



A compact instrument with outstanding performance

LAMBDA-MED KFT.

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Basic configuration

The basic set-up of the KF Titrino comprises the following components:

- 701 KF Titrino, the intelligent titrator that requires minimum bench-space.
- 703 Titration Stand: compact auxiliary unit; holds the titration vessel and stirs its contents; aspirates spent solution and adds solvent, both at the push of a button.
- Exchange Unit, available with PCTFE/PTFE or ceramic stopcock and with burette volumes of 1, 5, 10, 20 and 50 mL, with one burette tip each for titrating and dosing.
- Reagents: all commercially available reagents for volumetric KF titration can be used.



Use of the 703 Titration Stand is recommended because it is compact and facilitates liquid handling. However, the 701 KF Titrino can of course also be used together with the 728 Magnetic Stirrer.

Expansion possibilities

If you wish to connect a PC to the 701 KF Titrino, the optional Metrodata menu programme is a great help. It allows the comprehensive remote control of the instrument and gives access to all its functions and status conditions. Furthermore, methods, instrument settings, titration data and results can be saved in the PC and transferred from there to other storage media or to a LIMS. Curves can be plotted in real time or reproduced from the stored titration data.

For comprehensive documentation of your analysis and for result reports, a printer can be connected; a balance makes possible the automatic transfer of sample weights.

A pen recorder can be used to record the following types of curves:

- volume vs. time
- drift vs. time
- measured voltage vs. time.

The 768 KF Drying Oven is available for those cases where the water content of insoluble solids is to be determined and these cannot be introduced into the titration vessel, e.g. because they react with the reagents. The integrated pump of the 768 KF Drying Oven delivers a constant flow of dry air that transports the water given off by the sample heated in the oven to the titration vessel. The new «drift stop» endpoint criterion makes the oven method both more precise and faster.

The oven method can also be performed more economically using the 688 KF Drying Oven together with the 661 Pump Unit.

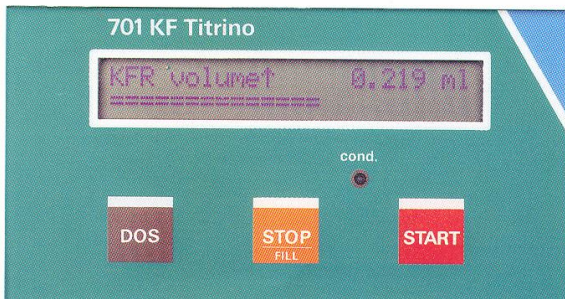


Routine operation

The separate keypad gives access to all the 701 KF Titrino's functions. For routine operation, the keypad can be disconnected and the instrument operated via the keys on its front panel:

- The START key gets the titration going.
- The STOP key stops the titration should this be necessary.
- The DOS key allows the manually controlled dosing of reagent, e.g. when priming the Exchange Unit.

In normal routine operation, the START key is all you require ... need we say anything more concerning ease of operation? Yes, the 701 KF Titrino talks to you in your preferred language, be it English, Spanish, French or German.



During titration, the display shows the volume of reagent used together with an analogue endpoint proximity indicator. This keeps you informed on the progress of the titration.

Progress in KF methodology

The 701 KF Titrator combines extremely easy routine operation with flexibility, thus allowing you to adapt the instrument configuration to your special requirements:

- Apply bi-voltametric or bi-amperometric endpoint indication with freely selectable polarising current or voltage.
- Choose between two stop criteria, namely the conventional «delay time» or the novel «drift stop», which, combined with the high resolution of the burette volume (10 000 increments), yields fast yet highly precise results.
- Define a start volume to further speed up the determinations.
- Take advantage of the «live keyboard» to change parameters while titration is in progress.
- Work with or without solution conditioning between determinations, with or without an automatic request for sample size and sample identification.
- In the «conditioning» mode, get the current drift value without delay at the push of a button.
- Have drift taken into account for result calculation.

If required, the 701 KF Titrino will add up the reagent consumption in order to keep you from running out of reagent or from unknowingly exhausting the buffer capacity of the solvent when working with a two-component reagent.



Dialogue languages

English, Spanish, French or German are selectable

Display

Backlit LCD, 5 mm high, two lines of 24 characters each

Keypad

Gives access to all the functions of the 701 KF Titrino; can be disconnected for routine operation

Titration modes

Karl Fischer titration

Titer determination with water or methanol/water standard

Titer determination with sodium tartrate (NaOOC(CHOH)₂COONa • 2 H₂O)

Blank determination

Statistics

Mean value

Absolute and relative standard deviation

Delete a given result and recalculate statistics

Drift value

Can be called up at any time in the conditioning mode and is displayed without delay

Endpoint indication

Bi-voltametric or bi-amperometric

Start volume

0 ... 99.99 mL; added at the start of a titration in order to save time

Stop criteria

1. Drift stop Titration stops as soon as the end-point voltage (current) and a preset drift value are reached
2. Delay time Titration stops as soon as the end-point voltage (current) has been within the prescribed range for the delay time given

