



**HD 2114P.0 HD 2114P.2**  
**HD 2134P.0 HD 2134P.2**



## MICROMANOMETERS WITH PITOT TUBE THERMOMETERS HD2114P.0, HD2114P.2, HD2134P.0, HD2134P.2

The **HD2114P.0** and **HD2114P.2**, **HD2134P.0** and **HD2134P.2** are portable micro-manometers using Pitot tubes and a large LCD display. They are used to perform measurements in the fields of air conditioning, heating and ventilation.

They measure the differential pressure detected by a Pitot tube connected to the instrument inputs acquiring the wind speed and flow rate inside pipelines and vents. They also measure the temperature using a type K thermocouple sensor. The instruments can be used as thermometers, and can be employed with any kind of thermocouple K sensor if a standard miniature connector is used.

The HD2114P.2 and HD2134P.2 instruments are **dataloggers**. They memorize up to 36,000 samples which can be transferred from the instrument connected to a PC via the multi-standard RS232C serial port and USB 2.0. The storing interval, printing, and baud rate can be configured using the menu. They are also fitted with an RS232C serial port and can transfer the acquired measurements to a PC or to a portable printer in real time.

The *Max*, *Min* and *Avg* function calculates the maximum, minimum or average values. Other functions include: the relative measurement REL, the HOLD function, and the automatic turning off which can also be disabled.

**The instruments have IP67 protection degree.**

### INSTRUMENT TECHNICAL CHARACTERISTICS

#### Instrument

Dimensions (Length x Width x Height)	185x90x40mm
Weight	470g (complete with batteries)
Materials	ABS, rubber
Display	2x4½ digits plus symbols Visible area: 52x42mm

#### Operating conditions

Operating temperature	-5...50°C
Warehouse temperature	-25...65°C
Working relative humidity	0...90%RH without condensation
<b>Protection degree</b>	<b>IP67</b>

#### Power

Batteries	4 1.5V type AA batteries
Autonomy	200 hours with 1800mAh alkaline batteries
Power absorbed with instrument off	20µA

Mains - models **HD2114P.2** and **HD2134P.2** Output mains adapter 9Vdc / 250mA

#### Unità di misura

°C - °F - Pa - mbar - mmH2O - PSI - m/s  
km/h - ft/m - mph - knot - l/s - m³/h - cfm

#### Security of memorized data

Unlimited, independent of battery charge conditions

#### Time

Date and time	Schedule in real time
Accuracy	1min/month max departure

#### Measured values storage - models **HD2114P.2** and **HD2134P.2**

Type	2000 pages containing 18 samples each
Quantity	36000 samples
Storage interval	1s...3600s (1hour)

#### Serial interface RS232C - models **HD2114P.2** and **HD2134P.2**

Type	RS232C electrically isolated
Baud rate	Can be set from 1200 to 38400 baud
Data bit	8
Parity	None
Stop bit	1
Flow Control	Xon/Xoff
Serial cable length	Max 15m
Immediate print interval	1s...3600s (1hour)

#### USB interface - models **HD2114P.2** and **HD2134P.2**

Type	1.1 - 2.0 electrically isolated
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#### Connections

Pressure inputs	2 quick couplings Ø 5mm
TC type K Temperature input	2-pole female polarized standard miniature connector

#### Serial and USB interface - models

**HD2114P.2** and **HD2134P.2** 8-pole MiniDin connector

#### Mains adapter - models

**HD2114P.2** and **HD2134P.2** 2-pole connector (positive at centre)



HD2110CSNM



HD2101/USB



Measurement of pressure, wind speed and flow rate calculated by the internal sensor, and temperature measured using thermocouple K

