



LFS1710



Conductivity sensor with integrated temperature sensor For various conductivity measurement applications



Benefits & characteristics



- Wide conductivity and temperature range
- Fast response time
- Optimal accuracy
- Resistance to various chemicals ¹⁾
- Excellent long-term stability
- Integrated RTD for temperature measurement and/or compensation
- Four-electrode measurement²
- Customer-specific sensor available upon request

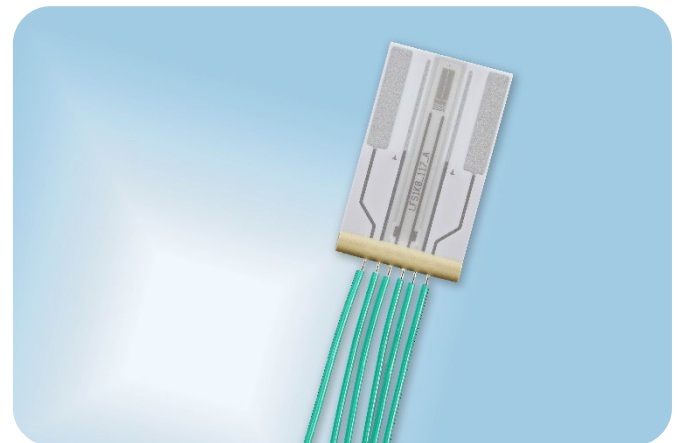
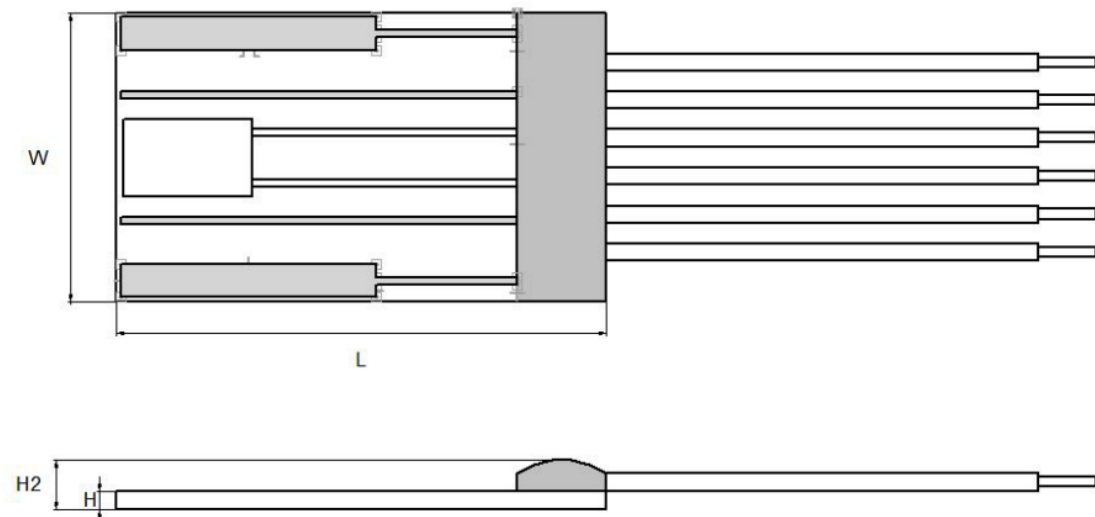


Illustration ³



L	W	H	H2	LW
Length	Width	Substrate height	Total height	Wire length
± 0.3 mm	± 0.3 mm	± 0.1 mm	± 0.3 mm	LW < 30 mm: ± 1 mm LW ≤ 30 mm: ± 1.5 mm

¹ Aggressive media can influence the long-term stability. Chemical resistance of the sensor in the end application must be tested by the customer

² Two-electrode configuration available upon request

³ for actual size see dimensions in order information



Technical data



Conductivity range: * 0.2 mS/cm to 200 mS/cm



Cell constant: ⁴* typical 0.44 cm⁻¹



Measurement frequency range: 50 Hz to 3 kHz



Maximum excitation voltage: < 0.7 Vpp (electrolysis of the analyte has to be avoided)
(between pin 1 and pin 6)



