



SENSICK
Capacitive sensors

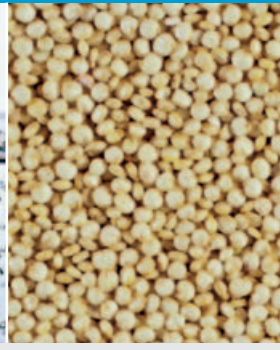


For detection through a wall. As simple as that.

Sometimes one simply wants to know what is beneath a surface, for example, behind a wall, in a storage vessel or in a container or beneath a cover.

Capacitive sensors are used when objects need to be detected irrespective of their material and even through a wall. Is there anything behind the cover? Is the sealed package really full? How much paint is there left in the container? Such problems are easily resolved using capacitive sensors.





Presence is enough.

Metallic or non-metallic, solid or liquid, compacted or powder-like. Not all materials sensed by a capacitive sensor react in the same way. Nevertheless, they are detected equally well by a sensor, irrespective of their properties. Their mere presence in the electro-static field of the sensor detects any material, which is non-gaseous. Water-based materials are particularly easy to detect.

Close at hand, but no disruption to work activity.

Capacitive sensors supplied by SICK are always convenient to use. Sensing ranges between 8 and 25 mm allow clearance in almost any installation situation and they are extremely adaptable for a wide range of applications.

As a result, these sensors remain unaffected by interference and malfunctions. Impurities and contamination, dust and airborne spray particles have little effect upon them as does electro-magnetic interference. No wonder that they are installed in the most diverse branches of industry. In the food industry, car industry or in storage and conveying technology.



Reliable for use in all branches of industry.

Three housing designs.

Four types.

18 or 30 mm cylindrical threaded housing, or a rectangular housing having an active sensing surface equipped with a 35 mm sensing face. The size of the sensing surface determines the choice of which sensor should be used. The larger it is, the greater the sensing distance, starting 3 to 8 mm for the CM 18 and ranges to 25 mm for the CM 30 and the CQ 35.



Electro-magnetic interference?

No problem!

Even exercising the greatest of care, electro-magnetic interference in manufacturing and storage systems can never be totally eliminated. Solenoid valves, relays and switches or frequency converters in close proximity, or electro-static discharges from the contents in a container or silo have very little effect upon SICK capacitive sensors.



They are all robust and resistant to aggressive chemicals

The capacitive sensors supplied by SICK are suitable for extremely adverse industrial environments. Protection to IP 67 is Standard, and in aggressive environments, the CM 18 PTFE operates particularly well. Due to its PTFE housing it resists virtually all chemicals, acids, alkalis and solvents, and is particularly hygienic – an advantage not only for food processing, but also, for the petro-chemical industry and in the semi-conductor industry for wafer manufacture.





Presence, filling, checking, testing. In every branch of industry.

Level and feed monitoring – that is one of attributes of capacitive sensors, irrespective of whether it involves a solid material such as paper or wood, granules or liquids. They reliably detect the status of the product in the production process and during final inspection.

