

**SANXIN**

# PC5 pH/Conductivity Tester

pH/Conductivity/TDS/Salinity/Temp.

## Operation Manual

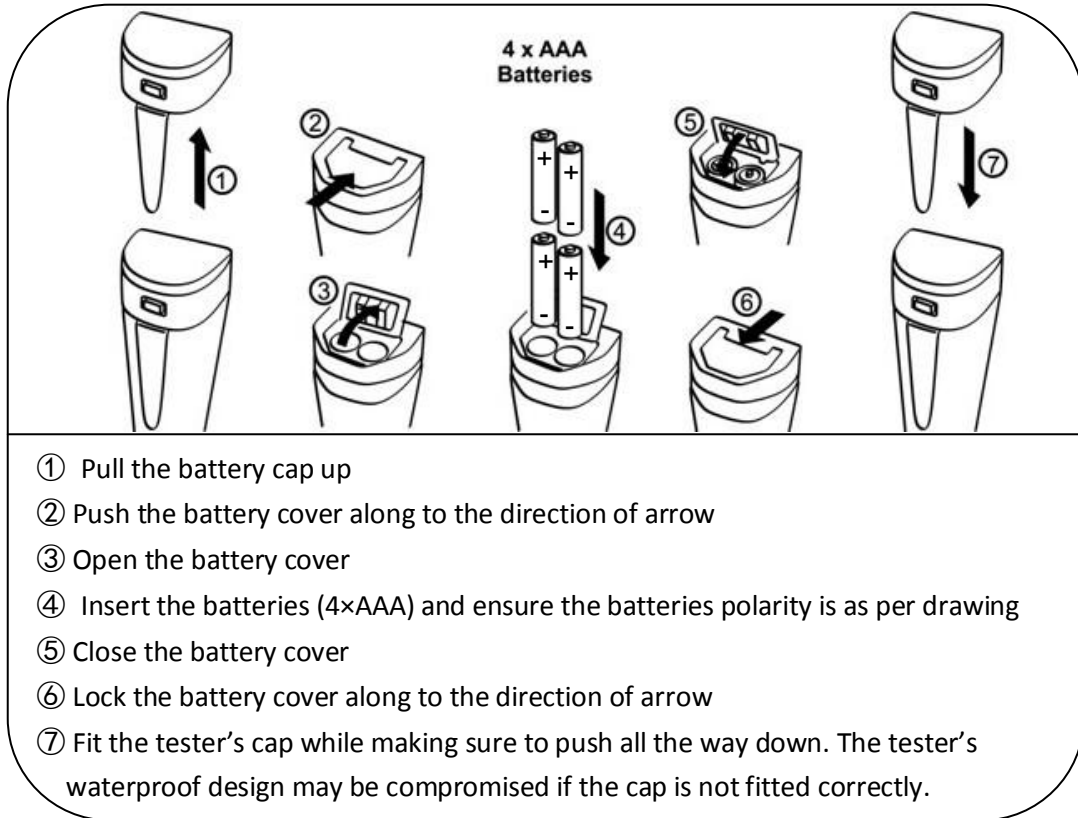


**Shanghai San-Xin Instrumentation Inc.**

# PC5 pH/Cond. Tester Operation Manual

## 1. Battery Installation




Please install batteries according to the following steps. Please note polarity: “+” (anode) is upward; “-” (cathode) is downward.



## 2. Keypad

Short press: key-hold time < 2 seconds

Long press: key-hold time > 2 seconds

	<ol style="list-style-type: none"> <li>1. Short press to turn ON the tester and long press to turn OFF the tester;</li> <li>2. When turned OFF, long press to enter parameter setting;</li> <li>3. In measurement mode, short press to turn on backlight.</li> </ol>
	<ol style="list-style-type: none"> <li>1. In measurement mode, short press to switch parameter <b>pH</b> → <b>COND</b> → <b>TDS</b> → <b>SAL</b>;</li> <li>2. In mode setting, short press to change parameter (Unidirectional).</li> </ol>
	<ol style="list-style-type: none"> <li>1. Long press to enter calibration mode;</li> <li>2. In calibration mode, short press to confirm calibration;</li> <li>3. When measured value is locked, short press to unlock.</li> </ol>

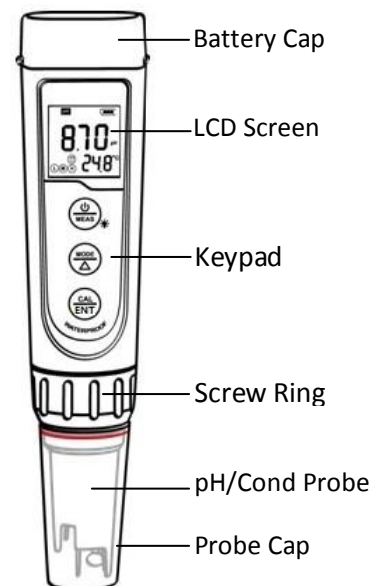




Diagram - 1

### 3. pH Calibration

3.1. Before first use or unused for a long time, fill certain 3M KCl solution in the calibration bottle, soak probe for at least 15 minutes. Pay attention that, soaking solution little higher that pH bulb will be enough. Users can make this solution by themselves. Preparation: dissolve 25g KCl in 100 ml of pure water.

