Technical Data Lambda Probe LS2-BF



Fig. 1 Lambda Probe LS2-BF

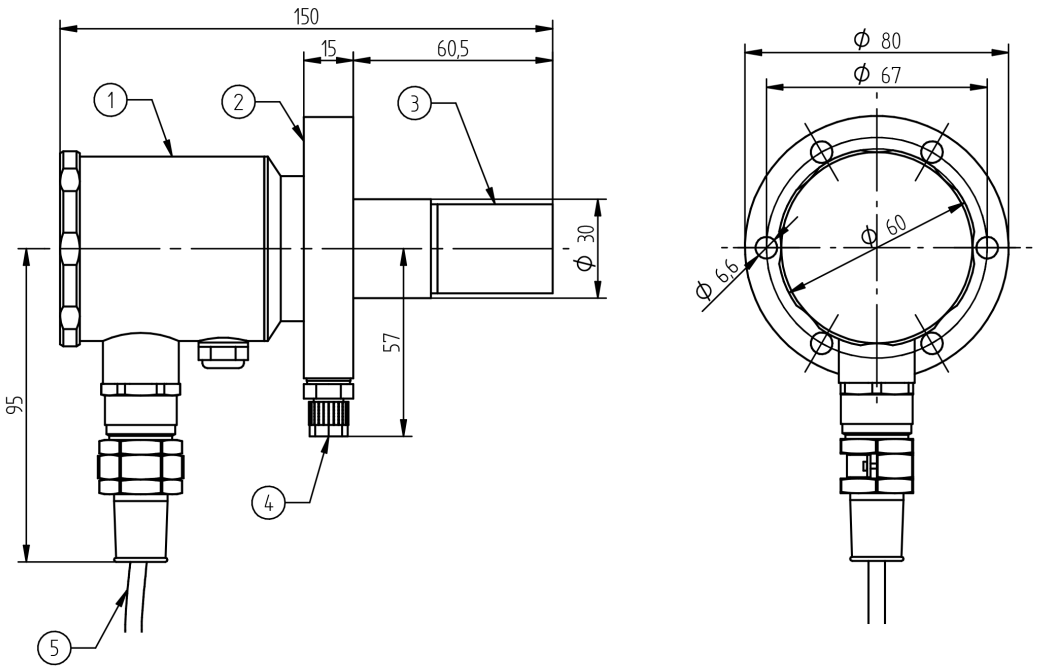
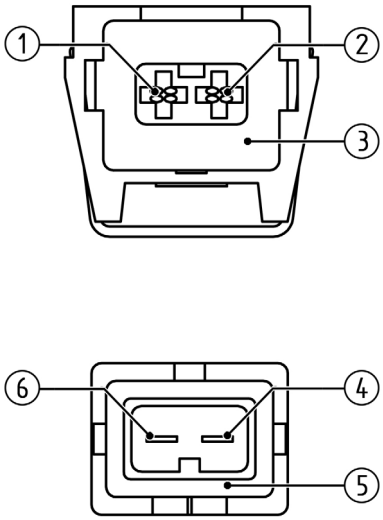


Fig. 2 Dimensional drawing Lambda Probe LS2-BF

1	Junction box
2	Mounting flange
3	Max. measuring gas temperature at sintered metal filter
4	Hose connection
5	Connecting cable



1 (+) Probe signal (black)
(PCB/LT2 term. 34)

2 (-) Probe signal (grey) (PCB/LT2 term. 33)

3 Socket sensor signal

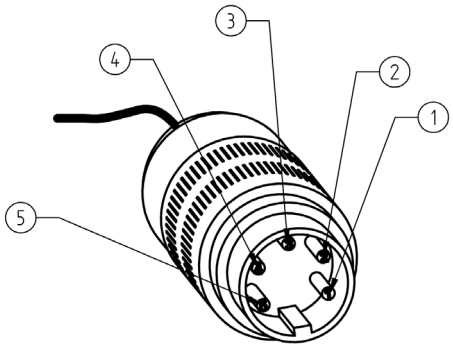
4 Probe heater (white) (PCB/LT2 term. 35)

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_2 (black)

2 = without function

3 = Probe heater (white)

4 = Probe heater (white)

5 = (-) Probe signal O_2 (red or blue)

Fig. 4 Pin assignment 5-pole round plug

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Technical Data	
Measuring range	**O_2:** 0 - 21 % O_2
Measuring precision	**O_2:** ± 5 % of measured value - not better than ± 0.3 vol. %
Sensor signal	**O_2:** -30 ... +150 mV
Response time	**O_2:** t_{60}: < 3 s t_{90}: < 9 s
Relaxation time (measurement readiness after overload)	**O_2:** t_{90}: < 8 s
Offset to environment	**O_2:** < 0.3 vol. %
Repeating precision	**O_2:** < 0.1 % deviation from measured value
Drift	**O_2:** < 1.7 % from measured value (after 1000 h of operation in EL light fuel oil and 1004 switching cycles ON / OFF)
Cross sensitivity	**O_2:** to CO_2 (15 vol. %) < 0.1 vol. % **O_2:** to CO (874 ppm) < 0.1 vol. % **O_2:** to CH_4 (76 ppm) < 0.1 vol. % **O_2:** to SO_2 (76 ppm) < 0.1 vol. % **O_2:** to NO (245 ppm) < 0.1 vol. % (O_2: Information assumes an operating gas composition of 5 vol. % O_2, rest is N_2)
Heating consumption	10 ... 25 W (at T_{gas} 350 °C | 662 °F approx. 18 W) (according to design, measuring gas temperature, and measuring speed)
Weight	1,300 g | 2.86 lb
Material of probe housing	1.4571
Material of connection housing	Aluminium
Material of connecting line	NICKEL-plated copper strand FEP insulation
Measuring principle	Zirconium dioxide cell (ZrO_2) potentiometric (voltage probe)
Approval	According to EN 16340:2014 D

