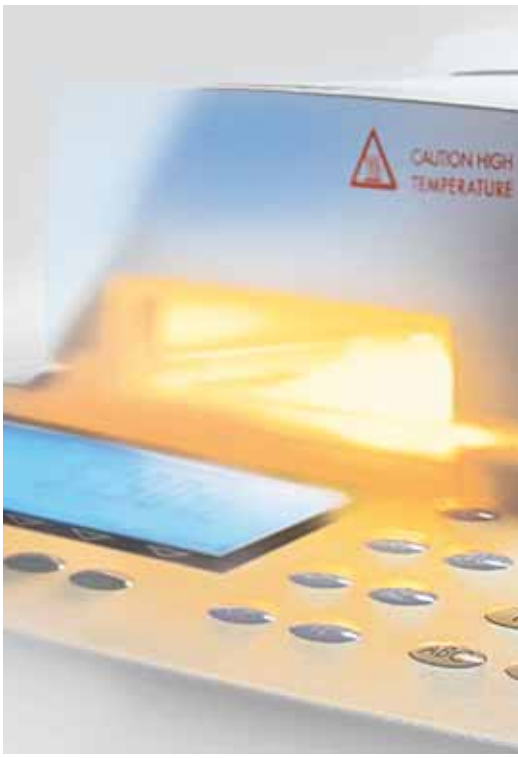
sartorius
mechatronics

Complete Catalog
Laboratory Mechatronics



turning science into solutions

A profile of Sartorius AG

The Sartorius Group is an internationally leading laboratory and process technology provider covering the segments of biotechnology and mechatronics. In 2007, the technology group earned pro forma sales revenue of 622.7 million euros. Founded in 1870, the Goettingen-based company currently employs approximately 4,500 persons. The major areas of activity in its biotechnology segment focus on fermentation, filtration, purification, fluid management and laboratory applications. In the mechatronics segment, the company primarily manufactures equipment and systems featuring weighing, measurement and automation technology for laboratory and industrial applications.

Key Sartorius customers are from the pharmaceutical, chemical and food and beverage industries and from numerous research and educational institutes of the public sector. Sartorius has its own production facilities in Europe, Asia and America as well as sales subsidiaries and local commercial agencies in more than 110 countries.

pH/ATC electrode
pH 0...14 / -5...80°C / 3M KCl
D982211 001
CAUTION HIGH
TEMPERATURE
12.57 %L

Contents


Max 410 g
d = 0.0001 g
370.0000 g
Cal
Tare
ABC
I/O
Setup
CF
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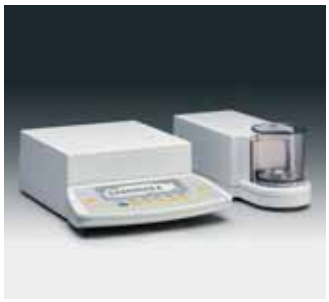
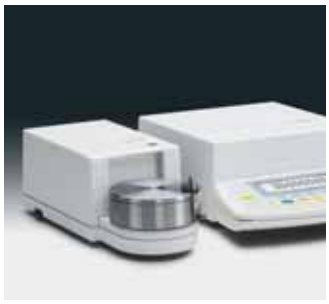
Weighing Equipment for the Laboratory

Premium Ultra-micro- and Microbalances: SE2, ME5 and ME36S
Maximum Accuracy – Even for Minimum Sample Quantities



Design 1



Design 2

Design 3

Sartorius premium microbalances meet the highest requirements when it's a matter of obtaining fast and exceptionally accurate results.
These balances offer maximum support when used as inspection, measuring and test equipment within a quality management system. The following performance features make your quality assurance procedures much easier:

- SQmin function displays the minimum sample weight allowable according to the United States Pharmacopeia (USP) (can be activated by Sartorius Service)
- Fully automatic calibration and adjustment feature: isoCAL
- ISO | GLP-compliant recording
- Input capability for alphanumeric sample IDs

All-glass draft shield
The motorized draft shield on the SE2 and ME5 is made entirely of glass with no frame to obstruct your view. A special coating on the glass inside the chamber eliminates interfering factors – such as those caused by electrostatically charged objects.

Cleaning as easy as 1-2-3
In just one easy step, you can completely remove the draft shield. The weighing chamber base plate features smooth, easy-to-clean surfaces. Design features that really pay for themselves whenever absolute cleanliness is the No. 1 priority.

Easy to operate
The generously sized opening of the draft shield moves to any position desired – you can choose to operate the draft shield at the press of an ergonomic key using the ball of your hand, a foot switch (optional) or an external computer.

Fast results
With stabilization times of only 10 seconds, the SE2 and ME5 will save you valuable time during each weighing operation.

Brilliant readability
The backlit, high-contrast graphical display ensures excellent readability. Text prompts in plain English (and your choice of other languages) guide you quickly and confidently in configuring the balance.

Flexible
Each ultra-micro- and microbalance has 14 built-in application programs as standard features, such as air buoyancy correction, differential weighing program for up to 999 samples, and statistical evaluation.

Featuring a readability of 1 µg, the ME36S offers an exceptionally wide weighing range up to a capacity of 31 g and outstanding metrological specifications, making it ideal for highly accurate micro-weighing and for weighing micro-quantities into heavy tare containers.

All balance-generated data can be logged via the standard RS-232C interface port.

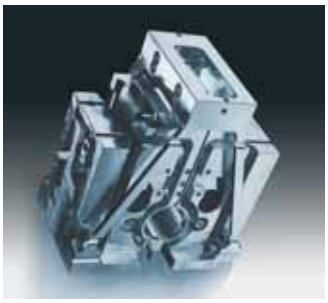
Filter weighing
Models ME5-F and SE2-F have been specially designed for weighing filters of up to 90 mm in diameter. The draft shield is made completely of metal, thereby minimizing the interfering effects of static electricity.

Specifications

Model		SE2***	ME5***	ME36S***	SE2-F filter balance	ME5-F filter balance
Weighing capacity	g	2.1	5.1	31	2.1	5.1
Readability	µg	0.1	1	1	0.1	1
Repeatability (±)	µg	0.25	1	2	0.25*	1**
Linearity (< ±)	µg	0.9	4	10	0.9*	4**
Response time (average)	s	10	10	14–18	10*	10**
Load plate ∅	mm	20	30	30	50 or 20 75 and 90 optional	50 or 30
Design		1	1	3	2	2

* with standard weighing pan 20 mm ∅
** with standard weighing pan 30 mm ∅
*** Models SE2, ME5 and ME36S are available in verified versions for use in legal metrology in the European Economic Area

Premium Semi-micro- and Analytical Balances: ME Series
When Results Count



Incomparably fast
An outstanding feature of the Sartorius ME series is speed: stable readouts with five decimal places in just eight seconds.

Controlled by palm-operable keys or by custom programming, the draft shield closes quietly, precisely and quickly. Its opening and closing position can be adapted to every weighing situation.

Incomparably stable accuracy
Repeatability of the weights measured is an additional strength of the Sartorius ME. Plus, the results are just as stable as the robotically etched 21st century weigh cell in the ME.

The Sartorius ME is amazingly impervious to the surrounding environment. Interfering static electricity on samples and tare containers can be neutralized at the touch of a key.

Incomparably reliable
Sartorius ME stands for reliability, year in, year out. That's why we are offering a three-year warranty, which we will extend on request for up to a total of five years.

Facts, facts and more facts
Exceptionally fast, rugged monolithic weigh cell

Three-part, motorized draft shield system

User-friendly palm-activated keys for draft shield operation; foot switch optional for applications where you need your hands free

Neutralizes static electricity

Prompts in clear English for operator guidance

Alphanumeric input capability for sample IDs

Software support for use in quality management systems

SQmin function displays the minimum allowable sample quantity in accordance with the United States Pharmacopeia (can be activated by Sartorius Service)

Display of the uncertainty of measurement according to the German Calibration Service (DKD)

ISO | GLP-compliant, user-configurable records | printouts

Built-in applications
Built-in software supports all key laboratory weighing applications to ensure smooth, time-saving lab procedures and reliable results.

- Density determination
- Calculation of weights using a definable factor or equation
- Statistical evaluation
- Differential weighing
- Air buoyancy correction
- Air density determination

Specifications

Model	ME235S	ME235P	ME614S	ME414S	ME254S	ME235P-SD*
Weighing capacity (g)	230	60 | 110 | 230	610	410	250	60 | 110 | 230
Readability (mg)	0.01	0.01 | 0.02 | 0.05	0.1	0.1	0.1	0.01 | 0.02 | 0.05
Repeatability (≤mg)	0.015 (0–60 g) 0.025 (60–230 g)	0.015 (0–60 g) 0.040 (60–110 g) 0.040 (110–230 g)	0.1	0.1	0.07	0.015 (0–60 g) 0.040 (60–110 g) 0.040 (110–230 g)
Linearity (≤ ± mg)	0.1	0.15	0.4	0.3	0.15	0.15
Response time (≤s)	8	8	3	2.5	2.5	8
Off-center load at ½ max. capacity (≤mg) (positions acc. to OIML R76)	0.15	0.2	0.6	0.4	0.3	0.2
Weighing pan diameter (mm)	90	90	90	90	90	90
Clearance above weighing pan (mm)	253	253	253	253	253	195

All models are available in verified versions for use in legal metrology in the European Economic Area (except *)
* with short-design draft shield and pipette opening 60 mm ∅, with cover

Premium Analytical and Precision Balances: LA Reference Series Get What's Really Important

The next generation succeeding the legendary Masterpro LA series of lab balances is aptly named the LA Reference. Building upon the reputation of the former series that have become bywords for reliability in many laboratories throughout the world, this new series is The Reference when it comes to accomplishing lab weighing tasks proficiently.

Reliability spelled in capital letters
The LA Reference offers reliability without compromise. This means there is no room for error, either during operation or display of the results, thanks to a range of features. These extend from the error-free input capability of data and parameters to user-friendly, tactile keys, to the clear, high-contrast graphical display. Plain-text prompts in a choice of languages for all settings make it easy to quickly select the functions needed.

For use in regulated areas and quality management systems, the LA offers a complete range of functions that you can rely on. For example, the fully automatic function, isoCAL, makes sure that calibration and adjustment are performed at regular intervals as required. ISO/GLP-compliant data logging and printers provide ideal support in ensuring that you meet documentation requirements. The printout can be individually customized to fulfill your application-specific demands.

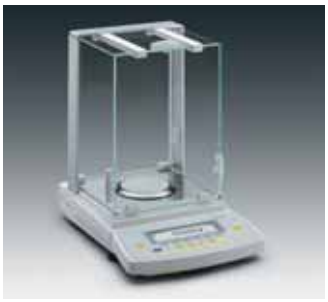
Ruggedness and high-tech design – not a contradiction!
Just one glance, and you can tell that the LA Reference offers the highest quality and resistance. The sleek metal housing, the robotically etched monolithic weigh cell technology and the high-grade keypad overlay give the balance the level of ruggedness it needs to stand up to tough daily use in the lab.

Precise manufacturing processes for the highest accuracy in the lab
The LA Reference provides you with the same maximum, consistent precision for measurements that goes into the manufacture of the balance itself at Sartorius. The balance's highly innovative monolithic weigh cell together with cutting-edge microprocessor technology ensures the most accurate and – on top of this – the fastest weight readouts anytime, all the time.

LA Reference – The Reference in standard features as well
The pan and weighing chamber base plate are made of high-grade stainless steel. As a result, they are chemically resistant and easy to clean. The especially large-sized draft shield chamber offers ample space for accommodating tall laboratory containers and for placing samples next to the pan to acclimatize them to the temperature inside. The display and operating unit that can be set up separately offers additional flexibility for special weighing tasks, such as below-balance weighing.

The standard built-in application software provides practically all programs ever needed for accomplishing weighing tasks reliably and accurately in the lab; from density determination of solid and liquid substances to differential weighing of up to 999 samples with convenient management of the data measured, and even statistics and time-controlled functions, to mention just a few.

The SQmin function for displaying the minimum allowable sample weight according to the United States Pharmacopeia and the S.U.R.E. function for continuously display of the measurement uncertainty ensure ideal dependability for use of the balance in regulated areas.



Design 1

Design 2

Design 3

Design 4

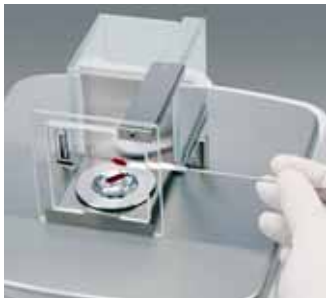
Design 5

Specifications

Model	Read-ability (mg)	Weighing capacity (g)	Pan size (mm)	Re-sponse time (average) (≤ s)	Repeat-ability (≤ ± mg)	Linearity (≤ ± mg)	De-sign
Analytical balances							
LA120S*	0.1	120	∅ 90	2	0.1	0.2	1
LA230S*	0.1	230	∅ 90	2	0.1	0.2	1
LA230P*	0.1|0.2|0.5	60|120|230	∅ 90	2	0.1|0.2|0.5	0.2|0.2|0.5	1
LA310S*	0.1	310	∅ 90	2	0.2	0.3	1
LA130S-F filter balance	0.1	150	208×264	4	0.2	0.2	5
Precision balances							
LA1200S*	1	1,200	∅ 130	1.5	1	2	2
LA620S*	1	620	∅ 130	1.5	1	2	2
LA220S*	1	220	∅ 130	1.5	1	2	2
LA2000P*	1|10	1,010|2,000	∅ 130	1.5	1|10	2|10	2
LA620P	1|2|5	120|240|620	∅ 130	1.5	1|1|3	2|2|5	2
LA5200D	1|10	1,010|5,200	∅ 130	2.5	1|10	2|10	2
LA3200D	1|10	1,000|3,200	∅ 130	1.5	1|10	2|10	2
LA8200S	10	8,200	216×200	2	10	20	3
LA6200S*	10	6,200	216×200	1.5	10	20	3
LA4200S*	10	4,200	216×200	1.5	10	20	3
LA2200S*	10	2,200	216×200	1.5	10	20	3
LA820*	10	820	216×200	1.5	10	10	3
LA420	10	420	216×200	1.5	10	10	3
LA2200P*	10|20|50	400|800|2,200	216×200	1.5	10|10|30	20|20|50	3
LA5200P*	10|20|50|100	1,200|2,400|3,800|5,200	216×200	1.5	10|20|50|50	20|20|50|100	3
LA8200P*	10|20|50	2,000|4,000|8,200	216×200	2	10|10|30	20|20|50	3
LA64001S	100	64,000	400×300	1.5	100	500	4
LA34001S*	100	34,000	400×300	1.5	100	200	4
LA16001S*	100	16,000	400×300	1.5	100	200	4
LA12000S*	100	12,000	216×200	1	50	100	3
LA6200*	100	6,200	216×200	1	50	100	3
LA4200	100	4,200	216×200	1	50	100	3
LA2200*	100	2,200	216×200	1	50	100	3
LA34001P*	100|200|500	8,000|16,000 34,000	400×300	1.5	50|100|100	200|200|500	4
LA12000P*	100|200|500	3,000|6,000|12,00	216×200	1	100|100|300	100|200|500	3
LA34000*	1.000	34,000	400×300	1	500	500	4

* These models are available in versions verified at the factory for use in legal metrology in the European Economic Area

Standard Micro-, Semi-micro-, Analytical and Precision Balances
The New Sartorius CP: Unrivalled in its Performance Class



As the successor to the Sartorius Competence series, which proved its reliability on a daily basis in practical use, the Sartorius CP also sets standards in engineering, quality and features. If you want to avoid taking risks when you make the investment in a new balances, the new CP is the best choice you can make.

Whether your samples are in the microgram range or up to 34 g, the Sartorius CP series with its 29 models offers the right instrument for practically every weighing task in the laboratory.

Engineering
All balances in the Sartorius CP series are equipped with a monolithic weigh cell available only from Sartorius. This cell is not only incredibly precise, but also exceptionally reliable and durable.

And the new Sartorius CP scores winning points with further technical advantages that ensure continuous operation of the balance with the greatest possible accuracy:

Take the built-in, motorized calibration weight: Just touch the CAL key, and the balance will automatically perform internal calibration and adjustment – whenever required in your process.

And there's the isoCAL function. When the ambient temperature changes by a specific value or once a defined time interval has elapsed, isoCAL performs internal calibration and adjustment fully automatically. Therefore, the balance ensures that calibration is carried out at regular intervals, and delivers consistently high accuracy.

On top of this, the high-contrast, backlit display is exceptionally easy to read under any room lighting conditions (non-backlit micro- and semi-microbalances available).

Quality
Not just the housing, but also the entire construction of the new Sartorius CP with its powerful core, the monolithic weigh cell, stand up to the abuse of tough daily use. The same goes for the control keys, the components on a balance that are most frequently used. Even after they have been pressed tens of thousands of times, they will continue to work precisely just like they have from day one, with positive click action for reliable activation of their respective functions.

Features
The Sartorius CP has precisely the features you need for fast and professional processing of weighing tasks in everyday laboratory routines. This includes ISO/GLP-compliant documentation. Connected to a Sartorius YDP03-0CE data printer or a computer, the new Sartorius CP enables you to comply with documentation requirements for use in a quality management system.

The draft shield designs of the balance models featuring readabilities of 1 µg, 2 µg, 0.01 mg, 0.1 mg and 1 mg are also impressive. Both the construction and size are specially adapted to the particular readability, offering tangible assets in actual use:

- Excellent shielding from drafts
- Draft shield doors that glide open smoothly for optimal access to the weighing chamber
- Outstandingly easy-to-clean design

A bidirectional RS-232C data interface provides the ideal basis for communication; for example, with a PC.

For advanced applications, such as weighing in percent, net-total formulation, dynamic weighing or animal weighing, mass unit conversion and counting, the CP offers these easy-to-run programs as standard features.

