Temperature calibrator TP 37450E.2 // TP 37450E.2i

TP Premium // Multifunction // Room temperature...450 °C // RT...842 °F

TP 37450E.2

TP 37450E.2i
Integrated measuring instrument

Highlights

- Best measurement uncertainties on the market
- Patented control technology - Fastest stabilisation times on the market - Time savings of up to 50 %
- Time and cost savings thanks to patented ventilator concept for fastest cooling times
- Patented touch screen function for simple and convenient operation
- Accessories: device under test management with barcode scanner
- Available with integrated measuring instrument → TP 37450E.2i

TP Premium

The calibrators of the TP Premium series are characterised by their **unparalleled performance** and **outstanding operating comfort**. By means of the **intuitive menu structure**, all necessary inputs can be made quickly and easily. The **large touch screen** has plenty of room to display the reference, target and devices under test temperatures. At the end of a calibration process, the TP Premium **provides the complete calibration certificate**. The continuously growing bandwidth of supported temperature ranges supports an increasing number of temperature sensors on the market. They can be calibrated with a resolution of up to 0.001 °C / K and thus meet the highest requirements, e.g. of the **food and pharmaceuticals industry**.

SIKA temperature calibrators

Temperature calibrators are used for the verification of the functionality and calibration of temperature measuring devices and temperature sensors. As the sole German manufacturer of these devices, we develop and produce our "Made in Germany" temperature calibrators with a special focus on **long-term reliability** and **utmost accuracy** in combination with **easy operation**. We can rely on more than 40 years of experience in doing this: SIKA's **first dry block temperature calibrator** was launched all the way back in 1980.

Every SIKA temperature calibrator is meticulously tested for **accuracy** and **stability**. This is attested by our standard calibration certificate, which we issue with every temperature calibrator, or by means of an optional DAkkS calibration certificate [German accreditation body]. This is to guarantee that you receive a **perfect product** which can be traced back to national and international temperature measurement standards.

Features

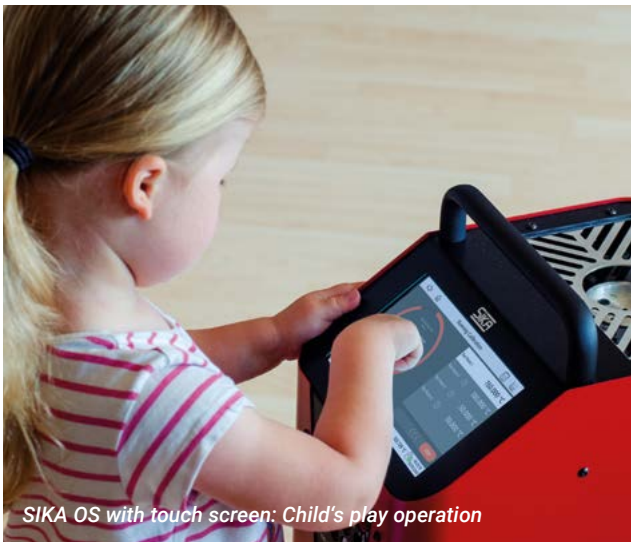
Three functions in one temperature calibrator

- Covering many calibration tasks with only one model: Dry block, infrared and surface calibration
  → Cost savings due to a reduction in the number of versions required
- Quick and easy change between the calibration functions
- Additional calibration functions for your application
  → Dry block for aseptic sensors
  → Air Shield Insert for the best measurement uncertainties

Dry block calibration

Infrared calibration

Surface calibration



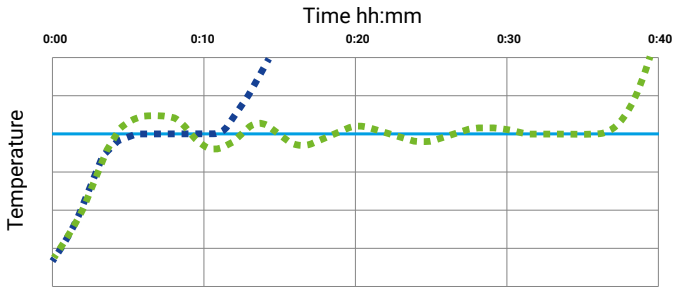
SIKA OS with touch screen: Child's play operation

SIKA OS with touch screen

- Simple operation of the temperature calibrator via the integrated 7" touch screen
  → Intuitive operation of the calibration functions
  → Management of calibration data directly on the calibrator
- Clear display
  → All important information at a glance
- Completely paperless calibration
  → Value calculation and transmission errors are excluded
- Glass surface made of multi-panel safety glass
  → Extremely robust against damage
  → Easy cleaning of the surface
  → Suitable for use in the food industry

