

High-performance fiber-optic sensor with
world's fastest response time



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Product description

The WLL180T fiber-optic photoelectric sensor family provides the world's fastest response time - only 16 μ s. In addition, it offers superior sensing distances of up to 20 m and its high light intensity delivers a reliable, high-powered solution – even in difficult ambient conditions, like dust, spray, mist, and water jets. Commissioning is simple – either via the external teach-in input or directly on the unit. Two, four-digit displays provide visualization of all programming

steps, status displays, plus target and actual values through an intuitive menu structure. The WLL180T sensors can be operated either as a stand-alone or in a bus configuration, depending on the requirements. In a bus configuration, several sensors are networked via an internal bus, enabling the settings on one WLL180T to be copied to all other devices on the bus. Fiber-optic amplifier cross-talk is prevented by the sensors' integrated anti-interference logic.

At a glance

- Selectable response time up to 16 μ s
- Sensing range up to 20 m (Through-beam system); up to 1400 mm (proximity system)
- Bus-compatible with anti-interference
- 2 x 4-digit display
- Adjustable hysteresis
- Rotatable display screen
- High-resolution signal processing
- Programmable time delays

Your benefits

- Reliable, rapid process detection, even under the most difficult ambient conditions, such as dust, spray or mist
- Easy commissioning and product changeover due to external teach-in
- Cross-talk is eliminated when utilizing bus configuration option
- Quick, easy setup and adjustment due to an intuitive operating menu
- Flexible parameter adjustment due to high-resolution signal processing. Hysteresis and time delays can be adapted to suit the application, e.g., when detecting tiny or transparent objects
- Easy-to-read display, even under difficult installation conditions

→ www.mysick.com/en/WLL180T

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

Sensor principle	Fiber-optic photoelectric sensor
Device type	Stand-alone/Base unit ¹⁾ /Expansion unit (depending on type)
Dimensions (W x H x D)	10.5 mm x 34.6 mm x 71.9 mm
Housing design (light emission)	Rectangular
Sensing range max. ²⁾	0 m ... 20 m, through-beam system ³⁾ (depending on type)
Sensing range	0 mm ... 1,400 mm, proximity system ^{4) 5)} 0 ... 18 m, through-beam system ³⁾ (depending on type)
Type of light	Visible red light / Infrared light (depending on type)
Light source ⁶⁾	LED
Angle of dispersion	Approx. 65°
Wave length	
Visible red light	650 nm
Infrared light	1,450 nm
Teach-in	Menu-controlled
Time type	Without time delay Time delay off Switch on delay ON and OFF delay One shot
Delay time	Programmable: 0 ms ... 9,999 ms
Indication	Display
Display	LED status display / 2x 4-character digital dual displays, Set value (green indicator) and actual value (red indicator) are displayed simultaneously, display of parameters

¹⁾ Up to 15 expansion units can be connected.

²⁾ Sensing range with 8 ms response time. Reduction with shorter response time (see tables LL3/WLL180T)

³⁾ LL3-TX01.

⁴⁾ Objects to be sensed with 90% reflectivity (based on DIN 5033 white standard). Sensing range with 8 ms response time. Reduction with shorter response time (see tables LL3/WLL180T)

⁵⁾ LL3-DK06.

⁶⁾ Average service life of 100,000 h at T_A = +25 °C.

Mechanics/electronics

Supply voltage ¹⁾	12 V DC ... 24 V DC
Ripple ²⁾	≤ 10 %
Power consumption ³⁾	≤ 50 mA
Output type	PNP, open collector/NPN, open collector (depending on type)
Switching mode	Light/dark-switching (manually selectable)
Output current I_{max.}	≤ 100 mA
Response time ⁴⁾	≤ 2 ms, ≤ 8 ms, ≤ 16 μs, ≤ 70 μs, ≤ 250 μs
Switching frequency	31.2 kHz, 7.1 kHz, 2 kHz, 250 Hz, 62.5 Hz
Connection type	Cable, 2 m ⁵⁾ /Male connector, M8 (depending on type)
Circuit protection	A ⁶⁾ , B ⁷⁾ , C ⁸⁾ , D ⁹⁾
Protection class	III

Housing material	ABS/PC
Enclosure rating ¹⁰⁾	IP 50
Ambient operating temperature	-25 °C ... +55 °C ¹¹⁾ (depending on type)
Ambient storage temperature	-40 °C ... +70 °C

¹⁾ +/- 10%.

