

CMB18-12NPPEW2SA00

CAPACITIVE PROXIMITY SENSORS





Ordering information

Туре	Part no.
CMB18-12NPPEW2SA00	6080639

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

Illustration may differ



Detailed technical data

Features

Housing	Cylindrical thread design
Thread size	M18 x 1
Diameter	Ø 18 mm
Sensing range S _n	0 mm 12 mm
Safe sensing range S _a	9.18 mm ¹⁾
Installation type	Non-flush
Switching frequency	50 Hz
Connection type	Cable, 4-wire, 2 m ²⁾
Switching output	PNP
Output function	Complementary
Output characteristic	Wire configurable
Electrical wiring	DC 4-wire
Adjustment	Potentiometer, 11 turns (Sensitivity) Teach-in by wire (Sensitivity) IO-Link (Sensor parameters and Smart Task functions)
Enclosure rating	IP67 IP68 ³⁾ IP69K
Special features	Visual adjustment indicator, Smart Task, IO-Link
Pin 2 configuration	External input, Teach-in, switching signal
Items supplied	Mounting nut, PA12 plastic (2x)

 $^{^{1)}}$ For flush mounting in electrically conductive materials Sa = 0.8 x Sr at temperatures <0 °C and >60 °C.

 $^{^{2)}}$ Do not bend below 0 $^{\circ}\text{C}.$

 $^{^{3)}}$ 1 m water depth / 60 min.

Screwdriver for potentiometer adjustment (1 x)