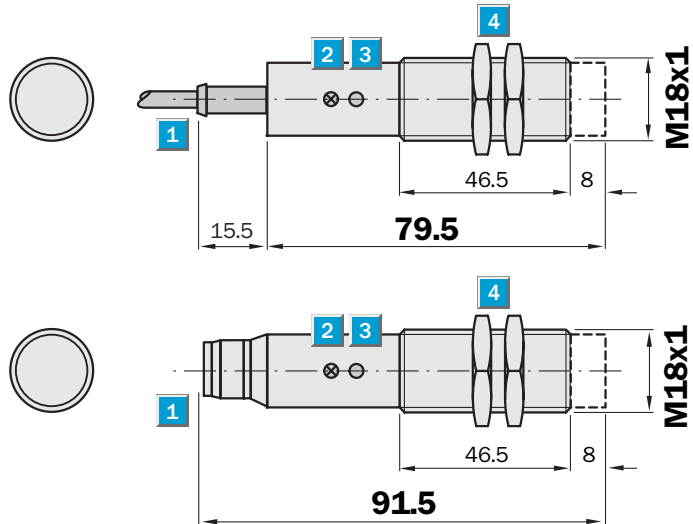
Type code Capacitive sensors

	CM	18	-	08B	N	P	-	K	W	0	
Sensor technology											Other codes
Capacitive	C									0	-
Design											Connection
Cylinder with thread		M						W			Cable, PVC
Cuboid		Q						C			Connector M12 x 1
Housing shape											Housing material
Metric external thread 18		18						K			Plastic
Metric external thread 30		30						T			PTFE (Teflon®)
Edge length of sensing face 35		35									Output
Sensing range/installation						P					Complementary
Flush				B							Interface
Non flush				N	P						PNP, 4-wire, 10 ... 40 V DC
8 mm, flush				08B	N						NPN, 4-wire, 10 ... 40 V DC
25 mm, non flush				25N	A						2-wire, 20 ... 265 V AC

	Sensing range
	3...8 mm 3...12 mm
Capacitive sensors	

- High EMC immunity
- Short-circuit protection (pulsed)
- Complementary output function
- Enclosure rating IP 67
- LED-status indicator

Dimensional drawing

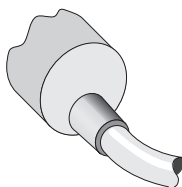


- 1 Cable, 2 m or connector M12, 4-pin
- 2 Display LED
- 3 Potentiometer
- 4 Fastening nuts (2 x); width across 24, Plastic

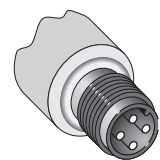
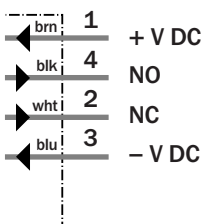


Connection type

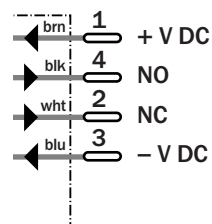
CM18-08BPP-KW1	CM18-08BPP-KC1
CM18-08BNP-KW1	CM18-08BNP-KC1
CM18-12NPP-KW1	CM18-12NPP-KC1
CM18-12NNP-KW1	CM18-12NNP-KC1



4 x 0.34 mm²



4-pin, M12



Accessories
Refer to "Technical Description – Connection and Fixing", 8 010 645

Technical data		CM18-	08BPP-KW1	08BPP-KC1	08BNP-KW1	08BNP-KC1	12NPP-KW1	12NPP-KC1	12NNP-KW1	12NNP-KC1		
Sensing range S_n	8 mm											
	12 mm											
DC 4-wire	yes											
Operating voltage V_0	10 ... 40 V DC											
Ripple V_{pp}	$\leq 10\%$ of U_b											
Voltage drop V_d ¹⁾	≤ 2.5 V											
Power consumption ²⁾	≤ 10 mA											
Continuous current I_a	≤ 200 mA											
Time delay before availability t_v	≤ 100 ms											
Hysteresis H	4 % ... 20 % of s_r											
Repeatability R ³⁾	$\leq 5\%$ of s_r											
Temperature drift	$\pm 10\%$ of s_r											
EMV	to EN 60 947-5-2											
Switching output	PNP											
	NPN											
Output function	NO											
	NC											
	complementary											
Installation type	flush											
	non flush											
Connection type	Cable, 2 m, PVC, 4 x 0.34 mm ²											
	Connector M12 x 1 mm											
Enclosure rating ⁴⁾	IP 67											
Switching frequency f	max. 30/s											
Dimensions ⁵⁾	M18 x 1											
Short-circuit protection	yes											
Reverse polarity protection	yes											
Power-up pulse suppression	yes											
Shock and vibration stress	30 g, 11 ms/10 ... 55 Hz, 1 mm											
Ambient temperature T_a	-25 °C ... +80 °C											
Housing material	Plastic											
Tightening torque	2.6 Nm											

¹⁾ At I_a max.


