

Titration Excellence



Excellence Titrators

T50

T70

T90

One Click[®] Titration

Simple, Efficient and Secure

METTLER TOLEDO

Tailored Exactly to Your Needs

Perfect Modularity

Successful companies take the most direct route to achieve their goals. This safeguards their leading position and enables them to offer their customers decisive advantages. The most direct route is characterized by simplicity, efficiency, and security. But of course, simple, efficient and secure mean something different to each individual user. That's why the Titration Excellence line has been designed with the utmost modularity in mind.

The Homescreen with Shortcuts allows you to start your tasks with one simple keystroke.

Users have one thing in common: they want an instrument whose routines have been designed for absolute simplicity. The Titration Excellence line sets new standards with its Homescreen and Shortcuts.



You can adapt the Homescreen to suit your individual needs.

Adaptable and efficient thanks to a high degree of flexibility

Even complex applications and routines can be quickly and easily programmed using the intuitive method editor. The unique Shortcuts allow you to start these processes with one single keystroke. Powerful titrators like this have never been so intuitive and efficient to operate.



Efficient analysis routines thanks to the well-designed method editor.

Security thanks to real Plug & Play

Security is an important concept in the Titration Excellence line, not just a slogan: many parameters are automatically checked by the instrument. For example, the automatic burette recognition feature ensures that all the quality-relevant data such as concentration, titer and expiration date are automatically read in and checked, irrespective of the drives on which the burettes with the titrants are present. The password-protected user management system coupled with user rights guarantees that critical data cannot be changed by mistake.



Optimum security with automatic burette recognition.

The modern titration platform is a sound investment

The modular design of the Titration Excellence line guarantees that you are optimally prepared for future changes. The modern platform provides you with ideal interfaces. Devices such as printers, memory sticks or barcode readers can be connected via the USB port and are automatically recognized. The built-in Ethernet connection allows you to integrate your titrators directly into a LabX® network. The Titration Excellence line is a sound investment for the future.



One Click® Titration

Intuitive and Easy to Understand

- **Unsurpassed user guidance**
- **Secure navigation**
- **Easily selectable and adaptable methods**

Optimized routines thanks to unsurpassed user guidance

Familiarity with the instrument is the most important basic requirement to optimize routine tasks. You will feel at home right from the start with the unsurpassed intuitive graphical user guidance of the Titration Excellence line. The Homescreen can be individually optimized to suit each user's needs. You see only the information needed to perform your daily work.

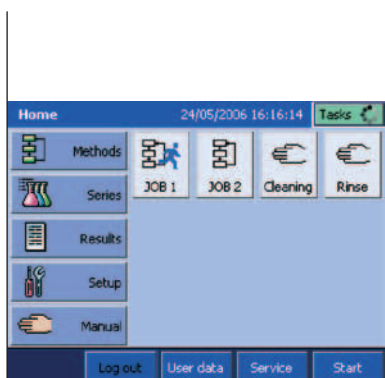
Secure navigation with the Home button

Regardless of which submenu you are currently in, one single key-stroke on the Home button takes you directly back to your Homescreen. Here you have added security: you are prompted to save your changes.

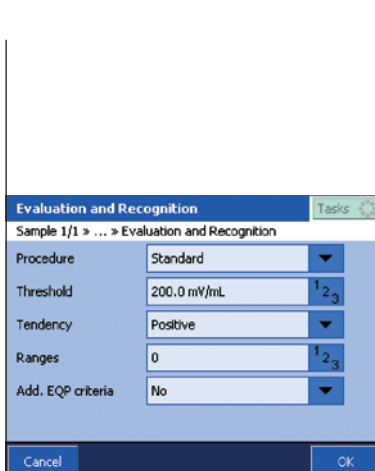
Selecting and adapting methods has never been easier

Over thirty commonly used and well-proven methods are stored as METTLER TOLEDO methods in the instrument. If the resources such as titrants, sensors, or pumps are available, you can use the METTLER TOLEDO methods for analyses just as they are. If desired, you can easily modify these methods using the well-designed method editor so that they can be optimally integrated in your processes.

