developing solutions

FISCHER
MESS- UND REGELTECHNIK

CE

RoHS III
COMPLIANT

Data sheet

NC57

Capacitive filling level probe

09015283 • DB_EN_NC57 • Rev. ST4-B • 02/24

1 Product and functional description

1.1 Performance characteristics

Typical applications

Measurement of tank filling levels in metal tanks for

- fresh water
- Waste waster, faeces

Areas of application

- Procedural technology
- Process technology
- Environmental technology
- Vehicle technology
- Ship technology

Main features

- Robust design (up to IP67)
- Easy start-up
- Reliable use
- Variable installation dimensions between 400 and 2000 mm in 50 mm steps

1.2 Device versions

NOTICE! All housing are filled with a PU compound mass.

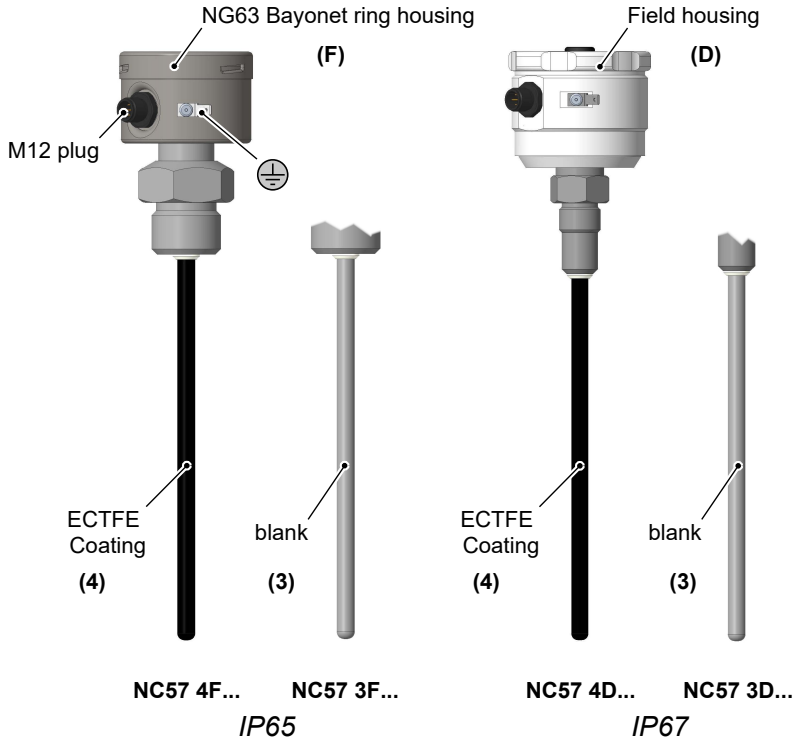


Fig. 1: Device versions

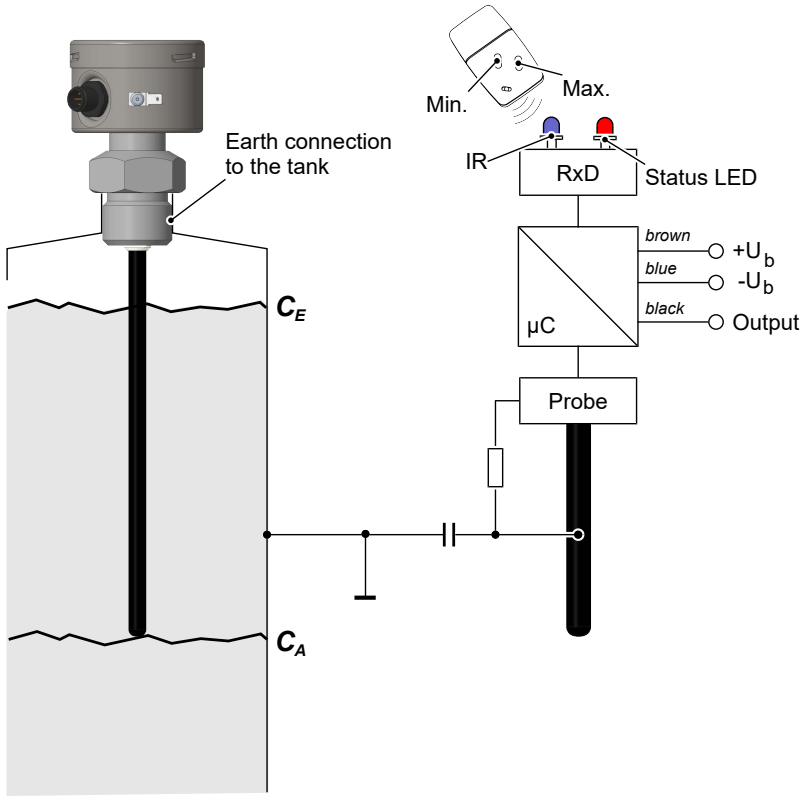
1.3 Intended use

The capacitive filling level probe NC57 serves to measure tank filling levels in tanks containing fresh water, waste water or faeces. Filling level heights of between 400 and 2000 mm can be measured. The probe can be used for tanks made of metal.

