Member of GHM GROUP

HD2307.0

HD2307.0
Pt100 AND Pt1000 SENSORS THERMOMETER

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: relative measurement REL, HOLD function and automatic switching-off system, (excludable).

The instrument has IP67 protection degree.

INSTRUMENT TECHNICAL CHARACTERISTICS	
Measurement of temperature	
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
Unit of measurement	°C - °F
Power Supply	
Batteries	3 batteries 1.5 V type AA
Autonomy	200 hours with 1800mAh alkaline batteries
Current consumption with instrument off	< 20µA
Connections	DIN45326 8 poles male connector
Operating conditions	
Operating Temperature	-5…50 °C
Storage temperature	-25…65 °C
Working relative humidity	0…90 %RH, no condensation
Protection degree	IP67
General characteristics	
Dimensions (Length x Width x Height)	140 x 88 x 38mm
Weight	160 g (complete with batteries)
Materials	ABS
Display	2 rows 4½ digits plus symbols Visible area: 52 x 42mm

ORDERING 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.

TEMPERATURE PROBES – RESISTANCE THERMOMETERS

Delta OHM offers a wide choice of Platinum resistance thermometers with resistance equal to 100 Ω at 0 °C and temperature coefficient α as defined by the IEC 60751 standard: Pt100, R_0=100 Ω, α= $3.851 \cdot 10^{-3}$ $°C^{-1}$.

For particular applications, probes with Pt1000 sensor or with a thermistor sensor are available.

The response time $\tau_{0.63}$ indicated for each probe is the response time of the sensor to a temperature variation, with a variation of the measured signal corresponding to the 63% of the total variation. The response times are referred:

- in water at 100 °C for immersion probes;
- to the contact with a metal surface at 200 °C for surface probes;
- to an air temperature of 100 °C for air probes.

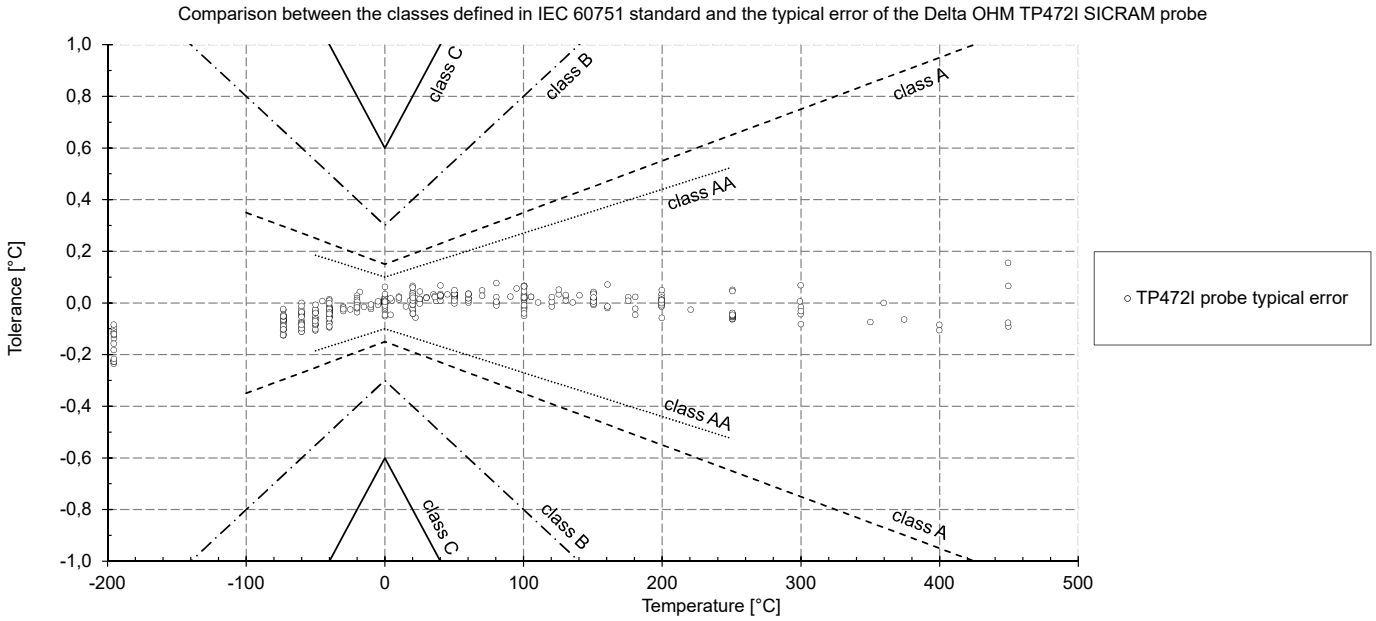
The IEC 60751:2008 standard defines the tolerance classes of the resistance thermometers as summarized in the following table:

	Temperature Range		
Tolerance Class	WIRE WOUND sensor	THIN FILM sensor	Tolerance [°C]
Class AA (1/3 DIN)	from -50 °C to 250 °C	from 0 °C to 150 °C	±(0,1+0,0017·|t|)
Class A	from -100 °C to 450 °C	from -30 °C to 300 °C	±(0,15+0,002·|t|)
Class B	from -196 °C to 600 °C	from -50 °C to 500 °C	±(0,3+0,005·|t|)
Class C	from -196 °C to 600 °C	from -50 °C to 600 °C	±(0,6+0,01·|t|)

Upon request, the probes can be assembled with a compatible connector chosen from TP471 and TP47.

