TitraLab®*854 and 856* **Titration Workstations**

Stat Titrations:
Customised to *YOUR*
exact application

Pharmaceuticals & Biotechnology
· **Neutralising capacity of antacids**
· **Reaction times of antacids**
· **Enzymatic activity**
  (lipase & esterase, protease, cholinesterase)

Agriculture & Food
· **Dissolution rates of agricultural limestone**
· **Dissolution properties of animal feeds**

Chemicals & Detergents
· **Stat-temperature reactions**
· **Rate determination**
· **Kinetic reactions**
· **Enzymatic activity in soap powder**

- when you need to be sure…

TitraLab®854 and 856
Stat Titration Workstations -

No more wasting time setting up. Order your TitraLab system incorporating the high-performance single burette TIM854 or bi-burette TIM856 Titration Manager with the appropriate application package and it will arrive with all you need. Getting started couldn't be simpler:

Save time and energy

Intelligent design ensures effortless setup and maintenance
Electrodes and tubing slot securely in place in one easy movement thanks to our unique bayonet concept.
For convenient installation and maintenance, the mono-block titrating burette is mounted in no time.

Follow the display

Intuitive interface guides you at every step
The TIM854 and TIM856 Titration Managers prompt you with clear-text messages in a choice of languages, making it so much easier when you're doing routine work. The titration curve is easy to follow live on the large graphic display together with electrode and titrant status.

Press just one key

One-touch selections and pre-programmed functions make titrations easy to run
The TIM854 and TIM856 give instant access to routine functions, making them by far the simplest titrators of their generation. Pre-set routines guide you when running analyses, repeating measurements and performing maintenance. The TIM854 and TIM856 allow you to automatically sequence operations and repeat measurements – ideal for linking direct measurement, reagent addition, set end point pH adjustment followed by a pH-Stat titration. Predefined electrode and reagent libraries mean you save time and effort setting up your application.

Get it right first time

High-resolution burette, unique PID and AAA algorithms ensure accurate regulation and results
The TIM854 and TIM856's titrating burettes offer the highest resolution on the market giving unbeatable accuracy for your pH/mV-Stat titrations. Whether you are working with strongly or weakly buffered samples or running single or multiple-step sequences, regulation is fast and reliable. Whatever your analysis, you can be sure of reaching set point value quickly and with no risk of overshoot.

Cover all the options

One or two-way Stat titrations as your experiment demands
The TIM854 performs one-way Stat titrations for your enzymatic studies or Stat temperature control for synthesis experiments. The TIM856 extends your possibilities with two-way Stat titration with automatic selection of the appropriate titrating burette according to pH/mV reading, continuous reagent addition with consecutive burette operation and synchronised addition of two non-miscible reagents for crystal growth studies.
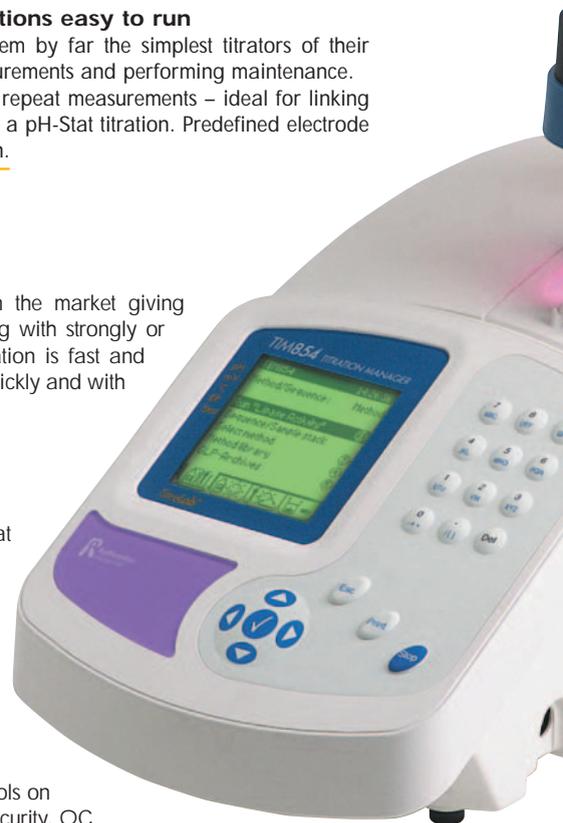
Stay in control

Efficient result recording meets strict traceability requirements
The TIM854 and TIM856 are the first titrators of their kind to offer full QC controls on your results. QC samples can be defined at specific intervals and, for greater security, QC requirements are directly defined at method level with password protection. Full traceability also means full result archiving thanks to a non-volatile memory which stores up to 200 results and 50 methods.

Plan ahead

Modular concept allows expansion to your future needs
On the TIM854 and TIM856, all interfaces are standard so you can add to your system as and when you wish. Increase your sample throughput from 10 to 126 samples using one of our range of sample changers. Add up to 4 additional burettes and 4 electrode inputs thanks to the versatile ABU52 dual burette system. Simplify data entry by connecting a standard PC keyboard and bar code reader. Obtain virtually unlimited storage capacity for your results with TitraMaster 85 PC Software.

Ready for immediate analysis

Ensuring the right choice for your application

We offer you a dedicated package ready to use straightaway: electrodes, specific accessories, standards, maintenance solutions and, of course, methods and application notes. The only thing you have to supply is the sample!

With more than 60 years' experience in electrochemistry, we know your business. Visit us at www.ictsl.net to get the latest updates on customised solutions for your application.

