

# Titration

The background of the slide features a close-up, slightly blurred image of several red titration tubes. These tubes are connected to grey plastic connectors or manifolds. Some of the connectors have small white labels with handwritten text, including 'mol/L' and '21.6.09'. The overall color palette is dominated by the red of the tubes and the grey of the connectors, with a soft, out-of-focus effect.

The Right Titration System  
for Every Application



	<b>Page</b>
Overview	148–149
Titration Excellence Line	150–153
Titration Automation	154–155
Entry Level	156–157
Karl Fischer Titration	158–159
LabX® titration PC Software	160–161
Services for Titrators	162–165
Accessories	166–171

# Titration Systems

## Select the Right One



### Concentration determination with highest precision and productivity.

Millions of titration analyses are performed every day. Using an automatic titrator precision and reliability in the research and quality control laboratories are significantly improved. METTLER TOLEDO offers a wide range of titrators and accessories and assists you with a deep knowledge about the hundreds of different titration applications.

### One Click® Titration Excellence Line

Modular general titrators providing simple, efficient and secure performance for all titration analysis purposes in a large variety of industry segments.



Excellence Line



**Automation**

Efficiency and Security

Wide range of sample changers and accessories for a complete automation of sample preparation and titration analyses.



Automation

**The easy start**

Entry Level

Compact entry level titrators for simple and dedicated applications in specific industry segments.



Entry Level

**One Click®****Water Determination**

Karl Fischer Titration

Volumetric and coulometric Karl Fischer titrators for determining the water content of solids, liquids and gases.



Karl Fischer

**PC Software**

LabX® titration

Professional PC software to control titration systems and handle data efficiently and safe.



LabX® PC Software

# One Click® Titration

## Simple, Efficient, Secure, Modular

One Click® titration means a milestone in solutions for simple, efficient and secure titration. The Titration Excellence models T50, T70, and T90 provide intuitive and easy operation, maximize efficiency in daily tasks and eliminate potential operator errors. The models T70 and T90 combine more than 500 general titration applications with volumetric Karl Fischer titration. Titration Excellence means a two in-one instrument and offers the utmost application power with simplest operation using minimum bench space.

### Simple



The intuitive user guidance of the brilliant color Touchscreen makes the operation very simple. You get familiar with the instrument in a very short time by clever navigation properties, task buttons informing about current analyses and the unique user specific Homescreen.

### Efficient



Specific Shortcuts can be set up on the Homescreen for the start of a manual or automated task with just one keystroke. Sophisticated Plug&Play make sensors, burettes, burette drives, sample changers, balances etc. immediately ready for use on connection. Errors in the installation are a thing of the past.

### Secure



Both the titrant and the sensor are automatically detected upon connection to the titrator and all applicable data are saved on the burette or sensor chip. These data is directly transferred to the titrator, where they can be saved and monitored. Plug&Play – safe and secure titration couldn't get any simpler.



## Modular

The modular platform of the Titration Excellence line guarantees that you are optimally prepared for future challenges. Your investment is protected by the possibility for a tailored upgrade of hardware and software at any time you want.



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# One Click® Titration

## Simple, Efficient, Secure, Modular

### T50

The first level of Excellence



A ready-to-go-system that has everything required for titration, for users who need a simple, rugged and easily-understandable titrator for performing routine analyses quickly and efficiently, available in two versions:

- T50 M Terminal: Manual titration stand and Terminal as control unit
- T50 A Terminal: Rondolino automated titration stand and Terminal as control unit

### T70

The allrounder



A titrator for general and volumetric Karl Fischer titration including multitasking, flexible method editing, upgradeability (additional pH-sensor or conductivity board or T90 functionality) and method loops for the integration of various methods into one. A flexible and expandable system which is easily adaptable to current and future needs.

### T90

Highest flexibility



The titrator that runs general and volumetric Karl Fischer titration in parallel including conditional method functions ("if ... then" logical conditions to decide how the analysis shall proceed) and Sample Series Sequences to integrate sample series of various methods into one. A titrator providing highest flexibility in method development to solve complex analyses and automation tasks.