²⁾ Without load

³⁾ U_b and T_a constant

⁴⁾ To EN 60529

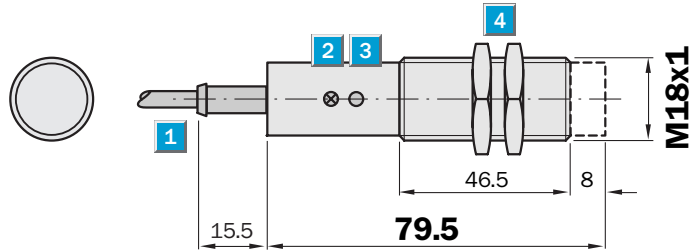
⁵⁾ Thread diameter x Pitch [mm]

Order information	
Type	Part no.
CM18-08BPP-KW1	6 020 136
CM18-08BPP-KC1	6 020 388
CM18-08BNP-KW1	6 021 455
CM18-08BNP-KC1	6 021 456
CM18-12NPP-KW1	6 020 389
CM18-12NPP-KC1	6 020 410
CM18-12NNP-KW1	6 021 457
CM18-12NNP-KC1	6 021 458

	Sensing range 3...8 mm
	Capacitive sensors

- PTFE housing with fine thread M18 x 1 mm
- High EMC immunity
- Short-circuit protection (pulsed)
- Complementary output function
- Enclosure rating IP 67
- Status indicator

Dimensional drawing

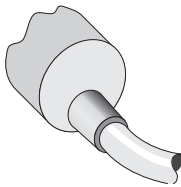


- 1 Cable, 2 m
- 2 Display LED
- 3 Potentiometer
- 4 Fastening nuts (2 x); width across 24, plastic

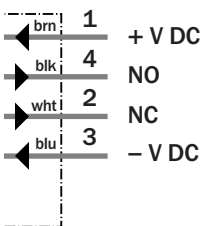


Connection type

- CM18-08BNP-TWO
- CM18-08BPP-TWO



4 x 0.34 mm²



Accessories
Refer to "Technical Description – Connection and Fixing", 8 010 645



Technical data		CM18-	08BPP-TWO	08BNP-TWO								
Sensing range S_n	8 mm											
DC 4-wire	yes											
Operating voltage V_0	10 ... 40 V DC											
Ripple V_{pp}	$\leq 10\%$ of U_b											
Voltage drop V_d ¹⁾	≤ 2.5 V											
Power consumption ²⁾	≤ 10 mA											
Continuous current I_a	≤ 200 mA											
Time delay before availability t_v	≤ 100 ms											
Hysteresis H	4 % ... 20 % of s_r											
Repeatability R ³⁾	$\leq 5\%$ of s_r											
Temperature drift	$\pm 10\%$ of s_r											
EMV	to EN 60 947-5-2											
Switching output	PNP											
	NPN											
Output function	NO											
	NC											
	complementary											
Installation type	flush											
Connection type	Cable, 2 m, PVC, 4 x 0.34 mm ²											
Enclosure rating⁴⁾	IP 67											
Switching frequency f	max. 30/s											
Dimensions⁵⁾	M18 x 1											
Short-circuit protection	yes											
Reverse polarity protection	yes											
Power-up pulse suppression	yes											
Shock and vibration stress	30 g, 11 ms/10 ... 55 Hz, 1 mm											
Ambient temperature T_a	-25 °C ... +60 °C											
Housing material	Plastic, PTFE											
Tightening torque	2.6 Nm											

¹⁾ At I_a max.


