

Power, flexibility and reliability for long-range applications



AC/DC



Product description

The W2000 sensor family offers advanced features with application flexibility and long sensing ranges. Designed with an IP 67-rated housing and a watertight front window, the W2000 is ideal for harsh duty applications. The gasketed top cover can be easily opened to provide access to timing functions, sensitivity adjustments, and a light/dark switching mode. The W2000 family also features SICK's custom Application-Spe-

cific Integrated Circuit (ASIC). This superior technology eliminates crosstalk interference and provides immunity to ambient lighting. Three LED indicators provide easily identifiable power, signal and status information from any angle. The W2000 through-beam, retro-reflective and energetic proximity variants enable users to choose the version suited for their application needs.

At a glance

- Rugged, plastic housing
- Crosstalk and ambient light immunity
- Adjustable sensing range
- Signal strength indicator
- IP 67/NEMA 6 enclosure rating

Your benefits

- Application-Specific Integrated Circuit (ASIC) technology eliminates crosstalk interference and provides ambient light immunity, which reduces false detection of unwanted targets
- Rugged IP-67 rated housing withstands harsh duty applications, increasing the sensor lifetime
- Three LED indicators make it easy to install and troubleshoot
- Versatile mounting brackets and cable options simplify installation



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→ www.mysick.com/en/W2000

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.



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Detailed technical data

Features

	DC			AC/DC		
	WT2000	WL2000	WS/WE2000	WT2000	WL2000	WS/WE2000
Sensor principle	Photoelectric proximity sensor	Photoelectric retro-reflective sensor	Through-beam photoelectric sensor	Photoelectric proximity sensor	Photoelectric retro-reflective sensor	Through-beam photoelectric sensor
Dimensions (W x H x D)	45 mm x 73.7 mm x 48.6 mm					
Housing design (light emission)	Rectangular					
Sensing range max.	0 m ... 3.5 m ¹⁾	0 m ... 15 m ²⁾	0 m ... 50 m	0 m ... 3.5 m ¹⁾	0 m ... 15 m ²⁾	0 m ... 50 m
Sensing range	0 m ... 3.5 m ¹⁾	0 m ... 15 m ²⁾	0 m ... 50 m	0 m ... 3.5 m ¹⁾	0 m ... 15 m ²⁾	0 m ... 50 m
Type of light	Infrared light	Visible red light	Infrared light		Visible red light	Infrared light
Light source ³⁾	LED					
Light spot size (distance)	Ø 55 mm (2.5 m)	Ø 320 mm (14 m)		Ø 55 mm (2.5 m)	Ø 320 mm (14 m)	
Angle of dispersion	Approx. 1.3°		1.3°	Approx. 1.3°		1.3°
Wave length	Infrared light: 880 nm Visible red light: 660 nm					
Time type	Time delay off ⁴⁾ , Switch on delay ⁵⁾					

¹⁾ Object with 90 % reflectance (referred to standard white, DIN 5033)

²⁾ PL80A.

³⁾ Average service life of 100,000 h at T_A = +25 °C.

⁴⁾ Adjustable via Off delay selector switch.

⁵⁾ Adjustable via On delay selector switch.

Mechanics/electronics

	DC			AC/DC		
	WT2000	WL2000	WS/WE2000	WT2000	WL2000	WS/WE2000
Supply voltage ¹⁾	10 V DC ... 30 V DC			24 V AC/DC ... 240 V AC/DC		
Ripple ²⁾	≤ 5 V			-		
Power consumption ³⁾	≤ 80 mA			≤ 6 W		
Output type	PNP, NPN			Relay, electrically isolated		
Output function	Complementary, complementary			Change-over contacts		
Switching mode	Light/dark-switching (selectable via light/dark selector)					
Signal voltage PNP HIGH/LOW	Approx. VS - 2.0 V / 0 V			-		
Output current I_{max.}	100 mA			-		
Switching current (switching voltage)	-			3 A (265 V)		
Response time ⁴⁾	≤ 1 ms			≤ 10 ms		
Switching frequency	500 Hz			10 Hz		
Connection type	Cable, 2 m ⁵⁾ / Male connector (depending on type)					
Circuit protection	A ⁶⁾ , C ⁷⁾ , D ⁸⁾			-		
Protection class ⁹⁾	II					
Weight	5.3 oz, 150 g					
Polarisation filter	-	✓	-	-	✓	-
Alarm output	PNP			-		

