



micro bath



additional inserts

micro bath
or

dry block



LR-Cal
 temperature
 calibrator

**Advanced micro bath temperature calibrators
 also as dry well metal block calibrator**

- LR-Cal LTC 100-F:** -35...+165°C / -31...+329°F
- LR-Cal LTC 100-F-PLUS:** -40...+165°C / -40...+329°F
- LR-Cal LTC 200-F:** +30...+225°C / +86...+437°F

- PID temperature controller with 4.3 inch touch screen
- Large reservoir volume 0.7 liter, depth 190 mm / 7.48 inch, diameter 60 mm / 2.36 inch
- Optional additional micro bath inserts to simplify the exchange of the operating fluid (silicone oil)
- Dry metal block inserts with 4...12 holes or with Black Body or for surface probes
- Accuracy ±0.1°C / ±0.2°F
- Temperature uniformity ±0.05°C / ±0.09°F
- Temperature stability ±0.01°C / ±0.02°F
- Very easy operation via touch screen
- Programs (ramps), Alarm, Events
- Data logging, trend graphs
- With adjustable speed magnetic stirrer
- Optional with 2nd. PID for external reference sensor, switchable via touch screen
- 10-point calibration for internal and optional external reference sensor possible, menu-driven



The image shows the instrument with optional input for external reference and with external probe.



LTC 100-F
LTC 100-F-PLUS
LTC 200-F

Portable temperature calibration micro baths
-35...+165°C / -40...+165°C / +30...+225°C



The portable micro bath temperature calibration devices **LR-Cal LTC 100-F**, **LR-Cal LTC 100-F-PLUS** and **LR-Cal LTC 200-F** serve as temperature source and reference device in one, for testing, adjustment and calibration of temperature measuring devices of all kinds. They are also particularly suitable for laboratory and glass thermometers as well as temperature probes with e.g. 90° bends. The optional micro bath inserts **LTC-F-INSERT-FL** simplify the use of the device considerably if you work with different silicone oils: you simply exchange the container (insert) instead of emptying and cleaning each time.



The image shows the device with optional input for external reference sensor and optional external probe **LTC-F-INSERT-FL** with optional containerlid with drilled holes Order-Code **LTC-F-DECKEL-05**.

Technical data

Model:	LR-Cal LTC 100-F	LR-Cal LTC 100-F-PLUS	LR-Cal LTC 200-F
Operating temperature range:	-35°C...+165°C / -31°F...+229°F *)	-40°C...+165°C / -40°F...+229°F **)	+30°C...+225°C / +86°F...+437°F
Temperature regulation:	internal Pt 100 sensor, PID temperature controller OPTION: additional for external reference probe, switchable		
Temperature stability:	±0.01°C / ±0.02°F		
Temperature uniformity:	±0.05°C / ±0.09°F		
Temperature circulation:	adjustable magnetic stirrer, made in Teflon		
Display:	4,3" colour Touch-Screen		
Display resolution:	0.1°C / 0.01°C / 0.001°C		
Accuracy:	±0.1°C / ±0.2°F		
Functions:	Programs (ramps), Trends, Data logging, 10-point calibration, alarm, events		
Test port:	60 mm / 2.36 inch diameter		
Insertion depth:	190 mm / 7.48 inch		
Max. filling level:	150 mm		
Reservoir volume:	0.7 liter		
Temperature generation:	peltier elements	advanced peltier elements	heating elements
Heating time (typical): ***)	-5...+100°C / +23...+215°F: 25 min	-5...+100°C / +23...+215°F: 25 min	+25...+220°C / +77...+428°F: 42 min
Cooling time (typical): ***)	+25...-30°C / +77...-13°F: 48 min	+25...-40°C / +77...-40°F: 1 h 40 min	+220...+100°C / +428...+212°F: 35 min
Interfaces:	2 x USB + 1 x Ethernet		
Supply:	115...230 VAC 50/60 Hz		
Power consumption:	max. 310 W		max. 320 W
Dimension:	280 x 370 x 490 mm		
Weight:	15.2 kg		
Storage conditions:	Temperature -10...+60°C rel. humidity 30...95% r.h. (non-condensing)		
Order-Code basic unit:	LTC100-F	LTC100-PLUS	LTC200-F
Order-Code for optional input for external reference:	LTC-EXTSENS		

*) the minimum temperature is 55°C / 131°F below ambient temperature, absolute minimum temperature -35°C / -31°F.

**) the minimum temperature is 60°C / 140°F below ambient temperature, absolute minimum temperature -40°C / -40°F.

***) measured with 1 probe with 6 mm diameter at ambient temperature 22°C ±1°C.

At least 1 insert (calibration bath or metal block) must be ordered with each basic unit, see page 3.



Optional micro bath inserts Order-Code **LTC-F-INSERT-FL** with 0.7 l volume, 190 mm depth and 60 mm diameter are available for all 3 models, to simplify the exchange of the silicone oil.



