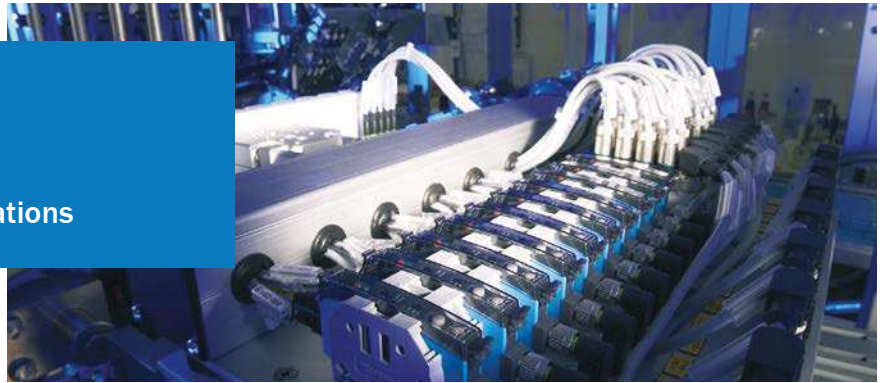


## Versatility for standard applications



## Additional information

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## Product description

The WLL170-2 fiber-optic photoelectric sensor family features a standard operating system that is especially suitable for basic applications, but can be used when rapid response times are crucial. There are several variants. The WLL170(T) version is optimized for a number of key applications, such as detection of very small objects, colored marks, or transparent objects. The WLL170T-2 is a teach-in version where the switching threshold can be set either

automatically by pressing a button or via a cable. In contrast, the WLL170-2 has a manual switching threshold adjustment via a potentiometer. Both models are available in a high-speed version with a switching frequency of 10 kHz for extremely fast response times. For optimum detection of color contrasts, you can choose between devices with a red or green LED emitter. Detection tasks are handled securely and reliably using the LL3 series of fiber-optic cables.

## At a glance

- Rapid response time (50 µs)
- Switching threshold adjustment via potentiometer, or teach-in via button or cable
- Four different teach-in modes
- Simple installation
- Red or green LED emitter

## Your benefits

- Reliable, rapid process detection
- Low installation costs due to short commissioning time
- Flexible teach-in modes allow the sensor to be customized according to the specific application
- Emitted light ideal for color or contrast detection
- Easy programming via simple potentiometer and switch adjustment

→ [www.mysick.com/en/WLL170-2](http://www.mysick.com/en/WLL170-2)

For more information, just enter the link or scan the QR code and get direct access to technical data, CAD design models, operating instructions, software, application examples and much more.



## Detailed technical data

### Features

	WLL170-2	WLL170T-2
<b>Sensor principle</b>	Fiber-optic photoelectric sensor	
<b>Dimensions (W x H x D)</b>	10.5 mm x 35.5 mm x 83.7 mm	
<b>Housing design (light emission)</b>	Rectangular	
<b>Sensing range max.</b>	0 mm ... 4,000 mm, through-beam system <sup>1)</sup> (depending on type)	0 mm ... 3,500 mm, through-beam system <sup>1)</sup> (depending on type)
<b>Sensing range</b>	0 mm ... 160 mm, proximity system <sup>2)</sup> 0 mm ... 700 mm, through-beam system <sup>3)</sup> (depending on type)	0 mm ... 160 mm, proximity system <sup>2)</sup> 0 ... 700 mm, through-beam system <sup>3)</sup> (depending on type)
<b>Type of light</b>	Visible red light/Green light (depending on type)	
<b>Light source <sup>4)</sup></b>	LED	
<b>Wave length</b>		
Visible red light	660 nm	
Green light	520 nm	525 nm
<b>Teach-in</b>	Potentiometer, 10-turn <sup>5)</sup>	Teach-in-button, cable
<b>Time type</b>	Off-delayed	
<b>Delay time</b>	Selectable by sliding switch: ≤ 40 ms	
<b>Indication</b>	LED	

<sup>1)</sup> LL3-TB02 and tip adapter LL3-TA01.

<sup>2)</sup> Objects to be sensed with 90% reflectivity (based on DIN 5033 white standard). Sensing range depends on fiber-optic cable.

<sup>3)</sup> LL3-tB01.

<sup>4)</sup> Average service life of 100,000 h at T<sub>A</sub> = +25 °C.

<sup>5)</sup> Scale 270°.

