General Catalog



NEW

INDUCTIVE SENSORS

- Full Inox Basic with IO-Link
- Full Inox Weld-Immune, M8
- Full Inox C23, cubic with IO-Link
- High Temperature, 230°C (440°F)

PHOTOELECTRIC SENSORS

- Contrast sensor with IO-Link
- C12: Cubic Subminiature
- C23: Cubic with IO-Link
- C23 Distance: Triangulation
- C55 Distance: TOF

SAFETY

• Type 2 light curtains for hand protection

RFID

- LF + HF R/W modules in ContriNet
- HF tags for 180°C (356°F), embeddable in metal
- HF tags for 250°C (482°F)
- EtherCat interface







INTRODUCTION

CONTRINEX

Contrinex is a leading manufacturer of sensors for factory automation. The Swiss company, headquartered in Givisiez near Fribourg (CH), has a unique and innovative range of products whose features far surpass those of standard sensors.

Since its foundation in 1972 by Peter Heimlicher, Dipl Ing ETH, Contrinex has grown from a one-man operation to a multinational group with over 500 employees worldwide. More than 15 subsidiaries cover the core markets in Europe, Asia, North and South America.

At a glance

- Technology leading manufacturer of inductive and photoelectric sensors as well as safety and RFID systems
- World market leader for miniature sensors, sensors with long operating distances and devices for particularly demanding operating conditions (all-metal, high-pressure and high-temperature resistant
- Represented in over 60 countries worldwide, headquarters in Switzerland
- 8000 products

Technology leader for sensor intelligence and industrial RFID



INTELLIGENT SENSORS FOR THE 4TH INDUSTRIAL REVOLUTION: INDUSTRY 4.0

Fit for the future with IO-Link

Intelligent sensors are the fundamental building blocks of modern smart factories. They enable sensorsupported production resources (machines, robots, etc.) to configure, control, manage and optimize themselves. Precise, reliable sensor data is now more essential than ever.

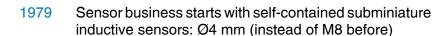
Sensors from Contrinex, the leader in intelligent sensor technology, ensure excellent data quality. To communicate that data, all Contrinex inductive and photoelectric ASIC sensors will be equipped with IO-Link as standard. Customers use either the sensor's binary PNP output or its intelligent IO-Link interface. Both are available in one and the same device.

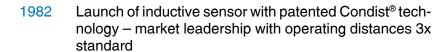
Another advantage is the fact that, with Contrinex sensors, there is no extra charge for IO-Link. This makes them not only quick and simple to install, but also highly economic.

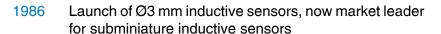
As the first standardized IO technology worldwide (IEC 61131-9) for communication with sensors and actuators, IO-Link is crucial to the 4th Industrial Revolution. By installing Contrinex ASIC sensors with IO-Link, users can make themselves fit for the future.



MARKET-LEADING INNOVATION







1996 Market launch of Ø4 mm subminiature photoelectric sensors

Launch of world's first inductive sensor with full-metal 1999 housing - thanks to patented Condet® technology

2005 Integration of Contrinex's excellent performance for inductive sensors in CMOS-ASIC (Application-Specific Integrated Circuit), a proprietary development

2007 Launch of RFID products for closed loop industrial applications. First RFID product range with tags and readers in full-metal housing

2008 Launch of Safetinex[®], the industrial safety product range

2009 The smart sensor is born. Launch of next generation ASIC, a "system on a chip", including IO-Link interface

Development starts on Contrinex's first ASIC for 2011 photoelectric sensors

2014 Launch of photoelectric sensor with new generation Contrinex ASIC and IO-Link



Early inductive sensor produced for own use in 1973 (special version for extreme conditions)



ASIC sensor technology



Safety product range



Subminiature photoelectric sensor

CONTRINEX PRODUCT RANGES

SENSORS

INDUCTIVE

BASIC MINIATURE **EXTREME** EXTRA PRESSURE HIGH PRESSURE EXTRA TEMPERATURE HIGH TEMPERATURE WASHDOWN ANALOG OUTPUT 2-WIRE WELD-IMMUNE SPECIAL

PHOTOELECTRIC

CYLINDRICAL SUBMINIATURE CYLINDRICAL MINIATURE CYLINDRICAL SMALL **CUBIC SUBMINIATURE CUBIC MINIATURE CUBIC SMALL CUBIC COMPACT** FIBER-OPTIC AMPLIFIERS, FIBERS

