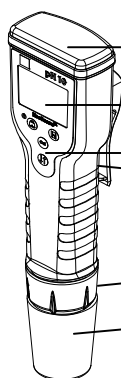# YSI Environmental

EcoSense® pH10 pH/Temperature Pen
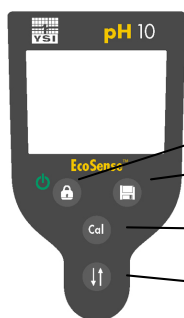## Operations Manual

YSI pH10 OVERVIEW

A. Description

1. Battery cap

2. Graphic LCD screen

3. Keypad

4. Belt clip (Do not remove screw.)

4. Electrode collar

5. Electrode & ATC assembly – outside o-ring on electrode is yellow and inside o-ring is black. (Electrode cap shown covering electrode.)

B. YSI pH10 Keypad Layout

Hold – On/Off key

Store key

Calibration key

Scroll key

INITIAL INSPECTION AND ASSEMBLY

Carefully unpack the instrument and accessories, and inspect for shipping damages. Notify your local dealer or YSI immediately (800-897-4151 or environmental@ysi.com) of any damages or missing parts. Save packing materials until satisfactory operation is confirmed.

BEFORE USING

A. Insert the Batteries

1. Remove the battery cap at the top of the unit.
2. Insert the set of batteries (included) ensuring correct polarities.
3. Securely replace battery cap.

B. Soak the Electrode

1. Remove the electrode cap covering the pH10 meter electrode.
2. Soak electrode in pH 4 buffer for 10 minutes before first use or after storage.

OPERATION

A. Power ON/OFF

Press "HOLD – On/Off" key for 3 seconds. The unit will turn on and enter the "Measure Mode". Repeat process to turn off. 10 minute automatic shutoff.

B. Set Date and Time

1. Press and Hold "CAL" key until it enters "Date/Time Set Mode".
2. Press "HOLD" key to select date or time parameters.
3. Press "STORE" key to increase value or "SCROLL" key to decrease value.
4. Press "CAL" key for 2 seconds to return to "Measure Mode".

C. Select Buffer Set

1. Press and hold "SCROLL" key until unit enters "Buffer Set Select Mode".
2. Press "SCROLL" key again to select either 7.00 (7.00/4.01/10.01) or 6.86 (6.86/4.00/9.18) buffer sets.
3. Press "STORE" key for 2 seconds to return to "Measure Mode".

Note: This is only needed once unless changing buffer sets.

D. Calibrate pH

1. Press "CAL" key for 2 seconds <u>and release</u> to enter "Calibration" mode.
2. Immerse meter into either pH 7.00 or 6.86 buffer solution depending on which Buffer Set you are using. 'WAIT' will flash.
3. The pH10 meter will determine when the calibration reading is stable. Meter is calibrated when "WAIT" disappears. The unit will automatically enter the next calibration point 5 seconds later. One/first point calibration is now completed. Press "CAL" key to exit or continue to next step for two/second point calibration.
4. Repeat Steps 2 and 3 for two/second point calibration by immersing the meter in pH 4.01/4.00 or 10.01/9.18 buffers.
5. Move to #6 for three/third point calibration or press "CAL" to exit two point calibration.
6. Repeat Steps 2 and 3 for three/third point calibration.
7. When "WAIT" disappears unit will automatically return to "Measure Mode".

Note: For accuracy, it is recommended pH calibration is performed routinely with good buffer solutions and a clean electrode or anytime after replacing the electrode.

E. Measure

Dip the electrode into the test solution while in the "Measure Mode".

F. Hold Data

1. When the pH is stable, press "HOLD" key once to lock the reading on the display.

2. Press "HOLD" key again to unlock reading and the unit will return to "Measure Mode". The unit is now ready for another measurement.

Note: The unit cannot be powered off in "Hold Mode".

G. Save Data

Either in the "Hold Mode" or the "Measure Mode", press "STORE" key for 2 seconds. "DATA SAVE" and "M-XX" will appear indicating the reading has been saved and stored in memory location XX. The unit automatically returns to "Measure Mode".

Note: The non-volatile memory stores up to 50 sets of data (pH, Temperature, Date, Time) even if power is lost. If memory is full, the next set of data will overwrite the first data set stored, etc.

H. Recall Data

1. In "Measure Mode", press "SCROLL" key 2 seconds, the most recent set of saved data will appear.
2. Press the "SCROLL" key to view previous saved data.
3. Press "STORE" key for 2 seconds to return to "Measure Mode".

