

Cubis®.

The Lab Balance that Adapts to Your Process...



turning science **into solutions**

## ... and Not the Other Way Around

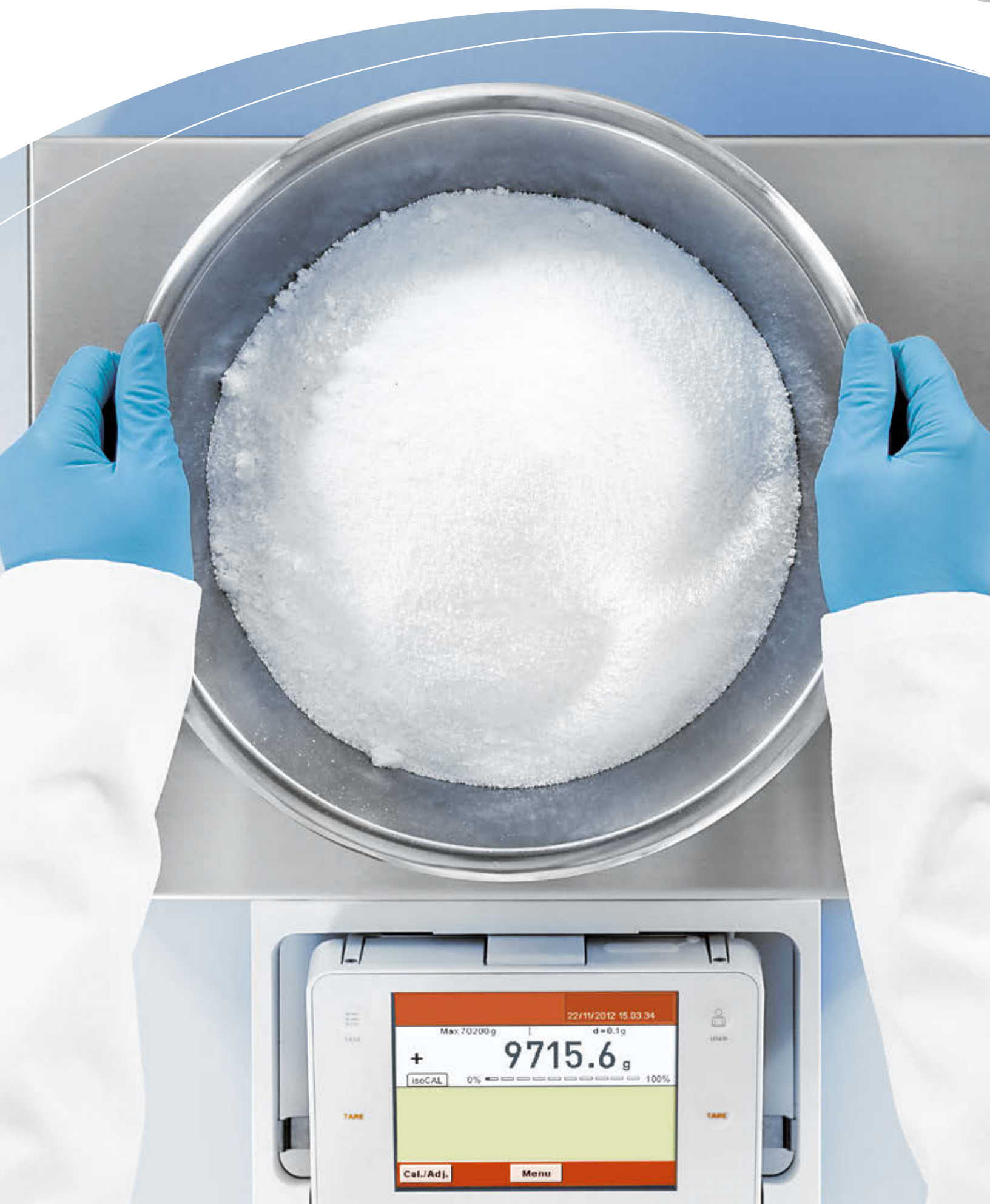
Universal lab balances often have only limited options for adaptation to special workflows in laboratories. Usually, a situation results where SOPs have to be modified to work around the balance functionalities available.

Sartorius Cubis® balances overcome these limitations. They are the first laboratory balances

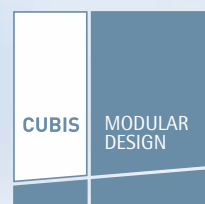
that not only can be seamlessly integrated into your individual workflows, but thanks to a wide selection of accessories and mechanical components for extended options, these balances can also be adapted to your weighing containers and workplace conditions - better than any other balance.

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Cubis®. Buffet,



## à la Carte or Fully Customized?

Since its launch, the Cubis® premium lab balance has established itself as a benchmark for use in regulated sectors like global pharmaceutical labs with the most stringent requirements.

These users expect the best possible performance across the board, but only want to invest in what is necessary. Cubis® meets all these requirements. As the first entirely modular-design balance, display and control units, weighing modules,

draft shield models, interfaces and much more can be freely combined.

Users can choose from thousands of options to configure their balance to suit their individual needs and obtain the optimal solution for integration into their process.

But we didn't stop at this level of innovation: When customers require a perfect solution to allow them to incorporate the lab balance into their processes in a fully individual way, configurability is simply not enough.

With Cubis®<sup>individual</sup>, we provide an elegant software solution that needs no additional laptop to implement a fully individual

profile of specifications – from the integration of data into the infrastructure of the software to the complete control of the weighing process – and beyond. Your benefits: quick, clearly-defined processes and accuracy.

But the growth on the "hardware side" of the Cubis® family is unstoppable as well. With the new high capacity models, Cubis® now covers the entire range from the research and QC laboratory to the process development labs and compounding areas. Here, Cubis® offers you the comprehensive accessories program to fit the solutions for your fully individual applications as well.



## Safe and Easy to Use with Standard Q-Guide or with Personalized Q-Apps

In addition to the standard user interface Q-Guide, Cubis® offers a new opportunity for using personalized solutions with Q-Apps. From a variety of downloadable Q-Apps that cover special laboratory applications, Q-Apps can be adapted to your individual operating procedure or be created for your special needs and requirements right from the start.



In addition to aspects strictly involving metrological specifications, preparing for and performing a weighing procedure and meeting the relevant regulatory standards are gaining ever-increasing importance. With the Q-Guide user interface,

work tasks are not only faster but Q-Guide eliminates the need for the user to follow time-consuming working steps.

The Q-Guide is designed so that the user only ever sees what is

needed for carrying out the task at hand. Once a task has been defined, Q-guide guides the user interactively through the settings and hides information that is not relevant.

### Personalized – Even Better than Configured

#### MSA – The Ultimate Solution

- Top-of-the-line technology and information design.
- Touch screen featuring high-resolution color TFT for brilliant reproduction of text and graphics.
- Outstanding ease of use and display quality, especially for complex applications.
- Q-Apps can be adapted to your individual operating procedure.



#### MSU – Classic and Universal

- High-resolution, generously sized, monochrome graphic display.
- Keys that feature positive click action and precise activation of functions.
- For users who wish to combine classic key-operated control with the widest possible range of performance features.



