# MULTIFUNCTION METER CX–660

**CX-660** belongs to the newest generation of measuring equipment. It is distinguished by high measurement's accuracy, a large 5" colour graphic touch screen and additional features which make working easier.

**Features:**

- Measures pH, mV, redox potential, conductivity, salinity, resistivity, dissolved oxygen, atmospheric pressure, and temperature.
- Enables simultaneous measurement and displaying of results of four measurement functions: pH or redox, conductivity or salinity or resistivity, oxygen, and temperature.
- Memory of parameters and the last calibration date of three sensors (electrodes) for each measurement function.
- Wide measurement range for pH, redox, conductivity, and oxygen.


**pH and mV measurement function**

- Depending on the used pH electrode, it can measure distilled water, pure water, wastewater, soil, creams, pastes, cheeses, meat, etc.
- Calibration of the pH electrode at 1 to 5 points with the ability to enter the pH values of available buffers into the device's memory.
- **Calibration procedure with use of NIST compliant pH standards has been simplified by automatic substitution of the standard's pH value depending on its temperature, eliminating the need to heat or cool those solutions.**
- Automatic detection of buffer or standard values.

• Automatic or manual temperature compensation.
• Automatic notification of poor electrode condition.
• Possibility to read electrode parameters (buffer and slope).
• Precise determination of redox potential (accuracy ±0.1 mV).

**Conductivity measurement function**

• A wide conductivity measurement range allows for the measurement of both ultra-pure waters and high salinity liquids.
• 6 measurement subranges are automatically switched.
• The first subrange, 0 to 20 µS/cm, enables measurements of re-distilled water with resolution down to three decimal places.
• **The meter allows for automatic temperature coefficient substitution when measuring surface, deep, and well waters with conductivity ranging from 60 µS/cm to 1 mS/cm, what significantly simplifies the work.**
• **Increased accuracy of ultra-pure water measurements with temperature compensation is achieved by automatic adjusting of the α coefficient depending on the temperature and type of trace contaminants.**
• Possibility of entering the reference temperature within the range of 0 - 40ºC.
• Three calibration types:
  - in standards at the reference temperature;
  - in standards at the current reference temperature - for selected types of standards, what does not require heating or cooling;
  - by entering the K constant within the range of 0.010 - 20.000 cm-1.
• Calibration results for three conductivity sensors may be stored in memory.
• Wide range of the α temperature coefficient (0.00 - 10.00%/ºC) can be entered depending on the tested liquid.
• Ability to enter a reference temperature within the range of 0 to 40°C.
• Conversion of conductivity to salinity in NaCl and KCl based on the real characteristic, not on constant coefficient, what significantly increases the accuracy.
• Measurement of salinity in TDS (Total Dissolved Solids) by entering a TDS coefficient in the range 0.2 to 1.0.

**Oxygen measurement function**

• Measurement of oxygen content in water or in the air.
• Measurement of oxygen content in water or wastewater in % saturation or mg/l.
• **Calibration of the oxygen sensor at two points (at 0 and 100%) or at one point (at 100%), with the data of the previous calibration at 0% taken into consideration.**
• Automatic temperature compensation.
• Automatic measurement of atmospheric pressure, taking into consideration its influence on the oxygen content measurement in mg/l.
• Automatic consideration of the influence of salinity measured in the conductivity mode with calculation of its influence on the oxygen content value in mg/l.

Other parameters

- Temperature measurement using a CT2S-121 sensor with a selected Pt-1000S resistor – with higher accuracy.
- Clock function with date.
- Collecting up to 2000 data sets in the internal data-logger with temperature, time and date, single collecting and also taking series of measurements with given time interval possible – all measured functions are stored. In case of collect series exceeding the memory capacity, the included computer software may be used.
- "HOLD" function allows you to freeze the actual results displayed on the screen.
- signalisation of a stabilised measurement result.
- Non-volatile memory of the stored results and calibration data.
- Built-in USB interface allows you to transfer results stored in the device's memory or currently measured to a PC.
- Ability to transfer a report from the last ten calibrations to a computer.
- Exceeding the calibration due date notification.
- Selectable languages: Polish, English, German, French, Italian, Spanish, and Portuguese.
- The device meets the GLP requirements.
- 24-month warranty.
- IP64 protection class.

