

Titration Automation



Dosing System

Liquid Handler



Automatic Dosing and Pipetting
Versatile & Reliable

METTLER TOLEDO

Superior Performance and Ruggedness During Continuous Operation

Dosing of up to four liquids with extreme accuracy from 50 microliters to 15 liters is the strength of the powerful Liquid Handler. It enables automatic preparation of single samples or large sample series in 24/7 operation. Thanks to the mechanically robust design and chemically resistant materials, reliable results are obtained even under most intensive usage throughout its lifetime.

High performance

With the Liquid Handler a sample volume can either be taken from beakers on the Sample Handler, Rondo or Rondolino autosamplers or simply from a bypass line. Afterwards the volume is dosed

into a beaker at the Excellence titrator and, if required, diluted with a defined volume of up to three different auxiliary reagents. The Liquid Handler processes these tasks with high accuracy and repeatability.

Rugged flexibility

Thanks to excellent chemical resistivity in the 6-way valve and in the burette, a large variety of liquids can be dispensed without problems. Adaptations to the viscosity and density of the liquid and a high dosing efficiency are achieved by the large adjustable dosing rate of 1.5 to 150 mL/min. Up to four different liquids can be dosed against a maximum counter pressure of 4 bar without carry-over or air bubbles. This is provided by the residual-free rinsing and mechanical ruggedness of the valve and the glass cylinder.



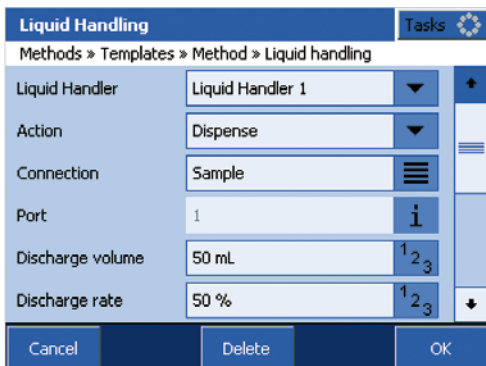


Many samples, many analytical parameters and dosing of different sample volumes are common in analytical water laboratories.

The combination of Liquid Handler and Sample Handler sample changer enables automatic analysis of large sample series with the required flexibility and accuracy in sample dosing: simply define the required sample volume and start the sample series – the rest is done automatically!

One Solution for Many Pipetting Tasks

Ion selective sensors are usually calibrated using a series of standard solutions of different concentrations. The preparation of such solutions by respective dilution of a standard stock solution includes time consuming and error-prone manual pipetting tasks. These tasks can be reliably automated with the Liquid Handler.



Simple programming

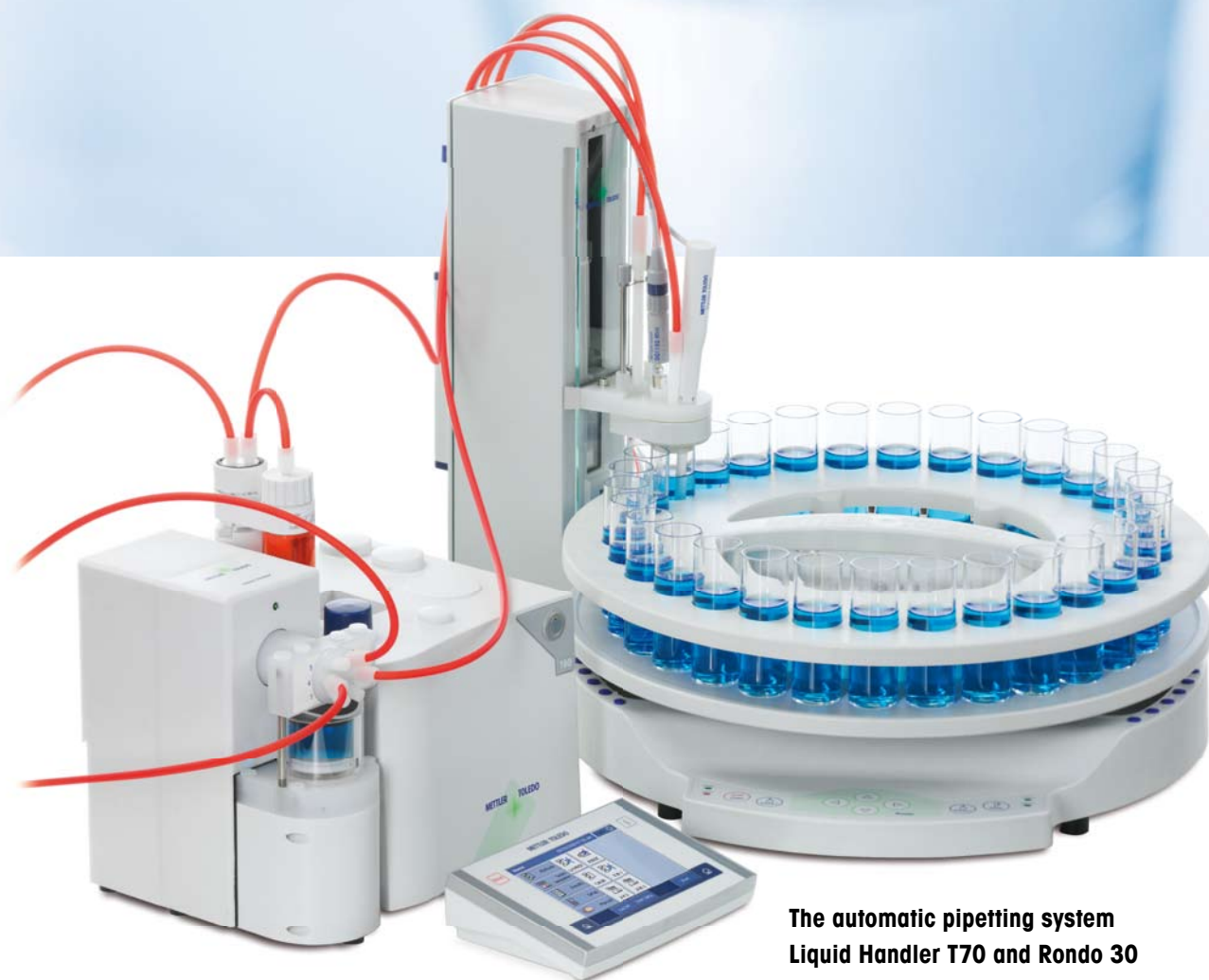
The method functions required for the control of the Liquid Handler can be very easily integrated into the method sequence of the T70 or T90 Excellence titrator, either on the Touchscreen or with the LabX[®] pro titration software. A large selection of functional settings provide flexibility for advanced pipetting.

