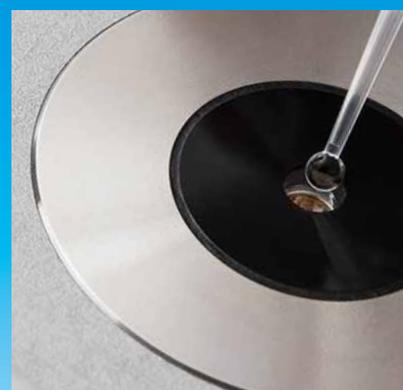


# Laboratory Catalog

2018/19



Balances  
Pipetting Solutions  
UV/VIS Spectroscopy  
Titrators  
Density Meters  
Refractometers  
pH Meters & Sensors  
Automated Synthesis  
Real-time Analytics  
Thermal Analysis



**Analytical Excellence**  
Get Reliable Results Efficiently

**METTLER TOLEDO**



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You will find a detailed table of content on the overview page of each chapter.

# Innovative Products

## For All Your Laboratory Applications

**METTLER TOLEDO's precision instruments are the foundation of research and quality-control labs all over the world. Our comprehensive product range provides you with flexibility and precision in every application. See the product range overview below.**

### **Weighing**

We are constantly improving the world of balances. Our comprehensive portfolio of lab balances offers maximum user protection, unparalleled measurement performance, full data security and seamless traceability.



### **Titration**

Our new generation of titration solutions focuses on ease of use and flexibility. Its unique One Click™ user interface keeps training time to a minimum and speeds up workflows. A modular design ensures perfect adaptation to any titration application.



### **pH Measurement**

From basic handhelds to flexible triple-channel meters, we offer a full spectrum of premium pH, conductivity, dissolved oxygen and ion instruments. You can find the right sensor for any application in any industry.



### **Materials Characterization**

We are the technology leader in thermal-analysis instrumentation. Our innovative product range includes DSC, TGA, TMA and DMA, as well as an unmatched, powerful common software platform, STAR®.





### Physical Values

This range of digital instruments determines parameters such as refractive index and density, as well as dropping, melting, slip-melting, boiling and cloud point. Using optical and calorimetric methods, these instruments measure materials' physical properties.

### Pipetting

Our pipettes enhance lab performance and help reduce time-to-market by guaranteeing optimum accuracy and repeatability. Innovative ergonomic designs, including the well-known LifeTouch System™ (LTS™), minimize fatigue and injuries.

### UV/VIS Spectroscopy

FastTrack™ technology and One Click™ operation form the basis for the simple operation, fast analysis, sustainable accuracy and trustworthy performance of the UV/VIS Excellence Line. LabX® and various automation options add power to these useful UV/VIS solutions.

### Automated Chemistry

We provide the enabling technology, software and expertise to help you build a seamless workflow when transforming bench-scale chemistry into a commercial process. We have set many milestones in the last 25 years that have helped our clients significantly enhance their performance and profitability.



# New Product Solutions

## For Research and Development

**Pushing the boundaries of what is possible is essential for great new discoveries in research and development. METTLER TOLEDO offers you measurement tools of the highest precision as well as many innovative techniques that help make sure your research is fast and effective.**

We offer equipment to enable everything from ultra-fast materials analysis to high-precision weighing. So whether you wish to perform fully automated organic synthesis, obtain ergonomic liquid-handling, or meet another processing goal in your lab, we provide the essential tools you need.

### Take Weighing to New Limits



New XPR microbalances incorporate a range of innovative new technologies to deliver the highest accuracy in their class. They are designed to help make your micro-weighing tasks simpler and more secure.

More information on page 34.

► [www.mt.com/xpr-microbalances](http://www.mt.com/xpr-microbalances)

### Automate Large Numbers of UV/VIS Samples



Simplify repetitive tasks and gain more productive lab time. Combine an InMotion sample changer and UV/VIS spectrophotometer for automated measurements of up to 308 samples in a row.

More information on page 157.

► [www.mt.com/uvvis-accessories](http://www.mt.com/uvvis-accessories)

### Keep Chemical Reactions Safe



The Reaction Calorimeter RC1mx is based on a proven high-performance thermostat design. RC1mx sensors and final control elements create plug-and-play functionality that is controlled by either a state-of-the-art touch interface or iControl PC software.

More information on page 232.

► [www.mt.com/RC1](http://www.mt.com/RC1)



### Benefit from Accurate Semi-Automated Pipetting



BenchSmart™ 96 is a semi-automated 96/384-well pipettor covering a range of 0.5 µL to 1000 µL. Highest reproducibility and efficiency are achieved thanks to automatic aspiration, dispensing, tip loading and tip ejection.

More information on page 140.

► [www.mt.com/benchsmart96](http://www.mt.com/benchsmart96)

# New Product Solutions For Effective Quality Control

**Getting reliable results efficiently is key for most quality control laboratories. METTLER TOLEDO's new product solutions provide precise results while making operation easier and supporting compliance with SOPs and regulations.**

## Save Effort with Automated Titration



Our compact InMotion™ Karl Fischer Oven Autosampler allows up to 26 samples to be placed on a rack of only 25 cm. Its temperature-scan functionality speeds up the analysis of unknown samples by determining the optimum temperature for heating the sample.

More information on page 171.  
▶ [www.mt.com/InMotionKF-oven](http://www.mt.com/InMotionKF-oven)

## Reduce Out-of-Service Pipette Costs



SmartStand is a unique solution to help labs adhere to their standard operating procedures and maintain GLP/GMP compliance. With SmartStand, you will know the current status of your pipette every time you use it.

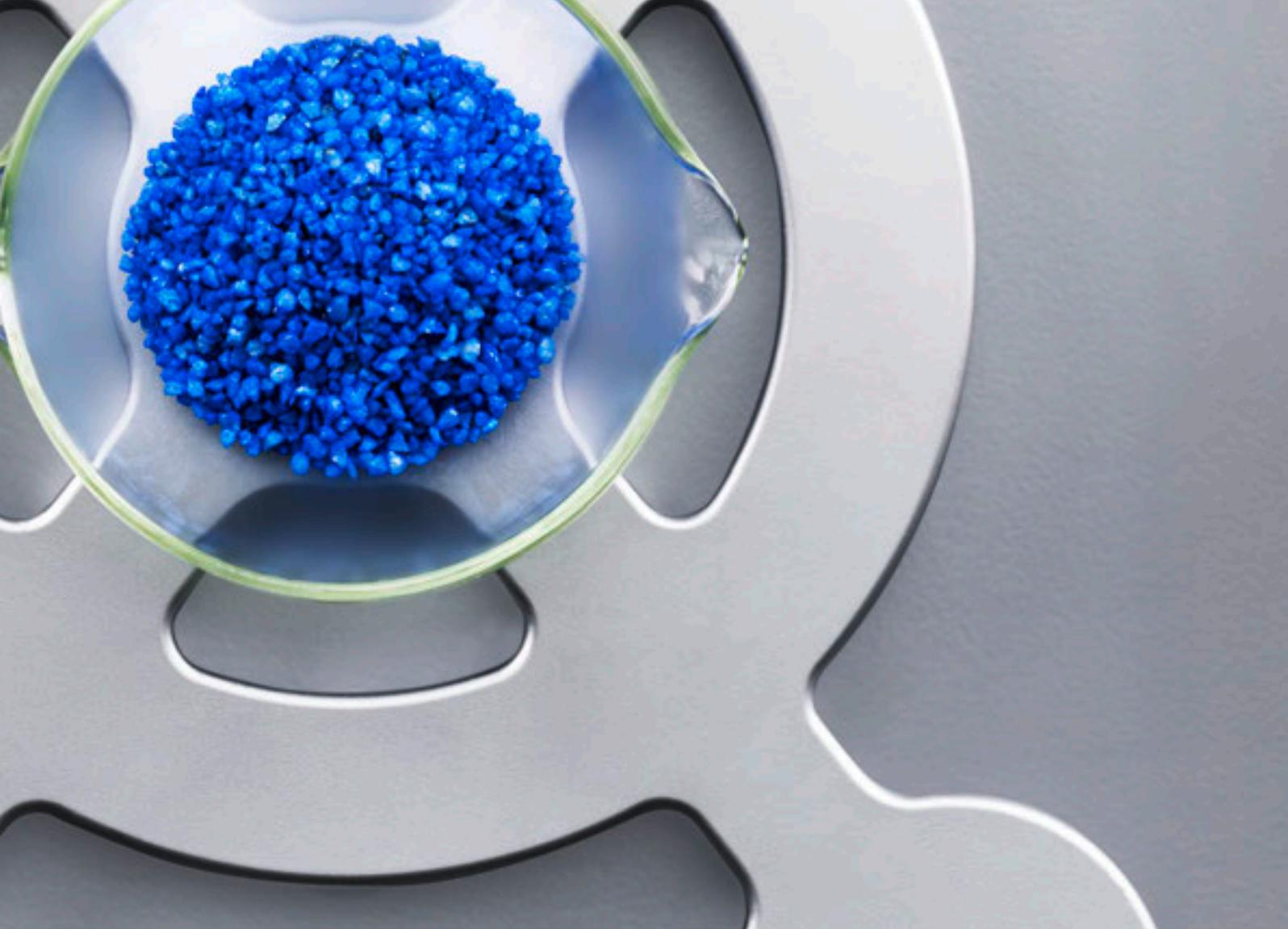
More information on page 148.  
▶ [www.mt.com/SmartStand](http://www.mt.com/SmartStand)

## Eliminate Weight-Handling Mix-Ups



WeightLink™ is an innovative weight identification system that guarantees full traceability of your balance tests. By linking your selected test weight with the requirements of your routine balance testing, test-weight mix-ups are a thing of the past.

More information on page 106.  
▶ [www.mt.com/weights](http://www.mt.com/weights)



### **Obtain Outstanding Weighing Performance**



Addressing your challenge to deliver more, XPR balances give you both speed and accuracy. Choose the SmartPan™ weighing pan when you need fast results under tough weighing conditions and the LevelMatic™ weighing pan when high accuracy is paramount.

More information on page 62.

► [www.mt.com/xpr-precision](http://www.mt.com/xpr-precision)

# Broaden Your Knowledge At the Lab Library

**The Lab Library offers plenty of free information and advice on a range of critical laboratory issues. Topics are carefully selected to support the daily activities of lab analysts and managers. In-depth knowledge and expert advice are easily accessible via links to articles, white papers, webinars and videos on specific topics. New topics are added regularly!**

## Literature



Benefit from our database of applications covering all industry segments. Basic introductory or advanced information is available to you in the form of white papers, guides and brochures.

## Live and On-Demand Webinars



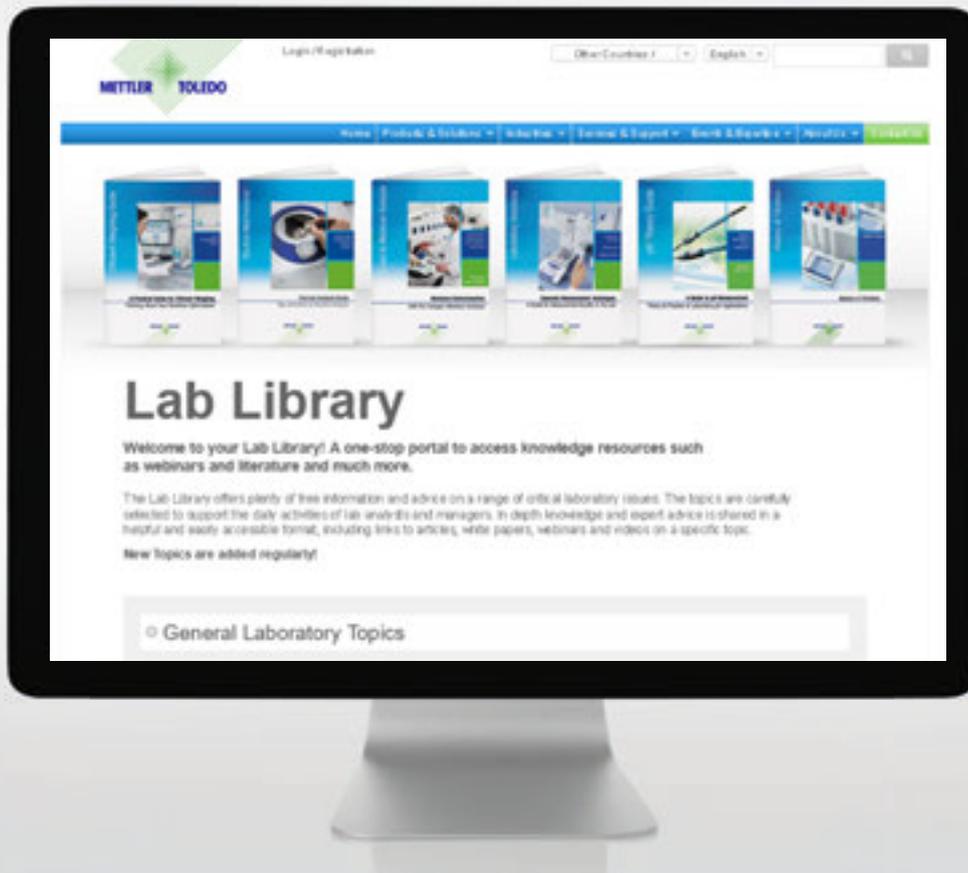
Live and on demand webinars give you the opportunity to receive specific and relevant information concerning industry trends, applications, product knowledge and laboratory best practices.

## Journals and Newsletters



Our newsletters provide you with insights into applications, new products and industry trends. UserCom journals feature examples and applications to help you gain practical knowledge and efficiency.

Get more information  
▶ [www.mt.com/lab-library](http://www.mt.com/lab-library)



## YouTube Laboratory Channel



Experience our range of laboratory products with selected videos on our laboratory YouTube channel. Our informative videos offer you a comprehensive overview of product innovations and application solutions.

► [www.youtube.com/mtlaboratory](http://www.youtube.com/mtlaboratory)

# Simplify Your Daily Routines With One Click

**One Click™ is more than just a shortcut. It's an intuitive user-management concept stretching across METTLER TOLEDO key laboratory instruments to help make your daily work in the lab as easy as possible. By defining shortcuts and adding them to the user-specific home screen, you obtain results that are not only accurate but fast at the touch of a button.**

#### Access

The home screen of the instrument shows all key tasks defined by a certain user.

#### Routine Tasks

Shortcuts allow each user access to all daily operations on their own customizable home screen.

#### Method Start

If a method key is pressed, the complete routine is started. No further confirmations or configurations are needed.

#### Back Home

The "home" button on the instrument brings the user to the home screen.





Karl Fischer Titrator



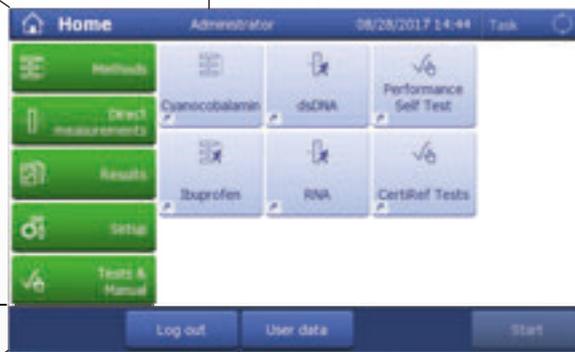
Excellence Titrator



Analytical Balance



Refractometer



Density Meter

SevenExcellence pH Meter

UV/VIS Spectrophotometer

Melting Point System



## One Common Interface Across All Key Lab Instruments

Most METTLER TOLEDO instruments share the same One Click™ user interface. This means users of one instrument are already familiar with the operation of other instruments.

### Key One Click Benefits:

- Easier and faster task execution
- Users see only the functions / actions they need
- Routine users are not distracted by unneeded functionality
- Operation mistakes are avoided
- SOPs are automatically followed
- Less training is required

See One Click in action in this short video.

► [www.mt.com/one-click-titration](http://www.mt.com/one-click-titration)

# One Software Solution For Multiple Lab Instruments

**LabX® software brings power to your laboratory bench with automatic data handling, high process security, full SOP user guidance and centralized management of multiple instruments, users and data. With remote networked operation, PCs in the laboratory are eliminated, creating a leaner lab experience. Administrative work is automated and your paperless lab becomes a reality.**

## Automation – Integration



Eliminate transcription errors by automating your entire process. Start running your benchtop instruments with one common software, and then integrate the software with any lab informatics system you use for complete operational control and traceability.

## Regulatory Support



Full traceability, enforced SOP methods, and extensive audit trails support your regulated lab and your efforts to meet requirements for 21 CFR Part 11, EU Annex 11, and ISO 17025.

## Workflow Guidance



Ensure process security with complete user guidance on the instrument touchscreen – even without a computer on the lab bench.



## LabX® Competence and Knowledge Center



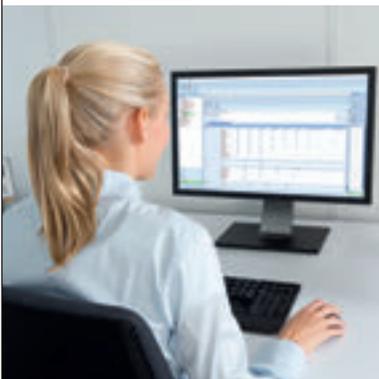
Download our white papers and watch LabX in action.  
► [www.mt.com/LabX](http://www.mt.com/LabX)

# Power the Bench

## Data and Workflow Management

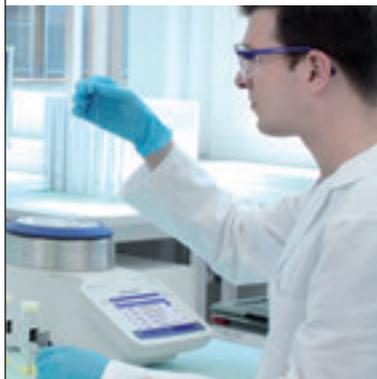
**LabX® Laboratory Software connects to multiple METTLER TOLEDO lab instruments. Benefit from increased workflow efficiency, optimal security support and centralized management of one or multiple instruments, users and data.**

### Central Control



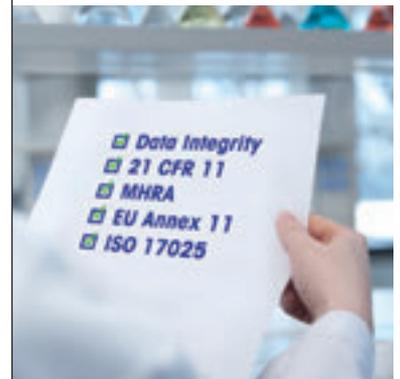
With LabX, you control data and process information centrally. You can manage SOP methods, users, instruments and results. You can view and electronically sign data as it is generated in real time from any connected computer.

### Flexible Operation



You can work on the instrument or a computer according to your preferences. LabX provides full step-by-step user guidance for the whole workflow. Automatic data handling means manual transcription errors are eliminated and administrative work is reduced to a minimum.

### Maximum Security



LabX has all the technical controls in place to support laboratories around the globe with regulatory compliance. LabX supports fully with FDA ALCOA+ requirements for data integrity as well as 21 CFR Part 11.

## Tailor LabX® to Your Needs

### Step 1

Select starter pack

#### Starter Pack Express

Up to three instruments attached to a local computer.

<b>Edition</b>	<b>LabX Express</b>
<b>Instrument License</b>	x1

#### Starter Pack Server

Up to 30 instruments and the capability to distribute the system over multiple computers. Advanced options available.

<b>Edition</b>	<b>LabX Server</b>
<b>Instrument License</b>	x1
<b>License Option</b>	<b>User Management</b>
<b>License Option</b>	<b>Auto Import/Export</b>

### Step 2

Configure according to application needs

License Option	Description
User Management	Centrally maintain and control users and roles
Product Database	Manage product data and parameters centrally, run methods based on products
Auto Import/Export	Automatically import and export data with .csv or XML file format
Statistics/Trending	Analyze measurements and monitor process changes while taking applicable regulations into account
Regulation	Full support of regulatory requirements including 21 CFR Part 11 and EU Annex 11
Report Designer	Configure advanced reports with data in chart, graph, and table formats
System Integration	Integrate with lab informatics systems (LIMS, ELN, ERP) using API webservice

### Step 3

Choose instruments to be connected

#### Supported Benchtop Instruments

- Balances
- Automated Quantos Dosing Systems
- Titrators
- Karl Fischer Titrators
- UV/VIS spectrophotometers
- pH Meters
- Refractometers
- Density Meters
- Melting Point Devices

### Expert Service



METTLER TOLEDO provides full-service support throughout all stages of the LabX life cycle, including:

- Maintenance Contracts
- Professional Installation
- Validation Service
- On-Site Trainings
- Application Development
- Support and Maintenance

Get more information

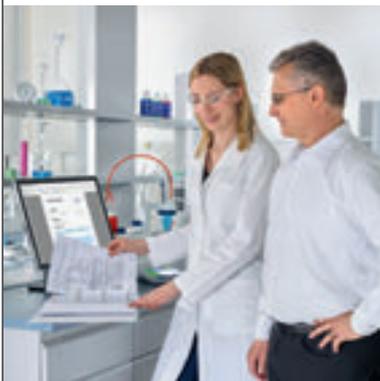
► [www.mt.com/LabX](http://www.mt.com/LabX)

# Gain Full Data Integrity With LabX Traceability

**For laboratories that must comply with GLP, GMP and GAMP regulations, it is important to have documented evidence of activities that can be checked by a second person and is available for inspection. Compliance with these regulations can help avoid risks such as import bans, product recalls, and even the closing of production plants.**

Frequently, transcribed data is missing needed elements and lacks the traceability required to satisfy internal quality management and regulatory mandates. The end result is that time and revenue are lost as analysts seek to resolve compliance situations by gathering missing data, re-transcribing results, documenting missing controls, and preparing reports.

## Be Prepared for Audits



An impending audit is a source of worry for many lab teams. Knowing that you will – at any time – be able to recreate the sequence of events and circumstances which led to a certain result or record, can be very reassuring.

## Avoid FDA Warning Letters



In 2016, 80% of FDA warning letters were issued due to a lack of data integrity. The main reason for issuance was incomplete data. LabX® prevents such situations from occurring as all meta-data is securely stored, along with the actual results.



HPLC analysis: LabX® transfers the complete weighing records to the Chromatography Data System (CDS) for subsequent HPLC analyses. Complete data is guaranteed! Find a typical seven-step workflow below.

**Step:**

1. Start your SOP by selecting a LabX method
2. Enter the substance ID via your barcode scanner
3. Weigh to target following the step-by-step wizard
4. Capture all weights and the full metadata set (balance ID, user ID, tare vessel, calibration history, SOP, method version, etc.)
5. Add solvent: concentration is automatically calculated based on added solvent volume
6. Export weighing data to CDS, including required metadata such as date/time, sample ID, balance ID, net weights and final concentration
7. Report and archive all HPLC results including raw weighing data, calculations, complete metadata such as balance ID, user, tare and gross weight.
8. Print report required.

Get more information  
 ► [www.mt.com/lab-data-integrity](http://www.mt.com/lab-data-integrity)

# Expert Service

## Across Your Value Chain

**Whatever the application, METTLER TOLEDO provides you with a tailor-made service solution specific for your industry, environment or regulation. This ensures product quality, on-time delivery, regulatory compliance and appropriate user competency.**

### Four Values That Satisfy Your Service Needs

METTLER TOLEDO has understood the challenges and continuous support requirements of our customers for many years. We provide you with in-depth know-how and comprehensive service offerings focused on the following four key values that are relevant in every laboratory around the world.

#### Uptime



Profit from maximum uptime for your equipment and processes by receiving support whenever and wherever you need it:

- Onsite and depot repair
- Wear-and-tear parts
- Spare parts and kits
- Remote service

#### Performance



Realize highly accurate and precise process results by optimizing equipment performance in all environments:

- Professional installation
- Setup and configuration
- Preventive maintenance
- Software maintenance
- Upgrade/refurbishment

#### Compliance



Gain peace-of-mind that you are complying with both the regulations and norms of your industry while obtaining results that meet requirements every time:

- Calibration and certificates
- Equipment qualification
- Performance verification
- Good Weighing Practice™ (GWP®) Verification



## Expertise



Ensure your workforce is efficient and effective with training and seminars tailored to your needs:

- Basic user and technical training
- Advanced application training
- Consulting and business support
- Documentation and downloads
- Good Measuring Practices

## More Than 3,000 Factory-Trained Service Specialists Worldwide

METTLER TOLEDO serves customers worldwide with one of the largest service networks available. Our geographically focused market organizations ensure close relationships with users. These organizations have the flexibility to adapt support and service offerings to your requirements.

### METTLER TOLEDO Service helps guarantee:

- Continuous operational quality and maximized uptime
- Comprehensive, audit-proof and fully traceable electronic certificates
- Consistency in procedures and certified, traceable tools
- Highest operational performance for your compliance needs
- Equipment installation and qualification trainings ensure your personnel has the knowledge to manage your lab with maximum efficiency

Get more information  
▶ [www.mt.com/service](http://www.mt.com/service)

# Care Packages

## Operate with Confidence

**METTLER TOLEDO Care Packages ensure that your equipment is always operating at peak performance and that your measurement results meet productivity, quality and regulatory requirements.**

### Planned Maintenance to Operate with Confidence

Periodic preventive maintenance gives you complete confidence in your equipment, helping you achieve accurate results, avoid unexpected downtime and save money over the life of the equipment.

METTLER TOLEDO Service offers you different types of maintenance packages to help you:

- Minimize possible long-term impact to your equipment
- Ensure that your equipment is always operating at peak performance
- Maximize your equipment lifetime and return on investment
- Comply with regulatory standards and ensure compliance
- Profit from preferred service intervention to eliminate wait time for repairs
- Ensure full cost control due to spare parts and labor coverage

#### Uptime Ensured



Avoid unexpected, costly downtime and repairs with timely maintenance. Make sure you achieve performance that meets your process requirements.

#### Reliable Results



Only regular maintenance enables reliable measurement results and improves the quality of your processes by ensuring higher accuracy.

#### Full Budget Control



Depending on the care contract chosen, you can reduce your costs with discounted break-fix rates and limit your risk with repair labor/spare parts coverage.



METTLER TOLEDO Care Packages ensure maximum uptime and optimum performance at a fixed price. They give you privileged access to our extensive expertise by providing you with a single solution that pairs hardware and maintenance with consulting. This combination gives you both reliability and total budget control.

Coverage	BasicCare	StandardCare	ComprehensiveCare
<b>Preventive maintenance</b>			
• Inspection and cleaning of all mechanical components	•	•	•
• Inspection and testing of electronic components			
• Inspection for wear and damage			
<b>Equipment operational testing</b>	•	•	•
<b>Preferred service intervention</b>	•	•	•
<b>Discounted repair labor</b>	•	-	-
<b>Technical hotline access</b>	-	•	•
<b>Repair labor coverage in case of equipment breakdown</b>	-	•	•
<b>Spare parts coverage</b>	-	-	•
<b>Calibration and verification</b>	Added according to your requirements and regulations		

Get more information  
 ► [www.mt.com/service](http://www.mt.com/service)

# Good Measuring Practices

## Five Steps to Improved Quality

**Good Measuring Practices by METTLER TOLEDO is a global program supporting you in laboratory and production environments with quality assurance measures.**

The five steps of all Good Measuring Practices guidelines start with an evaluation of the measuring needs of your processes and their associated risks. We also take into account regulatory requirements and norms relevant to your industry.

Armed with our technical expertise, Good Measuring Practices provide straightforward recommendations for selecting, installing, calibrating and operating laboratory equipment and devices.

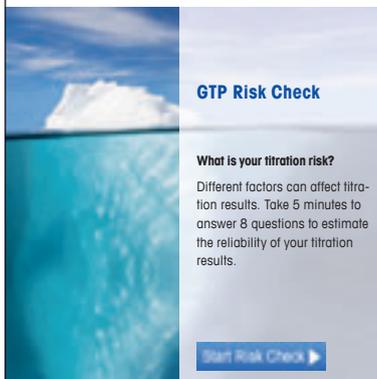
### Optimize Cost & Quality



The five Good Measuring Practices steps cover the entire lifecycle of your equipment and deliver practical guidance for implementing all necessary quality assurance measures.

Good Measuring Practices can significantly reduce the total cost of ownership of your laboratory equipment while safeguarding process quality.

### Tame Your Process Risk



METTLER TOLEDO's risk-based guidelines for laboratory equipment empower you to make the right decision whenever and wherever it matters.

Spend five minutes running our Risk Check tools and learn more about your process-specific risks. Gain confidence in your process safety and instrument performance day in, day out.

### Comply with Regulations

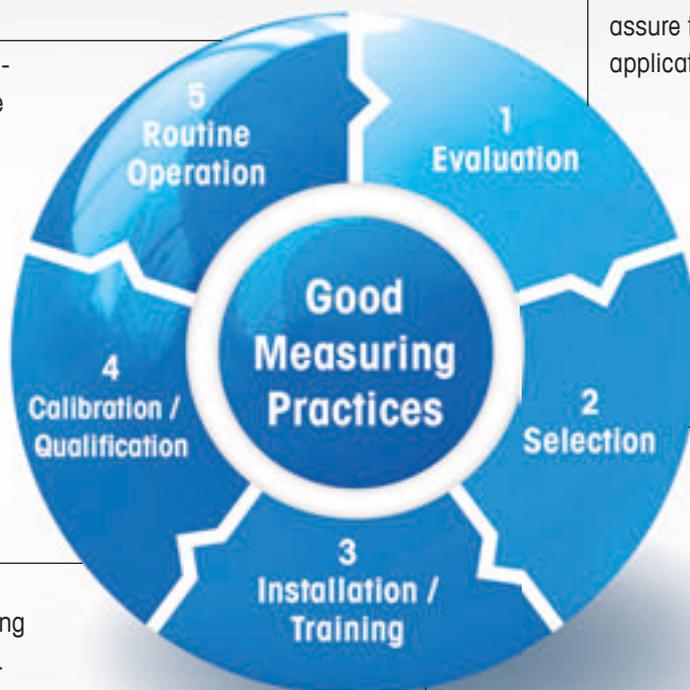


Good Measuring Practices help you to fully comply with the regulatory norms and requirements of your industry.

The guidelines satisfy all your needs for quality control and assurance and support you with audit-proof documentation so you have peace of mind at all times!

#### 5. Routine Operation

Benefit from tangible recommendations for optimal performance verification, calibration and maintenance.



#### 1. Evaluation

Analyze your process flow and associated criteria to consistently assure the highest quality of your application and data.

#### 2. Selection

Choose the ideal combination of instrument and measuring technology to best match your process needs.

#### 4. Calibration & Qualification

Trust our factory-trained Service Team when it comes to calibrating and qualifying your instruments.

#### 3. Installation & Training

Enjoy every confidence in your new device and master it with full professional skills right from day one.

## Learn more about our program for your instrument

- p. 78 Good Weighing Practice™**  
Accurate Weighing in 3 Simple Steps with GWP®
- p. 148 Good Pipetting Practice™**  
Improved Pipetting Techniques – Minimize Risk with GPP™
- p. 155 Good UV/VIS Practice™**  
Accurate and Reliable Spectroscopy – Ensured by GUVPTM™
- p. 179 Good Titration Practice™**  
Dependable Titration in Practice – Reliable Results with GTP®
- p. 198 Good Density and Refractometry Practice™**  
Secure Density and Refractometry Results – Guaranteed by GDRPTM™
- p. 225 Good Electrochemistry Practice™**  
Reliable pH Measurements – Thanks to GEP™
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Reliable Thermal Values – Optimized by GMDPTM™
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Fast and Secure Thermal Analysis Results – With the Help of GTAPT™

Get more information  
▶ [www.mt.com/gp](http://www.mt.com/gp)



# Balances and Dosing Solutions

Go Beyond Weighing



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Scan this code for more information.

# Laboratory Weighing

## Your Solution Is Here

**METTLER TOLEDO's weighing and dosing expertise and manufacturing competence goes into every balance we make to bring you outstanding performance. By adding the right laboratory software and dedicated accessories, you can create a customized weighing or dosing solution for fast, simple and worry-free workflows.**



Trust in METTLER TOLEDO's weighing expertise and manufacturing competence.

### Accuracy for Your Smallest Samples

To accurately weigh the smallest of samples, choose from our range of micro and ultra-micro balances which offer up to 61 million resolution points.



**Micro Weighing**

### Trusted Analyses

Trust in your results with our high performing analytical balances. They offer the capacity, readability, security features and built-in applications you need for all your analytical requirements.



**Analytical Weighing and Dosing**

### Robust Precision

With capacities from 0.001 grams to 64 kilograms, plus selected high performance models, we can meet all your precision weighing needs. Robust and easy to clean, our precision-weighing balances will give you years of reliable, accurate service.



**Precision Weighing**

# Three Steps To Consistent Weighing Accuracy

**Accurate weighing is about more than just the balance itself. METTLER TOLEDO's Sales and Service team can help you select, install, calibrate and maintain your balance in accordance with our globally recognized Good Weighing Practice™ (GWP®). Our expertise means you can rely on excellent performance, maximum uptime and full compliance with the norms and standards relevant to your industry.**

## 1. Step: Selection



Our free GWP Recommendation service provides documented evidence that the balance you select will meet your specific process, quality and regulatory requirements. It gives you the confidence you need to make the correct investment.

More information on page 31.

## 2. Step: Installation



Our Installation Pacs document balance installation and qualification in accordance with regulations and provide guidance on controlling environmental influences that may affect accuracy. Integral user training ensures balances are handled correctly from day one.

More information on page 76.

## 3. Step: Calibration and Testing



Balance calibration is at the core of accurate results. Our GWP Verification service proves balance accuracy on-site and includes an optimal routine testing/calibration schedule, specification of required test weights, and the ideal maintenance plan.

More information on page 78.



## **Selection: Make It Easy**

### To Choose the Right Equipment

GWP® Recommendation is a free service which helps you select the balance that meets your process requirements. Purchasing the right balance from the outset saves money by ensuring your weighing results truly meet your accuracy requirements. Our product experts will help you specify the factors which are essential to select the right balance:

#### **Maximum weight**

Specifies the maximum load you weigh

#### **Smallest net weight**

Specifies the smallest net amount you weigh

#### **Weighing tolerance**

Define your process weighing tolerance.

#### **Standards and regulations**

Ensures that the device will meet relevant quality standards (such as USP, GMP, ISO and LFT).

# LabX Application Solutions

## Efficient and Secure Workflows

**Connect your balance to LabX® software and benefit from full onscreen user guidance, automatic results calculations, and personalized reporting and documentation. LabX supports XPR/XPE/XP and XSR/XS balances, as well as Quantos.**

Users simply perform the weighing task and LabX takes care of the rest. Additionally, our LabX Services offer a comprehensive range of software support including LabX installation and application development.

### Bring the Power of LabX to Your Weighing Applications

#### Flawless SOP Adherence



By adding your SOP workflows into LabX, you can be sure that all users follow the correct procedures.

#### Central Instrument Control



All connected instruments can be monitored and controlled from the PC. Lab-wide data on weighing tasks, routine tests and instrument status are available at your fingertips.

#### Guidance at the Terminal



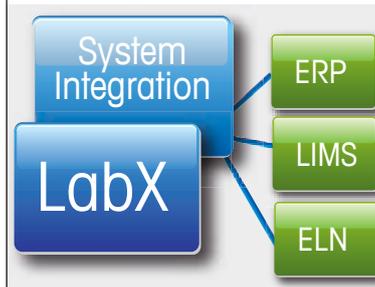
Users start each task directly from the balance terminal and follow step-by-step instructions to eliminate errors and rework.

#### Data Integrity



LabX saves all process data securely and performs all calculations, completely eliminating transcription errors and assisting in compliance with FDA 21 CFR Part 11.

#### Seamless Integration



Connect your balance to LabX for seamless integration with your existing information systems (e.g. ELNs and LIMS).

#### Multiple Instruments



Connect up to 30 instruments in any combination: XPR/XPE/XP/XSR/XSE/XS balances, Quantos, titrators, UV/VIS spectrophotometers, pH meters, melting point instruments, density meters and refractometers.

## Example Applications

Whether you customize an application from our library or create a new one from scratch, the examples below show the type of benefits LabX® can bring to any of your weighing applications. Our LabX specialists can develop your methods for you as part of our service offering.



### Standard Preparation

- One-step dosing
- Fully labeled samples
- Automatic calculations

### Typical Product Bundle

XPE205 Analytical balance  
LabX Balance Starter Pac  
ErgoClip flask  
Label printer  
Ethernet option



### Loss-on-Drying (LoD)

- Simplified sample handling
- Intelligent task management
- Color Pass/Fail identification

### Typical Product Bundle

XPE204 Analytical balance  
LabX Balance Starter Pac  
ErgoClip round-bottom flask  
Label printer  
Barcode reader  
Ethernet option



### Sieve Analysis

- Auto sieve-weighing
- No manual transcription
- Graphical reports

### Typical Product Bundle

XPR10001L Precision balance  
LabX Balance Starter Pac  
Ethernet option  
ErgoClip sieve

## LabX Starter Pacs

Starter Pac Express		Starter Pac Server	
Up to three instruments connected to a local computer		Up to 30 connected instruments with the capability to distribute the system over multiple computers. Advanced options available.	
LabX Balance express	11153120	LabX Balance server	11153121
LabX Quantos express	30062403	LabX Quantos server	30062404

Please see LabX on pages 16–19 for further details and licensing options.

## LabX Services

Carefully designed LabX Services allow you to choose the individual services you need to support your LabX system.

- App development
- Installation
- Training
- Validation
- Integration
- Support & maintenance

Our annual checkup is highly recommended to keep your system up-to-date and functioning correctly. For more details, please see the LabX Services for Excellence Balances brochure.



Please order the brochure for a full overview of LabX Services.

# Taking Weighing to New Limits For the Smallest Sample Sizes

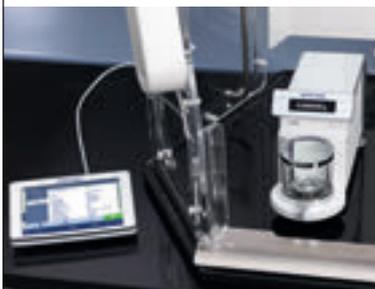
**With up to 61 million resolution points, XPR micro and ultra-micro balances are ideal for accurately measuring the smallest of samples.**

### Patented Cooling Delivers Top Performance



Heat from the electronics at the back of XPR is removed via the patented Active Temperature Control (ATC™) system. Better temperature stability enables the XPR to deliver an outstanding level of weighing performance.

### Space Saving



The XPR has the smallest footprint of any micro balance on the market and has the added convenience of being able to place the main terminal wherever it is most easily accessible – even outside your safety cabinet.

### Easy Cleaning



The newly designed draft shield provides easy access to the weighing pan. There are no edges and corners where sample material could become trapped. All parts can be removed, cleaned and replaced in a few simple steps.

<b>Accurate Results</b>	Active Temperature Control Magnetic Force Restoration weighing sensor with high resolution MinWeigh warning function
<b>Efficient Operation</b>	Storage of methods and sample series Capacitive colored touchscreen with gesture control, glove compatible
<b>Quality Assurance</b>	GWP®-approved built-in quality assurance monitoring ToleranceProfile function, programmable for up to 10 standards User management and password protection AuditTrail function and change history files StatusLight™ LevelControl, graphical leveling & level warning Temperature and time programmable proFACT
<b>Seamless Process</b>	Efficient operation via SmartView terminal Storage of SOPs in method library (including sample series and tolerances) Easy data export via connectivity ports: 4 × USB, 1 × LAN
<b>Sustainable Value</b>	Compact design with small footprint Optimized draft shield for easy cleaning Overload protection



XPR6UD5 micro balance



**Efficient Operation**

The SmartView terminal is right where you need it as you carry out your weighing tasks. The terminal is intuitive and includes all the basic functions you need to weigh.



**Simplified Documentation**

As you carry out your tasks, all parameters are automatically recorded on the built-in results notepad. You can choose a simple or expanded list and even add your own comments. Simply transfer results to a PC or print them out to complete your documentation.



**Direct Data Transfer**

You no longer need to record results by hand or spend time typing in data. Simply transfer task parameters and results to a PC or software application via USB. Transcription errors are completely eliminated and the integrity of your data is preserved.

Watch the video now.  
[www.mt.com/xpr-microbalances](http://www.mt.com/xpr-microbalances)

Model	Capacity	Readability	Repeatability <sup>2)</sup>	Linearity	Settling Time (typical)	USP Minimum Weight <sup>1)</sup>	Weighing Pan Ø (mm)	Material No.
XPR2	2.1 g	1 µg	0.8 µg	4 µg	7 s	1 mg	27	30279267
XPR6UD5	6.1 g	0.5 µg	0.5 µg	4 µg	9 s	0.6 mg	27	30279285
XPR10	10.1 g	1 µg	0.6 µg	4 µg	7 s	0.82 mg	27	30279296
XPR2U	2.1 g	0.1 µg	0.2 µg	1.5 µg	10 s	0.3 mg	16	30279196
XPR6U	6.1 g	0.1 µg	0.25 µg	4 µg	15 s	0.3 mg	16	30279276

<sup>1)</sup> Typical minimum sample weight according to USP Chapter 41; measurement at ≤ 5% load    <sup>2)</sup> Guaranteed value  
**All models also available in approved version.**

# Worry-Free Weighing

## High-Capacity Micro Balances

**XPE micro-analytical balances deliver the highest capacity coupled with the lowest possible minimum weight. This means you can dose directly into a larger tare container, saving valuable material and making significant cost reductions. Weighing becomes fast, easy and safe.**

### StaticDetect™ – Sample OK



A warning is given if the weighing error caused by static charges is above the user-defined limit. For the highest process security, AntiStatic measures neutralize the charge and ensure the most accurate results.

### StatusLight™ – Balance Ready



StatusLight uses color to intuitively indicate balance status. Green means ready, yellow is a warning and errors are shown in red.

### LabX® – Processes under Control



LabX laboratory software provides flexible SOP user guidance on the balance touchscreen. Automatic data handling, calculations and report generation eliminate transcription errors and assure full traceability.

<b>Accurate Results</b>	High-resolution technology Internal adjustment with sensitivity testing Internal temperature control StaticDetect
<b>Efficient Operation</b>	Color touchscreen 11 languages ErgoClips Micro for direct dosing Easy cleaning SmartGrid™ Micro hanging weighing pan SmartTrac™ guided dosing to target Automatic inner & outer draft shield SmartSens for hands-free operation
<b>Quality Assurance</b>	Graphical leveling & level warning MinWeigh protection TestManager™ FACT, GWP® & admin history 8 users & password protection StatusLight

<b>Seamless Process</b>	LabX ready RFID communication ready Compact AntiStatic kit ready Built-in RS232 & optional 2 <sup>nd</sup> interface
<b>Automation Options</b>	Quantos upgrade ready (XP56) LabX ready RFID communication ready



XPE56 micro-analytical balance



**SmartGrid Micro**

The unique SmartGrid minimizes the effects of air turbulence. Stabilization times are greatly reduced when compared to a standard pan weighing pan.



**Secure Dosing**

Direct dosing is accurate, fast, and fits any working situation thanks to the intelligently designed ErgoClips. For the fastest possible stabilization times, the Min-Weigh micro door is essential.



**Easy Cleaning**

Minimize the risk of contamination: Each panel of both the inner and outer draft shield can be removed easily and cleaned in a flash!

**Micro-Analytical**

Model	Capacity	Readability	Repeatability <sup>2)</sup>	Linearity	USP Minimum Weight <sup>1)</sup>	Weighing Pan (mm)	Material No.
XPE26	22 g	1 µg	1.5 µg	6 µg	1.4 mg	40×40	30105893
XPE26 DeltaRange	← 8 g → 22 g	2 µg / 10 µg	2 µg / 5 µg	10 µg	2.4 mg	40×40	30105897
XPE56	52 g	1 µg	1.5 µg	20 µg	1.4 mg	40×40	30105904
XPE56 DeltaRange	← 11 g → 52 g	2 µg / 10 µg	2 µg / 6 µg	30 µg	2.4 mg	40×40	30105932
XPE56 Quantos <sup>3)</sup>	52 g	1 µg	1.5 µg	20 µg	1.4 mg	40×40	30133090

<sup>1)</sup> Typical minimum sample weight according to USP Chapter 41; measurement at ≤ 5% load    <sup>2)</sup> Guaranteed value

<sup>3)</sup> XPE56 Quantos is only for use with Quantos dosing modules. The declared USP minimum weight is for an automated dosing system.

All models also available in approved version.

# Analytical Balances

## Overview

### Excellence Level Balances

Reliable analytical results begin with accurate weighing. Proper sample preparation and careful data handling are crucial. When there is no room for compromise, Excellence weighing and dosing solutions deliver accurate results first time, every time. Outstanding weighing performance and innovative sample-handling technologies help make your challenging weighing tasks efficient, error-free and compliant. Set up LabX® software for seamless integration and to ensure data integrity.

#### XPE



Capacity up to 520 g  
Readability 0.005 mg / 0.1 mg  
Minimum weight 1 mg  
USP minimum weight 10 mg

#### Ergonomic Solutions

Enjoy ergonomic processes with automatic draft shields, ErgoClips for precise sample handling, terminal stand, and built-in sensors.

#### Comprehensive Data Management

Workflow user guidance and centralized data management help ensure data integrity.

#### Regulatory Compliance

With a full set of quality assurance features, you can be sure to meet the strictest regulations.

#### Process Security

Complete process optimization and integration with LabX automated data handling and convenient accessories.

#### Integrated Electrostatic Solutions

StaticDetect™ warns you if an electrostatic charge is detected, then removes charges with the integrated ionizer.

#### Automated Dosing Options

Boost your process efficiency and achieve the highest accuracy by automating powder and/or liquid dosing.

#### Easy-to-Clean

Remove the SmartGrid™ weighing pan and draft shield in seconds with no need for tools, all dishwasher safe.

#### XPE Automated Dosing



Capacity up to 520 g  
Readability 0.005 mg / 0.1 mg  
Automated minimum weight 0.7 mg  
Automated USP minimum weight 7 mg

#### Powder Dosing

For highest accuracy and safety, dose free-flowing powders automatically into your target container.

#### Liquid Dosing

The correct amount of solvent is automatically added to your dosed substance to achieve highly accurate concentrations.

#### Increased Productivity

Automated dosing is much faster than dosing manually, making huge time savings for your lab; up to 30 samples can be dispensed in one completely unattended run.

#### Safe, Accurate Dosing

Automated dosing is highly accurate and reproducible, while materials are contained, minimizing exposure to toxic substances.

#### Assured User Safety

Potent or toxic compounds remain sealed and hence aerosol formation is kept to a minimum, operators work safely without exposure to substances during weighing.

#### Unmatched Accuracy

Dose 1 milligram to 5 grams of free-flowing powder directly into the target container for highly accurate dosing that eliminates variability and out-of-specification results.

#### XS



Capacity up to 320 g  
Readability 0.01 mg / 0.1 mg  
Minimum weight 1.6 mg  
USP minimum weight from 16 mg

#### Ergonomic Solutions

Enjoy ergonomic processes with ErgoClips for precise sample handling, quick-mounted terminal stand, and remote sensors.

#### Easy Data Management

Data handling features and easy system integration ensure you get results you can trust.

#### Industry Compliance

Quality assurance features ensure secure processes and compliance with industry standards.

#### Process Security

Simplify workflows and reduce errors with LabX automated data handling and useful accessories.

#### Easy-to-Clean

Remove the SmartGrid weighing pan and draft shield in seconds with no need for tools, all dishwasher safe.

## 1000 Balances. 4 Steps.

One Recommendation.

[www.mt.com/easyfinder](http://www.mt.com/easyfinder)



### Advanced Level Balances

When you need great performance and durability, our Advanced level balances are the right choice. They offer high weighing performance to deliver accurate results, intuitive operations and integrated applications to enable convenient weighing processes.

#### MS



Capacity up to 320 g  
Readability 0.01 mg / 0.1mg  
Minimum weight 3 mg  
USP minimum weight 30 mg

#### Robust with High Precision

High-precision MonoBloc™ weighing cell, full metal housing resistant to chemicals.

#### Touchscreen and Applications

The large color touchscreen and 11 intuitive applications with user guidance make routine weighing tasks simple and efficient.

#### Easy Data Transfer

USB, RS232, and optional Bluetooth enable easy connection to peripheral devices and PC.

#### Industry Compliance

Quality assurance features help support compliance with regulations, passcode-protected settings.

#### Easy-to-Clean

Dismantle the QuickLock draft shield and glass panels of the MS-TS quickly with no need for tools, easy-clean surfaces.

#### ML



Capacity up to 320 g  
Readability 0.1 mg  
Minimum weight 16 mg  
USB minimum weight 160 mg

#### Robust and Compact

High-precision MonoBloc weighing cell in a compact design.

#### Intuitive Applications

10 intuitive applications and a clear graphical user interface simplify routine weighing tasks.

#### Easy Data Transfer

USB, RS232, and optional Bluetooth enable easy connection to peripheral devices and PC.

#### Compliant Results Printouts

Print out up to four IDs, the balance serial number, and more, in order to meet regulations.

#### Easy-to-Clean

Remove the QuickLock glass panels quickly with no need for tools, easy-clean surfaces.

### Standard Level Balances

Enter the professional world of weighing with our robust and easy-to-use Standard level balances. High-quality construction and solid performance ensure consistent and precise weighing results.

#### ME



Capacity up to 220 g  
Readability 0.1 mg  
Minimum weight 16 mg  
USB minimum weight 160 mg

#### Robust and Durable

Robust weighing cell with overload protection.

#### Easy to use

Easy-to-use applications simplify routine weighing tasks.

#### Easy Data Transfer

USB, RS232, and optional Bluetooth enable easy connection to peripheral devices.

#### Easy-to-Clean

Smooth, easy-clean surfaces.

# XPE Weighing and Dosing Solutions

## Your Future-Proof Investment

An investment in a XPE balance ensures the accurate weighing results you want today. These flexible balances also enable you to adapt your balance over time through the addition of accessories, extra peripheral devices, LabX® and Quantos dosing modules. Be ready for today and prepared years to come.

- Automated powder and liquid dosing – Quantos
- Data management and process security – LabX
- Efficient applications – accessories and peripheral devices



Weighing



Weighing and liquid dosing



Automated powder dosing

Weighing, powder and liquid dosing



**LabX® Laboratory Software**

SOP user guidance on the instrument, automatic data handling, bidirectional integration with ERP systems.

For more details, please see page 14.

**Accessories**

Optimize your processes by adding peripheral devices and accessories.

For more details, please see page 92-93.

# XPE: Secure Analytical Weighing

## Reliable Results for Years to Come

XPE analytical balances provide outstanding performance and the lowest minimum sample weight in analytical weighing while supporting the highest requirements for safety, efficiency and quality assurance.

Excellence

### StaticDetect™ – Sample OK



When static charges are present, the weighing error is measured and a warning is given. For the highest process security, the user can employ anti-static measures to neutralize the charge and ensure the most accurate results.

### StatusLight™ – Balance Ready



The StatusLight uses color to intuitively indicate balance status. Green means ready, yellow is a warning and errors are shown in red. The clearly visible light communicates if the balance is ready for you to start your weighing task.

### LabX® – Processes under Control



LabX laboratory software provides flexible SOP user guidance on the balance's touchscreen. Automatic data handling, calculations and report generation eliminate transcription errors and assure full traceability.

<b>Accurate Results</b>	High-resolution cell technology Internal adjustment with sensitivity testing Internal temperature control StaticDetect	<b>Seamless Process</b>	Quantos upgrade ready LabX ready RFID communication ready Compact AntiStatic kit ready Built in RS232 & optional 2 <sup>nd</sup> interface
<b>Efficient Operation</b>	Color touchscreen User interface in 11 languages ErgoClips for direct sample dosing Easy cleaning SmartGrid™ hanging weighing pan SmartTrac™ guided dosing to target Automatic draft shield SmartSens for hands-free operation	<b>Automation Options</b>	Quantos upgrade ready LabX ready RFID communication ready
<b>Quality Assurance</b>	Graphical leveling & level warning MinWeigh protection Test Manager™ FACT, GWP® & admin history 8 users & password protection StatusLight		



XPE205 analytical balance



**SmartGrid and ErgoClips**

The unique SmartGrid minimizes the effects of air turbulence so that stabilization times are reduced. Direct dosing is accurate, fast, and fits any working situation thanks to the intelligently designed and flexible ErgoClips that can be installed in seconds.



**Easy Cleaning**

Minimize the risk of contamination: Each panel of the draft shield can be removed easily and cleaned in a flash.



**AntiStatic Kits**

The compact ionizer fixes on to your balance to gently and effectively remove charges from the sample and tare container. External units are also available.

Watch the video now.  
[www.mt.com/xpe-analytical](http://www.mt.com/xpe-analytical)

Model	Maximum Capacity	Readability	Repeat-ability <sup>1)</sup>	Linearity	USP Minimum Weight <sup>2)</sup>	Automated USP Minimum Weight <sup>3)</sup>	Weighing Pan (mm)	Material No.
XPE206 DeltaRange	← 81 g → 220 g	0.005/0.01 mg	0.015 mg	0.10 mg	10 mg	7 mg	78 × 73	30132913
XPE105	120 g	0.01 mg	0.015 mg	0.10 mg	14 mg	10 mg	78 × 73	30087635
XPE105 DeltaRange	← 41 g → 120 g	0.01/0.1 mg	0.015 mg	0.15 mg	14 mg	10 mg	78 × 73	30087924
XPE205	220 g	0.01 mg	0.015 mg	0.10 mg	14 mg	10 mg	78 × 73	30087653
XPE205 DeltaRange	← 81 g → 220 g	0.01/0.1 mg	0.015 mg	0.15 mg	14 mg	10 mg	78 × 73	30087700
XPE204	220 g	0.1 mg	0.05 mg	0.2 mg	82 mg	82 mg	78 × 73	30087643
XPE304	320 g	0.1 mg	0.08 mg	0.3 mg	82 mg	82 mg	78 × 73	30131288
XPE504	520 g	0.1 mg	0.08 mg	0.4 mg	82 mg	82 mg	78 × 73	30087770
XPE504 DeltaRange	← 100 g → 520 g	0.1/1 mg	0.5 mg	0.5 mg	82 mg	82 mg	78 × 73	30133099

<sup>1)</sup> Guaranteed value, 5% load    <sup>2)</sup> Typical minimum sample weight according to USP Chapter 41; measurement at ≤ 5 % load

<sup>3)</sup> The declared USP Minimum Weight is when using automated powder dosing

All models also available in approved version.