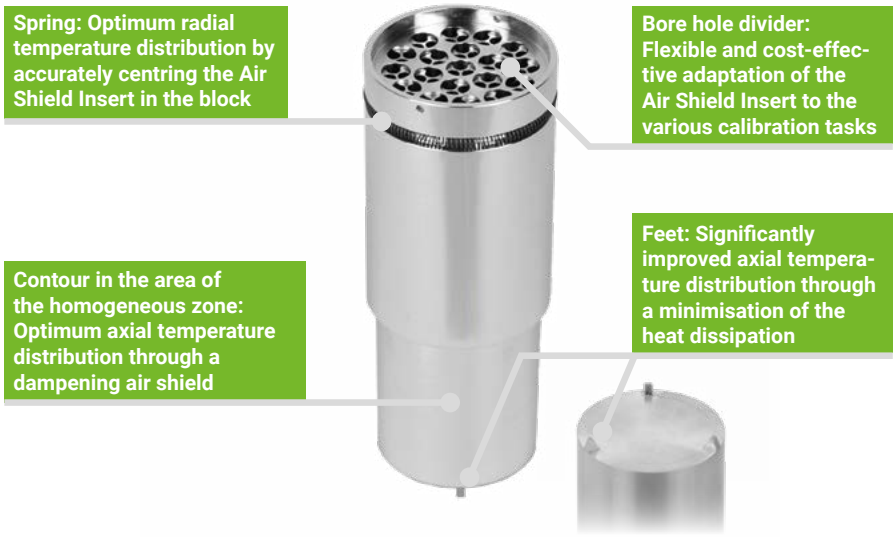
Temperature control with "rocket controller"

- Temperature regulator with model-based state control
- Special regulation algorithm based on knowledge and experience from space travel
- Unique temperature stability of < 0.001 °C / K
- Anticipatory activation of the heating and cooling elements
  → The settling time to the target temperature is reduced by approx. 90% at each calibration point
  → Time savings of up to 50% with each calibration process



Without rocket controller: Long settling time to the target temperature
With rocket controller: Settling time to the target temperature reduced by approx. 90%

Features



Air Shield Insert

- Patented dry block version with optimum radial and axial temperature distribution
- Automatic centring of the Air Shield Insert in the block
  → User errors due to jiggling or twisting are excluded

WebApp - Plug and play for your temperature calibrator

- With the WebApp, ongoing or completed calibration processes can be comfortably displayed on a PC or a smart phone
- The connection is made via LAN or WLAN (via router)
- The WebApp is opened via the browser of your PC or mobile phone. Installation of drivers or software is not required
- Compatible with all current operating systems (Windows, Mac OS, Linux, iOS and Android)

TT-Scan multi-channel measuring instrument

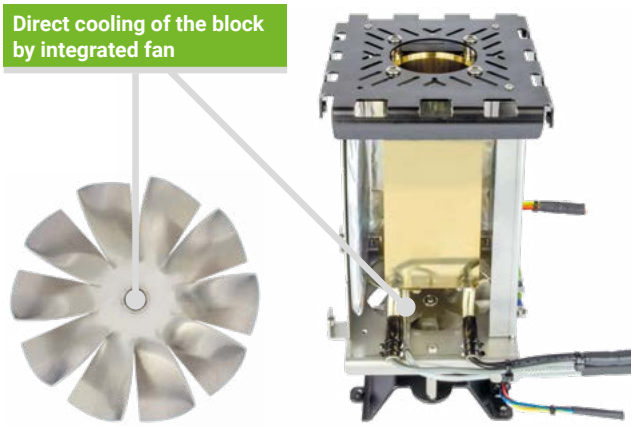
- To calibrate devices under test that do not have their own temperature display, you need to connect them to a measuring instrument
- This is done by our TT-Scan multi-channel measuring instrument: With this instrument, you can calibrate up to eight DUTs without a display unit of their own
- The TT-Scan is connected to a temperature calibrator, and the temperatures of the DUTs are directly shown on the display of the temperature calibrator.
- Compatible with DUTs with all common signals: Resistance thermometer, thermocouple and current signals
- The simultaneous calibration of several DUTs enables great time savings

Features

Automatic calibration with camera

In calibration processes for devices under test with their own temperature display, the display of the DUT must be read for each calibration point. The read value is transferred by the user to the calibrator or the calibration certificate, and the subsequent calibration point is only approached after a manual acknowledgement. For this purpose, the user must return to the calibrator at each calibration point. In some cases, this can lead to long delays if the user carries out other tasks in between. With our automatic calibration with a camera, these time-intensive intermediate steps are no longer needed:

