

Overview

Inductive sensor is a kind of proximity sensor.

Concept of Proximity Sensor

Proximity sensor is used to detect the proximity of objects and control the switch under the condition of non-contact by using the sensitive characteristics of sensors to close objects. In the common proximity sensor, according to the principle of induction, the proximity sensor can be divided into three types: high frequency oscillation, magnetic induction and electrostatic capacitance.

Features of Proximity Sensor

- ◆ No mechanical contact, low power Consumed and long life.
- ◆ Suitable for harsh working environment, reliable work.
- ◆ High repeatability of the detection, can accurately judge the location of the object.
- ◆ High response frequency, suitable for fast moving object detection.

Basic Principle of Inductive Sensor

High frequency alternating magnetic field is generated in the front-end detection coil. When the metal object is close to the magnetic field, eddy current is generated inside the metal object due to electromagnetic induction, leading to the attenuation of magnetic field energy, which is called eddy current loss. When the sensing surface of the proximity sensor is constantly close to the metal object, the attenuation of the magnetic field energy of the metal object is constantly increasing. When the attenuation reaches a certain degree, the sensor triggers the switch to output signals, so as to detect the presence or absence of the object.

Movement Differential

The difference between the induction distance when the proximity switch operates and the distance generated when the proximity switch is reset is the response distance. The response distance of the proximity switch is the response distance measured when the standard detection object is used.

Consumed Current

The current required in the working state of the sensor.

Leak Current

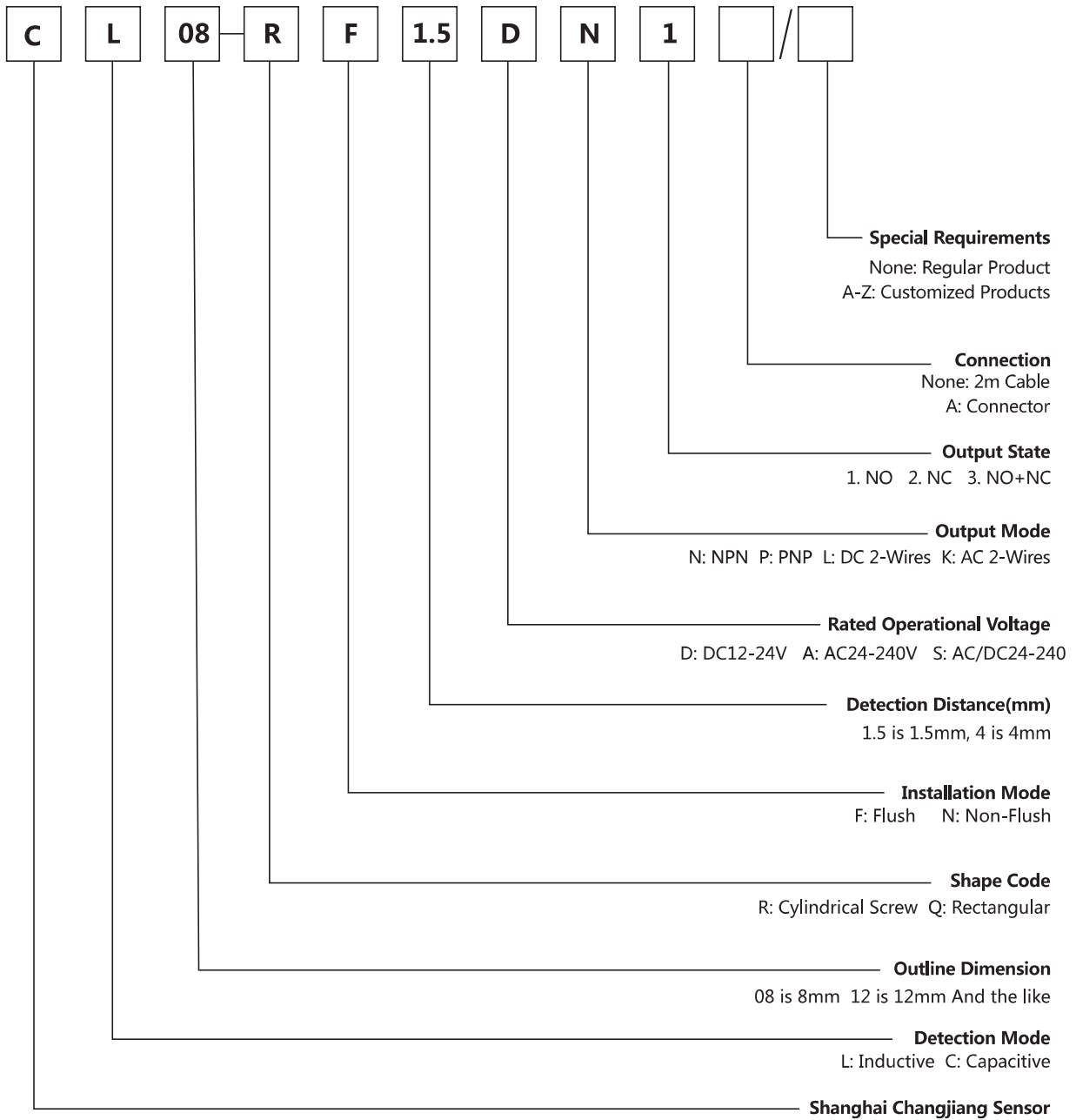
When the sensor is not turned on, the residual current in its load is called leak current.

