

Manual Capacitive Proximity Sensors

■ English



Application

Capacitive proximity sensors can sense metals and non-metals, such as wood, ceramics, water, oil, and etc. They are mainly used to detect liquids, solids in funnels, storage tanks, and granaries.

Influence between sensing object and sensing range. (Fig.1)

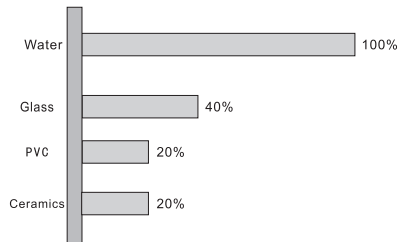


Fig.1

Mounting

There are two ways of mounting the sensor: flush and non-flush, depending on the surrounding condition.

■ Type & Dimension

Type	Mounting	Dimension
CA	Standard mounting with nut	1.Nut: M18 2.Vent: $18.2 < D < 22(\text{mm})$ 3.Non-flush mounting
CB	Standard mounting with nut	1.Nut: M30 2.Vent: $30.2 < D < 34(\text{mm})$ 3.Non-flush mounting
CC	Mounting clamp	1.Nut for clamp: M5 2.Vent: $34.2 < D < 40(\text{mm})$ 3.Non-flush mounting

■ Mounting requirement

- There should be a non-metallic area around the sensing face. The range of this area is D and $2S$. (Fig.2)
Notice: S- Sensing range, D- Diameter of sensor
- There should be no metallic object within $3S$ of the sensing face. (Fig.3) Notice: S- Sensing range.

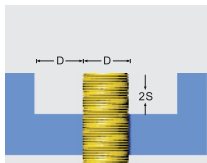


Fig2

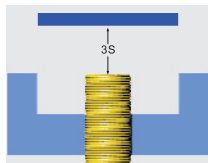


Fig3

Connection

- Three-wire:PNP & NPN mode of connection
- Two-wire(Fig. 4, Fig. 5)

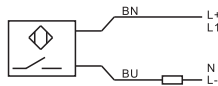


Fig. 4 AC/DC

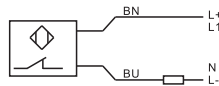


Fig. 5 AC/DC

PNP mode of connection(Fig. 6, Fig. 7)

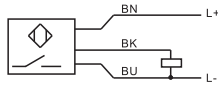


Fig. 6 PNP

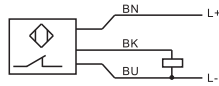


Fig. 7 PNP

NPN mode of connection(Fig. 8, Fig. 9)

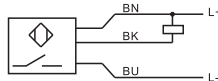


Fig. 8 NPN

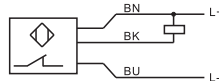


Fig. 9 NPN

Four-wire :PNP&NPN mode of connection(Fig.10, Fig.11)

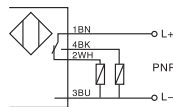


Fig.10 PNP

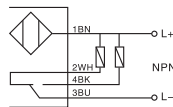


Fig.11 NPN

Series connection and parallel connection

1. Series connection of three-wire/four-wire DC and three-wire/four-wire DC sensor.(Fig.10)
2. Parallel connection of three-wire/four-wire DC and three-wire/four-wire DC sensor.(Fig.11)
3. Series connection of two-wire AC sensor.(Fig.12)
4. Parallel connection of two-wire AC sensor.(Fig.13)
5. Series connection of mechanical switch and AC sensor.(Fig.14)
6. Parallel connection of mechanical switch and AC sensor.(Fig.15)

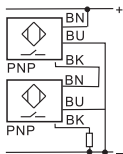


Fig. 10

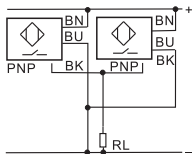


Fig. 11

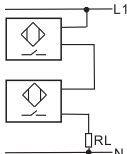


Fig. 12

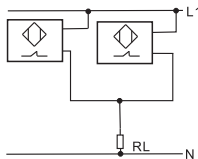


Fig. 13

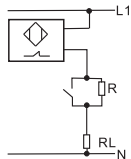


Fig. 14

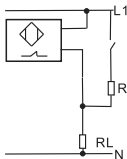


Fig. 15

Sensing range setting

■ Sensitivity

The sensing range of the capacitive sensor is set with a screw driver (included). In order to ensure operational safety, the sensing range of the capacitive sensors should not exceed the rated sensing range. Notice: The rated sensing range of the sensor is set in the factory.

