PH850 Portable pH Meter

User Manual

CE ISO 9001:2015 IP57 WATERPROOF RoHS compliant

Apera Instruments, LLC
aperainst.com

Contents

1   Introduction

Thank you for purchasing PH850 portable pH meter.

This product is a great combination of advanced electronics technology, sensor technology, and software design, made for general water solution applications such as water treatment, environmental monitoring, pools and spas, hydroponics, aquaculture, education, beverage making, cooling tower, etc., especially ideal for field use. In order to use and maintain the meter properly, please read the manual carefully before use.

1.1   Measurement Parameters

Measurement parameters	PH850
pH/mV	√
Conductivity/TDS	
Temperature	√

1.2   Basic Features

● The microprocessor-based portable meter features automatic calibration, automatic temperature compensation, function setup, self-diagnostics, automatic power-off and low voltage display.

● The meter's digital filter improves measurement speed and accuracy. There is a stable reading indication on the display.

● The package includes a portable case, a meter, electrodes, standard solutions and all accessories, which is convenient to use in field.

● The meter is dust proof and waterproof, meeting the IP57 rating.

1.3   pH Measurement Features

● 1-3 points automatic calibration, the meter provides calibration guide and automatic checking function.

● The meter can recognize pH standard buffer solutions automatically. USA series and NIST series buffer solutions can be selected.

● The meter provides three types of reading stability criteria.

2　Specifications

2.1　Main Specifications

	Specifications	
pH	Range	(0.00~14.00) pH
	Resolution	0.1/0.01 pH
	Accuracy	±0.01 pH ±1 digit
	Temperature compensation	(0~100)˚C (manual or automatic)
mV	Range	±1,000 mV
	Resolution	1 mV
	Accuracy	±0.2% F.S ±1 digit
Temperature	Range	0~100˚C
	Resolution	0.1˚C
	Accuracy	±0.5˚C ±1 digit

2.2　Other Specifications:

Power	AAA batteries × 3 (1.5V×3)	
IP rating	IP57	
Dimension & Weight	Meter: (86×196×33) mm / 335 g	
	Portable case:(330×270×82)mm/1.3kg	PH850, EC850

3　Instrument Description

3.1　LCD Display：

Diagram-2
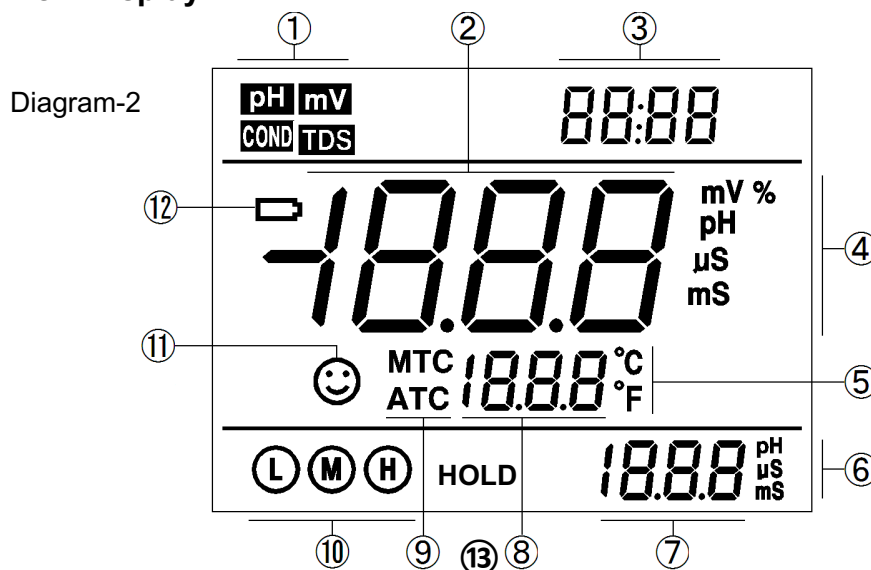
(1) — Parameter mode icons

(2) — Measurement reading

(3) — Prompts of special display mode

(4) — Units of measurement

(5) — Temperature units (°C and °F)

