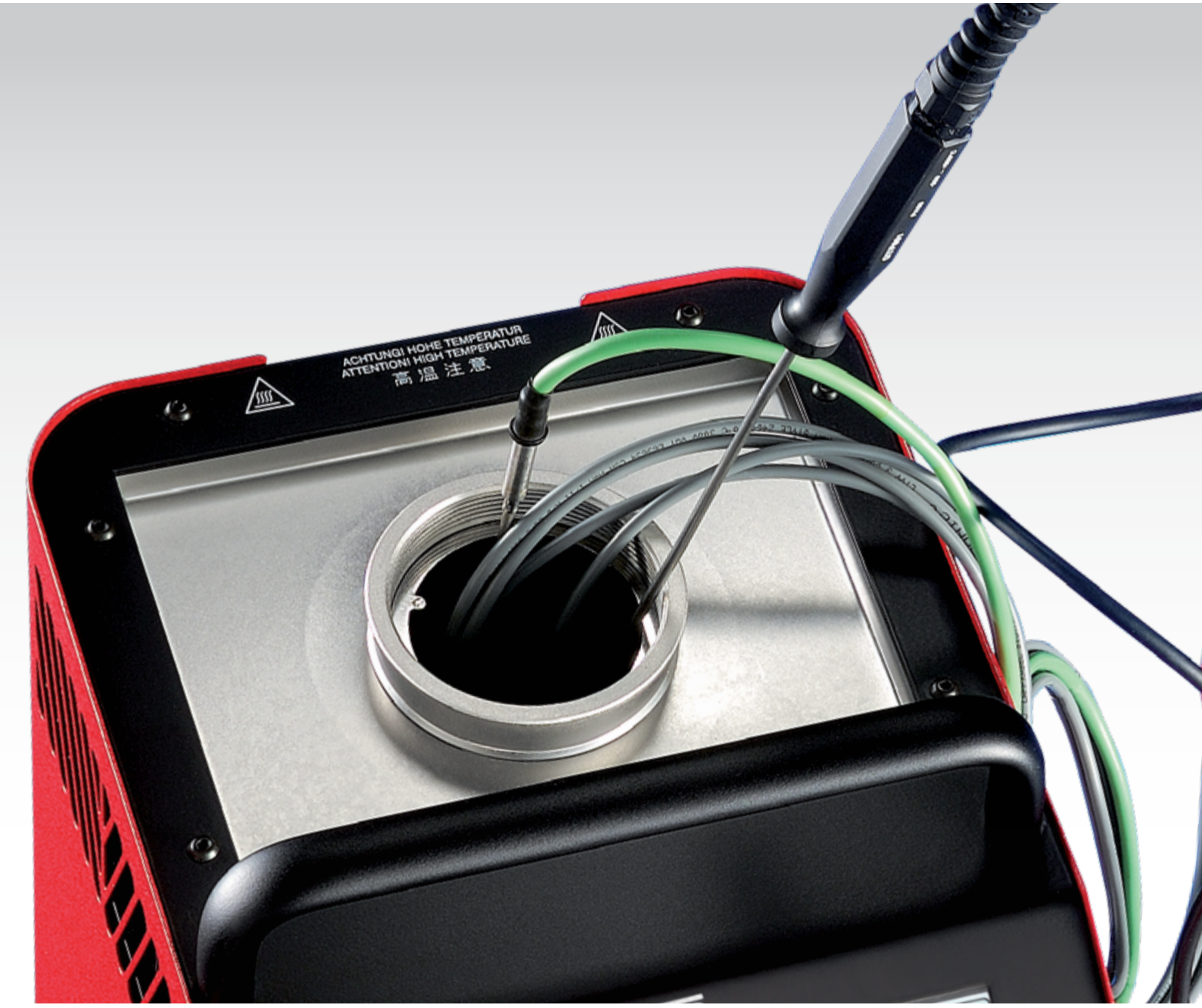
Temperature

CALIBRATION GUIDE



Reasons for a calibration

Temperature sensors are subject to mechanical, thermal and chemical stress. This results in a drift the longer the sensors are in use. Only the regular calibration of the sensors provides information on the difference between the actual temperature and the measured temperature and makes the specific drift visible.

