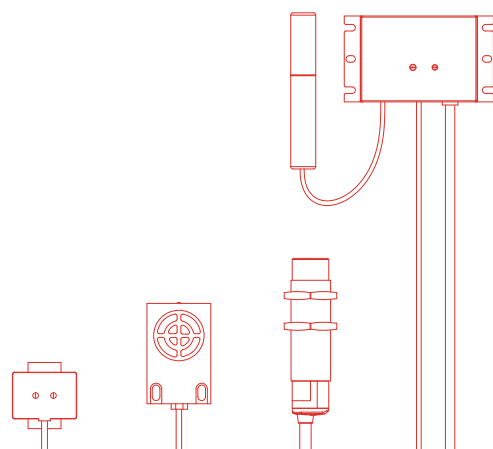
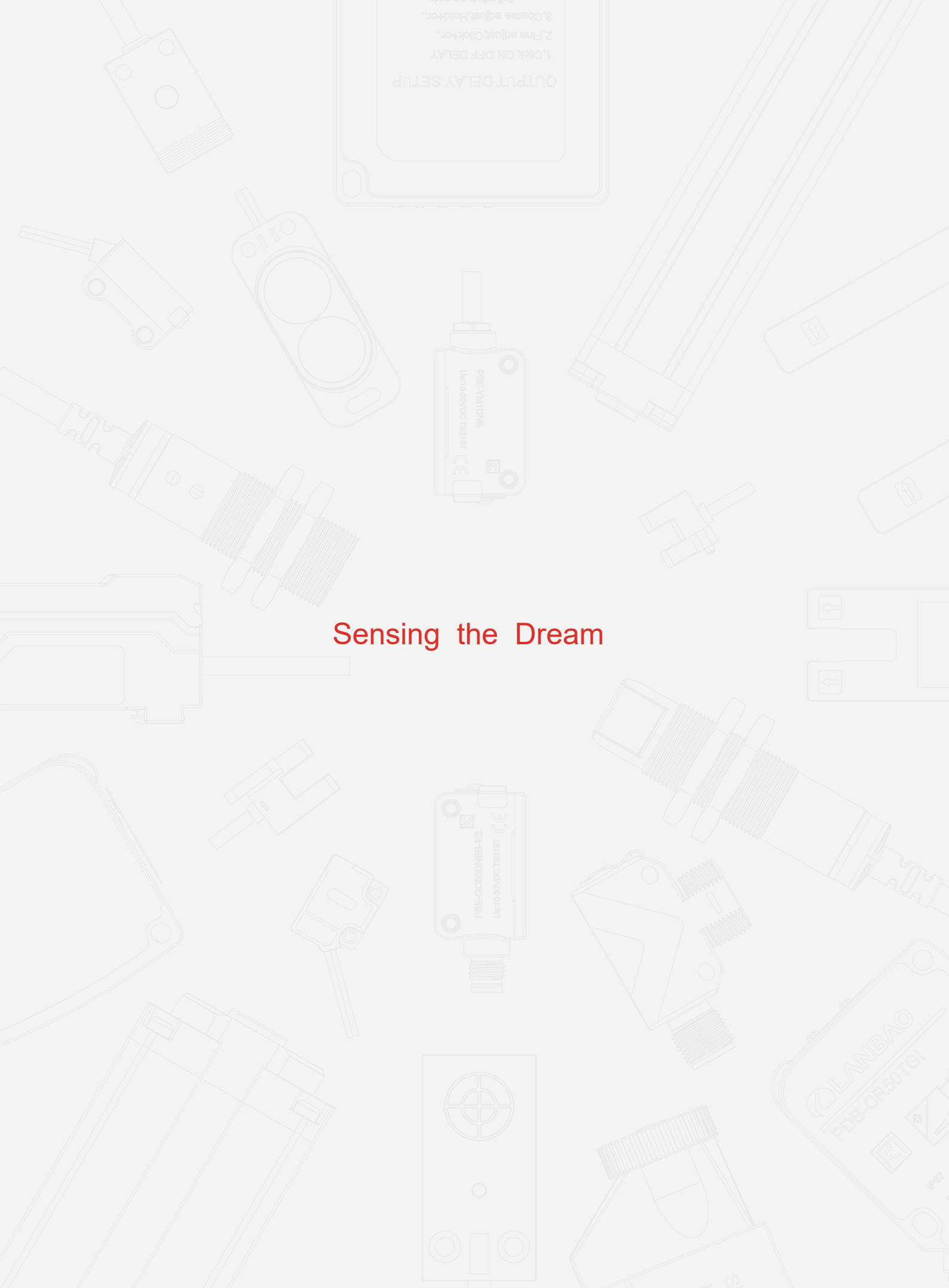


CAPACITIVE SENSORS





Sensing the Dream



About Us

Shanghai Lanbao Sensing Technology Co., Ltd., established in 1998, is a leading Chinese provider of industrial automation solutions. We specialize in developing innovative sensing technologies and systems, driving advancements in intelligent manufacturing. Our products are widely used across various industries, including electronics, automotive and energy, enhancing efficiency, safety and sustainability.

Lanbao offers a comprehensive range of sensors, including photoelectric, inductive, capacitive, laser, millimeter wave, ultrasonic and 3D laser measurement. Our solutions cater to diverse applications, from industrial robotics and automation to advanced manufacturing processes.



In 1998
Established



360+
Patents and
copyrights



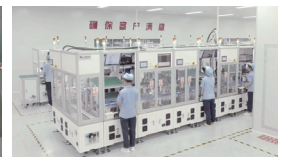
120+
Countries



99,000m²
Factory



15,000,000
Pcs/year



CORE PRODUCTS



Based on intelligent sensing technology, internet of things, cloud computing, big data, mobile internet and other advanced technologies, Lanbao improved the intelligence level of various products to help customers to transform their production modes from artificial to intelligent and digital. In this way, we're able to elevate the level of intelligent manufacturing to empower customers with high competitiveness.



Inductive Sensors

- Standard function cylindrical series
- Standard function square series
- High protection series
- Temperature extended series
- Factor one series
- Welding immune series
- Extended distance series
- Full metal housing series
- Clamp position series
- Analog output series
- Self-diagnosis series
- Speed monitoring series
- NAMUR series
- High pressure resistant series
- Inductive distance measuring series



Capacitive Sensors

- Standard function cylindrical series
- Standard function square series
- Extended sensing distance series
- Pipe liquid level series
- High temperature resistant material level series
- Corrosion resistant series
- Frequency enhanced series
- Split type series



Photoelectric Sensors

- Ultra thin series
- Micro square series
- Slot series
- Optical fiber series
- Little square series
- Large square series
- Color series
- Label series
- Round and square series
- Cylindrical series
- Color mark series

Measurement and Vision Sensors



Laser distance measuring sensor
PDA/PDB

OLED digital display, convenient operation, button/remote teach-in, multiple specifications available.



Laser displacement sensor
PDA/PDB/PDE

OLED digital display, easy operation, small size with high precision, flexible output mode, multiple specifications available.



CCD Laser diameter measuring sensor
PDT/PDM

Exquisite wide range, high precision, a variety of measurement modes, compatible with one-to-two, multi-controller cascading.



2D Laser scanner sensor
PDL

High-performance lidar to meet multiple applications widely used in manufacturing, warehousing, logistics, medical and service robot industries.



LVDT displacement sensor
LVR/LVA

Digital/analog/RS48 measurement accuracy reaches micron level.



Ultrasonic sensor
UR12/18/30/US40

With features as anti-pollution, antidust, anti-moisture, and strong penetration ability, widely used in fields like liquid level monitoring, robot anti-collision, single and double sheet detection, etc.



Millimeter wave radar sensor
MRA

Long-distance and high-precision ranging to meet micro-change monitoring in complex environments.



Code reader
PID

Wide resolution coverage and multiple series to meet industrial-level information traceability needs.



3D line scan sensor
PHM

In use of high-precision CMOS sensors and unique algorithms, with ultra high linear accuracy to realize non-contact and wear-free measurement.

Sensing the Dream

Safety and Control



Light curtain

SFB/SFE/SFG/SFN/SFS
MH20/MH40

SFx series high-level safety protective light curtains are widely used in forging and stamping industries, automotive manufacturing, and electrical and electronics manufacturing industries. MHxx series measuring light curtains can measure the size of objects and are extensively used in product quality inspection and passing detection.



Safety door switch

SLB-D/SLC-D/SLAS-D/SLD/
Operation keys

Combining ease of use and reliability, with various sizes and contact points available for selection.



Encoder

ENI38K/38S/50S/58K/58S
ENA39S/58S

Applied to machine tool feed axes, servo motion control, and industrial robots, the encoder features high rigidity, high response, and high positioning accuracy.



Gas Pressure Sensor

DPG

Gas pressure sensors, with their high precision, rapid response, strong environmental adaptability, and diverse outputs, have become the core device for gas pressure monitoring.

Industrial Network Module and Connection System



Industrial network module

Master/hub

Stable and reliable communication transmission, robust metal casing, excellent cost-performance ratio, aiding in the realization of Industry 4.0.



Junction box

DB08/DB12

Consolidate multiple power and data signals, reducing the amount of wiring needed.



Connection cable

QE8/QE12

Designed to connect various electronic devices for data transmission and power supply.



Connector

QE8/QE12

For electric connections, making the design and production process more convenient and flexible.

CONTENTS

01 Standard function cylindrical series

CR12/18/30 series E01-005

CQ20/32/34 series E01-017

02 Standard function square series

CE05S/05XS/07S/ E02-001

34S/35S/39S series

03 Extended sensing distance series

CR12/18/30 series E03-001

04 Frequency enhanced series

CR12/18 series E04-001

CE05S/05XS/06XS/ E04-004

16S/17S/34S series

05 Corrosion resistant series

CR18XT series E05-001

06 Pipe liquid level series

CE10S/15S series E06-01

07 High temperature material level series

CE53S series E07-001

08 Split type series

CE05S series E08-01

C R 18 X S C F 05 D P O □ - □ □
 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫ ⑬ ⑭

1. Classification

C: Capacitive sensor

2. Appearance code

R: Threaded cylindrical

Q: Smooth cylindrical

E: Square

3. Size code

Number: 01...99mm

4. Shape code

Blank: Cylindrical

X: Appearance improved/
function enhanced products**5. Housing material**

Blank: Metal copper

G: Stainless steel

S: Plastic

T: Teflon

6. Housing size

Blank: Square shell

A: Short

B: Standard

C: Long

D: Extra long

7. Mounting

F: Flush

N: Non-flush

8. Sensing distance

01...99: 1...99mm

e.g. 02: 2mm

9. Supply voltage

A: 20...250V AC

D: 10...30V DC

M: 18...36V DC

S: 20...250V AC/DC

10. Output logic

N: NPN

P: PNP

B: AC/DC 2 wires

F: NPN+PNP

T: AC 2wires

K: Relay

11. Output status

O: NO

C: NC

R: NO+NC

B: NO/NC optional

L: IO-link

12. Switch function

Blank: Standard function

G: Frequency enhanced

T1: On-delay function

T2: Off-delay function

Y: Extended distance

13. Connection

Blank: 2m cable

xM: xM cable (x: number)

e.g. 3M: 3M cable

E1: M8 3-pins connector

E2: M12 4-pins connector

E3: M8 4-pins connector

E5: M12 5-pins connector

Fx: Connector+cable

D: Terminal

14. Special requirements

4 digits or letters

Cylindrical

Square

Extended
distanceEnhanced
frequencyCorrosion
resistant

Pipe liquid level

High temperature
resistant
material level

Split type

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Product Family

Capacitive Sensors

Standard function cylindrical series

Universal outline design, adjustable sensitivity potentiometer. Full range of sizes from M12 to M30.

E01-005 CR12/18/30
CQ20/32/34



Standard function square series

Universal outline design, adjustable sensitivity potentiometer. Full range of sizes from CE05 to CE39.

E02-001 CE05S/05XS/07S
CE34S/35S/39S



Extended distance series

Longer sensing distance, up to 25mm. Adjustable sensitivity potentiometer.

E03-001 CR12X/18X/30X



Frequency enhanced series

Fast response speed, up to 100Hz. Adjustable sensitivity potentiometer.

E04-001 CR12X/18X
CE05S/05XS/06XS/16S/17S/34S



Corrosion resistant series

PTFE coating, corrosion-resistant and oil-resistant. Adjustable sensitivity potentiometer.

E05-001 CR18XT



Pipe liquid level series

Arc-shaped outline design, easy to install on pipe wall for detection. Adjustable sensitivity potentiometer.

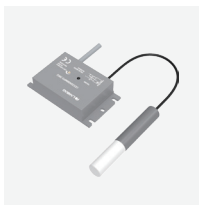
E06-001 CE10S/15S



High temperature resistant material level series

Applied for target detection in high-temperature environments such as dispensing equipment. Adjustable sensitivity potentiometer.

E07-001 CE53S



Split type series

Fast response speed, up to 100Hz. Separate sensing head and amplifier, convenient for adjustment and status indication.

E08-001 CE05



Cylindrical

Square

Extended distance

Enhanced frequency

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

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Series	Model Sensing distance	Insta- llation	CR12/12S	CR18/18S	CR30/30S	CR30XS	CQ20/20S	CQ32/32S	CQ32XS	CQ34S
Standard cylindrical series	F		2mm	5mm	10mm	10mm	10mm	15mm	15mm	15mm
	N		4mm	8mm	15mm		15mm	20mm		20mm

Series	Model Sensing distance	Insta- llation	CE05S/05XS	CE07S	CE34S	CE35S	CE39S
Standard function square series	F			5mm		10mm	
	N		5/6/8mm	8mm	10mm	15mm	12mm

Series	Model Sensing distance	Insta- llation	CR12X/XS	CR18X/XS	CR30X/XS	CE05S/05XS	CE06XS	CE16S	CE17S	CE34S
Extended sensing distance series	F		4mm	8mm	15mm					
	N		8mm	12mm	25mm					
Frequency enhanced series	F		4mm	8mm						
	N					5mm	6mm	6mm	8mm	8mm
Corrosion resistant series	F			5/8mm						
	N			8/12mm						

Series	Model Sensing distance	Insta- llation	CE10S	CE15S	CE53S
Pipe liquid level series	N		13mm	26mm	
High tempe- rature resis- tant material level series	N				8mm

Cylindrical

Square

Extended
distanceEnhanced
frequencyCorrosion
resistant

Pipe liquid level

High temperature
resistant
material level

Split type

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Capacitive Sensors

Standard Function Cylindrical Series



Rich variety of products

Metal shell and plastic shell, cylindrical diameter from M12 to $\phi 34$.

High protection degree

IP67 protection degree, with excellent water and oil resistance.

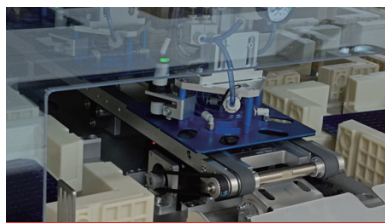
Wider range of applications

Detection of metal, plastic, glass, liquid etc.

Potentiometer sensitivity adjustment function

Potentiometer to adjust settings for different applications.

Application



Vacuum chuck wafer presence detection



DC 3/4 wires

Appearance	Dimension (mm)	Mounting	Connection	Sensing distance	Type	Model	
						NPN	PNP
	M12*1*52	Flush	2m cable	2mm	NO	CR12CF02DNO	CR12CF02DPO
					NC	CR12CF02DNC	CR12CF02DPC
	M12*1*65	Flush	Connector	2mm	NO	CR12CF02DNO-E2 ^②	CR12CF02DPO-E2 ^②
					NC	CR12CF02DNC-E2 ^②	CR12CF02DPC-E2 ^②
	M12*1*56	Non-flush	2m cable	4mm	NO	CR12CN04DNO	CR12CN04DPO
					NC	CR12CN04DNC	CR12CN04DPC
	M12*1*69	Non-flush	Connector	4mm	NO	CR12CN04DNO-E2 ^②	CR12CN04DPO-E2 ^②
					NC	CR12CN04DNC-E2 ^②	CR12CN04DPC-E2 ^②
	M12*1*52	Flush	2m cable	2mm	NO	CR12SCF02DNO	CR12SCF02DPO
					NC	CR12SCF02DNC	CR12SCF02DPC
	M12*1*65	Flush	Connector	2mm	NO	CR12SCF02DNO-E2 ^②	CR12SCF02DPO-E2 ^②
					NC	CR12SCF02DNC-E2 ^②	CR12SCF02DPC-E2 ^②
	M12*1*59	Non-flush	2m cable	4mm	NO	CR12SCN04DNO	CR12SCN04DPO
					NC	CR12SCN04DNC	CR12SCN04DPC
	M12*1*69	Non-flush	Connector	4mm	NO	CR12SCN04DNO-E2 ^②	CR12SCN04DPO-E2 ^②
					NC	CR12SCN04DNC-E2 ^②	CR12SCN04DPC-E2 ^②
	M18*70	Flush	2m cable	5mm	NO	CR18CF05DNO	CR18CF05DPO
					NC	CR18CF05DNC	CR18CF05DPC
					NO	CR18CF05DNR	CR18CF05DPR
	M18*1*70	Flush	Connector	5mm	NO	CR18CF05DNO-E2 ^②	CR18CF05DPO-E2 ^②
					NC	CR18CF05DNC-E2 ^②	CR18CF05DPC-E2 ^②
					NO+NC	CR18CF05DNR-E2 ^②	CR18CF05DPR-E2 ^②
	M18*1*83.5	Non-flush	2m cable	8mm	NO	CR18CN08DNO	CR18CN08DPO
					NC	CR18CN08DNC	CR18CN08DPC
					NO+NC	CR18CN08DNR	CR18CN08DPR
	M18*1*91.5	Non-flush	Connector	8mm	NO	CR18CN08DNO-E2 ^②	CR18CN08DPO-E2 ^②
					NC	CR18CN08DNC-E2 ^②	CR18CN08DPC-E2 ^②
					NO+NC	CR18CN08DNR-E2 ^②	CR18CN08DPR-E2 ^②
	M18*1*70	Flush	2m cable	5mm	NO	CR18SCF05DNO	CR18SCF05DPO
					NC	CR18SCF05DNC	CR18SCF05DPC
					NO+NC	CR18SCF05DNR	CR18SCF05DPR
	M18*1*83.5	Flush	Connector	5mm	NO	CR18SCF05DNO-E2 ^②	CR18SCF05DPO-E2 ^②
					NC	CR18SCF05DNC-E2 ^②	CR18SCF05DPC-E2 ^②
					NO+NC	CR18SCF05DNR-E2 ^②	CR18SCF05DPR-E2 ^②
	M18*1*78	Non-flush	2m cable	8mm	NO	CR18SCN08DNO	CR18SCN08DPO
					NC	CR18SCN08DNC	CR18SCN08DPC
					NO+NC	CR18SCN08DNR	CR18SCN08DPR
	M18*1*91.5	Non-flush	Connector	8mm	NO	CR18SCN08DNO-E2 ^②	CR18SCN08DPO-E2 ^②
					NC	CR18SCN08DNC-E2 ^②	CR18SCN08DPC-E2 ^②
					NO+NC	CR18SCN08DNR-E2 ^②	CR18SCN08DPR-E2 ^②
	M30*1.5*62	Flush	2m cable	10mm	NO	CR30CF10DNO	CR30CF10DPO
					NC	CR30CF10DNC	CR30CF10DPC
					NO+NC	CR30CF10DNR	CR30CF10DPR

