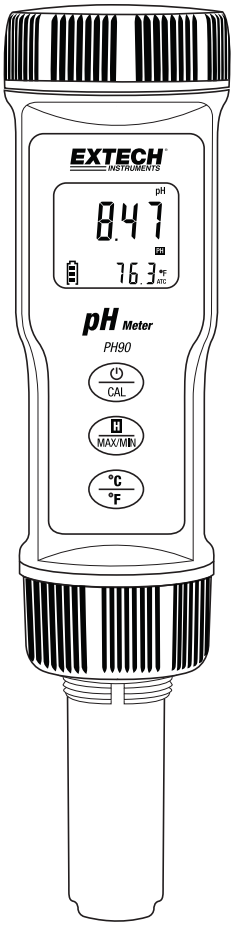
USER MANUAL

Waterproof pH/Temperature Meter

Model PH90



Introduction

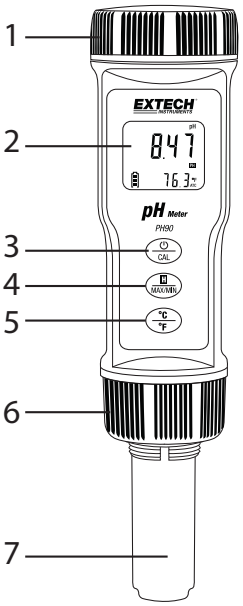
Thank you for selecting the Extech Model PH90 waterproof pH/Temperature meter. This instrument is equipped with a flat surface pH electrode (model pH95) for reliable test results. This device is shipped fully tested and calibrated and, with proper use, will provide years of reliable service.

Features

- Rugged, replaceable, flat surface pH electrode (pH95) for quick pH measurements
- LCD display shows pH and temperature measurements simultaneously
- Calibration automatically recognizes buffer solution
- PTS (percent of slope) feature alerts user when electrode replacement is necessary
- ATC (automatic temperature compensation)
- Waterproof design (IP57); meter can float in water
- Auto power off after 10 minutes of inactivity
- Easy to replace pH electrode

Description

1. Battery compartment cap
2. LCD Display
3. Power and CAL button
4. HOLD and MAX/MIN button
5. °C/°F button
6. Electrode collar
7. Electrode (PN: PH95; replaceable)



CAUTIONS

- This device contains small objects that can be swallowed; do not allow children or pets to handle or play with this device.
- Do not allow children or pets to handle or play with the batteries and packing material, these items pose a hazard.
- If this device is to be stored unused for an extended period of time, remove the batteries.
- Expired or damaged batteries can cause cauterization on contact with skin. Always use suitable hand protection.
- Please ensure that the batteries are not short-circuited.
- Do not dispose of batteries in a fire.

Overview

pH Overview

pH is a unit of measure (ranging from 0 to 14pH) indicating the degree of acidity or alkalinity of a solution. Solutions with a pH lower than 7 are considered acidic, solutions with a pH higher than 7 are known as bases, and solutions with a pH of exactly 7 are considered 'neutral'.
The pH scale is logarithmic so, for example, if sample 'A' is 1 pH lower than Sample 'B', then Sample 'A' is 10 times more acidic than Sample B. A difference of 1 pH represents a ten-fold difference in acidity.

Getting Started

- For new meters, remove the battery cap (1) at the top of the meter and install 2 batteries observing correct polarity.
- Remove the cap from the bottom of the instrument (7) to expose the flat surface electrode and reference junction.
- Before first use, rinse the electrode with clean tap water and wipe dry.
- The sponge should be kept moistened at all times to ensure accuracy.

Replacing Electrodes

The PH90 is shipped with a flat surface pH electrode attached (7). Electrode life is limited, and is dependent on (among other factors) frequency of use and care. If the electrode needs to be replaced, follow these steps for removing and connecting electrodes. Replacement pH electrodes (part number pH95) are available from Extech Instruments.

1. Unscrew the electrode collar (6) clockwise, and remove it completely.
2. Pull the pH electrode module out from the tester.
3. Carefully, plug a new electrode module into the tester socket.
4. Replace and tighten the electrode collar to ensure a good seal.

Automatic Electrode Recognition

When the meter is powered, it recognizes the type of electrode that is connected and displays the appropriate unit of measure. Attach the electrode before powering the meter; never power the meter without an electrode attached.

