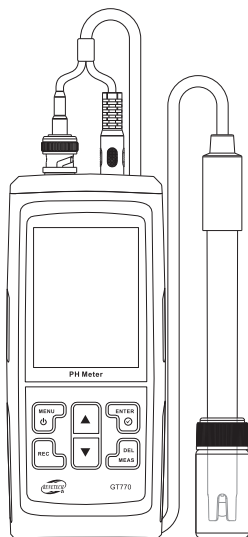




Model: GT770

Instruction Manual for 3-in-1 PH meter



Version: GT770-EN-00

I. Introduction

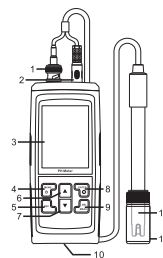
This product can be used for pH value measurement, solution temperature measurement and sensor voltage measurement of the solution. It is widely used in industries, electric power, agriculture, medicine, food, scientific research and environmental protection and other fields.

II. Features

1. Measurement of pH value of solution
2. Measurement of solution temperature
3. Sensor voltage measurement
4. Solution temperature compensation
5. Automatically/manually record data and generate reports
6. Data storage, viewing and deletion
7. Adjustable sampling time interval
8. Adjustable automatic shutdown time
9. Self-calibration, optional [4.00]-[6.86]-[9.18] or [4.00]-[7.00]-[10.00]
10. Temperature unit selection
11. Restore factory settings
12. Adjustable screen brightness
13. Chinese/English selection
14. Low battery prompt and power prompt
15. USB charging
16. Connect to computer PC software to transfer data
17. It can generate csv and bmp files compatible with the Windows system, and can also be used as a small-capacity storage device (USB flash drive) to store files in other formats.

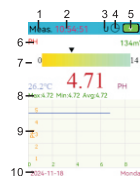
III. Part Names

1. Host and sensor interface
2. Temperature sensor interface
3. LCD display
4. MENU/⊕ button: Menu/Power button
5. REC button: record button
6. ▲ button: Up/Down button
7. ▼ button: Down/Add button
8. ENTER/⊙ button: Confirm button
9. DEL/MEAS button: Delete/measure button
10. USB interface
11. Sensor probe (with electrode glass ball inside)
12. Probe protective sleeve (with buffer solution inside)



IV. Interface description

1. Status: Ready/Measuring. Press the DEL/MEAS button to enter the measuring state during use. The data in the ready state does not change.
2. Time
3. USB is successfully connected to PC software
4. Timed shutdown is enabled



5. Battery power
6. Measurement mode: pH/Temperature/Voltage
7. Measurement data
8. Maximum/Minimum/Average value
9. Line chart of measurement data
10. Date

Common exceptions are displayed

Display	Instructions
Display[OL.]	Indicates that the data is out of range (overload).
Display[NC.]	Indicates that the probe is not connected or the signal is disconnected (no connect).
Display[ATC]	Indicates that the influence of temperature on the pH value is compensated (auto temperature compensation). The acidity and alkalinity of the solution will be affected by temperature changes. If the acidity and alkalinity of the solution to be tested are not affected by temperature, you can press the ENTER button briefly to cancel the ATC compensation.

V. Technical parameters

	Range	Resolution	Error
PH	0.00~14.00	0.01	±0.05
Temperature	0~60°C(32~140°F)	0.1°C	±1.0°C
Voltage	-500~500mV	1mV	±3%
Solution temperature compensation range	0~60°C(32~140°F)		
Working environment	0~50°C(32~122°F), ≤85%RH		
Data storage	8MB (Can store about 397,000 data)		
Battery	3.7V 1000mAh lithium battery		
Low battery prompt	4 levels of power indication. When the voltage is over than 3.3V, it will automatically shut down		
Charging adapter	5V/2A		

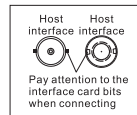
VI. Operation instructions

1. Measurement preparation

- (1) Connect the host and sensor correctly.
- (2) Turn on the power to check the battery level. If it cannot be turned on or the battery is low, please charge it in time.

2. Power on/off

- (1) Power on: In the off state, Short press the MENU/⊕ button to turn on the power and enter the measurement interface.
- (2) Manual shutdown: After turning on the power, press and hold the MENU/⊕ button in any interface to turn off the power.



3. Menu function operation

After turning on the power, Short press the MENU/▼ button to enter the menu. Press the ▲/▼ button to select the setting item and press the ENTER button to enter the setting.

Press the ▲/▼ button again to select, press the ENTER button to save and return to the menu (or press the MENU/▼ button to return to the menu without saving).

(1) RecMode(Recording mode):

Select automatic/manual data recording

a. Automatic data recording:

Achieve long-term recording (more than 200 points).

In the measurement interface, press the DEL/MEAS button briefly to enter the measurement, press the REC button briefly to start recording, record data according to the sampling interval time, and the [REC] icon flashes at the same time. When leaving this interface, the file will be automatically saved.

b. Manual data recording:

It can save the current recording points within 200. In the measurement interface, press the DEL/MEAS button briefly to enter the measurement, and press the REC button briefly to save the data file.

(2) File:

View the list of recorded data/pictures. Select the file and press the DEL/MEAS button briefly to delete the record or picture.

a. View recorded data:

.csv file format is the measurement data file. Press the ENTER button briefly to view the data list on the product. After entering the list interface, press the ENTER button briefly again to view the line chart.

b. View pictures:

.bmp file format is the product screenshot picture. You need to connect the computer to view the pictures. Picture resolution: 240x320 dpi.

