TRIED-AND-TESTED OVER MANY YEARS: SENSORS FOR OBJECT DETECTION AND FILL LEVEL DETECTION

CM capacitive proximity sensors – Redefining well-rounded

Capacitive proximity sensors can detect all powdery, granulated, liquid, and solid materials – even through plastic or glass walls.

The CM product family with metric housing offers extremely high electromagnetic compatibility (EMC), which prevents switching errors. The CM18 PTFE can be used in areas with high levels of chemical contaminants. What's more, PTFE is a harmless material which conforms to FDA regulations, meaning it can safely be used in the food industry.

For sensors in the CM product family, sensitivity adjustment can be performed quickly and easily using a potentiometer or teach-in button, saving valuable time during commissioning. Sensors installed in inaccessible locations can be equipped with an external, cabled teach-in button.

The CM capacitive proximity sensors are characterized by high shock and vibration resistance, and minimal sensitivity to dust and moisture. Together with optical adjustment indicators, these features ensure reliable object detection, in turn ensuring reduced machine downtime.

Want to know what is hidden behind a surface, such as a wall or cover? Or what is inside in a storage container or shipping container? CM capacitive proximity sensors from SICK can provide this "background information."

|	CM12	CM18 PTFE	CM18	CM30
Nominal Sensing Range (S_n)	8 mm	8 mm	8 ... 12 mm	16 ... 25 mm
Electric version	DC, 4 cables	DC, 4 cables	DC, 4 cables	DC, 4 cables
Enclosure rating	IP 68	IP 67	IP 68, IP 69K	IP 68, IP 69K
Temperature range	–20 °C ... +85 °C	–25 °C ... +60 °C	–30 °C ... +85 °C	–30 °C ... +85 °C
Material	PBT (30 % glass fiber reinforced)	PTFE	PBT (30 % glass fiber reinforced)	PBT (30 % glass fiber reinforced)
Special features	• Optical adjustment indicator • Teach-in functionality (incl. external teach-in) • Dynamic teach-in • Programmable output function (NO/NC) • Automatic load detection (PNP/NPN)	• Potentiometer (incl. external teach-in) • PTFE housing for use in environments severely contaminated by chemicals	• Optical adjustment indicator • Potentiometer (incl. external teach-in) • Programmable output function (NO/NC) • Optimized dust and moisture compensation • Enhanced electromagnetic compatibility (exceeds standard) • Larger active sensing range	• Optical adjustment indicator • Potentiometer (incl. external teach-in) • Programmable output function (NO/NC) • Optimized dust and moisture compensation • Enhanced electromagnetic compatibility (exceeds standard) • Larger active sensing range
Certifications	• CE • cULus	• CE • cULus	• CE • cULus • Ecolab	• CE • cULus • Ecolab
Switching frequency	15 Hz	30 Hz	50 Hz	50 Hz

The new generation CM18 and CM30

Owing to their cylindrical thread design, the new generation of capacitive proximity sensors from SICK can be used in a wide range of industrial applications. When developing the sensors, SICK focused heavily on reliability. Compared to their predecessors, they feature improved electromagnetic compatibility for reliable detection even in critical applications, such as those near frequency converters, for example.

Their resistant housing, which is certified by Ecolab, allows them to be used in hygienic and washdown zones. A further new development comes in the form of enclosure rating IP 69K, which allows the sensors to withstand even high-pressure cleaning techniques.

The new generation of capacitive proximity sensors from SICK with optical adjustment indicators.

And that's not all: The sensing range has increased, the moisture and dust compensation has improved, and an additional LED has been added to display signal stability. These features all work together to guarantee safe and reliable sensor configuration, and thereby highly reliable object and media detection. And when the situation starts hotting up, the capacitive proximity sensors can withstand extreme temperature fluctuations within a range of −30 °C to +85 °C.
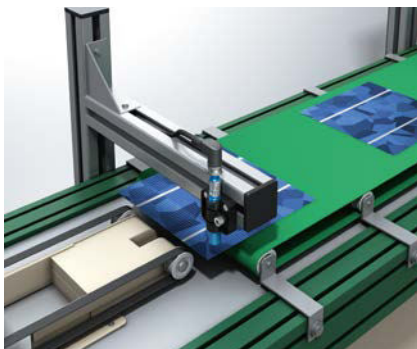
Solar and electronics industries: Detection of solar wafers

The CM12 capacitive proximity sensor is easy to install, reliably detecting wafer trays that have changed color due to the vacuum process.

Woodworking machines: Detection of wood

The CM18 capacitive proximity sensor is totally shock-proof. Thanks to its high levels of vibration and dust resistance, it can detect wooden objects with a variety of different surfaces (black, white, gloss, and matte) – regardless of wood shavings and sawdust.

Plastics industry: Detection of various media

The CM30 capacitive proximity sensor detects the minimum fill level in material feed hoppers, reducing the risk of running empty and any resultant machine downtime.

