33200 = CB0012

Website:www.ema-electronic.com

Linking your system

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Proximity Sensors

Capacitive
Inductive

IP67 CE RoHS

Features

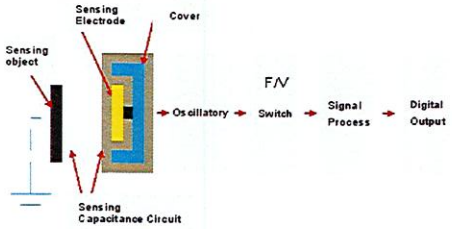
- Plastic thread type and cylinder type; Structure of sensors, durable working, and supply voltage AC/DC available
- Stable Operation: Without adjustable and mechanical components, proximity sensors don't be affected by the qualities of mediums and the variation of density, and it can work immediately after installation
- A variety of size and of outputs, easy installation, user-friendly handling .
- Operating temperature:-25~80(℃) Resistance to high temperature:-25~100(℃)
- Protection Classification:IP67
- Certification:CE and RoHS
- Sensing Objects: Solids and liquids
- Output: NPN、PNP、AC、DC、N/O、N/C
- Display: LED.
- Electric Protection: Overload, short-circuit, reverse polarity

Operating Principle

Capacitive proximity sensors belong to a sort of position sensors. Like the structure of a capacitor, the probe of sensor acts as one pole of capacitor and another pole is the sensing object. While the sensing object approaches a proximity sensor, the dielectric constant may change between object and sensor. Meanwhile, this causes the circuit to alter. The sensing objects of capacitive proximity sensors can be not only metals but also insulting solids, liquids, and powders. When detecting the low-k objects, proximity sensors can enhance the sensitivity by modifying clockwise the multipotentiometer behind the sensors; furthermore, a normal potentiometer makes a capacitive proximity sensor actuate in the position of sensing range by 70%~80%.

The sensing interface of capacitive proximity sensor is composed of two in-line metal electrodes, and it is similar to an open capacitors. These two electrodes constitute a capacitance with a series connection inside the RC oscillatory circuit. When the power is on, the RC oscillator stop working until a sensing object approaches the sensing interface due to the increasing volume of capacitance. Through the comparison between the signals handled by the post-circuit and the internal signals, a capacitive proximity sensor can detect the existence of objects. It can sense not only the metals but non-metals; moreover,the sensing range to the metals can acquire maximum value. The sensing range of the non-metals depends on the dielectric constants of the sensing materials. The higher dielectric constant, the longer sensing ranges.

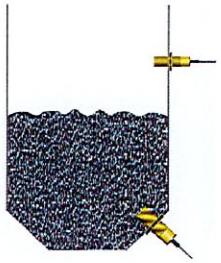
Operation Procedure of Capacitive Proximity Sensors



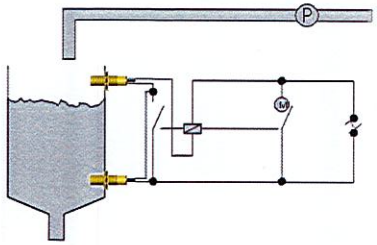
Application

Capacitive Proximity Sensors can sense metals and non-metals,such as liquids, solids in the funnels,the storage tanks, and the granaries. They are applied extensively in the industry; for example timbering, papermaking, glass, plastics, foods, cement, chemistry engineering, and etc.

Sensing Level of Solids

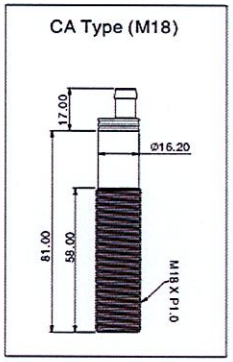


Sensing Level of Liquids

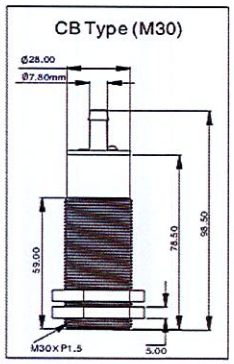


Dimensions (mm)