Mechanics/electronics

Ripple \$10 % ¹⁾ Voltage drop \$2.5 V DC ²⁾ Current consumption \$2.0 mA ³⁾ Time delay before availability \$300 ms Hysteresis \$3% 20 % Reproducibility \$5 % ^{4) 5)} Temperature drift (of \$,) \$\div 10 % EMC \$EN 61000.42 ESD: > 40 kV CD and AD EN 61000.43 Radiated RF: 20 V/m EN 61000.44 burst: +7 k kV / 5 kHz EN 61000.45 Surge: Voltage supply > 2 kV with 500 ohm; switching output > 2 kV with 500 ohm; EN 61000.45 Surge: Voltage supply > 2 kV with 500 ohm; switching output > 2 kV with 500 ohm EN 61000.48 mains frequency magnetic fields: Permanent > 60 A/m, 75.9 \(\pi \) tesla; briefly > 600 A/m, 759 \(\pi \) tesla Continuous current I _a \$200 mA Cable material \$PVC\$ Conductor size \$0.34 mm²\$ Cable diameter \$0.52 mm Short-circuit protection \$\frac{1}{2}\$ Reverse polarity protection \$\frac{1}{2}\$ FN 60068-2-27 shock resistance Ea: 30 g 11 ms; 3 shocks in each direction of the 3 coordinate axes are axes are axes are EC 60068-2-31 drop test: 2 times from 1 m, 100 times from 0.5 m EN 60068-2-6 vibration resistance Fo: 10 Hz 150 Hz, 1 mm / 15 g Ambient operating temperature \$-30 \(^2 \) C +85 \(^2 \) \$C Housing material Plastic, PBT Housing length \$86 mm	Supply voltage	10 V DC 36 V DC
Voltage drop ≤ 2.5 V DC ²² Current consumption ≤ 20 mA ³³ Time delay before availability ≤ 300 ms Hysteresis 3% 20 % Reproducibility ≤ 5 % ⁴¹ ⁵¹ Temperature drift (of S₁) ± 10 % EMC EN 61000-4.2 ESD: > 40 kV CD and AD EN 61000-4.3 Radiated RF: 20 V/m EN 61000-4.4 burst: +/- 4 kV / 5 kHz EN 61000-4.4 burst: +/- 4 kV / 5 kHz EN 61000-4.5 Surge: Voltage supply > 2 kV with 500 ohm; switching output > 2 kV with 500 ohm; switching output > 2 kV with 500 ohm; EN 61000-4.8 mains frequency magnetic fields: Permanent > 60 A/m, 75,9 μ tesla; briefly > 600 A/m, 759 μ tesla Continuous current I₂ ≤ 200 mA Cable material PVC Conductor size 0.34 mm² Cable diameter Ø 5.2 mm Short-circuit protection ✓ Reverse polarity protection ✓ Power-up pulse protection ✓ Shock and vibration resistance EN 60068-2-27 shock resistance Ea: 30 g 11 ms; 3 shocks in each direction of the 3 coordinate axes IEC 60068-2-31 drop test: 2 times from 1 m, 100 times from 0.5 m EN 60068-2 evibration resistance Fc: 10 Hz 150 Hz, 1 mm / 15 g Ambient operating temperature -30 °C +85 °C °E) Housing material Plastic, PBT Housing length <th></th> <th></th>		
Current consumption S 20 mA 3 Time delay before availability S 300 ms Reproducibility S 5 % 49 15) Temperature drift (of S₁) EMC EN 61000-4.2 ESD; > 40 kV CD and AD EN 61000-4.3 Radiated RF: 20 V/m EN 61000-4.4 Surge: Voltage supply > 2 kV with 500 ohm; switching output > 2 kV with EN 61000-4.5 Surge: Voltage supply > 2 kV with 500 ohm; switching output > 2 kV with 500 ohm EN 61000-4.6 HF: > 20 V/ms EN 61000-4.8 mains frequency magnetic fields: Permanent > 60 A/m, 75,9 µ tesla; briefly > 600 A/m, 759 µ tesla Continuous current I₂ Cable material PVC Conductor size Cable diameter Short-circuit protection Feverse polarity protection Power-up pulse protection FN 60068-2.27 shock resistance Ea: 30 g 11 ms; 3 shocks in each direction of the 3 coordinate axes IEC 60068-2.31 drop test: 2 times from 1 m, 100 times from 0.5 m EN 60068-2.6 vibration resistance Fc: 10 Hz 150 Hz, 1 mm / 15 g Ambient operating temperature -30 °C +85 °C Housing material Plastic, PBT Housing length	Ripple	≤ 10 % ¹⁾