Response Frequency

Response frequency is the maximum number of actions per second of the sensor.

Model Naming

Product Name:



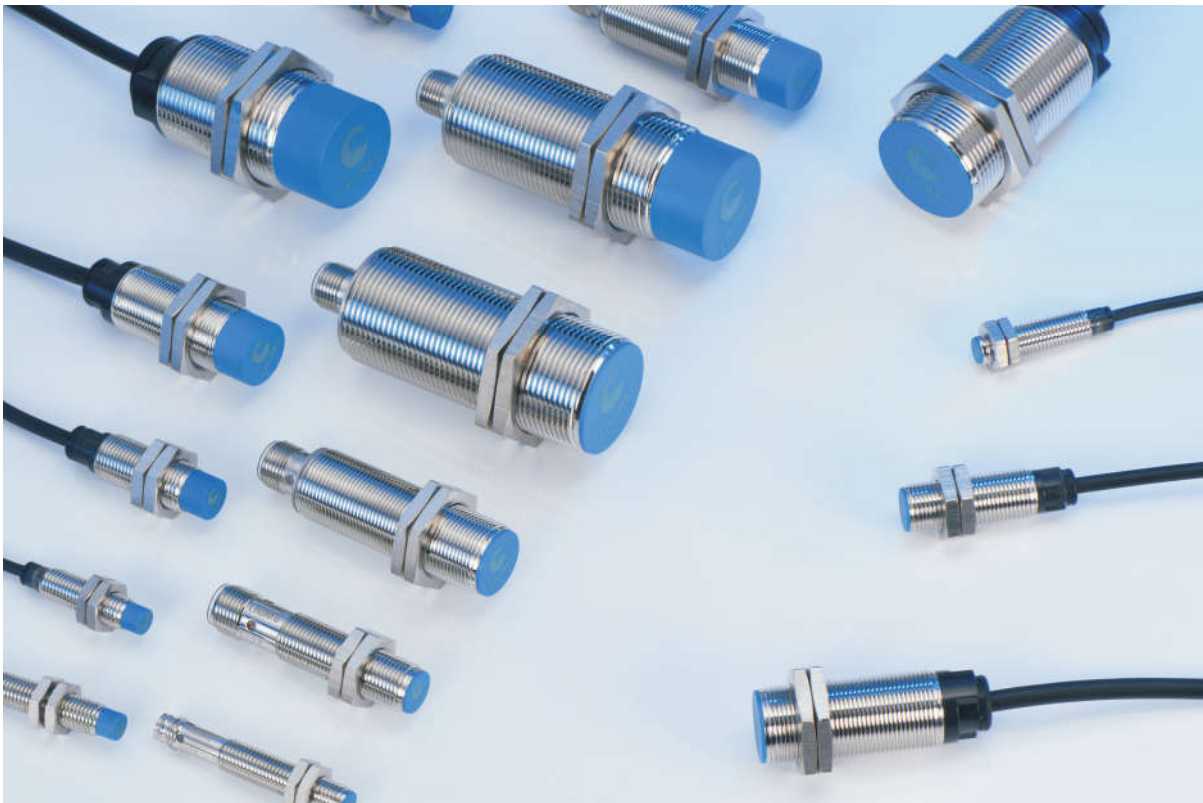
Inductive Sensor

Standard Function Type

- ◆ The non-contact detection method is safe and reliable.
- ◆ The special IC is used to design and manufacture to improve the anti-interference performance.
- ◆ Durable and high reliable, can replace small switches and limit switches.

Full Specification:

The cylindrical series M08 to M30mm and the rectangular series 17*17 to 40*40 mm.



Inductive Sensor - Rectangular

- ◆ The measurement deviation between the same type of sensor is very small
- ◆ High temperature stability
- ◆ Strong anti-interference ability
- ◆ M standard cable
- ◆ IP67 grade
- ◆ Strong and durable structure, stable and reliable performance, good consistency, high cost performance



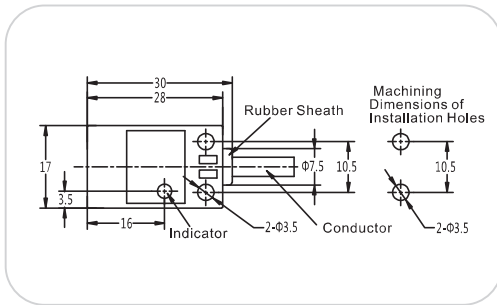
DC 3-Wires

| Product No. | | CL17 | CL25 | CL30 | CL40 |
|---------------------------|--------------------|--|----------------|----------------|----------------|
| Installation Mode | | Non-flush | Non-flush | Non-flush | Non-flush |
| Detection Distance | | 5mm±10% | 5mm±10% | 10mm±10% | 20mm±10% |
| Setting Distance | | 0~4mm | 0~4mm | 0~8mm | 0~16mm |
| Size (mm) | | 17*17*30 | 25*25*43 | 30*30*57 | 40*40*57 |
| Output Mode | NPN NO | CL17-QN5DN1 | CL25-QN5DN1 | CL30-QN10DN1 | CL40-QN20DN1 |
| | NPN NC | CL17-QN5DN2 | CL25-QN5DN2 | CL30-QN10DN2 | CL40-QN20DN2 |
| Output Mode | PNP NO | CL17-QN5DP1 | CL25-QN5DP1 | CL30-QN10DP1 | CL40-QN20DP1 |
| | PNP NC | CL17-QN5DP2 | CL25-QN5DP2 | CL30-QN10DP2 | CL40-QN20DP2 |
| Technical Parameter | | | | | |
| Standard Detection Object | | Iron 15×15×1mm | Iron 30×30×1mm | Iron 40×40×1mm | Iron 50×50×1mm |
