sartorius

Cubis®:
The Lab Balance
That Adapts to Your Process

turning science into solutions

Cubis® Premium Laboratory Balances

Universal balances often only offer limited options to adapt them to special workflows in laboratories. Therefore, standard operating procedures (SOPs) must frequently be adapted to the existing functionalities of laboratory balances.

This does not apply to Sartorius Cubis®: they are the first laboratory balances that you can integrate into your individual workflows, as well as adapt to your weighing containers and the conditions at your workplace by using accessories and mechanical extensions.

Contents


22/11/2012 15:03:34
+
9715.6 g
0%
100%
Cal./Adj.
Menu

Cubis® : Standard,

Personalized or Fully Customized? Your Choice

Since we launched the Cubis® range of premium laboratory balances in 2009, it has become the benchmark for use in regulated sectors that impose the highest requirements, such as in global pharmaceutical labs.

Modular Configuration
The first series of laboratory balances to feature a completely modular design, Cubis® enables you to combine your choice of display and control unit, weighing module, data interface module, and much more.

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

Cubis® individual Software
With the unique Cubis® individual software, you can create your own fully individual profile for your specific requirements without additionally needing to use a computer. Start off by integrating data into your software infrastructure and continue right on up to implementing complete control of your weighing process.

Your benefits: quick, clearly-defined processes and accuracy.

New Models
With the new high-capacity models, Cubis® now covers the entire range, from research and QC laboratories to testing laboratories. Cubis® offers a comprehensive range of accessories to choose from so you will find individual solutions that are best for your applications (see p. 20).

Equally new are the MCM manual mass comparators based on the Cubis® platform. A total of 14 different models are supplied for regulation-compliant mass comparison applications and | or for weight calibrations. Thanks to integrated climate sensors, the measurement uncertainty is indicated for every measured value. Beyond this, integrated workflows ensure a high level of reliability for error-free results (see p. 22).

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

The Cubis® Operating Design
Beyond the Q-Guide standard user interface, Cubis® offers you personalized solutions with Q-Apps. You can choose from a wide variety of downloadable Q-Apps for laboratory applications. The advantage is that you and your operators can adapt or fully personalize them according to your process workflows or even configure them to meet your special requirements right from the start.

In addition to aspects strictly involving metrological specifications, preparing for and performing a weighing procedure, compliance with the relevant regulatory standards is gaining ever-increasing importance.

The Cubis® easy-to-operate Q-Guide concept speeds up lab workflows. Moreover, Q-Guide eliminates the need for you and other users to perform time-consuming steps all on your own.

Q-Guide is designed so that you only see what is needed for carrying out the task at hand. Once you have configured a task, Q-Guide will lead you interactively through the settings and display only the relevant information.

Cubis® Display and Control Units

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 customized to your individual workflow

MSU – Classic and Universal

- High-resolution, generously sized, monochrome graphic display
- Keys that feature positive click action and precise activation of functions
- 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
- For users without complex operations who primarily want to perform ultra-precise weighing

A Multitude of Standardized Q-Apps Ready for You

If you have a weighing task not covered by one of the standardized Q-Apps downloadable from the App Center, contact your responsible Cubis® individual specialist. Just for you, our specialist will create an individual Q-App configured to meet your specific application requirements.

Application Example
Q-App: USP Chapter 41

Application Example
Q-App: Formulation

Cubis®. App-Solutely Individual

The Sartorius App Center: Download and Test Your Preferred Apps
You can readily download any standard Q-Apps from the Sartorius App Center and install these from an SD card in a Cubis® laboratory balance. Just test the Q-Apps of your choice for 30 days free of charge to discover all their winning capabilities for increasing efficiency in your daily lab work.

Easy Licensing for Permanent Use of Q-Apps
To permanently use your Q-App on your Cubis® balance, you must first activate the Q-App. Just enter the serial number of your Cubis® balance as well as your personal data. In just a few minutes, you will receive your individual Q-App activation code.

No Computers Needed!
In pharmaceutical labs, placing computers next to a balance is not necessarily desirable because this does not meet the strict cleanroom requirements that Sartorius lab balances comply with so effectively.
You can use the new Q-Apps to completely transfer your operating procedure (SOP) to the balance and avoid using a computer.

Application Example
Q-App: Differential Weighing (Backweigher Light V3)

Q-Apps:
Uniqueness Wins
Turn your Cubis® lab balance into a Cubis® individual by integrating customer-specific applications, called Q-Apps. These are downloadable application programs that guide you step by step through a specific workflow sequence.

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

Q-Apps:
Standard or Personalized
Besides individual Q-Apps that are performed according to your specific application, a variety of solutions for differential weighing, formulation and average weight control, or checking the net quantities filled are available as standard Q-Apps.

Standard Q-Apps additionally provide solutions for defining the starting point of your balance's operating range as well as for easy pipette calibration. With Q-Apps, you can carry out a specific workflow without needing to connect a computer.

www.sartorius.com/cubisindividual

Individual Integration into Your Application

Across the globe, pharmaceutical lab processes look similar at first glance. Yet their requirements are highly individual, especially for weighing processes. Everybody has their own approach for preparing samples, selecting vessels and placing samples in a weighing container.

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

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

Touch-free Draft Shield Operation
The motorized draft shield can be opened and closed without being touched – just a simple movement of your hand over the infrared sensor YHS01MS is all it takes. This provides additional safety, especially for applications involving toxic substances. In addition, the IR sensor can also be used to trigger other functions, such as printing, isoCAL or ionizer, etc.

Q-Grid Pan
This gridded weighing pan, Q-Grid (accessory option YWP03MS), is available for all Cubis® models with a readability of 10 mg and 100 mg, except for model 52025. Q-Grid lets you easily operate a balance with a large pan under laminar flow in safety powder hoods, workbenches or even in fume hoods, without restricting its performance. This saves considerable effort in busy pharmaceutical laboratories.

Q-Grip Holder
Q-Grip is a flexible and adaptable "one-size-fits-all" holder for bottles, test tubes, reaction containers and filters of up to 120 mm or nearly 5". Available as accessory option YFH01MS, it fits on all Cubis® semi-micro balances and analytical balances. Simply use it in place of the original weighing pan. Its individually adjustable angle ensures that you can maintain an ergonomic posture during filling and pipetting to transfer samples into various containers.

