

## Technical Data Lambda Probe LS2 without Housing



Fig. 1 LS2 Lambda Probe without housing

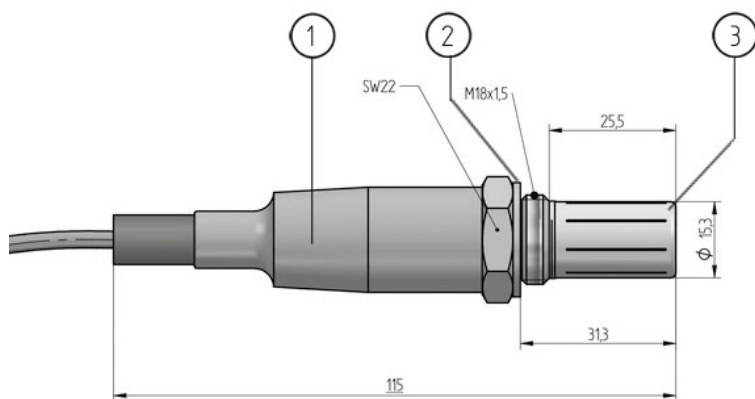
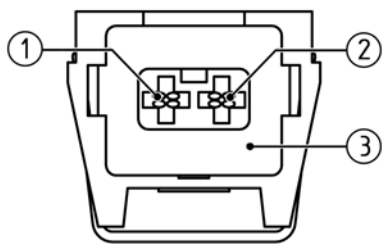


Fig. 2 Dimensions LS2 Lambda Probe without housing

1	LS2 Lambda Probe without housing	650R2004
2	Sealing washer	
3	Probe head	

## Technical Data Lambda Probe LS2 without Housing



- 1 (+) Probe signal (black) (PCB/LT2 term. 34)
- 2 (-) Probe signal (grey) (PCB/LT2 term. 33)
- 3 Socket sensor signal
- 4 Probe heater (white) (PCB/LT2 term. 35)
- 5 Plug probe heater
- 6 Probe heater (white) (PCB/LT2 term. 36)

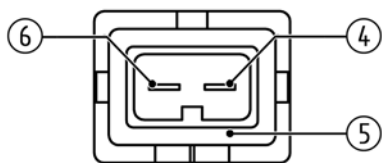
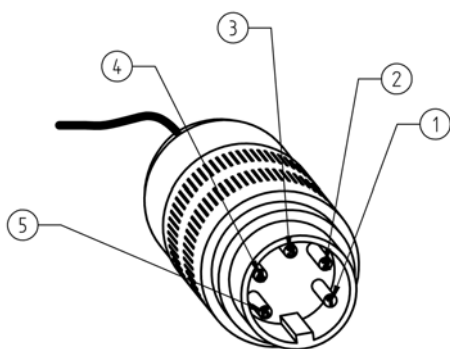


Fig. 3 Terminal assignment automotive plug

**For deliveries from: 01.04.2024.**



- 1 = (+) Probe signal O<sub>2</sub> (black)
- 2 = without function
- 3 = Probe heater (white)
- 4 = Probe heater (white)
- 5 = (-) Probe signal O<sub>2</sub> (red or blue)

Fig. 4 Pin assignment 5-pole round plug

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Technical data*	
Measuring range	O <sub>2</sub> : 0 ... 21 % O <sub>2</sub>
Measuring precision	O <sub>2</sub> : ± 5 % of measured value - not better than ± 0.3 vol. %
Sensor signal	O <sub>2</sub> : -30 ... +150 mV
Response time	O <sub>2</sub> : t <sub>60</sub> : < 3 s t <sub>90</sub> : < 9 s
Relaxation time (measurement readiness after overload)	O <sub>2</sub> : t <sub>90</sub> : < 8 s
Offset to environment	O <sub>2</sub> : < 0.3 vol. %
Repeating precision	O <sub>2</sub> : < 0.1 % deviation from measured value
Drift	O <sub>2</sub> : < 1.7 % from measured value (after 1000 h of operation in EL light fuel oil and 1004 switching cycles on/off)
Cross sensitivity **	O <sub>2</sub> : to CO <sub>2</sub> (15 vol. %) < 0.1 vol. % O <sub>2</sub> : to CO (874 ppm) < 0.1 vol. % O <sub>2</sub> : to CH <sub>4</sub> (76 ppm) < 0.1 vol. % O <sub>2</sub> : to SO <sub>2</sub> (76 ppm) < 0.1 vol. % O <sub>2</sub> : to NO (245 ppm) < 0.1 vol. %
Heating consumption	10 ... 25 W (according to design, measuring gas temperature, and measuring speed)
Lifetime	> 3 years (in case of light fuel oil and natural gas)
Weight	320 g   0.71 lb
Material of probe housing	1.4571
Material of connecting line	nickel-plated copper strand FEP insulation
Operating temperature of the measuring cell (sensor) at 13 V heating voltage in the air (20 °C   68 °F)	650 °C   1,202 °F
Measuring principle	zirconium dioxide cell (ZrO <sub>2</sub> ) potentiometric (voltage probe)
Heating time	10 minutes until operating temperature is reached

\* Information according to EN 16340:2014 D

\*\* O<sub>2</sub>: Information assumes an operating gas composition of 5 vol. % O<sub>2</sub>, rest is N<sub>2</sub>

Conditions for use	
Mounting / measuring gas extraction device	directly in exhaust gas channel / in situ
Seal tightness	q <sub>L</sub> ≤ 100 cm <sup>3</sup> /h *
Mounting position	horizontal to vertical
Permissible fuels	residue-free, gaseous hydrocarbons, light fuel oil
Ideal measuring gas speed	1 m/s ≤ X ≤ 4 m/s (deviating speeds on request)   3.28 ft/s ≤ X ≤ 13.12 ft/s (deviating speeds on request) (Higher measuring gas speed increases the measurement error. Measured at measuring gas temperature 25 °C   77 °F. In case of smaller measuring gas temperatures it might be necessary to protect the probe from the incident flow.)
Reference air supply	not required
Flange adapter	Connection thread M18 x 1,5 (40 Nm)

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## Environmental Conditions

Probe head	permissible flue gas temperature	≤ 450 °C   842 °F
Operation	permissible temperature	< 300 °C   572 °F on hexagon of probe housing < 200 °C   392 °F on cable lead < 150 °C   302 °F on connecting cable, up to 230 °C   446 °F short termed
Transport	permissible temperature	-20 ... +70 °C   -4 ... +158 °F
Storage	permissible temperature	-20 ... +70 °C   -4 ... +158 °F
Degree of protection	DIN EN 40050	IP42

\* According to DIN V 18160-1:2006-01, seal tightness towards environment through housing and fastening.

## NOTICE

The limits of the technical data must be strictly adhered to.

## Order Information

**Lambda Probe LS2 for measurement of oxygen (O<sub>2</sub>), for flue gas temperatures up to 450 °C | 842 °F with connecting cable**

Description/type	Order no.
Lambda Probe LS2 with cap, without housing, cable length 2 m   78.74" in, incl. test report *	650R2004

- \* Additional required:
- Lambda Transmitter LT2, conf. for LS2 in type "Standard", Order no. 657R102/LS2R/1S/...
  - or
  - Lambda Transmitter LT3, conf. for LS2, Order no. 657R51/.../LS2R/...
  - Gas extraction device (GED), order no. 655R1001 / R1002 / R1003 / R1004
  - Probe installation fitting (PIF), order no. 655R1010 or R1016

The information in this publication is subject to technical changes.



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