

HD 2205.2



HD 2205.2 BENCH-TOP pH METER

The **HD2205.2** is a bench top instrument for electrochemical measures: **pH** and **temperature**. It is fitted with a large backlit LCD display.

The **HD2205.2** is equipped with two BNC inputs for the measurement of **pH**, **mV**, **redox potential** (ORP) with pH or redox electrodes, or electrodes with separate reference, and one input for combined pH/temperature probes fitted with SICRAM module.

All models are fitted with input for the measurement of **temperature** with Pt100 or Pt1000 immersion, penetration or contact probes. The temperature probes are equipped with an automatic recognition module and factory calibration data are stored inside.



The pH electrode calibration can be carried out up to five points and the calibration sequence can be chosen from a list of 13 buffers. Temperature compensation can be automatic or manual.

The HD 2205.2 is a **datalogger**, it stores up to 2000 samples of data: pH, mV and temperature. The data can be transferred from the instrument connected to a PC via the RS232C and USB 2.0 serial ports. The storing parameters can be configured using the menu.

The RS232C serial port can be used to transfer the acquired measurements to a 24 column portable printer in real time (HD40.1 or HD40.2).

The instruments equipped with **HD22BT** (Bluetooth) option can transfer data, without any connection, to a PC or printer fitted with Bluetooth input or through Bluetooth/RS232C converter.

The software DeltaLog11 allows instrument management and configuration, and data processing on PC.

The instruments have IP66 protection degree.

Technical characteristics HD2205.2

pH - mV - °C - °F measurement

Instrument

Dimensions (Length x Width x Height)	265x185x70mm
Weight	490g
Materials	ABS, rubber
Display	Back lighted, matrix point display. 240x64 points, visible area: 128x35mm

Operating conditions

Working temperature	-5 ... 50°C
Storing temperature	-25 ... 65°C
Working relative humidity	0 ... 90% R.H. without condensate
Protection degree	IP66

Power

Mains adapter (cod. SWD10) 12Vdc/1A

Auxiliary socket

For supplying of electrode holder with built-in stirrer HD22.2

Security of memorized data

Unlimited

Time

Date and hour Real time schedule with backup battery 3.6V - 1/2AA
Accuracy 1min/month max drift

Measured values storing

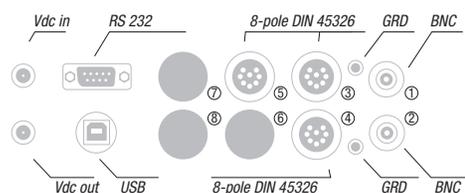
Quantity	2000 screens
Storage interval	1s ... 999s

Calibration storage

Quantity	Last 8 calibrations of each physical quantity
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RS232C serial interface

Type RS232C electrically isolated



Baud rate Can be set from 1200 to 115200 baud
 Data bit 8
 Parity None
 Stop bit 1
 Flow Control Xon/Xoff
 Length of serial cable Max 15m

USB Interface

Type 1.1 - 2.0 electrically isolated
 Bluetooth Interface HD22BT optional

Connections

Input for temperature probes with SICRAM module 8-pole male DIN45326 connector
 Inputs pH/mV ① - ② female BNC
 Inputs for SICRAM module pH/temperature ③ - ④ 8-pole male DIN45326 connector
 Serial interface DB9 connector (9-pole male)
 USB interface USB connector type B
 Bluetooth Optional
 Mains adapter 2-pole connector (Ø5.5mm-2.1mm). Positive at centre.
 Socket for power supply of electrode holder with built-in magnetic stirrer 2-pole connector (Ø5.5mm-2.1mm). Positive at centre (output 12Vdc/200mA max).