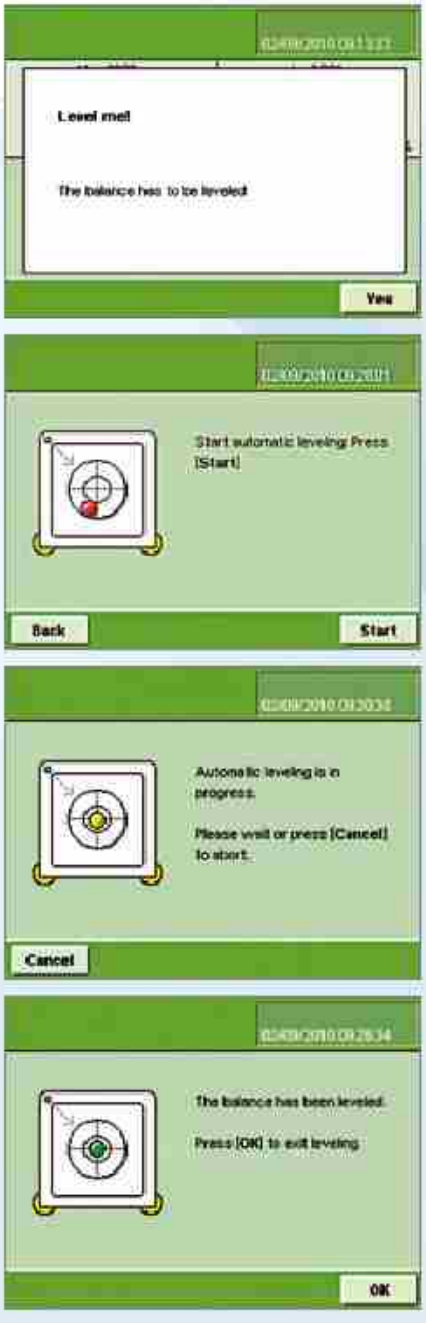
Q-Stat Ionizer
At the touch of a key, the Q-Stat ionizer integrated into the DI draft shield (see p. 16), eliminates electrostatic charges within seconds from sample containers and substances, preventing any interference with your weight measurements. The effective principle of four ion jets ensures that no disruptive air currents are generated during charge neutralization. This ensures that you will obtain stable and correct weighing results – independently of the ambient conditions.

Q-Level: Automatic, Motorized Leveling Now a Standard

Exact leveling of a lab balance is a key procedure in inspection equipment monitoring and is essential for reliable readings.

This is where the standard-equipped Q-Level automatic motorized leveling provides valuable support. This feature enables you to define which tasks the balance will carry out for you and which you prefer to perform on your own.

Cubis® is the first lab balance that automatically checks, performs and documents its exact leveling. Leveling is started at the touch of a key or performed fully automatic when the isoCAL function is activated.



Monitoring Leveling
If the Cubis® continuous self-monitoring function detects that the balance is no longer level, an alert message will appear, prompting you to start the leveling process. Once started, internal motors level the balance in just seconds. You can track the progress of motorized leveling on the display. Almost instantly, the balance is ready again to provide reliable results.

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

Feature*

Q-Com is a comprehensive communication concept that supports the requirement for integrating laboratory balances directly into the processes and IT structures of laboratories.

The concept includes advanced data interfaces that enable communication with laboratory information management systems (LIMS) and other external software and communication protocols.

Q-Com for Unlimited

Communication

Web Communication
Cubis® MSA features a Web Services communication platform as an option. This standardized communication technology permits external software systems, such as LIMS, ELN, etc. to display and use information, input fields, menus or complex operations on the touch screen of the balance. Bidirectional data transfer is enabled without complicated driver software. This eliminates the need to install computers, laptops or terminals in the direct vicinity of your balance.

SD Card as a Storage Medium
You can use an SD card to download all data, such as user master data or tasks, easily and securely from one Cubis® to another (no SD card port on the MSE display and control unit). Moreover, you can use this SD card as a storage medium for your measurement data.

Communication Protocols
Cubis® is standard-equipped to support ASCII and SICS communication protocols. You can therefore have your balance communicate with other manufacturers' software. Used with the MSA display and control unit, Cubis® can optionally communicate over XML.

Interfaces
All Cubis® balances have three standard-equipped interface ports (USB, RS232C, Ethernet [not on MSE]) and three optional ports (*Bluetooth*®, PS/2, RS232C), enabling nearly any type of bidirectional communication. Now that's what we call maximum connectivity!

Configurable Printout
The scope and content of the information to be printed is freely selectable. Via the Sartorius YDP30 printer, it is even possible to print out barcodes and QR codes.

The Right Draft Shield for Any Task

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

Thanks to the clever use of new materials, Cubis® draft shields feature high mechanical stability, yet their doors glide open effortlessly and silently. They provide outstanding visibility inside the entire weighing chamber and protect it against external influences that can interfere with weighing accuracy.

Unlike conventional lab balances on which an electrostatically charged draft shield can cause measurement errors, Cubis® eliminates these potential sources for error by a conductive coating on the glass panels of the draft shield.

No Compromises in Cleaning
Cubis® is well-protected against spillage of liquids. The weighing pan and the base plate of the draft shield are made of high-grade stainless steel and can be removed quickly and easily for thorough cleaning. In seconds, the balance will be ready again 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 entire unit.

DF Draft Shield for Filter Weighing
Manual stainless steel draft shield specially designed for ultra-accurate weighing of filters; for balances with 0.001 mg or 0.0001 mg readability (weighing modules 6.6S or 2.7S; not for 3.6P).

DM Draft Shield
Automatic ultra-micro- and micro balance draft shield with learning capability; for models with 0.001 mg or 0.0001 mg readability (weighing modules 6.6S, 3.6P, 2.7S).

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

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

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

The Utmost Precision
for the Smallest Sample Quantities

The high accuracy 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. Therefore, micro balances or even ultra-micro balances are needed to weigh samples less than 10 mg.

In addition, the substances to be analyzed are often only available in very small quantities and can also be expensive. In other cases, they may be so potent that users can only work with minimum quantities for their own protection.

Our Cubis® ultra-micro- and micro balances offer you the highest levels of safety, reliability of weighing results and conformity with the required standards.

In particular, the motorized all-glass draft shield helps accelerate workflows for fatigue-free weighing of minimum sample quantities. Moreover, the intelligent learning capability allows adaptation of the balance to any 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 fast and 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 optimally designed to minimize the interfering effects of static electricity. A choice of weighing pan diameters is available to accommodate different filter sizes (50 mm is standard | 75 mm and 90 mm are optional).

High-performance Weighing Made Easy
If you do not have any complex application requirements, but still require weighing results with uncompromising reliability, the MSE display unit in conjunction with the weighing modules of the micro balances and ultra-micro balances offers a perfect and cost-effective solution.