(6) — Units of pH and conductivity calibration value

(7) — pH and conductivity calibration value, and prompts of special display mode

(8) — Temperature value, and prompts of special display mode

(9) — Temperature compensation icons

      ATC — automatic temperature compensation, MTC — manual temperature compensation

(10) — Calibration guide icon

(11) — Stability icon of readings

(12) — Low battery icon, when this icon appears, please replace the battery

(13) — Automatic reading hold icon

3.2 Keypad Functions

Diagram-3
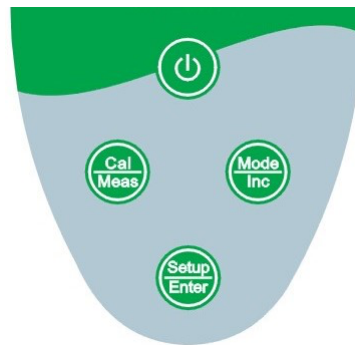
3.2.1. Keypad operations

Short press ----- <1.5 seconds;   Long press ----- >1.5 seconds.

Turn on the meter: Press ⏻ to turn on the meter.

Turn off the meter: In the measurement mode, press ⏻ and hold for 2 seconds to turn off the meter.

Note: In the calibration mode or the parameter setup mode, pressing ⏻ is invalid. Please press (CAL/MEAS) ***key to return to the measurement mode, then press ⏻ to turn off the meter.***

Chart -1 Keypad operations and descriptions

Keypad	Operations	Descriptions
(power icon)	Short press	● In the power-off mode, press this key to turn on the meter
	Long press	● In the measurement mode, press and hold this key for 2 seconds to turn off the meter.
MODE INC	Short/long press	Select measurement parameters: ● PH850 pH meter: **pH** → **mV** ● In the measurement mode: long press to enter manual temperature compensation mode, then long press or momentary press this key to change the temperature value (only one direction). ● In the parameter setup mode, press this key to change the serial number of the main menu and the submenu (only one direction) ● In the submenu mode, press this key to change parameters and setup (only one direction)
CAL MEAS	Short press	● In the measurement mode, press this key to enter the calibration mode ● In the calibration mode or the parameter setup and auto lock-up (HOLD) mode, press this key to return to the measurement mode
SETUP ENTER	Short press	● In the measurement mode, press this key to enter the parameter setup main menu ● In the calibration mode, press this key to make calibration ● In the parameter setup mode, press this key to select programs

3.3 Meter Socket

Chart-2 Sockets for Meters

Models	Photos	Description
PH850 pH meter		● BNC socket (right) — connect pH electrode or ORP electrode, ● RCA socket (middle) — connect temperature probe

3.4 Reading Stability Display Mode

When the measuring value is stable, smiley icon ☺ stays on LCD, see Diagram – 4. If the smiley icon ☺ does not appear or flash, please do not get the reading value or make calibration until the measuring value is stable. Per parameter P1.3, there are 3 criteria for stability standard: *nor* (Normal), *HI* (High), and *Lo* (Low). The factory default is set "Normal".
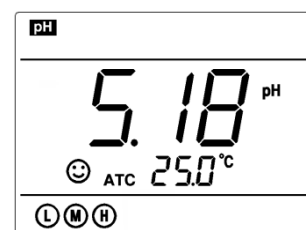

Diagram- 4

4

"High" is set for stability for longer time, "Low" is set for stability for shorter time. User can select suitable stability criteria according to different testing requirement.

3.5 Automatic Lock Display Mode

Select **On** from parameter P4.6 to turn on automatic lock-up display function. When the reading value stabilizes more than 10 seconds, the meter locks the measuring value automatically and displays **HOLD** icon, see Diagram – 5. In the **HOLD** mode, press (CAL/READ) to release lock-up.
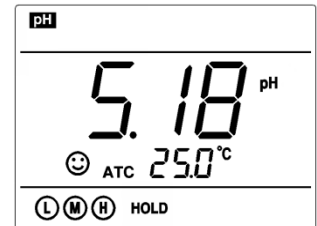
Diagram - 5

3.6 Automatic Power-off

The meter will be power-off if there is no operation for 20 minutes. The time of auto power-off can be set in parameter setting P3.2

3.7 Manual Temperature Compensation (MTC)

When the temperature probe does not connect to the meter, long press (MODE/INC) key, temperature value flashes, then long press (MODE/INC) key or short press (MODE/INC) key to change the temperature value in one way, and press (SETUP/ENTER) to confirm the temperature value to achieve Manual Temperature Compensation (MTC).

