Member of GHM GROUP

HD2107.1, HD2107.2, HD2127.1, HD2127.2

HD2107.1- HD2107.2 - HD2127.1 - HD2127.2
Pt100 AND Pt1000 SENSORS THERMOMETERS

HD2107.1 and **HD2107.2** are portable instruments equipped with large LCD display fitted with one input. HD2127.1 and HD2127.2 are instruments fitted with two inputs. They measure temperature by means of immersion, penetration, contact or air probes. Their sensor can be Pt100 with 3 or 4 wires, Pt1000 with 2 wires. They have centesimal resolution in the range ± 199.99°C, decimal in the rest of the range.

Probes are equipped with an automatic recognition module: factory calibration data are stored inside.

The instruments HD2107.2 and HD2127.2 are data logger; they store up to 80.000 samples which can be transferred into a PC connected to the serial ports RS232C and USB 2.0 or into portable printer.

It is possible to configure the storage interval, the printing and the baud rate by the menu.

Functions Max, Min and Avg calculate maximum, minimum and average values.

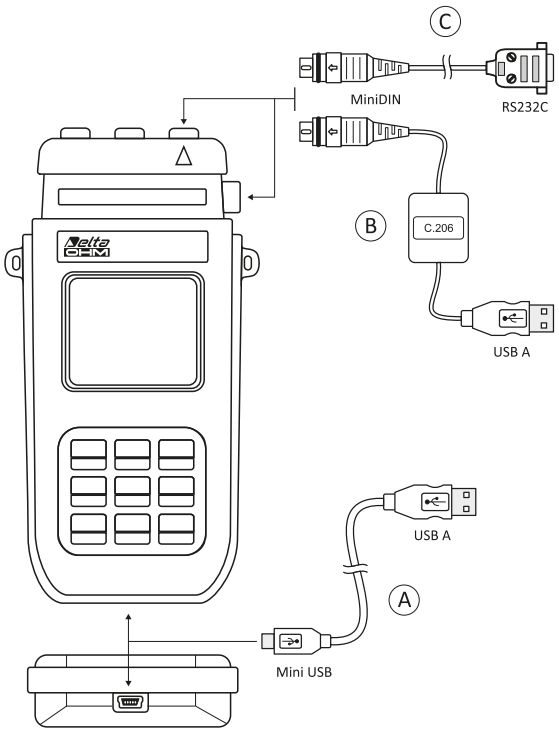
Further functions are: REL relative measure, HOLD and automatic switching-off system (excludable).

Instruments have IP66 protection degree.

	HD2107.1	HD2107.2	HD2127.1	HD2127.2
TC input:	1	1	2	2
Storage capacity	----	76000 samples	----	38000 couples of temperatures
PC interface	RS232C	RS232C + USB2.0	RS232C	RS232C + USB2.0
Data logger	NO	YES	NO	YES
A-B function	NO	NO	YES	YES

Technical specifications	
Measurement of temperature	
Pt100 measurement range	-200…+650°C
Pt1000 measurement range	-200…+650°C
Resolution	0.01°C in the range ±199.99°C 0.1°C in the remaining range
Instrument Accuracy	±0.01°C
Drift after 1 year	0.1°C/year
Unit of measurement	°C - °F - K
Measured values storage model HD2107.2	
Type	2000 pages containing 40 samples each
Quantity	Total of 80000 samples
Storage interval can be selected among	1,5,10,15,30 s 1,2,5,10,15,20,30 min.; 1 hour
Measured values storage model HD2127.2	
Type	2000 pages containing 16 pairs of samples each
Quantity	Total of 32000 samples (channel A + channel B)
Storage interval can be selected among	1,5,10,15,30 s, 1,2,5,10,15,20,30 min.; 1 hour
Security of stored data	Unlimited, independent of battery charge conditions
Power Supply	
Batteries	4 Batteries 1.5V type AA
Autonomy	200 hours with 1800mAh alkaline batteries
Current consumption with instrument off	20µA
Main	12Vdc / 1000mA Output mains adapter
Serial interface RS232C	
Type	RS232C galvanically isolated
Baud rate	can be set from 1200 to 38400 baud
Data bit	8
Parity	None
Stop bit	1
Flow Control	Xon/Xoff
Serial cable length	Max 15m
Print interval	Immediate or selectable among: 1,5,10,15,30 s; 1,2,5,10,15,20,30 min.; 1 hour
USB interface - model HD2107.2, HD2127.2	
Type	1.1 - 2.0 galvanically isolated
Connections	
Input for the probes	8-pole male DIN45326 connector
RS232C serial interface	8-pole MiniDin connector
USB interface	Type B MiniUSB connector
Mains adapter	2-pole connector (positive at centre)
Operating conditions	
Operating Temperature	-5...50°C
Storage temperature	-25 … 65°C
Working relative humidity	0 … 90%RH, no condensation