- The patented camera system automatically creates a recording of the DUT display at each calibration point. The subsequent calibration point is approached directly afterwards
  → No user interaction is required during the calibration process, as it is implemented automatically
  → All test points are approached without waiting times
- Upon completion of the entire calibration process, the user transmits the data of the created display records to the calibrator or calibration certificate
  → During the entire calibration process, the user is free to carry out other tasks
- The visual records of the device under test display at each calibration point are saved and attached to the calibration certificate as verification



Innovative ventilator concept

- Temperature calibrators which do not have an active cooling, e.g. due to special Peltier elements, use one or several ventilators for cooling down.
- The innovative SIKA ventilator concept enables a very direct cooling of the block and thus achieves the fastest cooling-down times on the market
  → Time and cost savings with every calibration
  → Reduced standstill times in your company
- The ventilator is exclusively used for cooling down the temperature calibrator
  → Completely silent heating mode
  → Reduced noise emissions for the user

SIKA Gold Service

SIKA Gold Service provides a comprehensive service package for the regular recalibration of your temperature calibrator. You will benefit from exclusive savings and discounts as well as special promotions reserved to SIKA Gold Service members.

- You will save 33% in the recalibration of your temperature calibrator
- You will receive a 10% discount on any repairs that may become necessary
- You will receive preferential invitations to product presentations, symposia, practice days and exclusive training offers

Register now and benefit from the SIKA Gold Service: gold-service.sika.net

Technical data

TP 37450E.2 / TP 37450E.2i				
Temperature range	Room temperature...450 °C		Room temperature...842 °F	
Dimension of the calibration insert	Ø 60 x 150 mm (calibration insert easily exchangeable)			
Dry block Air Shield Insert	**External reference temperature sensor**			
Display accuracy	±0.2 °C		±0.36 °F	
Temperature stability	±0.010 °C		±0.018 °F	
Temperature distribution → Axial → Radial	 ±0.100 °C ±0.015 °C		 ±0.18 °F ±0.027 °F	
Influence of load	±0.010 °C		±0.018 °F	
Dry block	**External reference temperature sensor**		**Internal reference temperature sensor**	
Display accuracy	±0.25 °C	±0.45 °F	±0.3 °C	±0.54 °F
Temperature stability	±0.010 °C	±0.018 °F	±0.030 °C	±0.054 °F
Temperature distribution → Axial → Radial	 ±0.300 °C ±0.060 °C	 ±0.54 °F ±1.08 °F	 ±0.300 °C ±0.060 °C	 ±0.54 °F ±1.08 °F
Influence of load	±0.015 °C	±0.027 °F	±0.015 °C	±0.027 °F
Infrared calibration	**External reference temperature sensor**		**Internal reference temperature sensor**	
Display accuracy	±0.5 °C	±0.9 °F	±0.5 °C	±0.9 °F
Temperature stability	±0.030 °C	±0.054 °F	±0.100 °C	±0.18 °F
Emission factor	0,9994			
Surface calibration	**External reference temperature sensor**			
Display accuracy	±1 °C		±1.8 °F	
Temperature stability	±0.250 °C		±0.45 °F	
General data				
Stabilisation time (with external reference temperature sensor) → to ±0.05°C → to ±0.005°C	 → to ±0.09 °F → to ±0.009 °F	 From 1 min From 5 min		
Heating time → 20 °C...440 °C	 → 68...824 °F	 17 min		
Cooling time → 450 °C...30 °C	 → 824...86 °F	 36 min		
Resolution of the temperature display	0.1 / 0.01 / 0.001 °C (selectable)		0.1/0.01/0.001 °F (selectable)	
Hysteresis	±0.010 °C		±0.018 °F	
Temperature units	°C / °F / K (selectable)			
Reference temperature sensor	Internal / external (selectable)			
Interfaces	Ethernet, 3 x USB			
Connectivity	OPC UA, serial communication, HTTP. Details and further possibilities on request.			
Dimensions				
→ Width → Height → Depth	210 mm 330 mm + 50 mm (Handle) 300 mm			
Weight	11 kg			
Power supply	110...115 V 60 Hz / 230 V 50 Hz Protective conductor (PE) needed			
Power consumption	Approx. 1000 W			
Adjustable temperature range	0...450 °C		-76...842 °F	
Display	Brilliant color touchscreen (7 inches), multi panel safety glass			
Approvals				

The integrated measuring instrument in detail

Resistance thermometers, thermocouples and signals from temperature transmitters must be operated with an external measuring instrument which measures the output signals and displays them as temperature during the calibration. This temperature can then be compared to the set calibrator temperature.

