PROXIMITY SENSORS

PRODUCTS AT A GLANCE

Inductive proximity sensors, inductive safety switches,
capacitive proximity sensors, magnetic proximity sensors

SICK
Sensor Intelligence.

Material to be detected	Product family	Housing			Material				Properties			Sensing range		
		Cylindrical threaded	Cylindrical smooth	Rectangular	Stainless steel	Metal	VISTAL™	Plastic	IP 69K	PTFE-coating	High-pressure resistant	Standard sensing range	Extended sensing range	Triple sensing range
Inductive proximity sensors														
Metal	IMM	■	■		■	■			■		■	■	■	
	IME	■				■						■	■	■
	IMB	■			■				■				■	
	IMF	■			■				■				■	
	IMI	■			■				■					■
	IMN	■				■						■		
	IMA	■				■								■
	IMP	■				■					■	■		
	SAM	■				■						■		
	IQM			■				■				■		
	IQY			■				■					■	
	IQB			■			■						■	
	IQV			■		■						■		
	IQG			■				■	■				■	
	IQL			■				■					■	
Inductive safety switches														
Metal	IN3000 Direct	■			■	■						■		
	IN4000 Direct		■			■						■		
	IN4000 Standard	■		■	■	■			■			■		
Capacitive proximity sensors														
Powders, granules, liquid, solid	CM	■						■	■			■		
	CM PTFE	■						■		■		■		
	CQ			■				■				■		
Magnetic proximity sensors														
Magnet	MM	■			■	■						■		
	MM Namur	■				■						■		
	MQ			■			■					■		

Electrical wiring				Switching output				Sensing range S_n	Page
DC 2-wire	AC/DC 2-wire	DC 3-wire	DC 4-wire	NAMUR output	Analog output	Semiconductor (OSSD)	IO-Link		
		■					■	4 mm	→ 4
■		■	■					20 mm	→ 4
■		■	■				■	20 mm	→ 5
		■	■					20 mm	→ 5
		■						40 mm	→ 5
				■				15 mm	→ 6
					■			0 mm ... 40 mm	→ 6
		■	■					3 mm	→ 7
			■				■	10mm	→ 7
		■						3 mm	→ 8
		■						4 mm	→ 8
		■						8 mm	→ 8
		■	■					7 mm	→ 9
		■	■					40 mm	→ 9
	■	■	■					60 mm	→ 9
						■		22 mm	→ 10
						■		45 mm	→ 11
						■		30 mm	→ 11
			■					25 mm	→ 12
			■					8 mm	→ 13
		■	■					25 mm	→ 13
		■						120 mm	→ 14
				■				120 mm	→ 15
		■						60 mm	→ 15

	IMM	**IME**
	Miniature sensors for industrial applications	The economic standard for use in industrial environments

Technical data overview

	IMM	IME
Housing	Cylindrical smooth housing / Cylindrical thread design	Cylindrical thread design
Thread size	M4 x 0.5 M5 x 0.5	M8 x 1 M12 x 1 M18 x 1 M30 x 1.5
Diameter	Ø 3 mm Ø 4 mm Ø 6.5 mm	–
Sensing range S_n	0.6 mm … 4 mm	1 mm … 38 mm
Electrical wiring	DC 3-wire	DC 2-wire / DC 3-wire
Housing material	Stainless steel (V2A)	Nickel-plated brass
Enclosure rating	IP 68 / IP 69K / IP 67	IP 67

At a glance

IMM	IME
• Types: M4 to M5, diameter from 3 mm to 6.5 mm • Extended sensing ranges: 0.6 mm to 4 mm • Electrical configuration: DC 3-wire • Enclosure rating: IP 67 • Temperature range: –25 °C to +70 °C • Rugged stainless-steel housing; plastic sensing face • IO-Link ready • Extremely compact, lightweight, and space-saving	• Types: M8 to M30 • Extended sensing ranges: 1.5 mm to 38 mm • Electrical configuration: DC 3-/4-wire, DC 2-wire • Enclosure rating: IP 67 • Temperature range: –25 °C to +75 °C • Nickel-plated brass housing; plastic sensing face

