

# LFP2000-N1NMB

LFP Inox

**TDR LEVEL SENSOR** 





#### Ordering information

Туре	Part no.
LFP2000-N1NMB	1059425

Other models and accessories → www.sick.com/LFP\_Inox

Illustration may differ



#### Detailed technical data

#### **Features**

Medium	Fluids
Measurement	Switch, Continuous
Design	Standard
Probe length	2,000 mm
Process pressure	-1 bar 16 bar
Process temperature	-20 °C +150 °C
UL approval	✓
RoHS certificate	✓
IO-Link	✓
EHEDG approval	✓

#### Performance

Accuracy of sensor element	± 5 mm
Reproducibility	≤ 2 mm
Resolution	1 mm
Response time	< 400 ms <sup>1)</sup>
Dielectricity constant	≥ 5 for rod probe ≥ 1.8 with coaxial tube
Conductivity	No limitation
Deactivated area at process connection	25 mm <sup>2)</sup>
Deactivated area at end of probe	≥ 10 mm <sup>3)</sup>
MTTF	194.3 years (EN ISO 13849-1)

 $<sup>^{1)}</sup>$  Dependent on measuring mode (high speed < 400 ms, high accuracy < 2,800 ms).

 $<sup>^{\</sup>rm 2)}$  With parameterized container with water under reference conditions, otherwise 40 mm.

<sup>3)</sup> With water under reference conditions.

Display	✓
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 $<sup>^{1)}</sup>$  Dependent on measuring mode (high speed < 400 ms, high accuracy < 2,800 ms).

#### Electronics

Supply voltage	12 V DC 30 V DC <sup>1)</sup>
Power consumption	$\leq$ 75 mA at 24 V DC without output load
Initialization time	≤2s
Protection class	III
Connection type	Round connector M12 x 1, 5-pin
Output signal	1 x PNP + 1 x PNP/NPN + 4 mA 20 mA / 0 V 10 V
Output load	4 mA 20 mA < 500 0hm at Uv > 13,5 V, 4 mA 20 mA < 400 0hm at Uv > 12 V, 0 V 10 V > 750 0hm at Uv 14 $\geq$ V
Hysteresis	Min. 2 mm, free adjustable
Output current	< 100 mA
Inductive load	<1H
Capacitive load	< 100 nF
Enclosure rating	IP67 / 69: EN 60529
Temperature drift	< 0.1 mm/K
Lower signal level	3.8 mA 4 mA, 0 V
Upper signal level	20 mA 20.5 mA, 10.5 V
EMC	EN 61326-2-3, 2014/30/EU

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

#### Mechanics

Wetted parts	316L (Ra ≤ 0,8 µm), PEEK
Process connection	3/4" NPT
Housing material	303
Housing design	With viewing window made from PMMA (acrylic glass)
Max. probe load	≤ 6 Nm

#### Ambient data

Ambient operating temperature	-20 °C +60 °C
Ambient temperature, storage	-40 °C +80 °C
Outdoor use	Only with weather hood

### Classifications

ECLASS 5.0	27200513
ECLASS 5.1.4	27200513
ECLASS 6.0	27200513
ECLASS 6.2	27200513
ECLASS 7.0	27200513
ECLASS 8.0	27200513
ECLASS 8.1	27200513

<sup>&</sup>lt;sup>2)</sup> With parameterized container with water under reference conditions, otherwise 40 mm.

<sup>3)</sup> With water under reference conditions.

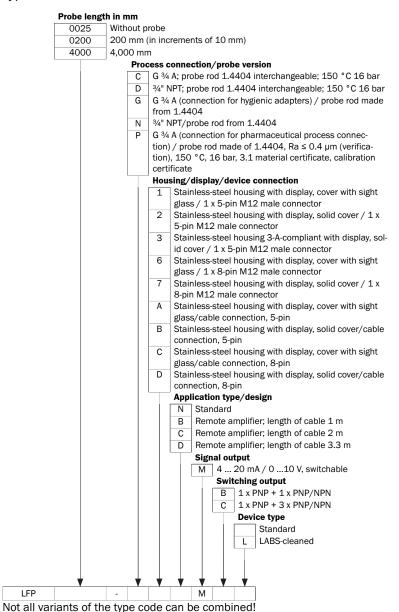
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ECLASS 9.0	27200513
ECLASS 10.0	27200513
ECLASS 11.0	27200513
ECLASS 12.0	27200513
ETIM 5.0	EC001447
ETIM 6.0	EC001447
ETIM 7.0	EC001447
ETIM 8.0	EC001447
UNSPSC 16.0901	41113710

