

# pH INSTRUMENTATION



pH meters measure the acidity or alkalinity of a solution. Frequently used in agriculture, food processing, laboratories and aquariums, pH meters test the quality of water, soil, food and other substances.

ETI offers a range of pH meters for different budgets and applications, from easy-to-use pocket testers to pH and temperature meters with interchangeable electrodes.

## MAINTAINING YOUR PH METER

pH meters and electrodes require good maintenance and care in order to get accurate readings.

## PROPER STORAGE

When not in use, your pH meter should be stored in a clean and dry environment. Fill the electrode cap with storage solution to keep it hydrated and store it upright.

## AVOID CONTAMINATION

Always rinse the electrode with distilled or deionised water before and after each measurement. Use separate containers for different samples to prevent cross-contamination, and avoid touching the electrode membrane with your fingers.

## GENTLE HANDLING

Handle your pH meter and electrode with care - the electrode's glass membrane is fragile and can be easily damaged. Never force the electrode into a sample; instead, gently immerse it to prevent damage.

## REPLACE ELECTRODES AS NEEDED

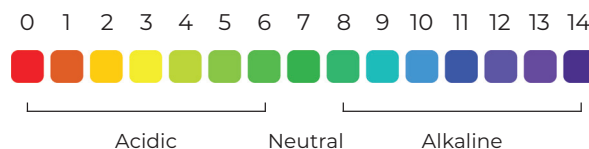
Over time, the electrode's performance can degrade. If you notice slower response times, erratic readings, or difficulty calibrating, it may be time to replace it.

## BUFFER SOLUTIONS

pH buffers are solutions that have a specific pH value. All pH meters have a calibration function that will automatically recalibrate the instrument when used with a pH buffer.

A neutral solution with a pH of 7 is typically used, but some pH meters or applications will require a two-point calibration method using an additional buffer solution, usually pH 4 or 10.

This makes the instrument more accurate at the values it has been calibrated to. Therefore, if your application is typically more acidic or more alkaline, you should choose a pH buffer to reflect this.



# pH PAL PLUS pH METER

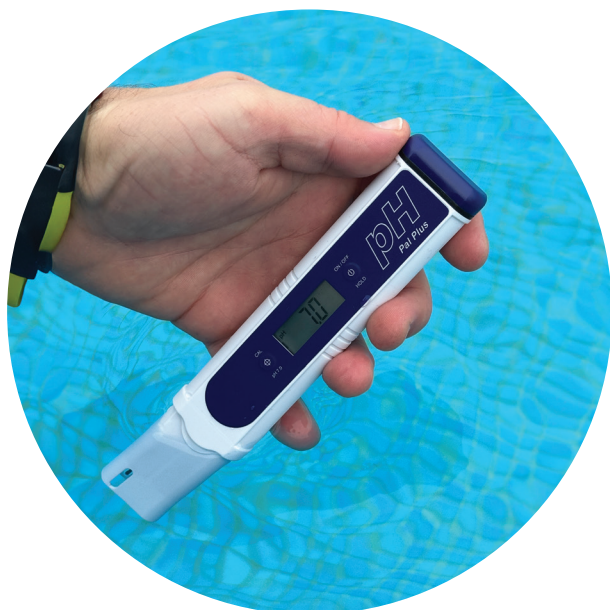
- Pocket-sized meter, ideal for everyday use
- Automatic recalibration feature
- Easy-to-read 8 mm LCD display
- Display hold function

The pH Pal Plus pH meter is a user-friendly, simple-to-use pocket-sized pH meter that incorporates an automatic recalibration feature. At the touch of a button, the instrument will automatically recalibrate itself when used in conjunction with a 7.00 pH buffer solution.

The unit is housed in a water-resistant case and features an easy-to-read 8 mm LCD display indicating pH over the range of 0 to 14 pH with a resolution of 0.1 pH and an accuracy of  $\pm 0.2$  pH.

The pH Pal Plus meter will power-off automatically after ten minutes, maximising battery life. This pH Pal is ideal for measuring the pH in food processing, hydroponics and water testing applications. The pH meter is an invaluable tool when mixing concentrates with water.

The unit is powered by four LR44 button cell batteries (supplied) and includes a protective cap. For pH buffer solutions and capsules, see page 125.



