



**HD 2114.0 HD2114.2 HD2134.0 HD2134.2  
HD2164.0 HD 2164.2 HD 2114B.0 HD2114B.2**



# MICROMANOMETER - THERMOMETER HD2114.0, HD2114.2, HD2134.0, HD2134.2, HD2164.0, HD2164.0 BAROMETER - THERMOMETER HD2114B.0, HD2114B.2

These are portable instruments with a large LCD display. They measure absolute, relative and differential pressure, as well as temperature.

Pressure is measured using an internal module which is differential with respect to the atmosphere with fixed full scale. With the PP471 module acting as an interface, the instrument can use all the TP704 and TP705 series Delta Ohm probes to perform the measurements. **The HD2114B.0 and HD2114B.2 internal module measures the barometric pressure.**

The temperature is detected using immersion, penetration, contact or air probes, with SICRAM module or direct 4 wire probes. The sensor can be a Pt100, Pt1000 or Ni1000. The temperature probes are fitted with a SICRAM module, with the factory calibration settings already being logged inside. On being turned on the instrument automatically detects these settings.

The HD2114.2, HD2134.2, HD2164.2 and HD2114B.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. **The Peak function can be activated with external probes connected to the module PP471** and detects the presence of pressure peaks. 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

Working temperature	-5...50°C
Storing 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



HD2110CSNM

Power absorbed with instrument off	20µA
Mains - models <b>HD21...4.2</b>	Output mains adapter 9Vdc / 250mA
<i>Measuring unit</i>	°C - °F - Pa - hPa - kPa - mbar - bar atm - mmHg - mmH <sub>2</sub> O - kgf/cm <sup>2</sup> - PSI inchHg
<i>Security of logged data</i>	Unlimited, independent of battery charge conditions
<i>Time</i>	
Date and time	Schedule in real time
Accuracy	1min/month max departure
<i>Measured values storage - models <b>HD21...4.2</b></i>	
Type	2000 pages containing 18 samples each
Quantity	36000 samples [pressure - temperature]
Storage interval	1s...3600s (1hour)
<i>Serial interface RS232C - models <b>HD21...4.2</b></i>	
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 **HD21...4.2**

Type	1.1 - 2.0 electrically isolated
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### Connections

Input modules for the probes	2 quick couplings Ø 5mm
Serial and USB interface models <b>HD21...4.2</b>	8-pole MiniDin connector
Mains adapter - models <b>HD21...4.2</b>	2-pole connector (positive at centre)



	HD2114.0	HD2134.0	HD2164.0	HD2114B.0	HD2114.2	HD2134.2	HD2164.2	HD2114B.2
<b>Full scale</b>	±20mbar	±200mbar	±2000mbar	600..1100mbar	±20mbar	±200mbar	±2000mbar	600..1100 mbar
<b>Barometer</b>	-	-	-	YES	-	-	-	YES
<b>Datalogger</b>	-	-	-	-	YES	YES	YES	YES
<b>RS232C-USB</b>	-	-	-	-	YES	YES	YES	YES
<b>External power supply</b>	-	-	-	-	YES	YES	YES	YES

