

HD 22569.2



HD 22569.2 BENCH-TOP METER FOR pH - CONDUCTIVITY - DISSOLVED OXYGEN

The instrument HD22569.2 is a bench top instrument for electrochemical measures: pH, conductivity, dissolved oxygen, and temperature. It is are fitted with a large backlighted LCD display.

The HD22569.2 measures pH, mV, redox potential (ORP) with pH, redox electrodes or electrodes with separate reference; conductivity, resistivity in liquids, total dissolved solids (TDS) and salinity with combined 4-ring and 2-ring conductivity/temperature probes with direct input or SICRAM module; concentration of dissolved oxygen in liquids (in mg/l) and saturation index (in %), using SICRAM combined probes of polarographic type with two or three electrodes and integrated temperature sensor.

The instruments is fitted with an 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 pH electrode calibration can be carried out on one or five points and the calibration sequence can be chosen from a list of 13 buffers Temperature compensation can be automatic or manual.
- 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.
- The dissolved Oxygen probe's quick calibration function guarantees timely correctness of the performed measurements.
- Conductivity, dissolved oxygen and temperature probes fitted with SICRAM module can store factory and calibration data inside.

The instruments HD22569.2 is a **datalogger**, it can memorize up to 2,000 samples of data:

. pH or mV, conductivity or resistivity or TDS or salinity, concentration of dissolved oxygen 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. 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 of HD22569.2

pH - mV - χ - Ω - TDS - NaCl - mg/l O_0 - $\%O_0$ - mbar - $^{\circ}$ C - $^{\circ}$ F measurement

. Instrument

Dimensions (Length x Width x Height) 265x185x70mm 490g Weight ABS, rubber Materials

Display Back lighted, matrix point display. 240x64 points, visible area: 128x35mm

Operating conditions

Working temperature -5 ... 50°C Storage temperature -25 ... 65°C

0 ... 90% R.H. without condensate Working relative humidity IP66

Protection degree

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

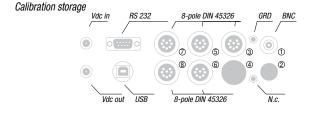
Real time schedule with backup battery E Date and hour

