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PORTABLE HYGRO-THERMOMETERS

HD2301.0 Hygro-Thermometer



ORDER CODES

HD2301.0: The kit is composed of the instrument HD2301.0, **combined probe HP472AC**, 3 1.5V alkaline batteries, operating manual, case.

PROBES COMPLETE WITH SICRAM MODULE temperature measurement

TP472I: Immersion probe, sensor Pt100. Stem Ø 3mm, length 300mm. Cable length 2 metres.
TP472I.0: Immersion probe, sensor Pt100. Stem Ø 3mm, length 230mm. Cable length 2 metres.
TP473P.0: Penetration probe, sensor Pt100. Stem Ø 4mm, length 150mm. Cable length 2 metres.
TP474C.0: Contact probe, sensor Pt100. Stem Ø 4mm, length 230mm, contact surface Ø 5mm. Cable length 2 metres.
TP475A.0: Air probe, sensor Pt100. Stem Ø 4mm, length 230mm. Cable length 2 metres.
TP472I.5: Immersion probe, sensor Pt100. Stem Ø 6mm, length 500mm. Cable length 2 metres.
TP472I.10: Immersion probe, sensor Pt100. Stem Ø 6mm, length 1,000mm. Cable length 2 metres.

Relative humidity and temperature probes

HP472AC: Combined probe %RH and temperature, dimensions Ø 26x170mm. Connection cable length 2 metres.
HP572AC: Combined probe %RH and temperature - thermocouple K sensor. Dimensions Ø 26x170mm. Connection cable length 2 metres.
HP473AC: Combined probe %RH and temperature. Handle dimensions Ø 26x130mm, probe Ø 14x110mm. Connection cable length 2 metres.
HP474AC: Combined probe %RH and temperature. Handle dimensions Ø 26x130mm, probe Ø 14x210mm. Connection cable length 2 metres.
HP475AC: Combined probe %RH and temperature. Connection cable length 2 metres. Handle Ø 26x110mm. Stainless steel stem Ø 12x560mm. Point Ø 13.5x75mm.
HP477DC: Combined sword probe %RH and temperature. Connection cable length 2 metres. Handle Ø 26x110mm. Probe's stem 18x4mm, length 520mm.

The **HD2301.0** is a portable instrument with a large LCD display. It measures relative humidity and temperature using a Pt100 sensor or thermocouple humidity/temperature combined probe. Temperature only is measured by immersion, penetration or contact probes. The sensor can be a Pt100, Pt1000 or Ni1000. When the humidity/temperature combined probe is connected, the instrument calculates and displays the absolute humidity, the dew point, the partial vapour pressure. The probes are fitted with an automatic detection module, with the factory calibration settings already being memorized inside. 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.

TECHNICAL CHARACTERISTICS

Instrument

Dimensions (Length x Width x Height) 140x88x38mm
Weight 160g (complete with batteries)
Materials ABS
Display 2x4 1/2 digits plus symbols
Visible area: 52x42mm

Operating conditions

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

Power

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

Power absorbed
Measuring unit

°C - °F - %RH - g/m³ - Td - hPa

Connections

Input module for the probes 8-pole male DIN45326 connector

Measurement of relative humidity by Instrument

Measurement range 0...100%RH
Resolution 0.1%RH
Accuracy ±0.1%RH
Drift after 1 year 0.1%RH/year

Measurement of temperature by Instrument

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



PROBES AND MODULES TECHNICAL DATA EQUIPPED WITH THE INSTRUMENT

Temperature probes without SICRAM module

TP47.100: Immersion probe sensor Pt100 direct 4 wires. Probe's stem Ø 3mm, length 230mm. 4 wire connection cable with connector, length 2 metres.
TP47.1000: Immersion probe sensor Pt1000. Probe's stem Ø 3mm, length 230mm. Connection cable 2 wires with connector, length 2 metres.
TP47: Only connector for probe connection: direct 4 wire Pt100, 2 wire Pt1000..