**PRESSURE PROBE TABLE**

Full scale pressure	Maximum overpressure	Resolution	ORDER CODES			Accuracy From 20 to 25°C	Functioning temperature	Connection
			Differential pressure	Relative pressure (compared to atmosphere)	Absolute pressure			
			NON insulated membrane	Insulated membrane	Insulated membrane			
10.0 mbar	20.0 mbar	0.001mbar	TP705-10MBD			0.50 % FSO	0...60°C	Tube Ø 5mm
20.0 mbar	40.0 mbar	0.001mbar	TP705-20MBD			0.50 % FSO	0...60°C	Tube Ø 5mm
50.0 mbar	100 mbar	0.001mbar	TP705-50MBD			0.50 % FSO	0...60°C	Tube Ø 5mm
100 mbar	200 mbar	0.01mbar	TP705-100MBD			0.25 % FSO	0...60°C	Tube Ø 5mm
200 mbar	400 mbar	0.01mbar	TP705-200MBD			0.25 % FSO	0...60°C	Tube Ø 5mm
				TP704-200MBGI		0.25 % FSO	0...80°C	¼ BSP
500 mbar	1000 mbar	0.01mbar	TP705-500MBD			0.25 % FSO	0...60°C	Tube Ø 5mm
				TP704-500MBGI		0.25 % FSO	0...80°C	¼ BSP
1.00 bar	2.00 bar	0.1mbar	TP705-1BD	TP705BARO		0.25 % FSO	0...60°C	Tube Ø 5mm
				TP705-1BGI		0.25 % FSO	0...80°C	¼ BSP
2.00 bar	4.00 bar	0.1mbar	TP705-2BD			0.25 % FSO	0...60°C	Tube Ø 5mm
				TP704-2BGI	TP704-2BAI	0.40 % FSO	0...80°C	¼ BSP
5.00 bar	10.00 bar	0.1mbar		TP704-5BGI	TP704-5BAI	0.40 % FSO	0...80°C	¼ BSP
10.0 bar	20.0 bar	0.001bar		TP704-10BGI	TP704-10BAI	0.40 % FSO	0...80°C	¼ BSP
20.0 bar	40.0 bar	0.001bar		TP704-20BGI	TP704-20BAI	0.40 % FSO	0...80°C	¼ BSP
50.0 bar	100.0 bar	0.001bar		TP704-50BGI	TP704-50BAI	0.40 % FSO	0...80°C	¼ BSP
100 bar	200 bar	0.01bar			TP704-100BAI	0.40 % FSO	0...80°C	¼ BSP
200 bar	400 bar	0.01bar			TP704-200BAI	0.40 % FSO	0...80°C	¼ BSP
500 bar	750 bar	0.01bar			TP704-500BAI	0.40 % FSO	0...80°C	¼ BSP

*Measurement of pressure using the internal sensor*

	HD2114.0 HD2114.2	HD2134.0 HD2134.2	HD2164.0 HD2164.2	HD2114B.0 HD2114B.2
<b>Full scale</b>	±20mbar	±200mbar	±2000mbar	600..1100mbar
<b>Maximum overpressure</b>	±300mbar	±1bar	±6bar	3bar
<b>Resolution</b>	0.001mbar	0.01mbar	0.1mbar	0.1mbar
<b>Accuracy @23°C</b>	±0.3%f.s.	±(0.1%f.s.+0.1% measurement)		±0.3mbar
<b>Working temperature</b>	0...60°C			
<b>Connection</b>	quick couplings Ø5mm			
<b>Compensation temperature</b>	0...60°C			
<b>Drift on zero</b>	±1%f.s.	±0.5%f.s.	±0.5%f.s.	±0.3%f.s.
<b>Drift on span</b>	±1%f.s.	±0.5%f.s.	±0.5%f.s.	±0.3%f.s.
<b>Fluid contacting the membrane</b>	non corrosive air and gas			

*Measurement of temperature by Instrument*

Pt100 measurement range	-200...+650°C
Pt1000 measurement range	-200...+650°C
Ni1000 measurement range	-50...+250°C
Resolution	0.1°C
Instrument accuracy	±0.1°C
Drift after 1 year	0.1°C/year

**TECHNICAL DATA OF PROBES AND MODULES EQUIPPED WITH INSTRUMENT**

**Pressure measurement by module PP471**

All TP704 and TP705 series Delta Ohm probes can be connected to the PP471 module. See the table below for the technical specifications of the individual probes.

*Technical specifications of the PP471 module*

Accuracy	±0.05% of full scale
Peak duration	≥ 5ms
Peak accuracy	±0.5% of full scale
Peak dead band	≤ 2% of full scale

**Pt100 sensor temperature probes using SICRAM module**

Model	Type	Application range	Accuracy
TP472I	Immersion	-196°C...+500°C	±0.25°C (-196°C...+350°C) ±0.4°C (+350°C...+500°C)
TP472I.0	Immersion	-50°C...+400°C	±0.25°C (-50°C...+350°C) ±0.4°C (+350°C...+400°C)
TP473P.0	Penetration	-50°C...+400°C	±0.25°C (-50°C...+350°C) ±0.4°C (+350°C...+400°C)
TP474C.0	Contact	-50°C...+400°C	±0.3°C (-50°C...+350°C) ±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) ±0.4°C (+350°C...+400°C)
TP472I.10	Immersion	-50°C...+400°C	±0.3°C (-50°C...+350°C) ±0.4°C (+350°C...+400°C)