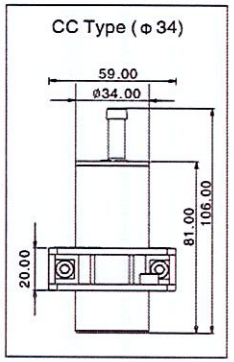
CA Type (M18)



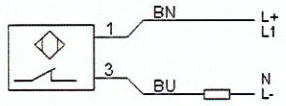
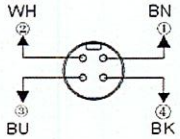
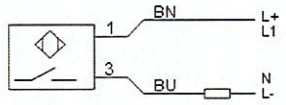
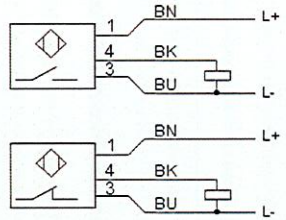
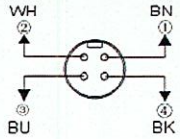
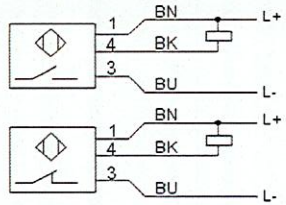
CB Type (M30)



CC Type (Φ 34)



Wiring

Electric Design	Connection	Color of Wire	Mode of Connection
2-Wire	PVC Cable /2 m; 2 x 0.34 mm²/td>5	BN BU	
	M12 Socket		
3-Wire	PVC Cable /2 m; 3 x 0.34 mm²/td>5	BN BU BK	Wire connection for PNP output 
	M12 Socket		Wire connection for NPN output 

Socket

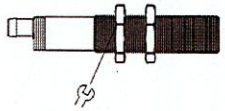
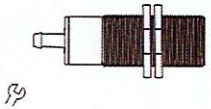
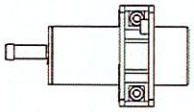
Type	Socket Part NO.					
	C	02	I	5	C	12
 I	C: Cable	Length 02: 2m 05: 5m 10: 10m	Connecter I: Straight L: Angle	Core 4: 4 5: 5	Material R: PUR C: PVC	Socket Size 12: M12
 L						

Order Type	CA: M18							CB: M30							CC: ∅34						
Order NO.	Housing Material	Supply Voltage	Sensing Range	Electric Design	Output	Load Current (mA)	Length (mm)	Connection	Order NO.	Housing Material	Supply Voltage	Sensing Range	Electric Design	Output	Load Current (mA)	Length (mm)	Connection	Order NO.	Housing Material	Supply Voltage	Sensing Range	Electric Design	Output	Load Current (mA)	Length (mm)	Connection
CA0001	PBT+GF	20~250VAC/DC	8 mm nf	2-Wire	NO	250	80	2M,PVC	CB0001	PBT+GF	20~250VAC/DC	15 mm nf	2-Wire	NO	250	80	2M,PVC									
CA0002	PBT+GF	20~250VAC/DC	8 mm nf	2-Wire	NC	250	80	2M,PVC	CB0002	PBT+GF	20~250VAC/DC	15 mm nf	2-Wire	NC	250	80	2M,PVC									
CA0004	PBT+GF	10~36VDC	8 mm nf	3-Wire	PNP NO	250	80	2M,PVC	CB0003	PBT+GF	20~250VAC/DC	15 mm nf	2-Wire	NO/NC	250	80	2M,PVC									
CA0005	PBT+GF	10~36VDC	8 mm nf	3-Wire	PNP NC	250	80	2M,PVC	CB0004	PBT+GF	10~36VDC	15 mm nf	3-Wire	PNP NO	250	80	2M,PVC									
CA0006	PBT+GF	10~36VDC	8 mm nf	3-Wire	NPN NO	250	80	2M,PVC	CB0005	PBT+GF	10~36VDC	15 mm nf	3-Wire	PNP NC	250	80	2M,PVC									
CA0007	PBT+GF	10~36VDC	8 mm nf	3-Wire	NPN NC	250	80	2M,PVC	CB0006	PBT+GF	10~36VDC	15 mm nf	3-Wire	NPN NO	250	80	2M,PVC									
CA0008	PBT+GF	10~36VDC	8 mm nf	2-Wire	NO/NC	250	80	2M,PVC	CB0007	PBT+GF	10~36VDC	15 mm nf	3-Wire	NPN NC	250	80	2M,PVC									
									CB0008	PBT+GF	10~36VDC	15 mm nf	2-Wire	NO/NC	250	80	2M,PVC									