Design 1

Design 2

Design 3

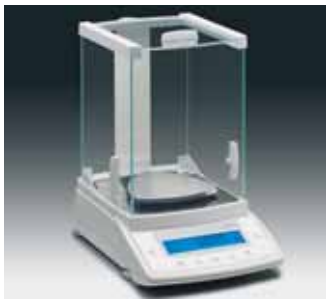
Design 4

Design 5

Specifications

Model	Read-ability (mg)	Weighing capacity (g)	Pan size (mm)	Response time (average) (≤ s)	Repeat-ability (≤ ± mg)	Linearity (≤ ± mg)	Design
Microbalances							
CPA2P	0.001 | 0.002 | 0.005	0.5 | 1 | 2	∅ 20	10	0.001 | 0.002 | 0.003	0.002 | 0.004 | 0.005	1
CPA2P-F	0.001 | 0.002 | 0.005	0.5 | 1 | 2	∅ 20 ∅ 125 filter pan	10	0.002 | 0.003 | 0.004	0.002 | 0.004 | 0.005	2
CPA26P	0.002 | 0.01	5 | 21	∅ 50	10	0.004	0.008	3
Semi-microbalance							
CPA225D	0.01 | 0.01 | 0.1	40 | 100 | 220	∅ 80*	6 | 3	0.02 | 0.05 | 0.1	0.03 | 0.1 | 0.2	4
Analytical balances							
CPA324S	0.1	320	∅ 80*	3	0.2	0.3	5
CPA224S	0.1	220	∅ 80*	2	0.1	0.2	5
CPA124S	0.1	120	∅ 80*	2	0.1	0.2	5
CPA64	0.1	64	∅ 80*	2	0.1	0.2	5

* Triangular weighing pan shape ∅ = Diameter of the inner circle

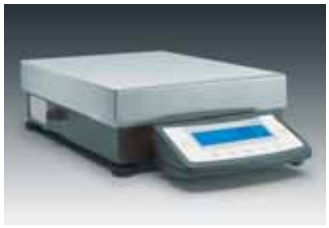


Design 6

Design 7

Design 8

Design 9



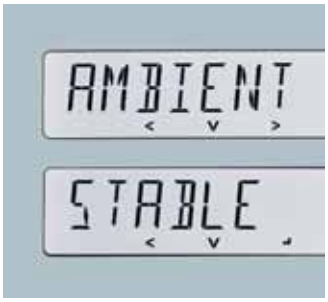
Design 10

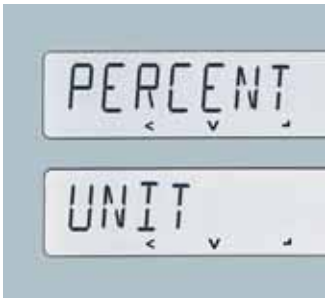
Specifications

Model	Read-ability (mg)	Weighing capacity (g)	Pan size (mm)	Response time (average) (≤ s)	Repeat-ability (≤ ± mg)	Linearity (≤ ± mg)	Design
Precision balances							
CPA1003S**	1	1.000	∅ 110*	2	1	2	6
CPA623S	1	620	∅ 110*	1.5	1	2	7
CPA423S	1	420	∅ 110*	1.5	1	2	7
CPA323S	1	320	∅ 110*	1.5	1	2	7
CPA223S	1	220	∅ 110*	1.5	1	2	7
CPA1003P**	1 | 10	500 | 1,000	∅ 110*	2	1 | 10	2 | 20	6
CPA6202S	10	6,200	190×204	1.5	10	20	8
CPA5202S-DS**	10	5,200	∅ 130	1.5	10	20	9
CPA4202S	10	4,200	190×204	1.5	10	20	8
CPA3202S	10	3,200	190×204	1.5	10	20	8
CPA2202S	10	2,200	190×204	1.5	10	20	8
CPA2202S-DS**	10	2,200	∅ 130	1.5	10	20	9
CPA6202P	10 | 20 | 50	1,500 | 3,000 | 6,200	190×204	1.5	10 | 10 | 30	20 | 20 | 50	8
CPA10001	100	10,000	190×204	1	100	200	8
CPA8201	100	8,200	190×204	1	100	200	8
CPA5201	100	5,200	190×204	1	100	200	8
CPA34001S	100	34,000	400×300	2	100	200	10
CPA16001S	100	16,000	400×300	2	100	200	10
CPA12001S	100	12,000	400×300	2	100	200	10
CPA34001P	100 | 200 | 500	8,000 | 16,000 | 34,000	400×300	2	100 | 200 | 500	300 | 300 | 300	10
CPA34000	1,000	34,000	400×300	1.5	500	1,000	10

* Triangular weighing pan shape ∅ = Diameter of the inner circle ** Equipped with the analytical balance draft shield as standard feature. All models are available in verified versions for use in legal metrology in the European Economic Area (except CPA2P, CPA2P-F, CPA2202S-DS, CPA5202S-DS, CPA1003P). Accessories available on request.

Standard Analytical and Precision Balances: Extend Series
The New Achievers for Your Lab





If you compare the specifications of many lab balances on paper, they all look the same – if you've seen one, you've seen them all. But in the real world there is more to a lab balance than just its technical specifications.

The new Sartorius Extend series has been specially designed for effective and reliable weighing in daily lab routines. This is where more powerful technology and application-oriented operation and features make all the difference.

Winning technology
More versatility in high resolution applications: 1 mg to 620 g and 10 mg to 6,200 g. Sartorius makes top-of-the-line technology available at a reasonable price.

Sartorius utilizes 21st century technology, such as the unique robotically etched monolithic weigh cell, which ensures long-term high accuracy.

The Extend series features the latest powerful microprocessor technology, shortening response times for faster results. In an Extend balance with 1 mg readability, the typical response time is just 1 to 1.2 seconds. Reliable weighing results are achieved all of the time – even under less than ideal ambient conditions, thanks to the Extend's highly sophisticated digital compensation algorithms.

Ease of use
When you need to get a heavy workload of repetitive applications done fast and reliably, day in and day out, the last thing you need is a lab balance so complicated that it causes operating errors and wastes your valuable time as a result. Welcome to your new Extend balance comfort zone: a simple, easy-to-understand control panel, key function assignments and the easy-to-read display are ideal for efficient weighing in your lab.

User-friendly operation: short, plain-English text prompts and cursor keys for navigation make it simple for you to configure the balance to meet your individual requirements.

The backlit display with its 15-mm digits means the results of measurement are plain to see, under any lighting conditions.

The level indicator is positioned conveniently right next to the display so that checking whether the balance is level becomes "second nature" to the operator.

The range of features
Add up all features of the new Sartorius Extend, and you'll find all the advantages that only a genuine Sartorius lab balance can offer: features that pay for themselves, time and again.

A built-in, motorized calibration weight is standard in all precision balances with the –CW suffix and in all analytical balances. Applied at a touch of a key it ensures the highest weighing accuracy at any time.

Whenever you need ISO/GLP-compliant documentation of raw data or calibration | adjustment data, the Sartorius Extend balance provides it at the touch of a key (in combination with the optional YDP03-0CE data printer).

The easy-to-clean draft shield chamber on the analytical balances provides optimal lighting conditions inside, thanks to its nearly frameless all-glass design.

The following additional built-in application programs come standard:
Weighing in percent, net-total-formulation, calculation (multiplication | division), dynamic weighing | animal weighing, mass unit conversion, and counting.

The bidirectional RS-232C data interface is another standard feature. Alternatively, Sartorius can provide an adapter cable for connection to a USB port.

Design 1

Design 2

Design 3

Design 4

Specifications

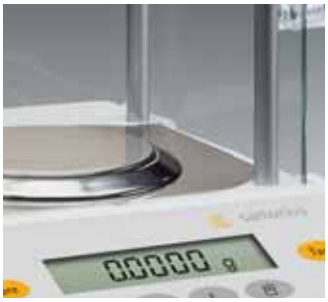
Model	Read-ability (mg)	Weighing capacity (g)	Pan size (mm)	Repeat-ability (mg)	Linearity (mg)	Response time (average,s)	Design
Analytical balances							
ED224S	0.1	220	∅90	0.1	0.2	2.5	1
ED124S	0.1	120	∅90	0.1	0.2	2.5	1

Model	Read-ability (mg)	Weighing capacity (g)	Pan size (mm)	Repeat-ability (mg)	Linearity (mg)	Response time (average,s)	Design
Precision balances							
ED153*	0.001	150	∅115	0.001	0.002	1.3	2
ED153-CW	0.001	150	∅115	0.001	0.002	1.3	2
ED323S*	0.001	320	∅115	0.001	0.002	1	2
ED323S-CW	0.001	320	∅115	0.001	0.002	1	2
ED423S*	0.001	420	∅115	0.001	0.002	1	2
ED423S-CW	0.001	420	∅115	0.001	0.002	1	2
ED623S*	0.001	620	∅115	0.001	0.002	1	2
ED623S-CW	0.001	620	∅115	0.001	0.002	1	2
ED822*	0.01	820	∅150	0.01	0.02	1	3
ED822-CW**	0.01	820	∅150	0.01	0.02	1	3
ED2202S*	0.01	2,200	180 × 180	0.01	0.02	1.1	4
ED2202S-CW	0.01	2,200	180 × 180	0.01	0.02	1.1	4
ED3202S*	0.01	3,200	180 × 180	0.01	0.02	1.1	4
ED3202S-CW	0.01	3,200	180 × 180	0.01	0.02	1.1	4
ED4202S*	0.01	4,200	180 × 180	0.01	0.02	1.1	4
ED4202S-CW	0.01	4,200	180 × 180	0.01	0.02	1.1	4
ED6202S*	0.01	6,200	180 × 180	0.01	0.02	1.1	4
ED6202S-CW	0.01	6,200	180 × 180	0.01	0.02	1.1	4
ED2201*	0.1	2,200	180 × 180	0.1	0.1	1	4
ED2201-CW	0.1	2,200	180 × 180	0.1	0.1	1	4
ED5201*	0.1	5,200	180 × 180	0.1	0.1	1	4
ED5201-CW	0.1	5,200	180 × 180	0.1	0.1	1	4
ED8201*	0.1	8,200	180 × 180	0.1	0.1	1	4
ED8201-CW	0.1	8,200	180 × 180	0.1	0.1	1	4

* All models are available in versions verified for use in legal metrology in the European Economic Area, except those marked by an asterisk ("*").

** Pan size for verified versions: 180 × 180 mm.

Budget Class Analytical and Precision Balances: Talent Series
The Affordable Introduction to Sartorius Weighing Technology



Sartorius Talent series balances are the alternative for all your simple weighing operations: economically priced yet with an uncompromisingly high degree of quality, reliability and sophisticated weighing technology. Whether you need to operate a balance in the lab, at school or a university, or in the field using the battery function, a balance from the Sartorius Talent series will always be the Number 1 choice.

Nineteen models – one design
The right weighing capacity for every application and every budget? No problem with the Talent series. It offers you 3 analytical balances with weighing capacities of 60 g, 120 g and 210 g, respectively, and a total of 16 precision balances – ranging from the top-of-the-line model with a 3,100-g weighing capacity and 0.01-g readability to the high capacity model featuring a 12-kg capacity.

Easy to operate for reliable results
When it comes to strictly weighing, easy operation is top priority. The balances of the new series prove to be particularly talented in this area: just set up the balance, turn it on, and you'll be "on your weigh." It couldn't be any easier than that!

Dependable and accurate
The innovative weigh cell technology, the rugged construction of the balance housing, the sleek stainless steel weighing pan and the keypad sealed by a membrane overlay assure high dependability and accuracy, even during frequent use.

Portability is standard
Many of the Talent series balances are also battery-operable, providing an alternative to line current operation. The built-in "power-saver" feature extends the service life of the battery. This function will automatically shut off the balance if a key has not been pressed after 2 minutes. An added benefit of this portable application: the balance is compact and lightweight.

Built-in application software
Talent series balances offer various application programs as standard features to make routine work easy: weighing in percent, net-total formulation, weigh averaging| dynamic weighing, counting and mass unit conversion.

RS-232C interface port
Each model comes standard with a bidirectional RS-232C interface port. This means no extra cost if you need to log the balance-generated results on an optional printer or connect a remote display for use in the educational sector.

Design 1

Design 2

Design 3

Design 4

Specifications

Model	Read-ability (mg)	Weighing capacity (g)	Pan size (mm)	Response time (average,s)	Repeat-ability (≤ ± mg)	Linearity (≤ ± mg)	Design
Analytical balances							
TE214S	0.0001	210	∅ 90	3	0.0001	0.0002	1
TE124S	0.0001	120	∅ 90	3	0.0001	0.0002	1
TE64	0.0001	60	∅ 90	3	0.0001	0.0002	1
Precision balances							
TE313S	0.001	310	∅ 100	2.5	0.001	0.002	2
TE313S-DS	0.001	310	∅ 100	2.5	0.001	0.002	1
TE153S	0.001	150	∅ 100	2.5	0.0015	0.003	2
TE153S-DS	0.001	150	∅ 100	2.5	0.0015	0.003	1
TE3102S	0.01	3,100	174 × 143	2.5	0.01	0.02	4
TE1502S	0.01	1,500	174 × 143	2.5	0.015	0.03	4
TE612	0.01	610	∅ 116	2	0.01	0.02	3
TE412	0.01	410	∅ 116	2	0.01	0.02	3
TE212	0.01	210	∅ 116	2	0.01	0.02	3
TE6101	0.1	6,100	174 × 143	2	0.1	0.2	4
TE4101	0.1	4,100	174 × 143	2	0.1	0.2	4
TE2101	0.1	2,100	174 × 143	1.5	0.1	0.2	4
TE601	0.1	610	174 × 143	1.5	0.1	0.2	4
TE12000	1	12,000	174 × 143	1.5	1	2	4
TE6100	1	6,100	174 × 143	1.5	1	2	4
TE4100	1	4,100	174 × 143	1.5	1	2	4

Safety Weighing Cabinet: SWC
Safe and Reliable for Weighing Hazardous Powders

For researchers and laboratory technicians, the risks involved with handling toxic and high-potency compounds are considerable. Weighing even the smallest sample quantities can expose them to potential hazards.

Health and safety: top priorities
Appropriate protective measures must be taken to protect the health of all laboratory staff when they weigh hazardous compounds in powdered form.

The Sartorius SWC Safety Weighing Cabinet offers important advantages in design and construction over traditional laboratory hoods: The SWC creates a contained area around the laboratory balance which prevents any air or finely powdered particulates from escaping into the operators' work area. At the same time, the constant inlet air velocity and the special cabinet construction both keep the air current practically turbulence-free, and, as a result, ensure consistent and repeatable weighing results.

Single-source equipment
The balance and weighing cabinet are perfectly matched to each other. With its SWC Safety Weighing Cabinet, Sartorius has succeeded in uniting two otherwise contradictory requirements: maximum personnel protection and reliable weighing results.

The Safety Weighing Cabinets are available in four different sizes for special applications, such as using a second laboratory balance in the cabinet or for unusually high structures.

Each of the four basic models consists of: Safety Weighing Cabinet with a separate HEPA filter unit, data-logging alarm, lighting unit, waste disposal system (on one side), airflow smoke test kit and anti-static cleaning wipes.

Sartorius SWC Safety Weighing Cabinets comply with the requirements of EN14175.

Models with filter unit	Models without filter unit	Dimensions in mm (W × D × H)
SWC900	SWC900NF	890×750×510
SWC1200	SWC1200NF	1230×750×510
SWC900T	SWC900TNF	890×750×770
SWC1200T	SWC1200TNF	1230×750×770

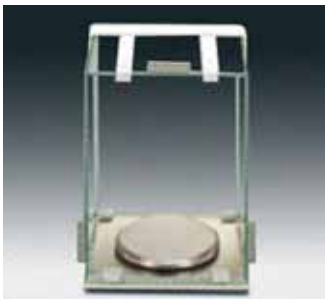
Accessories	
YWCF02	Carbon filters for solvent vapors
YWCF03	Box for carbon filters; for attachment to the filter box
YWCG01	Disposal chute for attachment to the side of the cabinet
YWCG02	Disposable chute bags (100 pcs)
YWCG03	Muffler; for attachment to fan filter box
YWCG04	Airflow smoke test kit
YWCG07	Anti-static decontamination wipes
YWCG14	Stainless steel bench; 890 mm wide
YWCG15	Stainless steel bench; 1230 mm wide
YWCG16	Printer table; for attachment to the cabinet
YWC10	Laboratory bench; fits SWC900, SWC900T and SWC900NF
YWC11	Laboratory bench; fits SWC1200, SWC1200T and SWC1200NF

Other accessories for our Safety Weighing Cabinets are available on request.

All of the balances listed below have been tested for use in the Safety Weighing Cabinet and achieved their typical repeatability with correspondingly extended response times.

Balance series	ME|SE	LA Reference	Sartorius CP	Extend ED
Microbalances	ME5 ME36S		CPA2P	
Semi-microbalances	ME235S ME235P		CPA225D	
Analytical balances	ME614S ME414S ME254S	LA310S LA230S LA230P LA120S	CPA324S CPA224S CPA124S CPA64	ED224S ED124S
Precision balances		LA1200S LA620S LA220S LA2000P LA620P LA5200D LA3200D	CPA1003S CPA1003P CPA623S CPA423S CPA323S CPA223S CPA2202S-DS CPA5202S-DS	ED623S ED423S ED323S ED153 All models listed are also available in –CW versions

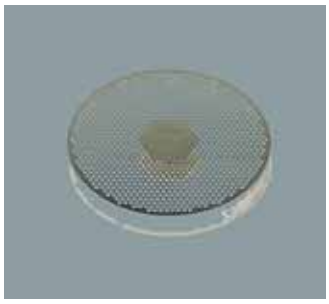
Accessories



Accessories for All ME, SE, LA, CPA, ED and TE Models	
Data printer, suitable for use in legal metrology; with date, time, and statistics functions	YDP03-0CE
Paper rolls, for YDP03-0CE; 5 rolls, 50 m each	6906937
Ink ribbon cartridge, for YDP03-0CE	6906918
Adhesive labels on normal paper for YDP03-0CE (continuous roll, 20 m)	69Y03247
SartoConnect, data transfer software for direct transfer of weights to an application (e.g. MS Excel) with RS-232C connecting cable; length: 1 m with RS-232C connecting cable; length: 5 m with RS-232C connecting cable; length: 15 m	 YSC01L YSC01L5 YSC01L15
Balance table, for precise, reliable weighing operations	YWT09
Balance table, cast stone, with vibration dampeners	YWT03
Wall console	YWT04
Remote display LCD; height of digits: 13 mm; reflective	YRD02Z
Hand switch, incl. T-connector	YHS02
Foot switch, incl. T-connector	YFS01
Ionizing blower for electrostatically charged samples [220 V]	YIB01-0DR
Ionizing blower for electrostatically charged samples [110 V]	YIB01-0UR
Stat-Pen ionizing probe for neutralization of electrostatic charges on samples	YSTP01
T-connector for connecting 2 peripherals	YTC01
RS-232C | USB interface cable, for connecting the balance to a PC with USB port; length: 1.5 m	YCC01-USBM2
RS-232C interface cable, for connecting the balance to a PC with a 25-pin COM port; length: approximately 1.5 m	7357312
RS-232C interface cable, for connecting the balance to a PC with a 9-pin COM port; length: approximately 1.5 m	7357314
Standard Operating Procedure (SOP)	YSL01D

Accessories for ME and SE2 Models	
Rechargeable battery pack, external, with battery level indicator for SE2 and all ME models	YRB05Z
Anti-static weighing pan for electrostatically charged samples for ME235S, ME235P, ME254S, ME414S, ME415S and ME614S for ME5	 YWP01ME YWP01MC
Density determination kit for ME235S, ME235P, ME254S, ME414S, ME415S and ME614S	YDK01
Glass plate support, for conditioning samples inside the weighing chamber, for all ME models except ME5	YGS01ME
Weighing scoop made of chrome-nickel steel, 90 mm × 32 mm × 8 mm	641214
Foot switch, incl. T-connector for all ME models and SE2	YPE01RC
Bar code scanner, for all ME models and SE2 (YCC01-0024M01 required)	YBR02FC
Cable with T-connector, or connecting a bar code scanner	YCC01-0024M01
®RS-232C adapter with *Bluetooth*® wireless technology and external antenna (for point-to-point connection only)	YBT01
USB adapter with *Bluetooth*® wireless technology for point-to-multipoint connections*	YBT02

* The equipment may be used only in the following countries: Austria, Belgium, Denmark, Finland, France (indoor use only), Germany, Greece, Iceland, Ireland, Liechtenstein, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.



