



## HD2307.0 THERMOMETER SENSORS: Pt100, Pt1000

**HD2307.0** is a portable instrument equipped with large LCD display. It measures temperature by means of immersion, penetration, contact or air probes. Its sensor can be 3 or 4 wires Pt100, Pt1000. Probes are equipped with an automatic recognition module: factory calibration data are stored inside. *The Max, Min* and *Avg* function calculate the maximum, minimum or average values. Other functions include: the relative measurement REL, the HOLD function, and the automatic switching-off system, excludable. **The instrument has IP67 protection degree.**

### TECHNICAL SPECIFICATIONS OF THE INSTRUMENT

#### Instrument

Dimensions (Length x Width x Height)	140x88x38mm
Weight	160g (complete with Batteries)
Materials	ABS
Display	2x4½ digits plus symbols Visible area: 52x42mm

#### Operating conditions

Operating temperature	-5 ... 50°C
Storage temperature	-25 ... 65°C
Working relative humidity	0 ... 90% RH, no condensation
<b>Protection degree</b>	<b>IP67</b>

#### Power supply

Batteries	3 Batteries 1.5V type AA
Autonomy	200 hours with 1800mAh alkaline batteries
Current consumption with instrument off	< 20µA

#### Unit of measurement

°C - °F

#### Connections

Module input for probes	DIN45326 8 poles male Connector
-------------------------	---------------------------------

#### Measurement of temperature by Instrument

Pt100 measurement range	-200...+650°C
Pt1000 measurement range	-200...+650°C
Resolution	0.1°C
Accuracy	±0.05°C
Drift after 1 year	0.1°C/year

### TECHNICAL DATA OF PROBES AND MODULES EQUIPPED WITH INSTRUMENT Temperature probes Pt100 sensor with SICRAM module

Model	Type	Application field	Accuracy
TP472I	Immersion	-196°C...+500°C	±0.25°C (-196°C...+300°C) ±0.5°C (+300°C...+500°C)
TP472I.0 1/3 DIN Thin Film	Immersion	-50°C...+300°C	±0.25°C (-50°C...+300°C)
TP473PI	Penetration	-50°C...+400°C	±0.25°C (-50°C...+300°C) ±0.5°C (+300°C...+400°C)
TP473P.0 1/3 DIN Thin Film	Penetration	-50°C...+300°C	±0.25°C (-50°C...+300°C)
TP474C.I	Contact	-50°C...+400°C	±0.3°C (-50°C...+300°C) ±0.5°C (+300°C...+400°C)
TP474C.0 1/3 DIN Thin Film	Contact	-50°C...+300°C	±0.3°C (-50°C...+300°C)
TP475A.0 1/3 DIN Thin Film	Air	-50°C...+250°C	±0.3°C (-50°C...+250°C)
TP472I.5	Penetration	-50°C...+400°C	±0.3°C (-50°C...+300°C) ±0.6°C (+300°C...+400°C)
TP472I.10	Penetration	-50°C...+400°C	±0.30°C (-50°C...+300°C) ±0.6°C (+300°C...+400°C)
TP49A.0 Class A Thin Film	Immersion	-70°C...+250°C	±0.3°C (-70°C...-50°C) ±0.25°C (-50°C...+250°C)
TP49AC.0 Class A Thin Film	Contact	-70°C...+250°C	±0.3°C (-70°C...-50°C) ±0.25°C (-50°C...+250°C)
TP49AP.0 Class A Thin Film	Penetration	-70°C...+250°C	±0.3°C (-70°C...-50°C) ±0.25°C (-50°C...+250°C)
TP875.I	Globe-thermometer Ø150mm	-30°C...+120°C	±0.25°C
TP876.I	Globe-thermometer Ø50mm	-30°C...+120°C	±0.25°C
TP87.0 1/3 DIN Thin Film	Immersion	-50°C...+200°C	±0.25°C
TP878.0 1/3 DIN Thin Film TP878.1.0 1/3 DIN Thin Film	Photovoltaic	+4°C...+85°C	±0.25°C
TP879.0 1/3 DIN Thin Film	Compost	-20°C...+120°C	±0.25°C

