EC8500 Portable Conductivity Meter

User Manual

Apera Instruments, LLC

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V4.0

Table of Contents

1 Introduction

Thank you for purchasing PC8500 pH/Conductivity meter. Please read the manual carefully before use.

1.1 Measurement parameters

Measurement parameters	EC8500
Conductivity/TDS/Salinity/Resistivity	√
Temperature	√

1.2 Instrument features

- The portable meter is featured with intelligent functions including automatic calibration, automatic temperature compensation, complete parameter settings, self-diagnostics, calibration reminders, calibration data tracking, and automatic power-off.
- GLP compliant (Good Laboratory Practice), real-time clock display, manual/automatic data logging. USB data output via PC-link software.
- A built-in digital filter improves measurement speed and accuracy, with a stability indicator for reliable measurement taking.
- Supplied in a portable carrying case that includes the meter, electrodes, standard solutions, soaking solution, and all necessary accessories for convenient field use.
- The meter is dustproof and waterproof, meeting the IP57 protection rating.

1.3 Conductivity measurement features

- Comes with a high-quality platinum black conductivity electrode with ATC (automatic temperature compensation)
- Supports 1–4 point automatic calibration with self-diagnosis
- Easily switch between conductivity, TDS, salinity, and resistivity measurement modes.

2 Technical Specifications

2.1 Main specifications

Conductivity	Measuring Range	Conductivity：0 to 1999 mS/cm, divided into six ranges: (0.00 to 19.99) μS/cm; (20.0 to 199.9) μS/cm; (200 to 1999) μS/cm; (2.00 to 19.99) mS/cm; (20.0 to 199.9) mS/cm; (200 to 1999) mS/cm; TDS: (0 to 100) g/L, Salinity: (0 to 100) ppt
	Resolution	0.01/0.1/1 μS/cm; 0.01/0.1 mS/cm
	Accuracy	±1.0% F.S ±1 digit
	Temperature compensation	(0 to 100) °C (manual or automatic)
	Electrode constant	0.1 / 1 / 10cm^{-1}
Temperature	Measuring Range	-10 to 110°C
	Resolution	0.1˚C
	Accuracy	±0.5˚C

2.2 Other specifications:

Data storage	500 sets
Storage content	Numberings, date, time, measurement values, measurement unit, and temperature value, last calibration record
Output	USB
Power	AA batteries × 3 (1.5V× 3)
IP rating	IP57 waterproof and dustproof
Dimension & Weight	Meter: (86×196×33) mm / 335 g
	Portable case: (370×270×77) mm /1.8 kg

3 Instrument Description

3.1 LCD Display:

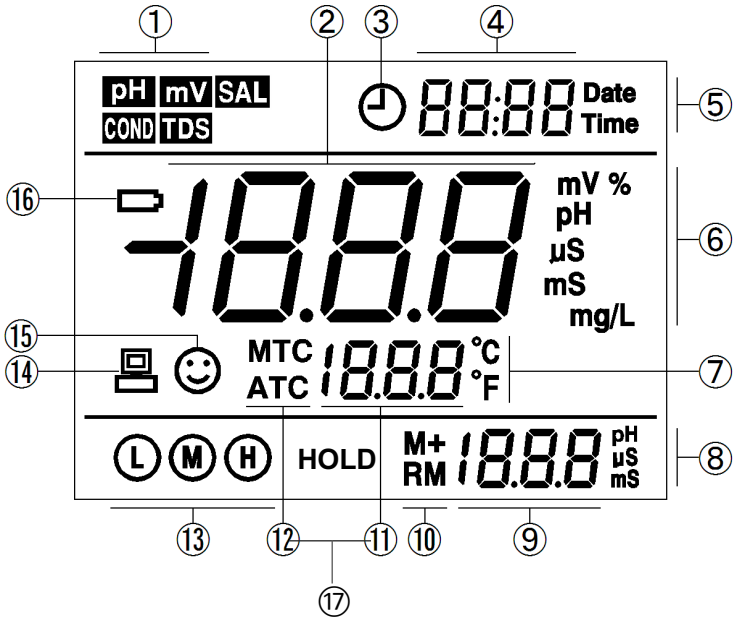

Diagram-2

(1) — Measurement mode icons

(2) — Measurement reading

(3) — Auto. Data Logging icon. When this icon appears, the meter is in the automatic data logging mode

(4) — Date and time, or prompts of special display mode

(5) — Units of date and time

(6) — Units of measurement

(7) — Temperature units

(8) — Units of calibration buffer value

(9) — Standard calibration value, the numbering for saved data and data recalling, and prompts of special display mode

(10) — Data logging and recall icons,

M+ — Data logging icon, RM — Recall the saved data

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

(12) — Temperature compensation icons, ATC — automatic temperature compensation,

MTC — manual temperature compensation

(13) — Calibration guide icon

(14) — USB icon: when this icon appears, the meter connects to the computer

(15) — Stability icon: When this icon stays on screen, it's good for recording the measurement.

(16) — Low battery icon: When this icon appears, please replace the batteries

(17) — Auto. Hold icon: When this icon appears, the reading will be automatically locked until being manually cancelled (refer to Section 3.4.2).

