

GRSE18S-N2421V

GR18

PHOTOELECTRIC SENSORS







Illustration may differ

Ordering information

Туре	part no.
GRSE18S-N2421V	1085766

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



Detailed technical data

Features

Functional principle	Through-beam photoelectric sensor
Dimensions (W x H x D)	18 mm x 18 mm x 55.9 mm
Housing design (light emission)	Cylindrical
Housing length	55.9 mm
Thread length	31.7 mm
Thread diameter (housing)	M18 x 1
Optical axis	Axial
Sensing range max.	0 m 15 m
Sensing range	0 m 10 m
Type of light	Infrared light
Light source	LED ¹⁾
Light spot size (distance)	Ø 420 mm (10 m)
Wave length	850 nm
Adjustment	None
Display	
LED green	Operating indicator Static on: power on
LED yellow	Status of received light beam Static on: object not present Static off: object present
Special applications	Hygienic and washdown zones

 $^{^{1)}}$ Average service life: 100,000 h at $\rm T_U$ = +25 $^{\circ}\rm C.$

Mechanics/electronics

Supply voltage U _B 10 ∨ DC 30 ∨ DC ¹⁾ Ripple < 5 ∨ _{pp} ²⁾ Current consumption 30 mA Switching output NPN Output function Complementary Switching mode Light/dark switching ⁵⁾ Signal voltage NPN HIGH/LOW Approx. V _S / ≤ 3 V Output current I _{max} . ≤ 100 mA ⁴⁾ Response time < 500 µs ⁵⁾ Switching frequency 1.000 Hz ⁶⁾ Connection type Male connector M12, 4-pin Circuit protection A ⁷⁾ B ⁸ B ⁸⁾ D ⁹⁾ Protection class III Weight 85 g Housing material Metal, Stainless steel V4A (1.4404, 316L) Optics material Plastic, PMMA Optics material Plostic, PMMA Inclosure rating IP67 IP68 ¹⁰⁾ IP69K ¹¹⁾ IP69K ¹¹⁾ IP69K ¹¹⁾ Items supplied Fastening nuts (4 x) Electromagnetic compatibility (EMC) Fastening nuts (4 x) Electromagnetic compatibility (EMC) Fender OFF at "Test" 0 V Ambient operating temperature -25 *C +55 *C ¹²⁾ Ambient temperature, storage <t< th=""><th></th><th></th></t<>		
Current consumption 30 mA Switching output NPN Output function Complementary Switching mode Light/dark switching ³¹ Signal voltage NPN HIGH/LOW Approx. V _S / ≤ 3 V Output current I _{max} . ≤ 100 mA ⁴¹ Response time < 500 μs ⁵¹ Switching frequency 1,000 Hz ⁶¹ Connection type Male connector M12, 4-pin Circuit protection A ⁻¹⟩ B ⁶¹ D ໑¹ Protection class III Weight 85 g Housing material Metal, Stainless steel V4A (1.4404, 316L) Optics material Plastic, PMMA Uptics material Plastic, PMMA Ingosure rating IP67 IP68 ¹¹¹¹⟩ IP68 ¹¹¹⟩ IP69 ¼¹¹¹ Items supplied Electromagnetic compatibility (EMC) EN 60947-5-2 Test input Sender OFF at *Test* 0 V Ambient operating temperature -25 ° C +55 ° C ¹²² Ambient temperature, storage -30 ° C +75 ° C UL File No.	Supply voltage U _B	10 V DC 30 V DC ¹⁾