Our integrated measuring instrument assumes the tasks of an external measuring instrument. It shows the temperature directly on the calibrator display and enables the fully automatic calibration of two devices under test at the same time.

Your benefits of the integrated measuring instrument at a glance:

- Temperature sensor calibration without additional measuring instrument
- Simultaneous calibration of several temperature sensors
- Fully automatic calibration and certification
- Enables the simplification of your work processes
- Offers great time savings compared to a temperature calibrator without integrated measuring instrument

The following DUTs can be connected to the integrated measuring instrument:

- Resistance thermometer (RTD): Pt100, Pt500 and Pt1000 in 2-,3- or 4-wire circuit
- Thermocouples (TC) of the types K, J, N, E, R, T, B, S, L and U
- 0(4)...20 mA current signals from temperature transmitters (mA), with and without supply voltage
- 0...10 V voltage signals
- Temperature switch (switch) with normally open and normally closed contacts

Temperature calibrator TP 37450E.2i // Integrated measuring instrument
Technical data

Device under test inputs - Resistance thermometers		
Number of channels	2	
Connection	4 mm safety socket, 4 per channel	
Connection type	2-, 3-, 4-wire technology	
Resistance range → Pt100 → Pt1000	 0…400 Ω 0…4000 Ω	
Accuracy → Pt100 → Pt500 → Pt1000 → Ni100 → Ni500 → Ni1000	 ±0.03 °C ±0.12°C ±0.06 °C ±0.02 °C ±0.08 °C ±0.04 °C	 ±0.054 °F ±0.216 °F ±0.108 °F ±0.036 °F ±0.144 °F ±0.072 °F
Device under test inputs - Thermocouple		
Number of channels	2	
Connection	2x thermocouple socket (mini)	
Measuring range	-10…100 mV	
Accuracy cold junction	±0.3 °C	±0.054 °F
Accuracy → Type K → Type J → Type N → Type E → Type T → Type R → Type S → Type B	 ±0.08 °C ±0.07 °C ±0.13 °C ±0.06 °C ±0.09 °C ±0.78 °C ±0.73 °C ±0.5 °C	 ±0.144 °F ±0.126 °F ±0.234 °F ±0.108 °F ±0.162 °F ±1.404 °F ±1.314 °F ±0.9 °F
Standard signal input (Current)		
Number of channels	1	
Connection	4 mm safety socket	
Measuring range	0…24 mA	
Accuracy	0.01 % of range	
Standard signal input (Voltage)		
Number of channels	1	
Connection	4 mm safety socket	
Measuring range	0…12 VDC	
Accuracy	0.01 % of range	
Switch test		
Number of channels	2	
Transmitter supply		
Output current	Max. 24 mA	
Output voltage	24 VDC	
General technical data		
Annual drift of all measuring inputs	Max. 30% of accuracy	

Article numbers

To order a complete calibrator, you need three article numbers:

1. Calibrator
2. Linearisation
3. Calibration insert

In addition, depending on your individual calibration requirements, you can order additional calibration inserts, necessary certificates and other accessories.

1. Calibrator									
Temperature range		**Function**	**Calibration insert [mm]**	**Power supply**	**Integrated measuring instrument**	**Article number**			
Room temperature...450°C	RT...842 °F	Multifunction	Ø 60 x 150	110...240 V	Without	EP3745	0	26015U3	
Room temperature...450°C	RT...842 °F	Multifunction	Ø 60 x 150	110...240 V	With	EP3745	I	26015U3	

Notice: Every "linearisation" article number with 13 digits starts with "EK1", while the following letters ("short designation") indicate the selected calibration function. You may also select several functions of one category.
Please indicate the calibration functions in alphabetical order and fill in any possibly remaining positions with "0".

2. Linearisation												
Calibration function			**Calibration insert / calibration medium**				**Reference temperature sensor**			**Short designation**		
Dry block			Air Shield Insert				external			A		
			Cylindrical calibration insert				external			B		
			Cylindrical calibration insert				internal			C		
Infrarot			Calibration insert for infrared calibration				external			D		
			Calibration insert for infrared calibration				internal			E		
Surface			Surface calibration insert				external			F		
Example article number linearisation												
Function:		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	
Article number:	**EK1**	**A**	**C**	**D**	**F**	**0**	**0**	**0**	**0**	**0**	**0**	

