



HD 3405.2 BENCH-TOP pH METER

The **HD3405.2** is a 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

Storage of measured values

Type	2000 pages of 17 samples each
Quantity	34,000 sets of measures made up of [pH or mV] and [°C or °F].

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

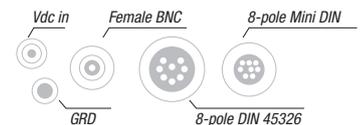
Type	1.1 - 2.0 electrically isolated
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Connections

Serial interface and USB	8-pole MiniDin connector
Mains adapter (cod. SWD10)	2-pole connector (positive at centre) 12Vdc/1A

Measurement connections

Temperature probe input with SICRAM module or TP47 module	8-pole male DIN45326 connector
pH/mV input	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 Ω
Calibration error @25°C	lOffsetl > 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

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

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

ORDERING CODES

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, temperature probes, standard reference solutions connection cables for pH electrodes with S7 connector, cables for data download to PC or printer have to be ordered separately.

Accessories

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. Powered 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.

pH Electrodes

KP 20: Gel pH combined electrode for general use, with S7 screw connector, EPOXY body.

KP 30: Gel pH combined electrode for general use, 1m cable with BNC, EPOXY body.

KP 50: Gel pH combined electrode, porous Teflon ring junction, suitable for emulsions, demineralised water and waste water with S7 screw connector, glass body.

KP 61: 3 diaphragm liquid filled pH combined electrode for wine, milk, cream, etc., S7 screw connector, liquid reference filling, glass body.

KP 62: 1 diaphragm gel pH combined electrode for general use, pure water, varnishes, gel filled, S7 screw connector, glass body.

KP 63: 1 liquid filled pH combined electrode for general use, varnishes, 1m cable with BNC, glass body.

KP 64: Liquid filled pH combined electrode, Teflon ring diaphragm, for wine, varnishes, emulsions, S7 screw connector, glass body.

KP 70: Pointed gel combined pH microelectrode diam. 6 x L=70 mm., with S7 screw connector, EPOXY body, glass tip, open junction for meat and cheese.

KP 80: Pointed gel pH combined electrode, with S7 screw connector, glass body, for cream, milk, viscous material, open junction.

KP100: Flat membrane gel combined pH electrode with S7 screw connector, glass body, for skin, leather, paper.

Characteristics and dimensions of the probes on page WA-76.

CP: 1.5m extension cable with BNC/S7 connector for electrode without cable, thread S7.

CP 5: 5m extension cable with BNC/S7 connector for electrode without cable, thread S7.

CP 10: 10m extension cable with BNC/S7 connector for electrode without cable, thread S7.

CP 15: 15m extension cable with BNC/S7 connector for electrode without cable, thread S7.

CE: S7 screw connector for pH electrode.

BNC: female BNC for extension cable

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 WA-76

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.

Electrolyte solutions

KCL 3M: 100cc ready for use solution for refilling of the electrodes.

Cleaning and maintenance

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 equipped with SICRAM module

TP472I: Wire wound Pt100 sensor, immersion probe. Stem Ø 3 mm, length 300 mm. Cable length 2 m.

TP472I.0: Thin film Pt100 sensor, immersion probe. Stem Ø 3 mm, length 230 mm. Cable length 2 m.

TP473P.I: Wire wound Pt100 sensor, penetration probe. Stem Ø 4mm, length 150 mm. Cable length 2 m.

TP473P.0: Thin film Pt100 sensor, penetration probe. Stem Ø 4mm, length 150 mm. Cable length 2 m.

TP474C.I: Wire wound Pt100 sensor, contact probe. Stem Ø 4mm, length 230mm, contact surface Ø 5mm. Cable length 2 m.

TP474C.0: Thin film Pt100 sensor, contact probe. Stem Ø 4mm, length 230mm, contact surface Ø 5mm. Cable length 2 m.

TP475A.0: Thin film Pt100 sensor, air probe. Stem Ø 4mm, length 230mm. Cable length 2 m.

TP472I.5: Thin film Pt100 sensor, penetration probe. Stem Ø 6mm, length 500 mm. Cable length 2 m.

TP472I.10: Thin film Pt100 sensor, penetration probe. Stem Ø 6mm, length 1000mm. Cable length 2 m.

TP49A.0: Thin film Pt100 sensor, immersion probe. Stem Ø 2,7mm, length 150mm. Cable length 2 m. Aluminium handle

TP49AC.0: Thin film Pt100 sensor, contact probe. Stem Ø 4mm, length 150mm. Cable length 2 m. Aluminium handle

TP49AP.0: Thin film Pt100 sensor, penetration probe. Stem Ø 2,7mm, length 150mm. Cable length 2 m. Aluminium handle

TP875.I: Wire wound Pt100 sensor, 150mm diameter globe-thermometer equipped with handle. Cable length 2 m.

TP876.I: Wire wound Pt100 sensor, 50mm diameter globe-thermometer equipped with handle. Cable length 2 m.

TP87.0: Thin film Pt100 sensor, immersion probe. Stem Ø 3 mm, length 70 mm. Cable length 2 m.

TP878.0: Thin film Pt100 sensor, contact probe for solar panels. Cable length 2 m.

TP878.1.0: Thin film Pt100 sensor, contact probe for solar panels. Cable length 5 m.

TP879.0: Thin film Pt100 sensor, penetration probe for compost. Stem Ø 8 mm, length 1000 mm. Cable length 2 m.

Temperature probes without SICRAM module

TP47.100.0: Thin film Pt100 sensor, immersion probe. Stem Ø 3mm, length 230mm. Connection cable 4 wires with connector, length 2 m.

TP47.1000.0: Thin film Pt1000 sensor, immersion probe. Probe's Stem Ø 3mm, length 230mm. Connection cable 4 wires with connector, length 2 m.

TP47: Connector for Pt100 4-wire and Pt1000 2-wire probes without SICRAM module.

TP87.100.0: Thin film Pt100 sensor, immersion probe. Stem Ø 3mm, length 70mm. 4-wires connection cable with connector, length 1 m.

TP87.1000.0: Thin film Pt1000 sensor, immersion probe. Stem Ø 3mm, length 70mm. 2-wires connection cable with connector, length 1 m.



pH



mV