■ Sensitivity adjustment

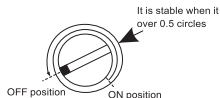
A. Without any target in front of the sensing face, turn the sensitivity potentiometer clockwise until the proximity sensor turns ON (LED light turns on) .



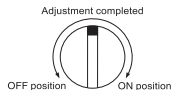
B. With a target in front of the sensing face, turn the sensitivity potentiometer anticlockwise from the ON position stated in A until the proximity sensor turns OFF (LED light turns off) .



C. If the difference between ON position and OFF position in B is more than 0.5 turns, the operation sensor is stable.



D. If you set sensitivity potentiometer at center position between ON and OFF position, sensitivity setting is completed.



- ※ When there is distance fluctuation between proximity sensor and target, please adjust B with target at farthest from this unit.
- ※ Turning potentiometer clockwise it is Max. and turning anticlockwise it is Min. Number of adjustment should be 6 ± 2 revolution and if you turn right or left excessively, it will not stop.

Sensitivity

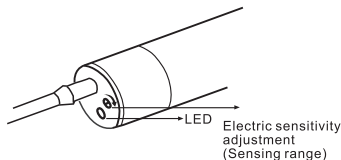


Fig. 16

Notice

■ Installation

1. Mounting for thread type :Do not twist the torque too tight (Fig.17)
2. Mounting for cylinder type : Adjusting torque range 2-4kgf-cm. (Fig. 18)
3. Lead protection: Please fasten the lead which is located 10cm away from the sensor by a clip in order to avoid damage of sensor resulted from the lead affected by an external force. (Fig. 19)
4. To prevent the mutual influences between the sensors: When mounting in facing way or opposed way, please follow the instruction in (Fig.20) to avoid of the false operation from the mutual influences.
Notice: S-Sensing range; D-Diameter of sensor.

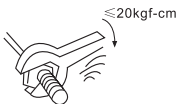


Fig. 17

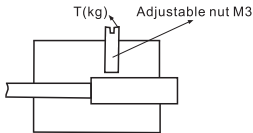


Fig. 18

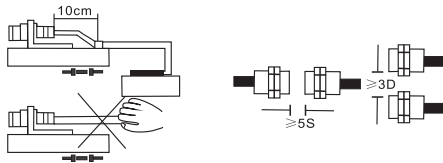


Fig. 19

Fig. 20

5. DC sensor should adopt insulation transformer to ensure stable voltage, in order to prevent the sensor from damage or false action, covering the metal bushing on the sensor lead-wire and grounding it to the earth.
6. Dynamic and power lines should not pass the surroundings of sensor.
7. Please set the sensing range of the sensor within the rated range to avoid the effects from temperature and supply voltage.
8. Wiring while power-on is strictly prohibited. Connecting the wires strictly according to the wiring diagram and output return elementary diagram.
9. In order to maintain reliable and long-life operation, please avoid the (outdoor)occasion beyond the stipulated ambient temperature. Do not drench it with water or water-soluble cutting lubricant when it is used with cover, even though the sensor is waterproof. Please do not use in the conditions with chemical agents, especially as strong base acid, nitric acid, hot strong sulfuric acid. If there is any special requirement to the sensor like water proof, oil proof, acid proof, base proof, high temperature proof or with any other specification, the users are required to give clear indication when placing an order. We can customize according to user requirements.

■ Maintenance

In order to ensure the reliable operation for a long time, the following regular examinations should be performed:

1. Check the installation position of detected object and proximity sensor if any deviation, looseness or deformation exists.
2. Check the attached wires and connecting parts if any looseness bad contact or wire disconnected exists.
3. Check if there is any accumulation of metallic powder attached.
4. Check if the temperature condition and environment are normal.
5. Check if the detection distance is normal.

ООО "РусАвтоматизация"