②E2:M12 4-pins connector

Capacitive

Cylindrical

Square

Extended distance

Enhanced frequency

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

Naming rules

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Selection List

Standard Function Cylindrical Series

Capacitive

Cylindrical

Square

Extended distance

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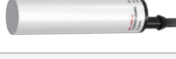
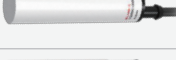
Appearance	Dimension (mm)	Mounting	Connection	Sensing distance	Type	Model	
						NPN	PNP
	M30*1.5*62	Flush	Connector	10mm	NO	CR30CF10DNO-E2 ^②	CR30CF10DPO-E2 ^②
					NC	CR30CF10DNC-E2 ^②	CR30CF10DPC-E2 ^②
					NO+NC	CR30CF10DNR-E2 ^②	CR30CF10DPR-E2 ^②
	M30*1.5*74	Non-flush	2m cable	15mm	NO	CR30CN15DNO	CR30CN15DPO
					NC	CR30CN15DNC	CR30CN15DPC
					NO+NC	CR30CN15DNR	CR30CN15DPR
	M30*1.5*74	Non-flush	Connector	15mm	NO	CR30CN15DNO-E2 ^②	CR30CN15DPO-E2 ^②
					NC	CR30CN15DNC-E2 ^②	CR30CN15DPC-E2 ^②
					NO+NC	CR30CN15DNR-E2 ^②	CR30CN15DPR-E2 ^②
	M30*1.5*62	Flush	2m cable	10mm	NO	CR30SCF10DNO	CR30SCF10DPO
					NC	CR30SCF10DNC	CR30SCF10DPC
					NO+NC	CR30SCF10DNR	CR30SCF10DPR
	M30*1.5*79	Flush	Connector	10mm	NO	CR30SCF10DNO-E2 ^②	CR30SCF10DPO-E2 ^②
					NC	CR30SCF10DNC-E2 ^②	CR30SCF10DPC-E2 ^②
					NO+NC	CR30SCF10DNR-E2 ^②	CR30SCF10DPR-E2 ^②
	M30*1.5*74	Non-flush	2m cable	15mm	NO	CR30SCN15DNO	CR30SCN15DPO
					NC	CR30SCN15DNC	CR30SCN15DPC
					NO+NC	CR30SCN15DNR	CR30SCN15DPR
	M30*1.5*91	Non-flush	Connector	15mm	NO	CR30SCN15DNO-E2 ^②	CR30SCN15DPO-E2 ^②
					NC	CR30SCN15DNC-E2 ^②	CR30SCN15DPC-E2 ^②
					NO+NC	CR30SCN15DNR-E2 ^②	CR30SCN15DPR-E2 ^②
	φ20*80	Flush	2m cable	10mm	NO	CQ20CF10DNO	CQ20CF10DPO
					NC	CQ20CF10DNC	CQ20CF10DPC
					NO+NC	CQ20CF10DNR	CQ20CF10DPR
	φ20*80	Flush	2m cable	10mm	NO	CQ20SCF10DNO	CQ20SCF10DPO
					NC	CQ20SCF10DNC	CQ20SCF10DPC
					NO+NC	CQ20SCF10DNR	CQ20SCF10DPR
	φ20*80	Non-flush	2m cable	15mm	NO	CQ20SCN15DNO	CQ20SCN15DPO
					NC	CQ20SCN15DNC	CQ20SCN15DPC
					NO+NC	CQ20SCN15DNR	CQ20SCN15DPR
	φ32*80	Flush	2m cable	15mm	NO	CQ32CF15DNO	CQ32CF15DPO
					NC	CQ32CF15DNC	CQ32CF15DPC
					NO+NC	CQ32CF15DNR	CQ32CF15DPR
	φ32*80	Flush	2m cable	15mm	NO	CQ32SCF15DNO	CQ32SCF15DPO
					NC	CQ32SCF15DNC	CQ32SCF15DPC
					NO+NC	CQ32SCF15DNR	CQ32SCF15DPR
	φ32*80	Non-flush	2m cable	20mm	NO	CQ32SCN20DNO	CQ32SCN20DPO
					NC	CQ32SCN20DNC	CQ32SCN20DPC
					NO+NC	CQ32SCN20DNR	CQ32SCN20DPR
	φ34*80	Flush	2m cable	15mm	NO	CQ34SCF15DNO	CQ34SCF15DPO
					NC	CQ34SCF15DNC	CQ34SCF15DPC
					NO+NC	CQ34SCF15DNR	CQ34SCF15DPR
	φ34*80	Non-flush	2m cable	20mm	NO	CQ34SCN20DNO	CQ34SCN20DPO
					NC	CQ34SCN20DNC	CQ34SCN20DPC
					NO+NC	CQ34SCN20DNR	CQ34SCN20DPR

②E2:M12 4-pins connector



Official Website

AC 2 wires

Appearance	Dimension (mm)	Mounting	Connection	Sensing distance	Model	
					NO	NC
	M18*1*70	Flush	2m cable	5mm	CR18CF05ATO	CR18CF05ATC
	M18*1*83.5		Connector		CR18CF05ATO-E2 ^②	CR18CF05ATC-E2 ^②
	M18*1*78	Non-flush	2m cable	8mm	CR18CN08ATO	CR18CN08ATC
	M18*1*91.5		Connector		CR18CN08ATO-E2 ^②	CR18CN08ATC-E2 ^②
	M18*1*70	Flush	2m cable	5mm	CR18SCF05ATO	CR18SCF05ATC
	M18*1*78		Connector		CR18SCF05ATO-E2 ^②	CR18SCF05ATC-E2 ^②
	M18*1*83.5	Non-flush	2m cable	8mm	CR18SCN08ATO	CR18SCN08ATC
	M18*1*91.5		Connector		CR18SCN08ATO-E2 ^②	CR18SCN08ATC-E2 ^②
	M30*1.5*62	Flush	2m cable	10mm	CR30CF10ATO	CR30CF10ATC
	M30*1.5*79		Connector		CR30CF10ATO-E2 ^②	CR30CF10ATC-E2 ^②
	M30*1.5*74	Non-flush	2m cable	15mm	CR30CN15ATO	CR30CN15ATC
	M30*1.5*91		Connector		CR30CN15ATO-E2 ^②	CR30CN15ATC-E2 ^②
	M30*1.5*62	Flush	2m cable	10mm	CR30SCF10ATO	CR30SCF10ATC
	M30*1.5*79		Connector		CR30SCF10ATO-E2 ^②	CR30SCF10ATC-E2 ^②
	M30*1.5*74	Non-flush	2m cable	15mm	CR30SCN15ATO	CR30SCN15ATC
	M30*1.5*91		Connector		CR30SCN15ATO-E2 ^②	CR30SCN15ATC-E2 ^②
	M18*1*83.5	Non-flush	2m cable	15mm	CR30SCN15ATO-T160	CR30SCN15ATC-T160
	M18*1*70				CR30SCN15ATO-T260	CR30SCN15ATC-T260
	φ20*80	Flush	2m cable	10mm	CQ20CF10ATO	CQ20CF10ATC
	φ20*80	Flush	2m cable	10mm	CQ20SCF10ATO	CQ20SCF10ATC
	φ32*80	Non-flush	2m cable	15mm	CQ20SCN15ATO	CQ20SCN15ATC
	φ32*80	Flush			CQ32CF15ATO	CQ32CF15ATC

②E2:M12 4-pins connector

Cylindrical

Square

Extended distance

Enhanced frequency

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

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Appearance	Dimension (mm)	Mounting	Connection	Sensing distance	Model	
					NO	NC
	φ32*80	Flush	2m cable	15mm	CQ32SCF15ATO	CQ32SCF15ATO
	φ32*80	Non-flush	2m cable	20mm	CQ32SCN20ATO	CQ32SCN20ATC
	φ34*80	Flush	2m cable	15mm	CQ34SCF15ATO	CQ34SCF15ATC
	φ34*80	Non-flush	2m cable	20mm	CQ34SCN20ATO	CQ34SCN20ATC

AC/DC 2 wires

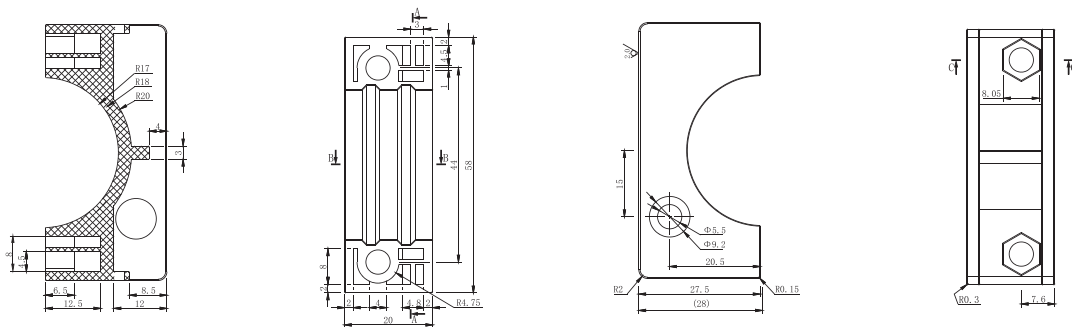
Appearance	Dimension (mm)	Mounting	Connection	Sensing distance	Model	
					NO	NC
	M30*1.5*62	Flush	2m cable	10mm	CR30SCF10SBO	CR30SCF10SBC
	M30*1.5*79		Connector		CR30SCF10SBO-E2 ^②	CR30SCF10SBC-E2 ^②
	M30*1.5*79	Non-flush	2m cable	15mm	CR30SCN15SBO	CR30SCN15SBC
	M30*1.5*91		Connector		CR30SCN15SBO-E2 ^②	CR30SCN15SBC-E2 ^②
	M30*1.5*64	Flush	2m cable	10mm	CR30XSCF10SBO	CR30XSCF10SBC
	M30*1.5*64				CR30XSCF10SBOT1	CR30XSCF10SBCT1
	M30*1.5*64				CR30XSCF10SBOT2	CR30XSCF10SBCT2
	M30*1.5*81	Flush	Connector	10mm	CR30XSCF10SBO-E2	CR30XSCF10SBC-E2 ^②
	M30*1.5*81				CR30XSCF10SBOT1-E2 ^②	CR30XSCF10SBCT1-E2 ^②
	M30*1.5*81				CR30XSCF10SBOT2-E2 ^②	CR30XSCF10SBCT2-E2 ^②
	φ32*80	Non-flush	2m cable	20mm	CQ32SCN20SBO	CQ32SCN20SBC
	φ34*80				CQ34SCN20SBO	CQ34SCN20SBC

②E2:M12 4-pins connector

AC 5 wires

Appearance	Dimension (mm)	Mounting	Connection	Sensing distance	Model	
					NO+NC	
	φ32*80	Flush	2m cable	15mm	CQ32XSCF15AK	
					CQ32XSCF15AK-T1	
					CQ32XSCF15AK-T2	





I Standard distance

Series	CR12		CR12S	
Model	CR12C□□D□□-□		CR12SC□□D□□-□	
Mounting	Flush	Non-flush	Flush	Non-flush
Detection distance	2mm (adjustable)	4mm (adjustable)	2mm (adjustable)	4mm (adjustable)
Switching frequency	50Hz		50Hz	
Ensure distance	0...1.6mm	0...3.2mm	0...1.6mm	0...3.2mm
Standard target	Fe 12*12*1t			
Shape specification	C model (dimensional drawing see page E01-021 for details)			
Connection	Cable type (standard length 2m), connector optional			
Repeat accuracy	≤3%			
Supply voltage	10...30V DC			
Output	Load current: ≤200mA; Voltage drop: ≤2.5V; Leakage current: 0.1mA			
Hysteresis	3...20%			
Current consumption	≤15mA			
Circuit protection	Short circuit protection, reverse polarity, overload protection			
Indicator	Yellow: output indication			
Working environments	Ambient temperature: -25...70°C; Environment humidity: 35...95%			
Protection degree	IP67			
Housing material	Nickel copper alloy		PBT	

Cylindrical

Square

Extended distance

Frequency enhanced

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

Series	CR18		CR18S	
Model	CR18C□□D□□-□		CR18SC□□D□□-□	
Mounting	Flush	Non-flush	Flush	Non-flush
Detection distance	5mm (adjustable)	8mm (adjustable)	5mm (adjustable)	8mm (adjustable)
Switching frequency	50Hz		50Hz	
Ensure distance	0...4mm	0...6.4mm	0...4mm	0...6.4mm
Standard target	Fe 18*18*1t	Fe 24*24*1t	Fe 18*18*1t	Fe 24*24*1t
Shape specification	C model (dimensional drawing see page E01-022 for details)			
Connection	Cable type (standard length 2m), connector optional			
Repeat accuracy	≤3%			
Supply voltage	10...30V DC			
Output	Load current: ≤200mA; Voltage drop: ≤2.5V; Leakage current: 0.1mA			
Hysteresis	3...20%			
Current consumption	≤15mA			
Circuit protection	Short circuit protection, reverse polarity, overload protection			
Indicator	Yellow: output indication			
Working environments	Ambient temperature: -25...70°C; Environment humidity: 35...95%			
Protection degree	IP67			
Housing material	Nickel copper alloy		PBT	



I Standard distance

Series	CR30		CR30S	
Model	CR30C□□D□□-□		CR30SC□□D□□-□	
Mounting	Flush	Non-flush	Flush	Non-flush
Detection distance	10mm (adjustable)	15mm (adjustable)	10mm (adjustable)	15mm (adjustable)
Switching frequency	50Hz		50Hz	
Ensure distance	0...8mm	0...12mm	0...8mm	0...12mm
Standard target	Fe 30*30*1t	Fe 45*45*1t	Fe 30*30*1t	Fe 45*45*1t
Shape specification	C model (dimensional drawing see page E01-023 for details)			
Connection	cCable type (standard length 2m), connector optional			
Repeat accuracy	≤3%			
Supply voltage	10...30V DC			
Output	Load current: ≤200mA; Voltage drop: ≤2.5V; Leakage current: 0.1mA			
Hysteresis	3...20%			
Current consumption	≤15mA			
Circuit protection	Short circuit protection, reverse polarity, overload protection			
Indicator	Yellow: output indication			
Working environments	Ambient temperature: -25...70°C; Environment humidity: 35...95%			
Protection degree	IP67			
Housing material	Nickel copper alloy		PBT	

Cylindrical

Square

Extended distance

Enhanced frequency

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

Naming rules

Product family

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Official Website

Capacitive

I Standard distance

Series	CR18		CR18S	
Model	CR18C□□AT□-□		CR18SC□□AT□-□	
Mounting	Flush	Non-flush	Flush	Non-flush
Detection distance	5mm (adjustable)	8mm (adjustable)	5mm (adjustable)	8mm (adjustable)
Switching frequency	15Hz		15Hz	
Ensure distance	0...4mm	0...6.4mm	0...4mm	0...6.4mm
Standard target	Fe 18*18*1t	Fe 24*24*1t	Fe 18*18*1t	Fe 24*24*1t
Shape specification	C model (dimensional drawing see page E01-022 for details)			
Connection	Cable type (standard length 2m), connector optional			
Repeat accuracy	≤3%			
Supply voltage	20...250V AC			
Output	Load current: ≤300mA; Voltage drop: ≤10V; Leakage current: 3mA			
Hysteresis	3...20%			
Current consumption	≤5mA			
Circuit protection	/			
Indicator	Yellow: output indication			
Working environments	Ambient temperature: -25...70°C; Ambient humidity: 35...95%			
Protection degree	IP67			
Housing material	Nickel copper alloy		PBT	

Cylindrical

Square

Extended distance

Frequency enhanced

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

Naming rules

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Series	CR30		CR30S	
Model	CR30C□□AT□-□		CR30SC□□AT□-□	
Mounting	Flush	Non-flush	Flush	Non-flush
Detection distance	10mm (adjustable)	15mm (adjustable)	10mm (adjustable)	15mm (adjustable)
Switching frequency	15Hz		15Hz	
Ensure distance	0...8mm	0...12mm	0...8mm	0...12mm
Standard target	Fe 30*30*1t	Fe 45*45*1t	Fe 30*30*1t	Fe 45*45*1t
Shape specification	C model (dimensional drawing see page E01-023 for details)			
Connection	Cable type (standard length 2m), connector optional			
Repeat accuracy	≤3%			
Supply voltage	20...250V AC			
Output	Load current: ≤300mA; Voltage drop: ≤10V; Leakage current: 3mA			
Hysteresis	3...20%			
Current consumption	≤5mA			
Circuit protection	/			
Indicator	Yellow: output indication			
Working environments	Ambient temperature: -25...70°C; Ambient humidity: 35...95%			
Protection degree	IP67			
Housing material	Nickel copper alloy		PBT	



I Standard distance

Series	CR30S	
Model	CR30SC□□SB□-□	
Mounting	Flush	Non-flush
Detection distance	10mm (adjustable)	15mm (adjustable)
Switching frequency	AC:15Hz, DC:40Hz	
Ensure distance	0...8mm	0...12mm
Standard target	Fe 30*30*1t	Fe 45*45*1t
Shape specification	C model (dimensional drawing see page E01-023 for details)	
Connection	Cable type (standard length 2m), connector optional	
Repeat accuracy	≤3%	
Supply voltage	20...250V AC/DC	
Output	Load current:AC:≤300mA, DC:≤100mA; Voltage drop:AC:≤10V, DC:≤8V; Leakage current:AC:≤3mA, DC:≤1mA	
Hysteresis	3...20%	
Current consumption	≤5mA	
Circuit protection	/	
Indicator	Yellow:output indication	
Working environments	Ambient temperature:-25...70°C; Ambient humidity:35...95%	
Protection degree	IP67	
Housing material	PBT	

Cylindrical

Square

Extended distance

Enhanced frequency

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

Naming rules

Product family

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Specification Parameter

Standard Function Cylindrical Series-AC 2 Wires

I Time delay

Series	CR30S
Model	CR30SCN15AT□-□
Mounting	Non-flush
Detection distance	15mm (adjustable)
Switching frequency	T1:on-delay 1...60s; T2:off-delay 1...60s
Ensure distance	0...12mm
Standard target	Fe 45*45*1t
Shape specification	C model (dimensional drawing see page E01-023 for details)
Connection	Cable type (standard length 2m)
Repeat accuracy	≤3%
Supply voltage	20...250V AC
Output	Load current: ≤300mA; Voltage drop: ≤10V; Leakage current: 3mA
Hysteresis	3...20%
Current consumption	≤5mA
Circuit protection	/
Indicator	Yellow: output indication
Working environments	Ambient temperature: -25...70°C; Ambient humidity: 35...95%
Protection degree	IP67
Housing material	PBT



