

# Continuous Level Sensor LTM-2

Authorizations



## Range of application

- Continuous level measurement in metallic vessels up to 3 m in height
- Ideal for adhesive and pasty media
- Level measurement of foaming media
- Minimum product conductivity 50  $\mu\text{S}/\text{cm}$
- Substitute for float sensors
- For liquid media with conductivity

## Application examples

- Level measurement in first running vessels of dosing plants
- Suitable for measuring the level in small vessels with overpressure
- Flotation cell level measurement
- Sump level measurement

## Design/Process connection

- Process connection G1.5"
- Sensor made of stainless steel (protection class IP 69 K)
- Process temperature up to 140 °C

## Features

- Compact and robust sensor with minimal size ratio
- 2-wire sensor with 4...20 mA output signal
- Individual parameter adjustment or programming via PC interface
- Electrical connection via M12-plug
- Current signal for measurement range, dry signal and error signal adjustable
- Not affected by density changes

## Options/Accessories

- Pre-assembled connecting cable for M12-plug
- Programming adapter MPI-200 with PC software
- Hastelloy C22 (2.4602) rod

## Functional principle

The potentiometric measuring principle measures the change in the voltage ratio between the electrode rod of the sensor and the metallic wall of the filled tank. An electric flow field arises in the medium due to the conductivity of the medium and its capacitive properties. This gives rise to a voltage ratio that is proportional to the immersed part of the rod.

Because only the ratio of the voltages is considered, the properties of the medium, in particular the electrical conductivity, do not enter into the measurement result. The sensor also provides information on the immersion situation of the electrode rod in the medium by means of a second, patent-pending measurement system. This system analyzes electrical resonance properties to detect foam and suppress it in the results, and to reliably prevent erroneous measurements due to adhesions.

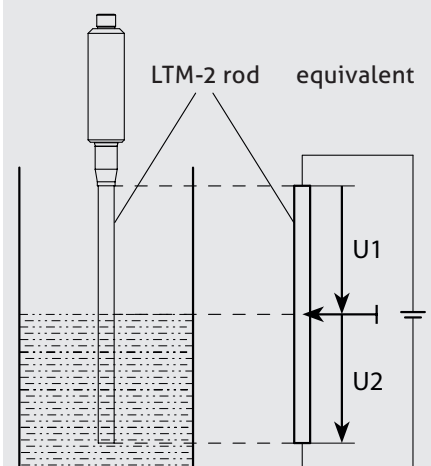
## Level sensor LTM-2



## Programming adapter MPI-200

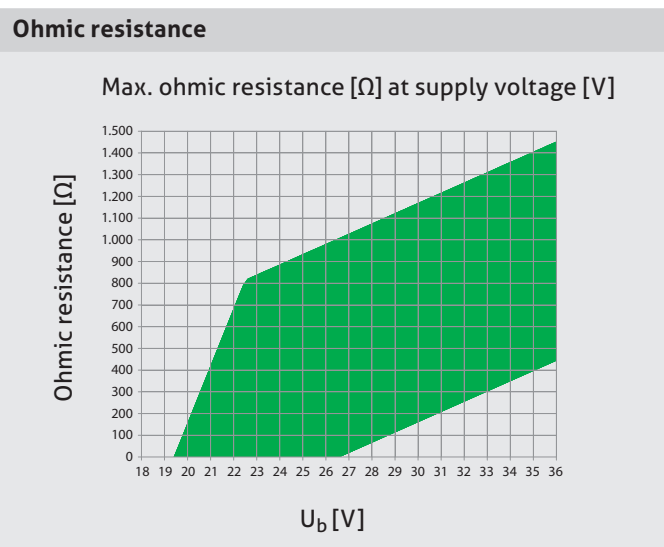


## Functional principle

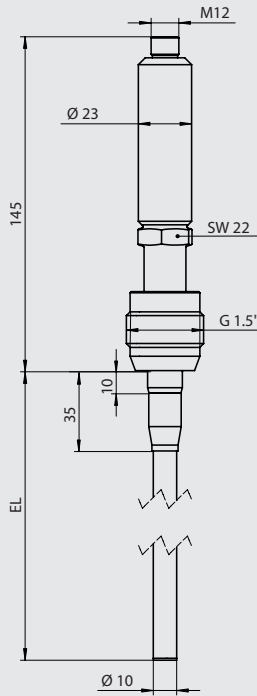


Specification		
Rod length EL		3000 mm max.
Rod diameter		10 mm
Measurement range		50...3000 mm
Process connection	thread	G1.5"
Process pressure		max. 16 bar
Tightening torque		10 Nm
Materials	head adapter isolating part rod	stainless steel 1.4305 stainless steel 1.4404 PEEK stainless steel 1.4404, $R_a \leq 0.8 \mu\text{m}$ stainless steel 2.4602 (Hastelloy C22), $R_a < 0.8 \mu\text{m}$ (Option)
Temperature range	ambient storage process	0...70 °C -40...85 °C -10...140 °C
Level measurement	parameters/settings	see table
Resolution	rod length > 500 mm rod length < 500 mm	< 0.1 % of upper range value (= rod length) < 0.5 mm
Linearity		< 1.0 % of upper range value (= rod length)
Reproducibility	rod length > 500 mm rod length < 500 mm	< 0.2 % of upper range value (= rod length) < 1.0 mm
Response time		< 100 ms
Supply		19...36 V DC
Output	signal burden parameters/settings	analog 4...20 mA, galvanic separated to housing, 2-wire loop see separate graphic see table
Electrical connection		M12-plug, 1.4301, 4-pin
Protection class		IP 69 K
Weight		550 g with rod length 1.5 m