All 3 models have two USB and one Ethernet port as well as socket for ext. reference sensor.

With additional micro bath inserts, you simplify the use of the device considerably if you work with several different silicone oils (depending on temperature): you simply exchange the container (insert) instead of emptying and cleaning each time.



Micro bath insert for all 3 models:

Order-Code: **LTC-F-INSERT-FL**

Micro bath insert incl. suspension basket, magnetic stirrer and transport lid.
Insertion depth 190 mm, diameter 60 mm, volume 0.7 Liter

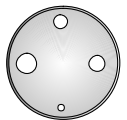


Dry block (well) inserts, only for models LR-Cal/ LTC 100-F and LR-Cal/ LTC 200-F:

Order-Code: **LTC-F-MB-04**

Metal block insert with 4 holes:

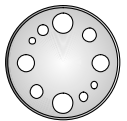
1 x 3.5 mm + 1 x 6.5 mm + 1 x 8.5 mm + 1 x 10.5 mm diameter



Order-Code: **LTC-F-INSERT-10**

Metal block insert with 10 holes:

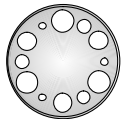
2 x 3.5 mm + 2 x 4.5 mm + 2 x 6.5 mm + 2 x 8.5 mm + 2 x 10.5 mm diameter



Order-Code: **LTC-F-INSERT-12**

Metal block insert with 12 holes:

3 x 3.5 mm + 3 x 6.5 mm + 3 x 8.5 mm + 3 x 10.5 mm diameter



Order-Code: **LTC-F-INSERT-10S**

Metal block insert with 12 holes: 2 x 3.5 mm + 2 x 4.5 mm

+ 2 x 5.5 mm + 2 x 6.5 mm + 1 x 8.5 mm + 2 x 9.5 mm + 1 x 10.5 mm diameter



Order-Code: **LTC-F-INSERT-B**

Metal block insert without holes (for self-drilling)



Order-Code: **LTC-F-INSERT-OF**

Metal block insert for surface probes
(operating range: -20°C...+150°C)

Order-Code: **LTC-F-INSERT-BB**

Black body insert for IR thermometers
(operating range: -14°C...+165°C)



LTC 100-F
 LTC 100-F-PLUS Portable temperature calibration micro baths
 LTC 200-F -35...+165°C / -40...+165°C / +30...+225°C



Simple operation via touch screen



Scope of standard delivery



Basic unit **LR-Cal** LTC 100-F or **LR-Cal** LTC 100-F-PLUS or **LR-Cal** LTC 200-F



Mains power cable (EU)

Operating manual (German/English)



Factory certificate of calibration EN 10204 3.1

Operating fluids (silicone oil), to be ordered seperately



Bottle with 1 l silicone oil

Specific heat: 1.5 KJ/kg K.
Thermal conductivity: 0.140 W/m K.

Order-Code	Operating temp. Range	Flash-point	for LR-Cal LTC 100-F	for LR-Cal LTC 100-F-PLUS	for LR-Cal LTC 200-F
LTC-F-AC05	-40...+125°C	42°C	Recommended	Recommended	not recommended
LTC-F-AC10	-30...+160°C	170°C	Recommended	Recommended	not recommended
LTC-F-AC20	-20...+200°C	240°C	Recommended	Recommended	Recommended
LTC-F-AC50	+30...+220°C	280°C	not recommended	not recommended	Recommended
LTC-F-AC100	+70...+288°C	315°C	not recommended	not recommended	Recommended

Options and accessories



Order-Code: **LTC-F-EXTSENS**

If you like to use the instrument with an external reference sensor (which is placed directly in the reservoir, very close to the units under test:

Option with 2nd. PID for external reference sensor incl. FA-DIN 6 plug for 3-/4-wire Pt 100 probe (incl. wiring diagram).

If a probe is required from us, please order code **LTC-F-PT100** in addition.



Order-Code: **LTC-F-PT100**

External reference temperature probe Pt 100

complete with FA-DIN 6 plug for direct connection to the socket at the front of the calibrator. Temperature range -50...+300°C, accuracy $\pm 0.1^\circ\text{C}$, probe diameter 4 mm, length 300 mm. For using this thermometer with the calibrator, **LTC-F-EXTSENS** must be ordered in addition. If this probe is ordered (also with **LTC-F-EXTSENS**) together with the instrument, the supplied factory certificate also indicates the values of this external probe.



Order-Code: **LTC-F-DECKEL-05**

Tank lid made in transparent methacrylate.

With 5 drillings for units under test plus 1 sender drilling for the optional external reference probe, can be used also with 6 items under test.

This accessory supports easy fixing of units under test and avoids temperature drops, caused by open reservoir.



Order-Code: **DKD-T-KAL-TK-6T**

DAkkS certificate of calibration (instead of factory certificate of calibration).

Order-Code: **LTC-F-KOFFER**

Robust aluminium trolley with handle and reinforced wheels and with high density foam.