

# HVACR DATALOGGER

**Mod. : DO 2003**

## Measuring Parameter :

- \* **Air speed and Flow rate inside pipeline with hot-wire probes, vane probes or Pitot tube probes.**
- \* **Relative Humidity & Temperature with combined probes**
- \* **Differential pressure up to 2000 mbar**
- \* **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 configured on the menu.

"Record" (RCD) function calculates maximum, average and minimum values. 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 12.5mm.

**Input :** **Input A** for air speed and pressure probes,

**Input B** only for combined temperature/humidity probes.

**Storage capacity :** 12,000 readings.

Storage interval configurable between 1 second & 1 hour.

Automatic switch-off after 8 minutes can be disabled.

**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.

**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 & Weight :** 72 × 210 × 40 mm

**Weight :** 320gr.

## Technical Specification of Hot wire Probe

### AP471 S1-AP471 S2-AP471 S3-AP471-S4

	AP471 S1-AP471 S3	AP471 S2	AP471 S4
<b>Kind of measure</b>	Air speed, calculated flow, air temperature		
<b>Working range</b>			
Speed	0...40m/s	0...5m/s	
Temperature	-30....+110°C	-30....+110°C	0....+80°C
<b>Resolution</b>	0.01m/s (0...19.99)-0.1m/s above 0.1 km/h	0.01m/s (0...5 m/s) 0.1 km/h	
Speed	1ft/min (0...1999)-1ft/min above 0.1 mph	1 ft/min 0.1 mph	
Temperature	0.1°C	0.1°C	
<b>Accuracy</b>			
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	
<b>Minimum Speed</b>	0 m/S		
<b>Air Temperature Compensation</b>	0...80°C		
<b>Unit of measurement</b>			
Speed	m/s - km/h - ft/min - mph		
Flow rate	l/s - m³/h - cfm		
<b>Duct section for flow calculation</b>	0.001....1.999 m²		
<b>Cable length</b>	2m		



## Technical Specification of Vane probes

### AP472 S1... - AP472 S2 - AP472 S4....

	AP472 S1.....		AP472 S2		AP472 S4.....			
	L	H	L	H	L	H	L	H
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 measurements					Vane			
Speed	Vane		Vane		---	TdK	---	TdK
Temperature	TdK		---		---	TdK	---	TdK
Measuring Range								
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								
Speed	0.01 m/s - 0.1 km/h - 1 ft/min - 0.1 mph - 0.1 knots				---	0.1°C	---	0.1°C
Temperature	0.1°C		---		---	0.1°C	---	0.1°C
Accuracy								
Speed	±(0.1m/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
Min. 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							
Flow	l/s - m³/min - cfm							
Duct section for flow calculation	100...100000 cm³ 0.01....10m³							
Cable length	2m							

## Technical Specification of Pitot tube probes AP473 S1 - AP473 S2 - AP473 S3 - AP473 S4

	AP473 S1	AP473 S2	AP473 S3	AP473 S4
<b>Kind of measurement</b>	Air speed, calculated flow, differential pressure, Air Temperature			
<b>Working range</b>	10 mbar f.s.	20 mbar f.s.	50 mbar f.s.	100 mbar f.s.
<b>Diff. pressure</b>	2....40m/s	2....55m/s	2....90m/s	2....130m/s
<b>Speed (*)</b>	-200...+460°C	-200...+460°C	-200...+460°C	-200...+460°C
<b>Temperature</b>				
<b>Resolution</b>				
Speed	m/s	0.1		
	km/h	1		
	ft/min	0.01.10 <sup>3</sup>		
	mph	1		
<b>Accuracy</b>				
Speed	± 0.4%f.s. of pressure	± 0.25%f.s. of pressure		
Temperature	± 0.5°C	± 0.5°C		
<b>Min. Speed</b>	2 m/s			
<b>Air temperature compensation</b>	-200...+460°C (if K thermocouple is connected to the module)			
<b>Unit of measurement</b>	m/s - km/h - ft/min - mph			
<b>Speed</b>				
<b>Flow rate</b>	l/s - m <sup>3</sup> /min - cfm			
<b>Duct section for flow calculation</b>	001....1.999 m <sup>2</sup>			

