



## ELECTROLYTE ANALYZER

- An electrolyte analyzer is a specialized medical device designed to measure the concentration of electrolytes in a biological sample, typically blood or serum. Electrolytes are essential ions, including sodium ( $\text{Na}^+$ ), potassium ( $\text{K}^+$ ), chloride ( $\text{Cl}^-$ ), bicarbonate ( $\text{HCO}_3^-$ ), and calcium ( $\text{Ca}^{2+}$ ), that play crucial roles in various physiological processes within the human body.
- The accurate measurement of these electrolyte levels is vital for diagnosing and managing a wide range of medical conditions.
- Working Principle of Electrolyte Analyzers
- **Electrochemical Sensors**
- Electrolyte analyzers typically employ electrochemical sensors, such as ion-selective electrodes (ISEs), to detect specific ions in the sample. These sensors work based on the principles of electrochemistry and ion exchange.
- **Measurement Techniques**
- The analyzers utilize various measurement techniques, including direct potentiometry and indirect ion-selective electrode methods, to determine ion concentrations accurately.
- **Explanation of Ion Concentration Measurement**
- The device measures the electrical potential difference generated when the ions in the sample interact with the selective electrodes, allowing for the calculation of ion concentration.
- Uses of Electrolyte Analyzer in Laboratory
- Medical Diagnosis
- Role in Clinical Laboratories
- Traditional Testing Methods
- Specific Applications in Research.