3.2. Rinse the probe in pure water and dry it.

3.3. Fill certain amount (about half volume of calibration bottle) of pH7.00 and pH4.00 buffer solution in separate pH calibration bottles;

3.4. Long press  to enter calibration mode; Short press  to exit.

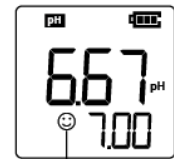










Diagram - 2

3.5. Dip the probe in pH7.00 buffer solution and stir gently, leave to Stabilize (LCD displays  as shown in the picture on the right). Short press  to complete 1-point calibration. The tester then returns to measurement mode and calibration icon  appears on the LCD.









3.6. For multi-point calibration (either 2 or 3 point), rinse the probe in clean water and repeat step 3.5 using 4.01pH and/or 10.01pH calibration solutions. After completion of each point, the calibration icons  (for 4.01pH) and  (for 10.01pH) will appear on the LCD near the .

### 4. pH Measurement




Short press  to turn on the tester. Rinse the probe in pure water and dry it. Dip the probe in sample solution, stir gently, leave it to stabilize. Get readings after LCD displays .

### 5. Special Notes


5.1. Tester can perform 1~3points automatic calibration. But pH7.00 or pH6.86 buffer solution must be used to make 1st point calibration. Then use other buffer solution to conduct 2nd or 3rd point calibration. Tester will recognize 5 kinds of pH buffer solutions. Refer to the following chart:

Calibration	USA Series	NIST Series	Indication icon	Recommended
1-point	7.00 pH	6.86 pH		Accuracy $\geq$ 0.1pH
2-point	7.00 pH, 4.01 pH or 1.68pH	6.86 pH, 4.01 pH or 1.68pH	 	Range: < 7.00pH
	7.00 pH, 10.01pH or 12.45pH	6.86 pH, 9.18 pH or 12.45pH	 	Range: > 7.00pH
3-point	7.00pH, 4.01 or 1.68pH, 10.01 or 12.45pH	6.86pH, 4.01 or 1.68pH, 9.18 or 12.45pH	  	Range: 0~14.00pH


5.2. The tester has self-diagnostic function, information as following chart:

Icons	Self-diagnostic information	Checking
<i>Er 1</i>	Wrong pH buffer solution or the recognition range of calibration solution exceeds standard.	1. Check whether pH buffer solution is correct. 2. Check whether the probe is damaged.
<i>Er 2</i>	Press  key when measuring value is not stable during measurement.	Press  key when  icon appears.

## 6. Conductivity Calibration

6.1. Press  key to switch to conductivity measurement mode. Rinse the probe in pure water and dry it.

6.2. Fill certain amount (about half volume of the calibration bottle) of 1413 $\mu$ S and 12.88mS conductivity standard solution in separate calibration bottles.

6.3. Long press  key to enter calibration mode, short press  to exit.









6.4. Dip the probe in 1413 $\mu$ S conductivity standard solution and stir gently, leave to Stabilize (LCD display  as shown in the picture on the right), Short press  key to complete 1-point calibration, The tester then returns to measurement mode and indication icon  will appears on the LCD.




Diagram-3

6.5. For multi-point calibration (either 2 or 3 point), rinse the probe in clean water and repeat step 6.4 using 84 $\mu$ S standard solution and / or 12.88mS standard solution. After completion of each point, the calibration icons  (for 84 $\mu$ S) and  (for 12.88mS) will appear on the LCD near the .

## 7. Conductivity Measurement

7.1. Press  key to turn on the tester. Rinse the probe in pure water and dry it. Dip the probe in sample solution, stir gently, leave to Stabilize, Get reading after LCD displays .

7.2. Press  key to switch between **TDS** → **SAL** → **pH** → **COND**

## 8. Notes

8.1. The tester uses 84 $\mu$ S, 1413 $\mu$ S and 12.88mS conductivity standard solution. User can conduct 2 or 3point calibration. Refer to the chart as following. Generally, calibrating the tester with 1413 $\mu$ S conductivity standard solution alone will meet the testing requirement.

Calibration Indication Icon	Calibration Standards	Measuring Range
Ⓛ	84μS/cm	0 ~ 200μS/cm
Ⓜ	1413μS/cm	200 ~ 2000μS/cm
Ⓜ	12.88mS/cm	2 ~ 20mS/cm

8.2. The tester has been calibrated in factory. Generally, user can use the tester directly or users can test conductivity standard solutions first. If the error is big, then calibration is needed.




8.3. Temperature compensation factor: The default setting of the temperature compensation factor is 2.0%/°C. User can adjust the factor based on following test solution and experimental data in parameter setting P4.

