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APERA INSTRUMENTS WS100 Fluoride pH Portable Meter Kit

APERA INSTRUMENTS WS100 Fluoride pH Portable Meter Kit User Manual

Contents

APERA INSTRUMENTS WS100 Fluoride pH Portable Meter Kit

Specifications

- **Fluoride Ion:**
    - Measurement range: 0.02 ppm to 1900 ppm
    - Display units: mg/L, ppm, pF
    - Accuracy: 5.00 to 6.00 pH
    - Temperature Compensation Range: Automatic
    - pH range requirement for accurate fluoride ion measurement:
      5.00 to 6.00 pH

- **pH:**
    - Measurement range: (-2.00 – 19.99) pH
    - Resolution: 0.1/0.01 pH
    - Accuracy: +/- 0.01 pH
    - Temperature Compensation Range: (0 – 100) Automatic

- **mV Measurement:**
    - Measurement range: Not specified
    - Resolution: Not specified
    - Accuracy: Not specified

- **Other technical parameters:**
    - Data Storage: 800 sets
    - Power Supply: AA Battery (1.5VX2)
    - Size and Weight: Instrument:(65X120X31) mm/180g ;
      Case:(360X270X76) mm/1.5Kg
    - Quality and Safety Certification: ISO9001:2015, CE
    - IP Rating: IP57 Dustproof and waterproof

Product Usage Instructions

- The Apera Instruments WS100 Fluoride/pH Portable Meter Kit is designed for measuring fluoride and pH levels in various water sources.
- It comes with automatic calibration, temperature compensation, data storage, self-diagnostics, and other essential features.
- The patented ion electrode design allows for quick stability and fast response when measuring fluoride levels.
- No stirring or reagents are required for measurement. The meter can directly measure fluoride concentration in mg/L, ppm, and pF units.
- The meter offers automatic calibration with up to 3 points, and it can recognize different pH standard buffer solutions.
- Users can choose from three series of standard buffer solutions (U.S.A, NIST, and CH) for calibration.
- The LCD shows parameter mode, measurement values, storage of measured values, temperature measurement, unit display, stability indicator, calibration indicator, and low battery reminder.
- The operation keys include power on/off and calibration keys.

FAQ

- **Q:** How do I calibrate the WS100 Fluoride/pH Portable Meter?
- **A:** To calibrate the meter, follow these steps:
    - Ensure the meter is clean and dry.
    - Turn on the meter and allow it to stabilize.
    - Select the calibration mode using the designated key.
    - Follow the on-screen instructions for calibration using appropriate buffer solutions.
    - Once calibration is complete, rinse the electrode with distilled water.
- **Q:** Can the WS100 meter be used for both in-field and laboratory testing?
- **A:** Yes, the WS100 Fluoride/pH Portable Meter Kit is suitable for both in-field and laboratory testing applications due to its portable design and advanced features.

Overview

Thank you for purchasing the Apera Instruments WS100 Fluoride/pH Portable Meter Kit. This fluoride/pH combo meter is widely used for drinking water, surface water and other water treatment applications, ideal for both in-field and laboratory testing.
Before using the product, please read this manual carefully before use to help you properly use and maintain the instrument.
For technical support, please contact us at **info@aperainst.com** or +1 (614)-285-3080.

Basic Functions

- Automatic calibration and temperature compensation (ATC), data storage, self-diagnostics, automatic shutdown, low-battery reminder
- Adopting digital filtering and intelligence to improve the instrument's responsiveness and accuracy of measurement data, measured value display when stable ☺ icon.
- Meets IP57 Waterproof and dustproof rating, ideal for use under harsh environments.

Features of Fluoride Measurement

- The patented structure of the 3-in-1 ion electrode contains an ion-selective electrode, reference electrode, and temperature electrode. This design generates quick stability, and fast response, and is easy to use.
- no need for stirring or adding reagents, directly measuring the ion concentration of fluoride quickly and simply, directly measuring the fluoride concentration with three different units: mg/L, ppm and pF.

Features of pH measurement

- 1-3 points of automatic calibration, with calibration icons and self-diagnosis function.
- Automatic recognition of up to 12 different pH standard buffer solutions, there are three series of standard buffer solutions to choose from: U.S.A, NIST, and CH.