3.2 Keypad Functions

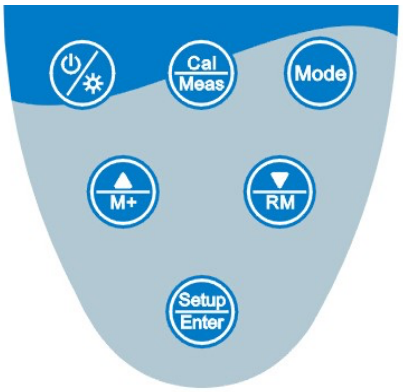

Diagram-3

3.2.1. Keypad operations

- Short-press <1 second
- Long-press >2 seconds
- Power on the meter: short-press ⏻ to power on the meter.
- Power off the meter: In the measurement mode, long-press ⏻ to turn off the meter.

Notes: In the calibration mode or the parameter set-up mode, pressing ⏻ is invalid. Please short-press CAL MEAS to return to measurement mode, then long-press ⏻ to turn off the meter.

Table – 1 Keypad Operations and Functions

pad	Operations	Functions
	Short press	● When the meter is powered off, short press to turn on the meter; ● In measurement mode, short press to turn on or turn off the backlight display.
	Long press	● In measurement mode, long press to turn off the meter.
	Short press	Select measurement parameter: ● EC8500 Conductivity meter: COND → TDS → SAL → RES
	Short press	● In measurement mode, short press to enter calibration mode; ● In auto. hold mode (HOLD), recall mode (RM) or other mode, short press to return to measurement mode,
	Short press	● In measurement mode, short press to enter parameter settings; ● In calibration mode, short press to finish the calibration; ● In parameter settings, short press to confirm the change; ● In data recalling mode (RM), short press to return to measurement mode.
	Short/ long press	● In measurement mode, long press to enter manual temperature compensation mode, then short press or long press to increase the temperature value; ● In measurement mode, short press to save the measurement value; ● In data recalling mode (RM), short press to browse through the saved data. Hold to browse quickly. ● In parameter settings mode, short press to change the parameter in main menu and sub-menu; ● In sub-menu mode, short press to make changes.
	Short/ long press	● In measurement mode, long press to enter manual temperature compensation mode, then short press or long press to increase the temperature value; ● In measurement mode, short press to recall the saved data; ● In data recalling mode (RM), short press to browse through the saved data. Hold the to browse quickly. ● In parameter settings mode, short press to change the parameter in main menu and sub-menu; ● In sub-menu mode, short press to make changes.

3.3 Meter Socket

Electrode socket displays as Table – 2. USB socket displays as Table– 3.

Table – 2 Sockets for meters

Models	Photos	Description
EC8500 Conductivity meter		● 8-pin socket — connect conductivity electrode

Table – 3 USB socket

Functions	Connect to meter	Description
USB communication		The meter has USB communication function, connecting the meter to a computer by USB cable with the installation of PC-Link software (included in the flash drive)

3.4 Reading Mode

3.4.1 General Reading Mode

When the reading becomes stable, a **smiley icon** ☺ will appear on the LCD (see *Diagram 4*).

If ☺ is **not displayed or is flashing**, do **not** record the reading or perform calibration until the value has stabilized. There are **three stability criteria**:

- **Normal** (factory default)
- **High** – stability is determined over a longer period
- **Low** – stability is determined over a shorter period

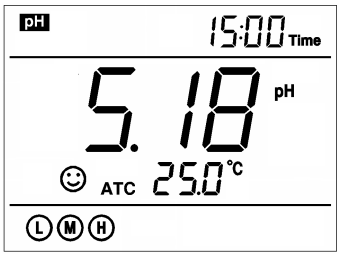

Diagram - 4

Users can select the appropriate stability criterion based on the testing requirements in P1.3 (refer to Section 7.3).

3.4.2. Automatic Hold mode

Select On in P3.6 to turn on Automatic Hold mode.

When the reading is stabilized for more than 10 seconds, the meter automatically locks the reading and displays the **HOLD** icon, see Diagram – 5.

In HOLD mode, short press (CAL/MEAS) to release the lock.

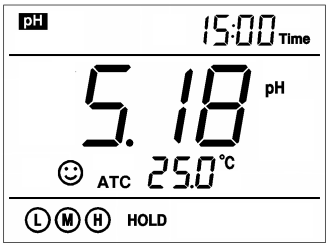

Diagram - 5

3.5 Data Logging, Data Recalling, Data Deletion

3.5.1. Manual Data Logging

When the measurement reading becomes stable, short press (M+).

The **M+** icon and the storage serial number will appear on the LCD, indicating that the current measurement data has been successfully stored (see *Diagram 6*).

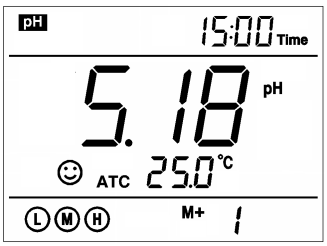

Diagram - 6

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3.5.2. Automatic Data Logging

To enable automatic data logging, set the storage interval (e.g., 3 minutes) in **parameter P3.3 (refer to Section 7.5)**.

Once activated, ⏲ will appear on the LCD, and the meter will enter the automatic data logging mode.

- After pressing (M+), ⏲ begins flashing, and the first measurement value is stored.
- After the preset time interval (e.g., 3 minutes), the second measurement will be automatically stored.
- The number next to M+ indicates how many sets of data have been stored (see *Diagram 7*).