#### Type code

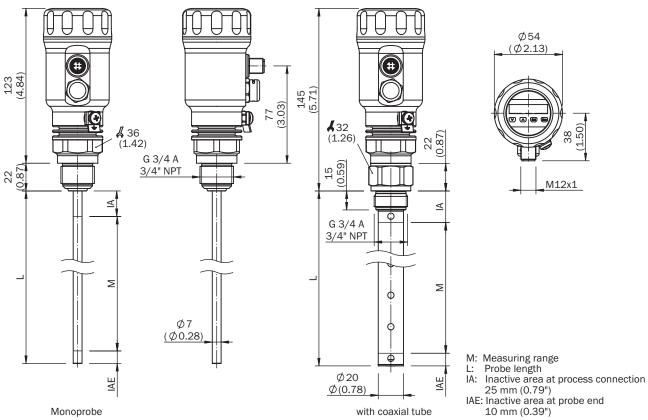
#### Type code



#### Dependence between length of coaxial cable and probe length

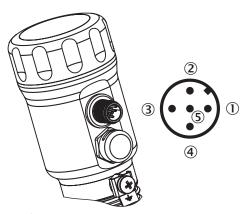
Length of coaxial cable (mm)	Max. probe length (mm) - foam mode deactivated	Max. probe length (mm) - foam mode active
1000	4,000	2000
2000	3,000	1500
3300	1.000	500

#### Dimensional drawing (Dimensions in mm (inch))



#### Connection type

5-pole M12 Connector



- ① L<sup>+</sup>: Supply voltage, brown
- ② Q<sub>A</sub>: Analog current-/voltage output, white
- M: Ground, reference ground for current-/voltage output, blue
   C/Q<sub>1</sub>: Switching output 1, PNP/IO-Link-communication, black
- ⑤ Q<sub>2</sub>: Switching output 2, PNP/NPN, grey

#### Recommended accessories

Other models and accessories → www.sick.com/LFP\_Inox

	Brief description	Туре	Part no.
Hardware			
4	Weather protection cover for LFP Inox, material: 304	APR-WP- LFP001-0001	2069530
Spare parts			
	Cover closed, material 1.4305	Cover closed	2067269
	Cover for LFP Inox with inspection window, material 1.4305 and PMMA	Cover with front screen	2067267
Flanges			
	Hygienic process connection adapter, Tri-Clamp 1" and 1 $\frac{1}{2}$ ", including acceptance test certificate 3.1; Ra $\leq$ 0.4 $\mu$ m, hygienic in accordance with EHEDG in combination with T-seals or Tri-Clamp seals from Combifit International B.V.	BEF-HA-TCLI10-LFP2	2126242
3	Hygienic process connection adapter, Tri-Clamp 2"; including acceptance test certificate 3.1; Ra $\leq 0.4~\mu m$ , hygienic in accordance with EHEDG in combination with T-seals or Tri-Clamp seals from Combifit International B.V.	BEF-HA-TCLI20-LFP2	2126243
	Weld-in flange, hygienic, G 3/4" including acceptance test certificate 3.1, Ra $\leq$ 0.4 $\mu m,$ Stainless steel 1.4404	BEF-HA- SWFL54-LFP2	2122489

	Brief description	Туре	Part no.		
Plug connectors and cables					
	Connection type head A: Female connector, M12, 5-pin, straight Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 2 m, 5-wire, PVC Description: Sensor/actuator cable, unshielded Connection systems: Flying leads Note: This product is generally resistant to chemical cleaning agents (see ECOLAB). Please do not use cleaning agents of any other Kind., Not resistant against lactic acid & hydrogen peroxide (H2O2) Application: Hygienic and washdown zones	DOL-1205-G02MNI	6052625		
•	Connection type head A: Female connector, M12, 5-pin, straight Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 2 m, 5-wire, PP Description: Sensor/actuator cable, unshielded Connection systems: Flying leads Note: This product is generally resistant to chemical cleaning agents (see ECOLAB) and other chemical compounds such as H2O2 and CH2O2. Before permanent installation is carried out, the material's resistance to the cleaning agent being used must be checked., Resistant against lactic acid & hydrogen peroxide (H2O2) Application: Hygienic and washdown zones, Drag chain operation	DOL-1205-G02MRN	6058494		
	Connection type head A: Female connector, M12, 5-pin, straight Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 5 m, 5-wire, PVC Description: Sensor/actuator cable, unshielded Connection systems: Flying leads Note: This product is generally resistant to chemical cleaning agents (see ECOLAB). Please do not use cleaning agents of any other Kind., Not resistant against lactic acid & hydrogen peroxide (H2O2) Application: Hygienic and washdown zones	DOL-1205-G05MNI	6052626		
•	Connection type head A: Female connector, M12, 5-pin, straight Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 5 m, 5-wire, PP Description: Sensor/actuator cable, unshielded Connection systems: Flying leads Note: This product is generally resistant to chemical cleaning agents (see ECOLAB) and other chemical compounds such as H202 and CH202. Before permanent installation is carried out, the material's resistance to the cleaning agent being used must be checked., Resistant against lactic acid & hydrogen peroxide (H202) Application: Hygienic and washdown zones, Drag chain operation	DOL-1205-G05MRN	6058495		
	<ul> <li>Connection type head A: Female connector, M12, 5-pin, straight</li> <li>Connection type head B: Flying leads</li> <li>Signal type: Sensor/actuator cable</li> <li>Cable: 10 m, 5-wire, PVC</li> <li>Description: Sensor/actuator cable, unshielded</li> <li>Connection systems: Flying leads</li> <li>Note: This product is generally resistant to chemical cleaning agents (see ECOLAB). Please do not use cleaning agents of any other Kind., Not resistant against lactic acid &amp; hydrogen peroxide (H2O2)</li> <li>Application: Hygienic and washdown zones</li> </ul>	DOL-1205-G10MNI	6052627		

