# Technical Data Lambda Probe LS2 ECO



*Fig. 1 Lambda Probe LS2 ECO*

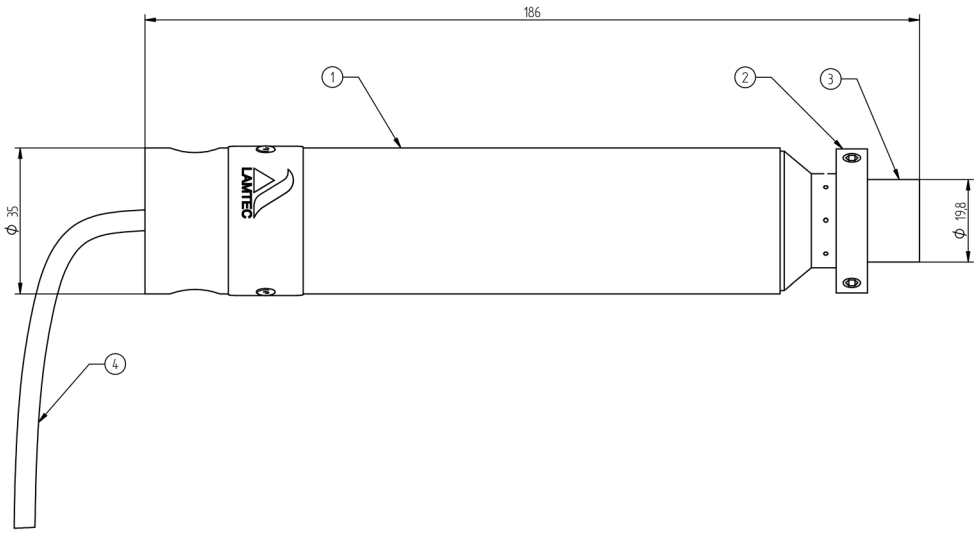
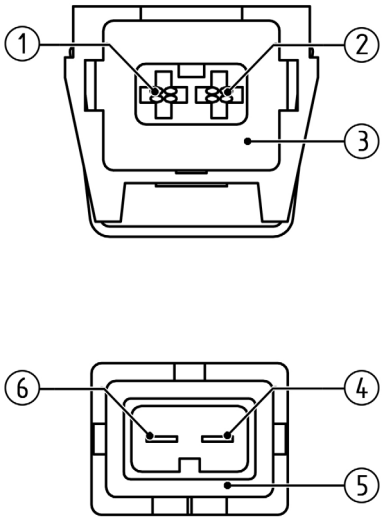



*Fig. 2 Lambda Probe LS2 ECO (dimensions in mm)*

| | |
|---|---|
| 1 | Lambda Probe LS2 ECO |
| 2 | Locking ring for GED ECO |
| 3 | Probe head |




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

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

**3** Socket sensor signal

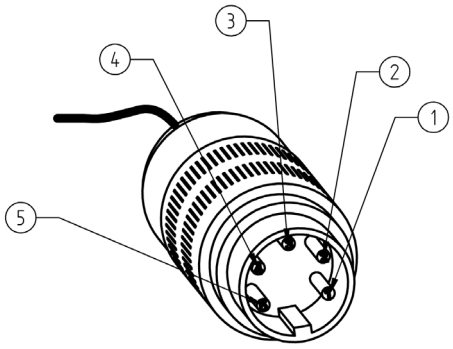
**4** Probe heater (white) (PCB/LT2 term. 35)

**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*

# Technical Data Lambda Probe LS2 ECO

| **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<br>$t_{90}$: < 9 s |
| Relaxation time<br>(measurement readiness after overload) | **$O_2$:** $t_{90}$: < 8 s |
| Offset in ambient air | **$O_2$:** < 0.3 vol. % |
| Repeat accuracy | **$O_2$:** < 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. %<br>**$O_2$:** to CO (874 ppm) < 0.1 vol. %<br>**$O_2$:** to $CH_4$ (76 ppm) < 0.1 vol. %<br>**$O_2$:** to $SO_2$ (76 ppm) < 0.1 vol. %<br>**$O_2$:** 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 | 560 g \| 1.23 lb |
| Material of probe housing | 1.4571/1.4301 |
| Material of connecting line | Nickel-plated copper strand<br>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 ($ZrO_2$) potentiometric (voltage probe) |
| Heating time | 10 minutes until operating temperature is reached |

* Information according to EN 16340:2014 D

** $O_2$: Information assumes an operating gas composition of 5 vol. % $O_2$, rest is $N_2$

| **Conditions for use** | |
|---|---|
| Mounting / measuring gas extraction device | Directly in exhaust gas channel / in situ |
| Seal tightness | $q_L$ ≤ 100 $cm^3$/h / 6.10 in³/h * |
| Mounting position | Horizontal to vertical |
| Permissible fuels | Residue-free, gaseous hydrocarbons, light fuel oil |

# Technical Data Lambda Probe LS2 ECO

| Conditions for use | |
|---|---|
| Ideal measuring gas speed | Without GED:<br>– 1 m/s ≤ X ≤ 4 m/s \| 3.28 ft/s ≤ X ≤ 13.12 ft/s<br>with GED ECO:<br>– T< 100 °C 1 m/s ≤ X ≤ 6 m/s \| 212 °F 3.28 ft/s ≤ X ≤ 19.68 ft/s<br>– T>100 °C 1 m/s ≤ X ≤ 12 m/s \| 212 °F 3.28 ft/s ≤ X ≤ 39.37 ft/s<br>(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 | Male coupling G1¼" |

| Environmental Conditions | | |
|---|---|---|
| **Probe head** | permissible flue gas temperature | ≤ 300 °C \| 572 °F |
| **Operation** | permissible temperature | ≤ 260 °C \| 500 °F at connecting cable |
| **Transport** | permissible temperature | -20 ... +70 °C \| -4 °F ... +158 °F |
| **Storage** | permissible temperature | -20 ... +70 °C \| -4 °F ... +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 ($O_2$), for flue gas temperatures up to 300 °C | 572 °F**
with connecting cable

| Description / Type | Order no. |
|---|---|
| Lambda Probe LS2 ECO (in standard housing), cable length 2 m \| 6.6 ft, with automotive plug, IP42* | 650R1000 |
| Lambda Probe LS2 ECO (in standard housing), cable length 5 m \| 16.4 ft, with automotive plug, IP42* | 650R1007 |
| Lambda probe LS2 ECO (in housing standard), cable length 2 m \| 6.56 ft, with round plug 5 pins, IP42* | 650R2000 |
| Lambda probe LS2 ECO (in housing standard), cable length 5 m \|16.40 ft, with round plug 5 pins, IP42* | 650R2007 |

* Additional required:

- Lambda Transmitter LT3, configured for LS2 with round plug
  Order-No. 657R51 / ... / LS2R / ...
- Gas extraction device GED ECO, order no. 655R1001 / R1002 / R1003
- Probe installation fitting (SEA), order no. 655R1010 or R1016

The information in this publication is subject to technical changes.

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