4 pH Measurement

4.1 pH Electrode Information

The meter connects to 201T-F plastic three-in-one combination pH electrode with built-in temperature sensor, with automatic temperature compensation function. Electrode housing is made of polycarbonate engineering plastics, which is corrosion and impact resistant. The BNC socket of electrode connects pH socket. RCA socket connects temperature socket. When dipping pH electrode in the solution, please stir the solution briefly to eliminate any air bubbles and allow it to stay in the solution until the reading is stable

Note: The 201T-F Combination Glass pH/temp. Electrode is only suitable for general water solutions' pH measurement. For special applications such as low ion concentration or complex solutions, please refer to **Section 10** to find the most suitable pH electrode model.

4.2 pH Calibration Consideration

4.2.1. Standard buffer solution

The meter uses two series of standard buffer solution: USA series and NIST series, 3 solutions for each series which are corresponding to calibration indication icons. Please see Chart - 3 for the two series of standard buffer solution.

Chart - 3 pH standard buffer solution series

Calibration guide icons		pH standard buffer solution series	
		USA series (USA)	NIST series (NIS)
Three-point calibration	(L)	1.68 pH and 4.00 pH	1.68 pH and 4.01 pH
	(M)	7.00 pH	6.86pH
	(H)	10.01 pH and 12.45 pH	9.18 pH and 12.45 pH

4.2.2. Three-point calibration

The instrument can perform 1-3 points calibration. The first point calibration must use 7.00 pH (or 6.86 pH) standard solution, then select other standard solution to perform the second and the third point calibration. See chart – 4.

Chart - 4 Three-point calibration mode

	USA standard	NIST standard	Icons	Suited range
One-point calibration	7.00 pH	6.86 pH	(M)	Accuracy $\leqslant$ ±0.1pH
Two-point calibration	7.00 pH→4.00 or 1.68pH	6.86 pH→4.01 or 1.68pH	(L) (M)	Range<7.00pH
	7.00 pH→10.01 or 2.45pH	6.86 pH→9.18 or 12.45pH	(M) (H)	Range>7.00pH
Three-point calibration	7.00pH→4.00 or1.68pH →10.01 or12.45pH	6.86pH→4.01or 1.68pH →9.18 or 12.45pH	(L) (M) (H)	Large Range

4.2.3. Calibration frequency

Calibration frequency depends on the sample, the electrode performance, and the required accuracy. For high accuracy measurements (≤ ±0.03pH), the meter should be calibrated immediately before taking a measurement. For general accuracy (≥±0.1pH), the meter can be calibrated and used for approximately one week before the next calibration.

The meter must be recalibrated in the following situations:

(a) New probe or probe that has not been used for a long time

(b) After measuring acid (pH<2) or alkaline solutions (pH>12)

(c) After measuring a solution that contains fluoride or a concentrated organic solution

(d) If the solution's temperature differs greatly from the calibration solution temperature.

4.3 pH Meter Calibration (with an example of 3-point calibration)

4.3.1. First point calibration

(a) Press (CAL/MEAS) key to enter the calibration mode, "**CAL 1**" flashes at the top right of LCD and "7.00 pH" flashes at the bottom right of LCD, indicating using pH 7.00 buffer solution to make the 1st point calibration.

(b) Rinse pH electrode in distilled or deionized water, allow it to dry, and submerge it in pH7.00 buffer solution. Stir the solution briefly and allow it to stay in the buffer solution until a stable reading is reached. When stable icon ☺ stays on LCD, press (SETUP/ENTER) key to calibrate, then 1st point calibration is finished, the meter enters in measurement mode of one-point calibration. Calibration guide icon (M) will display at the bottom left of LCD.
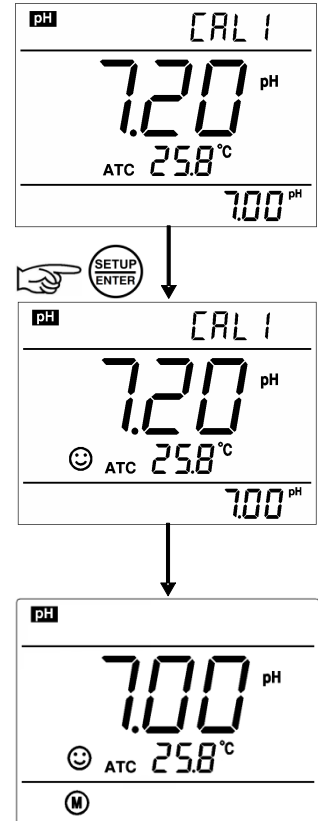
4.3.2. Second point calibration

