

- Conductivity, dissolved oxygen and temperature probes fitted with SICRAM module can store factory and calibration data inside.

The instruments HD2206.2 is a **datalogger**, it can memorize up to 2,000 samples of data. The data can be transferred from the instrument connected to a PC via the multi-standard RS232C serial port and USB 2.0. 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 HD2206.2

X - Ω - TDS - NaCl - °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
Storage 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 - ½AA
Accuracy	1min/month max drift

Measured values storing

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



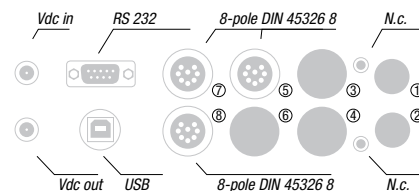
HD 2206.2 BENCH-TOP CONDUCTIVITY METER

The **HD2206.2** is a bench top instrument for electrochemical measures: **conductivity**, and **temperature**. It is fitted with a large backlighted LCD display.

The **HD2206.2** measures **conductivity**, **resistivity** in liquids, **total dissolved solids** (TDS), and **salinity** with combined 4-ring and 2-ring conductivity/temperature probes. The conductivity probes can have a direct input or with SICRAM module. The inputs are separate.

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 conductivity probe calibration can be performed automatically with automatically detected conductivity calibration solutions: 147µS/cm, 1413µS/cm, 12880µS/cm or 111800µS/cm or manually with calibration solutions having different values.



Calibration storage
Quantity Last 8 calibrations of each physical quantity

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 optional

Connections

Input for temperature probes with SICRAM module ⑤ 8-pole male DIN45326 connector
2/4 ring direct ③ conductivity input 8-pole male DIN45326 connector
Conductivity probe with SICRAM module input ⑦ 8-pole male DIN45326 connector
Serial interface DB9 connector (9- pole male)
USB interface USB connector type B
Bluetooth Optional
Mains adapter 2 -pole (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 conductivity by instrument

	Resolution
Measuring range (Kcell=0.01)	0.000...1.999µS/cm 0.001µS/cm
Measuring range (Kcell=0.1)	0.00...19.99µS/cm 0.01µS/cm
Measuring range (K cell=1)	0.0...199.9µS/cm 0.1µS/cm
	200...1999µS/cm 1µS/cm
	2.00...19.99mS/cm 0.01mS/cm
	20.0...199.9mS/cm 0.1mS/cm
	200...1999mS/cm 1mS/cm
Measuring range (Kcell=10)	200...1999mS/cm 1mS/cm
Accuracy (conductivity)	±0.5% ±1digit

Measurement of resistivity by instrument

Measuring range (Kcell=0.01)	Up to 1GΩ·cm (*)
Measuring range (Kcell=0.1)	Up to 100MΩ·cm (*)
Measuring range (K cell=1)	5.0...199.9Ω·cm 0.1Ω·cm
	200...999Ω·cm 1Ω·cm
	1.00k...19.99kΩ·cm 0.01kΩ·cm
	20.0k...99.9kΩ·cm 0.1kΩ·cm
	100k...999kΩ·cm 1kΩ·cm
	1...10MΩ·cm 1MΩ·cm
	0.5...5.0Ω·cm 0.1Ω·cm
Measuring range (Kcell=10)	0.5...5.0Ω·cm 0.1Ω·cm
Accuracy (resistivity)	±0.5% ±1digit

Measurement of total dissolved solids (with coefficient λ/TDS=0.5)

Measuring range (Kcell=0.01)	0.00...1.999mg/l 0.005mg/l
Measuring range (Kcell=0.1)	0.00...19.99mg/l 0.05mg/l
Measuring range (K cell=1)	0.0...199.9 mg/l 0.5 mg/l
	200...1999 mg/l 1 mg/l
	2.00...19.99 g/l 0.01 g/l
Measurement range (Kcell=10)	20.0...199.9 g/l 0.1 g/l
	100...999 g/l 1 g/l
Accuracy (total dissolved solids)	±0.5% ±1digit

Measurement of salinity

	Resolution
Measuring range	0.000...1.999g/l 1mg/l
	2.00...19.99g/l 10mg/l
	20.0...199.9 g/l 0.1 g/l
Accuracy (salinity)	±0.5% ±1digit

Automatic/manual temperature compensation

0...100°C with α_T = 0.00...4.00%/°C
Reference temperature 0...50°C
λ/TDS conversion factor 0.4...0.8
Cell constants K (cm⁻¹) already set on the instrument 0.01 - 0.1 - 0.5 - 0.7 - 1.0 - 10.0
Cell constants K(cm⁻¹) that can be set by user 0.01...20.00

Standard solutions automatically detected (@25°C)

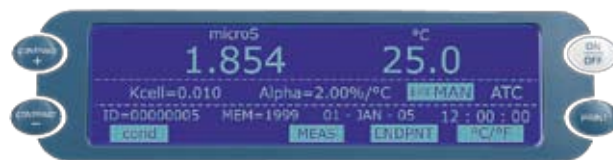
147µS/cm
1413µS/cm
12880µS/cm
111800µS/cm

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

(*) The resistivity measurement is obtained from the reciprocal of conductivity measurement. Close to the bottom of the scale, the indication of resistivity appears like reported in the table below:

K cell = 0.01 cm ⁻¹		K cell = 0.1 cm ⁻¹	
Conductivity (µS/cm)	Resistivity (MΩ·cm)	Conductivity (µS/cm)	Resistivity(MΩ·cm)
0.001 µS/cm	1000 MΩ·cm	0.01 µS/cm	100 MΩ·cm
0.002 µS/cm	500 MΩ·cm	0.02 µS/cm	50 MΩ·cm
0.003 µS/cm	333 MΩ·cm	0.03 µS/cm	33 MΩ·cm
0.004 µS/cm	250 MΩ·cm	0.04 µS/cm	25 MΩ·cm
...