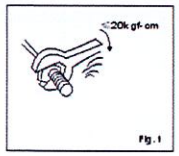
Order NO.	Housing Material	Supply Voltage	Sensing Range	Electric Design	Output	Load Current (mA)	Length (mm)	Connection
CB0009	PBT+GF	20~250VAC/DC	15 mm nf	2-Wire	NO	250	80	M12,Socket
CB0010	PBT+GF	20~250VAC/DC	15 mm nf	2-Wire	NC	250	80	M12,Socket
CB0011	PBT+GF	20~250VAC/DC	15 mm nf	2-Wire	NO/NC	250	80	M12,Socket
CB0012	PBT+GF	10~36VDC	15 mm nf	3-Wire	PNP NO	250	80	M12,Socket
CB0013	PBT+GF	10~36VDC	15 mm nf	3-Wire	PNP NC	250	80	M12,Socket
CB0014	PBT+GF	10~36VDC	15 mm nf	3-Wire	NPN NO	250	80	M12,Socket
CB0015	PBT+GF	10~36VDC	15 mm nf	3-Wire	NPN NC	250	80	M12,Socket
CB0016	PBT+GF	10~36VDC	15 mm nf	2-Wire	NO/NC	250	80	M12,Socket
CB0017	PBT+GF	10~36VDC	15 mm nf	3-Wire	PNP NO/NC	250	80	M12,Socket
CC0001	PBT+GF	20~250VAC/DC	20 mm nf	2-Wire	NO	250	80	2M,PVC
CC0002	PBT+GF	20~250VAC/DC	20 mm nf	2-Wire	NC	250	80	2M,PVC
CC0003	PBT+GF	20~250VAC/DC	20 mm nf	2-Wire	NO/NC	250	80	2M,PVC
CC0004	PBT+GF	10~36VDC	20 mm nf	3-Wire	PNP NO	250	80	2M,PVC
CC0005	PBT+GF	10~36VDC	20 mm nf	3-Wire	PNP NC	250	80	2M,PVC
CC0006	PBT+GF	10~36VDC	20 mm nf	3-Wire	NPN NO	250	80	2M,PVC
CC0007	PBT+GF	10~36VDC	20 mm nf	3-Wire	NPN NC	250	80	2M,PVC
CC0008	PBT+GF	10~36VDC	20 mm nf	2-Wire	NO/NC	250	80	2M,PVC
CC0009	PBT+GF	20~250VAC/DC	20 mm nf	2-Wire	NO	250	80	M12,Socket
CC0010	PBT+GF	20~250VAC/DC	20 mm nf	2-Wire	NC	250	80	M12,Socket
CC0011	PBT+GF	20~250VAC/DC	20 mm nf	2-Wire	NO/NC	250	80	M12,Socket
CC0012	PBT+GF	10~36VDC	20 mm nf	3-Wire	PNP NO	250	80	M12,Socket
CC0013	PBT+GF	10~36VDC	20 mm nf	3-Wire	PNP NC	250	80	M12,Socket
CC0014	PBT+GF	10~36VDC	20 mm nf	3-Wire	NPN NO	250	80	M12,Socket
CC0015	PBT+GF	10~36VDC	20 mm nf	3-Wire	NPN NC	250	80	M12,Socket
CC0016	PBT+GF	10~36VDC	20 mm nf	2-Wire	NO/NC	250	80	M12,Socket

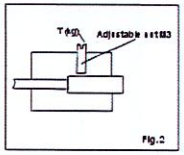
33200

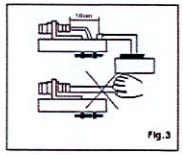
Installation

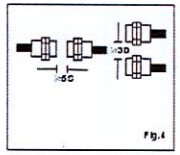
Type	Mounting	Mounting Size	Mounting Direction
CA	Standard Mounting (with nut)	1、Nut: M18×1 2、Vent: 18.2<D<22(mm) 3、Non-flash mounting	
CB	Standard Mounting (with nut)	1、Nut: M30×1.5 2、Vent: 30.2<D<34(mm) 3、Non-flash mounting	
CC	Mounting Clamp	1、Vent: 34.2<D<40(mm) 2、Fixed Bolt: M5 3、Non-flash mounting	

