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601-S Water Hardness Electrode

User Manual

Brief Introduction

Apera Instruments 601 water hardness electrode is the replacement electrode for Apera Instruments YD300 Portable Water Hardness Meter.

Technical Specifications

Measuring Range	(0.015 – 10) mmol/L; (1.5 – 1000) mg/L ($CaCO_3$)
pH Range	pH 5.0 – 10.0
Temperature Range	59 – 104 ˚F (15 – 40) ˚C (Auto.)
Housing	Polycarbonate
Electrode Impedance	(2 – 10) MΩ
Impedance resistance	≥ 1×10^{11} Ω
Temperature sensor	30KΩ thermistor
Connector	8 pins
Cable length	3 ft
Dimension	ø12 ×160 mm

Calibration Solution

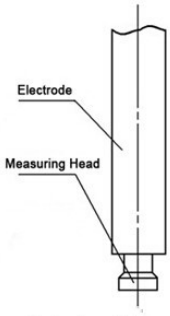
B1 calibration solution: 2.00×10^{-2} mmol/L

B2 calibration solution: 2.00×10^{-1} mmol/L

B3 calibration solution: 2.00 mmol/L

1. the B2 and B3 calibration solution is suitable for general water such as tap water.

2. the B1 and B2 calibration solution is suitable for low hardness concentration water such as boiler water.



Electrode and Measuring Head

How to Use the Electrode

1. The new electrode should be soaked and activated in the soaking solution for around half an hour, For daily use, soak it for 10 minutes before testing and calibration.
2. Shake electrode with force in the air to let the inner solution of electrode fall into the measuring head compartment; there should NOT be any bubbles within the measuring head. If the electrode film is concave, it will affect the performance. In this case, you can unscrew the white membrane for a few seconds to allow air to enter.Then tighten the membrane. If it is still concave, we recommend replacing the electrode.
3. Generally, calibration is necessary before every test, but if the interval between tests is short, then calibration is not necessary; To test if the meter is due for calibration, simply insert the electrode in one of the calibration solutions and wait for a stable reading. If the reading is within the stated error range, then it is unnecessary to recalibrate.
4. When measuring, the electrode should be placed diagonally in the measuring cup or suspended in the solution using an electrode holder. The electrode should not touch the bottom of the cup vertically during measurement, otherwise, it will affect the accuracy.
5. When testing boiler water, the user should choose the B1/B2 calibration method. TISAB must be added during calibration and measurement. The proportion is 2ml TISAB per 100ml solution.
6. When testing high concentration water hardness (concentration ≥ 2mmol/ or 200mg/L CaCO3). TISAB must be added during calibration and measurement. The proportion is 2ml TISAB per 100ml solution.

7. The water hardness adopts PVC membrane sensitive film. Put the electrode into the sample solution, stir a few seconds and let it stand diagonally. Then take the measurement after the reading is completely stablized.

8. Because B1, B2, and B3 calibration solutions have no buffer, they are easy to be contaminated, especially for the low concentration B1 solution, which should be replaced sooner.

Other factors affecting water hardness test

a) The pH of the sample solution must be pH 5 to pH 10, otherwise, the measurement will be inaccurate. Sodium hydroxide or hydrochloric acid can be added to adjust the pH.

b) A high concentration of sodium chloride will cause errors in the measurement. Measurement errors will occur if the sodium chloride concentration exceeds 2%. When the concentration reaches 20%, It cannot be measured at all.

9. When the measurement is finished, the electrode should be stored dry in the protection cap after being rinsed with deionized water or distilled water.

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