Switching output NPN Output function Complementary Switching mode Light/dark switching 3) Signal voltage NPN HIGH/LOW Approx. $V_{5}/s = 3 \text{ V}$ Output current I_{max} . Response time $< 500 \mu \text{s}^{-5}$) Switching frequency 1.000Hz^{-6}) Connection type Male connector M12, 4-pin Circuit protection A^{7}_{B} $B^{(8)}_{D}$ $D^{(9)}$ Protection class III Weight 85 g Housing material Metal, Stainless steel V4A (1.4404, 316L) Optics material Plastic, PMMA Optics material Plastic, PMMA Tightening torque, max. 90 Nm Enclosure rating P67 $1968 ^{(1)}_{1969 \text{K}^{-11}}$ Items supplied Fastening nuts (4 x) Electromagnetic compatibility (EMC) EN 60947-5-2 Test input Sender OFF at "Test" 0 V Ambient operating temperature $-25 ^{\circ}\text{C} + 75 ^{\circ}\text{C}$ Ambient temperature, storage $-30 ^{\circ}\text{C} + 75 ^{\circ}\text{C}$ UL File No. NRKH.E348498 & NRKH7.E348498	Ripple	< 5 V _{pp} ²⁾
Output function Complementary Switching mode Light/dark switching ²⁾ Signal voltage NPN HIGH/LOW Approx. V _S / ≤ 3 V Output current I _{max} . ≤ 100 mA ⁴⁾ Response time < 500 µs ⁵⁾ Switching frequency 1,000 Hz ⁶⁾ Connection type Male connector M12, 4-pin Circuit protection A ⁷⁾ B ⁸⁾ D ⁹⁾ Protection class III Weight 85 g Housing material Metal, Stainless steel V4A (1.4404, 316L) Optics material Plastic, PMMA Tightening torque, max. 90 Nm Enclosure rating IP67 IP68 ¹⁰⁾ IP69K ¹¹⁾ IP69K ¹¹⁾ Items supplied Fastening nuts (4 x) Electromagnetic compatibility (EMC) EN 60947-5-2 Test input Sender OFF at "Test" 0 V Ambient operating temperature -25 °C +55 °C ¹²⁾ Ambient temperature, storage -30 °C +75 °C UL File No. NRKH.E38498 & NRKH7.E348498	Current consumption	30 mA
Switching mode Light/dark switching 5 Signal voltage NPN HIGH/LOW Approx. $V_{S} / \le 3 \text{ V}$ Output current I_{max} . $$ \le 100 \text{ mA}^{4}$) Response time $$ < 500 \text{ µs}^{5}$ } Switching frequency Li,000 Hz 6 } Connection type Male connector M12, 4-pin A 7 B 8 D 9) Protection class III Weight Housing material Optics material Optics material Plastic, PMMA Tightening torque, max. Pie67 IP68 10 IP69K 11 Items supplied Fastening nuts (4 x) Electromagnetic compatibility (EMC) Test input Ambient operating temperature Ambient temperature, storage UL File No. NRKH.E348498 & NRKH7.E348498	Switching output	NPN
Signal voltage NPN HIGH/LOW Approx. $V_S / \le 3 V$ Output current I_{max} . Response time $< 500 \mu s^{5}$ Switching frequency $1,000 Hz^{6}$ Connection type Male connector M12, 4-pin Circuit protection $A^{77}_{B}_{B}_{B}_{D}_{D}^{9}$ Protection class III Weight Housing material Optics material Optics material Plastic, PMMA Tightening torque, max. Pie67 $IP68^{10}_{D}_{D}_{D}_{B}_{B}_{D}_{D}_{D}_{B}_{B}_{D}_{D}_{B}_{B}_{D}_{D}_{B}_{B}_{B}_{D}_{D}_{B}_{B}_{B}_{D}_{D}_{B}_{B}_{B}_{D}_{D}_{B}_{B}_{B}_{D}_{D}_{B}_{B}_{B}_{B}_{D}_{D}_{B}_{B}_{B}_{B}_{D}_{D}_{B}_{B}_{B}_{B}_{B}_{D}_{B}_{B}_{B}_{B}_{B}_{B}_{B}_{D}_{B}_{B}_{B}_{B}_{B}_{B}_{B}_{B}_{B}_{B$	Output function	Complementary