3.6V - 1/2AA

Accuracy 1min/month max drift

Measured values storing

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





Quantity	Last 8 calibrations of	each physical				Resolution	
,	quantity	, ,	Measurement range (Ko	cell=1)	0.0199.9 mg/l	0.5 mg/l	
					2001999 mg/l	1 mg/l	
RS232C serial interface						0.01 g/l	
Туре	RS232C electrically is					0.1 g/l	
Baud rate	Can be set from 1200	to 115200 baud	Measurement range (Ko			1 g/l	
Data bit	8		Accuracy (total dissolve	d solids)	$\pm 0.5\% \pm 1$ digit		
Parity	None						
Stop bit	1		Measurement of salinity	У	0.000 4.000//	d //	
Flow Control	Xon/Xoff		Measurement range		0.0001.999g/l	1mg/l	
Length of serial cable	Max 15m				2.0019.99g/l	10mg/l	
USB Interface			Accuracy (calinity)		20.0199.9g/l ±0.5% ±1digit	0.1g/l	
Type	1.1 - 2.0 electrically is	hatelos	Accuracy (salinity)		±0.5% ±1ulyit		
USB Interface	optional	ooiateu	Automatic/manual temp	nerature comnensatio	on		
ood interface	οριιοπαι		Automatio/manuar temp	ociatare compensant	0100 °C with $\alpha_{\tau} = 0$.	00 4 00%/°C	
Connections	8-pole male DIN45326 connector		Reference temperature Conversion factor X/TDS		050°C		
Input for temperature probes					0.40.8		
with SICRAM modules®				Cell constants K (cm ⁻¹)		1.0 - 10.0	
pH/mV ① input	BNC female		already set on instrument				
Input for SICRAM module	8-pole male DIN4532	6 connector	Cell constants K(cm ⁻¹) tha	at can be set by user	0.0120.00		
pH/ temperature ③							
2/ 4- electrode direct			Standard solutions auto	matically detected (@	,		
conductivity input ®	8-pole male DIN4532				147μS/cm		
Conductivity SICRAM module input ⑦		8-pole male DIN45326 connector				1413μS/cm	
Dissolved Oxygen input ®	8-pole male DIN4532				12880µS/cm		
Serial interface	DB9 connector (9- po	,			111800μS/cm		
USB interface Bluetooth	USB connector type B Optional		Measurement of conce	ntration of discolved	l ovvaan hy inetrument		
Mains adapter		5.5mm-2.1mm). Positive at	Measuring range	initiation of dissolved	0.0090.00mg/l		
Mains adaptor	centre		Resolution		0.00190.00111g/1		
Outlet for power supply of electrode holder					±0.03mg/l±1digit (60110%, 1013mbar,		
with built-in magnetic stirrer		put 12Vdc/200mA max).	riodarady		2025°C)	50 1070, 1010mbui,	
	(0.00	r · · · · · · · · · · · · · · ·					
pH measurement by instrument			Measurement of satura	tion index of dissolve	ed oxygen		
Measuring range	-9.999+19.999pH		Measuring range		0.0600.0%		
Resolution	0.01 o 0.001pH selectable from menu		Resolution		0.1%		
Accuracy	±0.001pH ±1digit		Accuracy		$\pm 0.3\% \pm 1$ digit (in the range $0.0199.9\%$)		
Input impedance	$>10^{12}\Omega$				$\pm 1\% \pm 1$ digit (in the rai	nge 200.0600.0%)	
Calibration error @25°C	Offset > 20mV						
	Slope > 63mV/pH o S		Measurement of barom	etric pressure			
Onlik mati an majota	Sensitivity > 106.5% or Sensitivity < 85% Up to 5 points with 13 automatically detected buffer solutions 1.679pH - 2.000pH - 4.000pH - 4.008pH - 4.010pH		Resolution Accuracy		0.01100.0mbar 0.1mbar ±2mbar±1digit between 18 and 25°C ±(2mbar+0.1mbar/°C) in the remaining range		
Calibration points							
Automatically detected pH standard							
solutions (@25°C)		000pH - 7.413pH - 7.648pH			±(21110a1+0.11110a1/ 0)	in the remaining range	
3010110113 (@25 0)	9.180pH - 9.210pH -		Salinity setting				
	3.100pii 3.210pii	то.оторгі	Setting		directly from menu or	automatically by conduc-	
mV measurement by instrument			Cotting		tivity measurement	automationly by conduc	
Measuring range	-1999.9+1999.9m	V	Setting range		0.070.0g/l		
Resolution	0.1mV		Resolution		0.1g/l		
Accuracy	±0.1mV ±1digit				· ·		
Drift after 1 year	0.5mV/year		Temperature measurement with the sensor inside the dissolved Oxygen probe				
			Measurement range		0.0+50.00°C		
Measurement of conductivity by instrument		Resolution	Resolution		0.1°C		
Measuring range (Kcell=0.01)	0.0001.999μS/cm	0.001μS/cm	Accuracy		±0.1°C		
Measuring range (Kcell=0.1)	0.0019.99μS/cm	0.01µS/cm	Drift after 1 year		0.1°C/year		
Measuring range (K cell=1)	0.0199.9μS/cm	0.1μS/cm	Automatic temperature	compensation	050°C		
	2001999μS/cm	1μS/cm	Magaurament of toward	roturo bu inotario			
	2.0019.99mS/cm	0.01mS/cm	Measurement of tempe	•			
Measuring range (Keell_10)	20.0199.9mS/cm 2001999mS/cm	0.1mS/cm 1mS/cm	Pt100 measuring range		-50+150°C		
Measuring range (Kcell=10) Accuracy (conductivity)	±0.5% ±1digit	IIII5/CIII	Pt1000 measuring rang Resolution	je	-50+150°C 0.1°C		
Accuracy (conductivity)	±0.5 /0 ± ruigit		Accuracy		±0.1°C ±1digit		
Measurement of resistivity by instrument			Drift after 1 year		0.1°C/year		
Measuring range (Kcell=0.01)	Up to 1GΩ·cm	(*)	Dinicultor 1 your		o.i oryoni		
Measuring range (Kcell=0.1)	Up to $100\text{M}\Omega\text{-cm}$	(*)	(*) The resistivity measu	rement is obtained f	from the reciprocal of co	nductivity measurement.	
Measuring range (K cell=1)	5.0199.9Ω·cm	0.1Ω·cm				like reported in the table	
,	200999Ω·cm	1Ω·cm	below:			•	
	1.00k…19.99kΩ·cm	$0.01 k\Omega \cdot cm$	K cell = 0	D.01 cm ⁻¹	K cell	= 0.1 cm ⁻¹	
	20.0k99.9kΩ·cm	0.1kΩ·cm	Conductivity (µS/cm)	Resistivity (MΩ·cm)			
	100k999kΩ⋅cm	1kΩ·cm	0.001 μS/cm	1000 MΩ·cm	0.01 µS/cm	100 MΩ·cm	
Managina and W. H. 40	110MΩ·cm	1MΩ·cm	· · · · · · · · · · · · · · · · · · ·				
Measuring range (Kcell=10)	0.55.0Ω⋅cm	0.1Ω·cm	0.002 μS/cm	500 MΩ·cm	0.02 μS/cm	50 MΩ·cm	
Accuracy (resistivity)	$\pm 0.5\% \pm 1$ digit		0.003 μS/cm	333 MΩ·cm	0.03 μS/cm	33 MΩ·cm	
			0.004 uS/cm	250 MQ⋅cm	0.04 uS/cm	25 MQ⋅cm	