Accessories

HD11: Saturated solution at 11.3%RH@20°C for calibration of relative humidity probes, fixing adapter M24x1.5

HD33: Saturated solution at 33.0%RH@20°C for calibration of relative humidity probes, fixing adapter M24x1.5

HD75: Saturated solution at 75.4%RH@20°C for calibration of relative humidity probes, fixing adapter M24x1.5

Protection for humidity probes HP472AC, HP572AC (M24x1,5)

P1: Stainless steel grid protection for probes Ø 26 mm.

P2: 20µ sintered polyethylene PE protection for probes Ø 26 mm.

P3: 20µ sintered bronze protection for probes Ø 26 mm.

P4: 20µ sintered PE complete cap for probes Ø 26 mm.

Protection for humidity probes HP473AC, HP474AC, HP475AC (M12x1)

P5: Stainless steel grid protection for probes Ø 14 mm.

P6: 20µm sintered complete protection made of stainless steel for probes Ø 14 mm.

P7: 10µm sintered complete protection made of PTFE for probes Ø 14 mm.

Temperature probes Pt100 sensor using SICRAM module

Model	Type	Range	Accuracy
TP472I	Immersion	-196 to 500 °C	±0,25 °C (-196 to 350 °C) ±0,4 °C (350 to 500 °C)
TP227I.0	Immersion	-50 to 400 °C	±0,25 °C (-150 to 350 °C) ±0,4 °C (350 to 400 °C)
TP473P.0	Penetration	-50 to 400 °C	±0,25 °C (-150 to 350 °C) ±0,4 °C (350 to 400 °C)
TP474C.0	Contact	-50 to 400 °C	±0,25 °C (-150 to 350 °C) ±0,4 °C (350 to 400 °C)
TP475A.0	Air	-50 to 400 °C	±0,25 °C (-150 to 350 °C) ±0,4 °C (350 to 400 °C)
TP472I.5	Immersion	-50 to 400 °C	±0,25 °C (-150 to 350 °C) ±0,4 °C (350 to 400 °C)
TP472I.10	Immersion	-50 to 400 °C	±0,25 °C (-150 to 350 °C) ±0,4 °C (350 to 400 °C)

Common characteristics Resolution 0.1°C

Temperature drift @ 20°C 0.003%/°C

Relative humidity and temperature probes using SICRAM module

Model	Temperature sensor	Working range		Accuracy	
		%HR	°C	%HR	°C
HP472AC	Pt100	5 to 98%HR	-20 to 80 °C	±2%(5 to 95%HR) ±3%(95 to 98%HR)	±0,3°C
HP572AC	Thermocouple K	5 to 98%HR	-20 to 80 °C		±0,5°C
HP473AC	Pt100	5 to 98%HR	-20 to 80 °C	±2,5%(5 to 95%HR) ±3,5%(95 to 98%HR)	±0,3°C
HP474AC	Pt100	5 to 98%HR	-40 to 150 °C		±0,3°C
HP475AC	Pt100	5 to 98%HR	-40 to 150 °C		±0,3°C
HP477DC	Pt100	5 to 98%HR	-40 to 150 °C		±0,3°C

Common characteristics

Relative humidity

Sensor Capacitive

Typical capacity @30% RH 300pF±40pF

Resolution 0.1%RH

Temperature drift @ 20°C 0.02%RH/°C

Response time %RH

at constant temperature 10sec (10□80%RH; air speed=2m/s)

Temperature with sensor Pt100

Resolution 0.1°C

Temperature drift @ 20°C 0.003%/°C

Temperature with thermocouple K - HP572AC

Resolution 0.1°C

Temperature drift @ 20°C 0.02%/°C

Probes Pt100 4 wires and Pt1000 2 wires

Model	Type	Range	Accuracy
TP47.100	4 wire Pt 100	-50 to 400 °C	Class A
TP47.1000	2 wire Pt 1000	-50 to 400 °C	Class A