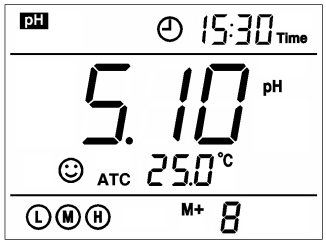

Diagram - 8

To **pause** the automatic data logging, short press (M+) again, ⏲ will stop flashing.

During automatic data logging mode, manual data logging is disabled.

To **exit** automatic data logging mode, set the time interval to **0** in **parameter P3.3**.

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3.5.3. Recalling stored data

In measurement mode, short-press (RM) to recall the most recently stored measurement.

The **RM** icon and the corresponding stored data will appear on the display (see *Diagram 8*).

- Continue short pressing (M+) or (RM) to browse through previously stored data sequentially.
- Press and hold (M+) or (RM) to quickly scroll through stored data.
- Short press (CAL/MEAS) to return to measurement mode.

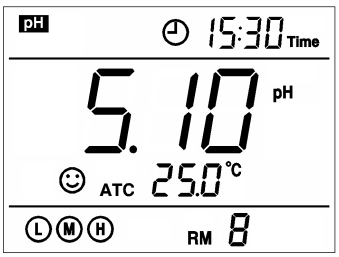


Diagram - 8

3.5.4. Data Deletion

Select **YES in parameter setting P3.6** to delete all the stored data, refer to Section 7.5. Once deleted, the data cannot be retrieved.

3.6 Auto. Power-off

The meter will be powered off if there is no operation for more than 20 minutes. Change the automatic power off time in parameter setting P3.7

3.7 Manual Temperature Compensation (MTC)

In measurement mode, when there is no temperature probe connected to the meter (**MTC** appears beside temperature), long-press (M+) or (RM). The temperature value will start flashing, then press (M+) or (RM) to adjust the temperature value to the true value, and short press (SETUP ENTER) to confirm to achieve manual temperature compensation.

4 Conductivity Calibration and Measurement

4.1 Conductivity Electrode Information

4.1.1. Conductivity electrode

Model 2301T-S plastic conductivity electrode with constant K=1.0 and built-in temperature sensor, with automatic temperature compensation function. When submerging the conductivity electrode in solution, stir the solution briefly to remove potential air bubbles.

4.1.2. Conductivity electrode constant

The meter matches conductivity electrodes of three constants: K=0.1, K=1.0 and K=10.0. Please refer to Table-8 for the measuring ranges. Set constant per parameter P2.1 and refer to Section 7.4.

Table –8 Electrode Constant and Measuring Range

Range	＜20 μS/cm	1.0 μS/cm to 100 mS/cm			＞100mS/cm
Conductivity Electrode Constant	K=0.1	K=1.0			K=10
Calibration Solution	84 μS/cm	84 μS/cm	1413 μS/cm	12.88 mS/cm	111.8 mS/cm
Electrode Model	DJS-0.1-S conductivity electrode	2301T-S conductivity electrode			2310T-S conductivity electrode

4.2 Conductivity Calibration Notes

4.2.1. Conductivity calibration solutions

The meter uses the following conductivity standard solutions: 84μS/cm, 1413μS/cm, 12.88mS/cm, 111.8mS/cm.

Table – 9

Calibration Icons	Calibration Solution Series	Range
(L)	84μS/cm	0-200 μS/cm
(M)	1413μS/cm	200-2,000 μS/cm
(H)	12.88mS/cm	2-20 mS/cm
	111.8mS/cm	>20 mS/cm

4.2.2. Calibration frequency

a) The meter is calibrated before leaving the factory and can be used right out of the box.

b) Perform calibration at least once per month.

c) For high accuracy measurements or large temperature deviations from the reference temperature (25°C), perform calibration weekly or before measurement.

d) For a new electrode or factory default setting, perform at least 2-point calibration.

4.2.3. Reference temperature

Reference temperature of factory default is 25°C. Other reference temperatures can also be set from 15°C to 30°C in parameter setting P2.3 (refer to Section 7.4).

4.2.4. Temperature coefficient

The temperature compensation coefficient of the meter setting is 2.00%/°C. However, the conductivity temperature coefficient is different for different solutions. Please refer to Table – 10 or the data collected during your testing. Set per parameter P2.4. and see Section 7.4.

Notes:

When the coefficient for the temperature compensation is set to 0.00 (no compensation), the measurement will be based on the current temperature.

Table – 10 Temperature compensation coefficient of special solutions

Solution	Temperature compensation coefficient
NaCl salt solution	2.12%/°C
5%NaOH solution	1.72%/°C
Dilute ammonia solution	1.88%/°C
10% hydrochloric acid solution	1.32%/°C
5% sulfuric acid solution	0.96%/°C

4.2.5. Avoid contamination of standard solution

Conductivity standard solution has no buffer. Please avoid any possible contamination during usage. Submerge the electrode in standard solution before washing the electrode and remove excess water by shake-dry or blot-dry with Kimwipes/clean tissue. Replace conductivity standard solution after each calibration.

