TitraLab® 860 and 865 Titration Workstations

Potentiometric Titrations: Customised to *YOUR* exact application

Food & Beverage

- **Peroxide number:** edible fats and oils
- **Chloride:** milk, butter, other dairy products
- **Ascorbic acid:** fruit juice and food

Environment & Water

- **pH, Alkalinity and Hardness**
- **Calcium and Magnesium**
- **Chloride**
- **Chemical Oxygen Demand**

Chemical & Pharmaceutical

- **Acid-base** titrations in aqueous/non-aqueous media
- **Redox** titrations
- **Karl Fischer**

Petrochemical

- **TAN/TBN:** according to ASTM D664, D2896
- **Bromine Index and Bromine Number:** according to ASTM D1159, D2710 & D5776
- **Mercaptans:** according to ASTM D3227

Radiometer analytical - *when you need to be sure...*

TitraLab® 860 and 865
Potentiometric Titration Workstations -

No more wasting time setting up. Order your TitraLab system incorporating the high-performance single burette TIM860 or biburette TIM865 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

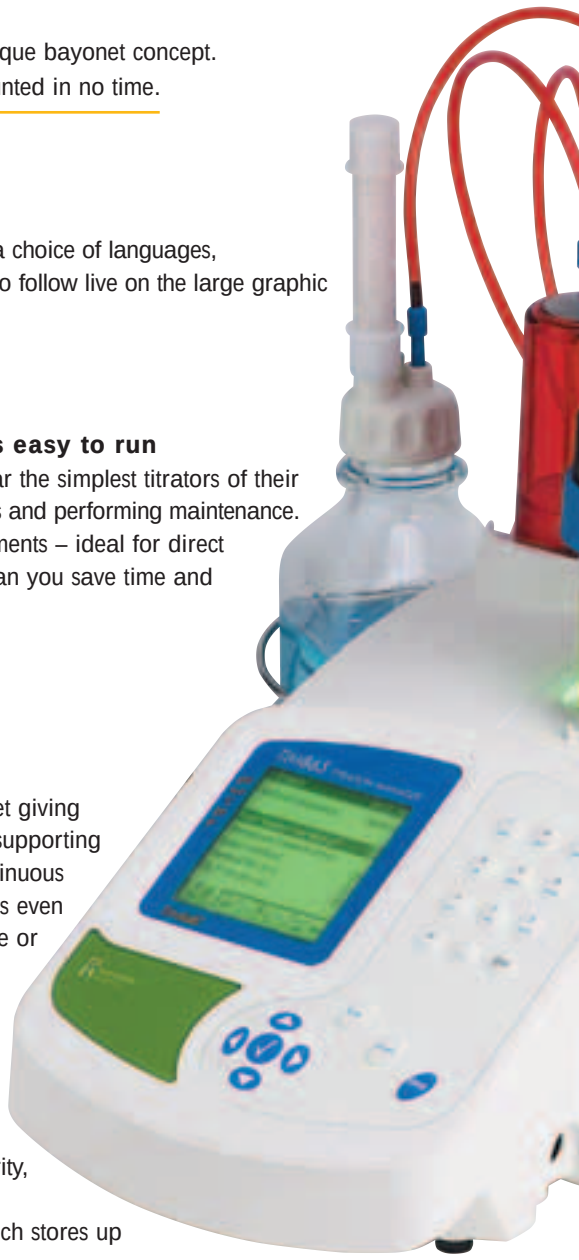
Intuitive interface guides you at every step
The TIM860 and TIM865 Titration Managers prompt you with clear-text messages in a choice of languages, making it so much easier when you're doing routine work. The titration curve is easy to follow live on the large graphic display together with electrode and titrant status.

Press just one key

One-touch selections and preprogrammed functions make titrations easy to run
The TIM860 and TIM865 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 TIM860 and TIM865 allow you to automatically sequence and repeat measurements – ideal for direct measurement followed by a 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 addition technique and special algorithms ensure accurate results
The TIM860 and TIM865's titrating burettes offer the highest resolution on the market giving unbeatable accuracy for your potentiometric titrations. Innovative electronic design supporting effective PID regulation loop algorithms combined with incremental or dynamic continuous titrant addition modes allow you to reach end points or to determine inflection points even more quickly. Whether you are working with sharp or weak curves or running single or multiple IP, detection is fast and reliable.



Stay in control

Efficient result recording meets strict traceability requirements
The TIM860 and TIM865 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 TIM860 and TIM865, 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

At Radiometer Analytical, we put applications first. 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.titration.com** 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

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

Technical Specifications

TitraLab® 860 and 865

Methods

- End point titration:
  1 to 4 pre-set end points.
- Inflection point titration:
  Auto determination of 1 to 8 inflection points with programmable IP acceptation windows.
- IP detection using 1st and 2nd derivative curve.
- Titration stops at: pH, mV, ml, IP number.
- Titrant addition techniques: incremental dynamic, incremental monotonic and continuous dynamic.
- 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 (with ABU52).
- Sequencing of up to 10 methods.
- Coupling of 2 to 4 methods in one beaker.
- Method reprocessing.

Measuring ranges / Resolution

Measuring ranges	Resolution
-9 to 23 pH	0.001 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.

Results

In each method, calculation of up to 8 results and 2 user-defined equations.
QC check on results with visual warning.
Statistical calculations.
Result recalculation.

Units

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

Storage capacity

Global password protection for programming access.

Non-volatile memory.

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 - TIM860.
2 embedded burette stands - TIM865.
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.

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 connections 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, French, Italian, Spanish and Swedish.

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 (TIM860 and 865):
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 860/xx or TitraLab 865/xx-xx Potentiometric Titration Workstation consists of the TIM860 pH/EP/IP Titrator, monoburette or the TIM865 pH/EP/IP Titrator, biburette with a full set of connecting cables, cell accessories and one or two xx ml burette(s).

Metrology

To comply with ISO 9001 and ISO 17025 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
Technique-based
Acid/base titration in aqueous or non-aqueous media
Complexometric titrations
Argentimetric titration (halides and silver)
Redox titration (zero and imposed current)
Dedicated
Peroxide number in edible fats and oils
Chloride in milk, butter and other dairy products
Ascorbic acid determination in food and beverages
Water hardness, calcium and magnesium determination
TAN and TBN, bromine number and bromine index according to ASTM
Mercaptans according to ASTM

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

For United States sales and service, contact:
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