

**Stationary cryostatic and thermostatic temperature calibration baths**
**LR-Cal BK40-M: -40...+125°C**
**LR-Cal TB300-M: Ambient temperature...+300°C**

The LR-Cal BK40-M (cryostatic) and LR-Cal TB300-M (thermostatic) temperature calibration baths were developed for calibrating temperature measurement and control devices in the laboratory. They feature a particularly robust design with stainless steel liquid containers and modern microprocessor control. The large usable volume ensures high temperature stability across the entire temperature range. This makes it possible to calibrate several test items simultaneously without any problems. The calibration baths can be optionally equipped with a vertical overflow system. This greatly improves temperature stability and uniformity. For details, see page 2.



- Testing and calibration of temperature probes/sensors
- Inspection of glass thermometers
- Testing and calibration of temperature measurement chains
- Testing and adjustment of thermostats and thermostatic valves

**Technical data:**

Type	LR-Cal BK40-M	LR-Cal TB300-M
Temperature range:	-40...+125°C	Ambient temperature...+300°C
Temperature stability:	±0.05°C	
Temperature uniformity (axial + radial):	0.02°C	
Indication of stability:	audiovisuell	
Accuracy:	±0.2°C at +120°C	±0.2°C at +150°C
Display resolution:	0.01°C	
Temperature indication:	°C/°F/K switchable	
Connection option for external temperature sensors:	optional (-2l version), for Resistance thermometer PT 100	
Interface:	RS232 optional with RS232-USB converter	
Maximal heat gradient:	2°C/min. (-40...+50°C) (with glycol-water mixture)	6°C/min. (with silicone oil 47V100)
Maximal cooling gradient:	0.5°C/min. (+30...-20°C) (with glycol-water mixture)	
Ramp function:	yes	
Switch test function:	yes	
Temperature calibration bath:	Depth 340 mm; diameter 85 mm	
Dimensions:	450 x 450 x 925 / 1300 mm	
Weight:	approx. 60 kg	approx. 26 kg
Power supply:	230 VAC ±10% / 2,500 W	230 VAC ±10% / 1,600 W

The LR-Cal BK40-M and LR-Cal TB300-M temperature calibration baths enable the simultaneous calibration of multiple test specimens with a wide range of diameters and lengths. The calibration bath container has a volume of approx. 10 liters. It is filled with a suitable calibration fluid. This is kept in a homogeneous state at all times with the aid of a vertical stirrer. This stirrer is driven by an electric motor (80 W). The devices are equipped with a safety temperature limiter, an overflow, and a valve for emptying the container.



## **BK40-M**    **Stationary cryostatic and thermostatic** **TB300-M**    **temperature calibration baths**

**LR-Cal**



The LR-Cal BK40-M and TB300-M temperature calibration baths feature a highly legible backlit display with 2 lines (2 x 16 characters). A temperature increase with a programmed gradient can be generated, enabling control of the switchover point of thermostats with storage of the switchover values. The temperature calibration baths in the -2I version are equipped with a connection for external Pt 100 (3-/4-wire) sensors (or thermocouples). A calibration certificate for the complete calibration measurement chain is available as an option, i.e., for a completely independently operating temperature standard.

Automatic calibrations can be performed via the RS232 interface (RS232/USB converter, see accessories) and the optional MS Windows software LR-Cal AQ2sp2.



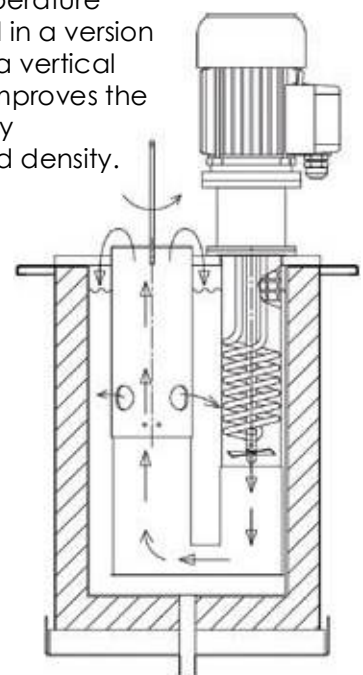
The microprocessor-controlled PID controller used in the LR-Cal BK40-M and TB300-M temperature calibration baths offers the following functions, among others:

- Setpoint adjustment
- Linearized temperature increases (based on specified starting point, increase point, and end point)
- Selection of the temperature unit °C/°F/K
- Display of the switching point of thermostats when the temperature rises and falls
- Display of the internal temperature of the calibration bath (Pt 100 Class A) and (for -2I version) the external reference temperature
- Setting the PID control parameters
- Indication of the communication parameters (computer interface)
- Automatic control from a PC (with optional LR-Cal AQ2sp2 software with test object data management, certificate creation, etc.)
- Version -2I with two inputs for Pt 100 (3-/4-wire) and thermocouples J, K, N, R, and S, with gold-plated connection sockets, with automatic cold junction compensation. An external reference and one test object, or two test objects, can be connected here.



### **Option: Version with vertical overflow system**

The LR-Cal BK40-M and LR-Cal TB300-M temperature calibration baths can optionally be supplied in a version with a vertical overflow system. This creates a vertical circulation inside the system, which further improves the stability and uniformity of the temperature by compensating for differences in viscosity and density.



#### Order-Codes:

Order-Codes	LR-Cal BK40-M	LR-Cal TB300-M
Standard execution:	BK40-M	TB300-M
Execution -2l with input for Pt 100:	BK40-M-2l	TB300-M-2l
Execution with fluid level adapter:	BK40-M-TR	TB300-M-TR
Execution -2l with input for Pt 100 and with fluid level adapter:	BK40-M-TR-2l	TB300-M-TR-2l

#### Calibration fluids (available as accessory):

Description	Designation	Recommendation	Order-Code
Glycol (10 liter)	Glycol	-40...+90°C	GLYCOL
Silicone oil (10 liter)	47V5	-40...+130°C	200C5
Silicone oil (10 liter)	47V10	-30...+150°C	47V10
Silicone oil (10 liter)	47V20	-20...+200°C	47V20
Silicone oil (10 liter)	47V50	+30...+200°C	47V50
Silicone oil (10 liter)	47V100	+50...+200°C	47V100
Silicone oil (10 liter)	47V150	+50...+200°C	47V150

#### Note:

For instrument versions with vertical overflow device (LR-Cal BK40-M-TR and LR-Cal BK40M-TR-2l), the operating fluid glycol (order-code [GLYCOL](#)) is used for the temperature range -1... +40°C, and for the temperature range 0...+125°C, the operating fluid 47V5 (order-code [200C5](#)) is required.

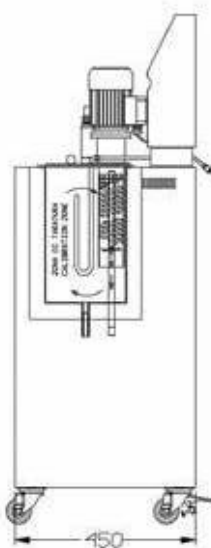
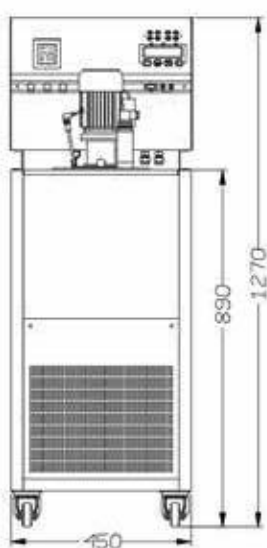
#### Further accessories:

Order-code [599.0.000.0003.0](#): PC software LR-Cal AQ2sp2 incl. RS232 cable  
 Order-code [RS232-USB-KONV](#): Interface converter RS232/USB  
 Order-code [BK-TB-KISTE](#): Wooden transport case

#### Dimensions (mm):



LR-Cal BK40-M



LR-Cal TB300-M