Technical Parameters

Fluoride Ion

Measurement range	0.02 ppm to 1900 ppm
Display units	mg/L, ppm, pF
Accuracy	±0.02 ppm or ±5% of reading (whichever is greater)
Temperature Compensation Range	(0-80) ℃ (Automatic)
pH range requirement for accurate fluoride ion measurement	5.00 to 6.00 pH

pH

Measurement range	(-2.00 – 19.99) pH
Resolution	0.1/0.01 pH
Accuracy	± 0.01 pH ± 1 digit
Temperature Compensation Range	(0 – 100) ℃ (Automatic)

mV

Measurement range	-1999 mV – 0 – 1999 mV
Resolution	1 mV
Accuracy	±0.1% FS

Other technical parameters

Data Storage	800 sets
Storage Content	Numberings, measurements, units of measurement, and temperature
Power Supply	AA Battery (1.5VX2)
Size and Weight	Instrument:(65X120X31) mm/180g ; Case:(360X270X76) mm/1.5Kg
Quality and Safety Certification	ISO9001:2015, CE
IP Rating	IP57 Dustproof and waterproof

Instrument Description

LCD Display
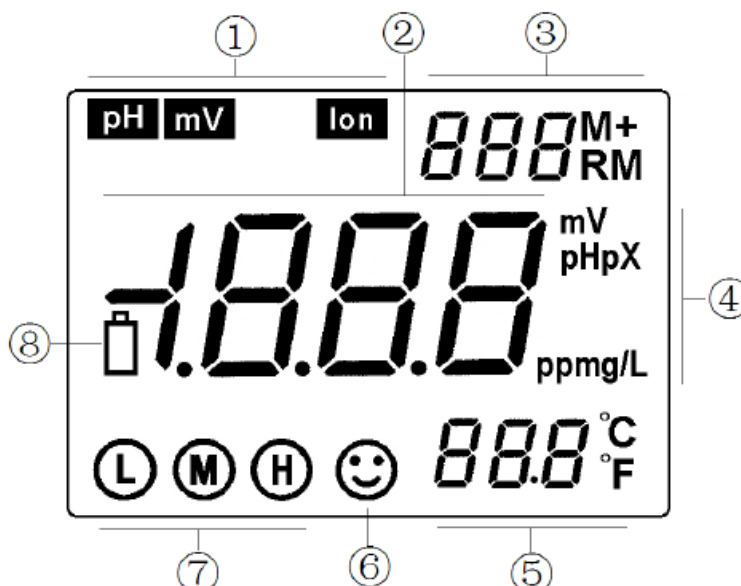
1. Parameter mode
2. Measurement value
3. Measured value storage and display of numbers, symbols indicate: M+ — Store Measured value

   RM – Recall measurement values icon ;
4. Measurement unit
5. Temperature measurement and unit
6. Smiley face; icon indicates stable readings
7. Instrument calibration indicator
8. Low battery reminder

Operation keys

1. Switch on/off key

2. Calibration key

- In measurement mode, press this key to enter calibration mode.
- In parameter setting mode, press this key to change the number or ON/OFF state.

3. **MODE** Function key
- In pH measurement mode, short press this key to change measurement parameters, long press this key to enter parameter setting mode P1, P2, P3 ......
- In fluoride measurement mode, press this key to enter parameter setting mode P1, P2, P3 ......

4. **ENTER** Backlight and enter key
- In measurement mode, short press (< 1.5s) to turn the backlight display on or off;
- In calibration mode or the parameter setting mode, press this key to confirm, and enter measurement;
- In pH measurement mode, press this key to change resolution simultaneously: 0.01→0.1 pH
- In ion measurement mode, press this key to change the parameter unit: mg/L → ppm → pX

5. **M+ RM** The combination key of memory storage and recall memory.
- In measurement mode, short press this button (< 1.5s) to save the measurement data. Long press this button (2s) to display the stored measurement data.
- In parameter setting mode, press this button to change the unit % → mol → g/cm3 → g/L or turn the meter ON/OFF.

Data Storage, Recall Data, and Clear Data

Data Storage

- While in the measurement mode, when the measurement data is stable and the smiley face icon appears, short press **M+ RM** key (1.5s), LCD will display " M+ " icon and a storage serial, and meanwhile storing all of the measurement information. It can store up to 300 groups.