	DC			AC/DC		
	WT2000	WL2000	WS/WE2000	WT2000	WL2000	WS/WE2000
Housing material	Glassfibre reinforced plastic					
Enclosure rating	IP 67, NEMA 6					
Ambient operating temperature	-13 °F ... 104 °F / -25 °C ... +40 °C					
Ambient storage temperature	-40 °F ... 158 °F / -40 °C ... +70 °C					

- ¹⁾ Limit values.
- ²⁾ May not exceed or fall short of V_s tolerances.
- ³⁾ Without load.
- ⁴⁾ Signal transit time with resistive load.
- ⁵⁾ Do not bend below 0 °C.
- ⁶⁾ A = V_s connections reverse-polarity protected.
- ⁷⁾ C = interference suppression.
- ⁸⁾ D = outputs overcurrent and short-circuit protected.
- ⁹⁾ Reference voltage: 50 V DC.

Ordering information

Other models available at www.mysick.com/en/W2000

WT2000, DC

- **Sensor principle:** Photoelectric proximity sensor
- **Type of light:** Infrared light
- **Light spot size (distance):** Ø 2.2 in (8.2 ft) / Ø 55 mm (2.5 m)
- **Output type:** PNP, NPN
- **Switching mode:** Light/dark-switching
- **Alarm output:** PNP

Sensing range max. ¹⁾	Time functions	Connection	Connection diagram	Model name	Part no.
0 ft ... 11.5 ft 0 m ... 3.5 m	-	Cable, 5-wire, 2 m, PVC	Cd-142	WT2000-B1102	7023056
		Connector M12, 4-pin	Cd-086	WT2000-B4100	7024001
		Connector M12, 5-pin	Cd-154	WT2000-B5100	7023059
	Time delay off ²⁾ Switch on delay ³⁾	Cable, 5-wire, 2 m, PVC	Cd-142	WT2000-B1122	7023058
		Connector M12, 5-pin	Cd-154	WT2000-B5120	7023061

- ¹⁾ Object with 90 % reflectance (referred to standard white, DIN 5033)
- ²⁾ Adjustable via Off delay selector switch.
- ³⁾ Adjustable via On delay selector switch.

WL2000, DC

- **Sensor principle:** Photoelectric retro-reflective sensor
- **Type of light:** visible red light
- **Light spot size (distance):** Ø 12.5 in (45.9 ft) / Ø 320 mm (14 m)
- **Output type:** PNP, NPN
- **Switching mode:** Light/dark-switching
- **Alarm output:** PNP

Sensing range max. ¹⁾	Time functions	Connection	Connection diagram	Model name	Part no.
0 ft ... 49 ft 0 m ... 15 m	-	Cable, 5-wire, 2 m, PVC	Cd-142	WL2000-B1302	7023044
		Connector M12, 4-pin	Cd-086	WL2000-B4300	7024002
		Connector M12, 5-pin	Cd-154	WL2000-B5300	7023047
	Time delay off ²⁾ Switch on delay ³⁾	Cable, 5-wire, 2 m, PVC	Cd-142	WL2000-B1322	7023046
		Connector M12, 5-pin	Cd-154	WL2000-B5320	7023049

- ¹⁾ PL80A.
- ²⁾ Adjustable via Off delay selector switch.
- ³⁾ Adjustable via On delay selector switch.

WS/WE2000, DC

- **Sensor principle:** Through-beam photoelectric sensor
- **Type of light:** Infrared light
- **Light spot size (distance):** 12.5 in (45.9 ft) / Ø 320 mm (14 m)
- **Output type:** PNP, NPN
- **Switching mode:** Light/dark-switching
- **Alarm output:** PNP

Sensing range max.	Time functions	Connection	Connection diagram	Model name	Part no.
0 ft ... 164 ft 0 m ... 50 m	-	Cable, 5-wire, 2 m, PVC	Cd-206	WS/WE2000-B1102	7025964
		Connector M12, 4-pin	Cd-215	WS/WE2000-B4100	7028604
		Connector M12, 5-pin	Cd-155	WS/WE2000-B5100	7025965
	Time delay off ¹⁾ Switch on delay ²⁾	Cable, 5-wire, 2 m, PVC	Cd-206	WS/WE2000-B1122	7025966
		Connector M12, 5-pin	Cd-155	WS/WE2000-B5120	7025967

¹⁾ Adjustable via Off delay selector switch.

²⁾ Adjustable via On delay selector switch.