ULTRASONIC

MINIATURE **SMALL** COMPACT

CAPACITIVE

BASIC HIGH PERFORMANCE

LIGHT CURTAINS

FINGER PROTECTION type 4 HAND PROTECTION type 4 and type 2 SAFETY RELAYS ACCESS CONTROL type 4

RFID

LOW AND HIGH FREQUENCY

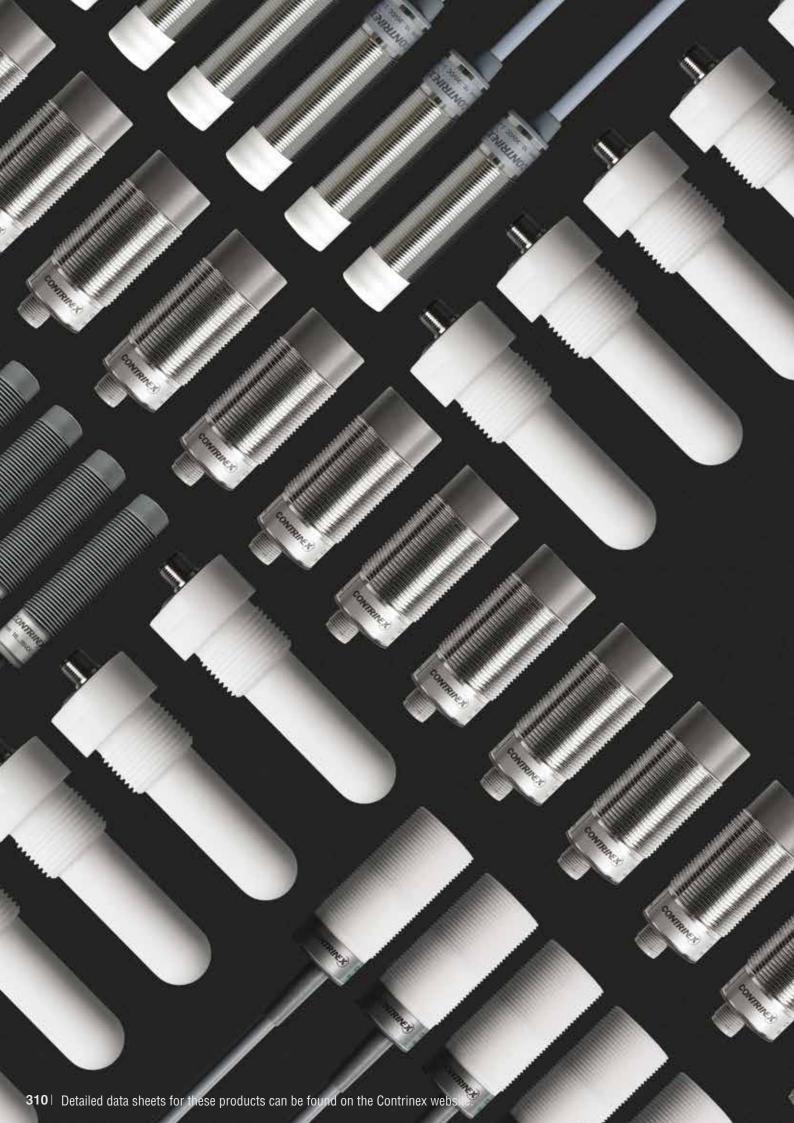
TRANSPONDERS CONTRINET **USB READ/WRITE MODULES** HANDHELD DEVICES **ACCESSORIES SOFTWARE** STARTER KITS



SENSOR SELECTOR

	INDUCTIVE	PHOTOELECTRIC
SENSING DISTANCE	1 mm - 40 mm	1 mm - 50,000 mm
TARGET MATERIAL	Metal only	Any material that reflects light
SENSING SPEED	0.02 - 10 kHz	1 - 5 kHz
ENVIRONMENT	Versions for normal or harsh and dirty environments, with protection class up to IP 68 / IP 69K	For clean environments without dust or steam, with protection class up to IP 67
PROGRAM OVERVIEW	P. 16-19	P. 168 - 171
TASKS	 ✓ Presence detection of metal objects ✓ Position control of all kinds of metal targets ✓ Counting tasks ✓ Distance control on end positions ✓ Quality control 	 ✓ Sensing of light reflective objects ✓ Position control of cartons and other objects on conveyors ✓ Detection of small objects over large distances