Installation Notice









Mounting for thread type :Don't twist the torgue too hard (Fig.1)
Mounting for cylinder type : To adjust the fixed screw and keep the torque in the range of 2-4kgf-cm. (Fig. 2)
Lead protection: Please fasten the lead which is located 10cm far away the sensor by a clip in order to avoid the damage of sensor resulted from the lead affected by an external force. (Fig. 3)
To prevent the mutual influences between the sensors: When mounting in facing way or apposed way, please follow the instruction in Fig.4 to avoid of the false operation from the mutual influences.
Notice: S-Sensing Range; D-sensor Diameter.

Features

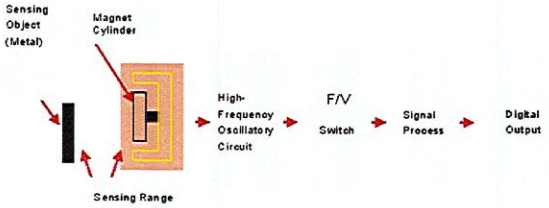
- IC smart inductive proximity sensor.Through an orientation mode, user can set the sensing range and the warning point discretionarily
- Sensing objects: Metals
- Output：NPN、PNP、AC、DC、N/O、N/C
- Display：LED
- Electric Protection: Overload, short-circuit, reverse polarity
- Protection Classification:IP67
- Certification:CE and RoHS
- A variety of size and of outputs, easy installation, user-friendly handling
- Operating temperature:-25~80(℃) Resistance to high temperature:-25~100(℃)

Operating Principle

Inductive proximity sensors include coils and electromagnets, and these two components are combined to the inductive part of a LC tuned circuit which activates the oscillator. Coils and electromagnets generate a low frequency electromagnetic field (EMF), and it is radiated from the sensing surface of the sensor. When a conductive object such as metals enters EMF, the eddy current starts to be transmitted inside the conductor. By absorbing the energy from EMF, this eddy current is increasing to the degree which is too large to be outputted by an amplifier so that the oscillator stop working and EMF disappears. It has been a well-known eddy current oscillator in the past.

Inductive proximity sensors are a sort of position sensors and composed of LC high-frequency oscillator and amplified resistor. When the metals approach the oscillatory sensing interface, it can generate an electric magnet field and an eddy current appearing inside the objects. This current retroacts to the proximity sensor and weaken the oscillation amplitude as to change the parameters of internal circuit in order to detect whether any metal approaches and to control the output of switches. The sensing objects for inductive proximity sensors should be all metals or conductive materials.

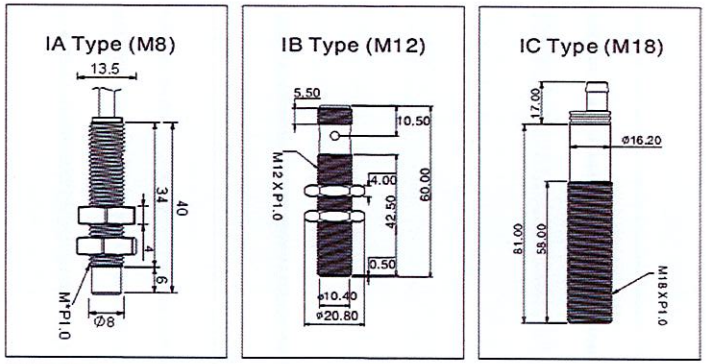
Operation Procedure of Inductive Proximity Sensors



Application

Inductive Proximity Sensors are usually applied to sense metals or conductive materials. Sensing range is determined by size of the sensors objects. The value of energy is determined by the size of the coils inside the sensors. The bigger sensors equip bigger coils which can ossible to offer and are possible to offer the longer sensing range. Therefore, this is better to choose an adequate sensor in size to match the sensing range needed,and it can avoid any unstable condition happened.

Dimensions (mm)



HT-High Temperature