#### MSE – Weighing Pure and Simple

- Large, high-contrast liquid crystal display.
- Easy-to-understand menu guidance with short text prompts.
- Clearly structured keys for precise activation of functions.





### A Multitude of Standardized Q-Apps is Waiting for You

If you have a weighing task that cannot be fulfilled by one of the Q-Apps from the App Center, contact your responsible Cubis® individual specialist. Just for you, the specialist will create an individual Q-App that is adapted to your task.

|                           |  |                        |  |
|---------------------------|--|------------------------|--|
| Q-App: USP 34, C. 41      |  | Administrator          |  |
| Step: 3   Sample Addition |  | 08/04/2012 01:01:56 pm |  |
| Max 2200 g                |  | d = 0.001 g            |  |
| +                         |  | 2.003 g                |  |
| Sample6:                  |  | 2.000 g                |  |
| Sample7:                  |  | 2.001 g                |  |
| Sample8:                  |  | 2.000 g                |  |
| Sample9:                  |  | 2.001 g                |  |
| Sample10:                 |  | 2.001 g                |  |
| Remove sample             |  |                        |  |
| Abort                     |  |                        |  |

Application Example  
Q-App USP Chapter 41

|                                 |    |                     |  |
|---------------------------------|----|---------------------|--|
| Q-App: Formulation              |    | Administrator       |  |
| Tare weighing                   |    | 16/10/2012 13:27:44 |  |
| Max 220 g                       |    | d = 0.001 g         |  |
| +                               |    | 24.957 g            |  |
| isoCAL                          | 0% | 100%                |  |
| Please center container on Pan! |    |                     |  |
| Abort                           |    | Proceed             |  |

Application Example  
Q-App Formulation

# Cubis®. App-Solutely Individual

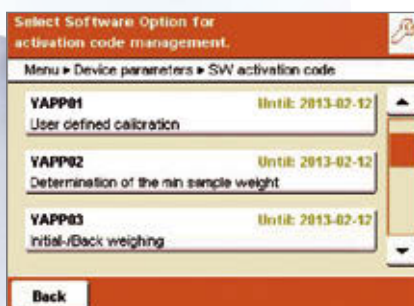
## The Sartorius App Center – Downloading and Testing

You can simply download any standard Q-App from the Sartorius App Center and transfer it from an SD card to a Cubis® balance. Afterwards, you can test the Q-App of your choice for 30 days free of charge and convince yourself of its function.



## Easy Licensing for Permanent Use of Q-Apps

To permanently use your Q-App on your Cubis® balance, you must first activate it. Just enter the serial number of your Cubis® balance as well as your personal data, and in just a few minutes you will receive your personal activation key.



## Laptops and PCs are Out!

In pharmaceutical labs, placing laptops and PCs next to a balance is not necessarily desirable because this does not meet the strict cleaning requirements that Sartorius lab balances comply with so effectively. If necessary, you can use the new Q-Apps to completely transfer your operating procedure (SOP) to the balance and avoid using a laptop.

| Q-App: Backweigher Light V3 |            |
|-----------------------------|------------|
| Backweigh results           |            |
| Sample number:              | Example 1  |
| Residue:                    | 4.0500 g   |
| Residue Percent:            | 81.0000 %  |
| Loss:                       | -0.9500 g  |
| Loss Percent:               | -19.0000 % |
| Initial weight (net):       | 5.0000 g   |
| Backweight (net):           | 4.0500 g   |
| Tare:                       | 7.0510 g   |

Application Example  
Q-App Backweigher Light V3

## Individuality is the Key – More Efficiency and Safety with Q-Apps

Turn your Cubis® lab balance into a Cubis®<sup>individual</sup> and integrate customer-specific applications, called Q-Apps, into your balance. These are reloadable application programs that guide the user step-by-step through the specific workflow.

It is thus guaranteed that the procedures described in the corresponding SOPs are observed at all times. This makes Q-Apps an attractive alternative to implementing external middleware.

## Choose between Two Types of Q-Apps

As individual Q-Apps are performed according to their specific application, a variety of solutions for differential weighing, formula and filling quantity control applications are available as standard Q-Apps.

Moreover, it is also possible to use standardized Q-App applications for the determination of the minimum sample weight according to USP as well as for easy pipette calibration. With the Cubis®<sup>individual</sup>, workflows can be performed independently and do not necessarily need to be connected to a PC.



[www.sartorius.com/cubisindividual](http://www.sartorius.com/cubisindividual)

# Individual Integration into Your Application

The processes in this world's pharmaceutical labs are only similar at first glance. The requirements are very individual, especially when you consider the subprocess of weighing. Every user has his or her own approach to initial weighing and related processes, like preparing the sample, selecting the container, introducing the sample into the weighing container and further processing for the next analytical step.

The lab balance must simply adapt to your entire process – not the other way around.

With its sensible array of optional accessories, Cubis® offers the potential for fully personalized application add-ons and upgrades that enable faster and more efficient work and enhance your process reliability.



### Opening the Draft Shield

The motorized draft shield can be opened and closed without being touched simply by using the infrared switch (YHS01MS). This offers additional safety, especially for applications involving toxic substances. Moreover, the IR sensor enables users to activate many other functions, such as printing, isoCAL, ionizer, etc.



### Q-Grid

The Q-Grid weighing pan (optional accessory YWP03MS) is available for all Cubis® models with a readability of 10 or 100 mg (except model 5202S and high capacity models). First and foremost, it allows the use of a balance with a larger pan in the laminar flow of safety weighing cabinets, workbenches, or even laboratory hoods, without restricting the performance of the balance. As a result, an application often encountered in pharmaceutical labs is made easier.





### Q-Grip

Q-Grip (optional accessory YFH01MS) is a flexible and adaptable "one-size-fits-all" holder for bottles, test tubes, reaction containers or filters (up to 120 mm) for all Cubis® semi-microbalances and analytical balances. Simply use it in place of the original weighing pan of the balance. Its individually adjustable angle always ensures ergonomic work during filling processes or when using pipettes to transfer samples into various containers.

### Q-Stat

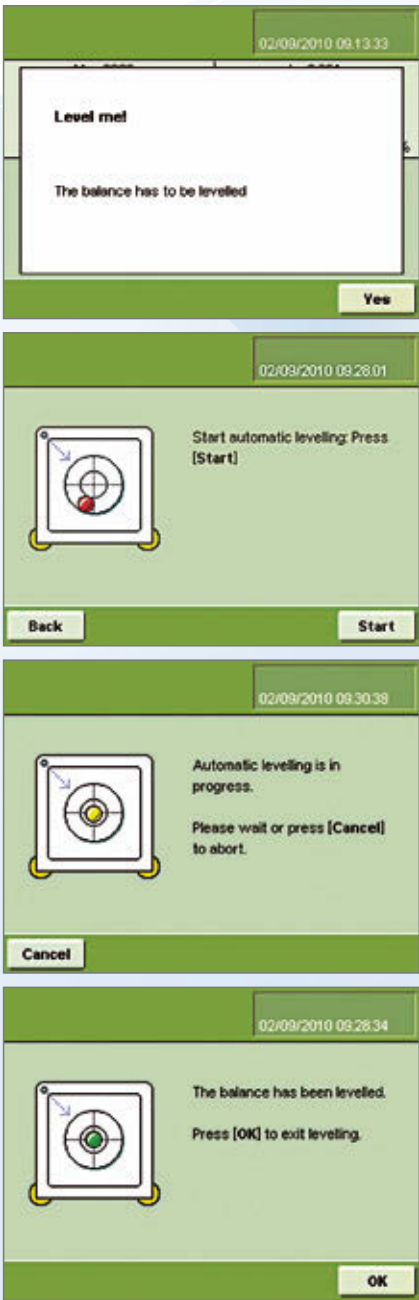
At the touch of a button, the Q-Stat ionizer integrated into the DI draft shield can quickly dissipate electrostatic charges which would affect the weighing measurements on sample containers and substances. The effective principle of four ion jets achieves this without disruptive air streams. As a result, stable and accurate weighing results can be guaranteed regardless of external influences.