On extra-size Cubis® weighing pans of 400 × 300 mm (nearly 16" × 12"), even large vessels will have enough space for safe and secure positioning. The sleek high-quality pan surfaces and easily removable control units permit quick and thorough cleaning.

With a removable display for remote or raised use on a support arm (accessory option YDH02MS), you can set up your balance the way you need it to minimize stress and strain, even when working with heavy loads.

Speed and Reliable Results

for the Largest Sample Sizes – with Cubis® High-capacity Balances

The requirements on your balance also change as your sample sizes increase. In the harsh environment of technical plants, large sample container dimensions call for significantly more rugged weighing instruments, apart from demands place on protection and cleaning of the balances.

Featuring IP 54 protection and top-quality, smooth surfaces, the new Cubis® high-capacity balances are more than capable of withstanding these conditions. They consistently deliver reliable results, even under the most adverse conditions – with an unwavering readability of 0.1 g for loads of up to 70 kg.

Cubis® high-capacity models also feature the full spectrum of options for easy process integration. With the MSA display and Q-Apps, they offer you a wide range of options for unique, customized solutions.

Cubis® continuously monitors whether it is perfectly level. Quick manual leveling takes just a few steps with interactive operator guidance prompts shown on the display.

Cubis® MCM

Manual Mass Comparators –
Your Full-range Mass Standard Laboratory

The new Cubis® MCM manual mass comparators are the first devices on the market that combine metrological weighing expertise and integrated control of workflows in line with the recommendations of the International Organization of Legal Metrology (OIML). In the OIML R111-1 International Recommendation, this organization defines metrological and technical requirements. These are the basis of the OIML's primary air to harmonize the regulations and metrological controls applied by national metrological services and other related organizations of its member states. In particular, the pharmaceutical industry requires that greater accuracy standards based on global regulations be adopted consistently throughout its manufacturing operations. In addition, Cubis® MCM delivers results that are all ASTM-compliant as well.

Integrated Workflow Control

Integrated workflow control in the Cubis® MCM manual mass comparators minimizes operating error rates. During a measurement process, the mass comparator provides user guidance prompts and instructions about the next step to perform. This significantly reduces the "human" factor that can compromise the accuracy of mass determination, making results more reliable.
At the same time, the Cubis® MCM ensures optimal, user-friendly workflows to reduce stress on operators.

Integrated Climate Sensors

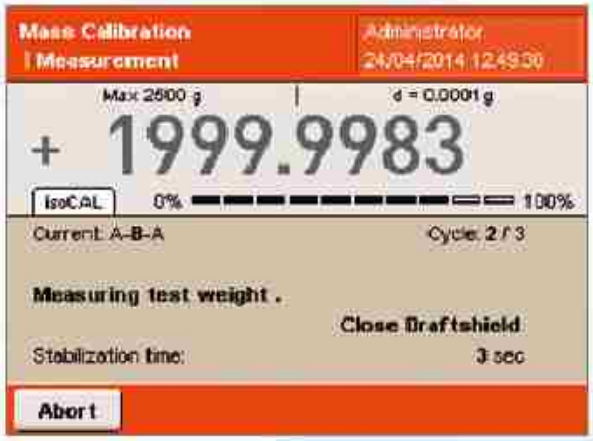
The sensors integrated in the mass comparator automatically log climate data like temperature, air pressure and humidity for calculating the air buoyancy correction at the site of measurement. This climate data can be documented on a computer so that you can check at any time that the limits on temperature, air pressure and humidity for the respective calibration levels are in compliance for accuracy classes E1, E2, F1 or F2.

The Fastest Mass Comparison Cycles

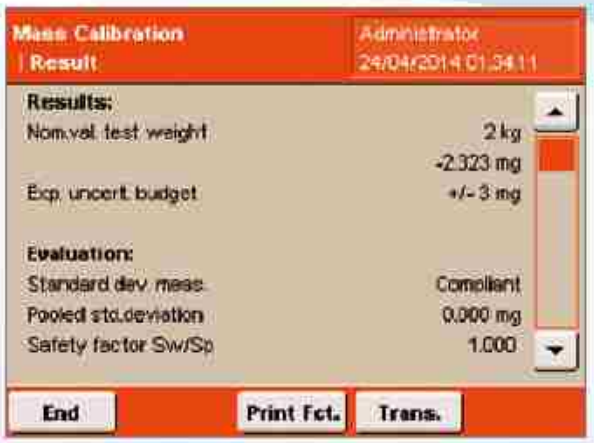
Compared with conventional units, Cubis® MCM mass comparators are by far the fastest in completing ABA, ABBA or AB1...BnA cycles to determine the conventional mass and its combined standard uncertainty.

The Cubis® mass comparator guides you step by step through each application. As a result, it significantly reduces the "human" factor that can compromise the accuracy of mass comparison results.

A total of 14 Cubis® MCM manual mass comparators are available with maximum capacities from 6.1 g to 64 kg and readabilities from 0.1 µg to 10 mg. All models with draft shields are supplied standard with a climate module equipped with climate sensors for temperature, humidity and air pressure. For mass comparator models without a draft shield, an external climate module with the appropriate sensors is included as part of the equipment supplied. A DAkkS calibration certificate can be provided for the climate sensors on request.



You can instantly tell where you are in the measurement process and what the next step to be performed is, which prevents errors.



A full presentation of the results is displayed along with the measurement uncertainties.

All Cubis® MCM mass comparators feature a separate display and control unit with an electronics unit isolated from the weigh cell to reduce the effects of heat generated by the electronics and of the warmth of the operator's hands.

The climate sensors for temperature, humidity and air pressure are integrated in a small, compact, lightweight interchangeable unit. They can be easily removed for DAkkS calibration.

Cubis® MCM Manual Mass Comparators – Your Full-range Mass Standard Laboratory

The Cubis® MCM manual mass comparators can be seamlessly integrated in the infrastructure of a mass standards laboratory. Based on the Cubis® Q-Com communication concept (see pp. 14–15), they can be integrated in existing networks and every type of desired data can be transferred to other devices.

The Cubis® MCM mass comparators are specified under both ideal and real laboratory conditions. This ensures that they always provide you their full and reliable performance during use on-site.

With all their built-in functions and technical possibilities, the Cubis® MCM mass comparators work like "small metrological laboratories" – the only difference is they are integrated in the mass comparator.

Cubis® MCM mass comparators deliver a full range of solutions for mass comparison by providing built-in climate sensors for temperature, humidity and air pressure, as well as user-guided workflows and readings of the results along with the measurement uncertainties.