ULTRASONIC	CAPACITIVE	
10 mm - 6000 mm	1 mm - 40 mm	
Any material that reflects sounds	Metals, non-metals, liquids, powders	
1 - 10 Hz	15 - 500 Hz	
For industrial environments, with protection class up to IP 67	For normal or demanding environments, with protection class up to IP 67	
P. 286 - 287	P. 312 - 313	
 ✓ Detection of all objects that reflect ultrasound ✓ Monitoring of winding and unwinding processes ✓ Liquid level control ✓ Loop tension control ✓ Position feedback ✓ Distance or height control 	 ✓ Level control of fluids, bulk materials and powder ✓ Presence detection of almost all materials ✓ Counting tasks for non-metallic materials ✓ Detection through non-metallic container walls 	



CAPACITIVE SENSORS

HIGHLIGHTS:

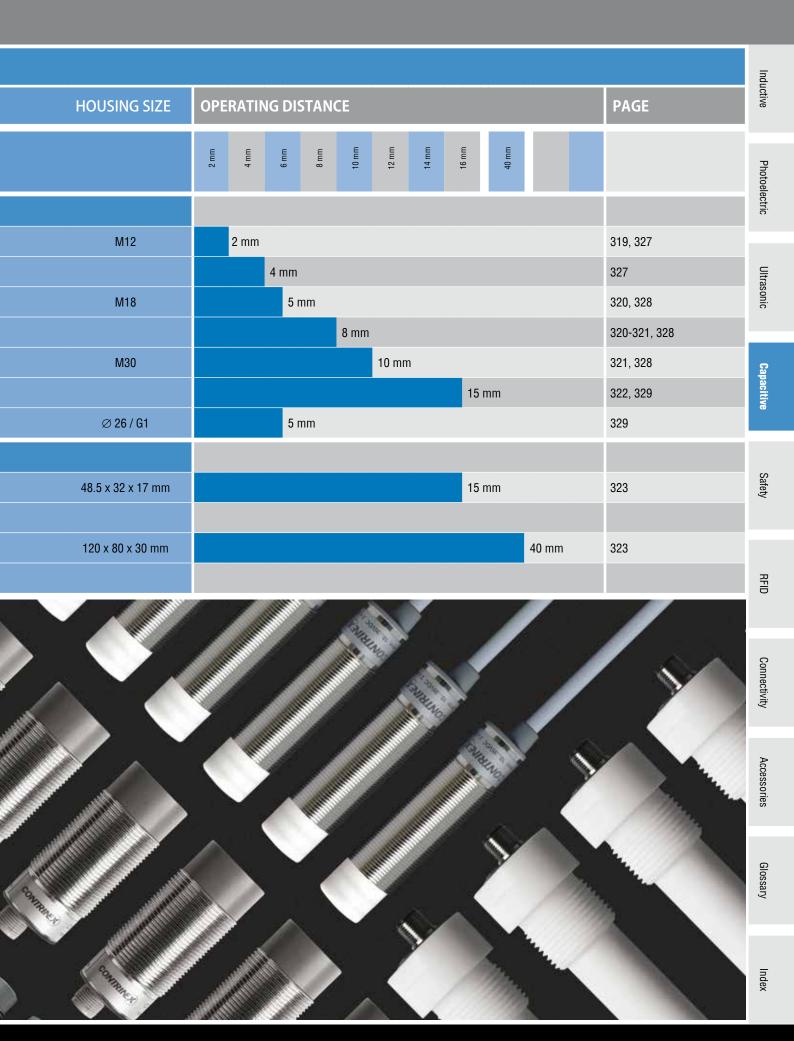
- ✓ Detection of virtually all target materials
- ✓ Easy adjustment with potentiometer and LED
- ✓ Detection through non-metallic pipes and containers
- ✓ Sensors for use in harsh chemical environments

NEW:

- ✓ Reliable level control of sticky and viscous materials
- ✓ Sensors with hygienic, FDA-compliant, PTFE housings

PROGRAM OVERVIEW

PRODUC	T RANGE	BASIC	HIGH PERFORMANCE
HOUSING SIZE	OPERATING DISTANCE		
		CYLINDRICAL	
M12	2 mm	p. 319	p. 327
	4 mm		p. 327
M18	5 mm	p. 320	p. 328
	8 mm	p. 320-321	p. 328
M30	10 mm	p. 321	p. 328
	15 mm	p. 322	p. 329
Ø 26 / G1	5 mm		p. 329
		CUBIC	
48.5 x 32 x 17 mm	15 mm	p. 323	
120 x 80 x 30 mm	40 mm	p. 323	



INTRODUCTION

Capacitive sensors are used in machines, installations and vehicles for monitoring the levels of liquids, pastes and bulk material. These materials can even be detected through non-metallic dividing walls. In addition, capacitive sensors are suitable as limit switches, contact-free position switches, for monitoring and positioning, as pulse generators for counting purposes, distance and speed measurement, and much more.