Display measurement information

- While in the measurement mode, long press **M+ RM** (>2s), meter will display the last stored information, and the storage number and "RM" icon will appear in the lower right corner of the LCD, and the complete measurement information. Again short press **M+ RM** or **CAL** meter will in turn display all the saved data.
- Hold **M+ RM** or **CAL** to quickly check the data.
- In the data displaying mode (there are RM and storage number in the upper right corner of the LCD), press **ENTER** key to return to measurement mode.

- Clear the stored data: In the data displaying mode, press **ENTER** key for 5 seconds, LCD will appear CLr for 2 seconds. It means that all the storage has been eliminated, and returns to measurement mode.

Fluoride ion concentration measurement

Preparation

1. Press ![ON OFF] key to power on, connect the F501-S fluoride ion electrode (pay attention to inserting direction), the meter automatically switches to fluoride ion concentration measurement mode.

2. Hold ![ENTER] to change fluoride ion concentration unit from mg/l, ppm to pX , release the button after selection.

3. If it is a new electrode or if it is your first use, activate the electrode by soaking it in 19.00 mg/L calibration solution for 1 hour. For regular usage, soak 10 to 20 minutes to activate it. When the reading is fully stabilized (![☺] stays on screen), the electrode activation is finished. Then you can start calibration and measurement (Please note that the reading during activation is random).

4. If the pH range of your measured solution is between 5.00 to 6.00 pH, then you can start the calibration and then measurement directly; if the pH range of your measured solution is beyond that range, we recommend that you add the Fluoride Ion TISAB (Total Ionic Strength Adjustment Buffer, SKU: AI1401) to your measured solution at the ratio of 1:1, and also add the TISAB to the calibration solution at the ratio of 1:1, and re-calibrate the electrode before measurement. This method stabilizes ionic strength and pH, reduces interference from other ions, and ensures consistent and accurate readings across different samples.

Calibration

1. Press ![CAL] , LCD displays 0.19 mg/L, and LCD top right corner CAL and the bottom left L will be blinking, indicating that the meter has entered the 1st point calibration mode and the calibration solution is 0.19 mg/l; Rinse the fluoride-ion electrode in distilled or deionized water and shake off the excess water; dip the electrode into 0.19 mg/L calibration solution, stir gently and let it stand still.

2. When the reading is stable and icon ![☺] stays on screen , press ![CAL] key again to finish 1st point calibration. End and 19.0 mg/L will be displayed after a few seconds. CAL and H will be flickering on the screen, indicating the meter has entered the 2nd point calibration mode and the calibration solution is 19.00 mg/L.

3. Take out the electrode and shake off excess solution, then dip it into 19.00 mg/L calibration solution, stir gently and let it stand still. When the reading is stable and ![☺] stays on screen, press ![CAL] key again to finish 2nd point calibration. After a few seconds End shows up, indicating the end of calibration; LCD' left corner shows two-point calibration icons L and H; The instrument automatically enters measurement mode.

Sample Measurement

1. Rinse the fluoride-ion electrode in distilled or deionized water and shake off excess water or blot dry with filter paper. Soak the electrode into your sample solution, stir gently and let it stand still; get the measurement when the reading is stable and ![☺] stays on screen.

2. Hold ![ENTER] to show Fluoride concentrations in different units, release after selection.

3. Short press ![MODE] key, the meter enters the mV mode and displays the mV value of the fluoride ion concentration.

4. After test, rinse off the electrode with distilled water, shake off excess water, and store dry with the cap on.

Parameter Settings

Table (4-3)

Symbol	The parameter sets the project	Code	Parameters
P1	Temperature unit selection		˚C / ˚F
P2	Backlight display time setting	**bL**	0-1-3-6 min
P3	Auto power off time setting	**AC**	0-10-20 min
P4	Restore to factory default settings		OFF-ON

