

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 BAROMETER - 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 to a PC via the RS232C and USB 2.0 serial ports. The storing interval, printing, and baud rate can be configured using the menu. They can transfer the acquired measurements in real time to a PC or to a portable printer (p.e. the HD40.1) with the RS232C serial port.

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 IP66 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 | IP66 |

Power supply

| | |
|------------------------------------|---|
| Batteries | 4 1.5V type AA batteries |
| Autonomy | 200 hours with 1800mAh alkaline batteries |
| Power absorbed with instrument off | 20µA |
| Mains - models HD21...4.2 | Output mains adapter 12Vdc / 1000mA |

Measuring unit

°C - °F - Pa - hPa - kPa - mbar - bar - atm
mmHg - mmH₂O - kgf/cm² - PSI - inchHg

Security of logged data

Unlimited, independent of battery charge conditions

Time

| | |
|---------------|----------------------|
| Date and time | Real time |
| Accuracy | 1min/month max drift |

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

| | |
|------------------|--|
| Type | 2000 pages containing 18 samples each |
| Quantity | 36000 samples (pressure - temperature) |
| Storage interval | 1,5,10,15,30s; 1,2,5,10,15,20,30min; 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 |
| Print interval | Immediate or 1,5,10,15,30s; 1,2,5,10,15,20,30min; 1hour |

*USB interface - models **HD21...4.2***

| | |
|------|---------------------------------|
| Type | 1.1 - 2.0 electrically isolated |
|------|---------------------------------|

Connections

| | |
|---|---------------------------------------|
| Input modules for the probes | 2 quick couplings Ø 5mm |
| 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) |



HD2114.2



PP471

| | 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 | - | - | - | - | ✓ | ✓ | ✓ | ✓ |

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 pressure probes at page PR-9 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 |

TECHNICAL DATA OF PROBES AND MODULES EQUIPPED WITH INSTRUMENT Temperature probes Pt100 sensor with SICRAM module

| Model | Type | Application field | Accuracy |
|--|-----------------------------|-------------------|---|
| TP472I | Immersion | -196°C...+500°C | ±0.25°C (-196°C...+300°C) ±0.5°C (+300°C...+500°C) |
| TP472I.0 1/3 DIN Thin Film | Immersion | -50°C...+300°C | ±0.25°C (-50°C...+300°C) |
| TP473P.I | Penetration | -50°C...+400°C | ±0.25°C (-50°C...+300°C) ±0.5°C (+300°C...+400°C) |
| TP473P.0 1/3 DIN Thin Film | Penetration | -50°C...+300°C | ±0.25°C (-50°C...+300°C) |
| TP474C.0 1/3 DIN Thin Film | Contact | -50°C...+300°C | ±0.3°C (-50°C...+300°C) |
| TP475A.0 1/3 DIN Thin Film | Air | -50°C...+250°C | ±0.3°C (-50°C...+250°C) |
| TP472I.5 | Penetration | -50°C...+400°C | ±0.3°C (-50°C...+300°C) ±0.6°C (+300°C...+400°C) |
| TP472I.10 | Penetration | -50°C...+400°C | ±0.30°C (-50°C...+300°C) ±0.6°C (+300°C...+400°C) |
| TP49A.I Class A Thin Film | Immersion | -70°C...+250°C | ±0.3°C (-70°C...-50°C) ±0.25°C (-50°C...+250°C) |
| TP49AC.I Class A Thin Film | Contact | -70°C...+250°C | ±0.3°C (-70°C...-50°C) ±0.25°C (-50°C...+250°C) |
| TP49AP.I Class A Thin Film | Penetration | -70°C...+250°C | ±0.3°C (-70°C...-50°C) ±0.25°C (-50°C...+250°C) |
| TP875.I | Globe-thermometer Ø150mm | -30°C...+120°C | ±0.25°C |
| TP876.I | Globe-thermometer Ø50mm | -30°C...+120°C | ±0.25°C |
| TP87.0 1/3 DIN Thin Film | Immersion | -50°C...+200°C | ±0.25°C |
| TP878.0 1/3 DIN Thin Film TP878.1.0 1/3 DIN Thin Film | Photovoltaic | -40°C...+85°C | ±0.25°C |
| TP879.0 1/3 DIN Thin Film | Compost | -20°C...+120°C | ±0.25°C |

Common features

| | |
|-------------------------|-----------|
| Temperature drift @20°C | 0.003%/°C |
|-------------------------|-----------|

4 wires Pt100 and 2 wires Pt1000 Probes

| Model | Type | Application field | Accuracy |
|----------------------------------|----------------|-------------------|----------|
| TP47.100.0 1/3 DIN Thin Film | 4 wires Pt100 | -50...+250°C | 1/3 DIN |
| TP47.1000.0 1/3 DIN Thin Film | 2 wires Pt1000 | -50...+250°C | 1/3 DIN |
| TP87.100.0 1/3 DIN Thin Film | 4 wires Pt100 | -50...+200°C | 1/3 DIN |
| TP87.1000.0 1/3 DIN Thin Film | 2 wires Pt1000 | -50...+200°C | 1/3 DIN |

