



## HD 2306.0 CONDUCTIVITY METER - THERMOMETER

The **HD2306.0** is a portable instrument with a large LCD display. It measures conductivity, liquid resistivity, total dissolved solids (TDS), and salinity using combined 4-ring and 2-ring conductivity/temperature probes. Temperature only is measured by Pt100 or Pt1000 immersion, penetration or contact probes. The probe calibration can be performed automatically in one or more than one of the 147µS, 1413µS, 12880µS or 111800µS/cm conductivity calibration solutions. The temperature probes are equipped with an automatic recognition module and factory calibration data are stored inside.

The *Max*, *Min* and *Avg* function calculates the maximum, minimum or average values.

Other functions include: the relative measurement REL, the Auto-HOLD function, and the automatic turning off which can also be disabled.

**The instrument has IP67 protection degree.**

### INSTRUMENT TECHNICAL CHARACTERISTICS

**Measured quantities:**  $\chi$ ,  $\Omega$ , TDS, °C, °F

#### Instrument

Dimensions (Length x Width x Height)	140x88x38mm
Weight	160g (complete with batteries)
Materials	ABS
Display	2x4½ digits 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>IP67</b>

#### Power

Batteries	3 1.5V type AA batteries
Autonomy	200 hours with 1800mAh alkaline batteries
Power absorbed with instrument off	< 20µA

#### Connections

Conductivity input/temperature probes	8-pole male DIN45326 connector
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#### Measurement of conductivity

Measuring range Kcell=0.1	0.00...19.99µS/cm	<i>Resolution</i> 0.01µS/cm
Measuring range Kcell=1	0.0...199.9µS/cm 200...1999µS/cm 2.00...19.99mS/cm 20.0...199.9mS/cm	0.1µS/cm 1µS/cm 0.01mS/cm 0.1mS/cm
Measuring range Kcell=10	200...1999mS/cm	1mS/cm
<i>Accuracy (conductivity)</i>	±0.5%1digit	

#### Measurement of resistivity

Measuring range Kcell=0.1	till 100MΩ·cm/(*)	
Measuring range Kcell=1	5.0...199.9Ω·cm 200...999Ω·cm 1.00k...19.99kΩ·cm 20.0k...99.9kΩ·cm 100k...999kΩ·cm 1...10MΩ·cm	0.1Ω·cm 1Ω·cm 0.01kΩ·cm 0.1kΩ·cm 1kΩ·cm 1MΩ·cm
Measuring range Kcell=10	0.5...5.0Ω·cm	0.1Ω·cm
<i>Accuracy (resistivity)</i>	±0.5%±1digit	

#### Measurement of salinity

Measurement range	0.000...1.999g/l 2.00...19.99g/l 20.0...199.9g/l	<i>Resolution</i> 1mg/l 10mg/l 0.1g/l
<i>Accuracy (salinity)</i>	±0.5%1digit	

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

Measurement range Kcell=0.1	0.00...19.99mg/l	0.05mg/l
Measurement range Kcell=1	0.0...199.9mg/l 200...1999mg/l 2.00...19.99g/l 20.0...99.9g/l	0.5mg/l 1mg/l 0.01g/l 0.1g/l
Measurement range Kcell=10	100...999g/l	1g/l
<i>Accuracy (conductivity)</i>	±0.5%±1digit	

#### Measurement of temperature

Pt100 measuring range	-50...+200°C
Pt1000 measuring range	-50...+200°C
<i>Resolution</i>	0.1°C
<i>Accuracy</i>	±0.25°C
<i>Drift after 1 year</i>	0.1°C/year

#### Temperature compensation automatic/manual

0...100°C with  $\alpha_T$  selectable from 0.00 to 4.00%/°C

<i>Reference temperature</i>	20°C or 25°C
<i><math>\chi</math> / TDS Conversion factor</i>	0.4...0.8
<i>Cell constant K (cm<sup>-1</sup>)</i>	0.1, 0.7, 1.0 and 10.0

#### Standard solutions automatically detected @25°C

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

#### Preset cell constant values:

K=0,01 - K=0,1 - K=1, K=10



(\*) 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 = 0.1 cm <sup>-1</sup>	
Conductivity (µS/cm)	Resistivity (MΩ·cm)
0.01 µS/cm	100 MΩ·cm
0.02 µS/cm	50 MΩ·cm
0.03 µS/cm	33 MΩ·cm
0.04 µS/cm	25 MΩ·cm

#### 4 wire Pt100 and 2 wire Pt1000 Temperature probes

Model	Type	Working range	Accuracy
TP47.100	Pt100 4 wires	-50...+200°C	Class A
TP47.1000	Pt1000 2 wires	-50...+200°C	Class A
TP87.100	Pt100 4 wires	-50...+200°C	Class A
TP87.1000	Pt1000 2 wires	-50...+200°C	Class A

Temperature drift @20°C                      0.005%/°C

#### ORDER CODES

**HD2306.0K:** The kit is composed of: instrument HD2306.0, 3 1.5V alkaline batteries, operating manual, case. **Other conductivity probes, temperature probes, calibration solutions must be ordered separately.**

**HD22.2:** Laboratory electrode holder composed of base plate with built-in magnetic stirrer, shaft and replaceable electrode holder. Suitable diameter 12mm. Powered by bench-top meters of the series HD22... with cable HD22.2.1 (optional) or power supplier SWD10 (optional).

**HD22.3:** Laboratory electrode holder composed of base plate. Flexible arm for free positioning. Suitable for electrodes with diameter 12mm.

#### Conductivity probes

Please see the order codes reported in the probes' technical specifications.

#### 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

**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 without SICRAM module

**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.

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



HD8747

HD8714

HD8712

HD8711

### TECHNICAL DATA OF PROBES AND MODULES EQUIPPED WITH INSTRUMENT

#### 2 and 4 electrode conductivity probes

ORDER CODE	MEASUREMENT RANGE	DIMENSIONS
<b>SP06T</b>	K=0.7 5µS...200mS/cm 0...90°C 4-electrode cell in Pocer/Platinum	
<b>SPT01G</b>	K=0.1 0.1µS...500µS/cm 0...80°C 2-electrode cell in Glass/Platinum	
<b>SPT1G</b>	K=1 10µS...10mS/cm 0...80°C 2-electrode cell in Glass/Platinum	
<b>SPT10G</b>	K=10 500µS...200mS/cm 0...80°C 2-electrode cell in Glass/Platinum	