

Eco pH Duo+

pH & Temperature meter
OPERATION (MANUAL)

PRODUCT SPECIFICATION

OPERATING RANGE	0~14PH	0~50°C
RESOLUTION	0.1PH	0.1°C
ACCURACY	±0.2PH	±0.5°C
MEMORY	10 DATA MEMORY	
BATTERY	4X1.5V BUTTON CELL (ALKALINE LR44 OR EQUIV.)	
BATTERY LIFE	150 HOURS (CONT.USE)	
AUTO SHUT-OFF	APPROX. 15 MIN.	
OPERATING TEMPERATURE	0~50°C	

pH & temperature are the most basic test parameters for marine and fresh water aquarium as well as commercial farming and aquaculture.

A healthy fish or crustacean requires a water condition near to its native environment to thrive, farmers will mimic these parameters to maximize yield and production.

At the right water condition, fish and crustacean will be more healthy and resistant to sickness. Temperature is most critical in crustacean growth rate and speed up size to market.

Ornamental fish exporters adjust pH to cause fish to bloom in full colors before export.

The Eco pH Duo+ tester takes out the chore of tedious chemical drip tests or color matching while the dual function keeps track of temperature at the same time. The meter can store 10 data of both pH and temperature in its memory for reviewing at a later time.



Water resistant - floats on water - drop shock - simple to use



TRANS INSTRUMENTS Eco pH Duo+ (Aquaria)

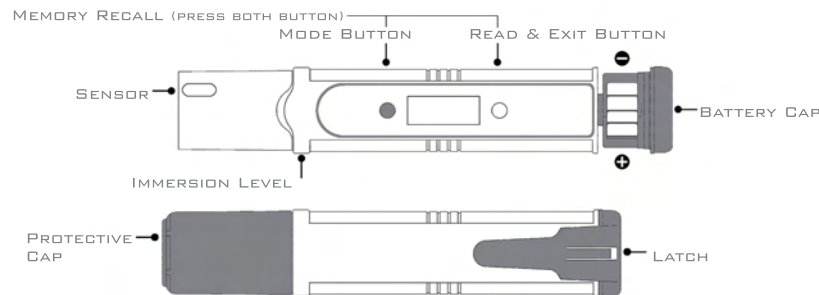
for Aquaculture · Hatchery · Monitoring of CO₂ in enclosed tanks

pH & Temperature dual function - Auto End-point - One-Touch cal - 10 Data memory

Water resistant - floats on water - drop shock - simple to use

ISO 9001 Certified Firm

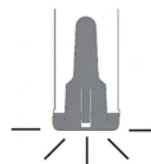
PRODUCT FEATURE



BATTERY CAP INSTALLATION

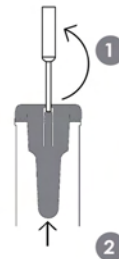
INSTALLING BATTERY CAP

This unit is shipped with the battery cap open. Close the battery cap by pressing Cap on on a hard surface until the latch **clicks**, indicating a secure lock.



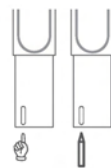
REPLACING BATTERIES

1. Lift latch with a pen or mini screwdriver. **DO NOT PULL** latch out completely.
2. Use the thumb to push Cap forward.
3. Hold the battery cap and separate it from the meter.
4. Replace all batteries according to polarity.

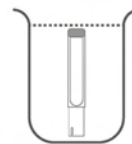


PRECAUTIONS IN HANDLING

Do not touch, rub or scratch the sensor. It is very delicate and might break or lose its sensitivity.



Do not submerge the unit underwater. Though the unit is water resistant, it cannot come under high pressure underwater. If it is dropped into water, retrieve it immediately and wipe dry with a cloth.



Do not store unit without the protective cap or under high temperature and direct sunlight. This will shorten the life span of the meter and cause premature expiry of the sensor.

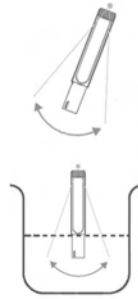


Do not clean unit with thinner or solvents. This will damage the unit. Use only mild detergent on damp cloth to clean and rinse unit if needed.



MAKING MEASUREMENT

1. Remove protective cap and press **READ** button once to switch on.
2. Display will appear blinking. Random readings or "- -" displayed are normal when sensor is not in contact with liquid.
3. Rinse the sensor area with water and shake the tester in the same way you would use a mercury thermometer, every time before each measurement.
4. Dip the sensor into liquid, shake to remove bubbles. Keep still and wait for the autolock feature to sense a stable endpoint reading.
5. When an endpoint reading is established, display will stop with a beep and alternate display between pH and temperature. You can take meter out and record readings.
6. Press the **READ** button to make another auto-lock measurement.
7. If the glass sensor is dry, a slow response will result with 2 to 3 digit off on repeated measurement. Dip the sensor in a cup of water for 30 to 60 minutes will restore speed.
8. To switch off the tester, hold-down the **READ** button for 3 seconds.
9. Always rinse, shake dry sensor and replace with protective cap before storing.