## Common Characteristics of Relative Humidity And Temperature Probes

### Relative Humidity

Sensor	Mk-33 capacitive
Typical capacity @ 30%RH	300pF ± 40pF
Working range	5 to 98% RH
Temp. drift @ 20°C	0.02% RH/°C
%RH response time at constant temp.	10 sec. (10 → 80%RH; air speed=2m/s)

### Temperature

Temperature sensor	Pt100 (100 @ 0°C)
Temperature drift @ 20°C	0.003% / °C
Temp. sensor (HP572AC)	K Thermocouple
Temperature drift @ 20°C	0.02% / °C

**HP472AC** : %RH and temperature combined probe, dimensions 26×170 mm. Connecting cable : 2m 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 26×170 mm. Connecting cable : 2m 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 26×130 mm. probe 14×110 mm. Connecting cable : 2m long.

Working range : -40°C...+150°C, 5...98%RH.  
%RH accuracy: ±2.5% °C accuracy: ±0.30°C.

**HP473AC** : %RH and temperature combined probe, Handle 26×110 mm Steel probe 12×560 mm, Terminal tip 13.5×75 Connecting cable : 2m long.

Working range : -40°C...+150°C, 5...98%RH.  
%RH accuracy: ±2.5% °C accuracy: ±0.35°C.

**HP473AC** : %RH and temperature sword combined probe, Handle 26×110 mm probe 18×4 mm, length : 150mm. Connecting cable : 2m 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 Temp. range : -10.... +60 °C.

### PP473 S1....S8 Differential pressure probes

Working range S1=f.s. 10mbar, S2=f.s. 20mbar, S3=f.s.50mbar,  
S4=f.s. 100mbar, S5=f.s. 200mbar, S6=f.s.500mbar,  
S7=f.s. 1bar, S8=f.s.2bar,

Maximum overpressure S1, S2, S3=f.s. 200mbar, S4=300mbar S5, S6=1bar  
S7=3bar S8=6bar

Accuracy @ 25°C ±0.5%f.s. (10.20, 50mbar) ±0.25%f.s. ±0.12%f.s.(200,500,  
(100mbar) 1000, 2000mbar)

Temperature range -10...+60°C

Fluid in contact with the membrane non-corrosive dry gas or air

Connection tube 5mm

## Ordering Code :

**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.**

## 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 meters.

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

## Vane Probes :

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

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

**AP472 S2** : Vane probe 60mm, Speed from 0.25...20 m/s; Cable length 2 meters.

**AP472 S4L** : Vane probe 16mm, Speed from 0.6 to 20 m/s; Cable length 2 meters.

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

**AP472 S4H** : Vane probe with thermocouple, 16mm, Speed from 10 to 50 m/s; Cable length 2 meters.

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

## 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 90 m/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.

## Relative Humidity and Temperature Probes :

**HP472AC** : %RH and temperature combined probe, dimensions 26×170 mm, 2 meters connecting cable.

**HP572AC** : %RH and temperature combined probe. **K Thermocouple sensor**. Dimensions 26 × 170 mm. 2 meters connecting cable.

**HP473AC** : %RH and temperature combined probe. Dimensions : handle 26 × 130 mm, probe 14 × 110mm. 2 meters connecting cable.

**HP474AC** : %RH and temperature combined probe. Dimension : handle 26×130mm, probe 14×210 mm. 2m connecting cable.

**HP475AC** : %RH and temperature combined probe 2m connecting cable. Handle 26×110 mm. Stainless-steel tube 12×560mm. Terminal tip 13.5×75mm.

**HP477DC** : %R and temperature combined sword probe. 2 meters connecting cable. Handle 26×110mm. Probe tube 18×4 mm, length 520 mm.

## PRESSURE PROBES :

**PP472** : Barometric probe, working range 600....1 100mbar.

**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 2 bar.