HydroLite®

HL101
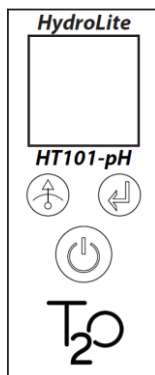# Pocket pH Tester

Instruction Manual

Introduction:

The HydroLite® HL101 is a pocket-sized pH and temperature tester. This manual provides instructions on use, with a step-by-step operating guide, as well as care and maintenance instructions.

Components:
- HydroLite® HL101 pocket pH/temperature tester
- pH Buffer Solutions (pH4.01/7.00)

Keypad:

The HL101 pocket pH/temperature tester uses a simple three-button membrane keypad, with graphical symbols to describe the function of each key.


Map of keys and functions:

KEY	FUNCTION
On/Off Hold	● Power the unit ON/OFF ● Freezes the currently displayed value for recording; press the key again to resume measuring. ● When in calibration mode, exits calibration and returns to measurement mode.
Cal	● Press the key to enter the calibration mode. ● Press and hold the key to enter the setup menu. ● In the setup mode, press the key to select default options.
Enter	● Confirms the calibration or selected option.

Display:

The unit is equipped with a clear LCD display that is used to show measured value, units, mode indicators and function indicators.
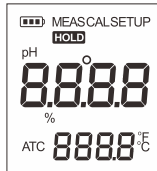

Map of mode indicators and descriptions:

Mode indicator	Description
MEAS	Indicates unit is in the measurement mode
CAL	Indicates unit is in the calibration mode
SETUP	Indicates unit is in SETUP mode
HOLD	Indicates the measured value has been frozen
ATC	Indicates temperature compensation is enabled

Prior to Use:

● Remove the electrode protective cap from the unit.
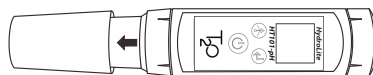
● If the membrane on the electrode dries out, soak the electrode in 3M KCL solution or tap water for at least 15 minutes. DO NOT use distilled or deionised water, as this will shorten the life of sensor.
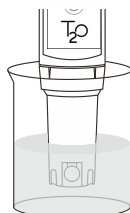
Power On/Off:
- Press ON/OFF key to turn on the unit, the display shows measured value.
- Press and hold the ON/OFF key for 5 seconds, the unit will turn off.
- If no key is pressed for 8 minutes, the unit will automatically turn off to conserve power.

Note: The auto-off function can be disabled if required – see below for further details

Setup Menu:
The HL101 pocket pH/temperature tester includes a comprehensive setup menu with customisable options to suit user measurement requirements.

| Menu item	Description	Available options	Details	DEFAULT?
bUF	pH Buffer	USA	USA Standard (pH4.01/7.00/10.01)	●
		NISt	NIST Standard (pH4.01/6.86/9.18)	
CAL	Calibration Points	1	1 point	
		2	2 points	●
		3	3 points	
UNIt	Temperature Unit	℃	Degrees Celsius	●
		℉	Degrees Fahrenheit	
℃	Temperature Calibration	CAL	Enters the temperature calibration mode	
HOLd	Auto-Hold	YES	Automatically freezes a stable reading	
		NO	Disable	●
OFF	Auto-Off	YES	Automatically turn off the unit	●
		NO	Disable	
rSt	Reset	YES	Restore factory settings	
		NO	Disable	●

Changing the default parameters:

1. Press and hold the CAL key for 3 seconds to enter the setup menu; the unit goes to buffer standard selection mode, the display shows "USA/BUF" (USA standard).


2. Press CAL key to select the USA or NIST standard for pH buffers. Press ENTER key to confirm; the unit goes into calibration point selection mode, the display shows "2/CAL" (2 points calibration).
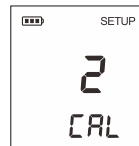
3. Press CAL key to select the number of calibration points (1, 2 or 3 points). Press ENTER key to confirm; the unit goes into temperature unit selection mode, the display shows "°C/UNIT".
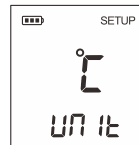
4. Press CAL key to select the temperature units (°C or °F). Press ENTER key to confirm, the unit goes into temperature calibration mode, the display shows "°C/CAL".
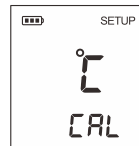
5. If you do not want to perform temperature calibration, press ENTER key; the unit goes to next option.

6. To perform temperature calibration, press CAL key to enter the temperature calibration mode, the display shows current temperature reading.

7. Press CAL key to set temperature value. Press ENTER key to confirm; the display shows "YES/HOLD" indicating that the auto-hold function is enabled.

If the auto-hold function is enabled, the unit will automatically sense a stable endpoint reading and freeze the reading in the display. If you disable this function, the unit allows user to freeze the reading in the display manually by pressing the HOLD key.

8. Press CAL key to enable or disable the auto-hold function. Press ENTER key to confirm; the display shows "YES/OFF" indicating that the auto-off function is enabled.