Note:

1) Screenshot operation: Press the REC button + DEL/MEAS button simultaneously in any interface until the save file name is displayed, which means the screenshot is saved successfully.

2) Screenshot save time: Affected by the product storage space and screen data, you need to wait patiently for about 30 seconds. During this period, the interface may freeze. This is not a product damage. Please do not perform any operations or connect the computer.

3) View pictures: After connecting the computer, enter "My Computer", and the newly added USB flash drive is the storage disk of this product.

(3) **Sampling(Sampling interval):** It can be set from 1 to 9 seconds.

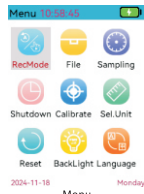
(4) **Shutdown(Shutdown time):** It can be set to 00, 10, 20, 30, 40, 50, 60 minutes. 00 means to turn off the automatic shutdown.

(5) **Calibrate:** The default is pH calibration. Short press the ▼ button to switch to temperature calibration, and short press the ▲ button to switch to pH calibration.

a. pH calibration:

1) According to the product interface prompt, prepare 3 kinds of calibration solutions, clean the probe, put the probe into the calibration solution, and press the ENTER button briefly to start calibration.

2) The automatic calibration can identify the calibration solution, or you can press the ENTER button briefly to jump to the currently displayed solution. During the calibration process, the calibration solution needs to be stirred.



3) During calibration, it will be automatically saved after the sampling value is stable.

4) Return to the automatic identification of the calibration solution again, clean the probe, and put it into the next calibration solution.

5) Repeat the above steps to complete the calibration of the 3 calibration solutions.

Note: If there is no GIF image displayed on the interface, it will not be automatically calibrated and recognized, and it will be calibrated in the order of 4.00-6.86-9.18 (or 4.00-7.00-10.00).

b. Temperature calibration:

1) According to the product interface prompt, prepare a constant temperature water bath at 25°C and press the ENTER button briefly to start calibration.

2) During calibration, it will be automatically saved after the sampling value is stable.

3) If there is an error in the calibration process, you need to check the connection of the probe. After the calibration is completed, it will exit automatically.

(6) Sel Unit(Select unit):

a. pH calibration solution: [4.00]-[6.86]-[9.18]/[4.00]-[7.00]-[10.00]

b. Temperature unit: Celsius [C]/Fahrenheit [F]

(7) **Reset:** You can choose to restore factory settings in case of misoperation or setting (the saved files will also be cleared). Do not perform any operations during the restoration process. After the restoration is completed, it will automatically shut down. After restarting, you can synchronize the information by connecting to the computer software.

(8) **Backlight:** Backlight brightness adjustment, which can be set from 1% to 100%.

(9) **Language:** English, Chinese.

4. Measurement

After turning on the power, short press the DEL/MEAS button to enter the measurement state. Press the ▲/▼ button to switch: pH value - Temperature - Voltage measurement interface. After connecting the probe correctly, you can start the measurement.

VII. PC software

1. Download software

Enter the website "www.benetechco.net" in the browser, press enter and enter the page to find the menu "Support"-"Download Catalog". Click into the page to find the software installation package "PH Meter.zip". Click the download button to directly extract the "zip package" after downloading. Double click on "PH MeterSetup .exe" to install.

2. Software interface



- 1) Click to start real-time measurement (the product is in the measurement state), and the measurement data can be displayed in real time.
- 2) Menu bar - System configuration (or Menu bar - Options - Configuration), you can set the sampling time and high and low alarm values. When the real-time measurement data exceeds the alarm value, the data list: if not exceeding the value, it is displayed in black; if exceeding the high alarm value, it is displayed in red; if lower than the low alarm value, it is displayed in green.
- 3) Menu bar - Options - Language switching, you can choose: English, Simplified Chinese, Traditional Chinese. After switching the language, you need to close the software and restart it.
- 4) When the mouse moves to the chart, the displayed data represents: serial number, corresponding curve value.

VIII. Probe maintenance and precautions

1. To obtain more accurate values, before measurement, it is necessary to perform fixed-point calibration with a known pH value standard buffer solution.
2. During use and storage, the probe glass ball must be protected. Any damage or abrasion will cause the electrode to fail and cannot be used.
3. When storing, put on the protective sleeve and add a small amount of buffer solution (the main component is potassium chloride) in time to keep the probe electrode moist.
4. When connecting the host sensor, it is necessary to ensure that the interface is clean and dry to prevent short circuits, damage to parts and affect the measurement results.
5. During use and storage, avoid soaking the probe in distilled water, protein solution, acidic fluoride solution for a long time, and prevent contact with silicone grease.
6. After the probe has been used for a long time, if the linearity is found to be slightly reduced, the probe electrode can be soaked in 4% HF (hydrofluoric acid) for 3-5 seconds, then washed clean with distilled water, and then soaked in the buffer solution to renew it.
7. The shelf life of the probe electrode is 1 year. The aged probe will affect the measurement results. It is recommended to replace it regularly.
8. If the solution to be tested contains substances that are easy to contaminate the glass ball or block the probe, it will cause the electrode to be passivated, affecting the measurement sensitivity and accuracy. It is necessary to use an appropriate cleaning agent to clean the probe according to the nature of the pollutant to renew it.

Note:

When selecting a cleaning agent, try to avoid cleaning agents that contain carbon tetrachloride, trichloroethylene, tetrahydrofuran, etc. that can dissolve polycarbonate resin (because such cleaning agents may react with the dissolved polycarbonate resin to the glass ball).

Specific Declarations:

Our company shall hold no any responsibility resulting from using output from this product as an direct or indirect evidence. We reserves the right to modify product design and specification without notice.

