

794 Basic Titrino



Compact titrator for training and routine analyses

- meets all basic titration needs
- includes ready-to-use methods
- is affordable and can be expanded as required
- is ideal for training in schools, technical colleges and universities

Brilliant – both outside and in!

Ideal for training and routine analysis

The 794 Basic Titrino is a low-cost instrument that fulfills all your titration requirements. Why should you settle for less?

Flexibility and easy operation make the 794 Basic Titrino the ideal instrument for training and routine work. The dialog is led via the backlit LCD; no less than seven dialog languages are available. The method memory contains a number of applications that can be used immediately.

For routine operation the keypad can be detached; operation is then via three keys of the front panel: Nothing could be simpler!

Sample weight and/or sample identification can be requested by the Basic Titrino before every titration; this comes directly from the attached balance, which avoids any sample mix-ups.

The non-volatile memory is used for methods and parameters; in sample changer applications it also assumes the role of the pushup (silo) storage for sample data. The results of the



Front view of 794 Basic Titrino

determinations can be stored in the pushup storage, statistically evaluated and processed into result reports.

Advanced methodological features

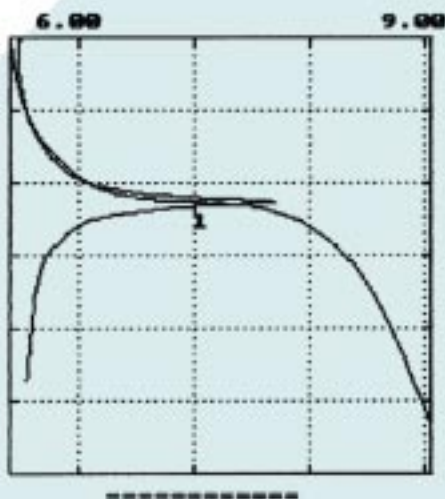
Apart from dynamic titration, which is suitable for most applications, the 794 Basic Titrino also masters monotonic and endpoint titration.

In many cases the titration time can be shortened by the addition of a start volume. The 794 Basic Titrino offers the possibility of adding a fixed start volume or one related to the sample size.

During the titration, the measured variable, i.e. the potential (mV) or the pH value, is displayed together with the dispensed volume.

The 794 Basic Titrino has two high-impedance electrode inputs that are selected according to requirements and individually calibrated. For titrations in non-aqueous media they act as differential amplifier inputs, allowing the application of the «three-electrode technique». Another input is available for polarized electrodes, e.g. for determinations of the bromine number or bromine index. A temperature measuring input is also available.

```
'cb
794 Titrino          01105   794.0010
date 2001-10-03    time 16:14    4
start V      0.000 ml DET pH      Acid
1.0 ml/div      dpH=1.0/div
```



Titration curve with 1st derivative curve

Evaluation, accessories

Evaluation

Normally, the 794 Basic Titrino evaluates all potential jumps. However, there is the possibility to modify the endpoint determination as follows:

- Evaluate only the greatest potential jump.
- Evaluate only the last potential jump (for summation parameters, e.g. acid numbers).
- Evaluate only potential jumps in specified windows.
- Evaluate only potential jumps at specified voltages (fixed endpoints, e.g. for ASTM and other standard methods).

There are virtually no restrictions for the entry of calculation formulae. The statistics function allows the calculation of mean values and absolute or relative standard deviations; outliers can be eliminated.

The attached optional printer supplies GLP-compliant documentation of the determinations.

Useful accessories

With the practical Metrohm Exchange Units, changing the titrant takes only seconds. Thread adapters are available for the reagent bottles of practically all manufacturers; tiresome re-filling of reagents is a thing of the past.

The Metrohm titration stands come in three versions. The 728 Magnetic Stirrer thoroughly mixes the titration solution. The 727 Titration Stand facilitates the rinsing of the buret tips and electrodes. It is equipped with a hand pump that is indispensable for certain titrations, e.g. surfactant determinations. For work with solvents, for example KF titrations, we recommend the 703 Titration Stand, which adds reagent at the press of a button and aspirates the spent solution.



794 Basic Titrino with 727 Titration Stand and Custom DP40 printer

Save money and be environment-conscious

If you wish to save reagents and do the environment a favor at the same time then you should consider using the eco titration cell. It allows the reduction of reagent consumption and waste by a factor of four – with concomitant cost savings. If you are dealing with small samples then you will find it hard to avoid the eco cell.

```
`fr
794 Titrino          01105   794.0010
date 2001-10-03      time 14:09      2
U(init)             -27 mV  DET U    Chloride
smpl size           100 ml   id#1     Run 28
id#2                 458     id#3     J.Smith
EP1                  2.337 ml          -94 mV
Chloride              8.28 ppm
stop #EP reached
```

Full result report



eco titration cell with 703 Titration Stand

A sophisticated instrument that is easy to operate

The 794 Basic Titrino is economical and highly suitable for training. It is extremely flexible and offers a large number of methodological features. Start-up is facilitated by the stored user methods; routine operation couldn't be simpler.