Safety Powder Hoods Systematic Safety

Two major requirements are paramount when toxic, powdery samples are weighed: Safety comes first, closely followed by the accuracy of initial weights as the second priority.

The Sartorius safety weighing station, consisting of a 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 all air and finely powdered particulates from entering into the user's respiratory system. At the same time, due to the constant rate of pure air drawn inside the hood and the low-turbulence flow within the hood, consistent and reproducible weighing results are guaranteed.

The balance and weighing hood are a perfectly matched system. They provide perfect operator protection, while delivering absolutely correct weighing results.

The Cubis® Safety Concept – Application-oriented and Flexible

- The mechanical level indicator of a balance is often difficult or even impossible to see inside a hood. This leads to parallax errors during leveling and ultimately to incorrect weight measurement results. With Q-Level, an optional feature on balances with a weighing capacity of ≤ 6.2 kg and a readability of > 0.001 mg, motorized leveling can be performed automatically inside the hood.
- With the optional infrared sensor YHS01MS, the draft shield can be opened hands-free and the balance can be tared. This reduces the risk of contamination.
- The *Bluetooth*® interface module eliminates the need for cables that can become contaminated so that the YDP10BT-0CE printer can be operated wirelessly outside the hood.
- The Q-Stat ionizer integrated into DI draft shield (see p. 11), not only reduces the interfering effects of static electricity. This highly effective device also prevents samples from adhering to a spatula, which can lead to frustration and contamination when a user tries to shake off a sample and ends up spilling it.
- 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 YWP03MS, 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 starting point of the operating range, according to USP.

Advanced Pharma Compliance
for Use in Regulated Sectors

With its integrated Advanced Pharma Compliance (APC) package, Cubis® offers the best support to guarantee qualified results. The APC package features a broad range of functions that ensure 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

Monitoring of Inspection and Testing Equipment

Self-test

- Leveling control
- Automatic motorized leveling, **Q-Level**
- Automatic time- and temperature-dependent calibration, **isoCAL**
- Monitoring of the operating range starting point according to USP 41, **SQmin**
- Automatic repeatability test, **reproTEST**

Support | Guidance

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

Data Processing | Data Integration | Process Integration

Applications | Workflows

- Downloadable applications (**Q-Apps**)
- 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** (with DI draft shield)
- Adjustable vessel holder, **Q-Grip**
- Weighing pan for laboratory fume hood or laminar flow bench, **Q-Grid**
- Infrared sensor, foot switch, barcode scanner (optional accessories)
- Programmable automatic draft shield doors

Cubis® MSA

Cubis® MSU

Cubis® MSE

•	•	
•	•	
•	•	
•	•	
•	•	
•	•	
•	•	•
•	•	•
•	•	•
•	•	
•	•	
•		
•		
•	•	
•		
•		
•		
•		
•	•	•
•	•	
•	•	•
•	•	•
•	•	•
•	•	•
•	•	•

Advanced Pharma Compliance
for Use in Regulated Sectors

Balance Monitoring

The first balance with automatic motorized leveling: Q-Level

Q-Level enables you to have your balance automatically leveled by motors at the touch of a key. In the process, the Cubis® balance checks whether it is perfectly level and will immediately alert you whenever it has to be re-leveled (automatic messaging only on models with a capacity of ≤ 6.2 kg and a readability of > 0.001 mg).

Q-Level combines novel sensors and the most advanced display technology, making it easier and faster for you to level the balance accurately. Cubis®, along with MSA or MSU display and control units, offers interactive prompting to guide you during manual leveling. While Q-Level is active, the display will show you all the information you need: the position of the air bubble as well as text prompts, or icons on MSE, so you know which leveling foot to turn in which direction.

Process Monitoring

User Management

User Profile Name | Password management for tamper-proof security.

Action Hierarchy

Cubis® has warning and reminder functions in combination with a configurable action hierarchy for leveling, determining the USP Chapter 41 starting point of the operating range, and for calibration | adjustment.

Compatibility and Traceability

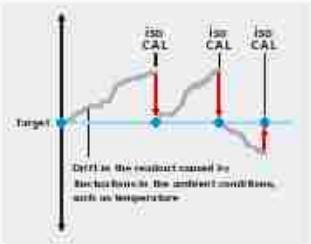
Cleaning Validation

Due to the high-quality materials and smooth untextured surfaces, Cubis® can be cleaned fast, easily and thoroughly.

Audit Trail

Logs important changes to the balance, so any errors or other non-conforming items can be quickly traced to the source.

Fully Automatic Calibration | Adjustment with isoCAL



You can choose to have the isoCAL function perform fully automatic calibration and adjustment after a factory preset or user-definable interval has elapsed. In addition, when a factory preset or user-definable temperature difference is exceeded, isoCAL will automatically trigger calibration and adjustment again.

Linearization

So-called linearity errors occur when there are any deviations from the theoretical linear slope of a balance's characteristic curve. Optimal linearization is required in order for your balance to meet its high accuracy criteria. That's why Cubis® eliminates these errors by automatically performing linearization.

Repeatability: ReproTEST

Cubis® lets you determine the standard deviation right where your balance is installed so you can check the repeatability of your weighing results: just one touch of a key is all it takes. This convenient reproTEST feature enables you to quickly determine whether the balance's environment is suitable so your balance will consistently deliver optimal and reliable weight measurements.

SQmin Function

During a weighing process, Cubis® monitors compliance of the starting point of its operating range with USP requirements. Once Cubis® has determined the starting point of an operating range, it will alert you whenever a value goes below this lowest point and will identify any unacceptable weights recorded or transferred.

DAkkS Measurement Uncertainty

Following internationally recognized DakkS calibration by the Sartorius Services unit, the characteristic curve of the measurement uncertainty can be read into the software of your Cubis®. As a result, you can choose between having the absolute or relative measurement uncertainty as well as the process accuracy displayed for every weight measured.

Task Management

The task management function enables you to define application workflows in your Cubis®. After you have configured a task workflow, you and your other operators will be guided interactively through your weighing process. Information not relevant to this process will be hidden to ensure error-free operation and to let you concentrate fully on the essentials of the task at hand.

Alibi Memory

A built-in alibi memory ensures traceable transfer of legal-for-trade weighing data to your computer.