I Time delay

Series	CR30XS
Model	CR30XSCF10SB□□-□
Mounting	Quasi-flush
Detection distance	10mm (adjustable)
Delay time	no-delay, on-delay 600s, off-delay 600s optional
Switching frequency	>0.76Sn
Ensure distance	3...15mm
Standard target	Fe 30*30*1t
Shape specification	C model (dimensional drawing see page E01-024 for details)
Connection	Cable type (standard length 2m)
Repeat accuracy	5%
Supply voltage	20...250V AC/DC
Output	Load current: AC: ≤300mA, DC: ≤100mA; Voltage drop: AC: ≤8V, DC: ≤8V; Leakage current : AC: ≤2.2mA, DC: ≤1.8mA
Hysteresis	3...20%
Current consumption	AC: ≤2.2mA, DC: ≤1.8mA
Circuit protection	Short circuit protection (N/A for DC 250V), reverse polarity, overload protection
Indicator	Yellow: output indication
Working environments	Ambient temperature: -25...70°C; Ambient humidity: 30...80%
Protection degree	IP68
Housing material	PBT

Cylindrical

Square

Extended distance

Enhanced frequency

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

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I Standard distance

Series	CQ20	CQ20S	
Model	CQ20CF10D□□	CQ20SC□□D□□	
Mounting	Flush	Flush	Non-flush
Detection distance	10mm (adjustable)	10mm (adjustable)	15mm (adjustable)
Switching frequency	50Hz	50Hz	
Ensure distance	0...8mm	0...8mm	0...12mm
Standard target	Fe 30*30*1t	Fe 30*30*1t	Fe 45*45*1t
Shape specification	C model (dimensional drawing see page E01-025 for details)		
Connection	Cable type (standard length 2m)		
Repeat accuracy	≤3%		
Supply voltage	10...30V DC		
Output	Load current: ≤200mA; Voltage drop: ≤2.5V; Leakage current : ≤0.1mA		
Hysteresis	3...20%		
Current consumption	≤15mA		
Circuit protection	Short circuit protection, reverse polarity, overload protection		
Indicator	Yellow: output indication		
Working environments	Ambient temperature: -25...70°C; Ambient humidity: 35...95%		
Protection degree	IP67		
Housing material	Nickel copper alloy	PBT	

Cylindrical

Square

Extended distance

Frequency enhanced

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

Series	CQ32	CQ32S	
Model	CQ32CF15D□□	CQ32SC□□D□□	
Mounting	Flush	Flush	Non-flush
Detection distance	15mm (adjustable)	15mm (adjustable)	20mm (adjustable)
Switching frequency	50Hz	50Hz	
Ensure distance	0...12mm	0...12mm	0...16mm
Standard target	Fe 45*45*1t	Fe 45*45*1t	Fe 60*60*1t
Shape specification	C model (dimensional drawing see page E01 for details)		
Connection	Cable type (standard length 2m)		
Repeat accuracy	≤3%		
Supply voltage	10...30V DC		
Output	Load current: ≤200mA; Voltage drop: ≤2.5V; Leakage current : ≤0.1mA		
Hysteresis	3...20%		
Current consumption	≤15mA		
Circuit protection	Short circuit protection, reverse polarity, overload protection		
Indicator	Yellow: output indication		
Working environments	Ambient temperature: -25...70°C; Ambient humidity: 35...95%		
Protection degree	IP67		
Housing material	Nickel copper alloy	PBT	



I Standard distance

Series	CQ34S	
Model	CQ34SC□□D□□	
Mounting	Flush	Non-flush
Detection distance	15mm (adjustable)	20mm (adjustable)
Switching frequency	50Hz	
Ensure distance	0...12mm	0...16mm
Standard target	Fe 45*45*1t	Fe 60*60*1t
Shape specification	C model (dimensional drawing see page E01-025 for details)	
Connection	Cable type (standard length 2m)	
Repeat accuracy	≤3%	
Supply voltage	10...30V DC	
Output	Load current: ≤200mA; Voltage drop: ≤2.5V; Leakage current : ≤0.1mA	
Hysteresis	3...20%	
Current consumption	≤15mA	
Circuit protection	Short circuit protection, reverse polarity, overload protection	
Indicator	Yellow: output indication	
Working environments	Ambient temperature: -25...70°C; Ambient humidity: 35...95%	
Protection degree	IP67	
Housing material	PBT	

Capacitive

Cylindrical

Square

Extended distance

Enhanced frequency

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

Naming rules

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I Standard distance

Series	CQ20	CQ20S	
Model	CQ20CF10AT□	CQ20SC□□AT□	
Mounting	Flush	Flush	Non-flush
Detection distance	10mm (adjustable)	10mm (adjustable)	15mm (adjustable)
Switching frequency	15Hz	15Hz	
Ensure distance	0...8mm	0...8mm	0...12mm
Standard target	Fe 30*30*1t	Fe 30*30*1t	Fe 45*45*1t
Shape specification	C model (dimensional drawing see page E01-025 for details)		
Connection	Cable type (standard length 2m)		
Repeat accuracy	≤3%		
Supply voltage	20...250V AC		
Output	Load current: ≤300mA; Voltage drop: ≤10V; Leakage current : ≤3mA		
Hysteresis	3...20%		
Current consumption	≤5mA		
Circuit protection	/		
Indicator	Yellow: output indication		
Working environments	Ambient temperature: -25...70°C; Ambient humidity: 35...95%		
Protection degree	IP67		
Housing material	Nickel copper alloy	PBT	

Series	CQ32	CQ32S	
Model	CQ32CF15AT□	CQ32SC□□AT□	
Mounting	Flush	Flush	Flush
Detection distance	15mm (adjustable)	15mm (adjustable)	20mm (adjustable)
Switching frequency	15Hz	15Hz	
Ensure distance	0...12mm	0...12mm	0...16mm
Standard target	Fe 45*45*1t	Fe 45*45*1t	Fe 60*60*1t
Shape specification	C model (dimensional drawing see page E01-025 for details)		
Connection	Cable type (standard length 2m)		
Repeat accuracy	≤3%		
Supply voltage	20...250V AC		
Output	Load current: ≤300mA; Voltage drop: ≤10V; Leakage current : ≤3mA		
Hysteresis	3...20%		
Current consumption	≤5mA		
Circuit protection	/		
Indicator	Yellow: output indication		
Working environments	Ambient temperature: -25...70°C; Ambient humidity: 35...95%		
Protection degree	IP67		
Housing material	Nickel copper alloy	PBT	



I Standard distance

Series	CQ34S	
Model	CQ34SC□□AT□	
Mounting	Flush	Non-flush
Detection distance	15mm (adjustable)	20mm (adjustable)
Switching frequency	15Hz	
Ensure distance	0...12mm	0...16mm
Standard target	Fe 45*45*1t	Fe 60*60*1t
Shape specification	C model (dimensional drawing see page E01-025 for details)	
Connection	Cable type (standard length 2m)	
Repeat accuracy	≤3%	
Supply voltage	20...250V AC	
Output	Load current: ≤300mA; Voltage drop: ≤10V; Leakage current : ≤3mA	
Hysteresis	3...20%	
Current consumption	≤5mA	
Circuit protection	/	
Indicator	Yellow: output indication	
Working environments	Ambient temperature: -25...70°C; Ambient humidity: 35...95%	
Protection degree	IP67	
Housing material	PBT	

Cylindrical

Square

Extended distance

Enhanced frequency

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

Naming rules

Product family

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Official Website

Capacitive

I Standard distance

Series	CQ32S
Model	CQ32SCN20SB□
Mounting	Non-flush
Detection distance	20mm (adjustable)
Switching frequency	AC:15Hz, DC:40Hz
Ensure distance	0...16mm
Standard target	Fe 60*60*1t
Shape specification	C model (dimensional drawing see page E01-025 for details)
Connection	Cable type (standard length 2m)
Repeat accuracy	≤3%
Supply voltage	20...250V AC/DC
Output	Load current:AC: ≤300mA, DC: ≤100mA;Voltage drop:AC: ≤10V, DC: ≤8V; Leakage current:AC: ≤3mA, DC: ≤1mA
Hysteresis	3...20%
Current consumption	≤5mA
Circuit protection	/
Indicator	Yellow:output indication
Working environments	Ambient temperature: -25...70°C;Ambient humidity:35...95%
Protection degree	IP67
Housing material	PBT

Cylindrical

Square

Extended distance

Frequency enhanced

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

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Series	CQ34S
Model	CQ34SCN20SB□
Mounting	Non-flush
Detection distance	20mm (adjustable)
Switching frequency	AC:15Hz, DC:40Hz
Ensure distance	0...16mm
Standard target	Fe 60*60*1t
Shape specification	C model (dimensional drawing see page E01-025 for details)
Connection	Cable type (standard length 2m)
Repeat accuracy	≤3%
Supply voltage	20...250V AC/DC
Output	Load current:AC: ≤300mA, DC: ≤100mA;Voltage drop:AC: ≤10V, DC: ≤8V; Leakage current:AC: ≤3mA, DC: ≤1mA
Hysteresis	3...20%
Current consumption	≤5mA
Circuit protection	/
Indicator	Yellow:output indication
Working environments	Ambient temperature: -25...70°C;Ambient humidity:35...95%
Protection degree	IP67
Housing material	PBT



I Delay

Series	CQ32S
Model	CQ32SCF15AK-□
Mounting	Flush
Detection distance	15mm (adjustable)
Delay time	T1: On-delay 1s...10min; T2: Off-delay 1s...10min
Ensure distance	0...12mm
Standard target	Fe 45*45*1t
Shape specification	C model (dimensional drawing see page E01-025 for details)
Connection	Cable type (standard length 2m)
Repeat accuracy	≤3%
Supply voltage	20...250V AC
Output	Load current: ≤2A; Voltage drop: ≤2.5V
Hysteresis	3...20%
Current consumption	≤25mA
Circuit protection	/
Indicator	Yellow: output indication
Working environments	Ambient temperature: -25...70°C; Ambient humidity: 35...95%
Protection degree	IP67
Housing material	PBT

Cylindrical

Square

Extended distance

Enhanced frequency

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

Naming rules

Product family

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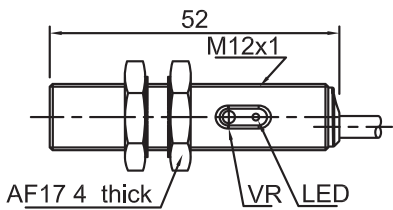
Series	CQ32XS
Model	CQ32XSCF15AK-□
Mounting	Quasi-flush
Detection distance	15mm (adjustable) ^①
Delay time	no-delay, on-delay 600s, off-delay 600s optional
Ensure distance	0...10.8mm
Increases distance	4...20mm
Standard target	Fe 45*45*1t
Shape specification	C model (dimensional drawing see page E01-025 for details)
Connection	Cable type (standard length 2m)
Repeat accuracy	5%
Supply voltage	20...250V AC
Output	Load current: ≤2A; Voltage drop: ≤2.5V
Hysteresis	3...20%
Current consumption	20V AC: <25mA, 250V AC: 5mA
Circuit protection	/
Indicator	Yellow: output indication
Working environments	Operating temperature: -25...70°C; Storage temperature: -30...80°C; Ambient humidity: 35...95% (no condensation or dew on optical surfaces)
Protection degree	IP67
Housing material	PC/PBT

Note: the factory default sensing distance is $S_n \pm 10\%$ 

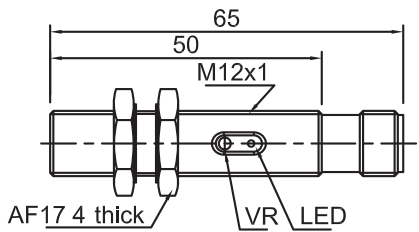
Official Website

Standard distance-CR12

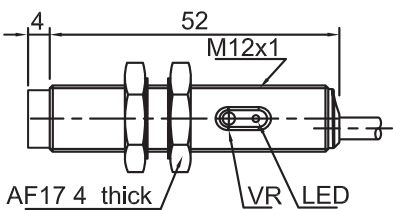
Flush—cable



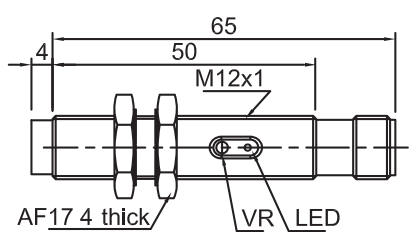
Flush—M12 connector



Non-flush—cable

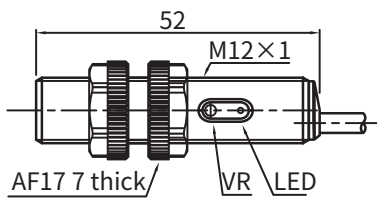


Non-flush—M12 connector

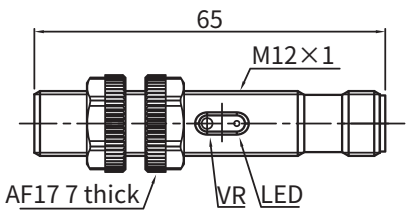


Standard distance-CR12S

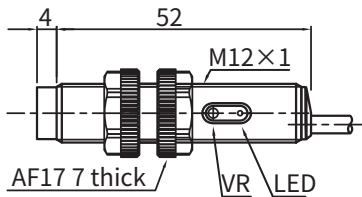
Flush—cable



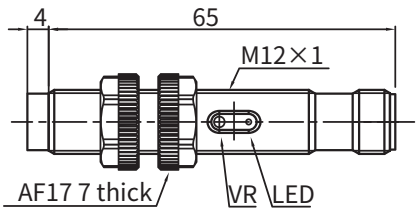
Flush—M12 connector



Non-flush—cable

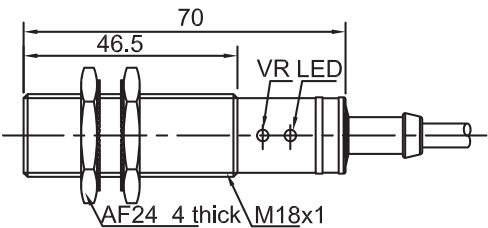


Non-flush—M12 connector

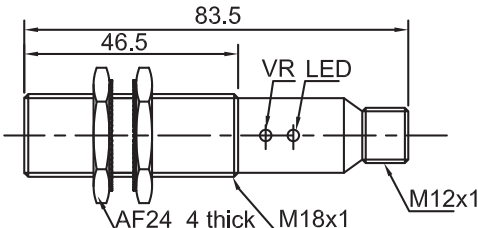


Standard distance-CR18

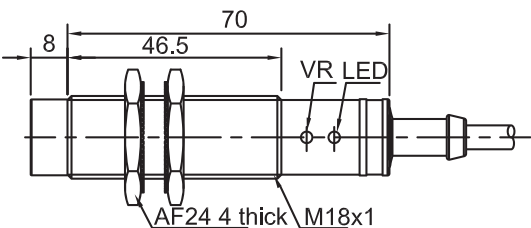
Flush—cable



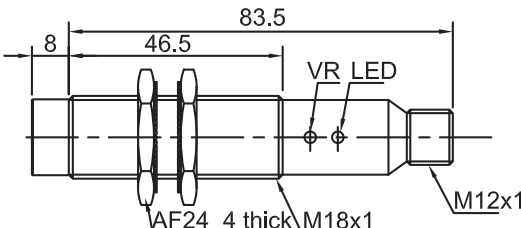
Flush—M12 connector



Non-flush—cable

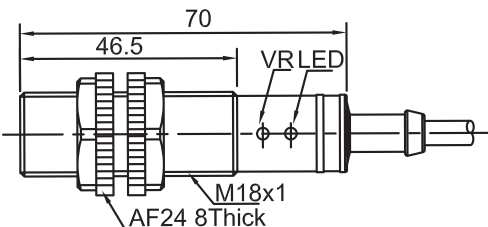


Non-flush—M12 connector

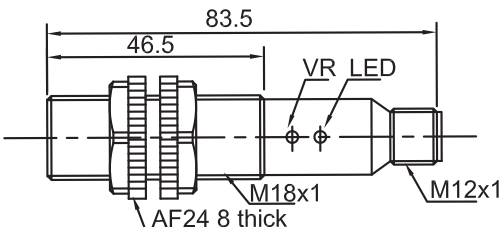


Standard distance-CR18S

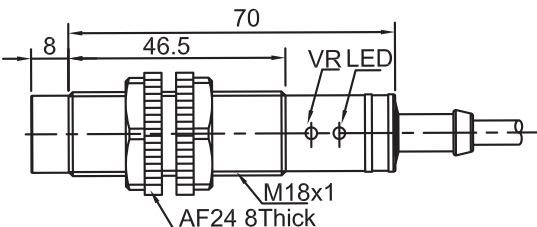
Flush—cable



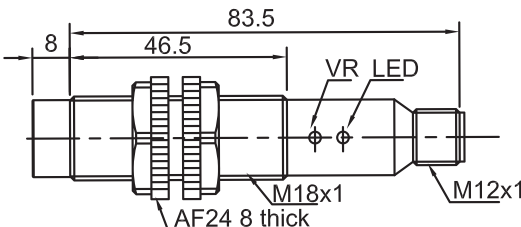
Flush—M12 connector



Non-flush—cable



Non-flush—M12 connector



Cylindrical

Square

Extended distance

Enhanced frequency

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

Naming rules

Product family

Wiring diagram

Installation guide

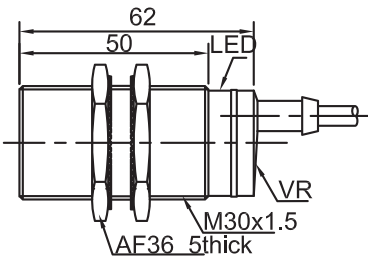
Technical guide



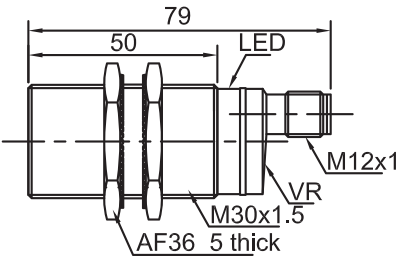
Official Website

Standard distance-CR30

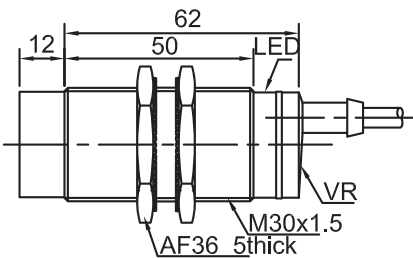
Flush—cable



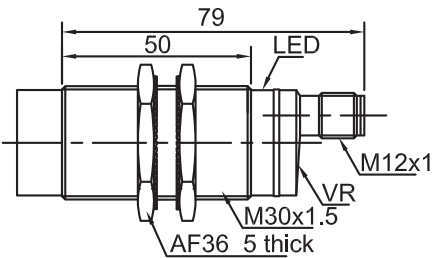
Flush—M12 connector



Non-flush—cable

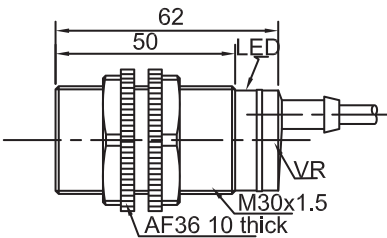


Non-flush—M12 connector

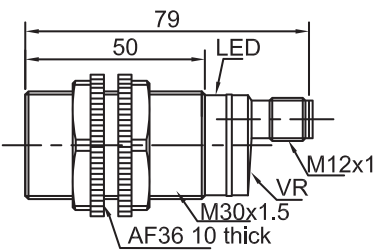


Standard distance/delay-CR30S

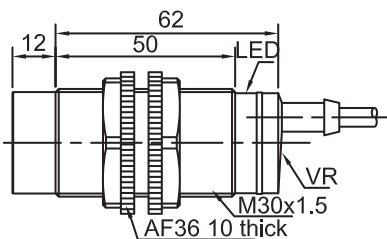
Flush—cable



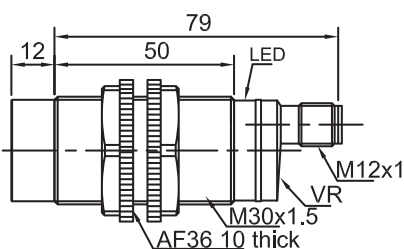
Flush—M12 connector



Non-flush—cable

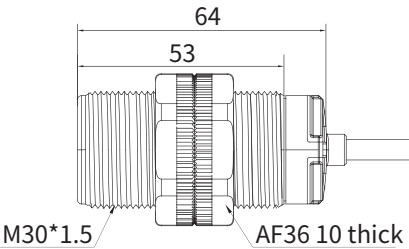


Non-flush—M12 connector

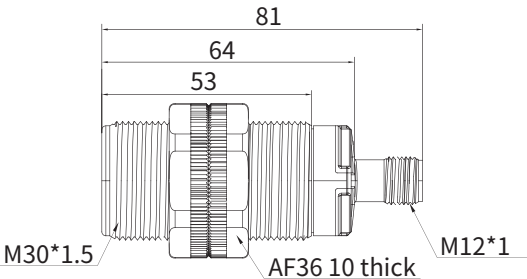


Standard distance/delay-CR30XS

Flush—cable



Flush—M12 connector



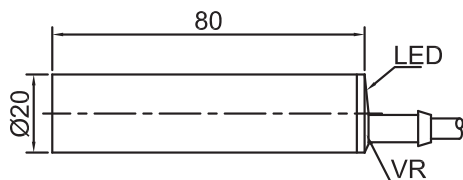
Capacitive

Cylindrical
Square
Extended distance
Enhenced frequency
Corrosion resistant
Pipe liquid level
High temperature resistant material level
Split type
Naming rules
Product family
Wiring diagram
Installation guide
Technical guide