| Response Frequency | | 500Hz | 500Hz | 500Hz | 40Hz |
| Movement Differential | | Less than 10% of detection distance | | | |
| Supply Voltage | | DC12-24V ripple (p-p) less than 10% (DC10~30V) | | | |
| Service Voltage Range | | Less than 8mA (at DC12V), less than 15mA (at DC24V) | | | |
| Consumed Current | | Less than 100mA | | | |
| Control Output | Switching Capacity | Below 2V (load current 200mA) | | | |
| | Residual Voltage | Action display (red) | | | |
| Indicator | | Reverse protection, surge absorption | | | |
| Protection Circuit | | Working / Storing: -25~+70°C (no freeze, no dew) | | | |
| Ambient Temperature Range | | Working / Storing: 35~95%RH (no dew) | | | |
| Ambient Humidity Range | | Temperature range from -25 °C to +70 °C is +23 °C, the detection distance is less than ±10%. | | | |
| Temperature Effect | | In the range of ±10% of the rated power supply voltage and ±2.5% of the rated power supply voltage, the detection distance is less than ±2.5%. | | | |
| Influence of Voltage | | Above 50MΩ (DC500V megger) between the whole charging part and the shell | | | |
| Insulation Resistance | | AC1, 000V 50/60Hz 1min between the whole charging part and the shell | | | |
| Withstand Voltage | | 10~55Hz up and down amplitude is 1.5mm, 2 hours in X、Y、Z directions | | | |
| Vibration (Durability) | | 300m/s ² 10 times in X、Y、Z directions | | | |
| Impact (Durability) | | IEC Standard IP67 | | | |
| IP Grade | | 2m PVC cable | 2m PVC cable | 2m PVC cable | 2m PVC cable |
| Connection Mode | | About 58g | About 99g | About 136g | About 198g |
| Weight | | Case: heat resistant ABS, Standard Cable (Black) PVC | | | |
| Material | | | | | |