GLP Certificate

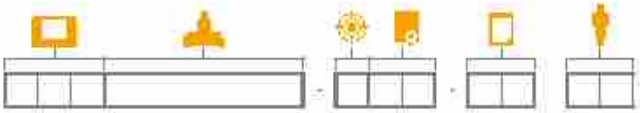
We asked an independent institute known for its strict vigilance to test and evaluate the suitability of a representative sample of many Cubis® series balances for use in GLP environments. These balances were equipped with an MSA display and control unit for testing. The outcome: the suitability of Cubis® for use in these environments was unconditionally certified.

Risk Analysis

A representative sample of many Cubis® series balances with an MSA display and control unit had to pass risk analysis testing according to the proactive method of FMEA (Failure Modes and Effects Analysis) as the basis for a GLP suitability review and cleaning validation. The results of this analysis are available on request.

Technical Specifications

Order Code



Note: Please use the adjacent fields to enter the selection made for each icon.

Example

Cubis® Display and Control Units
Select the display and control unit and enter it in the field identified by the icon in the order code.

Types	MSA	MSU	MSE
Operation	Touch screen, keys for important basic functions	Keys	Keys
Display	High-resolution color TFT, 5.7" graphical 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	Tiltable display, removable display and control unit	Removable display and control unit
Standard data interfaces	– USB port (integrated into weighing module) – RS-232C accessory interface, 25-pin (integrated into weighing module) – Ethernet (integrated into display and control unit) – Choice of data protocols available (also enables connection to software designed for external manufacturers) – *Bluetooth*® (optional accessory)		– USB port (integrated into weighing module) – RS-232C accessory interface, 25-pin (integrated into weighing module) – *Bluetooth*® (optional accessory)
SD card reader	Integrated as standard into display and control unit	Integrated as standard into display and control unit	–
Operation of motorized draft shield (only for DA, DI or DM draft shields)	Activated by side keys or touch-free using IR sensor (optional); learning capability	Activated by side keys or touch-free using IR sensor (optional); learning capability	Activated by key or touch-free using IR sensor (optional); learning capability
Applications	Mass unit conversion, SQmin function for operating range starting point according to USP, isoCAL automatic calibration | adjustment function, individual identifiers, density determination, statistics, calculation, averaging, formulation, weighing in percent, time-controlled functions, totalizing, DAkkS measurement uncertainty, second tare memory, counting, checkweighing, alibi memory, audit trail	Mass unit conversion, SQmin function for operating range starting point according to USP, isoCAL automatic calibration | adjustment function, individual identifiers, density determination, statistics, calculation, averaging, formulation, weighing in percent, time-controlled functions, totalizing, DAkkS measurement uncertainty, second tare memory, counting, checkweighing, alibi memory, audit trail	Mass unit conversion, isoCAL automatic calibration | adjustment function, density determination (buoyancy method only), calculation, averaging, net | total formulation, weighing in percent, counting, totalizing
Personalizable with Q-Apps	– Downloadable Q-Apps – Customer-specific modifications on request	–	–

Cubis® Weighing Modules

Please enter the model name, starting from the left, in the field identified by the icon in the order code.

	Readability [mg]	Weighing capacity [g]	Weighing pan (W × D) [mm]	Typical stabilization time [≤s]	Typical response time [≤s]	Repeatability [≤±mg]	Linearity [≤±mg]	Eccentric load [mg]* (Test load [g])	Optimum starting point of the operating range [mg]**
Ultra-Micro Balances 0.0001 mg									
2.7S	0.0001	2.1	∅ 20	7	10	0.00025	0.0009	0.0025 (1)	0.082***
Micro Balances 0.001 mg									
6.6S	0.001	6.1	∅ 30	5	8	0.001	0.004	0.004 (2)	0.82***
3.6P	0.001 | 0.002 | 0.005	1.1 | 2.1 | 3.1	∅ 30	5	8	0.003 | 0.004 | 0.005	0.004	0.005 (1)	0.82***
Semi-Micro Balances 0.01 mg									
225S	0.01	220	85 × 85	2	6	0...60 g: 0.015 60...220 g: 0.025	0.1	0.15 (100)	8.2
225P	0.01 | 0.02 | 0.05	60 | 120 | 220	85 × 85	2	6	0...60 g: 0.015 60...220 g: 0.04	0.15	0.2 (100)	8.2
125P	0.01 | 0.1	60 | 120	85 × 85	2	6	0...60 g: 0.015 60...120 g: 0.06	0.15	0.15 (50)	8.2
Analytical Balances 0.1 mg									
524S	0.1	520	85 × 85	1	3	0.1	0.4	0.3 (200)	82
524P	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
324S	0.1	320	85 × 85	1	3	0.1	0.3	0.3 (200)	82
324P	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
224S	0.1	220	85 × 85	1	3	0.07	0.2	0.2 (100)	82
124S	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 as the range from 820 d to the maximum weighing capacity. Depending on the installation location and environmental conditions, the value may be higher.

*** With DM draft shield

Cubis® Weighing Modules
Please enter the model name, starting from the left, in the field identified by the icon in the order code.

	Readability [mg]	Weighing capacity [g]	Weighing pan (W × D) [mm]	Typical stabilization time [≤s]	Typical response time [≤s]	Repeatability [≤±mg]	Linearity [≤±mg]	Eccentric (off-center) [mg]* (Test load [g])	Optimum starting point of the operating range [g]**
Precision Balances									
5203S	1	5,200	140 × 140	1	2	1	5	2 (2,000)	0.82
5203P	1 | 2 | 5	1,200 | 2,400 | 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 | 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 | 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
High-capacity Balances									
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 | 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 as the range from 820 d to the maximum weighing capacity. Depending on the installation location and environmental conditions, the value may be higher.

Cubis® Leveling
Select the type of leveling mode and enter "0" or "1" in the field identified by the icon in the order code.

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 to support manual leveling).
1	Fully automatic, motorized Q-Level leveling at the touch of a key (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 certificate type in the field identified by the icon in the order code.

00	Standard certificate of conformity to specifications
TR	Like 00, but with a detailed test report

Cubis® Draft Shields
Select a draft shield and enter the identifier in the field identified by the corresponding icon in the order code.

D0	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 all precision balances with a readability of 1 mg and weighing module 5202S.
DE	Manual, glass draft shield for all precision balances with a readability of 1 mg and weighing module 5202S.
DU	Manual, glass analytical draft shield with smooth-action doors that open wide and provide unimpeded access to the weighing chamber without interfering braces. For all models with 0.01 mg, 0.1 mg, and 1 mg readability and weighing module 5202S.
DA	Automatic, glass motorized draft shield with learning capability for user-friendly operation and easy customization to the changing requirements of different applications. For all models with 0.01 mg, 0.1 mg, and 1 mg readability and weighing module 5202S.
DI	Identical to the DA draft shield, but also includes an integrated ionizer to eliminate interfering electrostatic charges on samples and sample containers.
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 diameters of up to 50 mm (75 mm and 90 mm pans optional) in ultra-micro and micro balances with a readability of 0.0001 mg and 0.001 mg (not for weighing module 3.6P). Designed to minimize the effects of static electricity.