In measuring tasks, readings are often taken without regard to the fact that every display value contains an error. In industrial applications even the smallest inaccuracy can lead to production errors.

Why calibrate?

- Maintain consistently high product quality
- Meet industry standards and legal regulations
- Optimize processes and boost productivity
- Avoid unscheduled downtime

The creation of a calibration service according "DAkkS Deutscher Kalibrierdienst" for temperature, pressure and electrical measured values firmly continues and underlines the long tradition and more than 100 years of experience which SIKA has in this sector. SIKA temperature and pressure sensors, as well as measure, test and calibration instruments are available with either a works test certificate or DAkkS calibration certificate.

This guarantees the traceability of measured values to approved (national) standards as specified by DIN EN ISO 9000 ff in numerous areas. Our DAkkS laboratory is your competent contact for recalibration. Our services also include calibration to DAkkS guidelines or calibration on the basis of works test certificates for external products.

Three Series

SIKA divides temperature calibrators into three series. Depending on your requirements, up to 24 models are available.

TP Basic

Efficiency and portability are distinguishing features of the temperature calibrators of the TP Basic series. It consists of dry block calibrators which cover a wide temperature range and are used on-site e.g. in the marine sector. Designed to ensure a comfortable calibration of temperature sensors, they impress with an easy operation and a thoughtful use of different automatic functions.

TP Premium

Optimal performance and outstanding ease of use are distinguishing features of the TP Premium series calibrators. With the help of the intuitive menu structure, all the necessary entries can be made quickly and easily. Whether on the two colour, graphic display or on the large touch screen of the TP Touch series – block and set temperature as well as the difference and the variance of the stability can be set and displayed. The comprehensive range of accessories of the TP Premium series allows time-saving calibration setups.

TP Solid

The TP solid series features higher accuracies in standard dry block calibrators as well as a range of micro bath calibration baths and special versions. This series offers the user suitable products for calibrating sensors with complex geometry as well as zero point and high temperature. TP Solid – The All-round class for high demands.

Premium-Highlights

- Patented control technology (time saving up to 50 %)
- Worldwide fastest dry block temperature calibrators
- Hybrid technology (Peltier elements and heating cartridges)
- Widest temperature range with cooling and heating function on the market
- Fastest stabilisation times on the market
- Patented touchscreen function
- Management of device under test with barcode scanner (Accessories)

	TP Basic	TP Solid	TP Premium
Dry block	✓	✓	✓
Micro calibration bath		✓	✓
Multifunction			✓
Resolution	0.1...1 °C	0.01...1 °C	0.001...0.01 °C
Accuracy	0.4...1 °C	0.2...2 °C	0.1...0.3 °C
Internal reference sensor	✓	✓	✓
PC interface		✓	✓
External reference sensor			✓
Internal measuring instrument			✓

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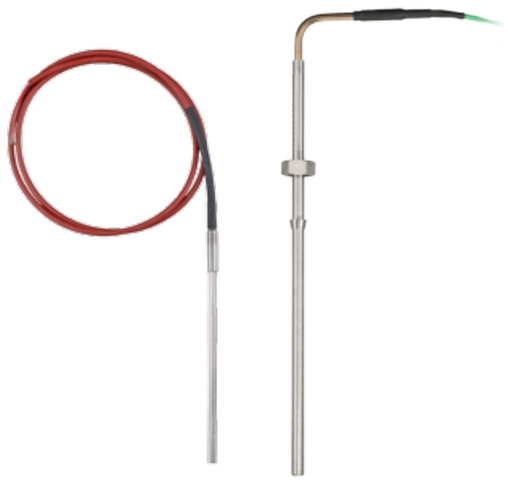
Dryblock function

Sensors with simple geometry

The dry block function has been developed to guarantee an easier calibration of the temperature in the laboratory and during field use. The optimum thermal coupling from the block to the test instrument is achieved with the appropriate adapter sleeve. The dry block covers the entire temperature range without the need to change the calibration medium.