Operating temperature range: -30 °C to +100 °C



Temperature sensor: * 1000 Ω nominal resistance at 0°C



Temperature coefficient (Pt1000): 3850 ppm/K



Measuring current (Pt1000): ⁵ 0.3 mA



Temperature sensor accuracy iST reference

(dependent on temperature range): *

IEC 60751 F0.3

B

IEC 60751 F0.6

C

Connection: * Pt/Ni-wires, Ø 0.2 mm

Cu/Ag-wires, PTFE-insulated, AWG 30

Temperature dependence of resistivity: according to IEC 60751:

-50 °C to 0 °C

$$R(T) = R_0 \times (1 + A \times T + B \times T^2 + C \times (T-100) \times T^3)$$

0 °C to 150 °C

$$R(T) = R_0 \times (1 + A \times T + B \times T^2)$$

$$A = 3.9083 \times 10^{-3} \times \text{°C}^{-1}$$

$$B = -5.775 \times 10^{-7} \times \text{°C}^{-2}$$

$$C = -4.183 \times 10^{-12} \times \text{°C}^{-4}$$

R₀ = resistance value in Ω at T = 0 °C

T = temperature in accordance with ITS90

Storage temperature: -20 °C to +100 °C

Alternative construction: * Customized over-mold

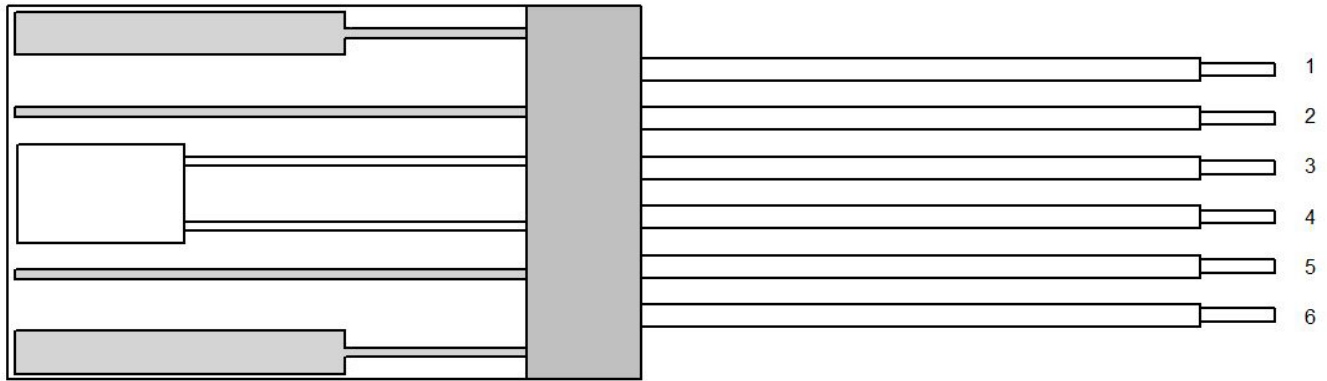
* [Customer-specific alternatives available](#)

⁴ Cell constant is strongly affected by external objects coming close to the front surface of the sensor.

⁵ Self-heating must be considered



Pin Assignment



1	2	3	4	5	6
I ₂	V ₂	T ₂	T ₁	V ₁	I ₁

I: applied current V: measured voltage T: temperature sensor

Order Information

Order code	Product name	Dimensions L x W x H / H2 mm	Temperature sensor Class
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6W Ni/Pt wires, Ø 0.2, 10 mm*

103852	LFS1K0.1710.6W.B.010-6	16.9 ^{±0.3} x 9.9 ^{±0.3} x 0.65 ^{±0.1} / 1.2 ^{±0.3}	F0.3 (class B)
103853	LFS1K0.1710.6W.C.010-6	16.9 ^{±0.3} x 9.9 ^{±0.3} x 0.65 ^{±0.1} / 1.2 ^{±0.3}	F0.6 (class C)

2I Cu/Ag-wires, PTFE-insulated, AWG 30, 70 mm*

103854	LFS1K0.1710.2I.B.070-6	16.9 ^{±0.3} x 9.9 ^{±0.3} x 0.65 ^{±0.1} / 1.2 ^{±0.3}	F0.3 (class B)
103855	LFS1K0.1710.2I.C.070-6	16.9 ^{±0.3} x 9.9 ^{±0.3} x 0.65 ^{±0.1} / 1.2 ^{±0.3}	F0.6 (class C)

*other wire lengths upon request



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