When the auto-off function is enabled, if no key is pressed for 8 minutes, the unit will automatically turn off to conserve power.

9. Press CAL key to enable or disable the auto-off function. Press ENTER key to confirm; the display shows "NO/RST" indicating the current status of the reset function.

WARNING:
The Reset function will restore the unit back to factory default settings; all calibration values and selected parameters will be reset.

10. Press CAL key to enable or disable the reset function. Press ENTER key to confirm; the unit returns to measurement mode.

EXIT THE SETUP MENU:
During the setup mode, to exit the setup menu, press ON/OFF key; the unit will return to measurement mode immediately.

pH Calibration:

The HL101 pocket pH/temperature tester allows up to 3 point calibration. We recommend that you perform at least a 2 point calibration for best accuracy. The unit automatically recognises and calibrates to the following standard buffer values.

- USA Standard Buffer Options: pH 4.01, 7.00, 10.01
- NIST Standard Buffer Options: pH 4.01, 6.86, 9.18

Single point calibration should only be carried out with pH 7.00 or pH 6.86, otherwise the calibration will not be accepted by the unit.

The unit must be calibrated prior to first use or whenever the electrode is replaced. To ensure optimum accuracy, regular calibration is recommended. Do not reuse calibration solution after calibration, contaminants in solution will affect the calibration and eventually the accuracy of the measurement.

SINGLE POINT CALIBRATION:

1.1   Ensure that 1 point calibration is selected in the setup menu.

1.2   Rinse the pH electrode with distilled water. Press CAL key; the unit shows "pH7.00/CAL1" or "pH6.86/CAL1".
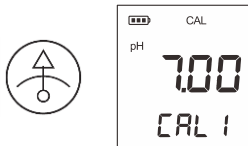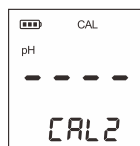

1.3   Immerse the pH electrode in the pH7.00 buffer solution; the end of the sensor must be completely submerged in the calibration solution. Stir the solution gently.

1.4   Press ENTER key to confirm. Wait for the measured value to stabilise; the display shows "END". Single point calibration is completed.
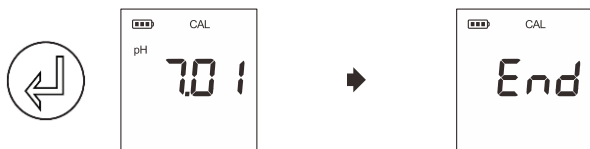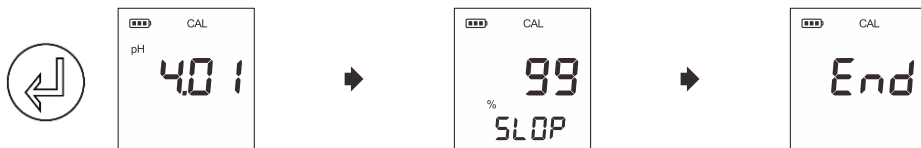

2 POINT CALIBRATION:

2.1   Ensure that 2 point calibration is selected in the setup menu.

2.2   Repeat steps 1.2 to 1.4 above. When the first calibration point is completed, the display will show "CAL2". The unit prompts you to continue with second point calibration.
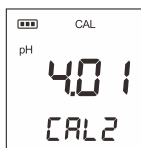
2.3 Rinse the pH electrode with distilled water. Immerse the electrode in the pH 4.01 buffer solution. Stir the solution gently.

2.4 Press ENTER key to confirm. Wait for the measured value to stabilize; the display shows electrode slope and "END". 2 point calibration is completed.


3 POINT CALIBRATION (not required for normal operation):

3.1 Ensure that 3 point calibration is selected in the setup menu.

3.2 Repeat steps 1.2 to 1.4 above. When the first calibration point is completed, the display will show "pH4.01/CAL2". The unit prompts you to continue with second point calibration.

3.3 Rinse the pH electrode with distilled water. Immerse the electrode in the pH 4.01 buffer solution. Stir the solution gently.

3.4 Press ENTER key to confirm. Wait for the measured value to stabilise; the display shows electrode slope and "pH10.01/CAL3".
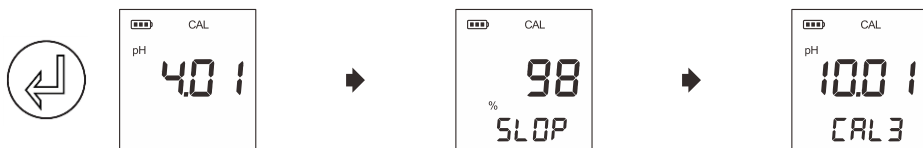
3.5 Rinse the pH electrode with distilled water again. Immerse the electrode into the pH10.01 (or pH9.18) buffer solution. Stir the solution gently.