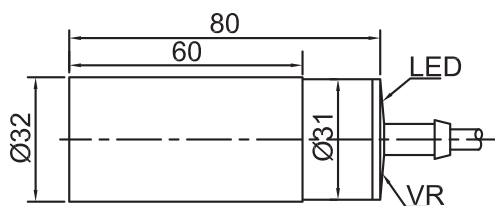
I Standard distance-CQ20/CQ20S

Flush/Non-flush—cable



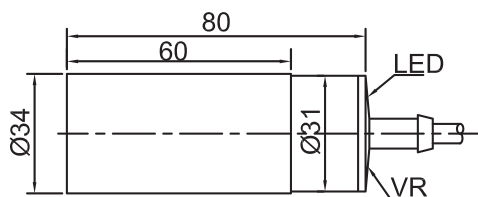
I Standard distance/delay-CQ32/CQ32S

Flush/Non-flush—cable



I Standard distance-CQ34S

Flush/Non-flush—cable



Capacitive

Cylindrical

Square

Extended distance

Enhenced frequency

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

Naming rules

Product family

Wiring diagram

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Capacitive Sensors

Standard Function Square Series



Rich variety of products, wide options

Multiple specifications, suitable for different application conditions.

Potentiometer adjustment

Sensitivity can be adjusted.

Cylindrical

Square

Extended distance

Frequency enhanced

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

Naming rules

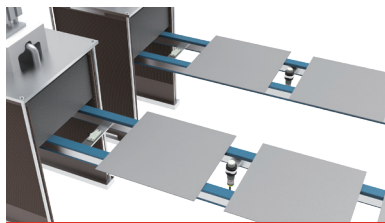
Product family

Wiring diagram

Installation guide

Technical guide

Application



Cache silicon wafer inspection



Official Website

DC 3 wires

Appearance	Dimension (mm)	Mounting	Connection	Sensing distance	Type	Model	
						NPN	PNP
	50*22.3*5	Non-flush	2m cable	5mm	NC	CE05SN05DNO	CE05SN05DPO
					NO	CE05SN05DNC	CE05SN05DPC
	50**20*5	Non-flush	2m cable	5mm	NC	CE05XSN05DNO	CE05XSN05DPO
					NO	CE05XSN05DNC	CE05XSN05DPC
	50*22.3*5	Non-flush	2m cable	8mm	NC	CE05SN08DNO	CE05SN08DPO
					NO	CE05SN08DNC	CE05SN08DPC
	50*22.3*5	Non-flush	2m cable	6mm	NC	CE05SN06DNOS	CE05SN06DPOS
					NO	CE05SN06DNCS	CE05SN06DPCS
	30*50*7	Flush	2m cable	5mm	NC	CE07SF05DNO	CE07SF05DPO
					NO	CE07SF05DNC	CE07SF05DPC
	30*50*7	Non-flush	2m cable	8mm	NC	CE07SN08DNO	CE07SN08DPO
					NO	CE07SN08DNC	CE07SN08DPC
	50*20*10	Non-flush	2m cable	10mm	NC	CE34SN10DNO	CE34SN10DPO
					NO	CE34SN10DNC	CE34SN10DPC
	35*58*15	Flush	2m cable	10mm	NC	CE35SF10DNO	CE35SF10DPO
					NO	CE35SF10DNC	CE35SF10DPC
	35*58*15	Non-flush	2m cable	15mm	NC	CE35SN15DNO	CE35SN15DPO
					NO	CE35SN15DNC	CE35SN15DPC
	39*59*15	Non-flush	2m cable	12mm	NC	CE39SN12DNO	CE39SN12DPO
					NO	CE39SN12DNC	CE39SN12DPC

Capacitive

Cylindrical

Square

Extended distance

Enhenced frequency

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

Naming rules

Product family

Wiring diagram

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Technical guide



Official Website

Capacitive

I Standard distance

Series	CE05S			CE05XS
Model	CE05SN□D□□		CE05SN06D□□S	CE05XSN05D□□
Mounting	Non-flush			Non-flush
Detection distance	5mm (not adjustable)	8mm (not adjustable)	6mm (not adjustable)	5mm (not adjustable)
Switching frequency	30Hz		100Hz	30Hz
Ensure distance	0...4mm	0...5.5mm	2...6mm	0...4mm
Standard target	Fe 30*30*1t			
Shape specification	Square model (dimensional drawing see page E05-005 for details)			
Connection	Cable type (standard length 2m)			
Repeat accuracy	≤3%	≤5%	≤3%	
Supply voltage	10...30V DC			
Output	Load current: ≤100mA; Voltage drop: ≤2.5V; Leakage current: ≤0.1mA			
Hysteresis	3...15%	3...20%	3...15%	
Current consumption	≤15mA			
Circuit protection	Short circuit protection, reverse polarity, overload protection			
Indicator	Yellow: output indication			
Working environments	Ambient temperature: -25...70°C; Ambient humidity: 35...95%			
Protection degree	IP67			
Housing material	PBT			

Series	CE07S		CE34S
Model	CE07S□□D□□		CE34SN10D□□
Mounting	Flush	Non-flush	Non-flush
Detection distance	5mm (not adjustable)	8mm (not adjustable)	10mm (adjustable)
Switching frequency	60Hz		60Hz
Ensure distance	0...4mm	0...6.4mm	0...8mm
Standard target	Fe 15*15*1t	Fe 24*24*1t	Fe 34*34*1t
Shape specification	Square model (dimensional drawing see page E05-005 for details)		Square model (dimensional drawing see page E05-006 for details)
Connection	Cable type (standard length 2m)		
Repeat accuracy	≤3%		
Supply voltage	10...30V DC		
Output	Load current: ≤200mA; Voltage drop: ≤2.5V; Leakage current: ≤0.1mA		
Hysteresis	3...20%		
Current consumption	≤15mA		
Circuit protection	Reverse polarity		
Indicator	Yellow: output indication		
Working environments	Ambient temperature: -10...55°C; Ambient humidity: 35...95%		
Protection degree	IP67		
Housing material	PBT		



Standard distance

Series	CE35S		CE39S
Model	CE35S□□D□□		CE39SN12D□□
Mounting	Flush	Non-flush	Non-flush
Detection distance	10mm (adjustable)	15mm (adjustable)	12mm (adjustable)
Switching frequency	60Hz		60Hz
Ensure distance	0...8mm	0...12mm	2...9.6mm
Standard target	Fe 35*35*1t	Fe 45*45*1t	Fe 45*45*1t
Shape specification	Square model (dimensional drawing see page E05-006 for details)		
Connection	Cable type (standard length 2m)		
Repeat accuracy	≤3%		≤5%
Supply voltage	10...30V DC		
Output	Load current: ≤200mA; Voltage drop: ≤2.5V; Leakage current: ≤0.1mA		
Hysteresis	3...20%		
Current consumption	≤15mA		
Circuit protection	Reverse polarity		
Indicator	Yellow: output indication		
Working environments	Ambient temperature: -10...55°C; Ambient humidity: 35...95%		
Protection degree	IP67		
Housing material	PBT		

Capacitive

Cylindrical

Square

Extended distance

Enhanced frequency

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

Naming rules

Product family

Wiring diagram

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Technical guide



Cylindrical

Square

Extended
distanceFrequency
enhancedCorrosion
resistant

Pipe liquid level

High temperature
resistant
material level

Split type

Naming rules

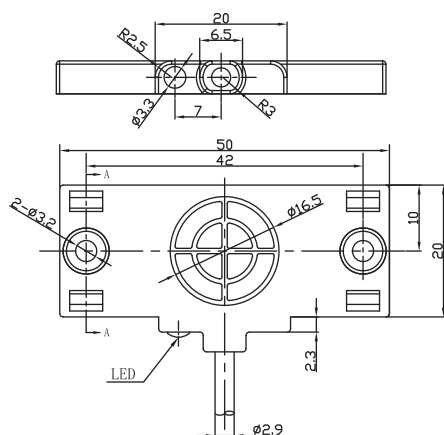
Product family

Wiring diagram

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guideTechnical
guide

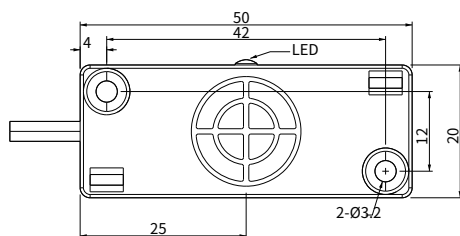
I Standard distance-CE05S

Non-flush—cable



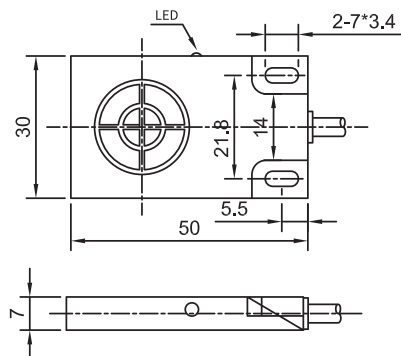
I Standard distance-CE05XS

Non-flush—cable

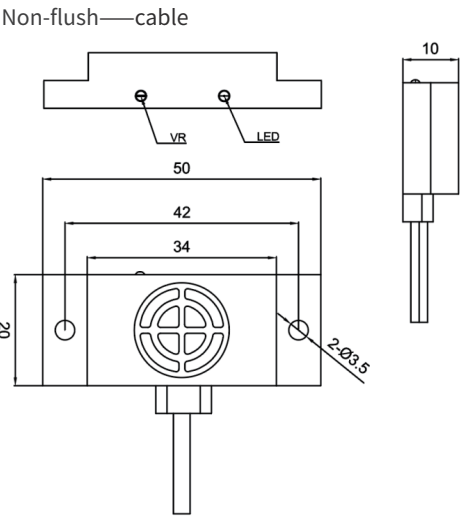


I Standard distance-CE07S

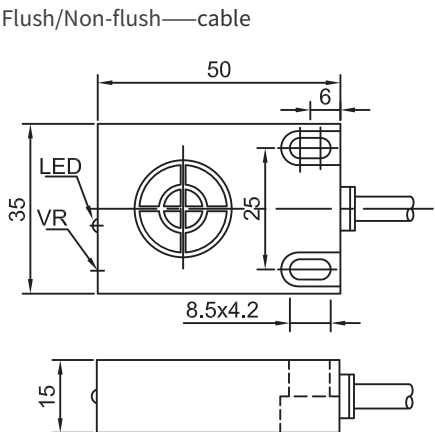
Flush/Non-flush—cable



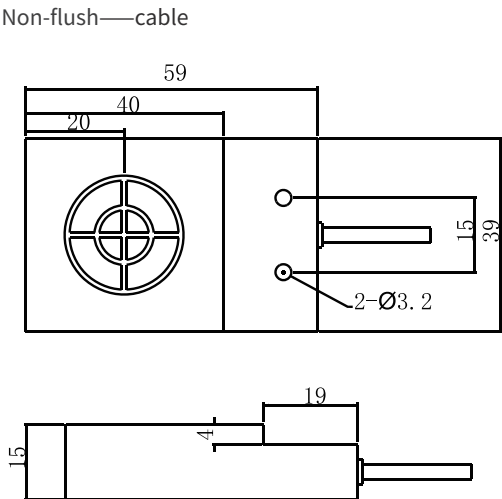
Standard distance-CE34S



Standard distance-CE35S



Standard distance-CE39S



Cylindrical

Square

Extended distance

Enhanced frequency

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

Naming rules

Product family

Wiring diagram

Installation guide

Technical guide



Official Website

Capacitive Sensors

Extended Sensing Distance Series



Extended sensing distance

Allowing installation at a greater distance for object detection.

Clearly visible working state

Power supply, signal dual indicator design.

Sensitivity adjustment, high accuracy

Multi-turn potentiometer, higher adjustment accuracy.

Application



Food packaging and logistics inspection

Cylindrical

Square

Extended distance

Frequency enhanced

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

Naming rules

Product family

Wiring diagram

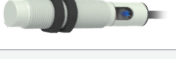
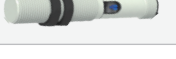
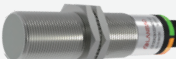
Installation guide

Technical guide



Official Website

DC 3/4 wires

Appearance	Dimension (mm)	Mounting	Connection	Sensing distance	Type	Model	
						NPN	PNP
	M12*1*63	Flush	2m cable	4mm	NO	CR12XCF04DNOY	CR12XCF04DPOY
					NC	CR12XCF04DNCY	CR12XCF04DPCY
	M12*1*75	Flush	Connector	4mm	NO	CR12XCF04DNOY-E2 ^②	CR12XCF04DPOY-E2 ^②
					NC	CR12XCF04DNCY-E2 ^②	CR12XCF04DPCY-E2 ^②
	M12*1*68	Non-flush	2m cable	8mm	NO	CR12XCN08DNOY	CR12XCN08DPOY
					NC	CR12XCN08DNCY	CR12XCN08DPCY
	M12*1*80	Non-flush	Connector	8mm	NO	CR12XCN08DNOY-E2 ^②	CR12XCN08DPOY-E2 ^②
					NC	CR12XCN08DNCY-E2 ^②	CR12XCN08DPCY-E2 ^②
	M12*1*62	Flush	2m cable	4mm	NO	CR12XSCF04DNOY	CR12XSCF04DPOY
					NC	CR12XSCF04DNCY	CR12XSCF04DPCY
	M12*1*74	Flush	Connector	4mm	NO	CR12XSCF04DNOY-E2 ^②	CR12XSCF04DPOY-E2 ^②
					NC	CR12XSCF04DNCY-E2 ^②	CR12XSCF04DPCY-E2 ^②
	M12*1*67	Non-flush	2m cable	8mm	NO	CR12XSCN08DNOY	CR12XSCN08DPOY
					NC	CR12XSCN08DNCY	CR12XSCN08DPCY
	M12*1*79	Non-flush	Connector	8mm	NO	CR12XSCN08DNOY-E2 ^②	CR12XSCN08DPOY-E2 ^②
					NC	CR12XSCN08DNCY-E2 ^②	CR12XSCN08DPCY-E2 ^②
	M18*1*70	Flush	2m cable	8mm	NO	CR18XCF08DNOY	CR18XCF08DPOY
					NC	CR18XCF08DNCY	CR18XCF08DPCY
					NO+NC	CR18XCF08DNRY	CR18XCF08DPRY
	M18*1*85	Flush	Connector	8mm	NO	CR18XCF08DNOY-E2 ^②	CR18XCF08DPOY-E2 ^②
					NC	CR18XCF08DNCY-E2 ^②	CR18XCF08DPCY-E2 ^②
					NO+NC	CR18XCF08DNRY-E2 ^②	CR18XCF08DPRY-E2 ^②
	M18*1*90	Non-flush	2m cable	12mm	NO	CR18XCN12DNOY	CR18XCN12DPOY
					NC	CR18XCN12DNCY	CR18XCN12DPCY
					NO+NC	CR18XCN12DNRY	CR18XCN12DPRY
	M18*1*95	Non-flush	Connector	12mm	NO	CR18XCN12DNOY-E2 ^②	CR18XCN12DPOY-E2 ^②
					NC	CR18XCN12DNCY-E2 ^②	CR18XCN12DPCY-E2 ^②
					NO+NC	CR18XCN12DNRY-E2 ^②	CR18XCN12DPRY-E2 ^②
	M18*1*70	Flush	2m cable	8mm	NO	CR18XSCF08DNOY	CR18XSCF08DPOY
					NC	CR18XSCF08DNCY	CR18XSCF08DPCY
					NO+NC	CR18XSCF08DNRY	CR18XSCF08DPRY
	M18*1*85	Flush	Connector	8mm	NO	CR18XSCF08DNOY-E2 ^②	CR18XSCF08DPOY-E2 ^②
					NC	CR18XSCF08DNCY-E2 ^②	CR18XSCF08DPCY-E2 ^②
					NO+NC	CR18XSCF08DNRY-E2 ^②	CR18XSCF08DPRY-E2 ^②
	M18*1*80	Non-flush	2m cable	12mm	NO	CR18XSCN12DNOY	CR18XSCN12DPOY
					NC	CR18XSCN12DNCY	CR18XSCN12DPCY
					NO+NC	CR18XSCN12DNRY	CR18XSCN12DPRY
	M18*1*95	Non-flush	Connector	12mm	NO	CR18XSCN12DNOY-E2 ^②	CR18XSCN12DPOY-E2 ^②
					NC	CR18XSCN12DNCY-E2 ^②	CR18XSCN12DPCY-E2 ^②
					NO+NC	CR18XSCN12DNRY-E2 ^②	CR18XSCN12DPRY-E2 ^②
	M30*1.5*64	Flush	2m cable	15mm	NO	CR30XCF15DNOY	CR30XCF15DPOY
					NC	CR30XCF15DNCY	CR30XCF15DPCY
					NO+NC	CR30XCF15DNRY	CR30XCF15DPRY

