О симетры–термометры ста ионарные DELTA OHM HD3456.2

Технические характеристики

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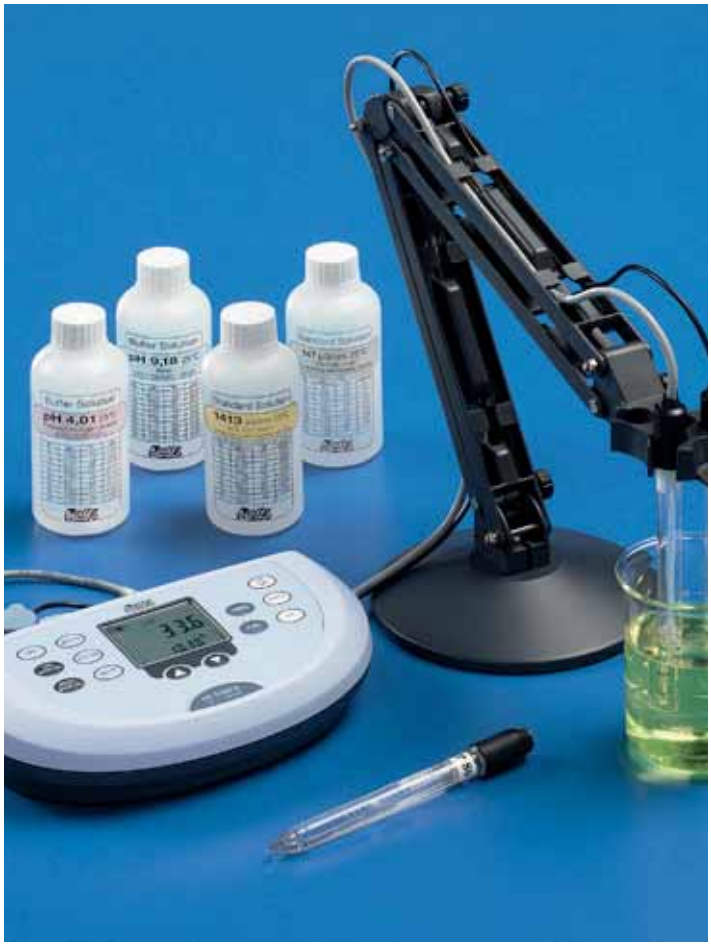
HD3456.2



HD3456.2
BENCH-TOP pH AND CONDUCTIVITY METER

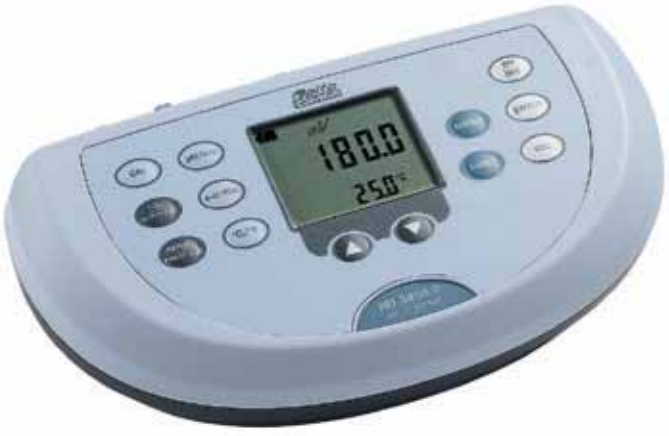
The **HD3456.2** is a bench top instrument for electrochemical measures: **pH**, **conductivity and temperature**.
The displayed data can be stored **(datalogger)** and can be transferred to PC or serial printer thanks to the multi-standard serial port RS232C and USB2.0 and software DeltaLog9 (Vers.2.0 and subsequent ones). The storing and printing parameters can be set from menu.

