LAMBDA

// Thermal Conductivity Sensor

Accurate Determination of Thermal Conductivity – Made Easy.

The LAMBDA is based on the hot wire method according to ASTM D7896-14, and it is a compact measuring device to determine the thermal conductivity of (nano-)fluids, gels and powders. The system determines the following parameters over a wide temperature range (up to 300 °C) and a pressure range (0 to 35 bar in standard version):

- thermal conductivity
- temperature

The LAMBDA is mainly used in areas of apparatus and plant engineering or fluid development in laboratories worldwide. Due to its compact design, the system is suitable for research in the laboratory as well as for test field applications.

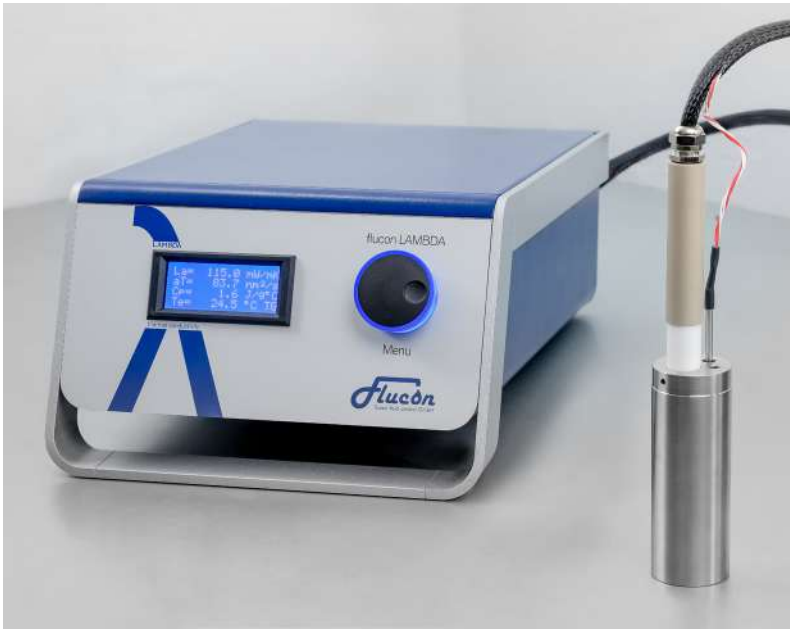
// KEY FEATURES

- ✓ wide measuring range (10 – 2000 mW/(m*K))
- ✓ thermal conductivity and temperature are displayed
- ✓ fast, instationary resistance measurement by means of the hot-wire method (ASTM D7896-14)
- ✓ robust stainless steel sensor
- ✓ wide temperature range (–50 °C to 300 °C)
- ✓ no unwanted influence of convection
- ✓ suitable for any fluid, powder or gel
- ✓ only 35 ml sample size needed, special version for 10 ml on request
- ✓ high reproducibility (98 - 99 %)
- ✓ short set-up time
- ✓ easy to operate
- ✓ RS-232/USB connection to your Windows PC for fully automatic measurement and temperature control (LAMBDA software included)
- ✓ optional thermostat available for automatic sample temperature control

Details and Technical Specifications

// MEASUREMENT

A small sample volume (about 35 ml) is sufficient for the measurement. The sample is filled into the supplied stainless steel container and brought to the desired temperature by means of a thermostat (thermostat optionally available). Depending on the settings made, the system can also automatically run a temperature profile according to your limit values. At short intervals (approx. 30 seconds), both the temperature and the thermal conductivity of your test fluid are determined and displayed.



// OPERATING MODES

The LAMBDA measuring system designed for stand-alone operation also has a standardized RS-232 (V.24) interface (adaptable to USB), which allows intuitive and comprehensive control and evaluation via your Windows PC. An output of the measured values over 0 - 10 V or 4 - 20 mA is also possible.