3.6 Press ENTER key to confirm. Wait for the measured value to stabilise; the display shows electrode slope and "END". Calibration is completed.
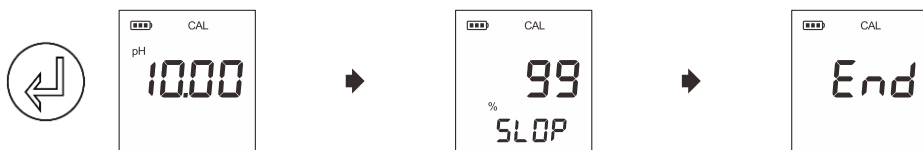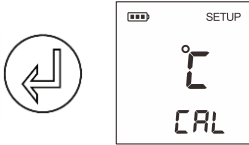

EXIT THE CALIBRATION:

During the calibration process, if you want to exit calibration, press ON/OFF key, the unit will return to measurement mode immediately.

Temperature Calibration:

During the measurement, if the temperature reading displayed differs from that of an accurate thermometer, you need to calibrate the unit.

1. Press and hold the CAL key for 3 seconds to enter setup menu.

2. Press ENTER key until unit shows the "^{o}C/CAL" or "^{o}F/CAL".

3. Press CAL key to enter the temperature calibration mode.

4. Press CAL key again to set temperature value (Resolution: 0.5^{o}C).
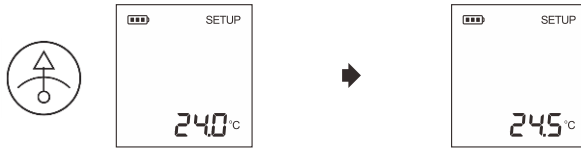

5. Press ENTER key to confirm, the display shows next option.

6. Press ON/OFF key, the unit returns to measurement mode. Calibration is completed.

pH Measurement:

Rinse the pH electrode thoroughly with distilled water. Immerse the electrode into the sample solution, stir the solution gently. Wait for the reading to stabilise; record the measured value as displayed.

Hold Function:

The HL101 pocket pH/temperature tester contains two data hold modes. When the Auto-Hold function is enabled, the unit will automatically sense a stable endpoint reading and freeze it; the "HOLD" indicator appears on the display. If the Auto-Hold function is disabled, press HOLD key, the unit will immediately freeze the currently displayed value. Press the HOLD key again to resume measuring.
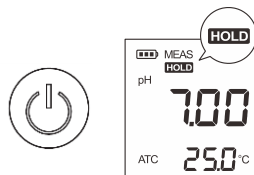
Electrode Care and Maintenance:
- For best results, always keep the pH electrode membrane wet.
- Ensure that the electrode is thoroughly washed with distilled water after each use.
- During extended periods of disuse, store the sensor with electrode storage solution. DO NOT use deionised or distilled water.
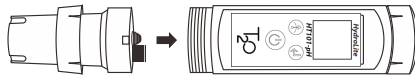
Electrode Replacement:
When the unit fails to calibrate or gives fluctuating readings for calibration standards, you need to replace the electrode module.
1. Twist the electrode collar counter clockwise, pull the old electrode module away from the unit.
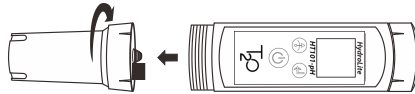
2. Align the slot on the new electrode module, gently push the module into the unit.

3. Twist the electrode collar clockwise until it is tight. Installation is completed.

Replacing the Batteries:
If the battery indicator disappears during the use, the batteries require replacing.

1. Twist the electrode collar counter clockwise, pull the electrode module out from the unit.
2. Insert two "AAA" batteries into the battery compartment (note polarity).

3. Align the slot on the electrode module, push the electrode into the unit.
4. Twist the electrode collar clockwise until it is tight.

Troubleshooting

LCD DISPLAY	CAUSE	CORRECTIVE ACTION
- - -	Electrode dried out	Soak the electrode in 3M KCL solution or tap water for 10 minutes
	Measured value is out of range	Check whether the electrode membrane is clogged, dirty or broken
Err	Incorrect pH buffer solutions	Use fresh pH buffer solutions for calibration
	Electrode is broken	Replace the pH electrode module

Specifications

pH	Model	HL101
	Range	-1.00~15.00pH
	Accuracy	±0.01pH
	Resolution	0.01pH
	Calibration Points	1 to 3 points, USA (pH4.01/7.00/10.01) or NIST (pH4.01/6.86/9.18)
	Temperature Compensation	0~60°C, 32~140°F, Automatic
Temperature	Range	0~60°C, 32~140°F
	Accuracy	±1°C
	Resolution	0.1°C
	Calibration Range	Measured value ±10°C
Others	Hold Function	Manual or Automatic
	Power Off	Manual or Automatic (8 minutes after last key pressed)
	Sensor Type	Standard pH Electrode (Order Code: HL101ELEC)
	Power Requirements	2×1.5V "AAA" Batteries
	Dimensions	185(L)×40(Dia.)mm
	Weight	100g

Trace2o® Limited
The Technology Centre
Wagtech Court
Station Road
Thatcham, Berkshire, RG19 4HZ
Tel.: +44 (0)1635 566772
Fax: +44 (0)1635 873509
sales@Trace2o.com
www.Trace2o.com