## Comparison Table Titration Excellence Line

Features		T50	T70	T90
<b>Analysis type</b>	Acid/base, precipitation (Cl <sup>-</sup> , Br <sup>-</sup> , etc.), redox, complexometric and photometric titrations	•	•	•
	pH stat, pH and ion selective and conductivity direct measurements and titration	•	•	•
	Two-phase titrations	•	•	•
	Volumetric Karl Fischer titration	—	•	•
<b>One Click® Titration</b>	Shortcuts per user	12	12	12
<b>Automation</b>	Rondo sample changer	•	•	•
	Rondolino autom. titration stand	•	•	•
	Liquid Handler automated dosing and pipeting device	-	•	•
	Continuous Run	-	•	•
	Connect other instruments via RS interface to trigger measurements and exchange results	•	•	•
<b>Hot Plug&amp;Play</b>	Plug&Play sensor recognition	•	•	•
	Automatic burette recognition with titrant and titer	•	•	•
	Solvent Manager	•	•	•
	Burette drive	•	•	•
	USB printer	•	•	•
	USB Memory stick	•	•	•
	USB barcode reader	•	•	•
<b>Burette drives</b>	Max. number to dispense and titrate	1 (internal)	1 (internal) +3 external	1 (internal) +7 external
	Max. number to dispense only	+3 external		
<b>Methods and series</b>	KF standard methods	—	•	•
	KF external extraction/dissolution dedicated method type	—	•	•
	KF autostart: automatic start after sample addition	—	•	•
	Drift stop for KF end point recognition (absolute and relative, tmax, delay)	—	•	•
	Learn titration for the automatic optimisation of the titration parameters used in the method	•	•	•
	Max. Number of method functions per method	15	60	120
	Max. Number of loops per method: combination of multiple titration in one method	1	3	6
	“if...then” decisions in method	—	—	•
	Express samples; can be inserted during the current series	—	•	•
	Series sequences: combination of individual samples series of different methods	—	—	10
	Number of samples per series	120	120	120
	Pre-programmed METTLER TOLEDO methods for the most important applications	> 30	> 40	> 40
	Max. number of methods	100	100	100
<b>Languages</b>	Chinese, English, French, German, Italian, Korean, Polish, Portuguese, Russian, Spanish	•	•	•
<b>Homogenizer</b>	RS232-C and TTL-I/O	•	•	•
<b>Control and evaluation</b>	End point titration (EP) with dynamic and continuous titrant addition	•	•	•
	Equivalence point titration (EQP) with dynamic or incremental titrant addition	•	•	•
	Five different curve evaluation procedures with EQP titrations: standard, asymmetric, segmented, min, max	•	•	•
	Predefined formulas for the most common calculations as well as freely definable calculation formulas	•	•	•
	Number of calculations per method	6	40	40
<b>Task list</b>	Number of tasks in task list	—	10	30
	Number of tasks running parallel	—	7	8
<b>Online Help</b>		•	•	•
<b>Parallel titration</b>		—	—	•
<b>Expandable</b>		—	to T90	—
<b>Sensor Boards</b>	pH/mV sensor or Conductivity (optional / standard)	1	2/1	3/1
<b>Sensor inputs</b>	Potentiometric (optional / standard)	2/2	4/2	6/2
	Polarized (optional / standard)	1/1	2/1	3/1
	Reference (optional / standard)	1/1	2/1	3/1
	PT1000 (optional / standard)	1/1	2/1	3/1
	Conductivity (optional / standard)	1/0	2/0	3/0
<b>Part No.</b>		*T50 M Terminal *T50 A Terminal	*T70 Terminal	*T90 Terminal

- \* • T50 M Terminal: 51109001 (T50 main unit including Terminal, 10 mL burette and manual titration stand kit)  
 • T50 A Terminal: 51109002 (T50 main unit including Terminal, 10 mL burette and automated titration stand Rondolino)  
 • T70 Terminal: 51109011 (T70 main unit including Terminal)  
 • T90 Terminal: 51109013 (T90 main unit including Terminal)



# Fully Automate Your Entire Titration Processes

## Rondolino

Compact and Simple Automation



A smart automatic titration stand for titration of series of up to 9 samples or simply for single samples. All samples are analyzed in exactly the same way which significantly improves the repeatability of the analyses. And when the titration is completed, the sensor is put back into the conditioning beaker.

### Rondolino

for sampling of 9 samples with 100 mL beakers

Part No. 51108500

### G20Rondolino

G20 with Rondolino bundle

Part No. 51105521

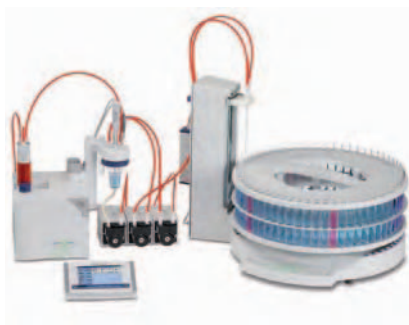
### T50A

T50 with Rondolino bundle

Part No. 51109002

## Rondo 60

Maximum Sample Throughput



Fully automated pH measurements directly in test tubes, rapid and precise aliquoting of sample volumes of 20 to 80 mL, high sample throughput for up to 120 samples distributed on two Rondo sample changers processed in parallel by a T90 titrator.

The Rondo system together with the T70 or T90 Excellence titrators for fully automatic sampling and high sample throughput.

### Rondo 60

for sampling of 60 samples in standard glass test tubes

Part No. 51108005

### Rondo 60 plus

for direct pH measurement and sampling of 60 samples in standard glass test tubes

