

Controlled temperature calibration micro baths

LR-Cal FLUID 200 Ambient temperature...+200°C

LR-Cal FLUID 200-H: Ambient temperature...+250°C

The portable temperature calibration micro baths

LR-Cal FLUID 200 and **LR-Cal FLUID 200-H** serve as temperature source and reference instrument in one. For testing, adjusting and calibrating all types of temperature measuring instruments. They are also particularly suitable for laboratory and glass thermometer as well as temperature probes with e.g. 90° bends.

Technical Data:

Temperature range at 20°C ambient temperature:

Models **LR-Cal FLUID 200** and **LR-Cal FLUID 200-2I**: Ambient temp...+200°C

Models **LR-Cal FLUID 200-H** and **LR-Cal FLUID 200-H-2I**: Ambient temp...+250°C

Accuracy of temperature indication:

Models **LR-Cal FLUID 200** and **LR-Cal FLUID 200-2I**: $\pm 0.15^\circ\text{C}$

Models **LR-Cal FLUID 200-H** and **LR-Cal FLUID 200-H-2I**: $\pm 0,2^\circ\text{C}$

Display resolution: 0.01°/0.1° (°C or °F or K)

Stability of controlled temperature: $\pm 0.02^\circ\text{C}$ at 50°C

Heating time: from T_{amb} to 140°C incl. stabilization approx 25 min.

Cooling time: from 140°C to T_{amb} incl. stabilization approx. 70 min.

Radial temperature uniformity at 150°C and 40 mm depth: $\pm 0.6^\circ\text{C}$

Axial temperature uniformity at 140°C: $\pm 0.01^\circ\text{C}$

Calibration medium (liquid): <80°C: water-glycole-mixture;

<125°C: silicone oil 200C5; <220°C: silicone oil 47V100

Calibration bath reservoir: Volume approx. 500 cm³, material Aluminium

Reservoir depth: 170 mm

Reservoir diameter: 60 mm

Power supply: 230 VAC (optional 115 VAC)

Power consumption: 500 VA

Interface: RS232

Housing material: Metal

Weight: approx. 8.3 kgs

Dimensions:

approx. 160 x 360 x 350 mm

Versions LR-Cal FLUID 100-2I

and **LR-Cal FLUID 100-N-2I:**

with 2 measuring inputs for Pt 100 and thermocouples, programmable.

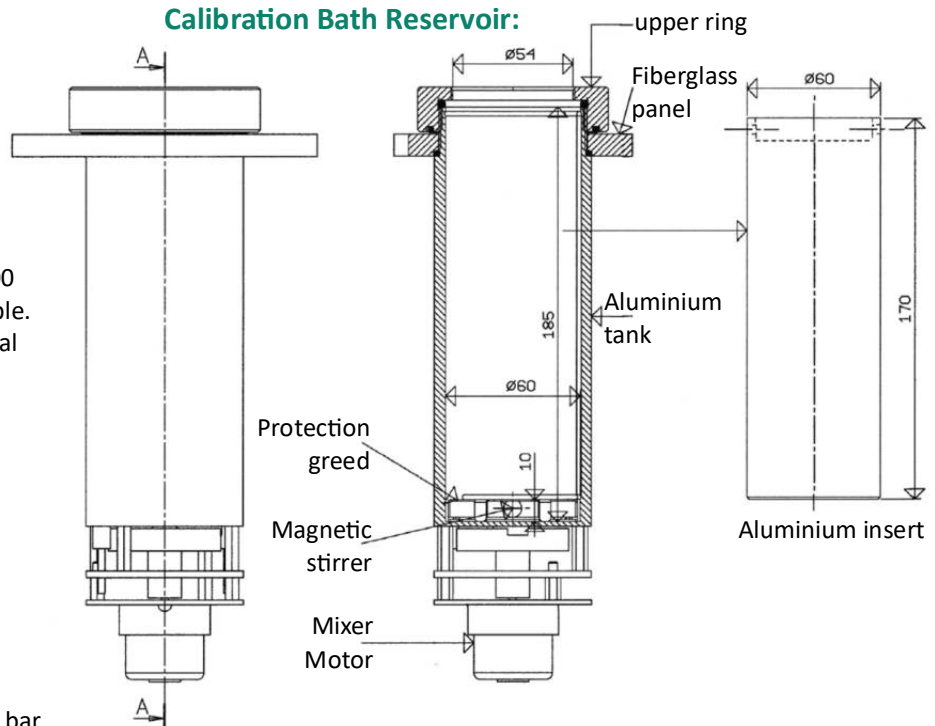
For unit under test and/or external reference. (Details see page 3.)



