

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



PORTABLE MANOMETER-THERMOMETER AND BAROMETER-MANOMETER-THERMOMETER SERIES

Series of portable instruments with 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 into a PC connected to the serial ports RS232C and USB 2.0 or into a portable printer. The storing interval, printing, and baud rate can be configured using the menu.

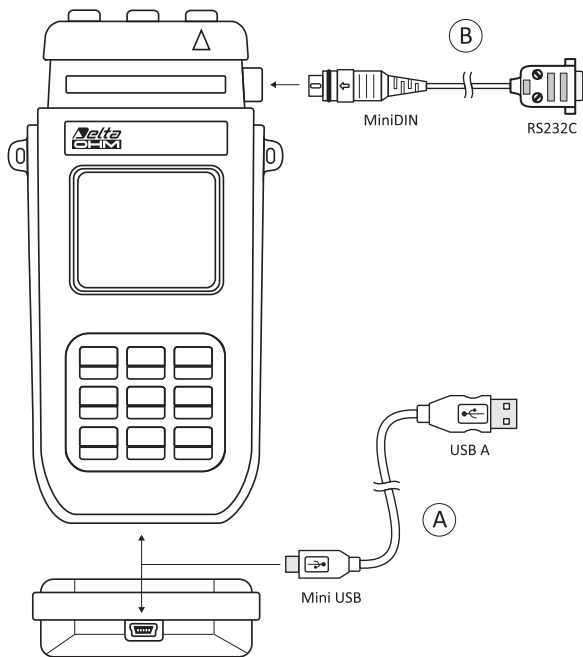
The **Max, Min and Avg** function calculates the maximum, minimum or average values. **The Peak function can be activated with external probes connected to the module PP471** and detects the presence of pressure peaks. Other functions include: the relative measurement REL, the HOLD function, and the automatic turning off (excludable).

The instruments have IP66 protection degree.

Measurement of pressure using internal sensor				
	HD2114.0 HD2114.2	HD2134.0 HD2134.2	HD2164.0 HD2164.2	HD2114B.0 HD2114B.2
Full scale	±20 mbar	±200 mbar	±2000 mbar	600..1100 mbar
Maximum overpressure	±300 mbar	±1 bar	±6 bar	3 bar
Resolution	0.005 mbar	0.01 mbar	0.1 mbar	0.1 mbar
Accuracy @23°C	±0.3% f.s.	±(0.1%f.s.+0.1% measurement)		±0.3 mbar
Working temperature	0...60 °C			
Connection	quick couplings Ø5 mm			
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			

Technical specifications	
Measurement of temperature	
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
Measuring unit	°C - °F - Pa - hPa - kPa - mbar - bar- atm - mmHg - mmH ₂ O - kgf/cm ² - PSI - inchHg
Measured values storage - models HD21...4.2	
Type	2000 pages containing 18 samples each
Quantity	36000 samples (pressure - temperature)
Storage interval	1,5,10,15,30 s; 1,2,5,10,15,20,30 min; 1 hour
Security of stored data	Unlimited, independent of battery charge conditions
Power supply	
Batteries	4 x 1.5V type AA batteries
Autonomy	200 hours with 1800mAh alkaline batteries
Current consumption with instrument off	20 µA
Mains - models HD21...4.2	Output mains adapter 12 Vdc / 1000 mA
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
Print interval	Immediate or 1,5,10,15,30 s; 1,2,5,10,15,20,30 min; 1 hour

USB interface - models HD21...4.2	
Type	1.1 - 2.0 electrically isolated
Connections	
Input modules for the probes	2 quick couplings Ø 5 mm
Serial interface models HD21...4.2	8-pole MiniDin connector
USB interface models HD21...4.2	Mini USB type B connector
Mains adapter - models HD21...4.2	2-pole connector (positive at centre)
Operating conditions	
Working temperature	-5 ... 50 °C
Storage temperature	-25 ... 65 °C
Working relative humidity	0...90% RH without condensation
Protection degree	IP66
General characteristics	
Dimensions (Length x Width x Height)	185 x 90 x 40 mm
Weight	470 g (complete with batteries)
Materials	ABS, rubber
Display	2 rows 4½ digits plus symbols Visible area: 52x42 mm
Time	
Date and time	Real time
Accuracy	1 min/month max drift



- A** The portable data logger HD21...2 is equipped with HID (Human Interface device) type USB port with mini USB connector. For the connection to a PC with the CP23 cable it is not necessary to load any USB driver.
- B** The port with the miniDin connector in all HD21...2 models, is a serial port type RS232C. The serial port RS232C of a PC or the printer HD40.1 can be connected by the cable HD2110CSNM.