Part No. 51108006

## Liquid Handler

Automatic Dosing and Pipeting



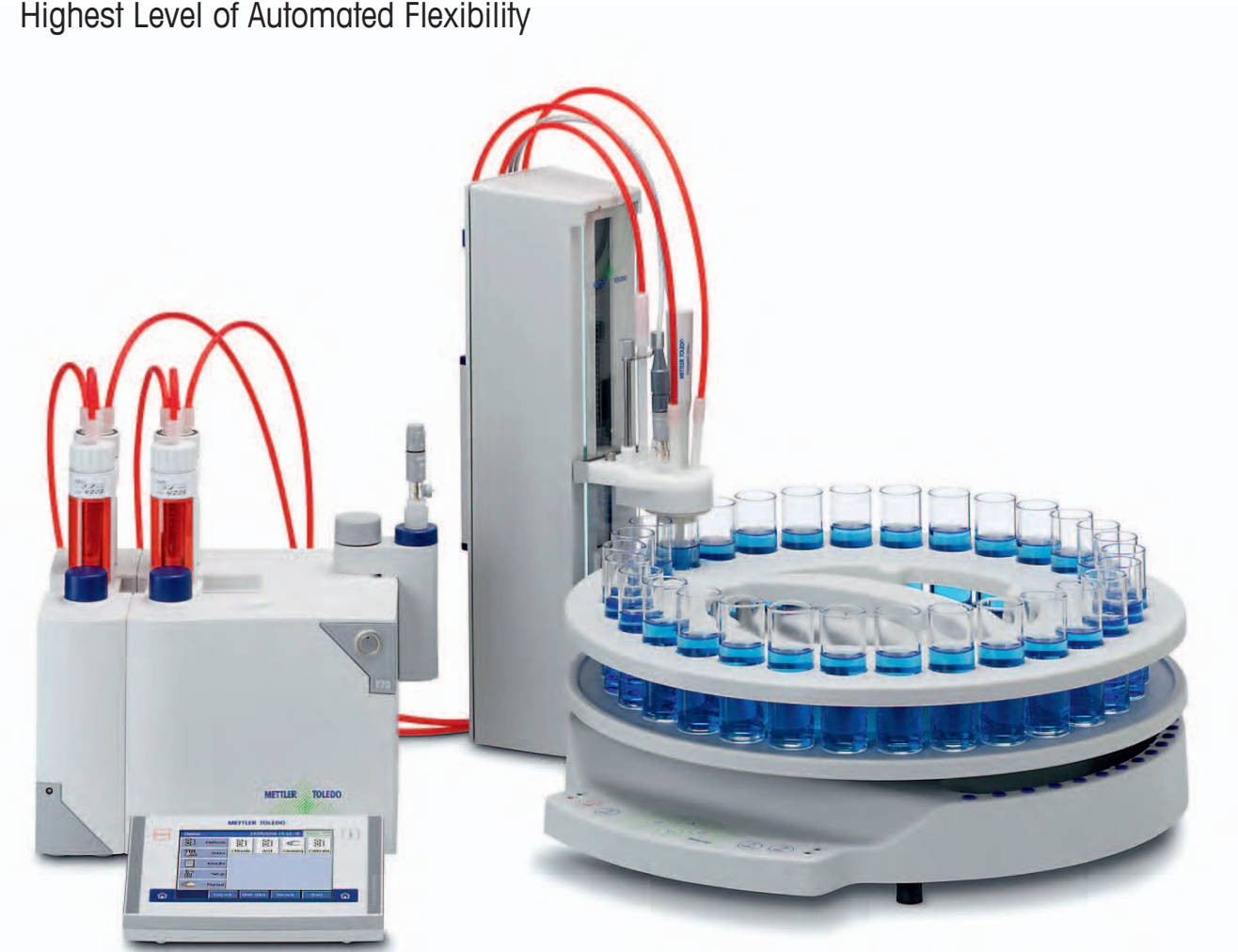
The robust Liquid Handler accurately dispenses or pipets samples and other solutions automatically controlled by the titrator and therefore allows realizing the most versatile automation applications.

### Liquid Handler

Automatic dosing and pipeting device

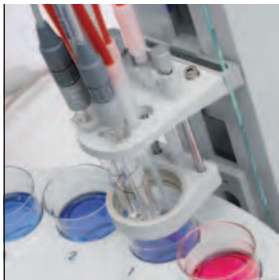
Part No. 51371500

Rondo 12 / 15 / 20 and 30  
Highest Level of Automated Flexibility



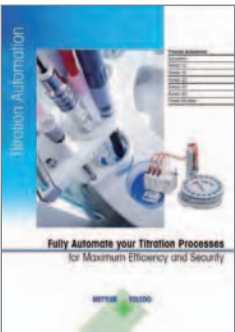
Expandable at any time with intelligent accessories for automatic sample preparation (pumps, DH100 heating system, magnetic stirrer), with a second tower to separate different titrations, with kits for COD and KF titrations – the system grows with your requirements.

The system together with the T50, T70 or T90 Excellence titrators for fully automated direct titration of 12, 15, 20 or 30 samples in different sample containers, easily realized and started at a single click.



Efficient elimination of sample carry over with the rinsing unit PowerShower™.

<b>Rondo 12</b> for 12 samples in 250 mL METTLER TOLEDO PP beakers, 400 mL (low form) or 600 mL (tall form) standard glass vessels	Part No. 51108001
<b>Rondo 15</b> for 15 samples in 150 mL (low form) or 250 mL (tall form) standard glass vessels	51108002
<b>Rondo 20</b> for 20 samples in 100 mL METTLER TOLEDO PP beakers	51108003
<b>Rondo 30</b> for 30 samples in 80 mL METTLER TOLEDO PP beakers	51108004



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# Intelligent Helpers For Simple Titrations

## DL15

Only 3 Steps to Your Result



The DL15 is ideal for many different industries when all that is needed is an endpoint titration or a pH measurement. Most often the DL15 is used to determine the acid and base content, also called acidity and alkalinity.

## DL22 F&B

The Food & Beverage Analyzer



The DL22 Food & Beverage Analyzer is a specialized titrator for the food and beverage industry. It includes the methods most commonly used in these industries, with predefined parameters, making life as easy as possible. When you select control parameters for the titration, you need only select from 3 predefined choices.

## G20

One Click® Compact Titrator



The Compact Titrator G20 is especially designed for basic routine applications and can be operated as simple as possible due to the well established unique One Click® user interface and the Plug&Play concept of the accessories. Every user has his own Homescreen with Shortcut buttons to start his analysis in One Click®. Analysis of up to 9 samples can be automated with the automated titration stand Rondolino. G20 is available in two versions:

- G20: Manual titration stand
- G20Rondolino: Rondolino automatic titration stand



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## Comparison Table Entry Level Titration

Analysis	DL15	DL22 F&B	G20
Acid/base, Redox	• (EP only)	•	•
Precipitation (Cl <sup>-</sup> , Br <sup>-</sup> , etc.)	•	•	•
Complexometric, Photometric	•	•	•
<b>User Interface</b>			
Shortcuts (per User)	3	3	4
Operation languages: English, French, German, Italian, Russian, Spanish	•	•	•
Operation languages: Chinese, Polish, Korean, Portuguese			•
<b>Stirrer</b>			
Internal magnetic stirrer	•	•*	•
Propeller Stirrer	•*	•	•
<b>Methods and series</b>			
pH measurement	•	•	•
End Point Titration (EP)	•	•	•
Equivalence point titration (EQP) with dynamic and incremental addition of titrant		•	•
Predefined formulas for most important calculations	•	•	•
Learn Titration			•
Max. Number of samples per series	9	9	120
Preprogrammed METTLER TOLEDO Methods	3	>20	>20
<b>Burettes</b>			
Number of steps per burette volume	10'000	10'000	20'000
Interchangeable burettes 1, 5, 10, 20 mL	•	•	•
External Dosing Unit to dispense only			•*
<b>Plug&amp;Play</b>			
PnP Burette and Sensor recognition			•
Rondolino autom. Titration stand	•*	•*	•**
Solvent Manager			•*
GLP compliant printouts	•	•	•
SP250 Peristaltic Pump, Diaphragm pump			1
USB Printer and Stick for data transfer			•*
<b>Software</b>			
LabX® light titration			•*
Part No.	DL15***	DL22 F&B***	G20/G20Rondolino***

