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DO-060.91E

BENCH TOP INSTRUMENTS DELTA OHM

HD3405.2, HD3406.2, HD3409.2, HD3456.2 Electrochemical measurements

The instrument series HD34... is made up of 4 bench top instruments for electrochemical measures: **pH, conductivity, dissolved oxygen, and temperature.**

The displayed data can be stored (**datalogger**) and can be transferred to PC or serial printer thanks to the multistandard serial ports 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 **HD3406.2** measures **conductivity, liquid 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 probe calibration can be performed automatically in one or more of the 147[S, 1413[S, 12880[S or 111800[S/cm conductivity calibration solutions.

The **HD3409.2** measures the **concentration (in mg/l) of dissolved Oxygen in liquids**, the **saturation index (in %)** and the **temperature** using SICRAM combined probes of polarographic type with two or three electrodes and integrated temperature sensor. **Temperature** is measured by Pt100-SICRAM or direct 4 wire-immersion, penetration or contact probes. Thanks to an internal pressure sensor, the instruments automatically compensate for barometric pressure. The instrument anticipates automatic compensation of the Oxygen probe membrane permeability and of the salinity of the liquid being examined. The dissolved Oxygen probe's quick calibration function guarantees timely correctness of the performed measurements.

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 on one, two or three points and the calibration sequence can be chosen from a list of 13 buffers.

The probe calibration can be performed automatically in one or more of the 147[S, 1413[S, 12880[S or 111800[S/cm conductivity calibration solutions.

The display shows continually the temperature in °C or °F and one selectable parameter according to the connected probe type, i.e. in case of conductivity probe it is possible to select between σ or κ or TDS or g/l.

Other common function of this instrument series 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 of the instrument series HD34...

Common technical data

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

Stocking 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

Selectable storage interval

1s, 5s, 10s, 15s, 30s, 1m, 2m, 5m, 10m, 15m, 20m, 30m y 1h

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

Interface USB

Type 1.1 - 2.0 electrically isolated

Common connections to all models

Serial interface and USB 8-pole MiniDin connector

Mains adapter (cod. SWD10) 2-pole connector (positive at centre) 12Vdc/1A

EMC Standard regulations

Security EN61000-4-2, EN61010-1 level 3

Electrostatic discharge EN61000-4-2 level 3

Electric fast transients EN61000-4-4 level 3,
EN61000-4-5 level 3

Voltage variations EN61000-4-11

Electromagnetic interference susceptibility IEC1000-4-3

Electromagnetic interference emission EN55020 class B

Technical characteristics HD3405.2 : pH - mV - °C - °F measurement

Measured values

pH - mV - °C - °F

Storage of measured values

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

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 $\pm 0.001\text{pH} \pm 1\text{digit}$
Input impedance $> 1012\Omega$
Calibration error @25°C [Offset]
> 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 $\pm 0.1\text{mV} \pm 1\text{digit}$
Drift after 1 year 0.5mV/year

Temperature Measurement

Pt100 measurement range -200...+650°C
Pt1000 measurement range -200...+650°C
Ni1000 measurement range -50...+250°C
Resolution 0.1°C
Accuracy $\pm 0.1^\circ\text{C} \pm 1\text{digit}$
Drift after 1 year 0.1°C/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

Technical characteristics HD3406.2 : X - Ω - TDS - ClNa - °C - °F measurement

Measured values

X - Ω - TDS - NaCl - °C - °F

Storage of measured values

Type 2000 pages of 18 samples each
Quantity 36,000 sets of measures made up of [X - Ω or TDS or NaCl] and [°C - °F]

Temperature probe input with SICRAM module or TP47 module 8-pole male DIN45326 connector
Input conductivity 8-pole male DIN45326 connector

Measurement of conductivity by instrument

Measurement range (Kcell=0.01) / Res.
0.000...1.999μS/cm / 0.001μS/cm
Measurement range (Kcell=0.1) / Res.
0.00...19.99μS/cm / 0.01μS/cm
Measurement range (Kcell=1) / Res.
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
Range di misura (Kcell=10) / Res.
200...1999mS/cm / 1mS/cm

