

GRL18-P2432 GR18

CYLINDRICAL PHOTOELECTRIC SENSORS





Ordering information

Туре	Part no.
GRL18-P2432	1066557

Other models and accessories → www.sick.com/GR18

Illustration may differ



Detailed technical data

Features

Functional principle	Photoelectric retro-reflective sensor
Functional principle detail	Dual lens
Dimensions (W x H x D)	18 mm x 18 mm x 73.5 mm
Housing design (light emission)	Cylindrical
Thread diameter (housing)	M18 x 1
Optical axis	Axial
Sensing range max.	0.03 m 7.2 m ¹⁾
Sensing range	0.06 m 6 m ¹⁾
Type of light	Visible red light
Light source	PinPoint LED ²⁾
Light spot size (distance)	Ø 175 mm (7 m)
Wave length	650 nm
Adjustment	Potentiometer
Indication	
LED green	Operating indicator Static on: power on
LED yellow	Status of received light beam Static on: object not present Static off: object present

¹⁾ Reflector PL80A.

 $^{^{2)}}$ Average service life: 100,000 h at T_{U} = +25 °C.

Mechanics/electronics

Supply voltage 10 V DC 30 V DC. 10 Ripple < 5 V pp. 20 Current consumption 30 mA Switching output PNP Output function Complementary Switching mode Light/dark switching Signal voltage PNP HIGH/LOW ∀ (≤ 3 V) / approx. 0 V Output current I _{max} ≤ 100 mA 20 Response time < 500 μs 40 Switching frequency 1,000 Hz 50 Connection type Male Generator M12, 4-pin Circuit protection B 70 ps. 20 B 70 ps. 20 B 70 ps. 20 Protection class III Housing material Metal, Nickel-plated brass and ABS Optics material Plastic, PMMA Enclosure rating IP67 Items supplied Fastening nuts (2 x) Electromagnetic compatibility (EMC) Ex 60947-5-2 Ambient operating temperature -25 °C +55 °C °0 Ambient temperature, storage -40 °C +70 °C UL File No. E348498	•	
Current consumption 30 mA Switching output PNP Output function Complementary Switching mode Light/dark switching Signal voltage PNP HIGH/LOW Vs - (≤ 3 V) / approx. 0 V Output current Imax. ≤ 100 mA ³) Response time < 500 µs ⁴) Switching frequency 1,000 Hz ⁵) Connection type Male connector M12, 4-pin Circuit protection A ⁶ B 7 / D ৪) B 7) D 8) Protection class III Housing material Metal, Nickel-plated brass and ABS Optics material Plastic, PMMA Enclosure rating IP67 Items supplied En 60947-5-2 Ambient operating temperature -25 ° C +55 ° C ° 9 Ambient temperature, storage -40 ° C +70 ° C	Supply voltage	10 V DC 30 V DC ¹⁾
Switching output Output function Complementary Switching mode Light/dark switching Signal voltage PNP HIGH/LOW Vs - (s 3 V) / approx. 0 V Output current Imax. Seponse time Switching frequency Light/dark switching Switching frequency Loonection type Male connector M12, 4-pin Circuit protection A 6 B 7 D 8 D 8 D 9 D 9 D 8 D 9 D 9 D 8 D 9 D 9 D 9 D 9 D 9 D 9 D 9 D 9 D 9 D 9	Ripple	< 5 V _{pp} ²⁾
Output function Complementary Switching mode Light/dark switching Signal voltage PNP HIGH/LOW V _S - (≤ 3 V) / approx. 0 V Output current I _{max} . ≤ 100 mA ³⁾ Response time < 500 μs ⁴⁾ Switching frequency 1,000 Hz ⁵⁾ Connection type Male connector M12, 4-pin Circuit protection A ⁶⁾ B ⁷⁾ D ⁸⁾ Protection class III Polarisation filter ✓ Housing material Metal, Nickel-plated brass and ABS Optics material Plastic, PMMA Enclosure rating IP67 Items supplied Fastening nuts (2 x) Electromagnetic compatibility (EMC) EN 60947-5-2 Ambient operating temperature -25 ° C +55 ° C °) Ambient temperature, storage -40 ° C +70 ° C	Current consumption	30 mA
Switching modeLight/dark switchingSignal voltage PNP HIGH/LOWV _S - (≤ 3 V) / approx. 0 VOutput current I _{max} .≤ 100 mA ³¹Response time< 500 μs ⁴¹	Switching output	PNP
Signal voltage PNP HIGH/LOW V _S - (≤ 3 V) / approx. 0 V Output current I _{max} . ≤ 100 mA ³⁾ Response time < 500 μs ⁴⁾ Switching frequency 1,000 Hz ⁵⁾ Connection type Male connector M12, 4-pin Circuit protection A ⁶⁾ B ⁷⁾ D ⁸⁾ Protection class III Polarisation filter ✓ Housing material Metal, Nickel-plated brass and ABS Optics material Plastic, PMMA Enclosure rating IP67 Items supplied Fastening nuts (2 x) Electromagnetic compatibility (EMC) EN 60947-5-2 Ambient operating temperature -25 °C +55 °C ⁹⁾ Ambient temperature, storage -40 °C +70 °C	Output function	Complementary
