



PHARMA DEVILS

PRODUCTION DEPARTMENT

STANDARD OPERATING PROCEDURE

Title: Cleaning, Calibration and Operation of Metrohm pH meter

SOP No.:		Department:	Microbiology
		Effective Date:	
Revision No.:	00	Revision Date:	
Supersede Revision No.:	Nil	Page No.:	1 of 6

1.0 OBJECTIVE

To lay down procedure for cleaning, calibration and operation of pH meter.

2.0 SCOPE

This SOP is applicable for pH meter, Make - Metrohm in Quality Control Department.

3.0 RESPONSIBILITY

Prepared by - Executive Quality Control

Checked by - Assistant Manager Microbiology / QC

Approved by - Head QA, QC

4.0 PROCEDURE

4.1 General Cleaning

4.1.1 Before using check that the all external parts of the pH meter are clean.

4.1.2 Cleaning is to be done by using soft lint free duster.

4.1.3 For cleaning 70 % IPA or other approved disinfectant solution is to be use.

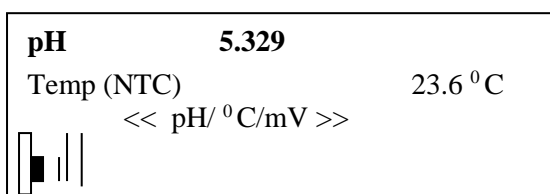
4.2 Operation

4.2.1 Connect the plug of the pH meter to the power supply and switch 'ON 'the power supply.

4.2.2 Switch 'ON 'the pH meter with the red color start key.

4.2.3 The pH meter will start in the last operating mode to have been used for measuring pH, temperature, or Potential.

4.2.4 The display will show as below.





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Note: During the switch-on process an instrument routine checking is carried out automatically. If an error message is displayed hear ('Err x') then please contact your local Metrohm agency.

- 4.2.5 Before measuring the sample wash the pH electrode with purified water and clean properly with tissue paper.
- 4.2.6 Dip the electrode into sample bottle or other sample container and press "OK" key and wait for result.
- 4.2.7 Observe the value from display.
- 4.2.8 In the measured value display the current measured value is shown together with the method of the temperature measurement (only for mode pH) and the date and time (only for modes U and T) respectively.
- 4.2.9 The measured value display changes when operating mode of the pH meter is changed with <OK> in the menu << pH/ °C/mV >>.
- 4.2.10 We can easily see which mode is set from the measuring unit or the prefix "pH" shown in the display.
- 4.2.11 After measuring the value remove the electrode from sample container.
- 4.2.12 Wash the electrode with purified water and clean with tissue paper.
- 4.2.13 If more than one sample dip the electrode in next sample and measure the value.
- 4.2.14 After completion wash the pH electrode properly and keep the electrode in 3 M KCl solution.

4.3 Calibration

- 4.3.1 Use standard buffer solution of pH 4.01,7.0 and 9.0 for calibration of pH meter.
- 4.3.2 Before calibration set the calibration parameter (temperature, report, calibration interval, No of buffer, Buffer type) in calibration setting menu with the help of setting key ("◀ ▶", "▲ ▼" and "OK" Key).
- 4.3.3 Press the "Cal" Key for calibration.
- 4.3.4 Immerse pH electrode in buffer solution pH 4.01 and conform with "OK" Key.
- 4.3.5 If a temperature sensor is connected, the calibration temperature is being determined.
- 4.3.6 If no temperature sensor is connected: enter the temperature with arrow keys and confirm with "OK".
- 4.3.7 The first buffer is being measured.
- 4.3.8 After measuring first buffer solution successfully message display on LCD is "Change buffer <OK>".
- 4.3.9 Remove pH electrode from first buffer and rinse with purified water properly and clean with tissue paper.
- 4.3.10 Immerse pH electrode in buffer solution pH 7.00 and conform with "OK" Key.
- 4.3.11 The second buffer solution is being measured.



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4.3.12 After measuring second buffer solution successfully message display on LCD is “Change buffer <OK>”.

4.3.13 Remove pH electrode from second buffer and rinse with purified water properly and clean with tissue paper.

4.3.14 Remove pH electrode from second buffer and rinse with purified water properly and clean with tissue paper.

4.3.15 Immerse pH electrode in third buffer solution pH 9.00 and conform with “OK” Key.

4.3.16 The third buffer solution is being measured.

4.3.17 When third buffer is measured and the result will display on LCD as following.

pH calibration	
Slope	99.34 %
pH (0)	7.008
T (NTC)	22.7 °C
CAL	
Calibration OK	

4.3.18 Record the calibration details in annexure - I.

4.3.19 After 30 second pH meter will switch back automatically to the measurement display. This can also be done immediately with <OK> or <QUIT>.

4.3.20 If the calibration data are outside the calibration parameters defined as the limit than a corresponding message will be shown.

pH calibration	
Slope	91.34 %
pH (0)	7.028
T (NTC)	22.7 °C
Yes: <OK> no: <QUIT>	
! Cal. Out of limits	

4.3.21 We can still accept the calibration data with <OK>, or reject it with <QUIT>.

4.3.22 Remove pH electrode from third buffer and rinse with purified water properly and clean with tissue paper.



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4.3.23 Keep the pH electrode in 3 M KCl solution.

4.3.24 Frequency of calibration - Daily.

4.3.25 After calibration, label shall be affixed to the side of the pH meter as per annexure - II.

4.4 Acceptance Criteria

4.4.1 Slope value - Lower limit - 95 % Upper Limit 103 %.

4.4.2 pH range - Lower limit 6.04 and Upper limit 8.00.

5.0 SAFETY & PRECAUTIONS

5.1 Only qualified Metrohm technicians should carry out service work on electronic components.

5.2 Open the housing only to change the batteries.

5.3 Do not clean the glass display with organic solvents like acetone.

5.4 Keep the electrode always in 3 mole KCl solution.

5.5 Change the standard buffer solutions after 15 days.

6.0 REVISION HISTORY

Revision No.	Reason for Revision	Superseded from & date
00	First Issue	-----

7.0 REFERENCES

Not applicable.



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8.0 ABBREVIATIONS

SOP : Standard Operating Procedure

°C : Degree Centigrade

% : Percentage

IPA : Iso Propyl Alcohol

mV : Milli Volt

KCl : Potassium Chloride

M : Molar

9.0 ANNEXURES

Annexure - I : Daily calibration record format of pH meter

