

HD 98569

- ▶ [GB]
pH - Conductivity
Dissolved Oxygen - Temperature



The HD 98569

is a portable multi-parameter data logger for electrochemical measures: **pH, conductivity, dissolved oxygen** and **temperature**. It is fitted with a large back-lighted LCD display.

The instrument measures:

- **pH, mV, redox potential (ORP)** with pH, redox or combined pH/temperature electrodes **complete with SICRAM module**;
- **conductivity, resistivity** in liquids, **total dissolved solids (TDS)**, and **salinity** with combined 4-ring and 2-ring conductivity and temperature probes **with SICRAM module**.
- **Concentration of dissolved oxygen** in liquids (in mg/l), **saturation index** (in %) **using SICRAM combined probes** of polarographic type with two or three electrodes and integrated temperature sensor.

The instrument is fitted with input for the measurement of **temperature** with Pt100 immersion, penetration or contact probes with SICRAM module.

- The pH electrode calibration can be carried out on one or five points and the calibration sequence can be chosen from a list of 8 buffers. Temperature compensation can be automatic or manual.
- The conductivity probe calibration can be performed with automatically detected conductivity calibration solutions: 147 μ S/cm, 1413 μ S/cm, 12880 μ S/cm, 111800 μ S/cm or manually with calibration solutions having different values.
- The dissolved oxygen probe's quick calibration function guarantees long-term correctness of the performed measurements.
- pH, conductivity dissolved oxygen and temperature probes fitted with SICRAM module can store factory and calibration data inside.

The HD 98569 is a **data logger**, it memorizes up to 200 single screens (labels) and up to 9000 samples in continuous storage mode: pH or mV, conductivity or resistivity or TDS or salinity, concentration of dissolved oxygen and saturation index and temperature.

The data can be transferred from the instrument connected to a PC via the multi-standard RS232C serial port and USB 2.0-1.1.

The instruments equipped with **HD22BT** Bluetooth option can transfer the data without any connection to a PC fitted with USB/Bluetooth converter HD USBKL1, or to the printer *S'print-BT* with Bluetooth interface or to a PC with Bluetooth input.

The serial connection RS232C can be used for direct printing of labels with a 24 column printer (*S'print-BT*).

The software **DeltaLog11** (vers. 2.0 and subsequent ones) allows instrument management and configuration, and data processing on PC.

Technical characteristics of HD 98569

Measured values

pH - mV
 χ - Ω - TDS - NaCl
 mg/l O₂ - %O₂
 °C - °F

Instrument

Dimensions (Length x Width x Height)	250x100x50mm
Weight	640g (complete with batteries)
Materials	ABS, rubber
Display	Graphic, back lighted LCD, 56x38mm. 128x64 points

Operating conditions

Working temperature	-5 ... 50°C
Storing temperature	-25 ... 65°C
Working relative humidity	0 ... 90% RH without condensate

Protection degree

IP66

Power

Batteries	4 batteries 1.5V type AA
Autonomy (with probes connected)	25 hours with 1800mAh alkaline batteries
Mains (cod. SWD10)	12Vdc/1A (positive at centre)

Security of memorized data

Unlimited

Time

Date and hour	Schedule in real time
Accuracy	1min/month max. departure

Continuous storage (LOG key)

Quantity	9000 samples of the three inputs
Type	organised in 1800 pages containing 5 samples each
Storage interval	1s ... 999s

Storage on command (MEM key)

Quantity	200 samples of the three inputs
Type	organised in 200 pages containing 1 sample each



- ① Only conductivity probes with SICRAM module.
- ② Input for O₂ and temperature or only temperature with SICRAM module.
- ③ Input for pH, mV, pH and temperature or only temperature probe with SICRAM module.



- ④ External power supply.
- ⑤ RS232 or USB interface.

Calibration storage	
pH and Dissolved Oxygen	Last 8 pH and dissolved oxygen calibrations. The last 2 are saved in the SICRAM memory of the probe as well.
Conductivity	Last calibration is saved in the SICRAM memory of the probe.

