



MANOMETER - THERMOMETER HD2304.0

The **HD2304.0** is a portable instrument with a large LCD display. It performs measurements of absolute, relative and differential pressure, and temperature. The PP471 electronic module is used to measure the pressure. The PP471 electronic module works as an interface between the instrument and the TP704 and TP705 series Delta Ohm probes.

The temperature is detected with immersion, penetration, contact or air Pt100 probes with SICRAM module or 4 wire direct Pt100 probes.

The temperature probes are fitted with SICRAM module and the factory calibration settings are already memorized inside. Upon turning on the instrument automatically detects them.

The Max, Min and Avg function calculate the maximum, minimum or average values.

Other functions include: the relative measurement REL, the HOLD function, and the automatic turning off that can also be disabled.

The instruments have IP67 protection degree.

INSTRUMENT TECHNICAL CHARACTERISTICS

Instrument

Dimensions (Length x Width x Height)	140x88x38mm
Weight	160g (complete with batteries)
Materials	ABS
Display	2x4½ characters plus symbols Visible area: 52x42mm

Operating conditions

Operating temperature	-5...50°C
Stocking temperature	-25...65°C
Working relative humidity	0...90%RH without condensation

Protection degree IP67

Power

Batteries	3 1.5V type AA batteries
Autonomy	200 hours with 1800mAh alkaline batteries
Power absorbed with instrument off	20µA

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

Connections

Input module for the probes 8-pole male DIN45326 connector

Measurement of temperature by Instrument

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

PROBES AND MODULES TECHNICAL DATA EQUIPPED WITH INSTRUMENT

Measurement of pressure by module PP471

All TP704 and TP705 series Delta Ohm probes can be connected to the PP471 module. For the technical characteristics of the single probes, see the table below.

Technical characteristics

Accuracy ±0.05% of full scale

Temperature probes Pt100 sensor 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 probes

Model	Type	Application range	Accuracy
TP47.100	4 wire Pt100	-50°C...+400°C	Class A

Common characteristics

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



ORDER CODES

HD2304.0K: The kit is composed of the instrument HD2304.0, **SICRAM interface module PP471**, 3 1.5V alkaline batteries, operating manual, case. **The probes must be ordered separately.**

Probes complete with SICRAM module 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 technical data table.**

TEMPERATURE MEASUREMENT PROBES

TP472I: Immersion probe, sensor Pt100. Stem \varnothing 3 mm, length 300 mm. Cable length 2 metres.

TP472I.0: Immersion probe, sensor Pt100. Stem \varnothing 3 mm, length 230 mm. Cable length 2 metres.

TP473P.0: Penetration probe, sensor Pt100. Stem \varnothing 4mm, length 150 mm. Cable length 2 metres.

TP474C.0: Contact probe, sensor Pt100. Stem \varnothing 4mm, length 230mm, contact surface \varnothing 5mm. Cable length 2 metres.

TP475A.0: Air probe, sensor Pt100. Stem \varnothing 4mm, length 230mm. Cable length 2 metres.

TP472I.5: Immersion probe, sensor Pt100. Stem \varnothing 6mm, length 500 mm. Cable length 2 metres.

TP472I.10: Immersion probe, sensor Pt100. Stem \varnothing 6mm, length 1000mm. Cable length 2 metres.

Temperature probes without SICRAM module

TP47.100: Immersion probe, 4 wire direct Pt100 sensor. Stem \varnothing 3mm, length 230mm. 4 wire connecting cable with connector, length 2 metres.

TP47: Connector for probes connection: 4 wire direct Pt100.





PRESSURE PROBE TABLE

Full 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	0.01mbar	TP705-10MBD			0.50 % FSO	0...60°C	Tube Ø 5mm
20.0 mbar	40.0 mbar	0.01mbar	TP705-20MBD			0.50 % FSO	0...60°C	Tube Ø 5mm
50.0 mbar	100 mbar	0.01mbar	TP705-50MBD			0.50 % FSO	0...60°C	Tube Ø 5mm
100 mbar	200 mbar	0.1mbar	TP705-100MBD			0.25 % FSO	0...60°C	Tube Ø 5mm
200 mbar	400 mbar	0.1mbar	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	0.1mbar	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	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	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	1mbar		TP704-5BGI	TP704-5BAI	0.40 % FSO	0...80°C	¼ BSP
10.0 bar	20.0 bar	0.01bar		TP704-10BGI	TP704-10BAI	0.40 % FSO	0...80°C	¼ BSP
20.0 bar	40.0 bar	0.01bar		TP704-20BGI	TP704-20BAI	0.40 % FSO	0...80°C	¼ BSP
50.0 bar	100.0 bar	0.01bar		TP704-50BGI	TP704-50BAI	0.40 % FSO	0...80°C	¼ BSP
100 bar	200 bar	0.1bar			TP704-100BAI	0.40 % FSO	0...80°C	¼ BSP
200 bar	400 bar	0.1bar			TP704-200BAI	0.40 % FSO	0...80°C	¼ BSP
500 bar	750 bar	0.1bar			TP704-500BAI	0.40 % FSO	0...80°C	¼ BSP