OPERATING PRINCIPLE

The electrodes at the device's sensing face permit the sensor to detect the dielectric conditions in its close surroundings. Depending on the distance between the target (or material) to be detected and the capacitive sensor, the capacitance in the measuring zone changes. The capacitance is dependent not only on the above-mentioned distance, but also on the dielectric constant (ε) of the target, as well as its shape. As the sensor approaches the target, the capacitance increases. When the set threshold value is reached, the transistor-oscillator is activated. By means of the built-in electronics, a changeable, electrical current is generated which, depending on the execution of the device, is available as a linear current signal or as a binary voltage at the output.

Using capacitive sensors, electronic circuits and PLCs, as well as relays or contactors can be controlled directly.

Capacitive sensors are enclosed in synthetic or metal housings and potted in epoxy resin. They are, moreover, insensitive to dirt and shock.

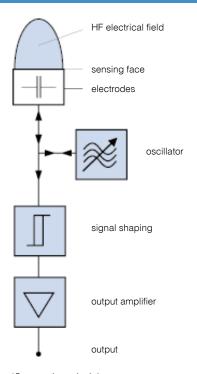


Fig. 15: operating principle

DELIVERY PROGRAM

Contrinex capacitive sensors deliver a reliable solution for all kinds of level sensing tasks. They are suitable for detection and position monitoring with virtually any target material. The program includes sensors in cylindrical (M12, M18 M30 or Ø 26/G1) or cubic form. Two ranges are offered: a cost effective Basic range, which includes AC/DC output switching, and a **High performance** range for difficult sensing tasks.

BASIC

Cost-effective with any target material - ideal for fill level sensing

The Contrinex Basic range consists of cylindrical and cubic devices. Cylindrical devices are available in 4-wire M12, M18 and M30 standard sizes. All 3 sizes may have PNP or NPN changeover outputs, while M30 devices are also available with 2-wire switching outputs (AC/DC, NO). Housings are either in durable polyphenylene oxide (PPO) or stainless steel



(V2A AISI 304) with a PPO sensing face. Sensor connection is by means of cable or an integral connector. All device types are available in embeddable versions, allowing detection through container walls. In addition, M18 and M30-sized devices are also available in non-embeddable versions that permit longer operating distances.

Cubic devices are available, sized 32 x 34 mm in a PVC housing with 3-wire connection, or 120 x 80 mm in a PBT housing with 4-wire connection.

With operating distances from 0.5 mm to 25 mm, Contrinex **Basic** range capacitive sensors are the cost effective solution for level sensing tasks in the plastics industry, in particular for the level control of granulates in feeders, pipes or silos.

HIGH PERFORMANCE

Challenging environments and viscous or sticky target materials

The Contrinex High performance range consists of 4-wire devices in M12, M18 and M30 standard sizes. All 3 sizes may have PNP or NPN changeover outputs. Hous-



ings are either in hygienic polytetrafluoroethylene (PTFE/Teflon) or stainless steel (V2A AISI 304) with a PTFE sensing face. Sensor connection is by means of cable or an integral connector. All these device sizes are available in non-embeddable or embeddable versions.

Devices with a PTFE housing are FDA compliant and ideal for applications in food and pharmaceutical industries. This hygienic housing material cannot contaminate produced goods and resists chemical cleaning agents.

For the difficult task of sensing sticky and viscous materials, the High performance range includes Ø 26/G1-sized sensors in a non-embeddable PTFE housing with PNP Changeover output.

With operating distances from 0 to 30 mm, Contrinex High performance range capacitive sensors are the ideal solution for difficult sensing tasks in demanding industries and environments.

SERIES AND PARALLEL CONNECTION

Capacitive 2-wire sensors with binary output can be used in series or parallel connection, similar to mechanical contacts. Attention has to be paid to the device-specific voltage drop, i.e. the residual voltage U_d, which multiplies in the case of series connection according to the number of devices. In the case of parallel connection of sensors with thyristor output, the first switching output takes the whole load current.

