



## Level sensors TDR level sensor

LFP2000-E4NMB



**Model Name** > LFP2000-E4NMB  
**Part No.** > 1066786



*Illustration may differ*

#### At a glance

- Level sensor for fluids
- No mechanical moving parts
- Manually cuttable and exchangeable probe with lengths from 200 mm up to 2,000 mm or rope probe up to 4,000 mm
- Resistant to deposit formation
- Process temperature up to 100 °C; process pressure up to 10 bar
- 3 in 1: combined display, analog output (acc. NAMUR NE 43) and binary output
- High enclosure rating of IP 67, rotatable housing and remote amplifier version

#### Your benefits

- Rugged design increases service life
- High flexibility due to cuttable and exchangeable monoprobe or rope probe
- Cost savings due to multiple output signals: one system for both level detection and continuous level monitoring
- Time and cost savings due to low maintenance and quick commissioning without calibration
- Titanium process connection brings high chemical resistance
- Compact and rotatable housing or remote amplifier ensures flexible installation
- No crosstalk when several sensors are mounted next to each other
- Advanced technology enables adjustment-free measurement



#### Features

|                      |                    |
|----------------------|--------------------|
| Medium:              | Fluids             |
| Measurement:         | Switch, Continuous |
| Probe type:          | Rope probe         |
| Probe length:        | 2,000 mm           |
| Process pressure:    | -1 bar ... 10 bar  |
| Process temperature: | -20 °C ... +100 °C |
| GOST approval:       | ✓                  |
| CULus certificate:   | ✓                  |
| RoHS certificate:    | ✓                  |
| IO-Link:             | ✓                  |
| Design:              | Standard           |

#### Performance

|                       |          |
|-----------------------|----------|
| Maximum level change: | 500 mm/s |
| Resolution:           | < 2 mm   |

|                                     |                                                                      |
|-------------------------------------|----------------------------------------------------------------------|
| Accuracy of sensor element:         | $\pm 5 \text{ mm}$ <sup>1)</sup>                                     |
| Repeatability:                      | $\leq 2 \text{ mm}$                                                  |
| Dielectricity constant:             | $\geq 1.8$ with coaxial tube, $\geq 5$ for mono rod probe/rope probe |
| Inactive area at process connector: | $25 \text{ mm}$ <sup>2)</sup>                                        |
| Inactive area at probe end:         | $10 \text{ mm}$ <sup>3)</sup>                                        |
| Conductivity:                       | No limitation                                                        |
| Response time:                      | $< 400 \text{ ms}$                                                   |
| MTTF:                               | 194.3 a (EN ISO 13849-1)                                             |

1) 3) <sup>1)</sup> With water under reference conditions <sup>2)</sup> With parameterized tank with water under reference conditions, otherwise 40 mm

## Mechanical data

|                     |                   |
|---------------------|-------------------|
| Housing material:   | Plastic PBT       |
| Max.probe load:     | 6 Nm              |
| Process connection: | G $\frac{3}{4}$ A |
| Wetted parts:       | 1.4404, PTFE      |

## Electrical data

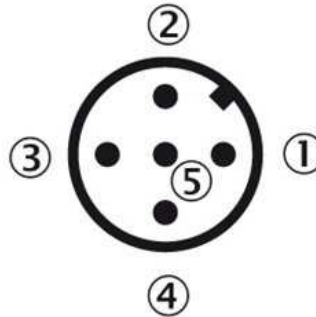
|                        |                                                                                                                                                                                       |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Temperature drift:     | $< 0.1 \text{ mm/K}$                                                                                                                                                                  |
| Enclosure rating:      | IP 67: EN 60529                                                                                                                                                                       |
| Supply voltage:        | 12 V DC ... 30 V DC <sup>1)</sup>                                                                                                                                                     |
| Power consumption:     | $\leq 100 \text{ mA}$ at 24 V DC without output load                                                                                                                                  |
| Protection class:      | III                                                                                                                                                                                   |
| Initialization time:   | $\leq 5 \text{ s}$                                                                                                                                                                    |
| Output signal:         | 1 PNP transistor output (Q1) and 1 PNP/NPN transistor output (Q2) switchable, 4 mA ... 20 mA, 0 V ... 10 V automatic switching depending on the load.                                 |
| Output load:           | 0 V ... 10 V $> 750 \text{ Ohm}$ at $U_v \geq 14 \text{ V}$ , 4 mA ... 20 mA $< 350 \text{ Ohm}$ at $U_v > 12 \text{ V}$ , 4 mA ... 20 mA $< 500 \text{ Ohm}$ at $U_v > 15 \text{ V}$ |
| Upper signal level:    | 20 mA ... 20.5 mA                                                                                                                                                                     |
| Lower signal level:    | 3.8 mA ... 4 mA                                                                                                                                                                       |
| Hysteresis:            | Min. 2 mm, free adjustable                                                                                                                                                            |
| Output current:        | $< 100 \text{ mA}$                                                                                                                                                                    |
| Signal voltage HIGH:   | $V_s - 2 \text{ V}$                                                                                                                                                                   |
| Signal voltage LOW:    | $\leq 2 \text{ V}$                                                                                                                                                                    |
| Capacitive load:       | 100 nF                                                                                                                                                                                |
| Inductive load:        | $< 1 \text{ H}$                                                                                                                                                                       |
| Electrical connection: | Round connector M12 x 1, 5-pin                                                                                                                                                        |
| EMC:                   | EN 61326-1:2006, 2004/108/EG                                                                                                                                                          |

<sup>1)</sup> All connections are polarity protected. All outputs are overload and short-circuit protected.

## Ambient data

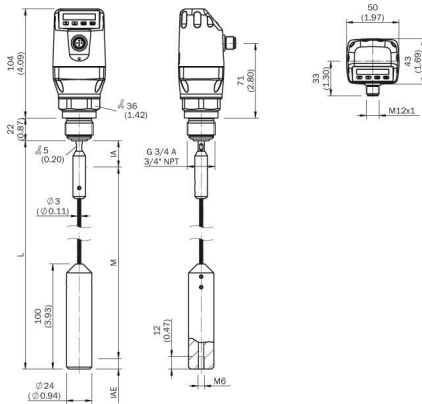
|                                |                                                                   |
|--------------------------------|-------------------------------------------------------------------|
| Ambient operating temperature: | $-20 \text{ }^{\circ}\text{C} \dots +60 \text{ }^{\circ}\text{C}$ |
| Ambient storage temperature:   | $-40 \text{ }^{\circ}\text{C} \dots +80 \text{ }^{\circ}\text{C}$ |

## Connection type



- |1| L+: Supply voltage, brown
- |2| QA: Analog current-/voltage output, white
- |3| M: Ground, reference ground  
for current-/voltage output, blue
- |4| C/Q1: Switching output 1,  
PNP/IO-Link-communication, black
- |5| Q2: Switching output 2, PNP/NPN, grey

## Dimensional drawing: rope probe



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