



VL18-4N3412 V18

**PHOTOELECTRIC SENSORS** 





## Ordering information

Туре	part no.
VL18-4N3412	6013576

Other models and accessories → www.sick.com/V18

Illustration may differ



#### Detailed technical data

#### **Features**

Functional principle	Photoelectric retro-reflective sensor
Dimensions (W x H x D)	18 mm x 18 mm x 60.6 mm
Housing design (light emission)	Cylindrical
Housing length	60.6 mm
Thread diameter (housing)	M18 x 1
Optical axis	Radial
Sensing range max.	0.05 m 3.7 m <sup>1)</sup>
Sensing range	0.05 m 3 m <sup>1)</sup>
Focus	Approx. 2.8°
Type of light	Visible red light
Light source	LED <sup>2)</sup>
Light spot size (distance)	Ø 150 mm (3 m)
Angle of dispersion	Approx. 2.8°
Adjustment	Potentiometer, 270° (Sensitivity)

<sup>1)</sup> Reflector C110A.

 $<sup>^{2)}</sup>$  Average service life: 100,000 h at TU = +25 °C.

#### Mechanics/electronics

Supply voltage Ua         10 ∨ DC 30 ∨ DC		
Current consumption       30 mA 3)         Switching output       NPN 4)         Switching mode       Light/dark switching 4)         Switching mode selector       Selectable via L/D control cable         Output current I <sub>max</sub> .       \$ 100 mA         Response time       \$ 2 ms 5)         Switching frequency       250 Hz 6)         Connection type       Cable, 4-wire, 2 m 7)         Cable material       Plastic, PVC         Conductor cross section       0.14 mm²         Cable diameter       Ø 5 mm         Circuit protection       A 8) B 9) C 10) D 11)         Protection class       III         Weight       120 g         Polarizing filter       ✓         Housing material       Metal, Nickel-plated brass         Optics material       Plastic, PMMA         Enclosure rating       Ple5 °C +70 °C	Supply voltage U <sub>B</sub>	10 V DC 30 V DC <sup>1)</sup>
Switching output  NPN 4)  Switching mode  Light/dark switching 4)  Switching mode selector  Output current I <sub>max.</sub> \$ 100 mA  Response time  \$ 2 ms 5)  Switching frequency  250 Hz 6)  Connection type  Cable, 4-wire, 2 m 7)  Cable material  Plastic, PVC  Conductor cross section  0.14 mm²  Cable diameter  Circuit protection  A 8) B 9) C 10) D 11)  Protection class  III  Weight  120 g  Polarizing filter  V  Housing material  Metal, Nickel-plated brass  Optics material  Plastic, PMMA  Enclosure rating  Ambient operating temperature  PS C +70 °C	Ripple	± 10 % <sup>2)</sup>
Switching mode       Light/dark switching ⁴¹         Switching mode selector       Selectable via L/D control cable         Output current I <sub>max</sub> .       ≤ 100 mA         Response time       ≤ 2 ms ⁵¹         Switching frequency       250 Hz ⁶¹         Connection type       Cable, 4-wire, 2 m ⁻¹¹         Cable material       Plastic, PVC         Conductor cross section       0.14 mm²         Cable diameter       Ø 5 mm         Circuit protection       A ⁶¹         B ໑¹       C ¹¹²         D ¹¹¹¹       D¹¹¹         Protection class       III         Weight       120 g         Polarizing filter       ✓         Housing material       Metal, Nickel-plated brass         Optics material       Plastic, PMMA         Enclosure rating       IP67         Ambient operating temperature       -25 °C +70 °C	Current consumption	30 mA <sup>3)</sup>
Switching mode selector  Output current I <sub>max</sub> .  Selectable via L/D control cable  ≤ 100 mA  Response time  ≤ 2 ms <sup>5)</sup> Switching frequency  250 Hz <sup>6)</sup> Connection type  Cable, 4-wire, 2 m <sup>7)</sup> Cable material  Plastic, PVC  Conductor cross section  0.14 mm²  Cable diameter  Circuit protection  A 8 B B 9 C 100 D 111  Protection class  III  Weight  Polarizing filter  Housing material  Optics material  Plastic, PMMA  Enclosure rating  Amblent operating temperature  Selectable via L/D control cable  ≤ 100 mA  A 100 mA  Polarizon (able diameter)  Selectable via L/D control cable  Selectable via L/D control cable	Switching output	NPN <sup>4)</sup>
Output current I <sub>max.</sub> ≤ 100 mA         Response time       ≤ 2 ms 5)         Switching frequency       250 Hz 6)         Connection type       Cable, 4-wire, 2 m 7)         Cable material       Plastic, PVC         Conductor cross section       0.14 mm²         Cable diameter       Ø 5 mm         Circuit protection       A 8) B 9) C 10) D 11)         C 100 D 111)       III         Weight       120 g         Polarizing filter       ✓         Housing material       Metal, Nickel-plated brass         Optics material       Plastic, PMMA         Enclosure rating       IP67         Ambient operating temperature       -25 ° C +70 ° C	Switching mode	Light/dark switching <sup>4)</sup>
