Temperature calibrator TP 37700E.2 // TP 37700E.2i
TP Premium // Dry block // Room temperature...700 °C // RT...1292 °F


TP 37700E.2


TP 37700E.2i
integrated measuring instrument

TP 37700E.2 - Highlights

- Best measurement uncertainties on the market
- Patented control technology - Fastest stabilisation times on the market - Time savings of up to 50 %
- Temperature calibrator with highest temperature range in the TP Premium Series
- Use of an extremely resilient metal alloy for long life
- Patented touch screen function for simple and convenient operation
- Accessories: device under test management with barcode scanner
- Available with integrated measuring instrument → TP 37700E.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.

SIKA Dr. Siebert & Kühn GmbH & Co. KG
Struthweg 7-9 // 34260 Kaufungen // Germany
www.sika.net

Features

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

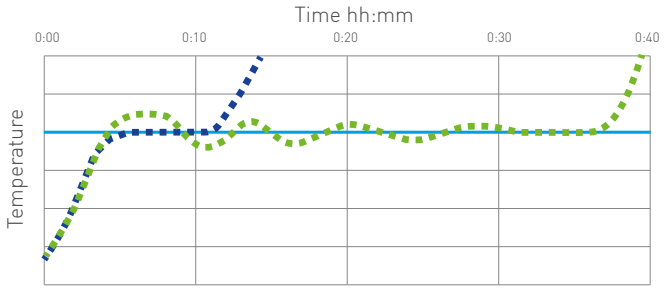

SIKA OS with touch screen: Child's play operation

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)

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

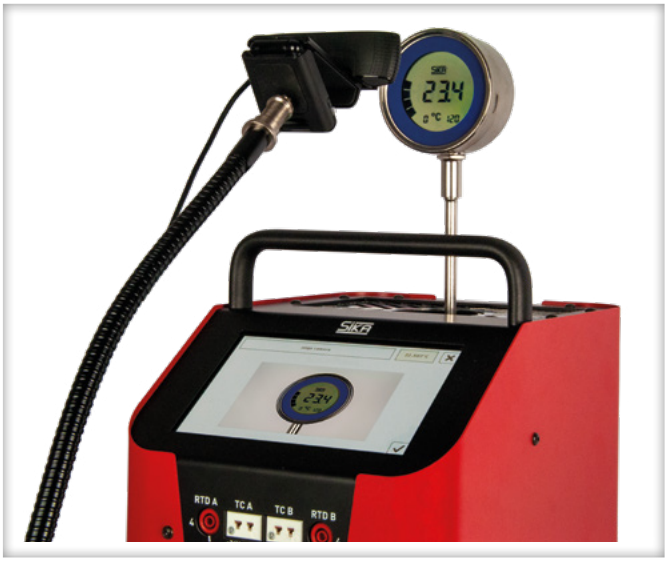


Without rocket controller: Long settling time to the target temperature
With rocket controller: Settling time to the target temperature reduced by approx. 90%

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



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

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

SIKA Dr. Siebert & Kühn GmbH & Co. KG
Struthweg 7-9 // 34260 Kaufungen // Germany
www.sika.net

Technical data

The TP 37700 can be operated up to 700 °C (1292 °F). For physical reasons, it achieves the best accuracy at temperatures up to 660 °C (1220 °F). For temperatures between 660 (1220 °F) and 700 °C (1292 °F) we recommend the use of a separate reference thermometer.

TP 37700E.2 / TP 37700E.2i		
Temperature range	Room temperature...700 °C	Room temperature...1292 °F
Dimension of the calibration insert	Ø 29 x 150 mm (calibration insert easily exchangeable)	
Dry block Air Shield Insert All values determined at 660 °C (1220 °F)	**External reference temperature sensor**	
Display accuracy	±0.27 °C	±0.486 °F
Temperature stability	±0.015 °C	±0.027 °F
Temperature distribution → Axial → Radial	 ±0.400 °C ±0.020 °C	 ±0.72 °F ±0.036 °F
Influence of load	±0.020 °C	±0.036 °F
Dry block All values determined at 660 °C (1220 °F)	**Internal reference temperature sensor**	
Display accuracy	±0.43 °C	±0.774 °F
Temperature stability	±0.100 °C	±0.18 °F
Temperature distribution → Axial → Radial	 ±0.400 °C ±0.040 °C	 ±0.72 °F ±0.072 °F
Influence of load	±0.180 °C	±0.324 °F
General data		
Stabilisation time (with external reference temperature sensor) → to ±0.05 °C → to ±0.09 °F → to ±0.005 °C → to ±0.009 °F	 From 1 min From 5 min	
Heating time → 20 °C...690 °C → 68...1274 °F	 19 min	
Cooling time → 700...30 °C → 1292...86 °F	 85 min	
Resolution of the temperature display	0.1 / 0.01 / 0.001 °C (selectable)	0.1/0.01/0.001 °F (selectable)
Hysteresis	±0.015 °C (part of the display accuracy)	±0.037 °F (part of the display accuracy)
Temperature units	°C / °F / K (selectable)	
Reference temperature sensor	Internal / external (selectable)	
Interfaces	Ethernet, 3 x USB	
Dimensions		
→ Width → Height → Depth	210 mm 330 mm + 50 mm (Handle) 300 mm	
Weight	10.0 kg	
Power supply	100...240 VAC, 50 / 60 Hz	
Power consumption	Approx. 1000 W	
Adjustable temperature range	0...700 °C	32...1292 °F
Display	Brilliant color touchscreen (7 inches), multi panel safety glass	
Approvals		
	CE RoHS REACH	

