

PH - 3227

PH Meter



EPCC / PRODUCTS / APPLICATION / SOFTWARE / ACCESSORIES / CONSUMABLES / SERVICES

Analytical Technologies Limited

An ISO 9001 Certified Company

www.analyticalgroup.net

►► INTRODUCTION

pH Meter model PH 3227 is a precision instrument suitable for most pH measurement. The results are displayed in pH units or Millivolts on a 31h digit direct digital readout.

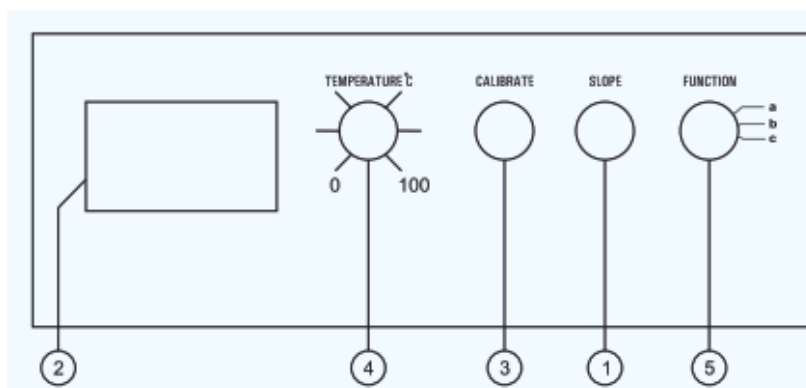
►► TECHNICAL SPECIFICATIONS

pH	: 0 to 14 pH
mV range	: 0 to + 1999mV
Resolution	: 0.01 pH; 1 mV
Repeatability	: +0.01 pH; + 1 mV
Accuracy	: pH : + 0.01 pH + 1 digit : mV : + 1 mV + 1 digit
Input Impedance	>10 ¹³ ohms.
Temperature Compensation	
Manual	: 0 to 100°C
Recorder Output	: 0 to 10 mV/pH adjustable 0 to 10 mV/100 mV adjustable
Slope Correction	: 80 to 120 %
Operating Temperature	: 10°C to 50°C
Range	
Display	: 31h digit bright seven segment LED display with automatic polarity and decimal point indication.
Power	: 220V + 10% AC, 50 Hz
Dimension	: 76 mm(H) x 275 mm(w) x 175 mm(D)
Weight	: 2 Kgs. (approx)

►► STANDARD ACCESORIES

1. Combination pH Electrode.
2. Electrode Stand and Clamp.
3. Buffer Bottles with Tablet.
4. Dust Cover.
5. Instruction Manual.

►► FRONT PANEL CONTROLS



1. Slope Control

This control varies the gain adjustment from 80% to 120%. This adjustment is necessary when output of the electrode is different from the standard output. This control is used for calibration with second buffer solution.

2. Digital Display

A 3^{1/2} digit display that reads upto + 1999. The decimal point appears automatically in the pH mode. Negative (-) indicator is displayed when negative millivolts are applied at the input, in mV mode.

3. Calibrate Control

This control sets the digital readout to the value of the calibration buffer that is used. Calibrate control operates in both modes (i.e. pH and mV)

4. Temperature °C (Manual)

This control compensates manually for the slope versus temp. characteristics of electrodes and operates in the pH mode only.

5. Function Control

(a) pH

At this position, the instrument measures directly in pH units. The Temp OC (manual) Control should be set to solution temperature during measurement.