	HD2114P.0 HD2114P.2	HD2134P.0 HD2134P.2
<i>Measurement range</i>		
Differential pressure	±20mbar	±200mbar
Speed (*)	2 ... 55m/s	2 ... 180m/s
Temperature using thermocouple K	-200...+1370°C	-200...+1370°C
Temperature using Pitot tube	-200...+600°C	-200...+600°C
Maximum overpressure	±300mbar	±1bar
<i>Resolution</i>		
Differential pressure	0.005mbar - 0.5Pa	0.01mbar - 1Pa
Speed	0.1 m/s - 1 km/h - 1 ft/min - 1 mph - 1 knots	
Flow rate	1l/s - 0.01·10 <sup>3</sup> m <sup>3</sup> /h - 0.01·10 <sup>3</sup> cfm	
Temperature	0.1°C	
<i>Accuracy</i>		
Differential pressure	±0.4%f.s.	±0.25%f.s.
Speed	±(2% reading+0.1m/s)	±(2% reading +0.3m/s)
Temperature (**)	±0.1°C	±0.1°C
Minimum speed	2 m/s	3 m/s
Automatic air temperature compensation	-200...+600°C	
Manual air temperature compensation	-200...+600°C	
<i>Unit of Measurement</i>		
Differential pressure	Pa - mbar - mmH <sub>2</sub> O - PSI	
Speed	m/s – km/h – ft/min – mph - knots	
Flow rate	l/s – m <sup>3</sup> /h – cfm	
Temperature	°C / °F	
Pipeline section for flow rate calculation	0.0001...1.9999 m <sup>2</sup>	
Fluid contacting the membrane	non corrosive air and gas	

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

(\*\*) The accuracy only refers to the instrument. The error due to the thermocouple or to the cold junction reference sensor is not included.

Temperature drift @20°C                    0.02%/°C  
Drift after 1 year                            0.1°C/year



S'print-BT

## Type K Thermocouple probes

### Accuracy of the thermocouple probes

The tolerance of a type of thermocouple corresponds to the maximum acceptable departure from the e.m.f. of any thermocouple of that type, with reference junction at 0°C. The tolerance is expressed in degrees Celsius, preceded by the sign. The percentage tolerance is given by the ratio between the tolerance expressed in degrees Celsius and the measurement junction temperature, multiplied by one hundred.

The thermocouples conforming to regulations ASTM E230 and CEI EN60584-2 must comply with one of the following tolerance levels, the values of which are reported in the table.

**G I** (special tolerances)

**G II** (normal tolerances)

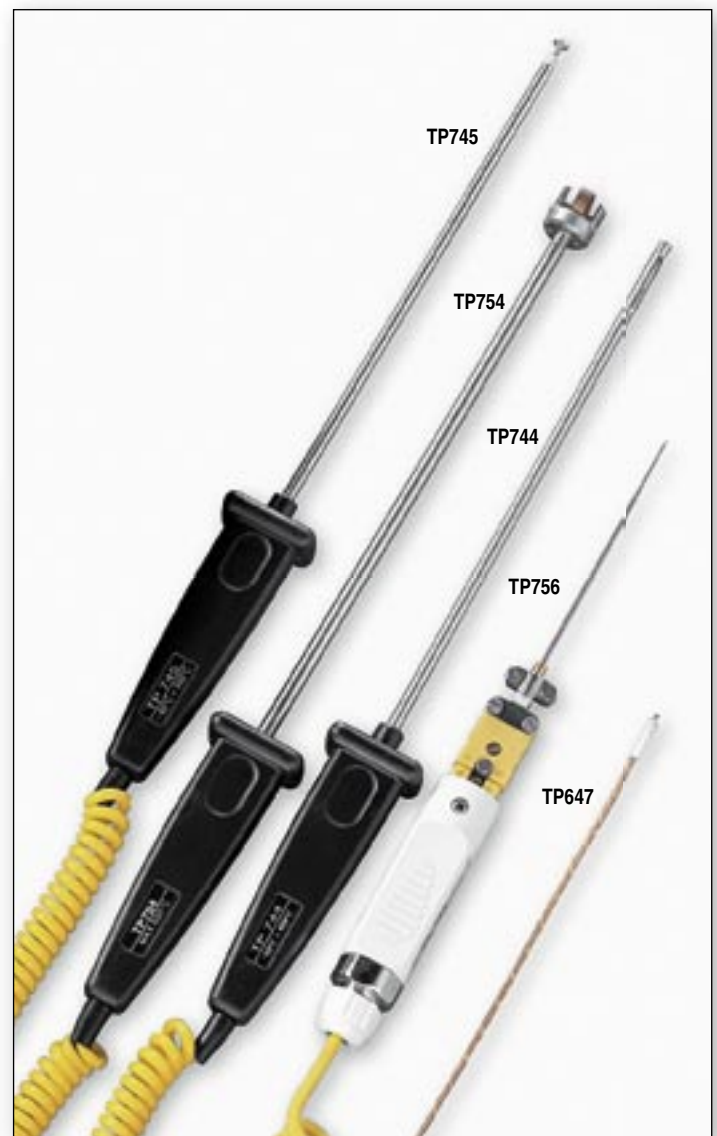
The tolerances refer to the expected thermocouple operating temperature, in agreement with the thermoelements' diameter.