# XPE Powder Dosing

## For the Highest Accuracy and Safety

**Quantos modules use an automated process to dose free-flowing powders with a level of accuracy that is impossible to match in a manual process, even by the most skillful hands. Simply enter a target weight and Quantos doses the exact amount. Automated dosing eliminates out-of-specification errors. Hands-free dosing of the powder directly into the target container significantly lowers exposure risk.**

### Unmatched Accuracy



Quantos can dose from one milligram to five grams of free-flowing powder directly into your target container. The highly accurate dosing process eliminates variability and out-of-specification results. Automated dosing can reduce the minimum net sample weight of your balance by up to 30 %.

### Assured User Safety



Potent or toxic compounds remain sealed within the dosing head and hence aerosol formation is kept to a minimum. With an automated dosing process, users work safely without exposure to substances during weighing.

### Simplified Powder Dosing



Nanoparticles, fine powders, granules and heterogeneous mixes are all suitable for dispensing. Even hard to handle or electrostatically charged powders are accurately dosed to target.



XPE analytical balance with powder module



**Easy Balance Upgrade**

The powder-dosing module is compatible with all XPE analytical balances. The dosing module is easy to attach to your balance. You are immediately ready to start powder dosing.



**Traceable Data**

All information (substance ID, substance expiry date etc.) is saved on the integrated RFID chip. Data can be easily called up and printed to ensure full traceability.



**LabX® Laboratory Software**

Store complex applications, such as dilution series, in LabX and then run them directly from the balance with step-by-step user guidance plus automatic data handling.

**Technical Specifications**

Powder Dispensing Range	1 mg to several g
Average Dispensing Time	15–20 seconds, depending on the target weight and powder flow
Compatible Balance Models	XPE56Q, XPE206DR, XPE205, XPE205DR, XPE105, XPE105DR, XPE204, XPE304, XPE504, XPE504DR
Suitable Powders	Free-flowing, granular, electrostatically charged, lyophilized material, compacting, low density

**Material No.**

Q2 Powder Dosing Module	30005906
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Download the XPE Powder Dosing brochure.

[www.mt.com/powder-dosing](http://www.mt.com/powder-dosing)

# XPE Liquid Dosing

## For Precise Concentrations

The **Quantos** liquid-dosing module dispenses liquids in a fine jet with individual drops weighing less than 1 milligram. To achieve the desired concentration, the liquid-dosing module dispenses the correct amount of solvent according to the actual amount of dosed substance. **Quantos** calculates the amount of liquid automatically.

### Highly Accurate Concentrations



Prepare concentrations down to 0.1 mg/g in one step in accordance with USP. Automated liquid dosing delivers precise concentrations every time because solvent is added automatically based on the actual weight of weighed-in solids.

### Manual Variability Eliminated



This gravimetric sample preparation uses precise balance results to produce accurate concentrations, in contrast to error-prone visual readings when using volumetric flasks. Automatic results recording also eliminates transcription errors.

### Compliant Process



Due to the improvements in accuracy, USP approves of gravimetric procedures as an alternative method for preparing solutions.



XPE analytical balance with liquid module



#### Easy Balance Upgrade

With the addition of a liquid-dosing module, you can use your XPE analytical balance to not only weigh your substances but also prepare solutions with an unmatched level of accuracy.



#### Micro-Dosing Valve

A micro-dosing valve is used to dispense solvents automatically with levels of precision down to less than one milligram.



#### LabX® Laboratory Software

Store complex applications, such as dilution series, in LabX and then run them directly from the balance with step-by-step user guidance plus automatic data handling.

### Technical Specifications

Liquid Dispensing Range	2 mg to 100 g
Liquid Source Bottle	25 mL, 250 mL, 500 mL, 1000 mL pressure-tight bottle with GL45 thread size
Average Dispensing Time	Maximum flow rate 30 g/min (0.5 bar pressure)
Suitable Liquids	Low viscosity solvents (<20cP) e.g. water, acetonitrile, methanol, ethanol
Compatible Balance Models	XPE206DR, XPE205, XPE205DR, XPE105, XPE105DR, XPE204, XPE304, XPE504, XPE504DR

#### Material No.

QLX45 Liquid Dosing Module	30008618
QL2 Pump Module	30008317
QLL1000 Liquid Bottle and Head	30008318
QLL25 Liquid Bottle and Head	30237340

# XPE Automated Powder Dosing For Precise Batch Preparation

**The Quantos autosampler system is the perfect solution for preparing batches of up to 30 powdered samples in one fully automated run. You benefit from highly accurate dosing while laboratory personnel are released to work on other tasks. Highly flexible, the autosampler system has the unique ability to dose different amounts per vial and record the fill weight in one step.**

## Increased Productivity



Automated powder dosing is much faster than dosing manually, capturing huge time savings for your lab. Up to 30 samples can be dispensed in one completely unattended run. While the autosampler is at work, your staff can focus on other tasks.

## Safe, Accurate Dosing



Automated dosing with Quantos is highly accurate and reproducible, even when using small capsules or electrostatically charged substances. Materials are contained, minimizing exposure to toxic substances.

## Fast Container Filling



Preparing samples with the Quantos autosampler module is not only considerably faster than preparing samples manually, but it also reduces errors and variability. Different sized containers as well as capsules and vials of any kind are filled quickly and automatically.



XPE analytical balance with autosampler

**Easy Balance Upgrade**

The autosampler works in conjunction with your XPE balance. Powders are dispensed automatically into the containers on the carousel.



**Container Flexibility**

By simply adjusting the height of the dosing head, Quantos can be used for filling vials, bottles, tubes, capsules, stability pouches, ampules, syringes and more.



**LabX® Laboratory Software**

Store complex applications, such as dilution series, in LabX and then run them directly from the balance with step-by-step user guidance plus automatic data handling.



**Technical Specifications**

Powder Dispensing Range	1 mg to several g
Average Dispensing Time	20–35 min for one run with 30 samples, depending on the target weight and powder flow
Compatible Balance Models	XPE206DR, XPE205, XPE205DR, XPE105, XPE105DR, XPE204
Suitable Powders	Free-flowing, granular, electrostatically charged, lyophilized material, compacting, low density
Target Vessel	30 containers with a diameter up to 28 mm, or 15 containers with a maximum diameter of 45 mm. Maximum height 110 mm (140 mm). Adapters available for capsules, bottles, vials, tubes, crucibles.

**Material No.**

Q2 Powder Dosing Unit	30005906
QS30 Autosampler	11141300



Download the Capsule Filling brochure.

► [www.mt.com/quantos-autosampler](http://www.mt.com/quantos-autosampler)

# XS: Worry-free Weighing

## Ergonomic, Reliable and Accurate

The XS analytical balance line, with its innovative accessories, sets new standards for fast and efficient weighing processes. Unique features on XS analytical balances make operation as comfortable and safe as possible.

### Fast Results



SmartGrid™ minimizes the effects of air currents to dramatically reduce stabilization times. Spilled substances fall through the grid and do not influence your weighing results.

### Easy Cleaning



The full weighing chamber, including SmartGrid and the drip tray underneath, dismantles in seconds and all parts go in the dishwasher.

### Intuitive Operation



The touchscreen is bright and clear to read. Fatigue and eye strain are greatly reduced thanks to a terminal that can be adjusted to individual comfort levels – brightness, contrast and digit size are all configurable.

<b>Accurate Results</b>	High-resolution cell technology FACT internal adjustment with advanced features
<b>Efficient Operation</b>	Touchscreen Large clear numbers on display User interface in 11 languages ErgoClips for direct dosing to target Easy cleaning SmartGrid hanging weighing pan
<b>Quality Assurance</b>	TestManager™ embedded software MinWeigh function FACT and GWP® history Password protection
<b>Seamless Process</b>	Built in RS232 Optional 2 <sup>nd</sup> interface LabX® ready
<b>Automation Options</b>	LabX ready



XS204 analytical balance



**Ergonomic Dosing**

Thanks to unique ErgoClip accessories, you can dose directly into your tare container in one easy step. This not only speeds up weighing processes but saves valuable substances too.

Model	Maximum Capacity	Readability	Repeatability <sup>2)</sup>	Linearity	USP Minimum Weight <sup>1)</sup>	Weighing Pan (mm)	Material No.
XS105 DualRange	41 g 120 g	0.01/0.1 mg	0.02 mg	0.2 mg	20 mg	78 × 73	11106009
XS105	120 g	0.01 mg	0.02 mg	0.2 mg	16 mg	78 × 73	30132870
XS205 DualRange	81 g 220 g	0.01/0.1 mg	0.02 mg	0.2 mg	20 mg	78 × 73	11106000
XS225 DualRange	121 g 220 g	0.01/0.1 mg	0.02 mg	0.2 mg	20 mg	78 × 73	30132858
XS64	62 g	0.1 mg	0.07 mg	0.2 mg	82 mg	78 × 73	11106015
XS104	120 g	0.1 mg	0.07 mg	0.2 mg	82 mg	78 × 73	11106012
XS204	220 g	0.1 mg	0.07 mg	0.2 mg	82 mg	78 × 73	11106003
XS204 DeltaRange	81 g 220 g	0.1/1 mg	0.1 mg	1 mg	82 mg	78 × 73	11106006
XS304	320 g	0.1 mg	0.07 mg	0.2 mg	82 mg	78 × 73	30132948

<sup>1)</sup> Typical minimum sample weight according to USP Chapter 41; measurement at ≤ 5 % load <sup>2)</sup> Guaranteed value  
**All models available in verified version.**

# MS: Semi-Micro Balances For Higher Accuracy Needs

With 10-microgram readability, MS semi-micro balances are perfect for weighing your smallest samples. The high resolution technology (HRT) weighing cell is made in Switzerland and ensures your results are accurate and reliable.

Advanced

### Accurate Results



Temperature controlled automatic internal adjustment (FACT) uses the two built-in weights to test for sensitivity and non-linearity to ensure consistently accurate results.

### Ergonomic Doors



The doors do not project beyond the balance so you save valuable bench space. To enable ergonomic dosing processes, the right hand door can be opened with the left lever – and vice versa.

### Pipette Check Application



Quickly convert your semi-micro balance into a pipette checking station by installing an evaporation trap. The built-in application guides you through the pipette check process.

<b>Accurate Results</b>	High resolution weighing cell (HRT) Two built-in adjustment weights FACT – fully automatic time and temperature-controlled internal adjustment Low minimum weight Full metal housing
<b>Efficient Operation</b>	HCD high contrast display (18 mm high digits) Easy cleaning with QuickLock glass panels ErgoDoor left/right operation Telescopic draft shield doors for reduced footprint
<b>Quality Assurance</b>	Menulock (settings protection) PipetteCheck with evaporation trap (optional)
<b>Seamless Process</b>	2 interfaces – USB and RS232 Bluetooth option PC Direct application for easy data transfer



MS105 semi-micro balance

**Reliable and Versatile**

You can depend on these balances for weighing all your small samples for process/quality control, density determination or formulation.

**Durable and Robust**

A metal housing protects the weighing sensor from environmental influences and impacts. Consistency and precision is guaranteed year after year – even with intensive use in harsh environments.

**Hands-Free Operation**

Perform selected balance operations with a remote sensor:

ErgoSens™ (shown): 11132601

Footswitch: 11106741

► [www.mt.com/semimicro-analytical](http://www.mt.com/semimicro-analytical)

Model	Maximum Capacity	Readability	Repeatability <sup>2)</sup>	Linearity	USP Minimum Weight <sup>1)</sup>	Weighing Pan (mm)	Material No.
MS105	120 g	0.01 mg	0.04 mg	0.1 mg	30 mg	∅ 80	11142056
MS105 DualRange	42 g   120 g	0.01 mg / 0.1 mg	0.03 mg / 0.08 mg	0.15 mg	30 mg	∅ 80	11142062
MS205 DualRange	82 g   220 g	0.01 mg / 0.1 mg	0.05 mg / 0.08 mg	0.2 mg	30 mg	∅ 80	11142068
MS204 <sup>3)</sup>	220 g	0.1 mg	0.09 mg	0.2 mg	100 mg	∅ 80	11142074

<sup>1)</sup> Typical minimum sample weight according to USP Chapter 41; measurement at ≤ 5 % load    <sup>2)</sup> Guaranteed value

<sup>3)</sup> MS semi-micro design with 0.1 mg readability

# MS-TS Analytical Balances

## Trusted Results at Your Fingertips

**Robust MS-TS analytical balances deliver fast, precise and reliable results with both lab and quality-control application support. Intuitive to operate and easy-to-clean, MS-TS balances bring a new level of comfort to your daily weighing tasks.**

Advanced

### Easy and Comfortable Use



The 7-inch extra-large color TFT touchscreen display can be operated through cotton, silicon and rubber gloves. An intuitive user interface and 18 millimeter high digits bring comfort to your daily tasks.

### Assured Traceability



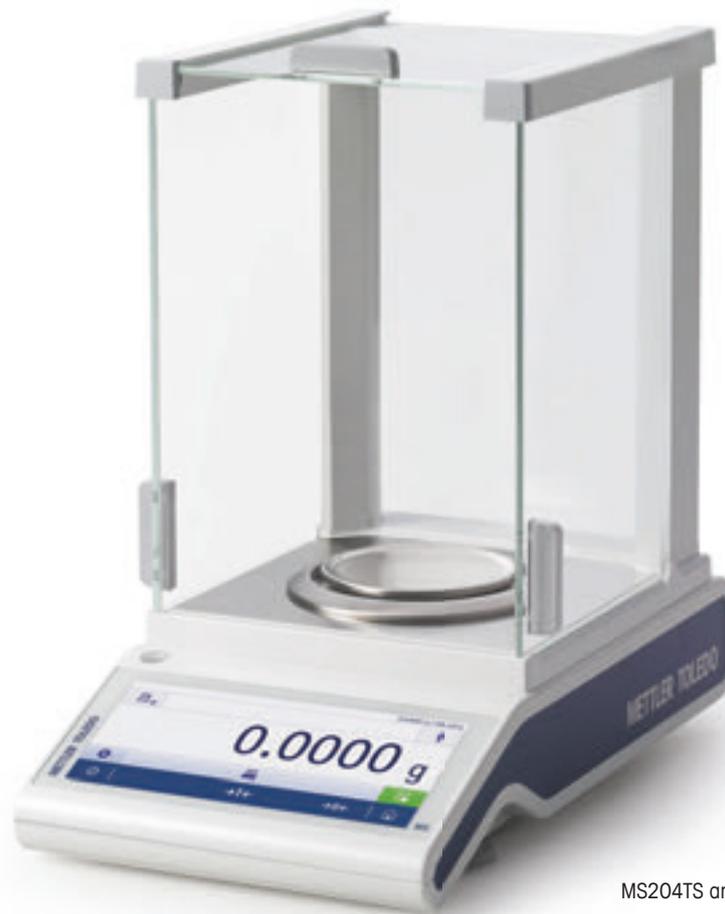
Enter up to four IDs per sample using the built-in touchpad or a barcode reader for fast and reliable traceability (user, sample, batch, etc.).

### Effortless Cleaning



The QuickLock draft shield dismantles in seconds without any tools and all parts are dishwasher-safe. Surfaces are smooth and rounded to make cleaning easy.

<b>Accurate Results</b>	<ul style="list-style-type: none"> <li>MonoBloc™ weighing cell and overload protection</li> <li>Built-in level control function and leveling user guidance</li> <li>FACT – fully automatic temperature-controlled internal adjustment</li> <li>User-defined minimum weight with warning function</li> <li>Wind ring for faster settling times</li> <li>Full metal housing</li> </ul>
<b>Efficient Operation</b>	<ul style="list-style-type: none"> <li>7-inch extra-large color TFT touchscreen (18 mm high digits)</li> <li>Easy cleaning with QuickLock for glass panels</li> <li>Graphical display of statistics – improved management and evaluation of weighing data</li> <li>Easy-to-use applications – simplified workflows and increased efficiency</li> </ul>
<b>Quality Assurance</b>	<ul style="list-style-type: none"> <li>ISO-Log records important changes, e.g. adjustments, leveling status</li> <li>Sample ID – avoids confusion among samples and provides traceability</li> <li>Passcode protection – only authorized users can make adjustments</li> </ul>
<b>Seamless Process</b>	<ul style="list-style-type: none"> <li>3 interfaces – USB device, USB host and RS232</li> <li>Bluetooth option</li> <li>PC direct application for easy data transfer (no software needed)</li> <li>LabX® direct balance software for customized data transfer</li> </ul>



MS204TS analytical balance

**Guided Balance Leveling**

Built-in LevelControl issues a warning when the balance is not level and provides onscreen guidance to help you level the balance in seconds.

**Safe Weighing Range**

When weighing-in, the weight value remains red until the net sample weight is above the pre-programmed minimum value. Enter your own minimum value for additional safety.

**Passcode Protection**

Create a passcode to restrict modification of balance settings to authorized personnel only – functions that affect metrological performance are protected against accidental alteration.

Watch the video now.

[www.mt.com/ms-analytical](http://www.mt.com/ms-analytical)

Model	Maximum Capacity	Readability	Repeatability <sup>2)</sup>	Linearity	USP Minimum Weight <sup>1)</sup>	Weighing Pan (mm)	Material No.
MS104TS	120 g	0.1 mg	0.1 mg	0.2 mg	160 mg	Ø 90	30133522
MS204TS	220 g	0.1 mg	0.1 mg	0.2 mg	160 mg	Ø 90	30133523
MS304TS	320 g	0.1 mg	0.1 mg	0.2 mg	160 mg	Ø 90	30133524

<sup>1)</sup> Typical minimum sample weight according to USP Chapter 41; measurement at ≤ 5 % load    <sup>2)</sup> Guaranteed value

# ML-T Analytical Balances

## Big Features Go Compact

The ML-T compact balances offer good weighing performance and robustness combined with easy-to-use applications. With a battery-power option, these clever balances are fully portable. Ergonomically designed and with multiple built-in applications, you get a lot of balance in a footprint of just 290 × 184 millimeters.

Advanced

### Intuitive Operation



The large 4.5-inch color TFT touchscreen with clear icons and intuitive guidance enables efficient balance operation even while wearing cloth or rubber gloves. Multilingual text and graphics walk you through every step of your weighing procedures.

### Process Tolerances Ensured



The weight value remains red until the net sample weight is above the pre-programmed minimum value. A user-defined minimum weight can also be programmed into the balance to provide an additional safety factor.

### Simplified Balance Leveling



The built-in LevelControl function issues a warning when the balance is not level and provides onscreen guidance to help you level the balance in seconds.

### Accurate Results

MonoBloc™ weighing cell with overload protection  
 FACT – fully automatic temperature controlled internal adjustment  
 Built-in level control function and leveling user guidance  
 User-defined minimum weight with warning function  
 Wind ring for faster settling times  
 Metal base

### Efficient Operation

4.5-inch color TFT touchscreen  
 Easy-to-use applications – simplified workflows and increased efficiency  
 Statistics – improved management of weighing data  
 Easy cleaning with QuickLock glass panels  
 Extra small footprint  
 Battery operation

### Quality Assurance

ISO-Log records important changes e.g. adjustments, leveling status  
 Sample ID avoids confusion among samples and provides traceability  
 Passcode protection – only authorized users can make adjustments

### Seamless Process

3 interfaces: USB device, USB host and RS232  
 Bluetooth option  
 Built-in PC direct application for easy data transfer (no software needed)  
 LabX® direct balance software for customized data transfer



ML204T analytical balance



**Quick and Easy Cleaning**

Remove, clean and reinsert all of the QuickLock glass panels in just a few simple steps without tools and without moving the balance. The balance housing has smooth, rounded edges to make cleaning even easier.



**Portable Convenience**

The battery compartment takes 8 AA batteries and provides you with up to 10 hours run time.



**Robust Weighing Cell**

Our renowned and robust MonoBloc™ weighing cell, with FACT automatic internal adjustment, delivers consistently reliable results in the lab or field.

Watch the video now.  
[www.mt.com/mlt-analytical](http://www.mt.com/mlt-analytical)

ML-T Models	Maximum Capacity	Readability	Repeatability <sup>2)</sup>	Linearity	USP Minimum Weight <sup>1)</sup>	Weighing Pan (mm)	Material No.
ML54T	52 g	0.1 mg	0.1 mg	0.2 mg	160 mg	∅ 90	30243391
ML104T	120 g	0.1 mg	0.1 mg	0.2 mg	160 mg	∅ 90	30243394
ML204T	220 g	0.1 mg	0.1 mg	0.2 mg	160 mg	∅ 90	30243397
ML304T	320 g	0.1 mg	0.1 mg	0.2 mg	160 mg	∅ 90	30243400

<sup>1)</sup> Typical minimum sample weight according to USP Chapter 41; measurement at ≤ 5 % load    <sup>2)</sup> Guaranteed value

# ME-T Analytical Balances

## For Your Essential Needs

**ME-T balances are ideal for all your routine weighing procedures. With the well known METTLER TOLEDO quality / performance, our balances are easy-to-use, and provide you with an intuitive touchscreen user-interface.**

Standard

### Intuitive Touchscreen Operation



The large 4.5-inch color TFT touchscreen with clear icons and intuitive guidance enables users to operate the balance efficiently even while wearing cloth or rubber gloves. Multilingual text and graphics walk you through every step of your weighing procedures.

### Accuracy Assured



An Electromagnetic Force Compensation (EMFC) weighing cell with automatic internal adjustment (FACT) delivers consistently reliable results and automatically adjusts the balance. Built-in overload protection helps to ensure a long balance life.

### Easy-to-Use



Eight embedded applications including checkweighing, totaling and formulation allow users to start working right away. Create a passcode to restrict modification of balance settings and keep it simple and easy for the user.

<b>Accurate Results</b>	Electromagnetic Force Compensation weighing cell with overload protection FACT – fully automatic temperature controlled internal adjustment* Wind ring for faster settling times Metal base
<b>Efficient Operation</b>	4.5-inch color TFT touchscreen Statistics – improved management of weighing data Rounded edges and smooth surfaces for easy cleaning
<b>Quality Assurance</b>	Sample ID avoids confusion among samples and provides traceability Passcode protection – only authorized users can make adjustments
<b>Seamless Process</b>	3 interfaces: USB device, USB host and RS232 Bluetooth option Built-in PC direct application for easy data transfer (no software needed) LabX® direct balance software for customized data transfer

\* Not available on models with external calibration (ME-TE)



ME204T analytical balance



**Easy Data Handling**

Multiple interfaces support barcode reader, printer and PC connections for easy traceability and data handling. USB and RS232 connectivity along with an optional Bluetooth adapter simplify data upload and transfer.



**Metal Base and Reinforced Body**

Robust construction protects against chemicals and rough handling.

Watch the video now.

► [www.mt.com/met-analytical](http://www.mt.com/met-analytical)

ME-T Models	Maximum Capacity	Readability	Repeatability <sup>2)</sup>	Linearity	USP Minimum Weight <sup>1)</sup>	Weighing Pan (mm)	Material No.
ME54T	52 g	0.1 mg	0.1 mg	0.2 mg	160 mg	∅ 90	30216540
ME54TE	52 g	0.1 mg	0.1 mg	0.2 mg	160 mg	∅ 90	30216620
ME104T	120 g	0.1 mg	0.1 mg	0.2 mg	160 mg	∅ 90	30216541
ME104TE	120 g	0.1 mg	0.1 mg	0.2 mg	160 mg	∅ 90	30216623
ME204T	220 g	0.1 mg	0.1 mg	0.2 mg	160 mg	∅ 90	30216542
ME204TE	220 g	0.1 mg	0.1 mg	0.2 mg	160 mg	∅ 90	30216625

<sup>1)</sup> Typical minimum sample weight according to USP Chapter 41; measurement at ≤ 5 % load    <sup>2)</sup> Guaranteed value

**E Models offer adjustment with an external weight**

# Precision Balances

## Overview

### Excellence Level Balances

Reliable analytical results begin with accurate weighing. Proper sample preparation and careful data handling are crucial. When there is no room for compromise, Excellence weighing and dosing solutions deliver accurate results first time, every time. Outstanding weighing performance and innovative sample-handling technologies help make your challenging weighing tasks efficient, error-free and compliant. Set up LabX® software for seamless integration and data integrity.

#### XPR



Capacity up to 64 kg  
 Readability 0.1 mg – 1 g  
 Minimum weight 12 mg  
 USP minimum weight 120 mg

#### Exceptionally Stable

The SmartPan™ weighing pan minimizes the effects of air currents to deliver faster and more accurate results.

#### Comprehensive Data Management

Workflow user guidance and centralized data management help ensure data integrity and process security.

#### Ergonomic Solutions

Enjoy ergonomic processes with the SmartPan weighing pan, terminal stand and remote sensors.

#### Regulatory Compliance

With a full set of quality assurance features, you can be sure of meeting the strictest regulations.

#### Process Security

Complete process optimization and integration with LabX automated data handling and convenient accessories.

#### High-Performance Models

High-performance models feature the LevelMatic weighing pan which eliminates corner load error.

#### Easy-to-Clean

Remove the standard pan, SmartPan and draft shield in seconds, with no need for tools, all dishwasher-safe.

#### XSR



Capacity up to 32 kg  
 Readability 1 mg – 1 g  
 Minimum weight 82 mg  
 USP minimum weight 820 mg

#### Exceptionally Stable

The SmartPan weighing pan minimizes the effects of air currents to deliver faster and more accurate results.

#### Easy Data Management

Advanced user interface features and easy system integration ensure efficient data handling.

#### Ergonomic Solutions

Enjoy ergonomic processes with the SmartPan weighing pan, terminal stand, and remote sensors.

#### Industry Compliance

Quality assurance features ensure secure processes and compliance with industry standards.

#### Process Security

Simplify workflows and reduce errors with LabX automated data handling and useful accessories.

#### Easy-to-Clean

Remove the standard pan, SmartPan and draft shield in seconds, with no need for tools, all dishwasher-safe.

## 1000 Balances. 4 Steps.

One Recommendation.

[www.mt.com/easyfinder](http://www.mt.com/easyfinder)



### Advanced Level Balances

When you need great performance and durability, our Advanced level balances are the right choice. They offer high weighing performance to deliver accurate results, intuitive operations and integrated applications to enable convenient weighing processes.

#### MS



Capacity up to 32 kg  
Readability 1 mg – 1 g  
Minimum weight 140 mg  
USP minimum weight 1.4 g

#### Robust with High Precision

High-precision MonoBloc™ weighing cell, full metal housing resistant to chemicals.

#### Touchscreen and Applications

The large color touchscreen and 11 intuitive applications with user guidance in the MS-TS make routine weighing tasks simple and efficient.

#### Easy Data Transfer

USB, RS232, and optional Bluetooth enable easy connection to peripheral devices and PC.

#### Industry Compliance

Quality assurance features help support compliance with regulations, passcode-protected settings.

#### Easy-to-Clean

Smooth, easy-clean surfaces.

#### ML



Capacity up to 6 kg  
Readability 1 mg – 0.1 g  
Minimum weight 140 mg  
USP minimum weight 1.4 g

#### Robust and Compact

High-precision MonoBloc weighing cell in a compact design.

#### Intuitive Applications

10 intuitive applications and a clear graphical user interface simplify routine weighing tasks.

#### Easy Data Transfer

USB, RS232, and optional Bluetooth enable easy connection to peripheral devices and PC.

#### Compliant Results Printouts

Print out up to 4 IDs, the balance serial number and more to meet relevant regulations.

#### Easy-to-Clean

Smooth, easy-clean surfaces.

### Standard Level Balances

Enter the professional world of weighing with our robust and easy-to-use Standard level balances. High-quality construction and solid performance ensure consistent and precise weighing results.

#### ME



Capacity up to 5 kg  
Readability 1 mg – 0.1 g  
Minimum weight 140 mg  
USP minimum weight 1.4 g

#### Robust and Durable

Robust weighing cell with overload protection.

#### Easy-to-Use

Easy-to-use applications simplify routine weighing tasks.

#### Easy Data Transfer

USB, RS232, and optional Bluetooth enable easy connection to peripheral devices.

#### Easy-to-Clean

Sleek, easy-clean surfaces.

# XPR Precision Balances

## Go Beyond Weighing

**When security is a top priority, XPR balances deliver the accurate results you need as the foundation for your analyses. XPR precision balances deliver outstanding weighing performance and support the highest requirements for data integrity and compliance. Our options and accessories enable you to create a solution tailored to your precise process requirements.**

### Outstanding Performance



The SmartPan™ weighing pan minimizes the effects of air currents on the weighing cell to deliver faster and more accurate results. In most conditions a draft shield is no longer needed, significantly reducing process steps.

### Efficient Processes



Customizable, integrated weighing methods guide you through each weighing process, saving time and providing higher process security. The built-in notepad automatically records all task parameters and results, eliminating manual transcription.

### Effortless Compliance



QA functions automatically monitor the balance level, routine tests and the minimum weight limit. The integrated StatusLight™ makes it easy to see at a glance if it is okay to start your weighing task.

<b>Accurate Results</b>	High-resolution technology SmartPan weighing pan (no draft shield)*
<b>Efficient Operation</b>	7-inch color touchscreen, glove compatible Storage of weighing methods (including sample series and tolerances) Integrated results notepad
<b>Quality Assurance</b>	GWP®-Approved built-in quality assurance monitoring Customizable tolerance profiles MinWeigh warning function Adjustment and routine test history Balance ready StatusLight LevelControl: level warning with graphical leveling guide Temperature and time programmable adjustment (proFACT) User management Change history log
<b>Seamless Process</b>	Easy connectivity and data export: 4 × USB, 1 LAN Easy connection of peripheral devices: printers, PC, barcode readers, footswitches and sensors Integrated label editor, alphanumeric and barcode Export of process and results data to XML or Excel
<b>Automation Options</b>	LabX® laboratory software

\* 1 mg, 5 mg and 10 mg models



**Error-Free Data Handling**

Data transfer to a PC or software program is easy and error-free via USB or Ethernet. Integrated LabX® functionalities assist you in ensuring data integrity.



**Extremely Durable**

Integrated overload protection prevents damage to the weighing cell. The full metal housing is chemically resistant and protects against dust and splashing liquids.



**Easy-to-Clean**

The standard pan, SmartPan™ and draft shield dismantle in seconds without tools. All parts are dishwasher-safe.



XPR603SN precision balance

Watch the video now.

► [www.mt.com/xpr-precision](http://www.mt.com/xpr-precision)

Model	Maximum Capacity	Readability	Repeatability <sup>2)</sup>	Linearity	USP Minimum Weight <sup>1)</sup>	Weighing Pan (mm)	Material No.
XPR204S	210 g	0.1 mg	0.2 mg	0.2 mg	240 mg	68	30315631
XPR404S	410 g	0.1 mg	0.1 mg	0.2 mg	120 mg	68	30315628
XPR504S DeltaRange	101 g → 510 g	0.1/1 mg	0.1/0.5 mg	0.4 mg	160 mg	68	30315239
XPR504S	510 g	0.1 mg	0.1 mg	0.3 mg	140 mg	68	30315652
XPR303SN	310 g	1 mg	0.9 mg	2 mg	1.0 g	127 × 127	30316446
XPR303S	310 g	1 mg	0.9 mg	2 mg	1.0 g	127 × 127	30316573
XPR603S	610 g	1 mg	0.9 mg	2 mg	1.0 g	127 × 127	30316504
XPR603SN	610 g	1 mg	0.9 mg	2 mg	1.0 g	127 × 127	30316540
XPR603S DeltaRange	120 g → 610 g	1/10 mg	0.8/4 mg	6 mg	1.6 g	127 × 127	30316525
XPR603SN DeltaRange	120 g → 610 g	1/10 mg	0.8/4 mg	6 mg	1.6 g	127 × 127	30316529
XPR1203S	1210 g	1 mg	0.8 mg	2 mg	820 mg	127 × 127	30316563
XPR3003S	3.1 kg	1 mg	1 mg	6 mg	1.2 g	127 × 127	30316701
XPR5003S	5.1 kg	1 mg	1.5 mg	6 mg	2.0 g	127 × 127	30316990
XPR3003SD5	3.1 kg	5 mg	6 mg	6 mg	6 g	172 × 205	30316705
XPR6003SD5	6.1 kg	5 mg	6 mg	7 mg	6 g	172 × 205	30316548
XPR1202S	1210 g	10 mg	8 mg	20 mg	8.2 g	172 × 205	30317123
XPR2002S	2.1 kg	10 mg	8 mg	20 mg	8.2 g	172 × 205	30316996
XPR4002S	4.1 kg	10 mg	8 mg	20 mg	8.2 g	172 × 205	30317269
XPR6002S	6.1 kg	10 mg	8 mg	20 mg	8.2 g	172 × 205	30317428
XPR6002S DeltaRange	1.2 kg → 6.1 kg	10/100 mg	8/60 mg	60 mg	10 g	172 × 205	30317458
XPR8002S	8.1 kg	10 mg	8 mg	20 mg	8.2 g	172 × 205	30317466
XPR10002S	10.1 kg	10 mg	8 mg	20 mg	8.2 g	172 × 205	30317433
XPR15002L	15.1 kg	10 mg	15 mg	20 mg	20 g	172 × 205	30317522
XPR20002L DeltaRange	4.2 kg → 20.1 kg	10/100 mg	30/80 mg	60 mg	36 g	172 × 205	30317526
XPR4001S	4.1 kg	0.1 g	80 mg	60 mg	82 g	190 × 223	30317447
XPR6001S	6.1 kg	0.1 g	80 mg	60 mg	82 g	190 × 223	30317491
XPR8001S	8.1 kg	0.1 g	80 mg	100 mg	82 g	190 × 223	30317511
XPR10001S	10.1 kg	0.1 g	80 mg	100 mg	82 g	280 × 360	30317483
XPR10001L	10.1 kg	0.1 g	80 mg	200 mg	82 g	280 × 360	30317530
XPR16001L	16.1 kg	0.1 g	80 mg	200 mg	82 g	280 × 360	30317542
XPR32001L	32.1 kg	0.1 g	80 mg	300 mg	82 g	280 × 360	30316292
XPR64001L	64.1 kg	0.1 g	100 mg	500 mg	82 g	280 × 360	30316477
XPR32000L	32.1 kg	1 g	600 mg	600 mg	820 g	280 × 360	30316485
XPR64000L	64.1 kg	1 g	600 mg	600 mg	820 g	280 × 360	30316493

<sup>1)</sup> Typical minimum sample weight according to USP Chapter 41; measurement at ≤ 5 % load    <sup>2)</sup> Guaranteed value

# Higher Performance Balances With Helpful Versatility

With METTLER TOLEDO's higher performance balances you can now weigh your smallest sample quantities on high-capacity balances. This is particularly useful for applications in which there is a substantial weight difference between the initial and final weight values or when the tare load is high compared to the weight of the applied material.

### One-Balance Formulation



Utilizing higher performance balances for formulation enables you to use just one balance in many cases. With their high repeatability, these high-capacity balances support the accurate weighing of small sample quantities.

### Heavy Tare, Light Product



Benefit of increased weighing range and lower minimum detectable sample load in applications where tare and sample differ substantially. Common applications are:

- Gas filling
- Non-volatile residue
- Weight loss

### Conserving Precious Materials



XPR-C and XPE-C balances offer the lowest minimum weight values in their class enabling you to use the smallest quantities possible of your most valuable materials.

<b>Accurate Results</b>	High-resolution technology SmartPan™ weighing pan (no draft shield)
<b>Efficient Operation</b>	7-inch color capacitive touchscreen terminal, glove compatible Storage of weighing methods (including sample series and tolerances) Integrated results notepad
<b>Quality Assurance</b>	GWP®-Approved built-in quality assurance monitoring MinWeigh warning function Adjustment and routine test history Balance ready StatusLight™ LevelControl: level warning with graphical leveling guide Temperature and time programmable adjustment (proFACT) User management
<b>Seamless Process</b>	Easy connectivity and data export: 4 × USB, 1 LAN Easy connection of peripheral devices: printers, PC, barcode readers, footswitches and sensors Integrated label editor, alphanumeric and barcode Export of process and results data to XML or Excel



**Lowest Minimum Weight**

Across each capacity range, our higher-performance balances offer the lowest minimum weight values.



**Minimal Eccentricity Error**

Minimize corner load and eccentricity errors with the hanging weighing pan and Level-Matic® weighing pan technology – faster results and improved performance.



**High Resolution**

The state-of-the-art high performance balances cover the capacity range from 0.05 mg to 5.000 kg with resolution up to 61 million points.



XPR26003LC high performance balance with 20 kg barrel

Watch the video now.  
[www.mt.com/xpr-precision](http://www.mt.com/xpr-precision)

S-Platform Model	Maximum Capacity	Readability	Repeatability <sup>2)</sup>	Linearity <sup>2)</sup>	USP Minimum Weight <sup>1)</sup>	Material No.
XPR6U	6.1 g	0.0001 mg	0.0004 mg	0.004 mg	0.3 mg	30279276
XPE26C	22 g	0.001 mg	0.0015 mg	0.006 mg	1.2 mg	30137966
XPE56C	52 g	0.001 mg	0.0045 mg	0.02 mg	1.4 mg	30137970
XPE205C DeltaRange	81 g – 220 g	0.01 / 0.1 mg	0.06 mg	0.2 mg	14 mg	30137974
XPE505C	520 g	0.01 mg	0.06 mg	0.2 mg	40 mg	30137978
XPR2004SC	2300 g	0.1 mg	0.6 mg	1 mg	600 mg	30317628
XPR5003SC	5100 g	1 mg	2 mg	3 mg	2 g	30317629
XPR10003SC	10100 g	1 mg	3.5 mg	7 mg	4 g	30317641
<b>L-Platform</b>						
XPR26003LC	26100 g	1 mg	6 mg	20 mg	8 g	30317642
XPR32003LD5C	32100 g	5 mg	15 mg	20 mg	13 g	30317643
XPR64003LD5C	64100 g	5 mg	15 mg	50 mg	20 g	30317644
XPR64002LC	64100 g	10 mg	35 mg	50 mg	36 g	30317645
<b>K-Type</b>						
XPE155KSC	150 kg	0.05 g	0.15 g	2 g	160 g	30210661
XPE604KMC	600 kg	0.1 g	0.3 g	10 g	280 g	30210662
XPE1003KMC	1100 kg	0.5 g	2 g	20 g	2 kg	30210664
XPE2003KLC	2500 kg	1 g	10 g	100 g	8.4 kg	30210665
XPE6002KLC	5400 kg	10 g	100 g	300 g	84 kg	30210666

<sup>1)</sup> Typical minimum sample weight according to USP Chapter 41; measurement at ≤ 5 % load <sup>2)</sup> Guaranteed value

# XSR Precision Balances

## Go Beyond Weighing

Even under harsh weighing conditions, you can rely on these robust balances to help you meet your productivity targets. XSR precision balances are ideal when you have high sample throughput and tight deadlines. You can rely on XSR to get the job done quickly, and without errors.

Excellence

### Fast Performance



The SmartPan™ weighing pan minimizes the effects of air currents on the weighing cell to deliver faster and more accurate results. In most conditions a draft shield is no longer needed, significantly reducing process steps.

### Ergonomic Operation



Placing the display at eye-level on the adjustable ErgoStand™ saves space and eliminates excessive neck bending. The touchscreen display simplifies operation and has large, bright, easy-to-read figures.

### Error-Free Data Transfer



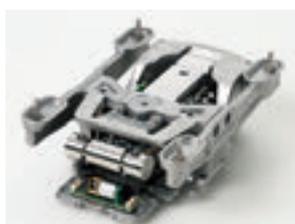
You no longer need to record results by hand or spend time typing in data. Simply transfer task parameters and results to a PC or software application via USB. Large volumes of data can be transferred quickly and without error.

<b>Accurate Results</b>	High-resolution technology SmartPan weighing pan*
<b>Efficient Operation</b>	4.3-inch color touchscreen, glove compatible Storage of weighing methods Integrated results notepad
<b>Quality Assurance</b>	Customizable tolerance profiles MinWeigh warning function Balance ready StatusLight™ LevelControl: level warning with graphical leveling guide Temperature and time programmable adjustment (proFACT) Password protected configuration
<b>Seamless Process</b>	Multiple interfaces for easy connectivity and data export: 4 × USB, 1 LAN Easy connection of peripheral devices: printers, PC, barcode readers, footswitches and sensors Export of process and results data to XML or Excel
<b>Automation Options</b>	LabX® laboratory software

\* 1 mg and 10 mg models



XSR603S precision balance



**Extremely Durable**

The new MonoBloc™ weighing cell delivers fast and precise results. Integrated overload protection and the full metal housing safeguard the weighing cell.



**Easy-to-Clean**

XSR precision balances withstand harsh chemicals, dust and dirt. Smooth surfaces and rounded edges make the whole balance easy-to-clean.

Watch the video now.

[www.mt.com/xsr-precision](http://www.mt.com/xsr-precision)

Model	Maximum Capacity	Readability	Repeatability <sup>2)</sup>	Linearity	USP Minimum Weight <sup>1)</sup>	Weighing Pan (mm)	Material No.
XSR303SN	310 g	1 mg	0.9 mg	2 mg	1.0 g	127 × 127	30316500
XSR303S	310 g	1 mg	0.9 mg	2 mg	1.0 g	127 × 127	30316577
XSR603SN	610 g	1 mg	0.9 mg	2 mg	1.0 g	127 × 127	30316544
XSR603S	610 g	1 mg	0.9 mg	2 mg	1.0 g	127 × 127	30316497
XSR1203S	1210 g	1 mg	0.8 mg	2 mg	820 mg	127 × 127	30316567
XSR1202S	1210 g	10 mg	8 mg	20 mg	8.2 g	172 × 205	30317127
XSR2002S	2.1 kg	10 mg	8 mg	20 mg	8.2 g	172 × 205	30317407
XSR4002S	4.1 kg	10 mg	8 mg	20 mg	8.2 g	172 × 205	30317443
XSR6002S	6.1 kg	10 mg	8 mg	20 mg	8.2 g	172 × 205	30317453
XSR6002S DeltaRange	1.2 kg → 6.1 kg	10 / 100 mg	8 / 60 mg	60 mg	10 g	172 × 205	30317462
XSR10002S	10.1 kg	10 mg	8 mg	20 mg	8.2 g	172 × 205	30317437
XSR4001S	4.1 kg	0.1 g	80 mg	60 mg	82 g	190 × 223	30317501
XSR6001S	6.1 kg	0.1 g	80 mg	60 mg	82 g	190 × 223	30317496
XSR8001S	8.1 kg	0.1 g	80 mg	100 mg	82 g	190 × 223	30317515
XSR10001S	10.1 kg	0.1 g	80 mg	100 mg	82 g	280 × 360	30317487
XSR10001L	10.1 kg	0.1 g	80 mg	200 mg	82 g	280 × 360	30317536
XSR16001L	16.1 kg	0.1 g	80 mg	200 mg	82 g	280 × 360	30317549
XSR32001L DeltaRange	6.4 kg → 32.1 kg	0.1 / 1 g	80 / 600 mg	300 mg	82 g	280 × 360	30316472
XSR32001L	32.1 kg	0.1 g	80 mg	300 mg	82 g	280 × 360	30316297
XSR16000L	16.1 kg	1 g	600 mg	600 mg	820 g	280 × 360	30316481
XSR32000L	32.1 kg	1 g	600 mg	600 mg	820 g	280 × 360	30316489

<sup>1)</sup> Typical minimum sample weight according to USP Chapter 41; measurement at ≤ 5 % load    <sup>2)</sup> Guaranteed value

# Large MS Precision Balances

## Tough Performers Built to Last

Accommodating loads of up to 32 kilograms, MS large-platform precision balances are built to take on your toughest jobs. The MonoBloc™ weighing cell, very robust design and extreme overload protection ensure you get reliable results in even the most challenging industrial environments.

### Robust Construction



The tough metal housing and extreme overload protection of more than 100 kilograms safeguard your balance when working with heavy sample containers. The large weighing pan provides extra convenience.

### Chemical Resistance



The weighing pan and balance housing are resistant to the harshest of chemicals, including acetone. This helps to ensure a long balance lifetime.

### Easy Cleaning



The balance housing is cleverly designed with smooth surfaces and round edges, making it easy to clean. User safety is improved and the risk of cross-contamination is reduced.

<b>Accurate Results</b>	MonoBloc weighing cell and overload protection
	FACT – fully automatic temperature-controlled internal adjustment
	Full metal housing
<b>Efficient Operation</b>	HCD high contrast display (18 mm high digits)
	Easy cleaning thanks to smooth wipe-clean surfaces
	SmartKeys: programmable keys for shortcuts
	Large platform for convenient weighing of bulky items
<b>Quality Assurance</b>	Menulock – balance settings can be password protected
<b>Seamless Process</b>	2 interfaces – USB and RS232
	Bluetooth option
	PC Direct application for easy data transfer



MS32001L precision balance



#### Clever Design Details

For example, the groove in the top of the weighing pan allows cylindrical samples to be placed directly on the balance without the need for an extra container.



#### Easy Stocktaking

The large weighing pan and built-in piece-counting application make these large platform balances perfect for logging your inventory.



#### Weigh Below the Balance

For special applications, this special hook enables you to weigh heavy items by hanging them from underneath the balance (Material No. 11132565).

Watch the video now.

► [www.mt.com/msl-precision](http://www.mt.com/msl-precision)

### Models with MonoBloc™ Weighing Cell

Model	Maximum Capacity	Readability	Repeatability <sup>2)</sup>	Linearity	USP Minimum Weight <sup>1)</sup>	Weighing Pan (mm)	Material No.
MS12001L	12200 g	0.1 g	0.1 mg	0.2 g	140 g	351 × 245	11124573
MS16001L	16200 g	0.1 g	0.1 mg	0.2 g	140 g	351 × 245	11124576
MS32001L	32200 g	0.1 g	0.1 mg	0.3 g	140 g	351 × 245	11124588
MS32000L	32200 g	1 g	1 g	1 g	820 g	351 × 245	11124701

<sup>1)</sup> Typical minimum sample weight according to USP Chapter 41; measurement at ≤ 5 % load    <sup>2)</sup> Guaranteed value

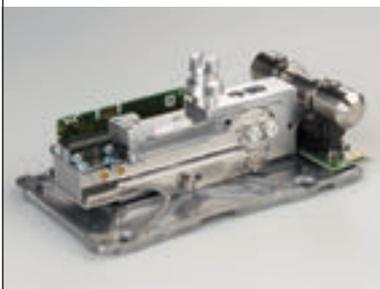
# Small MS Precision Balances

## Engineered for Reliable Performance

With a full metal housing, the robust construction of the MS small-platform precision balances makes them perfect for heavier tasks in the laboratory or out on the factory floor. The unique MonoBloc™ weighing cell delivers the accuracy you need and is fully protected against accidental overload.

Advanced

### Proven Weighing Cell



Our renowned MonoBloc weighing cell, with FACT automatic internal adjustment, delivers consistently reliable results. Built-in overload protection ensures a long balance lifetime.

### Robust Metal Housing



The full balance housing is die-cast aluminum which not only protects the weighing cell from environmental influences and impacts but is also resistant to harsh chemicals, including acetone.

### Fast Results



With three fixed feet and two LevelLock stands, MS balances are easy to level and sit solidly on your workbench. With the balance less susceptible to vibration, you get faster results.

### Accurate Results

MonoBloc weighing cell and overload protection  
 Built-in level control function and leveling user guidance  
 FACT – fully automatic temperature-controlled internal adjustment  
 MinWeigh warning function  
 Full metal housing

### Efficient Operation

7-inch extra-large color TFT touchscreen (18 mm high digits)  
 LevelControl function  
 Graphical display of statistics – improved management and evaluation of weighing data  
 Easy-to-use applications – simplified workflows and increased efficiency  
 Easy cleaning thanks to smooth wipe-clean surfaces  
 LevelLock – greater balance stability

### Quality Assurance

ISO-Log records important changes, e.g. adjustments, leveling status  
 Sample ID – avoids confusion between samples and provides traceability  
 Passcode protection – only authorized users can make adjustments

### Seamless Process

3 interfaces – USB device, USB host and RS232  
 Bluetooth option  
 PC Direct application for easy data transfer (no software needed)  
 LabX® Direct balance software for customized data transfer



MS3002TS 0.01 g precision balance without draft shield



MS603TS 1 mg precision balance with draft shield



**Large Color Touchscreen**

The 7-inch extra-large color TFT touchscreen display is operable through cotton, silicon and rubber gloves. An intuitive user interface and 18 millimeter high digits bring comfort to your daily tasks.



**Leveling Function**

The built-in LevelControl function issues a warning when the balance is not level and provides onscreen guidance to help you level the balance correctly within seconds.



**Minimum Weight Function**

During weighing-in, the weight value remains red until the net sample is above the pre-programmed minimum value. It's clear when process tolerances have been met.

**MS-TS Precision Balances 1 mg**

Model	Maximum Capacity	Readability	Repeatability <sup>2)</sup>	Linearity	USP Min. Weight <sup>1)</sup>	Weighing Pan (mm)	Material No.
MS303TS	320 g	0.001 g	0.001 g	0.002 g	1.4 g	127 × 127	30133525
MS403TS	420 g	0.001 g	0.001 g	0.002 g	1.4 g	127 × 127	30133526
MS603TS	620 g	0.001 g	0.001 g	0.002 g	1.4 g	127 × 127	30133527
MS1003TS	1020 g	0.001 g	0.001 g	0.002 g	1.4 g	127 × 127	30133528

**MS-TS Precision Balances 0.01 g**

Model	Maximum Capacity	Readability	Repeatability <sup>2)</sup>	Linearity	USP Min. Weight <sup>1)</sup>	Weighing Pan (mm)	Material No.
MS1602TS	1620 g	0.01 g	0.01 g	0.02 g	14 g	170 × 200	30133529
MS3002TS	3200 g	0.01 g	0.01 g	0.02 g	14 g	170 × 200	30133530
MS4002TS	4200 g	0.01 g	0.01 g	0.02 g	14 g	170 × 200	30133531
MS6002TS	6200 g	0.01 g	0.01 g	0.02 g	14 g	170 × 200	30133532
MS4002TS DeltaRange	820 g → 4200 g	0.1/0.01 g	0.1/0.01 g	0.08 g	14 g	170 × 200	30133533
MS6002TS DeltaRange	1220 g → 6200 g	0.1/0.01 g	0.1/0.01 g	0.08 g	14 g	170 × 200	30133534
MS12002TS	12200 g	0.01 g	0.01 g	0.025 g	14 g	170 × 200	30133535
MS8001TS	8200 g	0.1 g	0.1 g	0.2 g	140 g	190 × 226	30133536

<sup>1)</sup> Typical minimum sample weight according to USP Chapter 41; measurement at ≤ 5 % load    <sup>2)</sup> Guaranteed value

# ML-T Precision Balances

## Big Features Go Compact

Whether you work in a busy laboratory or out on the factory floor, space is always at a premium. With the smallest-in-class footprint and larger-than-average weighing pan, ML-T balances give you the room you need to carry out your daily tasks efficiently.

Standard

### Proven Weighing Cell



Our renowned MonoBloc™ weighing cell with FACT automatic internal adjustment delivers consistently reliable results. Built-in overload protection ensures a long balance lifetime.

### Compact and Convenient



The compact design makes the most of your workspace, giving you the extra space you need to have all your equipment and samples nearby.

### Intuitive Operation



The large 4.5-inch color TFT touchscreen with clear icons and intuitive guidance enables users to operate the balance quickly even while wearing cloth or rubber gloves. Multilingual text and graphics are included.

<b>Accurate Results</b>	<ul style="list-style-type: none"> <li>MonoBloc weighing cell with overload protection</li> <li>FACT – fully automatic temperature-controlled internal adjustment</li> <li>Built-in level control function and leveling user guidance</li> <li>User-defined minimum weight and warning function</li> <li>Metal base</li> </ul>
<b>Efficient Operation</b>	<ul style="list-style-type: none"> <li>4.5-inch large color TFT touchscreen</li> <li>Statistics – improved management of weighing data</li> <li>Easy cleaning thanks to smooth wipe-clean surfaces</li> <li>Extra small footprint</li> <li>Battery operation</li> </ul>
<b>Quality Assurance</b>	<ul style="list-style-type: none"> <li>ISO-Log records important changes, e.g. adjustments, leveling status</li> <li>Sample ID – avoids confusion between samples and provides traceability</li> <li>Passcode protection – only authorized users can make adjustments</li> </ul>
<b>Seamless Process</b>	<ul style="list-style-type: none"> <li>3 interfaces – USB device, USB host and RS232</li> <li>Bluetooth option</li> <li>PC Direct application for easy data transfer (no software needed)</li> <li>LabX® Direct balance software for customized data transfer</li> </ul>



ML4002 0.01 g precision balance without draft shield



ML503T 1 mg precision balance with draft shield



**Efficient Weighing-In**

The weighing-in guide helps the operator dose to target. The green screen indicates at a glance that the weighing result lies within the process tolerances.



**Guided Leveling**

The built-in LevelControl function issues a warning when the balance is not level and provides onscreen guidance to help you level the balance correctly within seconds.



**Battery Operation**

With up to 10 hours of battery operation, you can take your balance anywhere and be ready in case your power supply is not reliable.

Watch the video now.

[www.mt.com/mlt-precision](http://www.mt.com/mlt-precision)

**ML-T Precision Technical Specs**

Model	Maximum Capacity	Readability	Repeatability <sup>2)</sup>	Linearity	USP Min. Weight <sup>1)</sup>	Weighing Pan (mm)	Material No.
ML203T	220 g	1 mg	1 mg	0.002 g	2.1 g	∅ 120	30243403
ML303T	320 g	1 mg	1 mg	0.002 g	2.1 g	∅ 120	30243406
ML503T	520 g	1 mg	1 mg	0.002 g	2.1 g	∅ 120	30243409
ML802T	820 g	0.01 g	0.01 g	0.02 g	14 g	170×190	30243412
ML1602T	1620 g	0.01 g	0.01 g	0.02 g	14 g	170×190	30243415
ML3002T	3200 g	0.01 g	0.01 g	0.02 g	14 g	170×190	30243418
ML4002T	4200 g	0.01 g	0.01 g	0.02 g	14 g	170×190	30243421
ML6002T	6200 g	0.01 g	0.01 g	0.02 g	14 g	170×190	30243424
ML3001T	3200 g	0.1 g	0.1 g	0.2 g	140 g	170×190	30243427
ML6001T	6200 g	0.1 g	0.1 g	0.2 g	140 g	170×190	30243430

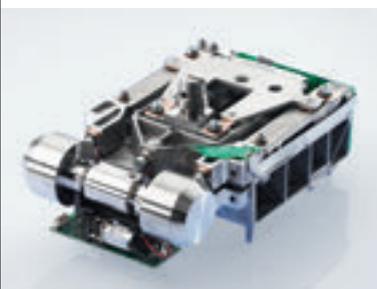
<sup>1)</sup> Typical minimum sample weight according to USP Chapter 41; measurement at ≤ 5 % load    <sup>2)</sup> Guaranteed value

# ME-T Precision Balances

## Cover Your Essential Needs

**ME-T balances are ideal for routine weighing procedures. Intuitive touchscreen operation makes your daily tasks as simple as possible. Built-in features ensure you get the accuracy, repeatability and traceability required. The metal base and easy-clean surfaces make the ME-T robust enough for use in tough environments.**

### Accuracy Assured



The proven Electromagnetic Force Compensation (EMFC) weighing cell with FACT technology delivers consistently reliable results and automatically adjusts the balance.