²⁾ May not exceed or fall short of V_S tolerances.

³⁾ Without load.

⁴⁾ Selectable.

⁵⁾ Do not bend below 0 °C.

⁶⁾ A = V_S connections reverse-polarity protected.

⁷⁾ B = inputs and output reverse-polarity protected.

⁸⁾ C = interference suppression.

⁹⁾ D = outputs overcurrent and short-circuit protected.

¹⁰⁾ With correctly attached fibre-optic cable LL3 and closed protection hood.

¹¹⁾ Operating temperature fluctuates according to number of devices connected: 4–8 devices: -25 °C ... +50 °C (output current 50 mA) / 9–16 devices: -25 °C ... +45 °C (output current 20 mA)

Ordering information

Other models available at www.mysick.com/en/WLL180T

Stand-alone

- **Adjustment:** Teach-in buttoncable+/- increment button, manual

Type of light	Sensing range max. ¹⁾	Output type	Connection	Connection diagram	Model name	Part no.
Visible red light	0 m ... 20 m, through-beam system ²⁾	PNP	Cable, 4-wire, 2 m	Cd-136	WLL180T-P432	6039093
			Male connector, M8, 4-pin	Cd-134	WLL180T-P434	6039095
		NPN	Cable, 4-wire, 2 m	Cd-136	WLL180T-N432	6039094
			Male connector, M8, 4-pin	Cd-134	WLL180T-N434	6039096
Infrared light	0 mm ... 1,000 mm, through-beam system ³⁾	PNP	Male connector, M8, 4-pin	Cd-134	WLL180T-P474	6039618
		NPN	Male connector, M8, 4-pin	Cd-134	WLL180T-N474	6039619

¹⁾ Sensing range with 8 ms response time. Reduction with shorter response time (see tables LL3/WLL180T)

²⁾ LL3-TX01.

³⁾ LL3-TW01.

Base unit

- **Type of light:** visible red light
- **Adjustment:** Teach-in button, cable, manual +/- increment button
- **Sensing range max.:** 0 m ... 20 m, through-beam system (Sensing range with 8 ms response time. Reduction with shorter response time (see tables LL3/WLL180T)) (LL3-TX01.)

Output type	Connection	Connection diagram	Model name	Part no.
PNP	Cable, 4-wire, 2 m	Cd-138	WLL180T-M432	6039097
	Male connector, M8, 3-pin	Cd-045	WLL180T-M333	6042428
	Male connector, M8, 4-pin	Cd-140	WLL180T-M434	6039101
NPN	Cable, 4-wire, 2 m	Cd-138	WLL180T-L432	6039099
	Male connector, M8, 3-pin	Cd-045	WLL180T-L333	6049837
	Male connector, M8, 4-pin	Cd-140	WLL180T-L434	6039103
2 x PNP	Male connector, M8, 4-pin	Cd-213	WLL180T-M634	6050760

