

## Controlled temperature calibration micro baths

Type LR-Cal LTC-FB-9035-45: -35...+120°C  
 Type LR-Cal LTC-FB-9018-60: -18...+140°C  
 Type LR-Cal LTC-FB-0200-60: amb. temp. ...+200°C  
 Type LR-Cal LTC-FB-0250-60: amb. temp. ...+250°C

The portable LR-Cal LTC-FB temperature calibration baths serve as both a self-sufficient temperature source and reference device for testing, adjusting, and calibrating all types of temperature measuring devices and temperature switches. They are also particularly well suited for laboratory and glass thermometers as well as temperature sensors with, for example, a 90° elbow.

For calibration laboratories and mobile use on site.

### Features:

- High control stability and accuracy.
- Easy operation via color touchscreen.
- Display resolution up to 0.001°C.
- Compact device with low weight.
- Calibration bath container with approx. 400 cm<sup>3</sup> volume.
- Very high temperature uniformity (using magnetic mixer).
- Large immersion depth approx. 170 mm.
- Includes mounting system for laboratory and glass thermometers.
- Programmable ramp function.
- USB interface for computer-assisted calibrations.
- PID controller (32-bit microprocessor).
- LR-Cal LTC-FB-9035-45 + LR-Cal LTC-FB-9018-60: with Peltier elements.
- LR-Cal LTC-FB-0200-60 + LR-Cal LTC-FB-0250-60: with heating elements.
- Optional calibration bath insert to shorten the time for calibration fluid exchange available.
- Optional metal dry block inserts available.



This image shows the calibrator including the option LTC-MP-3I

### Option: 3 measuring inputs - Order-Code LTC-MP-3I

Device version with 3 configurable measuring inputs, including 2 inputs for resistance thermometers (2-, 3-, or 4-wire) and thermocouple sensors (including cold junction compensation) and 1 input for temperature transducers with analog output signal 0...10 V or 4...20 mA. If you do not want to test or calibrate exclusively analog temperature measuring devices, we recommend these measuring inputs, Order-Code LTC-MP-3I.

Connectors for the electrical connection are included with this option.



### Option: exchangeable calibration bath inserts - Order-Code LTC-FB-INSERT

These inserts enable easy replacement of the calibration medium (silicone oil). There is a particularly suitable silicone oil for every temperature range. For optimal use, several calibration media often have to be used with a calibrator. The liquid is replaced without emptying (and cleaning) the calibration bath; only this insert needs to be replaced. We recommend at least two of these inserts, Order-Code LTC-FB-INSERT.



# LTC-FB Temperature calibration micro baths

## 4 versions, portable, from -35°C to +250°C

LR-Cal



### Technical data:

Specification	LR-Cal	LTC-FB-9035-45	LTC-FB-9018-60	LTC-FB-0200-60	LTC-FB-0250-60
Temperature range:		-35...+120°C	-18...+140°C	amb. ...+200°C	amb. ...+250°C
Display:		Touch screen (color)			
Display accuracy:		±0.15°C *		±0.2°C *	
Units of measure:		°C / °F / K			
Display resolution:		0.1° / 0.01° / 0.001°			
Mean heating time: (incl. stabilization)		approx. 40 min from amb. to 120°C	approx. 50 min from amb. to 140°C	approx. 30 min. from amb. to 200°C	
Mean cooling time: (incl. stabilization)		approx. 100 min from 120°C to amb.	approx. 50 min from 140°C to amb.	approx. 75 min from 200°C to 50°C	
Stability:		±0.02°C at 0°C **		±0.03°C at full temperature range **	
Axial uniformity:		±0.05°C			
Radial uniformity:		±0.02°C at 0°C ***	±0.07°C at 140°C ***	±0.06°C at 140°C ***	
Hole diameter:		45 mm		60 mm	
Hole depth:		170 mm			
Insert material:		anticorrosive			
Switch test, voltage:		On/Off - 4.5 VDC			
Adjustable ramp function:		from 0.1°C / 1°C			
PC interface:		USB type B			
Automatic calibration:		on 5 temperature points			
External probes:		Option: order code <a href="#">LTC-MP-3I</a> together with instrument			
Operation voltage:		230 VAC (optional 115 VAC) 50/60 Hz			
Electric power:		350 VA	300 VA	500 VA	
Dimensions:		160 x 360 x 350 mm			
Weight incl. std. equipm.		11.0 kg		8.3 kg	

All values have been measured at ambient temperature of +20°C and with a sensor with diameter 6 mm.

The achievement of stabilization is confirmed by a displayed root symbol √ and an aural beep

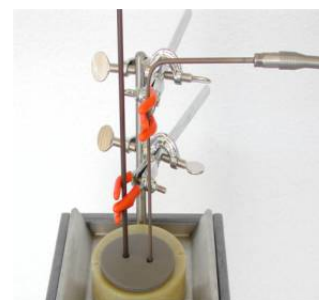
\* Temperature deviation between display and reference probe.