# Q-Level. The Automatic, Motorized Leveling Function Has

Exact leveling of a lab balance is the key element in inspection equipment monitoring and is essential for reliable readings. This is where Q-Level can provide valuable support, because users can define which tasks they will perform themselves and which the balance should carry out on its own. This is possible regardless of which of the three display | control units is chosen.

Cubis® is the first lab balance that automatically checks, performs and documents its exact leveling. The Cubis® balance can be leveled with the push of a button or fully automatically when the isoCAL-function has been activated. Quick and safe leveling with a significantly reduced risk of contamination for users when

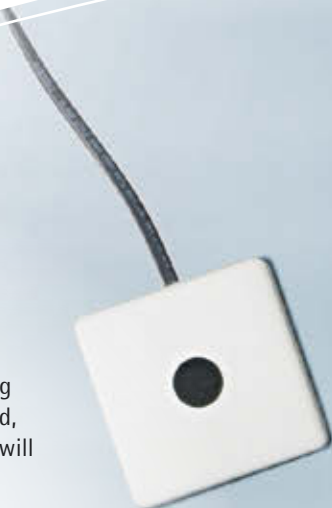
they work with toxic substances in safety weighing cabinets. This eases the burden on the user and allows more time for the user's actual tasks, in addition to being safer.



### Monitoring Leveling

If the Cubis® balance's constant monitoring function detects that it is no longer leveled, an alert message will appear and the user will be prompted to start the leveling process. Once started, internal motors level the balance in a matter of seconds. The progress of the motorized leveling process can be tracked on the display. Within seconds, the balance is again providing reliable results.

\* Leveling is done manually with interactive operator guidance on the display for models which do not feature motorized leveling (models with weighing capacity > 6,200 g or readability ≤ 0.001 mg).



Now Become a Standard Feature\*





# Q-Com for Unlimited Communication



## Web Communication

Web services offer a new communication platform that allows external software systems to directly show and use information, entry fields, menus, or complex operations on the touch screen of the MSA display and control unit. This eliminates the need to install PCs, laptops, or terminals in the area directly around the balance.



## Ready to Use in Seconds

All data, such as the user's master data or tasks, can be transferred easily and safely from one Cubis® to another using an SD card (not on the MSE). The time needed for configuration, especially when multiple unnetworked balances are in use, is therefore significantly reduced.



## GLP-compliant, Configurable Printout

When Cubis® is used in contaminated areas (enclosed protected areas), a wireless transmission option (*Bluetooth®*) is also available.\*



## Interface Options

Three fixed [USB, RS-232C, Ethernet (not on the MSE)] and three optional interface ports\* make almost all forms of bidirectional communication possible. Up to four interface ports can be used simultaneously.



## Communication with External Software

It is possible to connect Cubis® to external software systems. Using the balance's default standardized SICS communication protocol, it is also possible to communicate with software from other manufacturers.

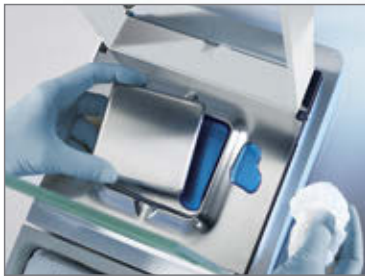
\* not for models with capacities ≥ 20,200 g

# The Right Draft Shield for Any Task

All draft shield models for the Cubis® offer obvious, practical advantages over conventional lab balances.

Despite their high mechanical stability, the draft shields of the Cubis® run very smoothly due to their new materials. They allow outstanding visibility over the entire weighing chamber and protect it against external impact factors.

Contrary to conventional lab balances, where an electrostatically charged draft shield can lead to measuring errors, the Cubis® eliminates these potential sources for error through a conductive coating on the glass panels.



**No Compromises in Cleaning**  
Cubis® is well-protected against fluid spillage. The weighing pan and the floor of the draft shield are made of high-grade stainless steel. Easily and quickly removable. In seconds, the balance is again ready for your measurements.



**Cleaning of the Draft Shield**  
For cleaning purposes, all doors of the draft shield can be disassembled in just a few steps, without compromising the stability of the unit as a whole.



**DM Draft Shield**  
Automatic ultramicrobalance and microbalance draft shield with learning capability; for models with 0.001 mg, 0.0001 mg readability (weighing modules 6.6S, 3.6P, 2.7S)



**DF Filter Balance Draft Shield**  
Manual stainless-steel draft shield specially designed for weighing filters; for models with 0.001 mg, 0.0001 mg readability (weighing modules 6.6S, 2.7S; not for 3.6P)



**DR Draft Shield**  
Removable, flat draft shield made of stainless steel for all models with 1 mg readability and for model 5202S



**DE Draft Shield**  
Manual draft shield for all models with 1 mg readability and for model 5202S



#### DU Draft Shield

Manual analytical balance draft shield for all models with 0.01 mg, 0.1 mg, and 1 mg readability and for model 5202S



#### DA Draft Shield

Automatic analytical balance draft shield for all models with 0.01 mg, 0.1 mg, and 1 mg readability and for model 5202S



#### DI Draft Shield

Automatic analytical balance draft shield with an integrated ionizer for all models with 0.01 mg, 0.1 mg, and 1 mg readability and for model 5202S

# The Utmost Precision for the Tiniest Sample Sizes

The high precision requirements in analytical testing and quantitative analyses in the pharmaceutical industry make the use of high-resolution balances indispensable. FDA compliance is only possible with laboratory balances that meet the minimum accuracy requirements of the US Pharmacopeia. This often leads to the necessity to use microbalances or even ultramicrobalances to weigh in samples less than 10 mg.

In addition, the substances to be analyzed are often only available in very small quantities and are correspondingly expensive. Alternatively, they may be so potent that the user can only work with minimum quantities so as not to be put in danger.

Cubis® microbalances and ultramicrobalances fulfill the most stringent requirements. They offer the user the highest level of safety in terms of result reliability and standard conformity.

Short measurement times result in time gained – for every single measurement. In particular, the motorized 100% glass draft shield means that working with minimum sample sizes is fast and effortless. The intelligent learning capability allows adaptation to every workflow.



### Efficient Cleaning

Easy and fast cleaning is especially important when working with minute sample sizes, as it helps prevent cross-contamination. All parts of the draft shield can be removed easily. After cleaning, the balance is ready to be used again just as quickly.



