

- TP Basic
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- TP Premium
- Accessories
- TT-Scan



Including products with:



TEMPERATURE CALIBRATORS



# Calibration with SIKA

Dry block calibrators and micro calibration baths are used to check and calibrate a wide range of temperature measuring instruments and temperature sensors. Mechanical, electro-mechanical or electronic measurement equipment can be checked with ease. The following can be tested directly:

- Contact-based immersion or surface temperature sensors
- Sensors with special shapes and sizes
- Non-contact infrared instruments and thermal imaging cameras

The compact and robust SIKA instruments are easy to transport, simple to use and offer all the features required for the specific test. Our instruments are already standard in many development, research and testing labs, testing and inspection departments and in the production and manufacturing sector.

**DEUTSCHER KALIBRIERDIENST **DKD****  
*Kalibrierlaboratorium für thermodynamische und elektrische Messgrößen*  
*Calibration laboratory for pressure and electrical measuring instruments*

Akkreditiert durch die / accredited by the  
 Akkreditierungsstelle des Deutschen Kalibrierdienstes

**SIKA** Labor Messtechnik  
 Dr. Siebert & Köhn GmbH & Co. KG  
 Steinfweg 7-9  
 34290 Kerklingen

Kalibrierschein  
 Calibration certificate

Geprüft  
 Objekt: Multikanal-Temperaturkalibrator  
 - Treiberblockfunktion (DB)

Hersteller:  
 Dr. Siebert & Köhn GmbH & Co. KG  
 D-34291 Kerklingen

Typ:  
 TP175524

Fabrikations-Nr.  
 Serien-Nr.: 590245

Auftraggeber:  
 Auftragsnummer:  
 Datum: 05.05.2017

Anzahl der Stellen des Kalibrierscheins:  
 Anzahl der Kopien ohne Kalibrierschein:  
 Datum der Kalibrierung:  
 2017-04-21

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 This calibration certificate may not be reproduced either fully or in part except with the consent of the DKD and the issuing laboratory. Calibration certificates without stamp.

Stempel: Datum: 05.05.2017  
 Ort: Kerklingen

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**Works Calibration Certificate**

**SIKA**

Instrument: Precision-Temperature-Calibrator

Type: TP175524

Range: RT to 650 °C

Serial No.: 5902022

Order No.:

Customer:

Used standards and devices:  
 Reference: Pt100, SN ASL-10, 2329 DKD-K-097  
 OIML Kerklyn, SN 027117, 0203 DKD-K-132011

Result:

Reading [°C]	Set value [°C]	Delta [°C]
100	99,999	0,10
200	199,995	0,10
300	299,994	0,10
400	399,992	0,10
500	499,988	-0,00
600	599,985	-0,02
650	649,983	0,02

The deviations are within the specified tolerance of:

**SIKA** electronic  
 Dr. Siebert & Köhn GmbH & Co. KG · Steinfweg 7-9  
 Telefon: (05605) 803-0 · Telefax: (05605) 80354 / 40

Deutscher Kalibrierdienst (DKD)  
 Akkreditierungsstelle

Deutscher Akkreditierungsrat

Akkreditierung

Die Akkreditierungsstelle des Deutschen Kalibrierdienstes akkreditiert gemäß  
 SIKA  
 Dr. Siebert & Köhn GmbH & Co. KG  
 Steinfweg 7-9  
 34290 Kerklingen

nach DIN EN ISO/IEC 17025:2005 für Kalibrierungen im Bereich / in dem Bereich  
 elektrische Gleichstrom- und NF-Großen, Druck, Tempere

Bestandteil der Urkunde ist: Anlage 04 (2 Seiten), 2007-05-25

GAR-Regelnummer: DKD-K-13801  
 Akkreditiert im DKD seit: 1995-10-25

Beurkundung: 2017-05-25

Dr. Ing. Wolfgang Siebert  
 Leiter der Kalibrierungen



## TP Basic series

The temperature calibrators in the TP Basic series have been developed for direct on-site use. With these instruments the focus is on efficiency and portability. The easy-to-use design and automatic functions have been carefully selected to facilitate operation. The result: quick, simple and efficient temperature calibrators that do not compromise on quality.

### Dry block function



The optimum thermal coupling from the block to test item is achieved with the correct adapter sleeve. Ideally, the internal diameter of the sleeve is 0.5 mm larger than the outer diameter of the test item. With the aid of the adapter sleeve, straight temperature sensors of virtually any length and diameter can be calibrated. The dry block covers the entire temperature range without the need to change the calibration medium. Viscosity, flash points or outgassing are of no concern.

### Adapter sleeve



*Some of the dry block calibrators have a large 60 mm block borehole and can hold several test items at once.*

# TP 17 200

Technical data	
Type	TP 17 200
Control sensor	Internal
Micro Bath	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Dry block	
Temperature range	-55...200 °C
Tolerance	±0.4 °C
Stability	±0.1 °C
Measurement zone	110...150 mm
Infrared	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Surface	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Block	
	Ø 28 mm / depth 150 mm
Display	
Display	2-line, 4-digit display Red / green, unit °C [°F optional]
Display range	-60...200 °C
Resolution	0.1 °C
General data	
<b>Dimensions</b>	
→ Width	210 mm
→ Height	380 + 50 mm
→ Depth	300 mm
<b>Weight</b>	Approx. 12.5 kg
<b>Power supply</b>	100...240 VAC, 50 / 60 Hz
<b>Power consumption</b>	Approx. 600 VA

## Type TP 17 200



### Scope of delivery

- Test certificate
- Mains cable
- Insert exchange tool
- Operating manual

### Optional accessories

- Transport case
- Adapter sleeve
- DKD certificate
- Works certificate



The TP 17 200 temperature calibrator, which is also known as TP COOL, works in a temperature range from -55 to 200 °C.

# TP 17 165 M

Technical data	
Type	TP 17 165 M
Control sensor	Internal
Micro Bath	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Dry block	
Temperature range	-35...165 °C
Tolerance	±1 °C
Stability	±0.1 °C
Measurement zone	110...150 mm
Infrared	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Surface	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Block	
	Ø 28 mm / depth 150 mm
Display	
Display	2-line, 4-digit display Red / green, unit °C [°F optional]
Display range	-50...165 °C
Resolution	1 °C
General data	
<b>Dimensions</b>	
→ Width	210 mm
→ Height	380 + 50 mm
→ Depth	300 mm
<b>Weight</b>	Approx. 10 kg
<b>Power supply</b>	100...240 VAC, 50 / 60 Hz
<b>Power consumption</b>	Approx. 400 VA



### Scope of delivery

- Test certificate
- Mains cable
- Insert exchange tool
- Operating manual

### Optional accessories

- Transport case
- Adapter sleeve
- DKD certificate
- Works certificate

# TP 17 165



### Scope of delivery

- Test certificate
- Mains cable
- Insert exchange tool
- Operating manual

### Optional accessories

- Transport case
- Adapter sleeve
- DKD certificate
- Works certificate

Technical data	
Type	TP 17 165
Control sensor	Internal
Micro Bath	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Dry block	
Temperature range	-35...165 °C
Tolerance	±0.4 °C
Stability	±0.1 °C
Measurement zone	110...150 mm
Infrared	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Surface	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Block	
	∅ 28 mm / depth 150 mm
Display	
Display	2-line, 4-digit display Red / green, unit °C (°F optional)
Display range	-50...165 °C
Resolution	0,1 °C
General data	
<b>Dimensions</b>	
→ Width	210 mm
→ Height	380 + 50 mm
→ Depth	300 mm
<b>Weight</b>	Approx. 10 kg
<b>Power supply</b>	100...240 VAC, 50 / 60 Hz
<b>Power consumption</b>	Approx. 400 VA