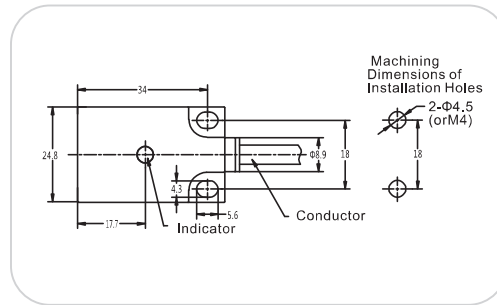
Outline Size and Output Circuit Diagram

Rectangular Wire Outline Dimensions

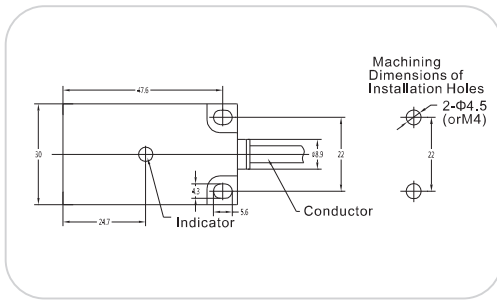
CL17-QN5□□□-□/□



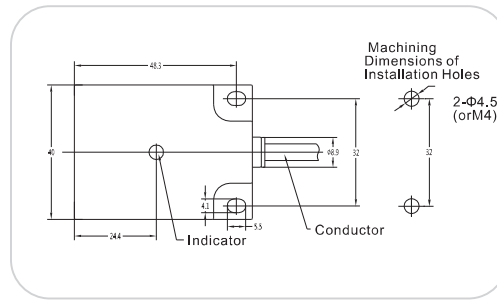
CL25-QN5□□□-□/□



CL30-QN10□□□-□/□

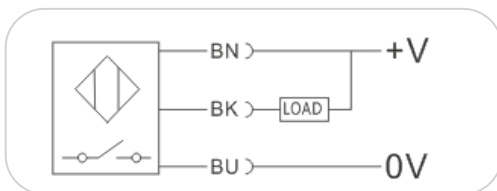


CL40-QN20□□□-□/□

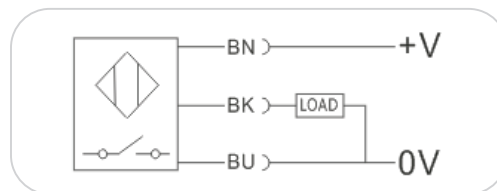


Output Circuit Diagram

CL□-QN□□□□-□/□



NPN Output

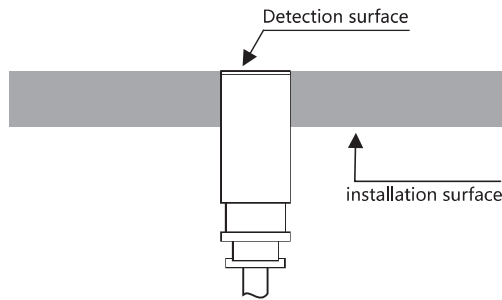


PNP Output

Product Installation Mode

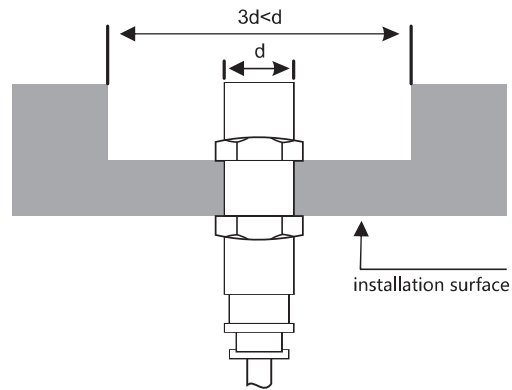
Flush Installation of Inductive Sensor:

When the inductive sensor (proximity switch) detection surface and the metal surface are mounted flush, other surfaces are submerged in the metal surface and are not affected by the metal object. Please refer to