#### Common features

Temperature drift @20°C	0.003%/°C
-------------------------	-----------

### 4 wires Pt100 and 2 wires Pt1000 Probes

Model	Type	Application field	Accuracy
TP47.100.0 1/3 DIN Thin Film	4 wires Pt100	-50...+250°C	1/3 DIN
TP47.1000.0 1/3 DIN Thin Film	2 wires Pt1000	-50...+250°C	1/3 DIN
TP87.100.0 1/3 DIN Thin Film	4 wires Pt100	-50...+200°C	1/3 DIN
TP87.1000.0 1/3 DIN Thin Film	2 wires Pt1000	-50...+200°C	1/3 DIN

#### Common features

Temperature drift @20°C	
Pt100	0.003%/°C
Pt1000	0.005%/°C

### PURCHASING CODES

**HD2307.0:** The kit consists of instrument HD2307.0, 3 per 1.5V alkaline Batteries, instruction manual and case. **Probes have to be ordered separately.**

#### Probes equipped with SICRAM module

- TP472I:** Immersion probe, Wire Wound Pt100 sensor. Stem Ø 3 mm, length 300 mm. Cable 2 meters long.
- TP472I.0:** Immersion probe, Thin Film Pt100 sensor. Stem Ø 3 mm, length 230 mm. Cable 2 meters long.
- TP473PI:** Penetration probe, Wire Wound Pt100 sensor. Stem Ø 4mm, length 150 mm. Cable 2 meters long.

**TP473P.0:** Penetration probe, Thin Film Pt100 sensor. Stem Ø 4mm, length 150 mm. Cable 2 meters long.

**TP474C.I:** Contact probe, Wire Wound Pt100 sensor. Stem Ø 4mm, length 230mm, contact surface Ø 5mm. Cable 2 meters long.

**TP474C.O:** Contact probe, Thin Film Pt100 sensor. Stem Ø 4mm, length 230mm, contact surface Ø 5mm. Cable 2 meters long.

**TP475A.O:** Air probe, Thin Film Pt100 sensor. Stem Ø 4mm, length 230mm. Cable 2 meters long.

**TP472I.5:** Penetration probe, Thin Film Pt100 sensor. Stem Ø 6mm, length 500 mm. Cable 2 meters long.

**TP472I.10:** Penetration probe, Thin Film Pt100 sensor. Stem Ø 6mm, length 1000mm. Cable 2 meters long.

**TP49A.O:** Immersion probe, Thin Film Pt100 sensor. Stem Ø 2.7mm, length 150mm. Cable 2 meters long. Aluminium handle.

**TP49AC.O:** Contact probe, Thin Film Pt100 sensor. Stem Ø 4 mm, length 150mm. Cable 2 meters long. Aluminium handle.

**TP49AP.O:** Penetration probe, Thin Film Pt100 sensor. Stem Ø 2.7mm, length 150mm. Cable 2 meters long. Aluminium handle.

**TP875.I:** Globe thermometer Ø 150 mm with handle. Wire Wound Pt100 sensor complete of SICRAM module. Cable 2 meters long.

**TP876.I:** Globe thermometer Ø 50 mm with handle. Wire Wound Pt100 sensor complete of SICRAM module. Cable 2 meters long.

**TP87.O:** Immersion probe, Thin Film Pt100 sensor. Stem Ø 3 mm, length 70 mm. Cable 2 meters long.

**TP878.O:** Contact probe for solar panels. Thin Film Pt100 sensor. Cable 2 meters long.

**TP878.1.O:** Contact probe for solar panels. Thin Film Pt100 sensor. Cable 5 meters long.

**TP879.O:** Penetration probe for compost. Thin Film Pt100 sensor. Stem Ø 8 mm, length 1000mm. Cable 2 meters long.

#### Temperature probes without SICRAM module

**TP47.100.0:** Immersion probe, Thin Film Pt100 sensor probe. Stem Ø 3 mm, length 230mm. 4 wires connection cable with connector, 2 meters long.

**TP47.1000.0:** Thin Film Pt1000 sensor immersion probe. Stem Ø 3 mm, length 230mm. 2 wires connection cable with connector, 2 meters long.

