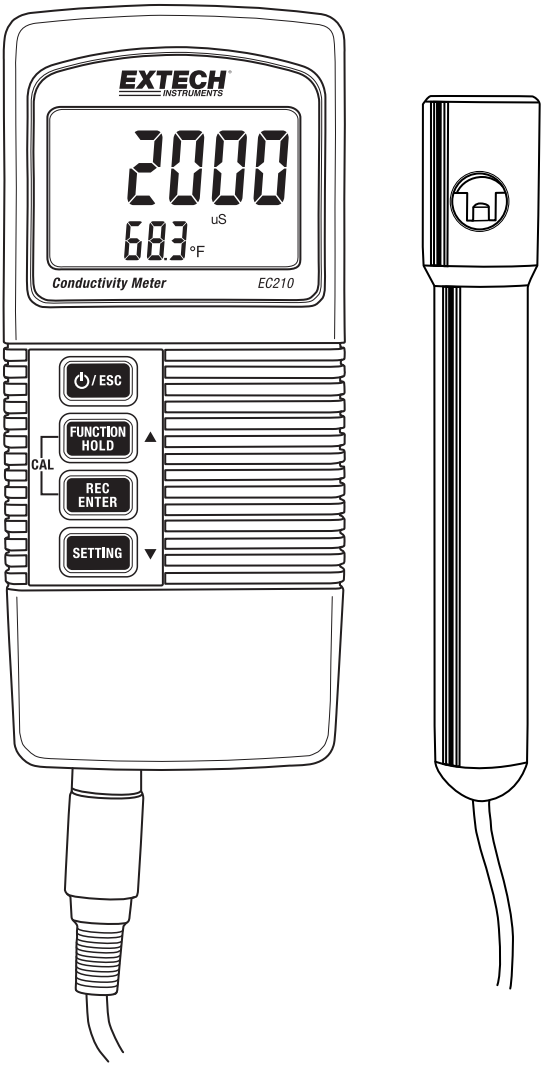
EXTECH INSTRUMENTS

User Guide

Conductivity Meter

Model EC210



Introduction

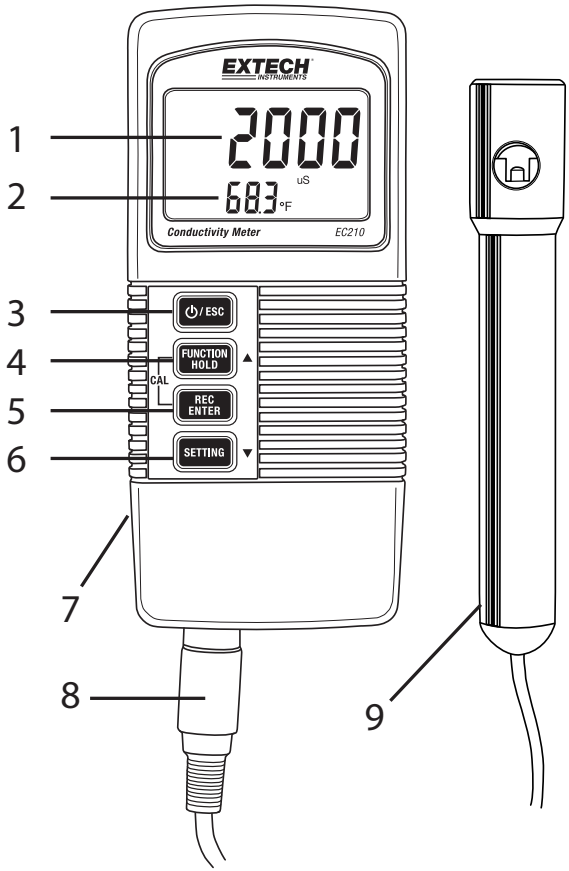
Thank you for selecting the Extech EC210 conductivity meter which simultaneously displays conductivity and Temperature. Conductivity is measured with a remote electrode that includes a thermistor for measuring temperature. This device is shipped fully tested and calibrated and, with proper use, will provide years of reliable service. Please visit our website (www.extech.com) to check for the latest version of this User Guide.