Press (CAL/MEAS) key to enter the calibration mode, "**CAL 2**" flashes at the top right of LCD indicating to make the 2nd point calibration. Rinse pH electrode in distilled or deionized water, allow it to dry, and submerge it in pH4.00 buffer solution. Stir the solution briefly and allow it to stay in the buffer solution until a stable reading is reached. The meter's display will show scanning and locking process of calibration buffer solution at the bottom right of LCD. When the meter locks 4.00 pH, stable icon ☺ stays on LCD, press (SETUP/ENTER) key to calibrate the meter. LCD will display electrode slope of acidity range, then 2nd point calibration is finished, the meter enters measurement mode of two-point calibration. Calibration guide icons (L) (M) will display at the bottom left of LCD.

Diagram- 6

4.3.3. Third point calibration

Press (CAL/MEAS) key to enter the calibration mode, "**CAL 3**" flashes at the top right of LCD indicating to make the 3rd point calibration. Rinse pH electrode in distilled or deionized water, allow it to dry, and submerge it in pH10.01 buffer solution. Stir the solution briefly and allow it to stay in the buffer solution until a stable reading is reached. The meter's display will show scanning and locking process of calibration buffer solution at the bottom right of LCD. When the meter locks 10.01pH, stable ☺ icon stays on LCD, press (SETUP/ENTER) the key to calibrate the meter. LCD will display electrode slope of alkalinity range, then 3rd point calibration is finished, the meter enters in measurement mode of three-point calibration.

Calibration guide icons (L) (M) (H) will display at the bottom left of LCD.

Notes:

(a) The meter can perform 1-3 points calibration. When the 1st point calibration is done, the meter will enter measurement mode of one-point calibration. Two-point and three-point calibration are in the same manner.

(b) During the calibration process, if measuring value is not stable yet (when ☺ does not stay on and the key (SETUP/ENTER) is pressed, then **Er 2** will display. (See chart – 5). To solve the problem, simply wait for ☺ to

stay on the screen before pressing (SETUP ENTER)

(c) To exit calibration mode and go back to measurement mode, press (CAL MEAS) key.

4.4 Sample Test

4.4.1. Rinse pH electrode in distilled or deionized water, allow it to dry, and submerge it in tested solution. Stir the solution briefly and allow it to stay in the tested solution until ☺ icon stays on LCD and a stable reading is reached, which is the pH value of test solution.
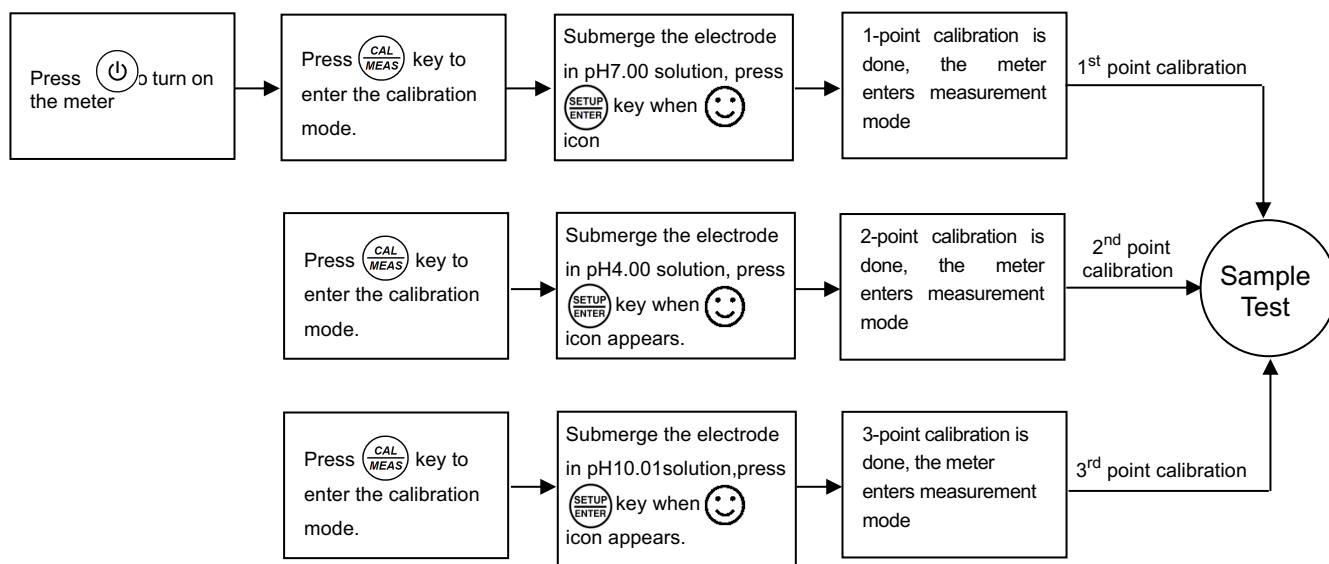