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	Brief description	Туре	Part no.	
•	<ul> <li>Connection type head A: Female connector, M12, 5-pin, straight</li> <li>Connection type head B: Flying leads</li> <li>Signal type: Sensor/actuator cable</li> <li>Cable: 10 m, 5-wire, PP</li> <li>Description: Sensor/actuator cable, unshielded</li> <li>Connection systems: Flying leads</li> <li>Note: This product is generally resistant to chemical cleaning agents (see ECOLAB) and other chemical compounds such as H2O2 and CH2O2. Before permanent installation is carried out, the material's resistance to the cleaning agent being used must be checked., Resistant against lactic acid &amp; hydrogen peroxide (H2O2)</li> <li>Application: Hygienic and washdown zones, Drag chain operation</li> </ul>	DOL-1205-G10MRN	6058496	
	<ul> <li>Connection type head A: Female connector, M12, 5-pin, straight</li> <li>Connection type head B: Flying leads</li> <li>Signal type: Sensor/actuator cable</li> <li>Cable: 25 m, 5-wire, PVC</li> <li>Description: Sensor/actuator cable, unshielded</li> <li>Connection systems: Flying leads</li> <li>Note: This product is generally resistant to chemical cleaning agents (see ECOLAB). Please do not use cleaning agents of any other Kind., Not resistant against lactic acid &amp; hydrogen peroxide (H2O2)</li> <li>Application: Hygienic and washdown zones</li> </ul>	DOL-1205-G25MNI	6052628	
•	Connection type head A: Female connector, M12, 5-pin, straight Connection type head B: Flying leads Signal type: Sensor/actuator cable Cable: 25 m, 5-wire, PP Description: Sensor/actuator cable, unshielded Connection systems: Flying leads Note: This product is generally resistant to chemical cleaning agents (see ECOLAB) and other chemical compounds such as H202 and CH202. Before permanent installation is carried out, the material's resistance to the cleaning agent being used must be checked., Resistant against lactic acid & hydrogen peroxide (H202) Application: Hygienic and washdown zones, Drag chain operation	DOL-1205-G25MRN	6058497	
Terminal and alignment brackets				
	1 piece, Centering for bypass- and immersion tube installation with diameter 40 mm $\dots$ 100 mm, PTFE	BEF-FL-BYRD40-LFP1	2059612	

#### Recommended services

Additional services → www.sick.com/LFP\_Inox

	Туре	Part no.
Function Block Factory		
<ul> <li>Description: The Function Block Factory supports common programmable logic controllers (PLCs) from various manufacturers, such as Siemens, Beckhoff, Rockwell Automation and B&amp;R. More information on the FBF can be found <a href="https://fbf.cloud.sick.com" target="_blank"> here</a>.</li> <li>Note: You can configure your function block at <a href="https://fbf.cloud.sick.com" target="_blank"> Function Block Factory.</a> As a login please use your SICK ID.</li> </ul>	Function Block Factory	On request

## SICK AT A GLANCE

SICK is one of the leading manufacturers of intelligent sensors and sensor solutions for industrial applications. A unique range of products and services creates the perfect basis for controlling processes securely and efficiently, protecting individuals from accidents and preventing damage to the environment.

We have extensive experience in a wide range of industries and understand their processes and requirements. With intelligent sensors, we can deliver exactly what our customers need. In application centers in Europe, Asia and North America, system solutions are tested and optimized in accordance with customer specifications. All this makes us a reliable supplier and development partner.

Comprehensive services complete our offering: SICK LifeTime Services provide support throughout the machine life cycle and ensure safety and productivity.

For us, that is "Sensor Intelligence."

# **WORLDWIDE PRESENCE:**

Contacts and other locations -www.sick.com