Output current I _{max} . ≤ 100 mA ⁴⁾ Response time < 500 μs ⁵⁾ Switching frequency 1,000 Hz ⁶⁾ Connection type Male connector M12, 4-pin Circuit protection A ⁷⁾ B ⁸⁾ D ⁹⁾ Protection class III Weight 85 g Housing material Metal, Stainless steel V4A (1.4404, 316L) Optics material Plastic, PMMA Tightening torque, max. 90 Nm Enclosure rating IP67 IP68 ¹⁰⁾ IP69k ¹¹⁾ Items supplied Fastening nuts (4 x) Electromagnetic compatibility (EMC) EN 60947-5-2 Test input Sender OFF at *Test* 0 V Ambient operating temperature -25 °C +55 °C ¹²⁾ Ambient temperature, storage -30 °C +75 °C UL File No. NRKH.E348498 & NRKH7.E348498	Switching mode	Light/dark switching ³⁾
Switching frequency	Signal voltage NPN HIGH/LOW	Approx. $V_S / \leq 3 V$
Switching frequency	Output current I _{max.}	\leq 100 mA $^{4)}$
Connection type Male connector M12, 4-pin A 7) B 8) D 9) Protection class Weight Housing material Optics material Plastic, PMMA Tightening torque, max. Enclosure rating IP67 IP68 10) IP69K 111) Items supplied Fastening nuts (4 x) Electromagnetic compatibility (EMC) Test input Ambient operating temperature Ambient temperature, storage UL File No. Male connector M12, 4-pin Ale pin A 7) B 8 Nel A 10 Nel	Response time	< 500 μs ⁵⁾
Circuit protection A 7) B 8) D 9) Protection class Weight Housing material Optics material Plastic, PMMA Tightening torque, max. Enclosure rating IP67 IP68 10) IP69K 11) Items supplied Electromagnetic compatibility (EMC) Test input Ambient operating temperature -25 ° C +55 ° C 12) Ambient temperature, storage UL File No.	Switching frequency	1,000 Hz ⁶⁾
Protection class Weight Housing material Optics material Plastic, PMMA Tightening torque, max. Enclosure rating IP67 IP68 ¹⁰⁾ IP69K ¹¹⁾ Items supplied Electromagnetic compatibility (EMC) Test input Ambient operating temperature -25 °C +75 °C UL File No.	Connection type	Male connector M12, 4-pin
Weight Housing material Metal, Stainless steel V4A (1.4404, 316L) Optics material Plastic, PMMA 90 Nm IP67 IP68 10) IP69K 11) Items supplied Fastening nuts (4 x) Electromagnetic compatibility (EMC) Test input Ambient operating temperature -25 °C +55 °C 12) Ambient temperature, storage UL File No. Metal, Stainless steel V4A (1.4404, 316L) Plastic, PMMA 90 Nm IP67 IP68 10) IP69K 11) IP69K 11) IP69K 11) IP69K 12) IP69K 12) IP69K 12) IP69K 12) IP69K 12) IP69K 13) IP69K 14) IP69K 14) IP69K 14) IP69K 14) IP68 10)	Circuit protection	B ⁸⁾