\* optional

\*\* Included in the G20Rondolino bundle

\*\*\* • DL15 comes with integrated burette drive, DG115-SC sensor, internal magnetic stirrer and 20mL burette  
• DL22 F&B comes with integrated burette drive, DG115-SC sensor, compact stirrer and 20mL burette  
• G20 comes with integrated burette drive, DG115-SC Plug&Play sensor, compact stirrer and Plug&Play 20mL burette



# One Click® Water Determination

## Simple & Secure

Karl Fischer titration is the specific standard method for water content determination and gives accurate and precise results within minutes. With the volumetric and coulometric Karl Fischer titrators your operators need only to press one button to run a water determination.

### V20 / V30

#### Volumetric KF Titrators

The Compact Volumetric Karl Fischer Titrators V20 and V30 determine water from 100 ppm to 100% in a wide range of liquid, solid and gaseous samples.



### C20 / C30

#### Coulometric KF Titrators

The Compact Coulometric Karl Fischer Titrators C20 and C30 offer particularly fast and precise titration of samples with a low water content from 1 ppm to 5%.



### Solvent Manager

Safe handling



The Solvent Manager takes care of filling, draining and exchange of reagents. It is controlled by the titrator and full security is guaranteed by the overflow protector in the waste bottle.

### Coulometric Generator

Without Diaphragm



For most samples the current generator without diaphragm offers more convenience in use since no catholyte is needed and the anolyte can be exchanged with the Solvent Manager in One Click®.

### D0308

Drying oven



The manual Karl Fischer drying oven D0308 allows safe oven applications with single samples using manual sample addition. It can be operated with the coulometric C20, C30, or volumetric V20, V30, T70 and T90 Karl Fischer titrators.

### Stromboli

KF oven  
sample changer



The compact Stromboli Karl Fischer oven sample changer is fully controlled by the C30, V30, T70 or T90 Karl Fischer titrators and enables automated water determination of 14 solid or viscous samples in an unattended operation mode. The flexible method editor allows easy programming to run multiple sample or blank series and check samples at different temperatures ranging from 40 – 300 °C.



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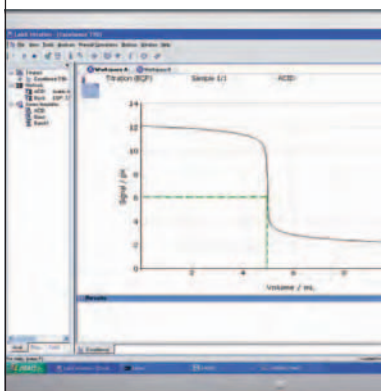
		Volumetric		Coulometer			
		V20	V30	C20D*	C20X*	C30D*	C30X*
<b>One Click® Titration</b>	Shortcuts per user on user-specific Homescreen	4	12	4	4	12	12
<b>Hot Plug&amp;Play</b>	Solvent or Reagent Control	–	•	–	–	•	•
	Solvent Manager	•	•	•	•	•	•
	Burette recognition with titrant and titer	•	•	–	–	–	–
<b>Automation</b>	USB printer	•	•	•	•	•	•
	Stromboli oven sample changer	–	•	–	–	•	•
<b>User Management</b>	Homogenizer	–	TTL	–	–	–	–
	“Expert-Routine” user groups	–	•	–	–	•	•
<b>Methods and series</b>	External extraction/dissolution	–	•	–	–	•	•
	Number of samples per series	120	120	120	120	120	120
	Preprogrammed METTLER TOLEDO methods	–	11	–	–	11	11
	Bromine Index determinations	–	–	–	–	•	•
<b>Languages</b>	Max. number of user methods	5	100	5	5	100	100
	Chinese, English, French, German, Italian, Korean, Polish, Portuguese, Russian, Spanish						
<b>PC software</b>	LabX® titration connectivity	•	•	•	•	•	•
	LabX® pro FDA 21CFR part 11 support	–	•	–	–	•	•
<b>Part No.</b>	Ready-to-start package	51105500	51105505	51105510	51105512	51105515	51105516

\* X = Generator without diaphragm  
D = Generator with diaphragm

# Complete Overview

## Total Control

### Control your Measurements from Anywhere with LabX®



With LabX® Pro, titrations can be controlled from any PC in the network. Simply connect your instruments to a PC or directly to the company Ethernet and you will be able to review data from your office or control measurements in real time while you are working in a different place. Your data will be stored in a central database and can be analyzed in a very comfortable, state-of-the-art, structured windows based software environment.

### Manage Your Titrators More Efficiently



LabX® will allow you to centrally manage your titrators. Tasks like checking the calibration data or updating methods can be done from one PC workstation. If desired, changes are applied automatically to all the connected instruments. This not only saves time but also avoids mistakes.

### Get Full FDA21CFR Part 11 Support



LabX® contains all the tools needed for data management and storage according to FDA regulations (21 CFR Part 11). The software provides comprehensive user management, access protection, electronic signature and audit trail functionality. To validate the system, METTLER TOLEDO offers full support and a two-volume validation manual which helps to keep validation cost down.

