Temperature calibrator TP 37450E.2 // TP 37450E.2i TP Premium // Multifunction // Room temperature...450 °C // RT...842 °F





TP 37450E.2 - 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 $^{\circ}\text{C}$ / 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.

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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





SIKA OS with touch screen

- Simple operation of the temperature calibrator via the integrated 7" touch screen
 - → Intuitive operation of the calibration functions
 - ightarrow 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 $^{\circ}\text{C}$ / 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
 - \rightarrow Time savings of up to 50% with each calibration process



With rocket controller:

Without rocket controller: Long settling time to the target temperature 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

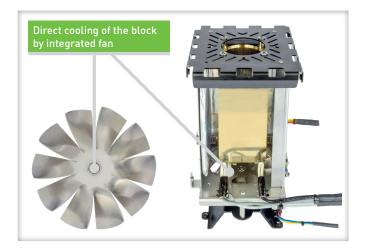
- To calibrate devices under test that do not have their own temperature display, you need to connect them to a measuring instrument
- This is done by our TT-Scan multi-channel measuring instrument: With this instrument, you can calibrate up to eight DUTs without a display unit of their own
- The TT-Scan 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

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 coolingdown times on the market
 - ightarrow Time and cost savings with every calibration
 - → Reduced standstill times in your company
- The ventilator is exclusively used for cooling down the temperature calibrator
 - ightarrow 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 temperati	ure450 °C	Room temperature842 °F				
Dimension of the calibration insert	Ø 60 x 150 mm (Ø 60 x 150 mm (calibration insert easily exchangeable)					
Dry block Air Shield Insert	External refere	nce temperature sensor					
Display accuracy	±0.2 °C		±0.36 °F	±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 refere	nce temperature sensor	Internal referer	nce 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 refere	nce temperature sensor	Internal referer	nce 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	1						
Surface calibration	External refere	nce temperature sensor					
Display accuracy	±1 °C		±1.8 °F				
Temperature stability	±0.250 °C		±0.45 °F				

TP 37450E.2 / TP 374	50E.2i					
Stabilisation time (with external reference → to ±0.05°C → to ±0.005°C	te temperature sensor) → to ±0.09 °F → to ±0.009 °F	From 1 min From 5 min				
Heating time → 20 °C440 °C	→ 68824 °F	17 min				
Cooling time → 450 °C30 °C	→ 82486 °F	36 min				
Resolution of the tem	perature display	0.1 / 0.01 / 0.001 °C (selectable)	0.1/0.01/0.001 °F (selectable)			
Hysteresis		±0.020 °C	±0.036 °C			
Temperature units		°C / °F / K (selectable)				
Reference temperatu	ire 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		100240 VAC, 50 / 60 Hz Protective conductor (PE) needed				
Power consumption		Approx. 1000 W				
Adjustable temperatu	re range	0450 °C	-76842 °F			
Display		Brilliant color touchscreen (7 inches), multi	panel safety glass			
Approvals						
		C E ROHS REACH				







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

Number of channels	2	
Connection	4 mm safety socket, 4	per channel
Connection type	2-, 3-, 4-wire technolo	
Resistance range		
→ Pt100	0400 Ω	
→ Pt1000	04000 Ω	
Accuracy		
→ Pt100	±0.03 °C	±0.054 °F
→ Pt1000	±0.06 °C	±0.108 °F
Device under test inputs - Thermocouple		
Number of channels	2	
Connection	2x thermocouple sock	ket (mini)
Measuring range	-10100 mV	
Accuracy cold junction	±0.3 °C	±0.054 °F
Accuracy		
→ Type K	±0.08 °C	±0.144 °F
→ Type J	±0.07 °C	±0.126 °F
→ Type N	±0.13 °C	±0.234 °F
→ Type E	±0.06 °C	±0.108 °F
→ Type T	±0.09 °C	±0.162 °F
→ Type R	±0.78 °C	±1.404 °F
→ Type S	±0.73 °C	±1.314 °F
Standard signal input (Current)		
Number of channels	1	
Connection	4 mm safety socket	
Measuring range	024 mA	
Accuracy	0.01 % of range	
Standard signal input (Voltage)		
Number of channels	1	
Connection	4 mm safety socket	
Measuring range	012 VDC	
Accuracy	0.01 % of range	
Switch test		
Number of channels	2	
Transmitter supply		
Output current	Max. 24 mA	
output current	Indx. 24 mix	

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



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 n	umber
Room temperature450°C	RT842 °F	Multifunction	Ø 60 x 150	110240 V	Without	EP3745	0 26015U
Room temperature450°C	RT842 °F	Multifunction	Ø 60 x 150	110240 V	With	EP3745	I 26015U

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			Calibratio	n insert /	calibration	medium	Reference temperature sensor			Short designation	
Dry block			Air Shield Insert			external			А		
			Cylindrical calibration insert			external			В		
			Cylindrica	Cylindrical calibration insert			internal			С	
Infrarot		Calibration insert for infrared calibration			external			D			
			Calibration insert for infrared calibratio			alibration	internal			E	
Surface			Surface calibration insert		external			F			
Example article nu	ımber line	arisation									
Function:		1	2	3	4	5	6	7	8	9	10
Article number:	EK1	A	С	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	EZ17260B02AL060F
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

6. 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
OAkkS calibration certificate integrated measuring instrument (Pt100, type K)	EKTPDAKKSMI1
OAkkS calibration certificate integrated measuring instrument (Pt100, Pt1000 type K, type J)	EKTPDAKKSMI2
OAkkS calibration certificate integrated measuring instrument (Pt100, type K, mA, V)	EKTPDAKKSMI3
OAkkS 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 450-4.5-300 (room temperature450 °C), straight	W454P413000GX0A2
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 \emptyset 3 mm sensors from \emptyset 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

Overview of SIKA temperature calibrators

Our series: Basic. Solid. Premium.

