FISCHER MESS- UND REGELTECHNIK

# NC57 || Capacitive Level Sensor

The Model NC57 Capacitive Level Sensor can be used for level measurement of

- Clean water
- Waste water and sewage

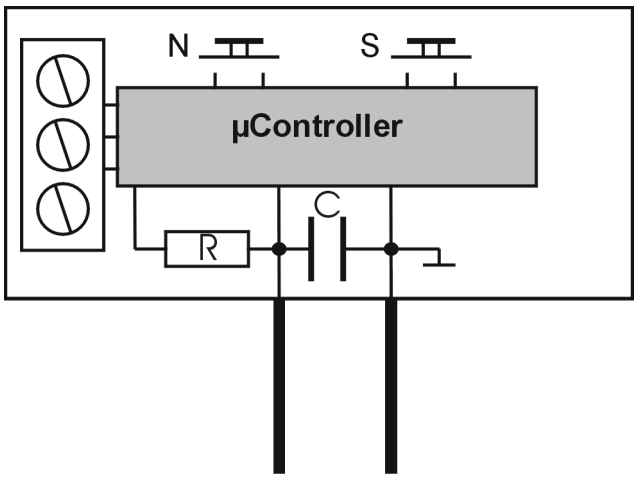
The NC57 can be applied to metal tanks and configured for measuring level in ranges from 400 to 2000 mm.

**Principles of Operation**

The metal rod needs to be mounted with a fixed distance to the tank wall. It forms a capacitor when charged with an A.C. voltage. When the rod is immersed in a liquid medium, the capacitance value is a function of the immersed length. With the probe fixed vertically downward, the immersed length is proportional to the liquid level. The capacitance of the probe is therefore a function of the level.

An electronic circuit module inside the NC57 Level Sensor converts the capacitance value to a level measurement and transmits as a linear standard electrical signal: 0-20 mA, 4-20 mA, 0-10 V DC, 0-5 V DC, 1-5 V DC or 2-10 V DC.

**Schematic Diagram**




**Features**

- Rugged design and construction, IP67
- Built-in electronic signal conversion
- Very easy level setting

**Applications**

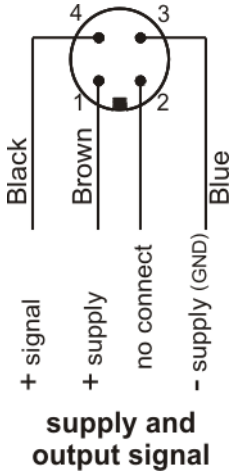
The Model NC57 Capacitive Level Sensor can be used in a various applications, for example:

- Manufacturing industries
- Process industries
- Environmental systems
- Vehicular applications
- Marine applications

# Specifications

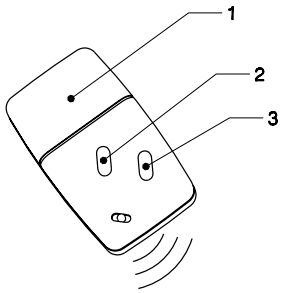
| | | | | | |
|---|---|---|---|---|---|
| **General** | | | | | |
| Sensing technique | Capacitance sensing | | | | |
| Level measuring range | 400 - 2000 mm (other ranges available against special order) | | | | |
| Operating pressure | 10 bar, max. | | | | |
| Temperature | Max. 80°C (ambient and media) | | | | |
| Number of electrodes | 1 | | | | |
| Process connection | Threaded G½, G1 | | | | |
| Degree of protection | IP67 / bayonet ring case NG63 IP65 | | | | |
| **Electrical** | | | | | |
| Operating voltage | 9 - 32 V DC | 9 - 32 V DC | 12 - 32 V DC | 12 - 32 V DC | 12 - 32 V DC |
| Supply current (without signal) | approx. 30 mA | approx. 30 mA | approx. 30 mA | approx. 30 mA | approx. 30 mA |
| Output signal | 0 - 20 mA | 4 - 20 mA | 0 - 10 V DC | 0/1 - 5 V DC | 2 - 10 V DC |
| Output load impedance | ($U_B$ - 9 V) / 20mA | ($U_B$ - 9 V) / 20mA | > 5 k Ω | > 5 k Ω | > 5 k Ω |
| | $U_B$ = Operating voltage | | | | |
| **Electrical Connection** | Male M12 type round shell connector | | | | |
| **Materials** | | | | | |
| Housing | Stainless steel | | | | |
| Media: contact | Blank rod of stainless steel 1.4404, ECTFE coated | | | | |