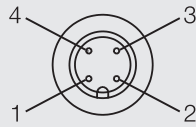
Possible parameter/Settings	
<b>4...20 mA current signal</b>	
Underrange	3.80; 3.95; 4.00 mA
Overrange	20.00; 20.05; 20.50 mA
Warning and failure signal (e.g. dry run)	3.80; 3.95; 4.00 mA 20.00; 20.05; 20.50; 21.00; 21.20 mA
<b>Level measurement</b>	
Zero/Gain	-50...50 % / 50...150 %
Damping	0; 0.1; 0.2; 0.5; 1; 2; 5 s
Physical unit	mm, inch, feet



## Dimensional drawing LTM-2



## Configuration M12-plug



- 1: +supply
- 2: -supply 4...20 mA
- 3: data link to MPI-200, must not be connected
- 4: data link to MPI-200, must not be connected

## Conventional usage



- Not suitable for applications in explosive areas.
- Not suitable for applications in security-relevant equipment (SIL).

## Installation



- **Attention!** Do not shorten the sensor rod!
- To guarantee a safe function of the sensor, the G1.5" thread must have a good electrical contact to the vessel wall! Because of this, **do not use any sealing materials like Teflon or others!**
- The sensor rod must not have any electrical contact to the vessel wall! Please also attend that the rod may swing if there are turbulences in the vessel!
- In Flotation Cells, non-metallic and/or rubber lined vessels, the LTM-BRK bracket needs to be used in conjunction with the LTM level probe
- The LTM-2 sensor is a 2-wire sensor with 4...20 mA output signal. Use of a cable with internal LEDs will cause a measurement error!
- To guarantee a trouble-free function the power supply cable should be shielded and grounded at the electrical control box

## Order Code

**LTM-2** (potentiometric level sensor for mining application, 2-wire technology, connecting head = 23 mm, electrical connection M12-plug, dry run adjustment to 4 mA)

## Rod material

- 00** (standard, 1.4404)  
**10** (Hastelloy C22, 2.4602)

**Rod length EL, choose length in a 10 mm raster, e.g.: 220, 230, 240 etc., max length 3000 mm.**

**50...3000** (for material 1.4404 and 2.4602)

**Process connection (material 1.4404)**

**G15** (standard thread G1.5")

## Installation position

**O** (installation from top)

## Output signal

**A2M** (4...20 mA, analog, 2-wire)

LTM-2 / 00 / 1500 / G15 / O / A2M

## Application sample



## Accessories Programming adapter

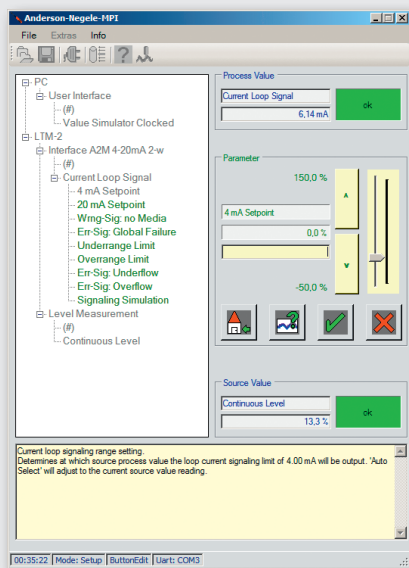
**MPI-200**

Incl. PC software

## Adjustment of LTM-2 parameters

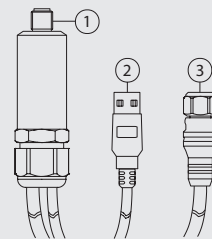
Using the PC based software and the programming adapter MPI-200 the following LTM-2 parameters can be adjusted or changed in situ (with vessel) or alternatively on the bench (in simulation mode): e.g.

### Configuration software



### Connection of programming adapter MPI-200

- 1: External power supply via M12-plug (optional)
- 2: USB port for connection to PC incl. power supply if not supplied external
- 3: Connection cable to LTM-2 sensor



The default setting of the LTM-2 level sensor is for operation with aqueous media without requiring special adjustments. In exceptional cases involving highly critical media or special tank contours (with internal structures such as a pipe), it may be necessary to make adjustments to some of the parameters:

### Prevention of signal jumps in turbulent media

To damp signal jumps at the lower end of the sensor (4 mA signal)

#### Setup Menu

- ↳ LTM-2
  - ↳ Level Measurement
    - ↳ Dry Run Detection
      - ↳ Hysteresis
        - Larger values result in better signal suppression

### Note



- A list of the parameter settings in the level sensor is supplied with the device. These parameter settings and those changed by the user can be printed out in the software using the MPI-200 programming adapter.
- When making settings, note the help texts in the MPI software. They provide useful information on changing the selected parameter.

### Transport/Storage



- No outdoor storage
- Dry and dust free
- Not exposed to corrosive media
- Protected against solar radiation
- Avoiding mechanical shock and vibration
- Storage temperature -40...+85 °C
- Relative humidity maximum 98 %

### Reshipment



- Sensors and process connection shall be clean and must not be contaminated with dangerous media and/or heat-conductive paste! Note the advice for cleaning!
- Use suitable transport packaging only to avoid damage of the equipment!

### Notice on conformity



Applicable guidelines:

- Electromagnetic compatibility 2004/108/EC
- The accordance with applicable EU-guidelines is confirmed with CE-labeling of the device.
- You have to guarantee the compliance of all guidelines applicable for the entire equipment.

### Disposal



- This instrument is not subject to the WEEE directive 2002/96/EC and the respective national laws.
- Pass the instrument directly on to a specialised recycling company and do not use the municipal collecting points.