

# Technical Data Lambda Probe LS2 ECO

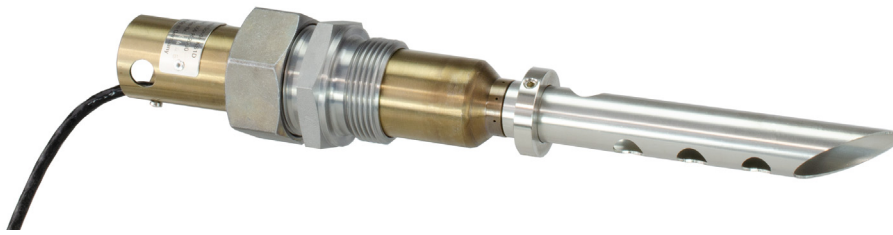


Fig. 1 Lambda Probe LS2 ECO with gas extraction device GED ECO and probe installation fitting (PIF)

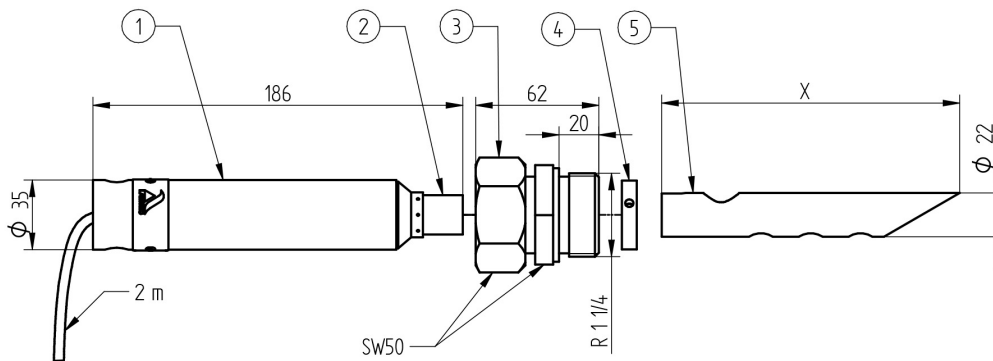
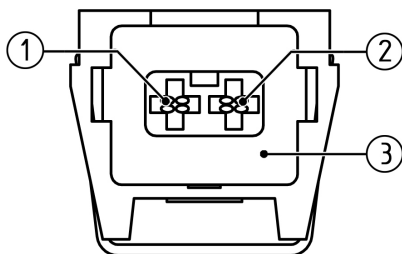


Fig. 2 Lambda Probe LS2 ECO with gas extraction device GED ECO and probe installation fitting (PIF)

No.	Description	Order no.
1	Lambda Probe LS2 ECO	650R1000 / 650R1007
2	Probe head	
3	Probe installation fitting 1 1/4"	655R1010
4	Locking ring for GED ECO	655R1021
5	Gas extraction device GED ECO length X = 150 mm / 5.91" in	655R1001
	Gas extraction device GED ECO length X = 300 mm / 11.81" in	655R1002
	Gas extraction device GED ECO length X = 450 mm / 17.72" in	655R1003



- 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)

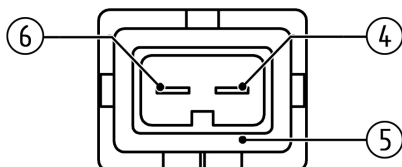


Fig. 3 Terminal assignment probe connection plug

## Technical Data Lambda Probe LS2 ECO

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 in ambient air	O <sub>2</sub> : < 0.3 vol. %
Repeat accuracy	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	560 g / 1.23 lb
Material of probe housing	1.4571/1.4301
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>

## Technical Data Lambda Probe LS2 ECO

Conditions for use	
Mounting / measuring gas extraction device	directly in exhaust gas channel / in situ
Seal tightness	$q_L \leq 100 \text{ cm}^3/\text{h} / 6.10 \text{ in}^3/\text{h}^*$
Mounting position	horizontal to vertical
Permissible fuels	residue-free, gaseous hydrocarbons, light fuel oil
Ideal measuring gas speed	without GED: $1 \text{ m/s} \leq X \leq 4 \text{ m/s}$ with GED ECO: $1 \text{ m/s} \leq X \leq 6 \text{ m/s}$  (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

<b>Probe head</b>	permissible flue gas temperature	$\leq 300 \text{ °C} / 572 \text{ °F}$
<b>Operation</b>	permissible temperature	$\leq 260 \text{ °C} / 500 \text{ °F}$ at connecting cable
<b>Transport</b>	permissible temperature	$-20 \dots +70 \text{ °C} / -4 \text{ °F} \dots +158 \text{ °F}$
<b>Storage</b>	permissible temperature	$-20 \dots +70 \text{ °C} / -4 \text{ °F} \dots +158 \text{ °F}$
<b>Degree of protection</b>	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.

# Technical Data Lambda Probe LS2 ECO

## Order Information

**Lambda Probe LS2 for measurement of oxygen (O<sub>2</sub>), 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, IP42*	650R1000
Lambda Probe LS2 ECO (in standard housing), cable length 5 m / 16.4 ft, IP42*	650R1007

\* Additional required:

- Lambda Transmitter LT3, conf. for LS2 in type  
Order no. 657R51 / ... / LS2 / ...
- Gas extraction device GED ECO, order no. 655R1001 / R1002 / R1003
- Probe installation fitting (PIF), order no. 655R1010 or R1016

## Gas extraction device (GED ECO)

Description / Type	Order no.
Gas extraction device (GED ECO), length 150 mm / 5.91" in	655R1001
Gas extraction device (GED ECO), length 300 mm / 11.81" in	655R1002
Gas extraction device (GED ECO), length 450 mm / 17.72" in	655R1003

## Probe installation fitting (PIF)

Description / Type	Order no.
Probe installation fitting (PIF), screw-in joint R1 1/4 ", material: steel	655R1010
Probe installation fitting (PIF) - screw-in joint R 1 1/4 ", material: stainless steel 1.4571	655R1016
Half sleeve fitting, tube threaded connection R 1 1/4 ", DIN 2986 for PIF type 655R1010 / R0016,material: steel	655R1012
Half sleeve fitting, tube threaded connection R 1 1/4 ", DIN 2986 for PIF type 655R1010 / R0016,material: stainless steel 1.4571	655R1015

The information in this publication is subject to technical changes.



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