Time delay before availability Hysteresis 3 % 20 % Reproducibility 5 5 % 41 51 Temperature drift (of S ₁) EMC EN 61000-4-2 ESD; > 40 kV CD and AD EN 61000-4-3 Radiated RF; 20 V/m EN 61000-4-4 burst: +/- 4 kV / 5 kHz EN 61000-4-5 burge: Voltage supply > 2 kV with 500 ohm; switching output > 2 kV with 500 ohm EN 61000-4-6 HF; > 20 V _{rms} EN 61000-4-6 HF; > 20 V _{rms} EN 61000-4-8 mains frequency magnetic fields: Permanent > 60 A/m, 75,9 µ tesla; briefly > 600 A/m, 759 µ tesla Continuous current I _a 2 200 mA Cable material PVC Conductor size Cable diameter \$\text{\$0.34 \text{ mm}^2\$}\$ Cable diameter \$\text{\$0.52 \text{ mm}\$}\$ Short-circuit protection Power-up pulse protection Feverse polarity protection Shock and vibration resistance EN 60068-2-27 shock resistance Ea: 30 g 11 ms; 3 shocks in each direction of the 3 coordinate axes EC 60068-2-31 drop test: 2 times from 1 m, 100 times from 0.5 m EN 60068-2-6 vibration resistance Fc: 10 Hz 150 Hz, 1 mm / 15 g Ambient operating temperature -30 °C +85 °C 60 Housing material Housing length 86 mm	Voltage drop	\leq 2.5 V DC $^{2)}$
Reproducibility	Current consumption	\leq 20 mA $^{3)}$
Reproducibility Temperature drift (of S₁) EMC EN 61000-4-2 ESD: > 40 kV CD and AD EN 61000-4-3 Radiated RF: 20 V/m EN 61000-4-4 burst: +/- + kV / 5 kHz EN 61000-4-5 Surge: Voltage supply > 2 kV with 500 ohm; switching output > 2 kV with 500 ohm EN 61000-4-6 HF: > 20 V/ms EN 61000-4-8 mains frequency magnetic fields: Permanent > 60 A/m, 75.9 μ tesla; briefly > 600 A/m, 759 μ tesla Continuous current Ia ≤ 200 mA Cable material PVC Conductor size Cable diameter Ø 5.2 mm Short-circuit protection ✓ Power-up pulse protection FN 60068-2-27 shock resistance Ea: 30 g 11 ms; 3 shocks in each direction of the 3 coordinate axes IEC 60068-2-31 drop test: 2 times from 1 m, 100 times from 0.5 m EN 60068-2-3 drop test: 2 times from 1 m, 100 times from 0.5 m EN 60068-2-6 vibration resistance FC: 10 Hz 150 Hz, 1 mm / 15 g Ambient operating temperature -30 °C +85 °C Housing material Plastic, PBT Housing length EN 6006	Time delay before availability	≤ 300 ms
## 10 % EMC EN 61000-4-2 ESD: > 40 kV CD and AD EN 61000-4-3 Radiated RF: 20 V/m EN 61000-4-4 Burst: +/- 4 kV / 5 kHz EN 61000-4-4 burst: +/- 4 kV / 5 kHz EN 61000-4-5 Surge: Voltage supply > 2 kV with 500 ohm; switching output > 2 kV with 500 ohm EN 61000-4-8 mains frequency magnetic fields: Permanent > 60 A/m, 75,9 μ tesla; briefly > 600 A/m, 759 μ tesla Continuous current Ia Conductor size Conductor size Cable diameter 9 5.2 mm Short-circuit protection Reverse polarity protection Fower-up pulse protection Fower-up pulse protection Fower-up pulse protection EN 60068-2-27 shock resistance Ea: 30 g 11 ms; 3 shocks in each direction of the 3 coordinate axes IEC 60068-2-31 drop test: 2 times from 1 m, 100 times from 0.5 m EN 60068-2-6 vibration resistance Fc: 10 Hz 150 Hz, 1 mm / 15 g Ambient operating temperature Ambient temperature, storage Housing material Housing length ### 1000-4-8 