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## LabX<sup>®</sup> Titration Software

METTLER TOLEDO  
instruments supported

	LabX <sup>®</sup> pro titration	LabX <sup>®</sup> light titration
	T50, T70, T90, V20, V30, C20, C30, DL5x, DL7x, DL31, DL32, DL38, DL39 titrators	G20 titrator
Client server networking	•	—
Control of multiple instruments	•	—
Instrument management	•	•
Full FDA 21 CFR Part11 support	•	—
Real-time online view/control	•	•
Method editor	•	•
Flexible sample series management	•	•
Smartcodes™: Analysis start by bar code reader	•	—
Automatic statistics/control charts	•	•
Graphical result evaluation	•	•
Report generator	•	•



# Titration Service Solutions For Proven Accuracy

Professionally executed installation and qualification (IQ/OQ) is a prerequisite for achieving correct titration results. In this way, your titrator performs perfectly from the beginning. METTLER TOLEDO offers a broad range of instrument qualification and software verification solutions for titrators.

## Service solutions to assure titration accuracy

Need	Proposed service solution
Professional installation	Equipment installation according to SOPs for all titrators and associated devices.
Initial qualification	IPac: IQ/OQ execution and documentation.
Comprehensive qualification	EQPac: equipment qualification.
Training and education	EduPac: certified titration training.



### Installation qualification: IPac

METTLER TOLEDO's trained and authorized service specialists perform instrument installation according to standardized SOPs and record all activities in the IPac. Installation (IQ) and proper taking-to-operation (OQ) of your titration system is assured and documented.



### Equipment qualification: EQPac

Some quality systems often require meticulous records. EQPacs provide you with a comprehensive history of all service measures, starting from installation over routine service interventions until disposal.



### Titration expertise and training: EduPac

Gain expertise in titration with practical hands-on workshops described in our EduPacs, instead of studying chemistry books. Easy understandable titration training helps to get your team up-to-speed with your new titration instrument.



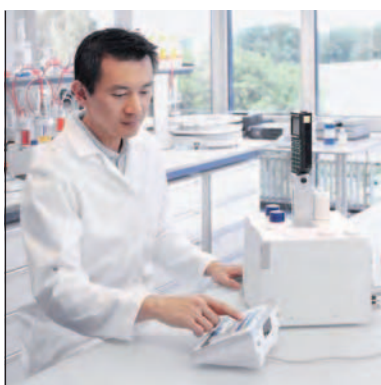
Qualification	Product Families	Product Types	Order no. English
EQPac	Titration Excellence	T50/T70/T90	51710454
	Volumetric KF Titrators	V20/V30	51710659
	Coulometric KF Titrators	C20/C30	51710656
IPac	Titration Excellence	T50/T70/T90	51710450
	Volumetric KF Titrators	V20/V30	51710651
	Coulometric KF Titrators	C20/C30	51710648
	Compact Titrator	G20	51710766
	LabX Titration	LabX titration initial verification	51710502
EduPac	General Titrators	T50/T70/T90/G20	51710883
	Volumetric KF Titrators	V20/V30	51710889
	Coulometric KF Titrators	C20/C30	51710886

# Essential Services To Protect Your Investment

To secure accurate and reliable results and thus protect your investment, METTLER TOLEDO recommends annual preventive maintenance combined with titrator calibration – an attractive package tailored to best meet your service requirements.

## Service solutions for routine operation

Need	Proposed service solution
Continuously high performance	Preventive maintenance combined with calibration service.
No break-downs	Preventive maintenance including updates and technical verification.
Accuracy and precision	Calibration documented in calibration certificates.
User qualification	Trainings, seminars, literature and consulting services.



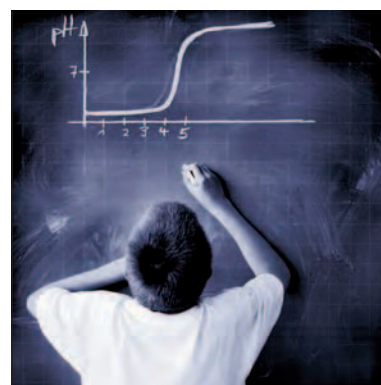
### Preventive maintenance

Professionally performed periodic maintenance of your titration system prevents from break-down and supports instrument performance. Preventive maintenance checklists are provided to support you for quality audits.



### Calibration

Calibration is essential for getting accurate and reliable titration results. Using traceable calibration tools ensures that the titrator functions according to its operational specifications. A calibration certificate provides the required proof for quality audits.



### Expertise

METTLER TOLEDO training packages for titration (EduPac binders), online and life seminars as well as consulting services help you to build-up, increase and maintain titration expertise in your team, also when deploying new staff.





Continuously dependable results are only possible if measurement risks are identified and eventually eliminated. METTLER TOLEDO's Good Titration Practice™ supports the customer in analyzing his specific process risk with the unique GTP® Risk Check tool. In addition, GTPSecure™ provides all services necessary to achieve accurate and reliable titration.

## Your benefits with GTPSecure™

Need	Benefits
Accurate results	Service solutions as part of GTPSecure™ ensure accurate titration results.
Regulatory compliance	The accuracy and reliability of your titration results always complies with your quality requirements.
Cost savings	Preventive maintenance and calibration result in cost savings.
Documentation	Audit-proof and up-to-date documentation complements your quality management system.