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

ORDERING CODES

- HD2114.0:** Micromanometer-Thermometer with **20 mbar built-in sensor**, input for SICRAM module PP471 to connect probes TP704 and TP705 series. Supplied with 4 x 1.5V alkaline batteries, operating manual, case.
- HD2114.2:** Micromanometer-Thermometer **data logger** with **20 mbar built-in sensor**, input for SICRAM module PP471 to connect probes TP704 and TP705 series. Supplied with 4 x 1.5V alkaline batteries, CP23 USB cable, operating manual, case and **DeltaLog9** software downloadable from Delta OHM website.
- HD2134.0:** Micromanometer-Thermometer with **200 mbar built-in sensor**, input for SICRAM module PP471 to connect probes TP704 and TP705 series. Supplied with 4 x 1.5V alkaline batteries, operating manual, case.
- HD2134.2:** Micromanometer-Thermometer **data logger** with **200 mbar built-in sensor**, input for SICRAM module PP471 to connect probes TP704 and TP705 series. Supplied with 4 x 1.5V alkaline batteries, CP23 USB cable, operating manual, case and **DeltaLog9** software downloadable from Delta OHM website.
- HD2164.0:** Micromanometer-Thermometer with **2000 mbar built-in sensor**, input for SICRAM module PP471 to connect probes TP704 and TP705 series. Supplied with 4 x 1.5V alkaline batteries, operating manual, case.
- HD2164.2:** Micromanometer-Thermometer **data logger** with **2000 mbar built-in sensor**, input for SICRAM module PP471 to connect probes TP704 and TP705 series. Supplied with 4 x 1.5V alkaline batteries, CP23 USB cable, operating manual, case and **DeltaLog9** software downloadable from Delta OHM website.

HD2114B.0: Barometer-Manometer-Thermometer with **built-in barometric sensor (600...1100 mbar)**, input for SICRAM module PP471 to connect probes TP704 and TP705 series. Supplied with 4 x 1.5V alkaline batteries, operating manual, case.

HD2114B.2: Barometer-Manometer-Thermometer data logger with **built-in barometric sensor (600...1100 mbar)**, input for SICRAM module PP471 to connect probes TP704 and TP705 series. Supplied with 4 x 1.5V alkaline batteries, CP23 USB cable, operating manual, case and **DeltaLog9** software downloadable from Delta OHM website.

The SICRAM module PP471, pressure probes and temperature probes have to be ordered separately. TP704 and TP705 series pressure probes and TP47... series temperature probes are suitable.

PP471: SICRAM module to connect SICRAM input instruments to the pressure probes TP704, TP705 series, cable L=1.5m.

Accessories

- HD2110CSNM:** 8-pole connection cable MiniDin - Sub D 9-pole female for RS232C.
- SWD10:** Stabilized power supply at 100-240Vac/12Vdc-1A mains voltage.
- HD40.1:** The kit includes: 24-column portable thermal printer, serial interface RS232, 57mm paper width, four NiMh 1.2V rechargeable batteries, SWD10 power supply, instruction manual, 5 thermal paper rolls. It uses the optional cable HD2110 CSNM.

