



DO 2003 hvac Datalogger



DO2003 AIR SPEED AND FLOW RATE - TEMPERATURE TEMPERATURE/RELATIVE HUMIDITY - PRESSURE

DO2003 is a portable instrument, **datalogger** specially designed to be used in the fields of air-conditioning, heating, ventilation, environmental comfort, energy saving both for industrial and residential application by means of a complete probes series. It measures:

- Air speed and flow rate inside pipeline with hot-wire probes, vane probes or Pitot tube probes
- relative humidity and temperature with combined probes
- differential pressure up to 2000 mbar and barometric pressure
- temperature with immersion, pointed or contact probes.

This datalogger stores up to 12.000 readings which can be downloaded to a PC connected to the instrument through RS232C serial port. Storage interval, printing, baud rate can be configurated on the menu.

"Record" (RCD) function calculates maximum, average and minimum values. A big size dual display and a led series make the reading of data easy.

The instrument is provided also with these further functions: relative measurement, Hold function, zero correction for differential pressure probes and hot-wire probes.

CHARACTERISTICS OF THE INSTRUMENT

Display: 3½ digit, dual LCD, figure height 12,5 mm. Unit of measure and other additional information are supplied with a led series.

No. 2 inputs: **input A** for air speed and pressure probes, **input B** only for combined temperature/humidity probes.

Storage capacity: 12.000 readings.

Storage interval and printing can be configured between 1 second and 1 hour.

Safety of stored data and battery charge situation unrelated.

Automatic switch-off after 8 minutes can be disabled.

Operating conditions:

Working temperature: -5°C..50°C.

Relative humidity 0-90% RH. not condensing.

Storage temperature: -20°C..+60°C.

Power supply: four 1.5V alkaline AA batteries, , operating time with alkaline batteries 100 hours approx.

Probes input: 2 circular 8 pole DIN 45326 male connectors.

9 pole SUB D male RS232C serial output. Baud rate from 300 to 38400 baud. housing: ABS.

Dimensions and weight: 72x210x40 mm - 320gr.

CHARACTERISTICS OF PROBES FOR DO2003 EQUIPPED WITH SICRAM MODULE Probes for air speed measurement

A file caldo: AP471 S1 - AP471 S2 - AP471 S3 - AP471 S4

	AP471 S1 - AP471 S3	AP471 S2	AP471 S4
Kind of measure	Air speed, calculated flow, air temperature		
Working range	Air speed, calculated flow, air temperature		
Speed	0...40m/s	0...5m/s	
Temperature	-30...+110°C	-30...+110°C	0...+80°C
Resolution	Air speed, calculated flow, air temperature		
Speed	0.01m/s (0...19.99) - 0.1m/s above 0.1 km/h 1 ft/min (0...1999) - 10ft/min above 0.1 mph	0.01 m/s (0...5 m/s) 0.1 km/h 1 ft/min 0.1 mph	
Temperature	0.1°C (-30...+110°C)	0.1°C (-30...+110°C)	
Accuracy	Air speed, calculated flow, air temperature		
Speed	±0.05 m/s (0...0.99 m/s) ±0.2 m/s (1.00...9.99 m/s) ±0.6 m/s (10.00...40.0 m/s)	±0.02m/s (0...0.99 m/s) ±0.1m/s (1.00...5.00 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		
Unit of measurement	Air speed, calculated flow, air temperature		
Speed	m/s - km/h - ft/min - mph		
Flow rate	l/s - m³/h - cfm		
Duct section for flow calculation	0.001...1.999 m²		
Cable length	~2m		

Vane probe: AP472 S1... - AP472 S2 - AP472 S4...

