

## HD 2303.0



### 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 air or 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

(\*) It's referred to all the probes except the hot wire ones, whose autonomy is stated in the table "Hot wire probes".

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

##### Hot-wire probes: AP471 S1 - AP471 S2 - AP471 S3 - AP471 S4

	AP471 S1 - AP471 S3	AP471 S2	AP471 S4
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	±0.2 m/s (0...0.99 m/s)	±0.2m/s (0...0.99 m/s)	
	±0.4 m/s (1.00...9.99 m/s)	±0.3m/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 S1	AP472 S2
Type of measure	Air speed, calculated flow rate, air temperature	Air speed, calculated flow rate
Diameter	100mm	60mm
Type of measurement		
Speed	Vane	Vane
Temperature	K thermocouple	----
Measurement range		
Speed (m/s)	0.6...25	0.5...20
Temperature (°C)	-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	----
Accuracy		
Speed	±(0.4 m/s +1.5%f.s.)	±(0.4m/s +1.5%f.s.)
Temperature	±0.8°C	----
Minimum speed	0.6m/s	0.5m/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.

### TECHNICAL DATA OF PROBES AND MODULES EQUIPPED WITH INSTRUMENT Temperature probes Pt100 sensor with SICRAM module

Model	Type	Application field	Accuracy
TP472I	Immersion	-196°C...+500°C	±0.25°C (-196°C...+300°C) ±0.5°C (+300°C...+500°C)
TP472I.0 1/3 DIN Thin Film	Immersion	-50°C...+300°C	±0.25°C (-50°C...+300°C)
TP473P.I	Penetration	-50°C...+400°C	±0.25°C (-50°C...+300°C) ±0.5°C (+300°C...+400°C)
TP473P.0 1/3 DIN Thin Film	Penetration	-50°C...+300°C	±0.25°C (-50°C...+300°C)
TP474C.0 1/3 DIN Thin Film	Contact	-50°C...+300°C	±0.3°C (-50°C...+300°C)
TP475A.0 1/3 DIN Thin Film	Air	-50°C...+250°C	±0.3°C (-50°C...+250°C)
TP472I.5	Penetration	-50°C...+400°C	±0.3°C (-50°C...+300°C) ±0.6°C (+300°C...+400°C)
TP472I.10	Penetration	-50°C...+400°C	±0.30°C (-50°C...+300°C) ±0.6°C (+300°C...+400°C)
TP49A.I Class A Thin Film	Immersion	-70°C...+250°C	±0.3°C (-70°C...-50°C) ±0.25°C (-50°C...+250°C)
TP49AC.I Class A Thin Film	Contact	-70°C...+250°C	±0.3°C (-70°C...-50°C) ±0.25°C (-50°C...+250°C)
TP49AP.I Class A Thin Film	Penetration	-70°C...+250°C	±0.3°C (-70°C...-50°C) ±0.25°C (-50°C...+250°C)
TP875.I	Globe-thermometer Ø150mm	-30°C...+120°C	±0.25°C
TP876.I	Globe-thermometer Ø50mm	-30°C...+120°C	±0.25°C
TP87.0 1/3 DIN Thin Film	Immersion	-50°C...+200°C	±0.25°C
TP878.0 1/3 DIN Thin Film TP878.1.0 1/3 DIN Thin Film	Photovoltaic	-40°C...+85°C	±0.25°C
TP879.0 1/3 DIN Thin Film	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
TP47.100.0	Pt100 4 wires	-50...+250°C	1/3 DIN
TP47.1000.0	Pt1000 2 wires	-50...+250°C	1/3 DIN

#### Common characteristics

Temperature drift @ 20°C

Pt100 0.003%/°C  
Pt1000 0.005%/°C

## ORDERING 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.

#### Vane probes:

**AP472 S1:** Vane probe with K 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.

#### Temperature probes equipped with SICRAM module

**TP472I:** Immersion probe, Wire Wound Pt100 sensor. Stem Ø 3 mm, length 300 mm. Cable 2 meters long.

**TP472I.0:** Immersion probe, Thin Film Pt100 sensor. Stem Ø 3 mm, length 230 mm. Cable 2 meters long.

**TP473P.I:** Penetration probe, Wire Wound Pt100 sensor. Stem Ø 4mm, length 150 mm. Cable 2 meters long.

**TP473P.0:** Penetration probe, Thin Film Pt100 sensor. Stem Ø 4mm, length 150 mm. Cable 2 meters long.

**TP474C.0:** Contact probe, Thin Film Pt100 sensor. Stem Ø 4mm, length 230mm, contact surface Ø 5mm. Cable 2 meters long.

**TP475A.0:** Air probe, Thin Film Pt100 sensor. Stem Ø 4mm, length 230mm. Cable 2 meters long.

**TP472I.5:** Penetration probe, Thin Film Pt100 sensor. Stem Ø 6mm, length 500 mm. Cable 2 meters long.

**TP472I.10:** Penetration probe, Thin Film Pt100 sensor. Stem Ø 6mm, length 1000mm. Cable 2 meters long.

**TP49A.I:** Immersion probe, Thin Film Pt100 sensor. Stem Ø 2.7mm, length 150mm. Cable 2 meters long. Aluminium handle.

**TP49AC.I:** Contact probe, Thin Film Pt100 sensor. Stem Ø 4 mm, length 150mm. Cable 2 meters long. Aluminium handle.

**TP49AP.I:** Penetration probe, Thin Film Pt100 sensor. Stem Ø 2.7mm, length 150mm. Cable 2 meters long. Aluminium handle.

**TP875.I:** Globe thermometer Ø 150 mm with handle. Wire Wound Pt100 sensor complete of SICRAM module. Cable 2 meters long.

**TP876.I:** Globe thermometer Ø 50 mm with handle. Wire Wound Pt100 sensor complete of SICRAM module. Cable 2 meters long.

**TP87.0:** Immersion probe, Thin Film Pt100 sensor. Stem Ø 3 mm, length 70 mm. Cable 2 meters long.

**TP878.0:** Contact probe for solar panels. Thin Film Pt100 sensor. Cable 2 meters long.

**TP878.1.0:** Contact probe for solar panels. Thin Film Pt100 sensor. Cable 5 meters long

**TP879.0:** Penetration probe for compost. Thin Film Pt100 sensor. Stem Ø 8 mm, length 1000mm. Cable 2 meters long.

#### Temperature probes without SICRAM module

**TP47.100.0:** 4 wire direct Pt100 sensor immersion probe. Probe's stem Ø 3mm, length 230mm. Connection cable 4 wires with connector, length 2 metres.

**TP47.1000.0:** 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.