Response time ≤ 2 ms 5)   Switching frequency 250 Hz 6)   Connection type Cable, 4-wire, 2 m 7)   Cable material Plastic, PVC   Conductor cross section 0.14 mm²   Cable diameter Ø 5 mm   Circuit protection A 8) B 9) C 10) D 11)   Protection class III   Weight 120 g   Polarizing filter ✓   Housing material Metal, Nickel-plated brass   Optics material Plastic, PMMA   Enclosure rating IP67   Ambient operating temperature -25 °C +70 °C	Switching mode selector	Selectable via L/D control cable
Switching frequency  Connection type  Cable, 4-wire, 2 m <sup>7)</sup> Cable material  Plastic, PVC  Conductor cross section  Circuit protection  A <sup>8)</sup> B <sup>9)</sup> C <sup>10)</sup> C <sup>10)</sup> C <sup>10)</sup> C <sup>11)</sup> Protection class  III  Weight  Polarizing filter  Housing material  Optics material  Optics material  Aei  Plastic, PMMA  Piestic, PMMA  Piestic, PMMA  Amblent operating temperature  250 Hz e <sup>6)</sup> Cable, 4-wire, 2 m <sup>7)</sup> Plastic, PMMA  Plastic, PMMA  Plastic, PMMA  Amblent operating temperature	Output current I <sub>max.</sub>	≤ 100 mA
Connection type Cable, 4-wire, 2 m 7) Cable material Plastic, PVC  Conductor cross section 0.14 mm² Cable diameter Ø 5 mm  Circuit protection A 8) B 9) C 10) D 11)  Protection class III  Weight 120 g  Polarizing filter  Housing material Metal, Nickel-plated brass  Optics material Plastic, PMMA  Enclosure rating Ambient operating temperature  Cable, 4-wire, 2 m 7)  Relatic, PVC  1.4 mm²  8 mm  8 mm  8 mm  9 mm  1.4 mm  1.5 mm  1.7 mm	Response time	≤ 2 ms <sup>5)</sup>
Cable material  Conductor cross section  Cable diameter  Circuit protection  A  B  B  B  C  C  C  C  C  C  C  C  C  C	Switching frequency	250 Hz <sup>6)</sup>
Conductor cross section  Cable diameter  Circuit protection  B 9 C 10 C 10 C 11  Protection class  III  Weight  Polarizing filter  Housing material  Optics material  Plastic, PMMA  Enclosure rating  Ambient operating temperature  O 14 mm²  A 89 B 9) C 10) C	Connection type	Cable, 4-wire, 2 m <sup>7)</sup>
Cable diameter  Circuit protection  A 8 B 9 C 10) D 11)  Protection class  III  Weight  Polarizing filter  Housing material  Optics material  Plastic, PMMA  Enclosure rating  Ambient operating temperature  Ø 5 mm  Ø 5 mm  Ø 5 mm  Meximal substance of the polarizance of the pola	Cable material	Plastic, PVC
Circuit protection  A 8) B 9) C 10) D 11)  Protection class  III  Weight  120 g  Polarizing filter  Housing material  Metal, Nickel-plated brass  Optics material  Plastic, PMMA  Enclosure rating  Ambient operating temperature  A 8) B 9) C 100 D 111  A 80 B 9) C 100 D 111  A 80 B 9) C 100 D 111  A 80 B 9) C 100 D 111 B 9 B 9 B 9 C 100 D 111 B 9 B 9 B 9 B 9 B 9 B 9 B 9 B 9 B 9 B 9	Conductor cross section	0.14 mm <sup>2</sup>
B 9 C 100 D 11)  Protection class  III  Weight  Polarizing filter  Housing material  Optics material  Polatics material  Polatics material  Polatics material  Polatics material  Polatics pMMA  Enclosure rating  Ambient operating temperature  B 9 C 100 D 100	Cable diameter	Ø 5 mm
Weight 120 g  Polarizing filter  Housing material Metal, Nickel-plated brass  Optics material Plastic, PMMA  Enclosure rating IP67  Ambient operating temperature 120 g  120 g  Metal, Nickel-plated brass  Plastic, PMMA  Plastic, PMMA  Plastic, PMMA  Por C	Circuit protection	B <sup>9)</sup> C <sup>10)</sup>
Polarizing filter  Housing material  Metal, Nickel-plated brass  Optics material  Plastic, PMMA  IP67  Ambient operating temperature  ✓  ✓  Metal, Nickel-plated brass  Plastic, PMMA  IP67  -25 °C +70 °C	Protection class	III
Housing material  Optics material  Plastic, PMMA  Enclosure rating  IP67  Ambient operating temperature  Plastic, PMMA  -25 °C +70 °C	Weight	120 g
Optics materialPlastic, PMMAEnclosure ratingIP67Ambient operating temperature-25 °C +70 °C	Polarizing filter	✓
Enclosure rating IP67 Ambient operating temperature -25 °C +70 °C	Housing material	Metal, Nickel-plated brass
Ambient operating temperature -25 °C +70 °C	Optics material	Plastic, PMMA
	Enclosure rating	
UL File No. NMFT2.E175606	Ambient operating temperature	-25 °C +70 °C
	UL File No.	NMFT2.E175606

