Apera Instruments AI532

Apera Instruments EC820 Benchtop Conductivity Meter Kit

User Manual

1. Introduction and Product Overview

The Apera Instruments EC820 Benchtop Conductivity Meter is a high-precision instrument designed for accurate measurement of Conductivity (EC), Total Dissolved Solids (TDS), Salinity, Resistivity, and temperature. This meter is equipped with advanced features for reliable and stable readings across a wide range of applications.

This manual provides detailed instructions for the proper setup, operation, maintenance, and troubleshooting of your EC820 meter to ensure optimal performance and longevity.

Figure 1: Apera Instruments EC820 Benchtop Conductivity Meter Kit. The image shows the main meter unit, a flexible electrode arm and holder, and the conductivity electrode submerged in a beaker of liquid.

2. Safety Precautions

- Always handle the meter and electrodes with care to prevent damage.

- Do not immerse the main meter unit in water. The unit is IP54 water-resistant, but not submersible.
- Use only the provided power adapter.
- Keep calibration solutions and samples away from children and pets. Follow safety data sheets (SDS) for handling specific chemicals.
- Ensure the meter is placed on a stable, level surface during operation.
- Disconnect power before cleaning or performing maintenance.

3. Package Contents

Verify that all items listed below are present in your package:

- EC820 Precision Benchtop Conductivity Meter
- 2401T-F Platinum Glass-body Conductivity Electrode
- Flexible Electrode Arm and Holder
- USB Cable
- PC-Link Software Flash Drive
- Power Adaptor (Input: 120V AC 60Hz; Output: 9V 300mA)
- Calibration Solutions:
  - 84 µS/cm (1 vial)
  - 1413 µS/cm (1 vial)
  - 12.88 mS/cm (1 vial)

Figure 2: The 2401T-F Platinum Glass-body Conductivity Electrode, showing its connection cables.

4. Setup

1. **Unpack the Meter:** Carefully remove all components from the packaging.
2. **Assemble Electrode Arm:** Attach the flexible electrode arm to the meter unit. Ensure it is securely fastened.
3. **Connect Electrode:** Plug the 2401T-F Conductivity Electrode into the designated "COND" port on the back of the meter. Ensure the connection is firm.

Figure 3: Rear panel of the EC820 meter, highlighting the "COND" and "TEMP" ports, along with RS232 and DC 9V power input.

4. **Connect Power:** Plug the power adapter into the "DC 9V" port on the back of the meter, then connect it to a standard 120V AC 60Hz power outlet.
5. **Initial Power On:** Press the power button to turn on the meter. The LCD display should illuminate.

5. Operating Instructions

5.1. Calibration

The EC820 meter features 1 to 4 points auto-calibration. Regular calibration ensures accurate measurements.

1. **Prepare Solutions:** Use the provided 84 µS/cm, 1413 µS/cm, and 12.88 mS/cm calibration solutions. Ensure solutions are at room temperature.
2. **Rinse Electrode:** Rinse the conductivity electrode thoroughly with distilled or deionized water before and after each measurement or calibration. Gently blot dry with a lint-free tissue.
3. **Enter Calibration Mode:** With the meter on, press the **CAL** button. The display will show "CAL" and prompt for the first calibration point.
4. **First Point Calibration:** Immerse the electrode into the 1413 µS/cm standard solution. Wait for the reading to stabilize (indicated by a stable icon on the display). The meter will automatically recognize the solution. Press **ENTER** to confirm.
5. **Subsequent Points (Optional):** For higher accuracy, proceed with 84 µS/cm and 12.88 mS/cm solutions following the same procedure. The meter will guide you through the process.
6. **Exit Calibration:** After completing desired calibration points, press the **MEAS** button to return to measurement mode.

Note: *The meter has a self-diagnosis function to help identify and fix common calibration problems. Refer to the on-screen prompts.*

5.2. Measurement

1. **Rinse Electrode:** Rinse the electrode with distilled water.
2. **Immerse Electrode:** Immerse the electrode into the sample solution, ensuring the sensor is fully submerged.
3. **Wait for Stability:** Allow the reading to stabilize. The stable reading icon will appear on the LCD.
4. **Record Reading:** Read the Conductivity (EC), TDS, Salinity, or Resistivity value displayed on the large LCD. Temperature will also be displayed simultaneously.
5. **Change Units:** Press the **UNIT** button to cycle through different measurement units (e.g., µS/cm, mS/cm, ppm, ppt).
6. **Data Storage:** The meter supports GLP data management with 500 groups of data storage. Use the **M+** / **R-M** buttons to store and recall data.
7. **Data Export:** Connect the meter to a PC via the USB cable and use the provided PC-Link software (Windows-based system only) to export data.

6. Maintenance

- **Electrode Cleaning:**
  - Regularly rinse the electrode with distilled or deionized water.
  - For stubborn deposits, refer to the electrode's specific cleaning instructions. Generally, a mild detergent solution or a specific electrode cleaning solution can be used, followed by thorough rinsing.
  - Do not scratch or damage the platinum black sensor.
- **Electrode Storage:**
  - Always store the conductivity electrode in its protective cap filled with a proper electrode storage solution (e.g., 3M KCl solution or Apera Instruments storage solution). Never store dry.
- **Meter Cleaning:** Wipe the main meter unit with a clean, damp cloth. Do not use abrasive cleaners or solvents.
- **Software Updates:** Check the Apera Instruments website periodically for any software updates for the PC-Link software.

Figure 4: Close-up view of the platinum glass-body conductivity electrode tip, which requires careful handling and proper storage.

7. Troubleshooting

Problem	Possible Cause	Solution
Meter does not power on	No power supply; faulty adapter; loose connection.	Check power adapter connection and outlet. Ensure adapter is functional.
Unstable readings	Dirty electrode; air bubbles on sensor; incorrect calibration; temperature fluctuations.	Clean electrode; gently tap electrode to remove bubbles; recalibrate meter; ensure sample temperature is stable.
Calibration error	Contaminated calibration solution; incorrect solution used; damaged electrode.	Use fresh calibration solutions; ensure correct solution for calibration point; inspect electrode for damage.
No data transfer to PC	Incorrect USB connection; software not installed or running; driver issues.	Verify USB cable connection; ensure PC-Link software is installed and open; check device manager for driver issues.

8. Specifications

Parameter	Value
Model Number	AI532
Measurement Parameters	Conductivity (EC), TDS, Salinity, Resistivity, Temperature
Conductivity Range	0 to 2,000 mS

Parameter	Value
Accuracy	±0.5% F.S.
Calibration Points	1 to 4 points auto-calibration (84µS/cm, 1413µS/cm, 12.88mS/cm, 111.8mS/cm)
Temperature Compensation	Automatic Temperature Compensation (ATC)
Data Storage	500 groups (GLP compliant)
Connectivity	USB for PC data export
Display Type	Large Backlit LCD
Power Supply	9V DC, 300mA (120V AC 60Hz adapter included)
Ingress Protection	IP54 Water-resistant
Certifications	CE, RoHS, ISO 9001:2015
Package Dimensions	10.63 x 9.88 x 6.61 inches
Weight	6.5 Pounds

9. Warranty and Support

Apera Instruments products are manufactured under an ISO 9001:2015 certified quality system, ensuring high standards of quality and reliability. For specific warranty information and technical support, please refer to the warranty card included with your product or visit the official Apera Instruments website.

For assistance with troubleshooting, calibration, or general inquiries, please contact Apera Instruments customer service. Contact details can typically be found on their official website or in the product packaging.

Online Resources: Apera Instruments Store on Amazon

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