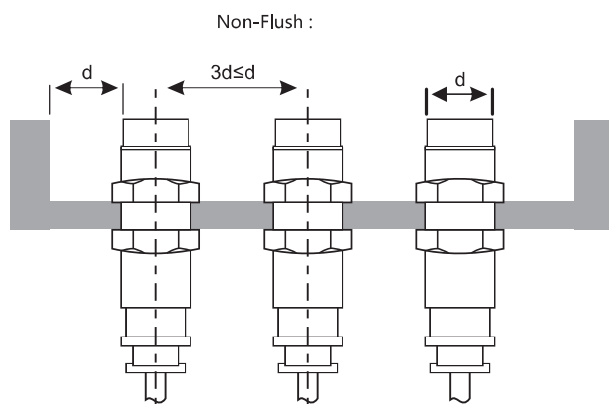
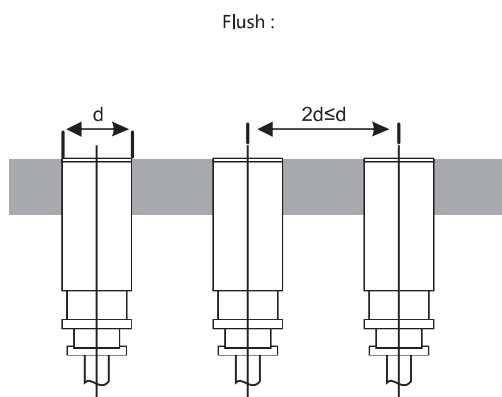
Non-Flush Installation of Inductive Sensor:

The non-embedded inductive sensor (proximity switch) cannot be submerged in the metal surface around the sensor surface, and it is easy to be affected by the metal surface. The detection distance of the non-submerged inductive sensor is longer, and the distance between the sides of the inductive sensor must be 3 times as long as that of the detection head during installation to prevent interference by metal objects.



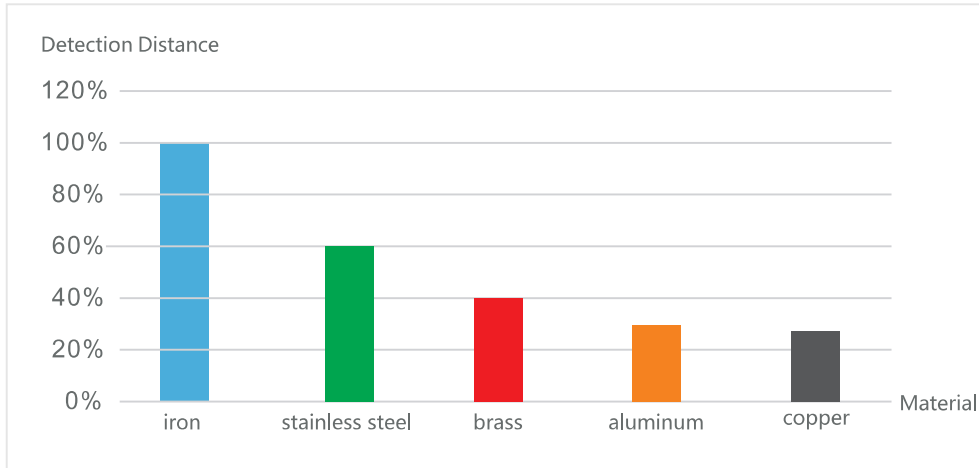
Side-by-Side Installation of Inductive Sensor