Housing material Metal, Stainless steel V4A (1.4404, 316L) Optics material Plastic, PMMA 1 Tightening torque, max. 90 Nm Enclosure rating IP67 IP68 10) IP69K 11) Items supplied Fastening nuts (4 x) Electromagnetic compatibility (EMC) EN 60947-5-2 Test input Sender OFF at "Test" 0 V Ambient operating temperature -25 °C +55 °C 12) Ambient temperature, storage -30 °C +75 °C UL File No. NRKH.E348498 & NRKH7.E348498	Protection class	III
Optics material Plastic, PMMA 90 Nm IP67 IP68 10) IP69K 11) Items supplied Fastening nuts (4 x) Electromagnetic compatibility (EMC) Test input Sender OFF at "Test" 0 V Ambient operating temperature -25 °C +55 °C 12) Ambient temperature, storage UL File No.	Weight	85 g
Tightening torque, max. Enclosure rating IP67 IP68 10) IP69K 11) Items supplied Fastening nuts (4 x) Electromagnetic compatibility (EMC) Test input Sender OFF at "Test" 0 V Ambient operating temperature -25 °C +55 °C 12) Ambient temperature, storage UL File No. 90 Nm P67 IP68 10) IP69K 11) IP68 10) IP67 IP68 10) IP68 10) IP68 10) IP67 IP68 10) IP69K 11) IP68 10) IP68 1	Housing material	Metal, Stainless steel V4A (1.4404, 316L)
Enclosure rating IP67 IP68 10) IP69K 11) Items supplied Fastening nuts (4 x) Electromagnetic compatibility (EMC) EN 60947-5-2 Test input Sender OFF at "Test" 0 V Ambient operating temperature -25 °C +55 °C 12) Ambient temperature, storage UL File No. IP67 IP68 10) IP69K 11) EN 60947-5-2 EN 60947-5-2 Test "Test" 0 V -25 °C +75 °C NRKH.E348498 & NRKH7.E348498	Optics material	Plastic, PMMA
IP68 10) IP69K 11) Items supplied Fastening nuts (4 x) Electromagnetic compatibility (EMC) EN 60947-5-2 Test input Sender OFF at "Test" 0 V Ambient operating temperature -25 °C +55 °C 12) Ambient temperature, storage UL File No. NRKH.E348498 & NRKH7.E348498	Tightening torque, max.	90 Nm
Electromagnetic compatibility (EMC) Test input Sender OFF at "Test" 0 V Ambient operating temperature -25 °C +55 °C ¹²⁾ Ambient temperature, storage -30 °C +75 °C UL File No. NRKH.E348498 & NRKH7.E348498	Enclosure rating	IP68 ¹⁰⁾
Test input Sender OFF at "Test" 0 V $ -25 ^{\circ}\text{C} +55 ^{\circ}\text{C} ^{12)} $ Ambient temperature, storage $ -30 ^{\circ}\text{C} +75 ^{\circ}\text{C} $ UL File No. NRKH.E348498 & NRKH7.E348498	Items supplied	Fastening nuts (4 x)
Ambient operating temperature -25 °C +55 °C ¹²⁾ -30 °C +75 °C UL File No. NRKH.E348498 & NRKH7.E348498	Electromagnetic compatibility (EMC)	EN 60947-5-2
Ambient temperature, storage -30 °C +75 °C UL File No. NRKH.E348498 & NRKH7.E348498	Test input	
UL File No. NRKH.E348498 & NRKH7.E348498	Ambient operating temperature	-25 °C +55 °C ¹²⁾
	Ambient temperature, storage	-30 °C +75 °C
Part number of individual components 2091197 GRS18S-D2421V 2091200 GRE18S-N2411V	UL File No.	NRKH.E348498 & NRKH7.E348498
	Part number of individual components	2091197 GRS18S-D2421V 2091200 GRE18S-N2411V

