

Portable dry block temperature calibrators

Type LR-Cal LTC-DB-1100-44: +200...+1100°C

Type LR-Cal LTC-DB-1200-35: +200...+1200°C

The portable dry metal block temperature calibrators

LR-Cal LTC-DB-1100-44 and LR-Cal LTC-DB-1200-35 serve as both as self-sufficient temperature source and reference device for testing, adjusting and calibrating all types of temperature measuring devices and temperature switches. These high-temperature metal dry block calibrators are designed to maintain high insulation even at the highest temperatures.

Features:

- High control stability and accuracy.
- Easy operation via color touchscreen.
- Display resolution up to 0.001°C.
- Compact device with low weight.
- Various inserts with different bores available.
- Programmable ramp function.
- USB interface for computer-assisted calibrations.
- PID controller (32-bit microprocessor).
- Innovative ventilation system to protect test specimens from excessive ambient temperatures.
- High-performance heating resistors ensure continuous provision of very high calibration temperatures



Option: 3 measuring inputs - Order-Code LTC-MP-3I, not for LTC-DB-1200-35:

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.



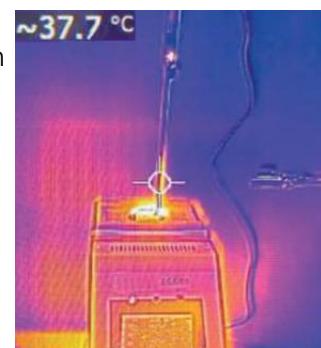
Weniger thermische Belastung für Ihre Prüflinge:

Both calibrators are equipped with a counterflow forced ventilation system that keeps the temperature in the upper part of the calibrator very low.

This solution makes it possible to keep the connection head of the thermocouples to be tested very close to room temperature.

It also ensures a high level of safety for the operator, as the temperature of the grid on the top of the housing remains very low. The adjacent image shows a thermocouple as a test specimen in an

LR-Cal LTC-DB-1100-44 at 1,000°C. The temperature of the connection head measured with an optical pyrometer is 37.7°C, which is very close to room temperature. This test confirms the excellent insulation of these calibrators.



Technical data:

Specification	LR-Cal	LTC-DB-1100-44	LTC-DB-1200-35
Temperature range:		+200...+1100°C	+200...+1200°C
Display:		Touch screen (color)	
Display accuracy:		±3°C full temperature range *	
Units of measure:		°C / °F / K	
Display resolution:		0.1° / 0.01° / 0.001°	
Mean heating time:		approx. 60 min.	
(incl. stabilization)		from ambient temperature to 1000°C	
Mean cooling time:		approx. 330 min.	
(incl. stabilization)		from 1000°C to 100°C	
Stability:		±0.05°C	
Axial uniformity:		3.6° ±0.3 **	1.5° ±0.8 **
Radial uniformity:		±1°C ***	±0.5°C ***
Hole diameter:		44 mm	35 mm
Hole depth:		220 mm	210 mm
Block insert material:		Ceramics (optional Inconel)	
Switch test, voltage:		Open/Closed - 4.5 VDC	
Adjustable ramp function:		from 0.1°C /min.	
PC interface:		USB type B	
Automatic calibration:		at 5 temperature points	
External probes:		Optional: Order-Code LTC-MP-3I	not available
Operating voltage:		230 VAC (optional 115 VAC)	230 VAC
Electric power:		900 W	
Dimensions:		170 x 330 x 450 mm	160 x 350 x 385 mm
Weight incl. std. acces.		12 kg	11.5 kg

All values have been measured at ambient temperature of +20°C.

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

* Temperature deviation between display and reference probe.

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

*** Measured at 1000°C at 40 mm above the button.

Options that must be ordered together with the basic unit LR-Cal LTC-DB-1100-44, 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)

Note: this both options are NOT available for version LR-Cal LTC-DB-1200-35.

Standard scope of delivery:

- Calibrator LR-Cal LTC-DB in the ordered version
- Power supply cable
- At LR-Cal LTC-DB-1100-44: 1 block insert 44 x 175 mm in ceramics with 4 drillings: 7.0 + 9.0 + 11.0 + 13.5 mm diameter, with suitable upper insulation
- At LR-Cal LTC-DB-1200-35: 1 block insert 35 x 160 mm in ceramics with 4 drillings: 4.8 + 6.4 + 9.5 + 12.8 mm (depth 125 mm), with suitable upper insulation
- 1 tool for removing inserts
- Set of spare fuses
- Electrical connection cable for testing/calibrating temperature switches (thermostats)
- Operating instructions (in German and English)
- Acceptance test certificate 3.1 in accordance with DIN EN 10204
- Only if option order-code [LTC-MP-3I](#) was ordered with the LR-Cal LTC-DB-1100-44:
1 set of measuring sockets (red/black) for the three measuring inputs