### Easy to Use



Eight embedded applications including check-weighing, totaling and formulation simplify daily tasks. The statistics option lets you easily evaluate your weighing results.

### Easy Data Handling



Connectivity via USB, RS232 or optional Bluetooth makes it easy to streamline data handling and ensure traceability. It's simple to connect a barcode reader and/or printer, or even to a PC.

### ME-T Precision Technical Specs

Model	Maximum Capacity	Readability	Repeatability <sup>2)</sup>	Linearity	USP Min. Weight <sup>1)</sup>	Weighing Pan (mm)	Material No.
ME103T	120 g	1 mg	1 mg	0.002 g	2.1 g	Ø 120	30216545
ME103TE	120 g	1 mg	1 mg	0.002 g	2.1 g	Ø 120	30216546
ME203T	220 g	1 mg	1 mg	0.002 g	2.1 g	Ø 120	30216547
ME203TE	220 g	1 mg	1 mg	0.002 g	2.1 g	Ø 120	30216549
ME303T	320 g	1 mg	1 mg	0.002 g	2.1 g	Ø 120	30216550
ME303TE	320 g	1 mg	1 mg	0.002 g	2.1 g	Ø 120	30216552
ME403T	420 g	1 mg	1 mg	0.002 g	2.1 g	Ø 120	30216554
ME403TE	420 g	1 mg	1 mg	0.002 g	2.1 g	Ø 120	30216557
ME503T	520 g	1 mg	1 mg	0.002 g	2.1 g	Ø 120	30243388
ME503TE	520 g	1 mg	1 mg	0.002 g	2.1 g	Ø 120	30243386
ME1002T	1200 g	0.01 g	0.01 g	0.2 g	14 g	180×180	30216558
ME1002TE	1200 g	0.01 g	0.01 g	0.2 g	14 g	180×180	30216559
ME2002T	2200 g	0.01 g	0.01 g	0.2 g	14 g	180×180	30216560
ME2002TE	2200 g	0.01 g	0.01 g	0.2 g	14 g	180×180	30216561
ME3002T	3200 g	0.01 g	0.01 g	0.2 g	14 g	180×180	30216562
ME3002TE	3200 g	0.01 g	0.01 g	0.2 g	14 g	180×180	30216563
ME4002T	4200 g	0.01 g	0.01 g	0.2 g	14 g	180×180	30216564
ME4002TE	4200 g	0.01 g	0.01 g	0.2 g	14 g	180×180	30216566
ME5002T	5200 g	0.01 g	0.01 g	0.2 g	14 g	180×180	30243383
ME5002TE	5200 g	0.01 g	0.01 g	0.2 g	14 g	180×180	30243381
ME4001T	4200 g	0.1 g	0.1 g	0.1 g	140 g	180×180	30216567
ME4001TE	4200 g	0.1 g	0.1 g	0.1 g	140 g	180×180	30216568

<sup>1)</sup> Typical minimum sample weight according to USP Chapter 41; measurement at ≤ 5 % load    <sup>2)</sup> Guaranteed value  
**E models offer adjustment with an external weight**

# PL-E Precision Balances

## Solid Weighing to Go

**PL-E portable precision balances offer dependable, go-anywhere weighing. Resilient, compact and lightweight, they are the ideal solution for accurate results in limited spaces. A stackable cover offers fuss-free storage. Ten built-in applications add versatility to this range of practical, mobile all-rounders.**

### Tough and Lightweight Design

Lightweight yet solidly built, a precise load cell helps to guarantee accurate results. A vibration-resistant design delivers high performance on temporary work surfaces and in the field.



PL1502E portable precision balance

### Compact and Portable



Handily shaped with a space-saving footprint, the PL-E fits on the smallest benches. Every model can be mains or battery operated, making the balance ideal for work whenever a power supply is hard to find.

### Backlit LCD Display



The attractive display features large, illuminated digits for easy reading in all light conditions. The straightforward user interface provides access to ten built-in applications offering additional weighing flexibility.

### Stackable Convenience



Protect your PL-E balance against dust and dirt with a protective cover which also enables you to stack up to five together.

### PL-E Technical Specs

Model	Maximum Capacity	Readability	Repeatability <sup>1)</sup>	Linearity	Dimensions (W×D×H)	Material No.
PL602E	620 g	0.01 g	0.01 g	0.02 g	194×225×67	30113826
PL1502E	1520 g	0.01 g	0.01 g	0.02 g	194×225×67	30113823
PL6001E	6200 g	0.1 g	0.1 g	0.2 g	194×225×67	30113829

<sup>1)</sup> Guaranteed value

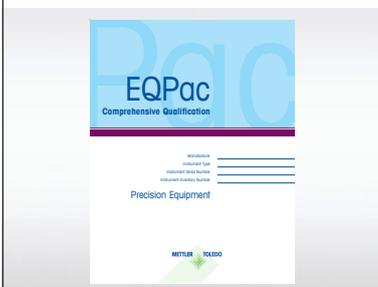
# Installation and Qualification For Productivity and Compliance

**New weighing equipment is expected to be fully operational and deliver accurate weighing results right from the start. METTLER TOLEDO's Installation Pacs provide professional equipment installation and comply with the standards of relevant regulatory authorities.**

## Your Benefits

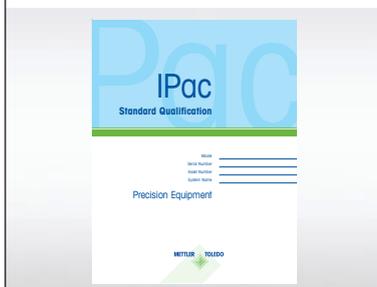
- Improved operational efficiency through quick installation and start-up
- Guidance to control environmental influences that affect weighing accuracy
- Reduced user error through professional user training
- Documented instrument qualification from installation to daily operation
- Ease of integration into quality systems and support of validation processes
- Reduction of equipment non-compliance during regulatory audits

### Comprehensive Qualification



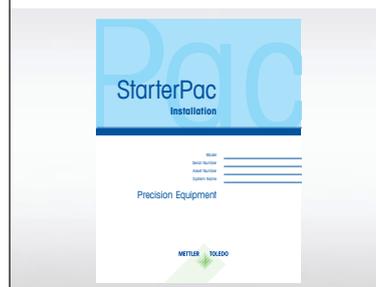
EQPac provides detailed lifecycle qualification documentation. We have dedicated Pacs to meet the different standards of highly regulated industries such as pharma, biotech, cosmetics and food.

### Standard Qualification



IPac is laid out to meet the qualification needs of industries with high quality standards such as pharma, chemicals, food & beverage, and automotive.

### Basic Confirmation



StarterPac is the solution for all other unregulated or low-regulation industries.



## Rely on Our Effective Solutions for Regulatory Compliance

	Laboratory Balances			Automated Dosing Systems		Moisture Analyzers	
	StarterPac Balance	IPac Balance	EQPac Balance	IPac Automated Dosing	EQ Pac Automated Dosing	IPac Moisture	EQPac Moisture
<b>DQ (Design Qualification)</b>							
Support of design and vendor qualification	–	–	•	–	•	–	•
<b>IQ (Installation Qualification)</b>							
Perform and document equipment installation	•	•	•	•	•	•	•
Conforms with FDA standards	–	–	•	–	•	–	•
<b>OQ (Operational Qualification)</b>							
Initial calibration according to manufacturer specifications	•	•	•	•	•	•	•
Equipment familiarization of users	•	•	•	•	•	•	•
Calibration documented in certificate	–	•	•	•	•	•	•
<b>PQ (Performance Qualification)</b>							
Support user in setting up SOP	–	•	•	•	•	•	•
Log authorized users	–	•	•	•	•	•	•
Consultation regarding re-qualification	–	–	•	–	•	–	•
Consultation regarding periodic maintenance	–	–	•	–	•	–	•
Consultation regarding purchase of weights	–	–	•	–	•	–	•

• Included

Installation Pacs are available in English, German, French, Spanish, Italian and Japanese

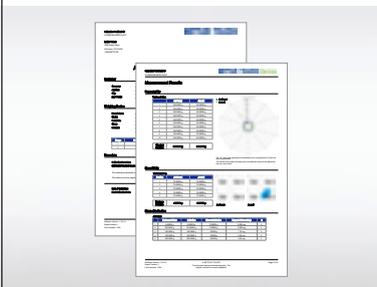
# Calibration and Testing

## Turn Quality Improvements into Profits

**Balance calibration determines the measurement uncertainty and minimum weight of weighing equipment on-site. The GWP® Verification in combination with the Accuracy Calibration Certificate (ACC) sets a new benchmark in weighing accuracy by linking the performance of a weighing device to customer-specific process tolerances. This goes beyond common industry standards and uses calibration results to help improve the quality of your weighing processes for increased profitability.**

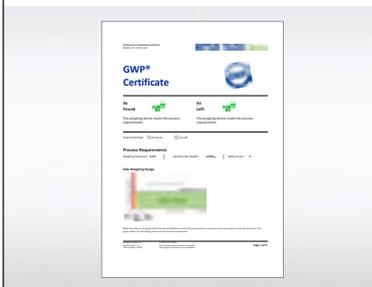
Moreover, our unique GWP Verification service will help you ensure that you continue to meet your specific process tolerances over time while keeping your costs and effort optimized.

### Accuracy Calibration Certificate



The globally standardized ACC follows EURAMET cg-18 calibration guidelines. Its modular approach is designed to fit your specific needs, and it is also available as a locally ISO17025-accredited version.

### GWP Certificate



The GWP Certificate comes as an annex to the ACC. As a "world's first", it provides pass/fail statements according to your own process tolerances, exceeding the value of traditional calibration.

### GWP Verification



GWP Verification proves the accuracy of your equipment on-site. It provides you with a calibration and testing schedule based on your specific risks and process requirements, plus all the documentation you need to pass internal or external audits.



## Your Benefits

- Proof of accuracy for all measurements to support consistent product quality
- Documentation of the safe weighing range with graphical elements
- Fast interpretation with clear pass/fail notifications based on your own specific tolerances
- Ensure compliance with global and local regulations and standards
- Optimized cost effective routine testing and calibration plans for maximum security
- Increased profits and reduced waste

## Good Weighing Practice™

METTLER TOLEDO developed GWP® (Good Weighing Practice) as a standardized scientific methodology for the secure selection, operation and calibration of weighing equipment. GWP is applicable to all weighing equipment from any manufacturer.



# Applications and Accessories

Small Details. Big Difference.





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Scan this code for more information.

# Quick Balance Conversion For Density Determination

Convert your analytical or precision balance for accurate density determination of solid, liquid and viscous substances in just moments. Whether you use the buoyancy technique, the displacement principle or the pycnometer method, density determination is easy and efficient.

### Quick and Easy Installation



By simply removing the balance weighing pan, the density kit can be installed on your balance in a few simple steps.

### Fast and Secure Processes



The built-in application on XPE and XS balances provides user guidance, collects results, calculates density values and allows statistical evaluation of a measurement series. Five methods are included.



Density Kit

### Density Kits

Balance	Description	Material No.
XPR/XSR precision, S-Platform (1 mg and 0.1 mg models)	Density Kit XPR/XSR precision	30300933
XPE/XS analytical	Density Kit XPE/XS analytical	11106706
MS semi-micro	Density Kit MS Semi-Micro	30004077
MS-TS	Density Kit MS-TS 1 mg and 0.1 mg	11142143
ML-T	Density Kit ML-T 1 mg and 0.1 mg	11142144
ME/ME-T	Density Kit ME/ME-T 0.1 mg	30029886

### Density Kit Accessories

Description	Material No.
Sinker 10 mL	210260
Sinker 10 mL with calibration certificate	210672
Thermometer	238767
Thermometer with calibration certificate	11132685
Re-calibration sinker 10 mL	210674



Sinker



Thermometer

# AntiStatic Solutions

## Eliminate Electrostatic Effects

When your weight values are unstable or are different for the same sample, the explanation is often simple: Electrostatic charges on the sample or container influence the weighing cell and lead to inaccurate results. AntiStatic Kits immediately neutralize electrostatic charges to ensure stable and accurate results.

### Integrated Flexibility



The compact AntiStatic Kit for XPE analytical balances is easily configured to activate when the draft shield doors are opened.

### Trusted Results



By neutralizing electrostatic charges on samples and containers when the balance is loaded, dosing is faster and productivity is increased.

### Workplace Safety



AntiStatic Kits completely remove electrostatic charges. The scattering of powdery substances is eliminated, making dosing safer and preventing cross-contamination.

### AntiStatic Kits

Balance	Description	Material No.
XPR microbalance	AntiStatic Kit with stand and one compact electrode	30215452
XPE/XS analytical balance*	Built-in compact AntiStatic Kit	30090337
XPE analytical balance with Quantos	AntiStatic Kit for powder dosing	11141829
All balances	Universal AntiStatic Kit U-electrode	11107767

\* Compatible also with XPE26/56

### Single AntiStatic Components

Description	Material No.
Optional U-electrode large	11107764
Optional U-electrode small	11140161
Power supply for universal AntiStatic Kit	11107766
Power supply for AntiStatic Kit Quantos	11107763
Optional compact Ionizer for XPR micro balances	30300921



XPE205  
with integrated AntiStatic Kit

# Manual Filter Weighing For Accurate Emissions Testing

**METTLER TOLEDO's range of AntiStatic solutions and filter-weighing kits for XPE and XPR balances enable you to accurately determine particulate matter amounts on filters as small as 0.1 µg. Our innovative solutions help you ensure compliance with all US and EU norms.**



### Environmental Monitoring

Filter kits fit onto all METTLER TOLEDO XPE analytical balances and are ideal for efficient routine work with filters up to 110 mm in diameter.

Model	Filter Sizes	Balance System	Resolution	Typical Repeatability	Material No.
Filter kit for XPE analytical balances	< Ø 110 mm	XPE205 (DR)	0.01 mg	0.03 mg	11140000
ErgoClip filter holder	Ø 110–150 mm	XPE205 (DR)	0.01 mg	0.03 mg	11140185

### Easy Assembly



Within seconds you can upgrade your XPE analytical balance into the perfect filter-weighing solution.



### Emissions Determination

With its cutting-edge performance, the XPR ultra-micro balance equipped with a Filter Kit determines particulate matter on filters weighing as little as 0.1 µg.

Model	Filter Ø	Balance System	Resolution	Typical Repeatability	Material No.
Filter Kit for XPR micro balances	30–70 mm	XPR	0.1 µg/1 µg	0.2 µg/0.6 µg	30300922

### High-Precision Filter Weighing



The weighing pan's innovative design enables easy placement of the filter in the ideal position. Two sizes of pans supplied, for Ø 47 mm and Ø 70 mm filters.

# Automated Filter Weighing For Accurate Emissions Testing

The innovative PFS-ONE filter robot guarantees the fast and precise determination of particulate matter on filters at an accuracy of up to 0.1 µg. The PFS-ONE ensures that you can meet the increasingly tight specifications of international emissions standards.



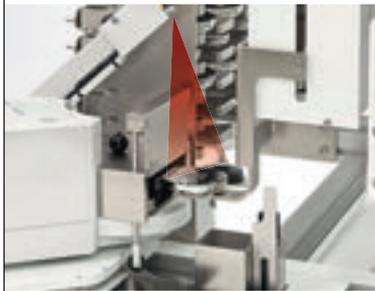
PFS-ONE filter robot

## Highest Accuracy Assured



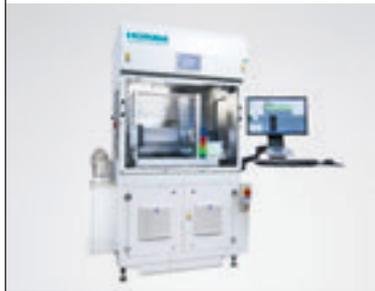
At the heart of the PFS-ONE filter robot is the XPR2U ultra-micro balance. With a readability of 0.1 µg you can be assured of unmatched precision and reliability.

## Automatic Data Processing



The integrated data-matrix-code scanner automatically identifies the filter ID and ensures fast and easy operation. Sample security before and after processing is maintained.

## Environmental Climate Control



The PFS-ONE is easily installed in existing laboratories as well as many environmental cabinets. Fully integrated systems, including environmental climate control and software, ensure compliance with international standards.

Model	Capacity	Filter Ø	Balance System	Resolution	Material No.
PFS-ONE	153 filters	47 mm	XPR2U	0.1 µg	30373620

# Pipette Check

## Valid Pipette Results Every Time

**You need to know that your pipettes are accurate every time you use them. With smart accessories, you can turn any XPE and XS analytical balance into a pipette check station.**



Three main factors ensure that your pipette delivers reliable results every day:

- Pipette performance checks
- Pipette asset management
- Service & calibration

### Reduce Evaporation



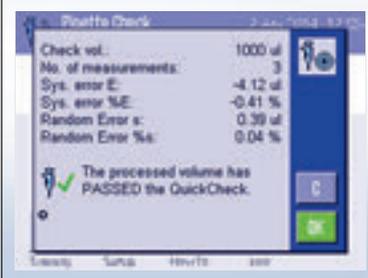
Evaporation traps are the key to achieving reproducible results. Our traps are ready to use within seconds and can hold up to 100 mL so you can handle large pipette volumes.

### Secure Tracking



With an RFID-tagged pipette, the check is automatically initiated. The tag contains the pipette data, check interval and method. When a check is passed, the next date is stored on the pipette.

### Correct Calculations



The XPE balance comes standard with easy-to-use, step-by-step guidance. Based on ISO 8655, it calculates all results automatically and shows pass/fail decisions.

Pipette Check Solutions	Description	Material No.
SmartCheck trap 50 mL	Evaporation trap for any analytical balance, snap-on fit for XPE/XS	30215436
Evaporation trap 10 mL	For XPE26/56 micro balances	11140041
Evaporation trap 20 mL	For XPE/XS analytical balances	11140043
Evaporation trap 100 mL	For XPE/XS analytical balances	11138440
EasyScan	Integrated RFID reader/writer for XPE analytical balances	30078900
EasyScan Flex	RFID reader/writer box for XPE balances	30215407
Smart Tag RFID labels	50 pcs	30101517
Smart Tag RFID labels	200 pcs	30101518
Calibry Express software	PC software to manage all pipette check data	11138423

# Pipette Calibration

## For Trusted Analytical Results

Pipettes require regular maintenance and calibration to perform at their best. The XPE26PC balance coupled with our Calibry pipette calibration software helps ensure compliant pipette calibration processes.



XPE26PC pipette check

### Calibrate Down to 1 $\mu\text{L}$



With repeatability  $< 1.5 \mu\text{g}$ , the XPE26PC enables you to calibrate volumes as small as 1  $\mu\text{L}$  in accordance with ISO 8655. Evaporation traps which can take up to 100 mL also make it suitable for calibrating large volume pipettes.

### High Throughput



The light barrier enables the evaporation trap lid to open automatically, reducing handling steps and providing fast, stable results. In combination with the 100 mL tank, many calibrations can be carried out in a continuous process.

### Efficient and Compliant



The Calibry-Software cockpit screen ensures efficient pipette calibration workflows in accordance with ISO 8655. User management, audit trail and a secure database help ensure compliance with FDA 21 CFR Part 11.

Pipette Calibration	Description	Material No.
XPE26PC	Dedicated balance for calibration of micro pipettes	30105901
Evaporation trap 20 mL	Specific evaporation trap for XS/XPE analytical balance	11140043
Evaporation trap 100 mL	Specific evaporation trap for XS/XPE analytical balance	11138440
Calibry workstation	Calibration software for up to 5 calibration station at one PC	11138419
Calibry network	Calibration software for up to 5 PC's connected to a network	11138420
Calibry DEMO version	45-day free-trial software DVD	30007307
Validation handbook	Detailed software validation handbook with many templates	11780959
Weighing table	Increase stability and speed with a dedicated XPE26PC table	11138041
CarePac weight set	Box with 1 g and 20 g test weights for XPE26PC	11123006
Transport case	For XPE26PC	11106997
Light barrier XPE26PC	Optional light barrier, can be mounted left or right	11140029

# Professional Weighing Tables

## Ergonomic and Efficient

A range of METTLER TOLEDO weighing tables are available to provide an ergonomic working area for every type of balance and pipette calibration equipment. Adjustable height and supporting elbow cushions relieve the stress caused by repetitive movements, improving operating convenience and efficiency. The balance sits on a separate inner table for faster stabilization times and more reliable results.



### Working Ergonomically



The height of the outer table can be adjusted to suit the user allowing the neck and back muscles to relax. The elbow cushions protect the user's arms during repetitive activities.

### Low-Vibration Table



Each weighing table consists of two decoupled tables. The outer working table absorbs impacts, while the balance on the inner table remains undisturbed. These versatile weighing tables are adaptable to every type of balance.

### Technical Data

Type	Material No.	Width (mm)	Depth (mm)	Height (mm)
Weighing table XPE26PC	11138041	760	803	784
Weighing table analytical/micro	11138042	760	803	784
Weighing table micro/ultra-micro	11138044	760	803	784

# RFID Solutions

## For Secure Data Transfer

**Our RFID accessories ensure error-free bi-directional data transfer between your balance and sample containers, pipettes and automation systems. Electronic transfer of sample IDs and weight values saves time and eliminates transcription errors.**

### Error-Free Data Transfer



An RFID Smart Tag label can be added to titration beakers, pipettes and almost any sample container to ensure error-free data transfer. Quantos dosing heads have a built-in chip for the same purpose.

### Fast Pipette Checks



All test data is stored safely on a built-in RFID chip on RAININ pipettes, or a Smart Tag can be added for other pipette brands. The balance application guides you through the testing process. Use an evaporation trap for the most accurate results.

### Simplified Titration



Save time entering information at the balance and titrator with SmartSample. After performing all sample preparation at the balance, simply enter the number of samples to be analyzed and start your titrations for efficient operation.



EasyScan module



SmartSample™ Kit for analytical balances



EasyScan Flex RFID reader/writer

Item	System Compatibility	Material No.
EasyScan	RFID module for integration directly on the balance Ideal for pipette performance checking on all XPE analytical and micro-analytical balances	30078900
SmartSample for titration	All XPE analytical balances and titrator systems with InMotion™ AutoSamplers (page 170)	30078901
EasyScan-Flex	External RFID reader/writer for use with all XPE balances, dosing heads, Smart Tag RFID labels and RFID-tagged pipettes	30215407
Smart Tag RFID labels	For use with all sample containers and pipettes, pack 200	30101518

# Laboratory Printers For Quality Documentation

## P-50 Excellence Printers

P-50 printers are universal printers suitable for documenting results and for printing labels. They are fully compatible with balances, titrators, moisture analyzers, and more.

P-56 and P-58 inkless thermal direct printers generate high-quality printouts extremely quickly without any noise or vibration. The P-56 is suitable for simple printouts and for all instruments with embedded applications. The P-58 offers several integrated applications such as time and date, statistics, totaling, formulation and labeling.

When your SOPs or regulatory requirements demand dot matrix technology, the P-52 printer is the perfect choice for straightforward, high-quality printing on paper and continuous labels.



P-58RUE

			
Model	P-58RUE	P-56RUE	P-52RUE
Alphanumeric sample ID entry	•	–	–
Barcode generation	•	–	–
Applications: statistics, totaling, formulation	•	–	–
Individual label printing (with barcode)	•	–	–
Built-in real-time clock	•	•	–
Print technology	Direct thermal	Direct thermal	Dot matrix
Print material	Paper, thermal paper, continuous label, individual labels	Paper, thermal paper, continuous label	Paper, continuous label
Print speed	Up to 100 mm/s	Up to 100 mm/s	Up to 10 mm/s
Operating language	English, German, French, Italian, Spanish, Russian, Chinese (simplified), Japanese, Korean	English, German, French, Italian, Spanish, Russian, Chinese (simplified), Japanese, Korean	English
Print language	English, German, French, Italian, Spanish, Russian, Chinese (simplified), Japanese	English, German, French, Italian, Spanish, Russian, Chinese (simplified), Japanese	English, German, French, Italian, Spanish, Russian, Chinese (simplified), Japanese
Chemical resistance	•	•	•
Interfaces	RS232, USB, Ethernet	RS232, USB, Ethernet	RS232, USB, Ethernet
Optional Bluetooth adapter, connects via RS232	•	•	•
<b>Material No.</b>	30094674	30094673	30237290

Item	Material No.	
P-58	DirectLabel: free PC software for customized labels included with printer	–
	Thermal labels: 6 rolls of 550 labels (56 mm × 18 mm), up to 10 years durability	30094725
P-56/58	Thermal paper: 10 rolls, 58 mm × 27 m, up to 25 years durability	30094723
	Thermal continuous label: 10 rolls, 58 mm × 13 m, up to 10 years durability	30094724
P-52	Standard paper: 5 rolls, 57 mm × 20 m	00072456
	Standard continuous label: 1 roll, 58 mm × 13 m	11600388
	Ribbon cartridge: black	00065975
P-50	Bluetooth adapter for XPE and XS balances	30237797
	Bluetooth adapter for MS-TS, ML-T and ME-T balances	30086495

## P-20 Standard Printers

P-20 standard printers use dot-matrix technology to produce results printouts that help you meet GMP/GLP/ISO documentation regulations. These printers are suitable for use with all instruments that have an RS232 port: selected titrators, Karl Fischer titrators, densitymeters and refractometers, and thermal analysis instruments.

Whether on normal or self-adhesive paper, archived printouts provide full traceability of your weighing and testing data.



RS-P28

				
Print application	•	•	•	•
Auto settings detection	•	•	•	•
Built-in real-time clock	•	•	–	–
Zero/tare key	•	•	–	–
Statistic application	•	–	–	–
Totalling application	•	–	–	–
Size W × D × H (mm)	120 × 203 × 73			
Printing speed	2.3 lines/second			
<b>Material No.</b>	11124304	11124303	11124300	11124301

Accessories for P-20 Standard Printers	Material No.
Paper roll, set of 5	00072456
Paper roll, self-adhesive	11600388
Ribbon cartridge black, set of 2	00065975

Accessories for All Printers	Material No.
RS9-RS9 cable (M/W) 1 m	11101051
RS9 F/F cable	51190362
USB 2.0 cable (A-B) 1 m	30241476
USB (A-B) cable 1.8 m	51191926
USB to RS232 converter, FTDI, 2 m	64088427
Anti-theft steel cord with lock	11600361

For more information about these and other cables, see "Cables" page 99.

# Powder Dosing Heads

## Dosing and Storage in One

The Quantos dosing head has been developed to dose free-flowing powdery substances such as APIs or reference standards in conjunction with an XPE dosing system. Our dosing heads are suitable for dosing fine, fluffy, static, compacted, granular, or heterogeneous substances. The use of a closed system avoids cross-contamination and protects the user, the substance and the environment.

### Precise Powder Dosing



A highly precise mechanism guarantees homogeneous powder flow. The dosing head learns powder behavior and optimizes dosing accuracy and speed. While no configuration is needed, any target weight can be hit.

### Keep Substances Contained



Powders are sealed within the dosing head. Individual dosing heads for each powder eliminate the risk of cross-contamination. Once the dosing head is filled, work proceeds with no powder contact.

### Safe Storage Solutions



A transport/storage box protects your dosing heads when not in use and ensures that valuable and toxic substances remain safe. The transport container is impact-resistant and water-tight for safe storage.

**Quantos Dosing Heads Overview**

	1	2	3	4	5	6	7	8	9	10
<b>Material</b>	Aluminum	Aluminum	Aluminum	Aluminum	Aluminum	Aluminum	Aluminum	Aluminum	Aluminum	Aluminum
<b>Capacity</b>	0.1g	0.2g	0.5g	1g	2g	5g	10g	20g	50g	100g
<b>Flow Rate</b>	0.1g/s	0.2g/s	0.5g/s	1g/s	2g/s	5g/s	10g/s	20g/s	50g/s	100g/s
<b>Particle Size</b>	< 10µm	10-20µm	20-50µm	50-100µm	100-200µm	200-500µm	500-1000µm	1000-2000µm	2000-5000µm	> 5000µm
<b>Static</b>	Low	Low	Low	Low	Low	Low	Low	Low	Low	Low
<b>Fluffy</b>	No	No	No	No	No	No	No	No	No	No
<b>Compacted</b>	No	No	No	No	No	No	No	No	No	No
<b>Heterogeneous</b>	No	No	No	No	No	No	No	No	No	No
<b>Granular</b>	No	No	No	No	No	No	No	No	No	No

To help select the correct dosing head for your powder type, download our free guide.

[www.mt.com/dosing-heads](http://www.mt.com/dosing-heads)

Order Information

Dosing Heads	Description	Material No.
QH008-BNMW (10 pcs)*	Standard dose head	11141533
QH012-LNMW (10 pcs)*	Standard dose head	11141532
QH012-LNLW (10 pcs)*	For large target amounts	11150145
QH012-LNJW (10 pcs)*	For large target amounts or fluffy substances	30366317
QH008-BNMP (10 pcs)*	For small target containers	11150120
QH012-LNMP (10 pcs)*	For small target containers	11150118
QH012-LNCT (10 pcs)*	For difficult-to-dose powders	11150171
QH012-LNLT (10 pcs)*	For compacting powders	11150170
QH012-LNMX (10 pcs)*	For high-density or fast-flowing powder	30112276
QH012-LNLX (10 pcs)*	For beads, pellets or coated particles	11150155
QH002-CNMW (30 pcs)	For few dispenses and low starting quantities	30083440
QH002-CNMW (90 pcs)	For few dispenses and low starting quantities	30098264
QH002-CNMW (500 pcs)	For few dispenses and low starting quantities	30244518
QH010-CNMW (10 pcs)	Standard dose head with fixed container	30132790
QH010-CNMW (40 pcs)	Standard dose head with fixed container	30132791
QH010-CNMW (150 pcs)	Standard dose head with fixed container	30046355
Dosing head starter kit (8 pcs)	Set of 8: 1 × QH008-BNMW, 1 × QH008-BNMP, 1 × QH012-LNMW, 1 × QH012-LNCT, 1 × QH012-LNLT, 2 × QH002-CNMW, 1 × QH010-CNMW	30132792
Transport box and vials 16 mL (10 pcs)	For QH008 powder dosing heads	30139824
Transport box and vials 125 mL (10 pcs)	For QH012 powder dosing heads	30036965

\*Sterilization: All QH012 and QH008 dosing heads are available sterilized.

Accessories for Quantos Modules	Description	Material No.
NetCom kit	To connect multiple peripherals	11141533
Ionizing kit	AntiStatic kit for powder dosing	11141829
Cable box	To store power supplies and cables	11141845
Citizen label printer kit	Citizen CLS631 for label printing with barcodes	11141820
Labels kit	Set with 2 label rolls and 1 ribbon roll	30004309
Protocol printer RS-P25/QB1	For strip print-outs	11141834
LabX Direct QuantosConnect	Bidirectional data transfer, sequence programming	30008323
QA000-M transponder	To store substance data and to provide printing data, set of 5 pcs	30303382
Powder test head (QA075-P)	For system testing of dosing mechanism	11141506
MinWeigh test head (QA000-W)	For routine testing of the instrument	11141507

ErgoDisc	Description	Material No.
ErgoDisc plate capsule size 00 (12 pos)	Manual sample changer for 12 capsules	11141754
ErgoDisc plate capsule size 0 (12 pos)	Manual sample changer for 12 capsules	11141751
ErgoDisc plate capsule size 1 (12 pos)	Manual sample changer for 12 capsules	11141755
ErgoDisc plate capsule size 2 (12 pos)	Manual sample changer for 12 capsules	11141758
ErgoDisc plate capsule size 3 (12 pos)	Manual sample changer for 12 capsules	11141752
ErgoDisc plate capsule size 4 (12 pos)	Manual sample changer for 12 capsules	30336822
ErgoDisc support plate	Bottom plate to fix the ErgoDisc	11141750
ErgoDisc side door	Door with minimal opening for ErgoDisc	11141760

Vial and Capsule Adapter	Description	Material No.
ErgoClip vial	With 5 different adapters $\varnothing$ 10.3–21 mm (1 pc. each)	30260822
Vial adapter $\varnothing$ 10.3 mm	Set of 5 pcs	11141571
Vial adapter $\varnothing$ 12.0 mm	Set of 5 pcs	11141575
Vial adapter $\varnothing$ 15.0 mm	Set of 5 pcs	11141572
Vial adapter $\varnothing$ 16.2 mm	Set of 5 pcs	11141573
Vial adapter $\varnothing$ 21.0 mm	Set of 5 pcs	11141574
Capsule adapter for size 0 capsules	Set of 5 pcs	30006418
Capsule adapter for size 00 capsules	Set of 5 pcs	30006417
Capsule adapter for size 000 capsules	Set of 5 pcs	30006416
Capsule adapter for size 1 capsules	Set of 5 pcs	30006419
Capsule adapter for size 2 capsules	Set of 5 pcs	30006430
Capsule adapter for size 3 capsules	Set of 5 pcs	30006431
Capsule adapter for size 4 capsules	Set of 5 pcs	30006432

## Accessories

### XPE, XPR, XSR, XS Balances



Description	Material No.	XPR/XS Ultra-micro and Micro Balances	XPE26/XPE56 Micro Balances	XPE Analytical Balances	XS Analytical Balances	XPR/XPE Precision Balances S/L-Platform	XSR/XS Precision Balances S/L-Platform
<b>LabX® Laboratory Software</b>							
LabX Balance Express Starter Pack	11153120	•	•	•	•	•	•
LabX Balance Server Starter Pack	11153121	•	•	•	•	•	•
LabX License for 1 Balance	11153220	•	•	•	•	•	•
LabX License for 5 Balances	11153221	•	•	•	•	•	•
LabX Quantos Express Starter Pack	30062403	–	•	•	–	–	–
LabX Quantos Server Starter Pack	30062404	–	•	•	–	–	–
LabX Express to Server Sidegrade	11153117	•	•	•	•	•	•
LabX Option Statistical Evaluation	30262374	•	•	•	•	•	•
LabX Option User Management	11153102	•	•	•	•	•	•
LabX Option Product Database	11153103	•	•	•	•	•	•
LabX Option Regulation	11153104	•	•	•	•	•	•
LabX Option Auto Import/Export	11153105	•	•	•	•	•	•
LabX Option Report Designer	11153106	•	•	•	•	•	•
LabX Option System Integration	11153107	•	•	•	•	•	•
LabX Validation Manual 1	30003640	•	•	•	–	•	•
LabX Validation Manual 2 Balance Extension	30416322	•	•	•	–	•	•
LabX Validation Manual 2 Quantos Extension	30416323	•	•	•	–	•	•
<b>LabX Direct</b>							
LabX Direct balance for simple data transfer	11120340	•	•	•	•	•	•
LabX Direct Quantos Connect for receiving and storing results	3008323	–	–	•	–	–	–
<b>Density Determination</b>							
Density Kit for Analytical Balances	11106706	–	–	•	•	–	–
Density Kit for Precision Balances, 0.1 mg and 1 mg models	11132680	–	–	–	–	• (S)	• (S)
Calibrated Thermometer (with certificate)	11132685	–	–	•	•	•	•
Sinker 10 mL for density determination of liquids	00210260	–	–	•	•	•	•
Sinker 10 mL for density determination of liquids (with certificate)	00210672	–	–	•	•	•	•
<b>Draft Shields</b>							
Pro Draft Shield, for 0.1 mg and 1 mg models, H: 248 mm	30300926	–	–	–	–	• (S)	• (S)
Pro Draft Shield glass free (food industry) for 0.1 mg and 1 mg models, H: 248 mm	30409092	–	–	–	–	• (S)	• (S)
MagicCube Draft Shield, 1 mg models, H: 175 mm	30300928	–	–	–	–	• (S)	• (S)
Simple Draft Shield, for 0.1 g models (weighing pan 11132660 needed), H: 175 mm	11131653	–	–	–	–	• (S)	• (S)
Simple Draft Shield for 5 mg and 10 mg models, H: 175 mm	30113496	–	–	–	–	• (S)	• (S)
W5 Draft Shield, for entire Microbalances, W×D×H (inside): 200×447×200 mm	30138798	•	–	–	–	–	–
W12 Draft Shield, for entire Precision Balances, W×D×H (inside): 300×450×450 mm	11134430	–	–	–	–	• (S)	• (S)
W64 Draft Shield, for entire balances, W×D×H (internal): 550×470×580 mm	11134470	•	•	•	•	•	•
<b>Stands and Wall Mountings</b>							
Terminal stand for placement of the terminal 30 cm above weighing pan, balances with S-Platform (XS balances require adapter, 30113494)	30125077	–	–	–	–	• (S)	• (S)
Terminal stand for placement of the terminal 30 cm above weighing pan, balances with L-Platform (XS balances require adapter, 30113494)	30125333	–	–	–	–	• (L)	• (L)
Terminal and printer stand for XPE Micro balances and Analytical Balances	11106730	–	•	•	•	–	–
Terminal wall mounting for XPR/XPE, incl. terminal extension cable 1.8 m	30300956	–	–	•	–	•	–
Terminal wall mounting for XPR/XSR terminal, including terminal extension cable. Requires XSR terminal adapter 30300956.	30138798	–	–	–	–	–	•



## Accessories

### XPE, XPR, XSR, XS Balances

Description	Material No.	XPR/XS Ultra-micro and Micro Balances	XPE26/XPE56 Micro Balances	XPE Analytical Balances	XS Analytical Balances	XPR/XPE Precision Balances S/L-Platform	XSR/XS Precision Balances S/L-Platform
<b>Optical Sensor</b>							
ErgoSens: Infrared sensor for touch-free remote operation Connection via USB	30300915	• (XPR)	–	–	–	• (XPR)	• (XSR)
ErgoSens: Optical infrared sensor for hands-free operation Connection via Aux 1, Aux 2	11132601	• (XS)	•	•	•	• (XPE)	• (XS)
<b>Foot Switches</b>							
Foot switch: Switch for remote operation, Connection via USB	30312558	• (XPR)	–	–	–	• (XPR)	• (XSR)
Foot switch with selectable balance functions Connection via Aux 1, Aux 2	11106741	• (XS)	•	•	•	• (XPE)	• (XS)
Bluetooth USB adapter (to connect to P5X printers it requires BT Interface 30086494)	30416089	• (XPR)	–	–	–	• (XPR)	• (XSR)
<b>Transport Cases</b>							
Transport case for Analytical Balances	11106869	–	–	•	•	–	–
Transport case for S-Platform Precision Balances, 5 mg, 10 mg and 0.1 g models, with space for printer and stand arm	30113497	–	–	–	–	• (S)	• (S)
<b>Dust Cover</b>							
Dust Cover Analytical Balances	30035828	–	•	•	•	–	–
Dust Cover Precision Balances	30035839	–	–	–	–	• (S)	• (S)
<b>Protective Covers</b>							
Protective cover for XPR terminals	30125377	• (XPR)	–	–	–	• (XPR)	–
Protective cover for XSR terminal	30300968	–	–	–	–	–	• (XSR)
Protective cover for XPE terminal	30059776	–	–	•	–	•	–
Protective cover for XS terminal	11106870	• (XS)	–	–	•	–	• (S)
Protective cover for XS terminal, Precision Balances with L-Platform	11132573	–	–	–	–	–	• (L)
Protective cover for XPR/XSR S-Platform 10 mg and 0.1 g models	30300966	–	–	–	–	•	•
Protective cover for XPR/XSR S-Platform 1 mg and 0.1 mg models	30300967	–	–	–	–	•	•
Protective cover for standard weighing pan 5 mg, 10 mg (172×205 mm)	30106207	–	–	–	–	• (S)	• (S)
Protective cover for standard weighing pan 0.1 g (190×223 mm)	30106204	–	–	–	–	• (S)	• (S)
IP54 cover for AC adapter, protects against dust and splashing (IP54)	11132550	•	•	•	•	•	•
<b>ErgoClips</b>							
ErgoClip Tube micro	30078848	–	•	–	–	–	–
ErgoClip Flask micro	11107879	–	•	–	–	–	–
ErgoClip Basket micro	11107889	–	•	–	–	–	–
MinWeigh Door micro	11107869	–	•	–	–	–	–
Stand for ErgoClips micro	11140175	–	•	–	–	–	–
ErgoClip Weighing Boat	11106748	–	–	•	•	–	–
ErgoClip Titration Basket	11106883	–	–	•	•	–	–
ErgoClip Basket small	11106747	–	–	•	•	–	–
ErgoClip Round-Bottom Flask	11106746	–	–	•	•	–	–
ErgoClip Flask	11106764	–	–	•	•	–	–
ErgoClip Flask small	11140180	–	–	•	•	–	–
ErgoClip Tube	11106784	–	–	•	•	–	–
ErgoClip Syringe	30008288	–	–	•	•	–	–
MinWeigh Door	11106749	–	–	•	•	–	–
Stand for ErgoClips	11140170	–	–	•	•	–	–

## Accessories

### XPE, XPR, XSR, XS Balances

Description	Material No.	XPR/XS Ultra-micro and Micro Balances	XPE26/XPE56 Micro Balances	XPE Analytical Balances	XS Analytical Balances	XPR/XPE Precision Balances S/L-Platform	XSR/XS Precision Balances S/L-Platform
<b>Barcode Readers</b>							
USB barcode reader	30417466	• (XPR)	•	•	•	• (XPR)	• (XSR)
<b>RS232 barcode reader – cordless</b>	21901299	• (XS)	•	•	•	• (XPE)	• (XS)
The following items are needed for operation (not incl. in 21901299):							
– Cradle	21901300	–	–	–	–	–	–
– Power supply kit 12V EU	21901373	–	–	–	–	–	–
– Power supply kit 12V UK	21901374	–	–	–	–	–	–
– Power supply kit 12V US	21901375	–	–	–	–	–	–
– Power supply kit 12V AUS	21901373 +71209966	–	–	–	–	–	–
– Same RS232 F cable and Null modem adaptor as for RS232 barcode reader	21901305	–	–	–	–	–	–
<b>RS232 Barcode Reader</b>	21901297	• (XS)	•	•	•	• (XPE)	• (XS)
The following items are needed for operation (not incl. in 21901297):							
– RS232 F cable	21901305	–	–	–	–	–	–
– Null modem adaptor	21900924	–	–	–	–	–	–
Plus 1 of the following:							
– Power supply kit 5V EU	21901370	–	–	–	–	–	–
– Power supply kit 5V UK	21901371	–	–	–	–	–	–
– Power supply kit 5V US	21901372	–	–	–	–	–	–
– Power supply kit 5V AUS	21901370 +71209966	–	–	–	–	–	–
<b>Spatula</b>							
Spatula set analytical	30064493	•	•	•	•	•	•
Spatula set micro	30064490	•	•	•	•	•	•
<b>Weighing Pans</b>							
Single-use aluminum weighing pans (10 units)	11106711	–	–	•	•	–	–
SmartGrid cover	11106709	–	–	•	•	–	–
SmartGrid cover micro	11106262	–	•	–	–	–	–
Weighing pan for 5 mg, 10 mg S-Platform models, 172×205 mm	30215056	–	–	–	–	• (S)	• (S)
Weighing pan, incl. pan support, for 0.1g S-Platform models, 190×223 mm	11132655	–	–	–	–	• (S)	• (S)
Grey drip tray for analytical balances	30038741	–	–	•	•	–	–
Dynamic weighing kit, 4 liter vessel, for 5 mg, 10 mg and 0.1 g S-Platform models and all L-Platform models	11132657	–	–	–	–	•	•
Bullion weighing kit to load or unload heavy items, only for models with L weighing platform	30300944	–	–	–	–	• (L)	–
Special weighing pan: Suitable for small, tubular samples; includes holder, pan and wind-ring	30113498	•	–	–	–	–	–
Special weighing pan set: Set of 10 special weighing pans	30215425	•	–	–	–	–	–
<b>Optional Interfaces</b>							
RS232 option: Interface for connection of a printer, computer or titrator	11132500	• (XS)	•	•	•	• (XPE)	• (XS)
Ethernet option: Ethernet interface for connection to Ethernet network	11132515	• (XS)	•	•	•	• (XPE)	• (XS)
RS-USB converter cable	11103691	•	•	•	•	•	•
BT2 option	30237796	• (XS)	•	•	•	• (XPE)	• (XS)
BT2 paired option	30237797	• (XS)	•	•	•	• (XPE)	• (XS)



## Accessories

### XPE, XPR, XSR, XS Balances

Description	Material No.	XPR/XS Ultra-micro and Micro Balances	XPE26/XPE56 Micro Balances	XPE Analytical Balances	XS Analytical Balances	XPR/XPE Precision Balances S/L-Platform	XSR/XS Precision Balances S/L-Platform
<b>Terminal Cable</b>							
Terminal extension cable for XPR/XPE terminals, 4.5 m	30110908	-	•	•	-	•	-
Terminal extension cable, 4.5 m	11600517	•	•	•	•	-	-
Terminal cable for XPR micro and ultra-micro balances: Length 4.5 m	30300920	-	-	-	-	-	-
<b>Filling Process Control</b>							
SQC-XPE software package	30251345	-	-	-	-	• (XPE)	-
LV12 small items transporter for automatic balance feeding	30374389	•	•	•	•	•	•
LV12 draft shield door	11106715	-	•	•	•	-	-
LV12 pro draft shield door for 0.1 mg and 1 mg models	11132711	-	-	-	-	• (S)	-
<b>Consumables</b>							
SmartPrep weighing funnel, 50 pcs	30061260	-	-	•	•	-	-
<b>Anti-Theft Device</b>							
Steel cord with T-bar mechanism and lock	11600361	-	•	•	•	•	•
<b>Hook for Weighing below the Balance</b>							
Below-the-balance weighing device for precision balances with L-platform (integrated in balance models with S-platforms)	11132565	-	-	-	-	• (L)	• (L)
<b>SE-Kit</b>							
XPE SE-kit, separate electronics kit for XPE analytical balances	11106743	-	-	•	-	-	-
SE-kit extension cable 0.6 m	00211535	-	-	•	-	-	-
SE-kit extension cable 5.0 m	00210688	-	-	•	-	-	-
<b>Filter Kits</b>							
Filter Kit: Suitable for 47 and 70 mm filters, includes tweezers, for XPR micro and ultra-micro balances	30300922	• (XPR)	-	-	-	-	-
Filter Pan: Suitable for 50 mm filters, for XPR micro and ultra-micro balances	00211214	•	-	-	-	-	-
Filter kit for XPE/XS analytical balances < ∅ 110 mm	11140000	-	-	•	•	-	-
ErgoClip filter holder < ∅ 110–150 mm	11140185	-	-	•	•	-	-



SmartPrep single-use, AntiStatic funnels provide a safe and fast method for weighing-in powders. Simply weigh, transfer and rinse. Fits nearly any standard 10–250 mL flask.

## Accessories

### MS, MS-TS, ML-T, ME-T, PL-E Balances

Description	Material No.	MS Semi-Micro	MS-L	MS-TS	ML-T	ME-T	PL-E
<b>Density Kits for Basic Weighing Balances</b>							
Density Kit MS Semi-Micro	30004077	•	-	-	-	-	-
Density Kit MS-TS 1 mg and 0.1 mg	11142143	-	-	•	-	-	-
Density Kit ML-T 1 mg and 0.1 mg	11142144	-	-	-	•	-	-
Density Kit ME/ME-T-1 mg	30029886	-	-	-	-	•	-
<b>LabX® Direct</b>							
LabX Direct full version for simple balance data transfer	11120340	•	•	•	•	•	•
<b>Draft Shields</b>							
Draft shield with sliding doors "mg" (usable height 168 mm)	12122405	-	-	•	-	-	-
Draft shield with sliding doors "0.1 mg" (usable height 236 mm)	12122404	-	-	•	-	-	-
Draft shield MS-DS-21 for models with readability of 0.1 g up to 0.01 g	12121014	-	-	•	-	-	-
Draft shield for precision balances ML-DS-21, height 227 mm (ML with pan size 170 × 190 mm)	12121015	-	-	-	•	-	-
Draft shield without sliding doors "0.1 mg" (235 mm) (Set DS High ME)	30037731	-	-	-	-	•	-
Draft shield without sliding doors "1 mg" (175 mm) (Set DS Low ME)	30042884	-	-	-	-	•	-
<b>Transport Case</b>							
Transport case for compact models (without draft shield)	12102982	-	-	-	-	-	•
<b>Dust Covers</b>							
Dust cover for models with draft shield 235 mm	30029049	-	-	-	-	•	-
Dust cover for models with draft shield 170 mm	30029050	-	-	-	-	•	-
Dust cover for models without draft shield	30029051	-	-	-	-	•	-
<b>Protective Covers</b>							
Protective cover for MS semi-micro	30006615	•	-	-	-	-	-
Protective cover for MS-TS balances (all models)	30216667	-	-	•	-	-	-
Protective cover for MS-L balances	12121852	-	•	-	-	-	-
Protective cover for ML-T balances with draft shield	30241514	-	-	-	•	-	-
Protective cover for ML-T balances with square pan	30241513	-	-	-	•	-	-
Protective cover for ME-T balances with draft shield	30241549	-	-	-	-	•	-
Protective cover for ME-T balances without draft shield	30241560	-	-	-	-	•	-
Protective cover for compact models	12102980	-	-	-	-	-	•
<b>Special Weighing Pans</b>							
Dynamic weighing pan MS-DWP-21 (MS-TS with pan size 170 × 200 mm, 190 × 226 mm)	30006471	-	-	•	-	-	-
<b>Anti-Theft Devices</b>							
Steel cord with lock	11600361	•	•	•	•	•	-
<b>Auxiliary Displays</b>							
Auxiliary display AD-RS-M7, RS232 large LCD backlit display powered by the balance (RS232 interface)	12122381	•	•	•	•	•	-
Auxiliary display RS-AD-L7, RS232 LCD display with backlight	72213564	-	-	-	-	-	•



## Accessories

### Cables



	Description	Material No.
All, with RS232 interface	RS9 (m) – RS9 (f), cable for connecting a balance (RS232, 9-pin) to a printer, PC or titrator (RS232, 9-pin), 1 m	11101051
	RS232F Cable for connecting to the NetCom kit, 1.8 m	11600724
	USB – RS232 converter cable, FTDI, 2 m	64088427
	USB-RS232 Converter: Connects peripheral devices to the balance via RS232 incl. zero modem f/f converter	30364315
All, with Ethernet interface	Ethernet extension cable, RJ45 patch cable U/UTP, CAT5, 3 m	11600395
	Ethernet extension cable, RJ45 patch cable U/UTP, CAT5, 5 m	11600396
With USB interface	USB (A – B) cable for connection to PC, 1 m	30241476



For more details please request our accessories brochure (30006734).

► [www.mt.com/lab-weighing-accessories](http://www.mt.com/lab-weighing-accessories)

# Our Expertise

## Your Cornerstone for Reliable Results

**Only the finest quality austenitic steel offers the highest resistance to corrosion over the course of a weight's lifetime. Our unique manufacturing process involves melting the steel under vacuum, traditional mechanical polishing, final stage electrolytic polishing, fully automated cleaning processes and final calibration using state-of-the-art mass comparators. The process has been perfected over years of experience to bring you accurate weights of the highest quality with a stability that remains unmatched in the market.**

### Custom Materials



Our specially produced super-austenitic stainless steel is cast under vacuum to reduce undesired trace elements, remove dissolved gases and improve oxide cleanliness. This optimizes the physical properties of the steel; e.g. density is highly reproducible.

### Electrolytic Polishing



A proprietary process eliminates microscopic protrusions in the weight's surface which is far more even compared to mechanical polishing. Thanks to the enhanced properties of the passive oxide film, long-term stability of the weight is improved.

### Robot Calibration



Substantial investment in cutting-edge robot technology, combined with decades of experience, guarantees the highest standard of weight calibration. Computer-controlled processes eliminate human error, ensuring consistent and reproducible results with low uncertainty values.

# Ensure Valid Weighing Results With Just Two Weights

**Routine balance testing helps maintain accuracy in-between scheduled calibrations performed by an authorized service technician. Thanks to CarePacs®, you can test your balance with just two weights rather than a full set and still ensure consistently accurate weighing results.**

The science-based global weighing standard GWP® states that testing at approximately 5 % and 100% of balance capacity is sufficient. This approach saves time and money and applies to all balances in all industries. Specific to pharmaceutical companies, the same methodology is documented in USP General Chapter 41.

## CarePac with Two Weights



The larger test weight (1) at approx. 100 % capacity assesses systematic deviations (sensitivity offset). The smaller test weight (a) at approx. 5 % capacity assesses random errors (repeatability, shown in red). Low test loads (b) are not recommended.

## Recommended Test Frequency



Industry regulations demand testing regimes which are related to the process risk – the higher the risk, the greater the testing frequency. With the simplified and efficient GWP-based testing approach.

## Up to 0.03 % Process Tolerance



Routine balance-testing maintains balance accuracy to limit the risk of working outside your specified process tolerances. CarePac weights are specified to validate process tolerances up to 0.03 %.

# Our Signature Line

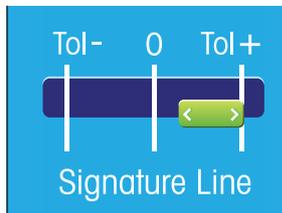
## OIML E1, E2 and F1 Test Weights



High-grade stainless steel, vacuum melted  
 Density: 8.0 kg/dm<sup>3</sup>  
 Magnetic susceptibility < 0.01  
 One-piece design (MonoBloc)



The Signature Line offers more than perfection. Hand-selected weights with assured positive tolerances and a life-time guarantee make these weights the first choice for ambitious testing purposes.



### Guaranteed Positive Tolerances

The unique electrolytic adjustment procedure combined with robotic calibrations allows selective production of weights in the positive tolerance range.