PRESSURE PROBE								
Full scale pressure	Maximum overpressure	Resolution	ORDERING 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 % f.s.	0..+60 °C	Tube Ø 5 mm
20.0 mbar	40.0 mbar	0.01 mbar	• TP705-20MBD			0.5 % f.s.	0..+60 °C	Tube Ø 5 mm
50.0 mbar	100 mbar	0.01 mbar	TP705-50MBD			0.5 % f.s.	0..+60 °C	Tube Ø 5 mm
100 mbar	200 mbar	0.1 mbar	TP705-100MBD			0.25 % f.s.	0..+60 °C	Tube Ø 5 mm
				TP704-100MBGI		0.25 % f.s.	-30..+80 °C	¼ BSP
200 mbar	400 mbar	0.1 mbar	TP705-200MBD			0.25 % f.s.	0..+60 °C	Tube Ø 5 mm
				TP704-200MBGI		0.25 % f.s.	-30..+80 °C	¼ BSP
400 mbar	1000 mbar	0.1 mbar		TP704-400MBGI		0.25 % f.s.	-40..+125 °C	¼ BSP
500 mbar	1000 mbar	0.1 mbar	TP705-500MBD			0.25 % f.s.	0..+60 °C	Tube Ø 5 mm
600 mbar	1000 mbar	0.1 mbar		TP704-600MBGI		0.25 % f.s.	-40..+125 °C	¼ BSP
			TP705-1BD			0.25 % f.s.	0..+60 °C	Tube Ø 5 mm
					TP705BARO	0.25 % f.s.	0..+60 °C	Tube Ø 5 mm
1.00 bar	2.00 bar	1 mbar		TP704-1BGI		0.25 % f.s.	-40..+125 °C	¼ BSP
					TP704-1BAI	0.25 % f.s.	-40..+125 °C	¼ BSP
			TP705-2BD			0.25 % f.s.	0..+60 °C	Tube Ø 5 mm
2.00 bar	4.00 bar	1 mbar		TP704-2BGI		0.25 % f.s.	-40..+125 °C	¼ BSP
					TP704-2BAI *	0.25 % f.s.	-25..+85 °C	¼ BSP
5.00 bar	10.00 bar	1 mbar		TP704-5BGI		0.25 % f.s.	-40..+125 °C	¼ BSP
					TP704-5BAI *	0.25 % f.s.	-25..+85 °C	¼ BSP
10.00 bar	20.0 bar	0.01 bar		TP704-10BGI		0.25 % f.s.	-40..+125 °C	¼ BSP
					TP704-10BAI *	0.25 % f.s.	-25..+85 °C	¼ BSP
20.0 bar	40.0 bar	0.01 bar		TP704-20BGI		0.25 % f.s.	-40..+125 °C	¼ BSP
					TP704-20BAI *	0.25 % f.s.	-25..+85 °C	¼ BSP
50.0 bar	100.0 bar	0.01 bar		TP704-50BGI		0.25 % f.s.	-40..+125 °C	¼ BSP
					TP704-50BAI *	0.25 % f.s.	-25..+85 °C	¼ BSP
100 bar	200 bar	0.1 bar		TP704-100BGI		0.25 % f.s.	-40..+125 °C	¼ BSP
					TP704-100BAI *	0.25 % f.s.	-25..+85 °C	¼ BSP
200 bar	400 bar	0.1 bar		TP704-200BGI		0.25 % f.s.	-40..+125 °C	¼ BSP
					TP704-200BAI *	0.25 % f.s.	-25..+85 °C	¼ BSP
500 bar	1000 bar	0.1 bar		TP704-500BGI		0.25 % f.s.	-40..+125 °C	¼ BSP
	700 bar	0.1 bar			TP704-500BAI *	0.25 % f.s.	-25..+85 °C	¼ BSP

* Ceramic diaphragm

• Only report of calibration, no Accredia certificate

All TP704 and TP705 series Delta OHM probes can be connected to the PP471 module.

Technical characteristics of 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

PRESSURE UNITS OF MEASUREMENTS

CONVERSION FACTORS

kPa	Mpa	bar	mbar	mmH ₂ O	Torr mmHg	at Kg/cm ²	Atm	Inch H ₂ O	Inch Hg	Psi lbf/in ²
1	1•10 ⁻³	1•10 ⁻³	10	102.0	7.501	10.20•10 ⁻³	9.869•10 ⁻³	4.016	0.2953	0.14505
1•10 ³	1	10	1•10 ⁴	102.0•10 ³	7501	10.20	9.869	4016	295.3	145.05
100	0.1	1	1•10 ³	10.20•10 ³	750.1	1.020	0.9869	401.6	29.53	14.505
0.1	1•10 ⁻⁴	1•10 ⁻³	1	10.20	0.7501	1.020•10 ⁻³	0.9869•10 ⁻³	0.4016	29.53•10 ⁻³	14.505•10 ⁻³
9.807•10 ⁻³	9.807•10 ⁻⁶	98.07•10 ⁻⁶	98.07•10 ⁻³	1	73.56•10 ⁻³	1•10 ⁻⁴	96.78•10 ⁻⁶	0.03937	2.896•10 ⁻³	1.4224•10 ⁻³
0.13332	133.32•10 ⁻³	1.333•10 ⁻³	1.333	13.59	1	1.359•10 ⁻³	1.316•10 ⁻³	0.5351	3.937•10 ⁻²	0.01934
98.07	98.07•10 ⁻³	0.9807	980.7	1•10 ⁴	735.6	1	0.9678	393.7	28.96	14.224
101.3	0.1013	1.013	1013	10.33•10 ³	760	1.033	1	406.7	29.92	14.68
0.2491	0.2491•10 ⁻³	2.491•10 ⁻³	2.491	25.4	1.8684	2.54•10 ⁻³	2.458•10 ⁻³	1	7.355•10 ⁻²	36.126•10 ⁻³
3.386	3.386•10 ⁻³	3.386•10 ⁻²	33.86	345.3	25.4	3.453•10 ⁻²	3.342•10 ⁻²	13.60	1	0.4912
6.8948	6.8948•10 ⁻³	6.8948•10 ⁻²	68.948	703.1	51.715	70.31•10 ⁻³	68.948•10 ⁻³	27.68	2.036	1