Extraction of the magnetic stirrer bar



Calibration Bath Reservoir:



Versions LR-Cal FLUID 200-2I and LR-Cal FLUID 200-H-2I:

With data acquisition card and two input devices to measure resistance thermometer probes and thermocouples.
 Details - see next page.

Included in scope of standard delivery:

- Temperature micro bath **LR-Cal FLUID 200** or **LR-Cal FLUID 200-H**
- Spare fuses
- Support for fixing units under test
- Connection cable for thermostat tests
- 1 Bottle*) 500 cm³ with silicone oil 47V20 or 47V50, see below
- Closing lids for transport purposes
- Carrying bag with shoulder strap
- Operating manual (German/English)
- Test certificate (factory certificate of calibration)



*) **LR-Cal FLUID 200:** 47V20, **LR-Cal FLUID 200-H:** 47V50

Additional at versions LR-Cal FLUID 200-2I and LR-Cal FLUID 200-H-2I (with 2 measuring inputs):

- Set of electrical connection cables (red/black)
- Set of clamping plugs (red/black)



Optional Accessories:

- External reference temperature sensors (see datasheet **LR-Cal LTC-F**)

- PC-Windows **software AQ2sp** incl. special RS232 connection cable.
 With the **AQ2sp** software, the calibrator can be completely controlled from the PC, manual or automatic calibration of one or more units under test, load of one or more test items, load and lifetime tests, creation of calibration certificates. Order-Code **590.0.000.0003.0** incl. RS232 cable.



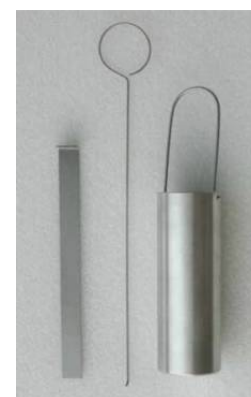
- **Extension tube** for increasing the immersion depth, total length 250 mm, usable immersion depth 230 mm.
 When used with silicone oil 47V20: working range 90...+200°C,
 radial temperature uniformity ±0.2°C (measured 50 mm from bottom),
 axial temperature uniformity ±0.1°C (measured in the range 0...150 mm from bottom)
 Order-Code **FLUID200-ER**.



- **Cooling coil** in stainless steel for shortening the cooling time (needs cold water connection).
 Also the minimum calibration temperature can be decreased.
 Order-Code **FLUID200-KS**



- **Conversion** of the **LR-Cal FLUID** calibration bath into a **dry block** temperature calibrator:
 Temperature range: -10...+125°C Block made of aluminium, diameter 60 mm,
 useful depth 170 mm. Heating time from -10 to +110°C: 45 min. Cooling time
 from 20°C to -10°C: 47 min. Stability of controlled temperature: ±0.04°C.
 Vertical temperature uniformity: ±0.03°C at 0°C; ±0.06°C at 80°C
 - Block without holes (for self-drilling): Order-Code **FLUID-INS-0**
 - Block with 9 holes (4.0 - 4.0 - 4.5 - 5.5 - 6.5 - 6.5 - 8.5 - 10.5 - 12.5 mm):
 Order-Code **FLUID-INS-9**



- **Various test liquids:** Please enquire with description of your application: dt-export@leitenberger.de, or see



Versions LR-Cal FLUID 200-2I and LR-Cal FLUID 200-H-2I:

Instrument version with 2 measuring inputs, both suitable for resistance thermometers Pt 100 (2-, 3- or 4-wire) or Pt 100 as well as thermocouples (incl. cold junction compensation) types B, E, J, K, N, R, S and T. The signals of up to two external temperature sensors can be displayed additionally.



Accuracy of the two measuring inputs:

Accuracy (max. deviation) of the optional measuring inputs at instrument version "-2I":

Resistance thermometer:				
Pt 100	at -40°C: ±0.09°C	at 0°C: ±0.08°C	at +150°C: ±0.11°C	at +300°C: ±0.14°C
Pt 1000	at -40°C: ±0.09°C	at 0°C: ±0.08°C	at +150°C: ±0.11°C	at +300°C: ±0.14°C
Thermocouples:				
Type B	at +950°C: ±0.97°C	at 1050°C: ±1.03°C	at +1200°C: ±1.12°C	
Type E	at -40°C: ±0.42°C	at 0°C: ±0.40°C	at +350°C: ±0.61°C	
Type J	at +200°C: ±0.52°C	at +450°C: ±0.67°C	at +700°C: ±0.82°C	
Types K + N + R + S	at +400°C: ±0.64°C	at +700°C: ±0.82°C	at +1000°C: ±1.00°C	
Type T	at -40°C: ±0.42°C	at 0°C: ±0.40°C	at +350°C: ±0.61°C	