# TP 17 166



**Type TP 17 166**

### Scope of delivery

- Test certificate
- Mains cable
- Insert exchange tool
- Operating manual

### Optional accessories

- Transport case
- Adapter sleeve
- DKD certificate
- Works certificate

Technical data	
Type	TP 17 166
Control sensor	Internal
Micro Bath	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Dry block	
Temperature range	-35...165 °C
Tolerance	±0.4 °C
Stability	±0.1 °C
Measurement zone	110...150 mm
Infrared	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Surface	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Block	
	Ø 60 mm / depth 150 mm
Display	
Display	2-line, 4-digit display Red / green, unit °C (°F optional)
Display range	-50...165 °C
Resolution	0.1 °C
General data	
<b>Dimensions</b>	
→ Width	210 mm
→ Height	380 + 50 mm
→ Depth	300 mm
<b>Weight</b>	Approx. 10 kg
<b>Power supply</b>	100...240 VAC, 50 / 60 Hz
<b>Power consumption</b>	Approx. 400 VA



The TP 17 166 temperature calibrator model has a very large calibration volume.

# TP 18 200 E

Technical data	
Type	TP 18 200 E
Control sensor	Internal
Micro Bath	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Dry block	
Temperature range	RT...200 °C
Tolerance	±1 °C
Stability	±0.1 °C
Measurement zone	60...100 mm
Infrared	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Surface	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Block	
	Ø 18 mm / depth 100 mm
Display	
Display	2-line, 4-digit display Red / green, unit °C [°F optional]
Display range	0...200 °C
Resolution	1 °C
General data	
<b>Dimensions</b>	
→ Width	220 mm
→ Height	96 mm
→ Depth	230 + 50 mm
<b>Weight</b>	Approx. 4 kg
<b>Power supply</b>	230 VAC, ±10 %, 50 / 60 Hz, optional 115 VAC, ±10 %, 50 / 60 Hz
<b>Power consumption</b>	Approx. 220 VA

## Type TP 18 200 E



### Scope of delivery

- Test certificate
- Mains cable
- Insert exchange tool
- Operating manual

### Optional accessories

- Transport case
- Adapter sleeve
- DKD certificate
- Works certificate



# TP 17 450

Technical data	
Type	TP 17 450
Control sensor	Internal
Micro Bath	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Dry block	
Temperature range	RT...450 °C
Tolerance	±0.6 °C
Stability	±0.1 °C
Measurement zone	110...150 mm
Infrared	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Surface	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Block	
	Ø 60 mm / depth 150 mm
Display	
Display	2-line, 4-digit display Red / green, unit °C [°F optional]
Display range	0...450 °C
Resolution	0.1 °C
General data	
<b>Dimensions</b>	
→ Width	150 mm
→ Height	330 + 70 mm
→ Depth	270 mm
<b>Weight</b>	Approx. 7.5 kg
<b>Power supply</b>	230 VAC, ±10 %, 50 / 60 Hz
<b>Power consumption</b>	Approx. 2000 VA



### Scope of delivery

- Test certificate
- Mains cable
- Insert exchange tool
- Operating manual

### Optional accessories

- Transport case
- Service transport bag
- Adapter sleeve
- DKD certificate
- Works certificate



The TP 17 450 temperature calibrator model has a very large calibration volume.

# TP 17 650 M



### Scope of delivery

- Test certificate
- Mains cable
- Insert exchange tool
- Operating manual

### Optional accessories

- Transport case
- Service transport bag
- Adapter sleeve
- DKD certificate
- Works certificate

Technical data	
Type	TP 17 650 M
Control sensor	Internal
Micro Bath	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Dry block	
Temperature range	RT...650 °C
Tolerance	±1 °C
Stability	±0.1 °C
Measurement zone	110...150 mm
Infrared	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Surface	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Block	
	Ø 28 mm / depth 150 mm
Display	
Display	2-line, 4-digit display Red / green, unit °C [°F optional]
Display range	0...650 °C
Resolution	1 °C
General data	
<b>Dimensions</b>	
→ Width	150 mm
→ Height	330 + 70 mm
→ Depth	270 mm
<b>Weight</b>	Approx. 7.5 kg
<b>Power supply</b>	230 VAC, ±10 %, 50 / 60 Hz, optional 115 VAC, ±10 %, 50 / 60 Hz
<b>Power consumption</b>	Approx. 1000 VA

# TP 17 650



### Scope of delivery

- Test certificate
- Mains cable
- Insert exchange tool
- Operating manual

### Optional accessories

- Transport case
- Service transport bag
- Adapter sleeve
- DKD certificate
- Works certificate

Technical data	
Type	TP 17 650
Control sensor	Internal
Micro Bath	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Dry block	
Temperature range	RT...650 °C
Tolerance	±0.8 °C
Stability	±0.1 °C
Measurement zone	110...150 mm
Infrared	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Surface	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Block	
	∅ 28 mm / depth 150 mm
Display	
Display	2-line, 4-digit display Red / green, unit °C (°F optional)
Display range	0...650 °C
Resolution	0.1 °C
General data	
<b>Dimensions</b>	
→ Width	150 mm
→ Height	330 + 70 mm
→ Depth	270 mm
<b>Weight</b>	Approx. 7.5 kg
<b>Power supply</b>	230 VAC, ±10 %, 50 / 60 Hz, optional 115 VAC, ±10 %, 50 / 60 Hz
<b>Power consumption</b>	Approx. 1000 VA

# TP 18 850 E

Technical data	
Type	TP 18 850 E
Control sensor	Internal
Micro Bath	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Dry block	
Temperature range	RT...850 °C
Tolerance	±1 °C
Stability	±0.1 °C
Measurement zone	60...100 mm or 160...200 mm
Infrared	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Surface	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Block	
	∅ 18 or 28 mm / depth 100 or 200 mm
Display	
Display	2-line, 4-digit display Red / green, unit °C [°F optional]
Display range	0...850 °C
Resolution	1 °C
General data	
<b>Dimensions</b>	
→ Width	430 mm
→ Height	190 mm
→ Depth	410 + 50 mm or 510 + 50 mm
<b>Weight</b>	Approx. 14 kg or 16 kg
<b>Power supply</b>	230 VAC, ±10 %, 50 / 60 Hz
<b>Power consumption</b>	Approx. 2000 VA

## Type TP 18 850 E



### Scope of delivery

- Test certificate
- Mains cable
- Insert exchange tool
- Operating manual

### Optional accessories

- Transport case
- Adapter sleeve
- DKD certificate
- Works certificate

# Calibration function for every need

## Micro bath function



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 tank floor.

## Black body function



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 is simply held at the specified distance above the measurement opening, 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 temperature function



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.

