HD2105.1
HD2105.2

TEMPERATURE-pH METERS HD2105.1 AND HD2105.2

The **HD2105.1** and **HD2105.2** are portable instruments with a large LCD display. They measure the pH and the redox potential (ORP) in mV. They measure the temperature using Pt100 or Pt1000 immersion, penetration or contact probes.
The electrode calibration can be carried out on one, two or three points and the calibration sequence can be chosen from a list of 13 buffers.
The temperature probes are fitted with an automatic detection module, with the factory calibration settings already being memorized inside.
The HD2105.2 is a **datalogger**. It memorizes up to 34,000 pH and temperature 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 HD2105.1 and HD2105.2 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 Auto-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)	185x90x40mm
Weight	470g (complete with batteries)
Materials	ABS, rubber
Display	2x4½ 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
Protection degree	**IP67**

Power

Batteries	4 1.5V type AA batteries
Autonomy	200 hours with 1800mAh alkaline batteries
Power absorbed with instrument off	20μA
Mains	Output mains adapter 9Vdc / 250mA

Security of memorized data Unlimited, independent of battery charge conditions

Time

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

*Measured values storage - model **HD2105.2***

Type	2000 pages containing 17 samples each
Quantity	Total of 34000 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 **HD2105.2***

Type	1.1 - 2.0 electrically isolated

Connections

Input module for the temperature probes	8-pole male DIN45326 connector
pH/mV input	Female BNC
Serial interface and USB	8-pole MiniDin connector
Mains adapter	2-pole connector (positive at centre)

Measurement of pH by Instrument

Measurement range	-2.000…+19.999pH
Resolution	0.01 or 0.001pH selectable from menu
Accuracy	±0.001pH
Input impedance	$>10^{12}\Omega$
Calibration error @25°C	|Offset|>20mV Slope<50mV/pH or Slope>63mV/pH Sensitivity < 85% or Sensitivity > 106.5%

Measurement of mV by Instrument

Measurement range	-1999.9…+1,999.9mV
Resolution	0.1mV
Accuracy	±0.1mV
Drift after 1 year	0.5mV/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	±0.1°C
Drift after 1 year	0.1°C/year

TECHNICAL DATA OF PROBES AND MODULES EQUIPPED WITH INSTRUMENT

Temperature probes Pt100 sensor using SICRAM module

Model	Type	Application range	Accuracy
TP87	Immersion	-50°C…+200°C	±0.25°C (-50°C…+200°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 and 2 wire Pt1000 Probes

Model	Type	Application range	Accuracy
TP87.100	Pt100 4 wires	-50…+200°C	Class A
TP87.1000	Pt1000 2 wires	-50…+200°C	Class A

Common characteristics

Resolution 0.1°C
Temperature drift @ 20°C 0.005%/°C

AF209.60

ORDER CODES

HD2105.1KE: The kit is composed of: instrument HD2105.1, **KP30 electrode**, **TP87 temperature probe**, 4.01pH and 6.86pH buffer solutions, connection cable for serial output HD2110CSNM, 4 1.5V alkaline batteries, operating manual, case and DeltaLog9 software.

HD2105.1K: The kit is composed of: instrument HD2105.1, **TP87 temperature probe**, connection cable for serial output HD2110CSNM, 4 1.5V alkaline batteries, operating manual, case and DeltaLog9 software. **The electrodes must be ordered separately.**

HD2105.2KE: The kit is composed of: instrument HD2105.2 **datalogger**, **KP30 electrode**, **TP87 temperature probe**, 4.01pH and 6.86pH buffer solutions, connection cable HD2101/USB, 4 1.5V alkaline batteries, operating manual, case and DeltaLog9 software.

HD2105.2K: The kit is composed of: instrument HD2105.2 **datalogger**, **TP87 temperature probe**, connection cable HD2101/USB, 4 1.5V alkaline batteries, operating manual, case and DeltaLog9 software. **The electrodes must be ordered separately.**

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.

pH Electrodes

KP20: Combined pH electrode, gel-filled, with screw connector S7, body in Epoxy, Ag/AgCl sat. KCl.

KP30: Combined pH electrode, cable 1m, gel-filled, body in Epoxy, Ag/AgCl sat. KCl.

KP60: Combined pH electrode, 1 diaphragm, gel-filled, with screw connector S7, body in glass, Ag/AgCl sat. KCl.

KP 61: Combined pH electrode, 3 diaphragms for milk, cream, etc. gel-filled, with screw connector S7, body in glass, Ag/AgCl sat. KCl.

KP 62: Combined pH electrode, 1 diaphragm for pure water, paints, etc. gel-filled, with screw connector S7, body in glass, Ag/AgCl sat. KCl.

KP 70: Combined pH electrode, micro diam. 6 x L=70mm, gel-filled, with screw connector S7, body in glass, Ag/AgCl sat. KCl.

KP 80: Combined pointed pH electrode, gel-filled, with screw connector S7, body in glass, Ag/AgCl sat. KCl.

CP: Extension cable 1.5m with BNC connectors on one side and S7 on the other side for electrode without cable.

CE: Screw connector S7 for pH electrode.

BNC: Female BNC for electrode extension.

HD2110CSNM

HD2101/USB

ORP Electrodes

KP90: REDOX PLATINUM electrode, with screw connector S7, gel-filled, body in glass.

pH Buffer solutions

HD8642: Buffer solution 4.01pH - 200cc.
HD8672: Buffer solution 6.86pH - 200cc.
HD8692: Buffer solution 9.18pH - 200cc.

Redox Buffer solutions

HDR220: Redox buffer solution 220mV 0.5 l.
HDR468: Redox buffer solution 468mV 0.5 l.

Temperature probes complete with SICRAM module

TP87: Pt100 sensor immersion probe. Probe's stem Ø 3mm, length 70mm. Cable length 1 metre.
TP472I.0: Pt100 sensor immersion probe. Stem Ø 3 mm, length 230 mm. Cable length 2 metres.
TP473P.0: Pt100 sensor penetration probe, Stem Ø 4mm, length 150 mm. Cable length 2 metres.
TP474C.0: Pt100 sensor contact probe. Stem Ø 4mm, length 230mm, contact surface Ø 5mm. Cable length 2 metres.
TP475A.0: Pt100 sensor air probe. Stem Ø 4mm, length 230mm. Cable length 2 metres.
TP472I.5: Immersion probe, sensor Pt100. Stem Ø 6mm, length 500 mm. Cable length 2 metres.
TP472I.10: Pt100 sensor immersion probe. Stem Ø 6mm, length 1,000mm. Cable length 2 metres.

Temperature probes without SICRAM module

TP87.100: Pt100 sensor immersion probe, Probe's stem Ø 3mm, length 70mm. Connection cable 4 wires with connector, length 1 metre.
TP87.1000: Pt1000 sensor immersion probe. Probe's stem Ø 3mm, length 70mm. Connection cable 2 wires with connector, length 1 metre.
TP47: Only connector for probe connection: direct 4 wire Pt100 and 2 wire Pt1000 and Ni1000.