Interface Module Options
For every balance, you can 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	YDP10-0CE
Verifiable data printer with *Bluetooth*® data transmission (with YD001MS-B or option IB only)	YDP10BT-0CE
Ink ribbon for YDP10-0CE and YDP10BT-0CE	6906918
Paper rolls for printer YDP10-0CE; 5 rolls, each with 50 m	6906937
Data interface *Bluetooth*® for wireless connection of data printer YDP10BT-0CE	YD001MS-B
RS-232C data interface, 9-pin including PS/2 for connecting a computer 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 detached 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 detached 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 detached setup of display and weighing unit	VF4016
25-pin RS232 to USB cable	YCC01-USBM2
RS-232C connection cable to connect computer with 9-pin; COM interface, length 5 ft	YCC05-001M2
WinWedge, software for data communication between balance and computer (via RS232)	YSW05
WinWedge, software for data communication (via Ethernet)	YSW06

Displays and Input|Output Elements

MSA control unit with color TFT graphic display and touch screen	YAC01MSA
MSE control unit with backlit liquid-crystal display and tactile keys	YAC01MSE
MSU control unit with backlit black | white graphic display and tactile navigation keys	YAC01MSU
Barcode scanner with connecting cable, 120 mm reading range	YBR03PS2
Foot switch for printing, taring, or using a different function key; key function selectable by menu code, incl. T-connector	YFS01
Infrared sensor for touch-free activation of functions (e.g., controlling the draft shield)	YHS01MS
Hand switch for printing, taring, or using a different function key; key function selectable by menu code, incl. T-connector	YHS02
Foot switch for activating the OPEN|CLOSE draft shield functions (only in combination with DA and DI draft shield), taring and printing	YPE01RC
Additional display, LCD, digit height 13 mm, backlit	YRD03Z
3-segment checkweighing display, red – green – red, for plus|minus measurements, incl. T-connector	YRD11Z

The *Bluetooth*® word mark and logos are owned by *Bluetooth*® SIG, Inc., and any use of such marks by Sartorius is under license. Other trademarks and trade names are those of their respective owners.

Pipette Calibration Hardware

Pipette calibration kit (hardware) for models with 0.1 mg and 0.01 mg readability Consists of moisture trap and all required adapters	YCP04MS
Pipette calibration kit (hardware) for micro balance weighing modules 6.6S and 3.6P Consists of moisture trap and all required adapters	VF988

Filter Weighing and Anti-static Accessories

Anti-static weighing pan, 130 mm diameter, for weighing modules with a readability of 0.1 mg or 0.01 mg	YWP01MS
Filter weighing pan, 75 mm diameter, for ultra-micro and micro balance models (weighing modules 6.6S, 2.7S; only for DF draft shield)	VF2562
Filter weighing pan, 90 mm diameter, for ultra-micro and micro balance models (weighing modules 6.6S, 2.7S; only for DF draft shield)	VF2880
Ionization blower to eliminate electrostatic charges on sample containers and samples	YIB01-0UR
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 = 1 mg	YDK02MS
Q-Grip, universal holder for containers used for weighing and filters up to a diameter of 120 mm (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 (pan size of 206 × 206 mm) for weighing in laboratory hoods, safety powder hoods or workbenches (reduces exposure of the weighing pan to lift by strong air current; replaces standard weighing pan)	YWP03MS

Anti-Vibration Solutions

Balance table made of cast stone, for weighing with vibration dampening	YWT03
Wall console	YWT04
Balance table made of wood with cast-stone inset for precise, reliable weight measurements	YWT09
Granite Platform (13" × 15") with vibration isolators	U1-21201315
Granite Platform (16" × 21") with vibration isolators	U1-24201621

Weighing Accessories

Weighing scoop of chrome-nickel steel, 90 × 32 × 8 mm	641214
Aluminum weighing scoop, 4.5 mg (pack of 250) for ultra-micro and micro balance models	U1-6565-250
Support arm for 10 | 100 mg precision weighing modules for raised mounting of 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 raised mounting of MSE, MSU and MSA display and control units	YDH02MS
Hook for below-balance weighing; for precision weighing modules with 100 mg | 1 g readability and weighing capacity ≥ 20 kg	69EA0040

The brand name and logo for *Bluetooth*® wireless technology are the property of *Bluetooth*® SIG Inc.
The use of this brand name and trademark by Sartorius AG is under license. Other brand names and trademarks are the property of their respective owners.

Cubis® MCM Manual Mass Comparators

Up to 111 g

Order number, with uncalibrated climate sensors	**MCM6.7**	**MCM36**	**MCM66**	**MCM106**
Order number, with calibrated climate sensors and DAkkS certificate	**MCM6.7-DAkkS**	**MCM36-DAkkS**	**MCM66-DAkkS**	**MCM106-DAkkS**
Maximum capacity	6.1 g	31 g	61 g	111 g
Readability	0.1 µg	1 µg	1 µg	1 µg
Range of use	0 – 6 g	0 – 30 g	0 – 60 g	0 – 111 g
Repeatability "s"				
– under optimal conditions [1]	0.15 µg	1 µg	1 µg	1 µg
– under standard conditions E [2]	0.3 µg	1.5 µg	2 µg	2 µg
– at 1/3 load [2]	0.2 µg			
– at 1/10 load [2]		0.7 µg	0.7 µg	0.7 µg
– under standard conditions F [3]	0.6 µg	4 µg	5 µg	5 µg
Electronic weighing | tare range	6.1 g	31 g	61 g	61 g
Substitution weights				50 g
Linearity	1 µg	6 µg	8 µg	8 µg
Eccentric (off-center) load deviation	0.25 µg/mm	1 µg/mm	1 µg/mm	1 µg/mm
Stabilization time	10 s	3 s	3 s	5 s
Cycle time (ABA)	90 s	90 s	90 s	90 s
Standard Accessories				
Data interfaces	RS-232C, USB, Ethernet, SD card (optional RS-232C, PS2, *Bluetooth*®)			
Draft shield	•	•	•	•
Additional application programs	Weighing, mass unit conversion, individual identifiers, density determination, statistics			
Port for below-balance weighing hook	•	•	•	•
Climate sensors	Integrated into draft shield			
Optional Accessories				
Calibration weight	5 g | E2 YCW352-00	20 g | E2 YCW422-00	50 g | E2 YCW452-00	50 g | E2 YCW452-00
Climate module	YMC20MC	YMC20MC	YMC20MC	YMC20MC
Calibrated climate module	YMC20MC-DAkkS	YMC20MC-DAkkS	YMC20MC-DAkkS	YMC20MC-DAkkS
2nd draft shield	YDS20C	YDS24C	YDS24C	YDS24C
Balance table	YWT03	YWT03	YWT03	YWT03
Dimensions				
Weighing pan size	∅ 16 mm	∅ 30 mm	∅ 30 mm	∅ 50 mm
Maximum object size (D × H)	16 × 70 mm	30 × 120 mm	30 × 120 mm	50 × 120 mm
Weigh cell (W × D × H)	122 × 343 × 141 mm	222 × 431 × 301 mm	222 × 431 × 301 mm	222 × 431 × 301 mm
Electronic unit (W × D × H)	239 × 320 × 56 mm	239 × 320 × 56 mm	239 × 320 × 56 mm	239 × 320 × 56 mm

