

HD2114.0  
HD2114.2  
HD2134.0  
HD2134.2  
HD2164.0  
HD2164.2  
HD2114B.0  
HD2114B.2



## HD2114.0, HD2114.2, HD2134.0, HD2134.2, HD2164.0 HD2164.2 MANOMETER - THERMOMETER HD2114B.0, HD2114B.2 BAROMETRIC - THERMOMETER

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 or Pt1000. Temperature probes are equipped with SICRAM module and factory calibration data are stored inside so that when the instrument is on it soon recognizes them.

The HD2114.2, HD2134.2, HD2164.2 and HD2114B.2 instruments are **dataloggers**. They store up to 36,000 samples which can be transferred in 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 excluded.

**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
Storage temperature	-25...65°C
Working relative humidity	0...90%RH without condensation

#### Protection degree

**IP67**

#### Power supply

Batteries	4 1.5V type AA batteries
Autonomy	200 hours with 1800mAh alkaline batteries
Power absorbed with instrument off	20µA
Mains - models <b>HD21...4.2</b>	Output mains adapter 9Vdc / 250mA

#### Measuring unit

°C - °F - Pa - hPa - kPa - mbar - bar atm - mmHg - mmH<sub>2</sub>O - kgf/cm<sup>2</sup> - PSI inchHg

#### Security of logged data

Unlimited, independent of battery charge conditions

#### Time

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

#### Measured values storage - models **HD21...4.2**

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

#### Serial interface RS232C - models **HD21...4.2**

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 **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)



**HD2114.2**



**PP471**

	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>	-	-	-	SI	-	-	-	SI
<b>Datalogger</b>	-	-	-	-	SI	SI	SI	SI
<b>RS232C-USB</b>	-	-	-	-	SI	SI	SI	SI
<b>External power supply</b>	-	-	-	-	SI	SI	SI	SI

### Measurement of pressure using the internal sensor

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

### Measurement of temperature by Instrument

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



### TECHNICAL SPECIFICATIONS OF PROBES AND MODULES IN LINE WITH THE 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

Modell	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	Penetration	-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	Contact	-50°C...+400°C	±0.3°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	±0.30°C (-50°C...+350°C) ±0.4°C (+350°C...+400°C)
TP49A	Immersion	-70°C...+400°C	±0.25°C (-50°C...+350°C) ±0.4°C (+350°C...+400°C)
TP49AC	Contact	-70°C...+400°C	±0.25°C (-50°C...+350°C) ±0.4°C (+350°C...+400°C)
TP49AP	Penetration	-70°C...+400°C	±0.25°C (-50°C...+350°C) ±0.4°C (+350°C...+400°C)
TP875	Globothermometer Ø 150mm	-30°C...+120°C	±0.25°C
TP876	Globothermometer Ø 50mm	-30°C...+120°C	±0.25°C
TP87	Immersion	-50°C...+200°C	±0.25°C
TP878 TP878.1	Solar pannels	+5°C...+80°C	±0.25°C
TP879	Per compost	-20°C...+120°C	±0.25°C

#### Common characteristics

Temperature drift @20°C	0.003%/°C
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#### 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

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

### ORDER CODES

**HD2114.0:** The kit consists of the HD2114.0 with built-in 20mbar full scale probe, 4 1.5V alkaline batteries, operating manual, case. **Other probes and cables have to be ordered separately.**

**HD2114.2:** The kit consists of the HD2114.2 datalogger with built-in 20mbar full scale probe, 4 1.5V alkaline batteries, operating manual, case and DeltaLog9 software. **Other probes and cables have to be ordered separately.**

**HD2134.0:** The kit consists of the HD2134.0 with built-in 200mbar full scale probe, 4 1.5V alkaline batteries, operating manual, case. **Other probes and cables have to be ordered separately.**

**HD2134.2:** The kit consists of the HD2134.2 datalogger with built-in 200mbar full scale probe, 4 1.5V alkaline batteries, operating manual, case and DeltaLog9 software. **Other probes and cables have to be ordered separately.**

