Кондуктометры DELTA OHM HD2156.1, HD2156.2

Технические характеристики

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Единый адрес для всех регионов: dmh@nt-rt.ru || www.deltaohm.nt-rt.ru

HD2156.1 - HD2156.2

HD2156.1, HD2156.2
pH METER - CONDUCTIVITY METER - THERMOMETER

HD2156.1 and **HD2156.2** are portable instruments with LCD display. They measure **pH, mV, redox potential (ORP), conductivity, liquid resistivity, total dissolved solids (TDS) and salinity** using combined 4-ring and 2-ring conductivity/temperature probes. Temperature only is measured by Pt100 or Pt1000 immersion, penetration, contact or air probes.

The pH electrode calibration, as well as manual, can be carried out on one, two or three points and the calibration sequence can be chosen from a list of 13 buffers.
The calibration of the conductivity probe can be performed automatically in one or more of the 147 µS/cm, 1413 µS/cm, 12880 µS/cm or 111800 µS/cm solutions.

The HD2156.2 instrument is a **datalogger**. It stores up to 20,000 sets of three measurements composed of pH or mV, conductivity or resistivity or TDS or salinity and temperature: these data can be transferred to a PC from the instrument connected via the RS232C or USB 2.0 serial ports. The storing interval, printing, and baud rate can be configured by the menu.

Both models are fitted with an RS232C serial port and can transfer the acquired measurements to a PC or to a portable printer in real time.

The Max, Min and **Avg** function calculates the maximum, minimum or average values.
Other functions include: the relative measurement REL, the Auto-HOLD function, and the automatic turning off which can also be excluded.

The instruments have IP66 protection degree.