4.2.6. Calibration Reminder (Due Calibration)

In parameter setting P2.6 (refer to Section 7.4), you can specify the time interval — in days or hours — for the meter to remind you to perform calibration again after your next calibration. When it's due to calibrate, the Er5 icon will appear on LCD (see Diagram – 9). To clear the error code, either perform a calibration, or go to parameter setting P2.6 and select "NO" to cancel the calibration reminder.

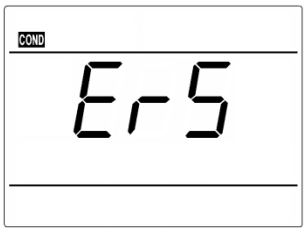


Diagram - 12

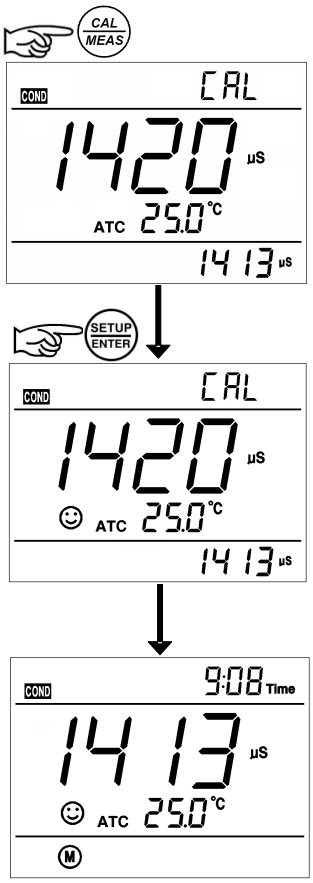
4.2.7. Check the calibration date

Check the last calibration date to see whether a new calibration is needed in parameter P2.7. (Refer to Section 7.4)

4.3 Conductivity Calibration (take calibration with 1413 µS/cm as an example)

4.3.1. Rinse the conductivity electrode in distilled or deionized water, shake-dry or blot-dry with Kimwipes/clean tissue to remove excess water, and submerge it into the solution at least 1 inch deep. Stir the solution briefly and allow it to stay in the solution.

4.3.2.Power on the meter. Short press (MODE) twice to switch to conductivity mode. Short press (CAL/MEAS) to enter conductivity calibration mode.
The meter's display will show blinking **CAL** at the top right, and scanning and locking process of calibration solution at the bottom right. When the meter locks 1413 μS, stable ☺ icon displays on LCD.
Press (SETUP/ENTER) to finish calibration, meter goes into measurement mode.
LCD shows (M) icon at the bottom left. See Diagram – 13



4.3.3. For multi-point calibration, please repeat Section 6.3.1-6.3.3 until all the calibrations are done. The meter can repeat calibration in the same calibration solution to ensure better accuracy and repeatability of the reading.

4.3.4. Notes
(a) Er 2 appears if press (SETUP/ENTER) before the value is locked. See Table – 12.
(b) If return from calibration mode, press (CAL/MEAS) to exit.

4.4 About TDS, Salinity, Resistivity and Conductivity

4.4.1. TDS, salinity, and resistivity are all converted from conductivity. Therefore only conductivity needs to & can be calibrated. TDS and conductivity is linear related. The conversion factor is 0.40-1.00. Adjust per parameter P2.5. The factory default setting is 0.71 (see Section 7.4).

4.4.2. Adjust TDS conversion factor per parameter P2.5 according to the data collected during testing. See Table – 11: commonly used TDS conversion factors.

Table – 11 Commonly used TDS conversion factors

Conductivity of solution	TDS conversion factor
0-100 μS/cm	0.60
100-1,000 μS/cm	0.71
1-10 mS/cm	0.81
10-100 mS/cm	0.94

4.5 Customer-Defined Calibration (take 10.50 μS/cm standard solution as an example)

4.5.1 Select **CUS** per parameter P2.2 (please refer to Section 7.4 for customer-defined solution). The meter enters Customer-defined calibration mode.

4.5.2. Rinse the electrode in distilled or deionized water, allow it to dry, and submerge it in 10.50μS/cm standard solution. Stir the solution briefly and allow it to stay in the solution until a stable reading is reached and ☺ icon

appears on LCD. Press (▲ M+) or (▼ RM) to adjust the measuring value to 10.50μS/cm, Press (SETUP ENTER) to calibrate the meter. Then the meter returns to measurement mode. In conductivity measurement mode with customer-defined calibration, the meter does not display electrode calibration guide icon.

6.5.3. Only one-point calibration for customer-defined calibration. The value set in “Customer-defined” is at a fixed temperature. There is no regulation of temperature coefficient and reference temperature. The meter has to perform calibration and measurement at the same temperature to avoid large error. The meter cannot recognize customer-defined calibration solution.

4.6 Sample test

4.6.1. Rinse conductivity electrode in distilled or deionized water, allow it to dry, and submerge it in the sample solution. Stir the solution briefly and allow it to stay in the sample solution until a stable reading is reached (☺ stays on screen), then record the reading as the conductivity measurement.

4.6.2. Short press (MODE) to switch to TDS, salinity, and resistivity.

4.6.3. During the process of calibration and measurement, the meter has self-diagnosis functions, indicating the relative information as below: Table – 12.

