

# high precision calibrator thermometer PN 5207



Thanks to its high performances and multiple functions, the PN 5207 is used as reference in quality department of various industries as well as in thermometry, physicochemistry, air conditioning or thermal exchanges laboratories, including calorimetry.

- Resolution 0.01°C
- Accuracy 0.02°C
- Direct or differential measurements
- Sensor simulation

## functions

The PN 5207 thermometer is a high precision unit for measuring temperatures using one or two RTD sensors for direct or differential temperature measurements.

The PN 5207 can be calibrated with a given sensor by entering its technical data. Both inputs may be paired.

As an accessory, a standard temperature sensor can be delivered with a calibration certificate over two measurement points (or more on request).

**Temperature measurement** .....  
By using one or two sensors, it is possible to measure differential and resistance. The reading may be selected either in Celsius degrees (°C), Fahrenheit degrees (°F), Kelvin (K), or Ohm ( ). Sensors may be 3 or 4-wire configuration, and automatically recognised by the instrument.

The keypad enables the user to enter the characteristics of the associated sensor

(relation between resistance/temperature) using two points, if known (see accessories AN 5847 and AN 5848). It also enables comparison between sensors.

**Measurement of rate of temperature variation** .....  
By using one sensor or between two sensors.

**Storage of values** .....  
The PN 5207 can permanently store the min. and max. values measured. The keypad enables the user to read them and the memory is reset to zero each time the function has changed.

**Threshold detector** .....  
Programmable min and max thresholds are displayed and output on the back connector.

**Analog output** .....  
An analog signal, with double sensitivity which is selectable at back of the unit by

a switch, enables the user to connect the PN 5207 to a recorder, if required.

**Sensor simulation** .....  
The PN 5207 simulates a variable resistance thus allowing calibration of all RTD input instruments. The resistance value entered via the front keypad is available at back of the unit. The simulated value is displayed in °C, °F, K or .

The PN 5207 has 10 memory locations to store the most usually popular values. This function is used for simultaneous calibration operations or for checking the linearization of an instrument.

The keypad enables the user to quickly convert a temperature value into a resistance value and vice-versa. The user has the complete conversion table from DIN-IEC 751 standards and DIN 43 760 for the Pt 100 and Ni 100 RTDs.

#### Notes:

1. The PN 5207 measures from - 212 to +1 025°C with Pt100 RTD and from -91 to + 228°C with Ni 100 RTD. These values, above those mentioned in the table opposite, are obtained by standard extrapolation. The temperature scale used is the ITS 90.

2. The measurements performed with Pt 100 sensors, class A, may be realized above 650°C, but results are improved with Pt 100 sensors, class B.

3. The permanent use of Ni 100 sensors is not recommended above + 150°C.

#### Measurement

Sensor	Measurement range	Resolution	Accuracy (1)
Pt 100	- 200 to + 101°C	0.02°C	0.04°C
	- 110 to + 114°C	0.01°C	0.02°C
	+ 104 to + 228°C	0.02°C	0.04°C
	+ 211 to + 470°C	0.05°C	0.10°C
	+ 438 to + 850°C	0.10°C	0.20°C
Ni 100	- 60 to + 73°C	0.01°C	0.02°C
	- 67 to + 133°C	0.02°C	0.04°C
	+ 125 to + 180°C	0.05°C	0.10°C
Resistance	0 to 20	5 m	20 m
	14 to 60	2 m	10 m
	56 to 144	1 m	5 m
	140 to 186	2 m	10 m
	180 to 199.995	5 m	20 m
	200 to 271	10 m	20 m
	260 to 440	10 m	40 m

#### Simulation

Sensor	Simulation range	Resolution	Accuracy (1)
Pt 100	- 200 to + 850°C	0.01°C	0.005 % + 0.01°C
Ni 100	- 60 to + 180°C	0.01°C	
Resistance	1 to 512	0.001	0.002 % + 0.0003

(1)  $\ln \pm (\% \text{ rdg} + \text{number of degrees or } )$  at  $23 \pm 1^\circ\text{C}$ .

#### general specifications

##### Display

LCD, 13 mm-high.  
Autorangeing.

##### Temperature coefficient

10 % of accuracy/°C.

##### Line resistance influence

3 balanced wire configuration: 0.01°C per 5 line for a line resistance 20 .  
3 unbalanced wire configuration: 0.01°C per 4 m of unbalance between the two measurements wires.

##### Common mode

Max. permissible voltage: 250 VDC or AC rms (350 V peak).  
Rejection 1 digit for 250 VDC or AC rms, 50 or 60 Hz.

##### Normal mode

Max. permissible voltage: 35 VAC rms (50 V peak).  
Rejection 1 digit for 10 mV, 50 or 60 Hz.

##### Analog output

1 mV or 10 mV/degree (up to 260°C on the 10 mV/°C position).  
1 mV/100 m up to 260 .  
10 mV/100 m up to 26 .  
Max. current: 1 mA.  
Accuracy:  $\pm (0.1 \% \text{ digital rdg} + 1 \text{ mV})$ .  
Common mode max. permissible voltage: 50 VDC or AC, 50 or 60 Hz.

##### Threshold overrun

Output on transistor isolated with opto-isolator.  
Break capacity: 30 V/50 mA max.  
Connection over two removable connec-

tors located at front and screw terminals located at back.  
Current in the sensor: 1 mA.  
Simulation permissible current: 0.5 to 5 mA.

##### Operating conditions

Operating rated range: 0 to + 50°C.  
Operating limit range: - 10 to + 50°C.

##### Power requirements

230 V  $\pm 10 \%$ , 50 to 400 Hz.  
Consumption: 16 VA approx.  
Optional internal battery (life 15 h) 6 V/3 Ah + charger.

##### Features

Dimensions: 215 x 88 x 269 mm.  
Weight: from 1.9 to 2.7 kg depending on option.  
Delivered with rigid carrying case.

#### ordering instructions

Calibrator thermometer

Calibrator thermometer with battery

PN 5207

PN 5207-B

##### Accessories and option

Standard sensor, connection via 5-pin terminal AN 5847  
Standard sensor, connection via lugs AN 5847B  
Reference sensor, connection via 5-pin plug AN 5848-1  
Reference sensor, connection via lugs AN 5848-2  
Soft carrying case AN 6901

The PN 5207 may be used with calibration baths and dry-wells.

The above specifications are subject to modification.



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