- Quality
- Accuracy
- Service
- Guarantee

### Full Lifetime Guarantee

The "stay-in-tolerance" lifetime guarantee means that if a weight should ever be found out of tolerance, it will be replaced free of charge.

- Weight and box
- Weight and box, **including certificate**
- Wire weight
- Marked wire weight
- Cylindrical weight with knob
- Marked cylindrical weight with knob

### Individual Weights

Nominal Value	Shape	E1		E2	
		Material No. Wooden Box	Material No. Plastic Box	Material No. Wooden Box	Material No. Plastic Box
1 mg	△	00159000	00159001	–	30003706
2 mg	△	00159010	00159011	–	30003707
5 mg	△	00159020	00159021	–	30003710
10 mg	△	00159030	00159031	–	30003711
20 mg	△	00159040	00159041	–	30003712
50 mg	△	00159050	00159051	–	30003713
100 mg	△	00159060	00159061	–	30003714
200 mg	△	00159070	00159071	–	30003715
500 mg	△	00159080	00159081	–	30003716
1 g	■	00159090	00159091	–	30003717
2 g	■	00159100	00159101	–	30003718
5 g	■	00159110	00159111	–	30003719
10 g	■	00159120	00159121	–	30003720
20 g	■	00159130	00159131	–	30003721
50 g	■	00159140	00159141	–	30003722
100 g	■	00159150	00159151	–	30003723
200 g	■	00159160	00159161	–	30003724
500 g	■	00159170	00159171	–	30003725
1 kg	■	00159180	00159181	–	30003726
2 kg	■	00159190	00159191	–	30003727
5 kg	■	00159200	00159201	–	30003728
10 kg	■	00159210	00159211	–	30003729
20 kg	■	00159220	00159221	–	30003730
50 kg	■	00159230	00159231	–	30003731

### Individual Weights

Nominal Value	Shape	F1	
		Material No. Wooden Box	Material No. Plastic Box
1 mg	△	–	30003743
2 mg	△	–	30003744
5 mg	△	–	30003745
10 mg	△	–	30003746
20 mg	△	–	30003747
50 mg	△	–	30003748
100 mg	△	–	30003749
200 mg	△	–	30003750
500 mg	△	–	30003751
1 g	■	–	30003752
2 g	■	–	30003753
5 g	■	–	30003754
10 g	■	–	30003755
20 g	■	–	30003756
50 g	■	–	30003757
100 g	■	–	30003758
200 g	■	–	30003759
500 g	■	–	30003760
1 kg	■	–	30003761
2 kg	■	–	30003762
5 kg	■	–	30003763
10 kg	■	–	30003764
20 kg	■	–	30003765
50 kg	■	–	30003766



Weight Sets	Range								
	1 mg 500 mg	1 mg 200 g	1 mg 1 kg	1 mg 2 kg	1 mg 5 kg	1 g 50 g	1 g 500 g	1 mg 1 kg	1 kg 5 kg
1 mg	△	△	△	△	△			△△	
2 mg	△△	△△	△△	△△	△△			△△	
5 mg	△	△	△	△	△			△△	
10 mg	△	△	△	△	△			△△	
20 mg	△△	△△	△△	△△	△△			△△	
50 mg	△	△	△	△	△			△△	
100 mg	△	△	△	△	△			△△	
200 mg	△△	△△	△△	△△	△△			△△	
500 mg	△	△	△	△	△			△△	
1 g		■	■	■	■	■	■	■	■
2 g		■	■	■	■	■	■	■	■
5 g		■	■	■	■	■	■	■	■
10 g		■	■	■	■	■	■	■	■
20 g		■	■	■	■	■	■	■	■
50 g		■	■	■	■	■	■	■	■
100 g		■	■	■	■	■	■	■	■
200 g		■	■	■	■	■	■	■	■
500 g			■	■	■	■	■	■	■
1 kg			■	■	■	■	■	■	■
2 kg				■	■	■	■	■	■
5 kg					■	■	■	■	■
No. of Weights	12	23	25	27	28	8	12	38	4

Material No.

E1 Wooden Box	00159300	00159340	00159350	11117614	11117616	00159310	00159320	00159360	00159330
	00159301	00159341	00159351	11117615	11117617	00159311	00159321	00159361	00159331
E2 Plastic Box	30003732	30003734	30003735	30003736	30003737	30003738	30003739	-	30003740
F1 Plastic Box	30003767	30003768	30003769	30003770	30003771	30003772	30003773	-	30003774

Benefit from Our Expertise

Correct Weight Handling



Download our free guide with 12 valuable tips for correct weight-handling.

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# Our Premium Line

## OIML E2 and F1 Test Weights



**Uncompromising selection of steel and rigorous control of manufacturing processes make Premium Line weights the excellent choice for balance calibration and testing. The proven one-piece design MonoBloc™ guarantees the best long-term stability and accurate test results.**



**Premium Stainless Steel**  
Premium, vacuum-melted stainless steel ensures an anticorrosive surface with low magnetization and susceptibility values.



**Made in Switzerland**  
The one-piece construction and electrolytically polished surface offers the best long-term stability.

High-grade stainless steel, vacuum melted  
Density: 8.0 kg/dm<sup>3</sup>  
Magnetic susceptibility < 0.01  
One-piece design (MonoBloc)

-  Weight and box
-  Weight and box, including certificate
-  Wire weight
-  Marked wire weight
-  Cylindrical weight with knob
-  Marked cylindrical weight with knob

Individual Weights		E2			
Nominal Value	Shape	Material No. Wooden Box		Material No. Plastic Box	
1 mg	△	00158300	00158301	00158306	00158307
2 mg	△	00158310	00158311	00158316	00158317
5 mg	△	00158320	00158321	00158326	00158327
10 mg	△	00158330	00158331	00158336	00158337
20 mg	△	00158340	00158341	00158346	00158347
50 mg	△	00158350	00158351	00158356	00158357
100 mg	△	00158360	00158361	00158366	00158367
200 mg	△	00158370	00158371	00158376	00158377
500 mg	△	00158380	00158381	00158386	00158387
1 g	■	00158390	00158391	00158396	00158397
2 g	■	00158400	00158401	00158406	00158407
5 g	■	00158410	00158411	00158416	00158417
10 g	■	00158420	00158421	00158426	00158427
20 g	■	00158430	00158431	00158436	00158437
50 g	■	00158440	00158441	00158446	00158447
100 g	■	00158450	00158451	00158456	00158457
200 g	■	00158460	00158461	00158466	00158467
500 g	■	00158470	00158471	00158476	00158477
1 kg	■	00158480	00158481	00158486	00158487
2 kg	■	00158490	00158491	00158496	00158497
5 kg	■	00158500	00158501	00158506	00158507
10 kg	■	00158510	00158511	00158516	00158517
20 kg	■	00158520	00158521	00158526	00158527
50 kg	■	00158530	00158531		

Individual Weights		F1			
Nominal Value	Shape	Material No. Wooden Box		Material No. Plastic Box	
1 mg	△	00159410	00159411	00159416	00159417
2 mg	△	00159420	00159421	00159426	00159427
5 mg	△	00159430	00159431	00159436	00159437
10 mg	△	00159440	00159441	00159446	00159447
20 mg	△	00159450	00159451	00159456	00159457
50 mg	△	00159460	00159461	00159466	00159467
100 mg	△	00159470	00159471	00159476	00159477
200 mg	△	00159480	00159481	00159486	00159487
500 mg	△	00159490	00159491	00159496	00159497
1 g	■	00158600	00158601	00158606	00158607
2 g	■	00158610	00158611	00158616	00158617
5 g	■	00158620	00158621	00158626	00158627
10 g	■	00158630	00158631	00158636	00158637
20 g	■	00158640	00158641	00158646	00158647
50 g	■	00158650	00158651	00158656	00158657
100 g	■	00158660	00158661	00158666	00158667
200 g	■	00158670	00158671	00158676	00158677
500 g	■	00158680	00158681	00158686	00158687
1 kg	■	00158690	00158691	00158696	00158697
2 kg	■	00158700	00158701	00158706	00158707
5 kg	■	00158710	00158711	00158716	00158717
10 kg	■	00158720	00158721	00158726	00158727
20 kg	■	00158730	00158731	00158736	00158737
50 kg	■	00158740	00158741		

# Standard Line

## OIML F1, F2 and M1 Test Weights



Proven technology and competitive prices make Standard Line weights a cost effective solution for general testing purposes. All weights are made of stainless steel; no aluminum is used, even for milligram weights. Weights are manufactured under METTLER TOLEDO's stringent ISO 9001 quality-management system.



**Adjusting Cavity**  
Each knob weight has an adjusting cavity which simplifies weight adjustment during calibration without the need for specialized equipment. These screw-knob weights are designed to resist dust and moisture intrusion providing durability for years to come.



**Robust and Durable**  
Standard Line weights are made of stainless steel, offering high corrosion resistance and ensuring excellent long term stability. They are supplied in a plastic, shock-resistant box that conforms to FDA requirements.

Stainless steel  
Density: 7.9 kg/dm<sup>3</sup>

- Weight and box
  - Weight and box, including certificate
  - Sheet weight
  - Marked sheet weight
  - Cylindrical weight with knob
  - Marked cylindrical weight with knob
- Marked single weights are available on request

Individual Weights		F1		F2		M1	
		Material No. Plastic Box		Material No. Plastic Box		Material No. Plastic Box	
Nominal Value	Shape	non cal	cal	non cal	cal	non cal	cal
1 mg	□	30402662	30406245	30402648	30406415	30402184	30406452
2 mg	□	30402629	30406246	30402649	30406416	30402510	30406453
5 mg	□	30402630	30406247	30402650	30406417	30402355	30406454
10 mg	□	30402631	30406388	30402651	30406418	30402585	30406455
20 mg	□	30402632	30406389	30402652	30406419	30402586	30406456
50 mg	□	30402633	30406390	30402653	30406420	30402587	30406457
100 mg	□	30402634	30406391	30402654	30406421	30402638	30406458
200 mg	□	30402635	30406392	30402655	30406422	30402639	30406459
500 mg	□	30402636	30406393	30402656	30406423	30402640	30406460
1 g	■	30402637	30406394	30402657	30406424	30402641	30406371
2 g	■	30402688	30406395	30402658	30406425	30402642	30406372
5 g	■	30402689	30406396	30402659	30406426	30402643	30406373
10 g	■	30402690	30406397	30402603	30406427	30402644	30406374
20 g	■	30402691	30406398	30402604	30406428	30402645	30406375
50 g	■	30402574	30406399	30402660	30406429	30402646	30406376
100 g	■	30402783	30406400	30402661	30406430	30402647	30406377
200 g	■	30402698	30406401	30402577	30406431	30402576	30406478
500 g	■	30402701	30406402	30402700	30406432	30402699	30406479
1 kg	■	30402664	30406403	30402663	30406433	30402702	30406480
2 kg	■	30402667	30406404	30402666	30406434	30402665	30406481
5 kg	■	30402710	30406405	30402709	30406435	30402708	30406482
10 kg	■	30402714	30406406	30402712	30406436	30402711	30406483
20 kg	■	30402782	30406407	30402781	30406437	30402780	30406484

Weight Sets	1 mg						
	500 mg	200 g	1 kg	2 kg	5 kg	50 g	500 g
1 mg	□	□	□	□	□		
2 mg	□ □	□ □	□ □	□ □	□ □		
5 mg	□	□	□	□	□		
10 mg	□	□	□	□	□		
20 mg	□ □	□ □	□ □	□ □	□ □		
50 mg	□	□	□	□	□		
100 mg	□	□	□	□	□		
200 mg	□ □	□ □	□ □	□ □	□ □		
500 mg	□	□	□	□	□		
1 g		■	■	■	■	■	■
2 g		■ ■	■ ■	■ ■	■ ■	■ ■	■ ■
5 g		■	■	■	■	■	■
10 g		■	■	■	■	■	■
20 g		■ ■	■ ■	■ ■	■ ■	■ ■	■ ■
50 g		■	■	■	■	■	■
100 g		■	■	■	■		■
200 g		■ ■	■ ■	■ ■	■ ■		■ ■
500 g			■	■	■		
1 kg			■	■	■		
2 kg				■ ■	■ ■		
5 kg					■		
Number of Weights	12	23	25	27	28	8	12
<b>F1</b>	30402723	30402717	30402735	30402684	30402687	30402681	30402730
	30406408	30406409	30406410	30406411	30406412	30406413	30406414
<b>F2</b>	30402722	30402716	30402734	30402683	30402686	30402680	30402729
	30406438	30406439	30406440	30406441	30406442	30406443	30406444
<b>M1</b>	30402721	30402715	30402732	30402682	30402685	30402679	30402728
	30406445	30406446	30406447	30406448	30406449	30406450	30406451

# Guaranteed Traceability Via Unique Weight Verification

**In our innovative WeightLink™ system, every test weight has a unique identification number (UIN) on the base which “links” it to its calibration certificate. Calibration and certificate data are stored in a data matrix code (DMC). The dedicated DMC scanner reads the two codes and sends the information to the balance. The balance firmware validates the certificate and weight data before allowing the balance test to begin.**

With this highly efficient system, it is impossible to test using the wrong weight, and the risk of manual data-entry errors is completely eliminated. Full traceability is assured in four easy steps:

- Scan certificate data
- Scan weight
- Perform balance test
- Print report

## Proven Traceability



The built-in balance testing application records the weight-specific data and test results. A detailed test report can be printed out with an external printer to provide full documentation of the balance test.

## Enhanced Security



WeightLink will only allow the use of a valid test weight. Verification of the test weight prior to use means you can rest assured that your testing procedures are fully compliant.

## Improved Productivity



Automatic transfer of weight parameters into the balance firmware is much faster than manual data entry and removes the need to check and re-check handwritten entries. Printing out results is quick and easy.

Watch the video to see WeightLink in action.

▶ [www.mt.com/weightlink](http://www.mt.com/weightlink)

### CarePac® S

Weighing ranges up to 490 g

OIML	XPE, XS, XPR 404 403	XPE, XPR, XS, XSR, MS, ML 203 204 205 206 303 304	XPE, XPR, XS 105 104	XPE, XPR, XS, ML, HE 53 54 56 64 73	XPE, XPR 26	XPR 6 10	XPR 2
Nominal Weight and Class	200 g F2 20 g F1	200 g F2 10 g F1	100 g F2 5 g E2	50 g F2 2 g E2	20 g F1 1 g E2	5 g E2 0.2 g E2	2 g E2 0.1 g E2
CarePac S	11123000	11123001	11123002	11123003	11123006	11123005	11123004
WeightLink™ CarePac S	30293475	30293476	30293477	30293478	30293481	30293480	30293479

#### ASTM

Nominal Weight and Class	200 g 1 20 g 1	200 g 1 10 g 1	100 g 1 5 g 1	50 g 1 2 g 1	50 g 1 1 g 1	5 g 1 0.2 g 1	2 g 1 0.1 g 1
CarePac S	11123100	11123101	11123102	11123103	11123106	11123105	11123104
WeightLink CarePac S	30293463	30293464	30293465	30293466	30293469	30293468	30293467

### CarePac M

Weighing ranges 500–4900 g

OIML	XPE, XS, XSR, MS, ML 503 504 603 802	XS, XSR, MS, ML 1003 1202 1203 1502 1602	XS, XSR, MS, ML 2001 2002 2003 3002	XS, XSR, MS, ML 4001 4002	XS, XSR, MS, ML 5003 6001 6002 8001 8002
Nominal Weight and Class	500 g F2 20 g F1	1000 g F2 50 g F2	2000 g F2 100 g F2	2000 g F2 200 g F2	5000 g F2 200 g F2
CarePac M/L	11123007	11123008	11123009	11123010	11123011
WeightLink CarePac M/L	30293482	30293483	30293484	30293485	30293486

#### ASTM

Nominal Weight and Class	500 g 1 20 g 1	1000 g 1 50 g 1	2000 g 1 100 g 1	2000 g 4 200 g 4	5000 g 4 200 g 4
CarePac M/L	11123107	11123108	11123109	11123110	11123111
WeightLink CarePac M/L	30293470	30293471	30293472	30293473	30293474

### CarePac L

Weighing ranges 5–8 kg

### Third Weight

or Customized Testing

Value	OIML Class E2	Value	OIML Class E2	WeightLink OIML Class E2	ASTM Class 1	WeightLink ASTM Class 1
1 mg	11123044	1 g	11123053	30293554	11123153	30293487
2 mg	11123045	2 g	11123054	30293555	11123154	30293488
5 mg	11123046	5 g	11123055	30293556	11123155	30293489
10 mg	11123047	10 g	11123056	30293557	11123156	30293490
20 mg	11123048	20 g	11123057	30293558	11123156	30293491
50 mg	11123049	50 g	11123058	30293559	11123158	30293492
100 mg	11123050	100 g	11123059	30293560	11123159	30293493
200 mg	11123051					
500 mg	11123052					

### Data Matrix Code Scanner

WeightLink DMC Scanner	30268560
WeightLink DMC Scanner + RS232 option	30304696



Please visit our website to see the full range of CarePacs available.

[www.mt.com/carepacs](http://www.mt.com/carepacs)

# Microgram Weights For Mass Calibration

These weights, combined with their specially designed set of accessories and handling tools, offer a complete calibration solution for customers who go beyond traditional boundaries.

Mainly used by national institutes for scientific research and calibrations, these weights also aid general industry research in areas where equipment calibration with milligram weights is no longer sufficiently precise.

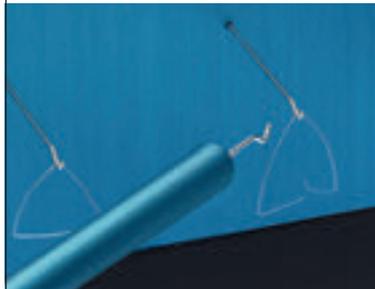


### Protective Storage



Easy-to-clean aluminum boxes protect weights against electrostatic charge. To avoid unintentional misplacement of weights, each box is laser marked with the nominal value.

### Stable Weights



Precise and inimitable shapes for each nominal weight. To ensure accuracy, an automated process is used to bend wires with diameter as small as 0.05 mm into desired shapes.

### Nifty Tools



Tweezers with a special hook and ceramic tips ensure proper handling. The miniature draft shield protects the weights during acclimatization and pre-weighing preparations.

### Weight Sets

Nominal Value	Weight Sequence	Number of Weights	Material No.	Material No.
0.05 mg – 0.5 mg	1, 2, 2, 5	5	30078805	30078807

### Single Weights

Nominal Value	MPE ( $\pm$ in $\mu\text{g}$ )	Uncertainty ( $\mu\text{g}$ )	Material No.	Material No.
0.05 mg	$\pm 1.5$	0.7	30078800	30080144
0.1 mg	$\pm 1.5$	0.7	30078801	30080145
0.2 mg	$\pm 1.5$	0.7	30078802	30080146
0.5 mg	$\pm 1.5$	0.7	30078803	30080147

 With statement of accuracy

 With traceable calibration certificate issued by the National Measurement Office in UK

## Accessories



### Tweezers

	Material No.
Straight tips, for weights 1 mg – 50 g, length 130 mm	00015900
Straight tips, for weights 1 g – 1 kg, length 220 mm	11116544
Straight tips, for weights 1 mg – 50 g, length 140 mm	11116543
Bent tips, for weights 1 g – 1 kg, length 210 mm	00015901
Bent tips, for weights 1 g – 200 g, length 130 mm	11116540
Straight tips, for weights 1 mg – 500 mg, length 130 mm	30040321



### Weight Forks

	Material No.
Aluminum/polyamide, for weights 500 g – 1 kg, length 300 mm	00222175
Aluminum/polyamide, for 2 kg weights, length 320 mm	00015902
Aluminum/polyamide, for 5 kg weights, length 470 mm	00015903
ABS, for 500 g weights, length 150 mm	11123094
ABS, for 1 kg weights, length 150 mm	11123095



### Weight Handles

	Material No.
Steel, with rubber coating, for 2 kg weights	11123096
Steel, with rubber coating, for 5 kg weights	11123097
Aluminum, for 10 kg and 20 kg weights	00015904
Aluminum, for 10 kg and 20 kg weights, with ear for crane	11116517
Aluminum, for 50 kg weights, with ear for crane	11116515

### Weight Sets

Range	Weight Sets								
	1 mg 500 mg	1 mg 200 g	1 mg 1 kg	1 mg 2 kg	1 mg 5 kg	1 g 50 g	1 g 500 g	1 mg 1 kg	1 kg 5 kg
1 mg	△	△	△	△	△			△△	
2 mg	△△	△△	△△	△△	△△			△△△	
5 mg	△	△	△	△	△			△△△	
10 mg	△	△	△	△	△			△△△	
20 mg	△△	△△	△△	△△	△△			△△△	
50 mg	△	△	△	△	△			△△△	
100 mg	△	△	△	△	△			△△△	
200 mg	△△	△△	△△	△△	△△			△△△	
500 mg	△△	△△	△△	△△	△△			△△△	
1 g		■	■	■	■	■	■	■	■
2 g		■	■	■	■	■	■	■	■
5 g		■	■	■	■	■	■	■	■
10 g		■	■	■	■	■	■	■	■
20 g		■	■	■	■	■	■	■	■
50 g		■	■	■	■	■	■	■	■
100 g		■	■	■	■	■	■	■	■
200 g		■	■	■	■	■	■	■	■
500 g		■	■	■	■	■	■	■	■
1 kg			■	■	■	■	■	■	■
2 kg				■	■	■	■	■	■
5 kg					■	■	■	■	■
No. of Weights	12	23	25	27	28	8	12	38	4

### Material No.

<b>E2 Wooden Box</b>	00158800	00158840	00158850	11117624	11117626	00158810	00158820	00158860	00158830
	00158801	00158841	00158851	11117625	11117627	00158811	00158821	00158861	00158831
<b>E2 Plastic Box</b>	00158806	00158846	00158856	11117321	11117323	00158816	00158826	-	11125900
	00158807	00158847	00158857	11117322	11117324	00158817	00158827	-	11125901
<b>F1 Wooden Box</b>	00161700	00158900	00158910	11117802	11117804	00158870	00158880	-	00158890
	00161701	00158901	00158911	11117803	11117805	00158871	00158881	-	00158891
<b>F1 Plastic Box</b>	00161706	00158906	00158916	11119979	11119981	00158876	00158886	-	11125907
	00161707	00158907	00158917	11119980	11119982	00158877	00158887	-	11125908

### Miscellaneous Accessories

	Material No.
Leather gloves, pair, not suitable for regulated environments	00072001
Nylon gloves, pair, suitable for all environments	11123098
Microfiber cloth, suitable for all environments	00158798
Brush, suitable for all environments	00158799
Weight marking, up to 5 digits, alphanumeric, on 1 g – 50 kg weights	11116500
Air bellow, for weight cleaning	11116548
WeightLink™ DMC Scanner	30268560
WeightLink DMC Scanner + RS232 option	30304696



DMC scanner



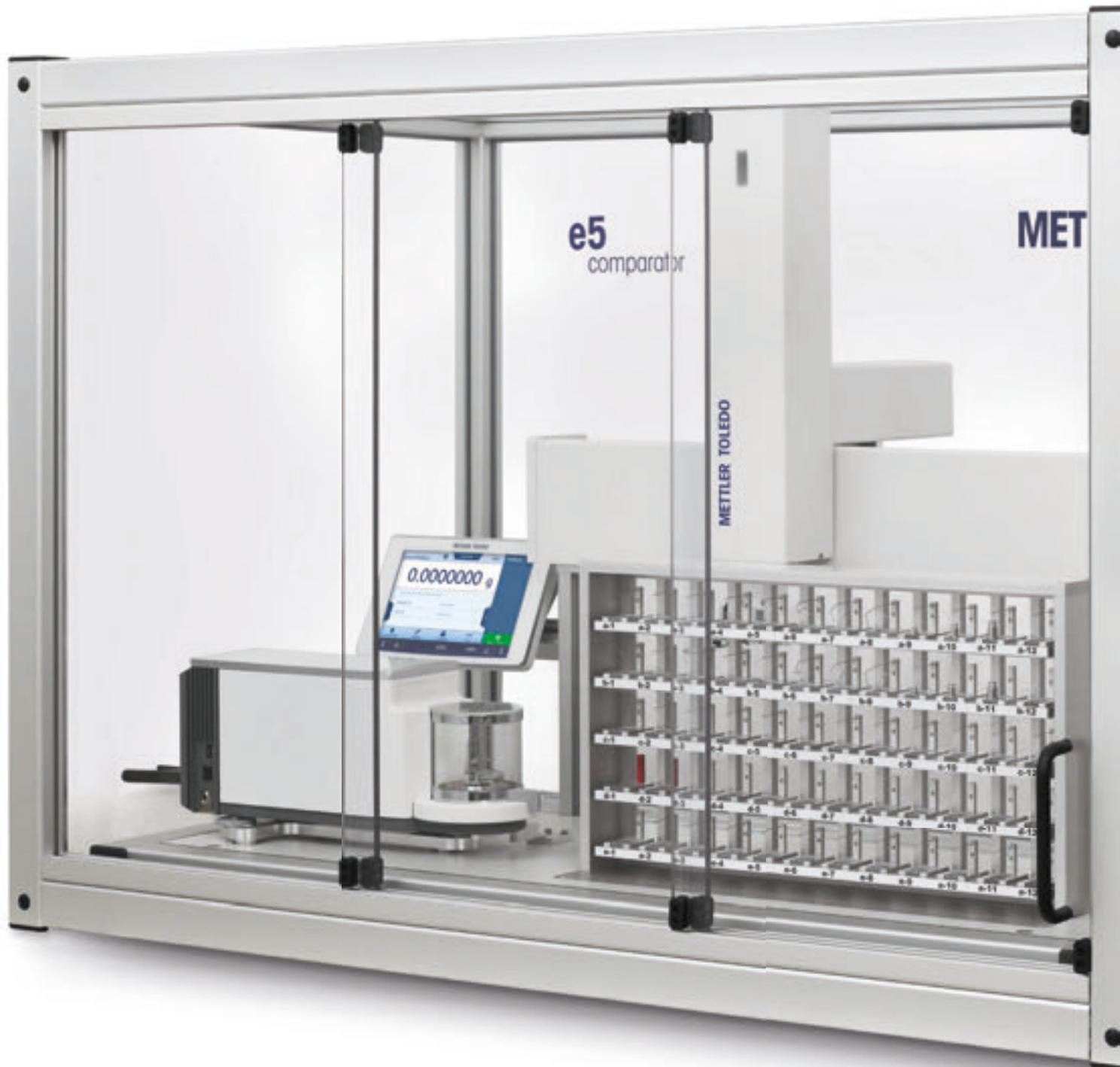
Brush



Weight marking

# Mass Comparators

Highly Accurate Mass Determination





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Manual Mass Comparators	114 – 115
Automated Mass Comparators	116 – 117
MC Link Calibration Software	118 – 119



Scan this code for more information.

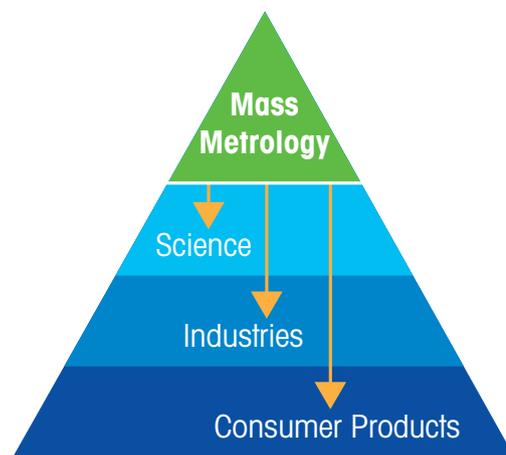
# Comparator Balances For Utmost Accuracy

**METTLER TOLEDO offers a comprehensive portfolio of mass comparators for seamless traceability in mass calibration and highly accurate weighing applications.**

Thanks to unrivaled repeatability and resolution, mass comparators are the most accurate balances in existence today. They determine the exact mass of unknown weights by comparison with a known reference weight.

Weights calibrated in an ISO 17025-accredited calibration laboratory are fully traceable to the International Prototype Kilogram (IPK) in Paris. Hence mass comparators play a key role in the realization of measurement standards.

METTLER TOLEDO mass metrology solutions guarantee the highest quality measurements and full compliance with country-specific norms in all areas of science, industry and consumer products.



For more details please request the Comparator Balances brochure (11795840B).

► [www.mt.com/comparator](http://www.mt.com/comparator)

**Ensured Traceability**

Choose from more than 20 models to cover your individual weighing range and accuracy level. Thanks to an ergonomic design, our comparator balances are easy to use. Complementary MC Link software ensures maximized productivity.



**Manual Comparators**

**Differentiate by Competence**

Enhance your service offering by adding the capability to perform density calibration of customer weights.



**Volume Comparators**

**Reduce Your Uncertainties**

Calibrate weights up to 60 kg and achieve the smallest uncertainties by running measurements at night without human influence. Maintain constant pressure or vacuum to eliminate air-density dependencies.



**Automated Comparators**

**Where Productivity Matters**

Enjoy worry-free weight calibration by fully automating all calibrations on your robotic mass comparator. Benefit from the highest productivity and improved measurement performance.



**Robotic Comparators**

# Manual Solutions

## Accurate and Versatile

**METTLER TOLEDO manual mass comparators offer a winning combination of the highest accuracy plus unmatched performance and are perfect for use in mass calibration laboratories or industrial applications.**

Our manual mass comparator range covers weight calibration from 0.05 mg to 5.000 kg. State-of-the-art weighing cells and innovative weighing pans (hanging, hook and LevelMatic) assure the best repeatability possible. MC Link mass-calibration software is supplied standard and helps fulfill data-integrity and compliance requirements while cutting calibration time in half.

### AX Comparators



Achieve the smallest uncertainties possible on manual comparators with AX window-range models. Hanging weighing pans, double draft shields and sophisticated weighing cells secure the best results for higher weight classes.

### XPR Comparators



Enjoy peak performance plus ergonomic and convenient operation. The LevelMatic weighing pan eliminates the influence of eccentricity guaranteeing improved performance. LevelControl provides a warning if the comparator is off-level to assure reliable results.

### XPR Micro Comparators



XPR micro comparators offer convenient full weighing ranges with the highest precision up to 520 g. Draft shield doors are controlled automatically to simplify workflows and reduce operator fatigue.



**Smooth Calibration Process**

Reduce manual handling steps through automatic data recording. Accelerate your calibration process and prevent data inconsistencies. Gain faster turnaround on weight calibration.



**Minimized Uncertainty**

Utmost reliability and accuracy thanks to the LevelMatic weighing pan, an innovative mechanism that reduces corner-load effects to the very minimum.



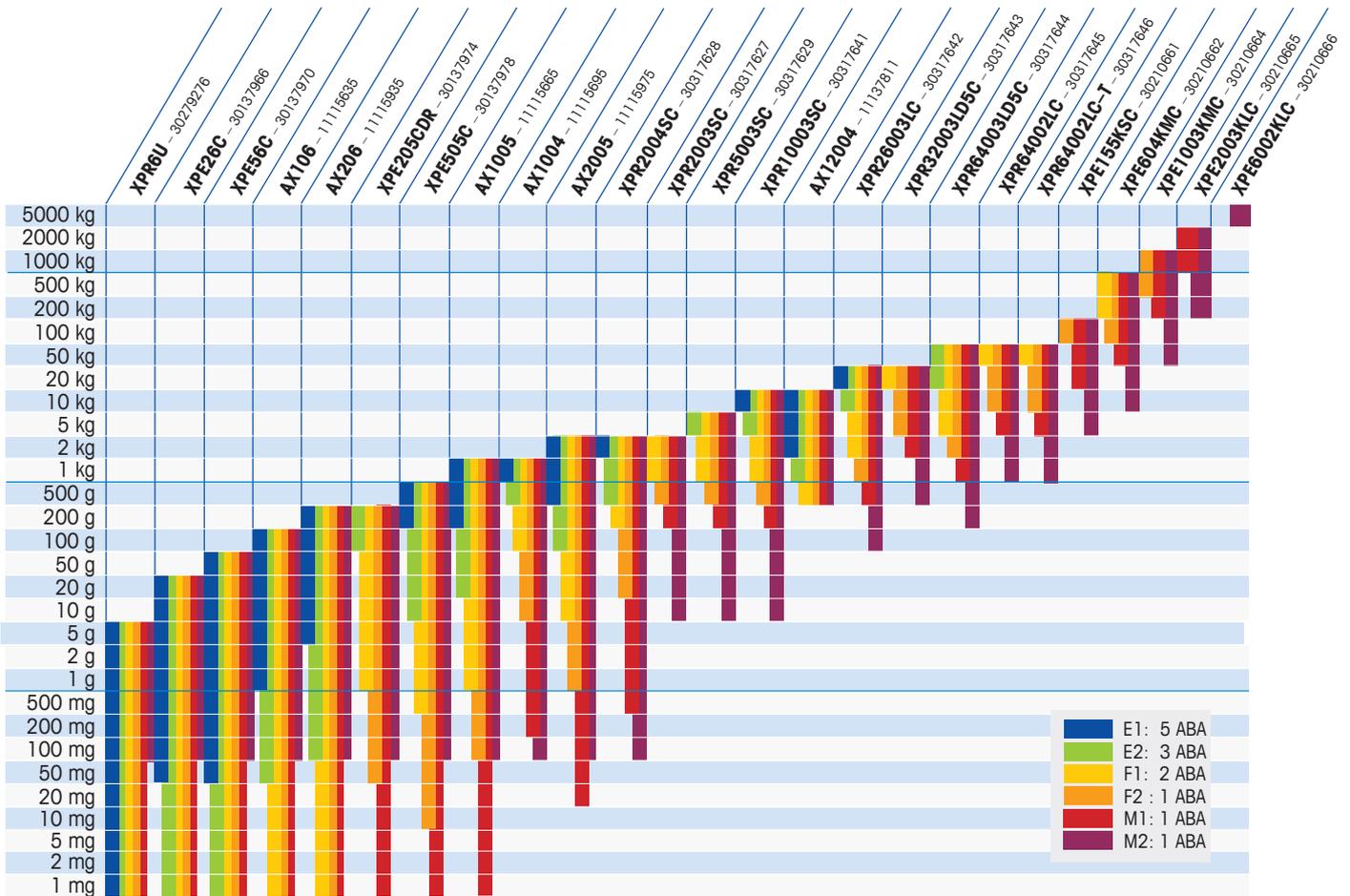
**Comprehensive Weight Calibration**

MC Link mass calibration software is intuitive and easy to use. Workflows are more efficient and all results are saved securely to help you ensure traceability and regulatory compliance at all times.

► [www.mt.com/mc-link](http://www.mt.com/mc-link)



XPR26003LC mass comparator with MC Link connection



The illustration shows the application ranges according to the OIML R111 recommendation at zero-meter altitude. Please contact us for a personal consultation to discuss your individual needs.

# Automated Solutions

## Highest Efficiency, Lowest Uncertainty

**Whereas research laboratories and national metrology institutes strive for the smallest uncertainties, private calibration laboratories are often driven by cost and throughput.**

Our automated mass comparators address these demands with application-oriented solutions and different levels of automation. Backed by more than 20 years of experience in automated mass comparison, these state-of-the-art vacuum, robotic and automated mass comparators are the instruments of choice around the world.

### Volume Comparators



Volume comparators address the demand to determine the density of weights up to 20 kg. Only with a known density of a higher class weight can the compliance of calibration be guaranteed.

### Automated Comparators



The absolute highest accuracy can be achieved by utilizing automated mass comparators. As air density is one of the primary contributors to uncertainty, the portfolio covers vacuum, constant-pressure and ambient-pressure models.

### Robotic Comparators



Our e\_Line and a\_Line mass comparators carry out weight calibration in a fully automated process, significantly reducing calibration times and measurement uncertainty.



**Accuracy Through Dissemination**

To establish full traceability to your primary standard and therefore the IPK, automated solutions establish disseminations up to 60 kg.



**Maximize Throughput**

With a magazine capacity for up to 100 weights, robotic mass comparators are designed to run 24 hours a day, maximizing your laboratory's throughput.

► [www.mt.com/lab-robotic-MC](http://www.mt.com/lab-robotic-MC)



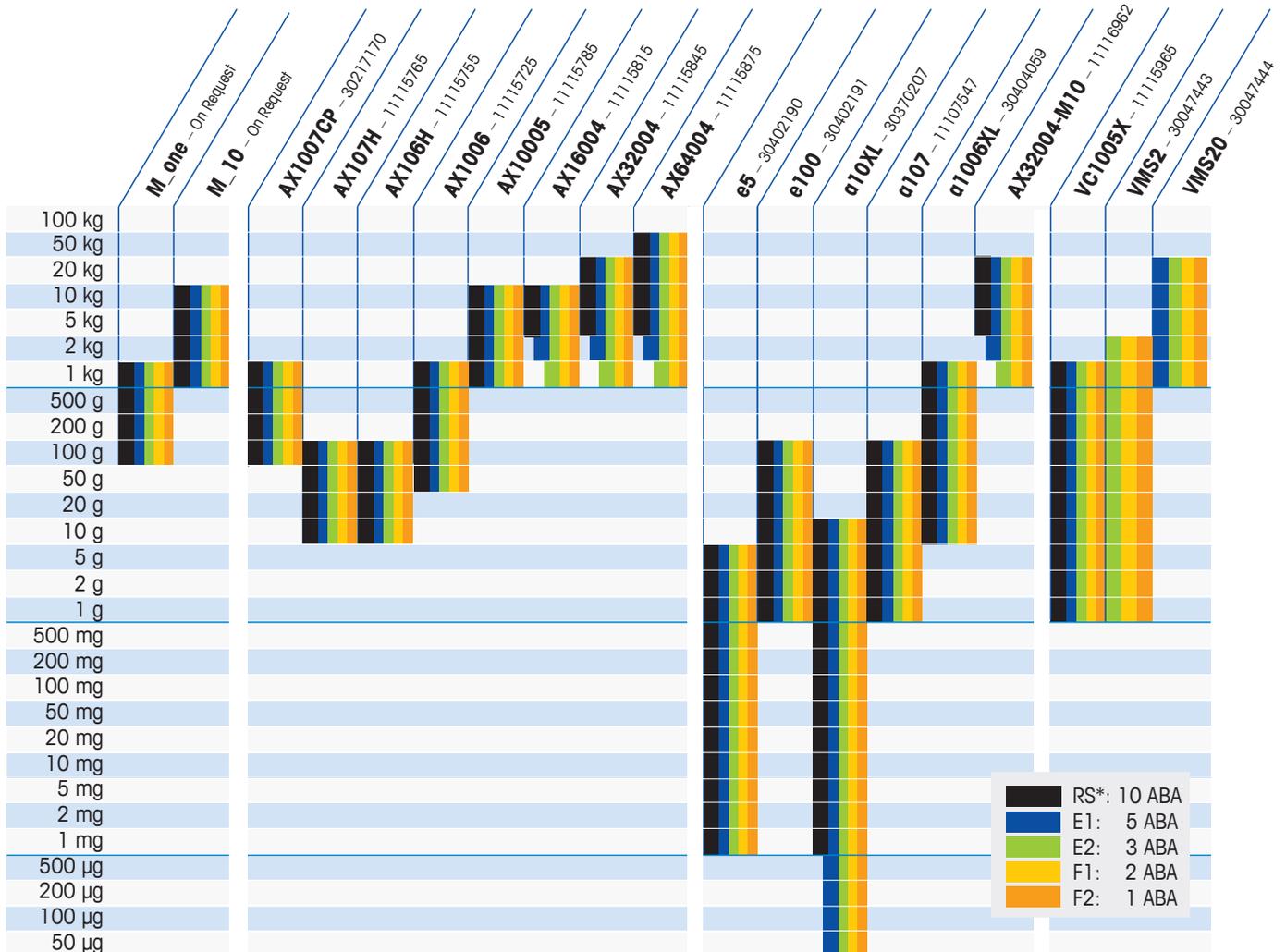
**Redefining the Kilogram**

With years of expertise in mass metrology, METTLER TOLEDO's M\_one vacuum mass comparator plays an important role in kilogram redefinition.

► [www.mt.com/m\\_one](http://www.mt.com/m_one)



M\_one vacuum mass comparator



The illustration shows the application ranges according to the OIML R111 recommendation at zero meter-altitude. In cases where the application range is limited by the physical size of the weight, additional support plates may be required to accommodate smaller weights. Please contact us for a personal consultation to discuss your individual needs.

# Increase Calibration Efficiency

## Smart Data Processing and Control

**Today's mass-calibration challenges demand a combination of high data security and process efficiency. Regulations must be followed and complex calculations carried out for accurate results and compliance.**

MC Link software fulfills every mass calibration laboratory's requirements. It helps you overcome the challenges inherent in tedious mass-calibration processes. Operable in multiple languages, the Office Client is designed to perform administrative and preliminary work, while the Laboratory Client provides all functionality for mass calibration and equipment testing.

MC Link reduces calibration workflows to a minimum by increasing efficiency, data security and conformity.

### Office Client

- User and permission management
- Administration of comparators and climate system
- Customer and weight management
- Process and uncertainty configurator
- Reporting and certificate printout in a few clicks
- Audit trail and integrated process quality control for regulatory support



	Material No.
MC Link software – standalone version	30208278
MC Link software – multi-place version	30208280
MC Link upgrade – multi-place license	30208289
MC Link license – 1 MT instrument	30208285
MC Link license – 1 non-MT instrument	30208288

	Material No.
MC Link option – audit trail license	30208283
MC Link option – barcode package	30212767
MC Link validation handbook	30212634
ClimaLog30 climate station	30078423
8 × RS232 serial port server	30211568

**Laboratory Client**

- Weight calibration
- Mass-comparator testing
- Real-time statistical process control



**Laboratory**



**Smooth Calibration**



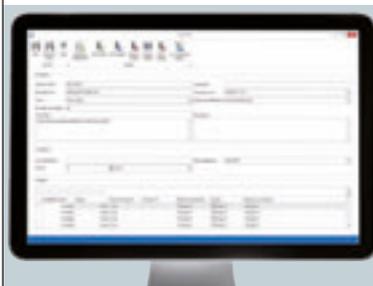
- Fast and secure calibration
- Reduced manual handling
- Improved accuracy
- Reduced lead times

**Efficient Workflow**



- Quality control and mass calibration in one process
- Automatic calculations and tolerance testing
- Direct certificate printing
- Increased productivity and throughput

**Reliable Results**



- Integrated process control
- Paperless, secure and traceable
- User management with comprehensive data-reporting for validation

# Moisture Analyzers

Because Moisture Content Matters





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Excellence Analyzers	124 – 125
Advanced Analyzer	126 – 127
Standard Analyzers	128 – 129
Moisture Analyzer Comparison Table	129
SmartCal™ and Accessories	130 – 131



Scan this code for more information.

# Accurate Moisture Determination

## Fast, Precise, Reliable

**Our moisture analyzers provide fast, precise and reliable moisture analysis for quality and in-process control applications. Robust and easy-to-use, these analyzers offer you long, reliable operation whether you work in a highly regulated pharmaceutical lab, need the highest resolution to measure moisture content in plastics, or take moisture measurements for food-product quality control.**



### High-Performance Analysis

With highly accurate and repeatable results for any sample type, these analyzers are ideal for applications with low moisture content such as plastics. Software capabilities support data handling, process security and regulatory requirements.



**Excellence Analyzers**

### Solid, All-Around Performance

Suitable for a variety of industries, this unit offers user-guided touchscreen operation with method shortcuts for ease-of-use. Its compact and robust design works for both quality and in-process control applications.



**Advanced Analyzers**

### Basic Moisture Analysis

This is a reliable, easy and affordable instrument with basic functions for standard moisture analysis. It offers simple, three-step operation with method buttons.



**Standard Analyzers**

### Routine Testing and Accessories

Verify your moisture analyzer's performance with SmartCal™, our unique routine testing substance. Benefit from a range of accessories such as sample pans, glass-fiber filters and PC software to ensure the best results and most efficient processes.



**SmartCal and Accessories**

# High-Performance Moisture Analysis

## Integrated Compliance for Peace of Mind

**Our Excellence analyzers are equipped with high-performance weighing cells for the best moisture results even when measuring very low moisture content. Drying method flexibility ensures outstanding performance for any sample type in research, quality control and in-process control. Integrated routine testing and quality management features help to ensure optimal instrument performance on an ongoing basis, as well as moisture measurements that meet the demands of highly regulated industries.**

### Accurate Results for All Sample Types



Get highly reliable and repeatable moisture results thanks to fast halogen heating and superior weighing performance with up to 0.001 % moisture-content readability. Highly flexible moisture methods including a preheat function and multiple drying programs enable accurate moisture content determination of samples with moisture contents ranging from <math><0.1\%</math> up to 100 %.

### Increased Safety and Process Control



Define multiple users with individual access rights. Assign different methods individually to each user. This reduces the risk of errors and increases efficiency while adhering to SOPs and regulations. Customizable control and warning limits for each method allow instant pass/fail decisions to be made by the user.

### Versatile Data Transfer and Instrument Control



Connect the instrument to a network through Wi-Fi, Ethernet, RS232 or USB. This enables the printing of results on any strip or network printer and the pushing of A4/letter PDF reports and CSV files to file servers. You can also import or export user and method settings as XML files via a USB drive. Integrate your moisture analyzer into any management system by using our comprehensible set of MT-SICS commands.



**Innovative Design for Easy Cleaning**

The hanging weighing pan and flat stainless-steel surface underneath allow fast and easy cleaning without the risk of dirt falling into the weighing cell.



**Built-in Tests Assure Optimal Performance**

Integrated routine testing features ensure the instrument is always performing optimally. These include FACT, SmartCal™ and tests for the heating and weighing units.



**Integrated Operator Training**

The setup wizard gets you up and running right away. The instrument tutorial shows you how to conduct a measurement and create a method.

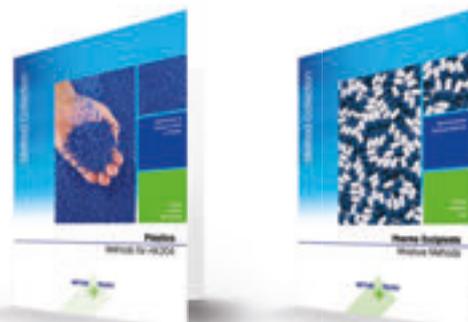


HX204 moisture analyzer

**Measurement Range and Order Numbers**

(Detailed specifications on page 129)

	<b>HX204</b>	<b>HS153</b>
Repeatability (sd) with 2 g Sample	0.05 %	0.05 %
Recommended Moisture Range	0.01–100 %MC	0.5–100 %MC
<b>Material No.</b>	<b>30019875</b>	<b>30019876</b>



Download our free Method Collections for pharma excipients and plastics to obtain tailor-made moisture methods for frequently used samples.

► [www.mt.com/moisture](http://www.mt.com/moisture)

# All-Rounder for Routine Tasks

## In the Lab or on the Production Floor

**Touchscreen operation and user guidance makes the HC103 perfect for your routine moisture tasks. Define several methods and start them directly from shortcuts on the home screen. View your results in real-time with a drying curve. A compact design saves space while robust components guarantee a long instrument lifetime, whether you work in a busy laboratory or harsh production environment. The HC103 offers you ease and convenience for both quality and in-process control applications.**

### Intuitive One Click™ Operation



The large seven-inch color touchscreen offers an easy-to-navigate user interface to simplify your routine tasks. Press the method shortcut on the home screen and follow the step-by-step graphical user guidance to start and run your measurement. Measurement progress is visualized on a real-time drying curve. To avoid accidental changes, settings can be protected.

### Robust and Compact Design



A tough metal housing combined with reliable halogen technology guarantees a long instrument lifetime and reliable results. Flat stainless steel surfaces are easy-to-clean. A compact design makes the HC103 perfectly suitable for the laboratory or production floor.

### Method Ease and Convenience



Define up to 20 methods using standard or rapid drying with various switch-off criteria and display units. Store up to 100 results in the instrument and review them easily in the results overview. Either print your results or transfer them to a USB flash drive or PC.



**Easy Reporting**

Production and quality control requires regular moisture testing for each batch. ID management (e.g. batch or sample ID) together with a barcode reader make documentation straightforward and easy.



**Multiple Languages**

The One Click™ user interface offers 13 languages. Instrument operation and results reporting can now be done in your preferred language.



**Integrated Operator Training**

The setup wizard gets you up and running right away. The instrument tutorial shows you how to conduct a measurement and create a method.



HC103 moisture analyzer

**Measurement Range and Order Numbers**

(Detailed specifications on page 129)

	HC103*
Repeatability (sd) with 2 g Sample	0.10 %
Recommended Moisture Range	1.0–100 %MC
<b>Material No. 230V</b>	<b>30216101</b>
<b>Material No. 115V</b>	<b>30216103</b>

\* Looking for a replacement for your HB43-S or HB43 moisture analyzer? The HC103 is its successor and offers the same reliable performance and quality.



Read more about the fundamentals and applications of moisture analysis in our moisture guide.

► [www.mt.com/moisture](http://www.mt.com/moisture)



HB43-S/HB43 moisture analyzer



HC103 moisture analyzer

# Great for Simple Moisture Analysis

## Reliable, Easy and Affordable

**Our Standard moisture analyzers are robust instruments that are straightforward to use. With simple method parameter choices and basic documentation functionalities, they fulfill the needs of users who do not have special requirements. With easy three-step operation and reliable measurement performance, you have everything you need to make accurate moisture measurements today and for years to come.**

### Simple Three-Step Operation



Get fast moisture results in an easy three-step process:

1. Tare the empty weighing pan
2. Add the sample
3. Press start and see your results in just a few minutes

### Brilliant Display



Thanks to large numbers and a brilliant LCD display, information and results are easy to read in all light conditions.

### Rugged Construction



The instrument is designed to last for many years. The robust metal housing, stainless-steel surface and reliable halogen technology will serve you well in all your daily moisture measurements.

## Measurement Range and Order Numbers

	HE73	HE53
Repeatability (sd) with 2 g sample	0.10 %	0.10 %
Recommended Moisture Range	1.0 –100 %MC	1.0 –100 %MC
Material No. 230V	30237200	30100246
Material No. 115V	30237205	30100251



HE53 moisture analyzer

## Moisture Analyzer Comparison Table

		HX204	HS153	HC103	HE73	HE53
<b>Repeatability (sd)</b>	With 2 g sample	0.05 %	0.05 %	0.10 %	0.15 %	0.15 %
	With 10 g sample	0.01 %	0.01 %	0.015 %	0.05 %	0.05 %
<b>Drying Programs</b>	Standard, rapid	•	•	•	•	•
	Gentle	•	•	-	-	-
	Step	•	-	-	-	-
<b>Readability</b>		0.1 mg	1 mg	1 mg	1 mg	1 mg
<b>Storage</b>	Methods	300	100	20	2	1
	Results	3000	3000	100	1	1
<b>Recommended %MC</b>		>0.01 %	>0.5 %	>1.0 %	>1.0 %	>1.0 %
<b>Result Handling</b>	Control charts	•	•	-	-	-
	Result overview	•	•	•	-	-
	ID management	•	•	•	-	-
	Real-time drying curve	•	•	•	-	-
	A4 network printing	•	•	-	-	-
	Export to FTP server	•	•	-	-	-
<b>User Management</b>		Multiple users with password protection		Protection of settings	-	-
<b>Switch-Off Criteria</b>	Weight loss/time (mg/s)	5 automatic, free	5 automatic, free	5 automatic, free	Auto, free	Auto
	Time (min)	1–480	1–480	1–480	1–120	1–120
<b>Test and Adjust</b>	Temperature [°C]	Freely definable	Fixed at 100/160	Fixed at 100/160	Fixed at 100/160	Fixed at 100/160
	3rd test temperature	Freely definable	-	-	-	-
	FACT	•	-	-	-	-
	Weight [g]	0.1–200	0.1–150	100	50	50
<b>Drying Temperature</b>	Range [°C]	40–230	40–230	40–230	50–200	50–160
<b>Display Modes</b>		%MC, %DC, %AM, %AD, g				
<b>Interfaces</b>	Wifi, Ethernet	•	•	-	-	-
	USB device/host	1/2	1/2	1/2	-	-
	SD card	•	•	-	-	-
	RS232	•	•	•	•	•
<b>Capacity</b>		201 g	151 g	101 g	71 g	54 g

# SmartCal Test Substance

## For Trusted Moisture Results

**Whether producing food, chemical or pharmaceutical products, no one can risk inaccurate results. In today's industries with strict regulations and ongoing audits, efficient performance verification and documentation are vital. SmartCal™ is an innovative test substance that offers a fast and efficient way to verify moisture analyzer performance. Testing your moisture analyzer regularly with SmartCal ensures that your measurements are reliable and fulfill the demands of your industry's regulations.**

### Certified SmartCal



The SmartCal test substance is certified by the independent German Federal Institute for Materials Research and Testing. The Certificate of Analysis satisfies the strictest regulatory requirements.

### Quick and Easy Testing



Simply select the integrated SmartCal method on the instrument, distribute the contents of the test sachet evenly over the sample pan and start the measurement. After ten minutes, you know if your instrument's performance is satisfactory or not.

### Documented Performance



SmartCal measurement reports make it easy to monitor and interpret your instrument's performance over time. Results can be stored directly in the instrument or manually entered into our free validated Excel report sheet.