Table – 12 Self-diagnosis information of conductivity measurement mode

Display Icons	Contents	How to Fix
Er 1	Cannot recognize the calibration standard solution.	1.Check whether conductivity calibration solution is correct, fresh, and clean. 2. Check whether the meter connects the electrode well. 3. Replace a new conductivity electrode.
Er2	Press (SETUP ENTER) when the reading is not stable yet during calibration.	Do not press (SETUP ENTER) until ☺ icon stays on screen.
Er3	During calibration, the reading has not been stable for more than 3 minutes.	1. Shake the electrode to eliminate bubbles in electrode head. 2. Replace a new conductivity electrode.
Er5	Time to re-calibrate your conductivity electrode	Press (CAL MEAS) to perform calibration or cancel due calibration setup in parameter P2.6.

4.7 Conductivity electrode maintenance

4.7.1. Always keep the conductivity electrode clean. Before taking a measurement, rinse the electrode in distilled or deionized water and then rinse it in the sample solution. When submerging the electrode in solution, stir the solution briefly to eliminate air bubbles and allow it to stay until a stable reading is reached. For dried-out conductivity electrode, soak the electrode in distilled or deionized water for 5-10 minutes. Always rinse off the

electrode in distilled or deionized water before and after measurement.

4.7.2. The interaction pole of Model 2301T-S conductivity electrode is coated with platinum black to minimize electrode polarization and expand measuring range. The platinum black coating applied by a special processing technology, which improves the electrode performance and the robustness of the coating, If the platinum black electrode is stained, gently clean the electrode with a soft brush in warm soap water.

5 Parameter Settings

5.1 Main menu

In the measurement mode, short press (SETUP ENTER) to enter P2.0, then press (▲ M+) or (▼ RM) to switch to main menu: P2.0→P3.0. Please refer to Diagram – 14.

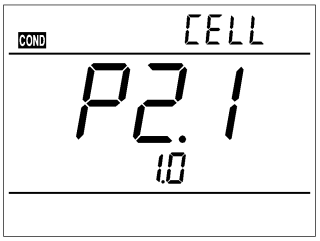
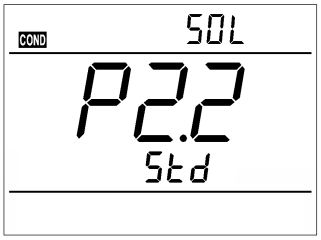
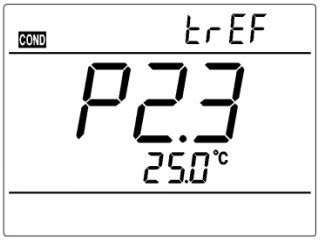
P2.0: Conductivity parameter setting; P3.0: Basic parameter setting.

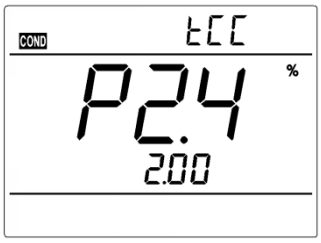
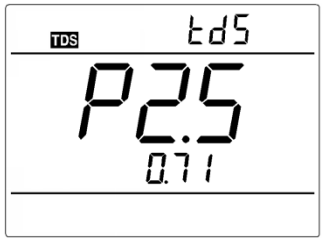
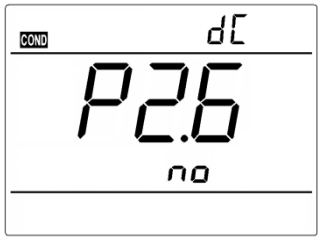
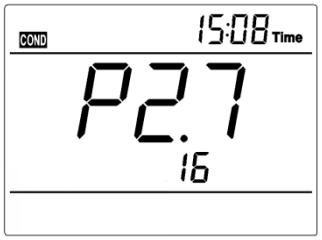
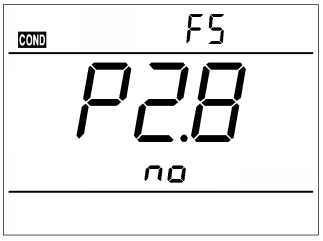
5.2 Sub-menus

5.2.2. In P2.0 mode, press (SETUP ENTER) to enter sub-menu P2.1 for conductivity parameter setting, then press (▲ M+) or (▼ RM) to switch among sub-menus: P2.1→P2.2→P2.3→P2.4→P2.5→P2.6→P2.7→ P2.8.

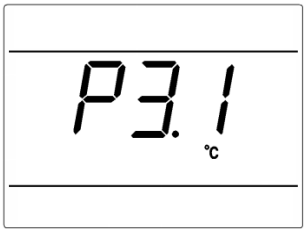
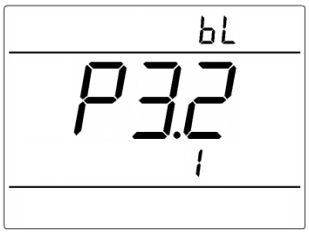
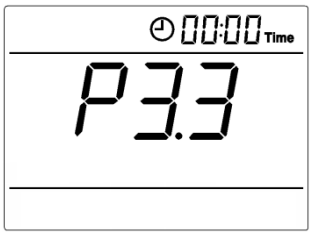
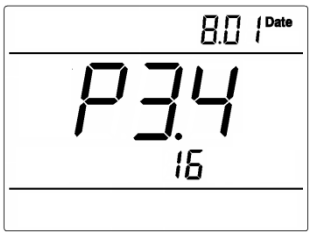
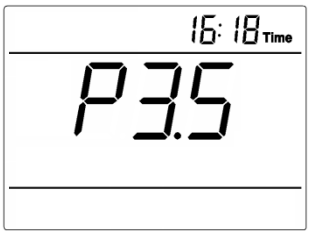
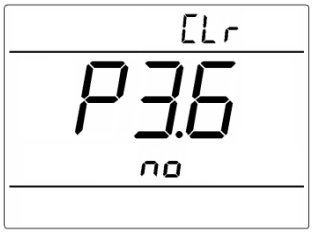
5.2.3. In P3.0 mode, press (SETUP ENTER) to enter sub-menu P3.1 of TDS parameter setting, then press (▲ M+) and (▼ RM) to switch among sub-menus: P3.1→P3.2→P3.3→P3.4→P3.5→P3.6→P3.7→P3.8,

