



P-511 Conductivity Meter User Manual



PEAK INSTRUMENTS INC
Version 1801

CONTENTS

I. General Information	1
II. Specifications.....	2
III. Device Instructions	3
1. Display indicators.....	3
2. Operation Keys	3
3. Save, view and delete data.	4
IV. Conductivity Measurement	5
1. Preparations	5
2. Calibration(Standard solution).....	5
3. Conductivity solution test.....	6
4. Important Instructions.....	6
5. Parameter settings	7
5.1. Table of conductivity meter parameter setup	7
5.2. Electrode constant setting(P1)	8
5.3. Electrode constant coefficient setting(P2).....	8
5.4. Manual temperature compensation(P3)	8
5.5. Standard solution setting(P4)	9
5.6. Temperature compensation coefficient setting(P5)	9
5.7. Reference temperature selection(P6).....	9
5.8. Temperature unit selection(P7)	10
5.9. Backlight setting(P8)	10
5.10. Auto shutdown timer of the device(P9)	10
5.11. Restore default settings(P10)	11
V. Notices.....	11
VI. Packing List.....	12

I. General Information

Thanks for using P-511 conductivity meter. In order to help you operate and maintain the instrument properly, please read the user manual before using it. We reserve the rights to update the manual and its parts subject to the purpose of improving the instrument's performance.

This instrument combines the technologies of advanced electronics, sensors and software design, which can be used to test the conductivity value, temperature and other parameters of water solutions. This portable tablet pH meter is very suitable for industrial and mining enterprises, power plant, environment protection, etc., especially convenient for outdoor use.

This instrument has built-in microprocessor chip, beautiful design, variable functions and the following features:

1. Built-in microprocessor chip, with automatic calibration, automatic or manual temperature compensation, data storage, function settings, automatic shutdown and low voltage alarm and other intelligent functions. Easy to use.
2. Digital filtering and slip techniques are used to improve meter's response speed and data accuracy. The symbol of “😊” is displayed when the measured value is stable.
3. Equipped with new type of conductivity electrode and temperature probe with automatic temperature compensation and can test RES, TDS and SAL value, which make the measurement more accurate and operation easier.
4. Automatic recognition of 8 standard conductivity calibration solutions with two kinds of options: USA and China.
5. The circuit board adopts Surface Mounted Technology to improve the reliability of product processing.
6. White backlight LCD screen.
7. IP57 waterproof and dustproof.

II. Specifications

Conductivity

Measuring Range	Conductivity: (0.00~19.99) $\mu\text{s}/\text{cm}$ (20.0~199.9) $\mu\text{s}/\text{cm}$ (200~1999) $\mu\text{s}/\text{cm}$ (2.00~19.99) ms/cm (20.0~199.9) ms/cm TDS: (0~100) g/L Salinity:(0~100) ppt Resistivity:(0~100) $\text{M}\Omega\cdot\text{cm}$
Resolution	0.01/0.1/1 $\mu\text{s}/\text{cm}$, 0.01/0.1 ms/cm
Accuracy	Electrode: $\pm 1.0\%$ FS Instrument: $\pm 1.5\%$ FS
Temperature Compensation	(0~100) $^{\circ}\text{C}$ (Auto/Manual)
Electrode Constant	0.1/1/10 cm^{-1}
Reference Temperature	25 $^{\circ}\text{C}$, 20 $^{\circ}\text{C}$, 18 $^{\circ}\text{C}$

Others

Data Storage	150 sets
Storage Contents	Series number, measuring value, unit, temperature
Power	Two pieces of AA battery
Size & Weight	165×90×32 mm/310g
Certificate	ISO, CE

Working Conditions

Ambient Temperature	5~35 $^{\circ}\text{C}$
Humidity	$\leq 85\%$
IP Grade	IP57

III. Device Instructions




1. Display indicators



- ① Parameter mode tag
- ② Measurement value
- ③ Data storage and replay number and symbol. Indicator of special status. M+ is symbol for data storage. RM is data replay icon.
- ④ Measurement unit
- ⑤ Temperature and unit
- ⑥ Stability symbol
- ⑦ Calibration indicators
- ⑧ Low voltage symbol, when the voltage is lower than 2.6V, the symbol will be shown to remind customer for battery change.