②E2:M12 4-pins connector

Capacitive

Cylindrical

Square

Extended distance

Enhanced frequency

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

Naming rules

Product family

Wiring diagram

Installation guide

Technical guide



Official Website

Selection List

Extended Distance Cylindrical Series

Capacitive

Cylindrical

Square

Extended distance

Frequency enhanced

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

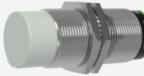
Naming rules

Product family

Wiring diagram

Installation guide

Technical guide

Appearance	Dimension (mm)	Mounting	Connection	Sensing distance	Type	Model	
						NPN	PNP
	M30*1.5*81	Flush	Connector	15mm	NO	CR30XCF15DNOY-E2 ^②	CR30XCF15DPOY-E2 ^②
					NC	CR30XCF15DNCY-E2 ^②	CR30XCF15DPCY-E2 ^②
					NO+NC	CR30XCF15DNRY-E2 ^②	CR30XCF15DPRY-E2 ^②
	M30*1.5*79	Non-flush	2m cable	25mm	NO	CR30XCN25DNOY	CR30XCN25DPOY
					NC	CR30XCN25DNCY	CR30XCN25DPCY
					NO+NC	CR30XCN25DNRY	CR30XCN25DPRY
	M30*1.5*96	Non-flush	Connector	25mm	NO	CR30XCN25DNOY-E2 ^②	CR30XCN25DPOY-E2 ^②
					NC	CR30XCN25DNCY-E2 ^②	CR30XCN25DPCY-E2 ^②
					NO+NC	CR30XCN25DNRY-E2 ^②	CR30XCN25DPRY-E2 ^②
	M30*1.5*64	Flush	2m cable	15mm	NO	CR30XSCF15DNOY	CR30XSCF15DPOY
					NC	CR30XSCF15DNCY	CR30XSCF15DPCY
					NO+NC	CR30XSCF15DNRY	CR30XSCF15DPRY
	M30*1.5*81	Flush	Connector	15mm	NO	CR30XSCF15DNOY-E2 ^②	CR30XSCF15DPOY-E2 ^②
					NC	CR30XSCF15DNCY-E2 ^②	CR30XSCF15DPCY-E2 ^②
					NO+NC	CR30XSCF15DNRY-E2 ^②	CR30XSCF15DPRY-E2 ^②
	M30*1.5*79	Non-flush	2m cable	25mm	NO	CR30XSCN25DNOY	CR30XSCN25DPOY
					NC	CR30XSCN25DNCY	CR30XSCN25DPCY
					NO+NC	CR30XSCN25DNRY	CR30XSCN25DPRY
	M30*1.5*96	Non-flush	Connector	25mm	NO	CR30XSCN25DNOY-E2 ^②	CR30XSCN25DPOY-E2 ^②
					NC	CR30XSCN25DNCY-E2 ^②	CR30XSCN25DPCY-E2 ^②
					NO+NC	CR30XSCN25DNRY-E2 ^②	CR30XSCN25DPRY-E2 ^②

②E2:M12 4-pins connector



Long distance

Series	CR12X		CR12XS	
Model	CR12XC□□D□□Y-□		CR12XSC□□D□□Y-□	
Mounting	Flush	Non-flush	Flush	Non-flush
Detection distance	4mm (adjustable) ①	8mm (adjustable) ①	4mm (adjustable) ①	8mm (adjustable) ①
Switching frequency	25Hz		20Hz	
Ensure distance	≤2.88mm	≤5.76mm	≤2.88mm	≤5.76mm
Adjust the distance	1...6mm	3...12mm	1...6mm	3...12mm
Standard target	Fe 12*12*1t	Fe 24*24*1t	Fe 12*12*1t	Fe 24*24*1t
Shape specification	C model (dimensional drawing see page E02-006 for details)			
Connection	Cable type (standard length 2m), connector optional			
Repeat accuracy	≤5%			
Supply voltage	10...30V DC			
Output	Load current: ≤200mA; Voltage drop: ≤2V; Leakage current: ≤0.1mA			
Hysteresis	3...20%			
Current consumption	≤20mA			
Circuit protection	Short circuit protection, reverse polarity, overload protection			
Indicator	Yellow: output indication; Green: power indication			
Working environments	Operating temperature: -25...70°C; Storage temperature: -30...80°C; Ambient humidity: 35...95% (no condensation or dew on optical surfaces)			
Protection degree	IP67		IP68	
Housing material	Nickel copper alloy		PBT	

Note: the factory default sensing distance is $S_n \pm 10\%$

Cylindrical

Square

Extended distance

Enhanced frequency

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

Naming rules

Product family

Wiring diagram

Installation guide

Technical guide

Series	CR18X		CR18XS	
Model	CR18XC□□D□□Y-□		CR18XSC□□D□□Y-□	
Mounting	Flush	Non-flush	Flush	Non-flush
Detection distance	8mm (adjustable) ①	12mm (adjustable) ①	8mm (adjustable) ①	12mm (adjustable) ①
Switching frequency	25Hz	35Hz	20Hz	25Hz
Ensure distance	≤5.76mm	≤8.64mm	≤5.76mm	≤8.64mm
Adjust the distance	3...12mm	3...15mm	3...12mm	3...15mm
Standard target	Fe 24*24*1t	Fe 36*36*1t	Fe 24*24*1t	Fe 36*36*1t
Shape specification	C model (dimensional drawing see page E02-007 for details)			
Connection	Cable type (standard length 2m), connector optional			
Repeat accuracy	≤5%			
Supply voltage	10...30V DC			
Output	Load current: ≤200mA; Voltage drop: ≤2V; Leakage current: ≤0.1mA			
Hysteresis	3...20%			
Current consumption	≤20mA			
Circuit protection	Short circuit protection, reverse polarity, overload protection			
Indicator	Yellow: output indication; Green: power indication			
Working environments	Operating temperature: -25...70°C; Storage temperature: -30...80°C; Ambient humidity: 35...95% (no condensation or dew on optical surfaces)			
Protection degree	IP67		IP68	
Housing material	Nickel copper alloy		PBT	

Note: the factory default sensing distance is $S_n \pm 10\%$ 

Official Website

I Long distance

Series	CR30X		CR30XS	
Model	CR30XC□□D□□Y-□		CR30XSC□□D□□Y-□	
Mounting	Flush	Non-flush	Flush	Non-flush
Detection distance	15mm (adjustable) ^①	25mm (adjustable) ^①	15mm (adjustable) ^①	25mm (adjustable) ^①
Switching frequency	25Hz		20Hz	
Ensure distance	≤10.8mm	≤18mm	≤10.8mm	≤18mm
Adjust the distance	3...20mm	4...30mm	3...20mm	4...30mm
Standard target	Fe 45*45*1t	Fe 75*75*1t	Fe 45*45*1t	Fe 75*75*1t
Shape specification	C model (dimensional drawing see page E02-008 for details)			
Connection	Cable type (standard length 2m), connector optional			
Repeat accuracy	≤5%			
Supply voltage	10...30V DC			
Output	Load current: ≤200mA; Voltage drop: ≤2V; Leakage current: ≤0.1mA			
Hysteresis	3...20%			
Current consumption	≤20mA			
Circuit protection	Short circuit protection, reverse polarity, overload protection			
Indicator	Yellow: output indication; Green: power indication			
Working environments	Operating temperature: -25...70°C; Storage temperature: -30...80°C; Ambient humidity: 35...95% (no condensation or dew on optical surfaces)			
Protection degree	IP67		IP68	
Housing material	Nickel copper alloy		PBT	

Note: the factory default sensing distance is $S_n \pm 10\%$

Cylindrical

Square

Extended distance

Frequency enhanced

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

Naming rules

Product family

Wiring diagram

Installation guide

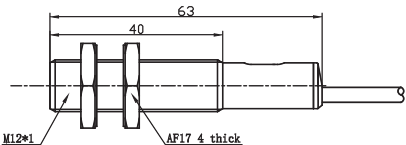
Technical guide



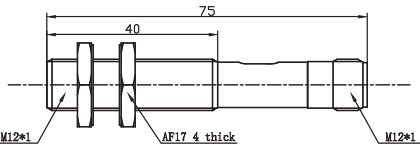
Official Website

Long distance-CR12X

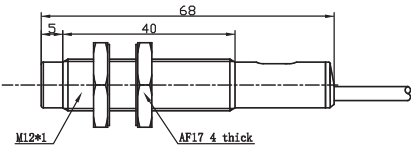
Flush—wires



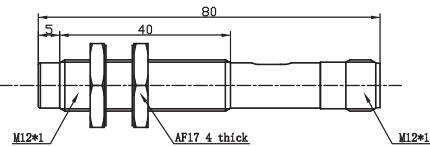
Flush—M12 connector



Non-flush—wires

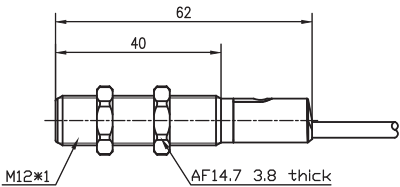


Non-flush—M12 connector

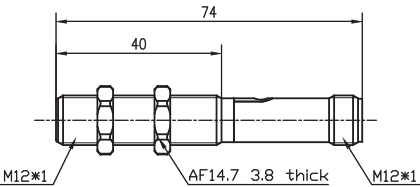


Long distance-CR12XS

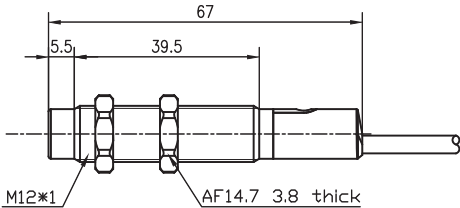
Flush—wires



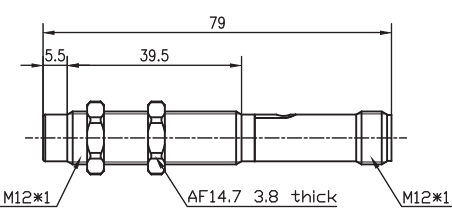
Flush—M12 connector



Non-flush—wires



Non-flush—M12 connector



Cylindrical

Square

Extended distance

Enhanced frequency

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

Naming rules

Product family

Wiring diagram

Installation guide

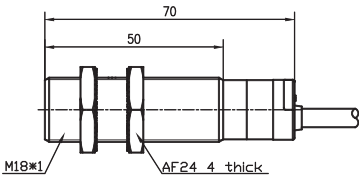
Technical guide



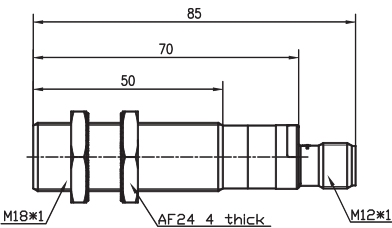
Official Website

Long distance-CR18X

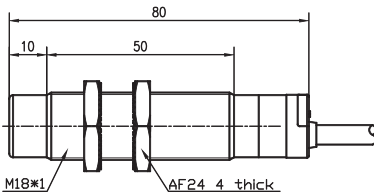
Flush—cable



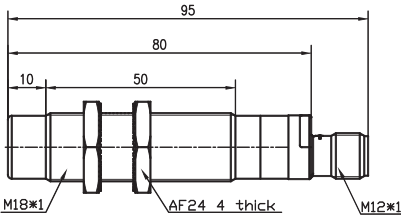
Flush—M12 connector



Non-flush—cable

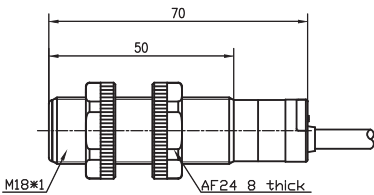


Non-flush—M12 connector

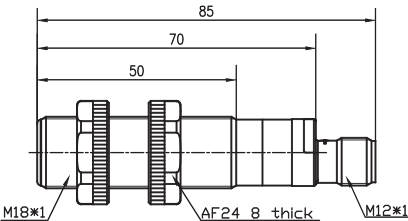


Long distance-CR18XS

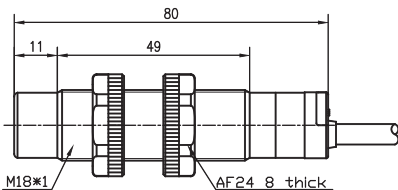
Flush—cable



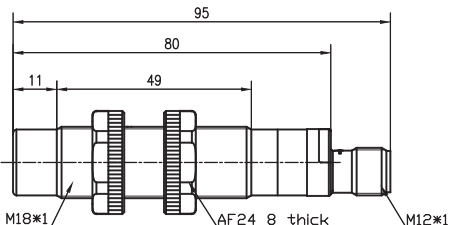
Flush—M12 connector



Non-flush—cable

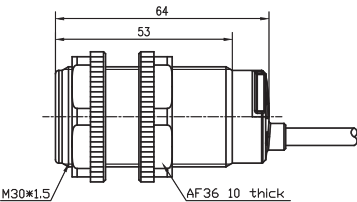


Non-flush—M12 connector

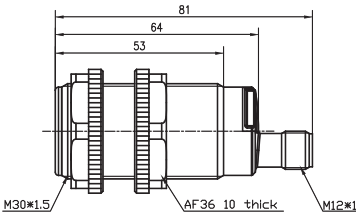


Long distance-CR30X

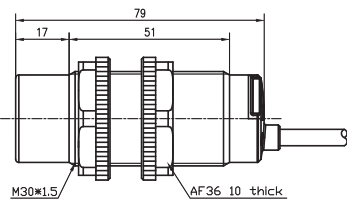
Flush—cable



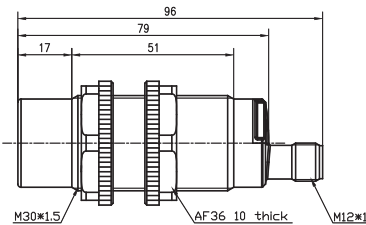
Flush—M12 connector



Non-flush—cable

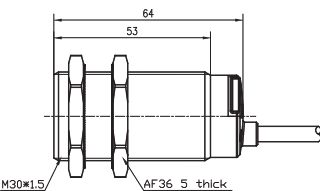


Non-flush—M12 connector

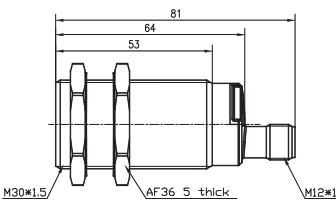


Long distance-CR30XS

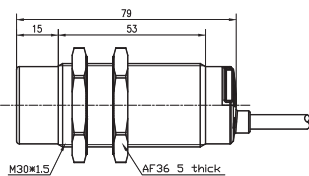
Flush—cable



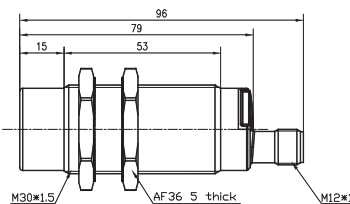
Flush—M12 connector



Non-flush—cable



Non-flush—M12 connector



Cylindrical

Square

Extended distance

Enhanced frequency

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

Naming rules

Product family

Wiring diagram

Installation guide

Technical guide



Official Website

Capacitive Sensors

Frequency Enhanced Series



Frequency enhanced series

Fast response, frequency up to 100Hz.

Knob adjustment

Distance can be adjusted by knob.

Cylindrical

Square

Extended
distanceFrequency
enhancedCorrosion
resistant

Pipe liquid level

High temperature
resistant
material level

Split type

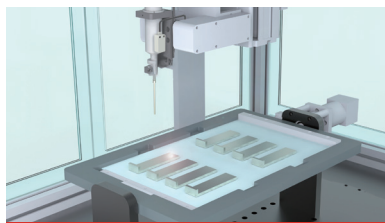
Naming rules

Product family

Wiring diagram

Installation
guideTechnical
guide

Application



Glue level detection



DC 3 Wires

Appearance	Dimension (mm)	Mounting	Connection	Sensing distance	Type	Model	
						NPN	PNP
	M12*1*63	Flush	2m cable	4mm	NO	CR12XCF04DNOG	CR12XCF04DPOG
					NC	CR12XCF04DNCG	CR12XCF04DPCG
	M12*1*75	Flush	Connector	4mm	NO	CR12XCF04DNOG-E2 ^②	CR12XCF04DPOG-E2 ^②
					NC	CR12XCF04DNCG-E2 ^②	CR12XCF04DPCG-E2 ^②
	M18*1*70	Flush	2m cable	8mm	NO	CR18XCF08DNOG	CR18XCF08DPOG
					NC	CR18XCF08DNCG	CR18XCF08DPCG
	M18*1*85	Flush	Connector	8mm	NO	CR18XCF08DNOG-E2 ^②	CR18XCF08DPOG-E2 ^②
					NC	CR18XCF08DNCG-E2 ^②	CR18XCF08DPCG-E2 ^②
	50*22.3*5.5	Non-flush	2m cable	6mm	NO	CE05SN06DNOG	CE05SN06DPOG
	50*20*5.5	Non-flush	2m cable	6mm	NO	CE05XSN06DNOG	
	50*20*6.5	Non-flush	2m cable	6mm	NO	CE06XSN06DNOG	
	16*37.1*12	Non-flush	2m cable	8mm	NO	CE16SN08DNOG	CE16SN08DPOG
					NC	CE16SN08DNCG	CE16SN08DPCG
	17*32*10.5	Non-flush	2m cable	8mm	NO	CE17SN08DNOY	
					NC	CE17SN08DN CY	
	50*20*10	Non-flush	2m cable	8mm	NO	CE34SN08DNOG	

②E2:M12 4-pins connector

Capacitive

Cylindrical

Square

Extended distance

Enhanced frequency

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

Naming rules

Product family

Wiring diagram

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Official Website

I Long distance

Series	CR12X	CR18X
Model	CR12XCF04D□□G	CR18XCF08D□□G
Mounting	Flush	Flush
Detection distance	4mm (adjustable) ①	8mm (adjustable) ①
Switching frequency	100Hz	100Hz
Ensure distance	≤2.88mm	≤5.76mm
Adjust the distance	1...6mm	3...12mm
Standard target	Fe 12*12*1t	Fe 24*24*1t
Shape specification	C model (dimensional drawing see page E03-006 for details)	
Connection	Cable type (standard length 2m), connector optional	
Repeat accuracy	≤5%	≤6%
Supply voltage	10...30V DC	
Output	Load current: ≤200mA; Voltage drop: ≤2V; Leakage current: ≤0.1mA	
Hysteresis	3...20%	
Current consumption	≤20mA	
Circuit protection	Short circuit protection, reverse polarity, overload protection	
Indicator	Yellow: output indication	Green: power indication; Yellow: power indication
Working environments	Operating temperature: -25...70°C; Storage temperature: -30...80°C; Ambient humidity: 35...95% (no condensation or dew on optical surfaces)	
Protection degree	IP67	
Housing material	Nickel copper alloy	

