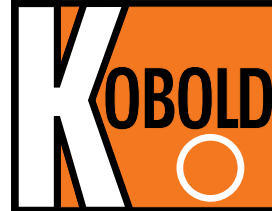




## Continuous Level Probe

Potentiometric Measuring Technique



measuring  
•  
monitoring  
•  
analysing



- Suited for viscous, pasty, very sticky media
- Stem length: 40 - 2000 mm
- Accuracy:  $\pm 1\%$  of stem length
- $p_{\max}$ : 10 bar  
 $t_{\max}$ : 120 °C (short-time 150 °C)
- Process connection: G 1/2, G 1, hygienic mounting (EHEDG, 3-A) with installation system LZE
- Food compatible materials st. st. and PEEK
- Analogue output: 4 - 20 mA



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**Model:**  
LNP



### Description

The KOBOLD level probes LNP serve for continuous level measurement of liquids with negligible conductivity. Levels in vessels containing viscous, pasty or very sticky media can be measured accurately with this new potentiometric method of measurement. It is most suitable for use in small vessels and for measuring fill heights greater than 40 mm.

The probe consists of a head mounted transmitter: this means that a 4-20 mA analogue signal that is electrically isolated from the supply voltage is available.

The probe can be mounted from the top or bottom. The output signal is automatically output positionally accurate. Single stem probes can be used in metallic vessels where the tank wall is parallel to the stem. When this is not the case, the double stem version needs to be used.

When used with the tank contents indicator LPA (see p. 67), which linearizes all standard tank shapes, tank contents can be outputted directly.

The devices with the KOBOLD weld-in sleeve LZE or LZE-NR form a hygienic measuring point which is cavity free and is ideally suited for CIP/SIP cleaning.

### The measuring technique

A defined potentiometer in the form of a stem is immersed in the medium. Thus a measuring bridge is created to the side of the tank or to the ground stem. The resistance of the measuring bridge changes in proportion to the level.

In opposition with the classic potentiometer, the contact with the liquid is not at a certain point, but along the entire length of the immersed probe.

See the equivalent circuit diagram for the measuring technique (p. 63).

In the electrical equivalent circuit diagram the liquid is represented by two equivalent resistors  $R_{F1}$  and  $R_{F2}$  of equal size. They divide the measuring signal exactly by two - an effect which makes it mathematically easy to correct.