2. Operation Keys

There are seven operating buttons

- 2.1.  On/off button, it is used to switch on/off the device in measuring mode. This key is not working in other modes.
- 2.2.  Calibration key.
 - 2.2.1. Press this button to enter calibration mode in measuring mode.
 - 2.2.2. Press this key to back in other modes.
- 2.3.  Function key. In measuring mode, short press (less than 1.5 seconds) this

key to change measure modes as below.



COND → **RES** → **TDS** → **SAL**



2.4.  Backlight and delete key.

2.4.1. In measuring mode, short press (less than 1.5 seconds) this key to turn on or off backlit.

2.4.2. When viewing saved data, long press (more than 5 seconds) this key to delete saved data.

2.5.  Increase and data view key.  Decrease and data saving key.

2.5.1. In measuring mode, short press (less than 1.5 seconds)  to save records, short press (less than 1.5 seconds)  to view saved records.


2.5.2.  and  are used to change parameters under setting mode.


2.6.  Set and Confirm/return key

2.6.1. In measuring status, long press (more than 2 seconds) to enter parameter settings.


2.6.2. Short press (less than 1.5 seconds) to confirm current selection in other status.

3. Save, view and delete data.

3.1. Data save. In measuring status, when the reading is stable and shows symbol ,

short press (less than 1.5 seconds)  to save records, the screen will show "M+" and storage number. The device can save 150 sets of records totally.


3.2. Data view.

3.2.1. In measuring status, short press (less than 1.5 seconds)  to view the newest saved record of the current unit, and right upper corner will show symbol "RM".

Continue press  or  to replay all saved records.

3.2.2. In view status, press  to return to measuring mode.

3.3. Delete data



In data viewing mode, long press (more than 5 seconds)  and screen displays

Address: 16223 Park Row, Houston, TX-77084, USA. Website: www.peakii.com. Tel: +1 2819353455






CLR for two seconds, which means all saved data is deleted already and back to measuring mode.

IV. Conductivity Measurement

1. Preparations

- 1.1. Press  to switch on device, then press  to choose **COND** measuring mode.
- 1.2. Check if the pole piece of platinum black electrode is intact. If it is broken or rusty, then the electrode should be replaced.
- 1.3. Connect the platinum black electrode and temperature electrode to the proper interfaces.

2. Calibration(Standard solution)

- 2.1. Press  to enter calibration mode, the screen will show "**CAL**" to indicate entering calibration mode.
- 2.2. Wash conductivity and temperature electrodes in pure water and wave them dry, dip the electrode in 1408 μ s/cm calibration solution, move the electrode and let it be static until the reading is stable (the symbol  will be shown on the screen), then press  and display shows 1408 μ s/cm, next press  to confirm the calibration, save the data and press  to quit calibration mode, then "**L M**" is shown on the screen.


NOTE: The instrument was already calibrated at the factory and can be used directly in general.

The standard solution method is for the inaccuracy of conductivity constant caused by long time use. The new conductivity electrode has been calibrated before leaving the factory, and its constant is labeled on the electrode. Just input constant before use.

In the method of electrode constant input, first to confirm the type of electrode constant, then input the constant coefficient. For example, if the constant is 10.5, then select the electrode of type 10, and set the constant as 1.05. That is $10.5 = 10 * 1.05$.

3. Conductivity solution test

3.1. Wash the pH electrode & temperature electrode and wave them dry, put them into the solution, shake the electrode and let it be static, then wait until the reading is stable and the symbol ☺ appear on the screen, then the reading is its conductivity value.

3.2. Short press  and the values of resistivity, TDS and salinity could be viewed accordingly.

4. Important Instructions

4.1. This instrument has the following two series of calibration solutions in the system, please set up the standard in P4.