Micro bath function

Sensors with complex geometry

The use of calibration liquids offers certain advantages if temperature sensors with an unusual shape and size are to be tested. The test item is immersed directly into the liquid without an insulating air gap, resulting in direct temperature contact between the calibrator and the test item. The liquid, such as silicone oil, is chosen depending on the calibration temperature required. The continuous adjustment of the magnetic stirrer together with the removable sensor basket agitates the calibration liquid to create a large measuring zone. Furthermore, the sensor basket guarantees unhindered stirring and helps protect the sensor.

Infrared function

Infrared measuring instruments

A patented infrared calibration sleeve is used to calibrate IR pyrometers or thermal imaging cameras. The special surface structure and the asymmetrical shapes create a "cavity radiator" with an emission factor of 0.9994, prevent the reflection of interference radiation and emit the required temperature in an ideal form. The pyrometer under test is simply held at the specified distance above the measurement opening of the calibrator, thereby forming the desired measurement area on the bottom for the calibration to be performed. A support base can be fitted directly on the unit.

Surface function

Surface sensors

Surface temperature sensors are calibrated using special sleeves that are fitted vertically with the required contact force. Switching calibration control to the external reference sensor creates the best possible temperature reference point on the surface of the sleeve. The reference sensor is located directly beneath the abutting face of the sleeve. The sleeve is designed in such a way that the best temperature homogeneity is achieved in the centre of the abutting face. The special design of the abutting face enables good thermal contact. There is no need to use a thermally conductive paste or other thermal conduction aids.

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Overview

By selecting the temperature range (left), the required accuracy, the features and the dimensions, you can choose the suitable model (right) with the help of the overview. Further technical information can be found at www.sika.net.

Temperature range	Function / Accuracy	Features	Block dimensions [mm]	Model	
-55 °C / -35 °C / -10 °C / RT / 100 °C / 165 °C / 200 °C / 225 °C / 255 °C / 400 °C / 450 °C / 650 °C / 850 °C / 1300 °C	DB Dry block	Integrated measuring instrument*	Ø Diameter 18		
	IR Infrared	External reference sensor	Ø Diameter 28		
	LI Micro bath	Interface	Ø Diameter 60		
	SU Surface		Ø Diameter 7 x 6.5		
			Depth 100		
			Depth 150		
			Depth 170		
			Depth 200		
-55 °C … 200 °C	±0.4 °C			✓					✓		Dry block	TP 17 200
	±0.2 °C				✓			✓			Dry block	TP 17 200 S
	±0.2 °C			✓	✓	✓		✓			Dry block	TP 37 200 E2
-35 °C … 165 °C	±1 °C							✓			Dry block	TP 17 165 M
	±0.4 °C							✓			Dry block	TP 17 165
	±0.2 °C				✓			✓			Dry block	TP 17 165 S
	±0.2 °C			✓	✓	✓		✓			Dry block	TP 37 165 E2
	±0.1 °C			✓	✓	✓		✓			Dry block	TP 38 165
	±0.4 °C							✓			Dry block	TP 17 166
	±0.2 °C					✓		✓			Dry block	TP 17 166 S
		±0.1 °C				✓			✓		Micro bath	TP M 165 S
	±0.3 °C	±0.5 °C	±0.1 °C	±1 °C	✓	✓	✓		✓		Multifunction	TP 3M 165 E2
-10 °C … 100 °C	±0.05 °C						✓		✓		Dry block	TP 17 Zero
RT …200 °C	±1 °C						✓			✓	Dry block	TP 18 200 E
RT …255 °C		±0.2 °C					✓		✓		Micro bath	TP M 255 S
	±0.3 °C	±0.5 °C	±0.2 °C	±1°C		✓	✓		✓		Multifunction	TP 3M 255 E
RT …450 °C	±0.6 °C								✓		Dry block	TP 17 450
	±0.3 °C						✓		✓		Dry block	TP 17 450 S
RT …650 °C	±1 °C							✓			Dry block	TP 17 650 M
	±0.8 °C							✓			Dry block	TP 17 650
	±0.4 °C						✓	✓			Dry block	TP 17 650 S
	±0.2 °C			✓	✓	✓		✓			Dry block	TP 38 650
RT …850 °C	±1 °C							✓	✓		Dry block	TP 18 850 E
400 °C…1300 °C	±2 °C					✓		✓		✓	Dry block	TP 28 1300 E

* optional

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