**TP47:** Only connector for probe connection without SICRAM module: direct 3 and 4 wires Pt100, 2 wires Pt1000.

**TP87.100.0** Immersion probe, Thin Film Pt100 sensor. Stem Ø 3 mm, length 70mm. Cable 2 meters long. 4 wires connection cable with connector 1 meter long.

**TP87.1000.0** Immersion probe, Thin Film Pt100 sensor. Stem Ø 3 mm, length 70mm. Cable 2 meters long. 2 wires connection cable with connector 1 meter long.

## TEMPERATURE PROBES

### Pt100 SENSOR PROBES $\alpha=0.00385\text{ }^{\circ}\text{C}^{-1}$ , $R_0 = 100\ \Omega$

Depending on the manufacturing technology of the Platinum sensing element, there are two categories of Pt100 sensor probes:

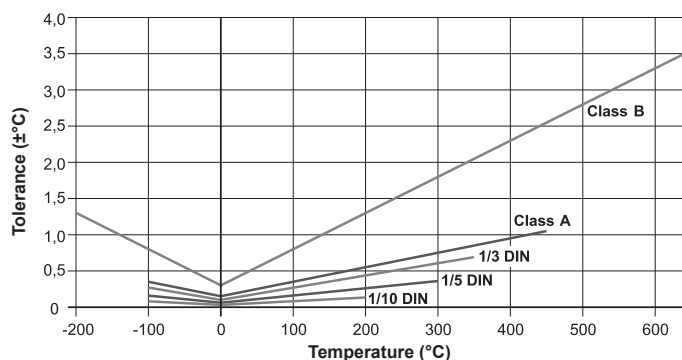
- **Wire Wound** probes : identified by the letter **I** in the ordering code;
- **Thin Film** probes : identified by the letter **O** in the ordering code.

The best performances are obtained by using the wire wound probes, characterized by a very low long-term drift compared to the thin film probes. **The measuring uncertainty of the probes with SICRAM module can be improved with a calibration Report or an ACCREDIA calibration certificate.**

#### Tolerance Classes

Reference standards:

- **DIN 43760 : 1980**
- **IEC 60751 : 2008**
- **BS EN 60751 : 2008**



IEC nomenclature	DIN nomenclature	Temperature range of validity of the tolerance class		Tolerance at 0 °C
		wire wound sensor	thin film sensor	
W0.03 <sup>(*)</sup>	1/10 DIN	Not defined by the standard	Not defined by the standard	± 0.03 °C
W0.06 <sup>(*)</sup>	1/5 DIN	Not defined by the standard	Not defined by the standard	± 0.06 °C
W0.1	1/3 DIN	-100...+350 °C	0...+150 °C	± 0.1 °C
W0.15	Class A (1/2 DIN)	-100...+450 °C	-30...+300 °C	± 0.15 °C
W0.3	Class B (DIN)	-196...+660 °C	-50...+600 °C	± 0.3 °C

<sup>(\*)</sup> Note: the tolerance classes W0.03 and W0.06 are not included in the IEC 60751 standard.

#### TOLERANCE AS A FUNCTION OF TEMPERATURE

(the temperature range refers to the platinum wire wound probes)

Temperature (°C)	Tolerance (°C)				
	W0.3 Class B (DIN)	W0.15 Class A (1/2 DIN)	W0.1 1/3 DIN	W0.06 1/5 DIN	W0.03 1/10 DIN
-200	± 1.3	---	---	---	---
-100	± 0.8	± 0.35	± 0.27	± 0.16	± 0.08
0	± 0.3	± 0.15	± 0.10	± 0.06	± 0.03
100	± 0.8	± 0.35	± 0.27	± 0.16	± 0.08
200	± 1.3	± 0.55	± 0.44	± 0.26	± 0.13
300	± 1.8	± 0.75	± 0.60	± 0.36	---
350	± 2.1	± 0.85	± 0.69	---	---
400	± 2.3	± 0.95	---	---	---
450	± 2.6	± 1.05	---	---	---
500	± 2.8	---	---	---	---
600	± 3.3	---	---	---	---
650	± 3.6	---	---	---	---