Manual

Water Analysis Meter PCE-PH 22

Date of last change: 07.07.2016

Contents

1   Introduction

Thank you for purchasing a PH-Meter from PCE Instruments.
The water resistant PCE-PH 22 pH meter quickly detects the pH value and temperature. Thanks to its split display it can show the pH value and temperature reading simultaneous with this pH meter. Its durable enclosure is water resistant up to IP 67 and can be used in adverse weather conditions. Recalibration of the device always ensures that readings are accurate and it is easy to do with the help of the calibration kit. The automatic calibration is done via the keypad and without the need for calibration screws. This pH meter has an electrode integrated into its enclosure and the readings are adjusted automatically for temperature compensation.

2   Safety notes

Please read this manual carefully and completely before you use the device for the first time. The device may only be used by qualified personnel and repaired by PCE Instruments personnel. There is no warranty of damages or injuries caused by non-observance of the manual.

- The device may only be used in approved temperature range
- The opening of the case should only be done by qualified personnel of the PCE Instruments.
- The instrument should never be placed with the user interface (e.g. keyboard side on a table)
- You should not make technical changes on the device
- The appliance should only be cleaned with a damp cloth / use only pH-neutral cleaner

This user's handbook is published from PCE Instruments without any guarantee.

We expressly point to our general guarantee terms, they can be found in our general terms of business.

If you have any questions please contact PCE Instruments.

3   Specification

Display	LCD, size : 20 mm x 28 mm. * With bar graph indicator.	
Measurement Range	pH	0 to 14 pH.
	Temp.	-5 to 80 °C (23 to 176 °F).
Resolution	pH	0.01 pH.
	Temp.	0.1 °C/ 0.1 °F.
	pH	± 0.02 pH * After calibration.
	Temp.	± 0.8 °C/ ± 1.5 °F.
pH Input Imped.	10^{12} Ω	
pH Electrode	Included.* PE-12	
pH Temp. Compensation	ATC (Automatic temperature compensation), build thermistor Temp. Sensor.	
Data Hold	Freeze the display reading.	
Memory Recall	Maximum & Minimum value.	
Sampling Time	Approx. 0.8 second	
pH Calibration	pH 7, pH 4 or pH 10, 3 points calibration ensure the best linearity and accuracy. * Other calibration point that near the pH 7, pH 4, and pH 10 are available.	
Data Logger	Max. can save 100 point data with recall. Manual, push the data logger button once will save data one time.	
Circuit	Custom one-chip of microprocessor LSI circuit.	
Operating Temperature	Meter: 0 to 60 °C (32 to 140 °F).	
	pH electrode : -5 to 80 °C (23 to 176 °F).	
Operating humidity	Less than 80 % r.H.	
Power Supply	DC 1.5V battery (UM-4/AAA) x 4 PCs.	
Power Consumption	Approx. 4.8 mA	
Dimension	186 x 40 x 32 mm (7.3 x 1.6 x 1.3 inch). * Meter with pH electrode.	
Weight	131 g/0.36 LB (included electrode).	
Power off	Auto power shut off to save battery life.	
Standard Accessories	Instruction Manual 1 PC pH electrode, PE-12 1 PC pH 7.00 buffer solution, PH-07A 1 PC pH 4.00 buffer solution, PH-04A 1 PC * PE-12, PH-07A, PH-04A are the consumer accessory.	
Optional Accessories	Meter : 0°C to 60°C (32°F to 140°F)	