RS232C serial interface

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
Length of serial cable	Max 15m
USB interface	
Typ	1.1 - 2.0 electrically isolated

Bluetooth interface

Optional for PCs fitted with Bluetooth input or HD USB.KL1 Bluetooth / RS232 adapter. The interface can be installed in Delta Ohm only.

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

Connections

Enabled inputs for temperature probes with SICRAM module	8-pole male DIN45326 connector
Input for pH/temperature with SICRAM module	8-pole male DIN45326 connector
Input for conductivity/temperature with SICRAM module	8-pole male DIN45326 connector
Input for dissolved oxygen/temperature with SICRAM module	8-pole male DIN45326 connector
RS232C / USB interface	8-pole MiniDin female connector
Bluetooth	Optional
Mains adapter	2-pole(Ø5.5mm- Ø2.1mm). Positive at centre (e.g. SWD10).

■ Measurement of pH by instrument

Measuring range	-9.999...+19.999pH
Resolution	0.01 o 0.001pH selectable from menu
Accuracy	±0.001pH ±1digit
Input impedance	>10 ¹² Ω
Calibration error @25°C	Offset > 20mV Slope > 63mV/pH or Slope < 50mV/pH Sensitivity > 106.5% or Sensitivity < 85%
Calibration points	Up to 5 points from a list of 8 automatically detected buffers
Temperature compensation	-50...150°C
Automatically detected standard solutions @25°C	1.679pH - 4.000pH - 4.010pH 6.860pH - 7.000pH - 7.648pH 9.180pH - 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 conductivity by instrument		Resolution
Measurement range (K cell=0.01)	0.000...1.999µS/cm	0.001µS/cm
Measurement range (K cell=0.1)	0.00...19.99µS/cm	0.01µS/cm
Measurement 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
Measurement range (K cell=10)	200...1999mS/cm	1mS/cm
Accuracy (conductivity) instrument	±0.5% ±1digit	

Measurement of resistivity by instrument		Resolution
Measurement range (K cell=0.01)	Up to 1GΩ·cm	
Measurement range (K cell=0.1)	Up to 100MΩ·cm	(*)
Measurement 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
Measurement range (K cell=10)	0.5...5.0Ω·cm	0.1Ω·cm
Accuracy (resistivity) instrument	±0.5% ±1digit	

(*) 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
...

Measurement of total dissolved solids (with coefficient λ/TDS=0.5)		Resolution
Measurement range (K cell=0.01)	0.00...1.999mg/l	0.005mg/l
Measurement range (K cell=0.1)	0.00...19.99mg/l	0.05mg/l
Measurement 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
	20.0...199.9 g/l	0.1 g/l
Measurement range (K cell=10)	100...999 g/l	1 g/l
Accuracy (total dissolved solids) instrument	±0.5% ±1digit	

Measurement of salinity		Resolution
Measurement 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) instrument	±0.5% ±1digit	

Automatic/manual temperature compensation	
0...100°C with α _T = 0.00...4.00%/°C	

Reference temperature	
0...50°C (Default values 20°C or 25°C)	

Conversion factor λ / TDS	
0.4...0.8	

Admitted cell constants K (cm⁻¹)	
0.01...20.00	

Automatically detected standard solutions (@25°C)	
147µS/cm	
1413µS/cm	
12880µS/cm	
111800µS/cm	

■ Measurement of concentration of dissolved oxygen	
Measurement range	0.00...90.00mg/l
Resolution	0.01mg/l
Accuracy instrument	±0.03mg/l ±1digit (60...110%, 1013mbar, 20...25°C)

Measurement of saturation index of dissolved oxygen

Measurement range	0.0...600.0%
Resolution	0.1%
Accuracy instrument	±0.3% ±1digit (in the range 0.0...199.9%) ±1% ±1digit (in the range 200.0...600.0%)

Salinity setting

Setting	directly from menu or automatically by conductivity measurement
Setting range	0.0...70.0g/l
Resolution	0.1g/l