TitraLab is a complete solution

All the elements are provided for a fully functional workstation

n A Titration Manager integrating all functions of a modern pH-Stat titrator
n One or two high-resolution burettes with a wide choice of volumes
n Two electrode inputs for standard pH or mV potentiometric titration, one for imposed current titration and a differential measurement mode
n A titration stand accommodating beakers from 5 to 400 ml and a choice of magnetic or propeller stirring
n One or two bottle holders for keeping reagents securely in place
n A full set of accessories and cables for easily completing your workstation installation.

Methods

- End point titration:
  1 to 4 pre-set end points.
- Stat techniques:
  Stat-PID: Proportional Integral Derivative Stat titration for weakly or non buffered samples
  Stat-AAA: Adaptive Addition Algorithm Stat titration for samples with significant buffer capacity
  Stat-temp.: reagent addition regulated according to sample temperature.
- Stat titration modes: TIM856 and TIM854
  One-way Stat titration.
- Stat titration modes: TIM856
  Two-way Stat titration, two reagents, appropriate burette operation depending on pH/mV.
  Continuous Stat titration, one reagent, burettes used consecutively for uninterrupted control.
  Synchronised Stat titration, two reagents, burettes operate simultaneously.
- Titration stops at: pH, mV, ml, IP number, time
- Titrant addition: continuous dynamic.
- Reagent addition.
- Titrant calibration.
- pH electrode calibration: up to 5 points using IUPAC standards or 4-7-10 Series buffers with error recognition on buffer used.
- Direct pH/mV measurements with recording on stable reading.
- Back titration with manual or automatic reagent addition.
- Sequencing of up to 10 methods.
- Coupling of 2 to 8 methods in one beaker.

Measuring ranges   ### Resolution

Measuring ranges	Resolution
-9 to 23 pH	0.002 pH
±2000 mV	0.1 mV
-10°C to +100°C	0.1°C

Printout

Automatic. GLP compliant.
Selectable: no, 80 columns.
Detailed or condensed.

Curves

Volume vs time, mV/pH vs time,
Temperature (°C) vs time.

Results

Reaction rate calculation on Max. slope, Mean slope, Volume at pre-selected time and Time at pre-selected volume.
Up to 6 results for Stat titration plus 2 user-defined equations.
4 results for EP titration and 2 user-defined equations.
QC check on results with visual warning.
Statistical calculations.

Units

All standard units for standards/samples/results.
User-defined result units.

Storage capacity

Global password protection for programming access.
Non-volatile memory.
5000 points/curve.
Set of pre-programmed methods.
User programmable: 50 methods.
Libraries for 30 electrodes and 30 reagents: more than 30 electrodes and 20 titrants pre-identified with ID and type to help programming.
Storage of 200 results.
Stored parameters characterised by own ID, location and calibration data.
Embedded operating procedures for electrode and reagent exchange.
Automatic electrode, titrant calibration and QC prompt.

Sample list

Up to 126 data with alphanumeric ID.
QC sample definition.

Electrode stand - stirring

Magnetic stirrer, 22 reproducible speeds (0 to 1100 rpm) in 50 rpm steps.
Propeller connection.
Beaker volume: 5 to 400 ml.

Burette

1 embedded burette stand - TIM854.
2 embedded burette stands - TIM856.
Burette volumes available: 1, 5, 10, 25, 50 ml.
Burette motor: 18000 steps.
Complies with ISO/FDIS 8655-3.
Burette extension: 4 (with ABU52).
UV-protected encapsulated glass syringe.
Embedded operating procedures for burette exchange, air bubble removal (Flush).
Rinse, Fill, Empty function.
Second burette operational during first burette refill.

Inputs/outputs

2 indicator electrode inputs.
1 reference electrode input.
Selectable polarised input from -1 mA to 1 mA in 1 µA steps, DC or AC.
Differential input.
Temperature input.
0-5 V TTL output.
0-12 V TTL output.
Serial connection for printer/PC, balance and additional titrator for use with TitraMaster 85 PC Software.
Burette extension (with ABU52).
Serial connection for sample changer fitted with 10 to 126-position tray.
PS/2 port for PC keyboard and/or barcode reader.

Languages

English, German, Danish and French (other languages, please consult us).

General specifications

Casing: Fully splashproof polypropylene.
Graphic 128x128 dot LCD and alphanumeric keypad.

Dimensions (H x W x D):
380 x 230 x 450 mm (excl. tubing).

Weight: 5 kg (excluding reagent bottles).

CE Marking (TIM854 and 856):
Complies with EMC directive 89/336/EEC
Complies with LV directive 73/23/EEC

Power requirements: 47.5 – 63 Hz
115/230 Vac +15 -18%.

Environmental operating conditions:
5 to 40°C temperature.
20 to 80% relative humidity.

Ordering information

TitraLab systems

The TitraLab 854/xx or TitraLab 856/xx-xx Stat Titration Workstation consists of the TIM854 pH/EP/Stat Titrator, monoburette or the TIM856 pH/EP/Stat Titrator, bi-burette with a full set of connecting cables, cell accessories and one or two xx ml burette(s).
Thermostated beakers available for standard and micro volumes.

Metrology

To comply with ISO9001 and ISO17025 requirements, our Metrology Dept. can supply calibration and verification certificates. Our Cofrac accredited laboratory produces pH and conductivity standards with certificates of traceability and conformity.

Examples of Application Packages
pH-Stat titration for standard volumes 8 - 100 ml
pH-Stat titration for micro volumes 0.5 - 9 ml

Consult our on-line application catalogue at **www.titration.com**