Accessories for LA Models	
Carrying case for all LA models up to 12.1 kg	YDB01LP
Anti-static weighing pan, for LA120S, LA230P, LA310S	YWP01LA
Extension cable, weighing platform to separate display and control unit (length: 2.7 m) for LA models up to 64 kg	YCC01-19M3
3-segment checkweighing display Red-green-red, for over-under checkweighing, incl. T-connector	YRD11Z
Column for raised display and control unit	
for models with weighing capacities up to 12 kg	YDH01LP
for models with weighing capacities of 16 kg and up	YDH02LP
Bar code scanner, for all LA models (YCCC01-0024M01 required)	YBR02FC
Cable with T-connector, for connecting a bar code scanner	YCC01-0024M01
Rechargeable battery pack, external, with battery level indicator	YRB06Z
Analytical draft shield chamber for all LA models	YDS01LP
Dust cover for LA models with a round weighing pan	6960LP01
for LA models with a rectangular weighing pan, up to 12.1 kg	6960LP02
Weighing bowls | pans | trays made of chrome-nickel steel	
For all balances with a weighing capacity > 400 g; volume: 1000 ml	641211
Volume: 500 ml	641212
Volume: 3000 ml	641213
Weighing scoop made of chrome-nickel steel, 90 mm × 32 mm × 8 mm	641214
Density determination kit for all 1-mg LA models	YDK01LP
for all 0.1-mg LA models	YDK01
RS-232C adapter with *Bluetooth*® wireless technology and external antenna (for point-to-point connection only)	YBT01
USB adapter with *Bluetooth*® wireless technology for point-to-multipoint connections*	YBT02

Accessories for CPA and ED Models	
Rechargeable battery pack, external, with battery level indicator	
Weighing capacity up to 10 kg	YRB05Z
Weighing capacity 12 kg to 34 kg	YRB06Z
Analytical draft shield chamber for CPA623S, CPA423, CPA323S, CPA223S	YDS01CP
Anti-static weighing pan for CPA225D, CPA324S, CPA224 S, CPA124S, CPA64, ED224S, ED124	YWP01CP
Density determination kit for CPA225D, CPA324S, CPA224S, CPA124S	YDK01
for ED224S, ED124S	YDK01LP
Draft shield cover with opening (∅ 30 mm) for CPA623S, CPA423S, CPA323S, CPA223S	YDS02CP
Hanger for below-balance weighing threaded fitting, for CPA12001S, CPA16001S, CPA34001S, CPA34001P, CPA34000	69EA0040
RS-232C adapter with RS-232C adapter with *Bluetooth*® with wireless technology and external antenna (for point-to-point connection only*)	YBT01
***Bluetooth*®** wireless technology for point-to-multipoint connections*	YBT02
Dust cover for display and control unit on CPA34001S, CPA16001S,	
CPA12001S, CPA34001P, CPA34000	6960CP01
on CPA423S, CPA323S, CPA623S, CPA223S	6960CP02
on CPA4202S, CPA3202S, CPA2202S, CPA8201, CPA6202S, CPA6202P, CPA5201, CPA10001	6960CP03
for display and control unit on CPA225D, CPA324S, CPA224S, CPA124S, CPA64	6960CP04

Accessories for TE Models	
Rechargeable battery pack, external (hours of operation: 20 or 40, depending on the model)	YRB08Z
Data printer	YDP04

* The equipment may be used only in the following countries: Austria, Belgium, Denmark, Finland, France (indoor use only), Germany, Greece, Iceland, Ireland, Liechtenstein, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

OEM Products

Do you need a weighing sensor for your applications?
Sartorius offers excellent and precise sensors for mass determination. Whether you need to count small parts or batch precise amounts of liquids and solids, we have the right sensors for your solution.

In addition to monitoring and filling, our load cells are used in a variety of application areas, from tensiometers and thermogravimetric systems to checkweighers and special balances, to name only a few.

The table below shows the range of OEM products available, with details on weighing capacities and readabilities. The possibilities go beyond what you see here – in close cooperation with you, we can also develop customer-specific solutions adapted to individual requirements.

Contact us for consultation on all the options.

Capacity (g)	**Readability** (mg)	**Models**					
		Individual components without CE mark	Encapsulated components with CE mark				Optional built-in calibration weight
					Explosion-protected		
			IP20	IP44	IP44	IP65	
0,5 ...2	0,001 ... 0,005		WZ2P-CW				
20	0,001		WZA26-CW				
60	0,01		WZA65-CW				
60	0,1	WZ64S					
60	0,1	WZ64-CW					
60	0,1			WZA64			...-CW
60	0,1				WZA64-X		
120	0,1	WZ124S					
120	0,1	WZ124-CW					
120	0,1			WZA124			...-CW
210 / 80	0,01/0,1	WZ215-CW					
210	0,1	WZ214S					
220	0,01		WZA225-CW				
220	0,1	WZ224-CW					
220	0,1			WZA224			...-CW
600	0,1		WZ614-CW				
320	1	WZ323		WZA323			...-CW
520	1	WZ523		WZA523			...-CW
620	1				WZA623-X		
1.000	10					WZG1	
1.200	1	WZ1203		WZA1203			...-CW
2.000	20					WZG2	
6.200	10				WZA6202-X		
8.200	10	WZ8202		WZA8202			...-CW
10.000	100					WZG10	
12.000	100	WZ12001		WZA12001	WZA12001-X		
20.000	200					WZG20	

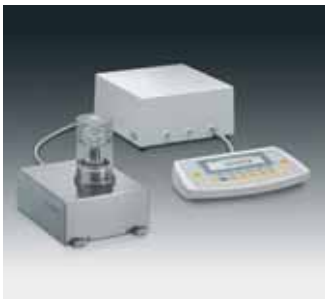
Examples of order number combinations

WZ523	Weigh cell with individual components without built-in calibration weight
WZ523-CW	Weigh cell with individual components with built-in calibration weight
WZA523	Weigh cell with encapsulated component without built-in calibration weight
WZA523-CW	Weigh cell with encapsulated component with built-in calibration weight

For more information on our weigh cells, visit our website: http://www.sartorius-mechatronics.com/index.php?id=1207

Sartorius Pipette Calibration
Totally Accurate, Efficient and Independent

GPC65-CW



GPC26-CW/GPC225-CW

YDB01WZA

Save time and money
Pipettes are gauges used as inspection, measuring and test equipment. GLP standards and European Standards require pipettes to be tested at defined intervals to ensure their continued proper functioning. Quick testing must also be performed between these intervals. Having pipette calibration performed externally can be expensive and time-consuming. Reserve pipettes must also be available to maintain routine operations. The equipment for performing the oft-required quick tests is not even available in many cases. Now you can calibrate your pipettes yourself quickly and inexpensively with the GPC Pipette Calibration Balance or YCP03-1 Pipette Calibration Set from Sartorius.

Procedure
The liquid taken up in the pipette is weighed on a balance. The volume of the liquid is calculated from its weight and density and compared with the nominal volume for the pipette. The balance transmits the weight value to the PC where all the required calculations are performed—for example, by the Picaso software. At the end of each measurement, the calibration results are printed as a GLP-compliant report. The installation of an evaporation trap maintains the humidity at 60–90%, thus preventing loss of liquid from the sampling chamber.

GPC Pipette Calibration Balances

Fast and ergonomic
The balances in the GPC series are ideally suited for gravimetric testing of the volume of any pipette size. Because these balances do not require an additional draft shield, opening and closing of the draft shield doors is eliminated. This saves considerable time. The calibration workstation's modular design can be optimally adapted to your lab staff's ergonomic needs.

"On the go" pipette calibrating
With the optional YDB01WZA carrying case, you can pack up your GPC pipette calibration balance along with the other accessories. Ambient conditions allowing, you have everything you need to calibrate your pipettes directly at the place of use.

Equipment supplied
- Weigh cell with separate electronic box, with
- Display/keypad unit with 1 m cable (GPC65-CW: 0.3 m)
- Motorized calibration and adjustment function with built-in calibration weight
- Bidirectional RS-232 data interface port
- Leveling feet and level indicator
- AC adapter
- Pipette calibration set with:
- Evaporation trap
- Sampling chambers: 6 ml and 21 ml (3 of each)
- Special adapter and reduction fittings for sampling chamber
- Cable for connecting the balance (RS-232) to a PC (USB)

Overview of GPS models

Model	Readability	Weighing capacity	Weighing range for pipetting
GPC26-CW	0.001 mg	20 g	0.001 mg – 8 g
GPC65-CW	0.01 mg	60 g	0.01 mg – 35 g
GPC225-CW	0.01 mg	220 g	0.01 mg – 195 g

Optional accessories	Order No
PICASO pipette calibration software (PC running Windows® 98 | 2000 | NT | XP required)	YCP03-2
Draft shield and 50 ml sampling chamber (stainless steel) (for GPC65-CW and GPC225-CW only)	YDS01WZA
Carrying case for mobile use	YDB01WZA

PICASO pipette calibration software

ME235P-SD

ME5 WITH VF988

YCP03-1 Pipette Calibration Set

Optimize your pipette calibration workstation
With the YCP03-1 Pipette Calibration Set, you can save time, money, and work. Of course, you need to choose the best balance for your needs to benefit from all these advantages.

If you need a balance for other uses as well...
... the Sartorius microbalances and semi-microbalances are the right answer for you. You can turn your balance into a pipette calibration workstation – and then back into an ordinary balance again – quickly and easily.

Equipment supplied
- Picaso installation CD
- Evaporation trap
- Weighing system adapter
- Sampling chamber adapter for 21-ml chamber
- Reduction fitting for 6-ml chamber
- Sampling chambers: 6 ml and 21 ml (3 of each)
- Cable for balance – computer
- Centering disk for the evaporation trap
- Carrying case

Picaso system requirements
Picaso requires a PC running Windows® 95|98|NT|2000|XP with an RS-232C interface port for the interface cable, 64 MB RAM and at least 20 MB available hard disk space.

Overview of Picaso software performance features
- Measurement data saved at a click of the mouse
- Program includes specifications on more than 450 pipette types
- Measurements in accordance with ASTM, British Standard and ISO 8655
- Individual pipettes inventoried
- Data records are GLP-compliant and include mean, (in)accuracy, (im)precision, and standard deviation
- Statistics displayed in graphs
- Time-controlled functions for monitoring calibration cycles
- On-line help for all functions

Overview of Balance Models

Model*	Readability (mg)	Weighing capacity (g)
ME235S	0.01	230
ME235P	0.01/0.02/0.05	60/110/230
ME235P-SD (with short-design draft shield)	0.01/0.02/0.05	60/110/230
CPA225D (VF2396 required)	0.01/0.1	100/220
ME5 (VF988 required)	0.001	5
ME36S (VF3677 required)	0.001	31 (16 g**)
CPA26P (VF3604 required)	0.002/0.01	5/21

Accessories	Order No.
Pipette Calibration Set incl. PICASO Pipette Calibration Software (for all ME models except ME5)	YCP03-1
Short-design draft shield and adaptation of YCP03-1 for CPA225D	VF2396
Adaptation of YCP03-1 for ME36S	VF3677
Adaptation of YCP03-1 for CPA26P	VF3604
Special pipette calibration set for ME5 includes: Draft shield, evaporation trap, sampling chamber adapter and sampling chamber (2.5 ml)	VF988

* Models ME235S, ME235P, CPA225D, ME5 and ME36S are also available in versions verified for legal metrology.
** Weighing capacity with pipette calibration set installed: 16 g

Sartorius Density Determination
The Optimum Equipment for All Methods

Whether you use the buoyancy technique, the displacement principle or the pycnometer method for determining the density of solid, powdery or liquid samples – Sartorius offers you the technical equipment for
performing these applications simply, quickly and precisely.

This includes:
- Microbalances, analytical balances and precision balances
- The YDK01 or YDK01LP density kit.
- An integrated application program built into the balance for density determination (standard software in all ME and LA balances)

Easy to use
Nothing is more annoying in laboratory applications than complicated operating sequences with delicate and sensitive instruments. This is why our density kits have been built to be especially rugged and uncomplicated.

Perfected technology and practical accessories
Large and easily accessible sample holders are supplied so that you can perform measurements in air or in a medium causing buoyancy. The special design prevents air bubbles from adhering, which could otherwise distort your results.

If you weigh a substance with a density less than that of the liquid causing buoyancy – forget the extra work. The specially shaped sieve lets you immerse your sample effortlessly below the surface of the liquid.

And determination of the density of liquids couldn't be easier than with our standardized glass plummet.

The integrated application software controls the measurements and evaluates them for you
The application software integrated into the balances of the ME and LA series provides you with the ultimate in user convenience.

Just select your preferred method of measurement by menu, weigh your samples and the balance does all the number crunching for you. In the process, it automatically takes into account all important factors that influence the measurement. For example, after you have entered the temperature, the balance directly determines the density of the selected immersion medium.

Results in black and white
A record of your results is printed out on the interfaced data printer – if you wish, as an ISO/GLP-compliant record.

The printout includes the following data:

- Temperature and density of the medium causing buoyancy
- Sample weight in air and in the medium
- The volume and the density of the sample

Which density kit for which balance?
YDK01 density kit:

- ME models with 0.01 mg and 0.1 mg readability
- LA models with 0.1 mg readability
- CPA324S, CPA224S, CPA124S, CPA225D

YDK01LP density kit:

- LA models with 1 mg readability
- ED models with 0.1 mg readability

Bluetooth® Wireless Technology*
Wireless Weighing and Communication

Bluetooth® wireless technology, widely used for laptops and mobile telephones, offers real advantages for both measurement and data storage processes. With a range of up to 100 meters, wireless connection of measuring stations, PCs and peripheral devices is now completely feasible for laboratory use.

No more cables to trip over, no more cable ducts collecting dust, no more inconvenient restrictions when positioning devices because they have to be connected to one another or within line-of-sight. Not only for mobile weighing, but also for clean room conditions or contaminated environments, ***Bluetooth***® wireless technology presents a practical alternative that eliminates connection problems before they occur.

Another major advantage of ***Bluetooth***® wireless technology is the ability to connect multiple weighing stations in individual networks.

Installation of Sartorius communication modules featuring ***Bluetooth***® wireless technology is as easy as can be. This technology uses the 2.45 GHz ISM band (for industrial, scientific, and medical usage). No fees are charged for this frequency, which means no added recurring costs for the user.

Data security is a high priority in ***Bluetooth***® wireless technology. Data communication in both directions is protected by the use of frequency hopping, and other encryption techniques are also available. Thus, even sensitive areas are reliably secured.

With the YBT01 module for connection to the RS-232C port on the weighing instrument, and the YBT02 module for connection to the computer's USB port, Sartorius presents a solution that meets the most sophisticated requirements, with the same high quality as our Premium balances designed for use in the chemical and pharmaceutical industries.

The communication module has a stainless steel housing for optimal observance of the strictest standards of cleanability. The data transfer procedures will be familiar to anyone who has used RS-232C data interfaces.

So put the bite on cable spaghetti with ***Bluetooth***® wireless technology. The YBT01 and YBT02 modules are perfect for use with any of our premium-series ME or LA Reference balances.

The equipment may be used only in the following countries: Austria, Belgium, Denmark, Finland, France (indoor use only), Germany, Greece, Iceland, Ireland, Liechtenstein, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

YBT01
RS-232C adapter with external antenna; for point-to-point connections only

Transmission power	In accordance with Class 1
Profiles supported	Serial port
Transmission speeds	1,200 to 115,200 bit/s (can be configured by Sartorius service)
Temperature range	0 to +40 °C (+32 to +104 °F)
IP protection	IP65
Dimensions (L×W×H)	121 mm × 84 mm × 32 mm (without antenna, cable, wall bracket)

YBT02: USB adapter; for point-to-multipoint connections

Transmission power	In accordance with Class 1
Specification	*Bluetooth*® wireless technology V.1.1
PC-Software	*Bluetooth*® device driver
Operating system	Windows® 98, 2000, XP

* The brand name and logo for *Bluetooth*® wireless technology are owned by Bluetooth SIG Inc., USA. The use of this trademark by Sartorius is under license.

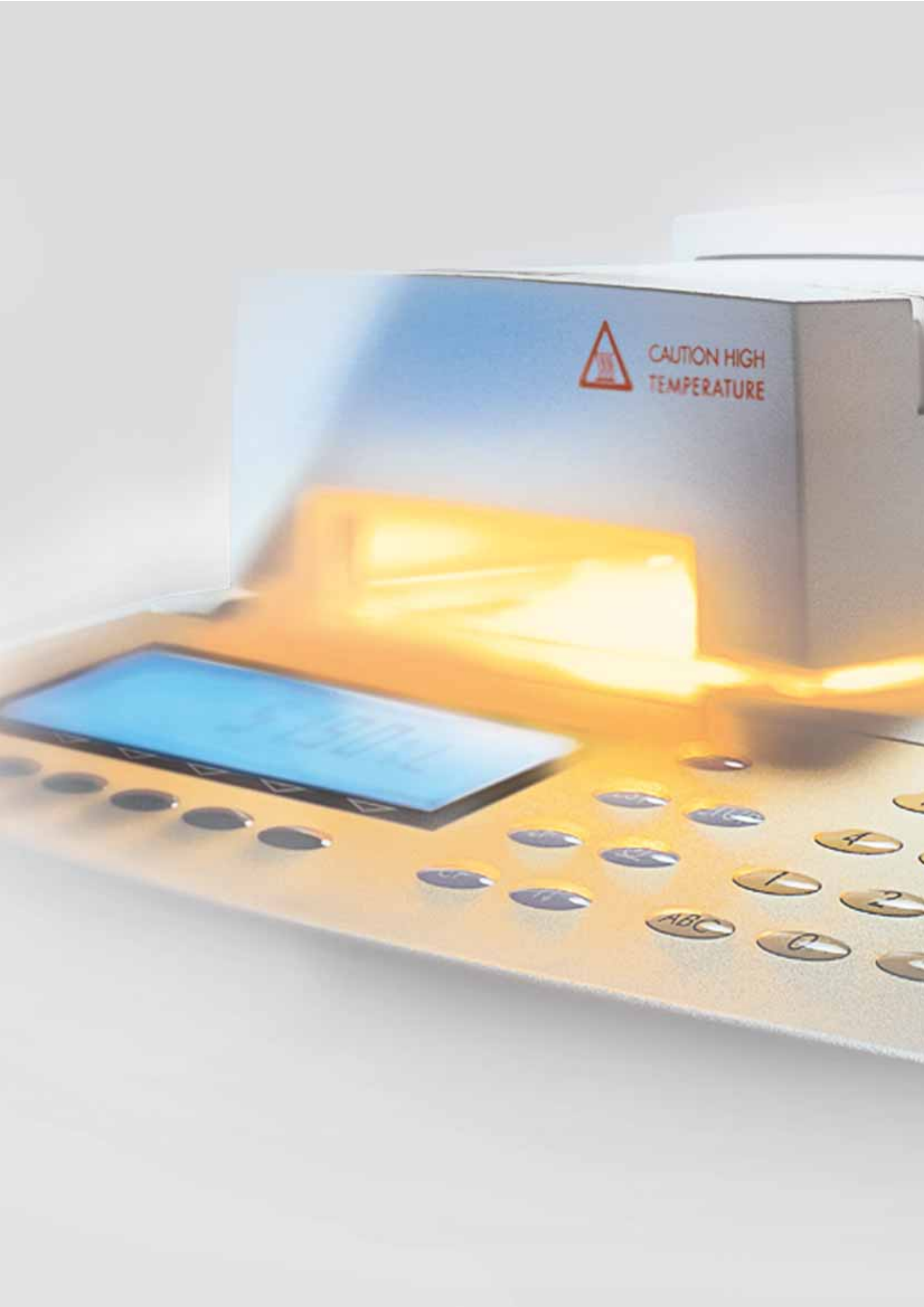
Equipment for Neutralizing Static Electricity Quickly and Reliably

Static electricity can block the entire workflow in the lab. When samples are weighed, particularly non-conductive samples such as plastic, glass or porcelain, an electrostatic field may build up between the sample and the stationary parts of the balance. As a rule, this effect is seen when the digits of a weight readout seem to "race out of control." This makes reliable weighing, particularly in the analytical field, very difficult. By ionization of samples using the Sartorius StatFan or Stat-Pen ionizing blower, static electricity is neutralized within just a few seconds, making it unnecessary to increase the humidity of the air. Elimination of static electricity can be performed instantly wherever needed.