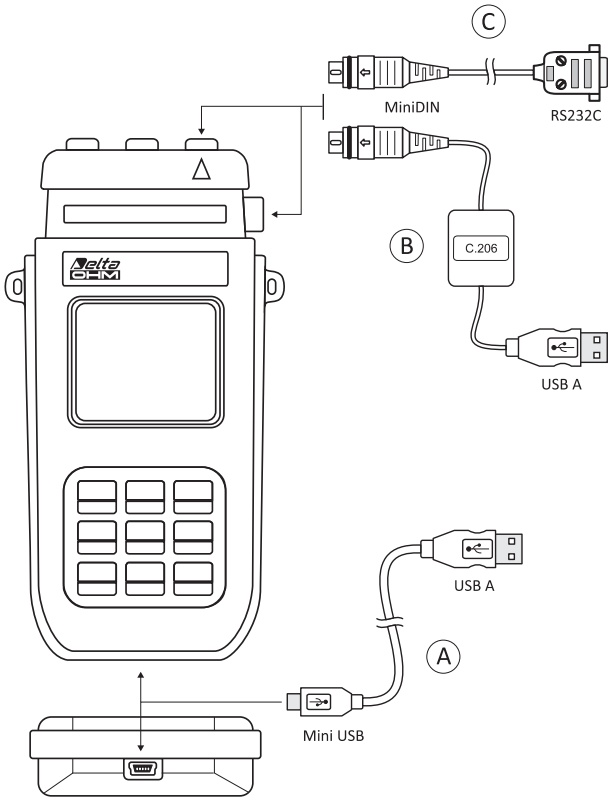
INSTRUMENT TECHNICAL CHARACTERISTICS		
Measured quantities	pH, mV, ℅, Ω, TDS, NaCl, °C, °F	
pH measurement by the instrument		
Measuring range	-2.00…+19.99 pH	
Resolution	0.01 pH	
Accuracy	±0.01 pH ±1digit	
Input impedance	$>10^{12}\Omega$	
Calibration error @25°C	|Offset| > 20mV Slope < 50 mV/pH or Slope > 63 mV/pH Sensitivity < 85% or Sensitivity > 106.5%	
Temperature compensation automatic/manual	-50...+150 °C	
mV measurement by the instrument		
Measuring range	-1999.9…+1999.9 mV	
Resolution	0.1 mV	
Accuracy	±0.6 mV or ±1% of the reading (the greater)	
Drift after 1 year	0.5 mV/year	
Measurement of conductivity		**Resolution**
Measuring range Kcell=0.01	0.0000…1.999 µS/cm	0.001 µS/cm
Measuring range Kcell=0.1	0.00…19.99 µS/cm	0.01 µS/cm
Measuring range Kcell=1	0.0…199.9 µS/cm	0.1 µS/cm
	200…1999 µS/cm	1 µS/cm
	2.00…19.99 mS/cm	0.01 mS/cm
	20.0…199.9 mS/cm	0.1 mS/cm
Measuring range Kcell=10	200…1999 mS/cm	1 mS/cm
Accuracy (conductivity)	±0.5%±1digit	
Measurement of resistivity		
Measuring range Kcell=0.01	till1GΩ·cm (*)	
Measuring range Kcell=0.1	till 100MΩ·cm (*)	
Measuring range Kcell=1	5.0…199.9 Ω·cm	0.1 Ω·cm
	200…999 Ω·cm	1 Ω·cm
	1.00 k…19.99 kΩ·cm	0.01 kΩ·cm
	20.0 k…99.9 kΩ·cm	0.1 kΩ·cm
	100 k…999 kΩ·cm	1 kΩ·cm
	1…10 MΩ·cm	1 MΩ·cm
Measuring range Kcell=10	0.5…5.0 Ω·cm	0.1 Ω·cm
Accuracy (resistivity)	±0.5%±1digit	
Measurement of total dissolved solids (with coefficient ℅/TDS=0.5		
Measuring range Kcell=0.01	0.000…19.999 mg/l	0.005 mg/l
Measuring range Kcell=0.1	0.00…19.99 mg/l	0.05 mg/l
Measuring range Kcell=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
	20.0…99.9 g/l	0.1 g/l
Measuring range Kcell=10	100…999 g/l	1 g/l
Accuracy (total dissolved solids)	±0.5% ±1digit	
Measurement of salinity		
Measurement range	0.000…1.999 g/l	1 mg/l
	2.00…19.99 g/l	10 mg/l
	20.0…199.9 g/l	0.1 g/l

Accuracy (salinity)	±0.5%±1digit
Measurement of temperature by instrument	
Pt100 measuring range	-50…+200 °C
Pt1000 measuring range	-50…+200 °C
Resolution	0.1°C
Accuracy	±0.25 °C
Drift after 1 year	0.1°C/year
Temperature compensation automatic/manual	0…100 °C with α_T selectable from 0.00 to 4.00%/ °C
Reference temperature	20 °C or 25 °C
χ / TDS conversion factor	0.4…0.8
Preset cell constant values: (cm^{-1})	K=0.01 K=0.1- K=0.7 - K=1 - K=10
Standard solutions automatically detected @25°C	147 µS/cm 1413 µS/cm 12880 µS/cm 111800 µS/cm
Power Supply	
Batteries	4 1.5V type AA batteries
Autonomy	200 hours with 1800 mAh alkaline batteries
Power absorbed with instrument off	20 µA
Mains (SWD10)	Output mains adapter 12 Vdc / 1A
Security of memorized data	Unlimited, independent of battery charge conditions
Measured values storage - model HD2156.2	
Type	2000 pages containing 10 samples each
Quantity	20.000 sets of measures composed of [pH or mV] [X or Ω or TDS or NaCl], [°C or °F] depending on configuration
Selectable storage interval	1, 5, 10, 15, 30 s 1, 2, 5, 10, 15, 20, 30 min 1 ora
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 lenght	Max 15m
Print interval	immediate or selectable between:: 1, 5, 10, 15, 30 s 1, 2, 5, 10, 15, 20, 30 min 1 hour
USB interface - model HD2156.2	
Type	1.1 - 2.0 electrically isolated
Connections	
pH/mV input	Female BNC connector
Conductivity input	8-pole male DIN45326 connector
Serial interface and USB	8-pole MiniUSB type B
USB interface	MiniUSB type B connector
Mains adapter	2-pole connector (positive at centre)