When multiple inductive sensors (proximity switches) are required to be installed side by side, in order to prevent interference between proximity switches, please refer to the chart less than to reserve a distance.

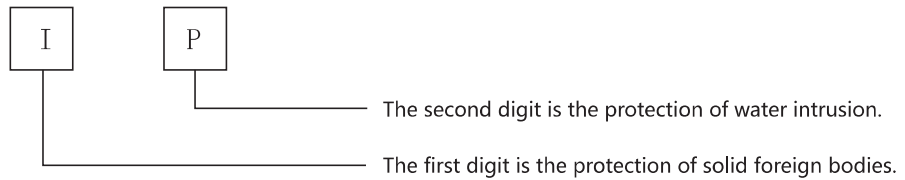


The effect of the material close to the detected object on the measuring distance

When detecting objects of different materials, the detection distance of the proximity switch has a corresponding change.



IP Grade Description



| Jargon | Instruction | | | |
|---------------------------|-------------|--|---|--|
| IP67 Grade Standard | | The first digit represents the level of protection (dust) | The second digit indicates the IP Grade | |
| | 4 | Prevent solid invasion of products with diameters greater than 1.0mm | 4 | Not affected by droplets splashing in any direction |
| | 5 | Prevent dust from operating site | 5 | Not affected by water injection in any direction |
| | 6 | Prevent all dust from invading | 6 | Not intruded by water spraying in any direction |
| | | | 7 | No effect on invasion of water under specified time and pressure |
| | | | 8 | Can still be used in water under specific pressure |

Product Application Case

Our products are widely used in food packaging, transportation equipment, textile machinery, semiconductor, printing machinery, pharmaceutical machinery, logistics industry, medical devices, elevators and so on.

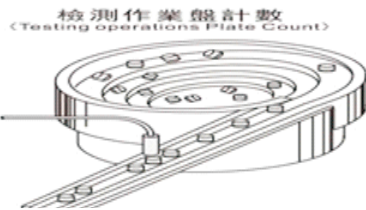
Detection of bottle caps



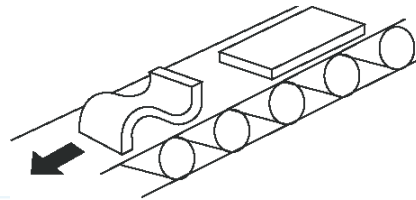
Manipulator application



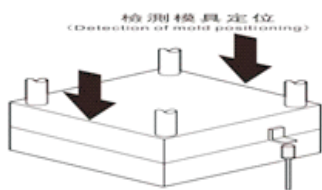
Panel count



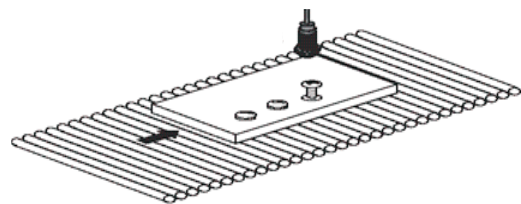
Test the product for changes



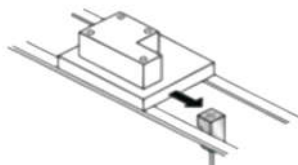
Mold positioning detection



Test screw height



Location detection



Equipment production line application