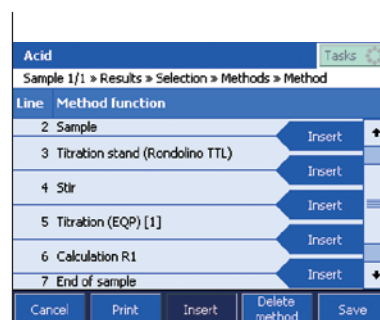
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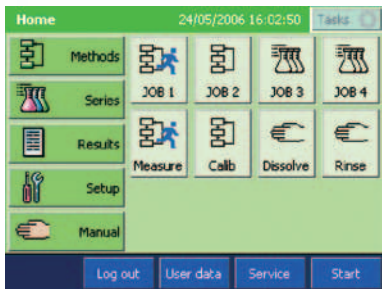
Your Homescreen – tailored to your needs.



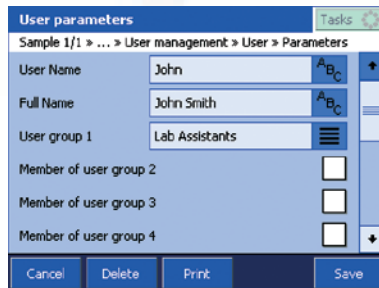
One Click and you are back on your Homescreen.



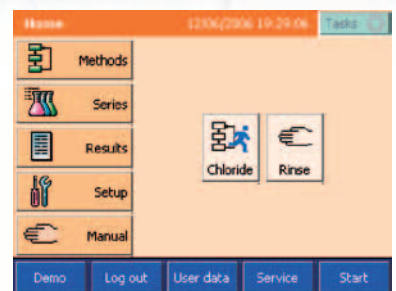
Method editor with building block concept – just like fitting building blocks together.



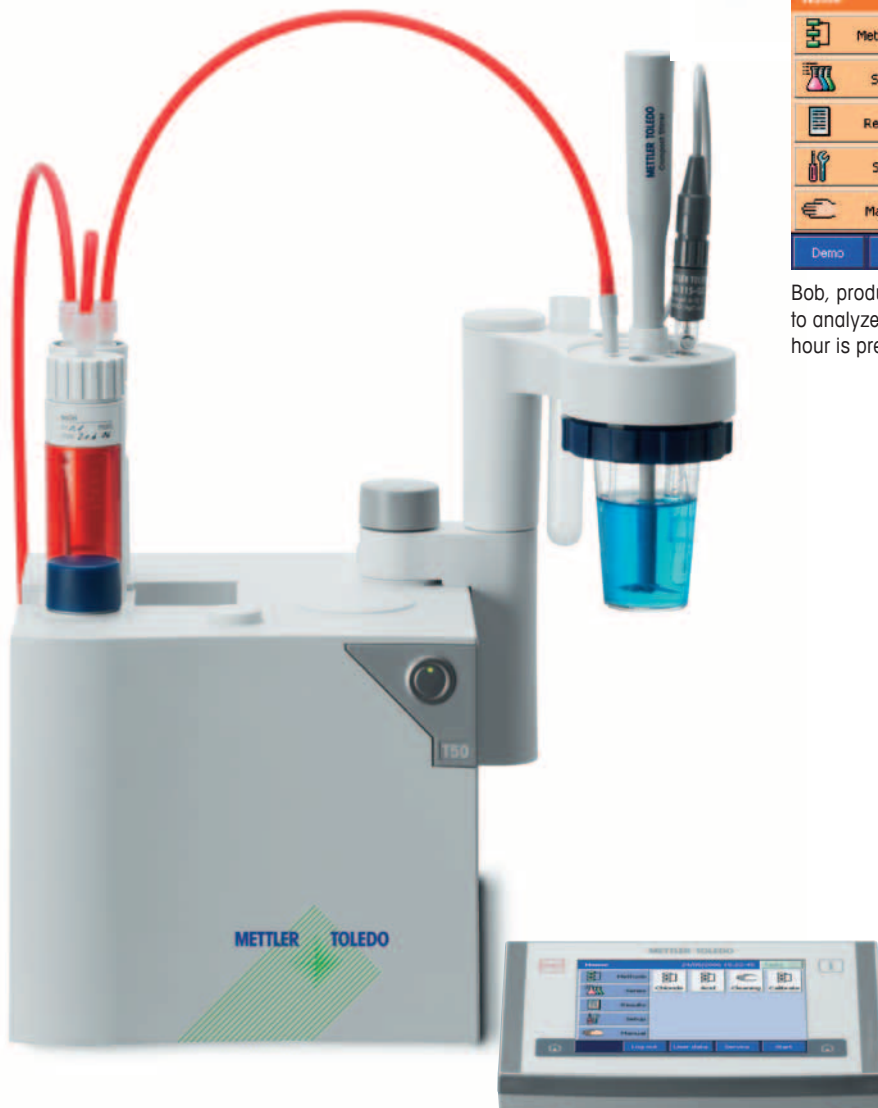
Joanne, laboratory assistant: "Thanks to my personalized Homescreen, I can perform all the different analyses very quickly and efficiently."