Time	
Date and time	schedule in real time
Accuracy	1 min/month max deviation
Operating conditions	
Working temperature	-5 … 50°C
Storage temperature	-25 … 65°C
Working relative humidity	0…90% RH without condensation
Protection degree	IP66
Instrument	
Dimensions (Length x Width x Height)	185 x 90 x 40 mm
Weight	470 g (complete with batteries)
Material	ABS, rubber
Display	2x4½ digits plus symbols Visible area: 52x42 mm

(*) 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:

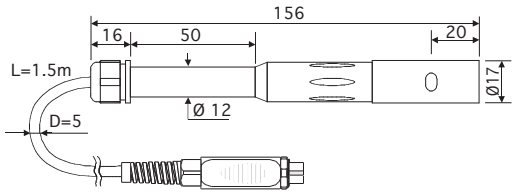
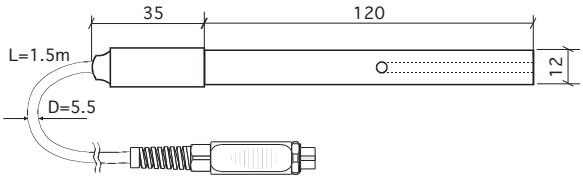
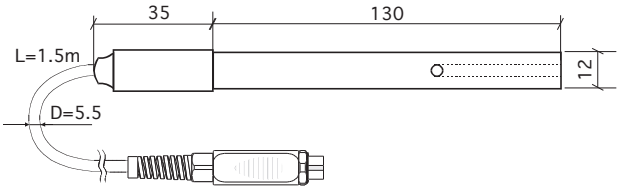
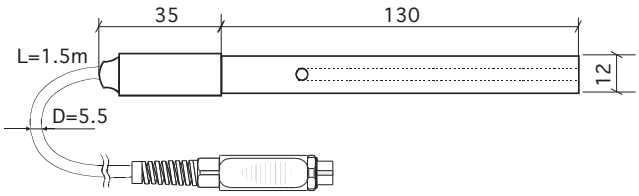
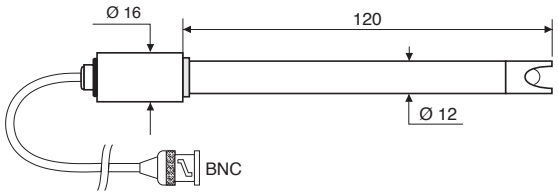
K cell = 0.01 cm^{-1}		K cell = 0.1 cm^{-1}	
Conductivity (µS/cm)	Resistivity (MΩ·cm)	Conductivity (µS/cm)	Resistivity (MΩ·cm)
0.001 µS/cm	1000 MΩ·cm	0.01 µS/cm	100 MΩ·cm
0.002 µS/cm	500 MΩ·cm	0.02 µS/cm	50 MΩ·cm
0.003 µS/cm	333 MΩ·cm	0.03 µS/cm	33 MΩ·cm
0.004 µS/cm	250 MΩ·cm	0.04 µS/cm	25 MΩ·cm



A In the **HD2156.2** models of portable data logger, a new serial port miniUSB type HID (Human Interface Device) has been implemented. When making the connection to the PC by the USB cable Type A - Mini USB B-type coded CP23, no USB driver installation is requested.

B For the connection of the models **HD2156.1** to the RS232 port of your PC, the C.206 USB/serial converter is available. The converter is equipped with its own drivers that have to be installed before connecting the converter to the PC.