### Application examples

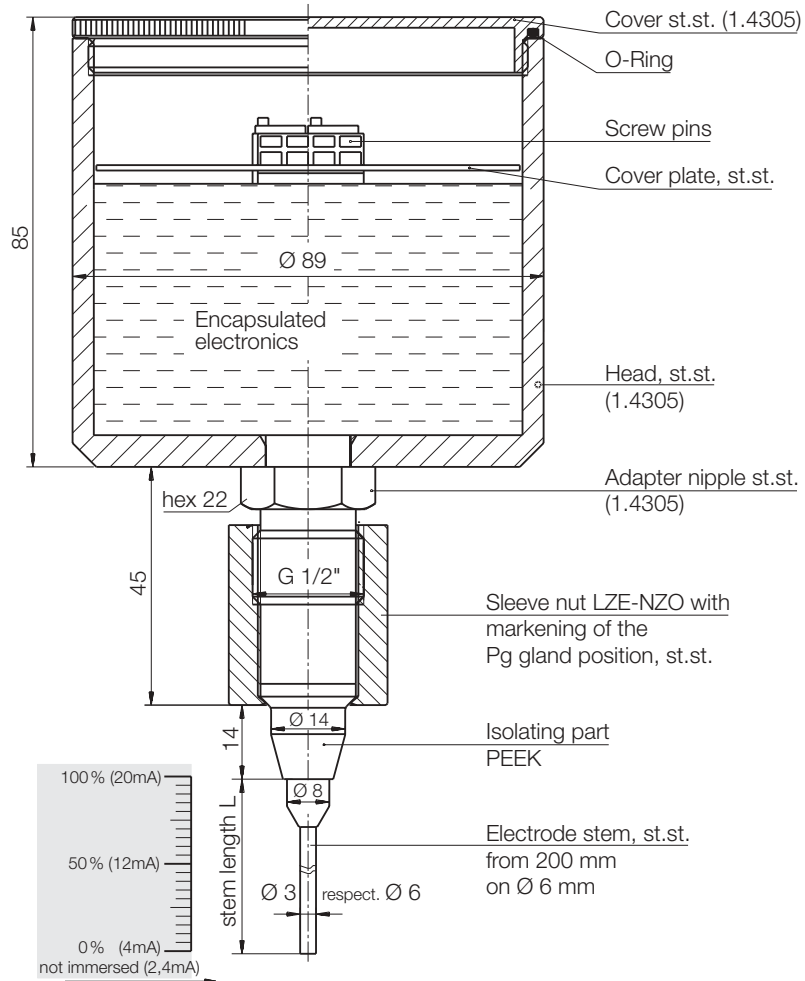
Continuous level measurement in

- viscous media
- pasty media
- very sticky media
- media with low conductivity

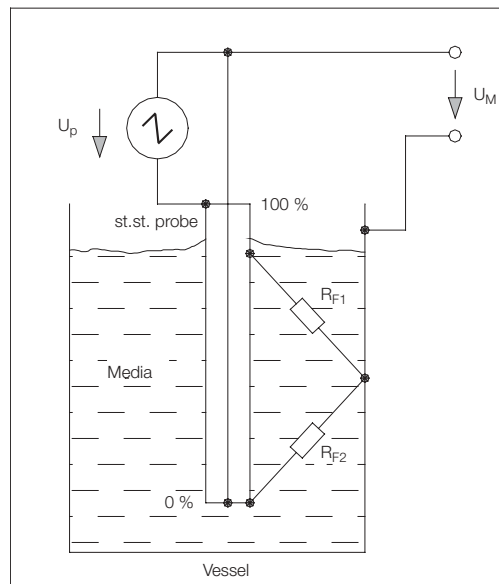
### Technical details

Method of measurement:	potentiometric (ratio measurement)
Accuracy:	1 % of stem length
Linearity:	1 % (2 stems or parallel tank wall)
Repeatability:	0.1 %
Medium temperature:	10 to +120 °C, short-time to 150 °C
Ambient temperature:	0-70 °C
Max. pressure:	10 bar
Material:	
head, screwed gland:	stainless steel 1.4305 (V2A)
insulating body:	PEEK
screw neck:	stainless steel 1.4305
stems:	stainless steel 1.4571 (V4A)
Stem lengths:	40, 200, 300, 400, 500 mm, (special lengths max. 2000 mm)
Process connection:	G 1/2", hygienic weld-in sleeves LZE, LZE-NR  G 1", hygienic weld-in sleeves LZE, LZE-NR
Connection:	2 x cable gland Pg 9 Spring-loaded terminal: 4-pole Function: mounting top/bottom, automatic position acquisition, automatic position changeover optional M12 plug connector
Output:	4-20 mA
Load:	max. 500 Ω
Replacement signal:	2.4 mA
Power supply:	18-36 V <sub>DC</sub> , max. 120 mA
Minimum conductivity:	1 μS/cm
Protection:	IP 67
Noise immunity:	according to EN 50082-2 (industrial)
Weight:	> 1.6 kg