## Oberflächen-Kalibrierhülse



# TP 17 200 S



**Type TP 17 200 S**

### Scope of delivery

- Test certificate
- Mains cable
- Insert exchange tool
- Operating manual

### Optional accessories

- Transport case
- Adapter sleeve
- PC software
- PC cable
- DKD certificate
- Works certificate

Technical data	
Type	TP 17 200 S
Control sensor	Internal
Micro Bath	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Dry block	
Temperature range	-55...200 °C
Tolerance	±0.2 °C
Stability	±0.05 °C
Measurement zone	110...150 mm
Infrared	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Surface	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Block	
	∅ 28 mm / depth 150 mm
Display	
Display	2-line, 4-digit display Red / green, unit °C (°F optional)
Display range	-60...200 °C
Resolution	0.01 °C in the range of -9.99...99.99 °C, else 0.1 °C
General data	
<b>Dimensions</b>	
→ Width	210 mm
→ Height	380 + 50 mm
→ Depth	300 mm
<b>Weight</b>	Approx. 12.5 kg
<b>Power supply</b>	100...240 VAC, 50 / 60 Hz
<b>Power consumption</b>	Approx. 600 VA



The TP 17 200 S temperature calibrator, which is also known as TP COOL, works in a temperature range from -55 to 200 °C.

## TP 17 165 S



### Scope of delivery

- Test certificate
- Mains cable
- Insert exchange tool
- Operating manual

### Optional accessories

- Transport case
- Adapter sleeve
- PC software
- PC cable
- DKD certificate
- Works certificate

Technical data	
Type	TP 17 165 S
Control sensor	Internal
Micro Bath	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Dry block	
Temperature range	-35...165 °C
Tolerance	±0.2 °C
Stability	±0.05 °C
Measurement zone	110...150 mm
Infrared	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Surface	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Block	
	∅ 28 mm / depth 150 mm
Display	
Display	2-line, 4-digit display Red / green, unit °C (°F optional)
Display range	-50...165 °C
Resolution	0.01 °C in the range of -9.99...99.99 °C, else 0.1 °C
General data	
<b>Dimensions</b>	
→ Width	210 mm
→ Height	380 + 50 mm
→ Depth	300 mm
<b>Weight</b>	Approx. 10 kg
<b>Power supply</b>	100...240 VAC, 50 / 60 Hz
<b>Power consumption</b>	Approx. 400 VA

# TP 17 166 S

Technical data	
Type	TP 17 166 S
Control sensor	Internal
Micro Bath	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Dry block	
Temperature range	-35...165 °C
Tolerance	±0.2 °C
Stability	±0.05 °C
Measurement zone	110...150 mm
Infrared	
Temperature range	-35...165 °C
Tolerance	±0.5 °C
Stability	±0.05 °C
Measurement zone	110 mm
Surface	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Block	
	Ø 60 mm / depth 150 mm
Display	
Display	2-line, 4-digit display Red / green, unit °C [°F optional]
Display range	-50...165 °C
Resolution	0.01 °C in the range of -9.99...99.99 °C, else 0.1 °C
General data	
<b>Dimensions</b>	
→ Width	210 mm
→ Height	380 + 50 mm
→ Depth	300 mm
<b>Weight</b>	Approx. 10 kg
<b>Power supply</b>	100...240 VAC, 50 / 60 Hz
<b>Power consumption</b>	Approx. 400 VA

## Type TP 17 166 S



### Scope of delivery

- Test certificate
- Mains cable
- Insert exchange tool
- Operating manual

### Optional accessories

- Transport case
- Adapter sleeve
- Infrared calibration sleeve
- PC software
- PC cable
- DKD certificate
- Works certificate



The TP 17 166 S temperature calibrator model has a very large calibration volume.



# TP 17 166 S-U

Technical data	
Type	TP 17 166 S-U
Control sensor	Switchable internal / external
Micro Bath	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Dry block	
Temperature range	-35...165 °C
Tolerance	±0.2 °C
Stability	±0.05 °C
Measurement zone	110...150 mm
Infrared	
Temperature range	-35...165 °C
Tolerance	±0.5 °C
Stability	±0.05 °C
Measurement zone	110 mm
Surface	
Temperature range	-25...150 °C
Tolerance	±1 °C
Stability	±0.2 °C
Measurement zone	
Block	
	Ø 60 mm / depth 150 mm
Display	
Display	2-line, 4-digit display Red / green, unit °C [°F optional]
Display range	-50...165 °C
Resolution	0.01 °C in the range of -9.99...99.99 °C, else 0.1 °C
General data	
<b>Dimensions</b>	
→ Width	210 mm
→ Height	380 + 50 mm
→ Depth	300 mm
<b>Weight</b>	Approx. 10 kg
<b>Power supply</b>	100...240 VAC, 50 / 60 Hz
<b>Power consumption</b>	Approx. 400 VA



### Scope of delivery

- Test certificate
- Mains cable
- Insert exchange tool
- Operating manual
- External calibration reference sensor TF 255-3-300

### Optional accessories

- Transport case
- Adapter sleeve
- Infrared calibration sleeve
- Surface calibration sleeve
- PC software
- PC cable
- DKD certificate
- Works certificate

# TP M 165 S



**Type** TP M 165 S

### Scope of delivery

- Test certificate
- Mains cable
- Insert exchange tool
- Operating manual
- Sensor basket, suction pump, transport cover
- Magnetic stirrer with magnet lifter
- Sensor lid with 5 silicone plugs

### Optional accessories

- Transport case
- Adapter sleeve
- Tube insert
- Infrared calibration sleeve
- PC software
- PC cable
- DKD certificate
- Works certificate

Technical data	
<b>Type</b>	TP M 165 S
<b>Control sensor</b>	Internal
Micro Bath	
<b>Temperature range</b>	-35...165 °C
<b>Tolerance</b>	±0.1 °C
<b>Stability</b>	±0.05 °C
<b>Measurement zone</b>	110...150 mm
Dry block	
<b>Temperature range</b>	-35...165 °C
<b>Tolerance</b>	±0.3 °C
<b>Stability</b>	±0.05 °C
<b>Measurement zone</b>	123...163 mm
Infrared	
<b>Temperature range</b>	-35...165 °C
<b>Tolerance</b>	±0.5 °C
<b>Stability</b>	±0.05 °C
<b>Measurement zone</b>	110 mm
Surface	
<b>Temperature range</b>	
<b>Tolerance</b>	
<b>Stability</b>	
<b>Measurement zone</b>	
Block	
	∅ 60 mm / depth 170 mm
Display	
<b>Display</b>	2-line, 4-digit display Red / green, unit °C (°F optional)
<b>Display range</b>	-50...165 °C
<b>Resolution</b>	0.01 °C in the range of -9.99...99.99 °C, else 0.1 °C
General data	
<b>Dimensions</b>	
→ Width	210 mm
→ Height	380 + 50 mm
→ Depth	300 mm
<b>Weight</b>	Approx. 12.5 kg
<b>Power supply</b>	100...240 VAC, 50 / 60 Hz
<b>Power consumption</b>	Approx. 400 VA

## TP M 165 S-U

### Type TP M 165 S-U



#### Scope of delivery

- Test certificate
- Mains cable
- Insert exchange tool
- Operating manual
- Sensor basket, suction pump, transport cover
- Magnetic stirrer with magnet lifter
- Sensor lid with 5 silicone plugs
- External calibration reference sensor TF 255-3-300

#### Optional accessories

- Transport case
- Adapter sleeve
- Tube insert
- Infrared calibration sleeve
- Surface calibration sleeve
- PC software
- PC cable
- DKD certificate
- Works certificate