Temperature measurement with the sensor inside the O₂ probe

Measurement range	0.0...50.0°C
Resolution	0.1°C
Accuracy instrument	±0.1°C
Drift after 1 year	0.1°C/year
Automatic temperature compensation	0...50°C

■ Measurement of temperature by instrument

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

24 column printing example

```
HD 98569
pH / chi / Oxy / temperature
Ser num=12345678

2007 - 01 - 31 12:00:00

LAB POSITION #1

Operator = Amministratore

SAMPLE ID = 00000001

pH EL sernum = 01234567
pH = 7.010
pH out of calibration !

O2 EL sernum = 76543210
mg/l O2 = 5.59

chi EL sernum = 98756410
mS = 2.177

Temp = 25.0°C ATC
```

Ordering codes

HD 98569: The kit is composed of: instrument **data logger** HD 98569 for measurement of pH - redox - conductivity - resistivity - TDS - salinity - concentration of dissolved oxygen- saturation index - temperature, 4 1.5V batteries type AA, calibrator HD9709/20, instructions manual, software DeltaLog11 (vers. 2.0 and subsequent ones), carrying case and SICRAM module pH471.1 (cable 1 meter).

The pH/mV electrodes, conductivity probes, dissolved oxygen probes, temperature probes, standard reference solutions for different measurement types, connection cables for data download to PC or printer have to be ordered separately.

HD2110CSNM: 8-pole connection cable Mini Din - Sub D 9-pole female for RS232C, for connection to PC with RS232C USB input.

HD2101/USB: Connection cable USB 2.0 connector type A - 8-pole Mini Din for connection to PC with USB input.

DeltaLog11: Further unit of software (vers. 2.0 and subsequent ones) for data download and management on PC using Windows 98 to XP operating systems.

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

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

HD2110CSP: Connection cable 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. For Ø12mm electrodes

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 PC. **The fitting of the module into the instrument is made exclusively by Delta Ohm, at the time of placing the order.**

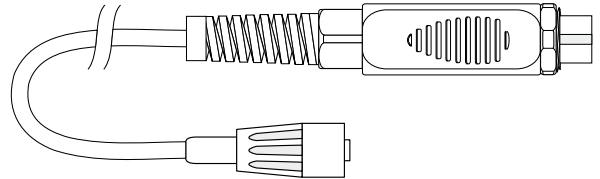
HD USB.KL1: USB/Bluetooth converter to be connected to the PC for wireless data transmission from the instrument with HD22BT module.

SICRAM Modules with S7 input for pH electrodes

KP471.1: SICRAM module for pH electrodes with S7 standard connection, cable L=1m.

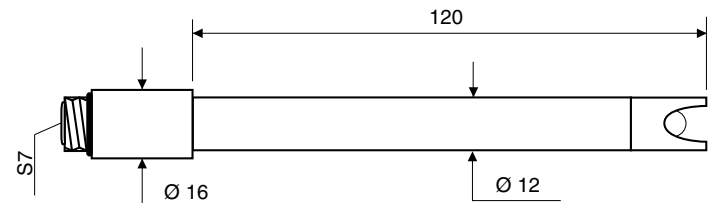
KP471.2: SICRAM module for pH electrodes with S7 standard connection, cable L=2m.

KP471.5: SICRAM module for pH electrodes with S7 standard connection, cable L=5m.

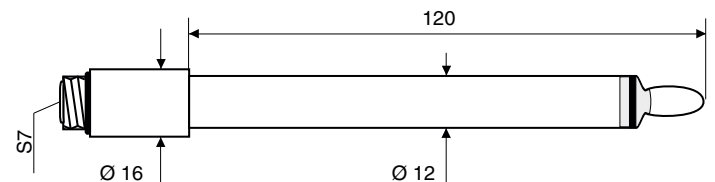


pH Electrodes to be connected to KP471... SICRAM module

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



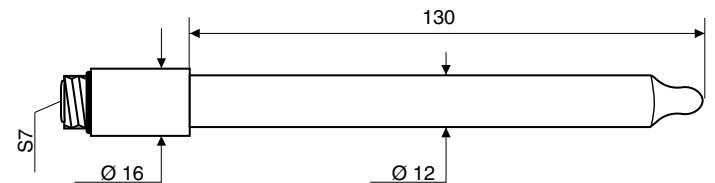
KP 50: Combined pH electrode pH for general use, varnishes, emulsions, GEL-filled, with S7 screw connector, body in glass.