Sartorius ionizing blowers can be used anywhere undesirable electrostatic charges are generated; for example, in production areas and photography labs. The flow rate of the ionizing stream can be continuously adjusted. For StatPen, the flow rate is altered by moving it closer or further away from a sample.

Specifications

	Power requirements	AC adapter	Neutralization	Flow rate	Weight
Ionizing blower StatFan YIB01-0DR	230 V/50 Hz	18 V/50 Hz	Up to ± 20 V	Up to 1.000 ccm/min	Approx. 0.6 kg
Ionizing blower StatFan YIB01-0UR	110 V/50 Hz	18 V/50 Hz	Up to ± 20 V	Up to 1.000 ccm/min	Approx. 0.6 kg
StatPen YSTP01	100 V… 230 V 50… 60 Hz		Up to ± 30 V		Approx. 0.8 kg


CAUTION HIGH
TEMPERATURE

Moisture and Water Analysis

The Right Analyzer for Any Application

Foods, chemical | pharmaceutical products, building materials or animal feed – you name it, the moisture or water content has a decisive impact on price, processability and quality, ranging from raw materials to final products. Determining this moisture content is one of the most common analyses in product development and in the manufacturing process. Here, the most diverse requirements on speed, resolution of the values measured or on the operating design of the moisture analyzers must also be considered in all cases. As a leading provider of moisture analysis equipment, Sartorius is thoroughly familiar with the needs of its customers and thus offers a wide range of equipment that is continuously being enhanced.

Infrared drying – fast and precise
Infrared dryers from the Sartorius **Moisture Analyzer** Series are increasingly used as a fast alternative to the classic oven drying method. These compact analyzers are designed for routine applications in production and incoming inspection. With the resolution of an analytical balance, they are also ideal for research and development. Whether you need an analyzer with an EC type-approval certificate or one tested for applications in legal metrology, Sartorius offers a customized solution for nearly every requirement. With their wide selection of infrared heat sources, including halogen lamp, CQR (coiled quartz radiator) or ceramic heating element, these moisture analyzers can be optimally adapted to the intended application.

Microwave drying
If the sample contains a large amount of water, microwave drying is the fastest and most effective drying method. It takes just 40–120 seconds to vaporize the water out of the sample. Under normal pressure conditions, the temperature of the escaping water vapor measures slightly over 100°C during the heating process, comparable to the 105°C setting in a classic oven dryer.

Differential weighing
If the oven drying method is absolutely essential, the differential weighing program of the **LA Reference** series of balances efficiently manages large volumes of data and automatically calculates the differences between the tare weight, initial sample weight and backweights.

Coulometry: selective detection of water
If you need to determine not only the moisture, but also the water content of a sample, the coulometric Karl Fisher (KF) titration method is the most commonly used technique. A further advancement in KF titration is the combination method incorporated in the WDS 400 **Water Detection System**. The WDS 400 allows accurate measurements to be performed down to a detection limit of 1µg of water. At the same time, it enables quantitative differentiation among surface water, capillary water, and water of crystallization. In addition, the WDS 400 completely eliminates the need for the test reagents required in KF titration.

Microwave resonance technology
The microwave resonance method offers the advantage of particularly fast measurement, well below one second. At the same time, it is non-destructive, which means that this versatile method can be used in the laboratory and for online and offline applications. The basis of this new Sartorius product line is the LMA300P, a modular system that consists of a control and evaluation unit and a resonator module in which the moisture of a sample is measured. Applications for the system cover measurement of the moisture in pourable, granulated and viscous products with a moisture content between 0.1% and 60%. The new PMD300 series can analyze moisture levels online, meaning that the analysis is performed and the results passed to the processing unit continuously. Highly sensitive sensors integrated in the production line constantly analyze moisture content and send the information to the processing unit, which is directly connected to the controller, ensuring that the entire process is constantly controlled and documented – and 100% automatic.

NIR technology
Optical or spectroscopic methods exploit the interaction between light and the sample. If light is directed on a sample, a part of that light is reflected, changing it characteristically. The resulting change in the light is then used to calculate the moisture content. NIR spectroscopy is a non-destructive technology, meaning that the samples can be used for further analyses. In addition, NIR spectroscopy is fast, reliable and precise. The LMA500 NIR calibrator is the first in our new NIR spectroscopy series. It not only analyzes moisture content, it can also do on-site calibration, allowing adaptation of methods to the materials being tested at a given time. The NIR calibrator is designed for pourable and granulated substances with a moisture content between 0.1% and 50%, depending on the sample.

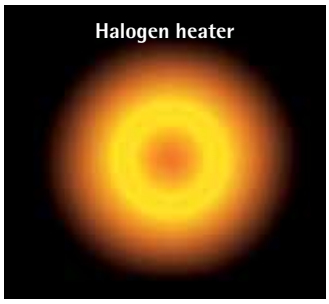
Sartorius MA35
Easy... very easy!

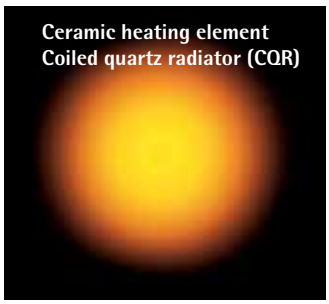
The MA35 is the new basic model in the **Moisture Analyzer** Series from Sartorius. Its performance functions and operating design are geared toward daily routine processes, such as repetitive QC monitoring of samples as performed during in-process control and incoming goods inspection. To make the MA35 even more user-friendly, we have done away with the least-used programming options, without compromising flexibility or measurement accuracy.

No need for programming
Because end-point determination is fully automatic, it is no longer necessary to program a shutoff parameter. The MA35 continuously monitors the drying process and stops the measurement as soon as the sample has reached a constant weight – i.e., when no more weight loss can be detected despite heating. A built-in weighing system provides the measurement accuracy required for this with 1-mg resolution that is optimized for use in high temperature ranges. For sample heating, the MA35 is equipped with two powerful metal tubular-shaped heating elements, providing 360 watts of power. These heating elements, also called dark radiators, are both rugged and durable. Compared to heating lamps made from glass, such as infrared lamps and halogen heaters, these are especially resistant to dirt and vibration. In addition, the MA35's metal heating elements can be used in accordance with the strict guidelines of the FDA and HACCP in cases where glass is prohibited in certain production processes.

Easy-to-understand and error-free moisture analysis
The operating design focuses on accuracy and ease of use. The concise display shows the user all important information at a single glance. Easy-to-understand icons guide you in three steps from taring the sample pan to starting the measurement. The MA35 has done away with the regular Program Selection menu, opting instead for a limited number of drying routines that can be saved in the non-volatile memory. All important operating parameters can be accessed and changed in seconds, giving you more flexibility. The optional printer, YDP03-0CE, enables you to print analysis results on a short report to save on paper usage. If you need comprehensive documentation, you can also print out the sample analysis results as well as the weighing system and temperature calibration as a detailed GLP report.

Sartorius MA150: The Compact Class Featuring Maximum Performance with Minimum Space Requirements





For routine operation
A rugged design with low space requirements and easy operation are the major features of this analyzer. Fully automatic drying of a sample until a constant weight is reached eliminates the need for programming an endpoint shutoff parameter. A total of 20 drying routines can be saved to give you the flexibility you need when measuring the moisture content of additional, out-of-the-ordinary samples.

Customizable and fast
Now you can choose between two different infrared analyzers that cover a diverse range of moisture measurement requirements. Whichever heat source you opt for, both analyzers deliver results within minutes. For temperature-sensitive samples, a ceramic heating element ensures especially gentle heating over the entire surface. The other choice, a CQR quartz glass heater, optimizes the analysis time even further, which is already ultra-fast for the analyzer featuring the ceramic heater.

Application-specific solutions
Practical accessories round off the entire lineup of Sartorius moisture analyzers, including an in-use dust cover, supplied as standard equipment. Also available is a special moisture analyzer version without openly accessible glass components, making you compliant with the stringent FDA and HACCP requirements that ban the use of glass in production.

Sartorius MA100: Analytical Precision Combined With Flexibility and Dynamics

As accurate as an analytical balance
The **MA100** was the first infrared dryer in the world to feature a built-in weighing system with 0.1-mg resolution and an EC type-approval certificate. A motorized heating unit moves over the sample to open or close the sample chamber. This reduces interfering effects when a sample is placed on the pan or a measurement is started. The pacesetting design enables the MA100 to achieve a measuring accuracy well beyond that provided by conventional infrared dryers.

Automatic adaptation to reference values
The MA100 features "Swift Parameter Adjustment to a given Reference Method," or SPRM. This function enables the operating parameters of **MA100** to be adapted to the results of an available reference method and saved as a drying routine. Optimization of operating parameters doesn't get any faster than this.

Flexible and modular
The MA100 analyzers give you a choice of three different infrared heat sources: a halogen lamp for standard applications, a ceramic heating element for gentle heating of temperature-sensitive samples and a CQR quartz glass heater. The CQR combines the fast drying capability of a halogen lamp with the gentle heating capability of a ceramic heater for drying samples evenly over their entire surface. A printer that can be optionally integrated into the housing eliminates the familiar cable spaghetti of an external printer, while helping keep your work area tidy.

A clean solution
Did you accidentally spill a sample? Are there spatters of grease inside the sample chamber? No problem with the MA100! The Plug & Dry® feature lets you slide out the heater cover easily for thorough cleaning and without letting any dirt get inside the housing.

Sartorius LMA100P:
Workhorse for Monitoring Production and Incoming Goods

A rugged environment and a tremendous influx of samples characterize the incoming goods and production departments.

Unique and modular
The **LMA100P**, a modular moisture analysis tool, is designed for production inspection with heavy sample traffic. Several samples can be analyzed simultaneously since up to four heating modules can be operated in parallel on one control unit. And different measurement parameters can be set for every module. A table saved in the setup menu controls which user can access which module. This guarantees the traceability of your measurements by preventing confusion with measurements from someone else's module.

Practical ideas for every day use
Entering moisture content tolerances allows the user to identify, after measurement, whether the test results lie within the accepted range or it is necessary to take regulatory action. The device features a large backlit display for easy reading, even under poor lighting conditions. The keyboard and handles are specially designed for operation in the production line and warehouse and can be operated easily while wearing work gloves. The hinged cover has a wide opening angle, allowing the user to insert and remove the sample easily.

Communicative
With RS-232, USB and Ethernet ports, the LMA100P supports every common interface available and can be integrated into your current communications infrastructure. Additionally, the LMA100P features an integrated thermal printer to enable on-site printing of data records. And when the device completes a measurement, it lets the user know by emitting an audible signal and activating a blinking red and green LED at the appropriate heating module.

Specifications
MA35 | MA100 | MA150 | LMA100P

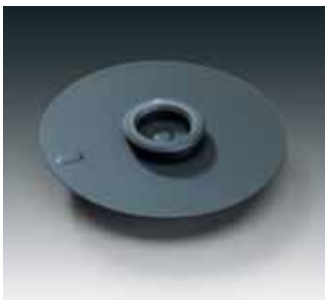
	MA35	MA100	MA150	LMA100P
Max. weighing capacity (g)	35	100	150	100
Accuracy of the weighing system (mg)	1	0.1	1	0.1
Weighing system with EC type-approval certificate		•		
Repeatability, average (%)				
– for initial sample weight approx. > 1 g	± 0.2	± 0.1	± 0.2	± 0.1
– with initial sample weight of approx. 5 g	± 0.05	± 0.02	± 0.05	± 0.02
Readability (%)	0.01	0.001	0.01	0.001
Display mode for results				
– % moisture	•	•	•	•
– volatile matter				•
– % dry weight	•	•	•	•
– % RATIO	•	•	•	•
– g residue	•	•	•	•
– g/kg residue		•	•	
– g/l residue			•	
– mg/l residue				•
– mg weight loss		•	•	
– Calculated value (measured value × factor)		•		
– ppm moisture				•
– ppm dry weight				•
Temperature range and settings				
– 40 to 160 °C, adjustable in 1-degree increments	•			
– 30 to 230 °C, adjustable in 1-degree increments		•		
– 40 to 220 °C, adjustable in 1-degree increments			•	
– 30 to 210 °C, adjustable in 1-degree increments				•
Heating modes				
– Standard drying	•	•	•	•
– Quick drying		•		
– Gentle drying		•	•	
– Phase drying		3×0.1–999 min.	1×0.1–999 min.	2×0.0–99.9 min.
Analysis modes				
– Fully automatic	•	•	•	
– Semi-automatic		1–50 mg/5–300 sec. 0.1–5.0%/5–300 sec.	1–50 mg/5–300 sec. 0.1–5.0%/5–300 sec.	0.010–9.990%/ 0.1–99.9 min.
– Timer settings	1×0.1–99 min.	3×0.1–999 min.	1×0.1–99 min.	2×0.0–99.9 min.
– Timer mode +fully/semi-automatic		2×0.1–999 min. + Automatic		
SPRM mode for parameter recognition		•		
Heating units				
– Ceramic IR heating element (infrared)		•	•	
– Halogen lamp (infrared)		•		
– CQR heater (coiled quartz radiator)		•	•	
– Metal tubular heating element (infrared dark radiator)	•			
– Quartz tube radiator (4 tubes				•
Upgrade of heating unit to Plug & Dry®*		•		
Access to sample chamber				
– hinged, flip-up cover	•		•	•
– motorized cover		•		

* Does not apply to the CQR quartz heating element

	MA35	MA100	MA150	LMA100P
Optional version compliant with FDA|HACCP regulations**	•		•	
DLG Signam approved			•	
Built-in calibration weight		•		•
Operator guidance features – Context-sensitive menu with alphanumeric interactive prompts and symbols – Text input for sample identification using soft-keys – Numeric keypad for sample identification and parameter input – Parameter input using soft-keys	•	•	•	•
		•		•
		•		
		•		•
reproTEST for determining the repeatability of the weighing system		•		
Number of program memory modules	1	30	20	300
Memory for data storage – Statistics on the last 9999 measurements – End point up to the next moisture analysis run	•	•	•	999
Password protection to prevent unauthorized changes in parameters		•	•	
Manual input of tare weights		•		
Data printer – Built-in (optional retrofit) – External (optional)	•	•	•	
Thermal printer built in				•
Printout – GLP-compliant, configurable – GLP-compliant, not configurable – Short report	•	•	•	•
	•			
Data interface port – RS-232C unidirectional – RS-232C bidirectional – Ethernet – USB	•	•	•	•
				•
				•
Bar code scanner connectivity		•		
Dust cover for the keypad		•	•	
Power consumption (VA)	max. 400	max. 700	max. 700	max. 700***
Dimensions (mm) W × D × H	224×366×191	350×453×156	213×320×180.5	495×413×235***
Weight, approx. (kg)	5.8	8.0	5.5	10***

* Does not apply to the CQR quartz heating element
** Not available with halogen or CQR quartz heating element
*** Applies to the combination of one operating and one heating module

Accessories
MA35 | MA100 | MA150 | LMA100P



Accessories	Order No.			
	MA35	**MA100**	**MA150**	**LMA100P**
Disposal sample pans, 80 pcs, aluminum; round, 90 mm ∅ Reusable sample pans, 10 pcs, stainless steel, round, 100 mm ∅	6965542	6965542	6965542	6965542 0-2014
Glass fiber filters, 80 pcs, 90 mm ∅ for analysis of liquid, pasty and fatty samples	6906940	6906940	6906940	6906940
Panel replacement set (conversion kit) Aluminum panels for replacing glass panels to meet FDA|HACCP regulations	YDS05MA	YDS03MA	YDS04MA	
Windows® 2000|NT|XP-compatible software for data collection and for programming drying programs; 9|25-pin interface cable included		YMW02MA	YMW02MA	
SartoCollect, software for communication between moisture analyzer and PC; 25-pin/9-pin cable included (2 m)	•	•	•	
Carrying case		YDB03MA	YDB05MA	
Data printer – Built-in – External	 YDP01MA	 YDP03-0CE YDP03-0CE	 YDP03-0CE	
Color ink ribbon for data printer	6906918	6906918	6906918	
Paper rolls for data printer – 5 pcs, 50 m each – 5 pcs, 20 m each (thermo paper)	 690693	 690693	 690693	 69M30100
External calibration weight – 100 g (E2) – 100 g (E2) DKD certificate – 30 g ± 0.3 mg – 30 g ± 0.3 mg DKD certificate – 50 g (E2) – 50 g (E2) DKD certificate	 YCW452-00 YCW452-02	 YCW512-00 YCW512-02	 YSS43-00 YSS43-02	 YCW512-00 YCW512-02
Temperature adjustment set	YTM01MA	YTM03MA	YTM03MA	YTM06MA
Additional heating module with integrated weighing system				LMA100PQ-000U

Interested in receiving more information about our moisture analyzers?
Visit www.sartorius.com/moisture. Our applications database contains a wealth of details about which analyzer is suitable for which application and which operating parameters Sartorius recommends for use. Moreover, numerous scientific publications are available for download as PDF files.

Sartorius LMA200PM: Speed Meets Analytical Precision

If the sample contains a large amount of water, microwave drying in accordance with the thermogravimetric (loss-on-drying) technique is the fastest and most effective drying method. Developed for measuring moisture content ranging from approximately 8% to 100%, the LMA200PM performs moisture analysis in a fraction of the time it takes for other thermogravimetric methods. It delivers results in just 40 to 120 seconds on average. The cylindrical design of the sample chamber and the dual apertures at the bottom of the chamber permit focused emission of microwave energy. This prevents hot and cold spots from occurring, a familiar problem with conventional microwave analyzers.