1. Temperature units ° C/ºF selection (P1) Long Press **MODE** to enter P1 remaining operations see section 5.4.5

2. Backlight display time setting (P2) In P1, long press **MODE** to enter P2 remaining operations see section 5.4.6

3. Auto-off time setting (P3) In P2, press **MODE** to enter P3 remaining operations see section 5.4.7

4. Restore factory default (P4) In P3, press **MODE** to enter P4 remaining operations see section 5.4.8

Notes

1. The meter does not automatically recognize calibration solutions. Please make sure to use the correct calibration solution according to the displayed reminders "0.19 mg/L" or "19.00 mg/L".
2. The calibration solution can be easily polluted, especially for low concentration solution (0.19 mg/l). Please pay attention to avoid contamination otherwise a large measurement error will occur. Replace the solution after 4~5 times of use.
3. When storing the electrode, just rinse it out and shake off excess water, then store dry with the electrode cap on.
4. When testing solutions in the order from low-concentration to high-concentration, the electrode does not need to be rinsed. Just shake off excess water or blot dry with filter paper. If it's from high concentration to low concentration, you need to rinse the electrode with distilled or deionized water, otherwise, it will affect the accuracy significantly.
5. Typically the meter needs to be calibrated before use every time. But when a requirement of accuracy is low, calibration is not necessary. Or try the electrode in the calibration solution, if the error is very small, calibration is not necessary.
6. According to the theory of Isothermal measurements of ion-selective electrodes, the smaller the difference of

temperature between test solution and the calibration solution, the higher the measurement accuracy is. Typically, the temperature difference between test solution and the calibration solution should ≤±15°C; for high-accuracy measurement, the temperatures should be the same.

7. When the meter is functioning abnormally, please set P4 as "ON" to reset the meter to factory default mode, and then perform calibration and measurements again.
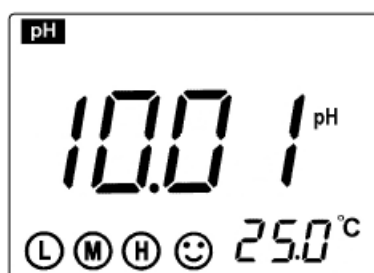
pH Measurement

Preparation
Connect the 201T-S pH Electrode to the meter (pay attention to the inserting direction); loosen the cap of the storage bottle of electrode; screw off the storage bottle; Press ⏻ to turn on meter. The meter automatically switches to pH measurement mode.

Meter Calibration

1. Use distilled water to rinse off electrode and then shake off excess water or blot dry with filter paper. Then soak it into the pH 7.00 buffer solution, stir the electrode gently and let it stand still.

2. Press (CAL) to enter calibration mode, LCD displays C1, indicating the first point of calibration; Wait for a stable reading and ☺ to appear and stay, then press (CAL) again , the LCD will show a blinking 7.00 pH, indicating the 1st point of calibration is completed; a stable pH value and a blinking C2 will be displayed, indicating the first point calibration has been finished and the meter enters the second point of calibration.

3. Rinse the pH electrode in distilled water and dry it, then soak it into the pH4.00 buffer solution, stir the electrode gently and let it stand still,, waiting for a stable reading and a smiley face icon to appear and stay, then again press , the (CAL) LCD will show a blinking 4.00 pH, a stable pH value and a blinking C3 will be displayed, indicating the second-point calibration has been finished and the meter enters the third-point calibration.

4. Rinse the pH electrode in distilled water and dry it, then soak it into the pH 10.01 buffer solution, stir the electrode gently and let it stand still, waiting for a stable reading and a smiley face icon to appear and stay, then again press, (CAL) the LCD will show a blinking 10.01 pH. A stable reading and L M H calibration icons will be displayed, see picture (4-1), indicating the three-point calibration has been finished and the meter automatically returns to measurement mode.

Picture(4-1)

Notes

- This meter can perform one-point, two-point or three-point automatic calibrations. After the first point calibration

(see item 5.2.2.), press ![ENTER] to confirm one-point calibration and return to measurement mode. The indication icon M standing for one-point calibration will appear on the lower left corner of LCD. When the requirement of accuracy is ≤±0.1pH, users can perform a one-point calibration with the pH7.00 buffer solution.

- After the second-point calibration, (see item 5.2.3.), press ![ENTER] to confirm two-point calibration and return to measurement mode. The indication icon L and M for two-point calibration will appear on the lower left corner of LCD. User can choose pH 4.00 and pH 7.00 to calibrate if the measurement is within the acidity range and choose pH 7.00 and pH 10.01 to calibrate if within the alkalinity range.
- Users should perform a three-point calibration to reach a more accurate measurement if the measurement range is wide, or if the electrode has been used for long or has aging phenomenon. If it's a new electrode, a three-point calibration is necessary to adjust the meter's slope to match the pH electrode.

Sample Measurement

Soak the pH electrode into the sample solution after rinsing and drying, hold the electrode still. Take the readings when the smiley face icon shows up and stays on screen (indicates a stable reading).

