

Capacitive NO/NC Selectable AC/DC Sensors



FEATURES

- NO/NC output selector switch
- AC/DC power supply
- Sensing of metallic and non-metallic objects
- Adjustable operating distance
- Cylindrical threaded metal or plastic casing
- Short circuit protection up to 50V in DC
- LED indication of the output logic status
- Cable and connector versions
- Protective housing available for mounting into containers
- **CE** Compliant to the EMC directive
- **RoHS Compliant**

DESCRIPTION

Capacitive sensors are used to detect metallic and non-metallic objects (liquid, plastic, wooden materials and so on). These capacitive sensors have a normally open or normally closed output selector switch and operate on a wide voltage range, 20 - 250 V AC/DC. This greatly reduces the need to keep multiple sensors in stock.

Their housing consists of a cylindrical threaded metal or plastic 30 mm diameter case. They are dust and water tight as well as shock and vibration resistant. All models feature LED indication of the output status and short circuit protection up to 50V in DC.

A screw placed on the sensor allows regulation of the operating distance. This sensitivity regulation is useful in applications, such as detection of full containers and non-detection of empty containers.

A waterproof protective housing is available. This housing is made of a non-toxic material (POM) and has a standard 1 1/2" GAS threaded fitting for mounting into a container. This housing permits a sensor to be rapidly removed for testing without the loss of material and protects the sensor from abrasion. The use of the housing can help to eliminate variation in the sensitivity of the sensor due to deposits of material.

OPERATING PRINCIPLE

Capacitive proximity sensors use the variation of the parasitic capacity that develops between the sensor and the object being detected. When the object is at a preset distance from the sensitive side of the sensor, an electronic circuit inside the sensor begins to oscillate. The rise or fall of such oscillation is identified by a threshold circuit that drives an amplifier for the operation of an external load.

The operating distance of the sensor depends on the actuator shape and size and is strictly linked to the nature of the material (Table 1.).

Capacitive sensors	
Metal	~ 1 x Sn
Water	~ 1 x Sn
Plastic	~ 0.5 x Sn
Glass	~ 0.5 x Sn
Wood	~ 0.4 x Sn

Table 1. Sensitivity with different materials. Sn = operating distance.

2 wire AC/DC NO/NC select advantages:

- Reduces stock
- Easier installation
- Not polarity sensitive
- Compatible with PLC units
- Separate power supply not required

2 wire AC/DC considerations:

- The min. current required for the load (Example: Switching of a relay) is \geq the min. switching current of the sensor.
- The leakage current is not sufficient to cause activation of high impedance inputs and is low enough to release low consumption relays.
- Attention is given to the "on state" voltage drop when there is a low supply voltage.

AC/DC Capacitive

MODEL

Output Function	NO/NC select	S5140	S5141	S5170	S5171
Operating Distance mm		0 - 20		0 - 25	
External Diameter		M30 x 1.5			
Power Supply		20 - 250 V ac/dc			
Max. Switching Current		500 mA			
Min. Switching Current		10 mA			
Leakage Current		\leq 2 mA			
Voltage Drop (On State)		< 6			
Short Circuit Protection		Yes (Up to 50V in dc)			
Operating Frequency(max)		10 Hz			
Case		Nickel Plated Brass		Plastic	
Dimensions		Fig. 5 (cable)	Fig. 6 (connector)	Fig. 7 (cable)	Fig. 8 (connector)
Flush Mounting		Yes		No	
Protection Degree		IP 65			
Operating Temperature		-20 to +70° C			
Output Connection		Cable PVC 3x0.50mm ²	Connector Type C2 *	Cable PVC 3x0.50mm ²	Connector Type C2 *
Protective housing Model #		—	—	S5911	S5912

* Mating connector with screw terminals included

DIMENSIONS: mm, 1 mm = .03937", 1" = 25.4 mm

Fig. 5

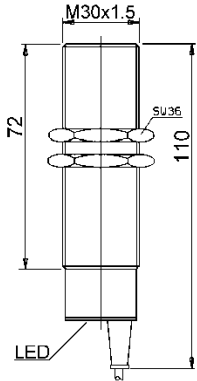


Fig. 6*

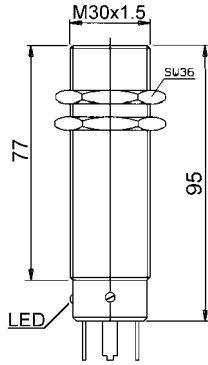


Fig. 7

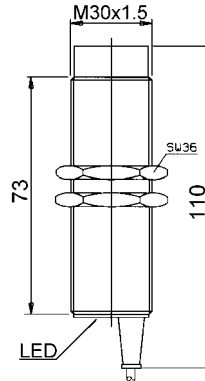
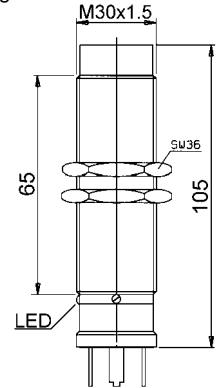
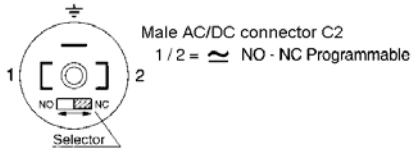
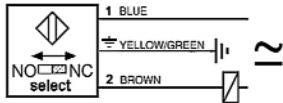


Fig. 8*



* mating C2 connector included

WIRING:

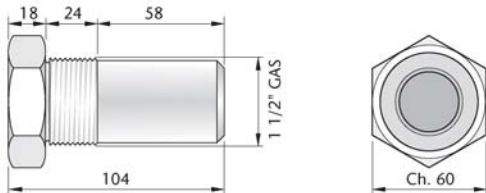
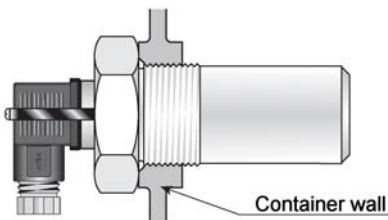


ACCESSORIES:

Protective housing:

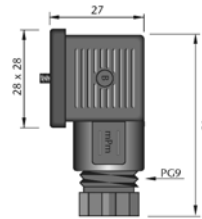
S5911 for sensors with cable

S5912 for sensors with connectors



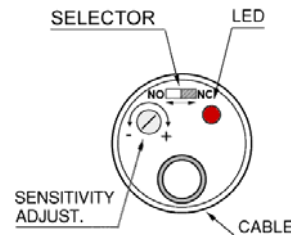
CONNECTOR: (included with sensor)

Female C2 connector with internal terminal screws



SELECTOR (NO/NC)

Before giving power to the sensor, program the sensor using the selector switch to the required function of NO (normally open) or NC (normally closed)



SENSITIVITY ADJUSTMENT

Remove plastic protection screw. Adjust internal trimmer. It is recommended that adjustments are carried out when the sensor is installed in its exact position. The sensitivity increases turning the trimmer clockwise and decreases turning the trimmer counterclockwise. The indication LED is off in the absence of material in the types with output NO and it is on in the types with output NC.