Detailed information  
about titration service offering  
are available at:  
► [www.mt.com/GTP-Secure](http://www.mt.com/GTP-Secure)



# Accessories

G20 with  
Manual Titration  
Kit and  
DGI115-SC in a  
glass titration  
beaker



## Accessories for Excellence Titrators and G20

Description	Part No.
Dosing Unit for dispensing and titration purposes	51109030
Rondolino automatic titration stand	51108500
Y-cable for simultaneous pump and stirrer connection	51109889
Electrode holder set containing: – Electrode holder, attachment screw, electrode sleeve	51109195
Manual titration stand containing: – Titration stand, attachment screw, spacing, clamping, threaded ring, titration vessel (2 pcs.), stopper set, ground joint adapter, electrode sleeve	51109190
Manual titration kit containing – Manual titration stand, compact stirrer	51109220
Auto titration kit containing: – Electrode holder set, compact stirrer	51109221
Manual titration stand without accessories	51109118
Dispensing tube adapter	51109169
Peristaltic pump SP250	51108016
Novoprene tubes for SP250 (1x1 m; 10x120 mm)	51109069
Fluorosilicone tubes for SP250 (5x120 mm)	51108149
Solvent Manager Kit	51105652

## Accessories for Excellence Titrators

Description	Part No.
Terminal (with connection cable and protective cover)	51109017
Protective cover for terminal	11132570
Conductivity sensor board	51109840
pH/mV sensor board	51109818
T70 → T90 Upgrade set	51109960
External power supply unit	51109806
6-pol CAN cable, 20 cm	51109874
6-pol CAN cable, 60 cm	51109886
USB cable A-A, 180 cm for PC connection	51191689
RS cable Titration Excellence	51190362
OE06 Auxiliary Output Expander OE06	51108065
DH100 Heating System 110 V	51108779
DH100 Heating System 240 V	51108780
Tx Karl Fischer Kit	51105605
Liquid Handler	51371500
Dosing tube adapter 4 to 1	51108356

## Accessories for all Compact Titrators

Description	Part No.
Protective cover for Touchscreen	51105567
External Power supply 100 – 240 VAC	51105795
USB cable 1.8 m A-B for PC	51191926



Excellence  
Titrator with  
sensor boards

## Accessories for Karl Fischer Titrators

Description	Part No.
Solvent Manager Set	51105600
DM143-SC Double pin Pt sensor	51107699
70 cm sensor cable for DM143-SC	51109183
Silicone Tube 133 mm	51107480
Silicone Tube 850 mm, Solvent Manager to solvent exchange bottle	51105581
Flat gasket seal for bottles	00023981
Molecular Sieve 3Å (250 g)	00071478
O-ring for screw caps, black, (4/pk)	51107496
Screw cap for solvent bottle	00023937
Magnetic stir bar	51191159
Drying tube with cover	00023961
Silicon grease	00071300

## Accessories for V20 and V30

Description	Part No.
Adapter for automatic draining of cell	51105594
O-ring for titration head	51190366
ST24 three hole adapter incl. ST10, ST7.5 and pin hole stoppers	00023982
Stopper for three hole adapter (1 set: 1 ST10, 1 ST7.5, 6 pin hole stopper)	00025883
Septum Stopper ST24 (10/pk)	00023950
Septum Stopper ST10 (10/pk)	00023949
Solvent delivery/drain tube with screw fitting	51107481
Thermostatable titration vessel, 150 mL	51107497
Titration vessel, 250 mL	51107463
Homogenizer adapter set for IKA, 18 mm hole	51107409
Homogenizer adapter set for Kinematica/Polytron, 12 mm hole	51107534

## Accessories for C20 and C30

Description	Part No.
Coulometric solvent exchange set	51105606
Solvent delivery/drain tube	00023936
Titration vessel	51108732
Thermostatable titration vessel	51109416
Coulometric generator with diaphragm	51108751
Coulometric generator without diaphragm	51108753
Generator cable	51107830
Teflon stopper with septum disk	51108741
Septum disk (12/pk)	51108740

## Accessories for General Titrators

Accessories	Part No.
Barcode reader (requires USB cable)	21901297
USB cable to barcode reader	21901309
LogStraight™ finger print reader	51192107
Micropropeller stirrer rod	00655073
Propeller stirring rod	00101229
Sensor holder (when not in use)	00025654
Bottle rack for 2x 1 litre bottles	51107065
TTL-I/O TBox DR42	51107420
TTL interface cable	51190589
RS232 Connection Cable (DB9 F/F)	51190362
RS232 Balance Cable (DB9 M/F)	11101051

## LevelSens

Description	Part No.
LevelSens with holder, non-aqueous	51109862
LevelSens with holder, aqueous	51109863
LevelSens Box (connects up to 4 LevelSens) includes 20 cm CAN cable	51109852
CAN cable, 20 cm	5119874
CAN cable, 60 cm	5119886

## Sample Handling Accessories

Description	Part No.
Visco-Spoon™	51107668
Syringes, 1 mL (100 pcs)	00071492
Syringes, 10 mL (100 pcs)	00071482
Needles, 80 x 0.8 mm (100 pcs)	00071484
Needles, 80 x 1.2 mm (12 pcs)	00071483
Glass weigh boat for powders, 20 x 60 mm (5 pcs)	00023951
Glass weigh boat for powders, 30 x 80 mm (5 pcs)	00023952



Visco-Spoon™  
for grease and  
wax samples



LevelSens used with  
Solvent Manager  
and exchange set

# Accessories

## Rondo and Rondolino Accessories

Description	Part No.
Rondo 30 upgrade set	51108225
Rondo 60 upgrade set	51108017
Rondo COD set	51108014
Rondo KF set	51108015
CoverUp™ lid handling device	51108470
Rondo Barcodereader attachment	51109420
Magnetic Stirrer, includes stir bar and cable holder	51108011
Power Shower™ for Rondo and Rondolino	51108219
Rinse tube for Power Shower™	51108116
Diaphragm pump, includes suction tube and retaining screws	51108012
Dosing tube for diaphragm pump, w/o tip, 80 cm	51108147
Dispensing tube for burette, for Rondo head, 85 cm	51108569
Dispensing tube for burette, for Rondo head, 1.35 m	51108070
Extension cable, mini-DIN, 0.5 m	51108351
Extension cable, mini-DIN, 1 m	51108308