Protection degree	IP66
General characteristics	
Dimensions (Length x Width x Height)	185x90x40mm
Weight	470g (complete with batteries)
Materials	ABS, rubber
Display	2 rows 4½ digits plus symbols Visible area: 52x42mm
Time	
Date and time	In real time
Accuracy	1min/month max drift



A The portable data loggers HD2107.2 HD2127.2 are equipped with HID (Human Interface device) type USB port with mini USB connector.

For the connection to a PC with the CP23 cable it is not necessary to load any USB driver.

B For the connection of the models HD21071 HD2127.1 to the USB port of a PC, is necessary the USB/serial converter C.206. The converter is supplied with its own drivers which must be installed before the connection of the converter to the PC (see details in the Cd-Rom supplied with the converter).

C The port with the miniDin connector is a serial port type RS232C. The serial port RS232C of a PC or the printer HD40.1 can be connected by the cable HD2110CSNM.

ORDERING CODES

HD2107.1: The kit consists of instrument HD2107.1, 4 per 1.5V alkaline batteries, instruction manual, case and Deltalog9 software downloadable from Delta OHM website. Probes and cables have to be ordered separately.

HD2107.2: The kit consists of instrument HD2107.2 data logger, 4 per 1.5V alkaline batteries, instruction manual, CP23 USB cable, case and Deltalog9 software downloadable from Delta OHM website. Probes have to be ordered separately.

HD2127.1: The kit consists of instrument HD2127.1, 4 per 1.5V alkaline batteries, instruction manual, case and Deltalog9 software downloadable from Delta OHM website. Probes and cables have to be ordered separately.

HD2127.2: The kit consists of instrument HD2127.2 data logger, 4 per 1.5V alkaline batteries, instruction manual, CP23 USB cable, case and Deltalog9 software downloadable from Delta OHM website. Probes have to be ordered separately.

HD2110CSNM: 8-pole connection cable MiniDin - Sub D 9-pole female for RS232C.

C.206: Cable for instruments of the series HD21...**1** to connect to USB input of PC.

SWD10: Stabilized 230Vac/12Vdc-1000mA mains adapter.

HD40.1: Upon request, portable, serial input, 24 column thermal printer, 58mm paper width. Use cable HD2110CSNM (option).

For all Pt100 and Pt1000 probes, see from **pag.30** onwards.

HD2107

HD2127

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.

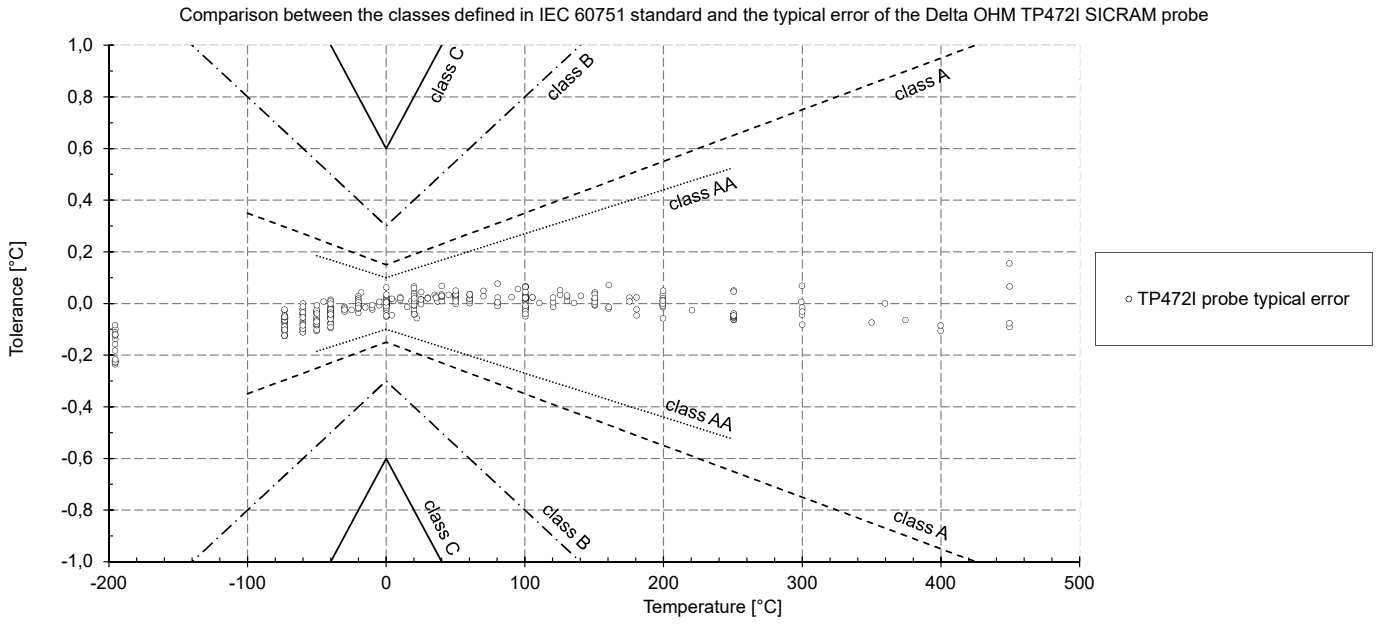
The IEC 60751:2008 standard defines the tolerance classes of the resistance thermometers as summarized in the following table:

	Temperature Range		
Tolerance class	WIRE WOUND sensor	THIN FILM sensor	Tolerance [°C]
classe AA (1/3 DIN)	from -50 °C to 250 °C	from 0 °C to 150 °C	±(0.1+0.0017·|t|)
classe A	from -100 °C to 450 °C	from -30 °C to 300 °C	±(0.15+0.002·|t|)
classe B	from -196 °C to 600 °C	from -50 °C to 500 °C	±(0.3+0.005·|t|)
classe C	from -196 °C to 600 °C	from -50 °C to 600 °C	±(0.6+0.01·|t|)

On 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 ISO17025 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.

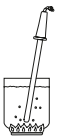
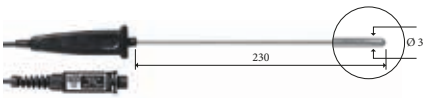
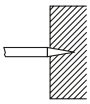
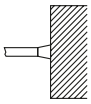
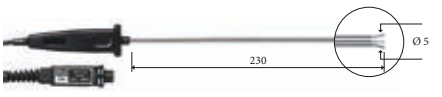
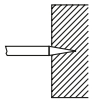
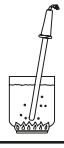
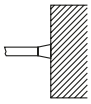
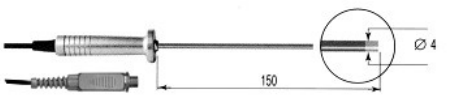
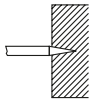
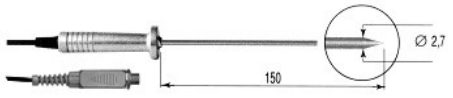
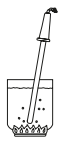
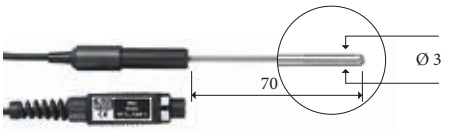
	Temperature [°C]										
Tolerance [°C]	-196	-100	-50	0	100	250	300	350	450	500	600
class AA	---	± 0.27	± 0.19	± 0.10	± 0.27	± 0.53	± 0.61	± 0.70	---	---	---
class A	---	± 0.35	± 0.25	± 0.15	± 0.35	± 0.65	± 0.75	± 0.85	± 1.05	---	---
class B	± 1.28	± 0.80	± 0.55	± 0.30	± 0.80	± 1.55	± 1.80	± 2.05	± 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.