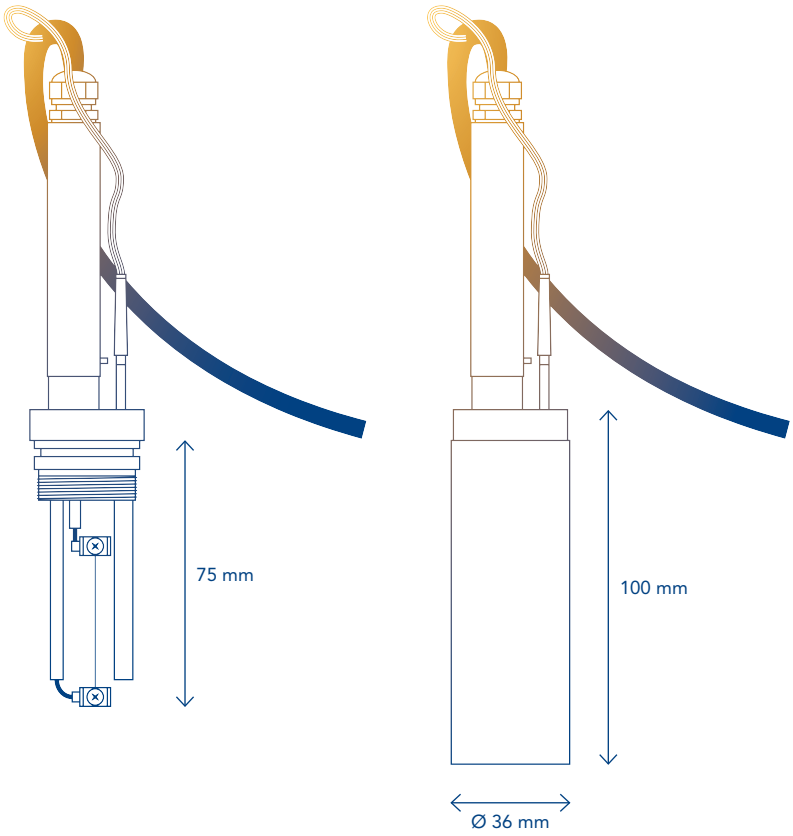
With the help of the supplied LAMBDA software, the thermal conductivity measurements can also be conveniently performed, recorded and evaluated by use of a PC.

// CLEANING

For cleaning purposes, the sensor can simply be immersed in a suitable cleaning fluid (e.g., water or acetone); one only has to make sure that the platinum wire is not damaged. Nevertheless, if this should happen, it can be replaced by the user within a few minutes (replacement wire is included).

// DIMENSIONS

Exact dimensions of the LAMBDA sensor and the screw-on cup:



LAMBDA sensor with platinum hot wire

Video:
Find a presentation of the **LAMBDA** on our homepage.

Video-Link:
youtu.be/I0N0I8I03EU

// TECHNICAL SPECIFICATIONS

Measuring media	fluids, gels, powders
Sample quantity	approx. 35 ml
Measuring range	10 – 2000 mW/(m*K)
Repeatability	98 – 99%
Temperature range – sensor	−50 °C to 300 °C
Temperature accuracy	±0.1 °C
Temperature measurement	PT100
Pressure range – sensor	0 – 35 bar (optional HP version up to 10,000 bar available)
Measuring time	approx. 60 s
Optional data transfer to a computer	RS232 interface
Response time	ca. 60 s
Optional data transfer to a computer	RS232 interface
Display	LCD
Dimensions – electronic unit (LxWxH)	370 x 235 x 150 mm
Weight – system	approx. 2.9 kg
Power supply	110 – 240 V AC, 50/60Hz
Energy consumption	15 W
Dimensions – measuring vessel (screw-on cup)	D = 36 mm (equals inner diameter of thermostat jacket) L = 100 mm (equals immersion depth into thermostat)
ASTM Standard	ASTM D7896-14

// WHAT IS LAMBDA?

The **thermal conductivity lambda (λ)** of a solid, a fluid or a gas may basically be understood as the speed at which a defined amount of heat travels as it goes through a particular substance. A low **λ** value means low thermal conductivity.

For both liquids and gases lambda highly depends on the temperature, whereas pressure dependence is comparatively low. The measure for lambda is W/(m*K) (Watts per Meter and Kelvin).