Clark, quality assurance: "The individual user rights feature means that I can make sure that users stick to our quality guidelines."



Bob, production assistant: "All I have to do to analyze the intermediate product every hour is press a Shortcut."



Improved Efficiency Through Intelligence and Automation

- **One Click® Titration**
- **Series Sequence**
- **Task button**

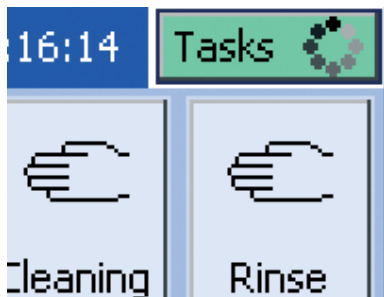
Complete efficiency – One Click® Titration

The Titration Excellence line ensures you get your results easily and quickly. The Shortcuts, which can be set up specifically for each user, are extremely helpful. Whether you want to calibrate electrodes, rinse burettes or start methods – you can define a Shortcut for any operation you like and store it on your Homescreen.

Start your analyses directly using Shortcuts (from the Homescreen).



Pure power: your titrator can simultaneously run up to eight different tasks.



Keep track of all the tasks in progress – the Task button

Flexibility is a major requirement to be able to work optimally. Efficiency is even greater if you can keep track of everything despite great flexibility, and at any time switch between any of up to eight tasks running in parallel using the Task button. This, for example, enables you to prepare or dissolve a solid while an analysis is in progress, so that you can start the next analysis afterward without losing time.

Delegate repetitive tasks to the instrument with One Click® – the Series Sequence

You can save not only individual methods but also complete sample series as templates. It is even possible to combine different sample series to form a Series Sequence, which is also stored as a Shortcut on the Homescreen. Analyses that consist of several methods and series can be started with one single click.



Up to two Rondo can operate with a T90 in parallel – even without PC software.

The satisfaction of being able to organize complex tasks efficiently

With the Titration Excellence line, it is easy to organize complex tasks efficiently. The "if...then" logical conditions allow the instrument to decide how the analysis should proceed. For example, does acid or base have to be added first to satisfy the initial pH conditions? Up to seven additional dosing units ensure that all the necessary resources are available at any time. Together with the Rondo sample changer, the Titration Excellence line provides very efficient system solutions.