Diagram – 7 Calibration and measurement process of pH meter

4.4.2. Self-diagnosis information

During the process of calibration and measurement, the meter has self-diagnosis functions, indicating the relative information as below, please refer to chart – 5.

Chart – 5 Self-diagnosis information of pH measurement mode

Display Icons	Meaning	Check and Fix
Er 1	Wrong pH buffer solution or the recognition of calibration solution out of range	1. Check whether pH buffer solution is correct. 2. Check whether the meter connects the electrode well. 3. Check whether the electrode is damaged.
Er2	Pressing (SETUP ENTER) key too soon	Press (SETUP ENTER) key after ☺ icon appears and stays
Er3	During calibration, the measuring value is not stable for ≥3min.	1. Check whether there are bubbles in glass bulb. 2. Replace with new pH electrode.
Er4	pH electrode performance error zero potential <-60mV or >60mV, slope <75%	1. Check whether there are bubbles in glass bulb. 2. Check whether pH buffer solution is correct. 3. Replace with new pH electrode.

4.4.3. pH temperature principle

Please note that the closer the temperature of the sample solution to the calibration solution, the more accurate the readings.

4.4.4. Factory default setting

For factory default setting, please refer to parameter setting P1.4 (Item 7.3). All calibration data is deleted and the meter restores to the theory value (zero electric potential of pH is 7.00, the slope is 100%). Some functions restore to the original value (refer to appendix -1). When calibration or measurement fails, please restore the meter to factory default setting and then perform re-calibration or measurement. Please note once set the factory default, all the data deleted will be irretrievable.

4.5 pH Electrode Maintenance

4.5.1. Daily maintenance

The soaking solution contained 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 or deionized 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 solution. The soaking/storage solution is 3M KCL (SKU: AI1107). Using other brand's storage solution might cause potential damage to the electrode.

The electrode should not be stored in distilled or deionized water, protein solution or acid fluoride solution. In addition, do not soak the electrode in organic silicon lipids. For best accuracy, always keep the meter clean and dry, especially the meter's electrode socket. Clean with medical cotton and alcohol if necessary.

4.5.2. Calibration buffer solution

For calibration accuracy, the pH of the standard buffer solution must be reliable. The buffer solution should be refreshed often, especially after heavy use.

4.5.3. Protect glass bulb

The sensitive glass bulb at the front of the combination electrode should not come in contact with hard surfaces. Scratches or cracks on the electrode will cause inaccurate readings. Before and after each measurement, the electrode should be washed with distilled or deionized water and dried. Do not clean the glass bulb with a tissue for it will affect the stability of the electrode potential and increase the response time. The electrode should be thoroughly cleaned if a sample sticks to the electrode. Use a solvent if the solution does not appear clean after washing.

4.5.4. Renew glass bulb

Electrodes that have been used over a long period of time will become aged. Submerge the electrode in 0.1mol/L hydrofluoric acid for 24 hours, then wash the electrode in distilled or deionized water, then submerge it in soaking solution for 24 hours. The method to prepare 0.1mol/L hydrofluoric acid dilute 9mL hydrochloric acid in distilled or deionized water to 1000mL. For serious passivation, submerge the bulb in

4% HF (hydrofluoric acid) for 3-5 seconds, and wash it in distilled or deionized water, then submerge it in the soaking solution for 24 hours to renew it.