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

8.4. TDS and conductivity is linear related, and its conversion factor is 0.40~1.00. Adjust the factor in parameter setting P5. The factory default setting is 0.71. Salinity and conductivity is linear related, and its conversion factor is 0.5. The tester only needs to be calibrated in conductivity mode, then after calibration, the meter can switch from conductivity to TDS or salinity mode.







8.5 With self-diagnostic information:

The tester has self-diagnostic function, information as following chart:

Icons	Self-diagnostic information	Checking
<i>Er 1</i>	Wrong conductivity standard solution or the recognition range of calibration solution exceeds standard.	<ol style="list-style-type: none"> <li>1. Check whether conductivity standard solution is correct.</li> <li>2. Check whether the probe is damaged.</li> </ol>
<i>Er 2</i>	Press  key when measuring value is not stable during measurement	Press  key when  icon appears.

## 9. Parameter Setting

### 9.1. Parameter setting method

When turned off, long press  to enter parameter setting → Short press  to switch P1-P2... P8 → Short Press  parameter flickering → Short press  to choose parameter → Short press  to confirm parameter → Long press  to return to measurement mode.

### 9.2. Setting chart


Symbol	Parameter Setting Contents	Code	Factory Default
P1	Select pH buffer standards	USA – NIST	USA
P2	Select automatic lock	Off – On	Off
P3	Select backlight	Off - 1 - On	1
P4	Temperature compensation factor	0.00 ~ 4.00%	2.00%
P5	TDS factor	0.40 ~ 1.00	0.71
P6	Salinity unit	ppt - mg/L	ppt
P7	Select temperature unit	°C-°F	°C
P8	Restore to factory default	No – Yes	No

### 9.3. Parameter setting instruction

#### a) Select standard pH buffer solution (P1):

There are two options of standard buffer solutions: USA series and NIST series. Factory default setting is USA series.

#### b) Automatic lock (P2):

Select “On” to activate auto lock function. When reading is stable for more than 10 seconds, the tester will lock the value automatically, and HOLD icon will display on LCD. Press  key to cancel automatic hold.

#### c) Backlight (P3):

“Off”-turn off backlight, “On”-turn on backlight, 1- backlight will last for 1 minute.

#### d) Temperature compensation factor (P4):

Adjust temperature compensation factor between 0.00~4.00%. Factory default setting is 2.00%.

Details refer to clause 8.3.

e) TDS factor (P5):

Adjust TDS factor between 0.40~1.00. Factory default setting is 0.71.

f) Salinity and temperature unit (P6 and P7):

Salinity unit: ppt and mg/L, Temperature unit: °C and °F. Factory default setting is ppt and °C.


g) Factory default setting (P8):

Select “Yes” to recover instrument calibration setting to theoretical value (pH and conductivity), parameter setting returns to initial value. This function can be used when instrument does not work well in calibration or measurement. Calibrate and measure again after recover the instrument to factory default status.

## 10. Technical Specifications

pH	Measuring range	-2.00 ~ 16.00pH
	Resolution	0.01pH
	Accuracy	±0.01pH
	Calibration points	1 ~ 3points automatic calibration
	Automatic temperature compensation	0 ~ 50°C
Cond.	Measuring range	0~200.0μS, 0~2000μS, 0~20.00mS
	Resolution	0.1/1μS, 0.01mS
	Accuracy	±1%F.S
	Calibration points	1 ~ 3points automatic calibration
TDS	Measuring range	0~100.0ppm, 0~1000ppm, 0~10.00ppt
Salinity	Measuring range	0 ~ 10.00ppt
Temp.	Measuring range	0 ~ 50°C
	Resolution	0.1°C
	Accuracy	±0.5°C

## 11. Other Specifications

LCD	Ultra clear STN LCD. 180° viewing angle Blue: Measurement. Green: Calibration. Red: Alarm
Reading lock	<b>HOLD</b>
Low battery reminder	 Replace batteries when icon blinks
Automatic power-off	8 minutes after last key press
Water proof rating	IP67 floats on water
Power	DC3V, AAA batteries×4
Battery life	Continuous operation>200 hours
Dimension/Weight	Tester: 40×40×178mm/133g; Suitcase: 255×210×50mm/700g;

## 12. Probe Replacement

Twill off the screw ring, unplug the probe, plug in new probe (pay attention to probe's position), and screw on the screw ring.

## 13. Warranty

We warrant this instrument to be free of defects in parts and workmanship for two years from date of shipment (a six month limited warranty applies to probes). This warranty does not apply to defects resulting from actions of the user, such as misuse, improper wiring, operation outside of specification, improper maintenance or repair, or unauthorized modification.

Warranty period is the time limit to provide free service for the products purchased by customers, not the service life of the instruments or probes.

Shanghai San-Xin Instrumentation, Inc.

Add: 3/F. Building No.4, No. 471 Guiping Road, Shanghai, China. 200233

Tel: +86-21-63362480

Fax: +86-21-64956880

Website: [www.shsan-xin.com](http://www.shsan-xin.com)

E-mail: [wxmab@shsan-xin.com](mailto:wxmab@shsan-xin.com)