### Filter Weighing

The special DF stainless-steel filter draft shield is optimized for ultraprecise weighing of filters. This filter draft shield minimizes electrostatic effects. Different weighing pan diameters are available for different filter sizes (50 mm as standard | 75 mm and 90 mm optional).



### Making High-end Balances Easy to Use

If the user does not have any complex application requirements, but nevertheless requires uncompromising reliability in the weighing results, the MSE control head in conjunction with the weighing modules of the microbalances and ultramicrobalances offers a perfect and cost-effective solution.



With a weighing pan surface of 400 × 300 mm, even large vessels have enough space to ensure weighing stability. The high-quality surfaces and easily-removable control units allow for quick and thorough cleaning.



With a removable display or one raised on a support arm (optional accessory YDH02MS), you can set up your balance so that even working with heavy loads is ergonomic and minimally stressful.

## Speed and Reliable Results

### for the Largest Sample Sizes – the New, High-capacity Models

The requirements of the balance also shift as the samples' sizes increase. In the harsher environment of technical plants, the much different container dimensions and larger material quantities demand that the weighing instruments be significantly more robust than those used in QC or research laboratories, not to mention the higher demands placed on their protection and cleaning.

With an IP54 protection class and top-quality, smooth surfaces, the new Cubis® high-capacity models are more than capable of withstanding these conditions: they consistently deliver reliable results, even under the most adverse conditions, i.e. up to 70 kg with a readability of 0.1 g.

Of course, the Cubis® high-capacity models also feature the full spectrum of options for simple process integration, thereby generating further synergies for unique and personalized solutions, especially with the MSA display and Q-Apps.



Continuous monitoring that balance leveling is correct. Quick manual leveling with interactive operator guidance on the display.

# Systematic Personnel Safety and Result Reliability

Safety in weighing toxic, powdery substances and accuracy when weighing-in are requirements that have become inseparably linked to modern laboratory environments.

A Sartorius safety weighing station, consisting of the Safety Powder Hood (SPH) and a Cubis® lab balance, is the professional solution to both of these requirements.

The safety powder hood creates a contained area around the lab balance which prevents any air or

finely powdered particulates from escaping into the breathing zone of the user. At the same time, due to the constant inlet air velocity of the air current and the low-turbulence flow within the hood, consistent and reproducible weighing results are guaranteed.

The balance and safety powder hood are a coordinated system that meets both requirements – maximum user protection and secure weighing results.

## The Application-oriented Performance Features of Cubis® Lab Balances Make the Entire System even More Safe:

– The mechanical level indicator of a balance is often difficult or even impossible to see inside a hood. This leads to parallax errors in leveling and ultimately to incorrect measurement results. With Q-Level (optional, only for models with weighing capacity  $\leq 6.2$  kg and readability  $> 0.001$  mg), leveling can be performed automatically in the hood with motorization.

– With the optional infrared sensor YHS01MS, the draft shield can be opened touch-free and the balance can be tared. This reduces the risk of contamination.

– With the *Bluetooth*® interface module, the printer YDP10BT can be operated wirelessly outside the hood, which limits the use of possibly contaminated cables.

– With the Q-Stat ionizer integrated into the draft shield DI, not only electrostatic influences on the weighing results are reduced. The “stubborn” behavior of the sample when handling with a spatula is also reduced and contamination due to spilt samples is prevented.

– With the sample holder YFH01MS, the best ergonomics are ensured for weighing-in under the difficult conditions in the hood.

– With the grid weighing pan WP03MS, even lab balances without draft shields (readability of 10 mg or 100 mg) can be operated in the air flow of the hood without any problems.





**The Safety Powder Hoods are available in Four Different Sizes:**

|        | Width          | Depth           | Height         |
|--------|----------------|-----------------|----------------|
| SPH32  | 30" (762 mm) × | 32" (813 mm) ×  | 32.5" (826 mm) |
| SPH32B | 30" (762 mm) × | 32" (813 mm) ×  | 32.5" (826 mm) |
| SPH48  | 30" (762 mm) × | 48" (1219 mm) × | 32.5" (826 mm) |
| SPH48B | 30" (762 mm) × | 48" (1219 mm) × | 32.5" (826 mm) |

**All Models Consist of:**

Ductless safety powder hood with two HEPA filters and one prefilter with continuous laminar flow protection from particulates at 0.3µm at 99.97% efficiency and low airflow audible and visual alarms. A waste disposal port comes standard on "B" models only.



Sartorius guarantees that balances used inside the SPH will fulfill their technical specifications, such as reproducibility and USP minimum sample weight.

# Advanced Pharma Compliance

## for Use in Regulated Sectors

In pharmaceutical laboratories, qualified weighing is a basic prerequisite for precise analyses and secure production processes. Your weighing solutions should therefore be as unique as your weighing tasks and environment. With its implemented Advanced Pharma Compliance (APC) package, Cubis® offers exactly the support

you need to guarantee qualified results. APC stands for a broad range of functions that perfect balance and process monitoring and guarantee the compatibility and traceability of your results.

### Cubis® Functions

#### Tamper Protection | Compliance Support

- Hierarchical password protection
- Integrated alibi memory
- User management
- Calibration storage
- Audit trail
- Action hierarchies for warning and intervention functions

#### Inspection Equipment Monitoring

##### Self-test

- Leveling control
- Automatic motorized leveling, **Q-Level**
- Automatic time- and temperature-dependent calibration, **isoCAL**
- Monitoring of the minimum sample weight according to USP Ch. 41, **SQmin**
- Automatic reproducibility test, **reproTest**

##### Support | Guidance

- Monitoring pre-selectable calibration routines in UserCal (with Q-App)
- Determination of measurement uncertainty in accordance with USP Ch. 41 USPmin (with Q-App)
- Displaying measurement uncertainty, **SURE**

#### Data Handling | Data Integration | Process Integration

##### Applications | Workflows

- Downloadable apps (application software)
- Integration of individual SOPs (workflows)
- Direct LIMS integration
- Advanced communication via web services

##### Interfaces

- Serial
- Network-compatible

#### Operational Support | Ease of Use | Ergonomics

- Integrated electrostatic eliminator, **Q-Stat** (DI draft shield)
- Variable vessel holder, **Q-Grip**
- Weighing pan for laboratory hood or laminar flow bench, **Q-Grid**
- IR sensor, foot switch, barcode reader (optional accessory)
- Programmable automatic draft shield doors

A white electronic scale with a digital display showing 0.000. The scale has a flat top surface for weighing and a control panel with buttons and a small screen below it.

Cubis® MSE

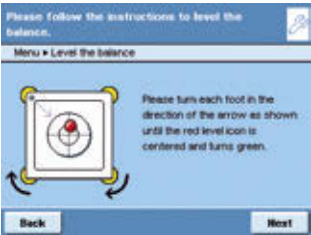
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# Advanced Pharma Compliance

## for Use in Regulated Sectors

### Balance Monitoring

#### The First Balance with Automatic Leveling: Q-Level



Q-Level offers automatic, motorized leveling at the touch of a button. This means that Cubis® can always check that balance leveling is perfect and informs the user immediately if any corrections are needed (only for models with a weighing capacity ≤ 6.2 kg and readability > 0.001 mg).