Isothermal measurement principle

According to the theory of Isothermal measurements, the smaller the difference of the temperatures between test solution and the calibration solution, the higher the measurement accuracy is. Typically, the temperature difference between test solution and the calibration solution should ≤±15℃; for high-accuracy measurement, the temperatures should be the same.

Parameter Settings

1. pH measurement parameter setting (Chart (5-1)

Prompt	Parameter Setting Items	Code	Parameters
P1	pH buffer solution series selection	**SOL**	USA(U.S.A series) NIS (NIST series) CH (China series)
P2	Purified water pH temperature compensation setting	**PU1**	OFF-On
P3	Ammonia-added purified water pH temperature compensation setting	**PU2**	OFF-On
P4	Temperature unit setting		℃ ℉
P5	Backlight display time setting	**BL**	0-1-3-6min
P6	Auto power off-setting	**AC**	0-10-20min
P7	Restore to Factory Default		OFF-On

2. pH buffer solution series selection (P1)

- Press **MODE** key, meter enters P1 mode: see picture (4-2).
- Press **CAL** or **M+ RM** key to choose buffer solution series:
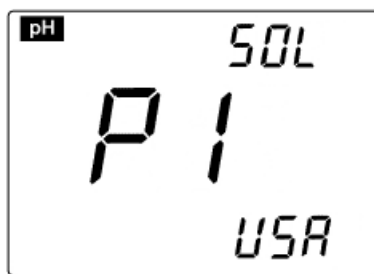
Picture (4-2)

- U.S.A series —1.68, 4.00, 7.00,10.01 and 12.45 pH
- NIST series — 1.68, 4.01, 6.86, 9.18 and 12.45 pH
- China series — 1.68, 4.00, 6.86, 9.18 and 12.46 pH
- Press **MODE** key to enter the next parameter setting or press **ENTER** key to confirm and return to measurement mode.

3. Purified water pH temperature compensation setting (P2)

- Short press **MODE** key in the mode P1, and the meter enters mode P2, see picture (4-3).
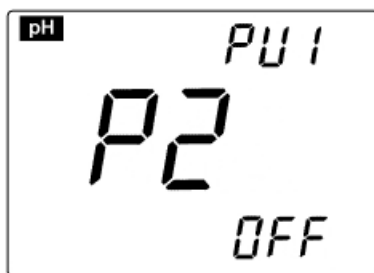
Picture (4-3)

- Press **CAL** or **M+ RM** to choose ON or OFF.
- Press **MODE** key to enter the next parameter setting or press **ENTER** key to confirm and return to measurement mode.
- The default setting is " OFF ".
- **Note:** A PU-1 icon will appear in the upper right corner of the LCD if the purified water temperature compensation function is set by the user.

4. Ammonia added purified water pH temp. compensation setting (P3)

- Short press **MODE** key in mode P2 to enter mode P3, see picture (4- 4).
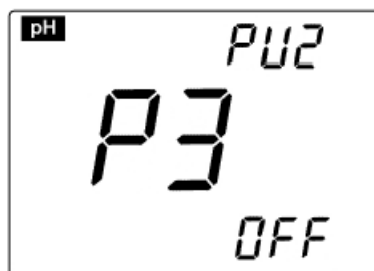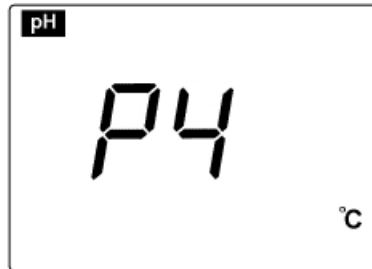

Picture (4-4)

- Press **CAL** or **M+ RM** key to choose ON or OFF

- Press **MODE** to enter the next parameter setting or press **ENTER** key to confirm and return to measurement mode.
- The default setting is " OFF ".
- **Note:** A PU-2 icon will appear in the upper right corner of the LCD if the purified water temperature compensation function is set by the user.

5. Temperature unit ℃/℉ setting (P4)

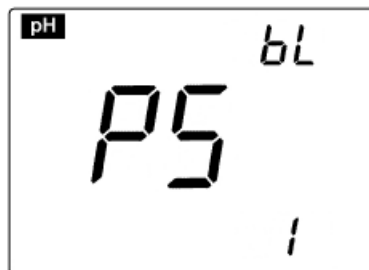- Short press **MODE** key in mode P3 to enter mode P4, see picture (4- 5).