## SmartCal™ Test Substance

Product	Material No.
SmartCal StarterPac	30005917
cSmartCal StarterPac	30005918
SmartCal12	30005792
cSmartCal12	30005793
SmartCal24	30005790
cSmartCal24	30005791
Thermohygrometer (RHT sensor) – HX/HS/HC	30020850

► [www.mt.com/smartcal](http://www.mt.com/smartcal)



SmartCal: certified moisture analyzer test substance

## Accessories for Moisture Analyzers

	Description	Quantity	Material No.
<b>Sample Handling</b>	Aluminum sample pan	80	00013865
	Glass fiber filters	100	00214464
	Extra-strong aluminum sample pans	80	11113863
	Reusable steel sample pan, height 6 mm	3	00214462
	Downholder	1	00214758
	Textile cage for bulky samples (HA-cage)	1	00214695
<b>Quality Management</b>	Certified temperature kit – HX/HS/HC	1	30020851
	Certified temperature kit – HE	1	30134141
	Certified adjustment weight 100 g – HX/HS/HC	1	11119531
	Certified adjustment weight 50 g – HE	1	11119460
	Thermohygrometer (RHT sensor) – HX/HS/HC	1	30020850
<b>Printers</b>	P-56RUE thermal printer	1	30094673
	RS-P25 compact printer with RS232 interface	1	11124300
	Printer paper (for P25 printer)	5	00072456
	Printer paper (for P25), self-adhesive	3	11600388
	Printer ribbon, black	2	00065975
	P-58RUE thermal printer	1	30094674
	P-52RUE dot-matrix printer	1	30237290
<b>Accessories</b>	Support stand – HX/HS	1	30018474
	Printer holder – HX/HS	1	30066692
	Dust filters – HX/HS	50	30020838
	Protective cover – HX/HS	1	30003957
	Anti-theft device – HX/HS/HC/HE	1	11600361
	HX/HS transportation case	1	30020836
	Protective cover – HC	1	30216115
	Dust filters – HC/HE/HB	50	11113883
	Protective cover – HE	1	30209145
	Barcode reader (USB)	1	30417466
	USB Wi-Fi adapter*	1	30380525
	Installation Pacs		see page 76

\* country specific availability ([www.mt.com/moisture](http://www.mt.com/moisture))

# Pipetting Solutions

Products for the Life Sciences





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Scan this code for more information.

# Rainin Pipetting

## Liquid Handling for the Life Sciences

**Pipetting is a central element of life science research, and for highly reproducible results, scientists need accurate pipettes coupled with high-quality, contamination-free tips.**

With more than 40 years of pipetting experience and knowledge, Rainin provides the industry's leading integrated pipetting solution. We manufacture pipettes and tips as a tested system, so you can trust your results. From the renowned LTS LifeTouch System and 96-well pipetting to RFID-enabled pipettes and the E4 XLS+ electronic pipette, our commitment to innovation and industry-leading ergonomics is clear.

### **Rainin Delivers Value and Performance**

- Broad selection of pipettes and tips
- Enhanced pipetting performance
- Superior ergonomics
- Reduced total cost of ownership
- Best-in-class service



Pipet-Lite XLS+

## Unparalleled Comfort

Ergonomic pipettes in manual, electronic, single-channel and multichannel formats for all pipetting applications. Built-in RFID tags, when used with SmartStand, streamline pipette management.



**Ergonomic Pipettes**

## High Throughput

New BenchSmart 96 and Liquidator 96 high-throughput pipetting systems are powerful, intuitive and easy to use. Speed up workflows using 96- and 384-well plates in volumes from 0.5 to 1,000  $\mu\text{L}$ .



**96/384-Well Pipetting**

## Excellent Hygiene

Rainin BioClean Ultra tips are among the cleanest and most tested tips on the market. A wide range of intert BioClean Ultra tips are available for all pipetting applications.



**BioClean Ultra Tips**

## World-Class Support

Whether on-site or in our ISO 17025-accredited labs, METTLER TOLEDO delivers a service experience that is unparalleled for quality and value.



**Service**

# Pipet-Lite XLS+

## Manual Performance You Can Trust

**With the Rainin Pipet-Lite™ XLS+™ family of pipettes, METTLER TOLEDO blends cutting-edge engineering with innovation to deliver highly reproducible results with exceptional comfort.**

### **XLS+ Single-Channel**

Lighter and smoother operation, new design



Pipet-Lite XLS+ further reduces plunger force and tip-ejection forces. Eleven models cover volume ranges from 0.1  $\mu\text{L}$  to 20 mL; custom fixed volumes are also available in LTS and traditional models. The RFID tag in every XLS+ model makes calibration and pipette inventory-management easy when used with SmartStand.

### **XLS+ Multichannel**

Ideal for 96-well plate work



Pipet-Lite XLS+ multichannels with lightweight liquid ends deliver perfect sealing, consistent sample pick-up on all channels and reproducible results. With volumes from 1 to 1,200  $\mu\text{L}$ , in 8- or 12-channel formats, these multichannel pipettes exceed laboratory requirements.

### **XLS Adjustable Spacer**

Fast format changes between plates and tubes



Pipet-Lite XLS Adjustable Spacer pipettes let you set nozzle spacing for use with 24-, 48- or 96-well plates with just a twist: 9–19 mm on 6-channel and 9–14 mm on 8-channel models. The liquid end rotates 360° for quick alignment with the plate.



SmartStand

## Pipet-Lite™ XLS+™ Pipettes

Single-Channel	Material No.
0.1–2 µL	17014393
0.5–10 µL	17014388
2–20 µL	17014392
10–100 µL	17014384
20–200 µL	17014391
20–300 µL	17014405
100–1,000 µL	17014382
200–2,000 µL	17014390
500–5,000 µL	17011790
1–10 mL	17011783
2–20 mL	17011788
Starter Kit*	17014406

\* Starter Kit: L-20XLS+, L-200XLS+, L-1000XLS+ and accessories

Adjustable Spacer: 6-Channel	Material No.
20–300 µL	17011841
100–1,200 µL	17011840

Adjustable Spacer 8-Channel	Material No.
5–50 µL	17011844
20–300 µL	17011843
100–1,200 µL	17011842

Accessories	Material No.
SmartStand – smart charging stand	30312897
Magnetic hang-ups with magnet, set of 3	17003024
Shelf hang-ups without magnet, 3 on a bracket	17014388
Carousel stand for 7 pipettes with fingerhook	17014392
Adapter for hang-ups and carousel stand for use with electronic and multichannel pipettes	17014384

Multichannel: 8-Channel	Material No.
0.5–10 µL	17013802
2–20 µL	17013803
5–50 µL	17013804
20–200 µL	17013805
20–300 µL	17013806
100–1,200 µL	17014496

Multichannel: 12-Channel	Material No.
0.5–10 µL	17013807
2–20 µL	17013808
5–50 µL	17013809
20–200 µL	17013810
100–1,200 µL	17014497

# E4 XLS+ Electronic Pipette

## Simple, Versatile and Secure

**Configure the E4™ XLS+™ to be as simple or elaborate as your work requires. Keep the functions you want, hide the ones you don't and password protect all, some or none of the E4's modes and features.**

### **XLS+ Single-Channel**

Simplicity without compromise



The E4 XLS+ is loaded with features and functionality, redefining simplicity and control in pipetting. The contoured body, even balance and legendary precision and accuracy combine for an extraordinary pipetting experience. When used with SmartStand, built-in RFID tags simplify pipette-inventory and calibration management.

### **XLS+ Multichannel**

Precision across all channels



The E4 XLS+ multichannel pipette is a perfect tool for high-throughput work. It is fast loading, lightweight and easy to handle. E4 delivers precision and consistency across all channels. Pipette settings, protocols and service alarms can be password protected for GLP/GMP™ compliance.

### **XLS Adjustable Spacer**

Quickly move samples between different formats



E4 XLS spacers let you set nozzle spacing for 24-, 48- or 96-well plates with just a twist: 9–19 mm on 6-channel and 9–14 mm on 8-channel models. The liquid end rotates 360° for quick alignment with the plate. E4 XLS spacers are ideal for genomic, proteomic and cell-culture applications.



The E4's carousel-like menu makes switching between features and functions fast and easy.

► [www.mt.com/RaininE4](http://www.mt.com/RaininE4)

E4 XLS+

## E4™ XLS+™ Pipettes

Single-Channel	Material No.	Adjustable Spacer: 6-Channel	Material No.
0.5–10 µL	17014484	20–300 µL	17012327
2–20 µL	17014487	100–1,200 µL	17012328
10–100 µL	17014483		
20–200 µL	17014486	Adjustable Spacer: 8-Channel	
20–300 µL	17014488	5–50 µL	17012329
100–1,000 µL	17014482	20–300 µL	17012330
200–2,000 µL	17014485	100–1,200 µL	17012331
500–5,000 µL	17012312		
1–10 mL	17012313	Accessories	Material No.
2–20 mL	17012314	SmartStand – smart charging stand	30312897
		Magnetic hang-ups with magnet, set of 3	17003024
		Shelf hang-ups without magnet, 3 on a bracket	17014388
		Carousel stand for 7 pipettes with fingerhook	17014392
		Adapter for hang-ups and carousel stand for use with electronic and multichannel pipettes	17014384
Multichannel: 8-Channel			
0.5–10 µL	17013792		
2–20 µL	17013793		
5–50 µL	17013794		
20–200 µL	17013795		
20–300 µL	17013796		
100–1,200 µL	17014498		
Multichannel: 12-Channel			
0.5–10 µL	17013797		
2–20 µL	17013798		
5–50 µL	17013799		
20–200 µL	17013800		
20–300 µL	17013801		
100–1,200 µL	17014499		

# BenchSmart 96

## Smart High-Throughput Pipetting

**For researchers who want the precision and reproducibility of automated liquid handling yet need the speed and flexibility of a manual system: meet the Rainin BenchSmart™ 96. It's easy to set up, save and retrieve any protocol – from simple one-step procedures to complex, multi-step experiments.**

The semi-automated BenchSmart improves reproducibility by eliminating user variability when aspirating and dispensing.

BenchSmart also gives users complete and precise control over the position of the pipetting head. With four tray positions, you will save time and reduce your risk of error by minimizing the need to swap out trays and reservoirs.

### Smart High-Throughput



With its large touchpad and intuitive interface, BenchSmart makes it easy to set up, save and retrieve any protocol from simple one-step procedures to complex, multi-step experiments. It is so intuitive that anyone in the lab can use it.

### Three Pipetting Heads



Quickly replaceable liquid heads provide great flexibility. Get the precision you demand with the 0.5–20  $\mu\text{L}$  head, the daily workhorse you need with the 5–200  $\mu\text{L}$  head and the multi-dispensing capability of the 100–1,000  $\mu\text{L}$  head.

### Save Time and Costs



BenchSmart 96 simplifies and speeds up workflows by significantly reducing if not eliminating the need to swap out tip racks and reservoirs.



BenchSmart 96

Description	Material No.
BenchSmart™ 96, 0.5–20 µL	30296705
BenchSmart 96, 5–200 µL	30296706
BenchSmart 96, 100–1,000 µL	30296707

**High-Throughput LTS Tips in Racks**

960 tips in 10 racks, 20 µL	17011185
960 tips in 10 racks, sterilized 20 µL	17011186
960 tips in 10 racks, sterilized, filter 20 µL	17011117
960 tips in 10 racks, 200 µL	17010645
960 tips in 10 racks, sterilized 200 µL	17010647
960 tips in 10 racks, sterilized, filter 200 µL	17010646
960 tips in 10 racks, 1,000 µL	30281704
960 tips in 10 racks, sterilized 1,000 µL	30296781
960 tips in 10 racks, sterilized, filter 1,000 µL	30296782

**High-Throughput LTS Low-Retention Tips in Racks**

960 low-ret. tips in 10 racks, sterilized 20 µL	17014399
960 low-ret. tips in 10 racks, sterilized, filter 20 µL	17014400
960 low-ret. tips in 10 racks, sterilized 200 µL	17014401
960 low-ret. tips in 10 racks, sterilized, filter 200 µL	17014402
960 low-ret. tips in 10 racks, sterilized 1,000 µL	30296783
960 low-ret. tips in 10 racks, sterilized, filter 1,000 µL	30296784

**High-Throughput LTS Tips in Stacks**

960 low-ret. tips in 10 stacks, 20 µL	17011187
960 low-ret. tips in 10 stacks, sterilized 20 µL	17011287
960 low-ret. tips in 10 stacks, 200 µL	17010648
960 low-ret. tips in 10 stacks, sterilized 200 µL	17010649

**High-Throughput LTS Low-Retention Tips in stacks**

960 low-ret. tips in 10 stacks, sterilized 20 µL	17014403
960 low-ret. tips in 10 stacks, sterilized 200 µL	17014404

**Accessories for BenchSmart 96 and Liquidator 96**

24-post magnetic bead separator for 96 wells	17011288
96-post magnetic bead separator for 384 wells	17011289

## Liquidator 96

### Fully Manual Operation



- Fast 96- and 384-well pipetting
- Two models: 0.5–20 µL and 5–200 µL

► [www.mt.com/liq96](http://www.mt.com/liq96)

# The LTS LiteTouch System

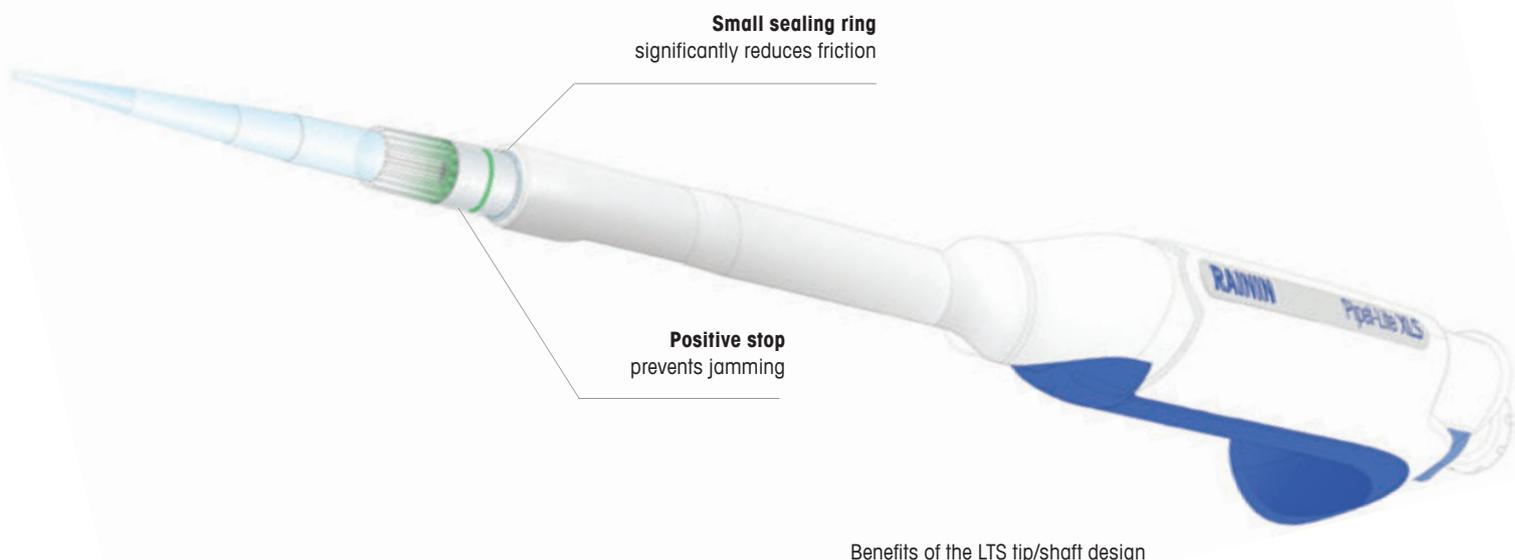
## Because Pipetting Shouldn't Hurt

**Not only is pipetting a forceful activity – it is repetitive. Minor stresses caused by strain and overuse accumulate over time and can develop into injuries.**

**The ergonomic aspects of pipetting are easily overlooked**, particularly among younger and less-experienced users. However, loading & ejecting tips, and aspirating & dispensing liquids – over and over and over – exert considerable force on your thumb, hand and arm. The injurious effects of those forces accumulate over time, which is why your risk of a repetitive strain injury (RSI) increases throughout your career.

**How often have you spent hours in the laboratory**, pipetting more samples than you care to count, only to find your hand sore or wrist aching? Pipettes are integral to many laboratory workflows, so it makes sense to pay close attention to their design and features, as they can significantly affect your performance and the level of strain put on your hands and arms.

**In addition to good accuracy and precision, a pipette's ergonomic features are essential** if you want to minimize fatigue and your risk of developing a RSI. No aspect of pipetting exerts more force on a user's thumb than tip-ejection, which is why the Rainin LTS™ LiteTouch™ tip-ejection system is so unique. LTS reduces tip-ejection force by up to 85 % and is available on all XLS and XLS+™ single- and multichannel pipettes.



Benefits of the LTS tip/shaft design



Pipet-Lite XLS+™ multichannel pipette

### BioClean Ultra LTS™ Tips for Optimal Performance

All Rainin tips meet METTLER TOLEDO’s rigorous BioClean Ultra standards. Made from virgin polypropylene with absolutely no bioactive components and manufactured in Class 100,000 clean-room conditions to eliminate the possibility of external contaminants (DNA, DNase, RNase, ATP, endotoxin or PCR inhibitors), high-quality BioClean Ultra LTS tips are guaranteed to be completely inert and free from contamination so they won’t influence the outcome of your experiments in any way.

#### Exceptional Design



Their precision design and engineering, exacting standards and automated production result in flawless tips that are pliable and will never crack.

#### Robotic Production



Automating our Class 100,000 clean-room tip-manufacturing facility has eliminated human contact during manufacturing and packaging.

#### BioClean Ultra Quality



Strict quality testing ensures absolute cleanliness and purity; each tip lot is rigorously tested and certified to be free of contamination.

# TerraRack

## The Most Eco-Friendly Rack Around

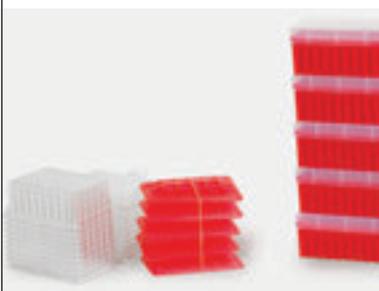
**TerraRack™ is a revolutionary new concept in tip racks. These completely recyclable stands are as sturdy as conventional racks, yet they are made with less than half the plastic. In fact, the hinged TerraRack shell is made from PETE, which is easily recycled.**

For convenience and complete cleanliness, TerraRacks with BioClean Ultra tips come sterilized, eliminating the need to autoclave.



TerraRack Family

### Less Waste



With 50 % less plastic than conventional racks, TerraRacks are also extremely compressible so used racks occupy significantly less space in a waste or storage container.

### 100 % Recyclable



In addition to being completely recyclable, much of each TerraRack is composed of PETE, which is easily recycled and aggressively recovered from the plastic waste stream.

### Sterile



TerraRacks are sterilized. Unlike refill systems where there is a potential for placing clean tips into a contaminated rack, you can be certain that you're working with a fresh, clean rack every time.



TerraRack

### TerraRack™ LTS Tips for Rainin LTS™ Pipettes

TerraRack LTS Tips in PETE TerraRack with Hinged Lid	Max. Capacity	Material No.
960 LTS tips in 10 racks, sterilized	20 µL	17014960
960 LTS tips in 10 racks, sterilized, filter	20 µL	17014961
960 LTS tips in 10 racks, sterilized	200 µL	17014962
960 LTS tips in 10 racks, sterilized, filter	200 µL	17014963
768 LTS tips in 8 rack, sterilized	300 µL	17014964
768 LTS tips in 8 rack, sterilized, filter	300 µL	17014965
768 LTS tips in 8 rack, sterilized	1,000 µL	17014966
768 LTS tips in 8 rack, sterilized, filter	1,000 µL	17014967
768 LTS tips in 8 rack, sterilized	1,200 µL	17014968
768 LTS tips in 8 rack, sterilized, filter	1,200 µL	17014969



TerraRack – LTS

### TerraRack Universal Tips for Rainin, Pipetman® and Other Pipette Brands

TerraRack Universal-Fit Tips in PETE TerraRack with Hinged Lid	Max. Capacity	Material No.
960 tips in 10 racks, sterilized	10 µL	17014970
960 tips in 10 racks, sterilized, filter	10 µL	17014971
960 tips in 10 racks, sterilized, ShaffGard	10 µL	17014972
960 tips in 10 racks, sterilized, ShaffGard, filter	10 µL	17014973
960 tips in 10 racks, sterilized, filter	20 µL	17014974
960 tips in 10 racks, sterilized, filter	100 µL	17014975
960 tips in 10 racks, sterilized, filter	200 µL	17014976
960 tips in 10 racks, sterilized	250 µL	17014977
768 tips in 8 rack, sterilized	300 µL	17014978
768 tips in 8 rack, sterilized, filter	300 µL	17014979
768 tips in 8 rack, sterilized	1,000 µL	17014980
768 tips in 8 rack, sterilized, filter	1,000 µL	17014981



TerraRack – universal

# BioClean Ultra Tips in Green Packaging

## Reduce Waste at the Source

Many labs today are concerned with reducing the environmental impact of plastic waste. Rainin has long been a pioneer in addressing these concerns through innovative package designs for tip-rack refilling to reduce plastic waste at the source.



### Green-Pak™ SpaceSaver™

Stacked refills – 80% less waste



SpaceSaver uses only about 11% of the bench space used by 10 racks. Protective outer shell components are made of recycled PETE. The SpaceSaver design allows individual refills to be discharged without exposing remaining refills. Available standard or sterilized.

### Green-Pak

Individual refills – 70% less waste



Green-Pak refills are completely sealed, eliminating contamination. The filter and sterilized tips are irradiated and certified free of DNase, RNase, DNA, endotoxin, ATP, PCR inhibitors, protein and protease. These refills also offer fast, trouble-free loading. Available standard, sterilized or sterilized with aerosol-resistant filter tips.

## LTS™ Tips for Rainin LTS™ Pipettes

Green-Pak™ SpaceSaver: Stacked Tip-Rack Refills	Max. Capacity	Material No.
960 LTS tips in 10 refills	20 µL	30389291
960 LTS tips in 10 refills, sterilized	20 µL	30389297
960 LTS tips in 10 refills	200 µL	30389299
960 LTS tips in 10 refills, sterilized	200 µL	30389301
768 LTS tips in 8 refills	300 µL	30389303
768 LTS tips in 8 refills, sterilized	300 µL	30389304
768 LTS tips in 8 refills	1,000 µL	30389292
768 LTS tips in 8 refills, sterilized	1,000 µL	30389294



SpaceSaver tip refills – stacked

Green-Pak: Individual Tip-Rack Refills	Max. Capacity	Material No.
960 LTS tips in 10 refills	20 µL	30389270
960 LTS tips in 10 refills, sterilized	20 µL	30389275
960 LTS tips in 10 refills, sterilized, filter	20 µL	30389274
960 LTS tips in 10 refills	200 µL	30389277
960 LTS tips in 10 refills, sterilized	200 µL	30389278
960 LTS tips in 10 refills, sterilized, filter	200 µL	30389276
768 LTS tips in 8 refills	1,000 µL	30389271
768 LTS tips in 8 refills, sterilized	1,000 µL	30389273
768 LTS tips in 8 refills, sterilized, filter	1,000 µL	30389272
Empty racks for 10 µL tips, red, pkg of 10		30389354
Empty racks for 250 µL tips, green, pkg of 10		30389353
Empty racks for 1,000 µL tips, blue, pkg of 8		30389351



Green-Pak tip refills – individual

Hinged-Cover Tip Racks	Max. Capacity	Material No.
960 LTS tips in 10 racks	20 µL	30389200
960 LTS tips in 10 racks, sterilized	20 µL	30389228
960 LTS tips in 10 racks, sterilized, filter	20 µL	30389225
960 LTS tips in 10 racks, sterilized, filter	200 µL	30389239
960 LTS tips in 10 racks	200 µL	30389243
960 LTS tips in 10 racks, sterilized	200 µL	30389245
960 LTS wide-orifice tips in 10 racks	200 µL	30389247
960 LTS wide-orifice tips in 10 racks, sterilized	200 µL	30389249
768 LTS tips in 8 racks	300 µL	30389253
768 LTS tips in 8 racks, sterilized	300 µL	30389255
768 LTS tips in 8 racks, sterilized, filter	300 µL	30389254
768 LTS tips in 8 racks	1,000 µL	30389211
768 LTS tips in 8 racks, sterilized	1,000 µL	30389215
768 LTS tips in 8 racks, sterilized, filter	1,000 µL	30389212
768 LTS wide-orifice tips in 8 racks	1,000 µL	30389217
768 LTS wide-orifice tips in 8 racks, sterilized	1,000 µL	30389220
768 LTS tips in 8 racks	1,200 µL	30389230
768 LTS tips in 8 racks, sterilized	1,200 µL	30389234
768 LTS tips in 8 racks, sterilized, filter	1,200 µL	30389231
480 LTS tips in 8 racks	2,000 µL	30389236
480 LTS tips in 8 racks, sterilized	2,000 µL	30389238
480 LTS tips in 8 racks, sterilized, filter	2,000 µL	30389237
192 LTS tips in 8 racks	5,000 µL	30389256
192 LTS tips in 8 racks, sterilized	5,000 µL	30389257



Hinged-cover tip racks

Low-Retention Tips in Hinged-Cover Racks	Max. Capacity	Material No.
960 low-retention LTS tips in 10 racks	20 µL	30389227
960 low-retention LTS tips in 10 racks, sterilized	20 µL	30389229
960 low-retention LTS tips in 10 racks, sterilized, filter	20 µL	30389226
960 low-retention LTS tips in 10 racks, sterilized, filter	200 µL	30389240
960 low-retention LTS tips in 10 racks	200 µL	30389244
960 low-retention LTS tips in 10 racks, sterilized	200 µL	30389246
768 low-retention LTS tips in 8 racks	1,000 µL	30389214
768 low-retention LTS tips in 8 racks, sterilized	1,000 µL	30389216
768 low-retention LTS tips in 8 racks, sterilized, filter	1,000 µL	30389213
768 low-retention LTS tips in 8 racks	1,200 µL	30389233
768 low-retention LTS tips in 8 racks, sterilized	1,200 µL	30389235
768 low-retention LTS tips in 8 racks, sterilized, filter	1,200 µL	30389232

Low-Retention Tips in Green-Pak SpaceSaver Stacked Refills	Max. Capacity	Material No.
960 low-retention LTS tips in 10 refills	20 µL	30389296
960 low-retention LTS tips in 10 refills, sterilized	20 µL	30389298
960 low-retention LTS tips in 10 refills	200 µL	30389300
960 low-retention LTS tips in 10 refills, sterilized	200 µL	30389302
768 low-retention LTS tips in 8 refills	1,000 µL	30389293
768 low-retention LTS tips in 8 refills, sterilized	1,000 µL	30389295

Complete ordering information for Rainin LTS and universal conical tips is available online at [www.mt.com/rainin](http://www.mt.com/rainin).

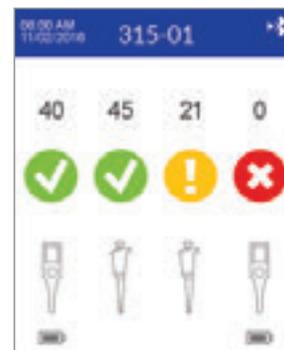
# SmartStand

## Pipette Management Simplified

With the SmartStand intelligent, easy-to-use pipette asset management system, you can:

- Reduce out-of-service or specification out-of-costs
- Proactively manage compliance
- Save time on recordkeeping and reporting

By reading the RFID chip that's in every Rainin XLS™ and XLS+™ pipette, SmartStand instantly and automatically displays the compliance status of up to four Pipet-Lite™ or E4™ XLS/XLS+ pipettes when placed on the stand. For labs that want a more comprehensive pipette management solution, SmartStand comes with our robust yet easy to use EasyDirect pipette management software.



SmartStand and Accessories	Material No.
Smart charging stand SCS-B	30312897
Fastening kit magnetic SCS-FK-M	30312899
Fastening kit shelf SCS-FK-S	30313000
Fastening kit bracket SCS-FK-B	30313247
Power supply E4-RCSWPS	17012879

Bluetooth® is a registered trademark of Bluetooth SIG, Inc.

# World-Class Service

## Optimize Your Pipette's Performance

**METTLER TOLEDO operates the world's most extensive network of ISO/IEC 17025-accredited pipette-calibration laboratories. With controlled laboratory environments and manufacturer-authorized spare parts, our certified pipette technicians and specialized calibration software make the difference in your day-to-day pipetting excellence.**

### Original Parts Ensure Top Performance



We maintain an extensive inventory of manufacturer-authorized spare parts for all major brands and types of pipettes.

### Rely on Well-Maintained Pipettes



Regularly scheduled preventive maintenance ensures top performance and reduces downtime caused by out-of-specification pipettes.

### Certified Results You Can Trust



Our software system, processes and reports meet your regulatory compliance needs and assures full traceability of data according to ISO 8655 and FDA 21 CFR Part 11.

### For Accuracy and Precision



Extensively trained technicians in environmentally controlled labs assure the highest accuracy and precision documented in certificates.

Improve your data quality with GPP™ – the Good Pipetting Practice, our comprehensive, systematic approach to maximizing pipetting accuracy and repeatability.

Schedule a GPP Seminar with our GPP experts that train you and your team right in your lab.



Service	Material No.
DSPM, single-channel preventative maintenance	17800017
PMP, single-channel PM plus with pass/fail report	17800030
PMP-M, multichannel PM plus with pass/fail report	17800065
PA, single-channel PM, 2x4 as returned	17800031
PA-M8, multichannel 8, PM, 2x4 as returned	17800096
PA-M12, multichannel 12, pm, 2x4 as returned	17800131
PB, single-channel, 2x4 as found, PM, 2x4 as returned	17800040
PB-M8, multichannel 8, 2x4 as found, PM, 2x4 as returned	17800105
PB-M12, multichannel 12, 2x4 as found, PM, 2x4 as returned	17800140
PE, single-channel, 3x4 as found, PM, 3x10 as returned	17800048
PE-M8, multichannel 8, 3x4 as found, PM, 3x10 as returned	17800113
PE-M12, multichannel 12, 3x4 as found, PM, 3x10 as returned	17800148

QS  
10.00mm

UV7



METTLER TOLEDO

METTLER TOLEDO

06/07/2017 15:23

Task



# UV/VIS Spectroscopy

Time and Space Matter



Scan this code for more information.

# FastTrack UV/VIS Spectroscopy

## Speed Up Your Measurements

The UV/VIS Excellence line provides fast and reliable measurements on a very compact footprint thanks to FastTrack™ technology. Intuitive One Click™ operation and pre-defined application methods speed up the spectroscopic workflow.

### UV5

The Entry to Excellence



The UV5 provides you with spectrum scans within one second, instant instruments readiness, pre-defined direct measurement types and intuitive One Click touchscreen operation. It helps you optimize UV/VIS measurement workflows in quality control.

### UV7

The Excellence Performer



The UV7 offers superior optical performance that is compliant with strict Pharmacopeia regulations. Advanced automation routines and pre-verified METTLER TOLEDO methods are ideal foundations for reliable measurements in regulated industries.



Order our UV/VIS Excellence brochure.

[www.mt.com/UV-VIS](http://www.mt.com/UV-VIS)



UV7 Excellence spectrophotometer

### Fast Measurements



FastTrack™ UV/VIS technology comprises modern fiber optics in combination with array detection and a Xenon flash lamp for analyses within seconds. The instrument is always ready for use, as no time is required for warm-up.

### A Cleaner Lab Bench



UV/VIS Excellence spectrophotometers fit into a notepad foot-print. The instruments can be operated as standalone and do not require the use of a connected PC, saving bench-top space.

### Sustainable Performance



The absence of moving parts, a long-lasting Xenon flash lamp, and state-of-the-art optical fibers provide ruggedness and reliability. Maintenance costs are reduced and performance remains sustainable.

		UV5	UV7
<b>Material No.</b>		30254725	30254726
<b>Optical Performance</b>	Wavelength range [nm]	190–1,100	190–1,100
	Wavelength resolution (toluene in hexane abs.)	>1.5	>1.9
	Wavelength accuracy (holmium oxide) [nm]	±1.0	±0.8
	Photometric accuracy (potassium dichromate) [A]	±0.01	±0.01
	Stray light at 198 nm (potassium chloride) [A]	>2	>2
<b>One Click™ UV/VIS Spectroscopy</b>	Shortcuts per user	24	24
<b>Automation</b>	Peristaltic pump FillPaMini	•	•
	CuvetteChanger	•	•
	Automatic performance verification CertiRef™	•	•
<b>Applications &amp; Methods</b>	InMotion™ sample changer	•	•
	Direct measurement types	3	4
	METTLER TOLEDO methods		•
	Method editor	•	•
	Kinetics		•
	Temperature Control	•	•
	Colors: Tristimulus, CIE Lab, CIE Luv, Lab according to Hunter, Chromaticity, Yellowness Index, APHA, Pt-CO, Hazen, Gardner, Saybolt, Hess-Ives, EBC, ASBC	•	•
<b>PC Software</b>	LabX® UV/VIS software	•	•
<b>Languages</b>	English, German, French, Spanish, Italian, Chinese, Russian, Portuguese		
<b>Connectivity</b>	USB memory stick storage (reports (pdf), data (csv), methods)	•	•
	USB devices (bar-code reader, compact printer, fingerprint reader)	•	•
	Ethernet (PC, network printer (HP PCL 3, Epson protocol), reports (pdf), data (csv))	•	•

UV5 A: 30254727 (UV5 unit with CuvetteChanger)

# UV/VIS Spectroscopy

## Designed for the Life Sciences

The UV5Bio and UV5Nano Excellence instruments optimize spectroscopic workflows in life sciences. FastTrack™ technology enables speedy and reliable measurements and LockPath™ technology ensures accurate micro-volume measurements.

### UV5Bio – the Life Science Expert



The UV5Bio is the ideal instrument for life science cuvette-based UV/VIS applications. Pre-programmed DNA, RNA, and protein applications are available as direct measurement routines or ready-to-use METTLER TOLEDO methods for an instant start. The One Click™ touchscreen interface provides intuitive and efficient shortcut operation.

### UV5Nano – the Micro Master



Measure uL volumes of precious DNA, RNA or protein samples in wide concentration ranges on the micro-volume platform. The additional cuvette measurement option doubles the application power. LockPath technology ensures exact and repeatable pathlength adjustment. No need for sample dilution – just pipette and measure.

### CuveT Thermostat for Exacting UV/VIS Analyses



Life science UV/VIS applications such as DNA analyses, kinetics or protein dynamics require reproducible and accurate temperature conditions.

CuveT controls the temperature of samples in a 10 mm cuvette within a temperature range of 4 °C to 95 °C in 10 mm cuvettes.



Order our UV/VIS Excellence brochure.

[www.mt.com/UV-VIS](http://www.mt.com/UV-VIS)



		UV5Bio	UV5Nano
<b>Material No.</b>		30254728	30254729
<b>FastTrack™ Technology</b>	Pulsed Xenon flash lamp, CCD array detector	•	•
<b>LockPath™ Technology</b>	Automatic pathlength adjustment		•
<b>Optical performance</b>	Wavelength range [nm]	190–1,100	190–1,100
	Wavelength resolution (toluene in hexane abs.)	>1.5	>1.7
	Wavelength accuracy (holmium oxide) [nm]	±1.0	±1.0
	Photometric accuracy (potassium dichromate) [A]	±0.01	±0.01
	Stray light at 198 nm (potassium chloride) [A]	>2	>1.7
<b>One Click™ UV/VIS Spectroscopy</b>	Shortcuts per user	24	24
<b>Automation</b>	Peristaltic pump FillPalMini	•	•
	InMotion™ sample changer	•	•
<b>Applications &amp; Methods</b>	Direct measurement types	4	3
	METTLER TOLEDO methods	•	•
	Method editor	•	•
	Bio-direct measurement applications	•	•
	Kinetics	•	•
	Micro-volume direct measurement applications		•
	Temperature Control	•	
	Colors: Tristimulus, CIE Lab, CIE Luv, Lab according to Hunter, Chromaticity, Yellowness Index, APHA, Pt-CO, Hazen, Gardner, Saybolt, Hess-Ives, EBC, ASBC	•	•
<b>PC Software</b>	LabX® UV/VIS software	•	•
<b>Languages</b>	English, German, French, Spanish, Italian, Chinese, Russian, Portuguese		
<b>Connectivity</b>	USB memory stick storage (reports (pdf), data (csv), methods)	•	•
	USB devices (bar-code reader, compact printer, fingerprint reader)	•	•
	Ethernet (PC, network printer (HP PCL 3, Epson protocol), reports (pdf), data (csv))	•	•

### Avoid Errors with LockPath



LockPath makes sure that the available pathlengths at 0.1 mm and 1 mm are accurately defined. Thanks to the rugged design, pathlength drift is excluded to eliminate expensive recalibration.

### Powerful Compactness



In the UV7, UV5 and UV5Bio, cuvette holders, CuvetteChanger, CuveT thermostating units are positioned in the easily accessible open sample area without compromising the instrument's footprint.

### Secure Quality



Good UV/VIS Practice™ (GUVP™) provides comprehensive installation and qualification services that cover the entire lifecycle of the instrument. Quality is improved while risks and costs are reduced.

# Smart Accessories

## For the UV/VIS Excellence Line

**Optimize the efficiency and security of your spectroscopic workflow with easily installable plug and play accessories that do not compromise the compact instrument's footprint.**

### Automatic Cuvette Changing



This auto-changer offers you efficient automatic measurement of series of up to eight cuvettes for both standard measurements with blank subtraction or complex kinetic applications, thermostatable from 10 °C to 80 °C.

### Automatic Performance Check



The fully automatic CertiRef™ performs all tests required to comply with Pharmacopeia (EP or USP) regulations. Certified reference materials traceable to NIST are used and a report documents all results.

### Automatic Sampling



Sample loading is easily automated with the FillPalMini, which pumps the sample safely and quickly into the flow cuvette. It can also be used for sample recovery and cuvette cleaning.

Product	Specifications	Material No.
CuveT	Thermostating unit	30361677
Cuvette Changer	8 × 10 mm cuvette positions, thermostatable	30236313
Peristaltic Pump FillPalMini	Four rolls peristaltic pump, SANTOPRENE peristaltic pump tube, 2.06 mm inner diameter (set of x), includes tube set to connect to flow cell, can be operated in two pump directions at varying pump speeds	30254735
CertiRef EP	Includes seven certified reference substance solutions and respective blank solvents sealed in mini cuvettes to perform automatic calibrations according to the EP 8.0 regulation (for UV5, UV7, UV5Bio)	30254732
CertiRef USP	Includes seven certified reference substance solutions and respective blank solvents sealed in mini cuvettes to perform automatic calibrations according to the USP 39 regulation (for UV5, UV7, UV5Bio)	30254733
Tube Set UV/VIS – InMotion™	Set to connect the flow-through cuvette to the InMotion sample changer	30399071

# Automate Your UV/VIS Workflow

## Manage Samples and Data Effectively

Reduce the number of sample-handling steps and eliminate transcription errors with automation.



### LabX® UV/VIS PC Software

LabX UV/VIS PC software expands the instrument with a comprehensive graphical editor for spectra evaluation and advanced automation possibilities, as well as enhanced data analysis and management possibilities fully compliant with 21 CFR Part 11/EU Annex 11. Beyond this, LabX fosters seamless UV/VIS instrument integration into a METTLER TOLEDO based instrument network.

### Automate Large Sample Numbers

Combine our InMotion™ sample changer and UV/VIS spectrophotometers, and you can obtain automated measurements of up to 303 samples in a row without manual interaction.



Product	Specifications	Material No.
Macro-Cuvette, 10 mm Pathlength	Optical glass, 320–2,500 nm, PTFE lid	30258736
Macro-Cuvette, 50 mm Pathlength	Optical glass, 320–2,500 nm, PTFE lid	30258737
Macro-Cuvette, 10 mm Pathlength	SUPRASIL quartz glass, 200–2,500 nm, PTFE lid	30258738
Macro-Cuvette, 50 mm Pathlength	SUPRASIL quartz glass, 200–2,500 nm, PTFE lid	30258739
Micro Cuvette, 10 mm Pathlength, 700 µL vol	SUPRASIL quartz glass, 200–2,500 nm, PTFE lid	30258740
Flow Cell, 10 mm Pathlength, 440 µL vol	Quartz glass, 170–2,700 nm, M6 connectors	30258741
1 cm Precision Cuvette Holder	Enables mounting of 1 cm standard cuvettes, included in standard delivery of UV5, UV5Bio, UV7	30236314
Base Holder Plate	Plate required to mount long pathlength cell holder and solid sample holder	30236315
Long Pathlength Cell Holder	Enables mounting of cuvettes with path lengths ranging from 10–50 mm	30254738
Solid Sample Holder	Enables measuring of solid sample films	30258692

# Titration

The Right System for Every Application





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Scan this code for more information.

# Titration Systems

## Select the Right One

**Determine concentrations with the highest precision and productivity.**

Millions of titration analyses are performed every day. Automatic titrators significantly improve precision and reliability in quality-control workflows. We offer you a wide range of titrators and accessories. We can also assist you with our deep knowledge of hundreds of titration applications to ensure you can obtain the kind of accuracy and repeatability that brings your quality and productivity to new levels.



Titration Excellence T9 with KF Coulometric Kit

### One Click Titration

The modular Titration Excellence line provides efficient and secure titration analytical in a large variety of industry segments.



Titration Excellence Line

### Flexible and Efficient Processing

Our wide range of sample changers and accessories allow for complete automation of sample preparation, titration, cleaning and more.



Automation

### Simple and Secure

The easy operation of the One Click™ Compact Line, including potentiometric and volumetric titrators, as well as coulometric Karl Fischer titrators, ensures accurate results in a small, space-saving footprint.



Compact Titrators Line

### Power Your Bench

The new LabX® Titration software that helps you control and manage titration systems and the data they produce is open for other instruments of the LabX platform. This ability to integrate systems saves time and enhances throughput.



LabX® Titration Software

### Solid, Entry-Level Performance

The simple and affordable entry-level titrators for basic potentiometric and volumetric Karl Fischer applications help you manage your basic applications easily and cost-effectively.



Easy Plus™ Titrators

# One Click Titration

## Efficient, Secure, Modular

**One Click™ titration is a milestone in the development of simple, efficient and secure titration. Titration Excellence models T5, T7 and T9 provide intuitive and easy operation, maximize efficiency in daily tasks and eliminate potential operator errors. All models combine more than 500 general titration applications, including volumetric and coulometric Karl Fischer applications. Titration Excellence offers nearly limitless application power with simple operation and using a minimum of bench space.**

### Efficient



Up to 24 user-defined shortcuts can be set up on the home screen to start a manual or automated task with just one key-stroke. Sophisticated plug-and-play operation makes sensors, burettes, burette drives, sample changers, balances immediately ready for use upon connection.

### Secure



Both the titrant and the sensor are automatically detected upon connection and all applicable data is saved on the burette or sensor chip. This data is directly transferred to the titrator, where it can be saved and monitored. Safe and secure titration does not 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 hardware or software upgrade at any time.



Titration Excellence touchscreen

Intuitive user guidance and a brilliant color touchscreen makes operation simple. Save up to 24 method or manual operation shortcuts that can be started with One Click™. Plug a USB stick for easy downloading of PDF reports in seconds.



InMotion autosampler with Excellence Titrator T5

Thanks to the StatusLight™ on the touchscreen and on the titrator, you can see at a glance if your system is working. Acoustic signals let you know the titrator has completed an analysis, needs resources or if it's waiting for your confirmation.



Order our detailed product brochure on [www.mt.com/lab-AntiStatic](http://www.mt.com/lab-AntiStatic)

# One Click Titration

## Convenient, Intelligent, Versatile

### Convenience and Power



The T5 titrator is a ready-to-go-system capable of general potentiometric titration, as well as volumetric and coulometric Karl Fischer titration, for users who need a simple, rugged and easily-understandable titrator for fast routine analyses. The T5 offers top-of-the line features such as SmartSample™, an error-free data transfer of your sample information from the balance to the titrator, and StatusLight™, which checks the status of your titrator in a fast, simple and intuitive way.

### Expanding as Your Needs Change



The T7 is a titrator for any application including multi-tasking, flexible method-editing, upgradeability (additional pH-sensor or conductivity board for T9 functionality) and method loops for the integration of various methods into one or more sample series sequences. It is a flexible and expandable system that adapts easily to current and future needs.

### Smart Versatility



The high-end T9 titrator that runs two titrations in parallel including conditional method functions using "if ... then" logic and sample series sequences to integrate various methods into one. It provides the highest flexibility in method development to solve complex analyses and automation tasks.

## Feature Comparison Table-Titration Excellence Line

		T5	T7	T9
<b>One Click™ Titration</b>	User specific home screen with shortcuts	•	•	•
	Shortcuts per user	24	24	24
	KF solvent control	•	•	•
<b>Hot Plug and Play</b>	Plug and play sensor recognition	•	•	•
	Burette recognition with titrant and titer	•	•	•
	Burette drive	•	•	•
	Solvent manager	•	•	•
	USB printer	•	•	•
	Memory stick	•	•	•
	USB barcode reader	•	•	•
<b>Security</b>	LevelSens	•	•	•
	LogStraight fingerprint reader	•	•	•
<b>Automation</b>	InMotion™ autosamplers	•	•	•
	Liquid handler	–	1	2
	Rondolino automated titration stand	•	•	•
	InMotion KF Oven Autosamplers	–	•	•
<b>Burette Drives</b>	Max. number to dose and titrate	1 internal + 1 external	1 internal + 3 external	1 internal + 7 external
	Max. number to dose only	+ 2 external	–	–
<b>Methods and Series</b>	Learn titration	•	•	•
	Karl Fischer methods volumetric	V20S equivalent methods	•	•
	Karl Fischer methods coulometric	C20S equivalent methods	•	•
	Bromine index determination	•	•	•
	Accompanying stating	–	•	•
	Standard addition	•	•	•
	Thermometric titration	•	•	•
	Manual RFID	•	•	•
	Number of method functions per method	15	60	150
	Number of loops per method	1	3	6
	Continuous run	–	•	•
	If... then conditions	–	–	•
	Result buffer	–	–	•
	Series sequences	–	10	10
	Number of samples per series	303	303	303
	Predefined METTLER TOLEDO methods	>60	>70 (incl. KF methods)	>70 (incl. KF methods)
Max. number of methods <sup>1)</sup>	150	150	150	
<b>Task List</b>	Number of tasks	10	10	30
	Number of tasks running in parallel	–	7	8
<b>LabX® Smartcodes™</b>		•	•	•
<b>SmartChemicals Functionality</b>		•	•	•
<b>Online Help</b>		•	•	•
<b>Parallel Titration including KF</b>		–	–	•
<b>Expandable</b>		–	to T9	–
<b>StatusLight and Event Sounds</b>		•	•	•
<b>Data Export/Printing</b>		•	•	•
<b>Sensor Boards</b>		1	2/1 <sup>2)</sup>	3/1 <sup>2)</sup>
<b>Sensor Inputs</b>	Potentiometric	2	4/2 <sup>2)</sup>	6/2 <sup>2)</sup>
	Polarized	1	2/1 <sup>2)</sup>	3/1 <sup>2)</sup>
	Reference	1	2/1 <sup>2)</sup>	3/1 <sup>2)</sup>
	PT1000	1	2/1 <sup>2)</sup>	3/1 <sup>2)</sup>
	Conductivity	1/0 <sup>2)</sup>	2/0 <sup>2)</sup>	3/0 <sup>2)</sup>
<b>PC Software</b>	LabX® Titration connectivity: Express/Server	•	•	•
<b>Homogenizer</b>		–	RS/TTL	RS/TTL
<b>Languages</b>	English, German, French, Spanish, Italian, Chinese, Russian, Polish, Korean, Portuguese			
<b>Material No.</b>		30252672*	30252675*	30252676*

<sup>1)</sup> Unlimited with T5, T7 and T9 titrators when connected with LabX® Titration software

<sup>2)</sup> 4/2 means for example: maximum number of inputs is 4, 2 are already available in standard delivery

\*  
- T5 including terminal, 10 mL PnP burette and manual titration stand kit  
- T7 including terminal  
- T9 including terminal

# Complete Automation For Efficient Titration

**Automation is more than sample throughput. From the simple-to-use Rondolino to our high-throughput InMotion™ autosamplers, we have a solution for you. More than just going from sample to sample, our wide range of accessories can fully automate sampling, identification, temperature controls and more.**

## Automation Solutions

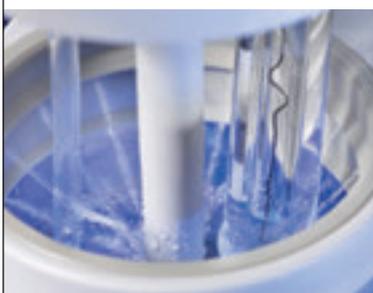
Need	Solution
Temperature control	Water bath racks and DH100
Liquid sampling/pipetting	InMotion aliquot kit, liquid handler and TV6 valve
Reading sample IDs	Barcode reader and SmartSample™ weighing
Reagent and waste control	Solvent manager, peristaltic and diaphragm pumps
Protection	CoverUp™ lid handling and LevelSens
Cleaning	PowerShower™ cleaning system and line rinse
Connectivity	LED status indicators
Water extraction	InMotion KF
Error-free chemical data	SmartChemicals

### Productive Throughput



From the simple-to-use nine-sample Rondolino up to managing more than 300 samples with the InMotion Max 25-milliliter system, maximize your productivity with minimal bench space. Stack magnetic pumps vertically for further space reduction.

### Tailored Workflows



Advanced programming allows for complex and thorough cleaning, rinsing and conditioning steps. Automatically pipette and transfer samples with the liquid handler and TV6 sampling valve.

### Protect Your Samples



Protect your samples and/or operators with the CoverUp lid-handling system and control the temperature of the entire rack of samples with water-bath racks. Integrate a barcode reader or SmartSample RFID technology for automatic sample identification.

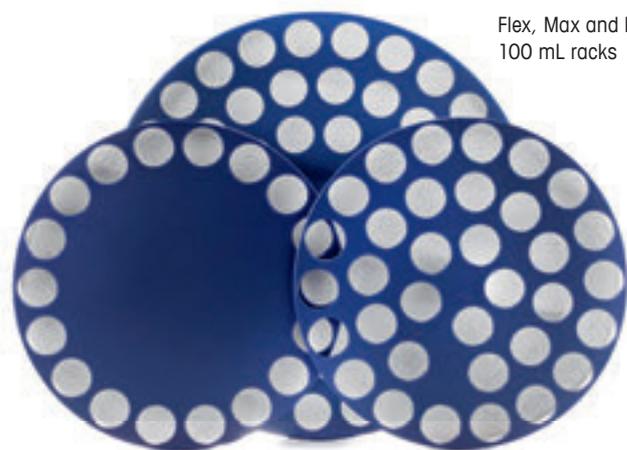


InMotion Max with the Excellence T9 titrator, InMotion Pro with the RM40 refractometer and InMotion Flex with the Seven Excellence pH meter

## Put Your Lab InMotion™

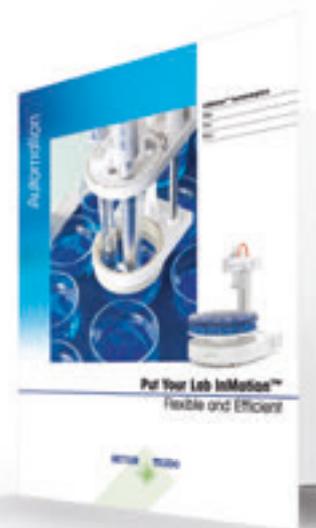
Flexible and Efficient Autosamplers

InMotion Bases		Corresponding InMotion Rack Kits		
Base Type	Material No.	Number of Samples	Beaker Size (mL)	Material No.
Flex	30094121	50	25	30094124
		27	80	30094125
		18	100	30094126
		15	180	30094127
		11	250	30094128
Pro	30094122	182	25	30094129
		69	80	30094130
		34	100	30094131
		23	180	30094132
Max	30094123	303	25	30094134
		113	80	30094135
		55	100	30094136
		43	180	30094137
		24	250	30094138



Flex, Max and Pro  
100 mL racks

<b>InMotion Complete Autosampler</b>	<b>Material No.</b>
InMotion Flex base and 100 mL rack kit	30094120
InMotion Flex base and 80 mL rack kit	30276336
<b>Temperature-Control Water-Bath Rack Kits</b>	
Flex 18 samples, 100 mL	30094139
Pro 61 samples, 80 mL	30094140
Pro 29 samples, 100 mL	30094141
<b>Rondolino</b>	
Automatic titration stand for 9 samples	51108500
<b>Excellence Titrator T5 Rondolino</b>	
T5 with Rondolino	30252674
<b>Compact Titrator G20S Rondolino</b>	
G20S with Rondolino	30252671
<b>Liquid Handler</b>	
Automatic dosing and pipetting device	51371500
<b>InMotion KF Oven Autosampler</b>	
InMotion KF Flex 24 samples, 10 mL	30407500
InMotion KF Pro 26 samples, 5 mL	30407503
InMotion KF Pro 24 samples, 10 mL	30407502
InMotion KF Pro 20 samples, 20 mL	30407501



Order our detailed product brochure on

► [www.mt.com/titration](http://www.mt.com/titration)

# The Intelligent Helper For Simple Titrations

**G10S and G20S compact titrators are specially designed for basic routine applications. Operation is as simple as possible.**



G10S compact titrator

### Just a Push of a Button



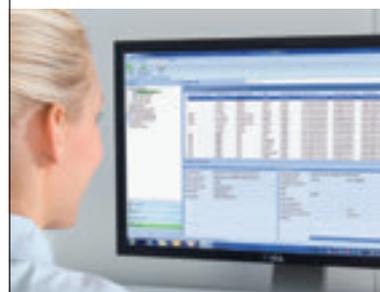
The large, color touchscreen with our One Click™ user interface is easy to understand and you'll be able to familiarize yourself with the screen in no time. Each user has an individual home screen with customized language selection and shortcut keys, which enable routine procedures to be executed with just one button push.

### Compact Automation



The automatic Rondolino titration stand is simple to install and uses minimal bench space. Series of up to nine samples are processed quickly and safely. Dip-rinsing after each analysis ensures minimal carry-over, and, after the series, the sensor is moved to a fixed conditioning beaker.

### Data Storage in PC Software



LabX® Titration PC software offers full titrator control, safe database archiving, efficient management of results with graphic monitoring and tailored result-search filters. The convenient Windows®-based user interface and integrated on-line help system enable safe and reliable G20S operation.

		G10S	G20S
<b>One Click Titration</b>	Shortcuts per user on user-specific home screen	4	12
<b>Hot Plug and Play</b>	Solvent manager (optional)	•	•
	Burette recognition with titrant and titer	•	•
<b>Automation Option</b>	Rondolino (up to 9 samples)	•	•
<b>User Management</b>	"Expert-Routine" user groups	•	•
<b>Method and Series</b>	Max. number of user methods	5	150
	Backtitration	–	•
<b>Burette Drives</b>	Number of burette drive to dose and titrate	1	1
	Number of burette drive to dose only	–	1
<b>Data Export and Printing</b>	USB, network, PDF	•	•
<b>PC Software</b>	LabX® Titration Express	–	•
<b>Material No. Ready-to-Start Package</b>	Manual titration stand	30267117	30252669
	Automatic titration stand (Rondolino bundle)	–	30252671



Order our detailed product brochure.  
[www.mt.com/Compact-Titration](http://www.mt.com/Compact-Titration)

# Specific Sodium Determination

## Simple and Accurate

If you need to measure the sodium content in your food and beverage products, our new sodium analyzer makes your analysis simple and fast. Reduce sample preparation steps and expense using safe, low-cost chemicals while specifically and exclusively measuring sodium ions.



