

Millikelvin Thermometers



MKT 10
MKT 50





MKT 10

The small and easily portable “little brother” of MKT 50 offers one sensor and comes in a convenient case. MKT 10 is a small and lightweight handheld instrument that even fits in your hand luggage when you travel frequently. It is also ideal for at-line measurements and quick measurements on site, for example in the pharmaceutical, chemical and biotechnological industries, as it measures with an accuracy of 10 mK. Whether you want to measure directly in your instrument or in a liquid bath – this high-precision handheld thermometer can do both with its probe made of stainless steel.

3 modes and quick calculation of the mean value

- Temperature mode
- Temperature statistics mode (statistics of up to 50 values) for measurements over a long period of time
- Resistance statistics mode for measurements over a long period of time
- The mean value is calculated from up to 50 measurement values

Accuracy of temperature measurement

- The sensor parameters are entered into MKT 10 according to DIN EN 60751
- MKT 10 and the temperature probe are calibrated as a measuring chain which provides good measurement uncertainty
- Measurement with an accuracy of 10 mK
- Highly stable PT 100 sensor with DAkkS certificate

Flexible power supply and communication

- Battery-operated
- Power over Ethernet (PoE): ecologically friendly power supply for less use of batteries

Temperature measurement with the highest precision

Imagine a world without temperature measurement. We wouldn't know what to wear before going outside, how to bake the perfect cake and when it is the best time for a jump into a nice cool swimming pool. We are confronted with temperature at all times and everywhere. Particularly for certain industries and in science temperature measurement with the highest precision is of the greatest importance, and determination of physical parameters such as density and viscosity rely on this accurate temperature measurement. In the pharmaceutical industry, for example, very accurate temperature measurement is essential. The temperature sensor has to have a level of accuracy three or more times higher than the measuring equipment which has to be validated. Anton Paar therefore offers two high-precision thermometers to specifically suit your individual applications – be it in the lab, at-line or for convenient mobile use.

MKT 10	Technical specifications	MKT 50
Measuring range		
0 °C to 100 °C (32 °F to 212 °F)	Temperature	-260 °C to +962 °C (-436 °F to +1764 °F)
80 Ω to 175 Ω	Resistance	0 Ω to 440 Ω
Resolution		
1 mK	Temperature	0.1 mK
0.4 Ω	Resistance	40 μΩ
Measurement uncertainty*		Measurement uncertainty**
< 10 mK	Temperature	< 1 mK
< 4 m Ω	Resistance	< 400 μΩ
Pt 100	Measuring sensor	Pt 100 or Pt 25.5 (DIN EN 60751 or ITS-90)
1 mA _{DC}	Measuring current	0.41 mA _{rms}
400 Ω (Vishay Precision Group, VHP 101)	Internal reference resistor	400 Ω (Vishay Precision Group, VHP 101)
1	Number of sensor inputs	2
4-wire, soldered	Sensor connection	4-wire (Lemo 1S304)
1 second (for one channel)	Measuring time	1.44 seconds (for both channels)
LAN (PoE, 10 Mbit)	Data outputs	RS-232 D (optional USB***) LAN (Ethernet, 10 Mbit)
0 °C to 35 °C (for highest accuracy) 20 °C to 25 °C recommended)	Ambient operating temperature	0 °C to 35 °C (for highest accuracy) 20 °C to 25 °C recommended)
Power over Ethernet (PoE) or 4xAA batteries	Power supply	Power adapter 7.5 V or 2xAA batteries
200 mm x 100 mm x 35 mm (7.8 in x 3.4 in x 1.38 in)	Dimensions (L x W x H)	240 mm x 190 mm x 110 mm (9.5 in x 7.5 in x 4.3 in)
approx. 500 g (1.1 lbs)	Weight	approx. 2 kg (4.4 lbs)

*) refers to the calibration of the whole measuring chain (confidence level: 95 %, number of measurement values: 50, ambient temperature during calibration: 23 °C)

**) refers to the calibration of the reference resistor without contribution of the sensor (confidence level: 95 %, number of measurement values: 50, ambient temperature during calibration: 23 °C)

***) with USB/RS-232 adapter



MKT 50

MKT 50 can be connected to up to 16 probes. It offers traceable temperature measurements and calibrations for industry, calibration laboratories, and research. In combination with Platinum Resistance Thermometers (Pt 100 and Pt 25.5) it is designed for temperature measurements of the highest accuracy. Its digital interfaces make it ideal for automatic comparison and fixed-point calibrations. Using calibrated Platinum Resistance Thermometers you can achieve a measurement uncertainty (instrument and sensor) of up to 1.4 mK. Many officially accredited calibration laboratories rely on MKT 50.