WT2000, AC/DC

- **Sensor principle:** Photoelectric proximity sensor
- **Type of light:** Infrared light
- **Light spot size (distance):** Ø 2.2 in (8.2 ft) / Ø 55 mm (2.5 m)
- **Output type:** relay
- **Switching mode:** Light/dark-switching

Sensing range max. ¹⁾	Time functions	Connection	Connection diagram	Model name	Part no.
0 ft ... 11.5 ft 0 m ... 3.5 m	-	Cable, 5-wire, 2 m, PVC	Cd-165	WT2000-R1102	7023062
		Mini connector, 5-pin	Cd-171	WT2000-R5100	7023065
	Time delay off ²⁾ Switch on delay ³⁾	Cable, 5-wire, 2 m, PVC	Cd-165	WT2000-R1122	7023064
		Mini connector, 5-pin	Cd-171	WT2000-R5120	7023067

¹⁾ Object with 90 % reflectance (referred to standard white, DIN 5033)

²⁾ Adjustable via Off delay selector switch.

³⁾ Adjustable via On delay selector switch.

WL2000, AC/DC

- **Sensor principle:** Photoelectric retro-reflective sensor
- **Type of light:** visible red light
- **Light spot size (distance):** Ø 12.5 in (45.9 ft) / Ø 320 mm (14 m)
- **Output type:** relay
- **Switching mode:** Light/dark-switching

Sensing range max. ¹⁾	Time functions	Connection	Connection diagram	Model name	Part no.
0 ft ... 49 ft 0 m ... 15 m	-	Cable, 5-wire, 2 m, PVC	Cd-165	WL2000-R1302	7023050
		Mini connector, 5-pin	Cd-171	WL2000-R5300	7023053
	Time delay off ²⁾ Switch on delay ³⁾	Cable, 5-wire, 2 m, PVC	Cd-165	WL2000-R1322	7023052
		Mini connector, 5-pin	Cd-171	WL2000-R5320	7023055

¹⁾ PL80A.

²⁾ Adjustable via Off delay selector switch.

³⁾ Adjustable via On delay selector switch.

WS/WE2000, AC/DC

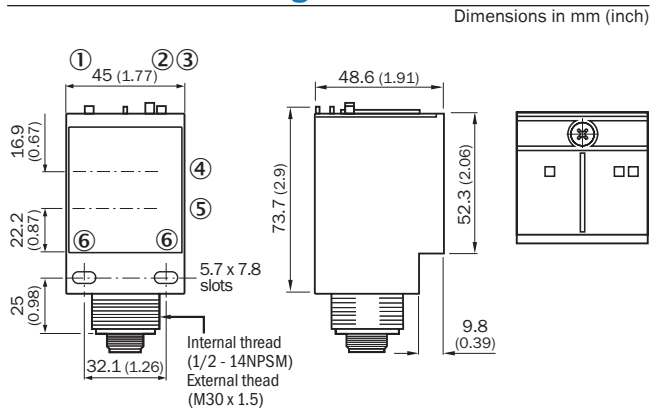
- **Sensor principle:** Through-beam photoelectric sensor
- **Type of light:** Infrared light
- **Light spot size (distance):** 12.5 in (45.9 ft) / Ø 320 mm (14 m)
- **Output type:** relay
- **Switching mode:** Light/dark-switching

Sensing range max.	Time functions	Connection	Connection diagram	Model name	Part no.
0 ft ... 164 ft 0 m ... 50 m	-	Cable, 5-wire, 2 m, PVC	Cd-046	WS/WE2000-R1102	7025968
		Mini connector, 5-pin	Cd-172	WS/WE2000-R5100	7025969
	Time delay off ¹⁾ Switch on delay ²⁾	Cable, 5-wire, 2 m, PVC	Cd-046	WS/WE2000-R1122	7025970
		Mini connector, 5-pin	Cd-172	WS/WE2000-R5120	7025971

¹⁾ Adjustable via Off delay selector switch.

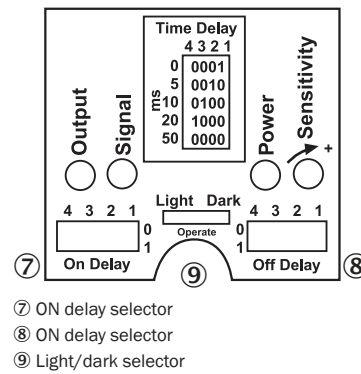
²⁾ Adjustable via On delay selector switch.