Q-Level combines novel sensors with the most advanced display technology, making it easier

and faster to level the balance accurately. For all models with weighing capacity > 6.2 kg or readability ≤ 0.001 mg, Cubis® offers the control units MSA or MSU, which allow interactively guided, manual leveling. The display provides all the necessary information: the position of the air bubble and instructions regarding which leveling foot must be turned in which direction (with MSE there are symbols only).

### Process Monitoring

#### User Management



User | Password management for tamper-proof security.

#### Action Hierarchy



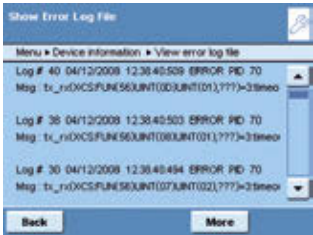
Cubis® has warning and reminder functions with a configurable action hierarchy for leveling, determining minimum sample weight, and calibration | adjustment.

### Compatibility and Traceability

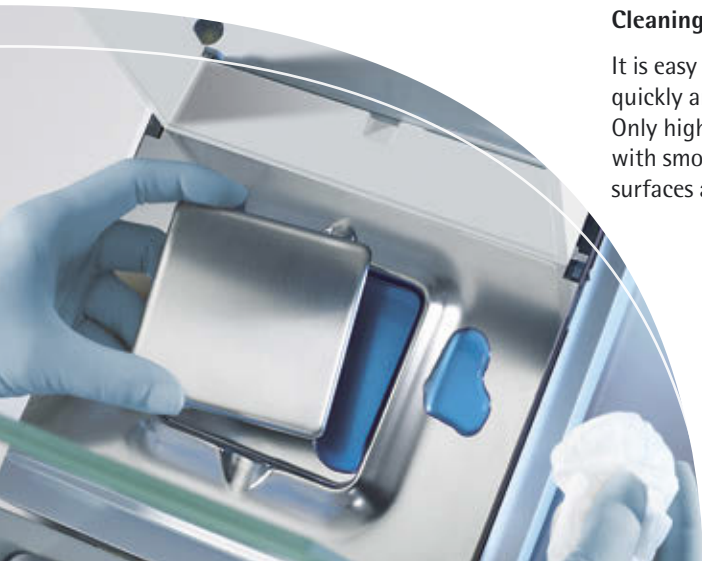
#### Cleaning Validation

It is easy to clean Cubis® quickly and thoroughly. Only high-grade materials with smooth, structure-free surfaces are used.

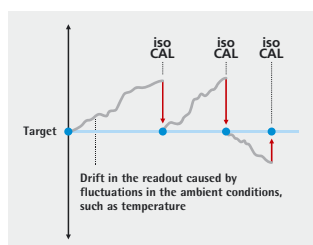
#### Audit Trail



The audit trail function logs major changes to the device. In this way, errors can be tracked quickly.



## Fully Automatic Calibration | Adjustment with isoCAL



The isoCAL calibration and adjustment function will activate after a preset or configurable time period. Exceeding a preset or configurable temperature difference triggers a recalibration | re-adjustment.

## Linearization

So-called linearity errors occur when there are deviations from the theoretical linear path of the balance's characteristic curve. Optimal linearization is a requirement for the balance to fulfill its high accuracy criteria. Cubis® corrects linearity errors automatically.

## Reproducibility Test

Cubis® allows the user to measure the reproducibility of the balance directly at the place of installation with just the press of a button. With reproTEST it is possible to quickly establish if the environment at the place of installation is suitable, so that the balance consistently provides optimal, reliable weighing results.

## SQmin Function

During the weighing process, Cubis® monitors compliance with the mandatory minimum sample weight set by the FDA according to USP. Once the minimum sample weight has been set at the place of installation, Cubis® warns the user when the value falls below this level and identifies unacceptable weight measurements.

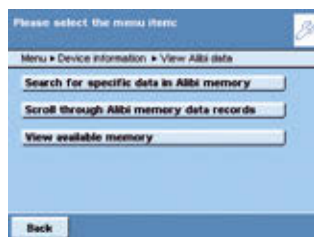
## DKD Measurement Uncertainty

In conjunction with a DKD calibration by Sartorius Service, the characteristic curve of the measurement uncertainty can also be integrated into the Cubis® software. For each weight value, you can then optionally display the absolute or relative measurement uncertainty or the process accuracy.

## Task Management

With task management, Cubis® allows application processes to be shown during weighing. Once the task has been set up, the user is interactively guided through the weighing process. Information that is not relevant is hidden, meaning no errors in the work process and the ability to concentrate on what is important.

## Alibi Memory



An integrated Alibi memory allows for traceable transfer of legal for trade weighing data to a PC.

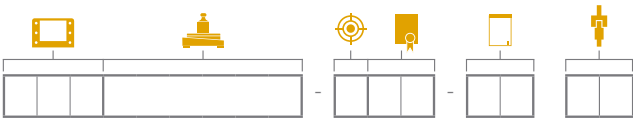
## GLP Certificate

As an example, for many models in the Cubis® series with an MSA display and control unit, the usability in GLP areas was tested and evaluated by an independent institution. Usability could be fully certified.

## Risk Analysis

As a basis for the GLP suitability review and cleaning validation, an exemplary risk analysis according to the methods set by the Failure Mode and Effect Analysis (FMEA) was conducted on many models with the MSA display and control units. This analysis is available upon request.

# Technical Specifications



Please use the adjacent fields to enter the selection made with the icon.



## Cubis® Display and Control Units

Select the display and control unit and enter it in the field marked with the icon.

| Types                                                                           | MSA                                                                                                                                                                                                                                                                                                                                                                                            | MSU                                                 | MSE                                                                                                                                                                                                             |
|---------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation                                                                       | Touch screen, keys for central basic functions                                                                                                                                                                                                                                                                                                                                                 | Keys                                                | Keys                                                                                                                                                                                                            |
| Display                                                                         | High-resolution color TFT, 5.7" graphic display                                                                                                                                                                                                                                                                                                                                                | High-resolution black white, 5.7" graphical display | Liquid crystal display, black white                                                                                                                                                                             |
| Adaptation of the display and control unit                                      | Tiltable display, removable display and control unit                                                                                                                                                                                                                                                                                                                                           |                                                     | Removable display and control unit                                                                                                                                                                              |
| Standard data interfaces                                                        | <ul style="list-style-type: none"><li>– USB (integrated into weighing module)</li><li>– RS-232C accessory interface, 25-pin (integrated into weighing module)</li><li>– Ethernet (integrated into display and control unit)</li><li>– Various data protocols available (can also be connected to software designed for external manufacturers)</li></ul>                                       |                                                     | <ul style="list-style-type: none"><li>– USB (integrated into weighing module)</li><li>– RS-232C accessory interface, 25-pin (integrated into weighing module)</li></ul>                                         |
| SD card reader                                                                  | Integrated as standard into display and control unit                                                                                                                                                                                                                                                                                                                                           |                                                     | –                                                                                                                                                                                                               |
| Operation of motorized draft shield (only applies to DA, DI or DM draft shield) | Activated by side keys or touch-free using IR switch (optional); learning capability                                                                                                                                                                                                                                                                                                           |                                                     | Activated by key or touch-free using IR switch (optional); learning capability                                                                                                                                  |
| Applications                                                                    | Unit conversion, SQmin function for minimum sample weight according to USP, isoCAL automatic calibration adjustment function, individual identifiers, density determination, statistics, calculations, averaging, formulation, weighing in percent, time-controlled functions, totalizing, DKD measurement uncertainty, second tare memory, counting, checkweighing, Alibi memory, audit trail |                                                     | Mass unit conversion, isoCAL automatic calibration adjustment function, density determination (buoyancy method only), calculations, averaging, net total formulation, weighing in percent, counting, totalizing |
| Personalizable with Q-Apps                                                      | <ul style="list-style-type: none"><li>– Downloadable Q-Apps</li><li>– Customer-specific modifications after mutual consultation</li></ul>                                                                                                                                                                                                                                                      | –                                                   | –                                                                                                                                                                                                               |