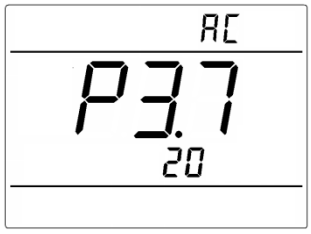
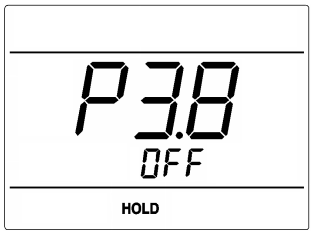
5.3 Sub-menu of conductivity parameter setting (press (▲ M+) or (▼ RM) to switch)

	**P2.1 – Select conductivity cell constant** (1.0-10.0-0.1) 1. In P2.0 mode, press (SETUP ENTER) to enter P2.1. 2. Press (SETUP ENTER), **1.0** flashes, then press (▲ M+) to select 1.0 →10.0→0.1, when parameter flashes, press (SETUP ENTER) to confirm. 3. After confirming the change, press (▲ M+) to enter P2.2, or press (CAL MEAS) to return to measurement mode.
	**P2.2 – Select conductivity standard solution** (Standard-CUS) 1. Press (SETUP ENTER) , **Std** flashes, then press (▲ M+) to select Std→CUS, press (SETUP ENTER) to confirm. Std – Standard series, CUS – customer-defined. 2. After confirming the change, press (▲ M+) to enter P2.3, or press (CAL MEAS) to return to measurement mode.
	**P2.3 – Select reference temperature** (15.0°C to 30.0°C) 1. Press (SETUP ENTER) , **25.0°C** flashes, then press (▲ M+) or (▼ RM) to adjust reference temperature value (15.0 – 30.0), press (SETUP ENTER) to confirm. 2. After confirming parameter, press (▲ M+) to enter in P2.4, or press (CAL MEAS) to return to measurement mode.

	**P2.4 – Adjust temperature compensation factor** (0.00 ~9.99%) 1. Press SETUP ENTER , **2.00** flashes, press M+ or RM to adjust temperature compensation factor 0.00–9.99, press SETUP ENTER to confirm. 2. After confirming the change, press M+ to enter P2.5, or press CAL MEAS to return to measurement mode.
	**P2.5 – Adjust TDS coefficient** (0.40~1.00) 1.Press SETUP ENTER , **0.71** flashes, press M+ or RM to adjust TDS Coefficient (0.40~1.00), press SETUP ENTER to confirm. 2. After confirming the change, press M+ to enter P2.6, or press CAL MEAS to return to measurement mode.
	**P2.6 – Set due calibration** (No – H00 – D00) 1. Press SETUP ENTER , **no** flashes, then press M+ to select no→H00→d00 Press SETUP ENTER to confirm. 2. When **H** flashes, press SETUP ENTER , **00** flashes. Press M+ to adjust Hours(0-99), press SETUP ENTER to confirm; When **D** flashes. press SETUP ENTER , **00** flashes. Press M+ to adjust days (0-99), press SETUP ENTER to confirm. E.g., if **D07** is set, then the meter will pop up **ER5** 7 days after your last calibration to remind you to recalibrate your electrode. 3. After confirming parameter, press M+ to enter P2.7 mode, or press CAL MEAS to return to measurement mode.
	**P2.7 – Check the date of the last conductivity calibration** 1. The date and time of the last calibration shown on top right of LCD, The middle number indicates the last two digits of the year. 2. Press M+ to enter P2.8, or press CAL MEAS to return to measurement mode.
	**P2.8 – Restore to factory default setting** (NO – Yes) 1.Press SETUP ENTER , **no** flashes, then press M+ to select no→YES, press SETUP ENTER to confirm, the meter returns to measurement mode. No–not restore to conductivity factory default settings, Yes–restore to conductivity factory default settings. 2. If not choosing Yes, press CAL MEAS to return to measurement mode.

