



## HD 2303.0 THERMO-ANEMOMETER

The **HD2303.0** is a portable instrument with a large LCD display. It is designed for use in the fields of air conditioning, heating, ventilation and environmental comfort. It uses 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 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 turning off that can also be excluded.

**The instruments have IP67 protection degree.**

### INSTRUMENT TECHNICAL CHARACTERISTICS

#### 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 without condensation
<b>Protection degree</b>	<b>IP67</b>

#### Power supply

Batteries	3 1.5V type AA batteries
Autonomy (*)	200 hours with 1800mAh alkaline batteries
Power absorbed with instrument off	< 20µA

#### Measuring unit

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

#### Connections

Input module for the probes 8-pole male DIN45326 connector

#### 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

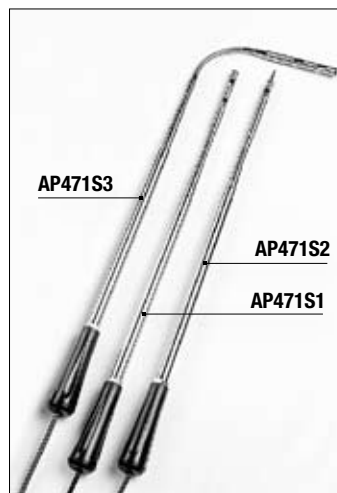
### PROBES AND MODULES TECHNICAL DATA EQUIPPED WITH INSTRUMENT Wind speed measurement probes

#### 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		

Air speed

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



**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	Vane					
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

**ORDER CODES**

**HD2303.0:** The kit consists of the instrument HD2303.0, 3 1.5V alkaline batteries, operating manual, case. **Probes must be ordered separately.**

**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 40m/s. Temperature from -25 to 80°C with thermocouple K sensor<sup>(\*)</sup>. Cable 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.