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

Certificates

EU declaration of conformity	✓
------------------------------	---

 $^{^{2)}\,\}mbox{May}$ not fall below or exceed $\mbox{U}_{\mbox{\sc V}}$ tolerances.

 $^{^{3)}}$ Q = light switching; $\bar{\rm Q}$ = dark switching.

 $^{^{4)}}$ At Uv > 24 V or ambient temperature > 49 °C, IA max. = 50 mA.

⁵⁾ Signal transit time with resistive load.

⁶⁾ With light/dark ratio 1:1.

 $^{^{7)}}$ A = V_S connections reverse-polarity protected.

 $^{^{8)}}$ B = inputs and output reverse-polarity protected.

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

 $^{^{10)}}$ According to EN 60529 (10 m water depth / 24 h).

 $^{^{11)}}$ According to ISO 20653:2013-03.

 $^{^{12)}}$ At U_{V} <=24V and $\text{I}_{\text{A}}\!\!<\!\!50\text{mA}.$

GRSE18S-N2421V | GR18

PHOTOELECTRIC SENSORS

UK declaration of conformity	✓
ACMA declaration of conformity	✓
Moroccan declaration of conformity	✓
China RoHS	✓
ECOLAB certificate	✓
cULus certificate	✓
Photobiological safety (DIN EN 62471) certificate	≠

Classifications

ECLASS 5.0 27270901 ECLASS 6.0 27270901 ECLASS 6.0 27270901 ECLASS 6.2 27270901 ECLASS 7.0 27270901 ECLASS 8.0 27270901 ECLASS 8.1 27270901 ECLASS 9.0 27270901 ECLASS 9.0 27270901 ECLASS 10.0 27270901 ECLASS 11.0 27270901 ECLASS 11.0 27270901 ECLASS 11.0 27270901 ECLASS 12.0 27270901 ECLASS 12.0 27270901 ETIM 5.0 EC002716 ETIM 6.0 EC002716 ETIM 7.0 EC002716		
ECLASS 6.0 27270901 ECLASS 6.2 27270901 ECLASS 7.0 27270901 ECLASS 8.0 27270901 ECLASS 8.1 27270901 ECLASS 9.0 27270901 ECLASS 10.0 27270901 ECLASS 10.0 27270901 ECLASS 11.0 27270901 ECLASS 11.0 27270901 ECLASS 12.0 27270901 ETIM 5.0 EC002716 ETIM 6.0 EC002716 ETIM 7.0 EC002716 ETIM 8.0 EC002716	ECLASS 5.0	27270901
ECLASS 6.2 27270901 ECLASS 7.0 27270901 ECLASS 8.0 27270901 ECLASS 8.1 27270901 ECLASS 9.0 27270901 ECLASS 10.0 27270901 ECLASS 11.0 27270901 ECLASS 11.0 27270901 ECLASS 12.0 27270901 ETIM 5.0 EC002716 ETIM 6.0 EC002716 ETIM 7.0 EC002716 ETIM 8.0 EC002716	ECLASS 5.1.4	27270901
ECLASS 7.0 27270901 ECLASS 8.0 27270901 ECLASS 8.1 27270901 ECLASS 9.0 27270901 ECLASS 10.0 27270901 ECLASS 11.0 27270901 ECLASS 12.0 27270901 ETIM 5.0 EC002716 ETIM 6.0 EC002716 ETIM 7.0 EC002716 ETIM 8.0 EC002716	ECLASS 6.0	27270901
ECLASS 8.0 27270901 ECLASS 8.1 27270901 ECLASS 9.0 27270901 ECLASS 10.0 27270901 ECLASS 11.0 27270901 ECLASS 12.0 27270901 ETIM 5.0 EC002716 ETIM 6.0 EC002716 ETIM 7.0 EC002716 ETIM 8.0 EC002716	ECLASS 6.2	27270901
ECLASS 8.1 27270901 ECLASS 9.0 27270901 ECLASS 10.0 27270901 ECLASS 11.0 27270901 ECLASS 12.0 27270901 ETIM 5.0 EC002716 ETIM 6.0 EC002716 ETIM 7.0 EC002716 ETIM 8.0 EC002716	ECLASS 7.0	27270901
ECLASS 9.0 27270901 ECLASS 10.0 27270901 ECLASS 11.0 27270901 ECLASS 12.0 27270901 ETIM 5.0 EC002716 ETIM 6.0 EC002716 ETIM 7.0 EC002716 ETIM 8.0 EC002716	ECLASS 8.0	27270901
ECLASS 10.0 27270901 ECLASS 11.0 27270901 ECLASS 12.0 27270901 ETIM 5.0 EC002716 ETIM 6.0 EC002716 ETIM 7.0 EC002716 ETIM 8.0 EC002716	ECLASS 8.1	27270901
ECLASS 11.0 27270901 ECLASS 12.0 27270901 ETIM 5.0 EC002716 ETIM 6.0 EC002716 ETIM 7.0 EC002716 ETIM 8.0 EC002716	ECLASS 9.0	27270901
ECLASS 12.0 27270901 ETIM 5.0 EC002716 ETIM 6.0 EC002716 ETIM 7.0 EC002716 ETIM 8.0 EC002716	ECLASS 10.0	27270901
ETIM 5.0 EC002716 ETIM 6.0 EC002716 ETIM 7.0 EC002716 ETIM 8.0 EC002716	ECLASS 11.0	27270901
ETIM 6.0 EC002716 ETIM 7.0 EC002716 ETIM 8.0 EC002716	ECLASS 12.0	27270901
ETIM 7.0 EC002716 ETIM 8.0 EC002716	ETIM 5.0	EC002716
ETIM 8.0 EC002716	ETIM 6.0	EC002716
	ETIM 7.0	EC002716
	ETIM 8.0	EC002716
UNSPSC 16.0901 39121528	UNSPSC 16.0901	39121528

