Bluelab Combo Meter™

Instruction Manual

bluelab® simple solutions combo meter™

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Table of Contents

1.0 Introduction to Bluelab Combo Meter

The battery operated Combo Meter measures nutrient, temperature and pH levels by use of one or the other of the two probes connected to an electronic meter. The meter has a liquid crystal display (LCD) digital readout.

1.1 Button Functions

1. The function panel has three press buttons; pH/Calibrate, Nutrient/Cal7.0 and Temp/Cal4/10. A short press of any button turns the meter on. The meter turns off automatically when no further buttons are pressed for a period of 4 minutes. Another short press starts it again.

   The meter can be manually turned off by holding the pH button down until the display starts flashing. The pH button is pressed again while the display is flashing.

   The buttons have a short press and long press function.

   A short press means a button is released in about one second. The long press is a button being pressed for at least three seconds and released when the display starts flashing.

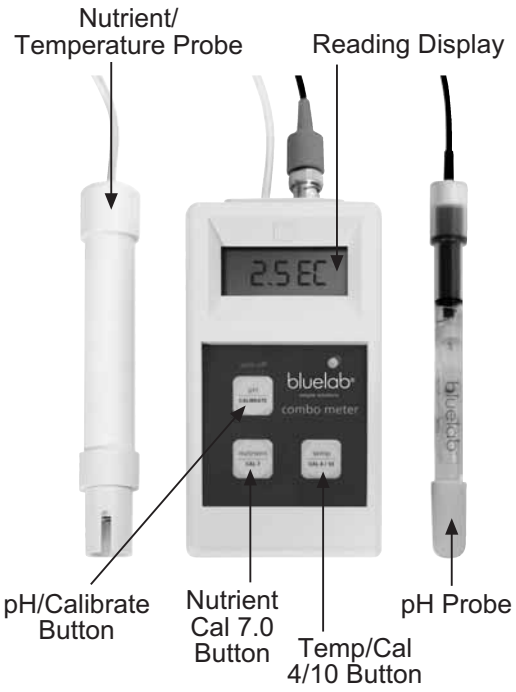

Figure 1. Bluelab Combo Meter

1.2 Meter Calibration

1. The pH of the meter is calibrated after each probe clean to ensure reading accuracy. Solutions used for calibration are carefully stored and replaced occasionally because pH reading accuracy is dependant on the accurracy of the calibration solutions used.

   If measuring a pH below 7.0 is normal, the meter is calibrated using pH7.0 and pH4.0 calibration solutions. If measuring a pH above 7.0 is normal, pH7.0 and pH10.0 solutions are used for calibration.

1.3 Storage of Meter

1. The meter is kept out of direct sunlight to prevent irreparable damage to the LCD screen; this includes storing in a cool, dry and clean place when not in use.

   The meter unit is not waterproof but will withstand occasional water splashes. If the meter does get splashed, it is wiped dry as soon as possible. Batteries are removed if the unit is to be stored for a prolonged period.

1.4 ppm Scale

1. In relation to the ppm scale, 500 ppm = 1.0 EC = 10 CF.

2.0 Preparing Bluelab Combo Meter for Use

Preparing the Bluelab Combo Meter for use involves hydrating the pH probe, inserting 2 x AAA batteries, connecting the pH probe and calibrating the pH. These tasks are performed before the meter is used for the first time.

1 Hydrate pH Probe

Remove pH probe tip protective cap. Soak tip in fresh water for at least one hour. Soaking tip for 24 hours will improve the probe's activity and is recommended if the probe tip has been allowed to dry.

CAUTION: Do not use de-ionized or distilled water. When probe is not in use, put some fresh water into the protective cap and place back onto probe.

2 Insert Batteries

Open battery compartment by sliding back cover down and insert 2 x AAA batteries.

CAUTION: Rechargeable batteries are not used as they will cause problems.

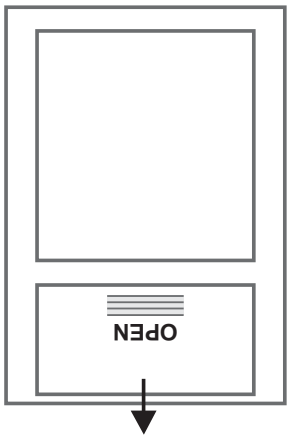

Figure 2. Battery Cover

3 Replace Cover

Slide cover back on.