Detailed information	➜ www.sick.com/IMM	➜ www.sick.com/IME

IMB	IMF	IMI
The rugged standard for use in harsh ambient conditions	The economic standard for use in the food industry	Robust full metal sensors for use in the food industry
Cylindrical thread design	Cylindrical thread design	Cylindrical thread design
M8 x 1 M12 x 1 M18 x 1 M30 x 1.5	M8 x 1 M12 x 1 M18 x 1 M30 x 1.5	M12 x 1 M18 x 1 M30 x 1.5
–	–	–
2 mm … 20 mm	2 mm … 20 mm	6 mm … 40 mm
DC 2-wire / DC 3-wire / DC 4-wire	DC 3-wire / DC 4-wire	DC 3-wire
Stainless steel (V2A)	Stainless steel (V4A)	Stainless steel (V4A)
IP 68, IP 69K	IP 68, IP 69K	IP 68, IP 69K

IMB
- Types: M8 to M30
- Extended sensing ranges: 2 mm to 20 mm
- Electrical configuration: DC 3-/4-wire, DC 2-wire
- Enclosure rating: IP 68, IP 69K
- Temperature range: –40 °C to +100 °C
- Rugged stainless-steel housing; plastic sensing face
- Optical adjustment indicator, IO-Link-ready
- Resistant to oils and cooling lubricants; suitable for use outdoors

➜ www.sick.com/IMB

IMF
- Types: M8 to M30
- Extended sensing ranges: 2 mm to 20 mm
- Electrical configuration: DC 3-/4-wire
- Enclosure rating: IP 68, IP 69K
- Temperature range: –40 °C to +100 °C
- Food-compatible stainless-steel housing, plastic sensing face
- Optical adjustment indicator, IO-Link-ready
- Resistant to industrial cleaning agents, Ecolab-certified

➜ www.sick.com/IMF

IMI
- Types: M8 to M30
- Triple sensing ranges: 6 mm to 40 mm
- Electrical configuration: DC 3-wire
- Enclosure rating: IP 68, IP 69K
- Temperature range: –25 °C to +85 °C
- Food-compatible stainless-steel housing, stainless steel sensing face
- Sensing face made of food-compatible stainless steel
- Resistant against cleaning agents

➜ www.sick.com/IMI

	IMN	IMA
	NAMUR sensors for explosive zones	Analog sensors with triple sensing range for use in industrial environments

Technical data overview

Housing	Cylindrical thread design	Cylindrical thread design
Thread size	M8 x 1 M12 x 1 M18 x 1 M30 x 1.5	M8 x 1 M12 x 1 M18 x 1 M30 x 1.5
Sensing range S_n	1 mm ... 15 mm	4 mm ... 40 mm
Electrical wiring	–	–
Housing material	Nickel-plated brass	Nickel-plated brass
Enclosure rating	IP 67	IP 67

At a glance

	• Types: M8 to M30 • Sensing ranges: 1 mm to 15 mm • NAMUR according to DIN EN 60947-5-6 • Enclosure rating: IP 67 • Temperature range: –20 °C to +70 °C • Nickel-plated brass housing; plastic sensing face • ATEX device category 1G and 2G • Suitable for applications in explosion-hazardous areas	• Types: M8 to M30 • Extended detection ranges: 0 mm to 40 mm • Analog output signal 0 V ... 10 V and 4 mA ... 20 mA • Enclosure rating: IP 67 • Temperature range: –25 °C to +75 °C • Nickel-plated brass housing; plastic sensing face • High resolution and repeatability • Distance control and continuous position detection

Detailed information	➜ www.sick.com/IMN	➜ www.sick.com/IMA

IMP	SAM
High-pressure-resistant sensors for hydraulic applications	The simple and intelligent way of speed monitoring

	Cylindrical thread design	Cylindrical thread design
	M5 x 0.5	M18 x 1
	M8 x 1	M30 x 1.5
	M12 x 1	
	M14 x 1.5	
	1 mm … 3 mm	7 mm / 10 mm
	DC 3-wire / DC 4-wire	DC 4-wire
	Stainless steel (V2A / V4A)	Nickel-plated brass
	IP 68	IP 67

- Types: M5, M8, M12 and M14
- Extended sensing ranges: 1 mm to 3 mm
- Electrical configuration: DC 3- and 4-wire
- Enclosure rating: IP 68
- Temperature range: –25 °C to +100 °C
- Stainless steel housing with active surface made from stable high-performance ceramic
- Pressure resistant up to 500 bar, gas-tight front
- Expected service life of up to 1 million pressure cycles
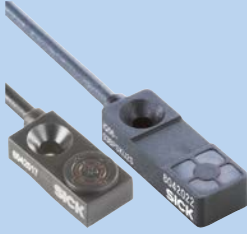
- Types: M18 and M30
- Sensing ranges: up to 10 mm flush
- Speed and acceleration monitoring
- Monitoring range: 6 to 12,000 pulses/min. and 0.1 to 2 pulses/sec.[2]
- Switching and pulse output
- Intelligent start-up delay
- Speed monitoring can be flexibly configured via two thresholds
- Flexible sensor settings, monitoring, extended diagnostics, and visualization thanks to IO-Link