\*\* Max. temperature difference at stable temperature over 30 min.

\*\*\* Measured from the button up to 40 mm

### Standard scope of delivery:

- LR-Cal LTC-FB calibrator in the version ordered
- Sealing cap for the calibration bath reservoir (for transport purposes)
- Tool for emptying the calibration bath reservoir
- Holding device for glass and laboratory thermometers
- For model LR-Cal LTC-FB-9035-45: 1 bottle with 500 cm<sup>3</sup> silicone oil 47V10
- For model LR-Cal LTC-FB-9018-60: 1 bottle with 500 cm<sup>3</sup> silicone oil 47V10
- For model LR-Cal LTC-FB-0200-60: 1 bottle with 500 cm<sup>3</sup> silicone oil 47V20
- For model LR-Cal LTC-FB-0250-60: 1 bottle with 500 cm<sup>3</sup> silicone oil 47V100
- Set of spare fuses
- Electrical connection cable for testing/calibrating temperature switches (thermostats)
- Carrying bag with shoulder strap (with space for calibrator and standard accessories)
- Operating instructions (in German and English)
- Acceptance test certificate 3.1 in accordance with DIN EN 10204
- Only if option item no. [LTC-MP-3I](#) was ordered with the basic unit:  
1 set of measuring sockets (red/black) for the three measuring inputs



**Dimensions (mm):**



**Options that must be ordered together with the basic unit, if required:**

Order-Code:	Description:
LTC-MP-3I	Instrument version with 3 configurable measuring inputs, as follows: 2 x for Pt 100 / Pt 1000 (2-, 3- or 4-wires) and Thermocouples TC Types B, E, J, K, N, R, S und T (incl. cold junction compensation) 1 x for Temperature transducer with analogue output signal 0...10 V or 4...20 mA Incl. set of red/black plugs for the electrical connection
LTC-MP-115V	Instrument version for power supply 115 VAC 50/60 Hz (instead of for 230 VAC)

**Accuracy of the 2 resistance and thermocouple inputs at option with order-code LTC-MP-3I:**  
 Maximal deviations

Resistance thermometer:			
Pt 100 + Pt 1000	at -40°C:	±0.09°C	at 0°C: ±0.08°C
	at +300°C:	±0.14°C	at +450°C: ±0.30°C
			at +150°C: ±0.11°C
			at +600°C: ±0.40°C
Thermocouples:			
Type B	at +950°C:	±0.97°C	at 1050°C: ±1.03°C
Type E	at -40°C:	±0.42°C	at 0°C: ±0.40°C
Type J	at +200°C:	±0.52°C	at +450°C: ±0.67°C
Types K + N + R + S	at +400°C:	±0.64°C	at +700°C: ±0.82°C
Type T	at -40°C:	±0.42°C	at 0°C: ±0.40°C
			at +1200°C: ±1,12°C
			at +350°C: ±0.61°C
			at +700°C: ±0.82°C
			at +1000°C: ±1.00°C
			at +350°C: ±0.61°C








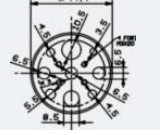
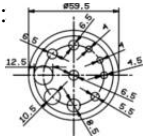