Formula for result calculation

$$\text{Result} = \frac{(V-B) \times T \times F}{S \times D}$$

where V = dispensed KFR volume
 B = blank volume
 T = titre
 F = factor
 S = sample size
 D = divisor

Drift-compensated results

Determinations can be carried out with or without the drift value being taken into account for result calculation

Units available for the result

%, ppm, mg/mL, g, mg, mL, mg/pc (mg per piece)

Reagent consumption adder

Cumulative reagent consumption can be evaluated; a warning is displayed when the selected limit is reached

Analogue output

The following curves can be obtained on an optional pen recorder: volume vs. time, drift vs. time or measured voltage vs. time

Connection possibilities via

9 V DC output (max. 200 mA)	703 Titration Stand or 728 Magnetic Stirrer
RS 232C interface	Printer and balance OR computer (PC)
Analogue output	Pen recorder
Conventional remote control (I/O lines)	Control unit for KF Sample Changer or for a laboratory robot (each in conjunction with a PC)

Dimensions (including Exchange Unit)

Width	150 mm
Height	450 mm
Depth	275 mm

Weight, including accessories

6.6 kg

Recommended instrument combination

2.701.0010 701 KF Titrino

Compact KF Titrator for fast and precise water determinations. Titration stop either by means of delay time or by drift criterion. Software-controlled polariser for bi-voltametric or bi-amperometric indication. Easy operation thanks to dialogue in English, French, Spanish or German. Equipped with RS 232C serial interface and remote control (I/O lines). Including accessories.

2.703.0010 703 Titration Stand (option)

Compact titration stand with magnetic stirrer and integrated pump for adding rinsing solution or solvent and for aspirating the titration vessel contents. Including accessories.

Options

Stirrer

2.728.0040 728 Magnetic Stirrer including base plate, stand rod and electrode holder; without power adapter, with fixed cable for attachment to the 701 KF Titrino

eco semimicro titration equipment

6.5613.000 Semimicro titration equipment consisting of titration vessel plus lid, adsorption tube, screw nipples for electrodes, burette tips or spray nozzles; blind stoppers, septum stopper, spray nozzles, rinsing distributor, tubing connections, aspiration tip and magnetic stirring bar

Exchange Units with glass cylinder and flat PCTFE/PTFE stopcock

6.3014.113 Exchange Unit 1 mL with 1 tip each for titration and dosing, 1 L reagent bottle made of brown glass
 6.3014.153 Exchange Unit 5 mL with 1 tip each for titration and dosing, 1 L reagent bottle made of brown glass
 6.3014.213 Exchange Unit 10 mL with 1 tip each for titration and dosing, 1 L reagent bottle made of brown glass
 6.3014.223 Exchange Unit 20 mL with 1 tip each for titration and dosing, 1 L reagent bottle made of brown glass
 6.3014.253 Exchange Unit 50 mL with 1 tip each for titration and dosing, 1 L reagent bottle made of brown glass

The bottle attachments of the above Exchange Units allow direct reagent dispensing from bottles with GL45 glass threads, i.e. 1 L reagent bottles from Baker and Riedel-de Haën. For other types of bottles, the following adapters are available:

6.1602.110 Siphon for Merck reagent bottles with S40 thread
 6.1618.000 Adapter 32 mm/GL45 for Fluka reagent bottles and 500 mL reagent bottles from Riedel-de Haën
 6.1618.010 Adapter 28 mm/GL45 for Fisher reagent bottles

Connecting cables for printers, balances and PC

6.2125.020 Connecting cable for Seiko thermal printer DPU 411-20 Type II
 6.2125.050 Connecting cable for Citizen iDP 56X RS or Epson FX, LX, LQ printers
 6.2125.040 Connecting cable for Epson printer EX 800/LQ 850 (DIN plug)
 6.2125.030 Stackable plug for connecting printer and balance at the same time
 6.2125.020 Connecting cable for Mettler balances AE 011/012 and for AND balances (use Mettler cable ME 33995 for Mettler balances AM, AT, PM and Mettler interface LC-RS25 for Mettler balances AB, AG)
 6.2125.070 Cable for Sartorius balances MP8 and MC1 (RS 232C)
 6.2125.080 Cable for Precisa balances
 6.2125.060 Connecting cable for IBM® PC/XT/AT and compatibles
 6.2125.010 Adapter cable RS 232C 25 pin – 9 pin for IBM® AT and compatibles fitted with a 9 pin connector

Metrodata PC programmes

6.6007.100 Menu programme (IBM-DOS) for the 701 KF Titrino
 6.6008.X00 VESUV 3.0 for Windows™ 95 or Windows™ NT, allows connection of 2 or more instruments (depending on the version), includes hardware dongle

768 KF Drying Oven

2.768.0010 Oven for driving off moisture of solid and liquid samples containing interfering or insoluble compounds. May be used with any volumetric or coulometric KF titrator. Automatic motor-driven sample transfer, built-in air pump and two gas drying bottles, external gas connection (e.g. N₂), incl. accessories.