4.5.5. Clean contaminated glass bulb and junction (please refer to Chart-6)

Chart – 6 Clean contaminated glass bulb and junction

Contamination	Cleaning Solutions
General tough contaminants	Apera Electrode Cleaning Solution (SKU: AI1166)
Organic lipid	Dilute detergent (weak alkaline)
Resin macromolecule	Dilute alcohol, acetone, ether
Proteinic sediment	Apera Electrode Cleaning Solution (SKU: AI1166)
Paints	Dilute bleacher, peroxide

Note: The electrode housing is polycarbonate. When use cleaning solutions, take cautions on carbon tetrachloride, trichlorethylene, tetrahydrofuran, acetone, etc., which will dissolve the housing and invalidate the electrode.

5   mV Value Measurement:

5.1   ORP Measurement

Press $\binom{MODE}{INC}$ key, and switch the meter to mV measurement mode. Connect 301Pt-C ORP electrode (SKU: AI1303, sold separately) and dip it in sample solution, stir the solution briefly and allow it to stay in the solution until ☺ icon stays and then record the reading, which is ORP value. ORP is in short for Oxidation Reduction Potential. The unit is mV.

5.2   Notes

5.2.1. ORP measurement does not require calibration. When the user is not sure about ORP electrode quality or measuring value, use ORP standard solution to test mV value and see whether ORP electrode or meter works properly.

5.2.2. Clean and Activate ORP Electrode

After the electrode has been used over long period of time, the platinum surface will get polluted, which causes inaccurate measurement and slow response. Please refer to the following methods to clean and activate ORP electrode:

(a) For inorganic pollutant, submerge the electrode in 0.1mol/L dilute hydrochloric acid for 30 minutes, then wash it in distilled or deionized water, then submerge it in the soaking solution for 6 hours.

(b) For organic or lipid pollutant, clean the platinum surface with detergent, then wash it in distilled or deionized water, then submerge it in the soaking solution for 6 hours.

(c) For heavily polluted platinum surface on which there is oxidation film, polish the platinum surface with

toothpaste, then wash it in distilled or deionized water, then submerge it in the soaking solution for 6 hours.

6 Parameter Setting

6.1 Main Menu

In the measurement mode, press (SETUP/ENTER) key to enter P1.0, then press (MODE/INC) to switch to main menu: P1.0→P3.0. Please refer to diagram – 9.

P1.0: pH parameter setting; P3.0: Basic parameter setting.

6.2 Submenu

7.2.1. In P1.0 mode, press (SETUP/ENTER) key to enter submenu P1.1 of pH parameter setting, then press (MODE/INC) key to switch among submenu: P1.1→P1.2→P1.3→P1.4, see Diagram – 9.
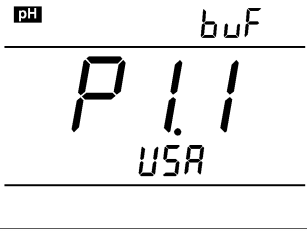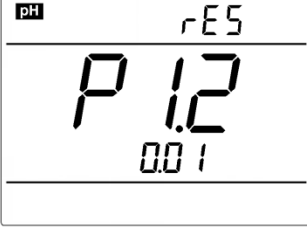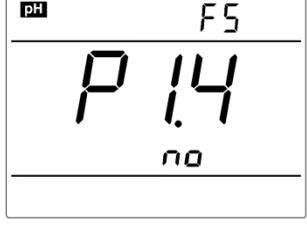
7.2.3. In P3.0 mode, press (SETUP/ENTER) key to enter submenu P3.1 of basic parameter setting, then press to switch among submenu: P3.1→P3.2→P3.3, see Diagram – 9.