## Cubis® Weighing Modules

Please enter the model name in the field identified by the icon.

|                            | Readability<br>[mg]      | Weighing<br>Capacity<br>[g] | Weighing<br>Pan<br>(W × D)<br>[mm] | Typical<br>Stabiliza-<br>tion Time<br>[s] | Typical<br>Measure-<br>ment Time<br>[s] | Repeatability<br>[±mg]               | Linearity<br>[±mg] | Corner<br>Load [mg]*<br>(Test Load<br>[g]) | Optimal<br>starting<br>point of the<br>operating<br>range [mg]** |
|----------------------------|--------------------------|-----------------------------|------------------------------------|-------------------------------------------|-----------------------------------------|--------------------------------------|--------------------|--------------------------------------------|------------------------------------------------------------------|
| <b>Ultramicrobalances</b>  |                          |                             |                                    |                                           |                                         |                                      |                    |                                            |                                                                  |
| 0.0001 mg                  |                          |                             |                                    |                                           |                                         |                                      |                    |                                            |                                                                  |
| <b>2.7S</b>                | 0.0001                   | 2.1                         | Ø 20                               | 7                                         | 10                                      | 0.00025                              | 0.0009             | 0.0025 (1)                                 | 0.082***                                                         |
| <b>Microbalances</b>       |                          |                             |                                    |                                           |                                         |                                      |                    |                                            |                                                                  |
| 0.001 mg                   |                          |                             |                                    |                                           |                                         |                                      |                    |                                            |                                                                  |
| <b>6.6S</b>                | 0.001                    | 6.1                         | Ø 30                               | 5                                         | 8                                       | 0.001                                | 0.004              | 0.004 (2)                                  | 0.82***                                                          |
| <b>3.6P</b>                | 0.001   0.002  <br>0.005 | 1.1   2.1   3.1             | Ø 30                               | 5                                         | 8                                       | 0.003   0.004  <br>0.005             | 0.004              | 0.005 (1)                                  | 0.82***                                                          |
| <b>Semi-microbalances</b>  |                          |                             |                                    |                                           |                                         |                                      |                    |                                            |                                                                  |
| 0.01 mg                    |                          |                             |                                    |                                           |                                         |                                      |                    |                                            |                                                                  |
| <b>225S</b>                | 0.01                     | 220                         | 85 × 85                            | 2                                         | 6                                       | 0...60 g: 0.015<br>60...220 g: 0.025 | 0.1                | 0.15 (100)                                 | 8.2                                                              |
| <b>225P</b>                | 0.01   0.02  <br>0.05    | 60   120   220              | 85 × 85                            | 2                                         | 6                                       | 0...60 g: 0.015<br>60...220 g: 0.04  | 0.15               | 0.2 (100)                                  | 8.2                                                              |
| <b>125P</b>                | 0.01   0.1               | 60   120                    | 85 × 85                            | 2                                         | 6                                       | 0...60 g: 0.015<br>60...120 g: 0.06  | 0.15               | 0.15 (50)                                  | 8.2                                                              |
| <b>Analytical Balances</b> |                          |                             |                                    |                                           |                                         |                                      |                    |                                            |                                                                  |
| 0.1 mg                     |                          |                             |                                    |                                           |                                         |                                      |                    |                                            |                                                                  |
| <b>524S</b>                | 0.1                      | 520                         | 85 × 85                            | 1                                         | 3                                       | 0.1                                  | 0.4                | 0.3 (200)                                  | 82                                                               |
| <b>524P</b>                | 0.1   0.2   0.5          | 120   240   520             | 85 × 85                            | 1                                         | 3                                       | 0.15   0.2   0.4                     | 0.5                | 0.4 (200)                                  | 82                                                               |
| <b>324S</b>                | 0.1                      | 320                         | 85 × 85                            | 1                                         | 3                                       | 0.1                                  | 0.3                | 0.3 (200)                                  | 82                                                               |
| <b>324P</b>                | 0.1   0.2   0.5          | 80   160   320              | 85 × 85                            | 1                                         | 3                                       | 0.1   0.2   0.4                      | 0.5                | 0.4 (200)                                  | 82                                                               |
| <b>224S</b>                | 0.1                      | 220                         | 85 × 85                            | 1                                         | 3                                       | 0.07                                 | 0.2                | 0.2 (100)                                  | 82                                                               |
| <b>124S</b>                | 0.1                      | 120                         | 85 × 85                            | 1                                         | 3                                       | 0.1                                  | 0.2                | 0.2 (50)                                   | 82                                                               |

\* Position according to OIML R76

\*\* According to USP (United States Pharmacopeia) Chapter 41, the optimal operating range is defined from 820d to maximum weighing capacity.  
Depending on the installation location and environmental conditions, the value could be higher.

\*\*\* with draft shield DM



Cubis® Weighing Modules

Please enter the model name in the field identified by the icon.