ESD: > 40 kV CD and AD EN 61000-4-2 ESD: > 40 kV CD and AD EN 61000-4-5 Rivity / 5 kHz EN 61000-4-5 Surge: Voltage supply > 2 kV with 500 ohm; switching output > 2 kV with 500	Hysteresis	3 % 20 %
EMC EN 61000-4-2 ESD: > 40 kV CD and AD EN 61000-4-3 Radiated RF: 20 V/m EN 61000-4-5 Surge: Voltage supply > 2 kV with 500 ohm; switching output > 2 kV with 500 ohm EN 61000-4-6 HF: > 20 V _{rms} EN 61000-4-5 Surge: Voltage supply > 2 kV with 500 ohm; switching output > 2 kV with 500 ohm EN 61000-4-8 mains frequency magnetic fields: Permanent > 60 A/m, 75,9 μ tesla; briefly > 600 A/m, 759 μ tesla Continuous current I _a ≤ 200 mA PVC Conductor size 0.34 mm² Cable diameter Ø 5.2 mm Short-circuit protection V Shock and vibration resistance EN 60068-2-27 shock resistance Ea: 30 g 11 ms; 3 shocks in each direction of the 3 coordinate axes IEC 60068-2-31 drop test: 2 times from 1 m, 100 times from 0.5 m EN 60068-2-3 vibration resistance Fc: 10 Hz 150 Hz, 1 mm / 15 g Ambient operating temperature -30 °C +85 °C 6 Housing material Housing length EN 600mb.	Reproducibility	≤ 5 % ^{4) 5)}
EN 61000-4-3 Radiated RF: 20 V/m EN 61000-4-4 burst: +/- 4 kV / 5 kHz EN 61000-4-5 Surge: Voltage supply > 2 kV with 500 ohm; switching output > 2 kV with 500 ohm EN 61000-4-6 HF: > 20 V _{rms} EN 61000-4-8 mains frequency magnetic fields: Permanent > 60 A/m, 75,9 μ tesla; briefly > 600 A/m, 759 μ tesla Continuous current I _a ≤ 200 mA Cable material PVC Conductor size O.34 mm² Short-circuit protection Feverse polarity protection Feverse polarity protection Fin 60068-2-27 shock resistance Ea: 30 g 11 ms; 3 shocks in each direction of the 3 coordinate axes EN 60068-2-31 drop test: 2 times from 1 m, 100 times from 0.5 m EN 60068-2-6 vibration resistance Fc: 10 Hz 150 Hz, 1 mm / 15 g Ambient operating temperature -30 °C +85 °C Housing material Housing length EN 60068-2-80 mm	Temperature drift (of S _r)	± 10 %
Cable material Conductor size 0.34 mm² Cable diameter Ø 5.2 mm Short-circuit protection Reverse polarity protection ✓ Power-up pulse protection Shock and vibration resistance EN 60068-2-27 shock resistance Ea: 30 g 11 ms; 3 shocks in each direction of the 3 coordinate axes IEC 60068-2-31 drop test: 2 times from 1 m, 100 times from 0.5 m EN 60068-2-6 vibration resistance Fc: 10 Hz 150 Hz, 1 mm / 15 g Ambient operating temperature -30 °C +85 °C ⁶⁾ Ambient temperature, storage Housing material Plastic, PBT Housing length	EMC	EN 61000-4-3 Radiated RF: 20 V/m EN 61000-4-4 burst: +/- 4 kV / 5 kHz EN 61000-4-5 Surge: Voltage supply > 2 kV with 500 ohm; switching output > 2 kV with 500 ohm EN 61000-4-6 HF: > 20 V _{rms} EN 61000-4-8 mains frequency magnetic fields: Permanent > 60 A/m, 75,9 μ tesla; briefly
Conductor size 0.34 mm² 0.34 mm² 0.34 mm² 0.34 mm² Nort-circuit protection Reverse polarity protection Fower-up pulse protection Shock and vibration resistance EN 60068-2-27 shock resistance Ea: 30 g 11 ms; 3 shocks in each direction of the 3 coordinate axes IEC 60068-2-31 drop test: 2 times from 1 m, 100 times from 0.5 m EN 60068-2-6 vibration resistance Fc: 10 Hz 150 Hz, 1 mm / 15 g Ambient operating temperature -30 °C +85 °C 6 Ambient temperature, storage Housing material Plastic, PBT 86 mm	Continuous current I _a	≤ 200 mA