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Operating Condition	
Lifetime	> 3 years (in case of light fuel oil and natural gas)
Heating time	10 min until operating temperature is reached
Operating temperature of the measuring cell (sensor) at 13 V heating voltage in the air (20 °C | 68 °F)	650 °C | 1,202 °F
Mounting / measuring gas extraction device	Directly in exhaust gas channel / in situ
Seal tightness	q_L ≤ 100 cm^3/h (According to DIN V 18160-1:2006-01, seal tightness towards environment through housing and fastening)
Mounting position	Horizontal to vertical
Permissible fuels	Residue-free, gaseous hydrocarbons, light fuel oil, heavy fuel oil (HFO), lignite and coal, biomass (according to design)
Ideal measuring gas speed	Without GED: – 1 m/s ≤ X ≤ 6 m/s | 3.28 ft/s ≤ X ≤ 19.69 ft/s with GED BASE: – T< 100 °C1 m/s ≤ X ≤ 10 m/s | 212 °F 3.28 ft/s ≤ X ≤ 32.81 ft/s – T> 100 °C 1 m/s ≤ X ≤ 20 m/s | 212 °F 3.28 ft/s ≤ X ≤. 65.67 ft/s with GED FLEX: – 0.1 m/s ≤ X depending on version | 0.328 ft/s ≤ X depending on version (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.) **Attention:** For lengths of GED FLEX > 1 m | 3.28 ft, a higher measuring gas speed (> 30 m/s | 98.42 ft/s) can lead to flutter and vibration of GED.
Reference air supply	Not required
Flange adapter	Depending on the selected GED

Environmental Conditions		
Probe head	permissible flue gas temperature	< 450 °C | 842 °F
Operation	permissible temperature	< 100 °C | 212 °F on cable gland < 100 °C | 212 °F on connection cable
Transport	permissible temperature	-20 ... +70 °C | -4 ... +158 °F
Storage	permissible temperature	-20 ... +70 °C | -4 ... +158 °F
Degree of protection	according DIN EN 40050	IP65

* 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

LS2-BF Lambda Probe for measurement of oxygen (O_2), for measuring gas temperatures up to 1,400 °C together with GED FLEX or GED BASE

Description/type	Order no.
Lambda Probe LS2-BF, cable length 2 m | 6.6 ft, incl. round plug 5 pins, IP65, incl. seal Novaphit SSTC for connecting head and additional pack with fixing material	650R2115
Lambda Probe LS2-BF, cable length 5 m | 16.5 ft, incl. round plug 5 pins, IP65, incl. seal Novaphit SSTC for connecting head and additional pack with fixing material	650R2116

Additionally required:

For measurements without purge operation, without fully automatic calibration

- LT3 Lambda Transmitter, configured for LS2, order no. 657R51 / … / LS2R / ...
- GED BASE or GED FLEX measuring gas extraction device

For measurements with purge operation (cyclical tripping)

- LT2 Lambda Transmitter, configured for LS2 in “purge operation” design
  Order no. 657R102 / LS2R / 3A / …
- GED FLEX measuring gas extraction device, T-adapter for purge operation
- Dedusting/purge unit, IP65, for GED FLEX T-adapter, order no. 657R0934

For measurements with purge operation (manual tripping)

- LT3 Lambda Transmitter, configured for LS2, order no. 657R51 / … / LS2R / .
- GED FLEX measuring gas extraction device, T-adapter for purge operation
- Dedusting/purge unit, IP65, for GED FLEX T-adapter, order no. 657R0934

For measurements with fully automatic calibration

- LT2 Lambda Transmitter, configured for LS2 in “fully automatic calibration” design
  Order no. 657R102 / LS2R / V / …
- GED BASE or GED FLEX measuring gas extraction device
- Dedusting/purge unit, IP65, for GED FLEX T-adapter, order no. 657R0934
- Fully automatic calibration system, order no. 657R0940

For measurements with purge operation (cyclical tripping) and fully automatic calibration

- LT2 Lambda Transmitter, configured for LS2 in “fully automatic calibration and purging” design
  Order no. 657R102 / LS2R / VA / …
- GED FLEX measuring gas extraction device, T-adapter for purge operation
- Dedusting/purge unit, IP65, for GED FLEX T-adapter, order no. 657R0934
- Fully automatic calibration system, order no. 657R0940

The information in this publication is subject to technical changes.

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