Diagram 9

Main menu of parameter setting

Submenu of pH parameter setting

pH

P1.0

SETUP ENTER

P1.1 Select pH standard solution
P1.2 Select resolution
P1.3 Set stability criteria
P1.4 Restore to factory setting

MODE INC

MODE INC

Submenu of basic parameter setting

P3.0

SETUP ENTER

P3.1 Select temperature unit
P3.2 Automatic power-off setup
P3.2 Automatic lock-up setup

MODE INC
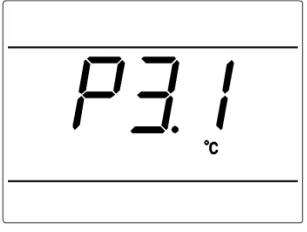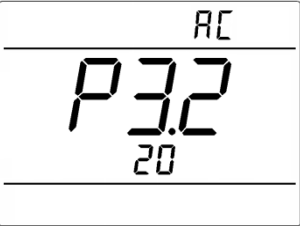
6.3 Submenu of pH Parameter Setting (press (MODE/INC) key to switch)

pH buF P 1.1 USA	**P1.1. – Select pH standard solution** (USA-NIST) 1. In measurement mode, press (SETUP/ENTER) key to enter P1.0 mode, then press (SETUP/ENTER) to enter P1.1. 2. Press (SETUP/ENTER) key, **USA** flashes, press (MODE/INC) key to select USA→nIS, press (SETUP/ENTER) to confirm. USA-USA series; nIS-NIST series. 3. After confirming parameter, press (MODE/INC) key to enter P1.2 mode, or press (CAL/MEAS) key to return to the measurement mode.
pH rES P 1.2 0.01	**P1.2. – Select resolution** (0.01 – 0.1) 1. Press (SETUP/ENTER) key, **0.01** flashes, press (MODE/INC) key to select 0.01→0.1, press (SETUP/ENTER) key to confirm. 2. After confirming parameter, press (MODE/INC) key to enter P1.3 mode, or press (CAL/MEAS) key to return to the measurement mode.
pH SC P 1.3 nor	**P1.3. – Set reading stability criteria** (Normal – High – Low) 1.Press (SETUP/ENTER) key, **nor** flashes. Press (MODE/INC) key to select nor→HI→Lo, press (SETUP/ENTER) to confirm. Nor – Normal, Hi – High, Lo – Low. 2. After confirming parameter, press (MODE/INC) key to enter P1.4 mode, or press (CAL/MEAS) key to return to the measurement mode.
pH FS P 1.4 no	**P1.4. –Restore factory setting** (No – Yes) 1.Press (SETUP/ENTER) key, **no** flashes. Press (MODE/INC) key to select no→YES, press (SETUP/ENTER) to confirm, the meter returns to the measurement mode. No – Do not restore, Yes – Restore to factory setting. 2.If not choosing **Yes** , press (CAL/MEAS) key to return to the measurement mode.

6.4 Submenu of Basic Parameter Setting (press (MODE/INC) key to switch)

P3.1 ℃	**P3.1. Select temperature unit** (°C—°F). 1. In P3.0 mode, press (SETUP/ENTER) key to enter P3.1 mode, please refer to the left Diagram. 2. Press (SETUP/ENTER) key, **°C** flashes, then press (MODE/INC) key to select °C→°F, press (SETUP/ENTER) key to confirm. 3. When parameter is confirmed, press (MODE/INC) key to enter mode P3.2 or press (CAL/MEAS) key to return to the measurement mode.

AC **P3.2** 20	**P3.2 – Automatic power-off setup** (10→20→30→On) 1. Press (SETUP/ENTER) key, **On** flashes, press (MODE/INC) key to select 10→20→30→On press (SETUP/ENTER) key to confirm. On – turn off automatic power-off; Time unit is minutes. 2. After confirming the parameter, press (SETUP/ENTER) key to enter mode P3.3 or press (CAL/MEAS) key to return to the measurement mode.
P3.3 OFF HOLD	**P3.2 – Automatic lock-up setup** (Off→On) 1. Press (SETUP/ENTER) key, **OFF** flashes, press (MODE/INC) key to select OFF→On, press (SETUP/ENTER) to confirm. Off – not set; On–set (the reading is automatically locked when stabilizes＞10 seconds.) 2. When Parameter is confirmed, press (CAL/MEAS) key to return to the measurement mode.