4   System description
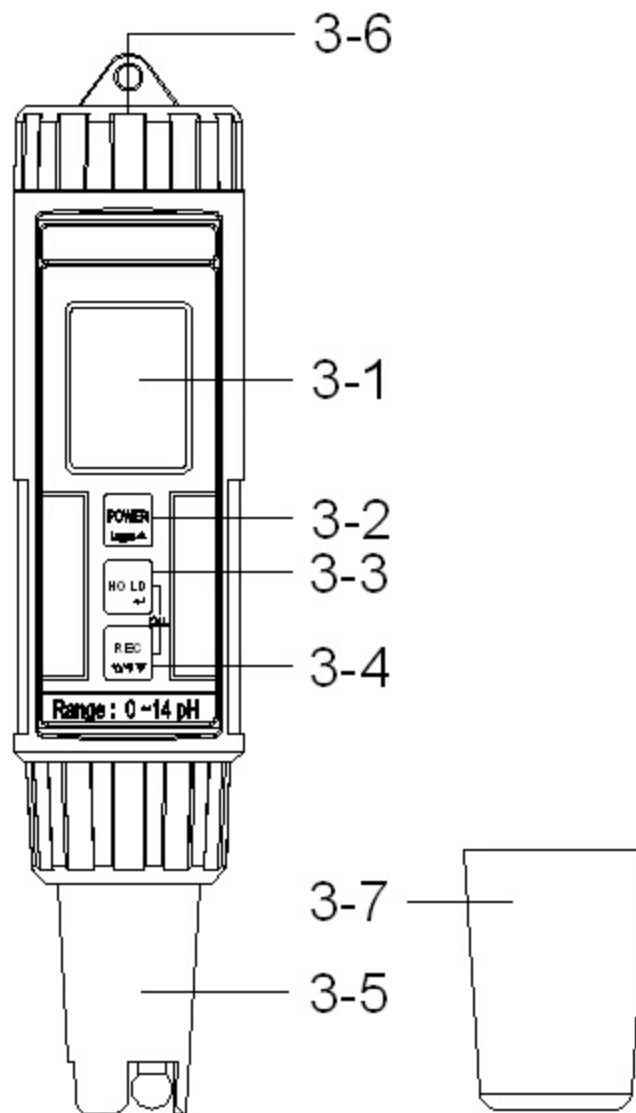
3-1 Display
3-2 Power (Logger, ▲) Button
3-3 Hold (Enter, CAL) button
3-4 REC (℃/℉ button, ▼) Button
3-5 pH electrode (Temp. sensor)
3-6 Battery compartment/Cover
3-7 Protection cover

5   pH Calibrating procedure

5.1   Calibrating Consideration

The pH meter already calibrated by mV signal that simulated from the ideal pH ELECTRODE mV output (base on 25 ℃ environment). However due to (a) An ideal electrode will produce 0 mV at pH 7.00, but most electrodes are slightly off. (b) The measuring environment temperature may not near 25 ℃ (15 to 35 ℃).

If intend to keep instrument combined electrode within high accuracy, it is necessary to make the following calibration procedures.

5.2   Requiring Equipment for Calibration

1) Combination pH electrode (PE-12, included)
2) Buffer solutions:
    pH 7.00 buffer solution (PH-07A, included).
    pH 4.00 buffer solution (PH-04A, included)

5.3   Calibration procedures

pH 7 calibration

1) Place the electrode into pH 7.00 buffer solution (PH-07A)
2) Power on the instrument by pressing the " Power button "
3) Press the „Hold button" once. The display will show the "HOLD" symbol.
    Press the "▼ button" once, the display will show following screen in sequence.
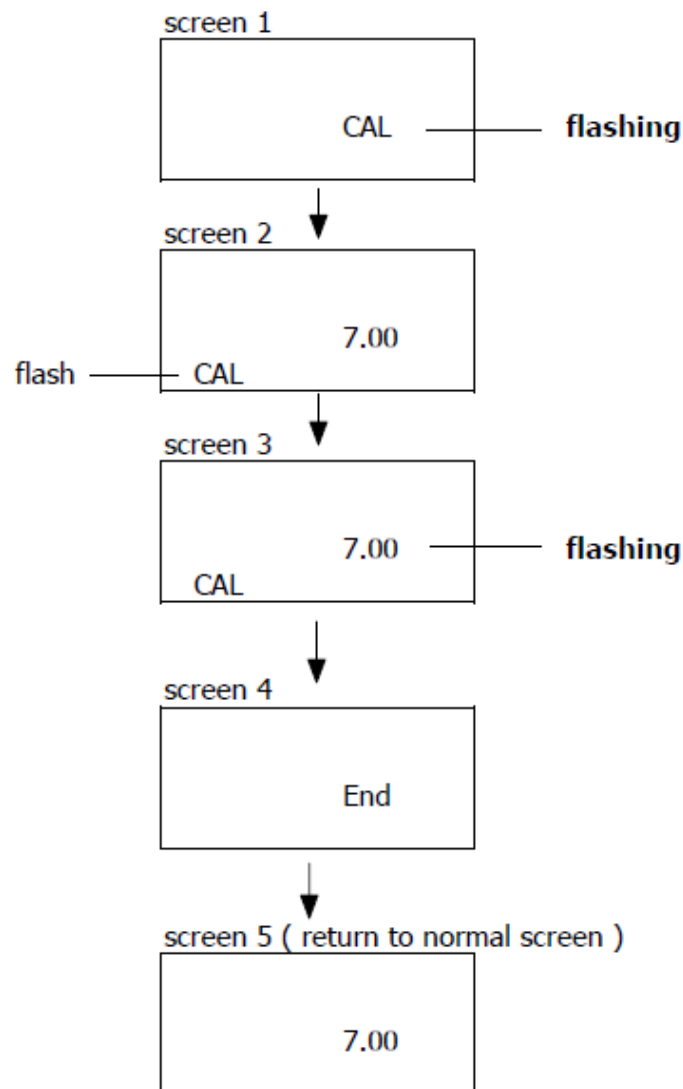
pH 4 calibration
1) Rinse the electrode in distilled water.
   Place electrode into buffer pH 4.00 solution.
2) All the calibration procedures are same as the above pH calibration, except:
   a. Change the buffer solution to pH 4.00 (PH-04A)
   b. The calibration screen value will change to 7.00 instead of 4.00

