



**HD 2103.1 HD 2103.2  
THERMO-ANEMOMETERS**

The **HD2103.1** and **HD2103.2** are portable instruments with a large LCD display. They are designed for use in the fields of air conditioning, heating, ventilation and environmental comfort. They use hot-wire or vane probes to measure air speed, flow rate, and temperature inside pipelines and vents. Temperature only is measured by immersion, penetration or air contact probes. The temperature sensor used can be chosen from the Pt100, Pt1000.

The probes are equipped with the SICRAM module, with the factory calibration data are stored inside.

The HD2103.2 instrument is a **datalogger**. It stores up to 38,000 samples which can be transferred from the instrument to a PC connected via the multi-standard RS232C serial port and USB 2.0. The storing interval, printing, and baud rate can be configured using the menu.

The HD2103.1 and HD2103.2 models are equipped with an RS232C serial port and can transfer the acquired measurements in real time to a PC or to a portable printer. 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 turning off that can also be excluded.

**The instruments have IP67 protection degree.**

**INSTRUMENT TECHNICAL CHARACTERISTICS**

*Instrument*

Dimensions (Length x Width x Height)	185x90x40mm
Weight	470g (complete with batteries)
Materials	ABS, rubber
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 without condensation
<b>Protection degree</b>	<b>IP67</b>

*Power supply*

Batteries	4 1.5V type AA batteries
Autonomy (*)	200 hours with 1800mAh alkaline batteries
Power absorbed with instrument off	20µA
Mains	Output mains adapter 12Vdc / 1000mA

*Measuring units*

°C - °F - m/s - km/h - ft/min - mph - knot -  
l/s - m³/s - m³/min - m³/h - ft³/s - ft³/min  
WCT

*Security data stored*

Unlimited, independent of battery charge conditions

*Time*

Date and time	Schedule in real time
Accuracy	1min/month max drift

*Measured values memorization - model HD2103.2*

Type	2000 pages containing 19 samples each
Quantity	Total of 38000 samples
Storage interval	1s...3600s (1hour)

*Serial interface RS232C*

Type	RS232C electrically 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
Immediate print interval	1s...3600s (1hour)

*USB interface - model HD2103.2*

Type	1.1 - 2.0 electrically isolated
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*Connections*

Input module for the probes	8-pole male DIN45326 connector
Serial interface and USB	8-pole MiniDin connector
Mains adapter	2-pole connector (positive at centre)

*Measurement of temperature by Instrument*

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

(\*) It's referred to all the probes except the hot wire ones, which autonomy is stated in the next pages



HD2101/USB

**PROBES AND MODULES TECHNICAL DATA EQUIPPED WITH INSTRUMENT**  
**Wind speed measurement probes**

**Hot-wire probes: AP471 S1 - AP471 S2 - AP471 S3 - AP471 S4 - AP471 S5**

	AP471 S1 - AP471 S3	AP471 S2	AP471 S4 AP471 S5
Type of measure	Air speed, calculated flow rate, air temperature		
Type of sensor			
Speed	NTC thermistor	Omnidirectional NTC thermistor	
Temperature	NTC thermistor	NTC thermistor	
Measurement range			
Speed	0,1...40m/s	0,1...5m/s	
Temperature	-25...+80°C	-25...+80°C	0...80°C
Measurement resolution:			
Speed	0.01 m/s 0.1 km/h 1 ft/min 0.1 mph 0.1 knot		
Temperature	0.1°C		
Measurement accuracy:			
Speed	±0.1 m/s (0...0.99 m/s)	±0.05m/s (0...0.99 m/s)	
	±0.3 m/s (1.00...9.99 m/s)	±0.15m/s (1.00...5.00 m/s)	
	±0.8 m/s (10.00...40.0 m/s)		
Temperature	±0.8°C (-10...+80°C)	±0.8°C (-10...+80°C)	
Minimum speed	0.1 m/s		
Air temperature compensation	0...80°C		
Sensor working conditions	Clean air, RH<80%		
Battery life	Approx. 20 hours @ 20 m/s with alkaline batteries	Approx. 30 hours @ 5 m/s with alkaline batteries	
Unit of Measurement			
Speed	m/s – km/h – ft/min – mph – knot		
Flow rate	l/s - m³/s - m³/min - m³/h - ft³/s - ft³/min		
Pipeline section for flow rate calculation	0.0001...1.9999 m²		
Cable length	~2m		

