

HZQW PHB-4 MICROCOMPUTER PORTABLE PH METER



Technical characteristics and operating conditions of the instrument

Measurement range	pH: 0 ~ 14.00pH; MV: & plusmn; 1600 mv
Temperature	0 ~ 60 °C
Resolution	pH: 0.01pH
Temperature: & plusmn;	1 °C
Precision :pH: 0.01pH, temperature:	± 1 °C
Automatic temperature compensation:	0-60 °C temperature compensation/manual compensation
Basic configuration:	e201-c plastic shell PH composite electrode; PH calibration specimen; Four dc1.5v batteries

The working conditions

When the environment temperature degrees:	0 ~ 40 °C relative humidity: < 85%
Power supply:	1.5V battery /4 knots

Has no noticeable vibrations

There is no interference from external magnetic fields except earth's

Input impedance:	$\geq 1 \times 10^{12} \Omega$
Zero drift:	$\leq 0.01 \text{ pH} \pm 1 \text{ word} / 2 \text{ hours}$
Low solution temperature compensation scope:	$0 \sim 60 \text{ }^\circ\text{C}$
Appearance size and weight:	$180 \times 80 \times 30 \text{ mm}$ (long & wide & high) 0.5 Kg
Consumption power:	2 W

iii. Working principle of the instrument

Basic principle of pH measurement

The pH value of aqueous solution is generally measured by using glass electrode as the indicator electrode and calomel electrode as the reference electrode. When the hydrogen ion concentration (strictly speaking, activity) in the solution, i.e. the pH value of the solution changes, the electric potential between the glass electrode and the calomel electrode also changes, and the relation of electric potential changes conforms to the following formula:

$$\Delta E = 58.16 \times \Delta \text{pH} \times (273 + t) / 293 \text{ (mV)}$$

Sector E: represents a change in potential in millivolts. (mV)

Flowering pH: represents the change in the pH of the solution.

T: it means the temperature of the test solution ($^\circ\text{C}$).

The commonly used indicating electrodes include glass electrode, antimony electrode, fluorine electrode, silver electrode and so on, among which glass electrode is the most widely used. The head of pH glass electrode is made of a special sensitive membrane, which is sensitive to hydrogen ions. When it is inserted into the solution under test, its potential changes with the concentration and temperature of hydrogen ions in the solution under test. Changes in solution temperature is $25 \text{ }^\circ\text{C}$, every 1 pH, electrode potential change 59.16 mV. This is the theoretical slope coefficient of the electrode.

The potential of the commonly used reference electrode is not changed with the concentration of hydrogen ions in the tested solution.

The essence of pH measurement is to measure the potential difference between two electrodes. When the potential difference between a pair of electrodes in the solution is equal to zero, the pH value of the solution under test is equal to zero potential pH value, which is related to the solution inside the glass electrode. This instrument is equipped with a composite electrode, which is composed of glass electrode and ag-agcl electrode. Its zero-point pH value is 7 ± 0.25 .