Features

- *Three ranges 2000uS, 20mS, and 100mS with auto range functionality*
- *Conductivity, TDS and temperature measurement functions*
- *Detachable probe for ease of use in a variety of measurement environments*
- *User adjustable automatic temperature compensation (set to '0' for uncompensated Conductivity measurements)*
- *Carbon rod electrode type for longevity*
- *LCD display shows Conductivity and Temperature simultaneously*
- *DATA HOLD for holding displayed reading*
- *Record and view MIN MAX readings*
- *Programming mode for selecting $^{o}C/^{o}F$ temperature units, enabling/disabling the auto power off utility, and programming the temperature compensation functionality*

Meter Description

1. Main measurement display
2. Temperature reading
3. Power/Escape button
4. Function/Hold/Up arrow button
5. Record/Enter button
6. Setting/down arrow button
7. Battery compartment (rear)
8. Probe connection
9. Probe



Conductivity Calibration

1. Connect the Conductivity electrode to the input socket at the bottom of the meter.
2. Switch the meter ON by pressing the POWER/ESC button.
3. Prepare a Conductivity Standard Solution (for example, 1.413uS).
4. Hold the probe by its handle and immerse the sensing electrode completely in the standard solution. Shake/stir the sensing electrode to allow the electrode's internal air bubbles to escape from the sensing electrode.
5. Press the HOLD button and the display will show the HOLD icon.
6. Press the REC button and the upper display area will show CAL and the lower display area will show YES. To abort at this point, simply wait and the meter will revert to the normal operating mode.
7. To continue, press the ENTER button and the display will show the Conductivity reading, the measurement unit, and, shortly after, the flashing CAL icon. Note that the meter will show END if the electrode does not detect an appropriate solution value.
8. While the CAL icon is flashing use the arrow buttons to adjust the displayed Conductivity reading to match the Conductivity value of the solution.
9. After a few seconds the meter will display END. Calibration is complete.

Conductivity Measurements

Measurement Preparation

Before taking measurements, perform the calibration described above if necessary.

Taking Conductivity Measurements

1. Connect the electrode to the probe input socket.
2. Switch the meter ON by pressing the POWER/ESC button.
3. If the display does not show Conductivity units (uS or mS), press and hold the FUNCTION button until the Conductivity units are displayed.
4. The lower display will indicate the temperature value.
5. The upper display shows the conductivity value.
6. Hold the electrode in hand and fully immerse the sensing head in the standard solution.
7. The upper display will show the conductivity value of the measured solution. The bottom display will show the temperature value of the measured solution.
8. Rinse the probe with distilled water after each use.

TDS Measurements

1. Connect the electrode to the probe input socket at the bottom of the meter. Immerse the probe in the measurement solution.
2. Switch the meter ON by pressing the POWER/ESC button. Press and hold the FUNCTION button until the ppm units are displayed.
3. The lower display shows the temperature value.
4. The upper display indicates the TDS value (measured in ppm).
5. Hold the electrode in hand and fully immerse the sensing head in the standard solution
6. The upper display will show the ppm value of the measured solution. The bottom display will show the temperature value of the measured solution.
7. Rinse the probe with distilled water after each use.
8. Press and hold the FUNCTION button for at least 2 seconds to return to the conductivity measurement mode.

Solution Temperature

The lower display indicates the temperature of the measured solution. Refer to the Setup Mode section for instructions on selecting ^{o}C/^{o}F temperature units and for adjusting the automatic temperature compensation.

Data Hold

Press the Function/Hold key to freeze the displayed value. The LCD will display **HOLD** along with the held reading. Press the Hold key again to release the data hold function.

