

Digital pH Meter

(Hydrogen Ion Concentration Meter)

Principle:

Measures hydrogen ion concentration (pH) based on the potential difference developed across a glass electrode, following the **Nernst equation**.

pH Range: 0–14

Electrodes: Glass electrode & Reference electrode

Display: Digital LCD/LED

Temperature Compensation: Manual / Automatic (ATC)

Standard Operating Procedure (SOP)

1. Instrument Start-Up

- Switch ON the pH meter
- Allow **5–10 minutes** for stabilization
- Rinse electrode with distilled water

2. Calibration

- Calibrate using standard buffer solutions
– pH **4.0, 7.0, 9.2 / 10.0**
- Rinse electrode between buffers
- Adjust calibration until correct pH is displayed

3. Sample Measurement

- Rinse electrode with distilled water
- Immerse electrode in sample solution
- Stir gently and allow reading to stabilize
- Record pH value

4. Between Measurements

- Rinse electrode with distilled water
- Blot gently (do not wipe)

5. Instrument Shutdown

- Rinse electrode thoroughly
- Store electrode in **electrode storage solution / pH 4 buffer**
- Switch OFF the instrument

Applications

- pH determination of herbal formulations
- Pharmaceutical analysis
- Water & soil analysis
- Quality control studies
- Research & teaching labs

Precautions

- Never allow electrode to dry
- Do not touch or scratch glass bulb
- Use fresh buffer solutions
- Avoid wiping electrode with tissue