

## WATERPROOF pH / REDOX / CONDUCTIVITY METER CRC-461

**CRC-461** is a meter designed for simultaneous measurements of: pH, redox potential, conductivity, salinity and temperature.

It is distinguished by a large 3,2" colour graphic touch screen, which enables simultaneous measurement and view of all measuring functions. It is equipped with separate, isolated inputs for each function, what eliminates the influence of one measuring function reading to another.



### Characteristic features:

- Designed for accurate measurements of: pH, redox potential (ORP), conductivity, salinity and temperature.
- Possibility of simultaneous measurement and observation of pH, conductivity, redox and temperature.
- The inputs (connectors) separate for each function are isolated one from another, what eliminates the mutual influence of the measurements.
- The meter may be used for the field measurements as well as during accurate laboratory work.
- "HOLD" function to freeze the result on the display.
- Signalisation of the result stabilisation with the "READY" symbol and sound.
- Possibility of sending a calibration report to a PC - up to 10 last calibrations.
- Low weight and small size make working in the field easier.
- Waterproof housing (IP-66) enables working in difficult conditions.

**In the pH and mV measurement function:**

- Depending on the kind of applied electrode it may be used for clean water, sewage, soil, pastes, etc.
- Calibration of the pH electrode in 1 ÷ 5 points.
- Automatic detection of buffer solutions, their values may be set by the user.
- Automatic correction of the stored pH standard solution value changes along with the temperature changes for NIST standards, what eliminates the necessity of the temperature adjustment.
- Automatic or manual temperature compensation.
- Possibility of storing characteristics of 3 pH electrodes enables their quick replacement, very useful feature during field work.
- Automatic control of the electrode's condition.
- Possibility of viewing the electrode's parameters (buffer and slope).
- Precise redox potential measurement (accuracy 0.1mV).

**In the conductivity measurement function:**

- Full measuring range enables measurements in ultra pure water as well as in very salty solutions.
- In case of measurements of natural water with conductivity from 60  $\mu\text{S}/\text{cm}$  to 1  $\text{mS}/\text{cm}$  the meter enables using non-linear temperature compensation. The parameters of this type of water are determined in norm EN27888:1999 and concern surface water, deep water and well water. This solution lowers the measurement error.
- The measurement accuracy of the ultra pure water with temperature compensation was increased by automatic adjustment of the  $\alpha$  coefficient depending on the temperature and kind of trace contaminations.
- Calibration by entering the constant K in range 0.01÷19.999  $\text{cm}^{-1}$  or in standard solutions in 1 to 5 points.
- Wide range of  $\alpha$  coefficient 0 ÷ 10 % / °C chosen depending on the measured solution.
- Possibility of changing the reference temperature.
- High accuracy conductivity cell **ECF-1** available as additional equipment. Measuring range: 0 , 400  $\text{mS}/\text{cm}$  is sufficient for conductivity measurements in majority of liquids of maximal concentration, e.g. aqueous soil extracts and water with grease or oil. Metal electrodes are easy to clean. Plastic housing protects from mechanical damage.
- Possibility to store constants K of 3 cells which cover the whole measuring range.
- Automatic calculation of conductivity into salinity in NaCl or KCl on the basis of the actual characteristics instead of a constant coefficient, what greatly increases accuracy.
- Possibility of defining TDS with entering the TDS coefficient in range 0.2 ÷ 1.0.
- The liquid resistivity measurement option.

**In the temperature measurement function:**

- Stores parameters of three temperature probes.
- Possibility of entering the sensor group for the selective probe, what provides higher measurement accuracy.

## Other features:

- Internal clock with date.
- Collecting up to 2000 data sets in the internal datalogger with temperature, time and date, single collecting and also taking series of measurements possible with time and date – readings of all measured functions are stored.
- Non-volatile memory of the stored results and calibration data
- Storing the date of next calibration and signalling it to the user.
- Possibility of choosing the language of the displayed information : Polish , English or German.
- Possibility of connecting with a PC by micro USB connector
- Software for data transmission and collection delivered in set.
- Powered by 2 x AA (1.2V) rechargeable batteries, or by power adapter with internal charging of batteries.
- Continuous working time without charging up to 18 hours depending on the chosen function and set brightness of the screen.
- Connecting with a PC by microUSB output.
- The meter meets the GLP requirements.

The set includes **CT2S-121** temperature probe, **EPS-1** pH electrode for measurements in clear water, **ECF-1** conductivity cell and **ERS-2** redox (ORP) electrode.

Measurements in liquid with sediment should be made with use of **IJ44A** pH electrode. Its unusual construction ("intermediate junction") protects the real junction (diaphragma) of the electrode against clogging, ensures stable measurements in these types of liquids or semi-liquid mass, in which other electrodes stop working quickly. When properly handled, the electrode's lifetime is longer than the standard electrodes.

## TECHNICAL DATA

Function	pH	mV	Conductivity, Salinity	Temperature
Range	-2.000 ÷ 16.000 pH	±2000 mV	0 ÷ 2000.0 mS/cm (autorange) 0 ÷ 239 g/l KCl 0 ÷ 296 g/l NaCl	-50.0 ÷ 200.0 °C
Accuracy ( 1 digit)	±0.002 pH*	±0.1 mV*	<19.99 mS/cm: ±0.1%* >20.00 mS/cm: ±0.25%* Salinity ± 2%*	±0.1 °C**
Temp. Compensation	-5 ÷ 110 °C	-	-5 70 °C	-
Input impedance	10 <sup>12</sup> W	10 <sup>12</sup> W	-	-
α coefficient	-	-	0.00 ÷ 10.00 % / °C	-
K constant			0.010 ÷ 19.999 cm <sup>-1</sup>	
Resistivity	Range: 0.500Ωcm ÷ 200MΩcm, accuracy: ±2% of the measured value			
Temperature sensor	Pt-1000 standard or accurate			
Power supply	2x AA 1,2 V rechargeable batteries, USB 5 V / 1000 mA power adapter			
Weight	255 g			
Dimensions (mm)	L=149 W=82 H=22			

\*The accuracy of the meter only.

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In the range 0 ÷ 100 °C the acceptable error of the probe with Pt-1000B resistor: ±0.8 °C, with Pt-1000S resistor: ±0.27 °C.

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