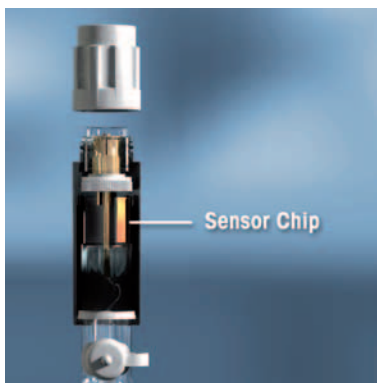
Complete Overview and Security

Thanks to Comprehensive Control

- **Plug & Play sensors**
- **Intelligent burettes**
- **Automatic recognition of burette drives and sensor boards**
- **Flexible user management**
- **Dual Mode**

Plug & Play Sensors kept under control

The instruments in the Titration Excellence line automatically recognize Plug & Play Sensors. All relevant data is saved in the Sensor Chip and automatically transferred to the titrator ensuring the correct sensor is being used at all times.



The Sensor Chip saves all relevant sensor data.

Intelligent burettes guarantee security

Is the correct titrant in the burette? Is the concentration right? Has the titer expired? On which drive is it installed? The Titration Excellence system automatically verifies all these parameters when an analysis is started. Simply mount the burette and it does the work for you.



The burette data is automatically read by the RFID sensor.

Automatic recognition of burette drives and sensor boards make incorrect installations impossible

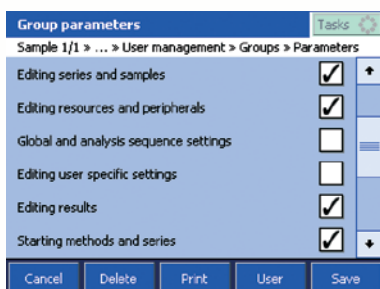
The Plug & Play concept of the Titration Excellence line is not just limited to the burette and the recognition of newly connected components. Additional USB (barcode readers, memory sticks, printers) or RS232 devices (Rondo, METTLER TOLEDO balances), as well as additional burette drives and sensor boards are automatically recognized on connection and can be immediately used for analyses without further configuration. Errors in the installation of these resources in the setup are now a thing of the past. Plug & Play, secure titration can really be that easy.



Further burette drives can be added with a click.

Maximum security through flexible user management

Titration Excellence instruments are equipped with a comprehensive user management system that allows you to register each user and to set up a Homescreen for each user. Depending on who logs on to the titrator, the corresponding Shortcuts together with the other user-defined settings appear such as screen settings or the language the user requires.



Each user group can be individually configured according to its needs.

Implemented security thanks to the Dual Mode

The Dual Mode allows you to work from the terminal or from a LabX® PC (or from both), depending on your environment and your needs. If there is no PC in your laboratory environment you can easily work from the Terminal. Via the network all the results from an analysis are stored in the LabX database, independent of where the analysis was started. The integration of the titrators into a network could not be easier and is possible without further cost thanks to the Ethernet connection. The Titration Excellence line combines security with flexibility.



Tailored Exactly to Your Needs

Segment-specific Applications

No matter what task arises, the METTLER TOLEDO Titration Excellence line offers tailor-made solutions. The pre-programmed METTLER TOLEDO methods in the instrument can be used directly for analyses in the various industry segments without further change.

Food

Many samples, many methods, one solution

Quality control of food and food ingredients means running a wide range of determinations such as pH, chloride content, acid value or peroxide value. Usually hundreds of food samples per month are analysed, therefore a titration system is needed that reduces the increasing workload for the laboratory personnel. The unsurpassed ease of use of the Excellence titrators offers quick user familiarity and less requirements for training / updates. Customize the user interface for lab personnel and use Shortcuts to simplify tasks and applications for users in each lab or plant!



Pharma

Active ingredient and water content determined in parallel

Frequently the active ingredient content of pharmaceutical substances is corrected with the water content. The Excellence titrator T90 takes care of the complete analysis: the content is determined by titration and at the same time the water content is determined with a volumetric Karl Fischer titration running in parallel. The water content value is used to calculate the content of the active ingredient. Much time is saved as the water determination is fast and the calculations are automatically done by the titrator.