Picture (4-5)

- Press **CAL** or **M+ RM** key to choose the temperature unit: ℃ or ℉.
- Press **MODE** key to enter the next parameter setting or press key to confirm and return to measurement mode.

6. Backlight display time setting (P5)

- Short press **MODE** key in mode P4 to enter mode P5, see picture (4- 6).

Picture (4-6)

- Press **CAL** or **M+ RM** key to choose the time of backlight auto power off: 0 min, 1 min, 3 min or 6 min. The backlight display function will be closed if choosing a 0 min.
- Press **MODE** key to enter the next parameter setting or press **ENTER** key to confirm and return to measurement mode.
- The default setting for P5 is 1min.

7. Auto power off time setting (P6)

- Short press **MODE** key in mode P5 to enter mode P6, see picture (4- 7).
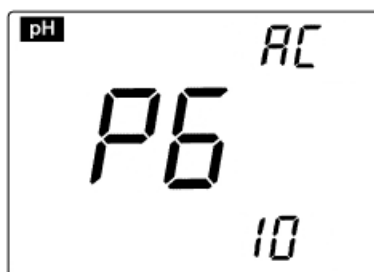
Picture(4-7)

- Press [CAL] or [M+ RM] key to choose the time: 0min, 10min or 20min. The auto power-off function will be closed if choosing 0min.
- Press [MODE] key to enter next parameter setting or press [☀ ENTER] key to confirm and return to measurement mode.
- The default setting for P6 is 10min.

8. Restore to default setting (P7)

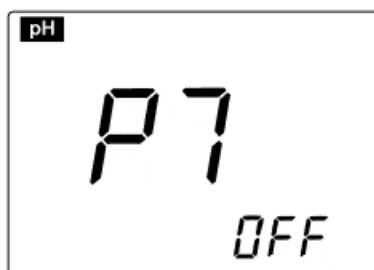- Short press [MODE] key in mode P6 to enter mode P7, see picture (4- 8).

Picture(4-8)

- Press [CAL] or [M+ RM] key to choose "ON", means that all the pH measurement parameters have been restored to the factory default setting.

Notes

1. The frequency that you need to calibrate your meter depends on the tested samples, performance of electrodes, and the requirement of the accuracy. For high-accuracy measurements (≤ ±0.02pH), the meter should be calibrated before test every time; For ordinary-accuracy measurements (≥±0.1pH), once calibrated, the meter can be used for about a week or longer. In the following cases, the meter must be re-calibrated before testing:
    - The electrode hasn't been used for a long time or a new electrode is connected.
    - After measuring strong acid (pH<2) or strong base (pH>12) solutions.
    - After measuring fluoride-containing solution and strong organic solution
    - There is a significant difference between the temperature of the test sample and the temperature of the buffer solution that is used in the last calibration.
2. The soaking solution in the supplied protective bottle is used to maintain activation in the glass bulb and junction. Loosen the capsule, remove the electrode and rinse in distilled water before taking a measurement. Insert the electrode and tighten the capsule after measurements to prevent the solution from leaking. If the soaking solution is turbid or moldy, replace the KCL solution (Product# AI1107).
3. For calibration accuracy, the pH of the standard buffer solution must be reliable. The buffer solution should be refreshed often, especially after heavy use. We recommend 10-15 times of use before replacing the pH buffers.

4. Always keep the meter clean and dry; especially around the socket connecting the meter and electrode, otherwise it may lead to inaccurate measurements or a damaged probe/meter. To clean, dry them with medical cotton and rubbing alcohol if the connectors appear dirty.

5. The sensitive glass bulb at the front of the combination electrode should not contact with hard surfaces. Scratches or cracks on the electrode will cause inaccurate readings. Before and after each measurement, the electrode should be rinsed with distilled water and dried. If a sample sticks to the electrode or it's contaminated, the electrode should be thoroughly cleaned using a soft brush with soap water and then rinsed with distilled water. After that, soak it in the KCL solution again for 6 hours.

6. How to renew the pH electrode when its response is getting slow:

   For general contaminants, soak the electrode in Apera's cleaning solution (AI1166) or detergent water for 30 minutes. Then use a soft brush to remove the contaminants. Afterwards, soak the probe in Apera 3M KCL soaking solution (AI1107) for at least 1 hour. Rinse it off, then re-calibrate the tester before using.