²⁾ Without load

³⁾ U_b and T_a constant

⁴⁾ To EN 60529

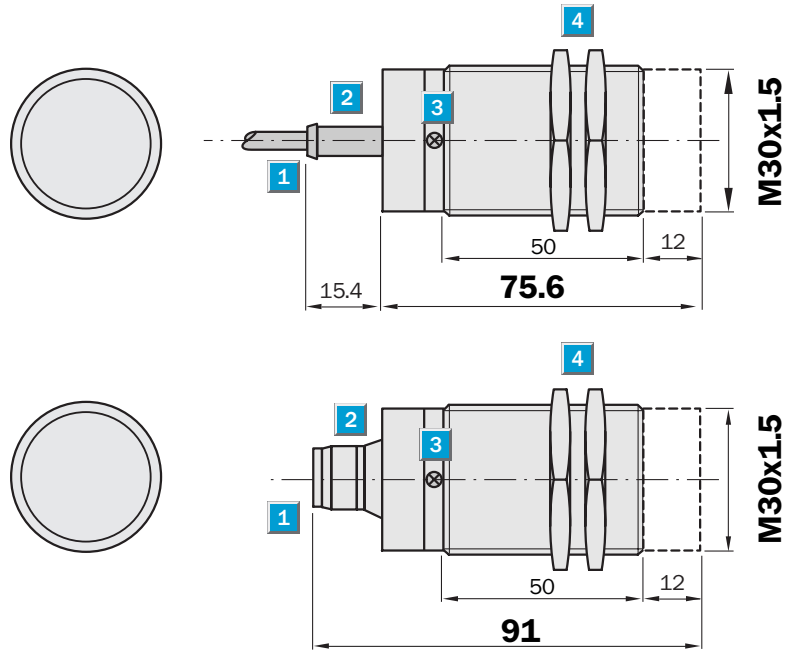
⁵⁾ Thread diameter x Pitch [mm]

Order information	
Type	Part no.
CM18-08BPP-TWO	6 026 195
CM18-08BNP-TWO	6 026 194

	Sensing range
	2...16 mm 4...25 mm
Capacitive sensors	

- High EMC immunity
- Short-circuit protection (pulsed)
- Complementary output function
- Enclosure rating IP 67
- LED-status indicator

Dimensional drawing

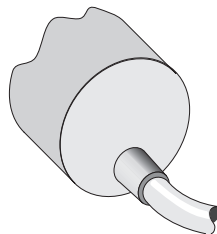


- 1 Cable, 2 m or connector M12, 4-pin
- 2 Potentiometer
- 3 Display LED
- 4 Fastening nuts (2 x); width across 36, plastic

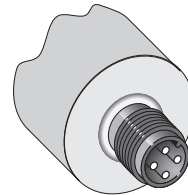
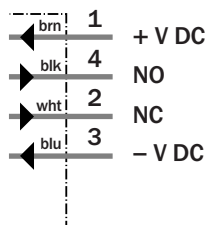


Connection type

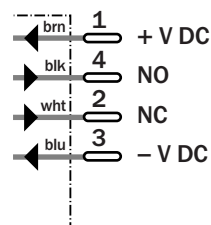
CM30-16BPP-KW1	CM30-16BPP-KC1
CM30-16BNP-KW1	CM30-16BNP-KC1
CM30-25NPP-KW1	CM30-25NPP-KC1
CM30-25NNP-KW1	CM30-25NNP-KC1



