

The display shows continually the temperature in °C or °F and one selectable parameter according to the connected probe type. Printing and storage always include the temperature in °C or °F and one selectable parameter for each probe type. 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 excluded. **The instruments have IP66 protection degree.**



## HD 3409.2 BENCH-TOP DISSOLVED OXYGEN METER

The **HD3409.2** is a bench top instrument for electrochemical measures: **dissolved oxygen** and **temperature**.

The displayed data can be stored (**datalogger**) and can be transferred to PC or serial printer thanks to the multi-standard 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 **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.



### Technical characteristics HD3409.2 mg/l O<sub>2</sub>, %O<sub>2</sub>, mbar, °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
<b>Protection degree</b>	<b>IP66</b>

#### Power

Batteries	3 batteries 1.5V type AA
Autonomy (only batteries)	100 hours with 1800mAh alkaline batteries
Mains (cod. <b>SWD10</b> )	Output mains adapter 100-240Vac/ 12Vdc-1A

#### Security of memorized data

Unlimited

#### 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 1hour

#### USB Interface

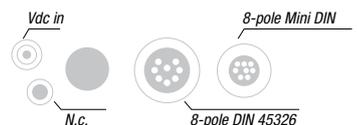
Type	1.1 - 2.0 electrically isolated
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#### Common connections to all models

Serial interface and USB	8-pole MiniDin connector
Mains adapter (cod. <b>SWD10</b> )	2-pole connector (positive at centre) 12Vdc/1A

#### Power absorbed with instrument off

Without dissolved oxygen probe	20µA
<b>With dissolved oxygen probe</b>	40µA



#### Storage of the measured values

Type	2000 pages of 9 samples each
Quantity	18,000 measures made up of the four parameters mg/l O <sub>2</sub> , %O <sub>2</sub> , 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	±0.03mg/l±1digit 60...110%, 1013mbar, 20...25°C)

#### Measurement of the saturation index of dissolved Oxygen

Measurement range	0.0...600.0%
Resolution	0.1%
Accuracy	±0.3% ±1digit (in the range 0...199.9%) ±1% ±1digit (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	±2mbar±1digit between 18 and 25°C ±(2mbar+0.1mbar/°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	±0.1°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	±0.1°C
Drift after 1 year	0.1°C/year

#### ORDERING CODES

**HD3409.2:** The kit is composed of: instrument HD3409.2 **datalogger**, for the measurement of dissolved oxygen concentration - saturation index - temperature, calibrator HD9709/20, 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.**

#### 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 120-240Vac/12Vdc/1A 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:** Module for the connection of Pt100 4-wire and Pt1000 2-wire probes to instrument series HD34..., without amplifying electronics and linearization.

#### Combined dissolved oxygen and temperature probes

**DO9709 SS:** The kit includes: combined probe for measurement of O<sub>2</sub> and temperature with replaceable membrane, three membranes, 50ml of zero solution, 50ml of electrolyte solution. Cable length 2m. Ø12mm x 120mm.

**DO9709 SS.5:** The kit includes: combined probe for measurement of O<sub>2</sub> and temperature with replaceable membrane, three membranes, 50ml of zero solution, 50ml of electrolyte solution. Cable length 5m. Ø12mm x 120mm.

#### Accessories

**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.

#### Probe dimensions and characteristics at page 403

**TP87:** Pt100 sensor immersion probe. Stem Ø 3 mm, length 70 mm. Cable length 1 m.

**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

**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

#### Accessories

**TP47:** Module for the connection of Pt100 4-wire and Pt1000 2-wire probes.



mg/l



%sat



mbar



°C