



LFS.1505.S



Conductivity sensor

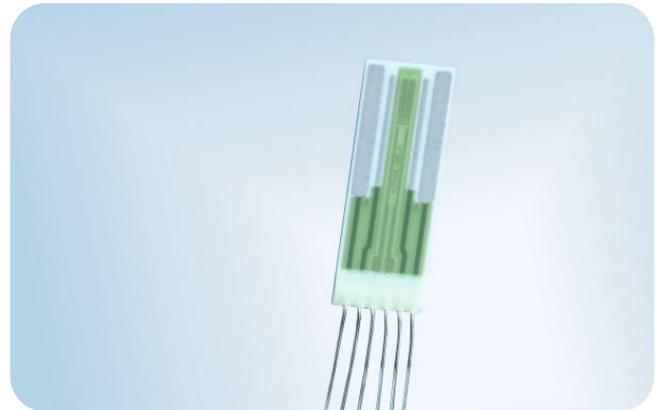
For various conductivity measurement applications



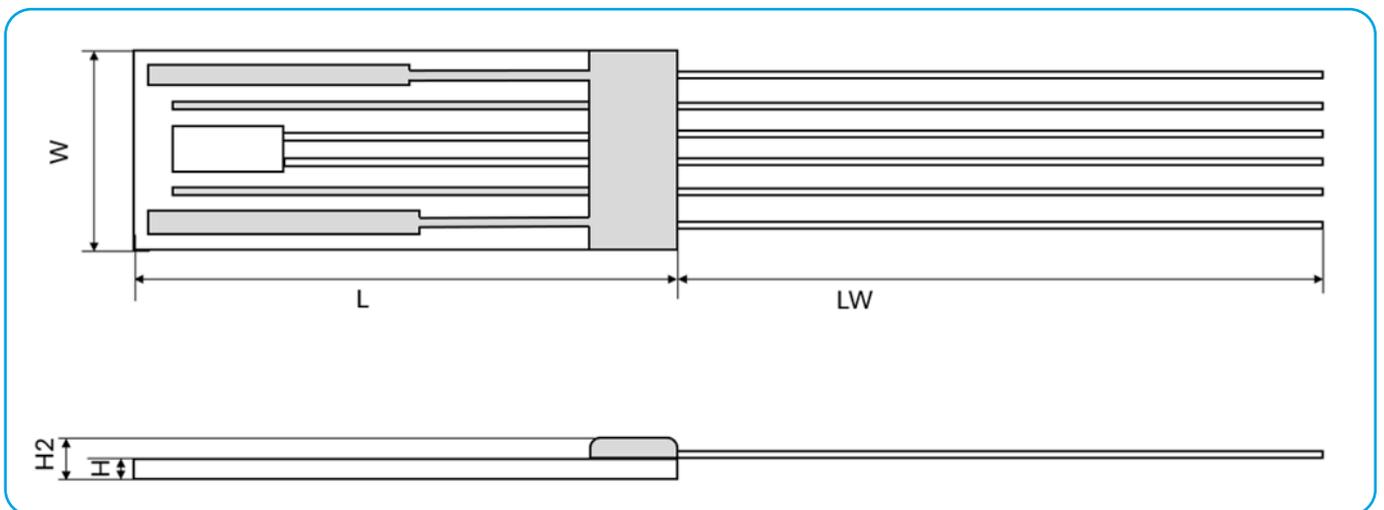
Benefits & characteristics



- Integrated RTD for temperature measurement and / or compensation¹⁾
- Wide conductivity and temperature range
- Fast response time
- Optimal accuracy
- High resistance to various chemicals²⁾
- Excellent long-term stability
- Four-electrode measurement



Illustration³⁾



| L | W | H | H2 | LW |
|----------|----------|------------------|--------------|--|
| Length | Width | Substrate height | Total height | Wire length |
| ± 0.2 mm | ± 0.3 mm | ± 0.1 mm | ± 0.3 mm | LW < 30 mm: ± 1 mm LW ≤ 30 mm: ± 1.5 mm |

¹⁾ Without integrated RTD, see data sheet Conductivity LFS1505.2L.20-4

²⁾ Aggressive media can influence the long-term stability. Chemical resistance of the sensor in the end application must be tested by the customer