4 x 0.34 mm²



4-pin, M12



Accessories

Refer to "Technical Description – Connection and Fixing", 8 010 645

Technical data		CM30-	16BPP-KW1	16BPP-KC1	16BNP-KW1	16BNP-KC1	25NPP-KW1	25NPP-KC1	25NNP-KW1	25NNP-KC1		
Sensing range S_n	16 mm											
	25 mm											
DC 4-wire	yes											
Operating voltage V_o	10 ... 40 V DC											
Ripple V_{pp}	$\leq 10\%$ of U_b											
Voltage drop V_d ¹⁾	≤ 2.5 V											
Power consumption ²⁾	≤ 10 mA											
Continuous current I_a	≤ 200 mA											
Time delay before availability t_v	≤ 100 ms											
Hysteresis H	4 % ... 20 % of s_r											
Repeatability R ³⁾	$\leq 5\%$ of s_r											
Temperature drift	$\pm 10\%$ of s_r											
EMV	to EN 60 947-5-2											
Switching output	PNP											
	NPN											
Output function	NO											
	NC											
	complementary											
Installation type	flush											
	non flush											
Connection type	Cable, 2 m, PVC, 4 x 0.34 mm ²											
	Connector M12 x 1 mm											
Enclosure rating ⁴⁾	IP 67											
Switching frequency f	max. 50/s											
Dimensions ⁵⁾	M30 x 1.5											
Short-circuit protection	yes											
Reverse polarity protection	yes											
Power-up pulse suppression	yes											
Shock and vibration stress	30 g, 11 ms/10 ... 55 Hz, 1 mm											
Ambient temperature T_a	-25 °C ... +80 °C											
Housing material	Plastic											
Tightening torque	7.5 Nm											

¹⁾ At I_a max.


²⁾ Without load

³⁾ U_b und T_a constant

⁴⁾ To EN 60529

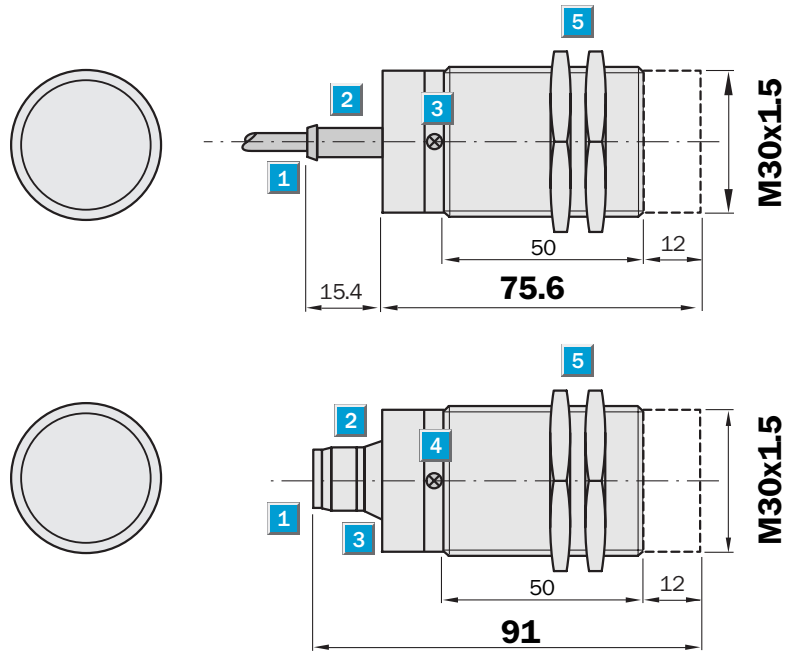
⁵⁾ Thread diameter x Pitch [mm]

Order information	
Type	Part no.
CM30-16BPP-KW1	6 020 473
CM30-16BPP-KC1	6 020 475
CM30-16BNP-KW1	6 021 459
CM30-16BNP-KC1	6 021 460
CM30-25NPP-KW1	6 020 476
CM30-25NPP-KC1	6 020 477
CM30-25NNP-KW1	6 021 461
CM30-25NNP-KC1	6 021 462

	Sensing range
	2...16 mm 4...25 mm
Capacitive sensors	

- 2-wire, 250 V AC
- High EMC immunity
- Complementary output function
- Enclosure rating IP 67
- LED-status indicator, yellow

Dimensional drawing



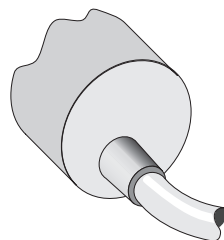
- 1 Cable, 2 m or connector M12, 3-pin
- 2 Potentiometer
- 3 Switch NO/NC
- 4 Display LED
- 5 Fastening nuts (2 x); width across 36, plastic