Note: the factory default sensing distance is Sn±10%

- Cylindrical
- Square
- Extended distance
- Frequency enhanced
- Corrosion resistant
- Pipe liquid level
- High temperature resistant material level
- Split type
- Naming rules
- Product family
- Wiring diagram
- Installation guide
- Technical guide



I Long distance

Series	CE05S	CE05XS
Model	CE05SN06D□OG	CE05XSN06DNOG
Mounting	Flush	
Detection distance	5mm (adjustable)	
Switching frequency	100Hz	
Adjust the distance	2...6mm	
Standard target	Fe 30*30*1t	
Shape specification	Square model (dimensional drawing see page E03-007 for details)	
Connection	Cable type (standard length 2m)	
Repeat accuracy	≤5%	
Supply voltage	10...30V DC	
Output	Load current: ≤100mA; Voltage drop: ≤2.5V; Leakage current: ≤0.1mA	
Hysteresis	1...20%	
Current consumption	≤15mA	
Circuit protection	Reverse polarity	
Indicator	Yellow: output indication	
Working environments	Ambient temperature: -10...55°C; Ambient humidity: 35...95%	
Protection degree	IP67	
Housing material	PBT	

Cylindrical

Square

Extended distance

Enhanced frequency

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

Naming rules

Product family

Wiring diagram

Installation guide

Technical guide

Series	CE06XS
Model	CE06XSN06D□□G
Mounting	Non-flush
Detection distance	5mm (adjustable)
Switching frequency	100Hz
Ensure distance	2...6mm
Standard target	Fe 30*30*1t
Shape specification	Square model (dimensional drawing see page E03-007 for details)
Connection	Cable type (standard length 2m)
Repeat accuracy	≤5%
Supply voltage	10...30V DC
Output	Load current: ≤100mA; Voltage drop: ≤2.5V; Leakage current: ≤0.1mA
Hysteresis	1...20%
Current consumption	≤15mA
Circuit protection	Reverse polarity
Indicator	Yellow: output indication
Working environments	Ambient temperature: -10...55°C; Ambient humidity: 35...95%
Protection degree	IP67
Housing material	PBT



Official Website

I Standard distance/Long distance

Series	CE16S	CE17S
Model	CE16SN08D□□G	CE17SN08D□□Y
Mounting	Non-flush	Non-flush
Detection distance	8mm (adjustable)	8mm (adjustable)
Switching frequency	≥100Hz	100Hz
Ensure distance	3...12mm	3...12mm
Standard target	St45 25*25*1t	Fe 25*25*1t
Shape specification	Square model (dimensional drawing see page E03-008 for details)	
Connection	Cable type (standard length 2m)	
Repeat accuracy	≤6%	≤5%
Supply voltage	10...30V DC	
Output	Load current: ≤150mA; Voltage drop: ≤2.5V; Leakage current: ≤0.1mA	
Hysteresis	3...20%	
Current consumption	≤15mA	≤5mA
Circuit protection	Short circuit protection, reverse polarity, overload protection	
Indicator	Yellow: output indication	
Working environments	Ambient temperature:-10...55°C; Ambient humidity:35...95%	
Protection degree	IP67	IP54
Housing material	ABS	

Cylindrical

Square

Extended distance

Frequency enhanced

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

Naming rules

Product family

Wiring diagram

Installation guide

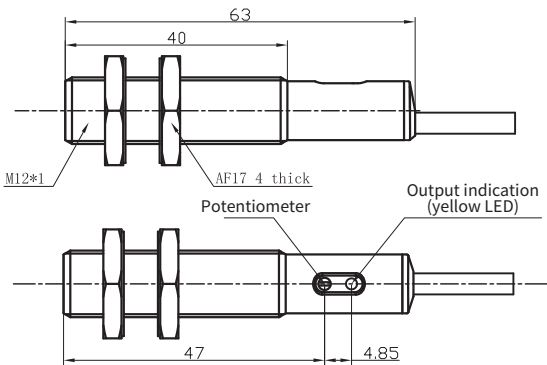
Technical guide

Series	CE34S
Model	CE34SN08DNOG
Mounting	Non-flush
Detection distance	5mm (adjustable)
Switching frequency	100Hz
Adjust the distance	2...8mm
Standard target	Fe 30*30*1t
Shape specification	Square model (dimensional drawing see page E03-008 for details)
Connection	Cable type (standard length 2m)
Repeat accuracy	≤3%
Supply voltage	10...30V DC
Output	Load current: ≤100mA; Voltage drop: ≤2.5V; Leakage current: ≤0.1mA
Hysteresis	3...15%
Current consumption	≤15mA
Circuit protection	Reverse polarity
Indicator	Yellow: output indication
Working environments	Ambient temperature:-10...55°C; Ambient humidity:35...95%
Protection degree	IP67
Housing material	PBT



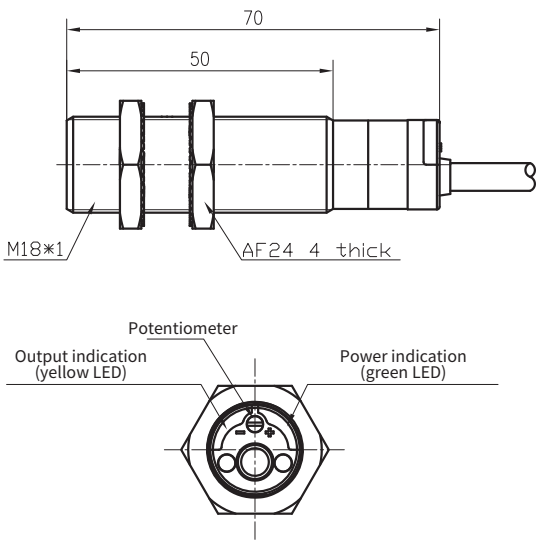
Long distance-CR12X

Flush—cable



Long distance-CR18X

Flush—cable



Cylindrical

Square

Extended distance

Enhanced frequency

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

Naming rules

Product family

Wiring diagram

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Official Website

Cylindrical

Square

Extended
distanceFrequency
enhancedCorrosion
resistant

Pipe liquid level

High temperature
resistant
material level

Split type

Naming rules

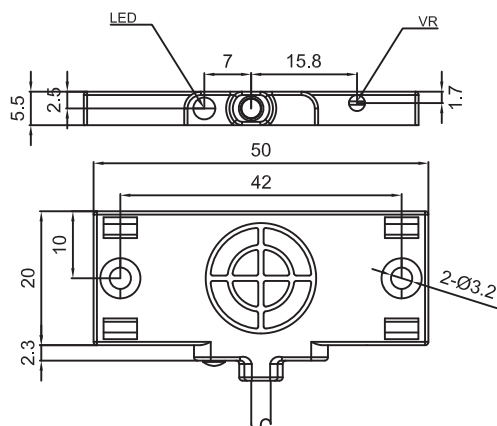
Product family

Wiring diagram

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guideTechnical
guide

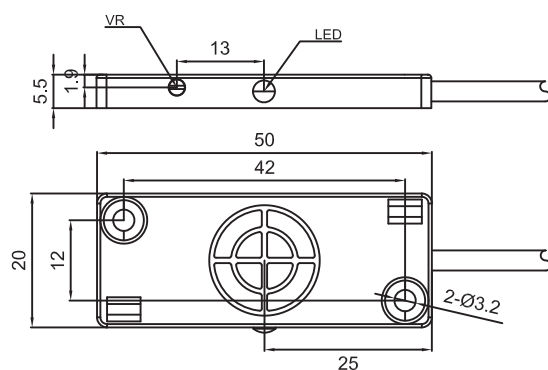
I Long distance-CE05S

Non-flush—cable



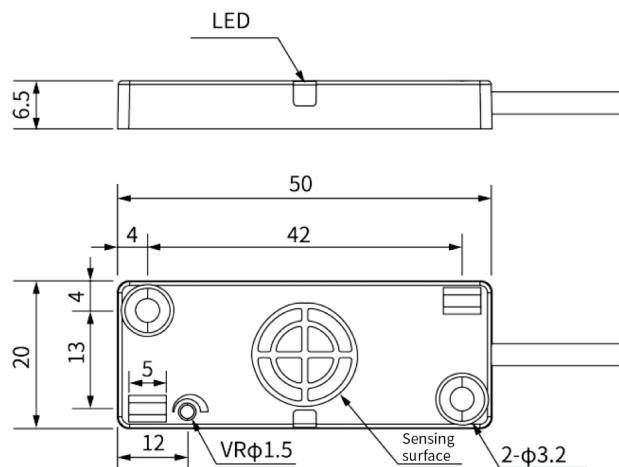
I Long distance-CE05XS

Non-flush—cable



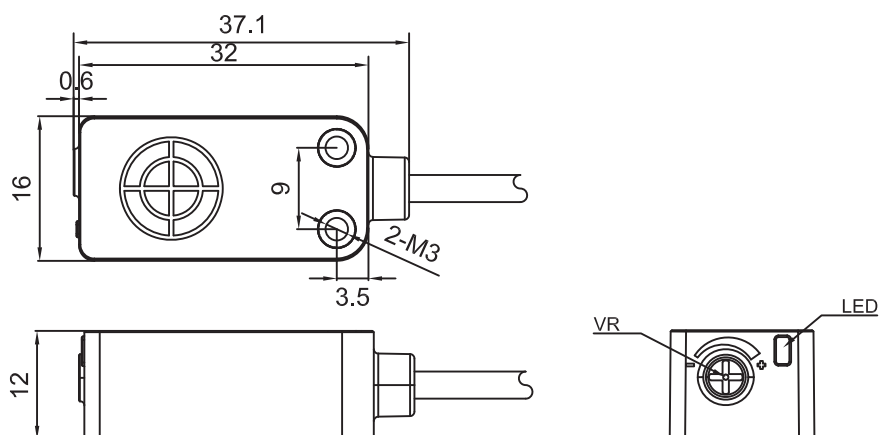
I Long distance-CE06XS

Non-flush—cable



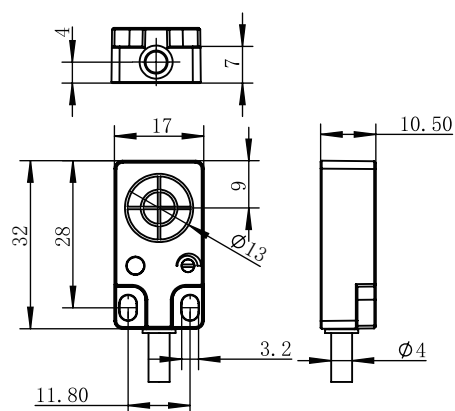
Long distance-CE16S

Non-flush—cable



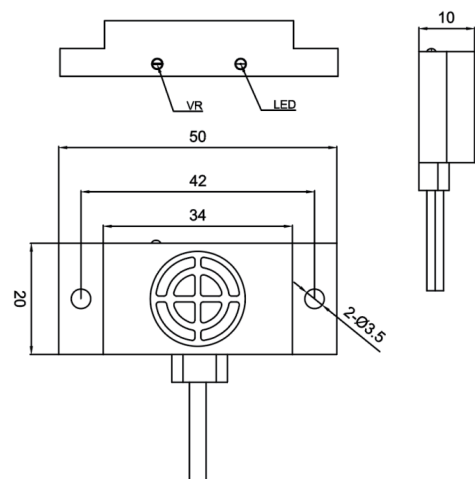
Long distance-CE17S

Non-flush—cable



Standard distance-CE34S

Non-flush—cable



Cylindrical

Square

Extended distance

Enhanced frequency

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

Naming rules

Product family

Wiring diagram

Installation guide

Technical guide



Official Website

Capacitive Sensors

Corrosion Resistant Series



For specifications, certification, usage and model list, please scan the product QR code.



Excellent anti-corrosion performance

PTFE housing, chemical and oil resistant.

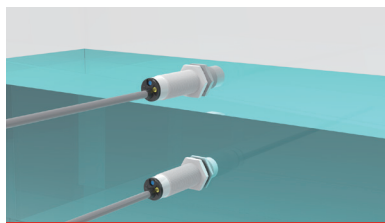
Potentiometer adjustment

Sensitivity can be adjusted.

Excellent level detection performance

Meet the needs of various contact liquid level detection, easily solve the problems caused by various wall hanging.

Application



Liquid level detection

Cylindrical

Square

Extended distance

Frequency enhanced

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

Naming rules

Product family

Wiring diagram

Installation guide

Technical guide



Official Website

DC 3/4 wires

Appearance	Dimension (mm)	Mounting	Connection	Sensing distance	Type	Model	
						NPN	PNP
	M18*1*70.8	Flush	2m cable	5mm	NO+NC	CR18XTCF05DNR	CR18XTCF05DPR
	M18*1*70.8	Non-flush	2m cable	8mm	NO+NC	CR18XTCN08DNR	CR18XTCN08DPR
	M18*1*70.8	Quasi-flush	2m cable	8mm	NO+NC	CR18XTCF08DNRY	CR18XTCF08DPRY
	M18*1*70.8	Non-flush	2m cable	12mm	NO+NC	CR18XTCN12DNRY	CR18XTCN12DPRY

Capacitive

Cylindrical

Square

Extended
distance

Enhanced
frequency

Corrosion
resistant

Pipe liquid level

High temperature
resistant
material level

Split type

Naming rules

Product family

Wiring diagram

Installation
guide

Technical
guide



Official Website

Capacitive

I Standard distance/Long distance

Series	CR18XT			
Model	CR18XTC□□D□□		CR18XTC□□D□□Y	
Mounting	Flush	Non-flush	Quasi-flush	Non-flush
Detection distance	5mm (adjustable)	8mm (adjustable)	8mm (adjustable)	12mm (adjustable)
Switching frequency	20Hz		20Hz	
Adjust the distance	2...7.5mm	3...12mm	3...12mm	3...15mm
Standard target	Fe 18*18*1t	Fe 24*24*1t	Fe 24*24*1t	Fe 36*36*1t
Shape specification	C model (dimensional drawing see page E04-004 for details)			
Connection	Cable type (standard length 2m)			
Repeat accuracy	≤5%			
Supply voltage	10...30V DC			
Output	Load current: ≤200mA; Voltage drop: ≤2V; Leakage current: ≤0.1mA			
Hysteresis	3...20%			
Current consumption	≤15mA			
Circuit protection	Short circuit protection, reverse polarity, overload protection			
Indicator	Yellow: power indication			
Working environments	Ambient temperature: -25...70°C; Ambient humidity: 35...95% (no condensation or dew on optical surfaces)			
Protection degree	IP67			
Housing material	PTFE white			

- Cylindrical
- Square
- Extended distance
- Frequency enhanced

Corrosion resistant

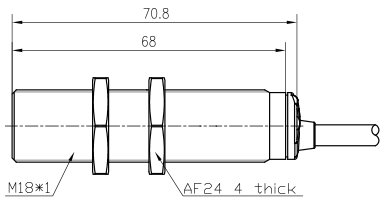
- Pipe liquid level
- High temperature resistant material level
- Split type

- Naming rules
- Product family
- Wiring diagram
- Installation guide
- Technical guide

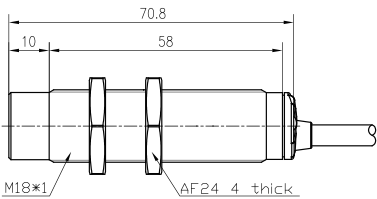


Standard distance/Long distance-CR18XT

Flush—cable



Non-flush—cable



Capacitive

Cylindrical

Square

Extended distance

Enhanced frequency

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

Naming rules

Product family

Wiring diagram

Installation guide

Technical guide



Official Website

Capacitive Sensors

Pipe Liquid Level Series



Flexible and simple installation

Curved appearance design, can be detected through non-metal pipe wall level.

Potentiometer adjustment

Adjustable sensitivity via potentiometer, easy setting.

IP67 protection degree

Special structure to achieve good waterproof and dustproof performance.

Application



Metal part inspection on the assembly line

Cylindrical

Square

Extended distance

Frequency enhanced

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

Naming rules

Product family

Wiring diagram

Installation guide

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Official Website

DC 3 wires

Appearance	Dimension (mm)	Mounting	Connection	Sensing distance	Type	Model	
						NPN	PNP
	43*24*20	Non-flush	2m cable	13mm	NO	CE10SN13DNO	CE10SN13DPO
					NC	CE10SN13DNC	CE10SN13DPC
	34*33*20	Non-flush	2m cable	26mm	NO	CE15SN26DNO	CE15SN26DPO
					NC	CE15SN26DNC	CE15SN26DPC

Capacitive

Cylindrical

Square

Extended distance

Enhanced frequency

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

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Official Website

I Standard distance

Series	CE10S	CE15S
Model	CE10SN13D□□	CE15SN26D□□
Mounting	Non-flush	Non-flush
Detection distance	13mm (adjustable)	26mm (adjustable)
Switching frequency	60Hz	60Hz
Applicable pipeline	Non-metal outer diameter: $\Phi 8 \dots 11\text{mm}$, Wall thickness $\leq 1.0\text{mm}$	Non-metal outer diameter: $\Phi 12 \dots 26\text{mm}$, Wall thickness $\leq 1.0\text{mm}$
Standard target	/	
Shape specification	Square model (dimensional drawing see page E06-004 for details)	
Connection	Cable type (standard length 2m)	
Repeat accuracy	$\leq 3\%$	
Supply voltage	10...30V DC	
Output	Load current: $\leq 200\text{mA}$; Voltage drop: $\leq 2.5\text{V}$; Leakage current: $\leq 0.1\text{mA}$	
Hysteresis	3...20%	
Current consumption	$\leq 15\text{mA}$	
Circuit protection	Short circuit protection, reverse polarity, overload protection	
Indicator	Yellow: output indication	
Working environments	Ambient temperature: $-10 \dots 55^{\circ}\text{C}$; Ambient humidity: 35...95%	
Protection degree	IP67	
Housing material	PBT	

Cylindrical

Square

Extended
distanceFrequency
enhancedCorrosion
resistant

Pipe liquid level

High temperature
resistant
material level

Split type

Naming rules

Product family

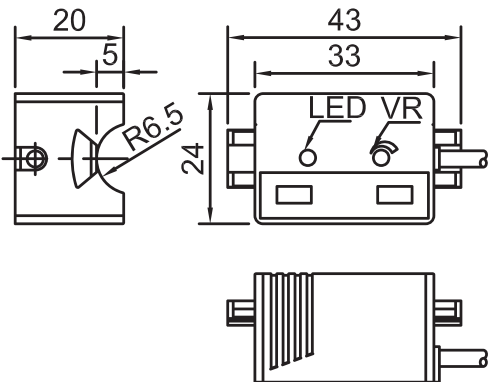
Wiring diagram

Installation
guideTechnical
guide

Official Website

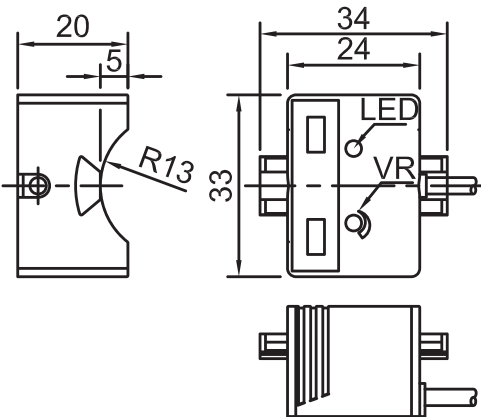
Standard distance-CE10S

Non-flush—cable



Standard distance-CE15S

Non-flush—cable



Cylindrical

Square

Extended distance

Enhanced frequency

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

Naming rules

Product family

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Official Website

Capacitive Sensors

High Temperature Resistant Material Level Series



For specifications, certification, usage and model list,
please scan the product QR code.



