



DATA SHEET

TM 210



Thermometer



Interchangeable measurement modules 1 device = several possible ranges and parameters



SMART-2014 system
Wireless and wired probes automatically recognized



Wireless connection
Device/probe wireless connection



Supplied with calibration certificate

Features

- Measurement of temperature, climatic conditions and U coefficient (depending on option)
- Interchangeable measurement modules
- 2 inputs for Pt100 temperature (from -200 to +600 °C)
- Up to 6 measurements simultaneously
- Large graphic display

References



TM 210
Instrument supplied with:
4 thermocouple inputs module M4TC,
measuring range according to the probe

The probes use a mini-DIN cable unique and pluggable that fits on every probes. This cable is supplied with each instrument. The instruments are supplied in a transport case with a calibration certificate, a charger and a USB cable.



Available probes and modules (optional)



Black ball (BN)



Large choice of temperature probes (see related datasheet): ambient / contact / penetration / immersion...



U coefficient module (MCU)
Measuring range from -20 to +80 °C
Allows to calculate U coefficient

Specifications of modules and Pt100 probes

| Module / Probe | Units | Measuring ranges | Accuracies* | Resolutions |
|----------------------|--------------------------|--|--|--|
| Thermocouple module | °C, °F | K: From -200 to +1300 °C J: From -100 à +750 °C N: From -200 to 1300 °C T: From -200 to +400 °C S: From 0 to 1760 °C | K, J, N, T: From -200 to 0 °C: $\pm 0.4 \text{ }^\circ\text{C} \pm 0.3\%$ of reading From 0 to 1300 °C: $\pm 0.4 \text{ }^\circ\text{C}$ S: $\pm 0.6 \text{ }^\circ\text{C}$ | 0.1 °C 0.1 °C 0.1 °C 0.1 °C 0.1 °C |
| U coefficient module | °C, °F, W/m ² | Thermocouple T: From -20 to +80 °C | $\pm 0.3 \text{ }^\circ\text{C}$ | 0.1 °C |
| Pt100 probe | °C, °F | From -200 to +600 °C | According to probe | 0.1 °C for all standard Pt100 probes 0.01 °C for high accuracy probes |

U coefficient module (option)

U coefficient module allows to calculate the thermal transmittance coefficient of a wall (U coefficient). U characterises the quantity of heat that goes through a wall in continuous operation. It is a key point to determine thermal leak. So it allows to estimate the insulation of a wall: the lower the value, the more insulated the wall. For building renovations, this coefficient is one of the most important values to estimate the their loss and their energy use.

Operating principle:

To estimate the thermal resistance of a wall, the outside temperature (T_e), the room temperature (T_i) and the inside surface temperature of the wall must be measured. If measurement conditions are respected, these 3 temperatures, by way of an empirical formula, gives the U value of thermal transfer of a wall and so its total thermal resistance R_t ($U=1/R_t$).



General features of the TM 210

| | |
|------------------------------|--|
| Connections | 2 mini-DIN connections SMART-2014 probes and 1 micro-USB port for charging and PC connection |
| Power supply | Lithium-Ion battery |
| Autonomy | 65 h with thermocouple module |
| Memory capacity | Up to 1000 dataset of 20 000 points |
| Conditions of use (°C/%RH/m) | From 0 to +50 °C. In non-condensing condition. From 0 to 2000 m. |
| Storage temperature | From -20 to +80 °C |
| Auto shut-off | Adjustable from 15 to 120 minutes or Off |
| Weight | 485 g |
| Operating environment | Neutral gas |
| European directives | 2014/30/EU EMC; 2014/35/EU Low Voltage; 2011/65/EU RoHS II; 2012/19/EU WEEE |
| Languages | French, English, Dutch, German, Italian, Portuguese, Swedish, Norwegian, Finn, Danish, Chinese, Japanese |

THERMOCOUPLE MODULE

- Dynamic delta T
- Audible alarm (2 setpoints)
- Selection of units
- Minimum / maximum values and hold function
- Storage of 4 thermocouple K, J and T channels
- Calculation of U coefficient

TEMPERATURE PROBES

- Dynamic delta T
- Audible alarm (2 setpoints)
- Selection of units
- Minimum / maximum values and hold function
- Storage

*All accuracies indicated in this document were stated in laboratory conditions and can be guaranteed for measurements carried out in the same conditions, or carried out with calibration compensation.