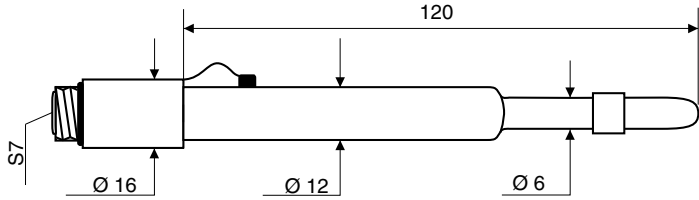
KP 61: Combined pH electrode, 3 diaphragms for milk, cream, etc. gel-filled, with screw connector S7, body in glass.



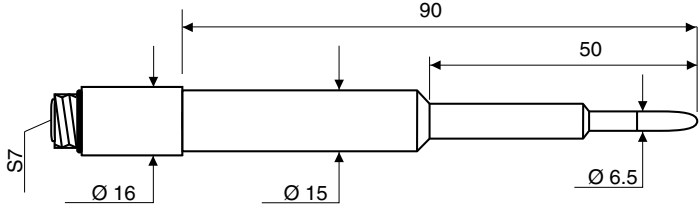
KP 62: Combined pH electrode, 1 diaphragm for pure water, paints, etc. GEL-filled, with screw connector S7, body in glass



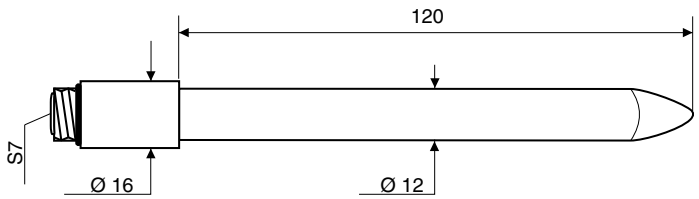
KP 64: Combined pH electrode for water, varnishes, emulsions, etc. reference filling solution KCl 3M, with S7 screw connector, body in glass.



KP 70: Combined pH electrode, micro diam. 6 x L=70mm, GEL-filled, for paste, bread, cheese, etc, with S7 connector, body in glass.

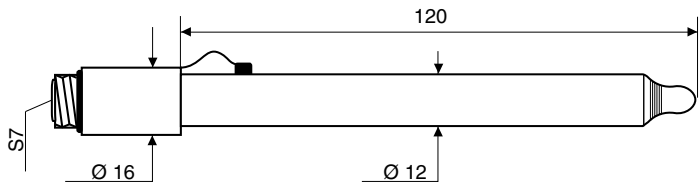


KP 80: Combined pointed pH electrode, gel-filled, with screw connector S7, body in glass.



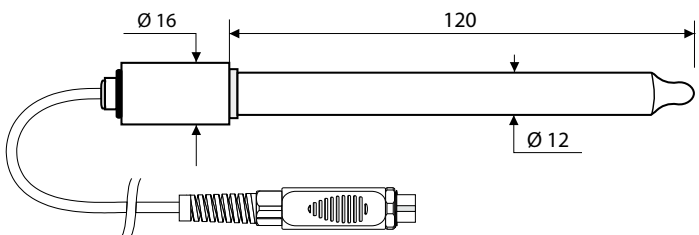
ORP Electrodes to be connected to KP471... SICRAM module

KP90: REDOX PLATINUM electrode, with screw connector S7, reference filling solution KCl 3M, body in glass.

