HD 3405.2
BENCH-TOP pH METER

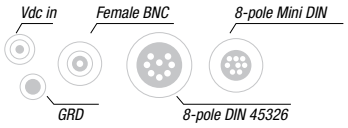
The **HD3405.2** is a 4 bench top instrument for electrochemical measures: **pH, and temperature**.
The displayed data can be stored **(datalogger)** and can be transferred to PC or serial printer thanks to the multi-standard serial port RS232C and USB2.0 and software DeltaLog9 (Vers.2.0 and subsequent ones). The storing and printing parameters can be set from menu.
The **HD3405.2** measures **pH**, **redox potential** (ORP) in mV. It measures **temperature** with Pt100 or Pt1000 immersion, penetration or contact probes. The pH 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 display shows continually the temperature in °C or °F and one of the parameters according to the connected probe type. Printing and storage always include the temperature in °C or °F and one selectable parameter for each probe type.

Other functions include: Max, Min and Avg function, the Auto-HOLD function, the automatic turning off which can also be excluded.

The instruments have IP66 protection degree.

Technical characteristics HD3405.2
pH - mV - °C/°F measurement

Instrument	
Dimensions (Length x Width x Height)	220x120x55mm
Weight	460g (complete with batteries)
Materials	ABS, rubber
Display	2x4½ characters 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	
Batteries	3 batteries 1.5V type AA
Autonomy (only batteries)	100 hours with 1800mAh alkaline batteries
Mains (cod. **SWD10**)	Output mains adapter 100-240Vac/ 12Vdc-1A
Security of memorized data	
	Unlimited
Selectable storage interval	
	1s, 5s, 10s, 15s, 30s, 1min, 2min, 5min, 10min, 15min, 20min, 30min and 1hour
Time	
Date and hour	Schedule in real time
Accuracy	1min/month max departure
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
Selectable print interval	immediate or 1s, 5s, 10s, 15s, 30s, 1min, 2min, 5min, 10min, 15min, 20min, 30min and 1hour
USB Interface	
Type	1.1 - 2.0 electrically isolated
Connections	
Serial interface and USB	8-pole MiniDin connector
Mains adapter (cod. SWD10)	2-pole connector (positive at centre) 12Vdc/1A
Storage of measured values	
Type	2000 pages of 17 samples each
Quantity	34,000 sets of measures made up of [pH or mV] or and [°C or °F].
Measurement connections	
Temperature probe input with SICRAM module or TP47 module pH/mV input	8-pole male DIN45326 connector female BNC



pH Measurement

Measurement range	-2.000…+19.999pH
Resolution	0.01 or 0.001pH selectable from menu
Accuracy	±0.001pH ±1digit
Input impedance	$>10^{12}\Omega$
Calibration error @25°C	|Offset| > 20mV Slope < 50mV/pH or Slope > 63mV/pH Sensitivity < 85% or Sensitivity > 106.5%
Automatic / manual temperature compensation	-50…+150°C

mV Measurement

Measurement range	-1999.9…+1999.9mV
Resolution	0.1mV
Accuracy	±0.1mV ±1digit
Drift after 1 year	0.5mV/year

Temperature Measurement

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

Automatically detected pH standard solutions (@25°C)

1.679pH - 2.000pH - 4.000pH - 4.008pH
4.010pH - 6.860pH - 6.865pH - 7.000pH
7.413pH - 7.648pH - 9.180pH - 9.210pH
10.010pH

Ordering codes for instrument series HD34…

HD3405.2: The kit is composed of: instrument HD3405.2 **datalogger,** for measurement of pH - redox - temperature, 3 1.5V alkaline batteries, operating manual and **DeltaLog9 version 2.0**.

pH/mV electrodes, conductivity probes, dissolved oxygen probes, temperature probes, standard reference solutions for different measurement types, connection cables for pH electrodes with S7 connector, cables for data download to PC or printer have to be ordered separately.

