

# Регистраторы данных для измерения температуры DELTA OHM HD32.8.8, HD32.8.16

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Единый адрес для всех регионов: [dmh@nt-rt.ru](mailto:dmh@nt-rt.ru) || [www.deltaohm.nt-rt.ru](http://www.deltaohm.nt-rt.ru)

## HD32.8.8 - HD32.8.16

### 8 or 16 INPUTS DATA LOGGER FOR THERMOCOUPLES

The **HD32.8.8** and **HD32.8.16** are two robust data loggers with 8 inputs (HD32.8.8) or 16 inputs (HD32.8.16) for K, J, T, N, R, S, B and E type thermocouple with miniature connector temperature probes. During the measuring phase, the connected probes must be of the same type.

The captured data can be displayed and processed on the PC using the DeltaLog9 software. The instrument has a total capacity of 800,000 acquisitions to be divided among all the present inputs. Storage can be managed in two ways: when the available memory is full, data are overwritten by starting from the oldest ones (circular memory), otherwise storage stops when the available memory is full. Maximum, minimum or average of the stored values are calculated.

Technical specifications	
Number of inputs	8 for HD32.8.8 16 for HD32.8.16
<b>Measuring range and accuracy of the instrument</b> Accuracy is referred to the instrument only, error due to the thermocouple or the cold junction reference sensor is not included	
Thermocouple K	-200...+1370°C ±0.1°C up to 600°C / ±0.2°C over 600°C
Thermocouple J	-100...+750°C ±0.1°C up to 400°C / ±0.2°C over 400°C
Thermocouple T	-200...+400°C ±0.1°C
Thermocouple N	-200...+1300°C ±0.1°C up to 600°C / ±0.2°C over 600°C
Thermocouple R	+200...+1480°C ±0.3°C
Thermocouple S	+200...+1480°C ±0.3°C
Thermocouple B	+200...+1800°C ±0.4°C
Thermocouple E	-200...+750°C ±0.1°C up to 300°C / ±0.2°C over 300°C
Resolution	0.05°C (in the range ±199.99°C) 0.1°C in the remaining range
Drift in temperature @20°C	0.02% / °C
Drift after 1 year	0.1°C / year
Internal watch accuracy	1min/month max drift
Unit of measurement	°C - °F - K configurable
Memory capacity	up to 800,000 acquisitions to be divided among all the present inputs max 64 logging session (e.g. 1 probe connected = 800,000 acquisitions, 8 probes connected = 96,000 acquisitions each probe)
Data Logging	instantaneous or delayed, with the possibility of selecting the storage start and end time.
Storage interval can be selected among	2,5,10,15,30 s; 1,2,5,10,15,20,30 min; 1 hour
Data download	RS232C from 1200 to 38,400 baud, galvanically isolated. Sub D 9-pole male connector. USB 1.1 - 2.0 galvanically isolated.
Security of stored data	unlimited

Power Supply	4 per 1.5V alkaline batteries type C-BABY External 12Vdc-1A power supply. Connector, external Ø 5.5mm, internal Ø 2.1mm. Power supply via the PC USB port.
Current consumption @6Vdc	<60µA when the instrument is off <60µA in sleep mode with all probes connected <40mA during data logging with all probes connected
Voltage insulation	60 V between inputs 500V between inputs and power supply
Autonomy	200 hours with 7800mAh alkaline batteries and all probes connected
Connection	Miniature female socket for thermocouple
<b>Operating conditions</b>	
Operating Temperature	-5...50°C
Storage temperature	-25 ... 65°C
Working relative humidity	0 ... 90%RH, no condensation
Protection degree	IP64
<b>General characteristics</b>	
Dimensions (Length x Width x Height)	220x180x50mm
Weight	1100 g (complete with batteries)
Materials	ABS, polycarbonate and aluminium
Display	Backlit graphic LCD 128x64 pixel
Keyboard	15 keys, configurable also without PC. Security password for keyboard locking

All thermocouples K, J, T, N, R, S, B and E type probes with male miniature connector can be connected. Further to K probes available on the catalogue. For all K thermocouples probes, see from **pag.36** onwards. Probes of different form can be supplied upon request.

### ORDERING CODES

**HD32.8.16:** Data logger with 16 inputs for thermocouples K, J, T, N, R, S, B and E type temperature probes. The kit consists of instrument HD32.8.16, 4 per 1.5Vdc alkaline C-Baby type batteries, instruction manual, software DeltaLog9 downloadable from Delta OHM website, support/transport strap. Probes, tripod, carrying case and cables have to be ordered separately.