Repeatability is the standard deviation "s"; it is calculated from 5 ABA cycles under the following conditions:

[1] Optimal conditions: Automatic measurement without operator influence measured in a laboratory under E1 conditions, on a decoupled weighing stone, no drafts from above

[2] Standard conditions E: Measurement performed manually under a laboratory under E1 conditions, on a decoupled weighing stone, no drafts from above

[3] Standard conditions F: Measurement performed manually under a laboratory under at least F1 conditions, on a non-decoupled weighing stone, air conditioning and minimal drafts from above

Cubis® MCM Manual Mass Comparators

600 g to 10 kg

Order number, with uncalibrated climate sensors	**MCM605**	**MCM1005**	**MCM1004**
Order number, with calibrated climate sensors and DAkkS certificate	**MCM605-DAkkS**	**MCM1005-DAkkS**	**MCM1004-DAkkS**
Maximum capacity	610 g	1,110 g	1,110 g
Readability	0.01 mg	0.01 mg	0.1 mg
Range of use	0 – 610 g	0 – 1,110 g	0 – 1,110 g
Repeatability "s"			
– under optimal conditions [1]	10 µg	15 µg	0.05 mg
– under standard conditions E [2]	20 µg	20 µg	0.07 mg
– at 1/3 load [2]	15 µg		
– at 1/10 load [2]	10 µg	15 µg	0.05 mg
– under standard conditions F [3]	30 µg	50 µg	0.2 mg
Electronic weighing | taring range	610 g	610 g	610 g
Substitution weights		500 g	500 g
Linearity	100 µg	100 µg | 600 g	0.1 mg | 600 g
Eccentric (off-center) load deviation	10 µg/mm	15 µg/mm	30 µg/mm
Stabilization time	5 s	5 s	3 s
Cycle time (ABA)	90 s	90 s	90 s
Standard Accessories			
Data interfaces	RS-232C, USB, Ethernet, SD card (optional RS-232C, PS2, *Bluetooth*®)		
Draft shield	•	•	•
Additional application programs	Weighing, mass unit conversion, individual identifiers, density determination, statistics		
Port for below-balance weighing hook	•	•	•
Climate sensors	Integrated into draft shield		
Optional Accessories			
Calibration weight	500 g | E2 YCW552-00	500 g | E2 YCW552-00	500 g | E2 YCW552-00
Climate module	YMC20MC	YMC20MC	YMC20MC
Calibrated climate module	YMC20MC-DAkkS	YMC20MC-DAkkS	YMC20MC-DAkkS
2nd draft shield	YDS24C	YDS24C	YDS24C
Balance table	YWT03	YWT03	YWT03
Dimensions			
Weighing pan size	∅ 90 mm	∅ 90 mm	∅ 90 mm
Maximum object size (D × H)	135 × 140 mm	135 × 140 mm	135 × 140 mm
Weigh cell (W × D × H)	222 × 431 × 301 mm	222 × 431 × 301 mm	222 × 431 × 301 mm
Electronic unit (W × D × H)	239 × 320 × 56 mm	239 × 320 × 56 mm	239 × 320 × 56 mm

Repeatability is the standard deviation "s"; it is calculated from 5 ABA cycles under the following conditions:

[1] Optimal conditions: automatic measurement without operator influence measured in a laboratory under E1 conditions, on a decoupled weighing stone, no drafts from above

[2] Standard conditions E: measurement performed manually in a laboratory under E1-conditions, on a decoupled weighing stone, no drafts from above

[3] Standard conditions F: measurement performed manually in a laboratory under at least F1 conditions, on a non-decoupled weighing stone, air conditioning and minimal drafts from above




Order number, with uncalibrated climate sensors	**MCM2004**	**MCM5004**	**MCM5003**	**MCM10K3**
Order number, with calibrated climate sensors and DAkkS certificate	**MCM2004-DAkkS**	**MCM5004-DAkkS**	**MCM5003-DAkkS**	**MCM10K3-DAkkS**
Maximum capacity	2,500 g	5,100 g	5,100 g	11 kg
Readability	0.1 mg	0.1 mg	1 mg	1 mg
Range of use	0 – 2,500 g	0 – 5,100 g	0 – 5,100 g	0 – 11 kg
Repeatability "s"				
– under optimal conditions[1]	0.05 mg	0.3 mg	0.5 mg	0.8 mg
– under standard conditions E[2]	0.1 mg	0.5 mg	0.8 mg	1 mg
– at 1/3 load[2]				
– at 1/10 load[2]	0.07 mg	0.3 mg	0.5 mg	0.8 mg
– under standard conditions F[3]	0.3 mg	0.8 mg	1.5 mg	3 mg
Electronic weighing | tare range	2,500 g	5,100 g	5,100 g	11 kg
Substitution weights		50 g		
Linearity	1 mg	2 mg	3 mg	6 mg
Eccentric (off-center) load deviation	30 µg/mm	151 µg/mm	300 µg/mm	0.5 mg/mm
Stabilization time	3 s	3 s	3 s	3 s
Cycle time (ABA)	90 s	90 s	90 s	90 s
Standard Accessories				
Data interfaces	RS-232C, USB, Ethernet, SD card (optional RS-232C, PS2, *Bluetooth*®)			
Draft shield	•	•	•	
Additional application programs	Weighing, mass unit conversion, individual identifiers, density determination, statistics			
Port for below-balance weighing hook	•	•	•	•
Climate sensor	Integrated into draft shield			Can be connected externally
Optional Accessories				
Calibration weight	2 kg | E2 YCW622-00	5 kg | E2 YCW652-00	5 kg | E2 YCW652-00	10 kg | E2 YCW712-00
Climate module	YMC20MC	YMC20MC	YMC20MC	YMC20MC
Calibrated climate module	YMC20MC-DAkkS	YMC20MC-DAkkS	YMC20MC-DAkkS	YMC20MC-DAkkS
2nd draft shield	YDS24C	YDS24C	YDS24C	YDS24C
Balance table	YWT03	YWT03	YWT03	YWT03
Lifting device for 10 kg				YAW51
Lifting device for 20 kg				
Dimensions				
Weighing pan size (W × D)	136 × 136 mm	136 × 136 mm	136 × 136 mm	200 × 200 mm
maximum object size (D × H)	130 × 200 mm	130 × 200 mm	130 × 200 mm	
Weigh cell (W × D × H)	240 × 276 × 373 mm	240 × 276 × 373 mm	240 × 276 × 373 mm	240 × 276 × 102 mm
Electronic unit (W × D × H)	239 × 320 × 56 mm	239 × 320 × 56 mm	239 × 320 × 56 mm	239 × 320 × 56 mm