Dimensional drawing



- ① Status indicator LED green: power on
- ② Status indicator LED red: signal strength
- ③ Status indicator LED, yellow: Output active
- ④ Center of emitter optical axis
- ⑤ Center of receiver optical axis
- ⑥ Mounting hole Ø 0.2 mm x 0.8 mm

Adjustments



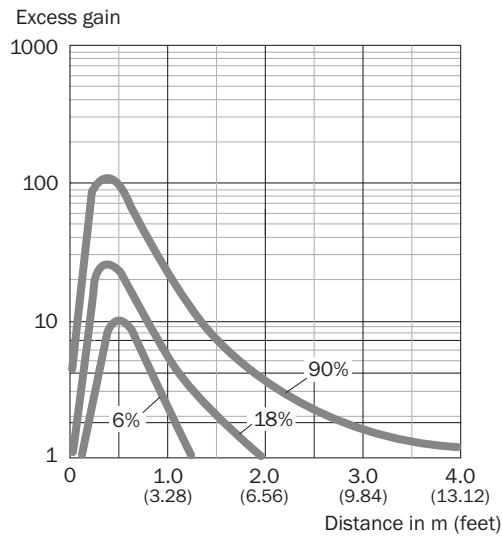
- ⑦ ON delay selector
- ⑧ ON delay selector
- ⑨ Light/dark selector



Characteristic curves

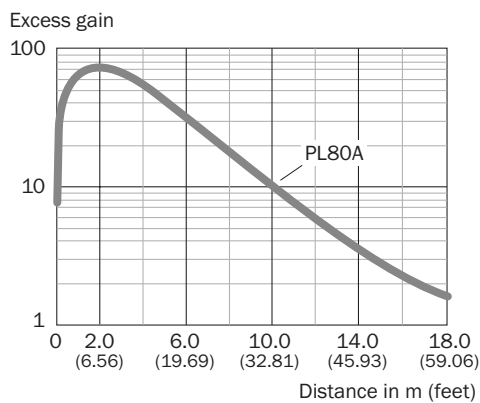
Black-white shift

WT2000

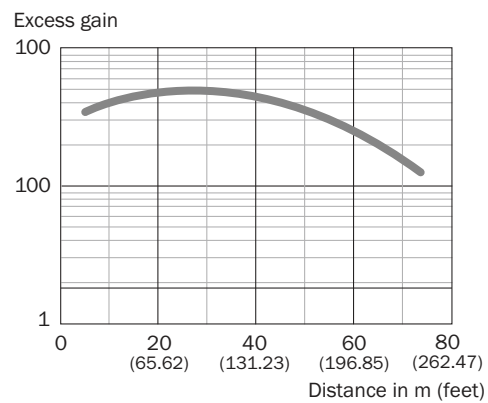


Operating range

WL2000

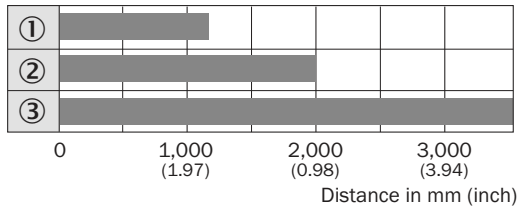


WS/WE2000



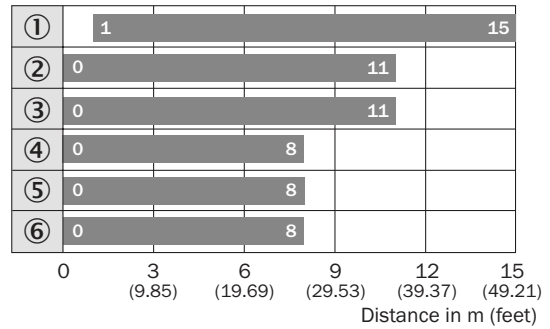
Bar diagrams

WT2000



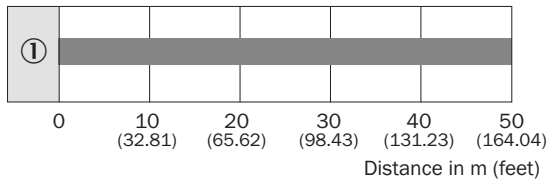
- Sensing range
- ① Sensing range on black, 6 % remission
- ② Sensing range on gray, 18 % remission
- ③ Sensing range on white, 90 % remission

WL2000



- Sensing range
- ① PL80A
- ② PL50A
- ③ PL40A
- ④ PL30A
- ⑤ PL20A
- ⑥ Reflective tape Diamond Grade