Accuracy of the 2 resistance and thermocouple inputs at option with order-code LTC-MP-3I:
(only for version LR-Cal LTC-DB-1100-44) Maximal deviations

Resistance thermometer:

Pt 100 + Pt 1000	at -40°C: $\pm 0.09^\circ\text{C}$ at +300°C: $\pm 0.14^\circ\text{C}$	at 0°C: $\pm 0.08^\circ\text{C}$ at +450°C: $\pm 0.30^\circ\text{C}$	at +150°C: $\pm 0.11^\circ\text{C}$ at +600°C: $\pm 0.40^\circ\text{C}$
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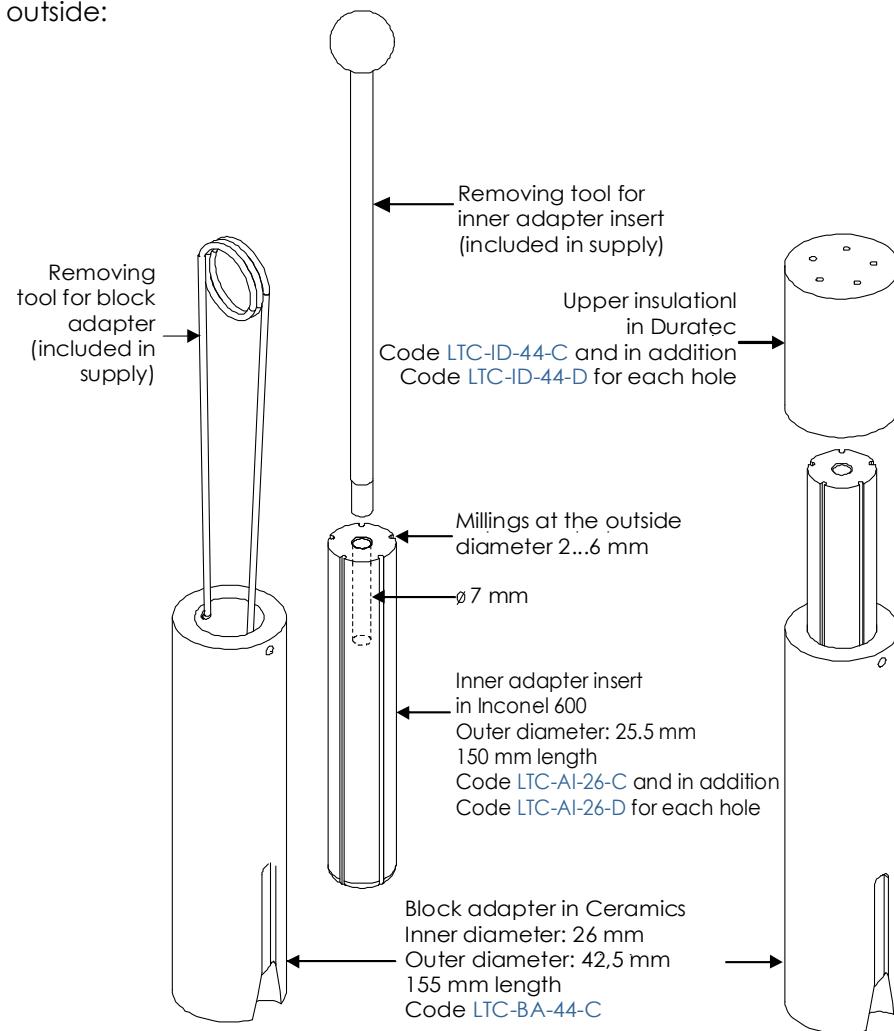
Thermocouples:

Type B	at +950°C: $\pm 0.97^\circ\text{C}$	at 1050°C: $\pm 1.03^\circ\text{C}$	at +1200°C: $\pm 1.12^\circ\text{C}$
Type E	at -40°C: $\pm 0.42^\circ\text{C}$	at 0°C: $\pm 0.40^\circ\text{C}$	at +350°C: $\pm 0.61^\circ\text{C}$
Type J	at +200°C: $\pm 0.52^\circ\text{C}$	at +450°C: $\pm 0.67^\circ\text{C}$	at +700°C: $\pm 0.82^\circ\text{C}$
Types K + N + R + S	at +400°C: $\pm 0.64^\circ\text{C}$	at +700°C: $\pm 0.82^\circ\text{C}$	at +1000°C: $\pm 1.00^\circ\text{C}$
Type T	at -40°C: $\pm 0.42^\circ\text{C}$	at 0°C: $\pm 0.40^\circ\text{C}$	at +350°C: $\pm 0.61^\circ\text{C}$

Available block inserts:

Various ceramic or Inconel block inserts with matching Duratec upper insulations are available. One ceramic block insert with standard holes is included with each calibrator. Block inserts with holes can also be manufactured to customer specifications. (A suitable upper insulation is essential for each block insert.)