EasyPlus Sodium Analyzer

### Health Risks Associated with Excess of Salt



The salt content of food products influences taste, but it can also adversely affect health. There is a clear link between sodium intake and high blood pressure. The World Health Organization (WHO) has published data showing that blood pressure is the number one health-risk factor in Europe, and food producers are now forced to declare or even reduce the most standardly used salt (sodium chloride) in foods.

### Simple, Accurate Analysis



This instrument was specifically designed to simplify sodium determination in food products using the standard addition technique. Simply add a sample and ionic strength-adjustment (ISA) solution and start the measurement. No system calibration is necessary. Specific sodium analysis has never been so quick and easy.

### Reduce Investment and Operating Costs



Not only does EasyPlus reduce initial investment costs, it also reduces operating costs. Replace the silver nitrate ( $\text{AgNO}_3$ ) titrant normally used for chloride determination with cheaper and safer sodium standards and reagents. Save operator time and increase productivity with fast sample measurements.

► [www.mt.com/sodiumanalyzer](http://www.mt.com/sodiumanalyzer)

Model	Description	Material No.
Easy Plus Na	Sodium Analyzer	30060051



Order our detailed product brochure.

► [www.mt.com/titration](http://www.mt.com/titration)

# One Click Water Determination

## Simple and Secure

**Karl Fischer titration is the specific standard method for water content determination, and it gives accurate and precise results within minutes. With our volumetric and coulometric Karl Fischer titrators, you only need to press one button to run a water determination. The precise and efficient InMotion KF autosampler can work unattended and will analyze up to 26 samples at once saving time and user effort.**

### V10S/V20S/V30S

Volumetric KF Titrators



The Compact Volumetric Karl Fischer titrator determines water from 100 ppm to 100 % in a wide range of liquid, solid and gaseous samples.

### C10S/C20S/C30S

Coulometric KF Titrators



The Compact Coulometric Karl Fischer titrator offers particularly fast and precise titration of samples that have 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, a generator without a diaphragm is easy and convenient. No catholyte is needed and the anolyte can be exchanged with the solvent manager in One Click™.

**D0308**

Drying Oven



The manual Karl Fischer D0308 drying oven allows safe oven applications with single samples using manual sample addition. It can be operated with both coulometric and volumetric Karl Fischer titrators.

**InMotion KF**

Oven Autosampler



The precise and efficient InMotion KF autosampler allows for up to 26 samples to be analyzed using the gas extraction technique. The innovative one-piece cap enables simple and fast sample preparation. Temperature scan functionality speeds up the analysis of unknown samples.



Order our detailed product brochure on

[www.mt.com/InMotionKF-Oven](http://www.mt.com/InMotionKF-Oven)

		Volumetric			Coulometric		
		V10S	V20S	V30S	C10SD/ C10SX*	C20SD/ C20SX*	C30SD/ C30SX*
<b>One Click Titration</b>	Shortcuts per user on user-specific Homescreen	4	12	12	4	12	12
	Solvent or Reagent Control	–	–	•	–	–	•
<b>Hot Plug and Play</b>	Solvent Manager	•	•	•	Optional	•	•
	Burette recognition with titrant and titer	•	•	•	–	–	–
	USB printer	•	•	•	•	•	•
<b>Automation</b>	InMotion KF Flex/Pro Autosamplers	–	–	•	–	–	•
	Homogenizer	–	–	TTL	–	–	–
<b>User Management</b>	"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
	Bromine Index determinations	–	–	–	–	–	•
	Max. number of user methods	5	5	150	5	5	150
<b>Languages</b>	Selectable Languages (specific per user)	Chinese, English, French, German, Italian, Korean, Polish, Portuguese, Russian, Spanish					
<b>Data Export and Printing</b>	USB, Network, PDF	•	•	•	•	•	•
<b>PC Software</b>	LabX® Titration Express	–	•	•	–	•	•
	LabX® Titration Server	–	•	•	–	•	•
<b>Material No. for Ready-to-start package</b>	Volumetric	30267116	30252666	30252667	–	–	–
	Coulometric with diaphragm (SD)	–	–	–	30267115	30252661	30252663
	Coulometric without diaphragm (SX)	–	–	–	30267114	30252660	30252662

\* X = Generator without diaphragm

D = Generator with diaphragm

# Power Your Titration Bench With LabX

**LabX® offers a great new possibility to connect multiple laboratory instruments with one single software. An uniform interface means less training and also helps increase operating efficiency. With an unique approach, LabX allows you to work from either the instrument or PC or both. It also offers complete compliance where needed.**

## Control Analysis from Anywhere



Either start your analysis at the instrument or from the PC. Always have constant access to both your current analysis and latest results no matter where you are using LabX mail functionality to have messages or results sent to you.

## Manage Titrations Efficiently



Fully automate method selection and transcription of samples IDs with a barcode or Smart-Sample™ RFID tag. When you do, you eliminate sample order errors by reading the sample information as you test it. You also ensure the right method is selected for each product.

## Ensure Full Traceability



The regulation option of LabX Server provides all the necessary tools to meet FDA regulations (21 CFR Part 11) for data management and storage. All relevant actions taken at the instrument or PC are recorded in the LabX audit trail for full traceability and flexibility, no matter where you work.



**Modular Approach**  
with LabX®

**Titration Starter Packs**

**LabX Titration Express**

Titration Instrument License

Excellence Balance License

**LabX Titration Server**

Titration Instrument License

Excellence Balance License

User Management

Auto Import/Export

**Included**

**Optional**

User Management

Auto Import/Export

Statistical Evaluation

Instrument License  
(1 additional)

Regulation

System Integration

Statistical Evaluation

Advanced Report Designer

Instrument License  
(28 additional)

Order our detailed product brochure on  
[www.mt.com/labxtitration](http://www.mt.com/labxtitration)

# EasyPlus Titrators

## Simple and Affordable

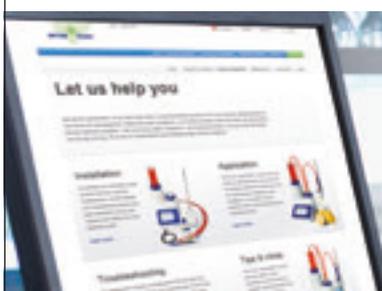
**Swiss-engineered EasyPlus™ titrators from METTLER TOLEDO offer a complete package for your routine applications. Operation does not get simpler or more intuitive than this, thanks to the smartphone-like iTitrate™ User Interface and iTitrate Intelligence™.**

### Affordable Swiss Technology



Swiss engineering and the highest quality parts and materials make this compact and accurate titrator a perfect addition to any quality-control laboratory.

### Service and Support



Take advantage of our internet-based service and support. Videos, FAQs and a multitude of applications are just a click away.

### Quick Start with iTitrate



Operation is simple with the app-based user interface and intuitive system menu navigation. Save training time and make daily tasks easier and faster.

### Simple Results Management



Connect your EasyPlus titrator to EasyDirect™ titration software and improve data management. Be secure in the knowledge that all results are stored, organized and easily accessible.

### Ready for Your Sample



Built-in iTitrate Intelligence requires that you set only a few parameters before the instrument is ready for titration.



Easy KFV titrator



Easy Pro titrator

► [www.mt.com/easyplustitration](http://www.mt.com/easyplustitration)

Features Comparison Table	Easy pH	Easy CI	Easy Ox	Easy Pro	Easy KFV
Application	Acid/base	Precipitation	Redox	Acid/base, precipitation, redox	Karl Fischer volumetric
Number of Titration Methods	1	1	1	3	1
Material No.	30060041	30060043	30060042	30060044	30060045
LongClick™	Yes	Yes	Yes	Yes	Yes
Easy Start Tutorial	Yes	Yes	Yes	Yes	Yes
Online Help	Yes	Yes	Yes	Yes	Yes
Predefined Calculation	Yes	Yes	Yes	Yes	Yes
Language	English, German, French, Italian, Spanish, Portuguese, Russian, Chinese, Korean, Polish, Thai, Vietnamese, Turkish, Japanese, Arabic				
EasyDirect™ PC connectivity	Yes	Yes	Yes	Yes	Yes



For more information see our accessories brochure and datasheets.



### Performance Verification

EasyPLUS verification is made easy with our performance verification kit. Receive the prepared standard solution appropriate for your type of titration and simply run three analyses. Submit your results at the dedicated webpage with your EasyPLUS titrator registration to receive an unbiased performance-verification statement confirming your titrator's accuracy.

# Service Solutions

## For Proven Titration Accuracy

**Professionally executed installation and qualification (IQ/OQ) is a prerequisite for achieving correct and reliable measurement results. METTLER TOLEDO offers a broad range of instrument qualification and software verification solutions so your titrator performs perfectly from the start.**

### Service Solutions to Ensure Titration Accuracy

Need	Proposed Service Solution
Professional installation	Equipment installation according to SOPs for all titrators and associated devices
Standard qualification	IPac: IQ/OQ execution and standard documentation
Comprehensive qualification	EQPac: Comprehensive IQ/OQ execution plus initial calibration
Training and education	EduPac: Certified titration training
Evaluation of measurement uncertainty	MuPac: Assessment and evaluation service
Performance verification	VPac: Verify performance yourself

#### Standard Qualification: IPac



IPac service provides professional installation including IQ and OQ, PQ and maintenance recommendations, system suitability testing and basic training with a standard level of documentation. IPac supports regulatory requirements such as ISO.

#### Comprehensive Qualification: EQPac



The EQPac service supports the highest level of regulatory compliance, providing IQ and OQ, PQ and maintenance recommendations, system suitability testing, initial calibration and basic training. The comprehensive, fully-compliant documentation supports all your regulatory needs.

#### Software Validation



The LabX® validation service provides complete and comprehensive software validation. The documentation provided contains all the evidence required to satisfy any regulatory body.



Qualification	Product Families	Product Types	Material No.
EQPac	Titration Excellence	T5/T7/T9	30311198
	Volumetric KF titrators	V20S/V30S	30311390
	Coulometric KF titrators	C20S/C30S	30311199
IPac	Titration Excellence	T5/T7/T9	30311398
	Volumetric KF titrators	V10S/V20S/V30S	30311400
	Coulometric KF titrators	C10S/C20S/C30S	30311399
	Compact titrator	G10S/G20S	30311397
	LabX® software	LabX Titration	51710898
EduPac	General titrators	T5/T7/T9/G20S	51710883
	Volumetric KF titrators	V10S/V20S/V30S	51710889
	Coulometric KF titrators	C10S/C20S/C30S	51710886
MuPac	Titration Compact and Excellence titrators	T5/T7/T9 – C10S/C20S/C30S V10S/V20S/V230S – G10S/G20S	30040345
Vpac	EasyPlus™ titrators	Easy pH Acid	30065502
		Easy pH Base	30065503
		Easy Cl Chloride	30065504

### Measurement Uncertainty



Get automated measurement uncertainty calculations for your titration with GTP® MuPac. Preferably applied to a validated customer method, GTP MuPac yields a confidence interval of the respective titration result and a comprehensive quantitative assessment of all factors that influence your results.

### VPac Performance Verification



VPac performance verification is the recommended workflow for customers to confirm the correct operation of the EasyPlus titrator and ensure result accuracy and reliability. VPac combines the convenience of ready-made standard kits with online verification documentation.

### Titration Expertise and Training



Instead of studying chemistry books and manuals, supplement qualification Pacs with our EduPac training. Under the expert tuition of a specialist, you will use practical exercises on your own device to get up-to-speed with your new equipment.

# Essential Service Protects Your Investment

**Annual preventive maintenance combined with titrator calibration is an attractive package designed to ensure accurate and reliable results. We also recommend that users be properly trained to maximize the accuracy of your equipment.**

## Service Solutions for Routine Operation

### Need

- Continuous high performance
- No breakdowns
- Accuracy and precision
- Confident users

### Proposed Service Solution

- Preventive maintenance combined with calibration service
- Preventive maintenance including updates and technical verification
- Calibration documented in calibration certificates
- Trainings, seminars, literature and consulting services

### Preventive Maintenance



Professionally performed periodic maintenance of your titration system prevents breakdown and supports instrument performance. Preventive maintenance checklists are provided to support you in quality audits.

### Calibration



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

### Expertise



Our online training, live and on-demand webinars, in-person seminars and consulting services will help you to build and maintain titration expertise in both your existing team and new staff.



LabX® PC software, LabX validation manual, Excellence T9 titrator with InMotion Pro autosampler

Continuously dependable results are only possible if measurement risks are identified and eliminated. METTLER TOLEDO's Good Titration Practice™ (GTP®) supports you in analyzing your specific process risk with our unique 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 you can trust
Regulatory compliance	Accurate and reliable results ensure compliance with your quality requirements
Cost savings	Preventive maintenance reduces the cost of unexpected downtime
Documentation	Audit-proof and up-to-date documentation satisfies the needs of your quality management system

Detailed information about the titration service offering is available at [www.mt.com/titration-service](http://www.mt.com/titration-service)

# Accessories



G20S with manual titration kit and DGi115-SC in a glass titration beaker

## Excellence and Compact Potentiometric Titrators

Description	Material No.
Dosing unit for dispensing and titration purposes	51109030
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
Diaphragm pump SD660 with suction tube	30094165
Suction tube with filter for SD660	30094166
Peristaltic pump SP280	30094237
Novoprene tubes for SP280/SPR200 (1 × 1 m; 10 × 120 mm)	51190969
Silicone tubes for SP280/SPR200 (5 × 120 mm)	51108149
ChemSure tube for SP280/SPR200	30094297
Solvent manager kit	51105652

## Compact Titrators

Description	Material No.
Protective touchscreen cover	51105567
External power supply 100–240 VAC	51105795
USB cable 1.8 m A-B for PC connection	51191926

## Excellence Titrators

Description	Material No.
Terminal (with connection cable and protective cover)	51109017
Protective cover for terminal	30125377
Conductivity sensor board	51109840
pH/mV sensor board	51109818
T7→T9 upgrade set	51109960
External power supply unit	30253597
6-pol CAN cable, 20 cm	51109874
6-pol CAN cable, 60 cm	51109886
USB cable A-A, 180 cm for PC connection	51191689
OE06 auxiliary output expander OE06	51108065
DH100 heating system 110 V	51108779
DH100 heating system 230 V	51108780
Volumetric KF kit (solvent manager included)	51105605
DV704 External KF volumetric kit	30378857
Coulometric KF kit (generator with diaphragm)	30267112
Coulometric KF kit (generator without diaphragm)	30267113
Liquid handler	51371500
Handheld USB barcode reader	21901297
Dosing tube adapter 4 to 1	51108356



SmartSample reader on Titration Excellence

## Karl Fischer Titrators

Description	Material 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
Clear glass bottle, 1 L	30079610
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
Silicone grease	00071300

## V10S, V20S and V30S

Description	Material No.
Adapter for automatic draining of cell	51105594
O-ring for titration head	51190366
ST24 three-hole adapter incl. ST10, ST7.5 and pinhole 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 IKA, 19 mm hole	30030846
Homogenizer adapter set for Kinematica/Polytron, 12 mm hole	51107534

## C10S, C20S and C30S

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

## General Titrators

Accessories	Material No.
Barcode reader (requires USB cable)	21901297
USB cable to barcode reader	21901309
LogStraight™ fingerprint reader	51192107
Micropropeller stirrer rod	00655073
Propeller stirring rod	00101229
Sensor holder (when not in use)	00025654
Bottle rack for 2 × 1 liter bottles	51107065
TTL-I/O TBox DR42	51107420
TTL interface cable	51190589
RS232 connection cable (DB9 F/F)	51190362
LevelSens™ Description	Material No.
LevelSens with holder, non-aqueous	51109853
LevelSens with holder, aqueous	51109854
LevelSens box (connects up to 4 LevelSens) – includes 20 cm CAN cable	51109210

## Sample Handling

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



Visco-Spoon™ for grease and wax samples

LevelSens used with solvent manager and exchange set

# Accessories

## InMotion™ Autosamplers

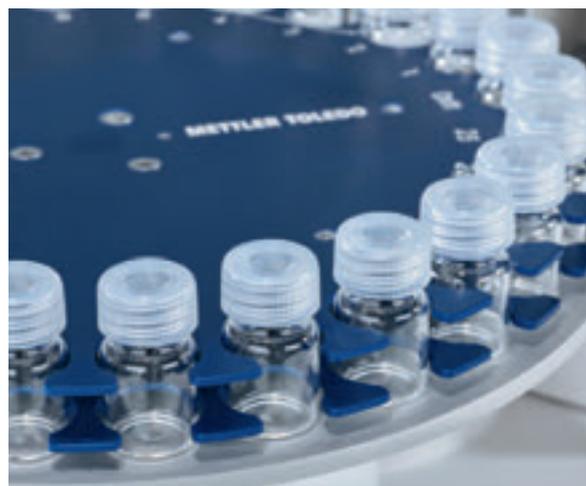
Description	Material No.
SmartSample RFID kit	30094251
SmartSample 100 mL sleeve w/tag, 20 pcs	30094269
SmartSample tag 100 pcs.	30094271
InMotion aliquot kit for Pro 25 mL	30094248
InMotion COD kit for Flex 100 mL	30094249
InMotion Karl Fischer Direct kit for 100 mL	30094250
CoverUp lid handling for InMotion Flex	30094252
CoverUp lid handling for InMotion Pro 80 mL	30094253
CoverUp lid handling for InMotion Pro 100 mL	30094254
CoverUp lid handling for InMotion Pro 180 mL	30094255
InMotion CoverUp lids, 80 mL, 10 pcs	30094274
InMotion CoverUp lids, 100 mL, 10 pcs	30094275
InMotion CoverUp lids, 180 mL, 10 pcs	30094276
Option board barcode/SmartSample	30094233
Option board CoverUp/Stirrer/Pump	30094234
Tower InMotion Flex (cover not included)	30094160
Cover InMotion Flex/Pro 2nd Tower	30094267
Tower InMotion Pro left type w/cover	30094236
Tower InMotion Max left type w/cover	30094232
Under-rack magnetic stirrer	30094263
InMotion barcode reader with mount	30094235
Reversible peristaltic pump SPR200	30094285
Titration sync cable, 5 pin	30094246
Stirrer/Pump Y cable, 6 pin	30094247
InMotion dispensing tube w/tip, 135 cm	51108070
InMotion dispensing tube w/tip, 3 m	30094162
Diaphragm pump dispensing tube w/o tip	51108147

## Rondolino

Description	Material No.
PowerShower™ for Rondolino	51108219
Rinse tube for Rondolino PowerShower	51108116
Diaphragm pump for Rondolino	51108012



InMotion Pro 100 mL with CoverUp™ lid handling



InMotion KF 10 mL vials with innovative one-piece cap

## InMotion KF

Description	Material No.
Rack kit InMotion KF Pro 5 mL	30407438
Rack kit InMotion KF Pro 10 mL	30407439
Rack kit InMotion KF Pro 20 mL	30407440
Air pump AP200	30407441
Gas stop valve SV2	30407442
Drying unit for InMotion KF (w/o tubes)	30407430
Tube set for InMotion KF drying unit	30407431
Transfer tube for InMotion KF	30407432
Heated transfer tube for InMotion KF	30407443
Sample vials 5 mL (set of 228)	30407444
Sample vials 10 mL (set of 192)	30407445
Sample vials 20 mL (set of 144)	30407482
Screw cap for 5 and 10 mL vials (228 pcs)	30407436
Screw cap for 20 mL vials (144 pcs)	30407437
Long needle for oil analysis (20 mL vial)	30407447
Long needle for oil analysis (10 mL vial)	30407448
Long needle for oil analysis (5 mL vial)	30407449
Tube set for automatic solvent exchange (pro only)	30407450
SP280 – peristaltic pump	30094237
Gas inlet adapter for coulometric cell	51108668
USB cable (1.8 m A-B)	51191926

## DO308

Description	Material 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
Gas inlet stopper for operation with DO308	51108761
Air-pump box	51108670
Drying tube with three-way tap	00105071

## Titration Sensors

### Plug and Play Combined pH Glass Electrodes with Sensor Chip

	Material No.
DGi101-SC pH micro-electrode (3 mm shaft diameter) for small titration vessels and aqueous solutions	51109507
DGi102-mini pH micro-electrode (6 mm shaft diameter) for small titration vessels and 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

### Classical Combined pH Glass Electrodes

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

### Classical Half-Cell Electrode

DG300-SC half-cell pH electrode in conjunction with reference electrode DX200	51109286
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### Classical Reference Electrodes for pH/ISE/Tenside Half-Cell Electrode Sensors

DX200 glass reference electrode	51089935
DX202-SC plastic reference electrode	51109295

### Sensors for Thermometric Titration

Thermotrode with integrated cable (1.2 m)	30322060
Thermotrode with integrated cable (2.0 m, for InMotion autosampler)	30322061



Titration sensors

### Plug and Play Combined Metal Electrodes with Sensor Chip

	Material No.
DMi101-mini semi-micro platinum-ring electrode (6 mm shaft diameter) with ceramic frit for argentometric titrations – for small sample volumes	51109523
DMi102-SC semi-micro silver-ring electrode (6 mm shaft diameter) with ceramic frit for argentometric titrations – for small sample volumes	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 InMotion 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

### Classical Metal Electrodes

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

### Photometric Sensors

Phototrode DP5 with 5 selectable wave lengths: 520 nm, 555 nm, 590 nm, 620 nm, 660 nm – includes LEMO connection cable	51109300
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### Temperature Probes

DT1000 – PT 1000	51109828
DT1000 adapter for Rondolino and InMotion	51108032

### Surfactant Electrodes

DS500 for aqueous surfactant titrations	51107670
DS800-TwoPhase for two-phase surfactant titrations	51109540

### Titration Conductivity Sensors

InLab717 glass 4 pole cell, 10 μs/cm ... 500 ms/cm, for conductivity titrations	51302401
InLab718 glass 2 pole cell, 0.1 ... 200 μs/cm, for low-conductivity titrations	51340266



DP5 Phototrode™ set at different wavelengths

# Accessories

## Sensor Cables and Parts

Description	Material No.
SC-LEMO 60 cm cable for plug and play and classical sensors	00089601
SC-LEMO 100 cm cable for plug and play and classical sensors	00089602
SC-LEMO 160 cm cable for plug and play and classical sensors	51108034
SC-LEMO 250 cm cable for plug and play and classical sensors	30094211
SC-LEMO 70 cm cable for amperometric/voltam- metric titrations and for DM143-SC	51109183
SC-LEMO 100 cm cable for amperometric/voltam- metric titrations and for DM143-SC	51109184
SC-LEMO 160 cm cable for amperometric/voltam- metric titrations and for DM143-SC	51109185
Cable MultiPin™ – Lemo/P11000 100 cm for DGi117-water	30281914
Y-cable (connection of the DP5 to the power supply and the titrator)	51109905
Sensor extension cable for electrode, 120 cm, female/male Lemo (for InMotion Max)	30259608

### Spare Sensor Parts

Adapter, DIN to LEMO	00089600
DS500 membrane kit	51107669
DS800-two phase emulsifier	51109453
Sensor-sleeve adapter	52001220

## Printers

Description	Material No.
USB-P25 alphanumeric printer for Excellence and Compact titrators	11124301
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 B412dn USB-commercial printer (cables not included) EU version	51192203

## Bottle-Top Adapters

Description	Material No.
Diameter 40.5 mm; slope 3.5 mm (Germany/Merck)	00023774
Diameter 37.5 mm; slope 5 mm (USA)	00023787
Diameter 28.5 mm (China)	30060026
Diameter 34 mm (India)	30060024



DV1020  
20 mL burette

## Burettes

Description	Material No.
1 mL burette DV1001 with RFID chip for plug and play installation	51107503
5 mL burette DV1005 with RFID chip for plug and play installation	51107500
10 mL burette DV1010 with RFID chip for plug and play installation	51107501
20 mL burette DV1020 with RFID chip for plug and play installation	51107502
Burette housing with RFID chip	51109117

Description	Material 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 crystallization	51107525
Stopcock/PTFE valve (standard)	51107537
Amber glass bottle, 1 L	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
Suction tube (3 m)	30094262
Drying tube with cover	00023961
Drying tube holder	00023915
Anti-diffusion tips (5 /pk)	00023240



### EasyPlus™ Titrator and Sodium Analyzer

Description	Material No.
EasyPlus burette 10 mL	30043900
EasyPlus burette 20 mL	30043901
EasyPlus burette 50 mL	30043902
EasyPlus tubing set instrument	30065464
EasyStir GT	30065467
EasyStir KF	30065468
EasyPlus titration head GT	30041102
Insert set titration head GT	30057635
EasyPlus titration head KF	30041103
Insert set titration head KF	30057636
KF vessel set	30065471
EasyPlus drying tube	30044701
Weighing boat and stopper set	30065466
Desktop power supply	51105798
Burette cover set	30057633
Valve	30042860
Bottle head	30060023
EasyPump	30064218
EasyPlus tubing set EasyPump	30065465
EasyDirect software, 3 titrators per PC installation	30065449

### Sensors for EasyPlus Titrator

Description	Material No.
EG11-BNC: pH aqueous	30043103
EG13-BNC: pH non-aqueous	30043104
EM40-BNC: Redox mV	30043106
EM43-BNC: KF/Redox Ipol	30043105
EM45-BNC: Silver/Precipitation	30043107

### Sodium Analyzer

Description	Material No.
DX222-Na for Sodium Analyzer	30079616
DX205-SC (ISE reference)	30066675
Sodium Analyzer head Na	30079612
Insert set sodium analyzer head Na	30079618
Electrolyte 0.5 M DIPA-HCL-ISA, 25 mL	30064081
Electrolyte 0.5 M DIPA-HCL-ISA, 250 mL	30066674

### Titration Beakers

Description	Material No.
Polypropylene beakers, 100 mL, 120/pk	51109388
Polypropylene beakers, 100 mL, 480/pk	51109389
Polypropylene beakers, 100 mL, 1,400/pk	00101974
Polypropylene beakers, 250 mL, 500/pk	00023829
Polypropylene beakers, red, 100 mL, 1,400/pk	00025777
Two-phase beaker for surfactant titrations	51107655
Covers for 100 mL beakers, 16/pk	00101448
Glass beakers, 100 mL, 20/pk	00101446
Polypropylene beakers 80 mL, 30/pk	51108030
Polypropylene beakers 80 mL, 1,352/pk	51109328
Polypropylene, 180 mL, 500/pk	30094245
Glass beakers, 250 mL, 10/pk (Not for ST20)	00023515
Glass beaker, for sample vol. 10–20 mL	00023516
Glass aliquot beaker, 20 mL	51108314
Glass aliquot beaker, 100 mL	51108161
Thermostatable glass, 100 mL	00023517

### Multiparameter Accessories

Description	Material No.
TV6, 2-way, 6-port valve	30026544
Adapter M8 × 1.5 M/M8 × 1 F (SP× pump)	30094295
Titration to DM/RM tube	51337240
Connection cable, DM/RM to titrator	51105856



Titration beakers

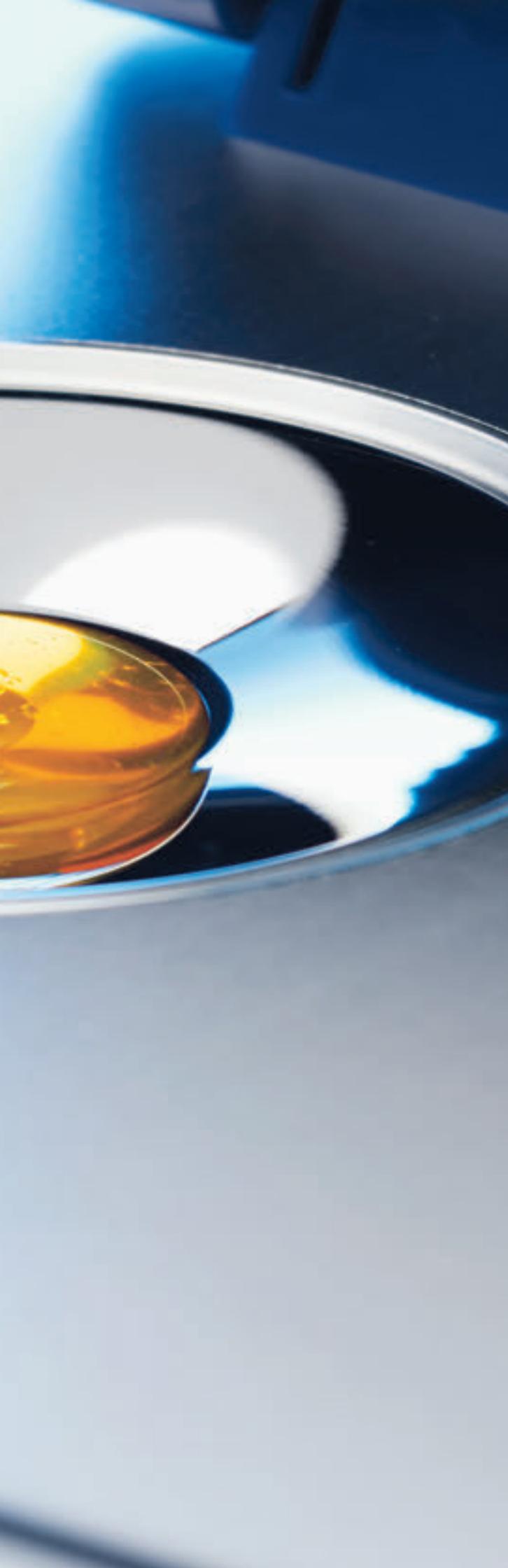
Get more information on our multiparameter solutions.

► [www.mt.com/titration-multiparameter](http://www.mt.com/titration-multiparameter)



# Density Meters and Refractometers

Solutions for the Quality Control of Liquids



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Scan this code for more information.

# Density Meters and Refractometers

## Reliable Results, Unsurpassed Reproducibility

### One Click™ Operation

One Click starts the measurement of density, refractive index or related values. Built-in temperature control brings the sample to the required temperature, measurement is done automatically and the result is displayed on the touchscreen. Unlike older methods like pycnometers, hydrometers and Abbe refractometers, results are user independent, thus highly reliable and reproducible.

### Simplified Quality Control

For quality control, target value and limits can be defined for each product. Measurement results are then displayed in red if they are out of limits.

### Multiparameter Measurement

The modular concept allows to upgrade any single instrument to a complete multiparameter system measuring density, refractive index (or related values), pH (or conductivity), acidity and color.

### Compact Size, Great Specs

When it comes to density meters, refractometers and cell modules, our modular units offer exact measurements combined with small, easy-to-handle benchprints.



Watch the video

▶ [www.mt.com/liquiphysics-multiparameter](http://www.mt.com/liquiphysics-multiparameter)

Density Meters  
Refractometers  
Cell Modules

**Less Work,  
Better Repeatability**

With additions such as sampling pumps and automation units, user variability is eliminated and workload is reduced.



LiquiPhysics™ Automation

**Tailor-Made  
Performance**

Advanced sample tracking, specialized software options and other workflow solutions help you manage your unit and your results. Measurements become as easy as possible.



LiquiPhysics Accessories

**Quick Measurements**

When you need basic measurements and/or on-the-go functionality, our range of basic instruments has the reliability and portability you need.



Compact Instruments

**Reliable Results**

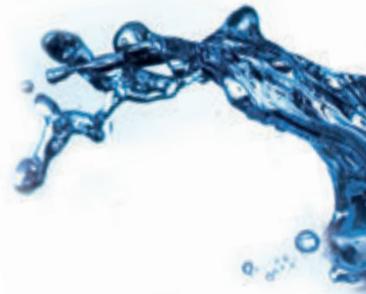
Our world-class network of technicians helps to ensure your instruments are working at their highest potential, while Good Density and Refractometry Practices™ help to ensure day-to-day accuracy.



Service

# Density Meters and Refractometers

## Compact Size, Great Specs.



### DM Density Meters

Faster, More Accurate Measurements



DM density meters determine the density and/or specific gravity of liquids quickly and accurately. The results are automatically converted into one or several pre- or user-defined units such as Brix, API degrees or alcohol concentrations. Automatic error detection, entire temperature range adjustments and built-in algorithms shorten measurement times required by up to 75 % – DM and DX are doubtlessly the state-of-the-art pinnacle for digital density measurement.

► [www.density.com](http://www.density.com)

### RM Refractometers

Versatility for Challenging Samples



Brix, refractive index or concentrations of dark, viscous or highly volatile liquids? RM refractometers master the quality control of a wide variety of challenging samples from routine Brix measurements at 20 °C to refractive index determinations of bitumen at 100 °C. The measurement process can be completely automated with the added advantage of no more manual cleaning, no more contact with dangerous solvents and better repeatability.

► [www.refractometry.com](http://www.refractometry.com)

### DX and RX Cell Modules

Efficient Combined Measurements



Density and refractive index are frequently determined in the same lab and, with increasing frequency, simultaneously. The upgrade of a DM density meter or a RM refractometer with a DX density cell module or a RX refractive index cell module is the most cost- and space-saving solution in such cases. Our solution is the perfect combination for any lab demanding fast and accurate results.



**DeltaRange™ density measuring cells are tailor-made solutions for applications such as alcohol content determination or the quality control of organic solvents. They offer five-place accuracy in the range required for such measurements at a significantly lower price than full-range, five-decimal-place cells.**



Please order our LiquiPhysics™ Excellence brochure.

► [www.mt.com/LiquiPhysics](http://www.mt.com/LiquiPhysics)

## Technical Specifications

Density Meter Density Cell		DM40 DX40	DM45 DeltaRange DX45 DeltaRange	DM50 DX50
Measuring range	[g/cm <sup>3</sup> ]	0–3	0–3	0–3
Repeatability (S.D. n=10)	[g/cm <sup>3</sup> ]	0.00005	0.000005	0.000005
	Brix [% w/w]	0.03	0.015	0.003
	ethanol [% v/v]	0.1	0.01	0.01
Limit of error	[g/cm <sup>3</sup> ]	0.0001	0.00002 <sup>1)</sup>	0.00002 <sup>2)</sup>
	Brix [% w/w]	0.03	0.00005	0.00003 <sup>3)</sup>
	ethanol [% v/v]	0.1	0.02	0.006
Temperature range	[°C]	0–91	0–91	0–91
Limit of error	[°C]	0.05 (10–30 °C) 0.10 (0–91 °C)	0.02 (15–20 °C) 0.05 (0–91 °C)	0.02 (10–30 °C) 0.05 (0–91 °C)

<sup>1)</sup> in the range 0.70000 ... 1.00000 g/cm<sup>3</sup>/ 15.00 ... 20.00 °C

<sup>2)</sup> in the range 0.00000 ... 1.00000 g/cm<sup>3</sup>

<sup>3)</sup> in the range of 1.00000 ... 2.00000 g/cm<sup>3</sup>

Refractometer Refractive Index Cell		RM40 RX40	RM50 RX50
Measuring range	[nD]	1.32–1.70	1.32–1.58
Repeatability (S.D. n=10)	[nD]	0.00005	0.00001
	Brix [% w/w]	0.05	0.01
Limit of error	[nD]	0.0001	0.00002 <sup>3)</sup>
	Brix [% w/w]	0.1	0.00004 <sup>4)</sup> 0.014
Temperature range	[°C]	5–100	5–75
Limit of error	[°C]	0.1 (5–100 °C)	0.03 (15–50 °C) 0.05 (5–75 °C)

<sup>3)</sup> around adjustment points

<sup>4)</sup> entire range

# Automation

## High Reliability with Minimal Effort

**Flexible automation solutions improve the quality of your measurement and increase the throughput of your workflows.**

### FillPal™

The Robust Approach



FillPal sampling pumps simplify the measurement of low viscous samples. These pumps can be used for all DM density meters and RM refractometers and are suitable for all applications where samples are of a similar nature and no intermediate complete rinsing and drying of the measuring cell is required. FillPal is available in two versions: FillPal Food for water-based products and FillPal Chem for aggressive samples including most acids, bases and organic solvents.

### SC1 & SC30

Maximum Performance



SC1 and SC30 automation units offer fully automated sampling, measurement, rinsing and drying. In addition, the SC30 is a sample changer with 30 positions that is equipped with the ScanStraight™ option. ScanStraight is capable of scanning barcode stickers on sample vials automatically, making sample tracking easier than ever.

- ▶ [www.mt.com/automation-sc1](http://www.mt.com/automation-sc1)
- ▶ [www.mt.com/automation-sc30](http://www.mt.com/automation-sc30)

**InMotion™**

High Throughput



The InMotion sample changer is the perfect solution for beverages or other kindred low viscous samples where over-sampling is sufficient (same as FillPal). Different beaker sizes and up to 303 sample positions offer flexibility for any application. Optional stirrer and pH measurement for fruit juices and automatic degassing of carbonated beverages ensure efficient workflows.

**SC Heated Versions**

High Viscosity



SC automation units are available in heated versions suitable for performing density measurements of samples which are highly viscous or even solid at ambient temperature such as paraffins, bitumen, heavy crude oils and edible fats. The SC1H and the SC30H can handle samples with a melting point of up to 60 °C.



Order our Automation brochure.

► [www.mt.com/LiquiPhysics](http://www.mt.com/LiquiPhysics)

**Technical Specifications**

	FillPal Food	FillPal Chem	InMotion	SC1	SC1H	SC30	SC30H
<b>Number of samples</b>	1	1	10–303	1	1	30	30
<b>Sample vials</b>	Any type	Any type	25–250 mL	6, 9 and 20 mL	6, 9 and 20 mL	6, 9 and 20 mL	6, 9 and 20 mL
<b>Sample characteristics</b>							
Max. Viscosity	1,000 mPas	1,000 mPas	1,000 mPas	36,000 mPas	36,000 mPas	36,000 mPas	36,000 mPas
Organic Solvents	Acetone, ethanol	Yes	Acetone, ethanol	Yes <sup>1)</sup>	Yes	Yes	Yes
Acids	No	Yes (most)	Yes <sup>2)</sup>	Yes <sup>1)</sup>	Yes <sup>1)</sup>	Yes <sup>1)</sup>	Yes <sup>1)</sup>
Bases	Yes	Yes	Yes <sup>2)</sup>	Yes	Yes	Yes	Yes
<b>Sampling</b>	Suction	Suction	Suction	Overpressure	Overpressure	Overpressure	Overpressure
<b>Rinsing</b>	Manual	Manual	Semi-automatic	Automatic	Automatic	Automatic	Automatic
<b>Drying</b>	DryPal required	DryPal required	DryPal required	Automatic	Automatic	Automatic	Automatic
<b>Sample recovery</b>	No	No	No	Yes	Yes	Yes	Yes
<b>Temperature</b>	Ambient	Ambient	Ambient	Ambient	Max. 80 °C <sup>2)</sup>	Ambient	Max. 80 °C <sup>2)</sup>

<sup>1)</sup> For concentrated reducing acids only with Hastelloy needle

<sup>2)</sup> Samples with a melting point of up to 60 °C can be handled (paraffin, edible fats, cosmetics, etc.)

<sup>3)</sup> With optional resistant tubing

# Valuable Options

## Custom-Tailored Performance

**Multi-Parameter Measurements**  
Enhanced Productivity



Density, refractive index (or related values), pH (or conductivity), acidity and color can be measured and analyzed in one run.

### Advanced Barcode Features

Convenient Sample Data Input



LiquiPhysics™ Excellence is not only able to read barcodes; it can also accurately interpret their information. With Smart Codes containing information about the type of product to be measured, the user simply scans the barcode to start the measurements. There is no additional button to click.

LiquiPhysics Excellence is even capable of scanning barcodes automatically. SC30 sample changers can be easily equipped with ScanStraight, a built-in barcode reader.

### Plug-and-Play Benefits

Features Tailored to Your Needs



LiquiPhysics systems can easily be upgraded to fulfill specific requirements. The LogStraight fingerprint reader greatly simplifies the log-in procedure at the instrument with no user names or passwords to enter. With ErgoSens, there is no need to touch the instrument to start the measurements. AtmoSens ensures highly accurate five place density adjustments. LevelSens guarantees greater safety when working with automation units and makes sure that the waste container never becomes overfilled.

### LabX® Laboratory Software

Make the Most of LiquiPhysics



LabX is a new concept for laboratory software (see pages 14–19). In addition to data acquisition, analysis and archiving, LabX offers SOP user guidance, and manages products, methods, users and instruments. It connects density meters, refractometers, melting point instruments, titrators and balances. Connection to LIMS or ERP allows full integration into your overarching IT systems.



### Auxiliary Instruments

Other devices can be integrated easily into LiquiPhysics™ systems, e.g. adding a spectrophotometer for color measurement, even without PC.

► [www.mt.com/liquiphysics-multiparameter](http://www.mt.com/liquiphysics-multiparameter)

### Accessories

Ordering Information

Printer	Material No.
USB-P25 dot-matrix printer	11124301
<b>Barcode Scanner</b>	
Hand scanner USB for 1D barcodes	21901297
ScanStraight Automatic scanner for SC30 sample changer for 1D and 2D barcodes	51337184
<b>Complete Connecting Sets for Additional Parameters (without auxiliary instruments)</b>	
Connecting kit – pH (SevenEasy™/SevenCompact™)	51337023
Connecting kit – conductivity (SevenEasy/SevenCompact)	51337022
Connecting kit – color Lovibond (PFX, PFXi 8XX and 9XX)	51337021
Connecting kit – color Minolta (CM5 and CR5)	30025477
<b>Sensors</b>	
AtmoSens barometric USB pressure sensor	51337020
Waste sensor LevelSens™ (to safely prevent waste container overfilling)	51109853
LogStraight fingerprint scanner for biometric user management	51192107
ErgoSens infrared sensor for hands-free operation	11132601
<b>Top Parts for RM Refractometers and RX Refractive Index Measuring Cells</b>	
Flow cell for automatic refractive index measurements (FillPal, SC1 or SC30)	51337024
Press to measure semi-solid products, such as fruit pulp	51337155
Foil stamp set to measure foils, granulates or gums	30384986
<b>LabX® Laboratory Software</b>	
LabX Express edition for standalone systems	11153130
LabX Server edition for client-server installations	11153131

## Basic Solutions For Any Environment

### DA-100M

Thermostat Included



The DA-100M density meter is a compact three-decimal-place density meter. It is equipped with a solid-state thermostat and an air pump to dry the measuring cell. The optional ASU-100 sampling pump greatly simplifies density determinations of low viscous samples.

### Densito and Refracto

Best On-Site Performance



The Densito 30PX and the Refracto 30PX offer all the features required for successful on-site density and refractive index measurements including automatic temperature compensation, direct display of the result in the desired unit, built-in timekeeping for full GLP compliance and data output via infrared interface. Densito and Refracto come with practical carrying cases which contain everything necessary to carry out measurements.

### Refracto 30GS

Gold and Sapphire



The Refracto 30GS features a very wide measuring range and a quick temperature response thanks to its special measuring cell equipped with a gold-plated stage ring and a prism made of artificial sapphire. This allows even faster measurements in any environment.



Order our Densito and Refracto brochures.

- ▶ [www.mt.com/Densito](http://www.mt.com/Densito)
- ▶ [www.mt.com/Refracto](http://www.mt.com/Refracto)

## Technical Specifications

	Measuring Range	Accuracy	Temperature Range	Material No.
<b>DA-100M Density meter</b>	0–2 g/cm <sup>3</sup>	0.001 g/cm <sup>3</sup>	15–40 °C (solid-state thermostat)	51320001
<b>Densito 30PX</b>	0–2 g/cm <sup>3</sup>	0.001 g/cm <sup>3</sup>	ambient (5–35 °C)	51324450
<b>Refracto 30PX</b>	1.32–1.50 (nD) 0–85 % Brix	0.0005 (nD) 0.2 % Brix	ambient (10–40 °C)	51324650
<b>Refracto 30GS</b>	1.32–1.65 (nD) 0–100 % Brix	0.0005 (nD) 0.2 % Brix	ambient (10–40 °C)	51324660

## Accessories

Description	Material No.
ASU-100 sampling pump for DA-100	ASU-100
Infrared adapter for data transmission for Densito 30PX and Refracto 30PX/GS	51325006
Adapter for external syringe for Densito 30PX	51324402
Cleaning tissues for Densito 30PX and Refracto 30PX/GS (set of 10)	51325003
Protective cover for Densito 30PX	51324430
Density water standards for DA-100M and Densito 30PX (set of 10)	51325005

# Better Accuracy and Reliability

## Reduce Risks, Increase Effectiveness

**The Accuracy of Your Instrument Is Important. The Accuracy Of Your Workflows Is Critical.**

Improve the accuracy of your density and refractive index measurement by understanding your workflow, identifying inherent risks and using good density and refractive-index practices.

### GDRP five Steps to Excellence

Good Density and Refractometry Practice™ (GDRP) is a five-step program to improve your lab process. It covers the entire lifecycle of your investment and helps to improve quality while reducing risks and costs.



#### Step 1: Evaluation

Understand current needs and anticipate future requirements.



#### Step 2: Selection

Select the best analytical system for your purposes.



#### Step 3: Installation

Ensure correct installation to help guarantee the best working conditions.



#### Step 4: Qualification

Ensure the best start with process qualification and professional training.



#### Step 5: Routine Operation

Keep the device working within specification with regular service, and keep users well-informed with ongoing training and seminars.

### Risk Check

Risk-free measurement of density and refractive index



**Are you aware of the whole risk? No?**

Take five minutes with our free web-based Risk Check to identify areas that could affect your process and evaluate the reliability of your current density or refractive-index measurements.

► [www.mt.com/GDRP](http://www.mt.com/GDRP)

► [www.mt.com/GDRP-riskcheck](http://www.mt.com/GDRP-riskcheck)



## Traceable Standards

### Improved Data Security

Combined liquid-standard reference materials from METTLER TOLEDO facilitate reliable performance verification. They are certified for both density value and refractive index at three different temperatures (15, 20 and 25 °C). Combined measuring systems can be verified in one step. All the information contained in the certificates is barcoded with no need to input data manually when performing a system-performance test or calibration.

Standard Reference Material	Density [g/cm <sup>3</sup> ] at 20 °C <sup>1)</sup>	Refractive Index at 20 °C <sup>2)</sup>	Material No.
Water	0.998...*	1.333...*	51338010
Dodecane	0.749...*	1.422...*	51338012
2,4-Dichlorotoluene	1.250...*	1.546...*	51338013
1-Bromonaphthalene	1.481...*	1.658...*	51338014

<sup>1)</sup> Uncertainty: 0.00003 g/cm<sup>3</sup>

<sup>2)</sup> Uncertainty: 0.00002

\* Typical values: May change from batch to batch without prior notice

## Installation and Qualification Pacs

### Regulatory Compliance

Professionally executed installation and operational qualification (IQ/OQ) including documentation is offered for LiquiPhysics™ Excellence instruments.

Service	Product Families	Product Types	Material No.
IPac	LiquiPhysics Excellence Density Meters	DM40/DM45/DM50 DX40/DX45/DX50	51710863
	LiquiPhysics Excellence Refractometers	RM40/RM50 RX40/RX50	51710873
EQPac	LiquiPhysics Excellence Density Meters	DM40/DM45/DM50 DX40/DX45/DX50	51710870
	LiquiPhysics Excellence Refractometers	RM40/RM50 RX40/RX50	51710873
EduPac	LiquiPhysics Excellence Density Meters	DM40/DM45/DM50 DX40/DX45/DX50	30047139
	LiquiPhysics Excellence Refractometers	RM40/RM50 RX40/RX50	30047152
LabX® Validation Manual II Base Package	LiquiPhysics Excellence Density Meters and Refractometers	DM40/DM45/DM50 RM40/RM50	30003640
LabX Validation Manual II LiquiPhysics Extension	LiquiPhysics Excellence Density Meters and Refractometers	DM40/DM45/DM50 RM40/RM50	30416324

# pH Meters and Sensors

Quick and Reliable pH Measurements





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Scan this code for more information.

# Quick, Reliable Results At Your Fingertips

**More than 65 years of sensor innovation combined with cleverly designed instruments have resulted in a product range of unparalleled quality and flexibility. Whatever you need to measure, be it pH, ORP, ion concentration, conductivity or dissolved oxygen (DO), METTLER TOLEDO provides you with the electrochemical equipment you need.**

Select the right equipment for pH, ORP, ion, conductivity or dissolved oxygen measurement.



SevenCompact S220

## Benchtop Accuracy

Seven is your flexible, reliable and easy-to-use lab tool. The heart of a Seven laboratory instrument is its precision measurement technology.



**SevenExcellence™  
and SevenCompact™**

## Portable Convenience

These hand-held meters provide optimum convenience and high performance during mobile work on the factory floor or out in the field.



**Seven2Go™ and SevenGo Duo™**

## Entry-Level Reliability

Five is the clever introduction to pH, conductivity or oxygen measurements. It is ideal for those who have a limited budget but still require a reliable meter.



**FiveEasy™ and FiveGo™**

## Fast Analysis

Our sensors combine innovative technologies and glass-blowing tradition for fast pH, ORP, ion-selective, conductivity and DO analysis.



**InLab® and LE Sensors**

## Comprehensive Systems

We take pride in a long tradition of producing complete measurement systems, including a comprehensive range of top quality solutions.



**Buffers and Solutions**

# SevenExcellence

## Powerful, Secure Instruments

**SevenExcellence™ stands for convenient, easy-to-understand operation combined with high measurement accuracy and outstanding flexibility. A capacitive touchscreen and large seven-inch display make the instrument truly intuitive, with ease-of-use reinforced by the availability of menus in ten languages. The instrument can effectively cope with complex applications and stringent requirements in regulated markets, but it also provides added value for routine laboratory measurements.**

### SeamLess Processes



SevenExcellence has been designed to optimize your workflows and make lab work more efficient. Just one click is needed to start a sample or a measurement/analysis series with an optional autosampler. Once setup, data archiving is a standard procedure that will take place automatically following each analysis.

### Solid Compliance



SevenExcellence comes with security functions that support your workflow during all phases of calibration, measurement and archiving. It is suitable for routine tasks as well as professional measurements under stringent GLP conditions. Connected to LabX®, SevenExcellence offers perfect compliance support.

### Sustainable Value



SevenExcellence offers flexibility on all levels, ranging from the number of measurement parameters to the choice of a vast collection of peripheral devices. The instrument's interfaces allow you to connect peripherals simultaneously, supporting your workflow in the best way possible.



### Unmatched Performance for Various Parameters

- pH
- Conductivity
- Ion concentration
- Dissolved oxygen/BOD
- Oxidation-reduction potential



SevenExcellence™ S479

# Convenient Versatility

## For Excellent Measurement Flexibility

**SevenExcellence™ offers flexibility on all levels, ranging from the number of measurement parameters to the choice of a vast collection of peripheral devices. The instrument's interfaces allow you to connect peripherals simultaneously, supporting a streamlined workflow.**



SevenExcellence S475

### Seven Good Reasons for SevenExcellence:

- **Touchscreen convenience** – easy to learn, quick to operate
- **Menu guidance in ten languages** – user-friendly operation
- **Large, well-arranged color display** – information identifiable at a glance
- **Modular design** – ready to expand when your needs change
- **Many peripheral options** – to ensure efficient measurement workflows
- **Intelligent sensors** – peace of mind, mistake elimination
- **Comprehensive service offering, incl. EQPac** – high uptime and compliance

### Automated Efficiency



With flexible InMotion™ autosamplers, automated sensor calibration and measurements of up to 303 samples are possible. Professional automation ensures security, comfort and maximum efficiency.

### Professional User Management



SevenExcellence includes ingenious user management with four levels from user to administrator, each with progressively more rights. This allows the experience-based assignment of rights. The risks of unintentional or unauthorized changes of settings and deletion of results are eliminated.

### LabX® Laboratory Software



Connected to LabX software (see pages 14–19), SevenExcellence profits from many additional functionalities such as report creation, compliance support (e.g. 21 CFR Part 11) and connection to ERP/LIMS systems. LabX also enables smart connection to other METTLER TOLEDO lab instruments.

## SevenExcellence™ Meters and Kits

Model	Channel	Parameter	Measuring Range	Resolution & Accuracy	InLab® Sensor	Material No.
S400-basic	1	pH mV Temperature	-2.000–20.000 pH; -2,000.0–2,000.0 mV -30.0–130.0 °C	0.001/0.01/0.1; ±0.002 0.1/1; ±0.1 0.1; ±0.1	None	30046240
S400-kit					Expert Pro-ISM	30046241
S400-bio					Routine Pro-ISM	30046242
S400-micro					Ultra-Micro-ISM	30092982
S400-uMix		Expert Pro-ISM and uMix stirrer	30092983			
S700-basic		Conductivity Temperature	0.001 µs/cm–2,000 ms/cm -30.0–130.0 °C	0.001–1; ±0.5% 0.1; ±0.1	None	30046244
S700-kit					731-ISM	30046245
S700-trace					Trace including flow cell	30046246
S500-basic		pH mV Ion concentration Temperature	-2.000–20.000 pH; -2,000.0–2,000.0 mV 0–999,999 mg/L, ppm -30.0–130.0 °C	0.001/0.01/0.1; ±0.002 0.1/1; ±0.1 0.001–1; ±0.5% 0.1; ±0.1	None	30046248
S500-kit					Expert Pro-ISM	30046249
S500-bio					Routine Pro-ISM	30046250
S500-f					perfectION™ Fluoride	30046251
S900-basic					Dissolved oxygen	0.000–50 mg/L, ppm
S900-kit		OptiOx	30092986			
S900-BOD		OptiOx	30092987			
S600-kit		Dissolved oxygen Temperature	0.000–99 mg/L, ppm -30.0–130.0 °C**	0.001; ±0.5% 0.1; ±0.1	605-ISM	30092985
S470-basic	2	pH mV Conductivity Temperature	See S400 and S700	See S400 and S700	None	30046252
S470-kit					Expert Pro-ISM, 731-ISM	30046253
S470-USP/EP					Pure Pro-ISM, 741-ISM	30046254
S475-basic	3	See S470 and S500	See S400, S700 and S500	See S400, S700 and S500	None	30046255
S479-kit		See S470 and S900	See S470 and S900	See S470 and S900	Expert Pro-ISM 731-ISM, OptiOx	30092988
S975-uMix		See S900, S700 and S500	See S900, S700 and S500	See S900, S700 and S500	Expert Pro-ISM 731-ISM, OptiOx and uMix stirrer	30092989

\* 0.0–50.0 °C for InLab OptiOx

\*\* 0.0–60.0 °C for InLab 605-ISM

**Basic versions include:**

Meter, the specified expansion units, uPlac™ electrode holder, semi-transparent cover, operating instructions, installation and quick guide, EasyDirect™ pH PC software, declaration of conformity and test certificate. Electrode is NOT included.

