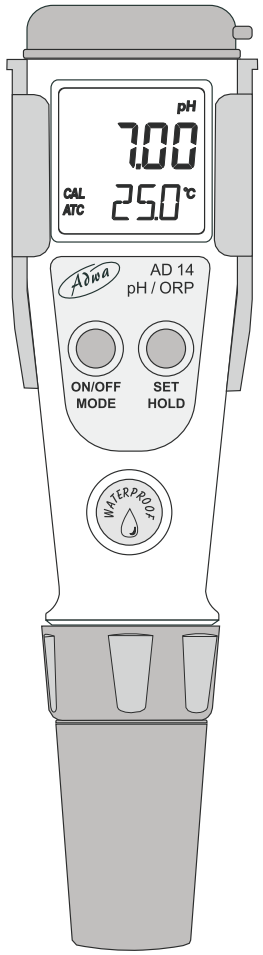
USER MANUAL

AD14 • Waterproof pH/ORP Tester



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Dear Customer,

Thank you for choosing an Adwa product. Please read carefully this manual before starting operations.

This instrument is in compliance with the EMC Directive 89/336/EEC and Low Voltage Directive 73/23/EEC for electrical equipments.

For additional technical information, please e-mail us at **sales@adwainstruments.com**.

INTRODUCTION

AD14 is waterproof pH, ORP and temperature tester. The housing has been completely sealed against humidity.

All pH readings are automatically temperature compensated (ATC), and temperature values can be displayed in °C or °F units.

The meter can be calibrated at one or two points for pH with auto-buffer recognition and against five memorized buffer values, while the ORP (mV) range is factory calibrated.

Measurements are highly accurate with a unique stability indicator right on the LCD. The model is also provided with a low battery symbol which warns the user when the batteries need to be replaced.

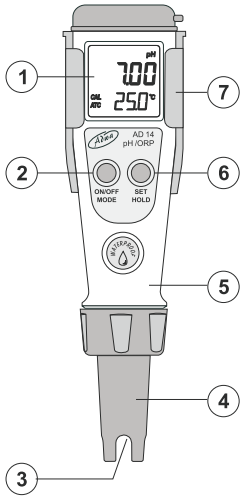
The **AD14P** pH/ORP electrode, supplied with the meter, is interchangeable and can be easily replaced by the user.

The encapsulated temperature sensor allows fast and accurate temperature measurement and compensation.

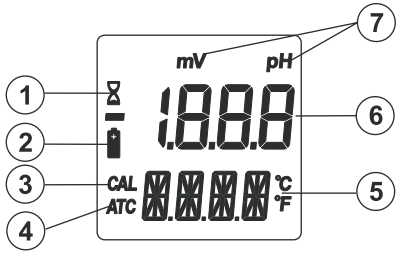
The meter is supplied complete with:

- **AD14P** pH/ORP electrode
- 4 x 1.5V batteries, button type
- User manual

FRONT PANEL & DISPLAY



1. Dual line LCD
2. ON/OFF/ MODE button
3. pH/ORP electrode & temperature sensor
4. Electrode body
5. Battery compartment (inside)
6. SET/HOLD button
7. Clip holder



1. Stability indicator (hourglass symbol)
2. Low battery warning indicator
3. Calibration mode / calibrated meter indication
4. ATC (Automatic Temperature Compensation) indicator
5. Secondary LCD level
6. Primary LCD level
7. Measurement unit for primary level

TECHNICAL DATA

Range	-2.00 to 16.00 pH ±1000 mV -5.0 to 60.0 °C / 23.0 to 140.0 °F
Resolution	0.01 pH / 1 mV 0.1 °C / 0.1 °F
Accuracy (@25 °C/77 °F)	±0.01 pH / ±2 mV ±0.5 °C / ±1 °F
pH Calibration	Automatic, 1 or 2 point with 2 sets of memorized buffers (pH 4.01/7.01/10.01 or 4.01/6.86/9.18)
Electrode	**AD14P** pH/ORP electrode (included)
Temperature Compensation	Automatic for pH readings
Battery Type / Life	4 x 1.5V button type / approx. 300 h of use
Auto-off	After 8 minutes of non-use
Environment	-5 to 50 °C (23 to122 °F); RH 100%
Dimensions	175.5 x 39 x 23 mm
Weight	100 g

ELECTRODES & SOLUTIONS

AD14P	Spare pH/ORP electrode
AD70004P	pH 4.01 buffer solution, 20 ml, 25 pcs.
AD7004	pH 4.01 buffer solution, 230 ml bottle
AD70007P	pH 7.01 buffer solution, 20 ml, 25 pcs.
AD7007	pH 7.01 buffer solution, 230 ml bottle
AD70010P	pH 10.01 buffer solution, 20 ml, 25 pcs.
AD7010	pH 10.01 buffer solution, 230 ml bottle
AD7061	Cleaning solution, 230 ml
AD70300	Storage solution, 230 ml

OPERATIONAL GUIDE

Turn the meter on

- Press and hold the ON/OFF/MODE button until the LCD lights up. All the used segments will be visible for one second (or as long as the button is pressed).

Freeze the display

- While in measurement mode, press the SET/HOLD button. The reading will be frozen on the LCD. Press any button to return to normal mode.

Turn the meter off

- While in measurement mode, press the ON/OFF/MODE button. OFF will appear on the secondary display. Release the button.