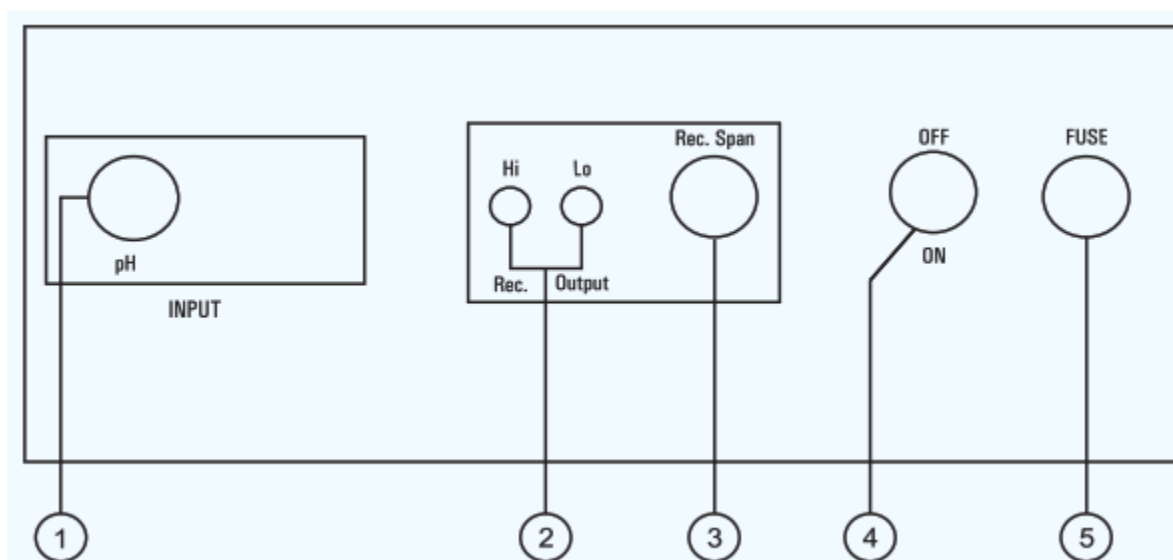
(b) Stand By

On 'STD BY' position, the instrument will indicate 000 ± 1

(c) mV

At this position, the instrument measures directly in millivolts from -1999mV to +1999mV

►► BACK PANEL CONTROLS



1. Input socket for pH & mV

This input socket accepts the combined electrode fitted with BNC connector.

2. Recorded Output

Red & Black socket are for recorder output connection when recorded is used.

3. Recorder Span

This control varies the amplitude of the recorder output signal. The max. value in the millivolt mode is 200 mV; while in the pH mode, is approx ± 70 mV.

4. On/Off Switch

This two position switch is used to switch On/Off the instrument. Instrument should be switched off when not in use.

5. Fuse(100 mA)

The 100 mA fuse is used to control the current from the power supply to the instrument.

►► FUNCTIONAL TESTING

1. Connect the instrument to A.C. supply

2. Put the Selector switch to 'Stand By'. The instrument should read ± 1 .

3. Instrument is now ready for use.

►► CONNECTING THE ELECTRODE

(a) Set up the electrode stand & fit the pH electrode into it.

(b) Carefully remove the protective rubber cap on the filling hole of electrode.

The level of KCl solution should be a few mm below the hole. Top up if necessary, with saturated KCl solution.

Now put the rubber cap back.

►► PREPARATION OF BUFFER SOLUTION

Dissolve one buffer tablet or powder capsule of 7pH in 100 ml distilled water. The pH of this solution is 7pH. Similarly, buffer solutions of any other value (say 4-pH) can be prepared. Put this buffer solution in a bottle and store in a cool place.

►► CALIBRATION OF ELECTRODE

The electrode should be calibrated before beginning measurements or when pH readings are doubtful. Once the calibration has been carried out, do not change the electrode without fresh calibration.

Following procedure is adopted for calibration of electrode .

- (a) Connect the combination pH electrode to the input socket, wash it with distilled water & switch ON the instrument.
- (b) Dip the electrode in 7pH Buffer Solution.
- (c) Set the "TEMPERATUREOC" control to the buffer solution temperature.
- (d) Set the Function Selector Switch to 'pH' position and adjust with "CALIBRATE" control till the digital display shows the precise pH value of the buffer solution.
- (e) Now move the Function Selector Switch to 'STAND BY'.
- (f) Remove the electrode from the buffer solution & wash it with distilled or de-ionised water.
- (g) Dip the combined electrode into another buffer solution (say 4 pH).
- (h) Set the "TEMPERATURE °C" control to the temperature of the selected buffer solution.
- (i) Set the Function Selector Switch to pH position. Adjust the "Slope" correction Control, at the front panel until the display shows the pH value of the selected buffer solution.