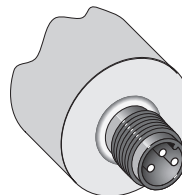
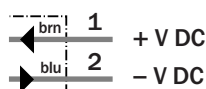
Connection type

CM30-16BAP-KW1
CM30-25NAP-KW1

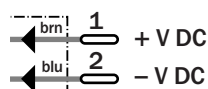
CM30-16BAP-KC1
CM30-25NAP-KC1



2 x 0.5 mm²



3-pin, M12



Accessories

Refer to "Technical Description – Connection and Fixing", 8 010 645

Technical data		CM30-	16BAP-KW1	16BAP-KC1	25NAP-KW1	25NAP-KC1						
Sensing range S_n	16 mm											
	25 mm											
Operating voltage V_o	20 ... 265 V AC											
Ripple V_{pp}	$\leq 10\%$ of U_b											
Voltage drop V_d ¹⁾	$\leq AC\ 10\ V$ (at load $\geq 20\ mA$)											
Power consumption ²⁾	$\leq 10\ mA$											
Continuous current I_a	$\leq 500\ mA$											
Time delay before availability t_v	$\leq 100\ ms$											
Hysteresis H	4 % ... 20 % of s_r											
Repeatability R ³⁾	$\leq 5\%$ of s_r											
Temperature drift	$\pm 10\%$ of s_r											
EMV	to EN 60 947-5-2											
Output function	NO											
	NC											
	complementary											
Installation type	flush											
	non flush											
Connection type	Cable, 2 m, PVC, 2 x 0.5 mm ² ,											
	Oil resistant											
	Connector M12 x 1 mm											
Enclosure rating ⁴⁾	IP 67											
Switching frequency f	max. 10/s											
Dimensions ⁵⁾	M30 x 1.5											
Reverse polarity protection	yes											
Power-up pulse suppression	yes											
Shock and vibration stress	30 g, 11 ms/10 ... 55 Hz, 1 mm											
Ambient temperature T_a	-25 °C ... +80 °C											
Housing material	Polyester											
Tightening torque	7.5 Nm											

¹⁾ At I_a max.


²⁾ Without load

³⁾ U_b and T_a constant

⁴⁾ To EN 60529

⁵⁾ Thread diameter x Pitch [mm]

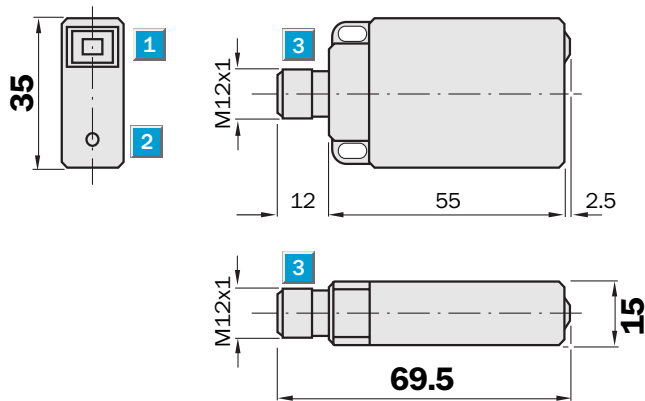
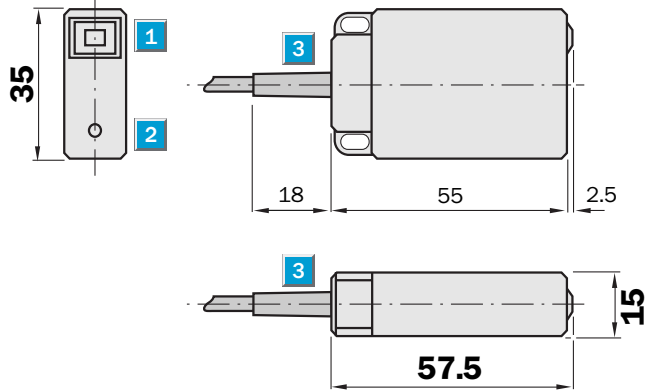
Order information	
Type	Part no.
CM30-16BAP-KW1	6 028 411
CM30-16BAP-KC1	6 028 412
CM30-25NAP-KW1	6 028 413
CM30-25NAP-KC1	6 028 414