λ



TDS

ORDERING CODES

HD2206.2: The kit is composed of: instrument HD2206.2 for the measurement of conductivity - resistivity - TDS - salinity - temperature, **datalogger**, stabilized power supply at mains voltage 100-240Vac/12Vdc-1A., instructions manual and software DeltaLog11.

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.

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 98 to Vista operating systems.

SWD10: Stabilized power supply at 230Vac/12Vdc-1A mains voltage.

HD40.1: Portable, serial input, 24 column thermal printer, 57mm paper width.

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 HD 2110 CSNM (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 \varnothing 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: Module for the connection of Pt100 4-wire and Pt1000 2-wire probes.

Conductivity probes and combined conductivity and temperature probes without SICRAM module (Input \odot)

SP06T: Combined conductivity and temperature 4-electrode cell in Platinum, body in Pocan. Cell constant $K = 0.7$. Measurement range $5\mu\text{S}/\text{cm} \dots 200\text{mS}/\text{cm}$, $0 \dots 90^\circ\text{C}$.

SPT401.001: Combined conductivity and temperature 2- electrode cell in stainless steel AISI 316. Cell constant $K = 0.01$. Measurement range $0.04\mu\text{S}/\text{cm} \dots 20\mu\text{S}/\text{cm}$, $0 \dots 120^\circ\text{C}$. Measurement in closed-cell.

SPT01G: Combined conductivity and temperature 2-electrode Platinum-wire cell, body in glass. Cell constant $K = 0.1$. Measurement range $0.1\mu\text{S}/\text{cm} \dots 500\mu\text{S}/\text{cm}$, $0 \dots 80^\circ\text{C}$.

SPT1G: Combined conductivity and temperature 2-electrode Platinum-wire cell, body in glass. Cell constant $K = 1$. Measurement range $10\mu\text{S}/\text{cm} \dots 10\text{mS}/\text{cm}$, $0 \dots 80^\circ\text{C}$.

SPT10G: Combined conductivity and temperature 2-electrode Platinum-wire cell, body in glass. Cell constant $K = 10$. Measurement range $500\mu\text{S}/\text{cm} \dots 200\text{mS}/\text{cm}$, $0 \dots 80^\circ\text{C}$.

Electrode dimensions and characteristics at page 402

Combined conductivity / temperature probes with SICRAM module (Input \odot)

SPT1GS: Combined conductivity /temperature 2-electrode Platinum- wire cell, body in glass with SICRAM module. Cell constant $K = 1$. Measuring range $10\mu\text{S}/\text{cm} \dots 10\text{mS}/\text{cm}$, $0 \dots 80^\circ\text{C}$.

Electrode dimensions and characteristics at page 402

Standard conductivity calibration solutions

HD8747: Standard calibration solution 0.001mol/l equal to $147\mu\text{S}/\text{cm}$ @ 25°C - 200cc.

HD8714: Standard calibration solution 0.01mol/l equal to $1413\mu\text{S}/\text{cm}$ @ 25°C - 200cc.

HD8712: Standard calibration solution 0.1mol/l equal to $12880\mu\text{S}/\text{cm}$ @ 25°C - 200cc.

HD87111: Standard calibration solution 1mol/l equal to $111800\mu\text{S}/\text{cm}$ @ 25°C - 200cc.

Temperature probes complete with SICRAM module (Input \odot)

TP87: Pt100 sensor immersion probe. Stem \varnothing 3 mm, length 70 mm. Cable length 1 m.

TP4721.0: Pt100 sensor immersion probe. Stem \varnothing 3 mm, length 230 mm. Cable length 2 m.

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

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

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

TP4721.5: Immersion probe, sensor Pt100. Stem \varnothing 6mm, length 500 mm. Cable length 2 m.

TP4721.10: Immersion probe, sensor Pt100. Stem \varnothing 6mm, length 1,000mm. Cable length 2 m.

Temperature probes complete with TP47 module (input \odot)

TP47.100: Direct 4 wires Pt100 sensor immersion probe. Probe's stem \varnothing 3mm, length 230mm. Connection cable 4 wires with connector, length 2 m.

TP47.1000: Pt1000 sensor immersion probe. Probe's stem \varnothing 3mm, length 230mm. Connection cable 2 wires with connector, length 2 m.

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

TP87.1000: Pt1000 sensor immersion probe. Probe's stem \varnothing 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.



HD40.1



HD22.3