Expansion unit

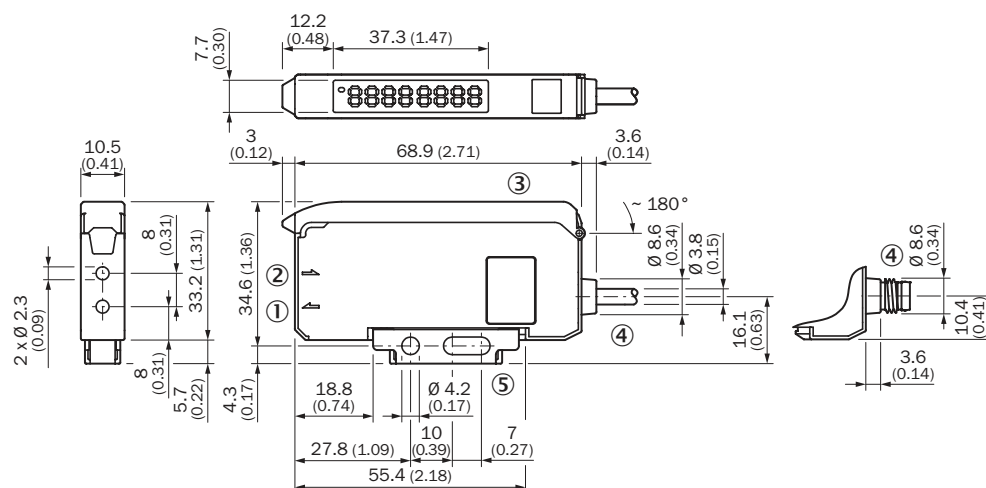
- **Type of light:** visible red light
- **Adjustment:** Teach-in button cable +/- increment button, manual
- **Sensing range max.:** 0 m ... 20 m, through-beam system (Sensing range with 8 ms response time. Reduction with shorter response time (see tables LL3/WLL180T)) (LL3-TX01.)

Output type	Connection	Connection diagram	Model name	Part no.
PNP	Cable, 2-wire, 2 m	Cd-138	WLL180T-F232	6039098
	Male connector, M8, 3-pin	Cd-045	WLL180T-F333	6042429
	Male connector, M8, 4-pin	Cd-140	WLL180T-F434	6039102
NPN	Cable, 2-wire, 2 m	Cd-138	WLL180T-E232	6039100
	Male connector, M8, 3-pin	Cd-045	WLL180T-E333	6049838
	Male connector, M8, 4-pin	Cd-140	WLL180T-E434	6039104
2 x NPN	Cable, 2-wire, 2 m	Cd-214	WLL180T-E632	6050763

Dimensional drawings

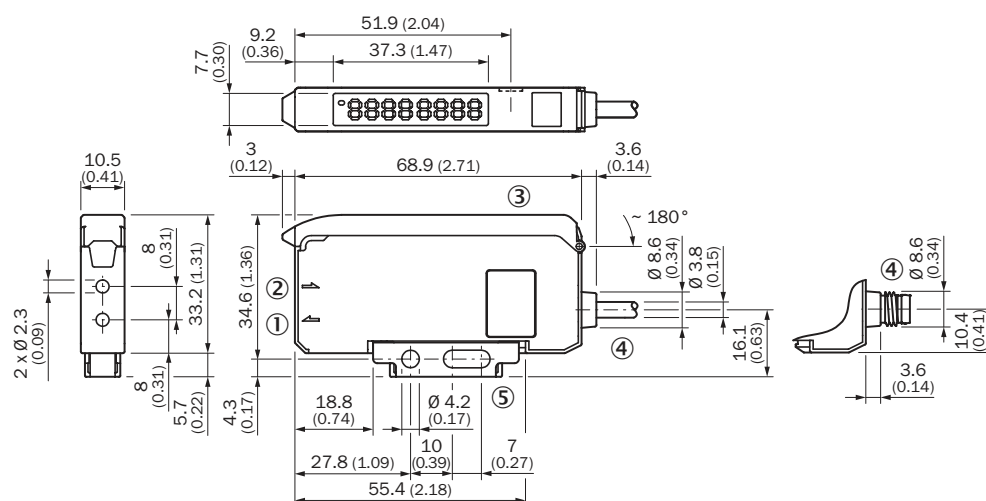
Dimensions in mm (inch)