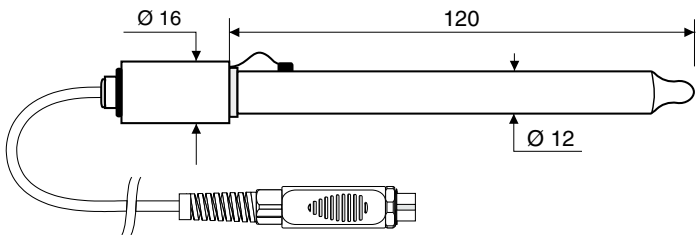


pH Electrodes with SICRAM module

KP 50TS: Combined pH/temperature electrode, Pt100 sensor, GEL-filled, with SICRAM module, body in glass, general use, varnishes, emulsions. Cable length 1m.



KP63TS: Combined pH/temperature electrode, Pt100 sensor, GEL-filled, with SICRAM module, body in glass, Ag/AgCl sat KCl.



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 500cc.
- HDR468:** Redox buffer solution 468mV 500cc.

Electrolyte solutions

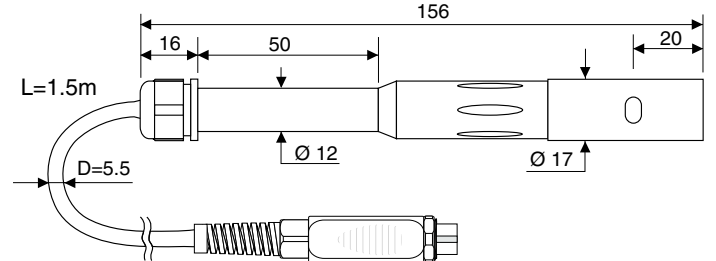
KCL 3M: 50cc ready for use solution for refilling of electrodes.

Cleaning and maintenance

- HD62PT:** Diaphragm cleaning (tiourea in HCl) - 200cc.
- HD62PP:** Protein cleaning (pepsin in HCl) - 200cc.
- HD62RF:** Regeneration (fluorhydric acid) - 100cc.
- HD62SC:** Solution for electrode preservation - 200cc.

Combined conductivity and temperature probes with SICRAM module

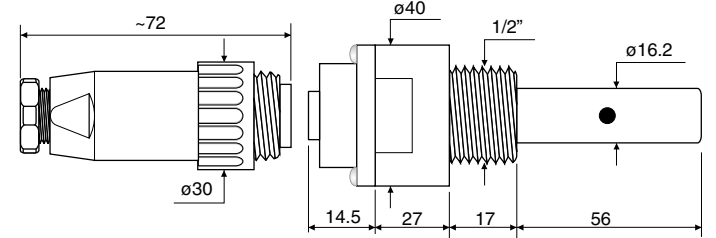
SP06TS: Combined conductivity and temperature 4-electrode cell, body in Pocan. Cell constant K=0.7.



Measurement range 5µS/cm ...200mS/cm, 0...90°C.

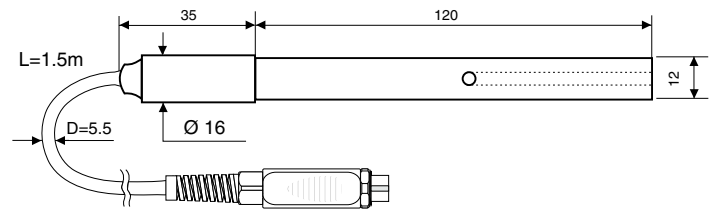
SPT401.001S: Combined conductivity and temperature 2-electrode cell in stainless steel AISI 316. Cell constant K=0.01. Cable 2m.

Measurement range 0.04µS/cm ...20µS/cm, 0...120°C. Measurement in closed-ell.



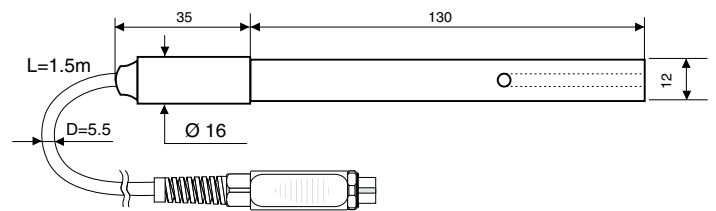
SPT01GS: Combined conductivity and temperature 2-electrode Platinum-wire cell, body in glass. Cell constant K=0.1.