MIN-MAX Data Recording

When selected, the Data Recording function records the Min and Max readings:

1. Press the REC button once. The REC indicator will appear on the display. Press REC button once again and REC MAX will display on the screen along with the maximum value.
2. Press REC again and the display will show REC MIN and the minimum value will be displayed.
3. To release the held MAX or MIN reading, press the HOLD button while either the REC MAX or REC MIN icons are visible; now only the REC icon will be visible. The meter is now continuing to monitor the highest (MAX) and lowest (MIN) readings but is displaying real time measurements. To view the MAX and MIN values again use the REC button as described earlier.
4. To exit the Record mode, press and hold the REC button for at least 2 seconds. The display will return to the normal operating mode.

Setup mode

Note: If the HOLD or MIN/MAX functions are active the Setup mode cannot be accessed.

To enter the Setup Mode press and hold the SETTING button for at least 5 seconds (until the beep is heard) and then use the SETTING button to scroll through the setup options. The options are:

- **SEt** Automatic temperature compensation percentage; settable from 0.00 to 5.00% per °C (the default is 2.00%). Set to 0.00% to take uncompensated Conductivity measurements. When power is cycled this parameter will revert to the default 2.00%
- **°C/F** Select the temperature units (°C °F)
- **OFF/ON** Auto power off disable/enable

Continue with the instructions below:

Temperature Compensation Percent Setting (SEt)

When the display shows **SEt** press ENTER. **SEt** will flash and the upper display will show the temperature compensation percent. Use the ▲ and ▼ buttons to set the desired temperature compensation percentage. After selecting the desired value, press ENTER to save the data. The display now shows the temperature units. Continue below:

Temperature Units Select

The lower display shows **C** or **F**. Use the ▲ button to select the desired unit of measure and then press ENTER to save. The lower display should now show **OFF YES** or **NO**. Continue below:

Auto Power OFF Enable/Disable

The display will show **OFF YES** or **OFF NO**. Use the ▲ button to select YES or NO.
YES: Auto power OFF is enabled (meter switches off automatically after 10 minutes)
NO: Auto power OFF is disabled
Press ENTER to save the selection. The meter will return to the normal operating mode.

Battery Replacement

The 9V battery that powers the instrument requires replacing when the battery icon flashes on the display. To replace the battery follow the steps below:

1. Disconnect the probe from the instrument.
2. Open the rear battery compartment using a screwdriver to remove the two Phillips head screws that secure the compartment.
3. Carefully remove the old battery from the compartment lid chamber and gently unsnap the battery's terminals from the wired (red/black) connectors.
4. Install a new 9V battery by snapping the battery terminals onto the wired connectors (observing correct polarity) and inserting the battery into the compartment lid chamber.
5. Install the compartment lid chamber into the meter housing and secure with the two screws.

Never dispose of used batteries or rechargeable batteries in household waste. As consumers, users are legally required to take used batteries to appropriate collection sites, the retail store where the batteries were purchased, or wherever batteries are sold.

Disposal: Do not dispose of this instrument in household waste. The user is obligated to take end-of-life devices to a designated collection point for the disposal of electrical and electronic equipment.

Specifications

General Specifications

Circuit	Custom one-chip LSI microprocessor circuit
Display	Dual function LCD Dimensions: 44mm X 29mm (1.73 x 1.14”)
Measurements	Conductivity, TDS, Temperature
Data hold	Data hold freezes displayed reading
Memory recall	Min/Max readings store and recall
Auto power off	Meter switches off after 10 minutes (can be disabled)
Sample rate	1 second (approx.)
Operating conditions	Temperature: 0 to 50 °C (32 to 122 °F); Humidity: < 80% RH
Battery power	9V alkaline battery
Power Consumption	Approx. 6.0 mA DC
Weight	295 g (0.65 lbs.) including batteries & probe
Dimensions	Meter: 135 x 60 x 33mm (5.3 x 2.4 x1.3") Probe: 22mm (0.87”) diameter x 120mm (4.72”) length

Electrical Specifications

Measurement	Range	Resolution	Accuracy
Conductivity	20.00mS/100.0mS/2000 uS	0.01mS/0.1mS/1uS	± (2%FS+1dgt)
TDS	1,200/12,000/66,000 ppm	1/10/100ppm	± (2%FS+1dgt)
Automatic Temperature Compensation range	0 to 50°C (32 to 122 °F)		

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