Powering the Meter

The batteries are already installed in the meter. Press the power button (3) to power ON or OFF. The displayed battery indicator lets the user know the status of the battery strength. The Auto Power off feature shuts the meter off automatically after 10 minutes of inactivity to preserve battery life.

Operation

Understanding the PH90 Display

When an electrode is placed in a solution, the main display indicates the pH reading while the lower display shows temperature.

pH Calibration

A two point calibration with a buffer of 7 and 4 or 10 (whichever is nearest to the expected sample value) is always recommended. For best accuracy, always calibrate at the sample temperature.

1. Check that the **pH** icon is displayed on the LCD.
2. Dip the electrode into the pH7 buffer solution. Stir gently and wait for a stable reading.
3. Press and hold the CAL button (3) to enter calibration mode.
4. The LCD will display the **CAL** icon and then flash **7.00**.
5. When calibration is complete the meter will stop flashing and indicate **SA** and **END**.
6. Rinse the electrode with clean tap water and wipe dry.
7. Dip the electrode in pH4 (or pH10) buffer solution.
8. Stir gently and wait until the display is stable.
9. Press and hold the CAL button to enter calibration mode.
10. The LCD will display the **CAL** icon and then flash **4.00** or **10.00**.
11. When calibration is complete the meter will stop flashing and indicate **%** (percent of slope), **SA** and **END**.
12. After the calibration of pH4 or pH10, the display will indicate the slope percentage (PTS), indicating the status of the electrode.
13. If the PTS is < 70% or > 130% the electrode must be replaced. A slope of 100% is ideal.

Note: The **SA** icon will not appear if the calibration fails.
Note: Calibrate with a pH 7 buffer first and then follow with a pH 4 or pH 10 calibration.

pH Measurements

After calibration (detailed earlier), rinse the electrode with clean tap water and wipe dry. Dip the electrode into the sample solution to be measured. Stir gently and wait for a stable reading. Automatic temperature compensation is always active when measuring pH (ATC icon shown on LCD).

Temperature Units Selection (°C/°F)

Press and hold the C/F button to toggle the displayed temperature units of measure.

Data Hold

Momentarily press the HOLD/MAX-MIN button (4) to enter the HOLD mode; the displayed reading will freeze. The icon **HOLD** will be displayed on the LCD while in this mode. Press this button again to exit the Data Hold mode and return to the measurement mode. The **HOLD** icon will disappear and the reading will return to the real-time value.

MAX/MIN

Press and hold the HOLD/MAXMIN button (4) until the **MAX** or **MIN** icon flashes on the display. Momentary presses of this button will now toggle the MAX (highest reading shown) and MIN (lowest reading shown) modes. Press and hold this button to exit the MAX/MIN mode and return to the measurement mode (the MAX/MIN icons will disappear). Note that the meter will not *Auto Power OFF* while in the MAX/MIN mode.

Factory Default RESET Procedure

To restore the meter to the factory default settings, power on the meter and press and hold these two buttons  while powering the meter OFF.

Battery Replacement

1. Unscrew the battery compartment cap counterclockwise to access the battery compartment.
2. Replace the two (2) 2032 batteries observing correct polarity.
3. Replace the battery compartment cap securely.

Never dispose of used batteries or rechargeable batteries in household waste.
As consumers, users are legally required to take used batteries to appropriate collection sites, the retail store where the batteries were purchased, or wherever batteries are sold.

Disposal: *Do not dispose of this instrument in household waste. The user is obligated to take end-of-life devices to a designated collection point for the disposal of electrical and electronic equipment.*

Specifications

Display	**pH**	**Temp**
Range	0 to 14.00 pH	0 to 90.0°C (32 to 194°F)
Accuracy	± (0.01pH + 1dgt)	± 0.5°C + 1 dgt (± 0.9°F + 1 dgt)
Resolution	0.01 pH	0.1°F/C
ATC (Auto temperature compensation)	0 to 90°C (32 to 194°F)	n/a
Calibration points	pH 4.00, 7.00, and 10.00	
Power	2 x 3V Lithium batteries (CR2032)	
Dimensions	36 x 170 x 36mm (1.4 x 6.7 x 1.4”)	
Weight	85g (3oz.)	