**Connection Diagram**




## Installation

The NC57 Capacitive Level Sensor is installed vertically downward at the top of the vessel in which liquid level is to be measured. It is fitted into a G½ resp. G1 threaded socket. Thereby an electroconductive connection between the wall of the tank and the connective thread must be ensured. The lower end of the rod must be at least 10 mm above the tank bottom to avoid contact with any sludge that may be present.




## Commissioning and Level Setting

The NC57 Capacitive Level Sensor can be put into operation after it is installed.

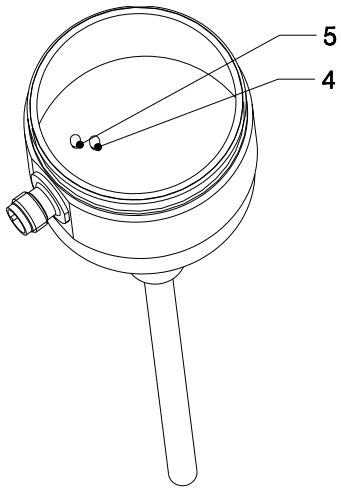
Level setting is done in two steps. First, the liquid in the tank is brought to the lowest operating level. The minimum level is set simply by pressing the "Min" button on the infrared remote control unit. The LED lamp on the top of the instrument starts blinking faster, then stays steadily on, indicating that the zero level is registered. The button is then released.

The tank is then filled up to its highest operating level. The "Max" button on the infrared remote control unit is pressed as before, until the instrument's LED is continuously lit. The NC57 registers the maximum level and the level setting procedure is complete.

The minimum or maximum limit level settings can be altered at any time, whenever the need arises, using the same procedure.

If only one limit setting needs to be changed, only one of two level setting buttons is used, after the liquid level in the tank is adjusted accordingly.

**For a downward characteristic (empty tank = high signal and filled tank = low signal) register the value for MAX with empty tank and the value for MIN with filled tank.**




1. Infrared remote control
2. Button “Min“
3. Button “Max“
4. LED lamp
5. Infrared receiver

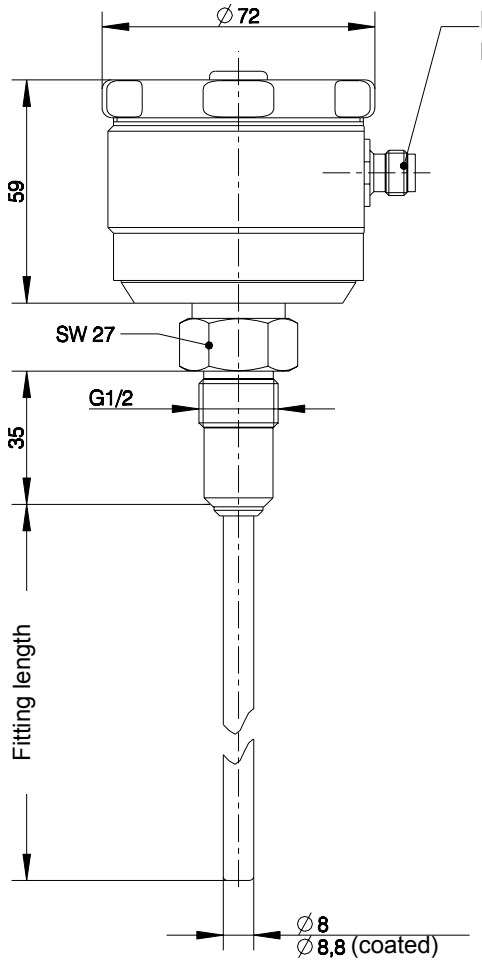
## Accessories

Infrared remote control unit model EU04.