### Mechanics/electronics

	WLL170-2	WLL170T-2
<b>Supply voltage <sup>1)</sup></b>	10 V DC ... 30 V DC	
<b>Ripple <sup>2)</sup></b>	10 %	
<b>Power consumption <sup>3)</sup></b>	≤ 30 mA	
<b>Output type</b>	PNP, open collector/NPN, open collector (depending on type)	
<b>Switching mode</b>	Light/dark-switching (selectable via light/dark selector)	
<b>Output current I<sub>max.</sub></b>	≤ 100 mA	
<b>Response time</b>	≤ 0.25 ms <sup>4)</sup> ≤ 50 μs <sup>4)</sup> (depending on type)	
<b>Switching frequency <sup>5)</sup></b>		
Response time ≤ 0.25 ms <sup>4)</sup>	2,000 Hz	
Response time ≤ 50 μs <sup>4)</sup>	10,000 Hz	
<b>Connection type</b>	Cable, 2 m <sup>6)</sup> /Male connector, M8 (depending on type)	
<b>Circuit protection</b>	A <sup>7)</sup> , B <sup>8)</sup> , C <sup>9)</sup> , D <sup>10)</sup>	
<b>Protection class</b>	III	

	WLL170-2	WLL170T-2
Housing material	ABS/PC	ABS
Enclosure rating <sup>1)</sup>	IP 66	
Ambient operating temperature	-25 °C ... +55 °C	
Ambient storage temperature	-40 °C ... +70 °C	

<sup>1)</sup> Limit values.

<sup>2)</sup> May not exceed or fall short of  $V_S$  tolerances.

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

<sup>4)</sup> Signal transit time with resistive load.

<sup>5)</sup> With light/dark ratio 1:1.

<sup>6)</sup> Do not bend below 0 °C.

<sup>7)</sup> A =  $V_S$  connections reverse-polarity protected.

<sup>8)</sup> B = inputs and output reverse-polarity protected.

<sup>9)</sup> C = interference suppression.

<sup>10)</sup> D = outputs overcurrent and short-circuit protected.

<sup>11)</sup> With correctly attached fibre-optic cable LL3 and closed protection hood.

## Ordering information

Other models available at [www.mysick.com/en/WLL170-2](http://www.mysick.com/en/WLL170-2)

### WLL170-2

- **Adjustment:** Potentiometer, 10-turn (Scale 270°.)

Type of light	Response time	Sensing range max. <sup>1)</sup>	Switching mode	Connection	Connection diagram	Model name	Part no.
Visible red light	≤ 0.25 ms	0 mm ... 4,000 mm, through-beam system	PNP	Cable, 3-wire, 2 m	Cd-043	WLL170-2P132	6029511
				Male connector, M8, 3-pin	Cd-045	WLL170-2P330	6029513
				Male connector, M8, 4-pin	Cd-066	WLL170-2P430	6029514
			NPN	Cable, 3-wire, 2 m	Cd-043	WLL170-2N132	6029515
				Male connector, M8, 3-pin	Cd-045	WLL170-2N330	6029517
				Male connector, M8, 4-pin	Cd-066	WLL170-2N430	6029518
Green light	≤ 0.25 ms	0 mm ... 1,700 mm, through-beam system	PNP	Cable, 3-wire, 2 m	Cd-043	WLL170-2P192	6029519
				Male connector, M8, 3-pin	Cd-045	WLL170-2P390	6029521
				Male connector, M8, 4-pin	Cd-066	WLL170-2P490	6029522
			NPN	Cable, 3-wire, 2 m	Cd-043	WLL170-2N192	6029523
				Male connector, M8, 3-pin	Cd-045	WLL170-2N390	6029525
				Male connector, M8, 4-pin	Cd-066	WLL170-2N490	6029526
Visible red light	≤ 50 µs	0 mm ... 1,600 mm, through-beam system	PNP	Cable, 3-wire, 2 m	Cd-043	WLL170-2P162	6029527
				Male connector, M8, 3-pin	Cd-045	WLL170-2P360	6029529
				Male connector, M8, 4-pin	Cd-066	WLL170-2P460	6029530
			NPN	Cable, 3-wire, 2 m	Cd-043	WLL170-2N162	6029531
				Male connector, M8, 3-pin	Cd-045	WLL170-2N360	6029533
				Male connector, M8, 4-pin	Cd-066	WLL170-2N460	6029534

<sup>1)</sup> LL3-TB02 and tip adapter LL3-TA01.