➜ www.sick.com/IMP

➜ www.sick.com/SAM

	IQM	IQY	IQB
	Rectangular miniature sensors for use in industrial environments	Slim rectangular housings for use in industrial environments	Small rectangular housings for use in industrial environments

Technical data overview

Housing	Rectangular	Rectangular	Rectangular
Dimensions	8 mm x 16 mm x 4 mm 10 mm x 30 mm x 6 mm	8 mm x 8 mm x 40 mm 5 mm x 5 mm x 25 mm	10 mm x 28 mm x 16 mm 12 mm x 40 mm x 26 mm
Sensing range S_n	1.5 mm / 3 mm	0.8 mm … 4 mm	2 mm … 8 mm
Electrical wiring	DC 3-wire	DC 3-wire	DC 3-wire / DC 4-wire
Housing material	PA6-GF30	Nickel-plated brass / VISTAL™	VISTAL™
Enclosure rating	IP 67	IP 67 / IP 68	IP 68

At a glance

	• Types:
	  8 mm x 16 mm x 4 mm
	  or
	  10 mm x 30 mm x 6 mm
	• Extended sensing ranges:
	  1.5 mm to 3 mm
	• Electrical configuration:
	  DC 3-wire
	• Enclosure rating: IP 67
	• Temperature range:
	  –20 °C to +70 °C
	• Plastic housing
	• Flat, space-saving and light design
		• Types:
		  5 mm x 5 mm x 25 mm
		  or
		  8 mm x 8 mm x 40 mm
		• Extended sensing ranges:
		  0.8 mm to 4 mm
		• Electrical configuration:
		  DC 3-wire
		• Enclosure rating:
		  IP 67 or IP 68
		• Temperature range:
		  –25 °C to +75 °C
		• Tough VISTAL™ housing
		• Thin version with
		  270° output state display
			• Types:
			  10 mm x 16 mm x 28 mm
			  or
			  12 mm x 26 mm x 40 mm
			• Extended sensing ranges:
			  2 mm to 8 mm
			• Electrical configuration:
			  DC 3-/4-wire
			• Enclosure rating: IP 68
			• Temperature range:
			  –25 °C to +75 °C
			• Tough VISTAL™ housing
			• Small version with
			  270° output state display

Detailed information	➜ www.sick.com/IQM	➜ www.sick.com/IQY	➜ www.sick.com/IQB

IQV	IQG	IQL
Flat rectangular housings for use in industrial environments	Compact rectangular housings for use in harsh ambient conditions	Large rectangular housings for use in industrial environments
Rectangular	Rectangular	Rectangular
20 mm x 32 mm x 8 mm 25 mm x 50 mm x 10 mm	40 mm x 40 mm x 66 mm 40 mm x 40 mm x 132 mm 40 mm x 40 mm x 118 mm	80 mm x 40 mm x 105 mm 80 mm x 40 mm x 112 mm
7 mm / 5 mm	20 mm / 40 mm	60 mm / 50 mm
DC 3-wire / DC 4-wire	DC 3-wire / DC 4-wire	AC/DC 2-wire / DC 3-wire / DC 4-wire
GD Zn	PA 66	PPE
IP 67	IP 67, IP 68, IP 69K	IP 65 / IP 67

- Types:
  20 mm x 32 mm x 8 mm
  or
  25 mm x 50 mm x 10 mm
- Extended sensing ranges:
  5 mm to 7 mm
- Electrical configuration: DC 3-/4-wire
- Enclosure rating: IP 67
- Temperature range:
  –25 °C to +70 °C
- Metal housing, plastic sensing face
- Flat housing made of robust metal

- Type: 40 mm x 40 mm
- Extended sensing ranges:
  15 mm to 40 mm
- Electrical configuration: DC 3-/4-wire
- Enclosure rating: IP 68, IP 69K
- Temperature range:
  –25 °C to +85 °C
- Plastic housing
- Push-lock mounting system
- Sensor head can be rotated in five directions

- Type: 80 mm x 80 mm
- Longer sensing ranges:
  50 mm to 60 mm
- Electrical configuration:
  DC 3-/4-wire, or AC/DC 2-wire
- Enclosure rating IP 65 or IP 67
- Temperature range:
  –25 °C to +80 °C
- Plastic housing
- Programmable N/O or N/C function
- Sensing range setting via potentiometer