#### Technical data

<b>Type</b>	TP M 165 S-U
<b>Control sensor</b>	Switchable internal / external
<b>Micro Bath</b>	
<b>Temperature range</b>	-35...165 °C
<b>Tolerance</b>	±0.1 °C
<b>Stability</b>	±0.05 °C
<b>Measurement zone</b>	110...150 mm
<b>Dry block</b>	
<b>Temperature range</b>	-35...165 °C
<b>Tolerance</b>	±0.3 °C
<b>Stability</b>	±0.05 °C
<b>Measurement zone</b>	123...163 mm
<b>Infrared</b>	
<b>Temperature range</b>	-35...165 °C
<b>Tolerance</b>	±0.5 °C
<b>Stability</b>	±0.05 °C
<b>Measurement zone</b>	110 mm
<b>Surface</b>	
<b>Temperature range</b>	-25...150 °C
<b>Tolerance</b>	±1 °C
<b>Stability</b>	±0.2 °C
<b>Measurement zone</b>	
<b>Block</b>	
	Ø 60 mm / depth 170 mm
<b>Display</b>	
<b>Display</b>	2-line, 4-digit display Red / green, unit °C (°F optional)
<b>Display range</b>	-50...165 °C
<b>Resolution</b>	0.01 °C in the range of -9.99...99.99 °C, else 0.1 °C
<b>General data</b>	
<b>Dimensions</b>	
→ Width	210 mm
→ Height	380 + 50 mm
→ Depth	300 mm
<b>Weight</b>	Approx. 12.5 kg
<b>Power supply</b>	100...240 VAC, 50 / 60 Hz
<b>Power consumption</b>	Approx. 400 VA

# TP M 225 S

Technical data	
Type	TP M 225 S
Control sensor	Internal
Micro Bath	
Temperature range	RT...225 °C
Tolerance	±0.2 °C
Stability	±0.05 °C
Measurement zone	110...150 mm
Dry block	
Temperature range	RT...225 °C
Tolerance	±0.4 °C
Stability	±0.05 °C
Measurement zone	123...163 mm
Infrared	
Temperature range	RT...225 °C
Tolerance	±0.5 °C
Stability	±0.05 °C
Measurement zone	110 mm
Surface	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Block	
	Ø 60 mm / depth 170 mm
Display	
Display	2-line, 4-digit display Red / green, unit °C (°F optional)
Display range	0...225 °C
Resolution	0.01 °C in the range of RT...99.99 °C, else 0.1 °C
General data	
<b>Dimensions</b>	
→ Width	150 mm
→ Height	330 + 70 mm
→ Depth	270 mm
<b>Weight</b>	Approx. 7.5 kg
<b>Power supply</b>	230 VAC, ±10 %, 50 / 60 Hz, optional 115 VAC, ±10 %, 50 / 60 Hz
<b>Power consumption</b>	Approx. 1000 VA

## Type TP M 225 S



### Scope of delivery

- Test certificate
- Mains cable
- Insert exchange tool
- Operating manual
- Sensor basket, suction pump, transport cover
- Magnetic stirrer with magnet lifter
- Sensor lid with 5 silicone plugs

### Optional accessories

- Transport case
- Service transport bag
- Adapter sleeve
- Tube insert
- Infrared calibration sleeve
- PC software
- PC cable
- DKD certificate
- Works certificate

## TP M 225 S-U

Technical data	
<b>Type</b>	TP M 225 S-U
<b>Control sensor</b>	Switchable internal / external
Micro Bath	
<b>Temperature range</b>	RT...225 °C
<b>Tolerance</b>	±0.2 °C
<b>Stability</b>	±0.05 °C
<b>Measurement zone</b>	110...150 mm
Dry block	
<b>Temperature range</b>	RT...225 °C
<b>Tolerance</b>	±0.4 °C
<b>Stability</b>	±0.05 °C
<b>Measurement zone</b>	123...163 mm
Infrared	
<b>Temperature range</b>	RT...225 °C
<b>Tolerance</b>	±0.5 °C
<b>Stability</b>	±0.05 °C
<b>Measurement zone</b>	110 mm
Surface	
<b>Temperature range</b>	RT...200 °C
<b>Tolerance</b>	±1 °C
<b>Stability</b>	±0.2 °C
<b>Measurement zone</b>	
Block	
	Ø 60 mm / depth 170 mm
Display	
<b>Display</b>	2-line, 4-digit display Red / green, unit °C [°F optional]
<b>Display range</b>	0...225 °C
<b>Resolution</b>	0.01 °C in the range of RT...99.99 °C, else 0.1 °C
General data	
<b>Dimensions</b>	
→ Width	150 mm
→ Height	330 + 70 mm
→ Depth	270 mm
<b>Weight</b>	Approx. 7.5 kg
<b>Power supply</b>	230 VAC, ±10 %, 50 / 60 Hz, optional 115 VAC, ±10 %, 50 / 60 Hz
<b>Power consumption</b>	Approx. 1000 VA

### Type TP M 225 S-U



#### Scope of delivery

- Test certificate
- Mains cable
- Insert exchange tool
- Operating manual
- Sensor basket, suction pump, transport cover
- Magnetic stirrer with magnet lifter
- Sensor lid with 5 silicone plugs
- External calibration reference sensor TF 255-3-300

#### Optional accessories

- Transport case
- Service transport bag
- Adapter sleeve
- Tube insert
- Infrared calibration sleeve
- Surface calibration sleeve
- PC software
- PC cable
- DKD certificate
- Works certificate

# TP M 255 S



**Type** TP M 255 S

## Scope of delivery

- Test certificate
- Mains cable
- Insert exchange tool
- Operating manual
- Sensor basket, suction pump, transport cover
- Magnetic stirrer with magnet lifter
- Sensor lid with 5 silicone plugs

## Optional accessories

- Transport case
- Service transport bag
- Adapter sleeve
- Tube insert
- Infrared calibration sleeve
- PC software
- PC cable
- DKD certificate
- Works certificate

Technical data	
<b>Type</b>	TP M 255 S
<b>Control sensor</b>	Internal
Micro Bath	
<b>Temperature range</b>	RT...255 °C
<b>Tolerance</b>	±0.2 °C
<b>Stability</b>	±0.05 °C
<b>Measurement zone</b>	110...150 mm
Dry block	
<b>Temperature range</b>	RT...255 °C
<b>Tolerance</b>	±0.4 °C
<b>Stability</b>	±0.05 °C
<b>Measurement zone</b>	123...163 mm
Infrared	
<b>Temperature range</b>	RT...255 °C
<b>Tolerance</b>	±0.5 °C
<b>Stability</b>	±0.05 °C
<b>Measurement zone</b>	110 mm
Surface	
<b>Temperature range</b>	
<b>Tolerance</b>	
<b>Stability</b>	
<b>Measurement zone</b>	
Block	
	Ø 60 mm / depth 170 mm
Display	
<b>Display</b>	2-line, 4-digit display Red / green, unit °C [°F optional]
<b>Display range</b>	0...225 °C
<b>Resolution</b>	0.01 °C in the range of RT...99.99 °C, else 0.1 °C
General data	
<b>Dimensions</b>	
→ Width	150 mm
→ Height	330 + 70 mm
→ Depth	270 mm
<b>Weight</b>	Approx. 7.5 kg
<b>Power supply</b>	230 VAC, ±10 %, 50 / 60 Hz, optional 115 VAC, ±10 %, 50 / 60 Hz
<b>Power consumption</b>	Approx. 1000 VA

## TP M 255 S-U



### Scope of delivery

- Test certificate
- Mains cable
- Insert exchange tool
- Operating manual
- Sensor basket, suction pump, transport cover
- Magnetic stirrer with magnet lifter
- Sensor lid with 5 silicone plugs
- External calibration reference sensor TF 255-3-300

### Optional accessories

- Transport case
- Service transport bag
- Adapter sleeve
- Tube insert
- Infrared calibration sleeve
- Surface calibration sleeve
- PC software
- PC cable
- DKD certificate
- Works certificate