**Kit versions include:**

As above plus appropriate electrode, buffer sachets and guides.

**Accessories for SevenExcellence**

	Material No.
<b>Expansion Units</b>	
pH/mV expansion unit	30034472
Conductivity expansion unit	30034473
DO/BOD expansion unit	30034474
pH/Ion expansion unit	30034471
<b>General Accessories</b>	
uPlac: Electrode holder (included in standard delivery)	30019823
uMix™ magnetic stirrer	30040000
USB-P25 printer (with USB cable)	11124301
LogStraight™ fingerprint reader	51192107
Barcode reader body	21901297
USB cable for barcode reader (not included with barcode reader body)	21901309
EasyDirect PC software (included in standard delivery)	30323214
USB A-B cable for EasyDirect PC software (not included with EasyDirect PC software)	51191926
<b>Automation</b>	
InMotion™ sample changer Flex Base and 100 mL rack bundle (for other configurations see <a href="http://www.mt.com/inmotion">www.mt.com/inmotion</a> )	30094120
Compact stirrer for InMotion including 2 propeller stirrers	51109150
<b>LabX® Laboratory Software</b>	
Starter pack LabX Express edition (for standalone systems, includes 1 SevenExcellence instrument license)	21901309
Starter pack LabX Server edition (for client server installations, includes 1 SevenExcellence instrument license)	30323214
1 SevenExcellence instrument license	51191926

# SevenCompact

## Universal, Reliable Instruments

**The SevenCompact™ series combines precise electrochemical measurement technologies with flexibility, innovative design and ease-of-use. It can be universally employed and continues in the tradition of our Seven series.**

### Intuitive Operation



Whether you are starting a measurement or calibration or are toggling between modes, you only need to press one key. For setting adjustments, the SevenCompact offers menus with full sentences in 13 languages. No more cryptic abbreviations to memorize.

### Long-Lasting Investment



SevenCompact offers a robust IP54-rated design that uses high-quality materials for durability. Comprehensive service and after-sales support guarantee smooth operations years after your initial, certified installation.

### Great Flexibility



Connect various accessories such as a barcode reader, keyboard, USB stick, USB printer or PC with EasyDirect™ pH software to boost SevenCompact's flexibility. Workflow efficiency is increased with the uPlace™ sensor stand and uMix™ stirrer.

## Seven Good Reasons for SevenCompact

- **Top sensors**  
Fast and accurate measurements
- **Menu guidance in 13 languages**  
User-friendly operation
- **Clear, well-arranged color display**  
Quick to learn
- **Printing and data-storage options**  
GLP compliant
- **Professional peripheral options**  
High efficiency
- **Intelligent sensors**  
Peace of mind
- **Full-fledged service offering**  
High uptime and compliance



SevenCompact™ S230-kit

## SevenCompact Meters and Kits

Model	Parameters	Measuring Range	Resolution & Accuracy	InLab® Sensor	Material No.
S220-basic (meter)	pH/mV*/Redox/Ion concentration**/°C***	-2.000–20.000 pH -2,000.0–2,000.0 mV 1.00E <sup>-9</sup> –9.99E <sup>+9</sup> -30.0–130.0 °C	pH: 0.001/0.01/0.1; ±0.002 mV: 0.1/1; ±0.2 Ions: last signifi. digit; ±0.5% 0.1 °C; ±0.1 °C	none	30019028
S220-standard kit				Expert Pro-ISM	30019029
S220-uMix kit				Expert Pro-ISM and uMix	30096986
S220-bio kit				Routine Pro-ISM	30019031
S220-micro kit				Ultra-Micro-ISM	30096985
S220-uni-kit				Versatile Pro	30019032
S230-basic (meter)	Cond./TDS/Salinity/Resistivity/°C	0.001 µs/cm–1,000 ms/cm -30.0–130.0 °C	0.001–1; ±0.5% 0.1 °C; ±0.1 °C	none	30019033
S230-standard kit				731-ISM	30019034
S213-basic (meter)	pH/mV*/Redox/°C***/Cond./TDS/Salinity/Resistivity/	-2.000–20.000 pH -2,000.0–2,000.0 mV 0.001 µs/cm–1,000 mS/cm -30.0–130.0 °C	pH: 0.001/0.01/0.1; ±0.002 mV: 0.1/1; ±0.1 0.001–1; ±0.5% 0.1 °C; ±0.1 °C	none	30339958
S213-standard kit				Expert Pro-ISM and 731-ISM	30339959
S213-water kit				Pure Pro-ISM and 741-ISM	30339980

\* Instrument can also measure rel. mV

\*\* Ion concentration supports units mmol/L, mol/L, ppm, mg/L, % and pX

\*\*\* Temperature display choice between °C and °F. ATC temperature range is -5,0–130,0 °C

## General SevenCompact Accessories

Description	Material No.
uPlace™: Electrode holder (included in standard delivery)	30019823
uMix™ magnetic stirrer	30040000
Protective cover (included in standard delivery)	30019824
USB-P25 printer (with USB cable)	11124301
Barcode reader body	21901297
USB cable for barcode reader (not included with barcode reader body)	21901309
EasyDirect pH PC software	30323214
USB A-B cable 1.8 m for EasyDirect pH PC software (not included with EasyDirect pH PC software)	51191926

**Non-kit versions include:** Meter, electrode arm, in-use cover, calibration certificate, declaration of conformity (electrode is NOT included)

**Kit versions include:** As above plus appropriate electrode, buffer sachets and measurement guides

# Seven2Go

## Quality Measurement Made Mobile



Seven2Go™ pro and Seven2Go

### Laboratory: Fast Quality Data



Seven2Go's new intuitive menu guarantees out-of-the-box operation for anyone. Thanks to ISM, the sensor is automatically recognized to save time and reduce errors when changing the sensor.

### At-Line: One-Handed Operation



Faster, more intuitive navigation shortens the time to actual measurement.

### Outdoors: Durable Investment



Thanks to its IP67 protection and drop-test resistance, new Seven2Go portables are able to withstand harsh and demanding environments.

Seven2Go™

	Seven2Go S2 pH	Seven2Go S3 Cond.	Seven2Go S4 DO
<b>Material No.</b>	30207949 (meter only)	30207954 (meter only)	30207958 (meter only)
<b>Measuring Range</b>	pH: -2.00-20.00 ±0.01	Cond.: 0.010 µs/cm-500.0 ms/cm ±0.5%	DO: 0.00-99.99 mg/L 0.2 mg/L (0-15 mg/L); ±10% (15-60 mg/L)
	Rel. mV: -1,999-1,999 mV ±1	TDS: 0.01 mg/L-300.00 g/L ±0.5%	Pressure: 500-1,100 mbar ±2%
	Temp.: -5.0-105.0 °C ±0.5	Spec. res.: 0.010-1,000 MΩcm ±0.5%	Temp.: 0.0-60.0 °C ±0.2
		Sal.: 0.01-42.00 psu ±0.5%	
		Cond. ash: 0.01-2,022.00% ±0.5%	
	Temp.: -5.0-105.0 °C ±0.2 °C		
<b>Sensor Connector</b>	BNC/RCA (cinch) (both IP67)	LTW 7-pin (IP67)	BNC/RCA (cinch) (both IP67)
<b>All Seven2Go</b>	Memory: 200; operating hours: 250-400 h; display: segmented LCD; rubber holster		

Seven2Go pro

	Seven2Go S8 pH/Ion	Seven2Go S7 Cond.	Seven2Go S9 DO
<b>Material No.</b>	30207874 (meter only)	30207961 (meter only)	30207970 (meter only)
<b>Measuring Range</b>	pH: -2.000-20.000 ±0.002	Cond.: 0.010 µs/cm-1,000 ms/cm ±0.5%	DO: 0.00-50.00 mg/L ±0.1 mg/L (0-8); ±0.2mg/L (8-20); ±10% (20-50)
	Rel. mV: -2,000.0-2,000.0 mV ±0.1	TDS: 0.01 mg/L-600.00 g/L ±0.5%	Pressure: 500-1,100 mbar ±2%
	Ion: 1.00e <sup>-9</sup> -9.99 <sup>+09</sup> ±0.5%	Spec. res.: 0.01-100.00 MΩcm ±0.5%	Temp.: 0.0-5.0 °C ±0.1
	Temp. ATC: -5.0-130.0 °C ±0.2	Sal.: 0.01-42.00 psu ±0.5%	
	Temp. MTC: -30-130 ±0.2	Cond. ash: 0.01-2,022.00% ±0.5%	
	Temp.: -5.0-105.0 °C ±0.1 °C		
<b>Sensor Connector</b>	BNC/RCA (cinch) (both IP67)	LTW 7-pin (IP67)	Mini LTW (IP67)
<b>All Seven2Go Pro</b>	Memory: 2,000 (GLP conform); operating hours: 200-250 h; display: graphic LCD; micro USB connection, 12 languages, EasyDirect™ pH; rubber holster		

Seven2Go Meter Kits

	Description	Material No.	Ideally Suited For
<b>pH/mV, ORP, Ion</b>	S2-standard kit with InLab® Expert Go-ISM sensor	30207950	Wide range of samples including emulsions and suspensions
	S2-field kit with InLab Expert Go-ISM sensor & uGo™ carrying case	30207951	As above, but especially for measurements on the go
	S2-food kit with InLab Solids Go-ISM sensor & uGo carrying case	30207952	Solid and semi-solid samples like cheese and meat
	S2-light kit with InLab Versatile Pro sensor	30207953	Academic and educational purposes
	S8-standard kit with InLab Expert Go-ISM sensor	30207975	Wide range of samples, also suited for emulsions and suspensions
	S8-field kit with InLab Expert Go-ISM sensor & uGo carrying case	30207875	As above, but especially for measurements on the go
	S8-biotechnology kit with Routine Go-ISM sensor	30207878	Fast results in a wide range of samples including harsh chemicals
	S8-fluoride kit with perfectION™ fluoride sensor	30207879	Aqueous samples, toothpaste and mouthwash
<b>Conductivity</b>	S3-standard kit with InLab 738-ISM sensor	30207955	Aqueous samples with mid-to-high conductivity
	S3-field kit with InLab 738-ISM sensor and uGo carrying case	30207956	As above, but especially for measurements on the go
	S3-bioethanol kit with InLab 725 sensor and uGo carrying case	30207957	Bioethanol and biofuels
	S7-standard kit with InLab 738-ISM sensor	30207962	Aqueous samples with mid to high conductivity
	S7-field kit with InLab 738-ISM sensor and uGo carrying case	30207963	As above, but especially for measurements on the go
S7-USP/EP kit with InLab 738-ISM sensor and uGo carrying case	30207973	Ultra-pure water and low conductivity samples	
<b>Dissolved Oxygen</b>	S4-standard kit with InLab 605-ISM sensor	30207959	Aqueous samples, alcoholic and non-alcoholic beverages
	S4-field kit with InLab 605-ISM sensor & uGo carrying case	30207960	As above, but especially for measurements on the go
	S9-standard kit with InLab OptiOx sensor	30207971	Fast results in aqueous samples
	S9-field kit with InLab OptiOx sensor & uGo carrying case	30207972	As above, but especially for measurements on the go
	S9-BOD kit with InLab OptiOx sensor, BODadapter and uGo carrying case	30207939	BOD measurements in all types of water samples
<b>Accessories</b>	Robust carry case uGo (IP67)	30122300	For measurements on the go or to securely store the instrument
	EasyDirect pH PC software	30323214	Transfer data from Seven2Go pro to PC (included in Seven2Go Pro delivery)

# SevenGo Duo™

## Mobile Dual-Channel Measurements

**The SevenGo™ Duo combines ease-of-use, quality and reliable measurement functions. The instrument is designed so that a single keystroke triggers calibration, a measurement or access of stored results and system settings.**



SevenGo Duo pro SG78

### SevenGo Duo



The rotatable electrode clip can be attached on the left, right or both sides of all instruments. It allows measurements to be taken with just one hand and is a convenient, space-saving way of storing electrodes.

### An Ergonomic Masterpiece



SevenGo Duo fits neatly into your hand, regardless of whether you are right- or left-handed. The size of the buttons reflects their importance. SevenGo Duo is so easy to use that you can really save time and increase your productivity.

### Status at-a-Glance



The large SevenGo Duo display shows all relevant setting and highlights the most important items. You can read the measurement value and check the state of the electrode at a glance. The results of parallel measurements appear in an alternating fashion on the display.

## SevenGo Duo™ SG23 pH/Cond.

Material No. (Meter Only): 51302600

	Measuring Range Channel 1	Measuring Range Channel 2	
pH	0.00–14.00 ±0.01	0.01 µs/cm–500.00 ms/cm ±0.5%	Conductivity
mV	–1,999.9–1,999.9 ±1	0.01 mg/L–300.00 g/L ±0.5%	TDS
		0.00–100.00 MΩcm ±0.5%	Resistance
		0.00–80.00 ppt ±0.5%	Salinity
Temperature	–5.0–105.0 ±0.5 °C	–5.0–105.0 ±0.2 °C	Temperature
Sensor connector	BNC, RCA/(cinch) (both IP67)	LTW 7-pin (IP67)	Sensor connector

SevenGo Duo Meter Kits	Material No.	Remarks
SG23-electrode kit with InLab® Expert Go-ISM and InLab 738-ISM	51302601	
SG23-field kit with InLab Expert Go-ISM and InLab 738-ISM	51302602	Includes uGo™ carry case, calibration solution sachets and cal. bottles
SG23 field kit 5 m with InLab Expert Go-ISM and InLab 738-ISM	51302603	Includes uGo carry case, calibration solution sachets and cal. bottles

## SevenGo Duo pro SG68 pH/Ion/DO

Material No. (Meter Only): 51302610

	Measuring Range Channel 1	Measuring Range Channel 2	
pH	–2.000–20.000 ±0.002	0.0–600.0% ±0.5%	Oxygen saturation
mV	–1,999.9–1,999.9 ±0.1	0.00–99.00 mg/L ±0.5%	Oxygen
Ions (mg/L; mol/L; ppm)	1.00e <sup>-9</sup> –9.99e <sup>+9</sup> ±0.5%	500–1,100 ±1 mbar	Pressure
Temperature	–5.0 (–30.0)–130.0 ±0.2 °C ATC (MTC)	0.0–60.0 ±0.1 °C	Temperature
Sensor connector	BNC, RCA/(cinch) (both IP67)	BNC, RCA/(cinch) (both IP67)	Sensor connector

SevenGo Duo Meter Kits	Material No.	Remarks
SG68 electrode kit with InLab Expert Go-ISM and InLab 605 ISM	51302611	
SG68 field kit with InLab Expert Go-ISM and InLab 605-ISM	51302612	Includes uGo carry case, pH buffer sachets and cal. bottles
SG68 field kit 5 m with InLab Expert Go-ISM and InLab 605 ISM	51302613	Includes uGo carry case, pH buffer sachets, 5 m cables and cal. bottles

## SevenGo Duo pro SG78 pH/Ion/Cond.

Material No. (Meter Only): 51302620

	Measuring Range Channel 1	Measuring Range Channel 2	
pH	–2.000–20.000 ±0.002	0.01 µs/cm–1,000.00 ms/cm ±0.5%	Conductivity
mV	–1,999.9–1,999.9 ±0.1	0.01 mg/L–600.00 g/L ±0.5%	TDS
Ions (mg/L; mol/L; ppm)	1.00e <sup>-9</sup> –9.99e <sup>+9</sup> ±0.5%	0.00–100.00 MΩcm ±0.5%	Spec. Res.
		0.00–80.00 ppt ±0.5%	Salinity
Temperature	–5.0 (–30.0)–130.0 ±0.2 °C ATC (MTC)	–5.0 (–30.0)–130.0 ±0.2 °C ATC (MTC)	Temperature
Sensor connector	BNC, RCA/(cinch) (both IP67)	LTW 7-pin (IP67)	Sensor connector

SevenGo Duo Meter Kits	Material No.	Remarks
SG78 electrode kit with InLab Expert Go-ISM and InLab 738-ISM	51302621	
SG78 field kit with InLab Expert Go-ISM and InLab 738-ISM	51302622	Includes uGo carry case, calibration solution sachets and cal. bottles
SG78 field kit 5 m with InLab Expert Go-ISM and InLab 738-ISM	51302623	Includes uGo carry case, calibration solution sachets, 5 m cables and cal. bottles
SG78 field kit USP/EP with InLab Expert Go-ISM and InLab 742-ISM	51302625	Includes uGo carry case, calibration solution sachets and cal. bottles

## SevenGo Duo pro SG98 pH/Ion/optical DO

Material No. (Meter Only): 51302661

	Measuring Range Channel 1	Measuring Range Channel 2	
pH	–2.000–20.000 ±0.002	0.0–500.0% ±10%	Oxygen Saturation
mV	–1,999.9–1,999.9 ±0.1	0.00 mg/L–50.00 mg/L ±0.1 (0–8); ±0.2 (8–20); ±10% (20–50)	Oxygen
Ions (mg/L; mol/L; ppm)	1.00e <sup>-9</sup> –9.99e <sup>+9</sup> ±0.5%	500–1,100 ±1 mbar	Pressure
Temperature	–5.0 (–30.0)–130.0 ±0.2 °C ATC (MTC)	0.0–50.0 ±0.1 °C	Temperature
Sensor connector	BNC, RCA/(cinch) (both IP67)	Mini LTW 7-pin (IP67)	Sensor connector

SevenGo Duo Meter Kits	Material No.	Remarks
SG98 electrode kit with InLab Expert Go-ISM and InLab OptiOx	51302662	
SG98 field kit with InLab Expert Go-ISM and InLab OptiOx	51302663	Includes uGo carry case, pH buffer sachets and cal. bottles
SG98 field kit 5 m with InLab Expert Go-ISM and InLab OptiOx	51302664	Includes uGo carry case, pH buffer sachets, 5 m cables and cal. bottles

# FiveEasy and FiveGo

## Quality for the Budget-Minded

The compact FiveEasy™ bench meters and the waterproof FiveGo™ portable meters for measuring pH, conductivity and dissolved oxygen are easy to operate thanks to intuitive keypads and large displays. Robust electrodes and helpful accessories complement the meters in FiveEasy and FiveGo kits.

### FiveEasy and FiveEasy Plus

Bench Meters for Laboratory Applications



New FiveEasy and FiveEasy Plus benchtop instruments provide quality pH/mV or conductivity measurements with the simple click of a button. Compact in design and featuring various data export opportunities, FiveEasy series instruments are the perfect companion to get reliable measurement data at a reasonable price.

### FiveGo

Portable Meters for Mobile Applications



New FiveGo portable instruments provide quality pH/mV, conductivity or dissolved oxygen measurements with the simple click of a button whether you are working in the lab, at-line or outdoors. A robust and waterproof design makes FiveGo instruments the perfect companion for reliable measurement data in wet conditions.

**Easy Operation**



Featuring a large, well-structured display for easy viewing, the instrument's intuitive button arrangement and simple menu ensure measurements can be performed in just a few clicks.

**Robust Design**



A robust and waterproof design makes FiveGo™ instruments a perfect companion to get reliable measurement data even in harsh conditions at a reasonable price.

**Simple Data Transfer**



FiveEasy™ Plus series meters allows data to be exported either directly to a printer or PC for further processing using its RS232 or USB ports.

► [www.mt.com/fiveeasy](http://www.mt.com/fiveeasy)

Model	FiveGo pH F2 FiveEasy pH F20	FiveGo Conductivity F3 FiveEasy Conductivity F30	FiveGo DO F4	FiveEasy Plus pH FP20	FiveEasy Plus Conductivity FP30
Measuring Range	0.00–14.00 pH –2,000–2,000 mV 0.0–100 °C (32–212 °F)	0.00 us/cm–200.0 mS/cm (conductivity) 0.0 mg/L–200.0 g/L(TDS) 0.0–100.0 °C (32–212 °F)	0.0–199.9%, 200–400% 0.0 to 45.0 mg/L 0.0–45.0 ppm 0.0–50.0 ppt 0.0–50.0 °C 500–1,100 mbar	–2.00–16.00 pH –2,000–2,000 mv –5.0–105.0 °C (23–221 °F)	0.00 us/cm–500.0 ms/cm (conductivity) 0.0 mg/L–300.0 g/L(TDS) 0.00–42.00 psu (salinity) –5.0–105.0 °C (23–221 °F)
Resolution	0.01 pH/1 mV/0.1 °C	Automatic range/0.1 °C	0.1/1%/0.01/0.1 mg/L 0.01/0.1 ppm/0.1 °C/ 1 mbar	0.01/0.1 pH 1 mV 0.1 °C	Automatic range 0.01–0.1 psu (salinity) 0.1 °C
Accuracy	±0.01 pH/±1 mV/ ±0.5 °C	±0.5% of the measured value/±0.5 °C	±1%/±1%/±1%/ ±0.3 °C	±0.01 pH ±1 mV 0.3 °C	±0.5% of the measured value 0.3 °C

**FiveEasy and FiveEasy Plus**

Model	Sensor	Material No.
F20-meter	None	30266658
F20-standard kit	LE438	30266626
FP20-meter	None	30266627
FP20-standard kit	LE438	30266628
FP20-bio kit	LE410	30266629
FP20-micro	LE422	30266940
FP20-tris	LE420	30266941
F30-meter	None	30266942
F30-standard kit	LE703	30266943
FP30-meter	None	30266944
FP30-standard kit	LE703	30266945

**FiveGo**

Model	Sensor	Material No.
F2-meter	None	30266946
F2-standard kit	LE438 IP67	30266889
F2-field kit	LE438 IP67	30266882
F2-food kit	LE427 IP67	30266881
F3-meter	None	30266883
F3-standard kit	LE703 IP67	30266888
F3-field kit	LE703 IP67	30266887
F4-meter	None	30266884
F4-standard kit	LE621 IP67	30266885
F4-field kit	LE621 IP67	30266886

**Non-kit versions include:**

Meter, operating manual, power adapter (FiveEasy only), batteries (FiveGo only), electrode clip (FiveGo only), wrist strap (FiveGo only) (electrode is NOT included), electrode arm (FiveEasy only)

**Kit versions include:**

As above, plus appropriate electrode, carrying case incl. 4 sample bottles (Field kits only), buffer sachets and guides

# InLab Sensors

## The Right Choice for Your Application

**METTLER TOLEDO electrodes have been synonymous with quality for more than 65 years. Our product offering covers the vast majority of applications both for laboratory and field measurement. Just use our sensor guide to find the right sensor for your application.**

Simplify your sensor selection.

► [www.mt.com/Electrode-Guide](http://www.mt.com/Electrode-Guide)

### pH General-Purpose Electrodes



Name	Features/Description	Connector	Material No.
<b>Routine Electrodes</b>	<b>Combined pH Glass Electrode with a Ceramic Diaphragm for Fast Results; TRIS Compatible</b>		
InLab <sup>®</sup> Routine	Shaft length: 120 mm	S7	51343050
InLab Routine Pro	With temperature probe (NTC 30 kΩ)	MultiPin™	51343054
InLab Routine Pt1000	With temperature probe (Pt1000)	MultiPin	51343056
InLab Routine Pro-ISM	With temperature probe (NTC 30 kΩ) and ISM	MultiPin	51343055

Name	Features/Description	Connector	Material No.
<b>Expert Electrodes</b>	<b>Combined pH Electrode with a PEEK Shaft; Clog-Free Open Junction; Maintenance-Free</b>		
InLab Expert	Shaft length: 120 mm	S7	51343100
InLab Expert Pro	With temperature probe (NTC 30 kΩ) and 1.2 m fixed cable	BNC/RCA	51343101
InLab Expert Pro-ISM	With temperature probe (NTC 30 kΩ), fixed cable 1.2 m and ISM	BNC/RCA	30014096
InLab Expert Pro-2m-ISM	With temperature probe (NTC 30 kΩ) and 2 m fixed cable	BNC/RCA	51343102
InLab Expert DIN	With temperature probe (Pt1000) and fixed cable 1.2 m	DIN/4 mm banana	51343103
InLab Expert NTC30	With temperature probe (NTC 30 kΩ)	MultiPin	51343104
InLab Expert Pt1000	With temperature probe (Pt1000)	MultiPin	51343105

Name	Features/Description	Connector	Material No.
<b>General-Purpose Electrodes</b>			
InLab Science	Movable glass sleeve	S7	51343070
InLab Science Pro-ISM	Movable glass sleeve; temperature probe (NTC 30 kΩ) and ISM	MultiPin	51343072
InLab Max Pro-ISM	Immovable glass sleeve; with temperature probe (NTC 30 kΩ) and ISM	MultiPin	30248830
InLab Power	Pressurized reference system Steady Force™	S7	51343110
InLab Power Pro-ISM	With temp. probe (NTC 30 kΩ) Steady Force and ISM; shaft length 170 mm	MultiPin	51344211
InLab Easy	Gel-filled; polysulfone shaft	S7	51343010
InLab Easy BNC	Gel-filled; polysulfone shaft; 1.2 m fixed cable	BNC	51343011
InLab Versatile Pro	Liquid-filled; polysulfone shaft; with temperature probe (NTC 30 kΩ) 1.2 m fixed cable	BNC/RCA	51343031

## pH Specialist: Micro and Long Electrodes



Name	Features/Description	Connector	Material No.
<b>Micro Electrodes for Small Volumes</b>			
InLab Nano	1.7 mm shaft diameter, with bevel needle and 1 m fixed cable	BNC	30092990
InLab Ultra Micro <b>ISM</b>	3 mm shaft diameter, min. sample volume 15 µl	MultiPin™	30244732
InLab Micro	3 mm shaft diameter, min. sample volume 45 µl	S7	51343160
InLab Micro Pro- <b>ISM</b>	5 mm shaft diameter; with temperature probe (NTC 30 kΩ) and ISM	MultiPin	51344163
InLab Semi-Micro	6 mm shaft diameter; maintenance-free	S7	51343165
InLab Semi-Micro-L	6 mm shaft diameter; shaft length: 230 mm	S7	51343161
InLab Flex-Micro	Flexible shaft; shaft length: 180 mm; 1 m fixed cable	BNC	51343164
InLab NMR	3 mm shaft diameter; shaft length 200 mm	S7	59904572
<b>Long Electrodes for Deep Vessels</b>			
InLab Reach 225	Shaft length: 225 mm	S7	30244733
InLab Reach Pro-225	Shaft length: 225 mm; with temperature probe (NTC 30 kΩ)	MultiPin	30248826
InLab Reach Pt1000-225	Shaft length: 225 mm; with temperature probe (Pt1000)	MultiPin	30248828
InLab Reach 425	Shaft length: 425 mm	S7	30248120
InLab Reach Pro-425	Shaft length: 425 mm; with temperature probe (NTC 30 kΩ)	MultiPin	51343061
InLab Reach Pt1000-425	Shaft length: 425 mm; with temperature probe (Pt1000)	MultiPin	51343062

## pH Specialist: Specific Applications



Name	Features/Description	Connector	Material No.
<b>Electrodes for Specific Applications</b>			
InLab Solids	Puncture electrode with spear tip; maintenance-free	S7	51343153
InLab Solids Pro- <b>ISM</b>	Puncture electrode with temp. probe (NTC 30 kΩ) and ISM; maintenance-free	MultiPin	51343155
InLab Viscous	Pressurized reference system Steady Force™; special thin tip	S7	51343150
InLab Viscous Pro- <b>ISM</b>	With temperature probe (NTC 30 kΩ) and Steady Force; special thin tip	MultiPin	51343151
InLab Dairy	Triple ceramic junction	S7	59904591
InLab Surface	Flat-ended membrane; for surfaces like paper, agar plates, skin	S7	51343157
InLab Surface Pro- <b>ISM</b>	Flat-ended membrane; shaft with temp. probe (NTC 30 kΩ) and ISM	MultiPin	30249570
InLab Cool	Temperature range: -30–80 °C	S7	51343174
InLab Cool Pro- <b>ISM</b>	Temperature range: -30–80 °C with temp. probe (NTC 30 kΩ) and ISM	MultiPin	30247850
InLab Pure	For pure water	S7	51343170
InLab Pure Pro- <b>ISM</b>	For ultra-pure water; with temperature probe (NTC 30 kΩ) and ISM	MultiPin	51343172
InLab Hydrofluoric	Special HF resistance membrane	S7	51343176

## pH Half-Cells and Reference Electrodes

Name	Features/Description	BNC Cable	Cable for Titrator	Connector	Material No.
InLab® Mono	pH half-cell	30281915	089601	S7	51343195
InLab Mono Plus	pH half-cell	30281915	089601	S7	51343196
InLab Reference	Reference electrode	30281923	30281922	S7	51343190
InLab Reference Plus	Reference electrode with PTFE sleeve	30281923	30281922	S7	51343191
InLab Reference Flow	Reference electrode with triple ceramic diaphragm	30281923	30281922	S7	51343192

## ORP/Redox Electrodes

Name	Features/Description	Connector	Material No.
<b>ORP/Redox Electrodes</b>			
InLab Redox	Combined electrode with a platinum ring	S7	51343200
InLab Redox-L	Combined electrode with a platinum ring; shaft length: 170 mm	S7	51343202
InLab Redox Flow	Combined electrode with a platinum ring and a movable sleeve-junction	S7	51343201
InLab Redox Micro	Combined electrode with a platinum ring; shaft diameter: 6 mm	S7	51343203
InLab Redox Au	Combined electrode with a gold ring	S7	51343204
InLab Redox Ag	Combined electrode with a silver ring; KNO <sub>3</sub> electrolyte	S7	51343205

## Temperature Sensors

Name	Features/Description	Connector	Material No.
InLab NTC 30 kΩ	Temperature sensor in glass shaft	S7	51343310
InLab P1000	Temperature sensor in glass shaft	S7	51343312
NTC 30 kΩ	Temperature sensor in stainless steel	RCA	51300164

► [www.mt.com/Electrode-Guide](http://www.mt.com/Electrode-Guide)

## Conductivity Probes

Name	Types	Measuring Range	Cell Constant	Connector	Material No.
InLab 731	4 graphite poles; epoxy shaft	10 μS/cm–1,000 ms/cm	0.57 cm <sup>-1</sup>	Mini DIN	51344020
InLab 731-ISM	4 graphite poles; epoxy shaft; with ISM	10 μS/cm–1,000 ms/cm	0.57 cm <sup>-1</sup>	Mini DIN	30014092
InLab 741	2 steel poles; stainless-steel shaft	0.001 μS/cm–500 μs/cm	0.105 cm <sup>-1</sup>	Mini DIN	51344024
InLab 741-ISM	2 steel poles; stainless-steel shaft; ISM	0.001 μS/cm–500 μs/cm	0.105 cm <sup>-1</sup>	Mini DIN	30014094
InLab Trace-ISM	2 titanium poles; epoxy shaft	0.0001 μS/cm–1,000 μs/cm	0.01 cm <sup>-1</sup>	Mini LTW	30014097
InLab 710	4 platinum poles; glass shaft	10 μS/cm–500 ms/cm	0.80 cm <sup>-1</sup>	Mini DIN	51302256
InLab 720	2 platinum poles; glass shaft	0.1 μS/cm–500 μs/cm	0.06 cm <sup>-1</sup>	Mini DIN	51302255
InLab 725	2 platinum poles; glass shaft	0.1 μS/cm–500 μs/cm	0.10 cm <sup>-1</sup>	Mini DIN	30014160
InLab 751-4	2 platinum poles; shaft diameter: 4 mm	0.01 mS/cm–100 ms/cm	1.0 cm <sup>-1</sup>	Mini DIN	51344030
InLab 752-6	2 platinum poles; shaft diameter: 6 mm	0.01 mS/cm–100 ms/cm	1.0 cm <sup>-1</sup>	Mini DIN	51344031

## Cables

Connection	Plug	Length	Material No.
MultiPin™	BNC/RCA (cinch)	1.2 m	30281896
MultiPin	BNC/RCA (cinch)	3.0 m	30281897
MultiPin	BNC/RCA (cinch)	5.0 m	30281898
MultiPin	BNC/RCA (cinch) IP67	1.8 m	30281913
MultiPin	BNC/1 × 4 mm	1.2 m	30281899
MultiPin	DIN 19262/RCA	1.2 m	30281910
MultiPin	DIN 19262/1 × 4 mm	1.2 m	30281911
MultiPin	Lemo 00/2 × 4 mm	1.2 m	30281912
S7	BNC	1.2 m	30281915
S7	BNC	3.0 m	30281916
S7	BNC	5.0 m	30281917
S7	BNC IP67	1.2 m	30281918
S7	DIN 19262	1.2 m	30281919
S7	DIN 19262	3.0 m	30281920
S7	DIN 19262	5.0 m	30281921
S7	Lemo 00	1.2 m	30281925
S7	4 mm banana	1.2 m	30281922
S7	2 mm banana	1.2 m	30281923
S7	RCA (cinch)	1.2 m	30281924



MultiPin connection



S7 connection



## ISM – Intelligent Sensor Management

- Secure and efficient**  
 Calibration data and sensor ID are automatically transferred to the meter
- Always up-to-date**  
 New calibration data is stored in the sensor
- Backup certificate guaranteed**  
 Initial factory calibration is stored in the sensor
- Conclusive calibration history**  
 The last five calibrations are stored in the sensor
- Easy lifetime monitoring**  
 The maximum temperature that the sensor has been exposed to is monitored automatically

## Sensors for Portable Meters

Name	Feature/Description	Cable Length	Connector	Material No.
<b>InLab® Sensors for pH Portables</b>				
InLab Expert Go-ISM	Combined pH electrode with a PEEK shaft; clog-free open junction; maintenance-free; with a temperature probe (NTC 30 kΩ), fixed cable and ISM	1.8 m	BNC/RCA	51344102
InLab Expert Go-ISM-5 m		5 m	BNC/RCA	51344103
InLab Expert Go-ISM-10 m		10 m	BNC/RCA	51344104
InLab Expert Go	As Expert Go-ISM but without ISM	1.8 m	BNC/RCA	51340288
InLab Routine Go-ISM	With temperature probe (NTC 30 kΩ) and ISM	1.8 m	BNC/RCA	30248832
InLab Solids Go-ISM	Puncture electrode with temp. probe (NTC 30 kΩ); maintenance-free	1.8 m	BNC/RCA	51343156
InLab Water Go	For weak surface water, polysulfone shaft with temperature probe (NTC 30 kΩ)		BNC/RCA	30253098
<b>Conductivity</b>				
InLab 738-ISM	Type: 4 graphite poles; epoxy shaft; with fixed cable and ISM Measuring range: 10 μs/cm–1,000 mS/cm Cell constant: 0.57 cm <sup>-1</sup>	1.8 m	LTW	51344110
InLab 738-ISM-5 m		5 m	LTW	51344112
InLab 738-ISM-10 m		10 m	LTW	51344114
InLab 738	As InLab 738-ISM but without ISM	1.8 m	LTW	51344120
InLab 742-ISM	Type: 2 steel poles; stainless-steel shaft; with fixed cable and ISM Measuring range: 0.001 μs/cm–500 μs/cm; cell const.: 105 cm <sup>-1</sup>	1.8 m	LTW	51344116
InLab 742-ISM-5 m		5 m	LTW	51344118
InLab 742		As InLab 742-ISM but without ISM	1.8 m	LTW
<b>Dissolved Oxygen*</b>				
InLab 605-ISM	Polarographic DO sensor with temperature probe (NTC 22 kΩ), fixed cable and ISM; shaft material: PPS	1.8 m	BNC/RCA	51344611
InLab 605-ISM-5 m		5 m	BNC/RCA	51344612
InLab 605-ISM-10 m		10 m	BNC/RCA	51344613
InLab 605	As InLab 605-ISM but without ISM	1.8 m	BNC/RCA	51340291
InLab OptiOx	Optical DO sensor with temperature probe, fixed cable and ISM; shaft material: PC/ABS	1.8 m	Mini LTW	51344621
InLab OptiOx 5 m		5 m	Mini LTW	51344622
InLab OptiOx 10 m		10 m	Mini LTW	51344623

\* The DO sensors can also be used with SevenExcellence™



### Combined ISE: perfectION™ Series

Ion	Name	Connector	Material No.	Reference Electrolyte	Membrane Module	ISA Solution																																																																																			
Calcium	Combined Ca <sup>2+</sup>	1.2 m; BNC	51344703	Ion Electrolyte A 51344750	51344850	51344761																																																																																			
		1.2 m; Lemo	51344803				Chloride	Combined Cl <sup>-</sup>	1.2 m; BNC	51344706	Ion Electrolyte B 51344751	N/A	51344760	1.2 m; Lemo	51344806	Copper	Combined Cu <sup>2+</sup>	1.2 m; BNC	51344712	Ion Electrolyte D 51344753	N/A	51344760	1.2 m; Lemo	51344812	Cyanide	Combined CN <sup>-</sup>	1.2 m; BNC	51344709	Ion Electrolyte B 51344751	N/A	10 mol/L NaOH	1.2 m; Lemo	51344809	Fluoride	Combined F <sup>-</sup>	1.2 m; BNC	51344715	Ion Electrolyte A 51344750	N/A	51344765	1.2 m; Lemo	51344815	Iodide	Combined I <sup>-</sup>	1.2 m; BNC	51344718	Ion Electrolyte D 51344753	N/A	51344760	1.2 m; Lemo	51344818	Lead	Combined Pb <sup>2+</sup>	1.2 m; BNC	51344730	Ion Electrolyte B 51344751	N/A	5 mol/L NaClO <sub>4</sub>	1.2 m; Lemo	51344830	Nitrate	Combined NO <sub>3</sub> <sup>-</sup>	1.2 m; BNC	51344727	Ion Electrolyte F 51344755	51344852	51344763	1.2 m; Lemo	51344827	Potassium	Combined K <sup>+</sup>	1.2 m; BNC	51344721	Ion Electrolyte E 51344754	51344851	51344762	1.2 m; Lemo	51344821	Silver/Sulphide	Combined Ag <sup>+</sup> /S <sup>2-</sup>	1.2 m; BNC	51344700	Ion Electrolyte B 51344751	N/A	Ag <sup>+</sup> : 51344760 S <sup>2-</sup> : see manual	1.2 m; Lemo	51344800	Sodium	Combined Na <sup>+</sup>
Chloride	Combined Cl <sup>-</sup>	1.2 m; BNC	51344706	Ion Electrolyte B 51344751	N/A	51344760																																																																																			
		1.2 m; Lemo	51344806				Copper	Combined Cu <sup>2+</sup>	1.2 m; BNC	51344712	Ion Electrolyte D 51344753	N/A	51344760	1.2 m; Lemo	51344812	Cyanide	Combined CN <sup>-</sup>	1.2 m; BNC	51344709	Ion Electrolyte B 51344751	N/A	10 mol/L NaOH	1.2 m; Lemo	51344809	Fluoride	Combined F <sup>-</sup>	1.2 m; BNC	51344715	Ion Electrolyte A 51344750	N/A	51344765	1.2 m; Lemo	51344815	Iodide	Combined I <sup>-</sup>	1.2 m; BNC	51344718	Ion Electrolyte D 51344753	N/A	51344760	1.2 m; Lemo	51344818	Lead	Combined Pb <sup>2+</sup>	1.2 m; BNC	51344730	Ion Electrolyte B 51344751	N/A	5 mol/L NaClO <sub>4</sub>	1.2 m; Lemo	51344830	Nitrate	Combined NO <sub>3</sub> <sup>-</sup>	1.2 m; BNC	51344727	Ion Electrolyte F 51344755	51344852	51344763	1.2 m; Lemo	51344827	Potassium	Combined K <sup>+</sup>	1.2 m; BNC	51344721	Ion Electrolyte E 51344754	51344851	51344762	1.2 m; Lemo	51344821	Silver/Sulphide	Combined Ag <sup>+</sup> /S <sup>2-</sup>	1.2 m; BNC	51344700	Ion Electrolyte B 51344751	N/A	Ag <sup>+</sup> : 51344760 S <sup>2-</sup> : see manual	1.2 m; Lemo	51344800	Sodium	Combined Na <sup>+</sup>	S7	51344724	3 mol/KCl 51350072	N/A	NH <sub>4</sub> Cl/NH <sub>4</sub> OH				
Copper	Combined Cu <sup>2+</sup>	1.2 m; BNC	51344712	Ion Electrolyte D 51344753	N/A	51344760																																																																																			
		1.2 m; Lemo	51344812				Cyanide	Combined CN <sup>-</sup>	1.2 m; BNC	51344709	Ion Electrolyte B 51344751	N/A	10 mol/L NaOH	1.2 m; Lemo	51344809	Fluoride	Combined F <sup>-</sup>	1.2 m; BNC	51344715	Ion Electrolyte A 51344750	N/A	51344765	1.2 m; Lemo	51344815	Iodide	Combined I <sup>-</sup>	1.2 m; BNC	51344718	Ion Electrolyte D 51344753	N/A	51344760	1.2 m; Lemo	51344818	Lead	Combined Pb <sup>2+</sup>	1.2 m; BNC	51344730	Ion Electrolyte B 51344751	N/A	5 mol/L NaClO <sub>4</sub>	1.2 m; Lemo	51344830	Nitrate	Combined NO <sub>3</sub> <sup>-</sup>	1.2 m; BNC	51344727	Ion Electrolyte F 51344755	51344852	51344763	1.2 m; Lemo	51344827	Potassium	Combined K <sup>+</sup>	1.2 m; BNC	51344721	Ion Electrolyte E 51344754	51344851	51344762	1.2 m; Lemo	51344821	Silver/Sulphide	Combined Ag <sup>+</sup> /S <sup>2-</sup>	1.2 m; BNC	51344700	Ion Electrolyte B 51344751	N/A	Ag <sup>+</sup> : 51344760 S <sup>2-</sup> : see manual	1.2 m; Lemo	51344800	Sodium	Combined Na <sup>+</sup>	S7	51344724	3 mol/KCl 51350072	N/A	NH <sub>4</sub> Cl/NH <sub>4</sub> OH													
Cyanide	Combined CN <sup>-</sup>	1.2 m; BNC	51344709	Ion Electrolyte B 51344751	N/A	10 mol/L NaOH																																																																																			
		1.2 m; Lemo	51344809				Fluoride	Combined F <sup>-</sup>	1.2 m; BNC	51344715	Ion Electrolyte A 51344750	N/A	51344765	1.2 m; Lemo	51344815	Iodide	Combined I <sup>-</sup>	1.2 m; BNC	51344718	Ion Electrolyte D 51344753	N/A	51344760	1.2 m; Lemo	51344818	Lead	Combined Pb <sup>2+</sup>	1.2 m; BNC	51344730	Ion Electrolyte B 51344751	N/A	5 mol/L NaClO <sub>4</sub>	1.2 m; Lemo	51344830	Nitrate	Combined NO <sub>3</sub> <sup>-</sup>	1.2 m; BNC	51344727	Ion Electrolyte F 51344755	51344852	51344763	1.2 m; Lemo	51344827	Potassium	Combined K <sup>+</sup>	1.2 m; BNC	51344721	Ion Electrolyte E 51344754	51344851	51344762	1.2 m; Lemo	51344821	Silver/Sulphide	Combined Ag <sup>+</sup> /S <sup>2-</sup>	1.2 m; BNC	51344700	Ion Electrolyte B 51344751	N/A	Ag <sup>+</sup> : 51344760 S <sup>2-</sup> : see manual	1.2 m; Lemo	51344800	Sodium	Combined Na <sup>+</sup>	S7	51344724	3 mol/KCl 51350072	N/A	NH <sub>4</sub> Cl/NH <sub>4</sub> OH																						
Fluoride	Combined F <sup>-</sup>	1.2 m; BNC	51344715	Ion Electrolyte A 51344750	N/A	51344765																																																																																			
		1.2 m; Lemo	51344815				Iodide	Combined I <sup>-</sup>	1.2 m; BNC	51344718	Ion Electrolyte D 51344753	N/A	51344760	1.2 m; Lemo	51344818	Lead	Combined Pb <sup>2+</sup>	1.2 m; BNC	51344730	Ion Electrolyte B 51344751	N/A	5 mol/L NaClO <sub>4</sub>	1.2 m; Lemo	51344830	Nitrate	Combined NO <sub>3</sub> <sup>-</sup>	1.2 m; BNC	51344727	Ion Electrolyte F 51344755	51344852	51344763	1.2 m; Lemo	51344827	Potassium	Combined K <sup>+</sup>	1.2 m; BNC	51344721	Ion Electrolyte E 51344754	51344851	51344762	1.2 m; Lemo	51344821	Silver/Sulphide	Combined Ag <sup>+</sup> /S <sup>2-</sup>	1.2 m; BNC	51344700	Ion Electrolyte B 51344751	N/A	Ag <sup>+</sup> : 51344760 S <sup>2-</sup> : see manual	1.2 m; Lemo	51344800	Sodium	Combined Na <sup>+</sup>	S7	51344724	3 mol/KCl 51350072	N/A	NH <sub>4</sub> Cl/NH <sub>4</sub> OH																															
Iodide	Combined I <sup>-</sup>	1.2 m; BNC	51344718	Ion Electrolyte D 51344753	N/A	51344760																																																																																			
		1.2 m; Lemo	51344818				Lead	Combined Pb <sup>2+</sup>	1.2 m; BNC	51344730	Ion Electrolyte B 51344751	N/A	5 mol/L NaClO <sub>4</sub>	1.2 m; Lemo	51344830	Nitrate	Combined NO <sub>3</sub> <sup>-</sup>	1.2 m; BNC	51344727	Ion Electrolyte F 51344755	51344852	51344763	1.2 m; Lemo	51344827	Potassium	Combined K <sup>+</sup>	1.2 m; BNC	51344721	Ion Electrolyte E 51344754	51344851	51344762	1.2 m; Lemo	51344821	Silver/Sulphide	Combined Ag <sup>+</sup> /S <sup>2-</sup>	1.2 m; BNC	51344700	Ion Electrolyte B 51344751	N/A	Ag <sup>+</sup> : 51344760 S <sup>2-</sup> : see manual	1.2 m; Lemo	51344800	Sodium	Combined Na <sup>+</sup>	S7	51344724	3 mol/KCl 51350072	N/A	NH <sub>4</sub> Cl/NH <sub>4</sub> OH																																								
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		1.2 m; Lemo	51344830				Nitrate	Combined NO <sub>3</sub> <sup>-</sup>	1.2 m; BNC	51344727	Ion Electrolyte F 51344755	51344852	51344763	1.2 m; Lemo	51344827	Potassium	Combined K <sup>+</sup>	1.2 m; BNC	51344721	Ion Electrolyte E 51344754	51344851	51344762	1.2 m; Lemo	51344821	Silver/Sulphide	Combined Ag <sup>+</sup> /S <sup>2-</sup>	1.2 m; BNC	51344700	Ion Electrolyte B 51344751	N/A	Ag <sup>+</sup> : 51344760 S <sup>2-</sup> : see manual	1.2 m; Lemo	51344800	Sodium	Combined Na <sup>+</sup>	S7	51344724	3 mol/KCl 51350072	N/A	NH <sub>4</sub> Cl/NH <sub>4</sub> OH																																																	
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Silver/Sulphide	Combined Ag <sup>+</sup> /S <sup>2-</sup>	1.2 m; BNC	51344700	Ion Electrolyte B 51344751	N/A	Ag <sup>+</sup> : 51344760 S <sup>2-</sup> : see manual																																																																																			
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DX sensors

## ISE Half-Cells: DX Series

Ion	Name	Material No.	Membrane Kit	Filling Solution	ISA Solution
Ammonium	DX218-NH <sub>4</sub> <sup>+</sup>	51340900	51340012	51340035	0.5 mol/L MgSO <sub>4</sub>
Barium	DX337-Ba <sup>+</sup>	51107674	51107688	51107892	1 mol/L Tris <sub>2</sub> HCl
Bromide	DX280-Br <sup>-</sup>	51340300	51340006	51340029	1 mol/L KNO <sub>3</sub>
Cadmium	DX312-Cd <sup>2+</sup>	51107672	51107686	51107891	1 mol/L KNO <sub>3</sub>
Calcium	DX240-Ca <sup>2+</sup>	51340600	51340009	51340032	4 mol/L KCl
Chloride	DX235-Cl <sup>-</sup>	51340400	51340007	51340030	1 mol/L KNO <sub>3</sub>
Copper	DX264-Cu <sup>2+</sup>	51107678	51107692	51107889	1 mol/L KNO <sub>3</sub>
Cyanide	DX226-CN <sup>-</sup>	51107681	51107695	51107893	10 mol/L NaOH
Fluoride	DX219-F <sup>-</sup>	51340500	51340008	51340031	TISAB III
Iodide	DX327-I <sup>-</sup>	51107680	51107694	51107898	1 mol/L KNO <sub>3</sub>
Lead	DX407-Pb <sup>2+</sup>	51107873	51107874	51107875	1 mol/L KNO <sub>3</sub>
Lithium	DX207-Li <sup>+</sup>	51107673	51107687	51107881	0.5 mol/L MgSO <sub>4</sub>
Nitrate	DX262-NO <sub>3</sub> <sup>-</sup>	51340800	51340011	51340034	0.5 mol/L MgSO <sub>4</sub>
Potassium	DX239-K <sup>+</sup>	51340700	51340010	51340033	0.5 mol/L MgSO <sub>4</sub>
Sodium	DX223-Na <sup>+</sup>	51340263	N/A	N/A	NH <sub>4</sub> Cl/NH <sub>4</sub> OH
Sulphide (Silver)	DX232-S <sup>2-</sup>	51107675	51107689	51107894	10 mol/L NaOH
Thiocyanate	DX258-SCN <sup>-</sup>	51107870	51107871	51107872	1 mol/L KNO <sub>3</sub>
NH <sub>3</sub> GSE	Ammonia	51341000	51340013	51340036	N/A

Cables are sold separately and are not included

Cable for pH/Ion meter: 30281915

Cable for titrator: 089601



LE438 sensor



LE409 sensor



LE407 sensor

## LightEdition Sensors

LightEdition (LE) sensors are tailor-made for high price-to-performance ratio. The offering includes sensors for all common applications. These sensors are the perfect match for Five- and Education-line meters.



LE420 sensor



LE427 sensor

Name	Features/Description	Connector	Material No.
LE438	Gel-filled plastic electrode with integrated temperature sensor for laboratory use, samples with fluctuating temperatures; low-maintenance	BNC/cinch	51340242
LE438 IP67		BNC/cinch IP67	30247153
LE407	Gel-filled plastic pH electrode with gel electrolyte, suitable for simple applications and easy samples such as water; low-maintenance	BNC	51340330
LE409	Glass pH electrode with liquid electrolyte for simple and rapid measurements in the laboratory, aqueous samples such as acids and bases; refillable electrolyte	BNC	51340331
LE410	As LE409 but with integrated temperature probe	BNC/cinch	51340348
LE420	Glass electrode with movable PTFE-sleeve junction for demanding, "dirty" samples such as waste water, emulsions (e.g. milk), oily samples	BNC	51340332
LE422	Micro pH electrode with gel electrolyte, shaft diameter: 4.3 mm	BNC	30089747
LE427	The spear tip design makes it ideal for solid samples such as meat, fruit, cheese, soil and many more; low-maintenance	BNC	51340333
LE427 IP67		BNC IP67	30259840
LE501	Glass ORP electrode for lab use	BNC	51340338
LE510	Robust plastic ORP electrode for field use (e.g. swimming pools)	BNC	51340339
LE703	Robust conductivity probe for medium-to-high conductivities (10 μs/cm–200 ms/cm)	Mini-DIN	51340335
LE740	Robust conductivity probe from low-to-medium conductivities (0.01 μs/cm–500 μs/cm)	Mini-DIN	51340336
LE621	Galvanic dissolved oxygen sensor, with integrated temp. sensor, with 1 m cable	BNC/cinch	51340403
LE 621 IP67	Galvanic dissolved oxygen sensor, with integrated temp. sensor, with 2 m cable	BNC/cinch IP67	30266975
NTC 30 kOhm	Separate temperature sensor	Cinch	51300164

# Calibration and Care

## Solutions Make the Difference

**The determination of pH, conductivity, ion concentration, redox potential and dissolved oxygen are common analyses in most laboratories. Measurement accuracy highly depends on the quality and operation of the solutions used for sensor calibration and maintenance.**

Find helpful maintenance tips in the pH trouble shooter.

► [www.mt.com/electrode-guide](http://www.mt.com/electrode-guide)

Find your test certificate and safety data sheet (SDS).

► [www.mt.com/buffer](http://www.mt.com/buffer)

### pH Measurement Precision



pH measurements are only as accurate as the buffer solutions used for calibration purposes. We offer a selection of quality pH buffers to match your specific requirements. Our sachets guarantee fresh solution for every calibration as well as maximum ease-of-use.

### Conductivity Standards



Depending on the type of sensor, conductivity standards are used for calibration or verification. Low-conductivity standards have a limited lifespan and require special handling. They are intended for verification purposes. Our sachets guarantee fresh solution for every calibration as well as maximum ease-of-use.

### Solutions for Ion-Selective Electrodes



Measuring with ion-selective electrodes (ISE) is the easiest and most affordable way to determine ion concentration. However, ISEs require careful handling and the use of the correct solutions. We offer all solutions that are needed for successful ion measurements.