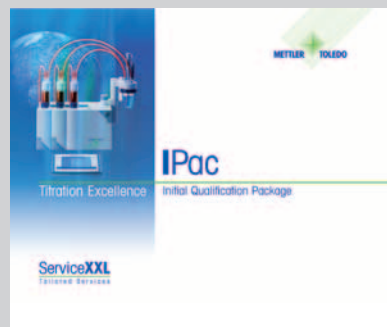




Petrochemistry

Meet demanding matrices with ease

Petrochemical products require optimized parameters for reliable end point and equivalence point titrations in non-aqueous media. The Titration Excellence line helps the customer with intelligent application modes, where the titration mode (e.g. acid/base non-aqueous) is selected and the optimal control parameters are automatically set. Titration Excellence means powerful, simple and efficient method development for demanding applications.



Service and Support

The necessity for instrument qualification and method/process validation to meet regulatory requirements is not just restricted to the pharmaceutical industry or the manufacturers of medical products.

All ISO certified companies recognize this necessity and express the need for procedures and documentation that prove that they satisfy the relevant quality and security standards. Feel secure in the knowledge that your Titration Excellence system is installed and qualified according to the quality standards that apply in your company. Ask for one of the qualification products offered by your local METTLER TOLEDO representative in the form of service and accompanying documentation.

- **IPac:**
Initial qualification consisting of IQ and OQ
- **EQPac:**
Complete instrument qualification including full documentation of the instrument's history
- **EduPac:**
Professional user familiarization
- Comprehensive calibration services

GTP™

Good Titration Practice™

► www.mt.com/gtp

For Every Application The Right Combination

Demands put on the laboratory and plant can change very quickly. This is no problem at all if you have decided in favor of the METTLER TOLEDO Titration Excellence line. The instrument can be optimally adapted to your new requirements thanks to its modular design concept.



Additional sensor boards are easily plugged in.

Upgrade concept guarantees cost efficiency

The modularity of the Titration Excellence systems allows you the security of a system that can be adapted in the future to fit the needs of your laboratory. Should a burette drive or additional sensor board need to be added due to changing needs in the lab, simply upgrade the existing system.

Burettes

- 20 mL
- 10 mL
- 5 mL
- 1 mL



Titration stand

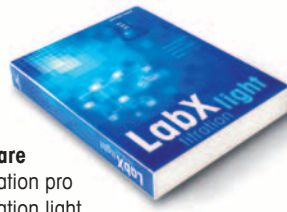
Dosing Unit



The Titration Excellence system grows with your needs



Software



PC software
LabX® titration pro
LabX® titration light



Plug & Play and classic sensors

Printer / Balance



USB-P25 printer



USB printer



Analytical balance

Expansion boards



pH/mV sensor board
Conductivity board

Volumetric KF titration



Karl Fischer Kit
including Solvent Manager,
titration stand, vessel, sensor,
tubes and all accessories
(only for T70/T90)

Pumps



SP250
Peristaltic
pump



**Membrane
pump**



**Solvent
Manager**

Automation accessories



LevelSens
Level and
Waste Sensor



DH100
Heating system



OE06
Output Expander



TBox DR42
24V/220V
Switch box



Adapter Set
For Kinematica or
IKA Homogenizers



LogStraight
Fingerprint
Reader

Automation



Rondolino
Automated titration stand



Rondo
Sample changer



Stromboli
KF oven sample changer



Liquid Handler
Dosing System

Plug & Play

- pH**
DGi101-SC
DGi102-Mini
DGi111-SC
DGi112-Pro
DGi113-SC
DGi114-SC
DGi115-SC
DGi116-Solvent
DGi117-Water