ADJUSTMENT OF THE OPERATING DISTANCE

Equipped with a 20-turn potentiometer, these Contrinex sensors allow for adjustment of the operating distance, which can be either longer than or shorter than the rated operating distance. Under favorable conditions, an operating distance of up to the maximum given value can be set.

MOUNTING

As with inductive sensors, two kinds of mounting are distinguished for capacitive sensors: embeddable or non-embeddable.

Sensors for embeddable installation in metal or other materials can be arranged side by side, and are particularly suitable for the contact-free detection of solid bodies or liquid levels through non-metallic dividing walls (max. wall thickness 4 mm).

When mounting two or more sensors for non-embeddable installation side by side in metal or other materials, some free space must be provided. Non-embeddable sensors are particularly suitable for applications where the medium to be detected comes into contact with the sensing head (e.g. level monitoring of bulk material, pastes or liquids).







COST EFFECTIVE WITH ANY TARGET MATERIAL

BASIC

CAPACITIVE SENSORS

KEY ADVANTAGES

- ✓ Synthetic housings
- ✓ For the detection of all kind of materials
- √ Adjustable operating distances
- ✓ Easy potentiometer set-up
- √ 4-wire devices

RANGE OVERVIEW	Housing size	Cylindrical	AC / DC	Cubic
BASIC	M12	p. 319		
	M18	p. 320-321		
	M30	p. 321-322	p. 321-322	
	48.5 x 32 x 17 mm			p. 323
	120 x 80 x 30 mm			p. 323

OVERVIEW

HOUSING SIZE

OPERATING DISTANCE MM

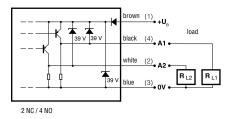
Ambient temperature range Setup

-25 ... +70 °C / -13 ... +158 °F Potentiometer

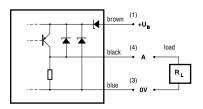
CAPACITIVE

WIRING DIAGRAMS

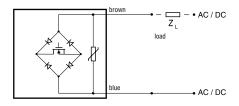
PNP Changeover outputs



PNP normally open (NO)



2-wire AC/DC



DATA	
Op. distance min./max. adjustable	
Housing material	
Sensing face material	
Degree of protection	
Mounting	
Max. switching frequency	
LED	
Supply voltage range	
PNP Changeover	
Other types available	

BASIC

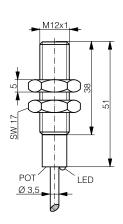
M12	M12	M12	M12
2	2	2	2

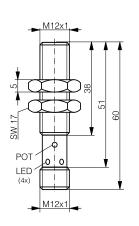


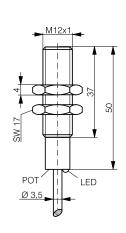


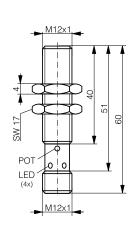












0.5 5 mm	0.5 5 mm	0.5 5 mm	0.5 5 mm	
PPO	PPO	Stainless steel V2A	Stainless steel V2A	
PPO	PPO	PP0	PPO	
IP 67	IP 67	IP 67	IP 67	
Embeddable	Embeddable	Embeddable	Embeddable	, i
300 Hz	50 Hz	300 Hz	300 Hz	
Yellow	Yellow / green	Yellow	Yellow	
12 30 VDC	10 35 VDC	12 30 VDC	12 30 VDC	
CSK-1121-203	CSS-1120-203	CSK-1121-103	CSS-1121-103	

Photoelectric

Inductive

Ultrasonic

Capacitive

Safety

RFID

Connectivity

Accessories

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CAPACITIVE

M18

5

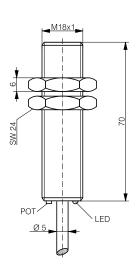
M18

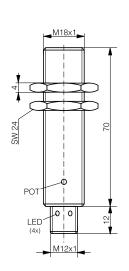
8

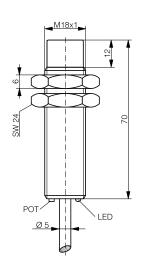












DATA				
Op. distance min./max. adjustable	1 8 mm	1 8 mm	1 10 mm	
Housing material	PP0	PP0	PP0	
Sensing face material	PP0	PPO PPO	PP0	
Degree of protection	IP 67	IP 67	IP 67	
Mounting	Embeddable	Embeddable	Non-embeddable	
Max. switching frequency	200 Hz	200 Hz	50 Hz	
LED	Yellow	Yellow	Yellow	
Supply voltage range	12 30 VDC	12 30 VDC	12 30 VDC	
PNP Changeover	CSK-1181-203	CSS-1181-203	CSK-1181-213	
AC/DC 2-wire NO				
Other types available				