For instance, pipetting of a defined volume of a liquid on the Rondo 30 sample changer from a beaker on position 29 into the positions 15, 16 or 17, which will then be specifically diluted. Complex pipetting routines can be automated according to the manual process and are performed with excellent precision.



Compact, accurate pipetting

The burette volume can be divided into 30 aspiration and dispensing tasks of differing volumes, which enables high flexibility for pipetting routines. The requirements of the ISO 8655-3 standard's dosing accuracy are fulfilled and the absolute dosing resolution of 5 μ L provides high pipetting accuracy. These features require a base that is only slightly wider than a Titration Excellence dosing unit.



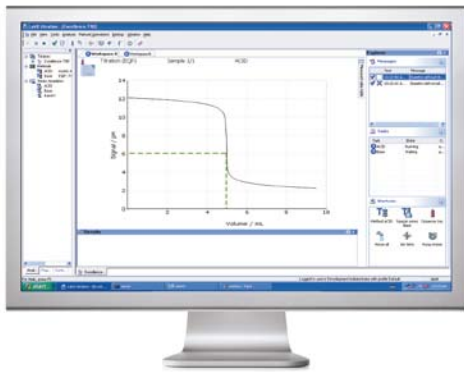
**The automatic pipetting system
Liquid Handler T70 and Rondo 30**

In order to accurately measure the fluoride content of cosmetic products such as toothpaste, the fluoride sensor must be calibrated with freshly prepared standards. This can be easily automated with the Liquid Handler and the Rondo sample changer: aliquots are taken from a beaker with fluoride standard stock solution, which are exactly diluted to the required concentration in other beakers.

Dosing of ion strength adjustment buffer or standard addition are further dispensing/pipetting tasks for reliable measurements that can be efficiently automated with the Liquid Handler.

Automatic Titration Made Simple and Secure

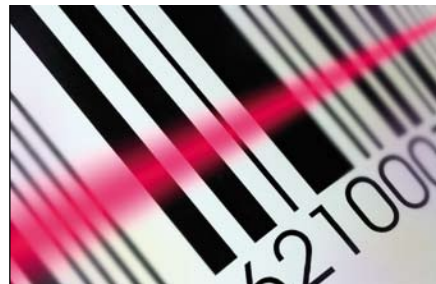
The Smartcodes™ ensure that different samples are analyzed with the correct method. The titration is started without using the PC or the Excellence Touchscreen. Together with the Liquid Handler and the Excellence titrator, many different titrations and measurements can be processed automatically even more simply and securely.



Full control

LabX® pro titration software provides:

- full control over the system
- secure database archiving
- efficient result management including graphical monitoring and individual data filter settings
- clear method development for new, automated applications
- complete tracking comprising user management, audit trail, method history and electronic signature.



Perfect efficiency

Using the Smartcode™ table of LabX® pro titration, the sample ID included in the bar code is assigned to the respective titration method. Now everything is ready for the desired automatic process: the bar code of the sample is scanned and the associated method is started. Choosing the wrong method is impossible.



Conductivity, fluoride content and pH value as well as the alkalinity, acidity and zinc value of different baths for automobiles must be reliably analyzed.

The samples are collected in vessels and labeled with Smartcodes™. The operator scans it with a bar code reader, puts the vessel on the Rondo sample changer and the bath-specific analyses are automatically processed on the Rondo-T90-Liquid Handler-LabX work station with guaranteed security and high efficiency.

Scanning of bar codes to identify samples and to assign the correct method





Titration Excellence T50, T70, T90

One Click™ Titration for any application – simple, efficient, secure and modular. Choose a tailored system that matches your requirements perfectly and that offers excellent results for all kinds of titrations in just One Click™.



Karl Fischer Compact Volumeters V20, V30

V20: Everything you need for routine volumetric Karl Fischer titration from 100 ppm up to 100% is included.

V30: Additional security with Solvent Control, user management Expert/Routine, automation with Stromboli and more.



Karl Fischer Compact Coulometers C20, C30

C20: Everything you need for routine coulometric Karl Fischer titration from 1 ppm up to 5% is included.

C30: Additional security with Reagent Control, user management Expert/Routine, automation with Stromboli and more.

www.mt.com/titration

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