Check that the correct readings are obtained with both the buffer solutions without further adjustment. If necessary, repeat steps 'b' through 'i' once again.

Soak the electrode in distilled water for some hours (preferably overnight) before use for better results.

►► PH MEASUREMENTS

- (a) Connect the Combination pH electrode to the input socket and Calibrate as directed above
- (b) Set the Selector switch to the pH position. Wash the electrodes with distilled water and dip the combined electrode in the solution under test.
- (c) Set the 'TEMPERATURE oc' control to the solution temperature.
- (d) The display shows the pH value of the solution directly in pH units.
- (e) Between measurements, leave the electrode immersed in distilled water and Function Selector Switch to 'Stand By' position.

Note : The Temperature Compensating Circuit of the Digital pH Meter corrects for the variations of the electro

performance with temperature. There is no means of correcting for the variations of the pH value of the buffer solution with temperature. The pH value of the buffer solution at the temperature of standardization must therefore be accurately known. pH value of standard buffer solution at various temperature is given below.

Temp ^{°C}	0 ^{°C}	5 ^{°C}	10 ^{°C}	15 ^{°C}	20 ^{°C}	25 ^{°C}	30 ^{°C}
4.0 pH	4.000	3.998	3.997	3.998	4.001	4.005	4.010
9.2 pH	9.464	9.395	9.332	9.276	9.225	9.180	9.139

►► mV MEASUREMENTS

To measure millivolts, proceed as follows:

- Connect the Combination ORP electrode to the input socket.
- Set the Function Selector Switch to mV position.
- Dip the combined electrode in solution under test.
- The display will show mV value of the solution under test in mV.

►► FAULT FINDING GUIDE

The following table may be useful in correcting malfunctions and avoiding simple pitfalls.

Cause	Remedy
1. NO DISPLAY	
(a) A.C. supply is not present	: Check a.c. supply
(b) Fuse at the back open circuit	: Replace fuse (1 00 mA)
2. Unstable and Inconsistent Reading	
(a) Electrode insufficiently immersed (The small porous sinter must be below the surface of the solution)	: Fully immerse the electrode
(b) Ceramic sinter blocked or coated with contaminant	: Clean with sharp knife or suitable solvent or renew the electrode.

3. Inaccurate Reading

- | | |
|--|--|
| (a) Container buffer solution | : Prepare a fresh solution |
| (b) The glass membrane is dehydrated | : Soak electrode in distilled water overnight. |
| (c) Glass membrane is cracked (This may well be invisible | : Replace with a new |

4. Display Flickering

- | | |
|--|---|
| (a) Poor earthing | : Connect an efficient earth. |
| (b) Severe interference through the electricity supply from switching devices etc. or R.F radiations from similar devices. | : Eliminate the disturbance or instrument cause move the another location or connect it to a different circuit. |

If the fault still exists, please refer to the nearest dealer for repairs by the Engineer of the Company.

NOTE : Do not play with the internal preset pots of the instrument Warranty stands only if the seal of the pots is intact.

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 **Analytical**®
Technologies Limited

HPLC Solutions MultipleLabs Analytical Bio-Med Analytical Distributors Analytical Foundation (Trust)

Corporate & Regd. Office:
Analytical House, # E67 & E68,
Ravi Park, Vasna Road, Baroda,
Gujarat 390 015. INDIA

T: +91 265 2253620
+91 265 2252839
+91 265 2252370
F: +91 265 2254395

E: info@hplctechnologies.com
info@multiplelabs.com
info@analyticalgroup.net

W. www.analyticalgroup.net
www.hplctechnologies.com
www.multiplelabs.com

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