- Masters all titration methods that are relevant in practice
- Two inputs for pH electrodes, ion-selective electrodes, metal electrodes
- One input for polarized electrodes
- Differential amplifier for low-conductivity (non-aqueous) media
- Free formulation of result calculations; up to nine formulae per method
- TIP (Titration Procedure) allows to link up to 30 single steps to form an analytical procedure

Tailor-made titration stands:

- 728 Magnetic Stirrer (shown here)
- 727 Titration Stand with hand pump, e.g. for surfactant titrations
- 703 Titration Stand, e.g. for KF titrations; adds reagent at the press of a button and aspirates spent solution

Options facilitate work and expand the application area:

- eco cell helps save reagents and reduce waste
- Sample changers for comprehensive automation
- Printers for documentation
- Method collections: Oil PAC for petrochemical applications, Surf PAC for surfactant analysis and Pharm PAC for the analysis of pharmaceutical ingredients
- Metrodata VESUV for backup and data base functions
- Metrodata TiNet for operation via PC and data management

Exchange Units for safe and rapid reagent change

Masters seven languages

Keypad for instrument dialog and parameter settings; the three keys on the front panel suffice for routine operation

Needs less space than an A4 sheet

Small-format or A4 printer for GLP-compliant documentation

The principal features

Instrument modes available

DET	Dynamic titration with adaptation of the volume increments to the slope of the titration curve.
MET	Monotonic titration with selectable, fixed volume increments.
SET	Titration to fixed endpoint (potentiometrically or with polarized electrodes); 2 endpoints can be set. Titration solution can be conditioned; pH stat applications are possible, as are KF titrations.
MEAS	Measuring pH value, voltage U (potentiometrically or with polarized electrodes), temperature T.
CAL	pH calibration with up to 9 buffers.
TIP	Titration Procedure: coupling of up to 30 single steps to form a procedure.

pK value

The titration data (DET and MET mode) can be used for automatic determination of the pK value in the range $pK = 3.5 \dots 10$ with good accuracy.

Programmable polarizer

For KF titrations, among others: I_{pol} can be set in the range $-127 \dots +127 \mu A$, U_{pol} in the range $-1270 \dots +1270 mV$.

Sensor connections

Two high-impedance inputs for pH electrodes, ion-selective electrodes, etc.

Separate input for a polarized electrode, e.g. double noble-metal electrode for KF water determination, or low-resistance electrode, e.g. noble metal electrode for redox titrations.

Input for Pt 100 or Pt 1000 resistance thermometer.

Differential potentiometry

Built-in differential amplifier for work in poorly conducting media, e.g. in non-aqueous solvents.

Start volume

Shortens the titration. Can be defined in absolute terms (0.00 ... 999.99 mL) or as a function of the sample weight (factor x sample weight).

Formulae for the result calculation

For every method up to 9 formulae can be freely programmed; the result designation can be entered as an alphanumeric text.

Statistics

Calculation of the mean value as well as the absolute and the relative standard deviation. Outliers can be eliminated and the statistics recalculated. An indicator lamp on the front panel shows whether the statistics function is switched on or off.

RS 232C data interface

Allows the printing out of results, endpoints, titration curves (also with 1st derivative) and parameters.

Balances can be attached, together with a printer (optional stackable plug).

Connection to computer (PC): The VESUV 3.0 PC program allows the acquisition of titration or measuring data; TiNet serves to operate individual instruments or titration networks via PC and is used for data management.

Dialogue languages

English, German, French, Spanish, Italian, Portuguese or Swedish can be selected.

Display

Backlit liquid crystal display (LCD), two lines of 24 characters each, character height 5 mm.

Memory (non-volatile)

Capacity: 10 000 bytes that can be used for methods or sample data (pushup storage for applications with sample changer). A method needs 100...200 bytes, a set of sample data max. 78 bytes.