Common features

Temperature drift @20°C

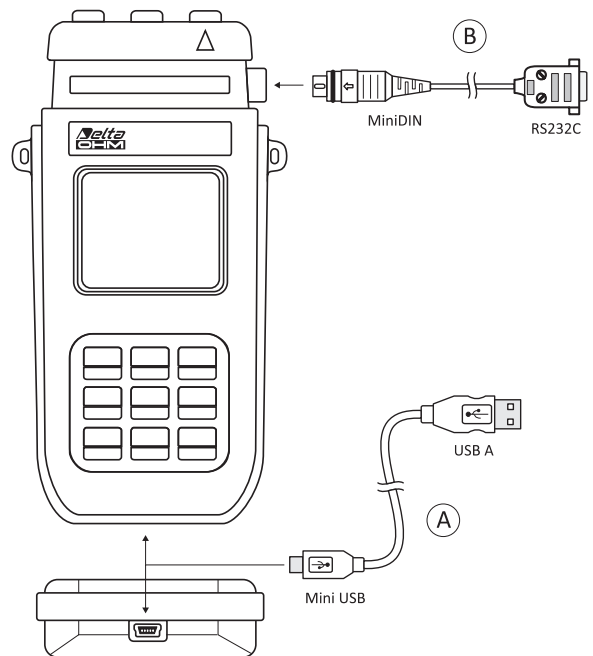
| | |
|--------|-----------|
| Pt100 | 0.003%/°C |
| Pt1000 | 0.005%/°C |

A To the portable data loggers of the series HD21...2 a serial port mini USB type HID (Human Interface Device) has been inserted.

For the connection to a PC with the cable USB type A - MiniUSB type B code CP23, it is **not necessary to install any driver USB**.

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.



ORDERING 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 PP471 module 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, CP23 USB cable, operating manual, case and DeltaLog9 software downloadable from Delta OHM website. **Other probes, PP471 module 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 PP471 module 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, CP23 USB cable, operating manual, case and Delta-Log9 software downloadable from Delta OHM website. **Other probes, PP471 module 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 PP471 module 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, CP23 USB cable, operating manual, case and DeltaLog9 software downloadable from Delta OHM website. **Other probes, PP471 module 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 PP471 module 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, CP23 USB cable, operating manual, case and DeltaLog9 software downloadable from Delta OHM website. **Other probes, PP471 module and cables have to be ordered separately.**

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

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

HD40.1: Portable, serial input, 24 column thermal printer, 58mm paper width.

Pressure probes equipped with SICRAM module

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, Wire Wound Pt100 sensor. Stem Ø 3 mm, length 300 mm. Cable 2 meters long.

TP472I.0: Immersion probe, Thin Film Pt100 sensor. Stem Ø 3 mm, length 230 mm. Cable 2 meters long.

TP473P.I: Penetration probe, Wire Wound Pt100 sensor. Stem Ø 4mm, length 150 mm. Cable 2 meters long.

TP473P.0: Penetration probe, Thin Film Pt100 sensor. Stem Ø 4mm, length 150 mm. Cable 2 meters long.

TP474C.I: Contact probe, Wire Wound Pt100 sensor. Stem Ø 4mm, length 230mm, contact surface Ø 5mm. Cable 2 meters long.

TP474C.0: Contact probe, Thin Film Pt100 sensor. Stem Ø 4mm, length 230mm, contact surface Ø 5mm. Cable 2 meters long.

TP475A.0: Air probe, Thin Film Pt100 sensor. Stem Ø 4mm, length 230mm. Cable 2 meters long.

TP472I.5: Penetration probe, Thin Film Pt100 sensor. Stem Ø 6mm, length 500 mm. Cable 2 meters long.

TP472I.10: Penetration probe, Thin Film Pt100 sensor. Stem Ø 6mm, length 1000mm. Cable 2 meters long.

TP49A.0: Immersion probe, Thin Film Pt100 sensor. Stem Ø 2.7mm, length 150mm. Cable 2 meters long. Aluminium handle.

TP49AC.0: Contact probe, Thin Film Pt100 sensor. Stem Ø 4 mm, length 150mm. Cable 2 meters long. Aluminium handle.

TP49AP.0: Penetration probe, Thin Film Pt100 sensor. Stem Ø 2.7mm, length 150mm. Cable 2 meters long. Aluminium handle.

TP875.I: Globe thermometer Ø 150 mm with handle. Wire Wound Pt100 sensor complete of SICRAM module. Cable 2 meters long.

TP876.I: Globe thermometer Ø 50 mm with handle. Wire Wound Pt100 sensor complete of SICRAM module. Cable 2 meters long.

TP87.0: Immersion probe, Thin Film Pt100 sensor. Stem Ø 3 mm, length 70 mm. Cable 2 meters long.

TP878.0: Contact probe for solar panels. Thin Film Pt100 sensor. Cable 2 meters long.

TP878.1.0: Contact probe for solar panels. Thin Film Pt100 sensor. Cable 5 meters long

TP879.0: Penetration probe for compost. Thin Film Pt100 sensor. Stem Ø 8 mm, length 1000mm. Cable 2 meters long.

Temperature probes without SICRAM module

TP47.100.0: Immersion probe, Thin Film Pt100 sensor probe. Stem Ø 3 mm, length 230mm. 4 wires connection cable with connector, 2 meters long.

TP47: Only connector for probe connection without SICRAM module: direct 3 and 4 wires Pt100, 2 wires Pt1000.

TP87.100.0 Immersion probe, Thin Film Pt100 sensor. Stem Ø 3 mm, length 70mm. Cable 2 meters long. 4 wires connection cable with connector 1 meter long.



HD2110CSNM

PRESSURE PROBE TABLE

| 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 |
| 1.00 bar | 2.00 bar | 1 mbar | | TP705BARO | | 0.25 % F.S. | 0...+60 °C | Tube Ø 5 mm |
| | | | | TP704-1BGI | | 0.25 % F.S. | -40...+125 °C | ¼ BSP |
| | | | | TP704-1BA | | 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 | | | | 0.25 % F.S. | -25...+85 °C | ¼ BSP |
| | | | | | | 0.25 % F.S. | -25...+85 °C | ¼ BSP |

* Ceramic diaphragm

• Only report of calibration, no Accredia certificate