BASIC

M18	M30	M30	M30	1110
8	10	10	10	זכנועם









Photoelectric

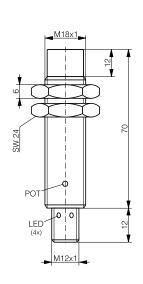
Ultrasonic

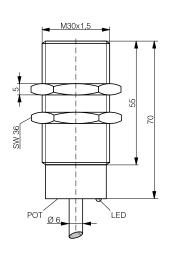
Capacitive

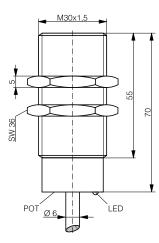
Safety

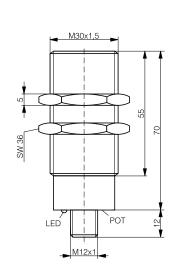
RFID

Connectivity









1 10 mm	2 20 mm	2 20 mm	2 20 mm
PPO	PPO	PP0	PP0
PPO	PPO	PP0	PP0
IP 67	IP 67	IP 67	IP 67
Non-embeddable	Embeddable	Embeddable	Embeddable
50 Hz	25 Hz	150 Hz	150 Hz
Yellow	Yellow	Yellow	Yellow
12 30 VDC	20 250 VDC	12 30 VDC	12 30 VDC
CSS-1181-213		CSK-1301-203	CSS-1301-203
	CSK-1300-207		

15

15

BASIC

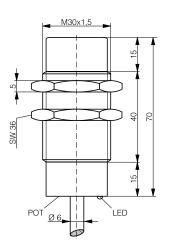
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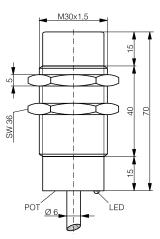


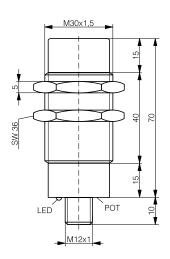












DATA				
Op. distance min./max. adjustable	2 25 mm	2 25 mm	2 25 mm	
Housing material	PPO	PP0	PP0	
Sensing face material	PP0	PP0	PP0	
Degree of protection	IP 67	IP 67	IP 67	
Mounting	Non-embeddable	Non-embeddable	Non-embeddable	
Max. switching frequency	25 Hz	50 Hz	50 Hz	
LED	Yellow	Yellow	Yellow	
Supply voltage range	20 250 VDC	12 30 VDC	12 30 VDC	
PNP Changeover		CSK-1301-213	CSS-1301-213	
AC/DC 2-wire NO	CSK-1300-217			
PNP NO				
Other types available				

BASIC

48.5 x 32 x 17

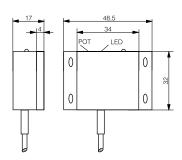
□ 120 x 80 x 30

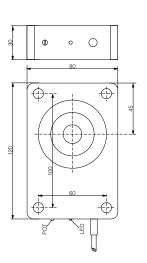
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		Acce
0 17 mm	2 70 mm	Accessories
PVC	PBTP	S
PVC	PBTP	
IP 67	IP 67	
Embeddable	Non-embeddable	Glog
50 Hz	50 Hz	Glossary
Yellow / green	Yellow / green	
10 30 VDC	10 35 VDC	
	CSK-3800-213	
		<u>n</u>
CSK-3320-208		Index

Inductive

Photoelectric

Ultrasonic

Connectivity



RELIABLE IN CHALLENGING SITUATIONS

HIGH **PERFORMANCE CAPACITIVE SENSORS**

KEY ADVANTAGES

- ✓ Metal or PTFE housing
- ✓ Medium optimized performance
- ✓ FDA compliant housings for hygienic applications
- ✓ Reliable detection of viscous and sticky materials
- √ Adjustable operating distances
- √ 3- and 4-wire devices

RANGE OVERVIEW	Housing size	Cylindrical
HIGH PERFORMANCE	M12	p. 327
	M18	p. 328
	M30	p. 328-329
	Ø 26 / G1	p. 329