The TP471 connector developed by Delta OHM contains an electronic module (SICRAM) that allows the probe error to be adjusted. During the Quality Control, the probes provided with this module are individually checked in our laboratories, linearizing the characteristic and allowing more stringent accuracy over the entire working range.

The following graph shows the Delta OHM SICRAM module probe TP472I typical error values obtained from the calibrations performed in our ISO 17025 calibration laboratory. The graph highlights the effectiveness of the linearization performed on the probes.



Tolerance as a function of temperature. The temperature range refers to the platinum wire wound probes.

	Temperature [°C]										
Tolerance [°C]	-196	-100	-50	0	100	250	300	350	450	500	600
Class AA	---	± 0.27	± 0.19	± 0.10	± 0.27	± 0.53	± 0.61	± 0.70	---	---	---
Class A	---	± 0.35	± 0.25	± 0.15	± 0.35	± 0.65	± 0.75	± 0.85	± 1.05	---	---
Class B	± 1.28	± 0.80	± 0.55	± 0.30	± 0.80	± 1.55	± 1.80	± 2.05	± 2.55	± 2.80	± 3.30
Class C	± 2.56	± 1.60	± 1.10	± 0.60	± 1.60	± 3.10	± 3.60	± 4.10	± 5.10	± 5.60	± 6.60
Accuracy TP472I	± 0.30	± 0.30	± 0.20	± 0.10	± 0.20	± 0.20	± 0.30	± 0.30	± 0.30	± 0.30	---

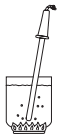
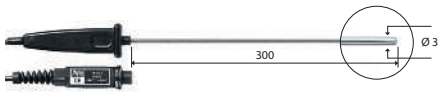
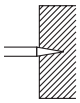
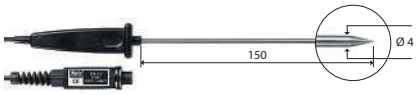
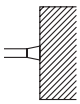
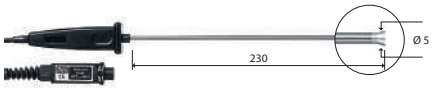
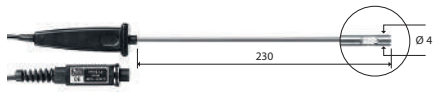
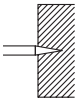
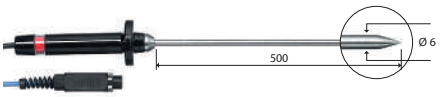
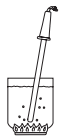
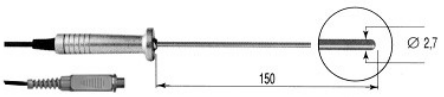
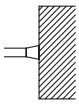
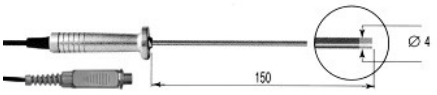
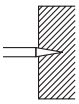
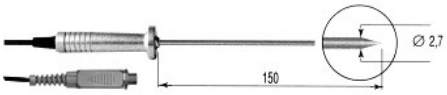
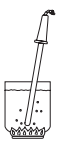
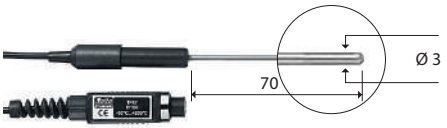
By means of the calibration, the purchased instrument can be metrologically characterized, determining the systematic error of the thermometer and ensuring at the same time the traceability to international standards.

Delta OHM Laboratories are able to provide this service by issuing calibration reports according to ISO 9001 or ACCREDIA LAT certificates in compliance with ISO/IEC 17025 standard, recognized internationally through ILAC MRA agreements.

ACCREDIA
L'ENTE ITALIANO DI ACCREDITAMENTO
LAT N° 124

Temperature - Humidity - Pressure - Air speed
Photometry/Radiometry - Acoustics

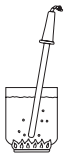
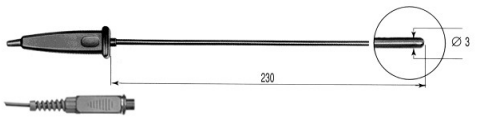
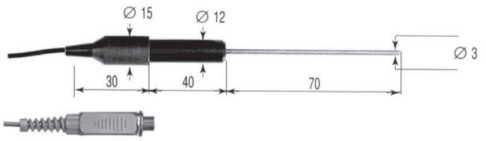
Pt100 PROBES WITH TP471 SICRAM MODULE