Technical data	
<b>Type</b>	TP M 255 S-U
<b>Control sensor</b>	Switchable internal / external
Micro Bath	
<b>Temperature range</b>	RT...255 °C
<b>Tolerance</b>	±0.2 °C
<b>Stability</b>	±0.05 °C
<b>Measurement zone</b>	110...150 mm
Dry block	
<b>Temperature range</b>	RT...255 °C
<b>Tolerance</b>	±0.4 °C
<b>Stability</b>	±0.05 °C
<b>Measurement zone</b>	123...163 mm
Infrared	
<b>Temperature range</b>	RT...255 °C
<b>Tolerance</b>	±0.5 °C
<b>Stability</b>	±0.05 °C
<b>Measurement zone</b>	110 mm
Surface	
<b>Temperature range</b>	RT...200 °C
<b>Tolerance</b>	±1 °C
<b>Stability</b>	±0.2 °C
<b>Measurement zone</b>	
Block	
	Ø 60 mm / depth 170 mm
Display	
<b>Display</b>	2-line, 4-digit display Red / green, unit °C (°F optional)
<b>Display range</b>	0...225 °C
<b>Resolution</b>	0.01 °C in the range of RT...99.99 °C, else 0.1 °C
General data	
<b>Dimensions</b>	
→ Width	150 mm
→ Height	330 + 70 mm
→ Depth	270 mm
<b>Weight</b>	Approx. 7.5 kg
<b>Power supply</b>	230 VAC, ±10 %, 50 / 60 Hz, optional 115 VAC, ±10 %, 50 / 60 Hz
<b>Power consumption</b>	Approx. 1000 VA

# TP 17 450 S

Technical data	
Type	TP 17 450 S
Control sensor	Internal
Micro Bath	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Dry block	
Temperature range	RT...450 °C
Tolerance	±0.3 °C
Stability	±0.05 °C
Measurement zone	110...150 mm
Infrared	
Temperature range	RT...450 °C
Tolerance	±0.5 °C
Stability	±0.05 °C
Measurement zone	110 mm
Surface	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Block	
	Ø 60 mm / depth 150 mm
Display	
Display	2-line, 4-digit display Red / green, unit °C [°F optional]
Display range	0...450 °C
Resolution	0.01 °C in the range of RT...99.99 °C, else 0.1 °C
General data	
<b>Dimensions</b>	
→ Width	150 mm
→ Height	330 + 70 mm
→ Depth	270 mm
<b>Weight</b>	Approx. 7.5 kg
<b>Power supply</b>	230 VAC, ±10 %, 50 / 60 Hz
<b>Power consumption</b>	Approx. 2000 VA



### Scope of delivery

- Test certificate
- Mains cable
- Insert exchange tool
- Operating manual

### Optional accessories

- Transport case
- Service transport bag
- Adapter sleeve
- Infrared calibration sleeve
- PC software
- PC cable
- DKD certificate
- Works certificate



The TP 17 450 S temperature calibrator model has a very large calibration volume.



## TP 17 450 S-U

Technical data	
Type	TP 17 450 S-U
Control sensor	Switchable internal / external
Micro Bath	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Dry block	
Temperature range	RT...450 °C
Tolerance	±0.3 °C
Stability	±0.05 °C
Measurement zone	110...150 mm
Infrared	
Temperature range	RT...450 °C
Tolerance	±0.5 °C
Stability	±0.05 °C
Measurement zone	110 mm
Surface	
Temperature range	RT...400 °C
Tolerance	±1 °C
Stability	±0.2 °C
Measurement zone	
Block	
	∅ 60 mm / depth 150 mm
Display	
Display	2-line, 4-digit display Red / green, unit °C (°F optional)
Display range	0...450 °C
Resolution	0.01 °C in the range of RT...99.99 °C, else 0.1 °C
General data	
<b>Dimensions</b>	
→ Width	150 mm
→ Height	330 + 70 mm
→ Depth	270 mm
<b>Weight</b>	Approx. 7.5 kg
<b>Power supply</b>	230 VAC, ±10 %, 50 / 60 Hz
<b>Power consumption</b>	Approx. 2000 VA

### Type TP 17 450 S-U



#### Scope of delivery

- Test certificate
- Mains cable
- Insert exchange tool
- Operating manual
- External calibration reference sensor TF 650-3-300

#### Optional accessories

- Transport case
- Service transport bag
- Adapter sleeve
- Infrared calibration sleeve
- Surface calibration sleeve
- PC software
- PC cable
- DKD certificate
- Works certificate

# TP 17 650 S



### Scope of delivery

- Test certificate
- Mains cable
- Insert exchange tool
- Operating manual

### Optional accessories

- Transport case
- Service transport bag
- Adapter sleeve
- PC software
- PC cable
- DKD certificate
- Works certificate

Technical data	
Type	TP 17 650 S
Control sensor	Internal
Micro Bath	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Dry block	
Temperature range	RT...650 °C
Tolerance	±0.4 °C
Stability	±0.05 °C
Measurement zone	110...150 mm
Infrared	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Surface	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Block	
	∅ 28 mm / depth 150 mm
Display	
Display	2-line, 4-digit display Red / green, unit °C (°F optional)
Display range	0...650 °C
Resolution	0.01 °C in the range of RT...99.99 °C, else 0.1 °C
General data	
<b>Dimensions</b>	
→ Width	150 mm
→ Height	330 + 70 mm
→ Depth	270 mm
<b>Weight</b>	Approx. 7.5 kg
<b>Power supply</b>	230 VAC, ±10 %, 50 / 60 Hz, optional 115 VAC, ±10 %, 50 / 60 Hz
<b>Power consumption</b>	Approx. 1000 VA

## TP 28 850 E

### Type TP 28 850 E



#### Scope of delivery

- Test certificate
- Mains cable
- Insert exchange tool
- Operating manual

#### Optional accessories

- Transport case
- Adapter sleeve
- PC software
- PC cable
- DKD certificate
- Works certificate

#### Technical data

<b>Type</b>	TP 28 850 E
<b>Control sensor</b>	Internal
<b>Micro Bath</b>	
<b>Temperature range</b>	
<b>Tolerance</b>	
<b>Stability</b>	
<b>Measurement zone</b>	
<b>Dry block</b>	
<b>Temperature range</b>	RT...850 °C
<b>Tolerance</b>	±0.5 °C
<b>Stability</b>	±0.05 °C
<b>Measurement zone</b>	60...100 mm oder 160...200 mm
<b>Infrared</b>	
<b>Temperature range</b>	
<b>Tolerance</b>	
<b>Stability</b>	
<b>Measurement zone</b>	
<b>Surface</b>	
<b>Temperature range</b>	
<b>Tolerance</b>	
<b>Stability</b>	
<b>Measurement zone</b>	
<b>Block</b>	
	∅ 18 o. 28 mm / depth 100 o. 200 mm
<b>Display</b>	
<b>Display</b>	2-line, 16-digit display Unit °C (°F optional)
<b>Display range</b>	0...850 °C
<b>Resolution</b>	0.01 °C in the range of RT...99.99 °C, else 0.1 °C
<b>General data</b>	
<b>Dimensions</b>	
→ Width	410 mm
→ Height	290 mm
→ Depth	415 + 100 mm
<b>Weight</b>	Approx. 16 kg
<b>Power supply</b>	230 VAC, 50 / 60 Hz
<b>Power consumption</b>	Approx. 2000 VA

# TP 17 ZERO

Technical data	
Type	TP 17 ZERO
Control sensor	Internal
Micro Bath	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Dry block	
Temperature range	-10...100 °C
Tolerance	±0.05 °C at 0 °C
Stability	±0.05 °C at 0 °C
Measurement zone	110...150 mm
Infrared	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Surface	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Block	
	7 drillings with Ø 6,5 mm, depth 150 mm
Display	
Display	1-line, 4-digit display Red, unit °C (°F optional)
Display range	-10...100 °C
Resolution	0.1 °C
General data	
<b>Dimensions</b>	
→ Width	160 mm
→ Height	320 + 50 mm
→ Depth	230 mm
<b>Weight</b>	Approx. 7 kg
<b>Power supply</b>	100...240 VAC, 50 / 60 Hz
<b>Power consumption</b>	Approx. 400 VA

## Type TP 17 ZERO



### Scope of delivery

- Test certificate
- Mains cable
- Operating manual

### Optional accessories

- Transport case
- PC software
- PC cable
- DKD certificate
- Works certificate



The TP 17 ZERO temperature calibrator is ideal for creating the ice point.