Common Accessories for instruments series HD34…

HD2110CSNM: 8-pole connection cable Mini Din - Sub D 9-pole female for RS232C, for connection to PC without USB input.
HD2101/USB: Connection cable USB 2.0 connector type A - 8-pole Mini Din for connection to PC with USB input.
SWD10: Stabilized power supply at 100-240Vac/12 Vdc-1A mains voltage.
HD40.1: Portable, serial input, 24 column thermal printer, 57mm paper width.
HD22.2: Laboratory electrode holder composed of basis plate with incorporated magnetic stirrer, staff and replaceable electrode holder. Height max. 380mm. Powerd by bench-top meters of the series HD22… with cable HD22.2.1 (**optional**) or supplier SWD10 (**optional**).
HD22.3: Laboratory electrode holder with metal basis plate. Flexible electrode holder for free positioning. For Ø 12mm probes.
TP47: Module for the connection of Pt100 4-wire and Pt1000 2-wire probes to instrument series HD34…, without amplifying electronics and linearization.

pH Electrodes

KP20: Combined pH electrode for common use, gel filled with screw connector S7 body in Epoxy.
KP30: Combined pH electrode for common use, cable 1 m, gel filled, body in Epoxy.
KP50: Combined pH electrode with Teflon collar diaphragm, for emulsions, deionised water, S7 screw connector, gel filled, body in glass.
KP 61: Combined pH electrode, 3 diaphragms for milk, cream, etc. elektrolyte, with screw connector S7, body in glass.
KP 62: Combined pH electrode, 1 diaphragm for pure water, paints, etc. gel-filled, with screw connector S7, body in glass.
KP 63: Combined pH electrode for common use, varnish, cable 1 m, electrolyte KCl 3M body in glass.
KP 64: Combined pH electrode for water, varnish, emulsions, etc., electrolyte KCl 3M with screw connector S7, body in glass.
KP 70: Combined pH micro electrode diam. 4.5 x L=25 mm. Gel filled with screw connector, body in glass.
KP 80: Combined pointed pH electrode, gel filled with screw connector S7, body in glass.
KP100: Flat membrane gel combined pH electrode with S7 screw connector, glass body, for skin, leather, paper.
CP: Extension cable 1.5m with BNC connectors on one side and S7 on the other side for electrode with S7 connector.
CP5: Extension cable 5m with BNC connectors on one side and S7 on the other side for electrode with S7 connector.
CE: S7 screw connector for pH electrode.
BNC: Female BNC for electrode extension.

ORP Electrodes

KP90: Redox Platinum electrode, with screw connector S7, electrolyte KCl 3M, body in glass.
KP91: Redox Platinum electrode with 1m cable, GEL filled, body in glass.
Electrode dimensions and characteristics at page 402

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.

Elettrolyte solutions

KCL 3M: 50cc ready for use solution for refilling of the electrodes.

Cleaning and maintainance

HD62PT: Diaphragm cleaning (tiourea in HCl) - 500ml.
HD62PP: Protein cleaning (pepsin in HCl) - 500ml.
HD62RF: Regeneration (fluorhydric acid) - 100ml.
HD62SC: Solution for electrode preservation - 500ml.

Temperature probes complete with SICRAM module

TP87: PT100 sensor immersion probe. Stem Ø 3 mm, length 70 mm. Cable length 1 m.
TP472I.0: Pt100 sensor immersion probe. Stem Ø 3 mm, length 230 mm. Cable length 2 m.
TP473P.0: Pt100 sensor penetration probe. Stem Ø 4mm, length 150 mm. Cable length 2 m.
TP474C.0: Pt100 sensor contact probe. Stem Ø 4mm, length 230mm, contact surface Ø 5mm. Cable length 2 m.
TP475A.0: Air probe, sensor Pt100. Stem Ø 4mm, length 230mm. Cable length 2 m.
TP472I.5: Immersion probe, sensor Pt100. Stem Ø 6mm, length 500 mm. Cable length 2 m.
TP472I.10: Immersion probe, sensor Pt100. Stem Ø 6mm, length 1,000mm. Cable length 2 m.

Temperature probes complete with TP47module

TP87.100: Pt100 sensor immersion probe. Probe's stem Ø 3mm, length 70mm. 4 wire connection cable with connector, length 1 m.
TP87.1000: Pt1000 sensor immersion probe. Probe's stem Ø 3mm, length 70mm. 2 wire connection cable with connector, length 1 m.

Accessories

TP47: Module for the connection of Pt100 4-wire and Pt1000 2-wire probes.

pH

mV