4 Connect pH Probe

Connect pH probe to meter by lining up the meter lugs and probe connector. Fasten securely by pushing probe connector on and twisting one quarter turn.

Inserting Twisting Attached

Figure 3. Probe Attachments

5 Clean Probes and Calibrate

Cleaning of the probes is described in Section 5.1 and 5.2 of this document. Calibrating the pH is described in Section 5.4 of this document.

3.0 Measuring Hydroponic Values

The values measured within hydroponics by the Combo meter include nutrient (conductivity), temperature and pH levels.

3.1 Measure Nutrient/Conductivity

1 Obtain Conductivity Value

Insert white nutrient/temperature probe into solution where there is strong movement of the solution, or stir the solution with the probe. Press NUTRIENT button once with a short press. Wait 1-2 minutes for probe to reach solution temperature and then read the nutrient conductivity value.

NOTE: The nutrient/temperature probe is cleaned at least once a month to ensure accurate readings. If oily additives are being used the probe is cleaned after each use.

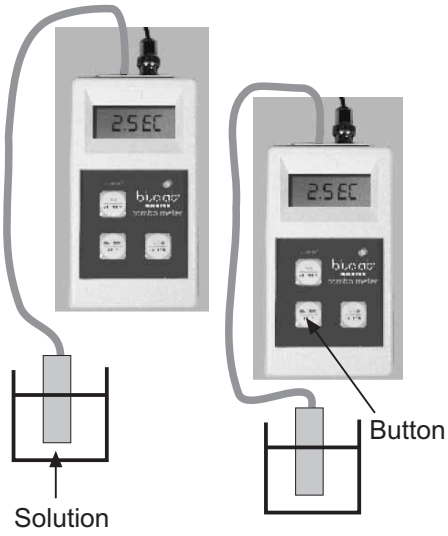

Figure 4. Nutrient Conductivity

2 Clean Probe

Cleaning of the measuring probes is described in Section 5.0 of this document.

3.2 Measure Temperature

1 Obtain Temperature Value

Insert white nutrient/temperature probe into solution and press TEMP button once with a short press. Wait 1-2 minutes for probe to reach solution temperature and then read temperature value.

NOTE: For a change to very cold or very hot temperatures it will take 4-5 minutes for probe to reach solution temperature. To help decrease time taken to reach the solution temperature, place probe in an area where there is strong movement of solution, or stir solution with the probe.

3.3 Measure pH Value

1 Obtain pH Value

Place 2 to 3cm of pH probe tip into solution and press pH button once with a short press. Wait 1-2 minutes for value to stabilize and then read pH value.

NOTE: If taking readings of more than one solution, rinse the probe thoroughly in fresh water between solutions to avoid cross contamination.

To decrease time taken to reach the solution temperature, place probe in an area where there is strong movement of solution, or stir solution with the probe.

2 Store Probe

Store pH probe tip in a container of fresh water between uses or replace storage cap with a small amount of water in it. The pH probe is never stored in de-ionized or distilled water as this will permanently damage it.

4.0 Changing Nutrient or Temperature Display Units

Nutrient and temperature can be displayed in different units. The units available are shown in the tables below.

4.1 Change Nutrient Display Units

1 Set Unit

Press and hold the NUTRIENT button until the display starts flashing, then release the button.

2 Select Values

While display is flashing, each short button press changes units between EC, CF and ppm.

The display flashes four times after the last button press and then returns back to a normal display, showing the value in the units selected.

Display	Nutrient Units
– – E C	EC (electrical conductivity)
– – C F	CF (conductivity factor)
– – – P	ppm (parts per million) TDS (total dissolved solids)

4.2 Change Temperature Display Units

1 Set Unit

Press and hold the TEMP button until the display starts flashing, then release the button.

2 Change Units Displays

While display is flashing, each short button press changes units between °C and °F (Celsius and Fahrenheit).

The display flashes four times after the last button press and then returns back to a normal display.

Display	Temperature Units
– – C	°C (degrees Celsius)
– – F	°F (degrees Fahrenheit)

5.0 Cleaning Probes and Meter Maintenance

Cleaning the Bluelab Combo Meter probes periodically ensures accurate readings. Cleaning includes using 'Jif', a trade name for a liquid scourer cream used in home bathrooms and kitchens. Similar products are called 'Liquid Vim' and 'Soft Scrub'. Scented varieties are never used as they affect the probe functions. Perform the following tasks to clean pH and nutrient/temperature probes.