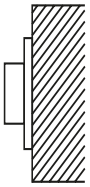
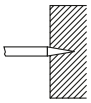
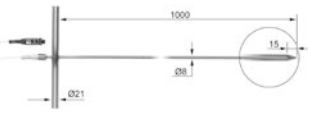
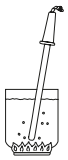
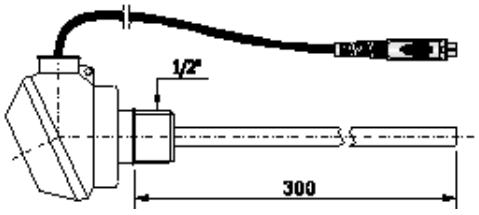
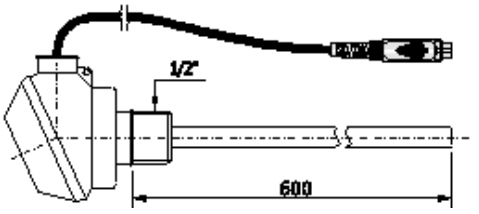
ACCREDIA
L'ENTE ITALIANO DI ACCREDITAMENTO
LAT N° 124

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

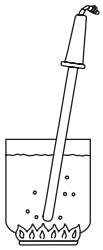
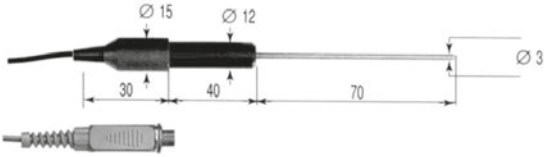
Pt100 PROBES WITH TP471 SICRAM MODULE

CODE	T (°C)	ACCURACY	USE	$\tau_{0.63}$	DIMENSIONS
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)		3s	
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)		3s	
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)		5s	
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)		5s	
TP475A.O	-50 +250	±0.1 °C (@ 0 °C) ±0.2 °C (-50 °C ≤ t ≤ 250°C)		12s	
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)		3s	
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)		3s	
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)		3,5s	
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		5,5s	
TP49AP.I	-70 +250	±0.1 °C (@ 0 °C) ±0.2 °C (-50 °C ≤ t ≤ 250°C)		4s	
TP87.O	-50 +200	±0.1 °C (@ 0 °C) ±0.2 °C (-50 °C ≤ t ≤ 250°C)		3s	

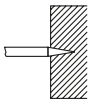
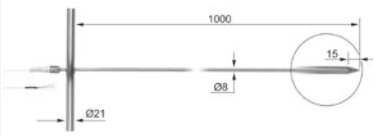
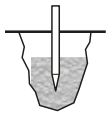
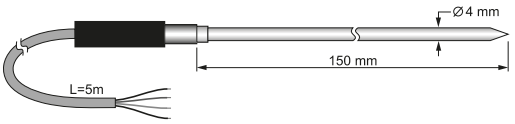
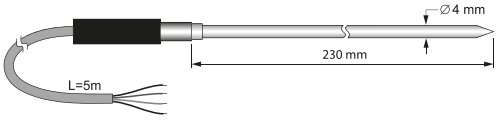
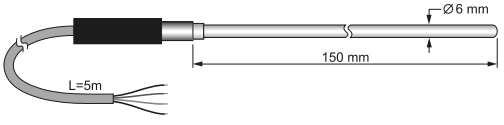
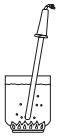
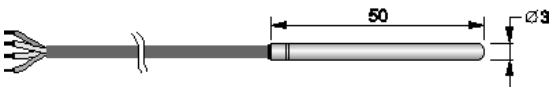
Pt100 PROBES WITH TP471 SICRAM MODULE

CODE	T (°C)	ACCURACY	USE	$\tau_{0.63}$	DIMENSIONS	
TP878.O	-40 +85	±0.1 °C (@ 0 °C) ±0.2 °C (-50 °C ≤ t ≤ 250°C)		60s	Contact probe for solar panels, with SICRAM module. Cable L = 2 m	
TP878.1.O	-40 +85	±0.1 °C (@ 0 °C) ±0.2 °C (-50 °C ≤ t ≤ 250°C)			Contact probe for solar panels, with SICRAM module. Cable L = 5 m	
TP879.O	-20 +120	±0.1 °C (@ 0 °C) ±0.2 °C (-50 °C ≤ t ≤ 250°C)		60s	Penetration probe for compost, with SICRAM module. Cable L = 5 m	
TP880/300.I	-50 +450	±0.1 °C (@ 0 °C) ±0.2 °C (-50 °C ≤ t ≤ 250°C) ±0.3 °C (t < -50 °C; t > 250 °C)		60s	Mignon head, cable length = 2m 	
TP880/600.I	-50 +450	±0.1 °C (@ 0 °C) ±0.2 °C (-50 °C ≤ t ≤ 250°C) ±0.3 °C (t < -50 °C; t > 250 °C)			Mignon head, cable length = 2m 	
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)		3s	 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 Ø150mm. Accuracy according to ISO 7243 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 Ø 50mm. Accuracy according to ISO 7243 ISO 7726. Pt100 sensor, 4-wire cable L=2 m. Supplied with SICRAM module.	