A CT2S-121 temperature sensor with a Pt-1000S resistor and a power adapter are included in the standard set.

The device can be equipped with pH, redox, conductivity, and oxygen sensors suitable for the tested liquids, such as:

**pH electrodes:**
**EPS-1** for pure water;
**IJ-44A** for measurements in liquids with sediments and semi-liquid masses;
**EPX-4U** for re-distilled water;
**EPX-4** for chemical compounds.

Redox electrode:
**ERS-2** – platinum.

Conductivity sensors
**ECF-1** with a wide linearity range and metal electrodes;
**EC-201t** platinum for re-distilled and distilled water;
**EC-210** for high concentrations above 400 mS/cm.

**Galvanic oxygen sensors:**

**COG-1, COG-1t** - with temperature sensor.

## Technical data of the pH and Redox function

| Function: | pH | Redox / mV | Temperature |
|---|---|---|---|
| **Range** | -6.000 ÷ 20.000 pH | ±2000.0 mV | -50.0 ÷ 200.0ºC |
| **Resolution** | 0.001 pH or 0.01 pH | 0.1 / 1 mV | 0.1 ºC |
| **Accuracy (± 1 digit)** | ±0.002 pH* | ±0.1 mV* | ±0.1 ºC*** |
| **Temperature compensation** | -5 ÷ 110 ºC | - | - |
| **Input impedance** | $>10^{12}\Omega$ | $>10^{12}\Omega$ | - |

## Technical data of the conductivity, salinity and resistivity function

| Function | Conductivity | Salinity | Resistivity | Temperature |
|---|---|---|---|---|
| **Range** | 0 ÷ 2000.0 mS/cm | KCl 0 ÷ 239 g/l,<br>NaCl 0 ÷ 296 g/l | 0.500 Ωcm ÷ 200 MΩcm | -50.0 ÷ 200.0 ºC |
| **Accuracy (± 1 digit)** | to 19.999 mS/cm ±0.1%,<br>from 20.00 mS/cm ±0.25%* | ±2 %* | ±2% of measured value | ±0.1 ºC*** |
| **Temperature compensation** | -5 ÷ 70 ºC | -5 ÷ 70 ºC | -5 ÷ 70 ºC | - |
| **α coefficient** | 0.00 ÷ 10.00 %/ºC | 0.00 ÷ 10.00 %/ºC | 0.00 ÷ 10.00 %/ºC | - |
| **constant K** | 0.010 ÷ 20.000 $cm^{-1}$ | | | - |

## Technical data – oxygen measurement function

| Function | Oxygen (%) | Oxygen (%) | Oxygen (mg/l) | Temperature |
|---|---|---|---|---|
| **Measurement environment** | air | water | water | water or air |
| **Range** | 0 ÷ 100% | 0 ÷ 600 % | 0 ÷ 60.00 mg/l | -50.0 ÷ 200.0 ºC |
| **Accuracy ± 1 digit** | ±.0.1 %* | ±0.1 %** | ±0.01 mg/l* | ±0.1 ºC *** |
| **Temperature compensation** | - | - | 0 ÷ 40 ºC | - |

* Accuracy of the meter.

** Accuracy with the COG-1 oxygen sensor in the calibration temperature ±2%. By difference of ±5 ºC from calibration temperature ± 4%, by difference of ±10ºC accuracy ±6%.

*** Accuracy of the meter, total accuracy is a sum of the meter and temperature sensor accuracy.
In the range 0 ÷ 100 ºC the maximal acceptable error of the used temperature sensor with PT-1000S resistor ±0.1 ºC.

## Other data

| | |
|---|---|
| **Power** | Adapter 5 V / 1000 mA USB |
| **Size (mm)** | 175 x 140 x 52 mm |
| **weight** | 420 g |

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