7   What's in the Kit

No.	Include	Quantity	PH850
1.	PH850 portable pH meter	1 set	✓
2.	201T-F plastic three-in-on pH electrode	1 pc	✓
3.	pH standard buffer solution (4.00 pH /7.00pH/10.01/50mL)	1 bottle each	✓
4.	Portable case	1 pc	✓
5.	Manual	1 book	✓

8   Recommended pH Electrodes for Different Applications

Application	Ideal Apera pH Electrodes to Use with 850 Series Meter
General water solutions	201T-F, LabSen 211, LabSen 213
Beverage, beer, wine…	LabSen 211, LabSen 213
Cosmetics	LabSen 851-S
Corrosive solutions	LabSen 861
Culture medium	LabSen 823, LabSen 821, LabSen 851-S
Dairy products (milk, cream, yogurt, mayo, etc.)	LabSen 823, LabSen 821
High-Temperature solution	LabSen 861
Low-temperature solution	LabSen 881
Meat	LabSen 763
Micro-volume solution	LabSen 241-6, LabSen 241-3
Purified Water (Low ion concentration samples)	LabSen 803, LabSen 801
Soil	LabSen 553
Solid or semi-solid samples (cheese, rice, fruit, etc.)	LabSen 753, LabSen 751, LabSen 251
Strong acid samples	LabSen 831
Strong alkaline samples	LabSen 841
Surface test (skin, paper, carpet, etc.)	LabSen 371
TRIS buffer solutions	LabSen 211, LabSen 213, LabSen 221
Viscous liquid	LabSen851-S, LabSen 851-H
Wastewater, emulsion, complex and caustic solutions	LabSen 333, LabSen 331

* Visit http://aperainst.com/electrodes or contact us at 1-614-285-3080 for more details.

9 <u>Warranty</u>

We warrant this instrument to be free from defects in material and workmanship and agree to repair or replace free of charge, at the option of APERA INSTRUMENTS, LLC, any malfunctioned or damaged product attributable to the responsibility of APERA INSTRUMENTS, LLC for a period of **THREE YEARS for the instrument and SIX MONTHS for the probe from the delivery.**

This limited warranty does NOT cover any issues due to:

- Accidental damage
- Improper use
- Normal wear and tear
- Transportation
- Storage
- Failure to follow the product instructions
- Unauthorized maintenance, modifications, combination or use with any products, materials, processes, systems or other matter
- Unauthorized repair

10 Appendix I: Parameter Setting & Factory Default Setting

Modes	Prompts	Parameter setting items	Abbreviation	Description	Restore to factory default
P1.0 pH	P1.1	Select pH buffer solution	buF	USA－NIST	USA
	P1.2	Select resolution	rES	0.01－0.1	0.01
	P1.3	Set reading stability criteria	SC	Normal－High－Low	Normal
	P1.4	Restore to factory default setting	FS	No－Yes	No
P2.0 Cond.	P2.1	Select electrode constant	CELL	1.0－10.0－0.1	1.0
	P2.2	Select reference temperature	trEF	15~30℃	25℃
	P2.3	Adjust temperature compensation coefficient	tCC	0.00~9.99	2.00
	P2.4	Adjust TDS factor	tdS	0.40~1.00	0.71
	P2.5	Restore to factory default setting	FS	No－Yes	No
P3.0 Basic Parameters	P3.1	Select temperature unit	／	℃ - ℉	℃
	P3.2	Automatic Power-off setup	AC	10－20－30－On	20
	P3.3	Automatic Lock-up setup	／	／	Off

11 Appendix II: Abbreviation Glossary

Modes	Prompts	Code and abbreviation	In English	Description
P1.0 pH	P1.1	buF	Standard buffers	Standard buffer solution
	P1.2	rES	Resolution	Resolution
	P1.3	SC	Stability criteria	Set up reading stability criteria
	P1.4	FS	Factory default setting	Factory default setting
P2.0 Conductivity	P2.1	CELL	Cell	Constant Cell
	P2.2	trEF	Reference temperature	Reference temperature
	P2.3	tCC	Temperature compensation coefficient	Temperature compensation coefficient
	P2.4	tdS	Total dissolved solid	TDS
	P2.5	FS	Factory default setting	Factory default setting
P3.0 Basic parameters	P3.1	/	/	/
	P3.2	AC	Auto close	Automatic Power-off
	P3.3	/	/	/