3. Calibration insert				
Bore holes [mm]	**Function**	**Calibration insert [mm]**	**Material**	**Article number**
1x Ø 3.5, 1x Ø 6.5, 1x Ø 8.5, 1x Ø 10.5	Dry block	Ø 60 x 150	Aluminium	EZ15060D04AL78
2x Ø 3.5, 2x Ø 4.5, 2x Ø 6.5, 2x Ø 8.5, 2x 10.5	Dry block	Ø 60 x 150	Aluminium	EZ15060D10AL79
2x Ø 3.5, 1x Ø 4.5, 1x Ø 5.0, 1x Ø 5.5, 1x Ø 6.5, 1x Ø 8.5, 1x Ø 9.0, 1x Ø 9.5, 1x Ø 10.5	Dry block	Ø 60 x 150	Aluminium	EZ15060D12AL81
3x Ø 3.5, 3x Ø 6.5, 3x Ø 8.5, 3x Ø 10.5	Dry block	Ø 60 x 150	Aluminium	EZ15060D12AL81
Calibration insert for infrared calibration	Infrarot	Ø 60 x 150	Aluminium	EZ15060B03AL41IR
Calibration insert for surface calibration	Surface	Ø 60 x 150	Aluminium	EZ17260B02AL06OF
Without bore holes (Air Shield Insert)	Dry block	Ø 60 x 150	Aluminium	EZ15260B00AL23F
Air Shield Insert incl. 1 bore hole of choice	Air Shield Insert	Ø 60 x 150	Aluminium	Please indicate bore holes in the order

4. Calibration certificate - Select your calibration certificates as needed Each calibrator is already delivered with a standard calibration certificate (6 test points).	**Article number**
SIKA works calibration certificate (similar to standard certificate + marking on the calibrator), 1st calibrator function	EKTPWP1FKT
SIKA works calibration certificate (similar to standard certificate + marking on the calibrator), 2nd calibrator function	EKTPWP2FKT
DAkkS calibration certificate (3 test points + measurement uncertainty determination) for 1st calibrator function	EKTPDAKKS1FKT
DAkkS calibration certificate (3 test points + measurement uncertainty determination) for 2nd calibrator function	EKTPDAKKS2FKT
Each additional test point DAkkS calibration certificate	EKTPDAKKSZUSP
SIKA Gold Service works calibration certificate	EKTPGOLDWP
SIKA Gold Service DAkkS	EKTPGOLDDAKKS
SIKA works calibration certificate integrated measuring instrument (Pt100, type K)	EKTPWPMI1
SIKA works calibration certificate integrated measuring instrument (Pt100, Pt1000 type K, type J)	EKTPWPMI2
SIKA works calibration certificate integrated measuring instrument (Pt100, type K, mA, V)	EKTPWPMI3
SIKA works calibration certificate integrated measuring instrument (Pt100, Pt1000 type K, type J, mA, V)	EKTPWPMI4
SIKA works calibration certificate for each additional measurement input of your choice (Pt500, Pt1000, type J/N/E/T/R/S, mA, V)	EKTPWPMIZUS
SIKA works calibration certificate complete (Pt100, Pt500, Pt1000, type K/J/N/E/T/R/S, mA, V)	EKTPWPMIKOMPL
DAkkS calibration certificate integrated measuring instrument (Pt100, type K)	EKTPDAKKSMI1
DAkkS calibration certificate integrated measuring instrument (Pt100, Pt1000 type K, type J)	EKTPDAKKSMI2
DAkkS calibration certificate integrated measuring instrument (Pt100, type K, mA, V)	EKTPDAKKSMI3
DAkkS calibration certificate integrated measuring instrument (Pt100, Pt1000 type K, type J, mA, V)	EKTPDAKKSMI4
DAkkS calibration certificate for each additional measurement input of your choice (Pt500, Pt1000, type J/N/E/T/R/S, mA, V)	EKTPDAKKSMIZUS
DAkkS calibration certificate complete (Pt100, Pt500, Pt1000, type K/J/N/E/T/R/S, mA, V)	EKTPDAKKSKOMPL

5. Accessories	**Article number**
Transport case without trolley	EZTPKOFFER20
Transport case with trolley	EZTPKOFFER20TG
External reference temperature sensor TF 700-4.5-300 (5…700 °C / 41…1292 °F), straight	W454P413000GX0R2
Network switch	XE2103
Barcode scanner	XE2102
W-LAN router	XE2101
DUT temperature sensor for demo purposes (Pt100 3-phase) for integrated measuring instrument	WMQMP31020050003
Bore hole divider for Air Shield Insert 3 x Ø 3 mm sensors from Ø 9 mm bore hole	XE2194
Spare part extension spring for Air Shield Insert	XE2267
Instruction in the temperature calibrator by SIKA field service	EKTPEINWEISUNG
Frame packaging for return of calibrator (e.g. for recalibration) Please indicate the calibrator model when ordering.	098V

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