Order code	Description	£ each
813-513	pH Pal Plus pH meter	66.00
816-051	7.00 pH buffer solution - 100 ml	10.00

## OPTIONAL ACCESSORY:

- This ready-made 7.00 pH buffer solution ensures the pH meter is reading correctly



Specification	pH Pal Plus pH meter
Range	0 to 14 pH
Resolution	0.1 pH
Accuracy	$\pm 0.2$ pH
Battery & life	4 x 1.5 volt LR44 button cell - 150 hours
Display	8 mm LCD
Dimensions	15 x 32 x 170 mm
Weight	70 grams

# 8000 pH METER

- Easy-to-use 2-point recalibration function
- ±0.05 pH accuracy
- 2 year guarantee
- Supplied complete with a pH electrode

The 8000 pH meter features an easy-to-read, LCD display and is supplied with a budget pH electrode.

The 8000 pH meter indicates pH over the range of 0 to 14 pH with a resolution of 0.01 pH and an accuracy of ±0.05 pH. The pH readings are manually temperature compensated over the range of 0 to 60 °C (default 25 °C).

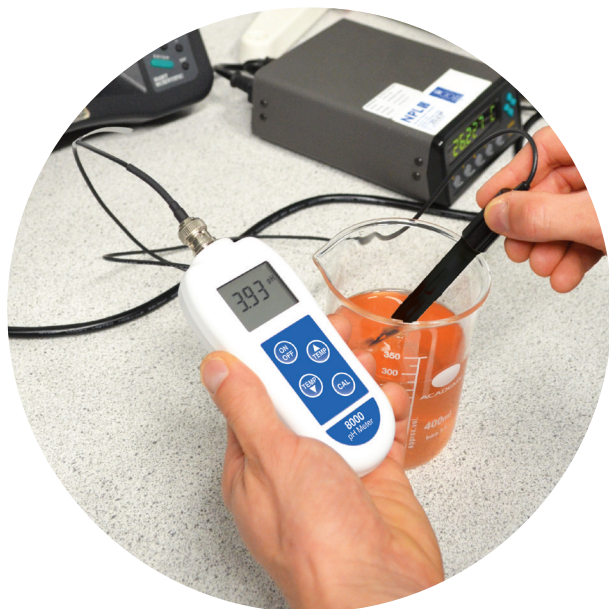
The unit will power off automatically after ten minutes, maximising battery life.

At the touch of a button, the instrument will automatically recalibrate itself when used in conjunction with pH4 and pH7 buffer solutions. See page 125 for pH electrodes, buffer solutions and capsules.

In order to calibrate this instrument before use, pH7 buffer solution or capsules must be purchased alongside this instrument, plus either a pH4 or pH10 buffer solution or capsules depending on your application.



Budget pH electrode (823-504)  
Supplied with 8000 pH meter



- These ready-made solutions are suitable for checking and cleaning pH instrumentation and pH electrodes.



Order code	Description	£ each
860-800	8000 pH meter	80.00
816-050	4.01 pH buffer solution - 100 ml	10.00
816-051	7.00 pH buffer solution - 100 ml	10.00
816-052	10.01 pH buffer solution - 100 ml	10.00

A certificate of analysis is available upon request for all buffer solutions.

Specification	8000 pH meter
Range	0 to 14 pH
Resolution	0.01 pH
Accuracy	±0.05 pH
Battery & life	3 x 1.5 volt AAA - 5,000 hours
Sensor type	Combination electrode
Display	Custom LCD
Dimensions	25 x 56 x 128 mm
Weight	130 grams
The 8000 pH meter is inclusive of pH electrode	



# 8100 pH & TEMPERATURE METER KIT

- Simultaneously displays pH & temperature
- Automatic temperature compensation (ATC)
- Complete with pH electrode and temperature probe
- 2 year guarantee

The 8100 pH meter features an easy-to-read, LCD display and is supplied as a kit which includes an 8100 pH meter, budget pH electrode, temperature probe, 4.01 and 7.00 pH buffer solutions and zip pouch for easy transportation and storage.

The 8100 pH meter indicates pH over the range of 0 to 14 pH with a resolution of 0.01 pH and temperature over the range of 0 to 99.9 °C with a resolution of 0.1 °C.

The pH readings are automatically temperature compensated over the operating range of 0 to 60 °C utilising the temperature probe supplied.