## WLL170T-2

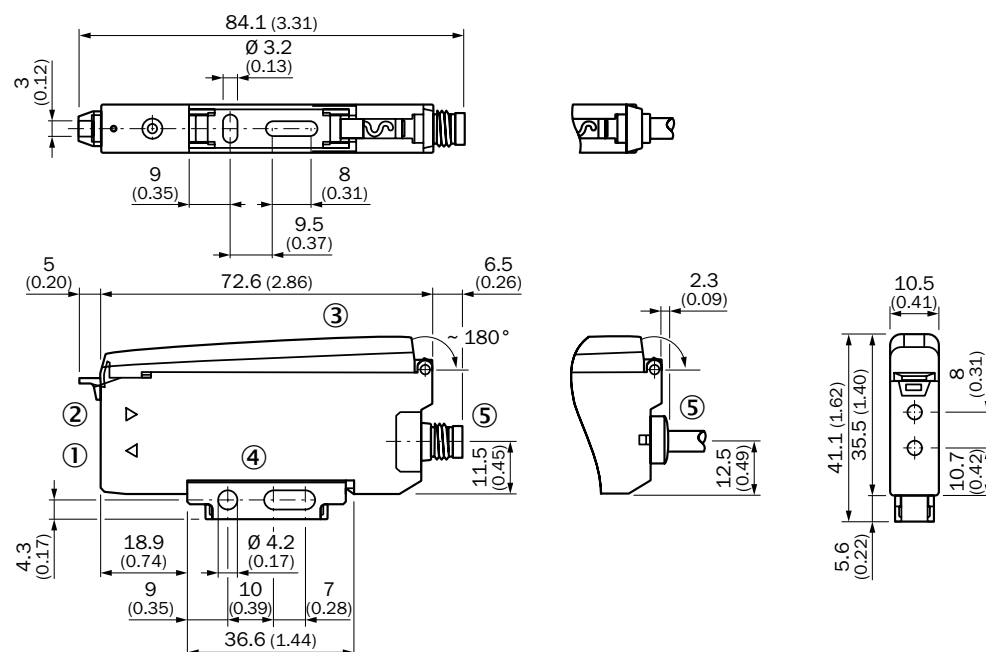
Type of light	Response time	Sensing range max. <sup>1)</sup>	Switching mode	Adjustment	Connection	Con- nection diagram	Model name	Part no.
Visible red light	$\leq 0.25$ ms	0 mm ... 3,500 mm, through-beam system	PNP	Teach-in button, Cable	Cable, 4-wire, 2 m	Cd-093	WLL170T-2P132	6033948
					Male connector, M8, 4-pin	Cd-092	WLL170T-2P430	6033950
				Teach-in button	Male connector, M8, 3-pin	Cd-045	WLL170T-2P330	6033949
			NPN	Teach-in button, Cable	Cable, 4-wire, 2 m	Cd-093	WLL170T-2N132	6033951
					Male connector, M8, 4-pin	Cd-092	WLL170T-2N430	6033953
				Teach-in button	Male connector, M8, 3-pin	Cd-045	WLL170T-2N330	6033952
Green light	$\leq 0.25$ ms	0 mm ... 1,600 mm, through-beam system	PNP	Teach-in button, Cable	Cable, 4-wire, 2 m	Cd-093	WLL170T-2P192	6033954
					Male connector, M8, 4-pin	Cd-092	WLL170T-2P490	6033956
				Teach-in button	Male connector, M8, 3-pin	Cd-045	WLL170T-2P390	6033955
			NPN	Teach-in button, Cable	Cable, 4-wire, 2 m	Cd-093	WLL170T-2N192	6033957
					Male connector, M8, 4-pin	Cd-092	WLL170T-2N490	6033959
				Teach-in button	Male connector, M8, 3-pin	Cd-045	WLL170T-2N390	6033958
Visible red light	$\leq 50$ $\mu$ s	0 mm ... 1,500 mm, through-beam system	PNP	Teach-in button, Cable	Cable, 4-wire, 2 m	Cd-093	WLL170T-2P162	6033963
					Male connector, M8, 4-pin	Cd-092	WLL170T-2P460	6033965
				Teach-in button	Male connector, M8, 3-pin	Cd-045	WLL170T-2P360	6033964
			NPN	Teach-in button, Cable	Cable, 4-wire, 2 m	Cd-093	WLL170T-2N162	6033960
					Male connector, M8, 4-pin	Cd-092	WLL170T-2N460	6033962
				Teach-in button	Male connector, M8, 3-pin	Cd-045	WLL170T-2N360	6033961

<sup>1)</sup> LL3-TB02 and tip adapter LL3-TA01.