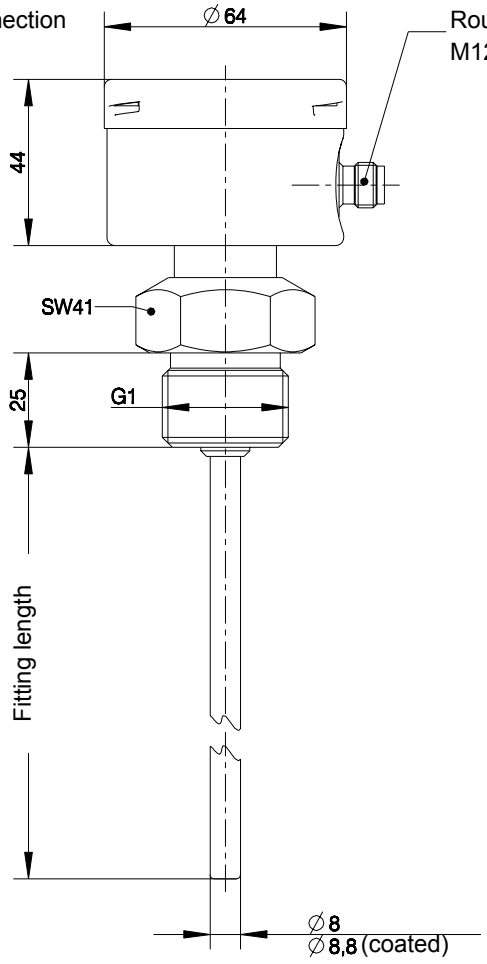
Weld in fitting G½ ordering code 06002001.

## Dimensions (all units in mm unless stated otherwise)

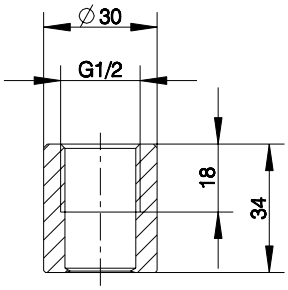
**Sensor with Field Housing IP67**
**Connection G½**




**Sensor with Bayonet Ring Housing**
**Connection G1**




**Weld in Fitting**
**Ordering Code 06002001**



# Ordering Code

| Capacitive Level Sensor | NC57 | | | | | | | | # | # | # | # |
|---|---|---|---|---|---|---|---|---|---|---|---|---|

**Function**

Nonconductive media
(electrode blank, material No. 1.4404) ..... > 3

Conductive media (water / waste water, sewage)
(electrode ECTFE coated) ..... > 4

**Material Housing / Connection**

Stainless steel (1.4571) field housing IP67 with G½ ..... > D

Stainless steel (1.4301) bayonet ring housing with G1 ..... > F

**Electrode Length (from housing bottom)**

400 - 2000 mm (in 50 mm steps) ..... > 0 4 0 0

..... >

..... >

..... >

..... > 2 0 0 0

**Signal Output**

0 - 20 mA linear, 3-wire (STANDARD) ..... > A

0 - 10 V DC linear, 3-wire (STANDARD) ..... > C

4 - 20 mA linear, 3-wire (STANDARD) ..... > P

0 - 5 V DC, 3-wire ..... > U

1 - 5 V DC, 3-wire ..... > D

2 - 10 V DC, 3-wire ..... > Z

**Supply Voltage**

9 - 32 VDC (only for output current) ..... > E

12 - 32 VDC (only for output voltage) ..... > F



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