Measurement of pH by instrument

Measuring range -9.999...+19.999pH
 Resolution 0.01 or 0.001pH selectable from menu
 Accuracy ±0.001pH ±1digit
 Input impedance >10¹²Ω
 Calibration error @25°C Ioffset > 20mV
 Slope > 63mV/pH or Slope < 50mV/pH
 Sensitivity > 106.5% or Sensitivity < 85%
 Calibration points Up to 5 points from a list of 13 automatically detected buffers.
 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

Measurement of mV by instrument

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

Measurement of temperature by instrument

Pt100 Measuring range -50...+150°C
 Pt1000 Measuring range -50...+150°C
 Resolution 0.1°C
 Accuracy ±0.1°C ±1digit
 Drift after 1 year 0.1°C/year

TECHNICAL DATA OF PROBES AND MODULES EQUIPPED WITH INSTRUMENT
Temperature probes Pt100 sensor with SICRAM module

Model	Type	Application field	Accuracy
TP472I	Immersion	-196°C...+500°C	±0.25°C (-196°C...+300°C) ±0.5°C (+300°C...+500°C)
TP472I.0 1/3 DIN Thin Film	Immersion	-50°C...+300°C	±0.25°C (-50°C...+300°C)
TP473P.I	Penetration	-50°C...+400°C	±0.25°C (-50°C...+300°C) ±0.5°C (+300°C...+400°C)
TP473P.0 1/3 DIN Thin Film	Penetration	-50°C...+300°C	±0.25°C (-50°C...+300°C)
TP474C.I	Contact	-50°C...+400°C	±0.3°C (-50°C...+300°C) ±0.5°C (+300°C...+400°C)
TP474C.0 1/3 DIN Thin Film	Contact	-50°C...+300°C	±0.3°C (-50°C...+300°C)
TP475A.0 1/3 DIN Thin Film	Air	-50°C...+250°C	±0.3°C (-50°C...+250°C)
TP472I.5	Penetration	-50°C...+400°C	±0.3°C (-50°C...+300°C) ±0.6°C (+300°C...+400°C)
TP472I.10	Penetration	-50°C...+400°C	±0.30°C (-50°C...+300°C) ±0.6°C (+300°C...+400°C)
TP49A.0 Class A Thin Film	Immersion	-70°C...+250°C	±0.3°C (-70°C...-50°C) ±0.25°C (-50°C...+250°C)
TP49AC.0 Class A Thin Film	Contact	-70°C...+250°C	±0.3°C (-70°C...-50°C) ±0.25°C (-50°C...+250°C)
TP49AP.0 Class A Thin Film	Penetration	-70°C...+250°C	±0.3°C (-70°C...-50°C) ±0.25°C (-50°C...+250°C)
TP875.I	Globe-thermometer Ø150mm	-30°C...+120°C	±0.25°C
TP876.I	Globe-thermometer Ø50mm	-30°C...+120°C	±0.25°C
TP87.0 1/3 DIN Thin Film	Immersion	-50°C...+200°C	±0.25°C
TP878.0 1/3 DIN Thin Film TP878.1.0 1/3 DIN Thin Film	Photovoltaic	+4°C...+85°C	±0.25°C
TP879.0 1/3 DIN Thin Film	Compost	-20°C...+120°C	±0.25°C

Common characteristics

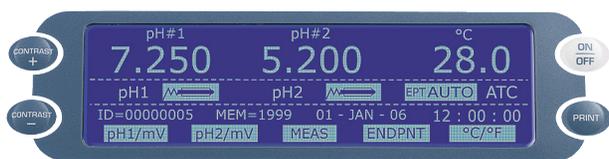
Temperature drift @ 20°C 0.003%/°C

4 wires Pt100 and 2 wires Pt1000 Probes

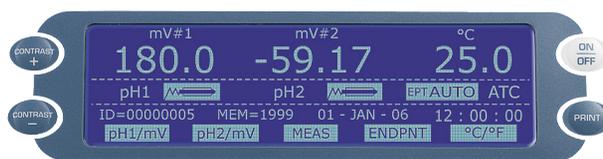
Model	Type	Application field	Accuracy
TP47.100.0 1/3 DIN Thin Film	4 wires Pt100	-50...+250°C	1/3 DIN
TP47.1000.0 1/3 DIN Thin Film	2 wires Pt1000	-50...+250°C	1/3 DIN
TP87.100.0 1/3 DIN Thin Film	4 wires Pt100	-50...+200°C	1/3 DIN
TP87.1000.0 1/3 DIN Thin Film	2 wires Pt1000	-50...+200°C	1/3 DIN