C The port with the MiniDIN connector which is present on every model is an RS232C type. By means of the cable coded HD2110CSNM, an RS232 port of a PC or the HD40.1. printer can be connected.

CONDUCTIVITY PROBES		
ORDER CODE	MEASUREMENT RANGE	DIMENSIONS
SP06T	K=0.7 5 µS/cm …100 mS/cm 0…90 °C 4-electrode cell in PBT/Platinum General use No heavy tasks Max pressure 5 bar	
SPT01G	K=0.1 0.1 µS/cm …500 µS/cm 0…80 °C 2-electrode cell in Glass/Platinum Pure water Max pressure 5 bar	
SPT1G	K=1 10 µS/cm …10 mS/cm 0…80 °C 2-electrode cell in Glass/Platinum General heavy tasks, average conductivity Max pressure 5 bar	
SPT10G	K=10 500 µS/cm …200 mS/cm 0…80 °C 2-electrode cell in Glass/Platinum General heavy tasks, high conductivity Max pressure 5 bar	
PH ELECTRODES		
KP30	0…14 pH / 0…80 °C / 2 bar Body in Epoxy - GEL filled 1 ceramic diaphragm Cable L=1 m with BNC Waste water, drinking water, water emulsions , galvanic baths, paints, varnishes, water suspensions, fruit juices, titration.	

ORDERING CODES

HD2156.1: The kit is composed by the instrument HD2156.1, 4 1.5V alkaline batteries, operating manual, case and DeltaLog9 software downloadable from Delta OHM website.

HD2156.2: The kit is is composed by the instrument HD2156.2 **data logger**, 4 1.5V alkaline batteries, USB cable CP23, operating manual, case and DeltaLog9 software downloadable from Delta OHM website.

pH/mV electrodes, conductivity probes, temperature probes, standard reference solutions, connection cables have to be ordered separately.

Accessories

HD2110CSNM: 8-pole connection cable MiniDin - Sub D 9-pole female for RS232C.

C.206: Cable for instruments of the series HD21...1 for direct connection to the USB input of a PC.

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

HD40.1: The kit includes: 24-columm portable thermal printer, serial interface RS232, 57mm paper width, four NiMh 1.2V rechargeable batteries, SWD10 power supply, instruction manual, 5 thermal paper rolls. It uses the optional cable HD2110 CSNM.

HD8600C: ACCREDIA ISO 17025 certified buffer solutions kit: pH 4.01+ pH 7.00 + pH 10.01. Two 50 ml bottles for each type (6 bottles in total).

HD8700C: ACCREDIA ISO 17025 certified standard solutions kit: 0.001mol/l (147 µS/cm @ 25 °C) + 0.01mol/l (1413 µS/cm @ 25 °C) + 0.1mol/l (12880 µS/cm @ 25 °C).
Two 50 ml bottles for each type (6 bottles in total).

HD22.2: Laboratory electrode holder composed of base plate with built-in magnetic stirrer, shaft and replaceable electrode hold-er. Suitable diameter 12mm. It holds up to 5 electrodes at the same time. Powered by power supplier SWD10 (**optional**).

HD22.3: Laboratory electrode holder composed of base plate. Flexible arm for free positioning. Suitable for electrodes with diameter 12mm. It holds up to 5 electrodes at the same time.

pH Electrodes

KP30: Gel pH combined electrode for general use, 1m cable with BNC, EPOXY body .

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

BNC: female BNC for extension cable

Conductivity Probes

SP06T: Conductivity and temperature combined probe. Cell constant 0.7.

SPT01G: Conductivity and temperature combined probe, glass body, 2 platinum wire electrodes, cell constant 0.1.

SPT1G: Conductivity and temperature combined probe, glass body, 2 platinum wire electrodes, cell constant 1.

SPT10G: Conductivity and temperature combined probe, glass body, 2 platinum wire electrodes, cell constant 10.

Temperature probes of the series TP87 and TP47... are suitable.

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