For other special contaminants, refer to Table-8
Table-8 Clean contaminated glass bulb and junction

Contamination	Cleaning Solutions
Inorganic metal oxide	Dilute acid less than 1mol/L
Organic lipid	Dilute detergent (weak alkaline)
Resin macromolecule	Dilute alcohol, acetone, ether
Proteinic haematocyte sediment	Acidic enzymatic solution (saccharated yeast tablets)
Paints	Dilute bleacher, peroxide

- Every pH electrode gradually loses its sensitivity and will eventually fail. The lifespan period for the 201T-S pH Electrode is about 1-2 years depending on how it's used and maintained.
- When an abnormal reading appears during calibration or measurement, please set P7 to "ON" to restore the meter to Factory Default settings, then re-calibrate the meter before measurement.
- Electrodes that have been used for a long period of time will become aged. Submerge the electrode in 0.1mol/L hydrochloric acid for 24 hours, then rinse the electrode in distilled water, then submerge it in 3M KCL soaking solution for 24 hours. The method to prepare 0.1mol/L hydrochloric acid: dilute 9mL hydrochloric acid in distilled or deionized water to 1000mL.

Self-diagnose Information

When using the meter, the following icons might appear. This is the meter's self-diagnose information, which helps users identify problems occurring with the meter or the electrode:

- A still display of -2.00 pH or 19.99 pH — this icon appears when the value has surpassed the measurement range. There will also appear such signs when the electrode is not well connected with the meter or when the electrode is not immerged into the solution. This is a normal phenomenon.
- Err1 — Abnormal electrode zero potential (<-60mV or >60mV)
- Err2 — Abnormal electrode slope (< 85% or >105%) When "Err1" or "Err2" appears, the meter cannot work properly, please take the following steps to check and fix the problem:

- Check if the electrode bulb has air bubble, if has, please shake the electrode with force for a few times to eliminate the air bubble inside the sensor.
- Check the quality of buffer solution, if it is expired or contaminated. If so, please replace with new ones.
- Set the meter to factory default mode then recalibrate it.
- If the meter still cannot recover to the normal state after doing the above steps, please replace a new pH electrode.

ORP Measurement

Sample Measurement

1. Press [ON OFF] key to turn on, and short press [MODE] to switch to mV mode;
2. Connect the ORP probe (301Pt-S, sold separately), soak it into sample solution, stir gently and let it stand still. Get the readings when the smiley face ion appears and stay on the screen.

Complete Kit
WS100 Fluoride/pH meter *1 pc; 201T-S 3-in-1 plastic pH/ATC electrode *1 pc; F501 Fluoride combination electrode *1pc; pH standard buffer solution (pH 4.00, pH 7.00and pH 10.01, 50mL) *1pc/each; Fluoride calibration solution (0.19ml/L and 19mg/L, 50mL) *1pc/each; Screw driver *1pc; Spare AA batteries *3pcs; Operation manual *1pc; Carrying case *1pc

Limited Warranty

We warrant this instrument to be free from defects in material and workmanship and agrees to repair or replace free of charge, at option of APERA INSTRUMENTS, LLC, any malfunctioned or damaged product attributable to responsibility of APERA INSTRUMENTS, LLC for a period of two years from the delivery (a six-month limited warranty applies to probes). This warranty does not apply to defects resulting from actions such as misuse (violation of the instructions in this manual or operations in the manner not specified in this manual), accidental damage, improper maintenance, or unauthorized repairs. Warranty period is the time limit to provide free service for the products purchased by customers, not the service life of the tester or probe.

Appendix 1. Fluoride Concentration Conversion Table

mol/L	pF	mg/L	ppm
1×10^{-3}	3.00	19.00	19.00
1×10^{-4}	4.00	1.90	1.90
1×10^{-5}	5.00	0.19	0.19

CONTACT

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- Website: **aperainst.com** Email: **info@aperainst.com**

Documents / Resources

APERA INSTRUMENTS WS100 Fluoride pH Portable Meter Kit [pdf] User Manual
WS100 Fluoride pH Portable Meter Kit, WS100, Fluoride pH Portable Meter Kit, Portable Meter Kit, Meter Kit

References

- **Apera Instruments® Meters and Sensors for pH, Conductivity, TDS, Salinity, ORP, DO, Turbidity, ISE**
- **User Manual**