**9CPRS232:** Connection cable with Sub D 9-pole female connector for RS232C (null modem).

**CP22:** Connection cable USB 2.0 connector type A - connector type B.

**BAG32.2:** Carrying case for the HD32.8 instrument and accessories.

**HD32CS:** Support and transport strap.

**SWD10:** 100-240VAC/12VDC-1A stabilized mains power supply.

**VTRAP32:** Tripod equipped with 6 input head and 5 probe holders code HD3218K.

**HD3218K:** Clamp shaft for a further probe.



HD32.8.8

HD32.8.16



# TEMPERATURE PROBES – THERMOCOUPLES

Delta OHM offers a wide choice of K-type thermocouples, meeting the characteristics defined by the IEC 60584 standard.

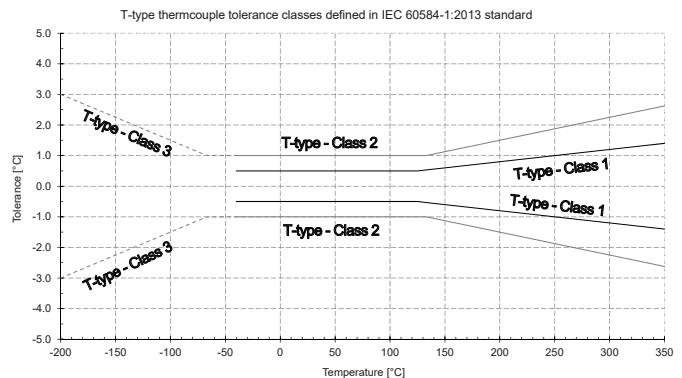
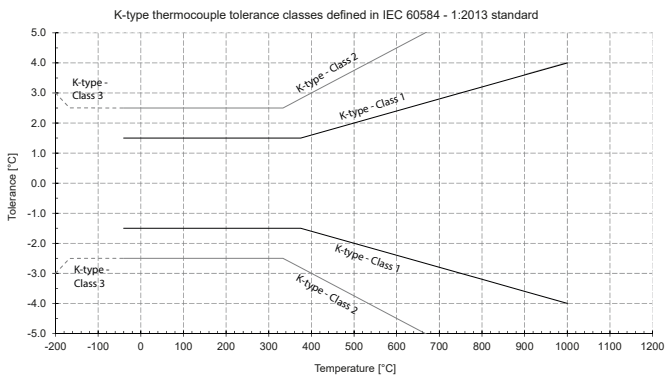
The response time  $\tau_{0.63}$  indicated for each probe is the reaction time of the sensor to a temperature variation, with a variation of the measured signal corresponding to the 63% of the total variation. The response times are referred:

- 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 60584-1:2013 standard defines the tolerance classes of the thermocouples as summarized in the following table:

Thermocouple Type	Class 1		Class 2		Class 3	
	Tolerance <sup>1</sup>	Temp. range	Tolerance <sup>1</sup>	Temp. range	Tolerance <sup>1</sup>	Temp. range
T	0.5 °C or 0.004· t	-40 °C...+350 °C	1 °C or 0.0075· t	-40 °C...+350 °C	1 °C or 0.015· t	-200 °C...+40 °C
E	1.5 °C or 0.004· t	-40 °C...+800 °C	2.5 °C or 0.0075· t	-40 °C...+900 °C	2.5 °C or 0.015· t	-200 °C...+40 °C
J		-40 °C...+750 °C		---	---	
K		-40 °C...+1000 °C		-40 °C...+1200 °C	2.5 °C or 0.015· t	-200 °C...+40 °C
N		-40 °C...+1000 °C		-40 °C...+1200 °C		-200 °C...+40 °C
R	1 °C	0 °C...+1100 °C	1.5 °C or 0.0025· t	0 °C...+1600 °C	---	---
S	[1+0.003·(t-1100)]	+1100 °C...+1600 °C		0 °C...+1700 °C	---	---
B	---	---		+600 °C...+1700 °C	4 °C or 0.005· t	600 °C...+1700 °C
C	---	---		+426 °C...+2315 °C	---	---
A	---	---	0.01· t	+1000 °C...+2500 °C	---	---

<sup>1</sup> Tolerance is expressed as a numerical value or as a function of temperature. The greater of the two values is valid



The elements that make up the thermocouple wires, with their respective polarity, are shown below.

Thermocouple type	Alloy standard elements and composition	
	Positive conductor	Negative conductor
R	Platinum – 13 % Rhodium	Platinum
S	Platinum – 10 % Rhodium	Platinum
B	Platinum – 30 % Rhodium	Platinum
J	Iron	Copper - Nickel
T	Copper	Copper - Nickel
E	Nickel - Chrome	Copper - Nickel
K	Nickel - Chrome	Nickel - Aluminium
N	Nickel - Chrome - Silicon	Nickel - Silicon
C	Tungsten - 5 % Rhenium	Tungsten - 26 % Rhenium
A	Tungsten - 5 % Rhenium	Tungsten - 20 % Rhenium

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.

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