Common characteristics

Resolution 0.1°C

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

Pt1000 0.005%/°C



HD2101.1 HD2101.2 Hygro-Thermometers



The **HD2101.1** and **HD2101.2** are portable instruments with a large LCD display. They measure relative humidity and temperature using a Pt100 sensor or thermocouple humidity/temperature combined probe. Temperature only is measured by immersion, penetration or contact probes. The sensor can be a Pt100, Pt1000 or Ni1000. When the humidity/temperature combined probe is connected, the instrument calculates and displays the absolute humidity, the dew point, the partial vapour pressure, and the **comfort indices**. The probes are fitted with an automatic detection module, with the factory calibration settings already being memorized inside. The HD2101.2 is a **datalogger**. It stores up to 38,000 samples which can be transferred from the instrument connected 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. The HD2101.1 and HD2101.2 models are fitted with an RS232C serial port and can transfer the acquired measurements in real time to a PC or to a portable printer. 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.

ORDER CODES

HD2101.1K: The kit is composed of the instrument HD2101.1, **combined probe HP472AC**, connection cable for serial output HD2110CSNM, 4 1.5V alkaline batteries, operating manual, case and DeltaLog9 software.

HD2101.2K: The kit is composed of the HD2101.2 **datalogger**, **combined probe HP472AC**, connection cable HD2101/USB, 4 1.5V alkaline batteries, operating manual, case and DeltaLog9 software.

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

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

DeltaLog9: Software for download and management of the data on PC using Windows 98 to XP operating systems.

AF209.60: Stabilized power supply at 230Vac/9Vdc-300mA mains voltage.

S'print-BT: On request, portable, serial input, 24 column thermal printer, 58mm paper width.

Temperature probes Pt100 sensor using SICRAM module

Relative humidity and temperature probes using SICRAM module

Probes Pt100 4 wires and Pt1000 2 wires

Accessories

Protections for probes

SAME CODES GOVERNING MODEL HD2301.0

INSTRUMENT TECHNICAL CHARACTERISTICS

Instrument

Dimensions	(Length x Width x Height) 140x88x38mm
Weight	160g (complete with batteries)
Material	ABS
Display	2x4 1/2 digits plus symbols Visible area: 52x42mm

Operating conditions

Operating temperature	-5...50°C
Warehouse temperature	-25...65°C
Working relative humidity	0...90%RH without condensation
Power	Batteries 4 1.5V type AA batteries Autonomy 200 hours with 1800mAh alkaline batteries

Power absorbed with instrument off 20µA

Measuring unit °C - °F - °K

Security of stored data

Unlimited, independent of battery charge conditions

Time

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

Measured values storage - model HD2101.2

Type	2000 pages containing 19 samples each 38,000 pairs of samples
Storage interval	1s...3600s (1hour)

Serial interface RS232C

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 - model HD2101.2

Type	1.1 - 2.0 electrically isolated
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Connections

Input module for the probes	8-pole male DIN45326 connector
Serial interface and USB	8-pole MiniDin connector
Mains adaptor	2-pole connector (positive at centre)



Measurement of relative humidity by Instrument

Measurement range 0...100%RH
 Resolution 0.1%RH
 Accuracy $\pm 0.1\%$ RH
 Drift after 1 year 0.1%RH/year

Measurement of temperature by Instrument

Pt100 measurement range -200...+650°C
 Pt1000 measurement range -200...+650°C
 Ni1000 measurement range -50...+250°C
 Resolution 0.1°C
 Accuracy $\pm 0.1\%$ °C
 Drift after 1 year 0.1°C/year



HD11

HD31

HD75

The technical data of the humidity and temperature probes and temperature for these instruments are listed on page 2 of this booklet as these probes are common across the range hygrometer



HD2101/USB



HD2110CSNM



S'print-BT