Stand-alone



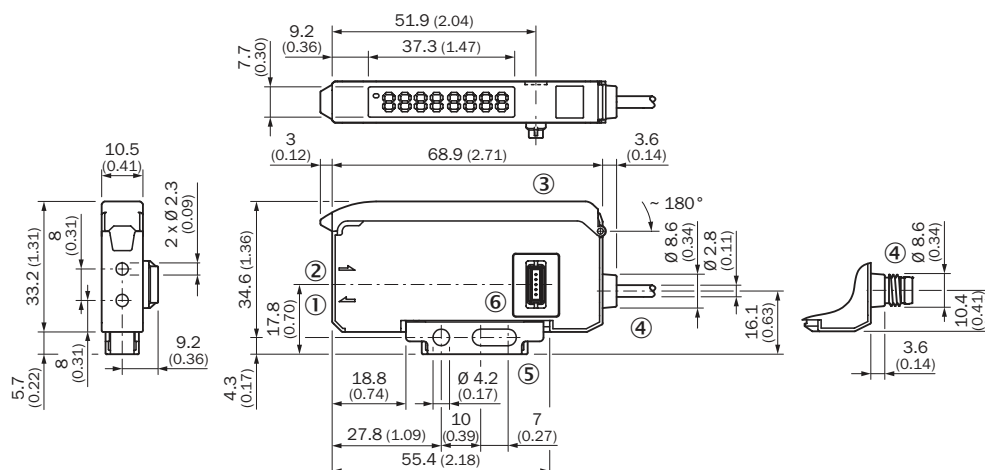
- ① Sender LED, installation of LL3 fibre-optic cable (sender fibre)
- ② Receiver, installation of LL3 fibre-optic cable (receiver fibre)
- ③ Protective hood, can be raised at both ends
- ④ Connection
- ⑤ Mounting bracket, included

Base unit



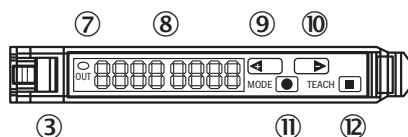
- ① Sender LED, installation of LL3 fibre-optic cable (sender fibre)
- ② Receiver, installation of LL3 fibre-optic cable (receiver fibre)
- ③ Protective hood, can be raised at both ends
- ④ Connection
- ⑤ Mounting bracket, included

Extension unit



- 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 Connection
- ⑤ Mounting bracket, included
- ⑥ Bus connector

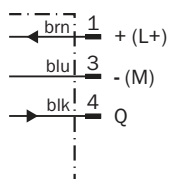
Adjustments



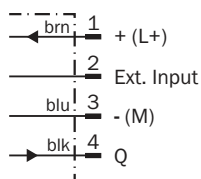
- ③ Locking the fiber-optic cables
- ⑦ LED indicator orange, lights up when switching output is active
- ⑧ Numeric display 2 x 4-digit; green: switching threshold, operating mode; red: actual value, Teach-in and function parameter
- ⑨ Step-button> (manual switching threshold: higher; or next function parameter)
- ⑩ Step-button< (manual switching threshold: lower; or previous function parameter)
- ⑪ Mode/Enter-button
- ⑫ Teach-in button

Connection diagram

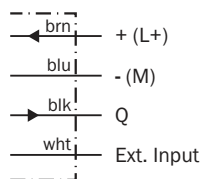
Cd-045



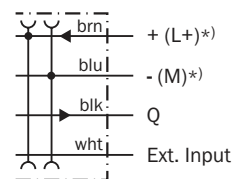
Cd-134



Cd-136

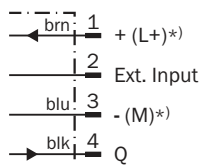


Cd-138



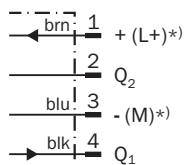
*) Only base unit

Cd-140



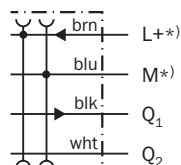
*) Only base unit

Cd-213



*) Only base unit

Cd-214




*) Only base unit

Recommended accessories

Mounting brackets/plates





Mounting brackets

Figure	Material	Description	Model name	Part no.
	Steel, zinc coated	Mounting bracket	BEF-WLL170	5306574
			BEF-WLL180	5325812

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

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