	AP472 S1...		AP472 S2	AP472 S4 ...			
	L	H		L	LT	H	HT
Type of measurements	Air speed, calculated flow, air temperature		Air speed, calculated flow	Air speed, calculated flow	Air speed, calculated flow, air temperature	Air speed, calculated flow	Air speed, calculated flow, air temperature
Diameter	100 mm		60 mm	16 mm			
Type of measurement	Vane		Vane	Vane			
Speed	Tc K		---	---	Tc K	---	Tc K
Temperature	---		---	---	---	---	---
Measuring range	Air speed, calculated flow, air temperature		Air speed, calculated flow	Air speed, calculated flow	Air speed, calculated flow, air temperature	Air speed, calculated flow	Air speed, calculated flow, air temperature
Speed	0.6...20 10...30	0.25...20	0.6...20	10...50			
Temperature (*)	-25...+80	-25...+80 (*)	-25...+80 (*)	-30...+120 (**)	-25...+80 (*)	-25...+80	
Resolution	Air speed, calculated flow, air temperature						
Speed	0.01 m/s - 0.1 km/h - 1 ft/min - 0.1 mph - 0.1 knots						
Temperature	0.1°C	---	---	0.1°C	---	---	0.1°C
Accuracy	Air speed, calculated flow, air temperature						
Speed	±(0.1 m/s +1.5%f.s.)		±(0.1 m/s +1.5%f.s.)	±(0.2 m/s +1.0%f.s.)			
Temperature	±0.5°C		---	---	±0.5°C	---	±0.5°C
Min. speed	0.6m/s	10m/s	0.25m/s	0.60m/s	10m/s		
Unit of measurement	Air speed, calculated flow, air temperature						
Speed	m/s - km/h - ft/min - mph - knots						
Flow	l/s - m³/s - m³/min - ft³/s - ft³/min						
Duct section for flow calculation	100...100000 cm² 0.01...10 m²						
Cable length	~2m						

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

(**) The temperature range refers to the probe head where the vane and the temperature sensor are located and not the handle, the cable and the telescopic shaft which can withstand up to a temperature of 80°C.



Pitot tube probes:

AP473 S1 - AP473 S2 - AP473 S3 - AP473 S4

	AP473 S1	AP473 S2	AP473 S3	AP473 S4
Kind of measurement	Air speed, calculated flow, differential pressure, Air temperature			
Working range				
Diff. pressure	10 mbar f.s.	20mbar f.s.	50mbar f.s.	100mbar f.s.
Speed (*)	2 ... 40m/s	2 ... 55m/s	2 ... 90m/s	2 ... 130m/s
Temperature	-200...+460°C	-200...+460°C	-200...+460°C	-200...+460°C
Resolution				
Speed			0.1	
			1	
			0,01·10 ³	
			1	
Temperature	0.1°C			
Accuracy				
Speed	±0.4%f.s. of pressure		±0.25%f.s. of pressure	
Temperature	±0.5°C		±0.5°C	
Minimum speed	2 m/s			
Air temperature compensation	-200...+460°C (if K thermocouple is connected to the module)			
Unit of measurement				
Speed	m/s – km/h – ft/min – mph			
Flow rate	l/s – m ³ /h – cfm			
Duct section for flow calculation	.001...1.999 m ²			

(*) A 20°C, 1013mbar and Ps negligible.

Pt100 sensor temperature probes

TP472I Wire Pt100 immersion probe. Tube Ø 3 mm, length 300 mm. 4 wire cable, 2 m long. Working range: -196°C...+500°C.

Accuracy: ±0.25°C (-196°C...+350°C) / ±0.4°C (+350°C...+500°C).

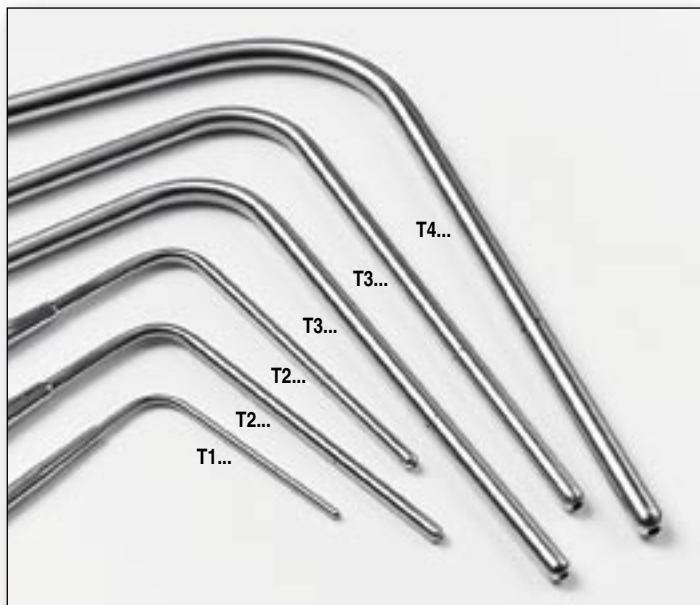
TP473P Wire Pt100 pointed probe. Tube Ø 4 mm, length 150 mm. 4 wire cable, 2 m long. Working range: -100°C...+400°C.

Accuracy: ±0.25°C (-100°C...+350°C) / ±0.4°C (+350°C...+400°C).

TP474C Thin film Pt100 contact probe. Tube Ø 4 mm, length 230 mm, contact surface made of silver Ø 5 mm. 4 wire cable, 2 m long.