Note: If measurements are taken in different samples successively, rinse the probe thoroughly to eliminate cross-contamination. After cleaning, rinse the probe with some of the sample to be measured.

MEASUREMENT & CALIBRATION

Taking Measurement

- Select the desired pH or ORP (mV) mode by pressing the SET/HOLD button.
- Submerge the electrode in the solution to be tested while stirring it gently.
- Measurements should be taken when the stability indicator (hourglass) disappears.
- The measured value is shown on the primary LCD level while the secondary one shows the sample temperature.

Note: Displayed pH readings are automatically compensated for temperature variations.

Note: Before taking any pH measurement, make sure the meter has been calibrated (CAL tag is displayed).

Note: The ORP (mV) range is factory calibrated.

pH Calibration

For better accuracy, frequent calibration of the instrument is recommended. In addition, the instrument must be recalibrated whenever:

a) The pH electrode is replaced.
b) After testing aggressive chemicals.
c) Where high accuracy is required.
d) At least once a month.

Calibration Procedure

- From normal measuring mode, press and hold the ON/OFF/MODE button until OFF on the secondary LCD is replaced by CAL.
- Release the button. The LCD enters the calibration mode displaying “pH 7.01 USE” (or “pH 6.86 USE” if the NIST buffer set was selected).
- The meter automatically recognizes buffers: if a valid buffer is detected then its value is shown on the primary display and REC appears on the secondary LCD level. If no valid buffer is detected, the meter keeps the USE indication active for 12 seconds, followed by WRNG, indicating the buffer being measured is not a valid calibration value.

Single-Point Calibration

- For a single-point calibration with buffers pH 4.01, 9.18 or 10.01, the meter automatically accepts the calibration when the reading is stable. The accepted buffer is displayed together with the message “OK 1” for one second, then the meter automatically returns to the normal measuring mode.
- If a single-point calibration with buffer pH 7.01 (or pH 6.86) is desired, then after the calibration point has been accepted, press the ON/OFF/MODE button to return to normal mode. The meter shows “7.01” (or “6.86”) and “OK 1” for one second, then it automatically returns to the normal mode.

Note: For better accuracy, it is recommended to perform a 2-point calibration.

Two-Point Calibration

- For a two-point calibration, place the electrode in pH 7.01 (or pH 6.86) buffer. After the first calibration point has been accepted, the “pH 4.01 USE” message appears. The message is held for 12 seconds, unless a valid buffer is recognized. If no valid buffer is recognized, then the WRNG message is shown. If a valid buffer (pH 4.01, 10.01, or 9.18) is detected, then the meter completes the calibration procedure. The LCD shows the accepted value with the “OK 2” message, and then the meter returns to the normal mode.

Note: When the calibration procedure is completed, the CAL tag is turned on.

To quit calibration & reset to default values

- After entering the calibration mode and before the first point is accepted, you can quit the procedure and return to the last calibration data by pressing the ON/OFF/MODE button. The secondary LCD displays “ESC”for one second and then the meter returns to the normal measuring mode.
- To reset to the default calibration values, press SET/HOLD after entering the calibration mode and before the first point is accepted. The secondary LCD displays “CLR” for one second, the meter resets to the default calibration and the CAL tag disappears.

SETUP

Setup mode allows the selection of temperature unit and pH buffer set. To enter the setup mode, select pH mode and then press the ON/OFF/MODE button until CAL on the secondary display is replaced by TEMP and the current temperature unit (e.g. TEMP °C). Then:

For °C/°F selection:

- Use the SET/HOLD button. After the tempera ture unit has been selected, press the ON/OFF/MODE button to enter the buffer set selection mode.
- Press the ON/OFF/MODE button again to return to the normal measuring mode.

To change the calibration buffer set:

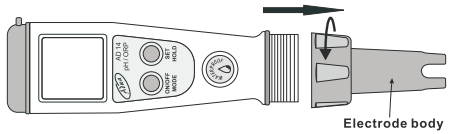
- After setting the temperature unit, the meter will show the current buffer set: “pH 7.01 BUFF” (for 4.01/7.01/10.01) or “pH 6.86 BUFF” (for NIST 4.01/6.86/*9.18).
- Change the set with the SET/HOLD button, then press ON/OFF/MODE to return to the normal measurement mode.

ELECTRODE MAINTENANCE

When not in use, rinse the electrode with water and store it with a few drops of **AD70300** storage solution in the protective cap.

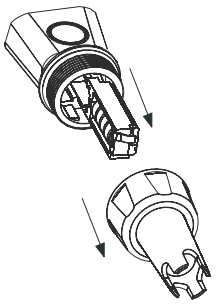
NEVER STORE THE ELECTRODE IN DISTILLED OR DEIONIZED WATER!

- If the electrode has been left dry, soak the tip in storage solution for at least one hour to reactivate it.
- To prolong the electrode life, it is recommended to clean it monthly by immersing the tip in **AD7061** general cleaning solution for 30 minutes. Afterwards, rinse it thoroughly with tap water and recalibrate the meter.
- The electrode can be easily replaced by unscrewing the body as shown below.



BATTERY REPLACEMENT

When the batteries become weak, the battery symbol on the LCD lights up to indicate a low battery condition. Batteries should be replaced soon.

To change the batteries, unscrew and release the electrode body. Take out the battery compartment and carefully replace all four batteries while paying attention to their polarity.

Reattach and tighten the electrode body properly to ensure a watertight seal.