Please contact the manufacturer before using this device with dirty or aggressive media because the device needs to be adapted in terms of the parts that come into contact with the media.

The device is to be exclusively used for the applications agreed between the manufacturer and the user.

1.4 Function diagram



C_A : Start capacity (probe free)
C_E : End capacity (probe covered)

Fig. 2: Function diagram

1.5 Design and mode of operation

The tank wall and special rod form the electrodes of the measuring equipment. A condition for the flawless function of the probe is a special probe mounted in parallel to the tank wall. In the case of installation lengths > 700 mm, the rod must be supported by insulated circlips at intervals of 700 mm respectively.

The housing is connected to the signal earth, and an AC voltage signal is applied to the special rod. If dipped into a fluid, this arrangement becomes a capacitor and the fluid acts as a dielectric. The capacity values of this capacitor are proportional to the filling height of the tank. Electronics integrated into the device convert these capacity changes into an analogue output signal (current or voltage).

2 Technical data

2.1 General

General information		
Type designation	NC57	
Measurement principle	Continuous measurement of the capacity change between the probe rod and tank wall, depending on the filling probe of a fluid.	
Operating pressure	Max. 10 bar	
Number of electrodes	1	
Thread connection	G ½ or G1	
Protection class	acc. to DIN EN 60529	
	Bayonet ring housing IP65 Field housing IP67	

Reference conditions (acc. to IEC 61298-1)		
Temperature	+15 to +25 °C	
Relative humidity	45 … 75 %	
Air pressure	86 to 106 kPa	860 to 1060 mbar
Installation position	vertical	

2.2 Input variables

Measuring range	The measuring range lies between 400 mm and 2000 mm, depending on the ordered probe length. Other lengths available on request.
Input signal	Probe rods covered: high capacity Probe rods free: low capacity

2.3 Output variables

	Current output	Voltage output
Output signal	0 to 20 mA 4 to 20 mA	0 … 10 V 2 … 10 V 0 … 5V 1 … 5V
Load impedance	$(U_b – 9V)/20$ mA	> 5 kΩ

2.4 Measuring accuracy

Measurement deviation	< 3 % FS

FS: Full Scale (measuring range)

2.5 Auxiliary energy

	Current output	Voltage output
Nominal voltage	24 V DC	24 V DC
Permitted op. voltage	9 to 32 V DC	12 to 32 V DC
Current draw (without signal)	30 mA	30 mA

2.6 Operating conditions

Ambient temperature range	-20 °C ... +70 °C
Storage temperature range	-40 °C ... +80 °C
Medium temperature range	
• Frost-sensitive media	0 °C ... +80 °C
• Frost-resistant media	-40 °C ... +80 °C
IP protection class	IP67
EMC	EN 61326-1:2013 EN 61326-2-3:2013
RoHS	EN IEC 63000:2018

2.7 Construction design

Electrical connection	M12 connector 4-pin, male
Installation position	vertical

2.7.1 Materials

Materials of the parts that come into contact with the medium	
Probe rod (bare)	Stainless steel 1.4404
with coating	ECTFE
Insulation piece	PEEK
Screw connection	Stainless steel 1.4404

Materials of the parts that come into contact with the surroundings	
Housing	Stainless steel Bayonet ring housing 1.4301 Field housing 1.4571
Compound mass	Polyurethane
M12 plug	Polyamide
Earthing connection	Brass, tin-coated