CH Chinese series: 146.6 μ s/cm, 1408 μ s/cm, 12.85ms/cm, 111.3 ms/cm

USA American series: 84 μ s/cm, 1413 μ s/cm, 12.88ms/cm, 111.9 ms/cm

4.2. This instrument has a unique function of one point calibration, you can choose one solution to calibrate according to the principle that the conductivity of liquid sample is as close to calibration solution as possible. The commonly used calibration solution is 1408 μ s / cm. The DJS-1(K=1) platinum black electrode calibrated by 1408 μ s/cm calibration solution can be used in the range of less than 100 ms/cm. Please refer to the following table.

Table 4-1

Measuring Range	0.05~20 μ s/cm	0.5 μ s/cm~200ms/cm		
Electrode Constant	K=0.1 cm ⁻¹ (flow test)	K=1.0 cm ⁻¹		
Calibration Solution	84 μ s/cm	84 μ s/cm	1413 μ s/cm	12.88ms/cm 111.9ms/cm
Indicator	Ⓛ	Ⓛ	Ⓛ Ⓜ	Ⓛ Ⓜ Ⓜ

4.3. There are two methods for conductivity electrode calibration, standard calibration solution and set up electrode constant. The calibration way in “4.2” is standard solution calibration. As long as the standard solution is accurate, it can guarantee the best accuracy. Therefore, the standard solution calibration method is preferred. If the user is used to the constant setting method, he can set it according to the constant marked on the conductivity electrode (the constant of new conductivity electrodes have been already calibrated, customers can rest assured to use, if it is not used for a

long time or contaminated, in order to ensure the accuracy, then clean electrodes firstly and calibrate them with standard solution.

4.4. The temperature compensation coefficient of the instrument is 2.00% /°C originally, but the conductivity temperature coefficient of different kinds of solutions with different concentrations is different. The user can refer to the table 4-2 or the data obtained by the user in the experiment and set up in P13. In high purity water of less than 10 μ s/cm, the instrument automatically compensates for nonlinear temperature.

NOTE: When the temperature compensation coefficient is set to 0.00, that is, namely there is no temperature compensation when testing, and the measured value of the instrument is the conductivity value at the current temperature.

Table 4-2

Solution	Temperature compensation coefficient
NaCl 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

5. Parameter settings

5.1. Table of conductivity meter parameter setup

Indicator	Description	Remarks
P1	Electrode constant setting	0.20-5.00
P2	Electrode constant coefficient setting	0.1, 1.0, 10
P3	Manual temperature compensation	(0-99.9)°C
P4	Standard solution setting	China, USA
P5	Temperature compensation coefficient setting	0.00%-9.99%
P6	Reference temperature selection	25°C, 20°C, 18°C
P7	Temperature unit selection	°C, °F
P8	Backlight time closing setting	0-20min or 0 stands for this function is not working
P9	Automatic shutdown time setting	0-20min or 0 stands for this function is not working
P10	System restore setup	OFF or ON



5.2. Electrode constant setting(P1)

5.2.1. Long press  to enter setting mode


Then press  to enter P1.



5.2.2. Press  or  to change constant value. Long press these keys to change the figures continuously. Press  to confirm the change and back.




5.2.3. Press  to enter next parameter setting or press  to back to measuring mode.



5.3. Electrode constant coefficient setting(P2).

5.3.1. Press  to choose P2 in mode P1,


Then press  to enter P2.



5.3.2. Press  or  to modify the coefficient. Press  to confirm the change and back.

5.3.3. Press  to enter next parameter setting or press  to back to measuring mode.



5.4. Manual temperature compensation(P3)

5.4.1. Press  to choose P3 in mode P2,


Then press  to enter P3.



5.4.2. Press  or  to change temperature. Long press these keys to change the figures continuously. Press  to confirm the change and back.




5.4.3. Press  to enter next parameter setting or press  to back to measuring mode.



5.5. Standard solution setting(P4)

5.5.1. Press  to choose P4 in mode P3,


Then press  to enter P4.



5.5.2. Press  or  to select solution standard. Press  to confirm the setting.




5.5.3. Press  to enter next parameter setting or press  to back to measuring mode.



5.6. Temperature compensation coefficient setting(P5)

5.6.1. Press  to choose P5 in mode P4,


Then press  to enter P5.