- Platinum**
DMi140-SC
DMi144-SC
DMi147-SC
DMi101-Mini

- Silver**
DMi102-SC
DMi141-SC
DMi145-SC
DMi148-SC

Classic

- pH**
DG111-SC
DG113-SC
DG115-SC

- Platinum**
DM140-SC

- Silver**
DM141-SC
DM405-SC

- KF**
DM143-SC

- Surfactant**
DS500
DS800-TwoPhase

- Photrode™**
DP5

- Temperature**
DT1000

- Half cell/
reference
electrodes**
DG300-SC
DX200
DX202-SC

- ISE**
Conductivity
InLab®717
InLab®718
InLab®710
InLab®720
InLab®731
InLab®741

Comparison Table

T50 – T70 – T90

The Titration Excellence line comprises three models that are all based on the same platform. This guarantees that methods can be easily transferred to other instruments of the Titration Excellence line.

T50 – the first level of Excellence

Everything you need for titration, in two versions:

- T50 M Terminal: Manual stand and Terminal
- T50 A Terminal: Autom. titration stand Rondolino and Terminal
- All versions include pH board, integrated burette drive, integrated magnetic stirrer, compact stirrer and 10 mL burette.
- Expandable with up to three external burette drives for dosing purposes, possibility to easily exchange the pH board with a conductivity board
- Professional user management system
- Modern interfaces: USB, Ethernet and CAN-Bus

T70 – the allrounder

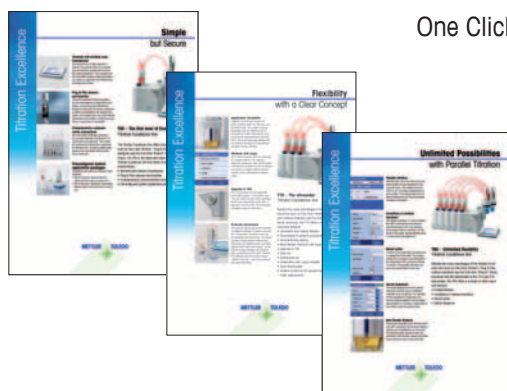
Order the system that is exactly tailored to your needs:

- T70 consisting of titrator with terminal, pH board, integrated burette drive and magnetic stirrer
- All other components needed (titration stand, etc.) can be ordered as modules
- Expandable with a sensor board (pH or conductivity) and up to three additional burette drives (for dosing and titration purposes)
- Possibility for later upgrade to T90
- Flexible method concept
- **Simultaneous processing of different tasks possible (task list)**
- **Full volumetric Karl Fischer titration functionality**
- Solvent Control for KF solvent monitoring and replacement in One Click®

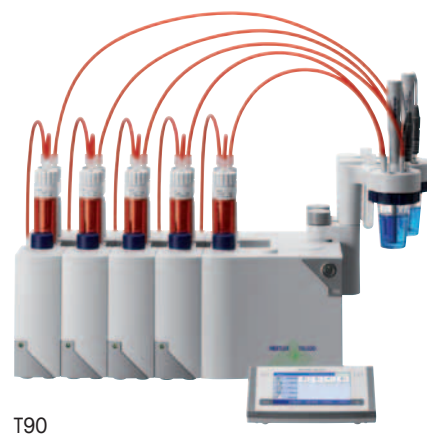
T90 – unlimited applicative flexibility

The powerful titration system that solves complex tasks easily and efficiently:

- T90 consisting of titrator with terminal, pH board, integrated burette drive and magnetic stirrer
- All other components needed (titration stand, etc.) can be ordered as modules
- Expandable with two sensor boards (pH and/or conductivity) and up to seven additional burette drives (for dosing and titration purposes)
- Parallel titrations
- Intelligent methods with "if... then" conditions
- Series sequences for the easy processing of demanding and combined tasks
- Result buffer for method or series-overlapping calculations and synchronization of parallel analyses
- Volumetric Karl Fischer titration functionality
- Parallel execution of general and KF titration
- Solvent Control for KF solvent monitoring and replacement in One Click®



For additional information see the Datasheets T50, T70 and T90.