|                               | Readability<br>[mg] | Weighing<br>Capacity<br>[g] | Weighing<br>Pan<br>(W × D)<br>[mm] | Typical<br>Stabiliza-<br>tion Time<br>[≤s] | Typical<br>Measure-<br>ment Time<br>[≤s] | Repeatability<br>[≤±mg] | Linearity<br>[≤±mg] | Corner<br>Load [mg]*<br>(Test Load<br>[g]) | Optimal<br>starting<br>point of the<br>operating<br>range [g]** |
|-------------------------------|---------------------|-----------------------------|------------------------------------|--------------------------------------------|------------------------------------------|-------------------------|---------------------|--------------------------------------------|-----------------------------------------------------------------|
| <b>Precision Balances</b>     |                     |                             |                                    |                                            |                                          |                         |                     |                                            |                                                                 |
| 5203S                         | 1                   | 5,200                       | 140 × 140                          | 1                                          | 2                                        | 1                       | 5                   | 2 (2,000)                                  | 0.82                                                            |
| 5203P                         | 1 2 5               | 1,200 2,400 <br>5,200       | 140 × 140                          | 1                                          | 2                                        | 1                       | 5                   | 2 (2,000)                                  | 0.82                                                            |
| 3203S                         | 1                   | 3,200                       | 140 × 140                          | 1                                          | 2                                        | 1                       | 5                   | 2 (1,000)                                  | 0.82                                                            |
| 2203S                         | 1                   | 2,200                       | 140 × 140                          | 1                                          | 1.5                                      | 1                       | 3                   | 2 (1,000)                                  | 0.82                                                            |
| 2203P                         | 1 10                | 1,010 2,200                 | 140 × 140                          | 1                                          | 1.5                                      | 1 6                     | 5                   | 3 (1,000)                                  | 0.82                                                            |
| 1203S                         | 1                   | 1,200                       | 140 × 140                          | 1                                          | 1.5                                      | 0.7                     | 2                   | 2 (500)                                    | 0.82                                                            |
| 623S                          | 1                   | 620                         | 140 × 140                          | 0.8                                        | 1                                        | 0.7                     | 2                   | 2 (200)                                    | 0.82                                                            |
| 623P                          | 1 2 5               | 150 300 620                 | 140 × 140                          | 0.8                                        | 1                                        | 1 2 4                   | 5                   | 4 (200)                                    | 0.82                                                            |
| 323S                          | 1                   | 320                         | 140 × 140                          | 0.8                                        | 1                                        | 0.7                     | 2                   | 2 (200)                                    | 0.82                                                            |
| 14202S                        | 10                  | 14,200                      | 206 × 206                          | 1                                          | 1.5                                      | 10                      | 30                  | 20 (5,000)                                 | 8.2                                                             |
| 14202P                        | 10 20 50            | 3,500 7,000 <br>14,200      | 206 × 206                          | 1                                          | 1.5                                      | 10 20 40                | 50                  | 40 (5,000)                                 | 8.2                                                             |
| 10202S                        | 10                  | 10,200                      | 206 × 206                          | 1                                          | 1.5                                      | 7                       | 20                  | 20 (5,000)                                 | 8.2                                                             |
| 8202S                         | 10                  | 8,200                       | 206 × 206                          | 1                                          | 1.5                                      | 7                       | 20                  | 20 (5,000)                                 | 8.2                                                             |
| 6202S                         | 10                  | 6,200                       | 206 × 206                          | 1                                          | 1.5                                      | 7                       | 20                  | 20 (2,000)                                 | 8.2                                                             |
| 6202P                         | 10 20 50            | 1,500 3,000 <br>6,200       | 206 × 206                          | 1                                          | 1.5                                      | 7 20 40                 | 50                  | 50 (2,000)                                 | 8.2                                                             |
| 5202S                         | 10                  | 5,200                       | 140 × 140                          | 0.8                                        | 1                                        | 6                       | 10                  | 10 (2,000)                                 | 8.2                                                             |
| 4202S                         | 10                  | 4,200                       | 206 × 206                          | 0.8                                        | 1                                        | 7                       | 20                  | 30 (2,000)                                 | 8.2                                                             |
| 2202S                         | 10                  | 2,200                       | 206 × 206                          | 0.8                                        | 1                                        | 7                       | 20                  | 20 (1,000)                                 | 8.2                                                             |
| 1202S                         | 10                  | 1,200                       | 206 × 206                          | 0.8                                        | 1                                        | 7                       | 20                  | 20 (500)                                   | 8.2                                                             |
| 12201S                        | 100                 | 12,200                      | 206 × 206                          | 0.8                                        | 1                                        | 50                      | 100                 | 200 (5,000)                                | 82                                                              |
| 8201S                         | 100                 | 8,200                       | 206 × 206                          | 0.8                                        | 1                                        | 50                      | 100                 | 200 (5,000)                                | 82                                                              |
| 5201S                         | 100                 | 5,200                       | 206 × 206                          | 0.8                                        | 1                                        | 50                      | 100                 | 200 (2,000)                                | 82                                                              |
| <b>High Capacity Balances</b> |                     |                             |                                    |                                            |                                          |                         |                     |                                            |                                                                 |
| 70201S                        | 100                 | 70,200                      | 400 × 300                          |                                            | 1.5                                      | 100                     | 500                 | 500 (20,000)                               | 82                                                              |
| 36201S                        | 100                 | 36,200                      | 400 × 300                          |                                            | 1.5                                      | 100                     | 200                 | 300 (10,000)                               | 82                                                              |
| 36201P                        | 100 1,000           | 10,200 <br>36,200           | 400 × 300                          |                                            | 1.5                                      | 100 500                 | 200                 | 300 (10,000)                               | 82                                                              |
| 20201S                        | 100                 | 20,200                      | 400 × 300                          |                                            | 1.5                                      | 100                     | 200                 | 300 (5,000)                                | 82                                                              |
| 70200S                        | 1,000               | 70,200                      | 400 × 300                          |                                            | 1                                        | 500                     | 1,000               | 1,000 (20,000)                             | 820                                                             |
| 36200S                        | 1,000               | 36,200                      | 400 × 300                          |                                            | 1                                        | 500                     | 1,000               | 1,000 (10,000)                             | 820                                                             |

\* Position according to OIML R76

\*\* According to USP (United States Pharmacopeia) Chapter 41, the optimal operating range is defined from 820d to maximum weighing capacity. Depending on the installation location and environmental conditions, the value could be higher.



### Cubis® Leveling

Select the type of leveling and enter identifier "0" or "1" in the field marked by the icon.

0

Cubis® shows the level indicator on the display and provides support for rapid leveling (a standard feature on MSA and MSU display and control units; for MSE units, only symbols are provided as an aid for manual leveling).

1

Fully automatic, motorized Q-Level leveling at the touch of a button (available for all Cubis® weighing modules with a weighing capacity of > 6.1 g and ≤ 6,200 g).



### Test Certificates

Select a test certificate and enter the identifier in the field marked with the icon.

00

Standard certificate of conformity to specifications

TR

Like 00, but with a detailed test protocol



**Cubis® Draft Shields**

Select a draft shield and enter the corresponding identifier in the field marked with the icon.

|    |                                                                                                                                                                                                                                                                                                                       |
|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DO | Flat, stainless steel weigh pan with no draft shield for weighing modules with a pan size of 206 × 206 mm and 400 × 300 mm.                                                                                                                                                                                           |
| DR | Flat, stainless steel weighing pan draft shield (removable, with no glass components) for precision balances with a readability of 1 mg and weighing module 5202S.                                                                                                                                                    |
| DE | Manual, glass draft shield for precision balances with a readability of 1 mg and weighing module 5202S.                                                                                                                                                                                                               |
| DU | Manual, glass analytical balance draft shield with smooth-running, wide-opening doors, unimpeded access to the weighing chamber without interfering braces. For models with 0.01 mg, 0.1 mg, 1 mg readability and weighing module 5202S.                                                                              |
| DA | Automatic, glass motorized draft shield with learning capability for ergonomic working and individual adaptation to different applications. For models with 0.01 mg, 0.1 mg, 1 mg readability and weighing module 5202S.                                                                                              |
| DI | Automatic, glass motorized draft shield with integrated ionizer to eliminate the impact of electrostatic charges in samples   vessels and learning capability for ergonomic working and individual adaptation to different applications. For models with 0.01 mg, 0.1 mg, 1 mg readability and weighing module 5202S. |
| DM | Automatic, motorized, round 100% glass draft shield with learning capability for ultra-micro and micro balances with a readability of 0.0001 mg and 0.001 mg (2.7S, 6.6S and 3.6P weighing modules).                                                                                                                  |
| DF | Manual, stainless steel draft shield for weighing filters with a diameter of up to 50 mm (75 mm and 90 mm pans are optional) in ultra-micro and micro balances with a readability of 0.0001 mg and 0.001 mg (not for weighing module 3.6P) and also reduces electrostatic effects.                                    |