**Dimensions**

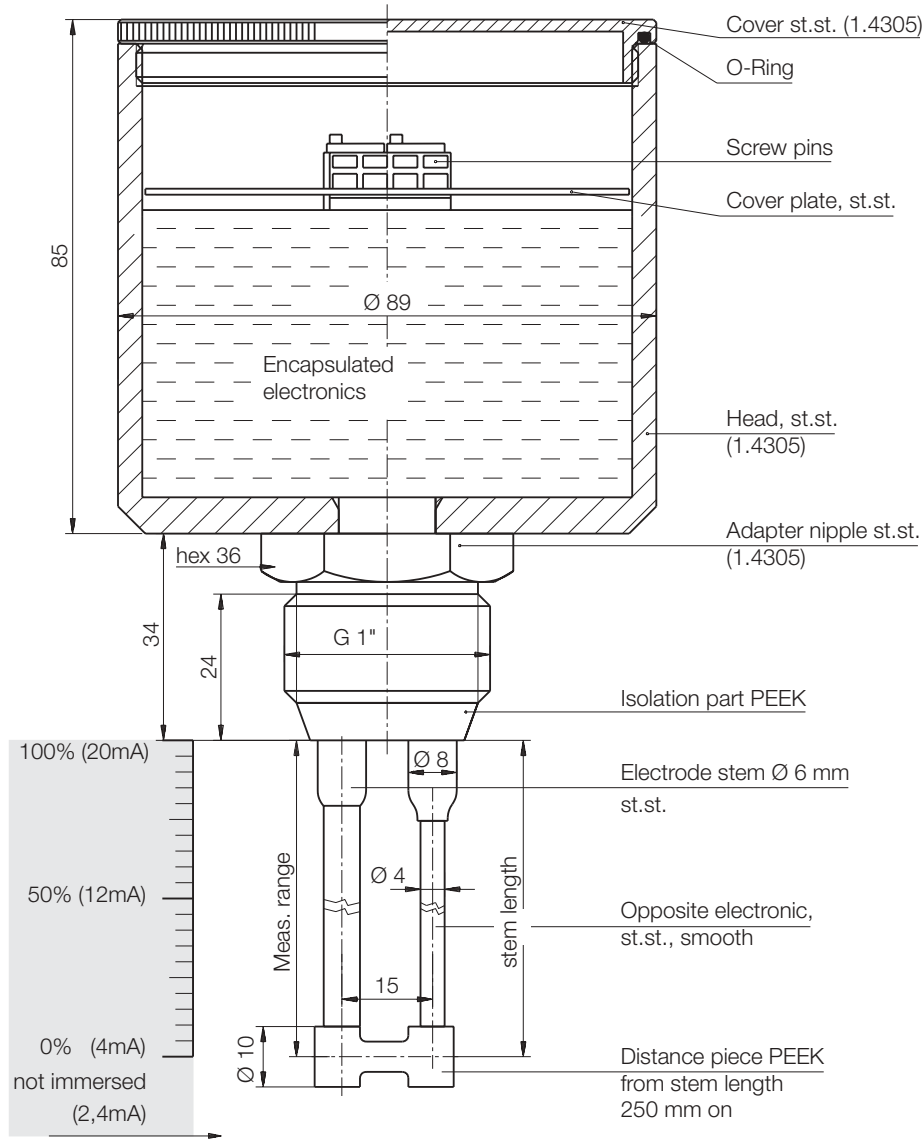


**Equivalent circuit diagram for measuring technique**





**Dimensions**



**Order Details** (Example: LNP-N P E15 004)

Model	Description	Electrical connection	Number of stems process connection	Stem length
LNP-N	potentiometric level measurement	P = Pg gland M = M12 plug connector	E15 = single stem 1/2" screwing (max. upto 500 mm) E25 = single stem 1" D25 = double stem 1" (max. upto 800 mm)	004 = 40 mm (Ø 3 mm) 020 = 200 mm (Ø 6 mm) 030 = 300 mm (Ø 6 mm) 040 = 400 mm (Ø 6 mm) 050 = 500 mm (Ø 6 mm) 060 = 600 mm (Ø 10 mm) 070 = 700 mm (Ø 10 mm) 080 = 800 mm (Ø 10 mm) 100 = 1000 mm (Ø 10 mm) 150 = 1500 mm (Ø 10 mm) 200 = 2000 mm (Ø 10 mm) special lengths upon request