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

#### Certificates

EU declaration of conformity	✓
UK declaration of conformity	✓
ACMA declaration of conformity	✓
Moroccan declaration of conformity	✓
China RoHS	✓

<sup>&</sup>lt;sup>2)</sup> May not fall below or exceed U<sub>V</sub> tolerances.

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

<sup>4)</sup> Control wire open: light switching L.ON.

<sup>5)</sup> Signal transit time with resistive load.

<sup>6)</sup> With light/dark ratio 1:1.

<sup>7)</sup> Do not bend below 0 °C.

 $<sup>^{8)}</sup>$  A = V<sub>S</sub> connections reverse-polarity protected.

 $<sup>^{9)}</sup>$  B = inputs and output reverse-polarity protected.

 $<sup>^{10)}</sup>$  C = interference suppression.

 $<sup>^{11)}</sup>$  D = outputs overcurrent and short-circuit protected.

# VL18-4N3412 | V18 PHOTOELECTRIC SENSORS

cRUus certificate	<b>✓</b>
Classifications	
ECLASS 5.0	27270902
ECLASS 5.1.4	27270902
ECLASS 6.0	27270902
ECLASS 6.2	27270902
ECLASS 7.0	27270902
ECLASS 8.0	27270902
ECLASS 8.1	27270902
ECLASS 9.0	27270902
ECLASS 10.0	27270902
ECLASS 11.0	27270902
ECLASS 12.0	27270902
ETIM 5.0	EC002717
ETIM 6.0	EC002717
ETIM 7.0	EC002717
ETIM 8.0	EC002717
UNSPSC 16.0901	39121528

# Adjustments

 $\Theta$ 

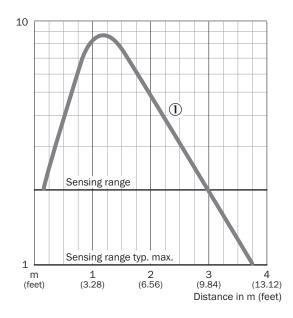
# Connection type



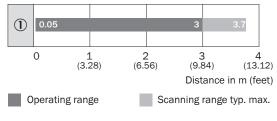
## Connection diagram Cd-089



#### Characteristic curve

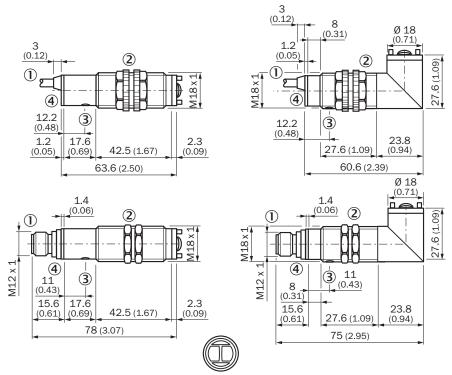


# Sensing range diagram



① Reflector type C110

#### **Dimensional drawing**



Dimensions in mm (inch)

- ① Connecting cable or connector
- ② Fastening nut, 22 mm hex, made of plastic for equipment with plastic housing
- ② Fastening nut, 24 mm hex, made of metal for equipment with metal housing
- 3 sensitivity control
- (4) Signal strength indicator, LED, yellow

#### Recommended accessories

Other models and accessories → www.sick.com/V18

	Brief description	Туре	part no.
Mounting syst	ems		
40	<ul> <li>Description: Mounting bracket for M18 sensors</li> <li>Material: Steel</li> <li>Details: Steel, zinc coated</li> <li>Items supplied: Without mounting hardware</li> <li>Suitable for: GR18, V180-2, V18, W15, Z1, Z2</li> </ul>	BEF-WN-M18	5308446
0 A 10	<ul> <li>Description: Universal mounting bracket for reflectors</li> <li>Dimensions (W x H x L): 85 mm x 90 mm x 35 mm</li> <li>Material: Steel</li> <li>Details: Steel, zinc coated</li> <li>Suitable for: C110A, P250, PL20, PL30A, PL40A, PL80A</li> </ul>	BEF-WN-REFX	2064574

	Brief description	Туре	part no.
connectors a	nd cables		
	Connection type head A: Male connector, M12, 4-pin, straight, A-coded     Description: Unshielded     Connection systems: Screw-type terminals     Permitted cross-section: ≤ 0.75 mm²	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."

# **WORLDWIDE PRESENCE:**

Contacts and other locations -www.sick.com