➜ www.sick.com/IQV

➜ www.sick.com/IQG

➜ www.sick.com/IQL

IN3000 Direct

Safe, non-contact position monitoring

8019335/2016-09-07

Technical data overview	
Housing	Cylindrical thread design
Thread size	M12 x 1 M18 x 1 M30 x 1.5
Dimensions (W x H x D)	–
Safety integrity level	SIL2 (IEC 61508), SILCL2 (EN 62061)
Category	Applicable up to category 3 (EN ISO 13849)
Performance level	PL d (EN ISO 13849)
Actuator coding level	Uncoded (EN ISO 14119)
Type of output	Semiconductor
Number of safe outputs	2
Connection type	Plug connector, M12, 4-pin
Flexi-Loop-ready	✔

At a glance

- Response range of up to 15 mm
- LED status indicator
- Up to performance level PL d (EN ISO 13849), SILCL2 (EN 62061), SIL2 (IEC 61508)
- Flexi Loop-compatible M12 plug connector

Detailed information	➜ www.sick.com/IN3000_Direct

	IN4000 Direct	IN4000 Standard
	Safe, non-contact position monitoring	Safe, non-contact position monitoring
	Rectangular	Cylindrical thread design / Rectangular
	–	M18 x 1
		M30 x 1.5
	40 mm x 40 mm x 66 mm	40 mm x 40 mm x 66 mm
	SIL3 (IEC 61508), SILCL3 (EN 62061)	SIL3 (IEC 61508)
	Category 4 (EN ISO 13849)	Category 4 (EN ISO 13849)
	PL e (EN ISO 13849)	PL e (EN ISO 13849)
	Uncoded (EN ISO 14119)	Uncoded (EN ISO 14119)
	Semiconductor (OSSD)	Semiconductor, pulsed
	2	1
	Plug connector, M12, 4-pin	Plug connector, M12, 4-pin
	✔	–

IN4000 Direct	IN4000 Standard
• Two OSSD safety outputs for direct connection of sensors to a single safety controller • Response range of up to 20 mm • LED status indicator • Up to performance level PL e / Cat. 4 (EN ISO 13849) • Flexi Loop-compatible M12 plug connector	• One clocked safety output for direct connection of sensors to a safety controller • IP67 or IP69K enclosure rating • Response range up to 15 mm • LED status indicator • Up to performance level PL e (EN ISO 13849) • Safe series connection of sensors possible
➔ www.sick.com/IN4000_Direct	➔ www.sick.com/IN4000_Standard

CM

Tried-and-tested sensors
for object detection and fill level detection

Technical data overview	
Housing	Cylindrical thread design
Thread size	M12 x 1 M18 x 1 M30 x 1.5
Dimensions (W x H x D)	–
Sensing range S_n	8 mm ... 25 mm
Electrical wiring	DC 4-wire / AC 2-wire
Housing material	Plastic
Enclosure rating	IP 67 / IP 68 / IP 69K

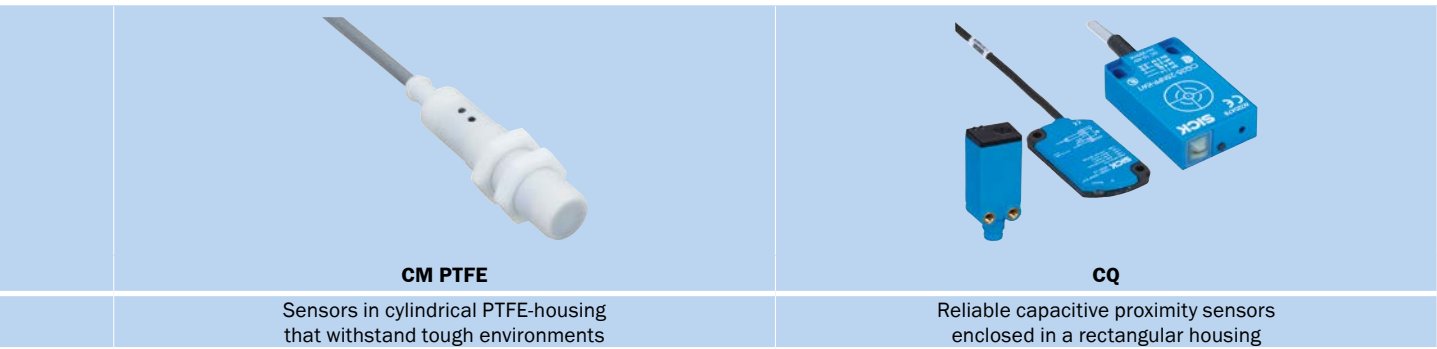**At a glance**

- Cylindrical housing in M12, M18, and M30 models
- Detects powders, granulates, liquids, and solids
- High electromagnetic compatibility
- Electrical configuration: DC 2 and 4-wire
- Supply voltage: 10 V DC to 36 V DC
- Optical adjustment indicator
- Sensing ranges of up to 25 mm
- Enclosure rating: IP 65, IP 68, IP 69K