**Optional Interface Modules**

Depending on the balance, it may be possible to select an additional interface module.

|    |                                               |
|----|-----------------------------------------------|
| IR | RS-232 interface, 25-pin                      |
| IB | Bluetooth® interface                          |
| IP | RS-232 interface, 9-pin, incl. PS/2 interface |

## Cubis® Optional Accessories

### Printers and Communication

|                                                                                                                                                                   |             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Verifiable data printer for connection to RS-232, 25-pin accessory interface                                                                                      | YDP10-OCE   |
| Verifiable data printer with <i>Bluetooth</i> ® data transmission (with YD001MS-B or option IB only)*                                                             | YDP10BT-OCE |
| Color ribbon for YDP10-OCE and YDP10BT-OCE                                                                                                                        | 6906918     |
| Paper rolls for printer YDP10-OCE; 5 rolls 50 m each                                                                                                              | 6906937     |
| <i>Bluetooth</i> ® data interface for wireless connection of data printer YDP10BT*                                                                                | YD001MS-B   |
| RS-232C data interface, 9-pin including PS/2 for connecting a PC or keyboard*                                                                                     | YD001MS-P   |
| RS-232C data interface, 25-pin for connection of Cubis® accessories*                                                                                              | YD001MS-R   |
| Display cable 3 m for Cubis® MSA and MSU models, for separate setup of display and weighing unit (installation by Sartorius Service or in factory [order VF4016]) | YCC01-MSD3  |
| Display cable 3 m for Cubis® MSE models, for separated setup of display and weighing unit (Installation by Sartorius Service or in factory [order VF4016])        | YCC01-MSED3 |
| Cable 3 m between weighing module and electronics module for Cubis® models with 0.01 mg   0.001 mg   0.0001 mg readability                                        | YCC01-MSM3  |
| Installation display cable 3 m for Cubis® models, for separate setup of display and weighing unit                                                                 | VF4016      |
| 25-pin to USB cable                                                                                                                                               | YCC01-USBM2 |
| RS-232C connection cable to connect PC with 9-pin; COM interface, length 5 ft                                                                                     | YCC05-001M2 |
| WinWedge, software for data communication between balance and PC (via RS232)                                                                                      | YSW05       |

### Displays and Input | Output Elements

|                                                                                                                                  |          |
|----------------------------------------------------------------------------------------------------------------------------------|----------|
| MSA control unit with color TFT graphic display and touch screen                                                                 | YAC01MSA |
| MSE display unit with backlit LC display and tactile keys                                                                        | YAC01MSE |
| MSU display and control unit with backlit b w graphic display and tactile navigation keys                                        | YAC01MSU |
| Barcode reader with connection cable, 120 mm reading range*                                                                      | YBR03PS2 |
| Foot switch for printing, taring, or using function keys, selection via menu, incl. T connector                                  | YFS01    |
| Infrared sensor for touch-free activation of functions (e.g., draft shield control)                                              | YHS01MS  |
| Hand switch for printing, taring, or using function keys, selection via menu, incl. T connector                                  | YHS02    |
| Foot switch for the draft shield OPEN   CLOSED functions (in combination with DA and DI draft shields only), taring and printing | YPE01RC  |
| Additional display, LCD, figure size 13 mm, backlit                                                                              | YRD03Z   |
| 3-segment control display, red – green – red, for plus   minus measurements, incl. T connector                                   | YRD11Z   |

\* Not available for Precision high capacity models with a weighing capacity of  $\geq 20,200$  g.

Pipette Calibration Hardware and Software

|                                                                                                                                                                                                   |             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Pipette calibration kit (hardware) for models with 0.1 mg and 0.01 mg readability<br>Consists of moisture trap and all required adapters                                                          | YCP04MS     |
| Pipette calibration kit (hardware) for microbalance weighing modules 6.6S and 3.6P<br>Consists of moisture trap and all required adapters                                                         | VF988       |
| Pipette Tracker pipette calibration software. Software and user manual in English only.                                                                                                           | YCP04-PT    |
| Pipette Tracker Pro pipette calibration software, for use in regulated areas, networkable and validatable, according to the 21 CFR Part 11 regulations. Software and user manual in English only. | YCP04-PTPro |
| Documentation basis for validation (IQ, OQ) of Pipette Tracker PRO version.<br>All documents are in English only.                                                                                 | YCP04-VTK   |

Filter Weighing and Antistatic Accessories

|                                                                                                                                                |           |
|------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| Antistatic weighing pan, diameter 130 mm, for weighing modules with a readability of 0.1 mg or 0.01 mg                                         | YWP01MS   |
| Filter weighing pan Ø 75 mm, for ultramicrobalance or microbalance models<br>(weighing modules 6.6S, 2.7S; only together with DF draft shield) | VF2562    |
| Filter weighing pan Ø 90 mm, for ultramicrobalance or microbalance models<br>(weighing modules 6.6S, 2.7S; only together with DF draft shield) | VF2880    |
| Ionization blower to eliminate electrostatic charges on sample containers and samples                                                          | YIB01-OUR |
| Stat-Pen ionization probe for discharging electrostatically charged samples and filters                                                        | YSTP01    |

Special Applications

|                                                                                                                                                                                                                                             |         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Density determination kit for solids and liquids for weighing modules with a readability < 1 mg                                                                                                                                             | YDK01MS |
| Density determination kit for solids and liquids for weighing modules with a readability of 1 mg                                                                                                                                            | YDK02MS |
| Q-Grip, flexible holder for weigh-in containers and filters up to 120 mm diameter (replaces the original weighing pan, for Cubis® models with 0.01 and 0.1 mg readability)                                                                  | YFH01MS |
| Q-Grid weighing pan for Cubis® models with a readability of 10 mg or 100 mg for weighing in laboratory hoods, safety weighing cabinets or workbenches (reduced wind attack surface of the weighing pan; replaces the standard weighing pan) | YWP03MS |

Granite Platforms and Weighing Table

|                                                                    |             |
|--------------------------------------------------------------------|-------------|
| Granite Platform (13" × 15") with vibration isolators              | U1-21201315 |
| Granite Platform (16" × 21") with vibration isolators              | U1-24201621 |
| Weighing table made from synthetic stone, with vibration dampening | YWT03       |

Weighing Accessories

|                                                                                                                                                    |             |
|----------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Weighing scoop made from chrome nickel steel, 90 × 32 × 8 mm                                                                                       | 641214      |
| Aluminum weighing scoop, 4.5 mg (250 pieces) for ultramicrobalance and microbalance models                                                         | U1-6565-250 |
| Support arm for 10   100 mg precision weighing modules for raising the MSE, MSU, and MSA display and control units                                 | YDH01MS     |
| Support arm for precision weighing modules with 100 mg   1 g readability and weighing capacity > 20 kg for raising the control units MSE, MSU, MSA | YDH02MS     |
| Hook for below-cell weighing for precision weighing modules with 100 mg   1 g readability and weighing capacity > 20 kg                            | 69EA0040    |

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