 $\begin{tabular}{lll} \textit{Measurement of total dissolved solids (with coefficient χ/TDS=0.5)} \\ \textit{Measurement range (Kcell=0.01)} & 0.00...1.999mg/l \\ \textit{Measurement range (Kcell=0.1)} & 0.00...19.99mg/l \\ \end{tabular}$

0.005mg/l 0.05mg/l

K cell = 0	0.01 cm ⁻¹	K cell = 0.1 cm ⁻¹		
Conductivity (µS/cm)	Resistivity (M Ω ·cm)	Conductivity (µS/cm)	Resistivity(M Ω ·cm)	
0.001 µS/cm	1000 M Ω ⋅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

HD22569.2: The kit is composed of: instrument HD22569.2 for the measurement of pH redox - conductivity - resistivity - TDS - salinity - concentration of dissolved oxygen, saturation index - temperature, datalogger, stabilized power supply at mains voltage 100-240Vac/12Vdc-1A., calibrator HD9709/20, 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 typo 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 100-240Vac/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. Powerd 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.

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.

pH electrodes without SICRAM module (Inputs ① and ②)

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

KP 64: Combined pH electrode for water, varnish, emulsions, etc., electrolyte KCI 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.

pH electrodes with SICRAM module (Input®)

KP63TS: Combined pH/temperature electrode with SICRAM module, body in Epoxy, Ag/AgCl sat KCI.

SICRAM Module with BNC input for pH electrodes (Input ③)

KP47: SICRAM module for pH electrode with BNC standard connector.

ORP Electrodes (Inputs ① and ②)

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 I.

Electrolyte solutions

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

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.

Conductivity probes and combined conductivity and temperature probes without SICRAM module (Input 7)

SP06T: Combined conductivity and temperature 4-electrode cell in Platinum, body in Pocan. Cell constant K = 0.7. Measurement range 5μ S/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 $0.04\mu\text{S/cm} \dots 20\mu\text{S/cm}$, $0...120^{\circ}\text{C}$. Measurement in closed-cell.

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

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.

Combined conductivity / temperature probes with SICRAM module (Input ®)

SPT1GS: Combined conductivity /temperature 2-electrode Platinum- wire cell, body in glass with SICRAM module. Cell constant K = 1. Measuring range 10µS/cm ...10mS/cm, 0...80°C.

Standard conductivity calibration solutions

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

Combined dissolved oxygen/temperature probes (Input ®)

D09709 SS: The kit includes: combined probe for measurement of 0, and temperature with replaceable membrane, three membranes, 50ml of zero solution, 50ml of electrolyte solution. Cable length 2m. Ø12mm x 120mm.

D09709 SS.5: The kit includes: combined probe for measurement of O₂ and temperature with replaceable membrane, three membranes, 50ml of zero solution, 50ml of electrolyte solution. Cable length 5m. Ø12mm x 120mm.

Electrode dimensions and characteristics at page 403

Accessories

D09709 SSK: Accessory kit for the D09709 SS probe consisting of three membranes, 50ml of zero solution, 50ml of electrolyte solution

D09709.20: Calibrator for polarographic probes D09709SS and D09709SS.5.

Temperature probes complete with SICRAM module (Input (S))

TP87: PT100 sensor immersion probe. Stem Ø 3 mm, length 70 mm. Cable length 1 metre. TP4721.0: Pt100 sensor immersion probe. Stem Ø 3 mm, length 230 mm. Cable length 2 m. TP473P.0: Pt100 sensor penetration probe. Stem Ø 4mm, length 150 mm. Cable length 2 m.

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

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

TP4721.5: Immersion probe, sensor Pt100. Stem Ø 6mm, length 500 mm, Cable length 2 m. TP4721.10: Immersion probe, sensor Pt100. Stem Ø 6mm, length 1,000mm. Cable length 2 m.

Temperature probes complete with TP47 module (input®)

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

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

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

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