**HD2164.0:** The kit consists of the HD2164.0 with built-in 2000mbar full scale probe, 4 1.5V alkaline batteries, operating manual, case. **Other probes and cables have to be ordered separately.**

**HD2164.2:** The kit consists of the HD2164.2 datalogger with built-in 2000mbar full scale probe, 4 1.5V alkaline batteries, operating manual, case and DeltaLog9 software. **Other probes and cables have to be ordered separately.**

**HD2114B.0:** The kit consists of the HD2114B.0 with 600...1100mbar range barometric sensor, 4 1.5V alkaline batteries, operating manual, case. **Other probes and cables have to be ordered separately.**

**HD2114B.2:** The kit consists of the HD2114B.2 datalogger with 600...1100mbar range barometric sensor, 4 1.5V alkaline batteries, operating manual, case and DeltaLog9 software. **Other probes and cables have to be ordered separately.**

**HD2110CSNM:** 8-pole connection cable MiniDin - Sub D 9-pole female for RS232C.



**C.206:** Cable for instruments of the series HD21...1 and .2 to connect directly to USB input of PC.

**HD2101/USB:** Connection cable USB 2.0 connector type A - 8-pole MiniDin.

**DeltaLog9:** Software for download and manage of the data on PC by using Windows 98 to Vista operating systems.

**SWD10:** Stabilized power supply at 230Vac/12Vdc-1000mA mains voltage.

**HD40.1:** Upon 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 EQUIPPED WITH SICRAM MODULE

**TP472I:** Immersion probe, Pt100sensor. Stem Ø 3 mm, length 300 mm. Cable 2 meters long.

**TP472I.0:** Immersion probe, Pt100sensor. Stem Ø 3 mm, length 230 mm. Cable 2 meters long.

**TP473P:** Penetration probe, Pt100sensor. Stem Ø 4mm, length 150 mm. Cable 2 meters long.

**TP473P.0:** Penetration probe, Pt100sensor. Stem Ø 4mm, length 150 mm. Cable 2 meters long.

**TP474C:** Contact probe, Pt100sensor. Stem Ø 4mm, length 230mm, contact surface Ø 5mm. Cable 2 meters long.

**TP474C.0:** Contact probe, Pt100sensor. Stem Ø 4mm, length 230mm, contact surface Ø 5mm. Cable 2 meters long.

**TP475A.0:** Air probe, Pt100sensor. Stem Ø 4mm, length 230mm. Cable 2 meters long.

**TP472I.5:** Immersion probe, Pt100sensor. Stem Ø 6mm, length 500 mm. Cable 2 meters long.

**TP472I.10:** Immersion probe, Pt100sensor. Stem Ø 6mm, length 1,000mm. Cable 2 meters long.

**TP49A:** Immersion probe, Pt100sensor. Stem Ø 2.7mm, length 150mm. Cable 2 meters long. Aluminium handle.

**TP49AC:** Contact probe, Pt100sensor. Stem Ø 4 mm, length 150mm. Cable 2 meters long. Aluminium handle.

**TP49AP:** Penetration probe, Pt100sensor. Stem Ø 2.7mm, length 150mm. Cable 2 meters long. Aluminium handle.

**TP875:** Globe thermometer Ø 150 mm with handle. Cable 2 meters long.