- Dry block calibrators of the TP Basic series impress with their uncomplicated operation and high cost-effectiveness.
 They are particularly suitable for use on ships or in industrial applications.
- Equipped with a PC interface, the dry block calibrators and calibration baths of the TP Solid series cover a wide temperature range with high accuracy.
- For the highest demands on accuracy and flexibility:
 The dry-block and multi-function temperature calibrators of the TP Premium series represent the pinnacle of our technical development. Equipped with an integrated touch screen, a PC interface, an external reference sensor and integrated measuring instrument, this series offers extreme accuracies for all calibration tasks.

emperature range RT=Room temperature)	Function	Accuracy		Features	Block dimensions [Ø mm x depth mm]	Туре
	Dry block	±0.4 °C	±0.72 °F	TP Basic	28 x 150	TP 17200
·55 °C 200 °C ·67 °F 392 °F	Dry block	±0.2 °C	±0.36 °F	TP Solid	28 x 150	TP 17200S
-07 F 372 F	Dry block	±0.2 °C	±0.36 °F	TP Premium	28 x 150	TP 37200E.2
·35 °C 155 °C ·31 °F 311 °F	Calibration bath	±0.1 °C	±0.18 °F	TP Solid	60 x 170	TP M165S
	Dry block	±1 °C	±1.80 °F	TP Basic	28 x 150	TP 17165M
	Dry block	±0.4 °C	±0.72 °F	TP Basic	28 x 150	TP 17165
	Dry block	±0.2 °C	±0.36 °F	TP Solid	28 x 150	TP 17165S
35 °C 165 °C	Dry block	±0.2 °C	±0.36 °F	TP Premium	28 x 150	TP 37165E.
-31 °F 329 °F	Dry block ext. Dry block int. Air Shield Insert Calibration bath Infrared Surface	±0.2 °C ±0.3 °C ±0.099 °C ±0.1 °C ±0.5 °C ±1 °C	±0.36 °F ±0.54 °F ±0.1782 °F ±0.18 °F ±0.9 °F ±1.88 °F	TP Premium	60 x 170	TP 3M165E
30 °C 165 °C	Dry block	±0.4 °C	±0.72 °F	TP Basic	60 x 150	TP 17166
22 °F 329 °F	Dry block	±0.2 °C	±0.36 °F	TP Solid	60 x 150	TP 17166S
·10 °C 100 °C 14 °F 212 °F	Dry block	±0.05 °C	±0.09 °F	TP Solid	7 x 6.5 x 150	TP 17Zero
RT 200 °C RT 392 °F	Dry block	±1 °C	±1.80 °F	TP Basic	18 x 150	TP 18200E
	Calibration bath	±0.2 °C	±0.36 °F	TP Solid	60 x 170	TP M255S
RT 255 °C RT 491 °F	Dry block ext. Dry block int. Air Shield Insert Calibration bath, tub insert, ext. Calibration bath, tub insert, int. Calibration bath, direct filling, ext. Calibration bath, direct filling, int. Infrared Surface	±0.25 °C ±0.5 °C ±0.08 °C ±0.35 °C ±0.53 °C ±0.18 °C ±0.46 °C ±0.5 °C ±1 °C	±0.45 °F ±0.9 °F ±0.144 °F ±0.63 °F ±0.954 °F ±0.324 °F ±0.828 °F ±0.9 °F ±1.8 °F	TP Premium	60 x 170	TP 3M255E
	Dry block	±0.6 °C	±1.08 °F	TP Basic	60 x 150	TP 17450
	Dry block	±0.3 °C	±0.54 °F	TP Solid	60 x 150	TP 17450S
RT 450 °C RT 842 °F	Dry block Air Shield Insert Infrared Surface	±0.3 °C ±0.2 °C ±0.5 °C ±1 °C	±0.54 °F ±0.36 °F ±0.9 °F ±1.8 °F	TP Premium	60 x 150	TP 37450E.
	Dry block	±1 °C	±1.8 °F	TP Basic	28 x 150	TP 17650M
RT 650 °C RT 1202 °F	Dry block	±0.8 °C	±1.44 °F	TP Basic	28 x 150	TP 17650
1202 F	Dry block	±0.4 °C	±0.72 °F	TP Solid	28 x 150	TP 17650S
RT 700 °C RT 1292 °F	Dry block Air Shield Insert	±0.43 °C ±0.27 °C	±0.744 °F ±0.486 °F	TP Premium	29 x 150	TP 37700E.
RT 850 °C RT 1562 °F	Dry block	±1 °C	±1.8 °F	TP Basic	18 x 100	TP 18850E
00 °C 1300 °C 52 °F 2372 °F	Dry block	±2 °C	±3.6 °F	TP Solid	28 x 200	TP 281300I

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