## Dimensional drawings

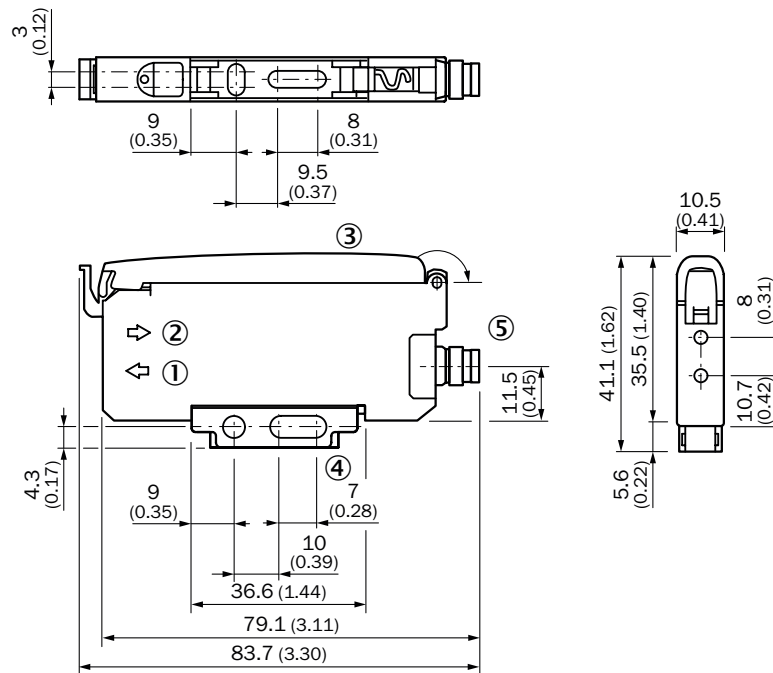
Dimensions in mm (inch)

### WLL170-2



- ① Sender LED, installation of LL3 fibre-optic cable (sender fibre)
- ② Receiver, installation of LL3 fibre optic cable (receiver fibre)
- ③ Protective hood, can be raised at both ends
- ④ Mounting bracket, included
- ⑤ Connection

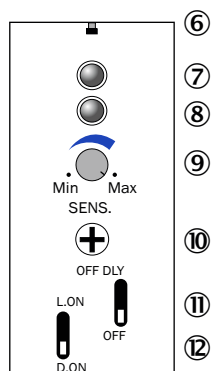
## WLL170T-2



- ① Sender LED, installation of LL3 fibre-optic cable (sender fibre)
- ② Receiver, installation of LL3 fibre-optic cable (receiver fibre)
- ③ Protective hood, can be raised at both ends
- ④ Mounting bracket, included
- ⑤ Connection

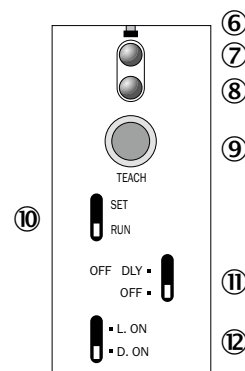
## Adjustments

## WLL170-2

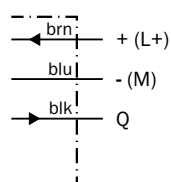


- ⑥ Indication of correct fibre-optic cable mounting
- ⑦ LED indicator orange, lights up when switching output is active
- ⑧ LED signal strength indicator green, lights up, when light received < 0.9 or > 1.1 (switching threshold = 1)
- ⑨ Sensitivity scale 270°
- ⑩ Sensitivity control (10 revolutions)
- ⑪ L.ON/ d.ON selection switch. "OFF DLY" (on) / "OFF", 40 ms fixed
- ⑫ Selector switch: "L.ON" (light-switching) / "D.ON" (dark-switching)

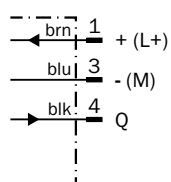
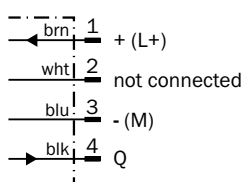
## WLL170T-2



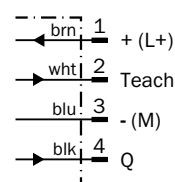
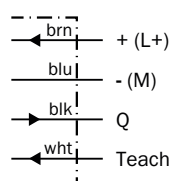
- ⑥ Indication of correct fibre-optic cable mounting
- ⑦ LED indicator orange: switching output active
- ⑧ LED signal strength indicator green, lights up, when light received < 0.9 or > 1.1 (switching threshold = 1)
- ⑨ Teach-in button
- ⑩ Operating mode selector switch: "SET" (Teach-in mode) / "RUN" (sensor mode)
- ⑪ L.ON/ d.ON selection switch. "OFF DLY" (on) / "OFF", 40 ms fixed
- ⑫ Selector switch: "L.ON" (light-switching) / "D.ON" (dark-switching)