5.4 Sub-menu of basic parameter setting (press M+ or RM to switch)

	**P3.1 – Select temperature unit** (°C—°F). 1. In P3.0, press SETUP/ENTER enter P3.1. 2. Press SETUP/ENTER, **°C** flashes, press M+ to select °C →°F, then press SETUP/ENTER to confirm. 3. After confirming the change, press M+ to enter P3.2 mode. or press CAL/MEAS to return to measurement mode.
	**P3.2 – Select backlight timing** (1-2-3-On) 1. Press SETUP/ENTER , **1** flashes, then press M+ to select 1→2→3 (min)→On. When the parameter flashes, press SETUP/ENTER to confirm. Select **On** to make the backlight always turn on. After confirming the change, press CAL/MEAS to enter P3.3 mode or press M+ to return to measurement mode.
	**P3.3 – Adjust Auto. Data Logger's Interval** 1. Press SETUP/ENTER , **:00** flashes, press M+ or RM to adjust the auto. data logging's interval in minutes (0-59), press SETUP/ENTER to confirm the change; then **00:** flashes – adjust the interval in hours (0-99); press SETUP/ENTER to confirm the change. E.g. If 01:02 is set up, it means the meter will automatically save the reading in every 1 hour and 2 minutes. After confirming the change, press M+ to enter P3.4 mode or press CAL/MEAS to return to measurement.
	**P3.4. – Adjust date** 1. Press SETUP/ENTER, **Day** flashes, press M+ or RM to adjust, then press SETUP/ENTER to confirm; Then **Month** starts flashing, press M+ or RM to adjust, then press SETUP/ENTER to confirm; Then **Year** starts flashing, press M+ or RM to adjust, then press SETUP/ENTER to confirm. 2. After confirming the change (the numbers stop flashing), press M+ to enter P3.5 or press CAL/MEAS to return to measurement mode.
	**P3.5. – Adjust time** 1. When SETUP/ENTER is pressed, **Hour** flashes, then press SETUP/ENTER and **Minute** flashes. When the number flashes, press M+ or RM to adjust time, then press SETUP/ENTER to confirm the change. 2. After confirming the change, press M+ to enter P3.6 or press CAL/MEAS to return to measurement mode.
	**P3.6. – Clear all storage value** (No—Yes) 1. When SETUP/ENTER is pressed, **No** flashes, then press M+ to select No—Yes, press SETUP/ENTER to confirm. No: not delete, Yes: Delete. 2. After confirming the parameter, press M+ to enter P3.7 or press CAL/MEAS to return to measurement mode.

	**P3.7 – Automatic power-off setup** (10 min→20 min→30 min→On) 1. Press SETUP ENTER, **On** flashes, press M+ to select 10→20→30→On, press SETUP ENTER confirm. **On** – the meter will never turn off automatically. 2. After confirming the change, press M+ to enter P3.8 or press CAL MEAS to return to measurement mode.
	**P3.8 – Set automatic lock-up function** (Off→On) 1. Press SETUP ENTER , **OFF** flashes, then press M+ to select OFF→On, 2. Press SETUP ENTER to confirm. Off: not set, On: set (the reading will be automatically locked when it's stabilized for more than 10 seconds.) 3. After confirming the change, press CAL MEAS to return to measurement.

6 USB Communication for Data Management

6.1 Software Requirement

There are two versions of PC-Link software included in the flash drive. The Web PC-Link Software and the traditional PC-Link software. The Web PC-Link software is installation-free and supports both Windows and Mac computers. Just open the html file with Chrome or Edge browsers, and connect the meter to your computer to start using the software. Scan the code below for video tutorial.

If using the traditional PC-link software, the recommended requirement for the computer is a Windows-based Personal computer (with Microsoft Excel) with USB communication port. The following content is about the traditional PC-link software.

6.2 Software Interface

Software interface: see Diagram-15.

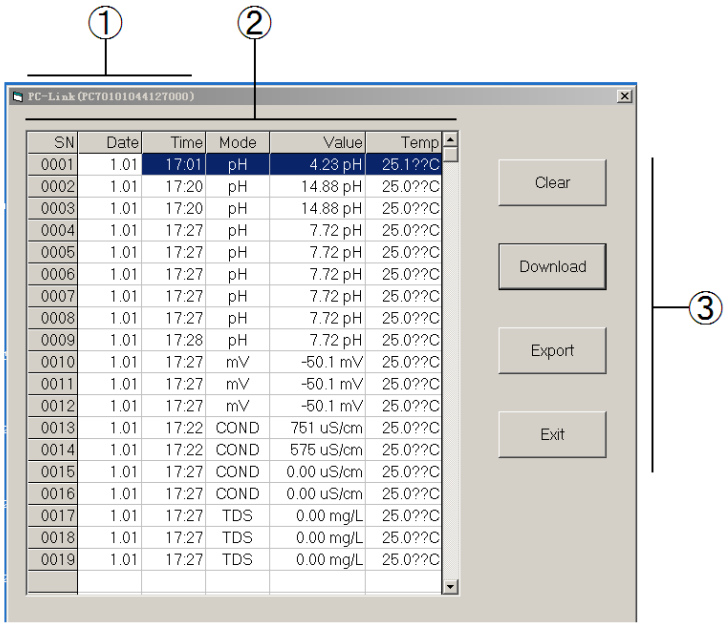


Diagram -15

① — Meter serial number

② — Stored value

③ — Function Keys

Clear — press this to clear the data

Download — press this to download the data from the meter to the computer

Export — press this to export the stored value to Microsoft Excel file

Exit — press this, PC-Link program exits from the computer interface

6.3 Install Software

Please follow the steps as below to load PC-Link to the computer:

Open “PC-Link” file→double click “Setup” program → click “OK”→ click icons (see Diagram – 16) → click “Continue”→ click “Confirm”.