Repeatability is the standard deviation "s"; it is calculated from 5 ABA cycles under the following conditions:

[1] Optimal conditions: automatic measurement without operator influence measured in a laboratory under E1 conditions, on a decoupled weighing stone, no drafts from above.

[2] Standard conditions E: measurement performed manually in a laboratory under E1 conditions, on a decoupled weighing stone, no drafts from above

[3] Standard conditions F: measurement performed manually in a laboratory under at least F1 conditions, on a non-decoupled weighing stone, air conditioning and minimal drafts from above

Cubis® MCM Manual Mass Comparators

40 kg – 60 kg



Order number, with uncalibrated climate sensors	**MCM40K3**	**MCM60K3**	**MCM60K2**
Order number, with calibrated climate sensors with DAkkS certificate	**MCM40K3-DAkkS**	**MCM60K3-DAkkS**	**MCM60K2-DAkkS**
Maximum capacity	41 kg	64 kg	64 kg
Readability	1 mg	2 mg	10 mg
Range of use	0 – 41 kg	0 – 64 kg	0 – 64 kg
Repeatability s			
– under optimal conditions [1]	2 mg	4 mg	6 mg
– under standard conditions E [2]	3 mg	6 mg	10 mg
– at 1/3 load [2]			
– at 1/10 load [2]	2 mg	4 mg	
– under standard conditions F [3]	6 mg	10 mg	25 mg
Electronic weighing | tare range	41 kg	64 kg	64 kg
Linearity	20 mg	40 mg	50 mg
Eccentric (off-center) load deviation	3.5 mg/mm	3.5 mg/mm	3.5 mg/mm
Stabilization time	5 s	5 s	5 s
Cycle time (ABA)	120 s	120 s	120 s
Standard Accessories			
Data interfaces	RS-232C, USB, Ethernet, SD card (optional RS-232C, PS2, *Bluetooth*®)		
Additional application programs	Weighing, mass unit conversion, individual identifiers, density determination, statistics		
Port for below-balance weighing hook	with opt. accessories 69EA0040	with opt. accessories 69EA0040	with opt. accessories 69EA0040
Climate sensor	Can be connected externally		
Optional Accessories			
Calibration weight	20 kg | E2 YCW722-00	50 kg | E2 YCW752-00	50 kg | E2 YCW752-00
Climate module	YMC20MC	YMC20MC	YMC20MC
Calibrated climate module	YMC20MC-DAkkS	YMC20MC-DAkkS	YMC20MC-DAkkS
2nd draft shield	YDS05C | YDS03C	YDS05C | YDS03C	YDS05C | YDS03C
Lifting device for 10 kg	YAW51	YAW51	YAW51
Lifting device for 20 kg	YAW52	YAW52	YAW52
Lifting device for 50 kg		YAW53	YAW53
Crane with chain hoist		YLD01C	YLD01C
Gripper for weights with handle		YLD02C	YLD02C
Floor-mounted column, stainless steel			
Dimensions			
Weighing pan size (W × D)	400 × 300 mm	400 × 300 mm	400 × 300 mm
Weigh cell (W × D × H)	400 × 326 × 126 mm	400 × 326 × 126 mm	400 × 326 × 126 mm
Electronic unit (W × D × H)	239 × 320 × 56 mm	239 × 320 × 56 mm	239 × 320 × 56 mm

Repeatability is the standard deviation "s"; it is calculated from 5 ABA cycles under the following conditions:

[1] Optimal conditions: automatic measurement without operator influence measured in a laboratory under E1 conditions, on a decoupled weighing stone, no drafts from above.

[2] Standard conditions E: measurement performed manually in a laboratory under E1 conditions, on a decoupled weighing stone, no drafts from above

[3] Standard conditions F: measurement performed manually in a laboratory under at least F1 conditions, on a non-decoupled weighing stone, air conditioning and minimal drafts from above

Accessories for Cubis® MCM Mass Comparators

Climate module, uncalibrated, for all MCM models	YCM20MC
Calibration of a climate module YCM20MC with DAkkS calibration certificate	YCM20DAkkS
Climate module with DAkkS calibration certificate for all MCM models	YCM20MC-DAkkS
Hook for below-balance weighing, for models MCM40K3, MCM60K3, MCM60K2, MCM40K3-DAkkS, MCM60K3-DAWKS and MCM60K2-DAkkS	69EA0040
Tower for climate module, for mounting YCM20MC; can be ported to the following models: MCM10K3, MCM40K3, MCM60K3, MCM60K2, MCM10K3-DAkkS, MCM40K3-DAkkS, MCM60K3-DAkkS and MCM60K2-DAkkS, connecting cable included	YCM20MC Tower

USA
Sartorius Corporation
5 Orville Drive, Suite 200
Bohemia, NY 11716

Phone +1.631.254.4249
Toll-free +1.800.635.2906
Fax +1.631.254.4253

www.sartorius.us

Canada
Sartorius Canada Inc.
2179 Dunwin Drive #4
Mississauga, ON L5L 1X2

Phone +1.905.569.7977
Toll-Free +1.800.668.4234
Fax +1.905.569.7021

www.sartorius.com

Specifications subject to change without notice.
Publication No.: WL-1010-e150605 | Order No.: 98649-011-75 | Ver. 04 | 2015