Feature comparison table Titration Excellence line		T50	T70	T90	
One Click® Titration	User specific Homescreen with Shortcuts	•	•	•	
	Shortcuts per user	12	12	12	
	KF Solvent Control	–	•	•	
Hot Plug & Play	Plug & Play sensor recognition	•	•	•	
	Burette recognition with titrant and titer	•	•	•	
	Burette drive	•	•	•	
	Solvent Manager	•	•	•	
	USB printer	•	•	•	
	Memory stick	•	•	•	
	USB barcode reader	•	•	•	
	LevelSens	•	•	•	
Security	LogStraight Fingerprint Reader	•	•	•	
	Rondo sample changer	•	•	•	
Automation	Liquid Handler	–	1	2	
	Rondolino automated titration stand	•	•	•	
	Stromboli KF oven sample changer	–	•	•	
	Max. number to dose and titrate	1 (internal)	1 (internal) + 3 external	1 (internal) + 7 external	
Method and series	Max. number to dose only	+ 3 external			
	Learn titration	•	•	•	
	Karl Fischer Methods	–	•	•	
	Accompanying stating	–	•	•	
	Number of method functions per method	15	60	150	
	Number of loops per method	1	3	6	
	Continous run	–	•	•	
	"if...then" conditions	–	–	•	
	Result buffer	–	–	•	
	Series sequences	–	–	10	
	Number of samples per series	120	120	120	
	Predefined METTLER TOLEDO methods	>30	>40 (incl. KF methods)	>40 (incl. KF methods)	
	Max. number of methods	120	120	120	
	Task list	Number of tasks	–	10	30
		Number of tasks running in parallel	–	7	8
LabX® Smartcodes™		–	•	•	
Online help		•	•	•	
Parallel titration		–	–	•	
Expandable		–	to T90	–	
Data Export	RS-232	•	•	•	
Sensor Boards	pH/mV or conductivity	1	2/1 ^{*)}	3/1 ^{*)}	
	Potentiometric	2	4/2 ^{*)}	6/2 ^{*)}	
	Polarized	1	2/1 ^{*)}	3/1 ^{*)}	
	Reference	1	2/1 ^{*)}	3/1 ^{*)}	
	PT1000	1	2/1 ^{*)}	3/1 ^{*)}	
	Conductivity	1/0 ^{*)}	2/0 ^{*)}	3/0 ^{*)}	
PC software	LabX® titration connectivity light and pro	•	•	•	
Homogenizer		TTL	RS/TTL	RS/TTL	
Languages	English / German / French / Spanish / Italian / Chinese / Russian / Polish / Korean / Portuguese				

^{*)} 4/2 means for example: maximum number of inputs is 4, 2 are already available in standard delivery

For Every Purpose the Perfect Match

Our customers put very different demands on a titrator. Common to all is the ability to perform titrations simply, efficiently and securely. Independent of the application field, the application, the sample throughput and the customer segment, different requirement profiles arise that METTLER TOLEDO is able to satisfy with the most modern product portfolio on the market.



Karl Fischer Compact Volumetric Titrators V20, V30

V20: Everything you need for routine volumetric KF 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 KF titration from 1 ppm up to 5% is included.

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



Entry level line

DL15: Easy-to-use, compact endpoint titrator

DL22 F&B: The easy start to Food & Beverage titrations



LabX[®] titration: the software wizard for simple and efficient titrations

Secure data archiving in data base, efficient data management with control charts and individual search filters, quick and comprehensive method development for all applicative challenges and complete traceability of your data thanks to user management, audit trail, method history and electronic signature.

www.mt.com/titration

For more information

One Click is a Registered Trademark of METTLER TOLEDO in Switzerland, the European Union, Russia and Singapore.
LabX is a Registered Trademark of METTLER TOLEDO in Switzerland, USA, China, Germany and a further 13 countries.

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