2.7.2 Dimension drawings

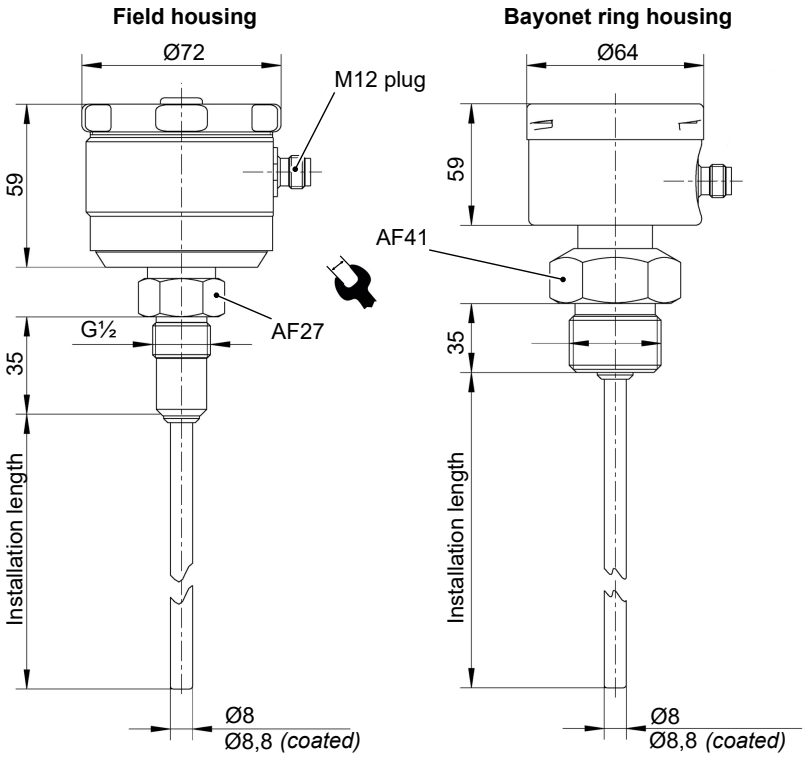


Fig. 3: Dimension drawing

Accessories

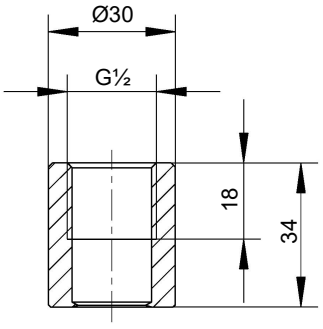
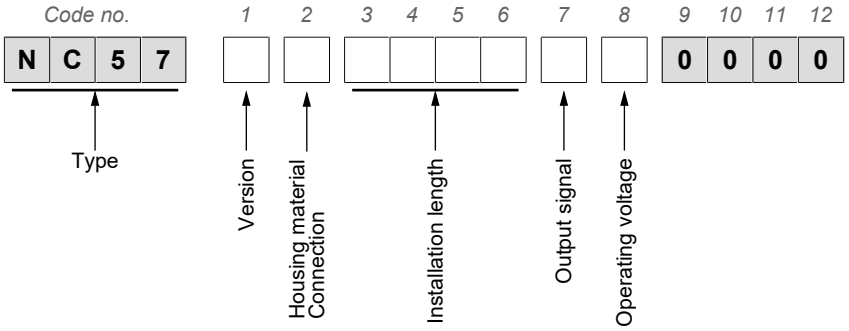


Fig. 4: Welding socket

3 Order codes



Design:

[1]	*(Code no.)*
3	Bare electrode
4	ECTFE-coated electrode

Casing material / connection:

[2]	*(Code no.)*
D	Stainless steel 1.4571 wth G½ connection
F	Bayonet housing NG63 in stainless steel 1.4301 with G1 connection

Installation length (from sealing surface):

[3-6]	*(Code no.)*
0400	400 mm
	to
2000	2000 mm
	The probe rods are produced in steps of 50 mm.

Output signal:

[7]	*(Code no.)*
A	0 to 20 mA
P	4 to 20 mA
C	0 to 10 V
Z	2 to 10 V
U	0 to 5 V
D	1 to 5 V

Operating voltage:

[8]	*(Code no.)*
E	9 … 32 V (for current output)
F	12 … 32 V (for voltage output)

3.1 Accessories

Order no.	Designation	No. of poles	Length
06401993	Connection cable with M12 connector	4 poles	2 m
06401994	Connection cable with M12 connector	4 poles	5 m
06401563	Connection cable with M12 connector	4 poles	7 m
06401572	Connection cable with M12 connector	4 poles	10 m

Order no.	Designation
06002001	Welding socket G½

Infrared remote control

Order no.	Designation
EU04	Infrared remote control

3.2 Information about the document

This document contains all technical data about the device. Great care was taken when compiling the texts and illustrations. nevertheless, errors cannot be ruled out.

Subject to technical amendments.

Notes

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