Strong sensing head

Stainless steel housing ensures reliable operation and durability.

Extremely high environmental tolerance

Separate structure design, with excellent chemical corrosion and oil resistance.

Fast installation

Simple structure design, easy to install.

Operate through a separate amplifier

The separate amplifier has the function of clear working state indication and sensitivity adjustment.

Cylindrical

Square

Extended
distanceFrequency
enhancedCorrosion
resistant

Pipe liquid level

High temperature
resistant
material level

Split type

Naming rules

Product family

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guideTechnical
guide

Official Website

DC 3 wires

Appearance	Dimension (mm)	Mounting	Connection	Sensing distance	Type	Model	
						NPN	PNP
	Amplifier:95.5*55*22 Induction head: Φ16*150	Non-flush	2m cable	8mm	NO	CE53SN08MNO	CE53SN08MPO
					NC	CE53SN08MNC	CE53SN08MPC
	Amplifier:95.5*55*22 Induction head: Φ16*100	Non-flush	2m cable	8mm	NO	CE53SN08MNO 3002	CE53SN08MPO 3002
					NC	CE53SN08MNC 3002	CE53SN08MPC 3002

Capacitive

Cylindrical

Square

Extended
distance

Enhenced
frequency

Corrosion
resistant

Pipe liquid level

High temperature
resistant
material level

Split type

Naming rules

Product family

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guide



Official Website

Specification Parameters

High Temperature Resistant Material Level Series-DC 3 Wires

I High temperature resistant up to 250°C-Split type

Series	CE53S
Model	CE53SN08M□□□
Mounting	Non-flush (contact use)
Detection distance	8mm (adjustable)
Switching frequency	0.3Hz
Standard test object	ST45 carbon steel, inner diameter>20mm, Wall thickness 1mm angular column
Standard target	/
Shape specification	Split type (dimensional drawing see page E07-004 for details)
Connection	Cable type (standard length 2m)
Repeat accuracy	≤5%
Supply voltage	18...36V DC
Output	Load current: ≤250mA; Voltage drop: ≤2.5V; Leakage current: ≤0.1mA
Hysteresis	3...20%
Current consumption	≤100mA
Circuit protection	Short circuit protection, reverse polarity, overload protection
Indicator	Yellow: output indication; Green: power indication
Working environments	Ambient temperature: 0...60°C; Induction head: 250°C Max
Protection degree	IP54
Housing material	Amplifier: PA66; Induction head: teflon+SS

Cylindrical

Square

Extended
distanceFrequency
enhancedCorrosion
resistant

Pipe liquid level

High temperature
resistant
material level

Split type

Naming rules

Product family

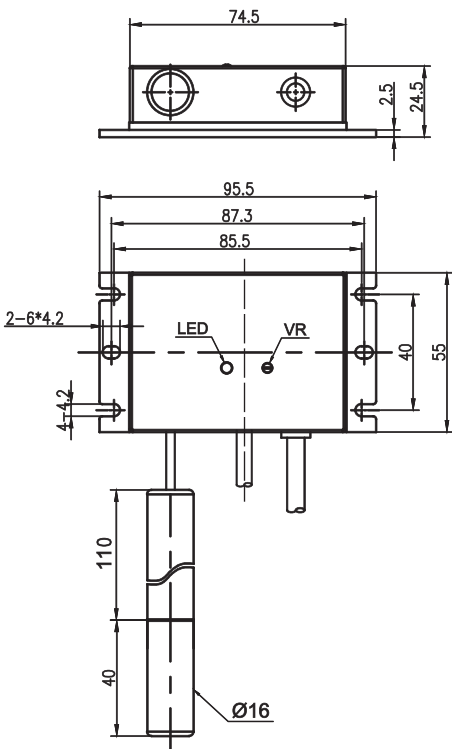
Wiring diagram

Installation
guideTechnical
guide

Official Website

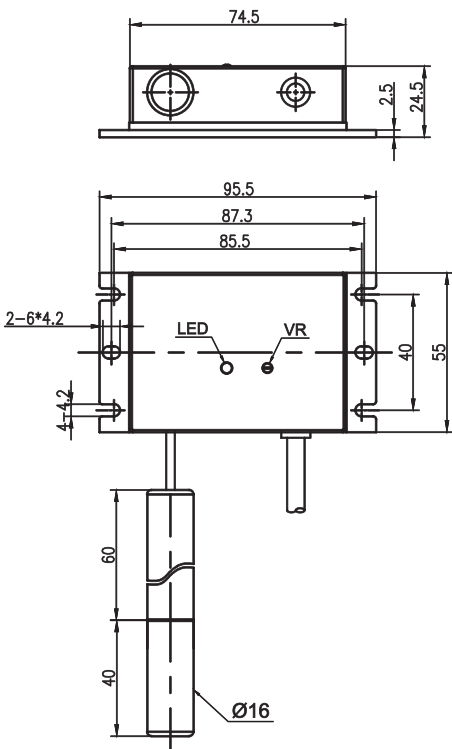
High temperature resistant up to 250°-CE53S

Non-flush—cable



High temperature resistant up to 250°-CE53S 3002

Non-flush—cable



Capacitive

Cylindrical

Square

Extended distance

Enhanced frequency

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

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Official Website

Capacitive Sensors

Split type Series



Amplifier separate design

Separate amplifier with clear operating status indication and sensitivity adjustment function.

Easy installation of sensing head

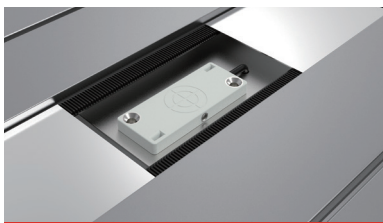
Flat sensing head with a thickness of only 5.5 mm, suitable for installation in narrow workstations.

High-frequency capacitor

Fast response speed up to 100Hz.

Split type

Application



Silicon wafer inspection in photovoltaic industry

Naming rules

Product family

Wiring diagram

Installation guide

Technical guide



Official Website

DC 3 wires

Appearance	Dimension (mm)	Mounting	Connection	Sensing distance	Type	Model
						NPN/PNP
	Amplifier 60.5*35*13	/	2m cable	/	NO/NC	CA05X-ESNB
	Sensing head 50*20*5.5	Non-flush	2m cable	8mm	NO/NC	CE05SXN08

Capacitive

Cylindrical

Square

Extended
distance

Enhenced
frequency

Corrosion
resistant

Pipe liquid level

High temperature
resistant
material level

Split type

Naming rules

Product family

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guide



Official Website

Specification Parameters

Split type Series-DC 3 Wires

I Long distance

Model	Sensing head: CE05SXN08 Amplifier: CA05X-ESNB
Mounting	Non-flush
Detection distance	8mm
Switching frequency	100Hz
Ensure distance	0...5.76mm
Standard target	Fe 25*25*1t
Shape specification	Square model (dimensional drawing see page E08-004 for details)
Connection	Cable type (Sensing head: 1m; Amplifier: 2m)
Repeat accuracy	≤5%
Supply voltage	24V DC
Output	Load current: ≤100mA; Voltage drop: ≤2V; Leakage current: ≤0.1mA
Hysteresis	1...20%
Current consumption	≤15mA
Circuit protection	Short circuit protection, reverse polarity, overload protection
Indicator	Yellow: output indication; Green: power indication
Working environments	Ambient temperature: -10...55°C; Ambient humidity: 35...95%
Protection degree	IP54
Housing material	Sensing head: PBT; Amplifier: PC

- Cylindrical
- Square
- Extended distance
- Frequency enhanced
- Corrosion resistant
- Pipe liquid level
- High temperature resistant material level

Split type

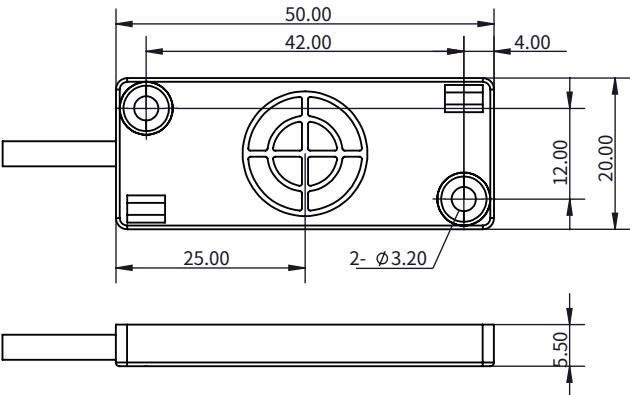
- Naming rules
- Product family
- Wiring diagram
- Installation guide
- Technical guide



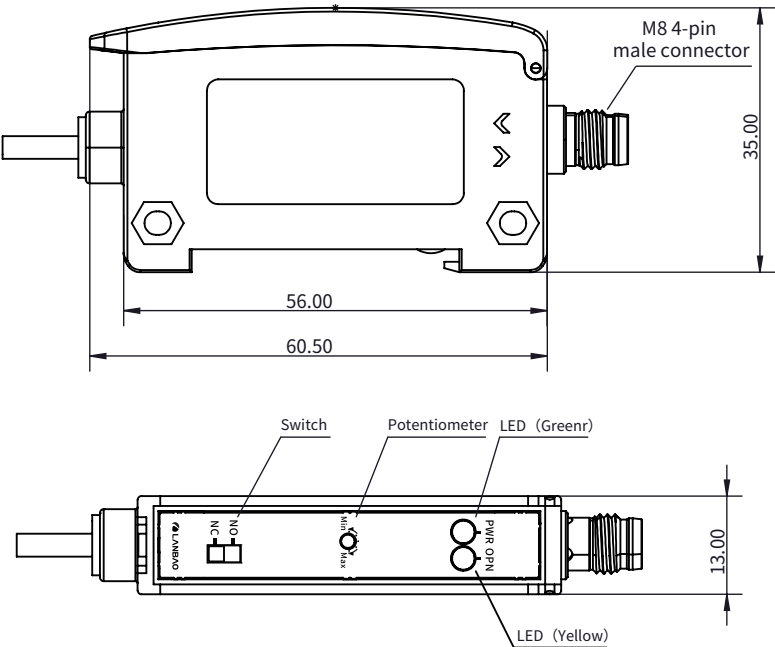
Long distance

Non-flush—cable

Sensing head:



Amplifier:



Capacitive

Cylindrical

Square

Extended distance

Enhanced frequency

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

Naming rules

Product family

Wiring diagram

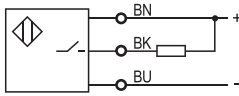
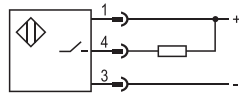
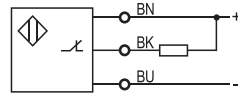
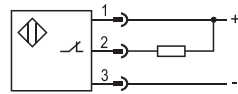
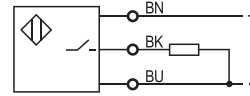
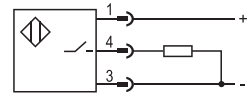
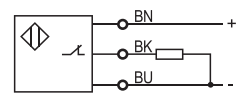
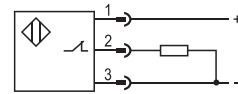
Installation guide

Technical guide

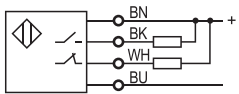
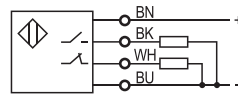
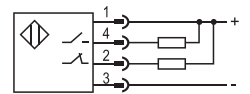
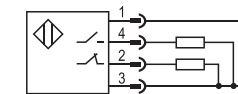


Official Website

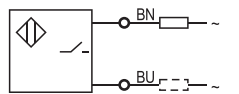
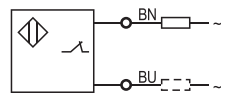
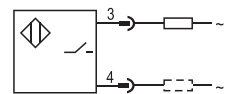
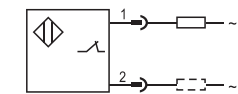
DC 3 wires

Cable
NPN NOM12 connector
NPN NOCable
NPN NCM12 connector
NPN NCCable
PNP NOM12 connector
PNP NOCable
PNP NOM12 connector
PNP NO

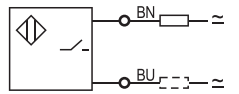
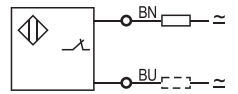
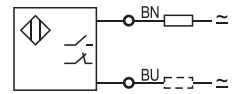
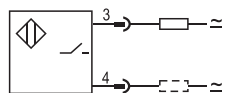
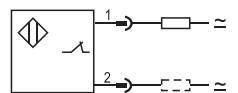
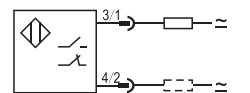
DC 4 wires

Cable
NPN NO+NCCable
PNP NO+NCM12 connector
NPN NO+NCM12 connector
PNP NO+NC

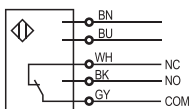
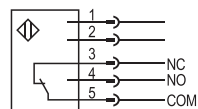
AC 2 wires

Cable
SCR NOCable
SCR NCM12 connector
SCR NOM12 connector
SCR NC

AC/DC 2 wires

Cable
NOCable
NCCable
NO/NCM12 connector
NOM12 connector
NCM12 connector
NO/NC

AC/DC 5 wires

Relay
CableRelay
Terminal connection

Connector

M8 connector



M12 connector



Capacitive

Cylindrical

Square

Extended distance

Frequency enhanced

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

Naming rules

Product family

Wiring diagram

Installation guide

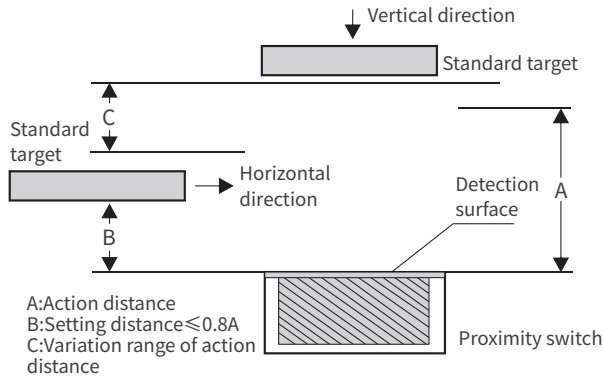
Technical guide



Official Website

I Position setting of the detected target

The sensing distance of the sensor may vary slightly due to changes in ambient conditions such as changes in ambient temperature and voltage. Therefore, in order to make the sensor work stably, the maximum approach position of the detection body needs to be smaller than the sensing distance. When using standard detection, set the actual sensing distance to be less than 80% of the operating distance. In addition, when the shape of the target is smaller than the standard sample or a target other than iron is used, since the sensing distance is shortened, the actual sensing distance must be shortened accordingly. For details, please refer to the specification.

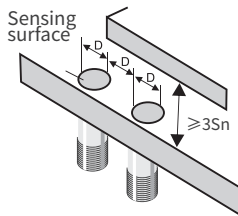


I Flushed, and non-flushed installation

According to the installation method, proximity sensors can be divided into flushed, quasi-flushed, and non-flushed installation. The flushed type can be embedded in the metal for use. The non-flushed type cannot be embedded and is used at a certain distance, but the operating distance is longer than that of the flushed type.

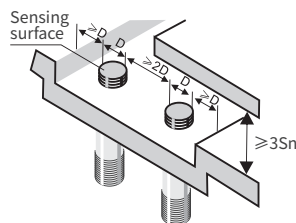
Flushed mounting

metal surface, the distance between the switch surface and the metal object opposite to it should be $\geq 3S_n$, and the distance between two adjacent switches must be $\geq D$.



Non-flushed mounting

Nonflushed mounting sensor can be identified by their sensing head, the area around the non-flush sensing surfaces has no metal casing. The distance from the sensing surface to the metal mounting medium must be $\geq 2S_n$. The distance between the sensing surface and the opposite metal object must be $\geq 3S_n$, and the distance between the other two adjacent proximity switches must be $\geq 2D$.



The advantages of flushed mounting capacitive sensors are that they have better mechanical protection and are less sensitive to false electrical influences than non-flushed mounting sensors.

I Sensor connection

Cable

Terminal

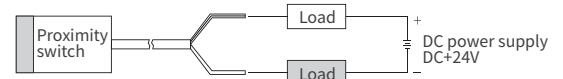
Connector

I Sensor connection notes

2 wire

Connection

Please connect the sensor cable correctly and reliably. If the wiring is wrong or unreliable, the sensor and peripheral devices will be damaged. Please refer to the right figure for the wiring method.



Lead wire

When connecting the sensor cable, separate the cable from the power line and high-voltage line. Please also avoid using the same wiring duct and the same conduit for wiring, otherwise it will cause malfunction. If the cable needs to be lengthened, please choose a cable with a cross-section of 0.3mm or more when it is less than 30m, and a cable with a conductor impedance of less than 100 Ω /km when it is more than 30m. Factors such as capacitance will distort the output waveform, please pay special attention.

The logical AND, logical OR connection of sensors

In principle, the AND or OR of a 2-wire DC switching output sensor cannot be connected. Also, it is not possible to connect in series with the contacts.

Connection to programmable controller

The DC input module of the programmable controller can be connected to a DC switch output 2-wire sensor, but the connection with the DC input module must be confirmed at ON and OFF before use. For example:

1, When ON

(Power supply voltage) - (operation voltage of input module) $\geq$ (saturation voltage of sensor) or (power supply voltage) - (minimum ON current of input module $\times$ internal impedance) $\geq$ (saturation voltage of sensor)

2, When OFF

(Minimum OFF current of input module) $\geq$ (Leakage current of sensor)

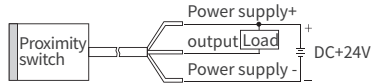


3 wire

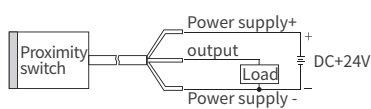
Connection

3-wire DC switching output sensor can be connected with AND or OR, with output NPN and PNP optional. It can connect DC drive loads such as power relays, electromagnets, and counters.

NPN output Connect



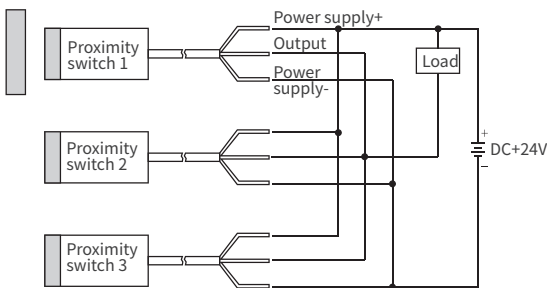
PNP output Connect



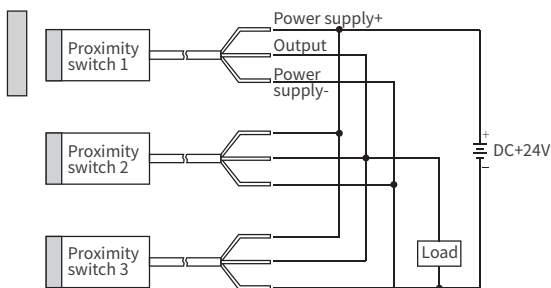
OR connection

When the sensor OR is connected, any sensor action can drive the load. The number of sensors depends on the sum of the leakage current, and as long as it does not affect the load operation, multiple connections can be made. NPN and PNP cannot be mixed.