Built-in analytical balance
The moist and dry weight of the sample required for calculating the loss of moisture is measured by a built-in analytical weighing system featuring 0.1 mg resolution. Thanks to its monolithic design (the cell is robotically etched from a single block), this system is particularly suitable for use in a moisture analyzer, because it considerably reduces zero point drift during heat exposure when compared with conventional weighing systems.

Intelligent endpoint determination
A moisture sensor integrated in the exhaust system of the sample chamber monitors the progress of drying. When the measurement begins, the moisture of the air inside the sample chamber continuously increases as water evaporates from the sample. Once the sample has dried and no longer releases water, the air moisture content drops back to its original level – a clear indication of the end point. At the same time, the built-in weighing system monitors the weight progression and confirms when the sample reaches a constant weight. This dual monitoring system ensures optimal moisture analysis results.

High speed
Two factors play a major role for ultra-fast measurements. First, the sample must absorb microwave energy within the shortest time possible and transform it into heat energy. For this purpose, the LMA200PM has a cylindrical sample chamber that focuses the microwave radiation on the sample. Microwave radiation enters the sample chamber through two openings at the bottom; coupled with the rotation of the sample, this ensures ideal absorption of the microwave energy. Second, the resulting water vapor must be transported away from the sample as fast as possible to obtain rapid analysis results. To accomplish this, a sample is applied to a glass fiber pad that allows water vapor to evaporate not only upward from the sample, but also downward through the pad. An exhaust system draws water vapor out of the sample chamber, thus preventing the effects of condensation.

Specifications | Accessories
LMA200PM

Model	LMA200PM
Weighing capacity (g)	70
Accuracy of the weighing system (g)	0.0001
Repeatability, average with initial sample weight of approx. 1 g (%)	± 0.05
Sample carrier	∅ 90 mm glass fiber pad
Display modes	% moisture, ppm moisture, % volatile components, % dry weight (solids), ppm dry weight, g dry weight, mg loss on drying, % RATIO
Measuring range	Approx. 8 to 100% moisture
Sample heating	Microwave generator with 1000 W input power
Power control for heating	2 to 100%, adjustable in 1%-increments
Endpoint determination	– Fully automatic, by means of weight and moisture sensors – User-defined as loss of weight/time: 1 to 50 mg/1 to 99 sec. 0.1 to 9.9%/1 to 99 sec. – Timer-mode: 0.1 to 99.9 min.
Response time (s)	Approx. 40 –120 (depends on sample and moisture content)
Programs	320, saved in non-volatile memory
Data printer	Thermal printer, built in
Moisture analysis report	– Configurable GLP-compliant printout – The report can be printed on non-fading paper by the built-in thermal printer.
Operator guidance	– Menu-driven, alphanumeric dialog texts (English, French, German, Italian and Spanish available) – 5 pre-programmed function keys
Data interfaces	– 1 RS-232 for PC – 1 Ethernet
Housing dimensions W×D×H (mm) | (inches)	510 × 535 × 304 | 20" × 21" × 12"
Weight, approx. (kg) | lbs	22 | 48.5
Power consumption (VA)	max. 1200

Accessories	Order No.
80 glass fiber pads	6906940
500 disposable pipettes	YAT01MA
5 rolls of printer paper, 20 m each	69M30100

Sartorius LA Reference
Efficient Management of Backweighing Data

Management of extensive weighing data, such as that generated using the classic oven drying method, is a powerful feature of the differential weighing function in Sartorius **LA Reference** Series balances. For up to 999 samples, these balances save the tare weight, initial sample weight and the backweight, and use this data to calculate the final result. It does not matter in which sequence the measured data is logged – **LA Reference** adapts to the individual needs of the user. A printout of all weights on the optionally available YDP03-0CE data printer is generated according to the sequence of the sample numbers.

Specifications | Accessories
LA Reference

Model	Readability	Weighing capacity
LA120S	0.1 mg	120 g
LA230S	0.1 mg	230 g
LA230P	0.1|0.2| 0.5 mg 60|120	230 g
LA310S	0.1 mg	310 g
LA130S-F filter balance	0.1 mg	150 g
LA1200S	0.001 g	1200 g
LA620S	0.001 g	620 g
LA220S	0.001 g	200 g
LA2000P	0.001 | 0.01g	1010 | 2000 g
LA620P	0.001 | 0.002 | 0.005 g	120 | 240 | 620 g
LA5200D	0.001 | 0.01g	1010 | 5000 g
LA3200D	0.001 | 0.01 g	1000 | 3200 g
LA6200S	0.01 g	6200 g
LA8200S	0.01 g	8200 g
LA4200S	0.01 g	4200 g
LA2200S	0.01 g	2200 g
LA820	0.01 g	820 g
LA420	0.01 g	420 g
LA2200P	0.01 | 0.02 | 0.05 g	400 | 800 | 2200 g
LA5200P	0.01 | 0.02 | 0.05 | 0.1 g	1200 | 2400 | 3800 | 5200 g
LA8200P	0.01 | 0.02 | 0.05 g	2000 | 4000 | 8200 g

Performance features of the differential weighing program
– Memory capacity for 999 samples in up to 100 lots
– Alphanumeric input of lot and sample names
– Taring, sample weighing and backweighing with up to 30 backweighs per sample
– Automatic and manual weight storage
– Evaluation of results with residue and loss (weight unit and %), calculation factor, RATIO values
– List function with display pages for lots, samples, measured values and results
– Statistical evaluation with statistics display page
– Printout as individual, backweighing or statistics record
– User-specific, configurable printout
– Connectivity for bar code scanner

Moreover, all LA Reference balances offer the following features:

- Backlit graphic display with full text support and variable digit sizes
- Fully automatic calibration|adjustment function, isoCAL
- Memory for ISO|GLP-compliant calibration|adjustment records
- 4 user-programmable lines, e.g., for entering the company address
- Standard equipped with application programs for counting, weighing in percent, checkweighing, animal weighing, formulation, totalizing, calculation of weight values, density determination and statistics, time-controlled functions, such as automatic data printout at intervals according to a preset time

Accessories	**Order No.**
Verifiable printer with functions for date, time and statistics functions	YDP03-0CE
Color ink ribbon for data printer	6906918
Paper rolls for data printer; 5 rolls, 50 m each	690693

Sartorius WDS 400: Selective Detection of Surface Water, Capillary Water and Water of Crystallization

Water, not moisture

Thermogravimetric methods, such as the oven drying method, use the weight loss of a sample to determine the total content of all volatile components but not, however, the pure water content. As a rule, the latter task is performed using electrochemical techniques that are based on the principle of coulometry (coulomb = electric charge). The most commonly known methods are coulometric Karl Fisher titration for solid and liquid samples and the phosphorus pentoxide method for trace analysis of gases. However, both methods require complicated equipment; moreover, KF titration necessitates the use of additional chemicals in order to perform an analysis. The WDS 400 Water Detection System from Sartorius combines these three standard methods into a high-resolution and easy procedure for selective detection of water in solids and pastes.

Get all three in one

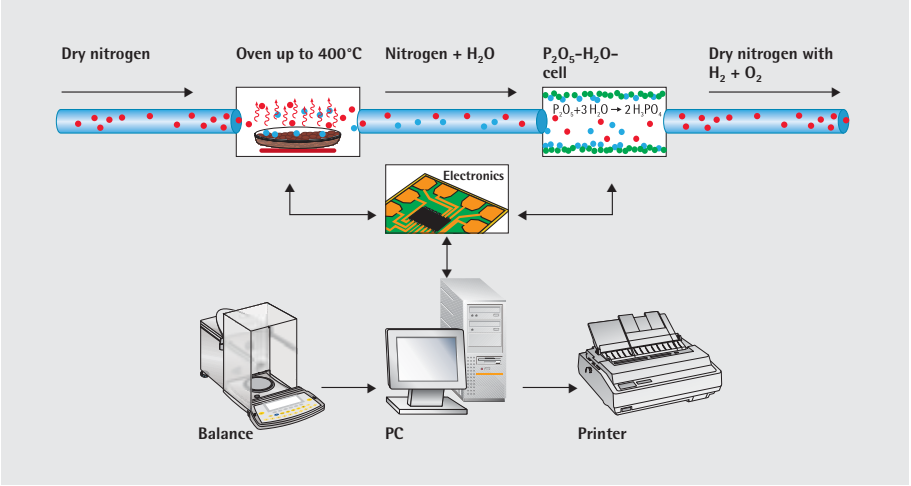
The WDS 400 adopts the principle of convection heating from the oven drying method in order to drive out the entire moisture from a sample. A ceramic disc coated with extremely hygroscopic phosphorus pentoxide P_2O_5 completely absorbs the water from the resulting gas mixture and bonds water molecules to phosphoric acid H_3PO_4 on the disc surface in a chemical reaction. By coulometry, i.e., by an electric current generated at the ceramic disc, phosphoric acid is broken down into phosphorus pentoxide P_2O_5, hydrogen H and oxygen O. Based on Faraday's law, it is known how much current is necessary in order to split off all hydrogen atoms from a chemical compound. Thus, the WDS 400 uses the amount of electric current to calculate the quantity of water driven out of a sample.

Highly accurate and selective

This combination method works so accurately that it is even possible to detect one single microgram of water. Beyond that, the WDS 400 enables water fractions to be differentiated according to surface water, capillary water and water of crystallization (the latter is chemically bound water).

Easy operation

All the user has to do is just weigh-in a sample. The WDS 400 does not require any complicated handling of detection reagents, many of which are toxic. For measurement of the water content, the user can choose the type of carrier gas, either nitrogen (Class 5.0) or room air. For using room air, the WDS 400 has a built-in pump and a drying unit.



Specifications | Accessories
WDS 400

Specifications

Moisture analysis method	Thermal analysis followed by coulometric measurement
Sample heating in the built-in stainless steel oven (convection heating)	From room temperature up to 400°C; adjustable in increments of 1°C
Detection limit	1 µg of water
Repeatability	±2% of the absolute water value measured (depends on sample)
Measuring range	1 ppm to approximately 40% water (depends on sample)
Sample weight, average	15 to 2000 mg
Display mode	ppm, % and g water, mA current
Analysis time	Average: 10 to 20 min | adjustable in increments of 1 min to 10 h
Operator guidance | Software	English | for PCs running Windows 2000 | NT | XP
Memory for data storage	On the hard drive of the connected PC
Number of measuring programs	Limited only by the PC's available disk space
Power supply	115/230 V ±10%
Frequency	50 to 60 Hz
Carrier gases:	– Dry room air (using integrated air pump with molecular sieve) – Nitrogen N2 (Class 5.0)
Gas pre-pressure	1 bar
Gas consumption	100 to 200 ml/min
Power consumption	Standby: 100 W/Full power: 600 W
Housing dimensions (mm) W × D × H	500 × 500 × 180
Weight, approx. (kg)	20

Accessories

Regeneration kit for electrochemical cell	69MA0224
Calibration standard	69MA0225
PTFE particle-removing filters; starting from serial no. 19070049	69MA0226
PTFE particle-removing filters; starting from serial no. 19170000	69MA0292
Nickel scoop	69MA0228
Electrolytic cell, uncoated	69MA0232
Temperature calibration unit for the oven	6740-86
Molecular sieve for drying unit	69MA0293
Flexible gas tubing, stainless steel, for external gas supply	69MA0229

Recommended balance models

Semi-microbalances	**ME235S**	**ME235P**	**CP225D**
Weighing range structure	SuperRange	PolyRange	DualRange
Weighing capacity g	230	60 | 110 | 230	80 | 220
Readability mg	0.01	0.01 | 0.02 | 0.05	0.1 | 0.01 | 0.01

Microbalances	**SE2**	**ME5**	**ME36S**	**CP2P**	**LE26P**
Weighing range structure	SuperRange	SuperRange	SuperRange	PolyRange	PolyRange
Weighing capacity g	2.1	5.1	31	0.5 | 1 | 2	5 | 21 g
Readability µg	0.1	1	1	1 | 2 | 5	2 | 10 g

Sartorius LMA300P
Moisture Analysis Within a Split Second

The **LMA300P** works with microwave resonance technology. With this indirect measurement method, a harmonic electromagnetic resonator field is built up by a microwave generator in a sensor (applicator). When the applicator is filled with a sample, the water in the sample interferes with the oscillation behavior (resonance) of the microwave, or interacts with the resonance field, changing the height and width of the resonance frequency peak.

Calibration

This change in resonance field is detected by a sensor, and the analyzer CPU calculates the moisture content of the sample based on the calibration previously carried out. The basic analyzer calibration required can be done by the classic oven drying method or, of course, using an infrared moisture analyzer from the Sartorius MA series.

Measurement

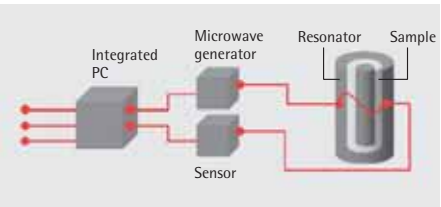
The microwave resonance method offers the advantage of particularly fast measurement in under one second. At the same time, it is non-destructive, which means that samples can be further used for subsequent tests. Changes in the color and surface structure of the sample, as is frequently the case, for instance, in natural raw materials, does not have any effect on calibration or thus on the measured result, unlike near infrared spectroscopy. The microwave resonance method is not limited to measurement of the surface moisture; rather, it also determines the core moisture thanks to its operating principle.

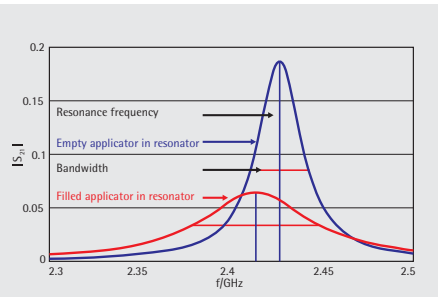
Applications

The **LMA300P** can be used for nearly all pourable and granulated products as well as viscous liquids, such as whitewash and similar materials. The measuring range is approximately 0.1 to 60% moisture content. The prerequisite for operating the analyzer is to calibrate measurements on the basis of measurement procedure providing absolute accuracy. The major application area for the **LMA300P** is incoming and in-process quality control.

Design

The LMA300P is a modular system. The standard configuration combines the **LMA300PA** display and control unit with a resonator module. This modular design permits easy adaptation of the analyzer to customer-specific applications; for example, by using a different resonator type.





Specifications | Accessories
LMA300P

Specifications*	
Measuring range (%)	Approx. 0.1 to 60
Readability (%)	0.01
Measuring accuracy (%)	± 0.05 (depends on calibration and type of sample)
Response time (s)	< 1
Display modes	% moisture, % dry mass (solids)
Measurement method	Microwave resonance technology
Operating temperature (°C)	Approx. 0 to 70
Operator guidance	Touchscreen with demand-driven menu based on alphanumeric prompts (dialog text and symbols)
Program memory modules	40
Data printer, optional	External
GLP-compliant report	Yes, with optional YDP03-0CE printer
Interface port	2 × RS-232 C for printer and PC USB port + 128 MB USB flash drive
Power requirements	115/230V AC
Frequency	50 to 60 Hz
Power consumption	Max. 60 VA
Housing dimensions (mm) W × D × H LMA300PA display and control unit	500 × 430 × 200
Net weight, approx. (kg) LMA300PA display and control unit	11.5

Accessories	Order No.
Printer	YDP03-0CE
Ink ribbon cartridge for data printer	6906918
Paper rolls for data printer, 5 pcs, 50 m each	690693
Applicator, 60 mm	69MA0294
Applicator, 140 mm	69MA0295
Reference standard	LMA301SY

Sensor Specifications	LMA300PR	LMA301PR	LMA302PR	LMA303PR	LMA304PR
Dimensions (in mm)	370 × 245 × 275	370 × 245 × 275	370 × 395 × 375	260 × 270 × 280	370 × 385 × 375
Weight	10 kg	10 kg	11 kg	5 kg	15 kg
Sample volume	(60/150) ml	(90/125) ml	400 ml	27 ml	2000 ml
Resonator diameter	40 mm	50 mm	46 mm	26 mm	96 mm

* In addition to the LMA300PR sensor module, other sensors are also available on request. Depending on the desired application, however, a Sartorius applications technician must be consulted before the specifications can be agreed upon.

Sartorius PMD300P and PMD301P
On-line Moisture Analysis Within a Split Second

The moisture analysis systems from the Sartorius PMD300 Series have been designed for online, in-process analysis. Through the use of microwave resonance technology, moisture content can be measured in less than one second. The system averages individual measurements taken over a user-defined period and then sends the data over an interface to a PC, switch cabinet or a PLC controller. Both core and surface moisture content are measured. The analysis is non-destructive and is not influenced by the color, density or surface characteristics of the sample material.

Sensors
A wide variety of sensors is available for the PMD300 series. This way, the analysis method can be customized to the sample and process as each situation requires. Depending on sensor type, the measuring range is between 0.1% and 60% moisture.

Ultra-sensitive planar sensors, featuring a special ceramic surface, are especially suited for use in assembly lines or in hoppers. Due to their compact form and high protection rating, all sensors can be used in the food industry. The diameter of the sensors' measuring field is between 50 and 130 mm.

Bypass sensors are especially suited for pourable or granulated products that are transported through pipes. Intake and discharge valves controlled by the PMD301P extract a defined sample amount, measure it and then return it to the main current. Optional functions also allow density to be measured together with moisture.

A special fork sensor is available for non-contact analysis. The sample is sent between two sensor surfaces without it touching the surface of the sensors. Ex-protected versions are available for all sensor types.

Applications
Monitoring and traceability: These versatile analysis systems can be used in a variety of locations. For example, they can be used in the incoming goods department to analyze raw materials continuously and document the results. Instead of doing spot checks, the entire batch is monitored without interruption. (Meets IFS V5 requirements.)

Optimizing energy consumption:
A significant factor contributing to the success of many processes is exact and immediate moisture analysis. This is why online moisture measurement is often used in baking and drying processes. The ideal conditions for drying and baking processes can be met by continuously monitoring moisture content without loss of time. The temperature in the oven, air supply or conveyor belt speed are adjusted to the current moisture content of the product. This lets you save valuable energy.

Time management:
Frequently, a predefined moisture content must be reached before proceeding to the next step in the process (batch processing). This is possible using Sartorius' online moisture analysis systems because they measure moisture content continuously and send them to the controller without delay. When the target moisture content has been reached, the process will go on to the next step instantaneously and automatically. Online moisture analysis makes your process efficient and transparent.