For the version LR-Cal LTC-DB-1100-44 version, we also offer a cost-effective multi-part solution consisting of a ceramic block adapter and an Inconel adapter insert with milled recesses on the outside:



For device version LR-Cal LTC-DB-1100-44:

Block inserts and upper insulation, with standard drillings

Order-Code:	Number of drillings	Material	Block insert with standard drillings
LTC-BI-44-175-4C	4	Ceramics	7.0 + 9.0 + 11.0 + 13.5 mm diameter (1 x included in standard supply of the calibrator)
LTC-BI-44-175-4I	4	Inconel 600	7.0 + 9.0 + 11.0 + 13.5 mm diameter
Order-Code:	Number of drillings	Upper insulation in Duratec, with standard drillings	
LTC-ID-44-4	4	suitable for LTC-BI-44-175-4C + LTC-BI-44-175-4I (1 x included in standard supply of the calibrator)	

Block insert with adapter and upper insulation for customer specific drillings

Order-Code:	Number of drillings	Material	Block adapter with 1 hole
LTC-BA-44-C	1	Ceramics	26.0 mm diameter
Order-Code:	Number of drillings	Adapter insert with customer specific drillings	
LTC-AI-26-I	0	Inconel	blank, drillings must be ordered additional
LTC-AI-26-D	1	Please order in addition for reach required drilling: As per customers request, diameter 2...6 mm	
Artikel-Nummer:	Number of drillings	Upper insulation in Duratec, without drillings	
LTC-ID-44-C	0	blank, drillings must be ordered additional	
LTC-ID-44-D	1	Please order in addition for reach required drilling: suitable for LTC-AI-26-D	

Block insert with Black Boddy and upper insulation

Order-Code:	Block insert with Black Body, for infrared thermometers		
LTC-BI-44-175-BB	Black Body insert in Inconel 600		
Order-Code:	Number of drillings	Upper insulation in Duratec, with standard drilling	
LTC-ID-44-BB	1	suitable for LTC-BI-44-175-BB	

For device version LR-Cal LTC-DB-1200-35:

Block inserts and upper insulation, with standard drillings

Order-Code:	Number of drillings	Material	Block insert with standard drillings
LTC-BI-35-160-4C	4	Ceramics	4.8 + 6.4 + 9.5 + 12.8 mm diameter (1 x included in standard supply of the calibrator)
LTC-BI-35-160-4I	4	Inconel 600	4.8 + 6.4 + 9.5 + 12.8 mm Durchmesser
Order-Code:	Number of drillings	Upper insulation in Duratec, with standard drillings	
LTC-ID-35-4	4	suitable for LTC-BI-35-160-4C + LTC-BI-35-160-4I (1 x included in standard supply of the calibrator)	

Block insert with upper insulation for customer specific drillings

Order-Code:	Number of drillings	Material	Blockeinsatz mit kundenspezifischen Bohrungen
LTC-BI-35-160-C1	per customers request	Ceramics	Nach Kundenwunsch, bitte beraten lassen
LTC-BI-35-160-I1	per customers request	Inconel 600	Nach Kundenwunsch, bitte beraten lassen
Order-Code:	Number of drillings	Upper insulation in Duratec, with drillings per customers request	
LTC-ID-35-C	per customers request	suitable for LTC-BI-35-160-C1 + LTC-BI-35-160-I1	



Block inserts in Ceramics and Inconel 600



Upper insulation in DURATEC

Accessories:

Order-Code:	Description:
LTC-DB-TW	Tool for removing block inserts (as spare part, 1 pc. included in device supply)
LTC-AQ2SP2	Windows-PC software LR-Cal AQ2sp2 (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.
LRT-F-0000-1400-70	External reference thermocouple type S, 0...1400°C, diameter 7.0 mm
LTC-DB-AKOFFER	Sturdy aluminium storage and transport case (50 x 37 x 60 cm) with space for device and accessories
LTC-DB-TROLLEY	Trolley hard case (43 x 32 x 55 cm) with handle and wheels, with space for device and accessories
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 version LTC-DB-1100-44 with measuring inputs LTC-MP-3I , measuring chain consisting of display and external reference sensor (external reference sensor LRT-F-0000-1400-70 , see above in this table)



Simple operation
via color touch screen

The image above shows the front of the version
LTC-DB-1100-44 with option [LTC-MP-3I](#)
(3 measuring inputs for sensors)