Connection diagram Cd-072

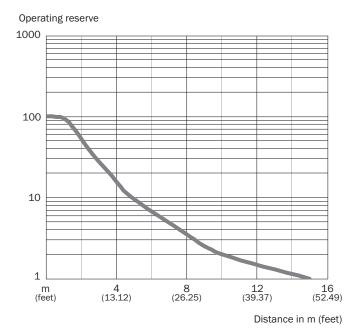
① ②
$$\frac{BN \cdot 1}{BN \cdot 1} + (L+)$$

$$\frac{BN \cdot 1}{BN \cdot 2} \text{ not connected}$$

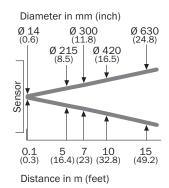
$$\frac{BU \cdot 3}{A} - (M)$$

$$\frac{BK \cdot 4}{A} \text{ Test}$$
① sender
② receiver

Characteristic curve GRSE18S



Light spot size GRSE18, infrared light

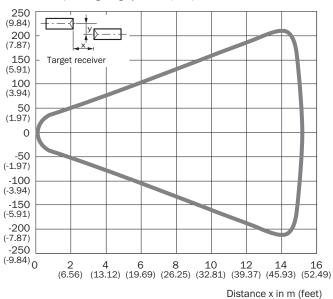


Sensing range diagram GRSE18S

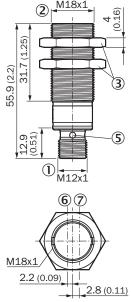


Response range GRSE18S

Parallel operating range y in mm (inch)



Dimensional drawing GR18S Inox, connector, straight



Dimensions in mm (inch)

- ① Connection
- ② Threaded mounting hole M18 x 1
- 3 fastening nuts (2 x); width across 24, stainless steel
- ⑤ LED indicator (4 x)
- 6 optical axis, receiver
- ⑦ optical axis, sender

Recommended accessories

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

	Brief description	Туре	part no.	
Mounting syst	Mounting systems			
40	Description: Mounting bracket for M18 sensors Material: Stainless steel Details: Stainless steel Items supplied: Without mounting hardware	BEF-WN-M18N	5320947	
connectors ar	nd cables			
	Connection type head A: Female connector, M12, 4-pin, straight Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 5 m, 4-wire, PVC Description: Sensor/actuator cable, unshielded Connection systems: Flying leads Note: This product is generally resistant to chemical cleaning agents (see ECOLAB). Please do not use cleaning agents of any other Kind., Not resistant against lactic acid & hydrogen peroxide (H2O2) Application: Hygienic and washdown zones	DOL-1204-G05MNI	6052615	
	Connection type head A: Female connector, M12, 4-pin, straight Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 5 m, 4-wire, PP Description: Sensor/actuator cable, unshielded Connection systems: Flying leads Note: This product is generally resistant to chemical cleaning agents (see ECOLAB) and other chemical compounds such as H202 and CH202. Before permanent installation is carried out, the material's resistance to the cleaning agent being used must be checked., Resistant against lactic acid & hydrogen peroxide (H202) Application: Hygienic and washdown zones, Drag chain operation	DOL-1204-G05MRN	6058476	

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."

WORLDWIDE PRESENCE:

Contacts and other locations -www.sick.com

