

WATERPROOF MULTIFUNCTION METER CX-401 FOR FIELD AND LAB USE

CX-401 measures: pH, redox potential (mV), conductivity, resistivity, salinity in KCl or NaCl, TDS, dissolved oxygen in % of saturation or in mg/l, oxygen in air in %, atmospheric pressure and temperature.

The function is chosen with the "FUNCTION" button.

It is possible to choose a version with **GXZ-3tk** multifunction (multi-parameter) head with electrodes for simultaneous measurement of three different functions (e.g. pH, conductivity and oxygen dissolved in water with temperature) or version with single electrodes. The models have different connectors.

Characteristic features:

- **CX-401** may be used for laboratory and field measurements.
- This small-size meter includes all functions of pH meters, conductivity meters and oxygen meters of the 401 series.
- The meter is equipped with easy to read backlight LCD display with brightness control, which enables observation of the chosen function and temperature results.
- "HOLD" function to freeze the result on the display.
- Signalisation of the result stabilisation with "READY" symbol and asound.
- Possibility of sending a calibration report to a PC - up to 10 last calibrations.
- Unification of the operating procedures in all measuring functions makes working trouble-free.
- Low weight and small size make working in the field easier.
- Waterproof housing (IP-66) enables working in difficult conditions.



In the pH measuring function:

- 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 along with the temperature changes for NIST standards, what eliminates the necessity of the temperature adjustment.

- 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).
- The measuring circuits of pH and conductivity are isolated what enables accurate and error free simultaneous measurements in the same vessel.
- Depending on the kind of applied electrode it may be used for clean water, sewage, soil, meat, paint etc.

In the mV and redox potential measuring function:

- Precise Redox potential measurement (accuracy 0.1mV).
- Possibility of mV measurement in relation to the set or measured reference potential (V_{ref}).
- Possibility of automatic calculation of the redox reading in relation to the chloride/silver electrode to the hydrogen electrode.

In the conductivity measuring function:

- Full measuring range enables measurements in ultra pure water as well as in solutions of very high conductivity.
- 6 sub-ranges switched automatically.
- In case of measurements of natural water with conductivity from 60 $\mu\text{S}/\text{cm}$ to 1 mS/cm the meter enables using non-linear temperature compensation. The parameters of this type of water are determined in the norm EN27888:1999 and concern surface waters, deep water and well water. This solution lowers the measurement error.
- The measurement accuracy of ultra pure water with temperature compensation was increased by automatic adjustment of the α coefficient depending on the temperature and kind of trace contaminations.
- Calibration by entering the constant K of the cell or in standard solutions in 1 to 5 points.
- Wide range of α coefficient $0 \div 10 \text{ \%} / \text{ }^\circ\text{C}$ chosen depending on the measured solution.
- Possibility of changing the reference temperature.
- Calibration by entering the constant K in range $0.010 \div 19.999 \text{ cm}^{-1}$ or in standard solution.
- 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 the TDS with entering the TDS coefficient in range $0.2 \div 1.0$.
- The liquid resistivity measurement option added.
- Possibility to measure electric admittance of tree seedlings (determining the vitality of seedlings with a special sensor).
- High accuracy conductivity cell ECF-1 available as additional equipment.
Measuring range: $0 \div 400 \text{ mS}/\text{cm}$ 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.

In the oxygen measuring function:

- Automatic calculation of atmospheric pressure influence on oxygen concentration in water in mg/l .
- 1 or 2 point oxygen sensor calibration.

- Automatic transfer of the salinity measured in the conductivity mode to the oxygen measurement mode with calculation of its influence on the oxygen content value.
- Wide measuring range enables measurements in lakes with blooming vegetation.
- In case of measurements of oxygen we recommend to buy an accurate, easy in use and maintenance **COG-1** galvanic oxygen sensor.

In the atmospheric pressure measuring function:

- Possibility of observation of atmospheric pressure value on the meter's screen.

Other features:

- Automatic or manual temperature compensation.
- Internal clock with date.
- Datalogger for 4000 data sets.
- Non-volatile memory of the stored results and calibration data.
- Storing the last calibration date and signalling it to the user.
- Possibility of connecting with a PC by micro USB connector
- Change of the date protected by a password
- The data transmission software enables printout of the data in a form protected against any changes.
- Powered by 2 x AA (1.5 V) rechargeable batteries or by power adapter with internal battery charging.
- The meter meets the GLP requirements.
- 24 months of warranty for the meter.

The additional equipment should be chosen by the user depending on the predicted parameters which will be measured and type of measured solutions.

The standard set includes **CT2B-121** temperature probe with **Pt-1000B** resistor.

TECHNICAL DATA

Function	pH	mV	Conductivity / Salinity	O ₂ (mg/l)	O ₂ (%)	Temperature
Range	-6.000 ÷ 20.000 pH	±1999.9 mV	0 ÷ 1999.9 mS/cm (autorange) / 0 ÷ 239 g/l KCl 0 ÷ 296 g/l NaCl	0 ÷ 60 mg/l	0 ÷ 600%, in air: 0 ÷ 100 %	-50.00 ÷ 200.00 °C
Accuracy (± 1 digit)	±0.002 pH*	±0.1 mV*	<19.99 mS/cm: ±0.1%* >20.00 mS/cm: ±0.25%* / Salinity ± 2%*	±0.01 mg/l**	±0.1%*	±0.1 °C***
Temp. Compensation	-5 ÷ 110 °C	-	-5 ÷ 70 °C	0 ÷ 40 °C	-	-
Input impedance	>10 ¹² Ω	>10 ¹² Ω	-	-	-	-
α coefficient	-	-	0.00 ÷ 10.00 % / °C	-	-	-
K constant	-	-	0.010 ÷ 19.999 cm ⁻¹	-	-	-
Resistivity	Range: 0.500Ωcm ÷ 200MΩcm, accuracy: ±2% of the measured value					
Air pressure range	800 ÷ 1100 hPa, accuracy: ±2 hPa					
Power	2 x AA 1.2V rechargeable battery, 5 V / 1000 mA USB power adapter					
Weight	260 g					
Dimensions (mm)	L=149 W=82 H=22					

*The accuracy of the meter only.

**The accuracy of the meter only. With COG-1 or COG-2 oxygen sensor the accuracy at calibration temperature: ±1%.

By the difference ±5 °C accuracy: ± 3%, by the difference ±10°C accuracy: ±5%.

***The accuracy of the meter only. The total error includes the meters and probe's accuracy.

In the range 0 ÷100 °C the acceptable error of the probe with Pt-1000B resistor: ±0.8 °C, with Pt-1000A resistor: ±0.35 °C.

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