At the touch of a button, the instrument will automatically recalibrate itself when used in conjunction with two pH buffer solutions. See page 125 for pH electrodes, buffer solutions and capsules.



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## 8100 pH METER KIT

### Each kit contains:

- 8100 pH meter
- Temperature probe (170-101)
- Budget pH electrode (823-504)
- 4.01 pH buffer solution (816-050)
- 7.00 pH buffer solution (816-051)
- Zip pouch (830-080)



Temperature probe (170-101)

### Budget pH electrode (823-504)

Order code	Description	£ each
860-810	8100 pH kit	131.00
170-101	Spare temperature probe	32.00
823-504	Budget pH electrode	24.00
Kit inclusive of temperature probe and electrode		



Specification	pH meter	Temperature
Range	0 to 14 pH	0 to 99.9 °C
Resolution	0.01 pH	0.1 °C
Accuracy	±0.05 pH	±0.5 °C
Battery & life	3 x 1.5 volt AAA - 5,000 hours	
Sensor type	Combination electrode / Thermistor	
Display	Custom LCD	
Dimensions	25 x 56 x 128 mm	
Weight	130 grams	
A certificate of analysis is available upon request for all buffer solutions.		

# 8100 PLUS pH METER

- Manual/automatic temperature compensation
- Easy-to-use 2-point recalibration function
- High accuracy  $\pm 0.02$  pH
- Waterproof IP66/67, robust design

The 8100 Plus pH meter is a three-in-one instrument that features a large easy-to-read, LCD display that indicates pH over the range of -2 to 16 pH with a resolution of 0.01 pH, mV over the range of -1000 to 1000 mV and temperature over the range of -39.9 to 149.9 °C with a resolution of 0.1 °C. The LCD display features both low battery indication and a user selectable backlight.

The pH readings are either manually or automatically temperature compensated over the range of 0 to 80 °C. To automatically compensate, it is necessary to utilise a thermistor temperature probe. Each unit incorporates an auto-power-off facility that automatically turns the instrument off after ten minutes, maximising battery life.

The 8100 Plus has an integrated rubber seal to ensure complete water resistance and helps to reduce the possibility of damage in harsh environments. At the touch of a button, the instrument will automatically recalibrate (two-point autocal) itself when used in conjunction with pH buffer solutions. For pH electrodes, buffer solutions and capsules, see overleaf.

Each unit incorporates an easy-to-use BNC connector for the pH electrode and a Lumberg screw-locking type connector for the temperature probe, allowing interchangeable thermistor probes to be used. We offer a wide range of temperature probes, see pages 86 and 87 for full details.

The 8100 Plus is available as a meter only or as a complete kit.



General purpose electrode (823-501)

Temperature probe (170-100)

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## 8100 PLUS pH METER KIT

### Each kit contains:

- 8100 Plus pH meter (225-085)
- Temperature probe (170-100)
- General purpose pH electrode (823-501)
- 4.01 pH buffer solution (816-050)
- 7.00 pH buffer solution (816-051)
- Zip pouch (830-080)



Order code	Description	£ each
225-085	8100 Plus pH meter*	127.50
860-820	8100 Plus kit	203.00
170-100	Temperature probe	32.00
823-501	General purpose pH electrode	48.00
830-231	Protective silicone cover - white	10.00
832-015	Stainless steel wall bracket	15.00





\*The 8100 Plus is exclusive of pH electrode & probe

Specification	pH	mV	Temperature
Range	-2 to 16 pH	$\pm 1000$ mV	-39.9 to 149.9 °C
Resolution	0.01 pH	1 mV	0.1 °C
Accuracy	$\pm 0.02$ pH	$\pm 1$ mV	$\pm 0.4$ °C (-9.9 to 69.9 °C)
Battery & life	3 x 1.5 volt AAA - 2,500 hours		
Sensor type	Combination electrode / Thermistor		
Display	12 mm LCD		
Dimensions	32 x 71 x 141 mm		
Weight	230 grams		

A certificate of analysis is available upon request for all buffer solutions.

# pH ELECTRODES WITH BNC CONNECTOR

pH meters are only part of the system, of equal importance is the design of the pH electrodes that are used to physically measure the product. This range of standard hand held pH electrodes are fully interchangeable via a BNC connector and are designed for use with the 8000/8100 and 8100 Plus pH meters or similar.