Working range: -50°C...+400°C.

Accuracy: ±0.25°C (-50°C...+350°C) / ±0.4°C (+350°C...+400°C).



Relative humidity and temperature probes

Typical characteristics of module of relative humidity and temperature probes

Relative humidity

Sensor	Mk-33 capacitive
Typical capacity @30%RH	300pF±40pF
Temperature working range	-40°C...+150°C
Working range	0 ... 100%R.H.
Accuracy	±1%RH in the range 20...90%RH ±2%RH in the range 10...99%RH
Resolution	0.1%RH
Temperature drift @20°C	0.02%RH/°C
%RH response time at constant temperature	10sec (10→80%RH; air speed=2m/s)

Temperature

Temperature sensor	Pt100 (100Ω @ 0°C)
Working range	-50°C...+200°C.
Accuracy	±0.1°C
Resolution	0.1°C
Temperature drift @20°C	0.003%/°C
Temperature sensor (HP572AC)	K Thermocouple
Working range	-50°C...+200°C.
Accuracy	±0.5°C
Resolution	0.05°C
Temperature drift @20°C	0.02%/°C

HP472AC %RH and temperature combined probe, dimensions Ø 26x170 mm.

Connecting cable: 2 m long. Working range: -20°C...+80°C, 5...98% RH.

%RH accuracy: ±2%

°C accuracy: ±0.30°C.



HP572AC %RH and K thermocouple temperature combined probe
 Dimensions Ø 26x170 mm. Connecting cable: 2 m long.
 Working range: -20°C...+80°C, 5...98% RH.
 %RH accuracy: ±2% °C accuracy: ±0.5°C.

HP473AC %RH and temperature combined probe. Handle Ø 26x130 mm, probe Ø 14x110 mm. Connecting cable: 2 m long
 Working range -20°C...80°C, 5...98% RH.
 %RH accuracy: ±2% °C accuracy: ±0.30°C.

HP474AC %RH and temperature combined probe. Handle Ø 26x130 mm, probe Ø 14x210 mm. Connecting cable: 2 m long .
 Working range: -40°C...+150°C, 5...98% RH.
 %RH accuracy: ±2.5% °C accuracy:±0.30°C

HP475AC %RH and temperature combined probe. Handle Ø 26x110 mm. Steel probe Ø12x560 mm. Terminal tip Ø 13,5x75 mm. Connecting cable: 2 m long.
 Working range -40°C...+150°C, 5...98% RH.
 %RH accuracy: ±2.5% °C accuracy: ±0.35°C

HP477DC %RH and temperature sword combined probe, handle Ø 26x110 mm. Probe 18x4 mm, length: 520 mm. Connecting cable: 2 m long.
 Working range -40°C...+150°C, 5...98% RH.
 %RH accuracy: ±2.5% °C accuracy: ±0.35°C

Pressure probes

PP472 Probe for measuring barometric pressure.
 Working range: 600 ... 1100mbar Resolution: 1mbar
 Accuracy @ 20°C: ±1mbar Temperature range: -10 ... +60°C

PP473 S1...S8 Differential pressure probes

Working range	S1=f.s.10mbar, S4=f.s.100mbar, S7=f.s.1bar,S7=3bar	S2=f.s.20mbar, S5=f.s.200mbar, S8=f.s.2bar S4=300mbar S8=6bar	S3=f.s.50mbar, S6=f.s.500mbar, S5,S6=1bar
Maximum overpressure	S1,S2,S3=200mbar S7=3bar	S4=300mbar S8=6bar	S5,S6=1bar
Accuracy @ 25°C	±0.5%f.s. (10, 20, 50mbar)	±0.25%f.s. (100mbar)	±0.12% f.s. (200, 500, 1000, 2000mbar)
Temperature range	-10 ... +60°C		
Fluid in contact with the membrane	non-corrosive dry gas or air		
Connection	tube Ø 5mm		

PP472SI...S8



Ordering codes

DO 2003: The kit is provided with instrument, 9CPRS232 serial output cable, 4 1.5V alkaline batteries, instructions manual, carrying case and software Deltalog3.

Probes have to be ordered separately.

9CPRS232: Female/female 9 pole sub D extension cable for RS232C (null modem).

DeltaLog3: (vers.4.0 and following ones) Software for downloading and PC data management.

