

HD2304.0



HD2304.0 MANOMETER - THERMOMETER HANDHELD - READ ONLY

HD2304.0 is a portable instrument with a 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 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 excluded.

The instrument has IP67 protection degree.

Technical specifications	
For all pressure specifications, see table at page 13	
Measurement of temperature	
Pt100 measurement range	-200...+650 °C
Resolution	0.1° C
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
Power supply	
Batteries	3 x 1.5V type AA batteries
Autonomy	200 hours with 1800mAh alkaline batteries
Current consumption with instrument off	< 20 µA
Connections	
Input module for the probes	8-pole male DIN45326 connector
Operating conditions	
Operating temperature	-5 ... 50 °C
Storage temperature	-25 ... 65 °C
Working relative humidity	0...90% RH without condensation
Protection degree	IP67
General characteristics	
Dimensions (Length x Width x Height)	140x88x38 mm
Weight	160 g (complete with batteries)
Materials	ABS
Display	2 rows 4½ digits plus symbols Visible area: 52x42 mm

ORDERING CODES

HD2304.0: The kit consists of the instrument HD2304.0, 3 1.5V alkaline batteries, operating manual, case. **Probes and interface module PP471 have to be ordered separately.**

For all pressure probes, PP471 module and Pt100 temperature probes see from **pag.13** onwards.



HD2304.0



PP471

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
				TP704-5BGI		0.25 % f.s.	-40..+125 °C	¼ BSP
5.00 bar	10.00 bar	1 mbar			TP704-5BAI *	0.25 % f.s.	-25..+85 °C	¼ BSP
				TP704-10BGI		0.25 % f.s.	-40..+125 °C	¼ BSP
10.00 bar	20.0 bar	0.01 bar			TP704-10BAI *	0.25 % f.s.	-25..+85 °C	¼ BSP
				TP704-20BGI		0.25 % f.s.	-40..+125 °C	¼ BSP
					TP704-20BAI *	0.25 % f.s.	-25..+85 °C	¼ BSP
				TP704-50BGI		0.25 % f.s.	-40..+125 °C	¼ BSP
50.0 bar	100.0 bar	0.01 bar			TP704-50BAI *	0.25 % f.s.	-25..+85 °C	¼ BSP
				TP704-100BGI		0.25 % f.s.	-40..+125 °C	¼ BSP
					TP704-100BAI *	0.25 % f.s.	-25..+85 °C	¼ BSP
				TP704-200BGI		0.25 % f.s.	-40..+125 °C	¼ BSP
					TP704-200BAI *	0.25 % f.s.	-25..+85 °C	¼ BSP
200 bar	400 bar	0.1 bar				0.25 % f.s.	-40..+125 °C	¼ BSP
				TP704-500BGI		0.25 % f.s.	-40..+125 °C	¼ BSP
500 bar	1000 bar	0.1 bar				0.25 % f.s.	-25..+85 °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	9.807•10 ⁻⁶	9.807•10 ⁻³	1	73.56•10 ⁻³	1•10 ⁻⁴	9.678•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