Measurement range 0.1µS/cm ...500µS/cm, 0...80°C.



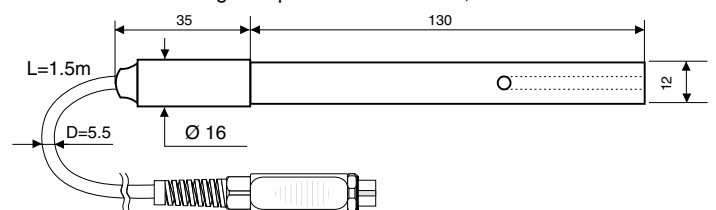
SPT1GS: Combined conductivity and temperature 2-electrode Platinum-wire cell, body in glass. Cell constant K=1.

Measurement range 10µS/cm ...10mS/cm, 0...80°C.



SPT10GS: 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 calibration solutions

HD8747: Standard calibration solution 0.001mol/l equal to 147 μ S/cm @25°C - 200cc.

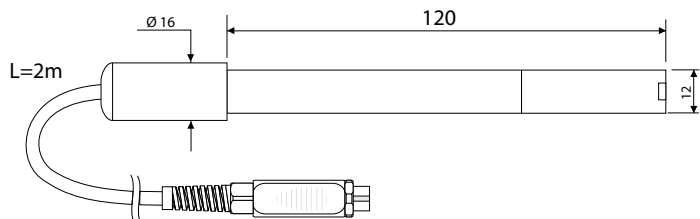
HD8714: Standard calibration solution 0.01mol/l equal to 1413 μ S/cm @25°C - 200cc.

HD8712: Standard calibration solution 0.1mol/l equal to 12880 μ S/cm @25°C - 200cc.

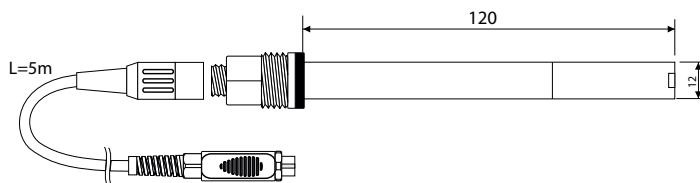
HD87111: Standard calibration solution 1mol/l equal to 111800 μ S/cm @25°C - 200cc.

Combined dissolved oxygen/temperature probes

DO9709 SS: The kit includes: combined probe for the measurement of O₂ and temperature with replaceable membrane, three membranes totally. 50ml of zero solution, 50ml of electrolyte solution. Cable length 2m. Ø12mm x 120mm.



DO9709 SS.5: The kit includes: combined probe for the measurement of O₂ and temperature with replaceable membrane, three membranes totally. 50ml of zero solution, 50ml of electrolyte solution. Cable length 5m. Ø12mm x 120mm.

**Accessories for combined dissolved oxygen/temperature probes**

DO9709 SSK: Accessory kit for the DO9709 SS probe consisting of three membranes, 50ml of zero solution, 50ml of electrolyte solution.

DO9709.20: Calibrator for polarographic probes DO9709SS and DO9709SS.5.

Temperature probes with SICRAM module

TP87: Pt100 sensor immersion probe. Probe's stem Ø 3mm, length 70mm. Cable length 1 metre.

TP472I.0: Pt100 sensor immersion probe. Stem Ø 3 mm, length 230 mm. Cable length 2 metres.

TP473P.0: Pt100 sensor penetration probe. Stem Ø 4mm, length 150 mm. Cable length 2 metres.

TP474C.0: Pt100 sensor contact probe. Stem Ø 4mm, length 230mm, contact surface Ø 5mm. Cable length 2 metres.

TP475A.0: Pt100 sensor air probe. Stem Ø 4mm, length 230mm. Cable length 2 metres.