Rondo 20 and  
CoverUp™ lid  
handling system



Stromboli 20 mL  
vials and caps

## Accessories for Stromboli

Description	Part No.
Gas drying unit and flow meter (needs tubes)	51108660
Stromboli tubing set for gas drying unit	51108666
Sample vials (glass), 42/pk	51108691
Rubber seals for vials, 42/pk	51108692
Sealing discs for vials, 144/pk	51108693
Drying tube, curved	51108639
Purge gas tube	51108837
Teflon stopper	51108668
Gas inlet	51108669
Set of glass tubing	51108695
TTL-I/O connection cable	51190589
Air pump box	51108673
Stop valve	51108688
Purge gas tube heater	51108836
Adapter for C30 stopper	51108761
Aluminium inserts for drift determination	51105246

## Accessories for D0308

Description	Part No.
Sample boat (glass)	51108657
Gas drying unit and flow meter (needs tubes)	51108660
Guide rod for sample boat	51371101
Screw cap GL37 for sample tube	51191129
Stop cock	51191130
Aluminium inserts for sample boat (50/pk)	51108649
Furnace sample tube	51371206
Tube set	51108676
Gas outlet tubing	51108837
Silicon stopper ST14.5 (10/pk)	00023276
Three-hole adapter with plug stoppers, for volumetric titrations	00023982
Purge gas adapter for C20/C30	51108761
Spare fuses (3/pk)	00054286
Air pump box	51108670
Drying tube with three-way tap	00105071

## Titration Sensors

<b>Plug&amp;Play combined pH glass electrodes with Sensor Chip</b>	<b>Part No.</b>
DGi101-SC pH micro-electrode for small titration vessels and Rondo 30 sample changer for aqueous solutions	51109507
DGi102-Mini pH micro-electrode for small titration vessels and Rondo 30 sample changer for aqueous solutions	51109508
DGi111-SC pH glass electrode	51109500
DGi112-Pro pH glass electrode with moveable sleeve diaphragm – for critical samples	51109501
DGi113-SC pH glass electrode with moveable sleeve diaphragm – non-aqueous titrations	51109502
DGi114-SC pH glass electrode with moveable sleeve diaphragm for aqueous solutions	51109503
DGi115-SC pH glass electrode with sleeve diaphragm	51109504
DGi116-Solvent pH glass electrode with movable sleeve junction for non-aqueous media	51109505
DGi117-Water pH glass electrode with integrated temperature sensor	51109506
<b>Classical combined pH glass electrodes</b>	<b>Part No.</b>
DG111-SC pH glass electrode	00089596
DG113-SC pH glass electrode with moveable sleeve diaphragm for non-aqueous titrations	00089632
DG115-SC pH glass electrode with sleeve diaphragm	00089806
<b>Classical half cell electrode</b>	<b>Part No.</b>
DG300-SC Half cell pH electrode in conjunction with reference electrode DX200	51109286
<b>Classical reference electrodes for pH/ISE/Tenside half cell electrode senores</b>	<b>Part No.</b>
DX200 glass reference electrode	51089935
DX202-SC plastic reference electrode	51109295



DP5 Phototrode™  
set at different wavelenghts



<b>Plug&amp;Play combined metal electrodes with Sensor Chip</b>	<b>Part No.</b>
DMi101-Mini semi micro platinum ring electrode with ceramic frit for argentometric titrations – for small sample volumes and Rondo 30 sample changer	51109523
DMi102-SC semi micro silver ring electrode with ceramic frit for argentometric titrations – for small sample volumes and Rondo 30 sample changer	51109533
DMi140-SC platinum ring electrode for redox titrations	51109520
DMi141-SC silver ring electrode for argentometric titrations	51109530
DMi144-SC platinum ring electrode for redox titrations on the Rondo 20 COD rack	51109521
DMi145-SC silver ring electrode with a movable easy-to-clean sleeve junction for argentometric titrations - dirty or viscous samples	51109531
DMi147-SC platinum ring electrode for redox titrations without changing pH value – pH glass as reference element without ceramic junction	51109522
DMi148-SC silver ring electrode for argentometric titrations without changing pH-value – pH glass as reference element without ceramic junction	51109532
<b>Classical metal electrodes</b>	<b>Part No.</b>
DM140-SC combined platinum ring electrode for redox titrations	00089598
DM141-SC combined silver ring electrode for argentometric titrations	00089599
DM143-SC double-pin platinum electrode	51107699
DM405-SC combined Ag <sub>2</sub> S-sulfidized silver billet electrode with annular ceramic junction for argentometric titrations	51109291
<b>Photometric sensors</b>	<b>Part No.</b>
Phototrode DP5 with 5 selectable wave lengths 520nm, 555nm, 590nm 620nm, 660nm includes LEMO connection cable	51109300
<b>Temperature probes</b>	<b>Part No.</b>
DT1000 – PT 1000	51109828
DT1000 adapter for Rondolino and Rondo	51108032
<b>Surfactant electrodes</b>	<b>Part No.</b>
DS500 for aqueous surfactant titrations	51107670
DS800-TwoPhase for two-phase surfactant titrations	51109540
<b>Conductivity sensors</b>	<b>Part No.</b>
InLab717 glass 4 pole cell, 10µS/cm...500mS/cm, for conductivity titrations	51302401
InLab718 glass 2 pole cell, 0.1...200µS/cm, for low-conductivity titrations	51340266