5.1 Clean pH Probe

1. **Rinse Probe**
   Rinse off the pH probe tip and place 1-2 drops of 'Jif' onto the glassware of the probe. Do not use scented 'Jif' varieties.

2. **Clean Glassware**
   Gently scrub glassware using a clean soft toothbrush, then rinse thoroughly under running water to remove all traces of 'Jif' / cleaner.

   CAUTION: Do not touch probe glassware with fingers, this will contaminate the probe.

5.2 Clean Nutrient/Temperature Probe

1. **Remove Shroud**
   Dismantle by holding the body and pulling away the shroud. Figure 5 shows the shroud removed.

2. **Clean Probe Face**
   Using unscented liquid scourer such as 'Jif' or 'Soft Scrub', place one or two drops onto probe face and using a finger or Bluelab Chamois, rub firmly and vigorously to clean the probe face.

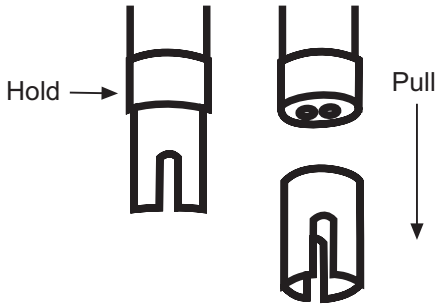

Figure 5. Shroud Removed

3. **Rinse Probe**
   Place probe under running water. Using the same finger or other side of Bluelab Chamois, completely remove all traces of cleaner.

4. **Check Probe Cleanliness**
   Check that water forms a film on the probe face, without beads of water. If beading is present, repeat the cleaning process until the face retains a water film without beading.

5. **Replace Shroud**
   Refit the shroud firmly onto the probe face.

5.3 Replacing Batteries

1. Batteries are replaced in the unit when the message 'LO BAT' appears in top left-hand corner of LCD display. Section 2.2 in this document explains battery replacement.

   NOTE: Batteries are checked at least once every six months for signs of deterioration, rusting or swelling. If signs of deterioration are found, battery holder contacts are cleaned and batteries replaced.

5.0 Cleaning Probes and Meter Maintenance cont.

5.4 pH Calibration

For accurate meter readings the pH probe is cleaned and recalibrated frequently. The pH calibration involves cleaning the pH probe and then calibrating in two solutions.

If a pH below 7.0 is being measured, use pH7.0 and pH4.0 calibration solutions.

If pH above 7.0 is being measured, use pH7.0 and pH10.0 calibration solutions.

If a message appears during the calibration process, such as 'e2: pH' then calibration was unreliable. Description of errors and causes are described in Section 6.0 of this document, titled 'Error Messages'. Follow these steps for meter pH calibration.

1 Clean pH Probe

Clean the probe as described in Section 5.1 of this document.

2 pH7.0 Calibration

Rinse probe thoroughly in fresh water, shake off excess water and place probe in a pH7.0 calibration solution for one minute or more.

Once meter reading is stable, press and hold CALIBRATE button until display starts flashing. Release button and press CAL 7.0 button once. The display stops flashing when '7.0pH' is displayed.

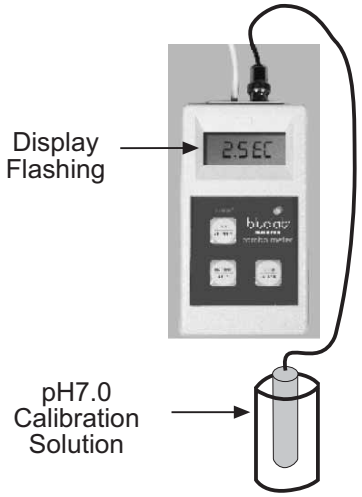

Figure 6. Typical Calibration Display

3 pH4.0/pH10.0 Calibration

Rinse the pH probe thoroughly in fresh water, shake off excess water and place the probe in either pH4.0 or pH10.0 calibration solution. Wait for a period of at least one minute for reading to stabilize.

Press and hold CALIBRATE button until display starts flashing. Release button and press CAL 4/10 button once. The display will stop flashing with '4.0pH' or '10.0pH' displayed, depending on the solution used. The meter is now calibrated and ready for use.

