



LFS1305



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
- 4 electrode measurement ²
- Customer-specific sensor available upon request

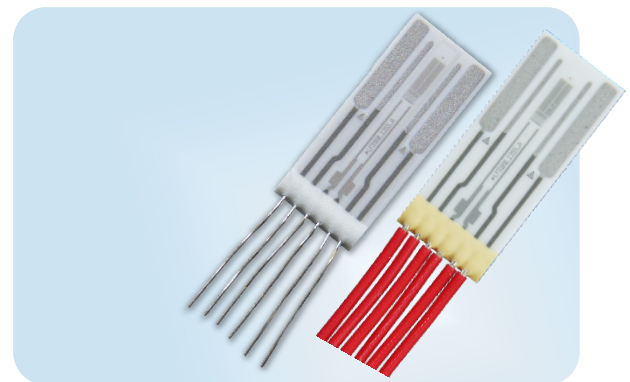
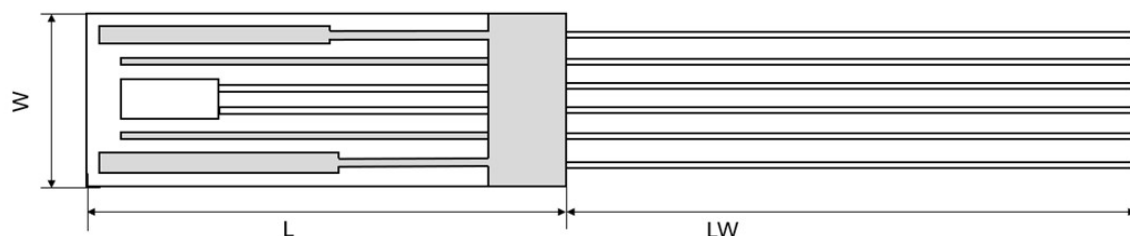


Illustration ³



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



Technical data



Conductivity range: * 100 $\mu\text{S}/\text{cm}$ to 200 mS/cm



Cell constant: ¹ * typical 0.86 cm^{-1}



Measurement frequency range: 100 Hz to 10 kHz



Maximum excitation voltage (between pin 1 and pin 6) < 0.7 V_{pp} (electrolysis of the analyte has to be avoided)



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) ² 0.3 mA

Temperature sensor accuracy iST reference

(dependent on temperature range): *

IEC 60751 F0.3

B

IEC 60751 F0.6

C

Connection: * Cu/Ag stranded wires, AWG 30/19, PTFE insulated

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

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

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

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

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

R_0 = resistance value in Ω at $T = 0 \text{ } ^\circ\text{C}$

T = temperature in accordance with ITS90

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

Alternative construction: * Customized over-mold

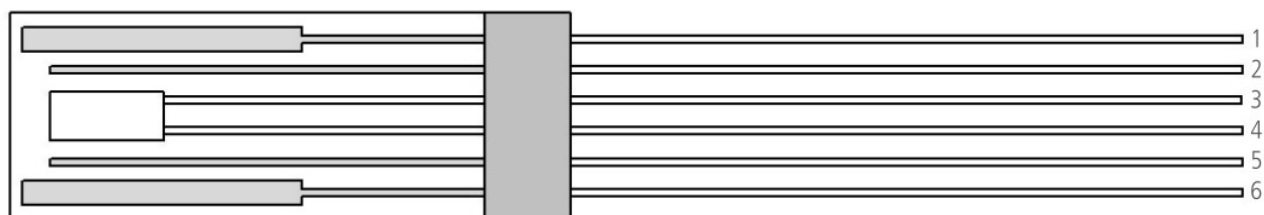
* Customer-specific alternatives available

¹) Cell constant is strongly affected by external objects coming close to the front surface of the sensor

² 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, LW [mm]	Temperature sensor Class
6W Ni/Pt wires, Ø 0.2 mm, 10mm *			
103850	LFS1K0.1305.6W.B.010-6	$12.9 \pm 0.3 \times 5.5 \pm 0.3 \times 0.65 \pm 0.1 / 1.3 \pm 0.3, 10$	F0.3 (class B)
103851	LFS1K0.1305.6W.C.010-6	$12.9 \pm 0.3 \times 5.5 \pm 0.3 \times 0.65 \pm 0.1 / 1.3 \pm 0.3, 10$	F0.6 (class C)
158044	LFS1K0.1305.2L.C.060-6	$12.9 \pm 0.3 \times 5.5 \pm 0.3 \times 0.65 \pm 0.1 / 1.3 \pm 0.3, 60$	F0.6 (class C)

Additional documents

Application note Conductivity Sensor, Document name AC_E



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