Accuracy (conductivity) $\pm 0.5\% \pm 1\text{digit}$

Measurement of resistivity by instrument

Measurement range (Kcell=0.01) / Res.
Up to 1GΩ.cm / (*)
Measurement range (Kcell=0.1) / Res.
Up to 100MΩ.cm / (*)
Measurement range (Kcell=1) / Res.
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) / Res.
0.5...5.0Ω.cm / 0.1Ω.cm
Accuracy (resistivity) $\pm 0.5\% \pm 1\text{digit}$

Measurement of total dissolved solids (with coefficient $\chi/\text{TDS}=0.5$)

Measurement range (Kcell=0.01) / Res.
0.00...1.999mg/l / 0.005mg/l
Measurement range (Kcell=0.1) / Res.
0.00...19.99mg/l / 0.05mg/l
Measurement range (Kcell=1) / Res.
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) / Res.
100...999 g/l / 1 g/l

Accuracy (total dissolved solids) $\pm 0.5\% \pm 1\text{digit}$

Measurement of salinity

Measurement range / Resolution
0.000...1.999g/l / 1mg/l
2.00...19.99g/l / 10mg/l
20.0...199.9g/l / 0.1g/l
Accuracy (salinity) $\pm 0.5\% \pm 1\text{digit}$

Temperature Measurement

Pt100 measurement range -200...+650°C
Pt1000 measurement range -200...+650°C
Ni1000 measurement range -50...+250°C
Resolution 0.1°C
Accuracy $\pm 0.1^\circ\text{C} \pm 1\text{digit}$
Drift after 1 year 0.1°C/year

Automatic/manual temperature compensation

0...100°C with $\alpha T = 0.00...4.00\%/^\circ\text{C}$

Reference temperature

20°C or 25°C selectable from menu

Conversion factor χ/TDS

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

(*) 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:

Conductivity ($\mu\text{S/cm}$)	Resistivity ($\text{M}\Omega\text{cm}$)
0.001 $\mu\text{S/cm}$ 1000 $\text{M}\Omega\text{cm}$	0.01 $\mu\text{S/cm}$ 100 $\text{M}\Omega\text{cm}$
0.002 $\mu\text{S/cm}$ 500 $\text{M}\Omega\text{cm}$	0.02 $\mu\text{S/cm}$ 50 $\text{M}\Omega\text{cm}$
0.003 $\mu\text{S/cm}$ 333 $\text{M}\Omega\text{cm}$	0.03 $\mu\text{S/cm}$ 33 $\text{M}\Omega\text{cm}$
0.004 $\mu\text{S/cm}$ 250 $\text{M}\Omega\text{cm}$	0.04 $\mu\text{S/cm}$ 25 $\text{M}\Omega\text{cm}$

Technical characteristics HD3409.2 : mg / l O₂ - % O₂ – mbar - °C - °F measurement



Measured values

mg / l O₂ - % O₂ – mbar - °C - °F

Power absorbed with instrument off

Without dissolved oxygen probe 20 μA
With dissolved oxygen probe 40 μA

Storage of the measured values

Type 2000 pages of 9 samples each
Quantity 18,000 measures made up of the four parameters mg/l O₂, - %O₂, -mbar -[°C or °F]

Measurement connections

Input for Oxygen probes 8-pole male DIN45326 connector
Input for temperature probes with SICRAM module or TP47 module

8-pole male DIN45326 connector

Measurement of the concentration of dissolved Oxygen

Measurement range 0.00...90.00mg/l
Resolution 0.01mg/l
Accuracy $\pm 0.03\text{mg/l} \pm 1\text{digit}$
60...110%, 1013mbar, 20...25°C)

Measurement of the saturation index of dissolved Oxygen

Measurement range 0.0...600.0%
Resolution 0.1%
Accuracy $\pm 0.3\% \pm 1\text{digit}$ (in the range .
0...199.9%)
 $\pm 1\% \pm 1\text{digit}$ (in the range
00.0...600.0%)