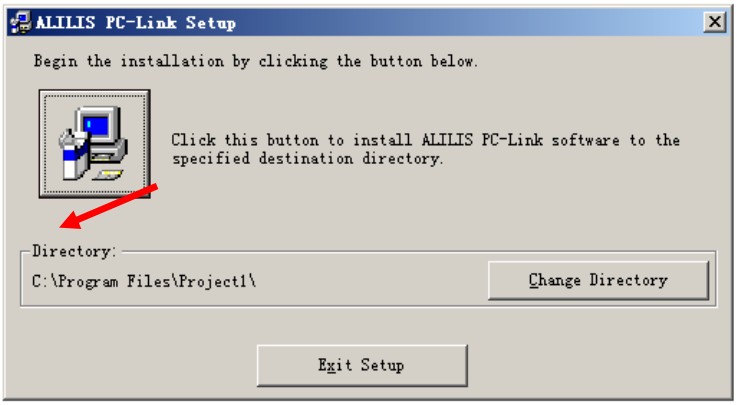


Diagram – 16

6.4 Automatic Connection Port

Connect USB cable to the meter and the computer, open PC-Link program, program interface shows on the computer, automatic connection is done after a few seconds. Icon shows at the left bottom of LCD.

Note:

To reconnect after turn-off, please restart the software interface, as the computer can not recognize the software automatically.

Besides, this software only recognizes 1-16 port numbers. For other port numbers, please set in "device manager" of the computer.

6.5 Operation Software

6.5.1. Upload the stored value

Press **Download**, all the data stored in the meter is downloaded to the computer. pH, mV, COND and TDS are sorted in the program.

6.5.2. Real-time storage.

During operation, press (RM) to manually log data or start auto. data logging. The measurement will be downloaded to the PC-link software through USB and will not be stored in the meter's memory.

6.5.3. Data processing

Press Export to export the data to Microsoft Excel file for further analysis.

7 What's in the Kit?

No.	Include	Quantity	PC8500
1	EC8500 portable pH/conductivity meter	1 pc	√
2	2301T-S plastic conductivity electrode	1 pc	√
3	Conductivity calibration solution (1413μS/cm/12.88mS/84μS/50mL)	1 bottle each	√
4	PC-Link communication software flash drive	1 pc	√
5	USB communication cable	1 pc	√
6	Portable carrying case	1 pc	√
7	User manual	1 pc	√

8 Recommended Conductivity Electrodes for Different Applications

Applications	Ideal Apera Conductivity Electrodes to Use
General water solutions (K=1, 0 to 200 mS/cm)	2301T-S
High accuracy test for general water solutions (K=1, 0 to 200,000μS/cm)	2401T-S
Pure water (K=0.1, 0 to 200 μS/cm)	DJS-0.1-S
High-range conductivity test (K=10, 20 to 2000 mS/cm)	2310T-S

9 Appendix I: Parameter setting and factory default setting

Modes	Prompts	Parameter setting items	Abbreviation	Description	Restore to factory default setting
P2.0 Conductivity	P2.1	Select electrode constant	CELL	1.0 - 10.0 - 0.1	1.0
	P2.2	Select conductivity standard solution	SOL	Standard—CUS	Standard
	P2.3	Select reference temperature	trEF	(15~30)℃	25℃
	P2.4	Adjust temperature compensation coefficient	tCC	0.00~9.99	2.00
	P2.5	Adjust TDS factor	tdS	0.40~1.00	0.71
	P2.6	Set due calibration	dC	No - H00 - D00	No
	P2.7	Check the date of the last calibration	/	-	-
	P2.8	Restore factory default setting	FS	No - Yes	No
P3.0 Basic parameters	P3.1	Select temperature unit	/	℃ - ℉	℃
	P3.2	Select back light timing	bL	1 - 2 - 3 - On	1
	P3.3	Adjust storage timing	/	-	0:00
	P3.4	Adjust date	/	-	-
	P3.5	Adjust time	/	-	-
	P3.6	Clear stored data	CLr	No - Yes	No
	P3.7	Automatic Power-off setup	AC	10 - 20 - 30 - On	20
	P3.8	Auto. Hold	/	Off - On	Off

10 Appendix II: Abbreviation Glossary

Modes	Prompts	Code and abbreviation	In English	Description
P2.0 Conductivity	P2.1	CELL	Cell	Constant Cell
	P2.2	SOL	Calibration solution	Calibration solution
	P2.3	trEF	Reference temperature	Reference temperature
	P2.4	tCC	Temperature compensation coefficient	Temperature compensation coefficient
	P2.5	tdS	Total Dissolved Solid	TDS
	P2.6	dC	Due Calibration	Remind due calibration
	P2.7	/	/	/
	P2.8	FS	Factory default setting	Factory default setting
P3.0 Basic parameters	P3.1	/	/	/
	P3.2	bL	Back light	Back light
	P3.3	/	/	/
	P3.4	/	/	/
	P3.5	/	/	/
	P3.6	CLr	Clear readings	Clear readings
	P3.7	AC	Auto. close	Auto. close
	P3.8	/	/	/

11 Limited Warranty

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

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