Specifications | Accessories
PMD300PA-000U

Evaluation unit	
Dimensions	410 × 460 × 210 mm
Weight	19 kg
Material	Stainless steel
Protection rating	IP 54

Mains connection (line voltage)
(110–230) V AC/(50–60) Hz/70 VA

Interface ports	
Data	One RS-422 (for PC, PLC, on-line computer); two RS-232 ports; optional Profibus and Ethernet ports
Analog output	Two (0/4–20) mA (active, isolated)
Analog input	One (0/4–20) mA
Control inputs	Four opto-electronic coupler inputs, 24 V, e.g., for start, stop and product selection
Control outputs	5 isolated contacts (24 V, 0.25 A DC)

Ambient conditions	
Temperature	
Sample temperature	0°C to +70°C automatic temperature compensation
Ambient operating temperature range	0 °C to +40 °C

Accessories	
Reference standard for planar sensors	PMD302SY

Planar sensor specifications:
PMD310SR

Protection rating	IP 65
Height of the microwave field over the sensor	up to 50 mm
Sensor material	ceramic
Measuring field diameter	110 mm
Sensor diameter	188 mm
Sensor height	53 mm
Weight	3 kg

PMD311SR

Protection rating	IP65
Height of the microwave field above the sensor	up to 70 mm
Sensor material	ceramic
Measuring field diameter	120 mm
Sensor diameter	188 mm
Sensor height	53 mm
Weight	3 kg

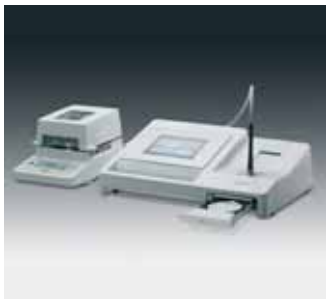
PMD312SR

Protection rating	IP 65
Height of the microwave field above the sensor	up to 80 mm
Sensor material	ceramic
Measuring field diameter	130 mm
Sensor diameter	188 mm
Sensor height	53 mm
Weight	3 kg

PMD313SR

Protection rating	IP 65
Height of the microwave field above the sensor	up to 30 mm
Sensor material	ceramic
Measuring field diameter	50 mm
Sensor diameter	80 mm
Sensor height	112 mm
Weight	1.6 kg

Sartorius LMA500: Analyzing Moisture Content with Optics: Quick, Reliable and Non-destructive



The LMA500 uses spectroscopy. It exploits the interaction between light and the sample. If the sample is exposed to near infrared light (NIR), a part of this light is reflected and modified characteristically on interaction with the sample. This change in the NIR light, which is dependent on the water content of the sample, reveals its moisture content.

Calibration
The LMA500 calibrates itself by analyzing data it has collected using sophisticated multivariate statistics (regression analyses, approximation procedures) practically without the need for user input or expert knowledge. If desired, you can quickly adjust the calibration by connecting an MA35 rapid moisture analyzer. This allows you to adjust to changes in sample characteristics, giving you another method for updating your system to new batches. Or you can create calibrations for products that have just been added to your product portfolio. Calibration settings for many classes of substances are available from Sartorius.

Verification made easy
Multivariate evaluation offers index values for evaluating measurements. This information identifies anomalies or samples that have been categorized incorrectly so corrective action can be taken immediately.

Applications
The LMA500 is designed for analyzing the moisture content of pourable and granulated products, and viscous products as well such as slurry. The measuring range is approximately 0.1 to 50% moisture content. Calibration with a direct measurement is required if you wish to use the NIR calibrator. The NIR calibrator is optimized for use with the MA35 moisture analyzer. Naturally, other reference methods can be used. The major applications of the NIR calibrator include laboratory analysis and in-line process control. Analysis does not modify the sample, so the sample can still be used after measurement.

Design
The NIR calibrator and its measuring, operating and evaluating components are contained in a water resistant IP54 housing. A fiber optic cable connects the probe so that measurements can be taken not only in the integrated analysis area but also at other locations, in the MA35 or directly in the production process. Thanks to the device's compact design, it can be quickly transported to other testing locations.

Software
The LMA500's software is easy to use and intuitive. All data is write-protected. Only users who have been authenticated can access the system. User permissions can be individually modified to suit your needs. No expert knowledge is necessary to create, extend or adjust calibration settings.

Specifications
LMA500PO

Spectrometer system

Spectral range	1,100 to 1,700 nm (effective: 1,100 to 1,680 nm)
A/D converter	16 bits
Spectral resolution [Δλ.FWHM]	< 16 nm
Wavelength precision	< 5 nm
Signal-to-noise ratio	> 3500:1
Photometric linearity	Gradient: 1 ± 0.05; axis intercept: 0 ± 0.05

Functions

Measurement range, typical	0 to 50% moisture (pourable and granulated samples)
Repeatability, average (%)	0.2% absolute moisture, dependent on sample and reference method
Precision of comparison, typical (%)	0.5% absolute moisture, dependent on reference method
Measurement time, typical	2 seconds
Memory capacity	1 GB for measurement and calibration data
Sample pan dimensions	90 mm ∅

Analyzer (hardware)

Dimensions	(W × D × H) 550 × 387 × 180 mm
Net weight, approximate	11.5 kg
Power supply	100 V to 240 V, – 15% to +10%
Frequency	48 to 60 Hz
Fuses	2 (neutral conductor/phase), 6.3 AT, 5 + 20 mm
Power consumption	45 VA max.
Temperature range	+10 to +30 °C (+50 to +86 °F)
IP protection	IP54 (also during use); front cover, display: IP65
Built-in interface	Two RS-232C (for connecting the MA35 to the YDP03-0CE)
Format	7-bit ASCII; 1 start bit; 1 stop bit; parity: odd; transmission rates: 1200 baud; handshake mode: hardware
Digital interfaces	One Ethernet (RJ45 socket): 10/100BaseT; one USB 1.1, one PS/2 keyboard port


sartorius

Mass Metrology

Automatic Mass Comparators and Robotic Devices

CCL1007

Load alternator on the CCL1007

CCR10-1000

Weight grabber on the CCR10-1000

The fascination of precision
International trade requires worldwide standardization of certain metrics. Mass plays an important role, because the majority of commerce throughout the world is defined by the mass of substances. To make sure the same masses are used around the world, each country has a national metrology institute (NMI) that governs units of measure. These institutes are the measure of all things.

Determination of mass to the very highest standards
Sartorius masters the core disciplines of weighing like no other and sets new standards in mass metrology. In cooperation with the Bureau International des Poids et Mesures and the Institute for Process Measurement and Sensor Technology of the Technical University of Ilmenau, Sartorius has developed a mass comparator – the CCL1007 – that is capable of determining differences in mass to an accuracy of 0.1 µg for weights of 1 kg – even under high-vacuum conditions. Our metrology experts will be happy to advise you, offering the best solution available to cover your needs. Just ask us!

Automatic Mass Comparators and Robotic Devices

Model	Maximum capacity	Readability	Average repeatability	R = robotic device A = automatic device
CCL1007	1,031 g	0.1 µg	0.1 µg	A 8 positions
CCR10	10.5 g	0.1 µg	0.2 µg	R 39–104 positions
CCR1000	1,002 g	1 µg	2 µg	R 21–60 positions
CCR10-1000	10.5 g 1,002 g	0.1 µg 1 µg	0.2 µg 2 µg	R 39–104 positions R 21–60 positions
CCR10K	10.05 kg	0.01 mg	0.03 mg	R 10–20 positions
CCR20K	20.05 kg	0.1 mg	0.1 mg	R 8–18 positions
CCR50K	51 kg	1 mg	1 mg	R 6–16 positions
CCR10K-20K	10.05 kg 20.05 kg	0.01 mg 0.1 mg	0.02 mg 0.05 mg	R 10–20 positions R 8–18 positions
CCR10K-50K	10.05 kg 51 kg	0.01 mg 1 mg	0.02 mg 1 mg	R 10–20 positions R 6–16 positions
CC1000S-L	1.002 kg	0.001 mg	0.001 mg	A 4 positions
CC10000U-L	10.05 kg	0.01 mg	0.01 mg	A 4 positions
CC10000S-L	10.05 kg	0.1 mg	0.1 mg	A 4 positions
CC20000S-L	20.05 kg	0.1 mg	0.1 mg	A 4 positions
CC50001S-L	51 kg	1 mg	1 mg	A 2 positions

Manual Mass Comparators

Specifications

Model	Maximum capacity (g)	Readability (mg)	Average repeat-ability (s in mg)*
Analytical range			
CCE6	6.1	0.0001	0.00015
CCE36	31	0.001	0.001
CCE66	61	0.001	0.001
CC111	111	0.001	0.001
CC310	310	0.01	0.01
CC500	505	0.01	0.015
CCE1005	1,005	0.01	0.01
Universal range			
CCE1004	1,200	0.1	0.05
CCE2004	2,500	0.1	0.1
CCE5004	5,100	0.2	0.3
CCE5003	5,100	1	0.5
CC10000S	10,050	0.1	0.1
CCE10K3	10,100	1	1
CC20000	20,050	1	1
CCE40K3	41,000	2	3
CCE60K3	64,000	2	4
CCE60K2	64,000	10	7
Research and testing range			
CC64K	64,000	50	100
CC150K	151,000	100	200
CC300K	303,000	1,000	500
CCS600K	605,000	1,000	2,000
CCT1000K	1,200,000	1,000	2,000
CCS1000K	1,510,000	5,000	5,000
CCT2000K	2,010,000	1,000	5,000
CCS3000K	3,010,000	10,000	10,000

* Repeatability is the standard deviation "s"; it is calculated from 6 ABA cycles (M) or ABBA cycles (A) after drift has been eliminated.

Accessories for Mass Metrology

Density determination

	Model	Maximum capacity	Readability	Average repeatability
Volume comparator with 2 load alternators	VD1005	1,125 g	0.01 mg	0.02 mg
Volume comparator with load alternator	VL1005	1,125 g	0.01 mg	0.02 mg
Pycnometer for weights up to 50 kg	YP50K	50 kg		
Density reference: 1 kg silicon sphere	VDR1000SIC			
Density reference: 500 g silicon sphere	VDR500SIC			
Density reference: 200 g silicon sphere	VDR200SIC			

Analysis of magnetic properties

Susceptometer for weights up to 50 kg	YSZ01C	50 kg	10 µg	10 µg
Susceptometer for weights up to 50 kg	YSZ02C	50 kg	1 µg	5 µg
Calibration kit for susceptometer	YSZ01RMC			
Susceptibility reference (1 kg)	YSZ01RSC			
Permeability indicator	YAW61			

Software for moisture analysis

ScalesNet with Data Logger converter	YSN01C
ScalesNet V4, V3, and other software licenses	YSN01LC
ScalesNet V4, license for mass derivation	YSN01MC
Data Logger converter (RS-232 LAN)	YSN01DC
Evaluation program for mass metrology	YPR02C

Air density determination

Climate station for an E1 laboratory	YCM02C
Climate station for an E2 laboratory	YCM03C

Draft shields

for CC10000S-L, CC10000U-L, CC20000S-L	YDS01C
for CC1000S-L	YDS44C
for CCE40K3, CCE60K3, CCE60K2	YDS03C
for CCE40K3, CCE60K3, CCE60K2	YDS05C
for CCE6, SE2, ME5, SC2, CC6	YDS20C
for CC21, CC50, CC111, CC310, CC500	YDS22C
for CCE1004, CCE2004, CCE5004, CCE5003	YDS24C
for ME235S, CCE36, CCE66, CCE100S	YDS26C
for CC64	YDS62C
for CC150K/CC300K	YDS64C
for CCS600K/CCS1000K	YDS80C
for CC3000K	YDS82C
for CCT1000K	YDS85C
for CCT2000K	YDS87C

Metrological Weights and Weight Sets (YCW, YCS)

The complete line – ranging from weights to certified testing services
Regular inspection and testing of weighing instruments are a must to ensure reliable weighing results. Sartorius offers highly accurate metrological weights and weight sets with nominal mass values from 1 mg to 1,000 kg, special and test weights, as well as the accessories required for correct handling and storage of weights.

Sartorius weights and weight sets are calibrated by the DKD* and comply with the International Recommendation OIML-R111:2004. Thus they are suitable for legal and general metrological applications in research and industry.

Sartorius weights meet the requirements for traceability to the national kilogram prototype in conformance with ISO 9001:2004. These weights help support your quality management and quality assurance systems, and fulfill GLP and GMP requirements.

Your DKD partner for mass units
Sartorius has DKD laboratories for both weights and electronic laboratory balances and industrial scales. Sartorius calibration laboratories have been inspected and accredited for compliance with the regulations of the German calibration service, DKD, concerning mass units. These laboratories meet the international standard for testing laboratories, ISO IEC 17025, which has been adopted as a European Standard under EN ISO IEC 17025.

* DKD= German Calibration Service. DKD certificates are officially recognized in all countries belonging to the Western European Calibration Cooperation (WECC), such as Denmark, Finland, Great Britain, Italy, the Netherlands, Sweden and Switzerland

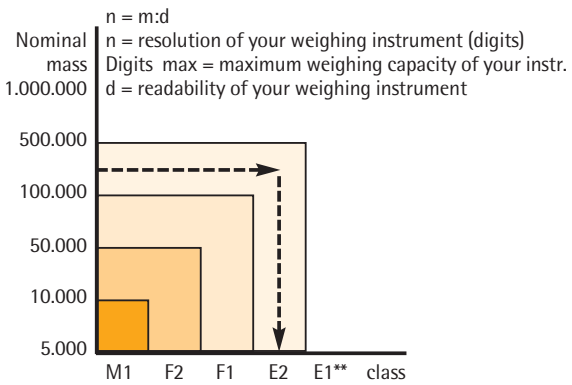
Recalibration for any brand names, manufacturers and designs
Depending on how frequently weights are used, they must be recalibrated on a regular basis so that they meet the requirements for reliable measuring, inspection and test equipment. Sartorius offers recalibration service along with DKD calibration certificates for all weights ranging from 1 mg to 50 kg, regardless of their design or brand name, and up to 500 kg for F2 and M1 weights.

Here's how to find the right test weight
Just determine the number of digits specified for your weighing instrument's resolution, then check the graph below for the particular accuracy class that your test weight must have.

The weight value of your test weight should be more than 80% of the maximum capacity of your weighing instrument.

Use the following chart to determine whether you need an individual weight or a weight set by comparing the nominal mass values.

Example: Suppose your weighing instrument has a capacity of 2,200 g and a readability of 0.01 g. This yields 220,000 digits, which correspond to a class E2 test weight. Since 80% of 2,200 g is 1,760 g, you need to round it to a weight value of 2,000 g.



** or E2, DKD-calibrated

Weight Sets (YCS)

Weight sets

Service weight sets

Features of Sartorius weight sets
The weights in Sartorius sets have the same features as the individual weights of their corresponding class, which are described on the following pages. Sartorius weight sets are supplied in a wooden case, along with gloves, forceps and brushes.

Service weight sets come in a plastic case for mobile maintenance of balances and scales.

Class E1 and E2 weights sets come with wire weights up to 500 mg Class F1, F2 and M1 weights sets come with leaf weights up to 500 mg. E2 F1

Nominal mass	E1	E2	F1
From 1 mg to 5 kg	YCS011-351-0X	YCS011-352-0X	
From 1 mg to 100 g	YCS011-511-0X	YCS011-512-0X	YCS01-513-0X
From 1 mg to 200 g	YCS011-521-0X	YCS011-522-0X	YCS01-523-0X
From 1 mg to 1 kg	YCS011-611-0X	YCS011-612-0X	YCS01-613-0X
From 1 mg to 5 kg	YCS011-651-0X	YCS011-652-0X	YCS01-653-0X
From 1 g to 1 kg	YCS31-611-0X	YCS31-612-0X	YCS31-613-0X
From 1 g to 5 kg	YCS31-651-0X	YCS31-652-0X	YCS31-653-0X
From 1 g to 10 kg	YCS31-711-0X	YCS31-712-0X	YCS31-713-0X

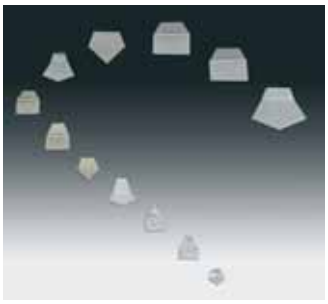
Nominal mass	F2	M1
From 1 mg to 100 g	YCS01-514-0X	YCS01-515-0X
From 1 mg to 200 g	YCS01-524-0X	YCS01-525-0X
From 1 mg to 1 kg	YCS01-614-0X	YCS01-615-0X
From 1 mg to 5 kg	YCS01-654-0X	YCS01-655-0X
From 1 g to 1 kg	YCS31-614-0X	YCS31-615-0X
From 1 g to 5 kg	YCS31-654-0X	YCS31-655-0X
From 1 g to 10 kg	YCS31-714-0X	YCS31-715-0X

Service weight set	E2	F1
From 100 g to 5 kg	YSS5128-6528-0X	
From 1 g to 5 kg		YSS3138-6538-0X

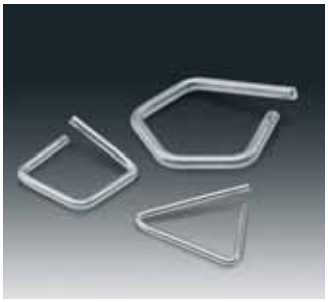
Options:
X = 0: weights with DKD certificate in Sartorius's name (E2, F1, F2 – 50 kg)
X = 2: weights with DKD certificate in customer's name
YCW02: DKD calibration certificate with customer data

Metrological Milligram Weights (YCW)

Knob weights



Leaf weights



Wire weights

Features of Sartorius metrological weights
Class F1 leaf weights (F2, M1 in weight sets); individual weights available on request

1-5 mg aluminum; density 2.7 g/cm^3
10-500 mg nickel silver; density 8.6 g/cm^3

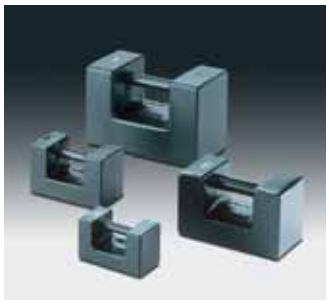
Class E1 and E2 wire weights 1-500 mg
special steel; non-magnetizable
E1: density 8.0 g/cm^3
E2: density 7.95 g/cm^3

Nominal mass	Wire weights Class E1	Wire weights Class E2	Leaf weights Class F1
1 mg	YCW0111-0X	YCW0121-0X	YCW013-0X
2 mg	YCW0211-0X	YCW0221-0X	YCW023-0X
5 mg	YCW0511-0X	YCW0521-0X	YCW053-0X
10 mg	YCW1111-0X	YCW1121-0X	YCW113-0X
20 mg	YCW1211-0X	YCW1221-0X	YCW123-0X
50 mg	YCW1511-0X	YCW1521-0X	YCW153-0X
100 mg	YCW2111-0X	YCW2121-0X	YCW213-0X
200 mg	YCW2211-0X	YCW2221-0X	YCW223-0X
500 mg	YCW2511-0X	YCW2521-0X	YCW253-0X

Options:
X = 0: weights with DKD certificate in Sartorius's name (E2, F1, F2 – 50 kg)
X = 2: weights with DKD certificate in customer's name
YCW02: DKD calibration certificate with customer data

Metrological Weights (YCW)

Knob weights



Block weights

Cylindrical weights

Class E1, E2, F1 and F2 knob weights
1 g to 50 kg, special steel,
non-magnetizable
E1: density 8.0 g/cm^3
E2, F1, F2; density 7.95 g/cm^3