## TP Premium series

The TP Premium series stands for optimum performance and outstanding ease of use. With the help of the self-explanatory menu structure, all the necessary entries can be made quickly and easily. The block and set temperature, as well as the difference and the variance of the stability, are displayed on the touch display. The block temperature can be set to precisely 0.001 °C.

### Dry block function



The optimum thermal coupling from the block to test item is achieved with the correct adapter sleeve. With the aid of the adapter sleeve, straight temperature sensors of virtually any length and diameter can be calibrated. The dry block covers the entire temperature range without the need to change the calibration medium. Viscosity, flash points or outgassing are of no concern.

### Micro bath function



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 tank floor.

### Black body function



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 is simply held at the specified distance above the measurement opening, 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 temperature function



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.



# TP 38 165 E



**Type TP 38 165 E**

### Scope of delivery

- Test certificate
- Mains cable
- Insert exchange tool
- Operating manual

### Optional accessories

- Transport case
- Adapter sleeve
- PC software
- PC cable
- Precision measuring instrument
- DKD certificate
- Works certificate

Technical data	
Type	TP 38 165 E
Control sensor	Internal
Micro Bath	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Dry block	
Temperature range	-35...165 °C
Tolerance	±0.1 °C
Stability	0.01...0.05 °C
Measurement zone	110...150 mm
Infrared	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Surface	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Block	
	∅ 28 mm / depth 150 mm
Display	
Display	Monochrome, graphic display Units °C / °F / K
Display range	-50...165 °C
Resolution	0.01 °C
General data	
<b>Dimensions</b>	
→ Width	153 mm
→ Height	347 mm
→ Depth	348 mm
<b>Weight</b>	Approx. 12 kg
<b>Power supply</b>	100...240 VAC, 50 / 60 Hz
<b>Power consumption</b>	Approx. 400 VA

# TP 38 165



**Type TP 38 165**

Technical data	
Type	TP 38 165
Control sensor	switchable internal / external
Micro Bath	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Dry block	
Temperature range	-35...165 °C
Tolerance	±0.1 °C
Stability	0.01...0.05 °C
Measurement zone	110...150 mm
Infrared	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Surface	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Block	
	∅ 28 mm / depth 150 mm
Display	
Display	Monochrome, graphic display Units °C / °F / K / Q / mV / mA
Display range	-50...165 °C
Resolution	0.01 °C
General data	
<b>Dimensions</b>	
→ Width	153 mm
→ Height	347 mm
→ Depth	348 mm
<b>Weight</b>	Approx. 12 kg
<b>Power supply</b>	100...240 VAC, 50 / 60 Hz
<b>Power consumption</b>	Approx. 400 VA

### Scope of delivery

- Test certificate
- Mains cable
- Insert exchange tool
- Operating manual

### Optional accessories

- Transport case
- Adapter sleeve
- PC software
- PC cable
- External calibration reference sensor
- DKD certificate
- Works certificate



## TP 38 650 E

Technical data	
Type	TP 38 650 E
Control sensor	Internal
Micro Bath	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Dry block	
Temperature range	RT...650 °C
Tolerance	±0.2 °C
Stability	0.03...0.1 °C
Measurement zone	110...150 mm
Infrared	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Surface	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Block	
	∅ 28 mm / depth 150 mm
Display	
Display	Monochrome, graphic display Units °C / °F / K
Display range	0...650 °C
Resolution	0.01 °C
General data	
<b>Dimensions</b>	
→ Width	153 mm
→ Height	347 mm
→ Depth	348 mm
<b>Weight</b>	Approx. 10 kg
<b>Power supply</b>	230 VAC, ±10 %, 50 / 60 Hz, optional 115 VAC, ±10 %, 50 / 60 Hz
<b>Power consumption</b>	Approx. 1000 VA

### Type TP 38 650 E



#### Scope of delivery

- Test certificate
- Mains cable
- Insert exchange tool
- Operating manual

#### Optional accessories

- Transport case
- Adapter sleeve
- PC software
- PC cable
- Precision measuring instrument
- DKD certificate
- Works certificate

# TP 38 650

Technical data	
Type	TP 38 650
Control sensor	Switchable internal / external
Micro Bath	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Dry block	
Temperature range	RT...650 °C
Tolerance	±0.2 °C
Stability	0.03...0.1 °C
Measurement zone	110...150 mm
Infrared	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Surface	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Block	
	Ø 28 mm / depth 150 mm
Display	
Display	Monochrome, graphic display Units °C / °F / K / Q / mV / mA
Display range	0...650 °C
Resolution	0.01 °C
General data	
<b>Dimensions</b>	
→ Width	153 mm
→ Height	347 mm
→ Depth	348 mm
<b>Weight</b>	Approx. 10 kg
<b>Power supply</b>	230 VAC, ±10 %, 50 / 60 Hz, optional 115 VAC, ±10 %, 50 / 60 Hz
<b>Power consumption</b>	Approx. 1000 VA

## Type TP 38 650



### Scope of delivery

- Test certificate
- Mains cable
- Insert exchange tool
- Operating manual

### Optional accessories

- Transport case
- Adapter sleeve
- PC software
- PC cable
- External calibration reference sensor
- DKD certificate
- Works certificate

# TP 37 200 E

## Type TP 37 200 E



### Scope of delivery

- Test certificate
- Mains cable
- Insert exchange tool
- PC- and network cable
- Operating manual

### Optional accessories

- Transport case
- Adapter sleeve
- External reference sensor TF 255-3-300
- PC software
- Network-switch, barcode-reader, WLAN-router
- DKD certificate
- Works certificate

### Technical data

<b>Type</b>	TP 37 200 E
<b>Control sensor</b>	Switchable internal / external
<b>Micro Bath</b>	
<b>Temperature range</b>	
<b>Tolerance</b>	
<b>Stability</b>	
<b>Measurement zone</b>	
<b>Dry block</b>	
<b>Temperature range</b>	-55...200 °C
<b>Tolerance</b>	±0.2 °C
<b>Stability</b>	±0.05 °C
<b>Measurement zone</b>	110...150 mm
<b>Infrared</b>	
<b>Temperature range</b>	
<b>Tolerance</b>	
<b>Stability</b>	
<b>Measurement zone</b>	
<b>Surface</b>	
<b>Temperature range</b>	
<b>Tolerance</b>	
<b>Stability</b>	
<b>Measurement zone</b>	
<b>Block</b>	
	Ø 28 mm / depth 150 mm
<b>Display</b>	
<b>Display</b>	Brilliant Color-Touchscreen (7") Viewing angle 120...140° Brightness 400 cd / m <sup>2</sup> Unit °C / °F
<b>Display range</b>	-60...200 °C
<b>Resolution</b>	0.1 / 0.01 / 0.001 °C
<b>General data</b>	
<b>Dimensions</b>	
→ Width	210 mm
→ Height	380 + 50 mm
→ Depth	300 mm
<b>Weight</b>	Approx. 12.5 kg
<b>Power supply</b>	100...240 VAC, 50 / 60 Hz
<b>Power consumption</b>	Approx. 600 VA