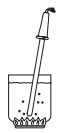
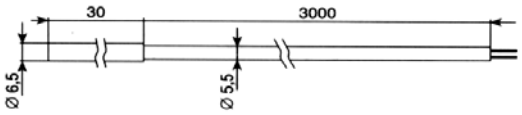
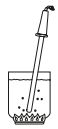
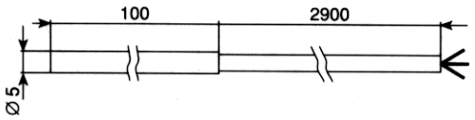
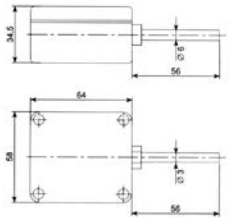
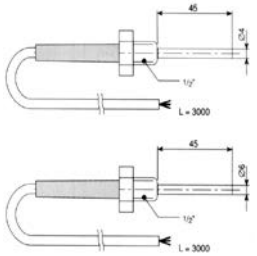
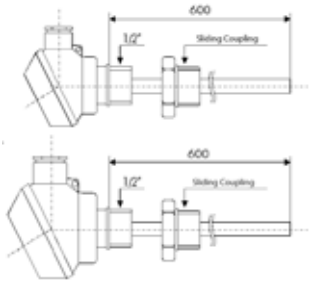
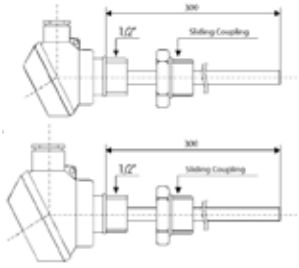
Pt100/Pt1000 PROBES WITH TP47 CONNECTOR WITHOUT SICRAM MODULE

CODE	T (°C)	CLASS	USE	$\tau_{0.63}$	DIMENSIONS
TP47.100.O (Pt100)	-50 +250	Class A		3s	
TP47.1000.O (Pt1000)					
TP87.100.O (Pt100)	-50 +200				
TP87.1000.O (Pt1000)					

Pt100 PROBES ENDING WITH FREE WIRES

TP875.1.I	-30 +120	Class A		15s	Globe-thermometer probe for measurement of radiant heat with Ø150mm. Accuracy according to ISO 7243 ISO 7726. Pt100 sensor, 4-wire cable L=2 m .
TP876.1.I					Globe-thermometer probe for measurement of radiant heat with Ø50mm. Accuracy according to ISO 7243 - ISO 7726. Pt100 sensor, 4-wire cable L=2 m.
TP878.1SS.O	-40 +85	Class A		60s	Contact probe for solar panels 4-wire cable L = 5 m 
TP879.1.O	-20 +120	Class A		60s	Penetration probe for compost 4-wire cable L = 5 m 
TP32MT.1P.I	-40 +100	Class A		40s	
TP32MT.1P.2	-50 +250	Class A		40s	
TP32MT.2.I	-40 +100	Class A		60s	
TP35.5AF.5	-110 +180	Class A		3s	 Cable L = 5 m. Shield in Inox + PTFE

TEMPERATURE PROBES FOR INDUSTRIAL USE

CODE	T (°C)	CLASS	USE	$\tau_{0.63}$	DIMENSIONS
HD882/EK (KTY81)	-40 +150	Not applicable		5s	
HD882/ E/100 (Pt100)	-50 +300	Class A		5s	
HD882/GK (KTY81)	-50 +100	Not applicable	Environmental	5s	
HD882/G100 (Pt100)	-50 +100	Class A	Environmental	5s	
HD882/L104 (Pt100)	0 +250	Class A	Process Thread	7s	
HD882/L106 (Pt100)	0 +250	Class A	Process Thread	15s	
HD882M100/600 (Pt100)	-50 +450	Class A	Process Thread - Miniature Head	15s	
HD882DM100/600 (Pt100)	-50 +450	Class A	Process Thread - DIN B Head	15s	
HD882M100/300 (Pt100)	-40 +100	Class A	Process Thread - Miniature Head	15s	
HD882DM100/300 (Pt100)	-50 +250	Class A	Process Thread - DIN B Head	15s	

CONNECTORS

TP47	Connector without SICRAM module. It can be connected to 4-wire Pt100 probes (and 3-wire with some instruments) 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