 Sensing range
4...25 mm

Capacitive sensors

- High EMC immunity
- Short-circuit protection (pulsed)
- Complementary output function
- Enclosure rating IP 67
- LED-status indicator

Dimensional drawing



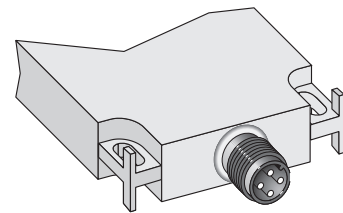
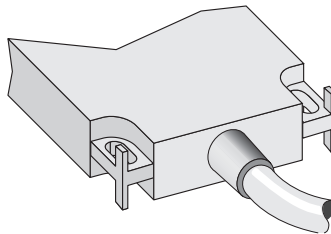
- 1 Display LED
- 2 Potentiometer
- 3 Cable, 2 m or connector M12, 4-pin



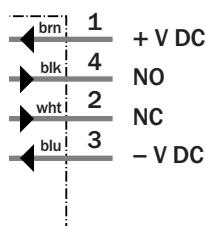
Connection type

CQ35-25NPP-KW1
CQ35-25NNP-KW1

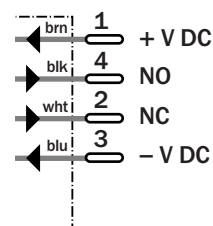
CQ35-25NPP-KC1
CQ35-25NNP-KC1



4 x 0.34 mm²



4-pin, M12



Accessories

Refer to "Technical Description – Connection and Fixing", 8 010 645



Technical data		CQ35-	25NPP-KW1	25NPP-KC1	25NNP-KW1	25NNP-KC1					
Sensing range S_n	25 mm										
DC 4-wire	yes										
Operating voltage V_0	10 ... 40 V DC										
Ripple V_{pp}	$\leq 10\%$ of U_b										
Voltage drop V_d ¹⁾	≤ 2.5 V										
Power consumption ²⁾	≤ 10 mA										
Continuous current I_a	≤ 200 mA										
Time delay before availability t_v	≤ 100 ms										
Hysteresis H	4 % ... 20 % of s_r										
Repeatability R ³⁾	$\leq 5\%$ of s_r										
Temperature drift	$\pm 10\%$ of s_r										
EMV	to EN 60 947-5-2										
Switching output	PNP										
	NPN										
Output function	NO										
	NC										
	complementary										
Installation type	non flush										
Connection type	Cable, 2 m, PVC, 4 x 0.34 mm ²										
	Connector M12 x 1 mm										
Enclosure rating⁴⁾	IP 67										
Switching frequency f	max. 50/s										
Dimensions⁵⁾	15 x 35 x 57.5/69.5										
Short-circuit protection	yes										
Reverse polarity protection	yes										
Power-up pulse suppression	yes										
Shock and vibration stress	30 g, 11 ms/10 ... 55 Hz, 1 mm										
Ambient temperature T_a	-25 °C ... +75 °C										
Housing material	Plastic										

¹⁾ At I_a max.

²⁾ Without load

³⁾ U_b and T_a constant

⁴⁾ To EN 60529

⁵⁾ Width x Height x Length [mm]

Order information

Type	Part no.
CQ35-25NPP-KW1	6 020 478
CQ35-25NPP-KC1	6 020 479
CQ35-25NNP-KW1	6 021 463
CQ35-25NNP-KC1	6 021 464

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Representatives and agencies
in all major industrial nations.

SICK