6.0 Error Messages

Error messages can appear during calibration or when the probe or meter is damaged. The following table describes error messages, the reason and cause for an error message.

To clear a calibration error message press any button once. The meter will reset to the factory set calibration and will need to be recalibrated successfully before use.

Error display	Indicates	Possible causes
E1: PH	Not enough difference between pH7.0 and pH4.0 readings.	pH4.0 calibration solution contaminated or wrong solution used. Probe contaminated, not properly attached, worn out or damaged.
E2 : PH	Not enough difference between pH7.0 and pH10.0 readings.	pH10.0 calibration solution contaminated or wrong solution used. Probe contaminated, not properly attached, worn out or damaged.
E3 : PH	Not enough difference between the readings.	Calibrate to pH7.0 **FIRST**, then to pH4.0/10.0.
E4 : PH	pH7.0 calibration unreliable.	Calibrate pH7.0 calibration solution contaminated or wrong solution used. Probe contaminated, not properly attached, worn out or damaged.

7.0 Troubleshooting Guide

Trouble	Possible reason	Possible solution
Nutrient readings inaccurate	Contaminated probe.	Clean probe as described in Section 5.0 of this document. Wait 5 to 10 minutes for reading to stabilize.
Temperature readings inaccurate	Temperature of probe different to solution temperature.	Wait 5 to 10 minutes for probe to reach solution temperature.
pH readings inaccurate	Contaminated probe. Incorrect calibration.	Clean pH probe as described in Section 5.0 of this document. Ensure calibration solutions are accurate. Replace if in doubt. Wait longer for readings to stabilize before calibrating.
Display shows LO BAT in top left hand corner	Insufficient power to take a reliable reading.	Replace the batteries. DO NOT use rechargeable batteries.
Meter will not turn on	Batteries dead or inserted incorrectly.	Check batteries are inserted correctly. Replace if necessary.
Display shows E2 : PH or similar	Problem with pH calibration or the meter is damaged.	See error message descriptions Section 6.0 of this document.
orPH urPH	Over range pH Under range pH	Solution > 14.0pH Solution < 0.0pH Check pH probe connection. pH probe could be faulty. Meter could be wet inside.
or°C/or°F/ ur°C/ ur°F	Over range temp Under range temp	Solution >51°C/122°F Solution <0°C/32°F Conductivity probe or meter faulty.
orEC/orCF/or P	Over range conductivity/nutrient	Over range conductivity >9.9 EC, 99 CF, 1990 ppm Conductivity probe or meter faulty

8.0 Technical Specifications

	pH	Nutrient	Temperature
Range	0 - 14 pH	0 - 9.9 EC 0 - 99 CF 0 - 1990 ppm	0 - 50°C 32 - 122°F
Resolution	0.1 pH	0.1 EC 1 CF 10 ppm	1°C 1°F
Accuracy (at 25°C)	± 0.1 pH	± 0.1 EC ± 1 CF ± 50 ppm	± 1°C ± 2°F
Calibration	Manual Calibration	Factory Calibrated	Factory Calibrated
Temperature Compensation	Not applicable	Automatic temperature compensation	Not applicable
Operating Temperature Range	0 - 45°C 32 - 113°F		
Power Source	2 x AAA Alkaline Batteries		
Other Features	Auto turn off function		

Contact Details

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The instrument is only as accurate as the probe is clean!

Bluelab cleaning kits

Probe cleaning is one of the most important parts of owning and operating any Bluelab Truncheon®, meter, monitor or controller. If the probe is contaminated (dirty), it affects the accuracy of the reading displayed.

The probe surface is where the instrument takes the reading of the solution. The information is sent back from the probe to the electronic brain of the instrument. A calculation is then done in the instruments brain or micro computer and a reading is then displayed. If the information sent back from the probe is inaccurate due to probe surface contamination then the reading will be inaccurate.

Cleaning the probes is a very easy task and prolongs the life of the probes.

The Bluelab cleaning kits have it all there for you:

pH cleaning and calibration kit:

- full colour instructions
- calibration solutions
- decanter vessels
- Bluelab probe cleaner
- Bluelab pH probe cleaning tool
- toothbrush

conductivity probe cleaning kit

- full colour instructions
- conductivity standard solution
- decanter vessel
- Bluelab probe cleaner
- Bluelab chamois (probe cleaning instrument)