ONGOING MAINTENANCE

A. Electrode Storage

1. Electrodes attached to the instrument should be kept in a moist environment. Keep the sponge in the chamber moist, tap water is acceptable. The single-junction electrode needs to be kept clean; check periodically for cleanliness.
2. For long-term storage, store in pH 4 buffer.

ERROR DISPLAYS AND TROUBLESHOOTING

pH LCD Display	ATC Display	DISPLAY Mode	Possible cause(s) [Action(s)]
Any Value	"OVER"	Measure	a. Temperature outside 0 to 99.9°C range. [Bring solution to a lower/higher temp.] b. Bad sensor. [Replace electrode.]
"OVER"	0.0-99.9°C	Measure	pH value outside 0.00 to14.00 pH range . [Use new buffer, Recalibrate, or Replace electrode.]
"OVER"	0.0 - 60.0°C	pH CAL a.pH-STAND b.pH-SLOPE	a. Offset @ 7.00pH: mV > 90mV Offset @ 6.86pH: mV > 98.3mV b. New slope>ideal slope by 30% [Use new buffer or Replace electrode.]
"OVER" "UNDER"	0.0 - 60.0°C	pH CAL a.pH-STAND b.pH-SLOPE	a. Offset @ 7.00pH: mV < -90mV Offset @ 6.86pH: mV < -81.7 mV b. New Slope < ideal slope by 30% [Use new buffer or Replace electrode.]

SPECIFICATIONS

Range	Resolution	Accuracy
pH 0.00 to 14.00 pH	pH 0.01 pH	pH ±0.02 pH ± 1 LSD
Temp. 0.0 to 99.9 °C Temp. 32.0 to 211.8 °F	Temp. 0.1 °C Temp. 0.2 °F	Temp. ±0.3 °C Temp. ±0.6 °F

pH

Buffer recognition	pH 7.00, 4.01, 10.01 or pH 6.86, 4.00, 9.18
Temperature compensation	AUTO 0.0 to 99.9 °C (32.0 to 211.8 °F)
Buffer temperature range	0.0 to 60.0°C (32.0 to 140 °F)
Electrode offset	±90 mV at pH 7.00 +98.3 mV / -81.7 mV at pH 6.86
Electrode slope	±30% at pH 4.00, 4.01, 9.18 and 10.01
Input impedance	$>10^{12}\Omega$

Temperature

Temperature sensor	Thermistor, 10 k at 25°C

General

Battery life	Meter: ~35 Hours
Ambient temperature range	0.0 to 50.0 °C
Display	98x64 graphic LCD
Case	IP67 water-tight case
Weight	105 g (3.7 ounces)

REPLACEMENT PARTS

Item Number	Description
605112	Instruction Manual
605113	pH10 Electrode Replacement Kit (Includes electrode, electrode collar, 2 o-rings, and sensor cap)
605114	Sensor Cap
605115	Battery Compartment Kit (Includes battery cover and battery gasket)
605118	Battery Kit (Includes 4 batteries)

WARRANTY

The YSI pH10 Instrument is warranted for <u>one year</u> from date of purchase by the end user against defects in materials and workmanship. YSI pH10 electrodes are warranted for <u>six months</u> from date of purchase by the end user against defects in material and workmanship. Within the warranty period, YSI will repair or replace, at its sole discretion, free of charge, any product that YSI determines to be covered by this warranty.

To exercise this warranty, write or call your local YSI representative, or contact YSI Customer Service in Yellow Springs, Ohio. Send the product and proof of purchase, transportation prepaid, to the Authorized Service Center selected by YSI. Repair or replacement will be made and the product returned, transportation prepaid. Repaired or replaced products are warranted for the balance of the original warranty period, or at least 90 days from date of repair or replacement.

Limitation of Warranty

This Warranty does not apply to any YSI product damage or failure caused by: (i) failure to install, operate or use the product in accordance with YSI's written instructions; (ii) abuse or misuse of the product; (iii) failure to maintain the product in accordance with YSI's written instructions or standard industry procedure; (iv) any improper repairs to the product; (v) use by you of defective or improper components or parts in servicing or repairing the product; or (vi) modification of the product in any way not expressly authorized by YSI.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. YSI's LIABILITY UNDER THIS WARRANTY IS LIMITED TO REPAIR OR REPLACEMENT OF THE PRODUCT, AND THIS SHALL BE YOUR SOLE AND EXCLUSIVE REMEDY FOR ANY DEFECTIVE PRODUCT COVERED BY THIS WARRANTY. IN NO EVENT SHALL YSI BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES RESULTING FROM ANY DEFECTIVE PRODUCT COVERED BY THIS WARRANTY.

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