**TP876:** Globe thermometer Ø 50 mm with handle. Cable 2 meters long.

**TP87:** Immersion probe, Pt100sensor. Stem Ø 3 mm, length 70 mm. Cable 2 meters long.

**TP878:** Contact probe for solar panels. Cable 2 meters long.

**TP878.1:** Contact probe for solar panels. Cable 5 meters long

**TP879:** Penetration probe for compost. Stem Ø 8 mm, length 1 meter. Cable 2 meters long.

#### 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 3, 4 wire Pt100, 2 wire Pt1000 .



HD40.1



HD2110CSNM

PRESSURE PROBE TABLE

Bottom scale pressure	Maximum overpressure	Resolution	ORDER CODES			Accuracy From 20 to 25°C	Working temperature	Connection
			Differential pressure	Relative pressure (compared to atmosphere)	Absolute pressure			
			NON insulated membrane	Insulated membrane	Insulated membrane			
10.0 mbar	20.0 mbar	0.01 mbar	• TP705-10MBD			0.5 % FSO	0..60 °C	Tube Ø 5 mm
20.0 mbar	40.0 mbar	0.01 mbar	• TP705-20MBD			0.5 % FSO	0..60 °C	Tube Ø 5 mm
50.0 mbar	100 mbar	0.01 mbar	TP705-50MBD			0.5 % FSO	0..60 °C	Tube Ø 5 mm
100 mbar	200 mbar	0.1 mbar	TP705-100MBD			0.25 % FSO	0..60 °C	Tube Ø 5 mm
				TP704-100MBGI		0.25 % FSO	-10..+80 °C	¼ BSP
200 mbar	400 mbar	0.1 mbar	TP705-200MBD			0.25 % FSO	0..60 °C	Tube Ø 5 mm
				TP704-200MBGI		0.25 % FSO	-10..+80 °C	¼ BSP
400 mbar	1000 mbar	0.1 mbar		TP704-400MBGI		0.25 % FSO	-10..+80 °C	¼ BSP
500 mbar	1000 mbar	0.1 mbar	TP705-500MBD			0.25 % FSO	0..60 °C	Tube Ø 5 mm
600 mbar	1000 mbar	0.1 mbar		TP704-600MBGI		0.25 % FSO	-40..125 °C	¼ BSP
			TP705-1BD			0.25 % FSO	0..60 °C	Tube Ø 5 mm
1.00 bar	2.00 bar	1 mbar			TP705BARO	0.25 % FSO	0..60 °C	Tube Ø 5 mm
						0.25 % FSO	-40..125 °C	¼ BSP
					TP704-1BA	0.25 % FSO	-40..120 °C	¼ BSP
			TP705-2BD			0.25 % FSO	0..60 °C	Tube Ø 5 mm
2.00 bar	4.00 bar	1 mbar		TP704-2BGI		0.25 % FSO	-40..+125 °C	¼ BSP
					TP704-2BAI *	0.25 % FSO	-25..+85 °C	¼ BSP
5.00 bar	10.00 bar	1 mbar		TP704-5BGI		0.25 % FSO	-40..+125 °C	¼ BSP
					TP704-5BAI *	0.25 % FSO	-25..+85 °C	¼ BSP
10.00 bar	20.0 bar	0.01 bar		TP704-10BGI		0.25 % FSO	-40..+125 °C	¼ BSP
					TP704-10BAI *	0.25 % FSO	-25..+85 °C	¼ BSP
20.0 bar	40.0 bar	0.01 bar		TP704-20BGI		0.25 % FSO	-40..+125 °C	¼ BSP
					TP704-20BAI *	0.25 % FSO	-25..+85 °C	¼ BSP
50.0 bar	100.0 bar	0.01 bar		TP704-50BGI		0.25 % FSO	-40..+125 °C	¼ BSP
					TP704-50BAI *	0.25 % FSO	-25..+85 °C	¼ BSP
100 bar	200 bar	0.1 mbar		TP704-100BGI		0.25 % FSO	-40..+125 °C	¼ BSP
					TP704-100BAI *	0.25 % FSO	-25..+85 °C	¼ BSP
200 bar	400 bar	0.1 mbar		TP704-200BGI		0.25 % FSO	-40..+125 °C	¼ BSP
					TP704-200BAI *	0.25 % FSO	-25..+85 °C	¼ BSP
500 bar	1000 bar	0.1 mbar		TP704-500BGI		0.25 % FSO	-40..+125 °C	¼ BSP
	700 bar	0.1 mbar			TP704-500BAI *	0.25 % FSO	-25..+85 °C	¼ BSP

\* Ceramic diaphragm

• Only report of calibration, no SIT certificate