User-friendly and versatile

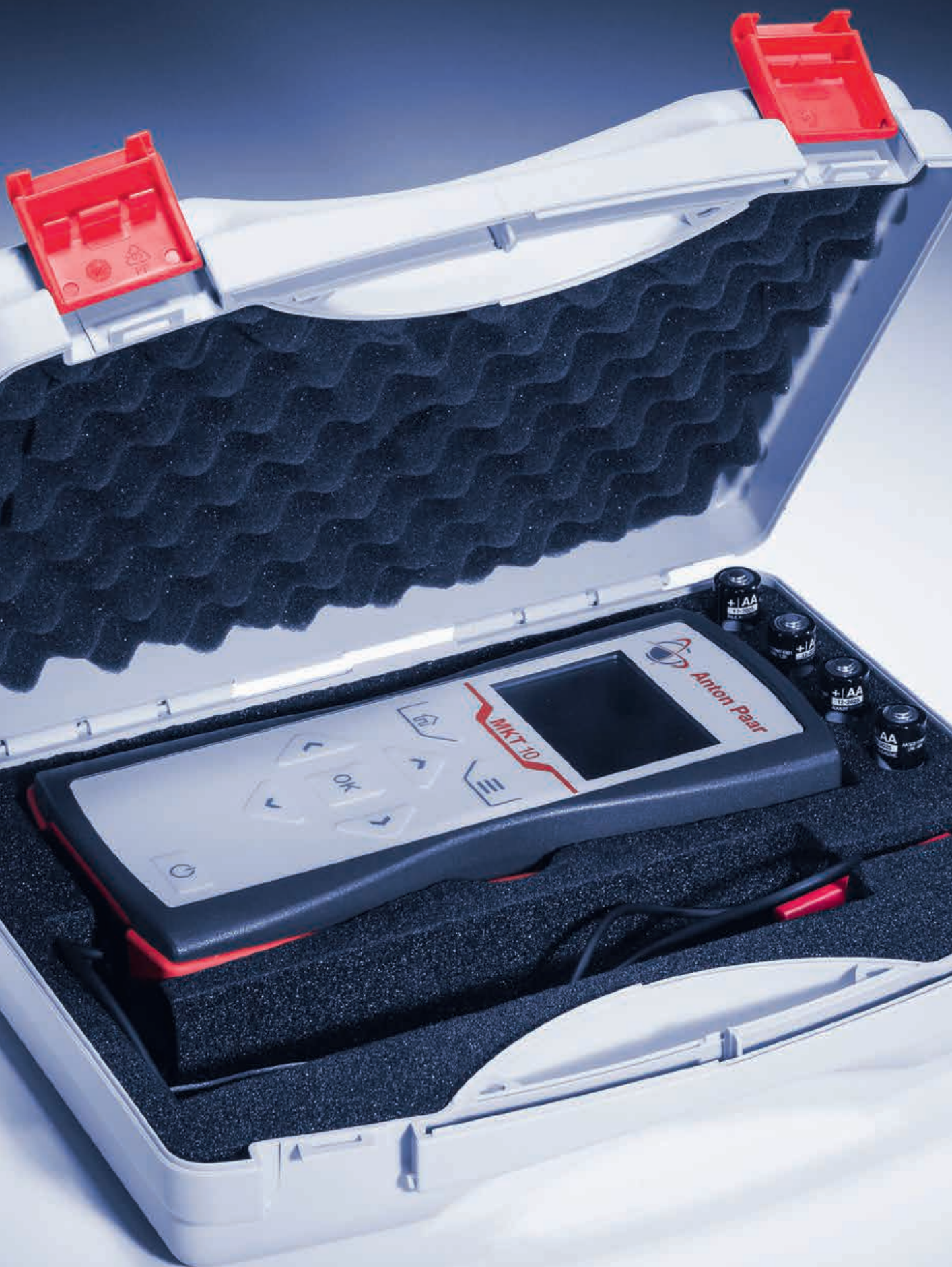
- For ITS-90, DIN EN 60751 and ASTM E1137 sensors
- Simultaneous measurement of temperature, resistance, resistance ratios, standard deviation, and mean values of both channels
- Reference resistance meter with a range of 0 Ohms to 440 Ohms
- Automatic adjustment of DMA M density meters and the SVM™ series of viscometers

Outstanding features

- Zero-point correction (measuring current reversal) and gain error correction (comparison with reference resistor) for each measurement
- Long-term stability only depends on the internal reference resistor
- The internal reference resistor can be easily adjusted by connecting a standard resistor
- LEMO connector with shielded cable for harsh industrial environments

Available sensors and accessories

- Highly stable Pt100 sensors with factory or DAkkS certificates
- Carrying case for safe transport of MKT 50 and two measuring sensors



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