**Vane probes: AP472 S1... - AP472 S2 - AP472 S4...**

	AP472 S1...	AP472 S2	AP472 S4...			
			L	LT	H	HT
Type of measure	Air speed, calculated flow rate, air temperature	Air speed, calculated flow rate	Air speed, calculated flow rate.	Air speed, calculated flow rate, air temperature.	Air speed, calculated flow rate.	Air speed, calculated flow rate, air temperature.
Diameter	100mm	60mm	16mm			
Type of measurement						
Speed	Vane	Vane	Vane			
Temperature	K thermocouple	----	----	K thermo couple	----	K thermo couple
Measurement range						
Speed (m/s)	0.6...25	0.5...20	0.8...20		10...40	
Temperature (°C)	-25...+80 (*)		-25...+80 (*)			
Resolution						
Speed	0.01 m/s 0.1 km/h 1 ft/min 0.1 mph 0.1 knot					
Temperature	0.1°C	----	----	0.1°C	----	0.1°C
Accuracy						
Speed	±(0.3 m/s +1.5%f.s.)	±(0.3m/s +1.5%f.s.)	±(0.4 m/s +1.5%f.s.)			
Temperature	±0.8°C	----	----	±0.8°C	----	±0.8°C
Minimum speed	0.6m/s	0.5m/s	0.8m/s		10m/s	
Unit of Measurement						
Speed	m/s – km/h – ft/min – mph – knot					
Flow rate	l/s - m³/s - m³/min - m³/h - ft³/s - ft³/min					
Pipeline section for flow rate calculation	0.0001...1.9999 m²					
Cable length	~2m					

(\*) The indicated value refers to the vane's working range.

**Temperature probes Pt100 sensor using SICRAM module**

Model	Type	Application range	Accuracy
TP472I	Immersion	-196°C...+500°C	±0.25°C (-196°C...+350°C) ±0.4°C (+350°C...+500°C)
TP472I.0	Immersion	-50°C...+400°C	±0.25°C (-50°C...+350°C) ±0.4°C (+350°C...+400°C)
TP473P	Penetration	-50°C...+400°C	±0.25°C (-50°C...+350°C) ±0.4°C (+350°C...+400°C)
TP473P.0	Penetration	-50°C...+400°C	±0.25°C (-50°C...+350°C) ±0.4°C (+350°C...+400°C)
TP474C	Contact	-50°C...+400°C	±0.3°C (-50°C...+350°C) ±0.4°C (+350°C...+400°C)
TP474C.0	Contact	-50°C...+400°C	±0.3°C (-50°C...+350°C) ±0.4°C (+350°C...+400°C)
TP475A.0	Air	-50°C...+250°C	±0.3°C (-50°C...+250°C)
TP472I.5	Immersion	-50°C...+400°C	±0.3°C (-50°C...+350°C) ±0.4°C (+350°C...+400°C)
TP472I.10	Immersion	-50°C...+400°C	±0.30°C (-50°C...+350°C) ±0.4°C (+350°C...+400°C)
TP49A	Immersion	-70°C...+400°C	±0.25°C (-50°C...+350°C) ±0.4°C (+350°C...+400°C)
TP49AC	Contact	-70°C...+400°C	±0.25°C (-50°C...+350°C) ±0.4°C (+350°C...+400°C)
TP49AP	Penetration	-70°C...+400°C	±0.25°C (-50°C...+350°C) ±0.4°C (+350°C...+400°C)
TP875	Globe thermometer Ø 150mm	-30°C...+120°C	±0.25°C
TP876	Globe thermometer Ø 50mm	-30°C...+120°C	±0.25°C
TP87	Immersion	-50°C...+200°C	±0.25°C
TP878 TP878.1	For solar panels	+5°C...+80°C	±0.25°C
TP879	For compost	-20°C...+120°C	±0.25°C

**Common characteristics**

Temperature drift @ 20°C 0.003%/°C

**4 wire Pt100 and 2 wire Pt1000 Probes**

Model	Type	Application range	Accuracy
TP47.100	Pt100 4 wires	-50...+400°C	Class A
TP47.1000	Pt1000 2 wires	-50...+400°C	Class A

**Common characteristics**

Temperature drift @ 20°C

Pt100 0.003%/°C  
Pt1000 0.005%/°C



Air speed

**ORDER CODES**

- HD2103.1:** The kit consists of the instrument HD2103.1, 4 1.5V alkaline batteries, operating manual, case and DeltaLog9 software. **Probes and cables must be ordered separately.**
- HD2103.2:** The kit consists of the HD2103.2 **datalogger**, 4 1.5V alkaline batteries, operating manual, case and DeltaLog9 software. **Probes and cables must be ordered separately.**
- HD2110CSNM:** 8-pole connection cable MiniDin - Sub D 9-pole female for RS232C.
- C.206:** Cable to connect the instruments HD21...1 and .2 directly to the USB port of the PC.
- HD2101/USB:** Connection cable USB 2.0 connector type A - 8-pole MiniDin.
- DeltaLog9:** Software for download and management of the data on PC using Windows 98 to Vista operating systems.
- SWD10:** Stabilized power supply at 230Vac/12Vdc-1000mA mains voltage.
- HD40.1:** On request, portable, serial input, 24 column thermal printer, 58mm paper width.