M1: 1–10 kg, brass/galvanized,
polished
Packaging of the weights:
Up to 20 g in a plastic case
50 g and up in a wooden case
1 kg and up: glove included

Knob weights
(100 kg and up: cylindrical weights)

Nominal mass	**E1** (1)	**E2** (1)	**F1** (1)	**F2** (1)	**M1** (2)	**M2** (3)
1 g	YCW311-0X	YCW312-0X	YCW313-0X	YCW314-0X		YCW316-0X
2 g	YCW321-0X	YCW322-0X	YCW323-0X	YCW324-0X		YCW326-0X
5 g	YCW351-0X	YCW352-0X	YCW353-0X	YCW354-0X		YCW356-0X
10 g	YCW411-0X	YCW412-0X	YCW413-0X	YCW414-0X		YCW416-0X
20 g	YCW421-0X	YCW422-0X	YCW423-0X	YCW424-0X		YCW426-0X
50 g	YCW451-0X	YCW452-0X	YCW453-0X	YCW454-0X		YCW456-0X
100 g	YCW511-0X	YCW512-0X	YCW513-0X	YCW514-0X		YCW516-0X
200 g	YCW521-0X	YCW522-0X	YCW523-0X	YCW524-0X		YCW526-0X
500 g	YCW551-0X	YCW552-0X	YCW553-0X	YCW554-0X		YCW556-0X
1 kg	YCW611-0X	YCW612-0X	YCW613-0X	YCW614-0X	YCW615-0X	YCW616-0X
2 kg	YCW621-0X	YCW622-0X	YCW623-0X	YCW624-0X	YCW625-0X	YCW626-0X
5 kg	YCW651-0X	YCW652-0X	YCW653-0X	YCW654-0X	YCW655-0X	YCW656-0X
10 kg	YCW711-0X	YCW712-0X	YCW713-0X	YCW714-0X	YCW715-0X	YCW716-0X
20 kg	YCW721-0X	YCW722-0X	YCW723-0X	YCW724-0X		
50 kg	YCW751-0X	YCW752-0X	YCW753-0X	YCW754-0X		
100 kg*			YCW813-00	YCW814-0X		
200 kg*			YCW823-00	YCW824-0X		
500 kg*			YCW853-00	YCW854-0X		
1,000 kg*			YCW913-00	YCW914-00		

Block weight, stainless steel

Block weight

Nominal mass	Block weight (1) M1	Block weights (4) M1	Cylindrical weights (4) M1
5 kg	YCW6554-0X	YCW6559-0X	
10 kg	YCW7154-0X	YCW7159-0X	
20 kg	YCW7254-0X	YCW7259-0X	
50 kg	YCW7554-0X	YCW7559-0X	
100 kg		YCW8159-0X	YCW8157-0X
200 kg**		YCW8259-0X	YCW8257-0X
500 kg**		YCW8559-0X	YCW8557-0X
1,000 kg**		YCW9159-00	YCW9157-00

* Cylindrical weight with lug for crane
** Cylindrical weight with lug for crane, stackable

Materials:
(1) stainless steel, (2) galvanized brass, (3) brass, precision lathed surface, (4) gray casting, painted black

Options:
X = 0 weights with DKD certificate in Sartorius's name (E2, F1, F2 – 50 kg)
X = 2: weights with DKD certificate in the customer's name
YCW02: DKD calibration certificate with customer data

Test Weights (YCW...8)

Test weights

Features of Sartorius test weights
Stainless steel, non-magnetizable,
density 7.9 g/cm³, polished;
packaging of the weights:
up to 1 kg: in a plastic screw-top can

Nominal mass	E2	F1	F2
1 g	YCW3128-0X	YCW3138-0X	
2 g	YCW3228-0X	YCW3238-0X	
5 g	YCW3528-0X	YCW3538-0X	
10 g	YCW4128-0X	YCW4138-0X	
20 g	YCW4228-0X	YCW4238-0X	
50 g	YCW4528-0X	YCW4538-0X	
100 g	YCW5128-0X	YCW5138-0X	YCW5148-0X
200 g	YCW5228-0X	YCW5238-0X	YCW5248-0X
500 g	YCW5528-0X	YCW5538-0X	YCW5548-0X
1 kg	YCW6128-0X	YCW6138-0X	YCW6148-0X
2 kg	YCW6228-0X	YCW6238-0X	YCW6248-0X
5 kg	YCW6528-0X	YCW6538-0X	YCW6548-0X
10 kg		YCW7138-0X	YCW7148-0X

Options:
X = 0: weights with DKD certificate in Sartorius's name
X = 2: weights with DKD certificate in the customer's name
YCW02: DKD calibration certificate with customer data

Accessories for Weights (YAW)

Forceps

Weight forks

Handles for lifting weights

Permeability indicator

Susceptometer

Cleanroom weight cases

Accessories for Sartorius weights
Sartorius offers glass bell jars with a support plate, plastic cases, brushes, gloves, forceps with silicone-coated tips, weight forks, handles for lifting weights and a permeability indicator (for checking magnetic properties of weights of accuracy classes E1, E2, F1 and F2).

In addition, Sartorius supplies susceptometers for easy and convenient determination of the susceptibility and magnetization of weights in accordance with OIML R111:2004.

Accessories		Order No.
Glass bell jar with support plate	for 1 mg – 5 g for 1 mg – 50 g (100 g oder 200 g) for 100 g – 1 kg (2 kg) for 2 kg – 5 kg for 10 kg for 20 kg for 50 kg	YAW00 YAW01 YAW02 YAW03 YAW04 YAW05 YAW06
Brush	Small, 100 mm Medium, 115 mm Large, 150 mm Extra large, 250 mm	YAW11 YAW12 YAW13 YAW14
Gloves (pair)	Cotton Leather	YAW21 YAW22
Forceps with silicon-coated tips	115 mm für 1 mg – 5 g 160 mm für 1 g – 200 g 230 mm für 1 g – 1 kg	YAW31 YAW32 YAW33
Weight forks	for 500 g for 1 kg for 2 kg	YAW41 YAW42 YAW43
Handles for lifting weights	for 5 kg for 10 kg for 20 kg for 50 kg	YAW50 YAW51 YAW52 YAW53
Permeability indicator	For checking magnetic properties of weights of accuracy classes E1, E2, F1 and F2 (OIML R111: 2004); supplied in a wooden case	YAW61
Susceptometer	Resolution: 10 µg Resolution: 1 µg YSZ02C For checking magnetic properties of weights of accuracy classes E1, E2, F1 and F2 (OIML R111: 2004); from 2 g to 50 kg.	YSZ01C
1-kg standard susceptibility reference		YSZ01RSC
Calibration set for susceptometer		YSZ01RMC
Plastic screw-top can for individual weights* with closed-pore insert; suitable for cleanroom conditions	for 50 g weights for 100 g weights for 200 g weights for 500 g weights for 1 kg weights for 2 kg weights for 5 kg weights for 10 kg weights	YAW50GL YAW100GL YAW200GL YAW500GL YAW1000GL YAW2000GL YAW5000GL YAW10000GL

* for knob weights only; for information on cans for cylinder weights, please contact Sartorius


Docu-pH Meter
12.03.00
20.6 °C
ATC
13:15
-82.6 mV
pH
Print/
Mem
Cal
Menu

Laboratory Equipment for Electrochemical Analysis

Sartorius DocuClip® & Docu-pH$_{Meter}$
The New Standard for Reliability in Electrochemical Analysis

Reliability starts with easy and comprehensible operation. With the newly developed Docu-pH$_{Meter}$ instruments, Sartorius is setting new standards in the determination and management of measured values. Equipped with a graphic display and easy-to-use soft keys, all Docu-pH$_{Meter}$ models are practical meters that make even complex laboratory tasks simple.

You can choose between "intelligent" electrodes connected to DocuClip® and standard electrodes with a BNC connector.

Comprehensive features – simple results

- Graphical display and softkeys
- Easy-to-understand menu-driven prompts in plain language
- Defined function keys for the most common applications; no double-assigned keys
- Fast mode for rapid results
- Automatic recognition of DocuClip®
- Automatic recognition of a variety of temperature probes
- Serial interface for data transfer to computer or printer (Docu-pH$^{+}_{Meter}$)
- Memory capacity for 500 data records (Docu-pH$^{+}_{Meter}$)

Give your electrodes an identity. DocuClip® is a unique device that makes an electrode uniquely identifiable, in just seconds. Equipped with built-in memory for calibration data, DocuClip® works together with the Sartorius Docu-pH$_{Meter}$ to store essential electrode specifications over its entire service life.

Electrode data is automatically logged 100% at each measurement, and can be sent to a printer or exported to a computer for further processing.

Specifications

Temperature measurement	**Docu-pH$_{Meter}$**	**Docu-pH$^{+}_{Meter}$**
Temperature range in °C	–5 to 105 (23 to 221 °F)	–5 to 105 (23 to 221 °F)
Readability in °C	0.1	0.1
Accuracy in °C	± 0.2	± 0.2
Temperature compensation	Automatic or manual from –5 to 105 °C	
Buffer recognition	Automatic: technical buffers, DIN/NIST buffers	
Calibration standards, max. quantity	3	3
Date | time battery-supplied	–	×
Sample IDs	–	×
Calibration prompts	–	×
Complete GLP-compliant record | printout	–	×
Memory for measurement data	–	×
Communication with DocuClip®	×	×
Input for pH combination electrodes	BNC	BNC
Input for temperature probe: NTC 10 kΩ, NTC 30 kΩ, Pt1000	2.5 mm phone jack	2.5 mm phone jack
RS-232 interface	–	×
Dimensions in mm	89 × 229 × 145	
Weight in kg	1	1

Specifications

pH Measurement	Docu-pH_{Meter}	Docu-pH^{+}_{Meter}
Range	–2.000 ... 20.000	–2.000 ... 20.000
Readability	0.001 | 0.01 | 0.1 configurable	0.001 | 0.01 | 0.1 configurable
Accuracy	± 0.005	± 0.005

mV Measurement		
Measurement range in mV	–2000.0 ... 2000.0	–2000.0 ... 2000.0
Readability in mV	0.1 | 1 configurable	0.1 | 1 configurable
Accuracy in mV	± 0.2 < | 1000 | ± 1 > | 1000 |	± 0.2 < | 1000 | ± 1 > | 1000 |

Choice of Standard Features

Docu-pH_{Meter}	Order number	
Measuring instrument incl. electrode retainer arm, technical buffer, AC adapter, operating instructions	Docu-pH	Docu-pH+
...with electrodes and DocuClip® for unique, 100% traceable data recording		
pH electrodes with:		
Plastic body, refillable, fiber junction, NTC 10 kΩ	Docu-pH | P10doc	Docu-pH+ | P10doc
Glass housing, refillable, platinum junction, NTC 10 kΩ		Docu-pH+ | P11doc
Plastic body, gel electrolyte, fiber junction, NTC 10 kΩ	Docu-pH | P12doc	Docu-pH+ | P12doc
Plastic body, gel electrolyte, fiber junction	Docu-pH | P20doc	Docu-pH+ | P20doc
Glass housing, refillable, platinum junction		Docu-pH+ | P21doc
...with conventional electrodes		
pH electrodes with:		
Plastic body, refillable, fiber junction, NTC 10 kΩ	Docu-pH | P10	Docu-pH+ | P10
Glass housing, refillable, platinum junction, NTC 10 kΩ		Docu-pH+ | P11
Plastic body, gel electrolyte, fiber junction, NTC 10 kΩ	Docu-pH | P12	Docu-pH+ | P12
Plastic body, gel electrolyte, fiber junction	Docu-pH | P20	Docu-pH+ | P20
Glass housing, refillable, platinum junction		Docu-pH+ | P21
DocuClip® ... for unique, 100% traceable documentation of calibration for any pH electrodes; initialization by the user with Docu-pH_{Meter} (or Docu-pH^{+}_{Meter}) required	DocuClip®	

Professional Meters:
Multi-talented Instruments for the Most Sophisticated Measurement Tasks

pH | mV meters, ion meters, conductivity meters. Four models – with all options to meet the highest requirements.

- Large, backlit multifunction graphical VGA 5.7" display
- Measuring accuracy down to ± 0.1 mV
- Automatic temperature compensation
- Menu-driven operation with plain language prompts
- Automatic recognition of 26 standard buffers (NIST and DIN, among others)
- Automatic checking of your combination electrode
- Automatic calibration prompt
- Stability icon: stability parameters can be adapted to the measuring task at hand
- Help function always available through soft keys

Clear functions – clear advantages
Simultaneous display of a measured value and the temperature, also for parallel measurements of the pH and conductivity, for example

Research-grade – i.e., the highest – accuracy covering a broad range of concentrations

Excellent reliability and repeatability of the measured results

GLP | GMP | ISO-compliant documentation of the calibrations and results

Interface port for connecting a printer or a PC

PP-15 | pH meter for pH and ORP measurements.
High resolution ensures even greater accuracy in electrochemical analysis.

PP-20 | pH and conductivity meter.
In addition to pH measurement, the high-end PP-20 Professional Meter offers research-grade conductivity measurements.

PP-25 | pH and ion-selective meter.
In addition to convenient pH measurement, the PP-25 features the added capability of research-grade ion-selective analysis for a wide range of concentrations.

PP-50 | pH meter, ion-selective meter and conductivity meter all in one unit.
The fully professional PP-50 combines all features of the models presented in this catalogue. This convenient Professional Meter is designed for use in a broad range of applications in the field of potentiometric analysis.

Specifications

pH Measurement	**PP-15**	**PP-20**	**PP-25**	**PP-50**
Range	-2.000 ... 20.000	-2.000 ... 20.000	-2.000 ... 20.000	-2.000 ... 20.000
Calibration standards, max. quantity	5	5	5	5
mV measurement				
Measurement range in mV	±2,000	±2,000	±2,000	±2,000
Temperature measurement				
Temperature range in °C	-5 ... +105	-5 ... +105	-5 ... +105	-5 ... +105
Ion-selective analysis				
Measuring range	–	–	$1.00 \cdot 10^{-9}$ ... $9.99 \cdot 10^{9}$	
Direct potentiometric measurement and incremental modes	–	–	×	×
Calibration standards, max. quantity	–	–	7	7
Conductivity measurement*				
Measuring range in µS/cm	–	0.5 ... 20.000	–	0.5 ... 20.000
Specific electrical resistance Measuring range in Ω · cm	–	50 ... $2.0 \cdot 10^{6}$	–	50 ... $2.0 \cdot 10^{6}$
Salinity Measuring range in ppt	–	0.01 ... 42.0	–	0.01 ... 42.0
NaCl content Measuring range in ppt	–	0.01 ... 70.0	–	0.01 ... 70.0
TDS Measuring range in mg/l	–	0.005 ... 300,000	–	0.005 ... 300,000
Calibration standards, max. quantity	–	5	–	5
Manual temperature input	×	×	×	×
Inputs for pH-combination electrodes and ISE	BNC	BNC	2 BNC	2 BNC
Input for conductivity cells	–	DIN	–	DIN
Date and time, non-volatile memory	×	×	×	×
Memory for measurement data	620	620	620	620
Dimensions in mm	265 × 200 × 100			

* Specifications based on a cell constant of 2.54 cm

pH/mV Meters: Reliable in All Applications

Basic Meter: A strong basis featuring Sartorius quality
Four keys do it all!

The user-friendly prompts and messages guide you fast and reliably through laboratory routines.

PB-11
- Easy 1-key calibration of 1, 2 or 3 calibration standards
- Automatic buffer recognition
- Automatic electrode test during standardization
- Automatic temperature compensation
- Clear readout with easy-to-understand symbols and LCD

Three kits are available with different ranges of equipment:

Meter with electrode retainer arm, technical buffers, AC adapter and operating instructions, as well as
- Refillable pH electrode, PY-P10, with plastic body and integrated temperature sensor PB-11-P10
- Refillable pH electrode, PY-P11, with glass body and integrated temperature sensor PB-11-P11
- Low-maintenance pH electrode, PY-P20, with gel electrolyte PB-11-P20

Portable Meter:
Compact design – solid performance
It's easy to operate anywhere in the field where you need accurate measurements on the spot.

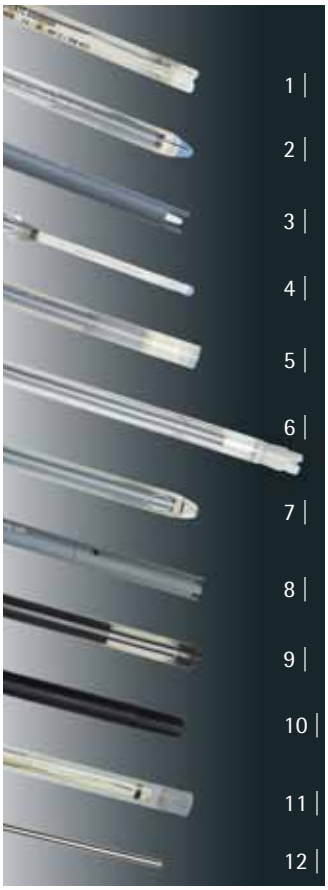
Portable Meter PT-10
- Battery operation using a 9-volt battery (optional AC adapter available separately)
- Waterproof in conformance with IP65
- Easy 1-key calibration of 1, 2 or 3 calibration standards
- Automatic buffer recognition
- Automatic electrode test during standardization
- Automatic temperature compensation
- Clear readout with easy-to-understand symbols and LCD
- Weighs only 270 g
- Two kits are available with different ranges of equipment:

Meter in a carrying case with 9-volt DC battery, technical buffers (90 ml with pH 7 and 90 ml with pH 4), 2 plastic sample containers, each with 60 ml, as well as:
- low-maintenance combination electrode, PY-P12, gel-filled, fiber junction, built-in temperature sensor PT-10P
- low-maintenance electrode, PY-P20, gel-filled, fiber junction PT-10-P20

Specifications

	Basic Meter PB-11	**Portable Meter PT-10**
pH measurement		
Range	-1.99 ... 19.99	0.00 ... 14.00
Calibration standards, max. quantity	3	3
mV measurement		
Measurement range in mV	-1,800 ... +1,800	-1,800 ... +1,800
Temperature measurement		
Temperature range in °C	-5 ... +105	-5 ... +105
Inputs for pH combination electrodes	BNC	BNC
Type of protection	–	IP65
Power source	AC adapter	9V battery or AC adapter
Dimensions in mm	230 × 120 × 80	165 × 95 × 33
Weight	1,390 g	270 g incl. battery

Sensors for the Highest Quality Measurements



pH | ATC combination electrodes – glass membrane electrodes
All pH combination electrodes have an Ag | AgCl reference. The electrodes are supplied with a 1 fixed cable and BNC connector; electrodes with a built-in temperature sensor additionally have a 2.5 mm phone plug.