CODE	T (°C)	ACCURACY	USE	$\tau_{0.63}$	DIMENSIONS (if not specified, cable length = 2 m)
TP472I	-196 +500	±0.1 °C (@ 0 °C) ±0.2 °C (-50 °C ≤ t ≤ 250°C) ±0.3 °C (t < -50 °C; t > 250 °C)		3 s	
TP472I.O	-50 +300	±0.1 °C (@ 0 °C) ±0.2 °C (-50 °C ≤ t ≤ 250°C) ±0.3 °C (t < -50 °C; t > 250 °C)		3 s	
TP473P.I	-50 +400	±0.1 °C (@ 0 °C) ±0.2 °C (-50 °C ≤ t ≤ 250°C) ±0.3 °C (t < -50 °C; t > 250 °C)		5 s	
TP473P.O	-50 +300	±0.1 °C (@ 0 °C) ±0.2 °C (-50 °C ≤ t ≤ 250°C) ±0.3 °C (t < -50 °C; t > 250 °C)			
TP474C.O	-50 +300	±0.1 °C (@ 0 °C) ±0.2 °C (-50 °C ≤ t ≤ 250°C) ±0.3 °C (t < -50 °C; t > 250 °C)		5 s	
TP475A.O	-50 +250	±0.1 °C (@ 0 °C) ±0.2 °C (-50 °C ≤ t ≤ 250°C)		12 s	
TP472I.5	-50 +400	±0.1 °C (@ 0 °C) ±0.2 °C (-50 °C ≤ t ≤ 250°C) ±0.3 °C (t < -50 °C; t > 250 °C)		3 s	
TP472I.10	-50 +400	±0.1 °C (@ 0 °C) ±0.2 °C (-50 °C ≤ t ≤ 250°C) ±0.3 °C (t < -50 °C; t > 250 °C)		3 s	
TP49A.I	-70 +250	±0.1 °C (@ 0 °C) ±0.2 °C (-50 °C ≤ t ≤ 250°C) ±0.3 °C (t < -50 °C; t > 250 °C)		3.5 s	 Cable L = 1.5 m
TP49AC.I	-70 +250	±0.1 °C (@ 0 °C) ±0.2 °C (-50 °C ≤ t ≤ 250°C) ±0.3 °C (t < -50 °C; t > 250 °C		5.5 s	 Cable L = 1.5 m
TP49AP.I	-70 +250	±0.1 °C (@ 0 °C) ±0.2 °C (-50 °C ≤ t ≤ 250°C)		4 s	 Cable L = 1.5 m
TP87.O	-50 +200	±0.1 °C (@ 0 °C) ±0.2 °C (-50 °C ≤ t ≤ 250°C)		3 s	 Cable L = 1 m

Pt100 PROBES WITH TP471 SICRAM MODULE

CODE	T (°C)	ACCURACY	USE	$\tau_{0.63}$	DIMENSIONS (if not specified, cable length = 2 m)
TP35.5AF.5S	-110 +180	±0.1 °C (@ 0 °C) ±0.2 °C (-50 °C ≤ t ≤ 250°C) ±0.3 °C (t < -50 °C; t > 250 °C)		3 s	 Cable L = 5 m. Shield in Inox + PTFE
TP875.I	-30 +120	±0.1 °C (@ 0 °C) ±0.2 °C (-50 °C ≤ t ≤ 250°C)		15'	Globe-thermometer probe for measurement of radiant heat with Ø150 mm. Accuracy according to ISO 7243 and ISO 7726. Pt100 sensor, 4-wire cable L=2 m. Supplied with SICRAM module.
TP876.I					Globe-thermometer probe for measurement of radiant heat with Ø50 mm. Accuracy according to ISO 7243 and ISO 7726. Pt100 sensor, 4-wire cable L=2 m. Supplied with SICRAM module.

Pt100/Pt1000 PROBES WITH TP47 CONNECTOR WITHOUT SICRAM MODULE

TP47.100.O (Pt100) TP47.1000.O (Pt1000)	-50 +250	Class A		3 s	
TP87.100.O (Pt100) TP87.1000.O (Pt1000)	-50 +200				 Cable L = 1 m

Pt100 PROBES ENDING WITH FREE WIRES

TP875.1.I	-30 +120	Class A		15'	Globe-thermometer probe for measurement of radiant heat with Ø150 mm. Accuracy according to ISO 7243 and ISO 7726. Pt100 sensor, 4-wire cable L=2 m.
TP876.1.I					Globe-thermometer probe for measurement of radiant heat with Ø50 mm. Accuracy according to ISO 7243 and ISO 7726. Pt100 sensor, 4-wire cable L=2 m.

CONNECTORS

TP47	Connector without SICRAM module for the connection of 4-wire (and 3-wire with some instruments) Pt100 or 2-wire Pt1000 probes.	
TP471	Connector with SICRAM electronic module for the connection of resistance thermometers and the correction of the characteristic of the sensor. It can be connected to 3-wire or 4-wire Pt100Ω platinum temperature probes. Assembling and calibration only in Delta OHM