



TT-TITRATE-A AUTOMATED POTENTIOMETRIC TITRATOR

TT-titrate-A Automated Potentiometric Titrator is designed for determining the Total Acid Number (TAN), Total Base Number (TBN), mercaptan sulfur, and chlorine content in petroleum products, lubricants, and transformer insulating oils.

Titration is a fundamental chemical analysis method used to determine the concentration of a chemical substance in a solution by reacting it with a measured amount of another chemical. The automated titrator performs this analysis using a motor-driven dispenser, a stirred reaction vessel, and electrodes that sense the completion of the reaction by measuring the potential difference between two electrodes. Automatic titration enhances accuracy, repeatability, and reproducibility while minimizing errors in calculation and documentation.

APPLICATIONS

Application standards

1. ASTM D664: Standard Test Method for Acid Number of Petroleum Products by Potentiometric Titration
2. ASTM D974: Standard Test Method for Acid and Base Number by Color-Indicator Titration
3. ASTM D2896: Standard Test Method for Base Number of Petroleum Products by Potentiometric Perchloric Acid Titration
4. ASTM D4929: Standard Test Methods for Determination of Organic Chloride Content in Crude Oil, Test Method A
5. ASTM D3227: Standard Test Method for (Thiol Mercaptan) Sulfur in Gasoline, Kerosene, Aviation Turbine, and Distillate Fuels (Potentiometric Method)
6. ASTM D4739: Standard Test Method for Base Number Determination by Potentiometric Hydrochloric Acid Titration
7. UOP163: Hydrogen Sulfide and Mercaptan Sulfur in Liquid Hydrocarbons by Potentiometric Titration
8. ASTM D94: Standard Test Methods for Saponification Number of Petroleum Products
9. ASTM 1159: Standard Test Method for Bromine Number of Petroleum Distillates and Commercial Aliphatic Olefins by Electrometric Titration

FEATURES

- Incorporates a unique built-in dosing unit to prevent chemical leaks.
- Capable of performing various types of titrations including acid-base, redox, complexometric (EDTA), blank, silver assay, non-aqueous, argentometric (precipitation), and back titration.
- Features multiple self-checking functions to prevent misoperation.
- Offers flexible application editing functions, allowing operators to store dedicated titration modes for future tests and easily adopt them with a single click.
- Equipped with RS232/USB ports for communication, with networked CAN capability.
- User-friendly interface with an intuitive keypad and function guide display.
- Programmable with TAN and TBN software built-in.
- Results are expressed in mg KOH/g.
- Supports connection to an external PC keyboard for easy text and sample information entry.
- Compatible with various types of printers, PCs, and balances.
- Includes a data logger for automatic storage of the last 55 analysis results.
- Utilizes a Hamilton electrode, model number 238060 FLUSHTRODE, manufactured in Switzerland.

TECHNICAL SPECIFICATIONS

1. MV Measuring Range: -2000.0mV to +2000.0mV, with an accuracy of $\pm 0.1\text{mV}$
2. Temperature Measurement Range: -5°C to 120°C
3. pH Measuring Range: -20.000pH to +20.000pH
4. MV Test: Resolution of 0.1mV, accuracy of $0.1\text{mV} \pm 0.03\%$
5. pH Resolution: 0.001pH, Accuracy: $\pm 0.003\text{pH}$
6. Temperature Measurement Precision: $\pm 0.1^{\circ}\text{C}$
7. Operation: Controlled via PC
8. Burette Rehydration Time: 16 seconds (100% filling rate)
9. Sample Storage: 50 samples with built-in titration and 100 samples with external titration

10. Optional: 16-station 100mL autosampler, 12-station 250mL autosampler, 18-station 50mL autosampler
11. Stirring Method: Magnetic stir, optional up stirring
12. Burette Resolution: 1/1500000
13. Titration Type: Potentiometric titration
14. Electrode Connector Type: MV/pH measuring electrode interface, reference electrode interface, PT1000 temperature electrode interface
15. Burette Refill Time: 16 seconds
16. Compatible with Burette Specifications: 1mL, 5mL, 10mL, 25mL



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