SENSORS IN CYLINDRICAL HOUSING

Product description

With their cylindrical design, the new generation of capacitive proximity sensors from SICK can be used in a wide range of industrial applications. SICK has placed particular emphasis on ensuring the reliability of these sensors as part of its continual product development. Their electromagnetic compatibility is even better than in previous models and the housing has been Ecolab certi-

fied. A further new development is the IP 69K enclosure rating, which allows the sensors to withstand high-pressure cleaning processes. And that's not all: The sensing range has increased, the moisture and dust compensation has improved, and a secondary LED has been added for indicating signal stability. This all combines to provide highly reliable object and media detection.

At a glance

- High electromagnetic compatibility
- Long sensing range
- Outstanding moisture and dust compensation
- IP65, IP 68, and IP 69K enclosure rating

- Ecolab certification
- Operating temperatures: -30 °C to +85 °C
- Indicator LEDs to display switching output and signal stability

Your benefits

- Excellent electromagnetic compatibility for reliable detection – even in critical applications – for example, near frequency converters
- Capable of withstanding high-pressure cleaning processes thanks to IP69K enclosure rating. The additional Ecolab certification makes it ideal for use in hygienic and wash-down areas

- The increased sensing range and outstanding moisture and dust compensation provide highly reliable detection, which minimizes machine downtime
- Visual installation aid to ensure signal stability for simple and reliable sensor adjustment

Additional information

➜ **www.mysick.com/en/CM30**

For more information, simply 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.

Detailed technical data

Features

Housing	Cylindrical thread design
Thread size	M30 x 1.5
Sensing range S_n	
Flush	16 mm
Non-flush	25 mm
Safe sensing range S_a [1]	
Flush	12.24 mm
Non-flush	19.13 mm
Installation type	Flush / non-flush (depending on type)
Switching frequency	50 Hz
Output type	NPN / PNP (depending on type)
Output function	Complementary
Output characteristic	Wire configurable
Electrical wiring	DC 4-wire
Adjustment	Potentiometer (Sensitivity)
Enclosure rating [2]	IP 68, IP 69K

[1] For flush mounting in electrically conductive materials Sa = 0.8 x Sr at temperatures <0 °C and >60 °C.

[2] 1 m water depth / 60 min.

Mechanics/electronics

Supply voltage	10 V DC ... 36 V DC
Ripple [1]	≤ 10 %
Voltage drop [2]	≤ 2 V DC
Current consumption [3]	≤ 12 mA
Time delay before availability	≤ 200 ms
Hysteresis	3 % ... 20 %
Repeatability [4] [5]	≤ 5 %
Temperature drift (of S_r)	± 10 %
EMC [6]	According to EN 60947-5-2
Continuous current I_a	≤ 200 mA
Connection type	Male connector, M12 Cable, 2 m, PVC [7] (depending on type)
Short-circuit protection	✔
Reverse polarity protection	✔
Power-up pulse protection	✔
Shock and vibration resistance	According to EN 60068
Ambient operating temperature [8]	–30 °C ... +85 °C
Ambient storage temperature	–40 °C ... +85 °C

[1] Of Ub.

[2] At I_a max.

[3] Without load.

[4] Of Sr.

[5] Ub and Ta constant.

[6] In EMC critical applications, conducted interference levels may lie within the frequency range of the oscillator. This can cause changes to the output signal. (See operating instructions.)

[7] Do not bend below 0 °C.

[8] +120 °C short time, at the front of the sensor.

Housing material	PBT
Tightening torque, max.	≤ 7.5 Nm

[1] Of Ub.

[2] At I_a max.

[3] Without load.

[4] Of Sr.

[5] Ub and Ta constant.

[6] In EMC critical applications, conducted interference levels may lie within the frequency range of the oscillator. This can cause changes to the output signal. (See operating instructions.)

[7] Do not bend below 0 °C.

[8] +120 °C short time, at the front of the sensor.

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

Ordering information

Other models ➜ www.mysick.com/en/CM30

CM30

- **Housing:** M30 x 1.5
- **Adjustment:** potentiometer (Sensitivity)

Sensing range S_n	Installation type	Output function	Output type	Connection	Connection diagram	Type	Part no.
≤ 16 mm	Flush	Complementary	NPN	M12, 4-pin male connector	Cd-006	CM30-16BNP-EC1	6058155
				Cable, 4-wire, 2 m, PVC	Cd-005	CM30-16BNP-EW1	6058154
			PNP	M12, 4-pin male connector	Cd-006	CM30-16BPP-EC1	6058153
				Cable, 4-wire, 2 m, PVC	Cd-005	CM30-16BPP-EW1	6058152
≤ 25 mm	Non-flush	Complementary	NPN	M12, 4-pin male connector	Cd-006	CM30-25NNP-EC1	6058159
				Cable, 4-wire, 2 m, PVC	Cd-005	CM30-25NNP-EW1	6058158
			PNP	M12, 4-pin male connector	Cd-006	CM30-25NPP-EC1	6058157
				Cable, 4-wire, 2 m, PVC	Cd-005	CM30-25NPP-EW1	6058156