OVERVIEW

Ambient temperature range

Setup

HOUSING SIZE

OPERATING DISTANCE MM

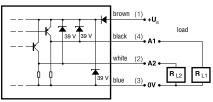
CAPACITIVE

-25 ... +70 °C / -13 ... +158 °F

Potentiometer

WIRING DIAGRAM

PNP Changeover outputs



2 NC / 4 NO

DATA	
Op. distance min./max. adjustable	
Housing material	
Sensing face material	
Degree of protection	
Mounting	
Max. switching frequency	
LED	
Supply voltage range	
PNP Changeover	
Other types available	

HIGH PERFORMANCE

M12	M12	M12	M12
2	2	4	4









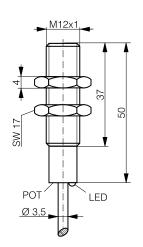


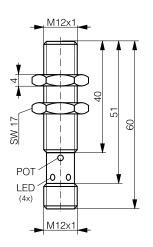


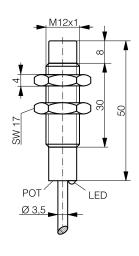
Capacitive

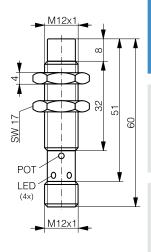
Safety

Photoelectric









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Accessories

Glossary

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RFID

0 6 mm	0 6 mm	1 8 mm	1 8 mm
Stainless steel V2A	Stainless steel V2A	Stainless steel V2A	Stainless steel V2A
PTFE	PTFE	PTFE	PTFE
IP 67	IP 67	IP 67	IP 67
Embeddable	Embeddable	Non-embeddable	Non-embeddable
500 Hz	500 Hz	50 Hz	50 Hz
Yellow / green	Yellow / green	Yellow	Yellow
10 35 VDC	10 35 VDC	12 30 VDC	12 30 VDC
CSK-1120-103	CSS-1120-103	CSK-1120-113	CSS-1120-113

HIGH PERFORMANCE

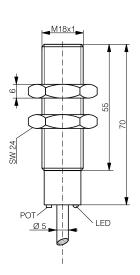
HOUSING SIZE	M18	M18	M30	
OPERATING DISTANCE MM	5	8	10	

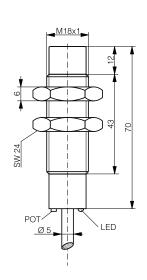


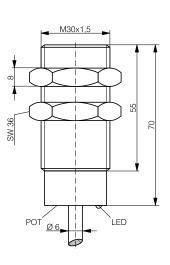












DATA				
Op. distance min./max. adjustable	0.5 10 mm	0.5 15 mm	0.5 25 mm	
Housing material	PTFE	PTFE	PTFE	
Sensing face material	PTFE	PTFE	PTFE	
Degree of protection	IP 67	IP 67	IP 67	
Mounting	Embeddable	Non-embeddable	Embeddable	
Max. switching frequency	300 Hz	50 Hz	200 Hz	
LED	Yellow / green	Yellow / green	Yellow / green	
Supply voltage range	10 35 VDC	10 35 VDC	10 35 VDC	
PNP Changeover	CSK-1180-303	CSK-1180-313	CSK-1300-303	
Other types available				