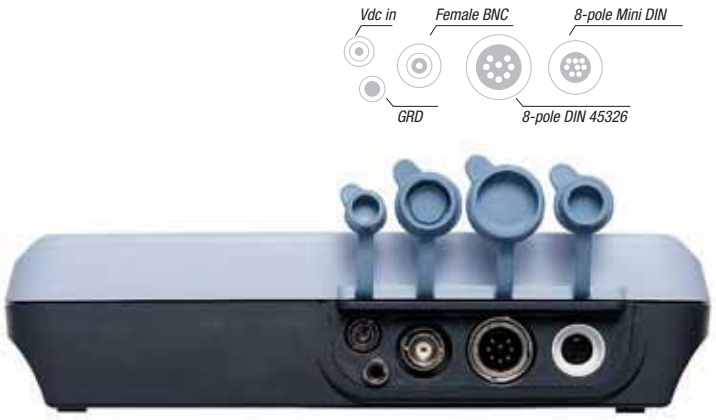
The **HD3456.2** measures **pH**, **mV**, **redox potential** (ORP), **conductivity**, **resistivity in liquids**, **total dissolved solids** (TDS), and **salinity** using combined 4-ring and 2-ring conductivity/ temperature probes. **Temperature** is measured by Pt100 or Pt1000 immersion, penetration or contact probes.
The pH electrode calibration, as well as manual, can be carried out automatically on one, two or three points and the calibration sequence can be chosen from a list of 13 buffers.
The conductivity probe calibration can be performed automatically in one or more of the 147µS, 1413µS, 12880µS or 111800µS/cm conductivity calibration solutions.

The display shows continually the temperature in °C or °F and one selectable parameter according to the connected probe type. Printing and storing data always include temperature in °C or °F and one selectable parameter for every kind of probe: i.e. in case of conductivity probe it is possible to select between χ or Ω or TDS or g/l.
Other functions of this instrument include: Max, Min and Avg function, the Auto-HOLD function, the automatic turning off which can also be disabled.
The instruments have IP66 protection degree.

Technical characteristics HD3456.2
pH, mV, χ, Ω, TDS, Sal, °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 10 samples each
Quantity	20,000 terns of measures made up of [pH or mV], [χ or Ω or TDS or salinity] and temperature.
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 drift
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 1ora
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





Connections

pH/mV input	Female BNC connector
Conductivity input	8-pole male DIN45326 connector
Input for temperature probes	8-pole male DIN45326 connector

Measurement of pH by Instrument

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

Measurement of mV by Instrument

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

Standard solutions automatically detected (@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 conductivity by Instrument		*Resolution*
Measurement range (Kcell=0.01)	0.000…1.999µS/cm	0.001µS/cm
Measurement range (Kcell=0.1)	0.00…19.99µS/cm	0.01µS/cm
Measurement range (Kcell=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
Measurement range (Kcell=10)	200…1999mS/cm	1mS/cm
Accuracy (conductivity)	±0.5% ±1digit	

Measurement of resistivity by Instrument		*Resolution*
Measurement range (Kcell=0.01)	Up to 1GΩ·cm	(*)
Measurement range (Kcell=0.1)	Up to 100MΩcm	(*)
Measurement range (Kcell=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
Measurement range (Kcell=10)	0.5…5.0ΩΩ·cm	0.1Ω·cm
Accuracy (resistivity)	±0.5% ±1digit	

Measurement of total dissolved solids (with coefficient χ/TDS=0.5)		
Measurement range (Kcell=0.01)	0.00…1.999mg/l	0.005mg/l
Measurement range (Kcell=0.1)	0.00…19.99mg/l	0.05mg/l
Measurement 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
Measurement range (Kcell=10)	100…999 g/l	1 g/l
Accuracy (total dissolved solids)	±0.5% ±1digit	

Measurement of salinity		
Measurement range	0.000…1.999g/l	1mg/l
	2.00…19.99g/l	10mg/l
	20.0…199.9g/l	0.1g/l
Accuracy (salinity)	±0.5% ±1digit	

Automatic/manual temperature compensation

0…100°C with α_T that can be selected from 0.00 to 4.00%/°C

Reference temperature	20°C o 25°C selectable from menu
χ/TDS conversion factor	0.4…0.8
Cell constant K (cm^{-1})	0.01 - 0.1 - 0.7 - 1.0 - 10.0

Standard solutions automatically detected (@25°C)

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

Measurement of temperature by Instrument

Pt100 measurement range	-50…+200°C
Pt1000 measurement range	-50…+200°C
Resolution	0.1°C
Accuracy	±0.25°C
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

ORDERING CODES

HD3456.2: The kit is composed of: instrument HD3456.2 **datalogger**, for the measurement of pH - redox - conductivity - resistivity - TDS - salinity - temperature, 3 1.5V alkaline batteries, operating manual and **DeltaLog9 version 2.0**.

pH/mV electrodes, conductivity 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

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 230Vac/9Vdc-300mA 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: Connector for Pt100 4-wire and Pt1000 2-wire probes without SICRAM module.

pH

χ

Ω

TDS

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.

