Document Number: **SASoM/EQUIP/034.v4**

Title: **Use and Maintenance of the Hanna PH211 Microprocessor pH Meter**

Version: **V4**

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Effective from:	01/10/2021
Valid to:	01/10/2026

SOP History		
Number	Date	Reason for Change
v1	01/01/2013	Original
V2	02/07/2013	Minor Amendments
V3	11/04/2016	Amendment to procedure
V4	01/10/2021	Update

1.0 Purpose –

The purpose of this SOP is to outline the principles of the routine use and maintenance of the Hanna PH211 Microprocessor pH Meter in Laboratory 248 at the St Andrews School of Medicine (SASoM).

2.0 Scope –

This SOP applies to routine use and maintenance of the Hanna PH211 Microprocessor pH Meter within the SASoM.

3.0 Responsibilities –

It is the responsibility of all users of the pH Meter within the SASoM to comply with this SOP.

4.0 Procedure –

The instrument should be calibrated each time before use. Calibration should be performed at pH7.01 (Cal 1) and pH4.01 (Cal 2) if preparing a solution less than pH7; calibration should be performed at pH7.01 (Cal 1) and 10.01 (Cal 3) if preparing a solution greater than pH7.

Switch the instrument on by pressing the 'On/Off' button. Display should then illuminate.

Press the Cal button to initiate calibration. The instrument will now ask for calibration standard solution 1 (pH 7.01).

Take pH probe from the Electrode Storage Buffer solution (SLS; PHB1430), wash thoroughly with distilled water and then carefully blot dry.

Immerse the probe into the pH7.01 calibration buffer (Fisher; FB67161) and allow the pH meter reading to stabilise ('NOT READY' indicator will flash in top left of the display screen). When stabilised 'CFM' will flash in top left of display screen. Press the 'CFM' button. Remove the probe, wash thoroughly with distilled water and then carefully blot dry.

Repeat the process for a 2-point calibration process by again pressing the Up or Down arrow buttons (located immediately underneath the 'CAL' and CFM' buttons) to scroll through the pre-defined calibration standards (pH4.01, pH7.01 and pH10.01).

Immerse the probe into the second calibration buffer pH4.01 (Fisher; FB67160) or pH10.01 (Fisher; FB67162) and allow the pH meter reading to stabilise ('NOT READY' indicator will flash in the top left of the display screen). When stabilised 'CFM' will flash in top left of display screen. Press 'CFM' button. After the second buffer calibration the pH meter will automatically revert to sample measurement pH mode. Remove the probe, wash thoroughly with distilled water and then carefully blot dry.

Immerse the probe into your sample / buffer solution and allow the pH meter reading to stabilise.

Add acid or alkali as required to gain the correct pH, using a disposable Pasteur pipette.

After the solution reaches the required pH, remove the probe, wash thoroughly with distilled water and then carefully blot dry. Return the probe to the soak solution Electrode Storage Buffer solution (SLS; PHB1430).

NEVER leave the pH probe out of solution.

Switch the instrument off by pressing the 'On/Off' button.

Maintenance –

Check and fill the inside of the pH probe with Electrode Storage Buffer (SLS; PHB1430) if and when required. This is carried out by revealing moving the plastic cover to reveal the small hole in the electrode glass and then filling it up using a syringe or pastette until the

solution is level with the hole. Make sure that the hole is then re-covered with the plastic ring after filling.

The pH probe should ALWAYS be stored upright in Electrode Storage Buffer solution (SLS; PHB1430) when not in use.

5.0 Personal protection –
A Howie coat must be worn at all times.
Disposable gloves must be worn as specified in the appropriate COSHH Risk Assessment.
Safety glasses must be worn when handling acids and alkalis.

6.0 Spillages –
Always clean up any spills immediately after use.
Only you know what you have spilt and are aware of that chemicals hazard.

7.0 Training –
All users have to be trained before using the Instrument by a designated person.

8.0 Related documents –

9.1 Equipment manual
9.2 Equipment Maintenance Information sheet
9.3 Risk assessments – RA/GEN/017, COSHH/003

9.0 Approval and sign off –

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STANDARD OPERATING PROCEDURE

Please sign below to indicate you have read this S.O.P and understand the procedures involved.

NAME	POSITION HELD	SIGNATURE	DATE