Probes equipped with SICRAM modules PROBES FOR AIR SPEED MEASUREMENTS

HOT-WIRE PROBES

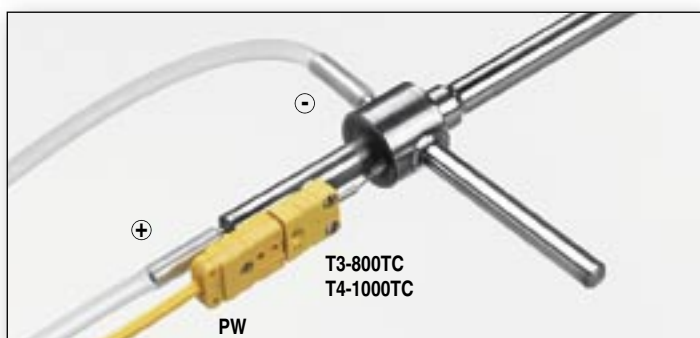
AP471 S1: Hot-wire telescopic probe, measuring range: 0...40m/s.

AP471 S2: Omni-directional hot-wire probe, measuring range: 0...5m/s.

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

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⁽¹⁾. 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⁽¹⁾. Cable length 2 metres.

MODULES FOR PITOT TUBES

AP473 S1: Pitot tube probe, differential pressure 10mbar f.s. Air speed from 2 to 40m/s. The Pitot tube has to be ordered separately.

AP473 S2: Pitot tube probe, differential pressure 20mbar f.s. Air speed from 2 to 55m/s. The Pitot tube has to be ordered separately.

AP473 S3: Pitot tube probe, differential pressure 50mbar f.s. Air speed from 2 to 90m/s. The Pitot tube has to be ordered separately.

AP473 S4: Pitot tube probe, differential pressure 100mbar f.s. Air speed from 2 to 130m/s. The Pitot tube has to be ordered separately.

PW: Connection cable between AP473S... module and Pitot tube.

TEMPERATURE MEASUREMENT

TP472I: Immersion probe, Pt100 sensor. Tube Ø 3 mm, length 300 mm. 4 wire cable, length 2 m.

TP473P: Pointed probe, Pt100 wire sensor. Tube Ø4 mm, length 150 mm. 4 wire cable, length 2 m.

TP474C: Contact probe, Pt100 thin film sensor. Tube Ø4 mm, length 230 mm, contact surface Ø 5 mm. 4 wire cable, length 2 m.

All temperature probes fitted with SICRAM module of the series TP47... may be connected to the instrument.



RELATIVE HUMIDITY AND TEMPERATURE PROBES

HP472AC: %RH and temperature combined probe, dimensions Ø 26x170 mm. 2 m connecting cable.

HP572AC %RH and temperature combined probe, **K thermocouple sensor**. Dimensions Ø 26x170 mm. 2 m connecting cable.

HP473AC: %RH and temperature combined probe. Dimensions: handle Ø 26x130 mm, probe Ø 14x110 mm. 2m connecting cable.

HP474AC: %RH and temperature combined probe. Dimensions: handle Ø 26x130 mm, probe Ø 14x210 mm. 2m connecting cable.

HP475AC: %RH and temperature combined probe. 2 m connecting cable. Handle Ø 26x110 mm. Stainless-steel tube Ø 12x560 mm. Terminal tip Ø 13.5x75 mm.

HP477DC: %RH and temperature combined sword probe. 2 m connecting cable. Handle Ø 26x110 mm. Probe tube 18x4 mm, length 520 mm.

Protection for humidity probes HP472AC, HP572AC (M24x1,5)

P1: Stainless steel grid protection for probes Ø 26 mm.

P2: 20µ sintered polyethylene PE protection for probes Ø 26 mm.

P3: 20µ sintered bronze protection for probes Ø 26 mm.

P4: 20µ sintered PE complete cap for probes Ø 26 mm.

Protection for humidity probes HP473AC, HP474AC, HP475AC (M12x1)

P5: Stainless steel grid protection for probes Ø 14 mm.

P6: 20µm sintered complete protection made of stainless steel for probes Ø 14 mm.

P7: 10µm sintered complete protection made of PTFE for probes Ø 14 mm.

PRESSURE PROBES

PP472: Barometric probe, working range 600...1100mbar.

PP473 S1: Differential pressure probe, full scale 10mbar.

PP473 S2: Differential pressure probe, full scale 20mbar.

PP473 S3: Differential pressure probe, full scale 50mbar.

PP473 S4: Differential pressure probe, full scale 100mbar.

PP473 S5: Differential pressure probe, full scale 200mbar.

PP473 S6: Differential pressure probe, full scale 500mbar.

PP473 S7: Differential pressure probe, full scale 1bar.

PP473 S8: Differential pressure probe, full scale 2bar.



PP471



AP471 S4