# LTC-FB Temperature calibration micro baths 4 versions, portable, from -35°C to +250°C

LR-Cal



## Optional accessories:

Order-Code:	Description:	
LTC-FB-INSERT	Calibration bath insert including sealing lid (for quick replacement of silicone oil/calibration fluid)  <i>Highly recommended!</i>	
LTC-FB-LONG	Extension tube suitable to increase the depth of the reservoir Total length 255 mm, usable insertion depth 230 mm (not suitable for version LR-Cal LTC-FB-9035-45!)	
LTC-FB-COOL	only for LR-Cal calibrators LTC-FB-0200-60 + LTC-FB-0250-60: Cooling coil to shorten the fluid cooling time within the reservoir (requires cold water connection). This can also be used to shift the start of the temperature range downwards.	
LTC-AQ2SP2	Windows-PC software LR-Cal AQ2sp (The device version with measurement inputs LTC-MP-3I is recommended for this purpose). Control of the calibrator from the PC, manual or automatic calibration of one or more test items, load and endurance tests, creation of calibration certificates	
LTC-FB-DB-45-0	only for LR-Cal calibrator LTC-FB-9035-45: Metal dry block insert (44.7 x 170 mm) without holes (for drilling yourself)	
LTC-FB-DB-60-0	only for LR-Cal calibrators LTC-FB-9018-60 + LTC-FB-0200-60 + LTC-FB-0250-60: Metal dry block insert (60 x 170 mm) without holes (for drilling yourself)	
LTC-FB-DB-45-7	only for LR-Cal calibrator LTC-FB-9035-45: Metal dry block insert (44.7 x 170 mm) with 7 holes 4.0 + 4.5 + 5.5 + 6.5 + 6.5 + 8.5 + 10.5 mm diameter	
LTC-FB-DB-45-9	only for LR-Cal calibrator LTC-FB-9035-45: Metal dry block insert (44.7 x 170 mm) with 9 holes 3.5 + 4.5 + 4.5 + 5.5 + 6.5 + 6.5 + 6.5 + 8.5 + 10.5 mm diameter	
LTC-FB-DB-60-9	only for LR-Cal calibrators LTC-FB-9018-60 + LTC-FB-0200-60 + LTC-FB-0250-60: Metal dry block insert (60 x 170 mm) with 9 holes 4.0 + 4.0 + 4.5 + 5.5 + 6.5 + 6.5 + 8.5 + 10.5 + 12.5 mm diameter	
LRT-F-9040-0650-45	External Pt 100 reference probe -40...+650°C, diameter 4.5 mm	
LRT-F-9040-0650-60	External Pt 100 reference probe -40...+650°C, diameter 6,0 mm	
LRT-F-0000-1400-70	External reference thermocouple type S, 0...1400°C, diameter 7,0 mm If the values from an external reference probe are to be shown on the device display, the LTC-MP-3I option must be ordered together with the calibrator.	
LTC-FB-DB-KOFFER	Sturdy aluminum storage and transport case (37 x 29 x 42 cm) with space for device and accessories	
LTC-FB-DB-TASCHE	Padded shoulder bag with shoulder strap (41 x 22 x 38 cm) with space for the device and standard accessories Note: 1 bag is already included with the device	
LTC-FB-ENT-TOOL	Tools to remove protective grille and magnet mixer rod for easier emptying and cleaning of the reservoir. (Already included in scope of delivery of the accessory inserts, see above)	
DKD-T-KAL-TK-6T	DAkKS calibration certificate (6 temperature points), traceable and accredited according to ISO 17025 for measuring chain consisting of device display and internal reference sensor, or, for device versions with LTC-MP-3I measuring inputs, measuring chain consisting of display and external reference sensor (LRT-F... see above).	

### Calibration fluids:



You can find important general information and selection recommendations on our website:

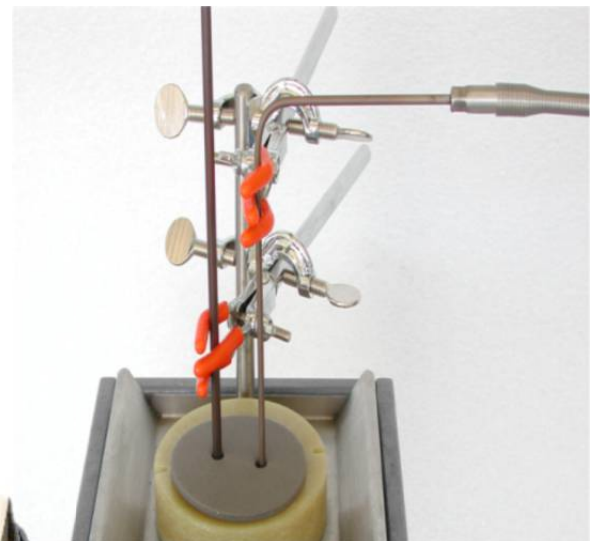


<https://www.druck-temperatur.de/en/products/temperature-calibration/microbaths.html#fluids>

Order-Code:	Description:
LTC-FB-SO-005	Bottle with 500 cm <sup>3</sup> silicone oil 47V5 (200C5) Recommended for temperatures -40...+130°C
LTC-FB-SO-010	Bottle with 500 cm <sup>3</sup> silicone oil 47V10 Recommended for temperatures -30...+150°C
LTC-FB-SO-020	Bottle with 500 cm <sup>3</sup> silicone oil 47V20 Recommended for temperatures -20...+200°C
LTC-FB-SO-050	Bottle with 500 cm <sup>3</sup> silicone oil 47V50 Recommended for temperatures +30...+200°C
LTC-FB-SO-100	Bottle with 500 cm <sup>3</sup> silicone oil 47V100 Recommended for temperatures +50...+200°C
LTC-FB-SO-150	Bottle with 500 cm <sup>3</sup> silicone oil 47V150 Recommended for temperatures +50...+200°C



Simple operation  
via color  
touch screen



Holdign device  
for glass thermometers  
included in scope of supply

Order-Code **LTC-FB-LONG**:  
Optionale Verlängerung  
der Eintauchtiefe für  
Prüfinge auf 230 mm