Detailed information	➜ www.sick.com/CM

	CM PTFE	CQ
	Sensors in cylindrical PTFE-housing that withstand tough environments	Reliable capacitive proximity sensors enclosed in a rectangular housing
	Cylindrical thread design M18 x 1	Rectangular –
	–	16 mm x 39.5 mm x 12 mm 28 mm x 46 mm x 5.5 mm 35 mm x 69.5 mm x 15 mm
	8 mm	6 mm … 25 mm
	DC 4-wire	DC 3-wire / DC 4-wire
	PTFE	Plastic
	IP 67	IP 67 / IP 68

• M18 - metric housing • Detects powders, granulates, liquids, and solids • Extremely high electromagnetic compatibility • Electric version: DC, 4-conductor • Supply voltage: 10 V … 36 V DC • Short-circuit protection (pulsed) • Housing material made from PTFE • IP 67 protection class	• Rectangular housing • Detects powders, granulates, liquids, and solids • Extremely high electromagnetic compatibility • Electric version: DC, 4-conductor • Supply voltage: 10 V … 36 V DC • Short-circuit protection (pulsed)
➜ www.sick.com/CM_PTFE	➜ www.sick.com/CQ

MM

Magnetic proximity sensors in common M8, M12, and M18 cylindrical housing

Technical data overview	
Housing	Cylindrical thread design / cylindrical
Thread size	M8 x 1 M12 x 1 M18 x 1
Housing	–
Sensing range S_n	45 mm … 120 mm
Electrical wiring	DC 3-wire
Magnetic field sensitivity, min.	0.4 mT … 1 mT
Housing material	Nickel-plated brass / V4A
Enclosure rating	IP 67

At a glance

- Types: M8 to M18
- Sensing range: up to 120 mm
- Electrical configuration: DC 3-wire
- Enclosure rating: IP 67
- Temperature range: –25 °C to +75 °C
- Nickel-plated brass housing; plastic sensing face
- Reliable detection of permanent magnets through non-ferromagnetic materials such as stainless steel, aluminum, plastic or wood
- Solves high-temperature applications by installing the permanent magnet in the high-temperature area and the sensor behind an insulated area

Detailed information	➜ www.sick.com/MM

MM Namur	MQ
NAMUR magnetic proximity sensors in a cylindrical housing for explosive areas	Magnetic proximity sensors in a rectangular housing

Cylindrical thread design	Rectangular
M12 x 1	–
M18 x 1	
–	10.3 mm x 37 mm x 16 mm
	10.3 mm x 28 mm x 16 mm
60 mm … 120 mm	≤ 60 mm
–	DC 3-wire
≤ 0.4 mT … ≤ 1 mT	1 mT
Nickel-plated brass / Stainless steel V4A (1.4404, 316L)	VISTAL™
IP 67	IP 68

- Types: M12 to M18 - Sensing range: up to 120 mm - Electrical configuration: NAMUR - Enclosure rating: IP 67 - Temperature range: –25 °C to +70 °C - Nickel-plated brass housing; plastic sensing face - Reliable detection of permanent magnets through non-ferromagnetic materials such as stainless steel, aluminum, plastic or wood - NAMUR design for usage in explosion-hazardous areas	- Type: 10 mm x 28 mm x 16 mm - Sensing ranges: up to 60 mm - Electrical configuration: DC, 3-wire - Enclosure rating: IP 67, IP 68 - Temperature range: –25 °C to +75 °C - Tough VISTAL™ housing - Reliable detection of permanent magnets through non-ferromagnetic materials such as stainless steel, aluminum, plastic or wood - Solves high-temperature applications by installing the permanent magnet in the high-temperature area and the sensor behind an insulated area
➜ www.sick.com/MM_Namur	➜ www.sick.com/MQ

Notes

Notes

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SICK AT A GLANCE

SICK is a leading manufacturer of intelligent sensors and sensor solutions for industrial applications. With more than 7,400 employees and over 50 subsidiaries and equity investments as well as numerous agencies worldwide, we are always close to our customers. 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.

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