# Accessories

## Sensor Cables and Parts

Sensor cables	Part No.
SC-LEMO 60 cm cable for Plug&Play and classical sensors	00089601
SC-LEMO 100 cm cable for Plug&Play and classical sensors	00089602
SC-LEMO 160 cm cable for Plug&Play and classical sensors	51108034
SC-LEMO 70 cm cable for amperometric titrations and for DM143-SC	51109183
SC-LEMO 100 cm cable for amperometric titrations and DM143-SC	51109184
SC-LEMO 160 cm cable for amperometric titrations and DM143-SC	51109185
Cable MultiPin™ – Lemo/Pt1000 70 cm for DG117-Water/DGi117-Water	51109296
Cable MultiPin™ – Lemo/Pt1000 100 cm for DG117-Water/DGi117-Water	51109297
Y-Cable (connection of the DP5 to the power supply and the titrator)	51109905
Spare parts for sensors	Part No.
Adapter, DIN to LEMO	00089600
DS500 membrane kit	51107669
DS800-Two Phase Emulsifier	51109453
Sensor sleeve adapter	52001220

## Printers

Description	Part No.
RS-P26 alphanumeric printer for DL15/DL22F&B/DL28/DL31/DL32/DL38/DL39 (cable not included)	RS-P26
Cable-RS-P26 to DL31/32/38/39/15/22/28	51190362
USB-P25 alphanumeric printer for V20/V30/C20/C30/G20/T50/T70/T90 (V3.X)	USB-P25
Cable USB-P25 to Excellence and Compact Titrators	51191926
Paper roll for USB-P25 / RS-P26 (Set of 2)	12120799
Paper roll, adhesive backed	11600388
OKI B410 USB-Commercial printer (cables not included) EU version	51191608
Paper rotary axis	12120735

## Bottle Top Adapters

Description	Part No.
Diameter 40.5 mm; slope 3.5 mm (Germany/Merck)	00023774
Diameter 37.5 mm; slope 5 mm (USA)	00023787



DV1020  
20 mL burette

## Burettes

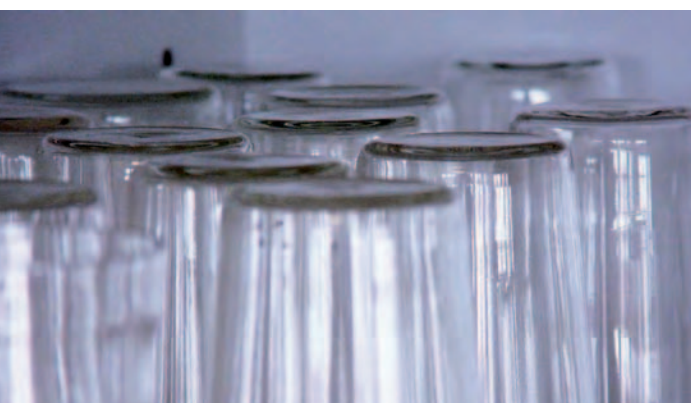
DV1000 burettes	Part No.
1 mL burette DV1001 with RFID chip for Plug&Play installation	51107503
5 mL burette DV1005 with RFID chip for Plug&Play installation	51107500
10 mL burette DV1010 with RFID chip for Plug&Play installation	51107501
20 mL burette DV1020 with RFID chip for Plug&Play installation	51107502
Burette housing with RFID chip	51109117
Accessories for burettes	Part No.
Centering ring 5 mL	51107519
Centering ring 10 mL	51107520
Centering ring 20 mL	51107521
Glass cylinder 1 mL	51107533
Glass cylinder 5 mL	51107100
Glass cylinder 10 mL	51107101
Glass cylinder 20 mL	51107102
Piston 1 mL	51107535
Piston 5 mL	51107115
Piston 10 mL	51107116
Piston 20 mL	51107117
Locking screw	51107518
Stopcock/Ceramic valve disk for reagents with tendency for crystallisation	51107525
Stopcock/Teflon valve (standard)	51107537
Amber glass bottle, 1L	00071296
Burette holder	00023645
Connection tubing	51107129
Dispensing tube with siphon tip (70 cm)	00025687
Dispensing tube with siphon tip (100 cm)	00025961
Suction tube (83 cm)	00025688
Drying tube with cover	00023961
Drying tube holder	00023915
Light protection tube (UV)	00023644
Set of labels	51107506
Anti-diffusion tips (5/pk)	00023240
Holder for burette tip	00023960



T70 Titrator, RM50 Refractometer, Rondo20 and Liquid Handler used for automated multiparameter juice analysis with LabX® software for data collection

## Titration Beakers

Description	Part No.
Plastic beakers, 100mL, 120/pk	51109388
Plastic beakers, 100mL, 480/pk	51109389
Plastic beakers, 100mL, 1400/pk	00101974
Plastic beakers, 250mL, 500/pk	00023829
Polypropylene beakers, red, 100mL, 1400/pk	00025777
Two-phase beaker for surfactant titrations	51107655
Covers for 80mL beakers, 16/pk	00101448
Glass beakers, 80mL, 20/pk	00101446
Plastic beakers 80 mL for Rondo 30, set of 30	51108030
Plastic beakers 80 mL for Rondo 30, set of 1352	51109382
Glass beaker, 150mL	00023917
Glass beaker, 250mL	00023918
Glass beakers, 250mL, 10/pk (Not for ST20)	00023515
Glass beaker, for sample vol. 10–20mL	00023516



## Multiparameter Analysis

Combine our Liquiphysics™ Excellence density and refractive index meters with the Excellence Line Titrators and one of our automation systems for high throughput One Click® determination of all your sample's analysis needs. Integrate LabX® for a complete system to meet all your laboratory needs in one secure and automated package.

## Multiparameter Accessories

Description	Part No.
Titration to DM/RM tube	51337240
Connection cable, DM/RM to titrator	51105856
Valve, 2 way, 6 Port	30026544

Visit ► [www.mt.com/titration-multiparameter](http://www.mt.com/titration-multiparameter) for more information about all of our multiparameter solutions.