# TP 37 165 E

Technical data	
Type	TP 37 165 E
Control sensor	Switchable internal / external
Micro Bath	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Dry block	
Temperature range	-35...165°C
Tolerance	±0.2 °C
Stability	±0.05 °C
Measurement zone	110...150 mm
Infrared	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Surface	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Block	
	Ø 28 mm / depth 150 mm
Display	
Display	Brilliant Color-Touchscreen (7") Viewing angle 120...140° Brightness 400 cd / m <sup>2</sup> Unit °C / °F
Display range	-50...165 °C
Resolution	0.1 / 0.01 / 0.001 °C
General data	
<b>Dimensions</b>	
→ Width	210 mm
→ Height	380 + 50 mm
→ Depth	300 mm
<b>Weight</b>	Approx. 10 kg
<b>Power supply</b>	100...240 VAC, 50 / 60 Hz
<b>Power consumption</b>	Approx. 400 VA



### Scope of delivery

- Test certificate
- Mains cable
- Insert exchange tool
- PC- and network cable
- Operating manual

### Optional accessories

- Transport case
- Adapter sleeve
- External reference sensor TF 255-3-300
- PC software
- Network-switch, barcode-reader, WLAN-router
- DKD certificate
- Works certificate

# TP 37 166 E

## Typ TP 37 166 E



### Scope of delivery

- Test certificate
- Mains cable
- Insert exchange tool
- PC- and network cable
- Operating manual

### Optional accessories

- Transport case
- Adapter sleeve
- Infrared calibration sleeve
- Surface calibration sleeve
- External reference sensor TF 255-3-300
- PC software
- Network-switch, barcode-reader, WLAN-router
- DKD certificate
- Works certificate

Technical data	
Type	TP 37 166 E
Control sensor	Switchable internal / external
Micro Bath	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Dry block	
Temperature range	-35...165 °C
Tolerance	±0.2 °C
Stability	±0.05 °C
Measurement zone	110...150 mm
Infrared	
Temperature range	-35...165 °C
Tolerance	±0.5 °C
Stability	±0.05 °C
Measurement zone	110 mm
Surface	
Temperature range	-25...150 °C
Tolerance	±1 °C
Stability	±0.2 °C
Measurement zone	
Block	
	Ø 60 mm / depth 150 mm
Display	
Display	Brilliant Color-Touchscreen (7") Viewing angle 120...140° Brightness 400 cd / m <sup>2</sup> Unit °C / °F
Display range	-50...165 °C
Resolution	0.1 / 0.01 / 0.001 °C
General data	
<b>Dimensions</b>	
→ Width	210 mm
→ Height	380 + 50 mm
→ Depth	300 mm
<b>Weight</b>	Approx. 13 kg
<b>Power supply</b>	100...240 VAC, 50 / 60 Hz
<b>Power consumption</b>	Approx. 400 VA



The Typ TP 37 166 E temperature calibrator model has a very large calibration volume.

# TP 3M 165 E

## Type TP 3M 165 E



### Scope of delivery

- Test certificate
- Mains cable
- Insert exchange tool
- PC- and network cable
- Operating manual
- Sensor basket, suction pump, transport cover
- Magnetic stirrer with magnet lifter
- Sensor lid with 5 silicone plugs

### Optional accessories

- Transport case
- Adapter sleeve
- Tube insert
- Infrared calibration sleeve
- Surface calibration sleeve
- External reference sensor TF 255-3-300
- PC software
- Network-switch, barcode-reader, WLAN-router
- DKD certificate
- Works certificate

### Technical data

<b>Type</b>	TP 3M 165 E
<b>Control sensor</b>	Switchable internal / external
<b>Micro Bath</b>	
<b>Temperature range</b>	-35...165 °C
<b>Tolerance</b>	±0.1 °C
<b>Stability</b>	±0.05 °C
<b>Measurement zone</b>	110...150 mm
<b>Dry block</b>	
<b>Temperature range</b>	-35...165 °C
<b>Tolerance</b>	±0.3 °C
<b>Stability</b>	±0.05 °C
<b>Measurement zone</b>	123...163 mm
<b>Infrared</b>	
<b>Temperature range</b>	-35...165 °C
<b>Tolerance</b>	±0.5 °C
<b>Stability</b>	±0.05 °C
<b>Measurement zone</b>	110 mm
<b>Surface</b>	
<b>Temperature range</b>	-25...150 °C
<b>Tolerance</b>	±1 °C
<b>Stability</b>	±0.2 °C
<b>Measurement zone</b>	
<b>Block</b>	
	Ø 60 mm / depth 170 mm
<b>Display</b>	
<b>Display</b>	Brilliant Color-Touchscreen (7") Viewing angle 120...140° Brightness 400 cd / m <sup>2</sup> Unit °C / °F
<b>Display range</b>	-50...165 °C
<b>Resolution</b>	0.1 / 0.01 / 0.001 °C
<b>General data</b>	
<b>Dimensions</b>	
→ Width	210 mm
→ Height	380 + 50 mm
→ Depth	300 mm
<b>Weight</b>	Approx. 13 kg
<b>Power supply</b>	100...240 VAC, 50 / 60 Hz
<b>Power consumption</b>	Approx. 400 VA

# TP 28 1300

**Type TP 28 1300**



### Scope of delivery

- Test certificate
- Mains cable
- Insert exchange tool
- Operating manual

### Optional accessories

- Transport case
- Adapter sleeve
- PC software
- PC cable
- DKD certificate
- Works certificate

Technical data	
Type	TP 28 1300
Control sensor	Internal
Micro Bath	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Dry block	
Temperature range	400...1300 °C
Tolerance	±2 °C
Stability	±0.5 °C
Measurement zone	at 200 mm
Infrared	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Surface	
Temperature range	
Tolerance	
Stability	
Measurement zone	
Block	
	∅ 28 mm / depth 200 mm
Display	
Display	1-line, 4½-digit display Red, unit °C [°F optional]
Display range	0...1300 °C
Resolution	0.5 °C
General data	
<b>Dimensions</b>	
→ Width	510 mm
→ Height	290 mm
→ Depth	415 + 100 mm
<b>Weight</b>	Approx. 25 kg
<b>Power supply</b>	230 VAC, 50 / 60 Hz
<b>Power consumption</b>	Approx. 1000 VA