**Probes complete with SICRAM module  
AIR speed measurement probes**

**Hot-wire PROBES:**

- AP471 S1:** Hot-wire telescopic probe, measuring range: 0.1...40m/s. Cable 2 metres long.
- AP471 S2:** Omnidirectional hot-wire probe, measuring range: 0.1...5m/s. Cable 2 metres long.
- AP471 S3:** Hot-wire telescopic probe with terminal tip for easy position, measuring range: 0.1...40m/s. Cable 2 metres long.
- AP471 S4:** Omnidirectional hot-wire telescopic probe with base, measuring range: 0.1...5m/s. Cable 2 metres long.
- AP471 S5:** Omnidirectional hot-wire telescopic probe, measuring range: 0.1...5m/s. Cable 2 metres long.

**Vane probes:**

- AP472 S1L:** Vane probe with thermocouple, Ø 100mm. Speed from 0.6 to 25m/s; temperature from -25 to 80°C. Cable 2 metres long.
- AP472 S2:** Vane probe, Ø 60mm. Measurement range: 0.5...20m/s. Cable 2 metres long.
- AP472 S4L:** Vane probe, Ø 16mm. speed from 0.8 to 20m/s. Cable 2 metres long.
- AP472 S4LT:** Vane probe with thermocouple, Ø 16mm, speed from 0.8 to 20m/s. Temperature from -25 to 80°C with thermocouple K sensor. Cable 2 metres long.
- AP472 S4H:** Vane probe, Ø 16mm speed from 10 to 40m/s. Cable 2 metres long.
- AP472 S4HT:** Vane probe with thermocouple, Ø 16mm speed from 10 to 50m/s. Temperature from -25 to 80°C with thermocouple K sensor<sup>(1)</sup>. Cable length 2 metres long.

**Temperature PROBES complete with SICRAM module**

- TP472I:** Immersion probe, sensor Pt100. Stem Ø 3 mm, length 300 mm. Cable 2 metres long.
- TP472I.0:** Immersion probe, sensor Pt100. Stem Ø 3 mm, length 230 mm. Cable 2 metres long.
- TP473P:** Penetration probe, sensor Pt100. Stem Ø 4mm, length 150 mm. Cable 2 metres long.
- TP473P.0:** Penetration probe, sensor Pt100. Stem Ø 4mm, length 150 mm. Cable 2 metres long.
- TP474C:** Contact probe, sensor Pt100. Stem Ø 4mm, length 230mm, contact surface Ø 5mm. Cable 2 metres long.
- TP474C.0:** Contact probe, sensor Pt100. Stem Ø 4mm, length 230mm, contact surface Ø 5mm. Cable 2 metres long.
- TP475A.0:** Air probe, Pt100 sensor. Stem Ø 4mm, length 230mm. Cable 2 metres long.
- TP472I.5:** Immersion probe, Pt100 sensor. Stem Ø 6mm, length 500 mm. Cable 2 metres long.
- TP472I.10:** Immersion probe, Pt100 sensor. Stem Ø 6mm, length 1000mm. Cable 2 metres long.
- TP875:** Globe thermometer Ø 150mm with handle, cable 2 metres long.
- TP876:** Globe thermometer Ø 50mm with handle. Cable 2 metres long.
- TP87:** Immersion probe, Pt100sensor. Stem Ø 3mm, length 70mm. Cable 2 metres long.
- TP878:** Contact probe for solar panels. Cable 2 metres long.
- TP878.1:** Contact probe for solar panels. Cable 5 metres long.
- TP879:** Penetration probe for compost. Stem Ø 8 mm, Length 1 m. Cable 2 meters long.

**Temperature probes without SICRAM module**

- TP47.100:** 4 wire direct Pt100 sensor immersion probe., Probe's stem Ø 3mm, length 230mm. Connection cable 4 wires with connector, length 2 metres.
- TP47.1000:** Pt1000 sensor immersion probe. Probe's stem Ø 3mm, length 230mm. Connection cable 2 wires with connector, length 2 metres.
- TP47:** Only connector for probe connection: direct 4 wires Pt100 and 2 wires Pt1000.



**SWD10**



**HD40.1**