Dimensions (including Exchange Unit)

Width	150 mm
Height	450 mm
Depth	275 mm

Weight (including keypad)

3.4 kg

Ordering information, options

Basic Titrino 794

2.794.0010 Compact titrator for dynamic (DET) and monotonic (MET) titrations as well as endpoint titrations (SET) (potentiometric or with polarized electrodes). Automatic determination of the pK value from the titration data is possible. TIP (Titration Procedure) allows coupling of up to 30 single steps to form a procedure. Simple operation thanks to dialog in English, German, French, Spanish, Italian, Portuguese and Swedish. Equipped with an RS 232C data interface, remote control (I/O lines) and separate keypad. 6.6008.500 Metrodata VESUV 3.0 Light included (see below).

Options

Stirrers, titration stands

- 2.728.0040** 728 Magnetic Stirrer with stand, electrode holder and stirring bar
- 2.727.0010** 727 Titration Stand with rinsing pump and rinsing head; requires 2.722.0010
- 2.722.0010** 722 Rod Stirrer for 2.727.0010, with controller and stirrer propeller
- 2.727.0100** 727 Titration Stand with controller and built-in magnetic stirrer, rinsing pump and rinsing head
- 2.703.0010** 703 Titration Stand

Highly integrated, manually operated titration stand with stirrer and pump for addition of solvents and aspiration of spent solution when performing endpoint titrations (SET) with conditioning between determinations

Exchange Units with glass cylinder and flat PCTFE/PTFE stopcock

- 6.3026.110 1 mL Exchange Unit with one tip each for titration and dosing
- 6.3026.150 5 mL Exchange Unit with one tip each for titration and dosing
- 6.3026.210 10 mL Exchange Unit with one tip each for titration and dosing
- 6.3026.220 20 mL Exchange Unit with one tip each for titration and dosing
- 6.3026.250 50 mL Exchange Unit with one tip each for titration and dosing

Method collections Oil PAC, Surf PAC and Pharm PAC

Consisting of: file containing the printed collection of texts on frequently used titration methods; CD ROM with the file's contents, that is with texts, parameter sets and curve examples (PDF files); CD ROM with demonstration versions of the Metrodata programs VESUV, TiNet, IC-Net etc. Adobe® Acrobat® Reader for reading and printing the PDF files. The parameter sets can be loaded from the CD ROM into the 794 Basic Titrino by means of the VESUV PC software.

- 6.6040.003 Oil PAC, English version
- 6.6040.001 Oil PAC, German version
- 6.6041.003 Surf PAC, English version
- 6.6041.001 Surf PAC, German version
- 6.6042.003 Pharm PAC, English version
- 6.6042.001 Pharm PAC, German version

Metrodata VESUV® 3.0

- 6.6008.200 Metrodata VESUV 3.0, including Hardware Dongle, for max. x instruments
- 6.6008.500 Metrodata VESUV 3.0 Light, including Hardware Dongle, for max. 2 instruments

PC program (Windows™ 95, 98, NT or 2000) for the acquisition of titration data via an RS 232C interface, method backup, printing of reports, curve display and reprocessing of data. Data base with filter, search and query functions, data export to Excel, Lotus, LIMS... Dialog in English or German.

Metrodata TiNet® 2.5

- 6.6012.XXX Metrodata TiNet 2.5, for x instruments
- 6.6012.XXX Metrodata TiNet 2.5 Light, for max. 2 instruments

Comprehensive, user-friendly PC program (Windows™ 95, 98, NT or 2000) for the freely programmable control of high-performance titration networks.

- Complies with FDA 21 CFR Part 11
- Creation and storage of methods
- Non-S-shaped curves can be evaluated manually or automatically
- Export to data base programs, e.g. Access, Excel, or to a LIMS
- Display, printing and storage of curves and results
- Dialog and instructions for use in English or German
- Includes 6.2145.000 TiNet Hardware Dongle

Connecting cables for printers, balances and PCs

- 6.2125.130 Cable for Custom DP40-S4N and Seiko DPU 414 printers (DB9)
- 6.2125.050 Cable for Epson FX, LX, LQ printers
- 6.2125.040 Cable for Epson EX 800/LQ 850 printers (DIN connector)
- 6.2125.030 Stackable plug for the simultaneous connection of printer and balance
- 6.2125.020 Cable for Mettler balances AE (011/012) as well as for AND balances (for Mettler balances AM, AT, PM use Mettler cable ME33995 and for Mettler balances AB, AG Mettler interface LC-RS25)
- 6.2125.070 Cable for Sartorius balances MP8 and MC1
- 6.2125.080 Cable for Precisa balances
- 6.2125.060 Cable for PC with 25-pin connector (DB25)
- 6.2125.110 Cable for PC with 9-pin connector (DB 9)



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Ion analysis

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Subject to modifications
Printed in Switzerland by Metrohm Ltd., CH-Herisau
8.794.6003 – 2002-01