HIGH PERFORMANCE

M30	M30	Ø 26/G1	Ø 26/G1	Indu
15	15	5	5	ictive







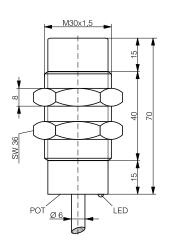


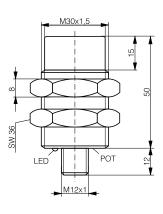
Photoelectric

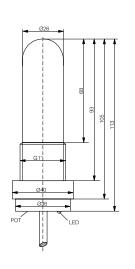
Ultrasonic

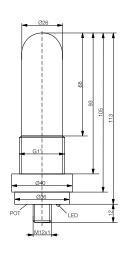
Capacitive

Safety



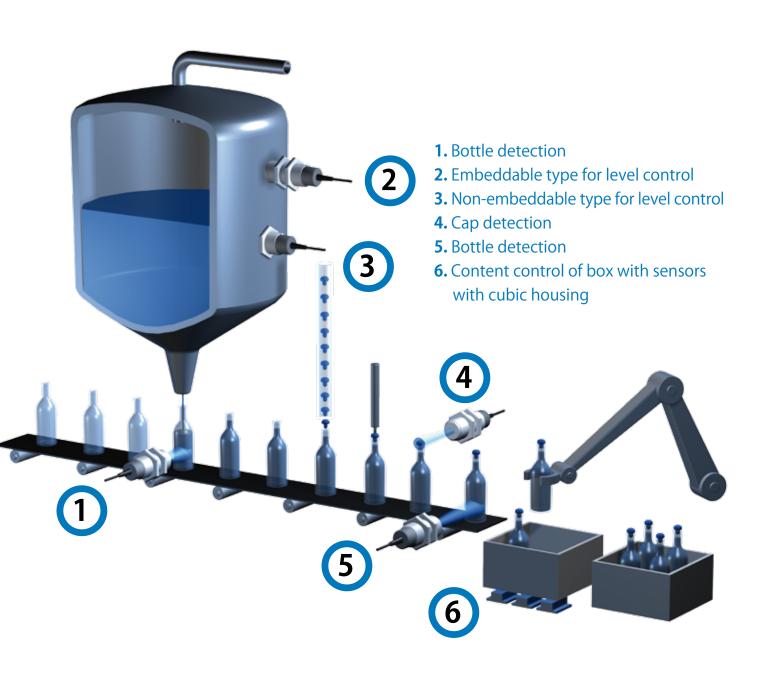






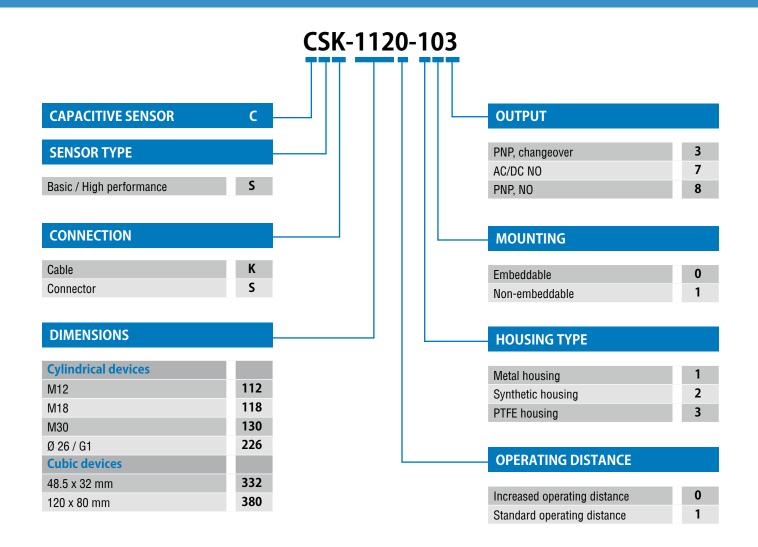
1 30 mm	1 30 mm	0 20 mm	0 20 mm	
PTFE	PTFE	PTFE	PTFE	
PTFE	PTFE	PTFE	PTFE	
IP 67	IP 67	IP 67	IP 67	
Non-embeddable	Non-embeddable	Non-embeddable	Non-embeddable	
50 Hz	50 Hz	50 Hz	50 Hz	
Yellow / green	Yellow / green	Yellow / green	Yellow / green	
10 35 VDC	10 35 VDC	10 35 VDC	10 35 VDC	
CSK-1300-313	CSS-1300-313	CSK-2260-313	CSS-2260-313	

Accessories





CAPACITIVE SENSORS



CAPACITIVE SENSORS

Part reference	Chapter/page	Part reference	Chapter/page
CSK-1120-103	4/327	CSS-1120-103	4/327
CSK-1120-113	4/327	CSS-1120-113	4/327
CSK-1121-103	4/319	CSS-1120-203	4/319
CSK-1121-203	4/319	CSS-1121-103	4/319
CSK-1180-303	4/328	CSS-1181-203	4/320
CSK-1180-313	4/328	CSS-1181-213	4/321
CSK-1181-203	4/320	CSS-1300-313	4/329
CSK-1181-213	4/320	CSS-1301-203	4/321
CSK-1300-207	4/321	CSS-1301-213	4/322
CSK-1300-217	4/322	CSS-2260-313	4/329
CSK-1300-303	4/328		
CSK-1300-313	4/329		
CSK-1301-203	4/321		
CSK-1301-213	4/322		
CSK-2260-313	4/329		
CSK-3320-208	4/323		
CSK-3800-213	4/323		



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