Automatic/manual temperature compensation

0...50°C

Measurement of barometric pressure

Measurement range 0.0...1100.0mbar
Resolution 0.1mbar
Accuracy $\pm 2\text{mbar} \pm 1\text{digit}$ between 18 and 25°C
 $\pm (2\text{mbar} + 0.1\text{mbar}/^\circ\text{C})$ in the remaining range

Salinity setting

Setting range 0.0...70.0g/l
Resolution 0.1g/l

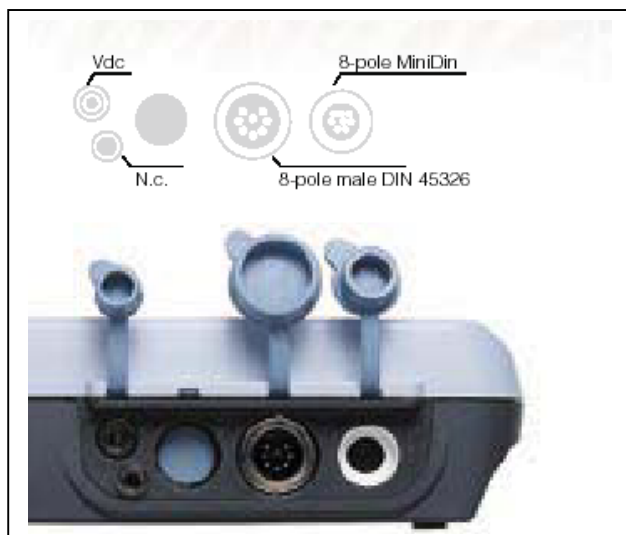
Temperature measurement with the sensor inside the dissolved Oxygen probe

Measurement range 0.0...+45.0°C
Resolution 0.1°C
Accuracy $\pm 0.1^\circ\text{C}$
Drift after 1 year 0.1°C/year

Temperature measurement by Instrument with Pt100 probe

Pt100 Measurement range -200...+650°C
Resolution 0.1°C
Accuracy $\pm 0.1^\circ\text{C}$
Drift after 1 year 0.1°C/year

Technical characteristics HD3456.2: pH - mV - X – Ω - TDS - ClNa - °C - °F measurement



Measured values

pH – mV - X – Ω - TDS - NaCl - °C - °F

Storage of measured values

Type 2000 pages of 10 samples each
Quantity 20,000 terms of measures made up of [pH or mV], [X or Ω or TDS or salinity] and temperature.

Connections

pH/mV input Female BNC connector
Conductivity input 8-pole male DIN45326 connector
Input for temperature probes with TP47 module 8-pole male DIN45326 connector

Measurement of pH by Instrument

Measurement range -2.000...+19.999pH
Resolution 0.01 or 0.001pH selectable from menu
Accuracy ±0.001pH ±1digit
Input impedance >1012Ω
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

Measurement of conductivity by Instrument

Measurement range (Kcell=0.01) / Res. 0.000...1.999μS/cm / 0.001μS/cm
Measurement range (Kcell=0.1) / Res. 0.00...19.99μS/cm / 0.01μS/cm
Measurement range (Kcell=1) / Res. 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) / Res. 200...1999mS/cm / 1mS/cm

Accuracy (conductivity) ±0.5% ±1digit

Measurement of resistivity by instrument

Measurement range (Kcell=0.01) / Res. Up to 1GΩ.cm / (*)

Measurement range (Kcell=0.1) / Res. Up to 100MΩ.cm / (*)

Measurement range (Kcell=1) / Res. 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) / Res. 0.5...5.0Ω.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) / Res. 0.00...1.999mg/l / 0.005mg/l

Measurement range (Kcell=0.1) / Res. 0.00...19.99mg/l / 0.05mg/l

Measurement range (Kcell=1) / Res. 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) / Res. 100...999 g/l / 1 g/l

Accuracy (total dissolved solids) ±0.5% ±1digit

Measurement of salinity

Measurement range / Resolution 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 αT = 0.00...4.00%/°C

Reference temperature 20°C or 25°C selectable from menu

Conversion factor χ/TDS 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:

Conductivity (μS/cm)	Resistivity (MΩcm)
0.001 μS/cm	1000 MΩcm
0.002 μS/cm	500 MΩcm
0.003 μS/cm	333 MΩcm
0.004 μS/cm	250 MΩcm
0.01 μS/cm	100 MΩcm
0.02 μS/cm	50 MΩcm
0.03 μS/cm	33 MΩcm
0.04 μS/cm	25 MΩcm



Technical characteristics	HD 3405.2	HD 3406.2	HD 3409.2	HD 3456.2
Dimensions (L x W x H)	220 x 120 x 55 mm			
Weight	460 g (complete with batteries)			
Materials	ABS, Ruber			
Display	2 x 4 ½ characters and symbols. Viewable area 52 x 42 mm			
Operating Conditions	5 to 50 ° C and between 0 and 90% non-condensing Humidity			
Protection	IP 66			
Power	3 x 1.5 V AA - Adapter 12VDC / 1A (SWD 10)			
Storage interval	1s, 5s, 10s, 15s, 30s, 1min, 2 min, 5 min, 10 min, 15 min, 20 min, 30 min and 1 hour			
Measured values storing	instant or 1s, 5s, 10s, 15s, 30s, 1min, 2 min, 5 min, 10 min, 15 min, 20 min, 30 min and 1 hour			
Interface	RS232C and USB2.0 electrically isolated			
Measured values	pH, mV, °C, °F	X _p , Ω, TDS, Cl Na, °C, °F	mg / l O ₂ , % O ₂ , mbar, °C, °F	pH, mV, X _p , Ω, TDS, Cl Na, °C, °F
Storage Capacity	34.000 readings (pH or mV) – (°C or °F)	36.000 readings (X _p or Ω or TDS or ClNa) – (°C or °F)	18.000 readings mg/ l O ₂ – O ₂ – mbar – (°C or °F)	20.000 readings (pH o mV) – (X _p or Ω or TDS or ClNa) – (°C or °F)
Measuring range	-2,000 to 19,999 pH -1999,9 to 1999,9 mV -200 to 650 °C	0,0 to 199,9 mS/ cm 5,0Ω to 10MΩcm TDS = 0,0 to 99,9 g/ l ClNa = 0,00 to 199,9 g/ l (*) -50 to 200 °C	0,00 to 90,00 mg/ l 0,0 to 600,0% 0,0 to 1100,0 mbar 0,0 to 45 °C(sonda O ₂) -200 to 650 °C (Pt100)	-2,000 to 19,999 pH -1999,9 to 1999,9 mV 0,0 to 199,9 mS/ cm 5,0Ω to 10MΩcm TDS = 0,0 to 99,9 g/ l ClNa = 0,00 to 199,9 g/ l (*) -50 to 200 °C
Maximum resolution	0,01 pH – 0,001 pH 0,1 mV 0,1 °C	0,1 μS/ cm 0,1 Ωcm TDS = 0,5 mg/ l ClNa = 1 mg/ l (*) 0,1 °C	0,01 mg/ l 0,1 % 0,1 mbar 0,1 °C	0,01 pH – 0,001 pH 0,1 mV 0,1 μS/ cm 0,1 Ωcm TDS = 0,5 mg/ l ClNa = 1 mg/ l (*) 0,1 °C
Accuracy Instrument	±0,00 pH ± 1 digit	±0,5% ± 1 digit para X _p , Ω, TDS, Cl Na	±0,03 mg/ l ± 1 digit	±0,00 pH ± 1 digit
	±0,1 mV ± 1 digit		±0,3%±1 dig (0a 199,9) ±1%±1 dig(200 a 600)	±0,1 mV ± 1 digit
	±0,1 °C ± 1 digit		±2mbar±1 dig(18 a 25°) ±2mbar±0,1mbar/°C ±0,1 °C ± 1 digit	±0,5% ± 1 digit para X _p , Ω, TDS, Cl Na ±0,1 °C ± 1 digit
Cell constant K (cm ⁻¹)	--	0,01 – 0,1 – 0,7 1,0 – 10,0	--	0,01 – 0,1 – 0,7 1,0 – 10,0
Temperature compensation	pH= -50 to 150 °C	Conductividad 0 to 100 °C	O ₂ = 0 to 50 °C	pH= -50 to 150 °C Conductivity 0 to 100 °C
Conversión factor X/ TDS		0,4 to 0,8		0,4 to 0,8
Standard solutions automatically detected	1,679 pH/2,000pH 4,000pH/4,008pH 4,010pH/6,860pH 6,865pH/7,000pH 7,413pH/7,648pH 9,180pH/9,210pH 10,010pH	147 μS/cm 1413 μS/cm 12880 μS/cm 111800 μS/cm	--	1,679 pH/2,000pH 4,000pH/4,008pH 4,010pH/6,860pH 6,865pH/7,000pH 7,413pH/7,648pH 9,180pH/9,210pH 10,010pH 147 μS/cm 1413 μS/cm 12880 μS/cm 111800 μS/cm