Output current I _{max} . ≤ 100 mA ³) Response time < 500 μs ⁴) Switching frequency 1,000 Hz ⁵) Connection type Male connector M12, 4-pin Circuit protection A ⁶) B ア) D శ) B ア) D 8) B ア) Polarisation filter ✓ Housing material Metal, Nickel-plated brass and ABS Optics material Plastic, PMMA Enclosure rating IP67 Items supplied Fastening nuts (2 x) Electromagnetic compatibility (EMC) EN 60947-5-2 Ambient operating temperature -25 ° C +55 ° C °) Ambient temperature, storage -40 ° C +70 ° C	Switching mode	Light/dark switching
Response time < 500 μs ⁴⁾ Switching frequency 1,000 Hz ⁵⁾ Connection type Male connector M12, 4-pin Circuit protection A ⁶ _D B ⁷⁾ _{D ⁸⁾} Protection class III Polarisation filter ✓ Housing material Metal, Nickel-plated brass and ABS Optics material Plastic, PMMA Enclosure rating IP67 Items supplied Fastening nuts (2 x) Electromagnetic compatibility (EMC) EN 60947-5-2 Ambient operating temperature -25 °C +55 °C ⁹⁾ Ambient temperature, storage -40 °C +70 °C	Signal voltage PNP HIGH/LOW	$V_S - (\le 3 \text{ V}) / \text{approx. 0 V}$
Switching frequency Connection type Male connector M12, 4-pin A 6 B 7 D 8 P 7 D 8 P 9 D 8 P P 9 D	Output current I _{max.}	\leq 100 mA $^{3)}$
Connection type Male connector M12, 4-pin A 6 B 7 D 8 Protection Protection class III Polarisation filter Housing material Metal, Nickel-plated brass and ABS Optics material Plastic, PMMA Enclosure rating IP67 Items supplied Fastening nuts (2 x) Electromagnetic compatibility (EMC) Ambient operating temperature -25 ° C +55 ° C 9 Ambient temperature, storage -40 ° C +70 ° C	Response time	< 500 µs ⁴⁾
Circuit protection A 6) B 7) D 8) Protection class III Polarisation filter Housing material Optics material Plastic, PMMA Enclosure rating Items supplied Fastening nuts (2 x) Electromagnetic compatibility (EMC) Ambient operating temperature -25 ° C +55 ° C 9) -40 ° C +70 ° C	Switching frequency	1,000 Hz ⁵⁾
B 7 D 8 D 8 D 8 D 8 D 8 D 8 D 8 D 8 D 8 D	Connection type	Male connector M12, 4-pin
Polarisation filter Housing material Metal, Nickel-plated brass and ABS Optics material Plastic, PMMA Enclosure rating IP67 Items supplied Fastening nuts (2 x) Electromagnetic compatibility (EMC) EN 60947-5-2 Ambient operating temperature −25 °C +55 °C 9) −40 °C +70 °C	Circuit protection	B ⁷⁾
Housing material Optics material Plastic, PMMA Enclosure rating IP67 Items supplied Fastening nuts (2 x) Electromagnetic compatibility (EMC) EN 60947-5-2 Ambient operating temperature -25 °C +55 °C °) -40 °C +70 °C	Protection class	III
Optics materialPlastic, PMMAEnclosure ratingIP67Items suppliedFastening nuts (2 x)Electromagnetic compatibility (EMC)EN 60947-5-2Ambient operating temperature-25 °C +55 °C °)Ambient temperature, storage-40 °C +70 °C	Polarisation filter	✓
Enclosure ratingIP67Items suppliedFastening nuts (2 x)Electromagnetic compatibility (EMC)EN 60947-5-2Ambient operating temperature-25 °C +55 °C 9)Ambient temperature, storage-40 °C +70 °C	Housing material	Metal, Nickel-plated brass and ABS
Items supplied Fastening nuts (2 x) Electromagnetic compatibility (EMC) EN 60947-5-2 Ambient operating temperature -25 °C +55 °C ⁹⁾ Ambient temperature, storage -40 °C +70 °C	Optics material	Plastic, PMMA
Electromagnetic compatibility (EMC) EN 60947-5-2 Ambient operating temperature -25 °C +55 °C ⁹⁾ -40 °C +70 °C	Enclosure rating	IP67
Ambient operating temperature $-25 ^{\circ}\text{C} \dots +55 ^{\circ}\text{C}^{9)}$ Ambient temperature, storage $-40 ^{\circ}\text{C} \dots +70 ^{\circ}\text{C}$	Items supplied	Fastening nuts (2 x)
Ambient temperature, storage -40 °C +70 °C	Electromagnetic compatibility (EMC)	EN 60947-5-2
. , ,	Ambient operating temperature	-25 °C +55 °C ⁹⁾
UL File No. E348498	Ambient temperature, storage	-40 °C +70 °C
	UL File No.	E348498

 $^{^{1)}}$ Limit values. Operated in short-circuit protected network: max. 8 A.