*Common characteristics*

Resolution	0.1°C
Temperature drift @20°C	0.003%/°C

**4 wire Pt100 and 2 wire Pt1000 Probes without SICRAM module**

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

**ORDER CODES**

- HD2114.0K:** The kit is composed of the HD2114.0 **with built-in 20mbar full scale probe**, 4 1.5V alkaline batteries, operating manual, case. **Other probes must be ordered separately.**
- HD2114.2K:** The kit is composed of the HD2114.2 **datalogger with built-in 20mbar full scale probe**, connection cable HD2101/USB, 4 1.5V alkaline batteries, operating manual, case and DeltaLog9 software. **Other probes must be ordered separately.**
- HD2134.0K:** The kit is composed of the HD2134.0 **with built-in 200mbar full scale probe**, 4 1.5V alkaline batteries, operating manual, case. **Other probes must be ordered separately.**
- HD2134.2K:** The kit is composed of the HD2134.2 **datalogger with built-in 200mbar full scale probe**, connection cable HD2101/USB, 4 1.5V alkaline batteries, operating manual, case and DeltaLog9 software. **Other probes must be ordered separately.**
- HD2164.0K:** The kit is composed of the HD2164.0 **with built-in 2000mbar full scale probe**, 4 1.5V alkaline batteries, operating manual, case. **Other probes must be ordered separately.**
- HD2164.2K:** The kit is composed of the HD2164.2 **datalogger with built-in 2000mbar full scale probe**, connection cable HD2101/USB, 4 1.5V alkaline batteries, operating manual, case and DeltaLog9 software. **Other probes must be ordered separately.**
- HD2114B.0K:** The kit is composed of the HD2114B.0 **with 600...1100mbar range barometric sensor**, 4 1.5V alkaline batteries, operating manual, case. **Other probes must be ordered separately.**
- HD2114B.2K:** The kit is composed of the HD2114B.2 **datalogger with 600...1100mbar range barometric sensor**, connection cable HD2101/USB, 4 1.5V alkaline batteries, operating manual, case and DeltaLog9 software. **Other probes must 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.
- 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.

**PRESSURE MEASUREMENT PROBES**

**PP471:** SICRAM interface module between instrument and TP704 and TP705 series Delta Ohm probes. Cable length 2 metres. **The list of pressure probes is outlined in the PP471 module technical data table.**

**TEMPERATURE PROBES COMPLETE WITH SICRAM MODULE**

- TP472I:** Pt100 sensor immersion probe. Stem Ø 3 mm, length 300 mm. Cable length 2 metres.
- TP472I.0:** Pt100 sensor immersion probe. Stem Ø 3 mm, length 230 mm. Cable length 2 metres.
- TP473P.0:** Pt100 sensor penetration probe. Stem Ø 4mm, length 150 mm. Cable length 2 metres.
- TP474C.0:** Pt100 sensor contact probe. Stem Ø 4mm, length 230mm, contact surface Ø 5mm. Cable length 2 metres.
- TP475A.0:** Pt100 sensor air probe. Stem Ø 4mm, length 230mm. Cable length 2 metres.
- TP472I.5:** Pt100 sensor immersion probe. Stem Ø 6mm, length 500 mm. Cable length 2 metres.
- TP472I.10:** Pt100 sensor immersion probe. Stem Ø 6mm, length 1,000mm. Cable length 2 metres.

**TEMPERATURE PROBES WITHOUT SICRAM MODULE**

- TP47.100:** Direct 4 wire Pt100 sensor immersion probe. Probe's stem Ø 3mm, length 230mm. 4 wire connection cable with connector, length 2 metres.
- TP47.1000:** Pt1000 sensor immersion probe. Probe's stem Ø 3mm, length 230mm. 2 wire connection cable with connector, length 2 metres.
- TP47:** Only connector for probe connection: direct 4 wire Pt100, 2 wire Pt1000 and Ni1000.



PP471