(*)The ranges of measurement and resolution of this table refer to a cell constant K = 1 and a conversion factor X/ TDS = 0,5. For securities other than those listed, please consult the instruction manual..

Ordering codes for instrument series HD34...

HD3405.2K: The kit is composed of: instrument HD3405.2 **data logger**, for measurement of pH - redox - temperature, 3 1.5V alkaline batteries, operating manual and DeltaLog9 version 2.0.

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.

Common accessories for instruments series HD22...

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 XP operating systems.

SWD10: Stabilized power supply at 230Vac/9Vdc-300mA mains voltage.

S'print-BT: Portable, serial input, 24 column thermal printer, 58mm paper width.

HD2110CSP: Connection cable for instruments series HD34...to printer **S'print-BT**

HD22.2: Laboratory electrode holder composed of basis plate with incorporated magnetic stirrer, staff and replaceable electrode holder. Height max. 380mm.

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: Module for the connection of Pt100 4-wire and Pt1000 2-wire probes to instrument series HD22..., without amplifying electronics and linearization.

Accessories for instrument series HD3405.2 and HD3456.2 with input for pH measurement

pH electrodes

KP20: Combined pH electrode for general use, gel filled with screw connector S7 body in Epoxy.

KP30: Combined pH electrode for general use, cable 1 m, gel filled, body in Epoxy.

KP50: Combined pH electrode with Teflon collar diaphragm, for emulsions, deionised water, S7 screw connector, gel filled, body in glass.

KP 61: Combined pH electrode, 3 diaphragms for milk, cream, etc. Liquid reference filling, with screw connector S7, body in glass.

KP 62: Combined pH electrode, 1 diaphragm for pure water, paints, etc. gel-filled, with screw connector S7, body in glass.

KP 63: Combined pH electrode for general use, varnish, cable 1 m, electrolyte KCl 3M body in glass.

KP 64: Combined pH electrode for water, varnish, emulsions, etc., electrolyte KCl 3M with screw connector S7, body in glass.

KP 70: Combined pH micro electrode diam. 4.5 x L=25 mm. Gel filled, with screw connector, body in glass.

KP 80: Combined pointed pH electrode, gel filled, with screw connector S7, body in glass.

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.

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 filled, 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: 50cc ready for use solution for refilling of the electrodes.

Cleaning and maintenance

HD62PT: Diaphragm cleaning (thiourea in HCl) - 500ml.

HD62PP: Protein cleaning (pepsin in HCl) - 500ml.

HD62RF: Regeneration (fluorhydric acid) - 100ml.

HD62SC: Solution for electrode preservation - 500ml.

Accessories for instruments HD3406.2 and HD3456.2 with input for conductivity

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.

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..

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.

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.

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.

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 for HD3406.2 and HD3456.2 complete with TP47 module

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

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

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

TP87.1000: Pt1000 sensor immersion probe. Probe's stem Ø 3mm, length 70mm. 2 wire connection cable with connector, length 1 metre..

Common Accessories for instruments of the series HD34...

TP47: Module for the connection of Pt100 4-wire and Pt1000 2-wire probes to instrument series HD34..., without amplifying electronics and linearization.