Temperature probes (optional)



Contact probes

- Copper contact
- Straight lamella
- 90° angled lamella
- Magnetic lamella
- On wheel for moving surface
- Wireless models
- ...



Penetration probes

- Stainless steel pointed contact tip
- 150 or 300 mm length
- With or without handle
- IP65 protection models
- Needle probes
- "T" handle
- Wireless models
- ...



Probes for pipe

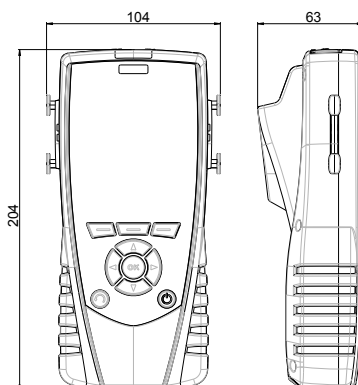
- Lamella contact with spring handle
- Pliers contact
- Lamella contact with curved tip
- Velcro
- ...

Delivery kits and options

✓ supplied with

| Description | TM 210 |
|---------------------------------------|--------|
| Pt100 SMART-2014 probe | Option |
| Wireless Pt100 probe | Option |
| 4 thermocouple channels module (M4TC) | ✓ |
| U coefficient module (MCU) | Option |
| K, J, N, T and S thermocouple probe | Option |
| Calibration certificate | ✓ |
| Soft transport case (MTP-210) | ✓ |
| Additional battery | Option |

Dimensions (in mm)



Features of housing

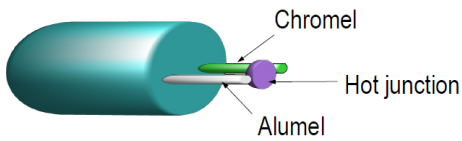
| | |
|------------|---|
| Material | ABS/PC and elastomer |
| Protection | IP54 |
| Display | LCD 120 x 160 px Dimensions: 58 x 76 mm Backlight Display of 6 measurements including 3 simultaneously |
| Keypad | Elastomer, 10 keys |

Operating principle

Thermometer: Thermocouple

According to the Seebeck effect, when two wires composed of different metals are joined at both ends, an electric circuit is formed. The voltage increases with temperature.

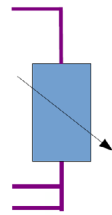
I.E: thermocouple K



Thermometer: Pt100 probe

Pt100 is a resistance with a positive temperature coefficient which varies according to the temperature. The higher the temperature is, the more the value of the resistance increases. ie.: for 0 °C \approx 100 Ω - for 100 °C \approx 138,5 Ω .

Platinum resistance



Accessories

| Description | Reference |
|---|------------|
| PC software for data recording and processing | Datalogger |
| Mini-DIN / mini-DIN cable for probe | CSM |
| Backpack | SAD |
| Infrared printer | KIMP23 |
| Telescopic extension length 1m bent at 90° for measuring probe | RTE |
| Wheeled telescopic tripod for radiofrequency probes. 1.20 to 3.50 m length, adjustable at 90° | RTR-3500 |



Only the accessories supplied with the device must be used.

Maintenance

We carry out calibration, adjustment and maintenance of your devices to guarantee a constant level of quality of your measurements. As part of Quality Assurance Standards, we recommend you to carry a yearly checking.

Precautions for use

Please always use the device in accordance with its intended use and within parameters described in the technical features in order not to compromise the protection ensured by the device.