Cable diameter Ø 5.2 mm Short-circuit protection Reverse polarity protection ✓ Power-up pulse protection Shock and vibration resistance EN 60068-2-27 shock resistance Ea: 30 g 11 ms; 3 shocks in each direction of the 3 coordinate axes IEC 60068-2-31 drop test: 2 times from 1 m, 100 times from 0.5 m EN 60068-2-6 vibration resistance Fc: 10 Hz 150 Hz, 1 mm / 15 g Ambient operating temperature -30 °C +85 °C 6) Ambient temperature, storage Housing material Housing length Ø 5.2 mm Ø 5.2 mm	Cable material	PVC
Short-circuit protection Reverse polarity protection Power-up pulse protection Shock and vibration resistance EN 60068-2-27 shock resistance Ea: 30 g 11 ms; 3 shocks in each direction of the 3 coordinate axes IEC 60068-2-31 drop test: 2 times from 1 m, 100 times from 0.5 m EN 60068-2-6 vibration resistance Fc: 10 Hz 150 Hz, 1 mm / 15 g Ambient operating temperature -30 °C +85 °C Housing material Housing length Plastic, PBT 86 mm	Conductor size	0.34 mm ²
Reverse polarity protection Power-up pulse protection EN 60068-2-27 shock resistance Ea: 30 g 11 ms; 3 shocks in each direction of the 3 coordinate axes IEC 60068-2-31 drop test: 2 times from 1 m, 100 times from 0.5 m EN 60068-2-6 vibration resistance Fc: 10 Hz 150 Hz, 1 mm / 15 g Ambient operating temperature -30 °C +85 °C ⁶⁾ Ambient temperature, storage Housing material Housing length Plastic, PBT 86 mm	Cable diameter	Ø 5.2 mm
Power-up pulse protection Shock and vibration resistance EN 60068-2-27 shock resistance Ea: 30 g 11 ms; 3 shocks in each direction of the 3 coordinate axes IEC 60068-2-31 drop test: 2 times from 1 m, 100 times from 0.5 m EN 60068-2-6 vibration resistance Fc: 10 Hz 150 Hz, 1 mm / 15 g Ambient operating temperature −30 °C +85 °C ⁶⁾ Ambient temperature, storage −40 °C +85 °C Housing material Housing length 86 mm	Short-circuit protection	✓
Shock and vibration resistance EN 60068-2-27 shock resistance Ea: 30 g 11 ms; 3 shocks in each direction of the 3 coordinate axes IEC 60068-2-31 drop test: 2 times from 1 m, 100 times from 0.5 m EN 60068-2-6 vibration resistance Fc: 10 Hz 150 Hz, 1 mm / 15 g Ambient operating temperature -30 °C +85 °C ⁶⁾ Ambient temperature, storage Housing material Plastic, PBT 86 mm	Reverse polarity protection	✓
nate axes IEC 60068-2-31 drop test: 2 times from 1 m, 100 times from 0.5 m EN 60068-2-6 vibration resistance Fc: 10 Hz 150 Hz, 1 mm / 15 g Ambient operating temperature -30 °C +85 °C ⁶⁾ Ambient temperature, storage -40 °C +85 °C Housing material Plastic, PBT 86 mm	Power-up pulse protection	✓
Ambient temperature, storage -40 °C +85 °C Housing material Plastic, PBT Housing length 86 mm	Shock and vibration resistance	IEC 60068-2-31 drop test: 2 times from 1 m, 100 times from 0.5 m
Housing material Plastic, PBT Housing length 86 mm	Ambient operating temperature	−30 °C +85 °C ⁶⁾
Housing length 86 mm	Ambient temperature, storage	-40 °C +85 °C
	Housing material	Plastic, PBT
Thread length 47 mm	Housing length	86 mm
Throad longer	Thread length	47 mm
Tightening torque, max. ≤ 2.6 Nm	Tightening torque, max.	≤ 2.6 Nm
UL File No. NRKH.E191603	UL File No.	NRKH.E191603

