



# THERMO-ANEMOMETER HD2303.0

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 fitted with the SICRAM module, with the factory calibration settings already being memorized 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 disabled.

**The instruments have IP67 protection degree.**

## INSTRUMENT TECHNICAL CHARACTERISTICS

### Instrument

|   |   |
|---|---|
| Dimensions<br>(Length x Width x Height) | 140x88x38mm                                       |
| Weight                                  | 160g (complete with batteries)                    |
| Materials                               | ABS   |
| Display                                 | 2x4½ digits plus symbols<br>Visible area: 52x42mm |

### Operating conditions

|                           |                                |
|---------------------------|--------------------------------|
| Operating temperature     | -5...50°C                      |
| Warehouse temperature     | -25...65°C                     |
| Working relative humidity | 0...90%RH without condensation |

**Protection degree IP67**

### Power

|                                    |   |
|------------------------------------|---|
| 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<br>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...40m/s   | 0...5m/s  |                      |
| Temperature                                | -30...+110°C                                      | -30...+110°C  | 0...80°C             |
| Measurement resolution:                    |   |   |                      |
| Speed                                      |   | 0.01 m/s<br>0.1 km/h<br>1 ft/min<br>0.1 mph<br>0.1 knot |                      |
| Temperature                                |   | 0.1°C   |                      |
| Measurement accuracy:                      |   |   |                      |
| Speed                                      | ±0.05 m/s (0...0.99 m/s)                          | ±0.02m/s (0...0.99 m/s)                                 |                      |
|  | ±0.2 m/s (1.00...9.99 m/s)                        | ±0.1m/s (1.00...5.00 m/s)                               |                      |
|  | ±0.6 m/s (10.00...40.0 m/s)                       |   |                      |
| Temperature                                | ±0.4°C (-30...+110°C)                             | ±0.4°C (-30...+110°C)                                   |                      |
| Minimum speed                              | 0 m/s   |   |                      |
| Air temperature compensation               | 0...80°C  |   |                      |
| 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   |   |                      |

(\*) 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  | H       |   | 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...20   | 10...30 | 0.25...20   | 0.6...20                         | 10...50   |                                  |   |
| Temperature (°C)                           | -25...+80 (*)                                    |         | -25...+80 (*)   | -25...+80 (*)                    | -30...+120 (**)                                   | -25...+80 (*)                    | -30...+120 (**)                                   |
| Resolution                                 |  |         |   |                                  |   |                                  |   |
| Speed                                      |  |         | 0.01 m/s<br>0.1 km/h<br>1 ft/min<br>0.1 mph<br>0.1 knot |                                  |   |                                  |   |
| Temperature                                | 0.1°C  |         | ---   | 0.1°C                            | ---   | 0.1°C                            | ---   |
| Accuracy                                   |  |         |   |                                  |   |                                  |   |
| Speed                                      | ±(0.1 m/s +1.5%f.s.)                             |         | ±(0.1m/s +1.5%f.s.)                                     | ±(0.2 m/s +1.0%f.s.)             |   |                                  |   |
| Temperature                                | ±0.5°C   |         | ---   | ---                              | ±0.5°C  | ---                              | ±0.5°C  |
| Minimum speed                              | 0.6m/s   | 10m/s   | 0.25m/s   | 0.60m/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.

(\*\*) The temperature limit refers to the probe head, where the vane and temperature sensors are located, and not to the handle, cable and telescopic rod that can withstand up to the maximum temperature of 80°C.



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)<br>±0.4°C (+350°C...+500°C) |
| TP472I.0  | Immersion                 | -50°C...+400°C    | ±0.25°C (-50°C...+350°C)<br>±0.4°C (+350°C...+400°C)  |
| TP473P.0  | Penetration               | -50°C...+400°C    | ±0.25°C (-50°C...+350°C)<br>±0.4°C (+350°C...+400°C)  |
| TP474C.0  | Contact                   | -50°C...+400°C    | ±0.3°C (-50°C...+350°C)<br>±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)<br>±0.4°C (+350°C...+400°C)   |
| TP472I.10 | Immersion                 | -50°C...+400°C    | ±0.3°C (-50°C...+350°C)<br>±0.4°C (+350°C...+400°C)   |
| TP875     | Globe thermometer Ø 150mm | -10°C...+100°C    | ±0.25°C   |

Common characteristics

Resolution 0.1°C  
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

Resolution 0.1°C  
Temperature drift @ 20°C  
Pt100 0.003%/°C  
Pt1000 0.005%/°C



AP471 S4

## ORDER CODES

**HD2303.OK:** The kit is composed of the instrument HD2303.0, 3 1.5V alkaline batteries, operating manual, case. **The 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...40m/s. Cable length 2 metres.

**AP471 S2:** Omnidirectional hot-wire probe, measuring range: 0...5m/s. Cable length 2 metres.

**AP471 S3:** Hot-wire telescopic probe with terminal tip for easy position, measuring range: 0...40m/s. Cable length 2 metres.

**AP471 S4:** Omnidirectional hot-wire telescopic probe with base, measuring range: 0...5m/s. Cable length 2 metres.

**AP471 S5:** Omnidirectional hot-wire telescopic probe, measuring range: 0...5m/s. Cable length 2 metres.

#### VANE PROBES:

**AP472 S1L:** Vane probe with thermocouple, Ø 100mm. Speed from 0.6 to 20m/s; temperature from -25 to 80°C. Cable length 2 metres.

**AP472 S1H:** Vane probe with thermocouple, Ø 100mm speed from 10 to 30m/s; temperature from -25 to 80°C. Cable length 2 metres.

**AP472 S2:** Vane probe, Ø 60mm. Measurement range: 0.25...20m/s. Cable length 2 metres.

**AP472 S4L:** Vane probe, Ø 16mm. speed from 0.6 to 20m/s. Cable length 2 metres.

**AP472 S4LT:** Vane probe with thermocouple, Ø 16mm, speed from 0.6 to 20m/s. Temperature from -30 to 120°C with thermocouple K sensor<sup>(\*)</sup>. Cable length 2 metres.

**AP472 S4H:** Vane probe, Ø 16mm speed from 10 to 50m/s. Cable length 2 metres.

**AP472 S4HT:** Vane probe with thermocouple, Ø 16mm speed from 10 to 50m/s. Temperature from -30 to 120°C with thermocouple K sensor<sup>(\*)</sup>. Cable length 2 metres.

(\*) The temperature limit refers to the probe head, where the vane and temperature sensors are located, and not to the handle, cable and telescopic rod that can withstand up to the maximum temperature of 80°C.

### TEMPERATURE MEASUREMENT PROBES

**TP472I:** Immersion probe, Pt100 sensor. Stem Ø 3 mm, length 300 mm. Cable length 2 metres.

**TP472I.0:** Immersion probe, Pt100 sensor. Stem Ø 3 mm, length 230 mm. Cable length 2 metres.

**TP473P.0:** Penetration probe, Pt100 sensor. Stem Ø 4mm, length 150 mm. Cable length 2 metres.

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

**TP475A.0:** Air probe, Pt100 sensor. Stem Ø 4mm, length 230mm. Cable length 2 metres.

**TP472I.5:** Immersion probe, Pt100 sensor. Stem Ø 6mm, length 500 mm. Cable length 2 metres.

**TP472I.10:** Immersion probe, Pt100 sensor. Stem Ø 6mm, length 1000mm. Cable length 2 metres.

**TP875:** Globe thermometer Ø 150 mm with handle, complete with SICRAM module. Cable length 2 metres.

### 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.