Remark:
- Except calibrate pH 7, pH 4, meter also can calibrate pH 10.
- The calibration procedures should start from the pH 7 at first, then pH 4 (or pH 10).
- During the calibration, the circuit will sensing solution value automatically. If the buffer solution value already beyond 7± 1 pH. 4± 1 pH, 10± 1 pH, the LCD will show " Err ".
- When the LCD show the screen 2, it allow the user to adjust another calibration value precisely (for example 7.01, 6.99...) by pressing the "▲ button", "▼ button".
- Rinse the electrode in distilled water before change the buffer solution.
- Repeat above pH, pH calibration procedures two times at least.
- After calibration, the "Electrode sensing head" should insert into the "Protection bottle".
- **PE-12, PH-07A, PH-04A is the consumer accessory.**

6   Measuring Procedure

6.1   pH measurement

After the pH electrode is calibrated, the unit is ready for measuring.
1) Power on the meter by pressing the "Power button"
2) Place the electrode into the measured solution, little shake the electrode and wait a few seconds to let the ATC (automatic temperature compensation) sensor to stabilize with the solution' temperature. The LCD will show pH value (up main display) and the temperature value (lower display) at the same time.
3) After make the measurement, please rinse the electrode in distilled water.
   After calibration, the "pH electrode" should insert into the "Protection bottle".
   *PE-11, PH-07A, PH-04A is the consumer accessory.

6.2   Data Hold

- During the measurement, press the "Hold Button" momentarily to hold the measured value. The LCD will show a "HOLD" symbol.
- Press the "Hold Button" once again to release the data hold function.

6.3   Data Record (Max., Min. reading)

1) The data record function records the maximum and minimum readings. Press the "REC Button"
   a. Momentarily to start the Data Record function, shows " REC " on the display.
2) With the "REC" symbol on the display.
   a. Press the "REC Button" momentarily, the "REC MAX" symbol along with the maximum value will appear on the display.
   b. Press the "REC Button" momentarily again, the "REC MIN" symbol along with the minimum value will appear on the display.
      - When display shows "REC MAX" or "REC MIN", press the "Hold Button" momentarily will delete the max. (min.) value, the display will show the "REC." only and execute the memory function continuously.
   c. To exit the memory record function, press the "REC" button for 2 seconds at least. The display will revert to the current reading, not show "REC".

6.4   Change Temp. unit °C, °F

Press the "℃/℉ button" continuously at least two seconds, then release the button will change the Temp. unit from ℃ to ℉ or ℉ to ℃.
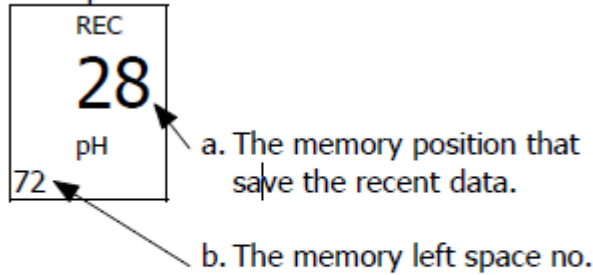
7 Data Logger
The meter can save max. 100 point data into the memory circuit