# Overview temperature calibrators

	TP Basic				TP Solid			
-55...200 °C			TP 17 200		TP 17 200 S			
-35...165 °C		TP 17165 M	TP 17 165	TP 17 166	TP 17 165 S		TP 17 166 S	
-10...100 °C					TP 17 Zero			
RT...200 °C	TP 18 200 E							
RT...225 °C								
RT...255 °C								
RT...450 °C				TP 17 450			TP 17 450 S	
RT...650 °C		TP 17 650 M	TP 17650		TP 17 650 S			
RT...850 °C	TP 18 850 E					TP 28 850 E		
400...1300 °C								
<b>Metrology*</b>								
Best Resolution	1 °C	1 °C	0.1 °C	0.1 °C	0.01 °C	0.01 °C	0.01 °C	
Stability	0.1 °C	0.1 °C	0.1 °C	0.1 °C	0.05 °C	0.05 °C	0.05 °C	
Tolerance	1 °C	1 °C	< 0.8 °C	< 0.6 °C	< 0.4 °C	< 0.5 °C	< 0.3 °C	
<b>Testholder</b>								
Block Ø	18 / 28 mm	28 mm	28 mm	60 mm	6.5 / 28 mm	18 / 28 mm	60 mm	
Dry block	✓	✓	✓	✓	✓	✓	✓	
Infrared							✓	
Microbath								
Surface								
<b>Scope of delivery</b>								
PC connection					✓	✓	✓	
External reference connection								
Internal precision measuring instrument								
Data logger function								
Controller OFF			✓	✓	✓		✓	
Manual control			✓	✓	✓		✓	
Set-value memory					✓		✓	
Temperature levels					✓		✓	
Gradient control					✓		✓	
Periodic counter	✓	✓	✓	✓	✓		✓	
<b>Optional accessories</b>								
Transport case	✓	✓	✓	✓	✓	✓	✓	
Service transport bag**		✓	✓	✓	✓		✓	
PC software					✓	✓	✓	
PC cable					✓	✓	✓	
Precision measuring instrument								
External calibration reference sensor								

\* The specifications listed are for guidance.

Detailed information can be found on the individual product pages.

\*\* For calibrators with slim body only



				TP Premium					
							TP 37 200 E		
	TP M 165 S	TP 17 166 S-U	TP M 165 S-U	TP 38 165 E		TP 38 165	TP 37165 E	TP 37 166 E	TP 3M 165 E
	TP M 225 S		TP M 225 S-U						
	TP M 255 S								
		TP 17 450 S-U							
				TP 38 650 E		TP 38 650			
					TP 28 1300				
	0.01 °C	0.01 °C	0.01 °C	0.01 °C	0.5 °C	0.01 °C	0.001 °C	0.001 °C	0.001 °C
	0.05 °C	0.05 °C	0.05 °C	-0.03 °C	0.5 °C	-0.03 °C	0.05 °C	0.05 °C	0.05 °C
	< 0.2 °C	< 0.3 °C	< 0.2 °C	< 0.2 °C	2 °C	< 0.2 °C	< 0.2 °C	< 0.3 °C	< 0.2 °C
	60 mm	60 mm	60 mm	28 mm	28 mm	28 mm	60 mm	60 mm	60 mm
	✓	✓	✓	✓	✓	✓	✓	✓	✓
	✓	✓	✓				✓	✓	✓
	✓		✓						✓
		✓	✓				✓	✓	✓
	✓	✓	✓	✓	✓	✓	✓	✓	✓
		✓	✓				✓	✓	✓
	✓	✓	✓	✓	✓	✓	✓	✓	✓
		✓	✓				✓	✓	✓
	✓	✓	✓	✓	✓	✓	✓	✓	✓
		✓	✓				✓	✓	✓
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	✓	✓	✓	✓	✓	✓	✓	✓	✓
						✓			
						✓	✓	✓	✓

# Accessories

## Adapter sleeves

Dry-block calibrators are designed to simplify temperature calibration in the lab and in the field. With the help of adapter sleeves, straight temperature sensors with almost any length and diameter can be calibrated. The dry block covers the entire temperature range of the calibrator with no need for changing the calibration medium. Viscosity, flash point and outgassing are of no concern. Every adapter sleeve can be equipped with a single or several multi bores. Bores with diameters ranging from 1.5 to 25.5 mm can be realised in 0.5 mm steps. Ideally, the internal diameter of the sleeve is 0.5 mm larger than the outer diameter of the test item.

## Calibration liquids

Using a liquid calibration medium is advantageous for checking temperature sensors with unusual shapes or dimensions. The test item is immersed in the liquid without an insulating air gap, resulting in direct contact between the calibrator and the test item. The calibration liquid is chosen according to the desired calibration temperature. The sensor lid with 5 silicone plugs and / or a support base ensures the stable positioning of the test items in the calibration bath. The lid reduces heat emission over the surface of the liquid, thereby ensuring optimum measurement results.

	Demineralised water	Silicone oil 10 CS	Silicone oil 20 CS	Silicone oil 50 CS
Limits	2...95 °C	-35...155 °C	7...220 °C	50...270 °C
Flash point		165 °C	230 °C	280 °C

## Tub insert

Our tub insert is the ideal solution for applications in which a variety of liquids are used. It eliminates the time-consuming task of exchanging the liquids and cleaning the bath. The separate tub insert is just as leak-proof as the bath itself.

## Calibration and testing software

The in-house calibration software application is used for temperature calibrators that are equipped with an external interface for programming and evaluating the calibration values. It can be operated easily from an external PC. The following calibration tasks can be performed:

- Programmable ramp functions
- Programmable temperature cycles
- Series tests (e.g. for incoming goods inspection)
- Preparing the test data in graphical and in tabular form
- Incorporating customer data in the certificates
- Programmable temperature gradients



# Calibration reference sensors



If the sensor to be calibrated is too short to be inserted into the homogeneous temperature zone of the metal block, an external reference sensor can be used without any problems. This results in a small, flexible measurement zone.

## Calibration reference sensor - Type TF

Pt100 without probe specific linearization in the controller for Series TP...S-U, TP 3...

Technical data	
Measuring range	
TF 255-3-300	-50...255 °C / sensitive area 2 mm
TF 650-3-300	-50...650 °C / sensitive area 5 mm
Tolerance	
±0.05 °C in the range of -9.99...99.99 °C, else ±0.1 °C	
Version	
Material	Rust and acid-proof Stainless steel 1.4571 Robust plastic handle
Immersion tube	Ø 3 mm, L = 300 mm
Electrical connection	Silicon cable with 4-pin mini DIN-plug

## An ace of calibration

Particular attention is given to the physical construction to ensure that shocks have minimal effect on the reference sensor.

The use of robust measuring elements in thinfilm technology ensure standardised and reliable performance.

Intensive ageing tests are carried out at the maximum operating temperature to examine longterm temperature stability. In order to detect longterm effects through thermal stress, a defined tempering process is carried out with a special selection of reference sensors over 300 hours. In the case of stress caused by thermocycling, no significant hysteresis effects were found.

The physical structure of the reference sensors requires that different materials be joined together. The special design of the joint areas prevents the occurrence of parasitic thermoelectric voltages. Thus the measurement reading is not affected by the temperature gradients from the measurement point to the handle.

In examining the self-heating characteristics it was seen that measurement currents  $\leq 1$  mA are ideally suited, since no distortion of the measurement result occurs. Here the self-heating effect can be neglected.

## Calibration reference sensor - Type TFEE

Pt100 with probe specific linearization through EEPROM in the handle for TT-Scan and Series TP 38...

Technical data	
Measuring range	
TFEE 255-3-300	-50...255 °C / sensitive area 2 mm
TFEE 650-3-300	-50...650 °C / sensitive area 5 mm
Tolerance	
±0.05 °C in the range of -35.00...199.99 °C, else ±0.1 °C	
Version	
Material	Rust and acid-proof Stainless steel 1.4571 Robust plastic handle
Immersion tube	Ø 3 mm, L = 300 mm
Electrical connection	Silicon cable with 7-pin mini DIN-plug