NPN output OR Connect



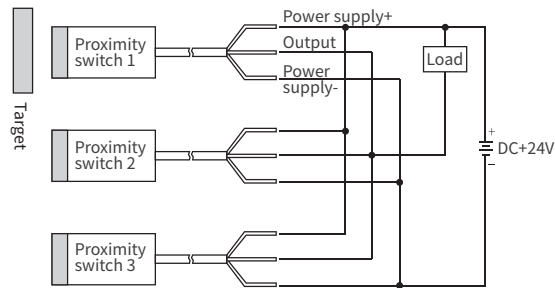
PNP output OR Connect



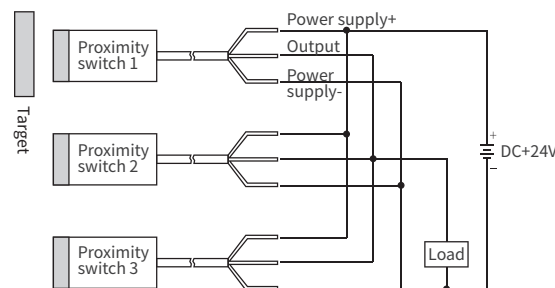
AND connection

When the sensor AND is connected, all sensors can drive the load when they act. The number of sensors depends on the sum of their saturation voltages. As long as it does not affect the supply voltage and load driving voltage of the sensor, multiple connections can be made. The response speed of the sensor is the sum of the initial reset of each sensor.

NPN output OR Connect



NPN output OR Connect

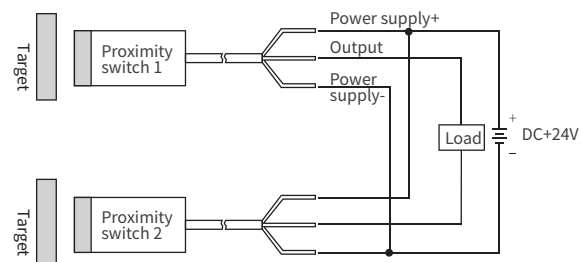


Sensor 1 : PNP output

Sensor 2: NPN output

Advantages: The saturation voltage of the sensor does not affect the voltage when the sensor operates. The action of the sensor depends on its own response speed.

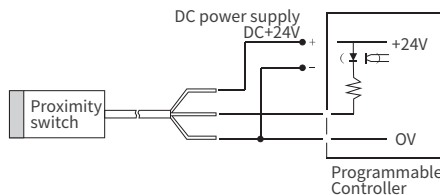
NNPN.PNP hybrid AND



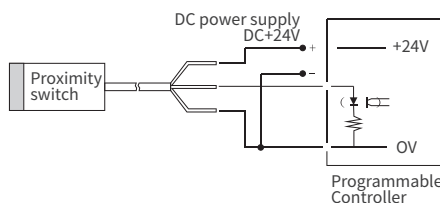
connect with programmable controller

programmable control DC input module can be directly connected to the DC switch 3-wire NPN or PNP output. Please use a DC+24V DC regulated power supply for the power supply of the sensor.

NPN output



PNP output



Cylindrical

Square

Extended distance

Frequency enhanced

Corrosion resistant

Pipe liquid level

High temperature resistant material level

Split type

Naming rules

Product family

Wiring diagram

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Cable connection

(same as 2-wire cable connection)

Electroplating of detected target

If the surface of the detected target is plated, the operating distance will change. Especially after iron surface treatment, the action distance will be shortened by 10-30% according to the type of electroplating.

Precautions when turning the power on or off

The output state of the sensor when the power is turned on or off, whether it is detection or non-detection status, is OFF. In particular, when the power is turned on, the operation that the output state is turned off for a certain period of time is called initial reset. However, in the following cases, the output will be in an instant ON (OFF) state. This time is proportional to the length of the sensor's operating distance, about 10-100ms. When connecting the sensor to the counter and programmable controller, there is no problem because the counter and programmable controller have an initial reset circuit inside. In other cases, please take care to avoid the following situations.

- ❶ The detected object is located near the detection distance of the sensor.
- ❷ For DC voltage type and DC switching type sensors, when the power is turned on (off), the time constant rises (drops) significantly.
- ❸ The AC switch type sensor may be self-excited and noisy when the power is turned on (off).

Capacitor, lamp load

For DC switch type and AC switch type sensors, capacitors, incandescent lamps, etc. cannot be used as loads directly connected to them. Please connect or connect a currentlimiting resistor in series through a relay.

The peak current set by the current limiting resistor R is within the load current of the sensor:

$$\frac{\text{power supply voltage } V}{\text{The maximum load current value of the proximity switch mA}} \leq R \text{ (K}\Omega\text{)}$$

Allowable loss of capacitor R (w)

$$\frac{\text{power supply voltage } V^2}{R(\Omega)} \times \text{More than 2 times}$$

When the load is in parallel with the capacitor and lamp

$$\frac{\text{power supply voltage } V}{\text{The maximum load current value of the proximity switch mA}} \leq R \text{ (K}\Omega\text{)}$$

Allowable loss of capacitor R (w)

$$\frac{\text{power supply voltage } V^2}{R(\Omega)} \times \text{More than 2 times}$$

Load short circuit protection

when the current exceeds two times the maximum load current of the sensor due to malfunction of the sensor, load damage, etc., the load short-circuit protection circuit will cut off the load current and protect the output of the sensor.

Precautions for wiring checking

Use buzzer, lamp and other experiments to check the wiring of the sensor, which may generate high voltage and large current. So please do not use this kind of checking method.

Cylindrical

Square

Extended distance

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Corrosion resistant

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High temperature resistant material level

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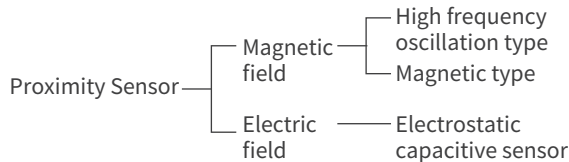
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I Concept of proximity sensor

Proximity sensor uses the sensor's sensitive characteristics to achieve detecting purpose of the approaching objects in a non-contact state. Among the commonly used proximity sensors, they can be divided into high-frequency oscillation type, magnetic induction type, and electrostatic capacitance type according to the principle of induction.

I Principle

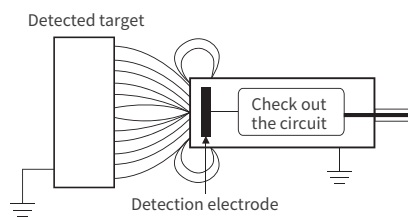


I Proximity sensor features

- 1 No mechanical contact during detection, not easy to damage, no wear and small error;
- 2 Not affected by the surrounding working environment, normal detection even in harsh environments;
- 3 High detection repeatability and accurate positioning;
- 4 High response frequency, suitable for detection of fast moving objects.

I Basic concepts of capacitive sensors

The sensing surface of the capacitive sensor is composed of two coaxial metal electrodes, which form a capacitor and are connected in series in the RC oscillation circuit. When the power is turned on, the RC oscillator does not oscillate. When a target approaches the sensing surface of the sensor, the capacitance increases and the oscillator starts to oscillate. It is converted into a switch signal through the processing of the post-stage circuit, thereby achieving the purpose of detecting whether there is an object. Capacitive sensors can detect metal objects as well as non-metal objects. The maximum operating distance can be obtained for metal objects. For non-metallic objects, the action distance depends on the dielectric constant of the material. The larger the dielectric constant of the material is, the greater the action distance can be obtained.



Electrostatic capacitive sensor

I Standard target

The sensing distance of proximity sensor varies with the size and material of the detected target. As the shape of the target increases, the sensing distance increases. When the volume reaches a certain value, the sensing distance no longer increases and becomes a fixed value. Usually, the smallest detection body that reaches a fixed sensing distance is called a standard detection target.

The standard detection target is generally made of iron (St37), a square object with 1mm thickness, and the length of the side is the larger of the diameter of the sensing surface and 3 times the sensing distance.

I Sensing distance

The sensing distance means the distance between the standard detection target and the sensing surface, for normally open, it is from OFF to ON, and for normally closed, it is from ON to OFF.

The standard sensing distance is the distance between the standard detection body and the sensing surface without considering the tolerance, operating temperature, power supply voltage, etc.

The effective sensing distance is the sensing distance measured by a single proximity switch under a specific installation environment, temperature and voltage, generally measured with rated working voltage and room temperature ($23 \pm 5^\circ\text{C}$).

The actual sensing distance is the sensing distance of a single proximity sensor under the condition of a specific temperature and supply voltage, normally the allowable ambient temperature is $-25^\circ\text{C} \sim 70^\circ\text{C}$, and the input voltage is measured from 85% to 110% of the rated voltage.

The reliable sensing distance refers to the distance between the action point of the proximity switch and its sensing surface after the correct action of the proximity switch under the specified conditions.

I Sensing distance error

The error between the sensor's sensing distance and the standard sensing distance is generally $\pm 10\%$.

I Relative permittivity

The characteristic parameter for capacitive sensors is the relative permittivity.

Relative permittivity, a physical parameter that characterizes the dielectric properties or polarization properties of a dielectric material. Its value is equal to the ratio of the capacitance of a capacitor of the same size made with the material to be tested as the medium and the vacuum as the medium. Also called relative permittivity.

For capacitive sensors, the detected objects with different dielectric constants have different sensing distances and sensing sensitivities. The greater the dielectric constant of the material, the greater the achievable sensing distance.

Material	Dielectric constant	Material	Dielectric constant
Air	1	Polyethylene	2.3
Teflon	2	Polypropylene	2.3
Wood	2~7	Cable rubber compounds	2.5
Paraffin	2.2	Soft rubber	2.5
Gasoline	2.2	Silicon	2.8
Turpentine	2.2	PVC melt	2.9
Transformer oil	2.2	Polystyrene	3
Paper	2.3	Celluloid	3

Material	Dielectric constant	Material	Dielectric constant
Plexiglass	3.6	Hard paper	4.5
Epoxy resin adhesive	3.6	Quartz sand	4.5
Bakelite	3.6	Glass	5
Quartz glass	3.7	Polyamide	5
hard rubber	4	Mica	6
Oil paper	4	Marble	8
Crumbs of card-board pressing	4	Alcohol	25.8
Ceramics	44	Water	80

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Typical materials that can be sensed

Solids: wood, ceramics, glass, paper, plastic, stone, rubber, ice, non-ferrous materials and plant materials.

Liquids: water, oil, glue and paint.

Granular objects: plastic particles, seeds, feed and salt.

Powdered objects: dyes, soap powder, sand, cement, fertilizers, sugar, flour and coffee.

Switch point offset

The deviation between the actual operating position of the sensor and the standard operating position.

Load current

The load current is the working current that passes through the sensor under normal conditions.

Voltage drop

Voltage drop is the voltage measured at the 2 ends of the sensor or at the output when the sensor is turned on.

Current consumption

The current required for the sensor to work.

Leakage current

When the sensor is not turned on, the current remaining in its load is called leakage current.

Short circuit protection

If the limit current is exceeded, the output will be closed and released periodically until the short circuit condition is released.

Surge protection

Surge mainly refers to the instantaneous overvoltage in the circuit that exceeds the normal working voltage, which is likely to cause the circuit to burn out at the moment of the surge. Surge protection devices can effectively absorb or divert sudden bursts of energy to protect equipment from damage.

Polarity protection

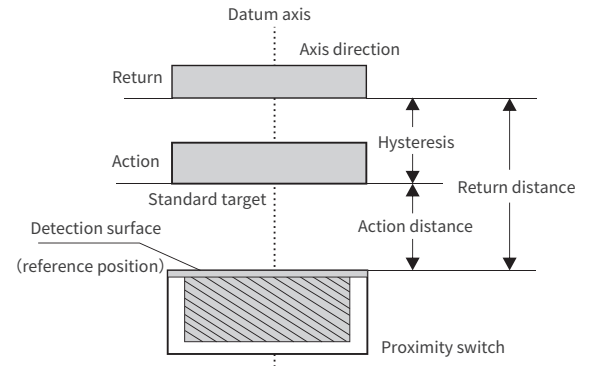
The protection function of the DC sensor against reverse polarity connection.

Time delay

The startup delay time is the time interval from the moment the sensor is powered on until it is ready and outputs a normal signal. Response delay is the reaction time when the sensor enters or leaves the sensing area.

Hysteresis

The difference between the sensing distance that triggers the sensor action when the detection body is close to the sensor sensing surface and the resetting distance when the detection body is far away.



Repeated accuracy

The repeated accuracy refers to the variation of the effective working distance when the shell temperature is $(23 \pm 5) ^\circ\text{C}$, the relative humidity is random, the power supply voltage is $\pm 5\%$ of the rated measurement voltage, and the measurement is performed within the range of 8 hours.

Switch frequency

The switch frequency refers to the maximum number of sensor actions per second.

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Shell material

Metal	① Aluminum (die-cast aluminum alloy): Standard cut-to-form aluminum, can be anodized and used for housing and fastening parts. ② Nickel copper alloy: copper nickel binary alloy, good mechanical properties and corrosion resistance, beautiful color. ③ Stainless steel: good chemical resistance and strength.
Plastic	① ABS engineering plastics (Acrylnitril-Butadien-Styrol): shock-resistant, strong, with certain chemical resistance. Some models are flame retardant and can be used as housing material. ② PA 6, PA 12 (polyamide): good mechanical strength and temperature resistance. PA12 is permitted for use in the food industry. ③ PBT: Good mechanical strength and temperature tolerance. Some models are flame retardant with good chemical and oil resistance. ④ PC: Transparent, hard, elastic and impact resistant, good temperature tolerance and certain chemical resistance. ⑤ PMMA: Transparent, hard, not easy to scratch, UV ray resistant, can be used as an optical element. ⑥ POM: Good impact resistance, mechanical strength and chemical resistance. ⑦ PUR: Elastic, wear-resistant, impact-resistant, resistant to corrosion by oils, greases, and solvents. ⑧ PVC: Good mechanical strength and chemical resistance.
Ceramics	High strength, chemical resistance and electrical insulation, high temperature resistance.

The metal shell is firm, and the tightening torque is large during installation. Cylindrical products have high mounting thread accuracy. The plastic material shell is economical and has good water resistance. The installation thread precision of cylindrical products is low, and the tightening torque is limited.

Protection degree

The IP protection degree system is drafted by IEC (INTERNATIONAL ELECTROTECHNICAL COMMISSION). Classify electrical appliances according to their dust and moisture resistance properties. The foreign objects referred to here include tools, and human fingers should not touch the live parts of the electrical appliance to avoid electric shock. The IP is composed of two numbers. The first number indicates the level of product separation from dust and foreign objects intrusion. The second number indicates the degree of airtightness of the product against moisture and water intrusion. The larger the number, the higher the protection level.

IP protection degree system

Term	Illustration																																				
Protect structure	Degree of protection from water, human body and solid foreign objects. The structure conforms to IEC (International Electrotechnical Commission) specifications. • IEC Standard • Protection level indicated by the first digit <table> <tr> <th>The first digit</th><th>Illustration</th></tr> <tr> <td>0</td><td>No protection</td></tr> <tr> <td>1</td><td>Prevent human hands from touching the inner charging part (Φ50mm)</td></tr> <tr> <td>2</td><td>Prevent human hands from touching the inner charging part (Φ12mm)</td></tr> <tr> <td>3</td><td>Prevent solids with thickness or diameter greater than 2.5mm from invading the internal charging part</td></tr> <tr> <td>4</td><td>Prevent solids with thickness or diameter greater than 1.0mm from invading the internal charging part</td></tr> <tr> <td>5</td><td>Prevent dust intrusion that affects operation</td></tr> <tr> <td>6</td><td>Completely prevent dust intrusion</td></tr> </table> • Protection level indicated by the second digit <table> <tr> <th>Second digit</th><th>Illustration</th></tr> <tr> <td>0</td><td>No protection</td></tr> <tr> <td>1</td><td>Keep vertically falling water droplets free of harmful effects</td></tr> <tr> <td>2</td><td>Make water droplets falling 15° wider than vertical without harmful effects</td></tr> <tr> <td>3</td><td>Make water droplets falling 60° wider than vertical without harmful effects</td></tr> <tr> <td>4</td><td>Make water droplets splashing in any direction without harmful effects</td></tr> <tr> <td>5</td><td>Keep water sprayed in any direction without harmful effects</td></tr> <tr> <td>6</td><td>Make it impossible for water jetted in any direction to penetrate</td></tr> <tr> <td>7</td><td>Make it immersed in water without water intrusion under specific conditions</td></tr> <tr> <td>8</td><td>Can still be used when immersed in water under specified pressure</td></tr> </table> Note: IEC stipulates the test methods for the above protection structures, the protection specified by the product specification Construction is determined by these tests. WARNING: Although the protective construction means that the sensor includes the cable, the end of the cable is not waterproof and is enclosed by the designated protection. Therefore, make sure that water does not penetrate from the end of the cable. No water seepage is allowed here • JEM standard IP67g Designated protection other than the IEC standard IP67 protection structure means that oil droplets or air bubbles cannot enter from any direction.	The first digit	Illustration	0	No protection	1	Prevent human hands from touching the inner charging part (Φ50mm)	2	Prevent human hands from touching the inner charging part (Φ12mm)	3	Prevent solids with thickness or diameter greater than 2.5mm from invading the internal charging part	4	Prevent solids with thickness or diameter greater than 1.0mm from invading the internal charging part	5	Prevent dust intrusion that affects operation	6	Completely prevent dust intrusion	Second digit	Illustration	0	No protection	1	Keep vertically falling water droplets free of harmful effects	2	Make water droplets falling 15° wider than vertical without harmful effects	3	Make water droplets falling 60° wider than vertical without harmful effects	4	Make water droplets splashing in any direction without harmful effects	5	Keep water sprayed in any direction without harmful effects	6	Make it impossible for water jetted in any direction to penetrate	7	Make it immersed in water without water intrusion under specific conditions	8	Can still be used when immersed in water under specified pressure
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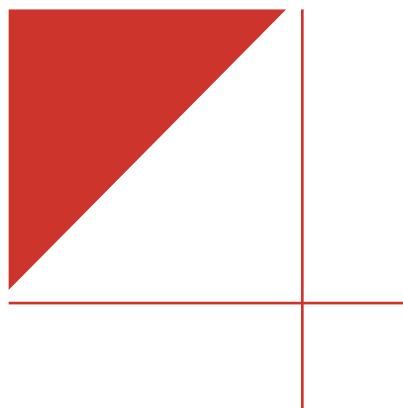
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