7.1 Save data
1) Turn on the meter.
2) Press the "REC Button" momentarily, shows "REC" on the display.
3) Press the "Logger Button" momentarily will save one measuring value to memory, display will show :

Example :

REC

28.

pH

72

a. The memory position that save the recent data.

b. The memory left space no.

c. a + b = 100
   For example : 28 + 72 = 100

4) To exit the memory data logger (record) function, press the "REC" button for 2 seconds at least. The display will revert to the current reading, not show "REC"

7.2 Call data
1) Turn on the meter.
   Press the "Hold Button" momentarily, LCD shows "HOLD".
   Following, press the "REC Button" continuously until display shows following , then release the button.

Example :

28.

ttL

The total data point that are saved into the memory.
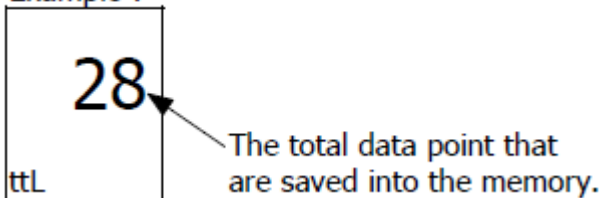
2) Uses "▲ Button" or "▼ Button" to call the data that already saved into the memory.
   *Note : *During call the data, the " pH " unit will be flashed.*

Example :

8.07

pH ◄ ——— flashing

25.0 ℃
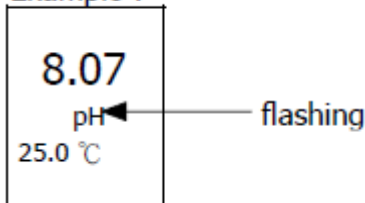
Press " Hold Button " (3-3. Fig. 1) will exit the data call function.
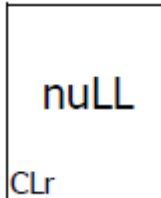
7.3 Delete data (Empty the memory)

1) Turn off the meter first.
2) Press the "REC Button" continuously and not release, at the same time press the "Power Button" momentarily, the display will show following screen, then release both fingers from the buttons.

```
┌─────────┐
│         │
│    n    │
│         │
│CLr      │
└─────────┘
```
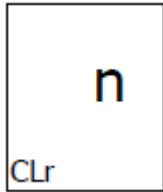
3) Press "▼ Button" momentarily, display shows:

```
┌─────────┐
│         │
│    y    │
│         │
│CLr      │
└─────────┘
```
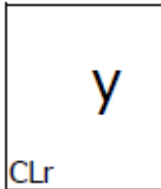
4) Press "Button" momentarily, the display shows:

```
┌─────────┐
│         │
│  nuLL   │
│         │
│CLr      │
└─────────┘
```

Now all the saved data is deleted, memory will empty.

8   Replacement of Battery

1) When the LCD display show " ⊏⊠ ", It is necessary to replace the battery. However, in-spec measurement may still be made for several hours after Low Battery Indicator appears before the instrument become inaccurate.
2) To replace the battery, rotate and remove the "Battery Cover" take out the old batteries, install new batteries:
   DC 1.5V battery (UM-4/AAA) x 4 PCs.
3) When install the batteries, should make attention the battery polarity.
4) After install the batteries, reinstall the battery cover again.

9   Replacement of pH Electrode

1) Take away the pH electrode and change the new unit
2) The pH electrode, PE-12 is the standard accessory of the meter. However the PE-12 is also the consumer parts, its life is depend the working period and the maintenance.
3) Rinse the electrode in distilled water after the usage.
4) "pH Electrode sensing "should insert into the "Protection bottle" if the meter is not used.

10 Disposal

For the disposal of batteries, the 2006/66/EC directive of the European Parliament applies. Due to the contained pollutants, batteries must not be disposed of as household waste. They must be given to collection points designed for that purpose.

In order to comply with the EU directive 2012/19/EU we take our devices back. We either re-use them or give them to a recycling company which disposes of the devices in line with law.

If you have any questions, please contact PCE Instruments.

11 Contact

If you have any questions about our range of products or measuring instruments please contact PCE Instruments.

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