Temperature calibrator TP 37700E.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	0...400 Ω	
→ Pt1000	0...4000 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 socket (mini)	
Measuring range	-10...100 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	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	

SIKA Dr. Siebert & Kühn GmbH & Co. KG
Struthweg 7-9 // 34260 Kaufungen // Germany
www.sika.net

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 number		
Room temperature...700 °C	RT...1292 °F	Dry block	Ø 29 x 150	110...240 V	Without	EP3770	**0**	22915U3
Room temperature...700 °C	RT...1292 °F	Dry block	Ø 29 x 150	110...240 V	With	EP3770	**I**	22915U3

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	internal	C

Example article number linearisation

Function:		1	2	3	4	5	6	7	8	9	10
Article number:	**EK1**	**A**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

3. Calibration insert

Bore holes [mm]	Function	Calibration insert [mm]	Material	Article number
Air Shield Insert incl. 1 bore hole of choice	Air Shield Insert	Ø 29 x 150	Copper-Alu	Please indicate bore holes in the order
Calibration insert incl. 1 bore hole of choice	Dry block	Ø 29 x 150	Copper-Alu	

SIKA Dr. Siebert & Kühn GmbH & Co. KG
Struthweg 7-9 // 34260 Kaufungen // Germany
www.sika.net

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
SIKA Gold Service works calibration certificate	EKTPGOLDWP
SIKA Gold Service DAkkS	EKTPGOLDDAKKS
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 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	EZTPKOFFER020
Transport case with trolley	EZTPKOFFER020TG
External reference temperature sensor TF 660-4.5-300 (room temperature...700 °C / 1292 °F), straight	W454P413000GX0A3
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 3 x Ø 3 mm sensors from Ø 9 mm bore hole	XE2194
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

Temperature range (RT=Room temperature)	Function	Accuracy		Features	Block dimensions [Ø mm x depth mm]	Type
-55 °C ... 200 °C -67 °F ... 392 °F	Dry block	±0.4 °C	±0.72 °F		28 x 150	TP 17200
	Dry block	±0.2 °C	±0.36 °F	PC interface	28 x 150	TP 17200S
	Dry block	±0.2 °C	±0.36 °F	Touch screen PC interface External reference sensor Integrated measuring instrument	28 x 150	TP 37200E.2
-35 °C ... 165 °C -31 °F ... 329 °F	Dry block	±1 °C	±1.80 °F		28 x 150	TP 17165M
	Dry block	±0.4 °C	±0.72 °F		28 x 150	TP 17165
	Dry block	±0.2 °C	±0.36 °F	PC interface	28 x 150	TP 17165S
	Dry block	±0.2 °C	±0.36 °F	Touch screen PC interface External reference sensor Integrated measuring instrument	28 x 150	TP 37165E.2
	Dry block	±0.4 °C	±0.72 °F		60 x 150	TP 17166
	Dry block	±0.2 °C	±0.36 °F	PC interface	60 x 150	TP 17166S
	Calibration bath	±0.1 °C	±0.18 °F	PC interface	60 x 170	TP M165S
	Dry block Air Shield Insert Calibration bath Infrared Surface	±0.3 °C ±0.099 °C ±0.1 °C ±0.5 °C ±1 °C	±0.54 °F ±0.1782 °F ±0.18 °F ±0.9 °F ±1.88 °F	Touch screen PC interface External reference sensor Integrated measuring instrument	60 x 170	TP 3M165E.2
-10 °C ... 100 °C 14 °F ... 212 °F	Dry block	±0.05 °C	±0.09 °F	PC interface	7 x 6.5 x 150	TP 17Zero
RT ... 200 °C RT ... 392 °F	Dry block	±1 °C	±1.80 °F		18 x 150	TP 18200E
RT ... 255 °C RT ... 491 °F	Calibration bath	±0.2 °C	±0.36 °F	PC interface	60 x 170	TP M255S
	Dry block Calibration bath 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	Touch screen PC interface External reference sensor Integrated measuring instrument	60 x 170	TP 3M255E.2
RT ... 450 °C RT ... 842 °F	Dry block	±0.6 °C	±1.08 °F		60 x 150	TP 17450
	Dry block	±0.3 °C	±0.54 °F	PC interface	60 x 150	TP 17450S
	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	Touchscreen PC interface External reference sensor Integrated measuring instrument	60 x 150	TP 37450E.2
RT ... 650 °C RT ... 1202 °F	Dry block	±1 °C	±1.80 °F		28 x 150	TP 17650M
	Dry block	±0.8 °C	±1.44 °F		28 x 150	TP 17650
	Dry block	±0.4 °C	±0.72 °F	PC interface	28 x 150	TP 17650S
RT ... 700 °C RT ... 1292 °F	Air Shield Insert	±0.53 °C	±0.954 °F	Touchscreen PC interface External reference sensor Integrated measuring instrument	29 x 150	TP 37700E.2
RT ... 850 °C RT ... 1562 °F	Dry block	±1 °C	±1.80 °F		18 x 100	TP 18850E
400 °C ... 1300 °C 752 °F ... 2372 °F	Dry block	±2 °C	±3.6 °F	PC interface	28 x 200	TP 281300E

Subject to technical modifications and errors

SIKA Dr. Siebert & Kühn GmbH & Co. KG
Struthweg 7-9 // 34260 Kaufungen // Germany
www.sika.net