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.
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.

ORP Electrodes

KP90: Redox Platinum electrode, with screw connector S7, electrolyte KCl 3M, body in glass.
KP91: Redox Platinum electrode with 1m cable, GEL fi lled, body in glass.

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.

Combined conductivity and temperature probes

SP06T: Combined conductivity and temperature 4-electrode cell in Platinum, body in Pocan. Cell constant K = 0.7. Measurement range 5µS/cm …200mS/cm, 0…90°C. max. pressure 5bar.
SPT401.001: Combined conductivity and temperature 2- electrode cell in stainless steel AISI 316. Cell constant K = 0.01. Measurement range 0.04µS/cm …20µS/cm, 0…120°C. **Measurement in closed-cell**. Max. pressure 5bar.
SPT01G: Combined conductivity and temperature 2-electrode Platinum-wire cell, body in glass. Cell constant K = 0.1. Measurement range 0.1µS/cm …500µS/cm, 0…80°C. Max. pressure 5bar.
SPT1G: Combined conductivity and temperature 2-electrode Platinum-wire cell, body in glass. Cell constant K = 1. Measurement range 10µS/cm …10mS/cm, 0…80°C. Max. pressure 5bar.
SPT10G: Combined conductivity and temperature 2-electrode Platinum-wire cell, body in glass. Cell constant K = 10. Measurement range 500µS/cm …200mS/cm, 0…80°C. Max. pressure 5bar.

Standard conductivity calibration solutions

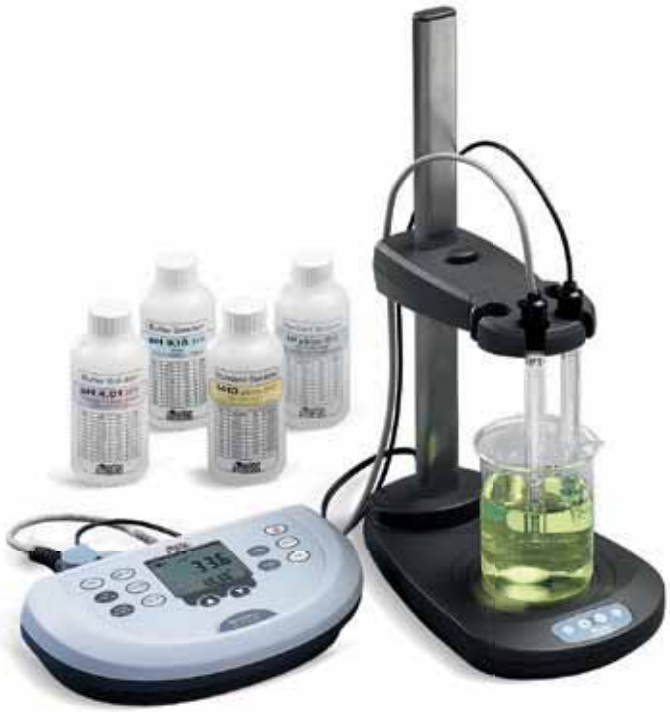
HD8747: Standard calibration solution 0.001mol/l equal to 147µS/cm @25°C - 200cc.
HD8714: Standard calibration solution 0.01mol/l equal to 1413µS/cm @25°C - 200cc.
HD8712: Standard calibration solution 0.1mol/l equal to 12880µS/cm @25°C - 200cc.
HD87111: Standard calibration solution 1mol/l equal to 111800µS/cm @25°C - 200cc.

Temperature probes complete 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 complete with TP47 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.



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