³⁾ For actual size see dimensions in order information



Technical data



Conductivity range:⁴⁾ 100 $\mu\text{S}/\text{cm}$ to 200 mS/cm
(Extended range from 10 $\mu\text{S}/\text{cm}$ to 200 mS/cm possible with cell constant correction)



Cell constant: ⁵⁾ * typical 0.68 cm^{-1}



Measurement frequency range: 100 Hz to 10 kHz



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



Operating temperature range: -30 $^{\circ}\text{C}$ to +100 $^{\circ}\text{C}$

Temperature sensor: * Pt1000, 1000 Ω nominal resistance at 0 $^{\circ}\text{C}$



Temperature coefficient (Pt1000) 3850 ppm/K

Measuring current (Pt1000) ⁶⁾ 0.3 mA

| Temperature sensor accuracy (dependent on temperature range): * | iST reference | |
|--|---------------|--|
| IEC 60751 F0.3 | B | |
| IEC 60751 F0.6 | C | |

Connection: * Pt/Ni-wires, \varnothing 0.2 mm

| Temperature dependence of resistivity: | according to IEC 60751: | |
|--|---|--|
| -50 $^{\circ}\text{C}$ to 0 $^{\circ}\text{C}$ | $R(T) = R_0 \times (1 + A \times T + B \times T^2 + C \times (T-100) \times T^3)$ | |
| 0 $^{\circ}\text{C}$ to 150 $^{\circ}\text{C}$ | $R(T) = R_0 \times (1 + A \times T + B \times T^2)$ | |
| | $A = 3.9083 \times 10^{-3} \times ^{\circ}\text{C}^{-1}$ | |
| | $B = -5.775 \times 10^{-7} \times ^{\circ}\text{C}^{-2}$ | |
| | $C = -4.183 \times 10^{-12} \times ^{\circ}\text{C}^{-4}$ | |
| | $R_0 =$ resistance value in Ω at $T = 0 \text{ }^{\circ}\text{C}$ | |
| | $T =$ temperature in accordance with ITS90 | |

Storage temperature: -20 $^{\circ}\text{C}$ to +100 $^{\circ}\text{C}$

Alternative construction:* Customized over-mold

Special 6 leads

* Customer-specific alternatives available

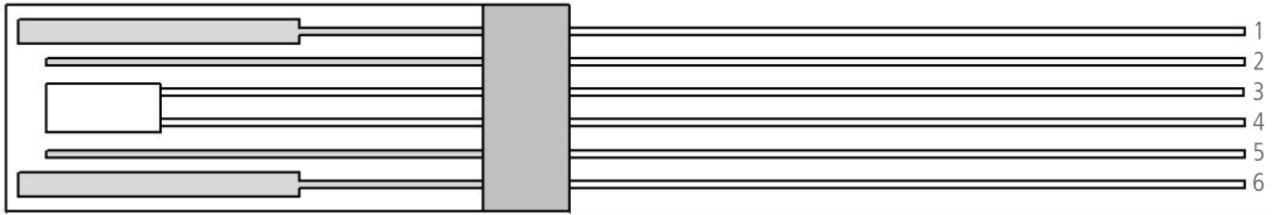
⁴⁾ Extended range from 10 $\mu\text{S}/\text{cm}$ to 200 mS/cm possible with cell constant correction

⁵⁾ Cell constant is strongly affected by external objects coming close to the front surface of the sensor.

⁶⁾ 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 ^{±0.3} x W ^{±0.3} x H ^{±0.1} / H2 ^{±0.3} , LW [mm] | Temperature sensor Class |
|---|--------------------------|--|--------------------------|
| 6W Ni/Pt wires, Ø 0.2 mm, 10 mm long* with special passivation | | | |
| 105120 | LFS1K0.1505.6W.B.010-6.S | 14.9 x 5.5 x 0.6 / 1.1, 10 | F0.3 (class B) |
| 105121 | LFS1K0.1505.6W.C.010-6.S | 14.9 x 5.5 x 0.6 / 1.1, 10 | F0.6 (class C) |

*Other wire lengths upon request



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