TP472I.5: Pt100 sensor immersion probe. Stem Ø 6mm, length 500 mm. Cable length 2 metres.

TP472I.10: Pt100 sensor immersion probe. Stem Ø 6mm, length 1,000mm. Cable length 2 metres.

El HD 98569

es un instrumento portátil multiparamétrico datalogger específico para medidas electroquímicas: **pH, conductividad, oxígeno disuelto y temperatura**. Dispone de display LCD retroiluminado de gran tamaño.

El instrumento mide:

- el **pH**, los **mV**, el **potencial de óxido-reducción (ORP)** con electrodos pH, redox o con sondas combinadas pH/temperatura **con módulo SICRAM**;
- la **conductividad**, la **resistividad** en los líquidos, los **sólidos totales disueltos (TDS)** y la **salinidad** con sondas combinadas de conductividad y temperatura de 2 ó 4 anillos **con módulo SICRAM**;
- la **concentración del oxígeno disuelto** en los líquidos (en mg/l), el **índice de saturación** (en %) y la temperatura **con sondas combinadas SICRAM** de tipo polarográfico de dos o tres electrodos y sensor de temperatura integrado.

Al instrumento se pueden conectar sondas de **temperatura Pt100** de inmersión, penetración o contacto con módulo SICRAM.

- La calibración del electrodo de pH se efectúa eligiendo entre uno y cinco puntos y seleccionando la secuencia de calibración en una lista de 8 soluciones tampón. La compensación de la temperatura puede ser automática o manual.
- La calibración de la sonda de conductividad se puede efectuar de forma automática con el reconocimiento de las soluciones patrón: 147 μ S/cm, 1413 μ S/cm, 12880 μ S/cm, 111800 μ S/cm o de forma manual con soluciones de valor distinto.
- La función de calibración rápida de la sonda de oxígeno disuelto garantiza en el tiempo la exactitud de las medidas.
- Las sondas de pH, conductividad, oxígeno disuelto y temperatura con módulo SICRAM memorizan los datos de calibración de fábrica.

El HD 98569 es un **datalogger**, memoriza hasta 200 pantallas individuales (etiquetas) y hasta 9000 muestras en memorización continua de: pH o mV, conductividad o resistividad o TDS o salinidad, concentración de oxígeno disuelto o índice de saturación y temperatura.

Los datos se pueden transferir a un PC conectado al instrumento mediante el puerto serie multiestándar RS232C o el puerto USB 2.0-1.1.

Si dispone de la opción Bluetooth **HD22BT**, el HD 98569 puede enviar los datos, sin conexiones, a un PC provisto del convertidor USB/Bluetooth HD USBKL1, a la impresora con interfaz Bluetooth *S'print-BT* o a un PC provisto de entrada Bluetooth.

La conexión serie RS232C se puede emplear para la impresión directa de etiquetas con una impresora de 24 columnas (*S'print-BT*).

El software dedicado **DeltaLog11** (vers. 2.0 y siguientes) permite manejar y configurar el instrumento, así como elaborar los datos mediante PC.



- ① Sólo sondas de conductividad con módulo SICRAM.
- ② Entrada sondas O₂ y temperatura o sólo temperatura SICRAM.
- ③ Entrada sondas de pH, mV, pH y temperatura, sólo sondas temperatura SICRAM.

Manufacture of portable and bench top instruments
Current and voltage loop transmitters
Temperature - Humidity - Pressure
Air speed - Light - Acoustics
pH - Conductivity - Dissolved Oxygen - Turbidity
Elements for weather stations - Thermal Microclimate



SIT CENTRE N°124

Temperature - Humidity - Pressure - Air speed
Photometry/Radiometry - Acoustics



Delta Ohm srl - Via G. Marconi, 5 - 35030 Caselle di Selvazzano (Pd) - Italy
Tel. 0039 0498977150 r.a. Fax 0039 049635596 - E-mail: deltaohm@tin.it Web Site: www.deltaohm.com