TITLE: Operation and Calibration of pH Meter

1.0 PURPOSE:

To describe the operation and Calibration procedure for the pH Meter.

2.0 SCOPE:

This procedure is applicable to the digital pH Meter of Laboratory.

Make : Polmon

Model : LP-135M

Instrument No.: DIPL/QC/INS/pH/001

3.0 RESPONSIBILITY:

3.1 Analyst-QC is responsible to follow this SOP.

3.2 Head-QC/Designee is responsible for ensuring implementation of this SOP.

3.3 Head-QA/Designee is responsible for monitoring overall compliance of this SOP.

4.0 DEFINITION:

Nil

5.0 PROCEDURE:

5.1 **DISPLAY:**

5.1.1 Small display shows Temp (AUTO/MAN) corresponding to mode indicator.

5.1.2 Big display shows pH/mV &offset values corresponding to mode indicator.

5.2 **KEYS:**

Instrument has 10 Keys. 4 Function Keys (Hold, pH/mV, AUTO/MAN, CAL) to select the instrument-operating mode; three sets of 'UP' & 'DOWN' ▲/▼ keys to change the display value like Manual Temperature, SLOPE and STD.

5.3 **OPERATION:**

5.3.1 MEASURE MODE:

In the Measure mode instrument automatically displays the measured value, corresponding to mode Indicator.

Manual Temperature Compensation (Auto Temperature Compensation disabled) is achieved by pressing the AUTO/MAN key, default temperature is displayed. Press Temperature ▲/▼ keys to get required temperature of the sample.

5.3.2 HOLD MODE:

In HOLD mode the pH/mV display will blink with offset value obtained in the previous calibration.

5.4 **CALIBRATION:**

Calibration Schedule: Daily

Note:

- Ensure that electrodes are not dry.
- Operate the HOLD button and select "Measure" mode i.e. STD LED should be off.
- Press pH/mV key to select the **"pH Mode".**
- Put the instruments in the **PH Mode** and **Measure Mode** before you do the calibration. The electrode must be dipped in a stand by solution or raw water. Press **pH/mV** key to select the **"pH Mode"**.

5.4.1 Press **CAL** key for **4** sec, to enter into calibration Mode. (This is indicated by the blinking of pH display).

5.4.2 Press **AUTO/MAN** key to select Temperature Compensation mode. (This is indicated by **AUTO/MAN** LED's glowing at the right side of the display).

5.4.2.1 If **AUTO TEMP** is selected, plug the **ATC** probe into the socket provided.

5.4.2.2 If **MAN TEMP** Is selected, set the buffer temperature using (Temp) ▲/▼ keys.

5.4.3 Press **HOLD** key to put the instrument in **STD** mode. (This is indicated by **STD** LED glowing on the right side of pH display).

5.4.4 Rinse the electrode & **ATC** probe (if used) with distilled water and remove the excess water with tissue paper.

5.4.5 Dip the electrode & **ATC** probe (if used) into the **buffer** pH solution (Recommended pH value is 7.00).

5.4.6 Wait for **20 to 30sec,** for stabilization of pH reading.

5.4.7 After display shows a pH reading (stable), press **STD ▲/▼** keys on the front panel to adjust the displayed pH to match the calibration buffer.

5.4.8 Press **CAL** key **once** to accept this buffer pH value.

5.4.9 Press **HOLD** key to put the instrument in **STD** mode.

5.4.10 Rinse the electrode & **ATC** probe (if used) with distilled water and remove excess water with tissue paper. (Don't rub the electrode or ATC (if used).

5.4.11 Dip the electrode & **ATC** probe (if used) in **second buffer pH solution** (Select solution with pH value near the measuring range).

5.4.12 Press **HOLD** key to put the instrument back in **MEASURE** mode.

5.4.13 Wait for **20 to 30 sec,** for stabilization of display value.

5.4.14 After display shows pH reading (stable) adjust **SLOPE ▲/▼** keys on the front panel to match the second calibration buffer.

5.4.15 Press **CAL** key **once** to accept **buffer2** value. Now the instrument is calibrated.

5.5 **ERROR MESSAGES:**

El:- It same buffer is used for STD and SLOPE adjustment in Dual point calibration.

E2:- If STD/SLOPE or both goes over range in Single point/Dual point calibration.

The above two messages will appear till It is rectified or till the instrument is powered off

E3:- Check for ATC connection.

E4:- Check for ELECTRODE connection.

Note: If E2 is displayed frequently, change the electrode.

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5.6 **SPECIAL INSTRUCTIONS!**

5.6.1 Put the plastic cap provided for the BNC socket whenever pH electrode is disconnected from the instrument, to avoid any scaling due to atmosphere which may cause fluctuation and deviation in pH reading.

5.6.2 Put the DUST PROOF COVER on the instrument to protect the enclosure from accidental spillage of solution on the instrument.

5.6.3 For precision measurement use 7.00 buffer for STD adjustment as first buffer and use second buffer which is nearer to the sample.

5.6.4 Don't keep the electrode in dry condition, to avoid it place in 7.00/4.00 buffer solution only.

5.6.5 Don't store the electrode in distilled/ionized water.

6.0 FORMATS / ANNEXURE(S):

6.1 pH calibration record : QC011-FM049

6.2 Instrument Usage log book : QC048-FM086

7.0 CHANGE HISTORY:

Revision No.	Effective Date	Changes Made	Ref CCF No.
00	01.06.2006	New SOP introduced	--
01	01.08.2009	Formats given clear and clarity.	--
02	01.03.2011	pH 2.0 buffer calibration was removed.	--
03	01.06.2014	Formats are the part of SOP. So prepared Separately.	--
04	01.01.2017	SOP format changed make in line with SOP-QA-001-04.	QC-CRF-025/16

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