Classifications

eCl@ss 5.0	27270902
eCl@ss 5.1.4	27270902
eCl@ss 6.0	27270902
eCl@ss 6.2	27270902
eCl@ss 7.0	27270902
eCl@ss 8.0	27270902
eCl@ss 8.1	27270902
eCl@ss 9.0	27270902

 $^{^{2)}\,\}mathrm{May}$ not exceed or fall below U_{V} tolerances.

 $^{^{3)}}$ At Uv > 24 V or ambient temperature > 49 °C, IA max. = 50 mA.

 $^{^{4)}}$ Signal transit time with resistive load.

⁵⁾ With light/dark ratio 1:1.

 $^{^{6)}}$ A = V_S connections reverse-polarity protected.

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

 $^{^{8)}}$ D = outputs overcurrent and short-circuit protected.

 $^{^{9)}}$ At $\rm U_{v}$ <=24V and $\rm I_{A}{<}50mA.$

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CYLINDRICAL PHOTOELECTRIC SENSORS

eCl@ss 10.0	27270902
eCl@ss 11.0	27270902
eCl@ss 12.0	27270902
ETIM 5.0	EC002717
ETIM 6.0	EC002717
ETIM 7.0	EC002717
ETIM 8.0	EC002717
UNSPSC 16.0901	39121528

Connection diagram

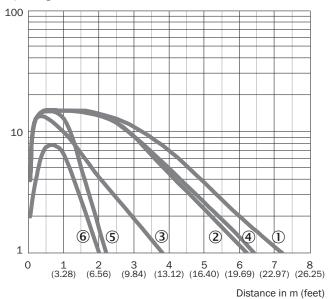
Cd-084

$$\begin{array}{c|c} & BN & 1 \\ \hline & BN & 2 \\ \hline & WH & 2 \\ \hline & BU & 3 \\ \hline & & -(M) \\ \hline & BK & 4 \\ \hline & Q \\ \hline \end{array}$$

Characteristic curve

GRL18S

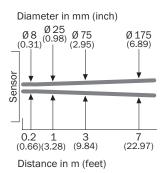
Operating reserve



- ① Reflector PL80A
- ② Reflector PL40A
- 3 Reflector PL20A
- ④ Reflector P250
- ⑤ Reflector PL22
- © Reflective tape REF-Plus 3436

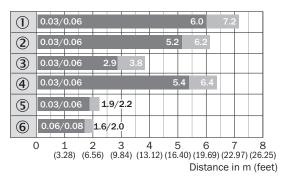
Light spot size

GRL18S



Sensing range diagram

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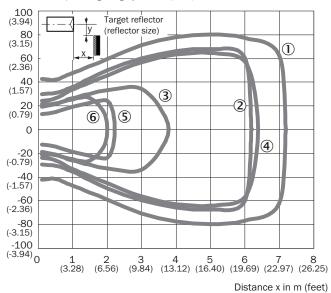


- Sensing range
- Sensing range max.
- ① Reflector PL80A
- ② Reflector PL40A
- 3 Reflector PL20A
- ④ Reflector P250
- ⑤ Reflector PL22
- ® Reflective tape REF-Plus 3436

Response range

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Parallel operating range y in mm (inch)



- ① Reflector PL80A
- ② Reflector PL40A
- 3 Reflector PL20A
- ④ Reflector P250
- ⑤ Reflector PL22
- ® Reflective tape REF-Plus 3436

Adjustments

GRL18(S), GRSE18(S), Sensitivity setting: Potentiometer, 270 $^{\circ}$

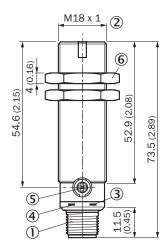


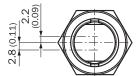




Dimensional drawing (Dimensions in mm (inch))

GRTE18, GRL18, GRSE18, metal, connector, straight





- ① Male connector M12, 4-pin
- ② Threaded mounting hole M18 x 1
- 3 LED indicator yellow
- 4 LED indicator green
- Sensitivity control: potentiometer 270°
- ⑤ Fastening nuts (2x); width across 24, metal

Recommended accessories

Other models and accessories → www.sick.com/GR18

	Brief description	Туре	Part no.
Mounting brackets and plates			
40	Mounting bracket for M18 sensors, steel, zinc coated, without mounting hardware	BEF-WN-M18	5308446
	Universal mounting bracket for reflectors, steel, zinc coated	BEF-WN-REFX	2064574
Plug connectors and cables			
P	Head A: female connector, M12, 4-pin, straight, A-coded Head B: Flying leads Cable: Sensor/actuator cable, PVC, unshielded, 5 m	YF2A14- 050VB3XLEAX	2096235
The state of the s	Head A: male connector, M12, 4-pin, straight Cable: unshielded	STE-1204-G	6009932

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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