)
WFL5	15 (0.59)	4.5 (0.17)
WFL15	13.5 (0.53)	6 (0.24)
WFL30	13.5 (0.53)	6 (0.24)
WFL50	24.5 (0.96)	6 (0.24)
WFL80	24.5 (0.96)	6 (0.24)
WFL120	24.5 (0.96)	6 (0.24)

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

Adjustments

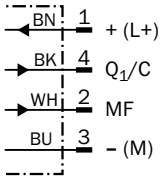
Adjustment: teach-in via Teach-in button (WFxx-B41Cxx)



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

Connection diagram

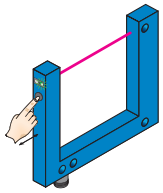
cd-273



Concept of operation

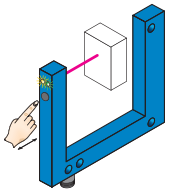
Teach-in via Teach-in button (WFxx-B41Cxx)

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 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.

Recommended accessories

Other models and accessories ➜ 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.”

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