

# L-Probe EM 2020



## Construction and Function:

The ceramic part of the Lambda-Probe (Solid electrolytes) has the design of a one-side-closed pipe. The surface, inside and outside, of the probe-ceramic is covered with a micro porous platinum layer (electrode). The catalyzing effect of the platinum influences the characteristic of the probe.

On the gas-measuring-side of the probe, porous ceramic is over the platinum layer. This protection layer prevents the erosive influence residue in the measuring gas and on the catalyzing effect from the platinum layer. The probe receives therefore a high longtime stability.

The ceramic heating element heats up the active probe ceramic (ZrO<sub>2</sub>) inside, independent of the process temperature.

The ceramic heating element possess PTC-characteristic, and serve to rapid heating and mark off the performance consumption.

The heating elements connections are ease from the probe signal voltage.

## Technical Data

**Sensor element:**  
Zirconium dioxide pipe

**Fitting thread:**  
M 18

**Measuring range:**  
100 %O<sub>2</sub> ... 10<sup>-26</sup> %O<sub>2</sub>

**Reaction time for 220°C gas:**  
≤ 2s for rising from 25 mV to 44 mV

**Measuring gas temperature:**  
< 200 °C

**Measuring gas flow:**  
approx... 40 l/h

**Connection (1m lead, can be also 2,3m):**  
Heating voltage: plug  
Probe signal: socket

**Necessary heating voltage:**  
12 V ... 14 V, for continuous work  
ca. 1,2 A (Power supply family NTV44)  
Power 18 W for 12 V heating voltage  
Insulation resistance between sensor and heater terminal > 30 MΩ

**Climate:**  
Storage: -40...+100 °C

Operation: 0...+100 °C  
5...95% relative humidity, noncondensing

## MAIN APPLICATIONS

**Industrial process**

**Heat treatment unit**

**Gas analysis**

**Environmental engineering**

# L-Probe EM 2020



## Technical Data

### Operating temperature range:

Hexagon on sensor housing  $\leq 500^{\circ}\text{C}$ ,  
Cable lead through  $\leq 200^{\circ}\text{C}$ ,  
Connection cable  $\leq 150^{\circ}\text{C}$ ,  
Connection plug  $\leq 120^{\circ}\text{C}$ ,  
Permissible continuous temperature =  $600^{\circ}\text{C}$ .

### Vibration level (in the hexagon):

Stochastic vibration  $\leq 800\text{ m/s}^2$   
Sinusoidal vibration amplitude  $\leq 0.3\text{mm}$   
Sinusoidal vibration acceleration  $\leq 300\text{m/s}^2$

**The reproducibility of the L-Probe signal,** depend on pressure changes, flow, measurement gas, as well as ambient pressure and temperature through the sensor.

Analyzing gas should always go after the L-probe directly to the ambient pressure.

Overall accuracy of 5% relative to measured oxygen concentration can be expected, when all comply with requirements.

### Sensor aging in burner gas after 1000h and measuring temperature $220^{\circ}\text{C}$ :

For probe voltage of 25 mV, probe voltage maximum difference is  $\leq \pm 0.6\text{ mV}$ .

### Speeding up aging for a 500h work and temperature of $400^{\circ}\text{C}$ with probe voltage of 30 mV:

Maximum probe voltage difference is  $\leq \pm 1.8\text{ mV}$ .

### Service life at $T_{\text{GAS}} < 300^{\circ}\text{C}$ :

Guide value  $> 10.000\text{ h}$

### Mounting

Any position is permissible. Not protected against immersion. If probe is directly subjected to splashing or dirt, suitable protective measures must be provided.

Mounting in exhaust pipes at a location with representative exhaust gas composition include complying with the specified temperature limits.

Sensor must be covered when the burner system is treated with paint, oil or something different. Sometimes it is needed to flashing L probe for a security measurement.

Tightening torque is in range 50 ... 60 Nm, material properties and strength of mating thread must be selected accordingly



### Order number

28454

### Device name

L-probe EM 2020

### Optional accessories

103-1510

24931

103-1513

530-3552

Measuring chamber MK 1

Measuring chamber MK1 with L-probe EM2020

Measuring chamber MK 2.1

Measuring chamber MK 2.1 with L-probe EM2020