¹⁾ Of Ub.

 $^{^{1)}}$ For flush mounting in electrically conductive materials Sa = 0.8 x Sr at temperatures <0 °C and >60 °C.

²⁾ Do not bend below 0 °C.

 $^{^{\}rm 3)}\,1\,\text{m}$ water depth / 60 min.

 $^{^{2)}}$ At I $_{\rm a}$ max.

³⁾ Without load.

⁴⁾ Of Sr.

⁵⁾ Supply voltage Ub and constant ambient temperature Ta.

 $^{^{6)}}$ +120 °C short time, at the front of the sensor.

Safety-related parameters

MTTF _D	916 years
DC _{avg}	0%
T _M (mission time)	20 years

Communication interface

Communication interface	IO-Link V1.1
Communication Interface detail	COM2 (38,4 kBaud)
Cycle time	> 5 ms
Process data length	4 Byte
Process data structure	Bit 0 = switching signal Q_{L1} Bit 1 = switching signal Q_{L2} Bit 2 = Sensor switching channel Qint1 Bit 3 = Sensor switching channel Qint2 Bit 4 = Contamination alarm for switching channel Qint1 Bit 5 = Contamination channel for Qint2 Bit 6 = Temperature alarm Bit 7 = Short-circuit Bit 16 31 = Analog value (digit value, not linearized)

Reduction factors

Note	The values are reference values which may vary
Metal	1
Water	1
PVC	Approx. 0.4
Oil	Approx. 0.25
Glass	0.6
Ceramics	0.5
Alcohol	0.7
Wood	0.2 0.7

Installation note

Remark	Associated graphic see "Installation"
A	18 mm
В	36 mm
c	18 mm
D	36 mm
E	8 mm
F	36 mm

Smart Task

Smart Task name	Base logics
Logic function	Direct AND OR Window Hysteresis
Timer function	Deactivated On delay Off delay ON and OFF delay

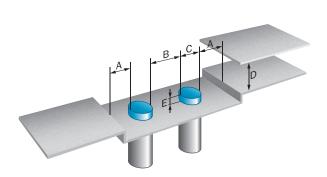
	Impulse (one shot)
Inverter	Yes
Switching signal	
Switching signal Q _{L1}	Switching output
Switching signal Q _{L2}	Switching output

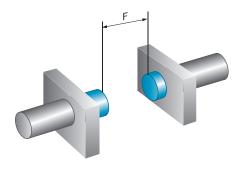
Classifications

eCl@ss 5.0	27270102
eCl@ss 5.1.4	27270102
eCl@ss 6.0	27270102
eCl@ss 6.2	27270102
eCl@ss 7.0	27270102
eCl@ss 8.0	27270102
eCl@ss 8.1	27270102
eCl@ss 9.0	27270102
eCl@ss 10.0	27270102
eCl@ss 11.0	27270102
eCl@ss 12.0	27274201
ETIM 5.0	EC002715
ETIM 6.0	EC002715
ETIM 7.0	EC002715
ETIM 8.0	EC002715
UNSPSC 16.0901	39122230

Installation note

Non-flush installation





Connection diagram

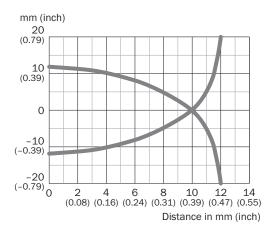
Cd-525



Q_{L1}/C = Switching output, IO-Link communication MF = Multifunction

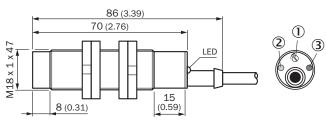
Response diagram

CMB18, Non-flush installation



Dimensional drawing (Dimensions in mm (inch))

CMB18, non-flush, cable



- ① Potentiometer for sensitivity adjustment
- ② LED yellow: output active
- 3 LED green: operating indicator

Recommended accessories

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

	Brief description	Туре	Part no.	
Connection m	Connection modules			
	IO-Link V1.1 Class A port, USB2.0 port, optional external power supply 24V $/$ 1A	IOLA2US-01101 (SiLink2 Master)	1061790	
Mounting bra	ckets and plates			
نازنا	Mounting plate for M18 sensors, steel, zinc coated, without mounting hardware	BEF-WG-M18	5321870	
40	Mounting bracket for M18 sensors, steel, zinc coated, without mounting hardware	BEF-WN-M18	5308446	
Plug connecto	ors and cables			
Wis.	Head A: male connector, M12, 4-pin, straight Cable: unshielded	STE-1204-G	6009932	
Sensor Integration Gateway				
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Further functions: Web server integrated, USB connection for easy configuration of the SIG200 Sensor Integration Gateway with SOPAS ET, the engineering tool from SICK, logic editor is available for easy configuration of logic functions Connection CONFIG: 1 x M8, 4-pin female connector, USB 2.0 (USB-A) Logic editor: yes Communication interface: IO-Link, USB, Ethernet, PROFINET, REST API Product category: IO-Link Master	SIG200-0A0412200	1089794	

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:

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