

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 |
| Protection degree | IP67 |

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.