Common features

Temperature drift @20°C
 Pt100 0.003%/°C
 Pt1000 0.005%/°C



pH



mV

Ordering codes

HD2205.2: The kit is composed of: instrument HD2205.2 for measurement of pH - redox - temperature, **datalogger**, SWD10 stabilized power supply at mains voltage 100-240Vac/12Vdc-1A, instructions manual and software DeltaLog11.

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

9CPRS232: Connection cable SubD female 9- pole for serial output RS232C.

CP22: USB 2.0 connection cable - connector type A - connector type B.

DeltaLog11: Software for download and management of the data on PC using Windows operating systems.

SWD10: Stabilized power supply at 100-240Vac/12Vdc-1A mains voltage.

HD40.1: 24-column portable thermal printer, serial interface, 57mm paper width, four NiMH 1.2V rechargeable batteries, SWD10 power supply, instruction manual, 5 thermal paper rolls. It uses the cable 9CPRS 232 (optional).

HD40.2: 24-column portable thermal printer, **Bluetooth and serial interface**, 57mm paper width, four NiMH 1.2V rechargeable batteries, SWD10 power supply, instruction manual, 5 thermal paper rolls. Requires the module HD22BT (optional) or the cable 9CPRS 232 (optional).

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.

HD22BT: Bluetooth module for wireless data transmission from instrument to PC. **The fitting of the module into the instrument is made exclusively by Delta Ohm, at the time of placing the order.**

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

pH electrodes without SICRAM module (Inputs ① and ②)

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: 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.

Electrode dimensions and characteristics at page WA-76

CP: Extension cable 1.5m with BNC connector on one side and S7 on the other side for electrode with S7 connector.

CP5: Extension cable 5m with BNC connector on one side and S7 on the other side for electrode with S7 connector.

CP10: Extension cable 10m with BNC connector on one side and S7 on the other side, for electrode without cable.

CP15: Extension cable 15m with BNC connector on one side and S7 on the other side, for electrode without cable.

CE: S7 screw connector for pH electrode.

BNC: Female BNC for electrode extension.

pH electrodes with SICRAM module (Input ③)

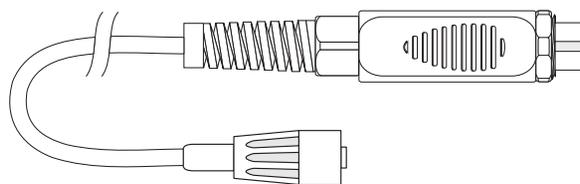
KP63TS: Combined pH/temperature electrode with SICRAM module, body in Epoxy, Ag/AgCl sat KCl, one diaphragm, for general purpose.

SICRAM Module with S7 input for pH electrodes (Input ③)

pH 471.1: SICRAM module for pH electrodes with S7 standard connection, cable L=1m.

pH 471.2: SICRAM module for pH electrodes with S7 standard connection, cable L=2m.

pH 471.5: SICRAM module for pH electrodes with S7 standard connection, cable L=5m.



ORP Electrodes (Inputs ① and ②)

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.

Characteristics and dimensions of the probes at page WA-76



HD40.1

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 electrode refilling.

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 complete with SICRAM module (Input \odot)

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

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

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

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

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

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

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

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

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

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

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

TP49AP.0: Thin film Pt100 sensor, penetration probe. Stem \varnothing 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 \varnothing 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 \varnothing 8 mm, length 1000 mm. Cable length 2 m.

Temperature probes complete with TP47 module (input \odot)

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

TP47.1000.0: Thin film Pt1000 sensor, immersion probe. Probe's Stem \varnothing 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 \varnothing 3mm, length 70mm. 4-wires connection cable with connector, length 1 m.

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



HD22.2