### Accuracy of type K thermocouples:

Range °C	G I*	G II*
0...+1,370°C	±1.1°C or ±0.4%	±2.2°C or ±0.75%
-200 ... 0°C (**)	---	±2.2°C or ±2%

(\*) The higher of the two optional limits is the valid one. Example: at 200°C the percentage tolerance for type K thermocouple, tolerance G II, is ±0.75% and is equal to ±1.5°C. Therefore, the limit of ±2.2°C is valid. On the other hand, at 600°C the percentage tolerance is equal to ±4.5°C, and therefore this is the limit to use.

(\*\*) The thermocouples that meet the limits for temperatures above 0°C do not necessarily meet the limits for the range under 0°C.



**ORDER CODES**

- HD2114P.0 K:** The kit is composed of the HD2114P.0 with 20mbar full scale and thermocouple K input, 4 1.5V alkaline batteries, operating manual, case. **The Pitot tubes have to be ordered separately.**
- HD2114P.2 K:** The kit is composed of the HD2114P.2 datalogger with 20mbar full scale and thermocouple K input, connection cable HD2101/USB, 4 1.5V alkaline batteries, operating manual, case and DeltaLog9 software. **The Pitot tubes have to be ordered separately.**
- HD2134P.0 K:** The kit is composed of the HD2134P.0 with 200mbar full scale and thermocouple K input, 4 1.5V alkaline batteries, operating manual, case. **The Pitot tubes have to be ordered separately.**
- HD2134P.2K:** The kit is composed of the HD2134P.2 datalogger with 200mbar full scale and thermocouple K input, connection cable HD2101/USB, 4 1.5V alkaline batteries, operating manual, case and DeltaLog9 software. **The Pitot tubes have to be ordered separately.**
- HD2110CSNM:** 8-pole connection cable MiniDin - Sub D 9-pole female for RS232C.
- HD2101/USB:** Connection cable USB 2.0 connector type A - 8-pole MiniDin.
- DeltaLog9:** Software for download and management of the data on PC using Windows 98 to XP operating systems.
- PW:** Extension with male-female standard miniature connectors to connect the Pitot tube's thermocouple K to the instrument, length 2m.
- AF209.60:** Stabilized power supply at 230Vac/9Vdc-300mA mains voltage.
- S'print-BT:** On request, portable, serial input, 24 column thermal printer, 58mm paper width.

	T1-...	T2-...	T3-...	T4-...	
Diameter d (mm)	3	5	8	10	
Length point t (mm)	33	55	88	135	
Length L (mm)	300	400 600	500 800	500 800 1000	
Order Code (*)	T1-300	T2-400 T2-600	T3-500 T3-800 T3-800TC	T4-500 T4-800 T4-800TC T4-1000 T4-1000TC	

(\*) TC = Pitot tubes with thermocouple K

**Thermocouple K probes**

All thermocouple probes of type K can be connected to the instruments using the standard miniature connector, which can be found in the price list.