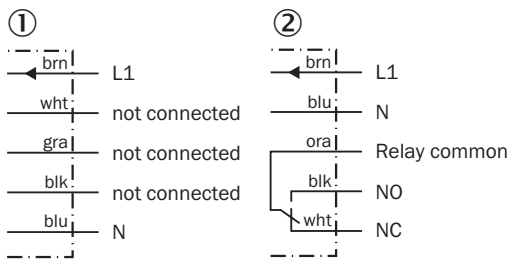
WS/WE2000



- Sensing range

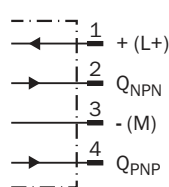
Connection diagram

Cd-046

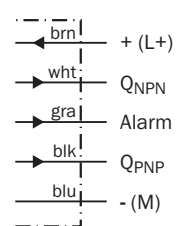


- ① Sender
- ② Receiver

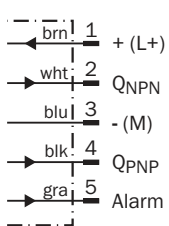
Cd-086



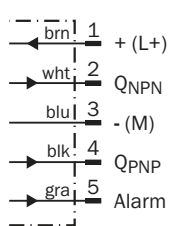
Cd-142



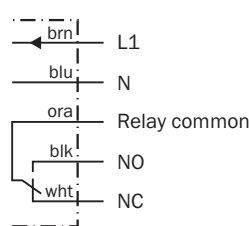
Cd-154



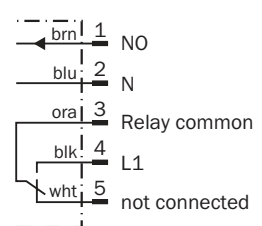
Cd-155



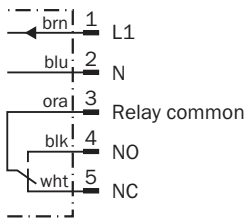
Cd-165



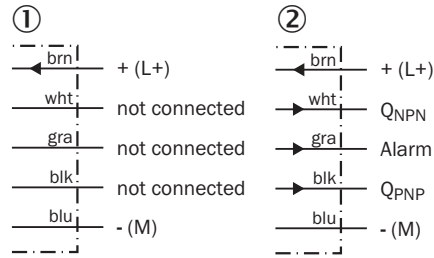
Cd-171



Cd-172

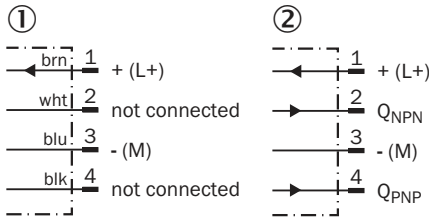


Cd-206



① Sender
② Receiver

Cd-215



① Sender
② Receiver

Recommended accessories

Plug connectors and cables

Connecting cable (female connector-open)

- Enclosure rating: IP 67





Figure	Connection type head A	Connection type head B	Cable length	Model name	Part no.
	Female connector, M12, 4-pin, straight	Cable	2 m	DOL-1204-G02M	6009382
			5 m	DOL-1204-G05M	6009866
	Female connector, M12, 4-pin, angled	Cable	2 m	DOL-1204-W02M	6009383
			5 m	DOL-1204-W05M	6009867




Reflectors

Angular


- **Description:** Rectangular, screw connection

Figure	Material	Dimensions	Model name	Part no.
	PMMA/ABS	47 mm x 47 mm	P250	5304812
		38 mm x 15 mm	PL20A	1012719
		56 mm x 28 mm	PL30A	1002314
		37 mm x 56 mm	PL40A	1012720
		80 mm x 80 mm	PL80A	1003865

Reflective tape

Figure	Description	Dimensions	Model name	Part no.
	Self-adhesive	50 mm x 60 mm	REF-IRF-56	5314244

Round

Figure	Description	Material	Diameter	Model name	Part no.
	Round, screw connection	PMMA/ABS	80 mm	C110A	5304549

→ For additional accessories, please see page L-861





A well-rounded package

No tools required: cylindrical sensors are easy to install and ready for operation in no time. With the broadest portfolio on the market, this sensor family offers total versatility. They are equipped with an innovative mounting system, short-body or standard housings in metal, INOX stainless steel, or plastic, in versions suitable for food and beverage, or with high-precision laser technology. The comprehensive range covers the entire application spectrum of modern photoelectric sensor technology. SICK's cylindrical sensors are simply designed for every area of application.

Your benefits

- The solution for economical challenges thanks to simple mounting, standardized connection technology and universal use
- Compatible due to standardized design in cylindrical housing, standardized connection system and electrical interfaces
- High operating reserves and access to new solutions due to large sensing ranges and similar system specifications for all variants
- Standard housing made of plastic, metal or stainless steel ensures durability in rough environmental conditions