**Cd-043**

**Cd-045**

**Cd-066**

**Cd-092**

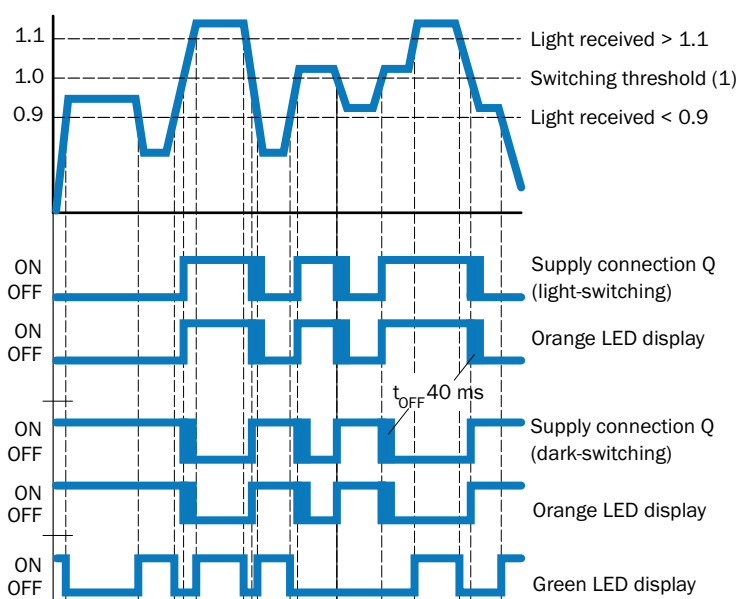
**Cd-093**

**WLL170T-2**

Operating mode selector switch in RUN mode  
(after setting the switching threshold by means  
of Teach-in.


**Orange LED display:** lights up if supply connection Q is active. Dependent on setting of light/dark-selector switch.

**Green LED display:** lights up if light received is  $< 0.9$  or  $> 1.1$  (based on the switching threshold  $Q$ , switching threshold = 1).



### Mounting brackets/plates





## Mounting brackets

Figure	Material	Description	Model name	Part no.
	Steel, zinc coated	Mounting bracket	BEF-WLL170	5306574





## Plug connectors and cables

## Connecting cable (female connector-open)



- Cable material: PVC
- Enclosure rating: IP 67, IP 69K

Figure	Connection type head A	Connection type head B	Connecting cable	Connector material	Model name	Part no.
	Female connector, M8, 3-pin, straight	Cable, open conductor heads	2 m, 3-wire	TPU	DOL-0803-G02M	6010785
			5 m, 3-wire	TPU	DOL-0803-G05M	6022009
	Female connector, M8, 3-pin, angled	Cable, open conductor heads	2 m, 3-wire	TPU	DOL-0803-W02M	6008489
			5 m, 3-wire	TPU	DOL-0803-W05M	6022010
	Female connector, M8, 4-pin, straight	Cable, open conductor heads	2 m, 4-wire	PVC	DOL-0804-G02M	6009870
			5 m, 4-wire	PVC	DOL-0804-G05M	6009872
	Female connector, M8, 4-pin, angled	Cable, open conductor heads	2 m, 4-wire	PVC	DOL-0804-W02M	6009871
			5 m, 4-wire	PVC	DOL-0804-W05M	6009873

## Female connector (ready to assemble)



Figure	Connection type head A	Connection type head B	Connector material	Description	Model name	Part no.
	Female connector, M8, 3-pin, straight	Screw-type terminals	PBT	IP 67	DOS-0803-G	7902077
	Female connector, M8, 3-pin, angled	Pin penetration	PBT	IP 67	DOS-0803-W	7902078
	Female connector, M8, 4-pin, straight	Screw-type terminals	PBT	IP 67	DOS-0804-G	6009974
	Female connector, M8, 4-pin, angled	Pin penetration	PBT	IP 67	DOS-0804-W	6009975

## Male connector (ready to assemble)

Figure	Connection type head A	Connection type head B	Connector material	Description	Model name	Part no.
	Male connector, M8, 3-pin, straight	Screw-type terminals	PBT	IP 67	STE-0803-G	6037322
	Male connector, M8, 4-pin, straight	Screw-type terminals	PBT	IP 67	STE-0804-G	6037323

## Other mounting accessories

### Others

Figure	Material	Description	Model name	Part no.
	Stainless steel	Rail end piece for block mounting	BF-EB01-W190	5313011
	Plastic	Cutter for fibers, supplied with LL3, 10 mm x 37 mm x 65 mm	FC	5304141

→ For additional accessories, please see page L-861