		Order code	£ each
<b>BUDGET pH ELECTRODE</b>  Ø12 x 120 mm	This plastic bodied electrode is ideal for measuring the pH in liquids and semi-solids, in a variety of industries including hydroponics, education and scientific.	823-504	24.00
<b>GENERAL PURPOSE ELECTRODE</b>  Ø12 x 120 mm	This plastic bodied electrode is ideal for measuring the pH in liquids and semi-solids in a wide variety of industries including food processing, agriculture and pharmaceutical.	823-501	48.00
<b>SPEAR-SHAPED ELECTRODES</b>  Ø6 or Ø12 x 120 mm	These glass penetration pH electrodes measure pH in semi-solid and soft materials. Ideal for use in a wide variety of industries including food processing and agriculture.	823-502 (Ø12 mm) 823-503 (Ø6 mm)	100.00 100.00
<b>KNIFE PROBE ELECTRODE</b>  Ø20 x 145 mm	This stainless steel, sheathed glass electrode is ideal for insertion into meat, cheese or similar. The knife probe can also be used in a variety of applications in food processing and agriculture.	823-514	120.00

**Please note:** maximum operating temperature range of pH electrodes is 80 °C. Each electrode is supplied with a one metre lead.

## CALIBRATION SOLUTIONS & CAPSULES

### pH buffer, cleaning & storage solutions

These ready-made solutions are suitable for checking and cleaning pH instrumentation and pH electrodes.

Buffer solutions are available for 4.01, 7.00 and 10.01 pH.



Order code	Description	£ each
816-050	4.01 pH buffer solution - 100 ml	10.00
816-051	7.00 pH buffer solution - 100 ml	10.00
816-052	10.01 pH buffer solution - 100 ml	10.00
816-027	7.00 pH buffer solution - 1 Ltr	33.00
816-040	Cleaning solution - 500 ml	33.50
816-041	Storage solution - 500 ml	33.50

### pH buffer capsules

These DIY pH buffer capsules are available in four standard values, 4.00, 7.00, 9.00 and 10.00 pH.

Each capsule makes 100 ml of solution when mixed with de-ionised water. Supplied in packs of ten capsules.



Order code	Description	£ each
816-004	4.00 pH buffer capsules (10)	21.00
816-007	7.00 pH buffer capsules (10)	21.00
816-009	9.00 pH buffer capsules (10)	21.00
816-010	10.00 pH buffer capsules (10)	21.00

# 8500 CONDUCTIVITY METER

- Measures ppm, mS/cm & temperature
- Automatic temperature compensation
- Easy-to-use 1-point recalibration function
- Compact & robust design

The 8500 Conductivity Meter is a three-in-one instrument that features an easy-to-read LCD display that indicates parts per million over a range of 0 to 3500 ppm with a resolution of 1 ppm, millisiemens/cm over a range of 0.00 to 5.00 mS/cm with a resolution of 0.01 mS/cm, and temperature over the range of 0 to 50 °C with a resolution of 0.1 °C.

Both the ppm and mS/cm readings are automatically temperature compensated over the operating range of 0 to 50 °C, utilising the temperature sensor in the probe.

Each unit is housed in a robust ABS case and powered by three AAA batteries that give a minimum of 5,000 hours of battery life.

The unit will power-off automatically after ten minutes, maximising battery life.

At the touch of a button, the instrument will recalibrate itself when used in conjunction with 816-071 calibration solution.



- **816-071 Calibration Solution**  
To maintain accurate readings, use this calibration solution in conjunction with your Conductivity Meter.



Order code	Description	£ each
225-528	8500 Conductivity meter	110.00
816-071	Calibration solution - 100ml	10.50
830-231	Protective silicone cover - white	10.00
830-080	Zip pouch	12.50

Certificate of analysis is available upon request

Specification	mS/cm	ppm	Temperature
Range	0.00 to 5.00 mS/cm	0 to 3500 ppm	0.0 to 50.0 °C
Resolution	0.01 mS/cm	1 ppm	0.1 °C
Accuracy	± 2% F.S mS/cm	± 2% F.S ppm	± 0.5 °C
Battery	3 x 1.5 volt AAA		
Battery life	5,000 hours (normal use)		
EC Calibration	Manual, 1 point		
Display	Custom LCD		
Dimensions	25 x 56 x 128 mm		
Weight	130 grams		