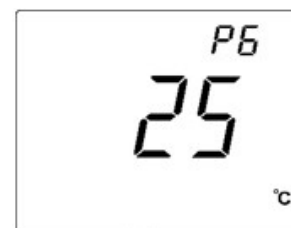
5.6.2. Press  or  to change coefficient, Long press these keys to change the figures continuously. Press  to confirm the change and back.




5.6.3. Press  to enter next parameter setting or press  to back to measuring mode.



5.7. Reference temperature selection(P6)

5.7.1. Press  to choose P6 in mode P5,


Then press  to enter P6.



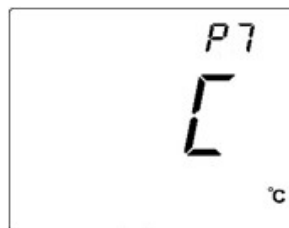
5.7.2. Press  or  to choose reference temperature, there are three options: 25°C, 20°C, 18°C. Press  to confirm the selection.




5.7.3. Press  to enter next parameter setting or press  to back to measuring mode.



5.8. Temperature unit selection(P7)

5.7.1. Press  to choose P7 in mode P6,


Then press  to enter P7.



5.7.2. Press  or  to choose temperature unit °C/°F. Press  to confirm the selection.




5.7.3. Press  to enter next parameter setting or press  to back to measuring mode.



5.9. Backlight setting(P8)

5.9.1. Press  to choose P8 in mode P7,


Then press  to enter P8.



5.9.2. Press  or  to choose auto shutdown time of backlight. Press  to confirm the change and back.



5.9.3. Press  to enter next parameter setting or press  to back to measuring mode.


5.10. Auto shutdown timer of the device(P9)



5.10.1. Press  to choose P9 in mode P8,

Then press  to enter P9.




5.10.2. Press  or  to set the automatic shutdown time of the device.

Press  to confirm the change and back. "0" means disabling this function.




5.10.3. Press  to enter next parameter setting or press  to back to measuring mode.


5.11. Restore default settings(P10)

5.11.1. Press  to choose P10 in mode P9,

Then press  to enter P10.



5.11.2. Press  or  to choose "On" and confirm by pressing  and "888"

blinks on the screen, which means it is restored to default settings. Press  to back to measuring mode.

5.11.3. Be careful to use this function, because all saved data will be removed once restored to default settings.

V. Notices

1. The conductivity electrode has been calibrated before leaving factory, its constant Value is marked on the electrode, and the customer can set constant, no need to recalibrate it.
2. Normally, it is recommended the electrode should be calibrated once a month or after a period of time. It will depend on the real situations. It is not necessary to be calibrated very often.
3. Keep conductivity electrode clean. Wash it clean in pure water and wave it dry before and after measurement, preferably rinsed with the tested solution.
4. DJS series platinum black conductivity electrode surface is coated a layer of platinum black to reduce electrode polarization, expand its measuring range, so platinum black electrode surface can't be wiped, can only be shaken in water for cleaning to avoid damage platinum-black coating. The organic contamination on the electrode surface can be cleaned with warm water containing detergents or alcohol.
5. The conductivity electrode can be intruded in pure water before use to prevent platinum black passivated. If the platinum black electrode is failure, dip it in 10% nitric acid solution or 10% hydrochloric acid solution for 2 minutes, then rinsed clean with pure water, if the condition is not improved, then the platinum black needs to be electroplated or replaced.
6. When the instrument is abnormal, please restore the instrument to factory setting in P10, then calibrate and test it again.

VI. Packing List

Description	Number
P -511 conductivity meter	1 unit
Conductivity electrode	1 piece
Temperature electrode	1 piece
AA Battery	2 pieces
User manual	1 copy

PEAK INSTRUMENTS INC

Address: 16223 Park Row, Houston, TX 77084, USA.

Tel/Fax: +1 2819353455/2815780806.

Website: www.peakii.com

Email: info@peakii.com