**pH Buffer Solutions**

Technical pH Buffer	Packaging	Material No.
2.00	250 mL	51350002
2.00	6 × 250 mL	51350016
2.00	30 × 20 mL (sachets)	30111134
4.01	250 mL	51350004
4.01	6 × 250 mL	51350018
4.01	30 × 20 mL (sachets)	51302069
7.00	250 mL	51350006
7.00	6 × 250 mL	51350020
7.00	30 × 20 mL (sachets)	51350047
9.21	250 mL	51350008
9.21	6 × 250 mL	51350022
9.21	30 × 20 mL (sachets)	51350070
10.00	250 mL	51350010
10.00	6 × 250 mL	51302024
10.01	30 × 20 mL (sachets)	51350079
11.00	250 mL	51350012
11.00	6 × 250 mL	30111126
11.00	30 × 20 mL (sachets)	30111135

**Rainbow Boxes**

4.01/7.00/9.21	6 × 250 mL	30095312
4.01/7.00/10.00	6 × 250 mL	30095313
4.01/7.00/9.21	30 × 20 mL (sachets)	51302068
4.01/7.00/10.01	30 × 20 mL (sachets)	51302080

**NIST/DIN pH Buffer Solutions pH ±0.015**

4.006	250 mL	51350052
4.006	30 × 20 mL (sachets)	30111136
6.865	250 mL	51350054
6.865	30 × 20 mL (sachets)	30111137
9.180	250 mL	51350056
9.180	30 × 20 mL (sachets)	30111138
10.012	250 mL	51350058
10.012	30 × 20 mL (sachets)	30111139

**DKD-Certified pH Buffer Solutions**

4.01	250 mL	51350032
4.01	6 × 250 mL	51350042
7.00	250 mL	51350034
7.00	6 × 250 mL	51350044
9.21	250 mL	51350036
9.21	6 × 250 mL	51350046
10.00	250 mL	51350038
10.00	6 × 250 mL	51350048

**Redox Buffer Solutions**

220 mV, pH 7 (UH = 427 mV)	250 mL	51350060
220 mV, pH 7 (UH = 427 mV)	6 × 250 mL	51350062
468 mV, pH 0.1 (UH = 675 mV)	6 × 30 mL	51350064

**Maintenance Solutions**

Electrolytes for Reference Electrodes	Packaging	Material No.
KCl 3 mol/L	25 mL	51343180
KCl 3 mol/L	250 mL	51350072
KCl 3 mol/L	6 × 250 mL	51350080
KCl 3 mol/L, AgCl saturated	25 mL	51343184
KCl 3 mol/L, AgCl saturated	250 mL	51350074
KCl 3 mol/L, AgCl saturated	6 × 250 mL	51350082
KNO <sub>3</sub> 1M Electrolyte	25 mL	51343182
KNO <sub>3</sub> 1M Electrolyte	250 mL	51350078
KNO <sub>3</sub> 1M Electrolyte	6 × 250 mL	51350086
KCl 1M Electrolyte	25 mL	51343181
Friscolyt-B®	25 mL	51343185
Friscolyt-B	250 mL	51350076
Friscolyt-B	6 × 250 mL	51350084
LiCl 1 mol/L in EtOH	6 × 30 mL	51350088
InLab® Storage Solution	250 mL	30111142

**Cleaning Solutions**

Pepsin-HCl (protein contamination)	250 mL	51350100
Pepsin-HCl (protein contamination)	6 × 250 mL	30045061
Thiourea cleaner (silver sulphide contamination)	250 mL	51350102
Thiourea cleaner (silver sulphide contamination)	6 × 250 mL	30045062
Regeneration solution	25 mL	51350104

**Solutions for Ion-Selective Electrodes**

[ppm]	Packaging	Material No.
Ammonium 1000	500 mL	30090859
Ammonium 100	500 mL	30090860
Calcium 1000	500 mL	51344771
Calcium 100	500 mL	30090855
Calcium 10	500 mL	30090856
Chloride 1000	500 mL	51344772
Chloride 100	500 mL	30090853
Chloride 10	500 mL	30090854
Copper 1000	500 mL	51344774
Cyanide 1000	500 mL	51344773
Fluoride 1000	500 mL	51344775
Fluoride 100	500 mL	30090851
Fluoride 10	500 mL	30090852
Iodide 1000	500 mL	51344776
Lead 1000	500 mL	51344780
Nitrate 1000	500 mL	51344779
Potassium 1000	500 mL	51344777
Silver 1000	500 mL	51344770
Sodium 1000	500 mL	51344778
Sodium 100	500 mL	30090857
Sodium 10	500 mL	30090858
Sulphide 1000	500 mL	51344781

**Conductivity Standards**

	Packaging	Material No.
Check Solution	250 mL	30090847
1.3 µs		
5 µs	250 mL	30094617
10 µs	250 mL	51300169
10 µs	10 × 20 mL (sachets)	30111141
84 µs	250 mL	51302153
84 µs	10 × 20 mL (sachets)	30111140
500 µs	250 mL	51300170
1.413 µs	250 mL	51350092
1.413 µs	6 × 250 mL	51350096
1.413 µs	30 × 20 mL (sachets)	51302049
12.88 ms	250 mL	51350094
12.88 ms	6 × 250 mL	51350098
12.88 ms	30 × 20 mL (sachets)	51302050

**Zero-Oxygen Tablets**

DO Standard	Packaging	Material No.
Zero-oxygen tablets	20 pcs	51300140

# pH Service and Support

## Tailored to Your Needs

**With comprehensive service offerings from METTLER TOLEDO, you can maximize the performance and uptime of your pH-measuring systems. Accurate and precise results are guaranteed at any time.**

Be free of compliance concerns during quality audits with our professional installation and qualification services. You also have access to comprehensive trainings and a large selection of know-how materials. Professional support ensures fast, trouble-free operation from day one.

### Installation and Qualification



Proof of professional installation and commissioning is required by several regulations and quality standards. We serve with simple and fully compliant initial qualification services.

StarterPac: Installation

IPac: Standard Qualification

EQPac: Comprehensive Qualification

### Calibration and Certification



Calibration is essential for getting accurate and reliable measurement results. Traceable calibration tools ensure that your instruments function according to their operational specifications. A calibration certificate provides the required proof for quality audits.

### Preventive Maintenance



Professional periodic maintenance prevents breakdown and supports instrument performance. Inspection, cleaning, testing and adjustment is included and the equipment condition is documented.

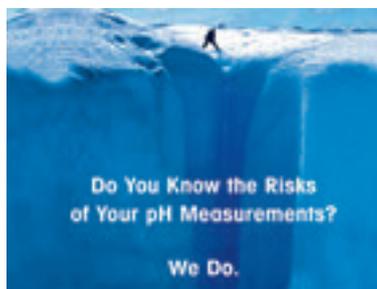


## Good Electrochemistry Practice™

### Know Your pH Measurement Risks

pH is a common analysis, but many things can go wrong. The same goes for conductivity, ion concentration, dissolved oxygen and redox determination.

GEP™ is about guiding you through the product lifecycle to detect and address possible risks. With the right tools, you can be assured of consistently reliable results.



### GEP Risk Check

The first step to improve your electrochemical processes is to learn about possible risks. Take five minutes and check your processes step-by-step. GEP Risk Check will point out where you could do better and suggest possible ways to get there.



### Sensor Product Guide

Find the right sensor for your application using our Sensor Product Guide. This interactive guide makes sensor selection easier. Additionally, you will find best-practice sensor-handling movies, a trouble-shooter and more.



### Web Know-How Portal

Take advantage of our self-study eLearnings, on-demand webinars, and other GEP training materials to keep you and your business up to date and well informed.



# Automated Reactors and In Situ Analysis

Chemical Synthesis, Process Development  
and Particle Characterization

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Scan this code for more information.

# Supporting Innovation From Molecule to Manufacturing

**METTLER TOLEDO instruments are considered the industry standard. They provide information so that researchers can make better decisions to develop processes with higher quality in less time and at lower costs.**

## Early-Phase Development

Synthesis workstations, real-time analytical technology, and in situ sampling allow chemists to quickly develop new synthetic routes, then safely deliver grams to kilograms of materials. These tools provide initial understanding of process scale-up issues, enabling scientists to eliminate non-viable candidates early in development. A common software platform for all instruments makes it simple to visualize, interpret and report results.

## Process Development

The combination of reaction calorimeters, Fourier-Transform Infrared (FTIR)-based in situ reaction analysis systems, and inline particle size and shape analysis tools supports process understanding from a chemistry, thermodynamics, and particle-characterization perspective. Integrated software provides a deeper understanding with less effort. Whether a batch or continuous process, enhanced quality and quantity of knowledge enables engineers to quickly scale-up, eliminate failures and avoid safety incidents.

## Scale-Up and Manufacturing

Process Analytical Technology (PAT) tools ensure processes are within boundary conditions, eliminating the risk of batch failures while delivering higher yields at lower cost. PAT systems allow users to realize the benefits of Quality by Design (QbD) through the transfer of more robust, lower-cost commercial processes to manufacturing.

## Real-Time Analysis

Safe and automated sampling of chemical reactions 24/7. Representative samples are guaranteed by quenching and diluting the sample in real time at the point of capture.



Automated Sampling

### Increased Productivity

Automated synthesis workstations increase productivity by controlling and recording all chemical reaction parameters 24 hours a day.



**Synthesis Reactors**

### Eliminate Grab Sampling

FTIR-based systems provide real-time composition analysis to monitor key reaction species in situ, eliminating the need for grab sampling.



**Reaction Analysis**

### Optimized Development

Probe-based instruments optimize crystallization and particulate process development by understanding and controlling particle size and shape in-process.



**Particle Characterization**

### Instrument Support

We support and service your measurement equipment through its entire life-cycle, from installation to preventive maintenance, and from calibration to equipment repair.



**Service**

# Unattended Sampling

## For a Wide Range of Reactions

Sampling chemical reactions for offline analysis to determine reaction progress or impurity profiles is standard practice. However, the manual process is challenging when sampling air-sensitive reactions, reactions at elevated pressure, or from heterogeneous mixtures. Poor sampling reproducibility and delays in quenching can lead to variable results and analytical inaccuracies. EasySampler™ was designed to eliminate these challenges by providing an automated and robust inline method of taking representative samples from reactions.

### Difficult Reactions to Sample



It is labor intensive or impossible to sample reactions that are air- or moisture-sensitive, at elevated pressure or sub-ambient temperature, or highly toxic. EasySampler's unique probe enables sample capture and immediate quench so samples are representative of the reaction at the time of sampling.

### Representative and Reproducible



Sampling reactions with precision is challenging, especially for heterogeneous or multiphase reactions. EasySampler samples from the same position in the reactor into a fixed-volume pocket. Solids begin dissolving immediately in the quench step for accurate and reproducible analytical data.

### Automated and Unattended



Sampling long reactions or a series of DOE experiments can be impractical. The lack of samples leads to blind spots in data, thus requiring repeat experiments. EasySampler can be programmed with a sequence for continued sampling operations 24 hours a day.



### HPLC-Ready Samples



After quenching, the liquid handling system dilutes the sample to a user specified concentration and transfers it to a vial, ready for offline analysis. Quench and dilution steps can function as sample derivatization steps, thus decreasing sample preparation time and eliminating human error.



EasySampler™ 1210

### Case Study: Pfizer Evaluates Automated Sampling For Improved Impurity Profiling

Learn how scientists at Pfizer applied unattended sampling to gather low-level impurity and kinetics profiling data from thick reaction slurries, tri-phasic mixtures and oxygen-sensitive reactions. Four reaction case studies highlight how automated reaction-sampling impacts chemical and process development.

► [www.mt.com/Pfizer-Sampling](http://www.mt.com/Pfizer-Sampling)

### Order Information

Description	Material No.
EasySampler 1210 System Complete	30083901
EasySampler Probe 450 Set (for reactors up to 6 L)	30306037
EasySampler Probe 330 Set (for reactors up to 1 L)	30306933
EasySampler Probe 210 Set (for reactors from 10 mL to 400 mL)	30246344
Sleeve Complete, PTFE, Alloy C-22 (1 piece per pack)	30100528
10 mL Vial, including Screw Cap (100 pieces per pack)	30244745
10 mL vial including Screw Cap (1,000 pieces per pack)	30111624

# Synthesis Automation Leads to Better Science

**Synthesis reactors reduce chemical and process development times by replacing traditional round-bottom flasks and jacketed lab reactors. They help researchers complete more experiments and deliver more information per experiment, increasing overall productivity. HFCal (Heat Flow Calorimetry) is an add-on for synthesis workstations that provides reaction-calorimetry capabilities.**

## EasyMax

Small-Scale Synthesis



EasyMax makes chemical synthesis easier by eliminating the dependence on ice baths, oil baths, and chillers. Quickly explore reaction conditions, even under low temperatures, while recording data that would otherwise be missed.

## OptiMax™

Large Volume Synthesis



OptiMax ensures robust and scalable processes by applying synthesis reactors on the liter scale. Unattended control increases productivity while ensuring that all data is collected and experiments are safe. A HFCal option ensures scale-up issues are identified earlier.

## RC1<sub>e</sub>®

Reaction Calorimetry



The combination of RC1<sub>e</sub> and RTCal (Real Time Calorimetry) provides reaction information under process-like conditions using real-time heat-flow or heat-flux calorimetry. Optimize process-safety investigations to avoid incidents in the lab or plant.



## RX-10™

Control Jacketed  
Lab Reactors



Connect and control your jacketed laboratory reactor with programmable temperature, liquid dosing and sampling for data-rich experiments, day or night. Automation and data capture allows researchers to scale-up more successful experiments.



### White Paper: Techniques to Synthesize Breakthrough Molecules

This white paper discusses how scientists open new possibilities for control, optimization and reporting of critical process conditions. Four case studies highlight how leading pharmaceutical companies impact synthesis-lab performance.

► [www.mt.com/synthesize-molecules](http://www.mt.com/synthesize-molecules)

Model	Environment	Application Area
EasyMax	Lab	Synthetic chemistry, process development
EasyMax HFCal	Lab	Process optimization, scale-up, process safety screening
OptiMax™	Lab	Synthetic chemistry, process development
OptiMax HFCal	Lab	Process optimization, scale-up, process safety
RC1 <sup>®</sup>	Lab/pilot lab/small scale production	Process development, process optimization, scale-up, process safety
RX-10	Lab	Process development, scale-up, process chemistry
RTCAl	Lab	Polymerizations, process optimization, process chemistry

# Real-Time Reaction Monitoring Improves Chemistry Understanding

**Suitable for a wide range of chemistries, ReactIR™ in situ FTIR spectroscopy provides real-time monitoring of key reaction species and how they change during the reaction course. Designed to follow reaction progression, ReactIR provides specific information about reaction initiation, conversion, intermediates and endpoint to answer fundamental questions about the chemical reaction, including “When does it start and stop?” and “What are the mechanisms and kinetics?”**

## ReactIR 15/45m

Reaction Analysis



A real-time, in situ mid-infrared-based system designed to study reaction progression – providing specific information about reaction initiation, conversion, intermediates, and endpoint. The comprehensive nature of the data makes it ideal for kinetic analysis and facilitates the elucidation of reaction mechanism and pathway.

## ReactIR 45P

In-Process Reaction Analysis



By providing in-depth reaction understanding, in situ mid-infrared enables chemical processes to be successfully moved from the lab to the pilot plant and production. By tracking critical parameters in realtime, process design and quality are improved while variation and batch failures are eliminated.



**White Paper: Process FTIR For Safe Operation of Sodium Borohydride Reduction**

John O'Reilly of Roche Ireland discusses sustainable Process Analytical Technology (PAT) system using Process FTIR for the safe operation of a sodium borohydride reduction. Roche Ireland uses an innovative approach to PAT integration that bridges the gap between PAT and quality control while further integrating PAT as a routine manufacturing system.

► [www.mt.com/PAT-Roche](http://www.mt.com/PAT-Roche)

**Configuration**

Model	Environment	Application Area
ReactiR™ 15	Lab	Synthetic chemistry
ReactiR 45m	Lab	Synthetic chemistry, chemical development, kinetics, quantitative analysis
ReactiR 45P	Lab/production	Scale-up, campaigns, process transfer

# Particle Size and Shape Analysis For the Lab, Pilot Plant & Production

**ParticleTrack™ and ParticleView™ provide precise inline measurement of particle size, shape, and count without sampling. Probe-based instruments measure particles and droplets in gas or liquid suspension at process concentration providing real-time information to speed development, maximize process performance and optimize quality.**

## **ParticleTrack G400** Measure Particle Changes



Track the rate and degree of change to particles and particle structures as they naturally exist in-process. The portable G400 is ideal for applications in less than one liter vessels or small pipelines. Experimental parameters are quickly screened to assess the impact of process conditions on the particle system.

## **ParticleTrack G600** Characterize Particles from Lab to Plant



Tracking particles in real-time allows conditions to be adjusted to reduce cycle time and ensure batch-to-batch consistency. G600 is ideal for one to 50,000 liter vessels providing information to design and scale-up processes with the desired particle size distribution, yield and purity.

## **ParticleView V19** Particle Vision and Measurement



This real-time, probe-based microscope provides instant critical insight into crystal, particle and droplet systems. It enables chemists and engineers to detect and understand process changes that could take months to discover with traditional offline microscopy techniques.



### White Paper: Effective Crystallization Process Development

This white paper introduces the fundamentals of crystallization development. By implementing particle measurements inline, real-time process optimization is possible in laboratory or process environments without offline sampling. Applications include improving solid/liquid separations and consistently meeting particle-size specifications.

[www.mt.com/wp-Crystallization-PD](http://www.mt.com/wp-Crystallization-PD)

### Configuration

Model	Technology	Vessel Size	Key Characteristic
<b>Laboratory Solutions</b>			
G400	FBRM®	30–500 mL	Portable, interchangeable probes
G600L	FBRM	500 mL–5 L	Results scalable to plant
V19	PVM	250 mL–5 L	In-process video microscopy
<b>Production Solutions</b>			
G600R	FBRM	1 L +	Dip-pipe mountable
G600S/T	FBRM	1 L +	Pipeline installations
G600P	FBRM	20 L +	1 m probe length
G600X	FBRM	1 L +	Customizable

# Extend Instrument Performance With Custom Maintenance Programs

**Researchers and engineers across industry and academia rely on METTLER TOLEDO instruments to provide critical information during investigations. To be successful, scientists need to be confident that the equipment works correctly when it is needed, and that results can be trusted.**

We provide a range of service options to prevent instrument downtime, guarantee result quality and ensure regulatory compliance. Our customized coverage minimizes unexpected costs, improves data collection reliability, and reduces the total cost of ownership.

## Uptime



Instruments are often subjected to high utilization in critical processes. System reliability is maximized through our field service team, help desk, return to factory refurbishment and repair services, as well as our optional value-added products.

## Performance

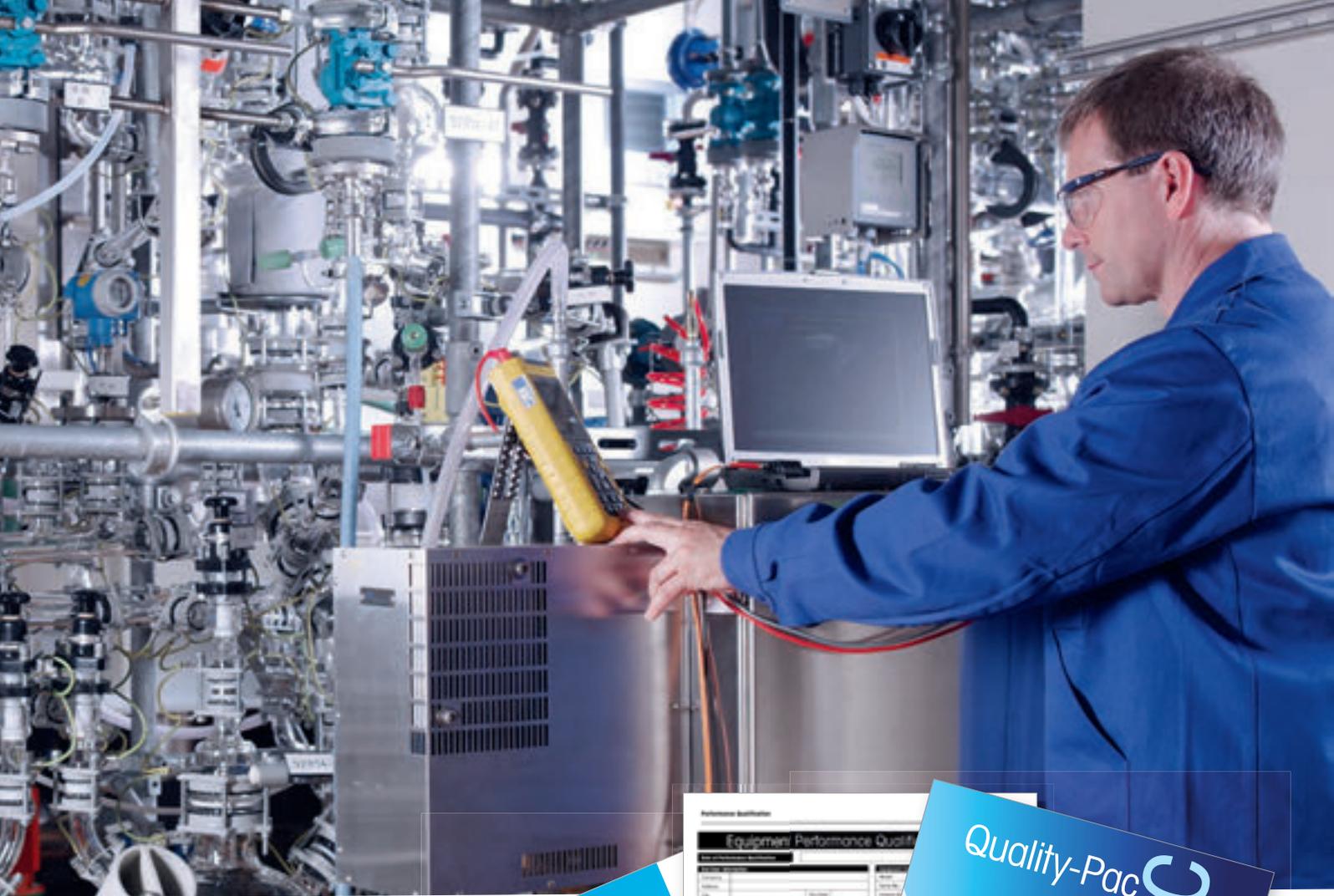


Optimize hardware and software performance with comprehensive installation, preventive maintenance and full-service contract programs. Our trained technicians ensure the system is performing within factory specifications.

## Compliance



Meet internal and external compliance standards with optional value-added services. IPac and EQPac qualification services ensure internal compliance standards are met and provide objective evidence for regulated environments.



### Expertise



Maximize equipment and process performance with professional training for your personnel. Service specialists identify, plan and coordinate complex product solutions for on-time and on-budget completion.



### Installation and Performance-Verification Packages

Professional documentation ensures compliance and process consistency.

# Melting Point and Dropping Point Instruments

Simple, Efficient and Trustworthy





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Scan this code for more information.

# Melting and Dropping Point Excellence

## Ready at the Touch of a Button

**How do you test the purity of your products or quality of your materials? Multiple methods such as melting, boiling, cloud, slip melting, dropping and softening points – as well as dropping and softening points can be used to characterize a substance and analyze its properties.**

Our Excellence Melting and Dropping Point Systems offer the possibility of measuring these thermal values accurately and automatically with just One Click™.



Melting Point Excellence MP90

## Trust Your Results

Investigate color changes and decomposition temperatures with video observation. Statistical evaluation with standard deviation and mean value allow you to have full confidence in your data.



Melting, Boiling, Cloud,  
Slip Melting Point

## Measurements Made Easy

With simple operating routines and an intuitive color touchscreen, you can perform dropping and softening point measurements with a press of a button.



Dropping and Softening Point

## Simplify Sample Preparation

Ensure high performance and proper sample preparation with our dedicated accessories and software.



Accessories

## Secure Your Investment

Our worldwide service network is always on hand to help you keep your instruments performing at their peak.



Service

# Determine Melting Point With Just One Click

**Melting, boiling cloud and slip melting point determination have never been so easy! With simple operating routines and an intuitive color touchscreen, you can perform measurements quickly. Press one button, and the instrument does the rest for you. Attend to other important tasks while the measurement is being performed.**

## Measure Up to Six Samples at Once



In today's fast-paced lab and production environments, high-throughput processing is essential. With the Melting Point Excellence System, you can run up to six samples simultaneously, saving you valuable time and effort.

## Comply with Standards

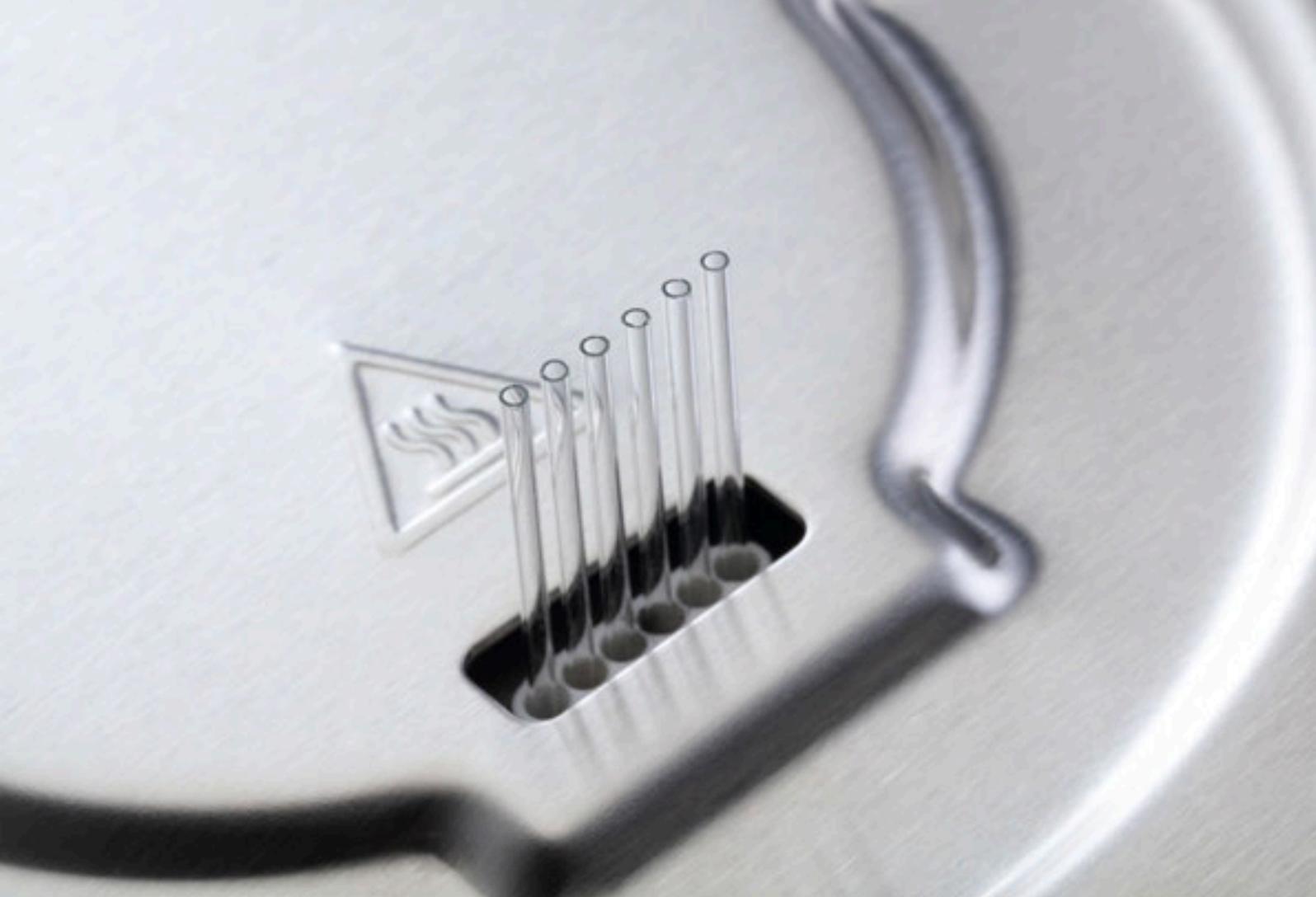


Working in accordance with regulations and standards is a must. With Excellence Melting Point Systems, ensure full compliance with relevant international and national standards and norms, such as Ph.Eur. 2.2.60, USP<741>, Ch.P. 0612, and Japanese JIS.

## Minimize Training and Operator Influence



Measurement results can be influenced by the user. Save time and money while reducing operator training and influence with the fully automatic determination of melting, boiling, slip melting and cloud points.



Performing a melting point experiment with the Melting Point Excellence MP90

<b>Applications</b>	<b>MP55</b>	<b>MP70</b>	<b>MP80</b>	<b>MP90</b>
Melting Point & Range	•	•	•	•
Boiling Point	–	–	•	–
Cloud Point (Heating)	–	–	•	–
Slip Melting Point	•	–	•	–

**Specifications**

Number of Capillaries	3 melting point 2 slip melting point	4 melting point	3 melting point 2 boiling/cloud/ slip melting point	6 melting point
Temperature Range	RT to 300 °C	RT to 350 °C	RT to 350 °C	RT to 400 °C
Video Storage and Replay	Instrument only	Instrument; export to SD card or to a PC	Instrument; export to SD card or to a PC	Instrument; export to SD card or to a PC
Result Storage	10	50	50	100
Material No.	30321330	51142502	30321331	51142503

RT = Room temperature



Download our detailed product brochure.

# Comply with Standards

## Reliable Dropping Point Determination

Determine the dropping and softening points of pitch, asphalt, polymers, resins, waxes and many more materials automatically with the innovative METTLER TOLEDO Dropping Point System. Standard, compliant cups and measurement methods ensure comparable results, and all instruments conform to ASTM international standards and other norms.

### Start with One Click™



One Click determination is as simple as it sounds: all you need to do is press a button to start your measurement. Clicking the "Home" button on any menu takes you directly back to the initial screen.

### Trust Your Results



Observe your measurements in real time via video or replay the video to verify your results. Digital image analysis and automatic detection of dropping and softening points guarantee that results are reliable.

### Manage Your Data



Perform different measurements quickly and efficiently by working with up to 60 methods. Results are displayed immediately after the experiment, and up to 100 results are stored automatically for access at any time directly on the instrument.



	<b>DP70</b>	<b>DP90</b>
<b>Instrument Type</b>	Standalone instrument	Control unit with external measuring cell
<b>Temperature Range</b>	RT to 400 °C	-20 °C to 400 °C
<b>Heating Rate</b>	0.1 to 20 °C per minute	0.1 to 20 °C per minute
<b>Cups Number</b>	Up to 2	Up to 2
<b>Cups Dimensions (orifice)</b>	2.8/6.35 mm	2.8/6.35 mm
<b>Languages</b>	English, German, Chinese, Japanese, Spanish, French, Russian, Portuguese	
<b>Video</b>	Color AVI Magnification 2.5 ×	Color AVI Magnification 2.5 ×
<b>Video Export</b>	On SD card or to PC	On SD card or to PC
<b>Length Diagram for Softening</b>	Yes	Yes
<b>User Management</b>	Yes	Yes
<b>Shortcuts (One Click™)</b>	12 per user	12 per user
<b>Material No.</b>	51143000	51143002

RT = Room Temperature

# Added Value With the Right Accessories

**Benefit from all that METTLER TOLEDO's Excellence Melting and Dropping Point Systems have to offer you. Ensure high performance and proper sample preparation.**

## Accessory Boxes



Robust and smart sample preparation tools speed up preparation, increase operational security and avoid unnecessary measurement repetition. Available with standard or USP-compliant reference substances.

## PC Software



LabX®, our laboratory management software for analytical instruments and balances, powers your Melting Point Excellence System with automatic data handling, high process security, and full SOP user guidance.

Accessories	Description	Material No.
Melting Point Accessory Box	Contains everything for secure sample preparation and traceable temperature-accuracy check.	51142599
USP Melting Point Accessory Box	Contains everything for secure sample preparation and traceable temperature-accuracy check according to USP.	30312725
Dropping Point Accessory Box	Contains everything for secure sample preparation and traceable temperature-accuracy check.	51143740
MP VPac™	Verify the performance of your melting-point instrument with pre-filled and ready-to-use capillaries.	30097033

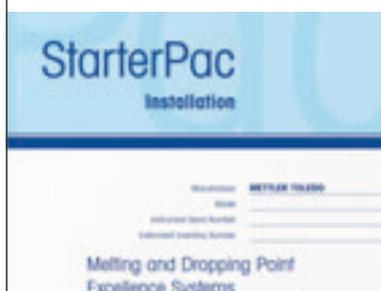
## LabX for Melting Point

LabX Thermal Values Starter Pack: Express Edition	Full version of LabX Thermal Values for installation on a single computer.	30005779
LabX Thermal Values Starter Pack: Server Edition	Full version of LabX Thermal Values for installation on multiple computers and availability in a distributed network.	30005810
LabX Thermal Values Instrument License	For each additional instrument to be connected to the LabX installation, an instrument license is needed.	30005811

# Secure Your Investment Throughout the Product Lifecycle

**METTLER TOLEDO will support and service your melting and dropping point systems throughout their entire life-cycle. From installation and qualification to regular preventive maintenance and calibration, we offer a broad range of solutions to help protect your investment every step of the way.**

## Professional Installation



For a quick and simple solution to document correct delivery and installation, ask about the Melting and Dropping Point StarterPac. Aimed at self-regulated environments, the StarterPac is the ideal choice for your internal quality management system.

## Comprehensive Qualification



The EQPac Comprehensive Qualification service is specifically designed to address compliance concerns in today's demanding regulatory environment. It provides onsite, fully-documented, professional installation and qualification to ensure regulatory compliance and dependable operation.

## Maintenance and Calibration



Preventive maintenance is key to the performance and longevity of your melting or dropping point system. Combined with our calibration service, pre-planned, periodic maintenance ensures an accurate and dependable system that provides the best performance possible.

Service Products	Description	Material No.
StarterPac Melting & Dropping Point	Professional installation and performance verification for melting and dropping point	30353501
EQPac Melting Point	Melting point equipment qualification	30355851
EQPac Dropping Point	Dropping point equipment qualification	30026235
EDUPac Melting Point	Melting point education package	30100867
EDUPac Dropping Point	Dropping point education package	30100870

# DSC, TGA, TMA and DMA Instruments

Robust Characterization Has Never Been Easier





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Scan this code for more information.

# Materials Characterization Tailored to Your Exact Needs

The METTLER TOLEDO thermal analysis Excellence and Advanced lines offer tailor-made solutions for academic and industrial applications. Their unrivalled performance and innovative technology will propel you to the forefront of your field and guarantee you the highest level of Swiss quality, accuracy and efficiency.

## Differential Scanning Calorimetry

DSC determines the enthalpies of thermal events and the temperatures at which these processes occur.



DSC and Flash DSC



### Thermogravimetric Analysis (TGA)

TGA measures the sample weight as a function of temperature. It is used to perform compositional analysis or investigate the reaction kinetics of your sample.



TGA/DSC and TGA

### Dynamic Mechanical Analysis (DMA) and Thermomechanical Analysis (TMA)

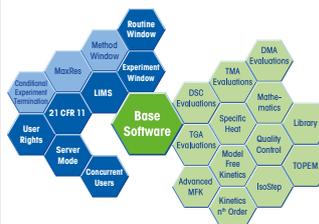
DMA and TMA are used to measure the mechanical and viscoelastic properties of materials as a function of temperature, time and frequency.



DMA and TMA

### The Software Standard in Thermal Analysis

STAR<sup>e</sup> software is the most comprehensive thermal analysis software on the market, providing unrivalled flexibility and endless evaluation possibilities.



STAR<sup>e</sup> Software

### Results You Can Trust

Our service portfolio is designed to ensure the continuous performance and reliability of your thermal analysis systems.



Services

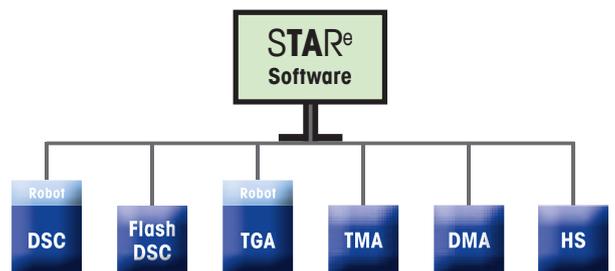
# STAR<sup>®</sup> System Software

## Select the Right Thermal Analysis Module

**STAR<sup>®</sup> is a sound investment. You can begin with the instrument configuration that meets your current needs. Later on, you can upgrade the system with options or accessories to satisfy new requirements.**

### Modular Design

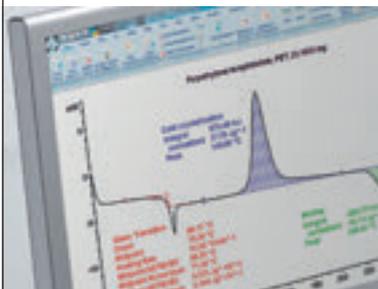
STAR<sup>®</sup> software is designed around a powerful basic software that consists of evaluation and module-control windows and a simplified installation window. The software can easily be expanded to support new applications or instruments.



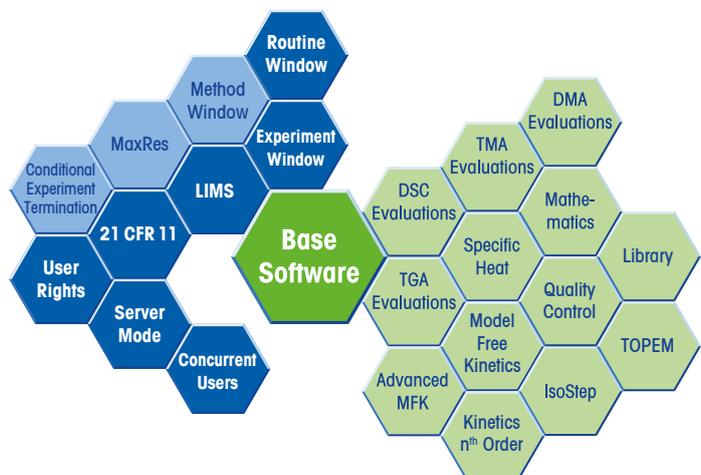
### Features and benefits of STAR<sup>®</sup> Excellence Software:

- **Unlimited evaluation possibilities** – enormous flexibility
- **Reliable automation** – high throughput and automatic assessments dramatically improve efficiency
- **Integrated database** – ensures the highest level of data security
- **Modular concept** – tailor-made solutions for your current and future needs
- **Solid compliance** – 21 CFR Part 11 user-level management and electronic signature
- **Time-saving FlexCal<sup>®</sup> calibration** – for more accurate measurement results
- **STAR<sup>®</sup> free evaluation** – an opportunity to use free evaluation software

### Powerful and Versatile



STAR<sup>®</sup> software provides unrivalled flexibility and unlimited evaluation possibilities.





### DSC

Differential scanning calorimetry (DSC) utilizes an innovative sensor with a patented star-shaped arrangement of 120 thermocouples that guarantee unmatched sensitivity and resolution.



#### Features and Benefits

- Amazing sensitivity to measure weak effects
- Outstanding resolution to allow measurement of rapid changes and close-lying events
- Efficient automation enabled by a reliable sample robot for high throughput

► [www.mt.com/dsc](http://www.mt.com/dsc)

### HP DSC

For material testing, process development or quality control there is often no alternative to DSC measurements under pressure. High-pressure (HP) DSC allows these measurements to be performed, expanding the possibilities of thermal analysis.



#### Features and Benefits

- Shorter analysis time for higher-pressure and temperature-accelerate reactions
- Measurement under process conditions for a simulation of practical reaction environments
- Better interpretation of effects, which can be separated by suppressing vaporization

► [www.mt.com/ta-hpdsc](http://www.mt.com/ta-hpdsc)

### Flash DSC

Flash DSC revolutionizes rapid-scanning DSC. Flash DSC allows the user to analyze reorganization processes that were previously impossible to measure. Flash DSC is the ideal complement to conventional DSC.



#### Features and Benefits

- Ultra-high heating rates to reduce measurement times and suppress reorganization processes
- Ultra-high cooling rates that allow materials with defined structural properties to be prepared
- Fast-response sensor enabling the kinetics of extremely fast reactions or crystallization processes to be studied

► [www.mt.com/ta-fdsc](http://www.mt.com/ta-fdsc)



**TGA/DSC and TGA**

The TGA/DSC and TGA instruments are equipped with a top-of-the-line METTLER TOLEDO ultramicro balance with unique built-in calibration ring weights for unparalleled accuracy.



**Features and Benefits**

- Efficient automation – reliable sample robot for high sample throughput TGA/DSC and TGA
- METTLER TOLEDO ultra-micro-balance – rely on the balance technology leader
- DSC heat flow measurement – for simultaneous detection of thermal events

▶ [www.mt.com/tga-dsc](http://www.mt.com/tga-dsc)  
 ▶ [www.mt.com/tga](http://www.mt.com/tga)

**TMA**

The Thermomechanical Analyzer incorporates Swiss precision mechanics and features nanometer resolution to measure the very smallest dimensional changes.



**Features and Benefits**

- Nanometer resolution – allows very small changes to be measured
- Dynamic load TMA (DLTMA mode) – measures weak transitions and elasticity
- SDTA – simultaneous measurement of thermal effects

▶ [www.mt.com/tma](http://www.mt.com/tma)

**DMA**

The Dynamic Mechanical Analyzer (DMA) with its revolutionary technology offers previously unattained performance and time-saving external sample loading.



**Features and Benefits**

- Wide force range from 1 mN to 40 N – allows very soft and very hard samples to be measured
- Frequency range from 1 mHz to 1 kHz – means that measurements can be performed under real conditions or more rapidly at higher frequencies
- Innovative sample holders – permit samples to be prepared and loaded externally

▶ [www.mt.com/dma](http://www.mt.com/dma)

## Analysis over an Extremely Wide Application Range

Materials Characterization by	DSC	Flash DSC	TGA	TMA	DMA
<b>Physical Properties</b>					
Melting, crystallization	•	•	-	•	•
Enthalpy of crystallization	•	•	-	-	-
Solid fat index	•	-	-	-	-
Purity determination	•	-	-	-	-
Vaporization, drying	•	-	•	-	-
Sorption, desorption	-	-	•	-	-
Glass transition	•	•	-	•	•
Specific heat capacity	•	•	-	-	-
Expansion coefficient, shrinkage behavior	-	-	-	•	-
Polymorphism, crystalline transitions	•	•	-	•	-
Liquid-crystalline transitions	•	•	-	-	-
Viscoelastic behavior, elastic modulus	-	-	-	•	•
<b>Chemical Changes</b>					
Decomposition, pyrolysis	•	-	•	•	-
Oxidation, stability	•	-	•	•	-
Curing, vulcanization, gelation	•	•	-	-	•
Dehydration	•	•	•	-	-
Denaturation	•	•	-	-	-
Swelling and foaming	•	-	-	•	-
Reaction process, reaction enthalpy and kinetics	•	•	•	-	-

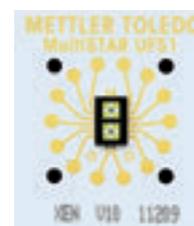
Thermal analysis is firmly established as a method for the characterization of physical and chemical properties of materials in many different fields.

## Crucibles and Sensors for Thermal Analysis

Crucibles serve as containers for samples during thermoanalytical measurements. The type of crucible used can have a large effect on results quality and influence important DSC measuring-cell characteristics. In Flash DSC, the sample is placed directly onto the MultiSTAR® chip sensor. The patented dynamic power compensation control circuit allows measurements to be performed with a minimum noise level at high heating and cooling rates.

Crucible Type	Quantity	Volume	Max. Press.	Max. Temp.	For DSC	For TGA	Material No.
Aluminum crucible light	100	20 µL	0.2 MPa	640 °C	•	•	51119810
Aluminum crucible standard	100	40 µL	0.2 MPa	640 °C	•	-	00026763
Copper crucible	100	40 µL	-	750 °C	•	•	51140407
Platinum crucible small	4	30 µL	-	1,600 °C	•	•	51140842
Platinum crucible medium	4	70 µL	-	1,600 °C	•	•	51119654
Gold crucible	6	40 µL	0.25 MPa	750 °C	•	•	00027220
Medium-pressure crucible	25	120 µL	2 MPa	250 °C	•	-	00029990
Reusable, gold-plated high-pressure crucible	3	30 µL	15 MPa	350 °C	•	-	51140405
High-pressure crucible	25	40 µL	15 MPa	750 °C	•	-	00026731
Sapphire crucible medium	4	70 µL	-	2,000 °C	-	•	51140845
Alumina crucible small	20	30 µL	-	2,000 °C	-	•	51140843
Alumina crucible medium	20	70 µL	-	2,000 °C	-	•	00024123
Alumina crucible large	20	150 µL	-	2,000 °C	-	*	00024124
Alumina crucible large	4	900 µL	-	2,000 °C	-	*	51119960

\* only with large furnace



MultiSTAR UFS 1 sensor for Flash DSC



Selection of crucibles for thermal analysis

For more crucibles ask for our crucible brochure or see

► [www.mt.com/ta-crucibles](http://www.mt.com/ta-crucibles)

# Hot-Stage Microscopy

## Seeing is Believing



**Hot-Stage microscopy is a powerful tool that is widely used for the visual characterization of all kinds of thermal transitions. The possibility of directly observing morphological changes in a sample as it is heated or cooled is of enormous value. Changes in the shape, structure and color of crystals are seen as well as their size and number. The technique allows phase transitions to be characterized and provides information on expansion and shrinkage behavior.**

### Features and Benefits

- **Imaging possibilities** – allows polymorphic transitions to be studied visually
- **Closed-furnace design** – guarantees excellent temperature control
- **High sensitivity** – optical sensitivity is not influenced by heating or cooling rates
- **STAR® free evaluation** – an opportunity to use free evaluation software



Microscope equipped with Hot-Stage 84

### Thermal Events and Operations

That can be defined with HS82/HS84

Industry	Thermal Events	HS82	HS84
Pharmaceuticals, petrol, food, cosmetics, academia	Melting characteristics	•	•
Pharmaceuticals, food, cosmetics	Polymorphism	•	•
Chemicals, cosmetics	Liquid crystal transitions	•	•
Polymers, pharmaceuticals	Crystallization and nucleation	•	•
Chemicals, petroleum	Cloud point	•	-
Chemicals, academia, test laboratories	Purity	-	•
Pharmaceuticals, chemicals, polymers	Decomposition temperature	•	•
Polymers	Curing		•
Pharmaceuticals, polymers, chemicals, academia, test laboratories	Reaction and transformation enthalpy	-	•
Forensic science	Oil immersion/temperature-variation method	•	-

The HS82 hot-stage microscopy system is an easy-to-use and precise thermal measuring cell for visual sample observation. The HS84 hot-stage microscopy system also allows DSC heat-flow measurements. Two different software packages allow evaluation of heat flow or video-image capture.



Image at 100 °C



Image at 90 °C

# Comprehensive Support

## Benefit from Our Services

### Helpful Application Materials



#### Webinars

- ▶ [www.mt.com/ta-webinars](http://www.mt.com/ta-webinars)
- ▶ [www.mt.com/ta-ondemand](http://www.mt.com/ta-ondemand)

#### Applications

- ▶ [www.mt.com/ta-applications](http://www.mt.com/ta-applications)

#### Handbooks

- ▶ [www.mt.com/ta-handbooks](http://www.mt.com/ta-handbooks)

#### Videos

- ▶ [www.mt.com/ta-videos](http://www.mt.com/ta-videos)

### Comprehensive Training



For self-training purposes, you can purchase the tutorial kit with 23 well-chosen application examples and corresponding test substances.

- ▶ [www.mt.com/ta-tutorial](http://www.mt.com/ta-tutorial)

Classroom training is still an effective way to learn.

- ▶ [www.mt.com/ta-training](http://www.mt.com/ta-training)

Register for an eTraining course.

- ▶ [www.mt.com/ta-ettraining](http://www.mt.com/ta-ettraining)

### Bi-Annual Application Magazine



A large number of scientific results and discoveries are made every year based on thermal analysis. Interesting examples from different application fields and industries are published in our UserCom magazine.

- ▶ [www.mt.com/ta-usercoms](http://www.mt.com/ta-usercoms)

### World-Class Service and Support

Results you can trust

IQ/OQ Equipment Qualification	Equipment Qualification by factory-trained METTLER TOLEDO service engineers ensures that your instrument meets regulatory and operational requirements.
PQ Equipment Requalification	Performance Qualification certifies that your instrument continues to meet requirements.
Initial Training	On-site training by METTLER TOLEDO product specialists after instrument installation reduces start-up time.
Calibration and Adjustment	Periodic calibration and adjustment guarantees accurate and high quality results.
Preventive Maintenance	Regular maintenance of your equipment ensures maximum instrument uptime throughout the years.
Training	Hands-on training courses run by METTLER TOLEDO experts help you to achieve a high level of competence for measurements and the evaluation and interpretation of results.
In-House Service	Repair work and instrument system upgrades performed by experienced product service specialists at METTLER TOLEDO facilities often save time and travel costs.
On-Site Service	Rapid on-site repair by expert-trained service engineers is readily available whenever you need it. With the premium level service contract, you can expect a professional service visit within hours.



# Five Steps to Excellence

## Full Life-Cycle Support

**METTLER TOLEDO offers comprehensive support for all five steps of Good Thermal Analysis Practice™ (GTAP™). This not only ensures that you invest in the most suitable equipment and services but also that you operate your system correctly to minimize errors and improve performance.**



### Step 1 Evaluation



Selecting the right analytical system not only involves knowing your current needs, but must also take into account future requirements. Secure the first few steps on this path by using our professional consulting services and documentation of your requirements.

### Step 2 Selection



Once your actual and future needs have been clearly identified, the most suitable Thermal Analysis system can be selected. This includes not only the instrument but also automation possibilities, software, accessories and services.

### Step 3 Installation and Qualification



Installation is crucial to guarantee the best working conditions as well as longevity of the selected system. After installation, the system has to be qualified for operation. Nowadays professional qualification and calibration of the analytical instrument is an important requirement in many industries. These activities need to be documented in a way that is easily traceable.



#### Step 4 Training



User training is very important to achieve the best possible results. We offer different training possibilities:

- On-site training as part of the IQ/OQ process
- Classroom training courses
- Web-based seminars (Webinars) and e-Training
- Handbooks and a tutorial kit for self-training

This gives you the confidence and skills to operate the system correctly.

#### Step 5 Routine Operation



Regularly maintained instruments reduce the likelihood of day-to-day measurement errors and prevent potentially expensive follow-up costs. We offer basic and extended calibration services as well as preventive maintenance services.

The right crucible is very important for optimum system performance. We offer a wide range of different crucibles, crucible volumes and materials.



#### Evaluate Process Risks

Perform your own laboratory Thermal Analysis Risk Check with our web-based tool.

- ▶ [www.mt.com/ta-riskcheck](http://www.mt.com/ta-riskcheck)
- ▶ [www.mt.com/gtap](http://www.mt.com/gtap)

# METTLER TOLEDO

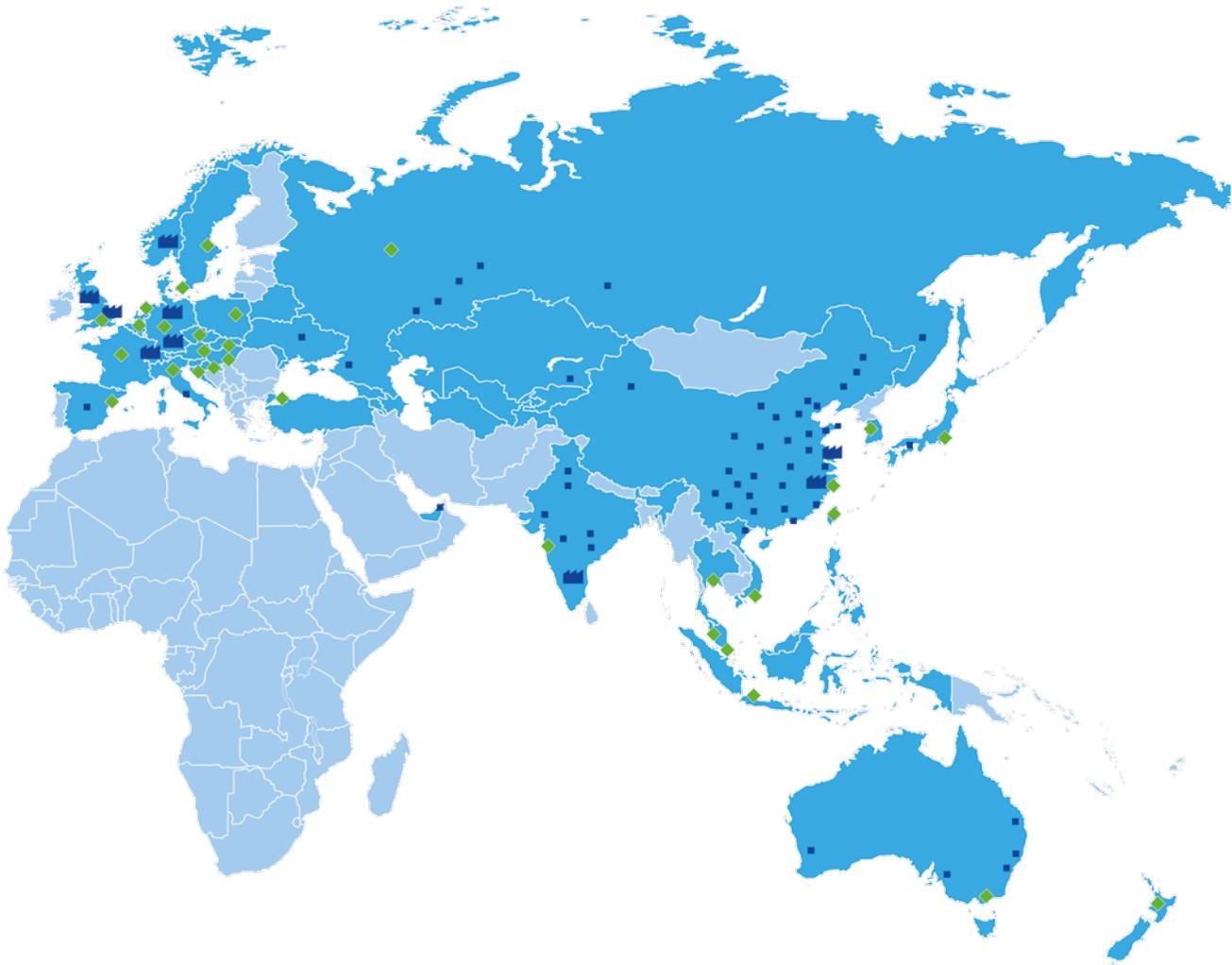
## Organizations Worldwide



**METTLER TOLEDO has its own Sales & Service Organizations in 40 countries as well as Distribution & Service Partners in most other countries across the globe. Products are developed and produced in various locations in the United States, Europe and China.**

-  R&D Manufacturing Center
-  Market Head Office
-  Sales & Service Office
-  METTLER TOLEDO
-  Dealer & Partner

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