In the presence of certain radio transmitters, this product may produce erroneous readings. If this occurs then measurements should be repeated at another location.

AQUARIA CONTROL

pH control

Maintaining correct water chemistry is important for all aquariums. Too high or too low a pH causes stress to marine habitat. Taking into account other parameters like the softness and hardness of water, when the pH is right, the fish will glow in full colors and even spawn.

A general recommended range are as follows:

Saltwater aquarium 8.0 to 8.2pH

Fresh water aquarium 7.0 to 7.4pH

Each fish or plant species has its desired pH preference. Seek advise from reference books or your supplier to establish the ideal pH range for the species you are keeping.

pH is also an indicator of CO² accumulation. When CO² increase, pH will be lowered.

NOTES ON PH ADJUSTMENT:

While testing and adjusting pH value, take care not to overload the buffering capacity of the aquarium. Make adjustment in small incremental over a period of time with pH adjusters and test it each time with the ECO pH Duo test.

Regular checks with your ECO pH Duo tester will help you maintain the water condition in checks and prevent stress and sickness to your fish.

Temperature control

Temperature is critical in the growth of crustacean. In shrimp aquaculture, higher temperature encourage feeding and faster growth. Species like the black tiger prawn will not feed at below 25°C and thus stop growing.

At 23-35°C green algae will grow well and above 35°C blue-green algae will bloom.

In fish aquaculture, higher temperature reduces the holding capacity of oxygen in water, fishes will increase respiration thus speed up aging and excretion; proliferate disease and outbreaks.

DATA MEMORY

STORING DATA TO MEMORY

1. This meter is capable of storing up to 10 data memory of pH and temperature.
2. After an auto-lock reading is established, press the **MODE** button once to store. Display will show **5.0 1** blink shortly indicating readings are stored to counter **01**. One data is stored each time **after auto-lock is completed**.
3. When data storage is full, **FULL** will flash shortly. Press the **MODE** button again while **FULL** is blinking will override counter **01**. From now on, each data stored will override subsequent counters.

RECALL DATA FROM MEMORY

1. To enter RECALL mode, press and hold-down both **READ** and **MODE** button. Display will show **r.0 1** then pH, then temperature reading in a cycle. Press the **MODE** button once to scroll up and review **r.0 2** data and again the next counter in a cyclical sequence.
2. To erase or clear all data memory, while in recall mode press and hold-down both **READ** and **MODE** button till **CL R** appear blinking till it stops, all data are erased.
3. To exit recall mode, press the **READ** button once and display will resume measurement mode.

CALIBRATION

NOTE: Regular calibration is necessary to maintain its accuracy. Depending on usage, perform a check once a week if it is used once daily; check or calibrate once a month if it is used once weekly. If multiple uses are required daily, then daily checks or calibration before series of tests will ensure its accuracy.


This tester is factory calibrated. But due to prolong storage, the unit must be re-calibrated before use. Soak the sensor in tap water for 10 minutes prior to calibration..

Calibration should be performed at room temperature of about 25°C or 77°F.

At anytime, pressing the READ button a few times will cancel and exit the calibration mode.

1. Use only pH7.0 buffer solution for calibration. The attached satchel is for single use only.
Box of 10 satchel Buffer Solution : pH 7.00 Order Code : SP0701S
2. Remove protective cap. Always rinse sensor area with water, shake tester in the same way you would use a mercury thermometer before each and every test.
3. Cut open the shorter side of the pH7 satchel and slide the sensor area till it is fully immersed in the liquid. Tap or jiggle a little to remove bubbles.
4. Press and hold down **MODE** button until **CL AL** appear. Then **7.00** will display in a blinking mode indicating the correct buffer is recognised and calibration is in progress.
5. Wait until the display stops with a beep. Calibration is completed.
6. Rinse the sensor area thoroughly with water before continue testing.

ERROR CODE & MAINTENANCE

- When **Err** appears during measurement or calibration, it means a stable reading cannot be established. This could due to a dry sensor. Try soak the sensor in a cup of water for 1 hour and re-test. When **Err** appear during calibration, it could mean a wrong standard solution is used. Otherwise, the sensor could be damaged or expired.
- If **L** and **H** alternate at the right side of display, it means the temperature sensor is malfunction or damage. Send back to the dealer for investigation.
- If the unit is stored for a long period of time, the sensor will become dry. A slow response to a stable reading result. Soaking the sensor area in a cup of tap water or preferably pH7 solution for 15 to 60 minutes will restore sensitivity to the sensor.
Never soak the sensor in water over night as this will cause premature expiry of sensor.
- When the low battery symbol  **continuously** appears on the display, it indicates a battery life of less than 2 hours. Promptly replace all four batteries according to instructions overleaf.
- Note that the sensor is electro-chemistry type that will degrade over time. Though the pH sensor has a life span of more than 365 tests, it could be limited to 1 year or less if is heavily used or not maintained and stored properly.
- Never soak sensor in water overnight or store without the protective cap. When the unit fails to calibrate or responds very slowly, it means that the meter should be replaced. It is not possible to repair a broken or an expired sensor.