Figure number	Order number	Construction	Built-in temperature sensor	pH range	Application
1 |	PY-P10	Plastic body; electrolyte: KCl 3 mol/l; free of silver ions; fiber junction	Yes	0 to 14	Simple standard applications
2 |	PY-P11	Glass body; electrolyte: KCl 3 mol/l; free of silver ions; platinum junction; toughened low-resistance glass	Yes	0 to 14	All standard applications; TRIS-compatible
3 |	PY-P12	Plastic body, gel-filled, fiber junction	Yes	0 to 14	Simple standard applications
3 |	PY-P20	Plastic body, gel-filled, fiber junction	No	0 to 14	Simple standard applications
2 |	PY-P21	Glass body; electrolyte: KCl 3 mol/l; free of silver ions; platinum junction, toughened low-resistance glass	No	0 to 14	All standard applications TRIS-compatible
4 |	PY-P22	Micro-electrode (length: 110; diameter: 5 mm); electrolyte: KCl 3 mol/l, free of silver ions; platinum junction; low-resistance glass	No	0 to 14	Low sample quantity
5 |	PY-P23	Flat-membrane electrode; glass body; gel-filled; annular-gap junction; low-resistance glass	No	2 to 13	Surface measure-ments; quantity
6 |	PY-P24	High-performance electrode, plastic body; electrolyte: KCl 3 mol/l; free of silver ions; adjustable sleeve junction for control of the flow rate of the KCl solution; low-resistance glass membrane	No	0 to 14	Samples with a low ionic concentration; emulsions, suspensions pH values

ORP combination (redox) electrodes
This type of electrode has an Ag | AgCl reference. It is supplied with a permanently attached cable and a BNC connector.

Figure number	Order number	Construction	Built-in temperature sensor	pH range	Application
7 |	PY-R01	Glass body; porous ceramic reference junction; platinum disc sensing element (4 mm diameter); electrolyte: KCl 3 mol/l; free of silver ions	No	0 to 14	

Conductivity cells and multi-sense cell (pH, conductivity, temperature)
The conductivity cells are supplied with a permanently attached cord and an 8-pin DIN connector.

Figure number	Order number	Recommended measuring range	Construction	Built-in temperature sensor
8 |	PY-C01	0.5 µS/cm to 2000 S/cm	4-band conductivity cell (platinum)	Yes
8 |	PY-C02	0.01 mS/cm to 5 mS/cm	4-band conductivity cell (platinum)	Yes
8 |	PY-C03	1 mS/cm to 200 mS/cm	4-band conductivity cell (platinum)	Yes
	PY-C12	1 µS/cm to 300,000 µS/cm	4-band conductivity cell (graphite)	Yes
3 |	PY-PC1	0.01 mS/cm to 5 mS/cm pH 0 to 14	Combination electrode, 12 mm diameter; 120 mm length; 2-band cell (platinum); pH electrode with gel-filled electrode; temperature sensor	Yes

Ion-selective pH combination electrodes
All ion-selective electrodes are combination electrodes. They are supplied with a permanently attached cord and BNC connector.

Figure number	Order number	Ion	Measuring range in ppm	pH range
9 |	PY-I01	Fluoride (F^-)	0.05 ... 500	5 ... 5.5
10 |	PY-I02	Ammonia (NH_3)	0.02 ... 17,000	≥ 11
11 |	PY-I03	Sodium (Na^+)	0.02 ... to saturation	9 ... 12
9 |	PY-I04	Chloride (Cl^-)	2 ... 35,500	2 ... 12
9 |	PY-I05	Nitrate (NO_3^-)	0.4 ... 62,000	2.5 ... 11
9 |	PY-I06	Potassium (K^+)	0.04 ... 39,000	2 ... 12
9 |	PY-I07	Calcium (Ca^{2+})	0.2 ... 40,000	2.5 ... 11
9 |	PY-I08	Silver/sulfide (Ag^+/S^{2-})	0.003 ... 12,000 S^{2-} | 0.01 ... 108,000 Ag^+	>12 S^{2-} | 2 ... 8 Ag^+

Temperature compensating probe
NTC 10 kΩ stainless steel sensor with permanently attached cord and a 2.5 mm phone plug.

Figure number	Order number	Recommended for	Construction
12 |	PY-T01	Temperature measurement and automatic temperature compensation; for use with all electrodes without a built-in temperature sensor	Stainless steel body; 4.7 mm diameter; 120 mm length

Accessories

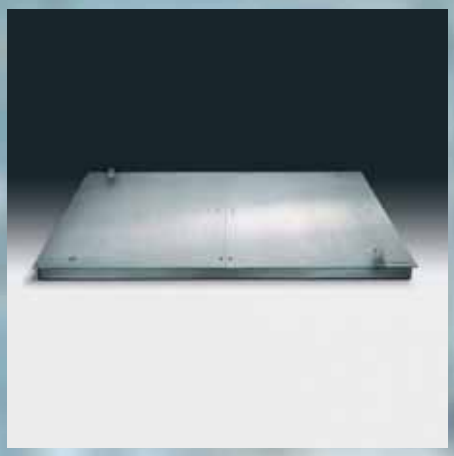
	Order No.
Printer for Professional Meters and Docu-pH_{Meter} Docu-pH^{+}_{Meter}	YDP05-PH
Printer paper, 5 rolls, 50 m/roll	6906937
Color ink ribbon	6906918

pH buffers	
50 capsules per pkg; dissolve contents of each capsule in 100 ml of distilled water	
pH = 4.01 ± 0.02 at 25 °C	PY-Y01
pH = 7.00 ± 0.02 at 25 °C	PY-Y02
pH = 9.00 ± 0.02 at 25 °C	PY-Y03
pH = 10.00 ± 0.02 at 25 °C	PY-Y04
Color-coded buffer solution in practical pump-bottle, eliminates the need for a beaker during calibration, traceable to NIST standards	
pH = 4.00 ± 0.01 at 25 °C, 500 ml	PY-Y21
pH = 4.00 ± 0.01 at 25 °C, 6 + 90 ml	PY-Y21-6
pH = 7.00 ± 0.01 at 25 °C, 500 ml	PY-Y22
pH = 7.00 ± 0.01 at 25 °C, 6 + 90 ml	PY-Y22-6
pH = 10.00 ± 0.01 at 25 °C, 500 ml	PY-Y23
Storage solution, for pH combination electrodes, 500 ml	PY-Y05
Cleaning solution, pepsin | hydrochloric acid, 500 ml	PY-Y06
Electrolyte solution, KCl (3 mol/l), free of silver ions, 500 ml	PY-Y07

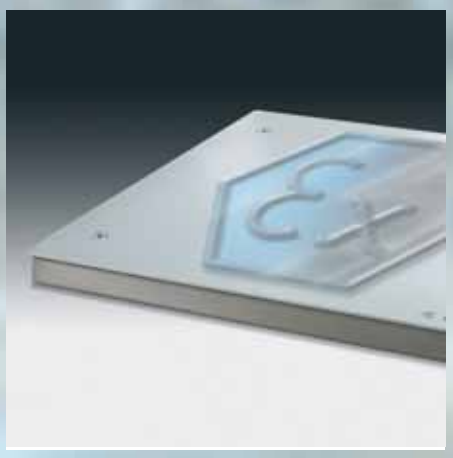
Conductivity standards, traceable to NIST Standards	
0.084 mS/cm ±1.0% at 25 °C (KCl 0.0001 mol/l), 500 ml	PY-Y10
0.147 mS/cm ±1.0% at 25 °C (KCl 0.001 mol/l), 500 ml	PY-Y11
1.413 mS/cm ±1.0% at 25 °C (KCl 0.01 mol/l), 500 ml	PY-Y12
12.88 mS/cm ±1.0% at 25 °C (KCl 0.1 mol/l), 500 ml	PY-Y13

Equipment qualification* – IQ |OQ |PQ	
pH meter qualification (IQ|OQ)	8407pH
For each additional parameter	8407Para

* in Austria and Switzerland: available starting in 3rd quarter




für Windows




sartorius
sartorius

Process
Weighing & Control

Weighing in Industrial Processes: Reliable Weighing Equipment Based on Experience

Within our Process Weighing & Control business area, we offer an especially wide range of products and services for many industrial branches and applications. This extends from rugged industrial platform scales and precision scales to automatic checkweighers as well as from weigh and load cells, batching and filling equipment to metal detectors. We see ourselves as specialists and highly capable partners for optimizing weight-based and lot-based processes. At Sartorius, we offer more than just products. We provide technical consulting services and problem-solving expertise that focus on your processes and add value.

Our solutions for your process
Process optimization is one of the main driving forces for innovation at Sartorius. Our sales and service specialists who are highly knowledgeable of customers' processes and applications are available to serve your needs.

Technical consultation is our calling
Production processes may be similar; however, no two installations are ever the same. This is why we offer our customers individual consultation to develop solutions that are precisely custom-designed for their specific application.

Systems for accurate, on-target batching of individual components with intelligent control of the shut-off setpoints for nozzles to ensure fast and precise filling.

Recipe management systems ranging from stand-alone manual recipe systems all the way to fully automatic process control; for direct and simple management of data on recipes and materials.

Process controllers with integrated PLCs and recipe databases; ideal for batching and recipe management processes.

Belt-weighers available in various versions for reliable monitoring of conveyed bulk-material quantities as well as for feed and discharge control for any area of installation.

Dynamic checkweighers for 100% traceable average weight control of individual or packaged products.

Average weight control systems for prepackages, or checking the net content of packages

Metal detectors for all types of packaged and unpackaged products and liquid product feed

Simple paint scales to complex, network-capable color-matching and paint-mixing systems with outstanding product features, such as the recalculation function.

Weigh cells, load cells, mounting kits and electronic units – these optimally matched components cover the entire spectrum of vessel weighing.

Platforms as the basis for a variety of weighing tasks in industry

Complete scales unite ease of use with high-performance capability; a wide range of accessories and options permits perfect adaptation to the place of installation and use

Display and control units as well as terminal enable individual process solutions while the broad selection of interfaces and optional cards enable connection to other systems

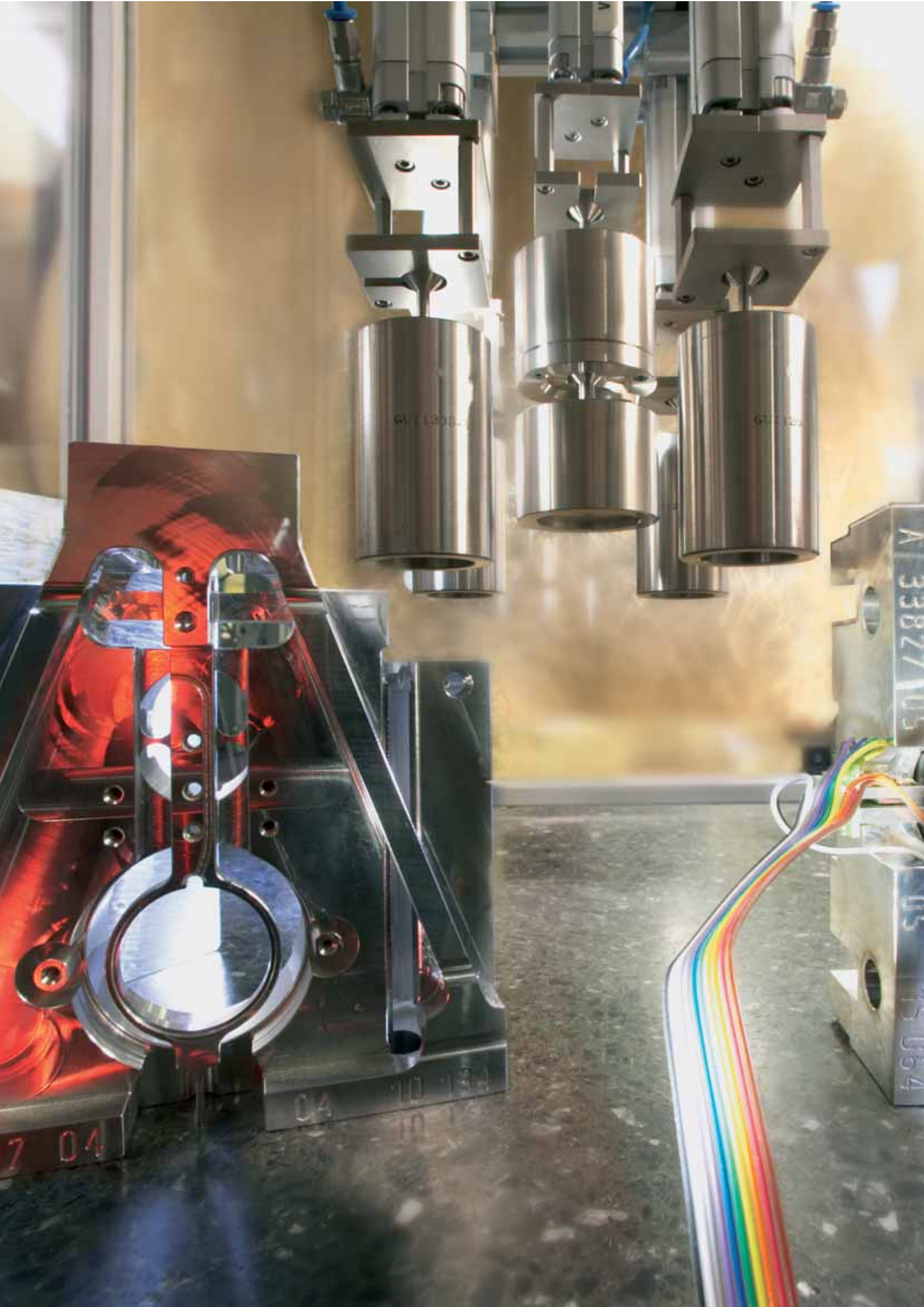
Process transmitters for tank and hopper scales combine high accuracy and resolution with high reliability

On-line moisture analysis methods let you determine the moisture content in seconds in active production processes using microwave-resonance technology

Whether for the chemical and cosmetics industries or the food and beverage industry, we offer systems that accurately weigh, detect and control the flow of materials from incoming goods to production and quality assurance all the way to dispatch. As a result, our systems keep our customers informed at all times about where every individual kilo has gone and reliably trace batches thanks to extensive logging and reporting capabilities. Systems from Sartorius ensure that the use of materials and product output are precisely controlled.

The selection of materials, finishes and types of industrial protection permits reliable operation of Sartorius scales even in mission-critical production sites and tough environments. For industries subject to compliance with regulations – the pharmaceutical and food industries – Sartorius offers series with the following performance features:

- Excellent cleanability
- Dust-tight | washdown resistance | protection against immersion
- Compatibility of the materials with aggressive substances
- IQ | OQ | PQ documents
- HACCP compliance
- GMP compliance
- Designs that meet EHEDG requirements
- Designs available for use in hazardous areas of the various zone classifications with ATEX and international approvals



Service

Services

Services provided by Sartorius range from installation and maintenance to equipment qualification to engineering. Quality and reliability form the foundation of our service philosophy. As a worldwide service organization, our goal is to supply the best mechatronic service possible, perfectly tailored to your requirements.

Installation and commissioning
Installation and commissioning performed by our service professionals take your instruments from zero to 100 in a flash. This means your new equipment is ready for use right away. In particular the reliability of measurement results and the service life of the equipment are strongly connected to the specification-conformant initial installation and configuration.

This is what you can expect from us:

- Proper installation of the equipment
- Connection of peripheral devices, such as printers
- Adaptation of the equipment to ambient conditions
- Configuration of interface ports
- Configuration of applications
- Workstation-specific training for equipment operators

Equipment qualification (IQ/OQ) – professional support for pharmaceuticals industry
Equipment qualification is prerequisite for validation of your processes. This means that the qualification of measurement systems in many areas of the pharmaceutical industry are required. Sartorius supports you with an expert team of trained specialists. Our solutions support current guidelines, such as GLP, GMP and FDA. The documentation features can easily be integrated in existing QM systems.

The following services are carried out during qualification:

- Clear documentation of equipment qualification in the equipment logbook
- Checking and documentation of proper installation
- Documentation of equipment configuration
- Metrological testing at the place of installation
- Issuance of a DKD calibration certificate indicating the uncertainty of measurement
- Determination of the minimum sample quantity as described in USP guidelines, including printout
- Workstation-specific instruction for equipment operators with certification of completed training

Maintenance services and maintenance contracts
Regular maintenance will extend the service life of your instruments. This keeps the reliability of your measurement results on the safe side and helps to prevent equipment failure and unscheduled downtime. Whether within the framework of a service contract or on short notice, our maintenance service gives you the security you need. And all this applies to equipment from other manufacturers, too.

Our broad range of services includes the following:

- Workstation-specific checking of functions
- Checking mechatronic | metrological specifications
- Checking mechanical and electrical subassemblies
- Testing device settings
- Function-specific cleaning
- Adjustments (as needed)

Calibration certificates
Within the scope of monitoring inspection, measuring and test equipment as described in EN ISO/IEC 17025, is it essential that you have calibration certificates prepared for all of your test instruments every year. Sartorius has been accredited by the German national metrology institute (Physikalisch-technisch Bundesanstalt, or PTB) to issue DKD calibration certificates for non-automatic electronic weighing instruments and test weights. The DKD calibration certificate is an internationally recognized certificate that gives you and your auditors absolute certainty in assessing your results of measurement. A calibration certificate can be issued in the scope of initial installation, equipment maintenance and corrective maintenance.

Your advantages:

- Recognized certificate in conformance with the EURAMET/cg-18/v.01 calibration guide
- Traceability to a national standard and the prototype kilogram
- Precise indication of the uncertainty of measurement
- Minimum sample quantity determined in accordance with USP
- Security for your monitoring of inspection, measuring and test equipment
- International validity

Certificate of the minimum sample quantity as described in USP guidelines
Chapter 41 of the United States Pharmacopeia (USP) specifies the use of weighing instruments and weights. According to the USP, the uncertainty of measurement when weighing any substance must not exceed 0.1% of the initial sample quantity. Our experienced service technicians use special software to determine the minimum sample quantity in accordance with USP guidelines and prepare a minimum sample quantity certificate as described in the USP. A special seal is then affixed to the weighing instrument indicating the smallest permissible sample quantity in accordance with USP.

Corrective maintenance services
We offer corrective maintenance on site, carried out by our service team, and at our repair center. Exclusive use of original spare parts, subsequent calibration | adjustment as described in the manufacturer's specifications, highly trained technicians and fast processing times guarantee top-quality repairs and short downtimes for your equipment.

This is what you can expect from us:

- Short repair processing times
- Corrective maintenance using only original spare parts
- Comprehensive report on repair work carried out at a repair center
- Function-specific cleaning
- Calibration | adjustment of the equipment
- Express repair service by special arrangement
- Special conditions for purchase of new equipment if repair would be uneconomical

On-line management of inspection, measuring and test equipment
The external assignment of your test equipment monitoring is a matter of trust. With its Internet-supported platform for management of inspection, measuring and test equipment, the integral software solution from Sartorius can help minimize your costs for test equipment monitoring. Any computer with Internet access can be used to access all the test equipment monitoring data you need, 24/7, and calibration certificates can downloaded at any time.

Your advantages:

- Direct access 24 hours a day, 365 days a year, to test equipment data and calibration certificates
- Logical, easy-to-use menu structure
- Access to data is independent of your location
- The product life cycle of each device is completely documented
- No software installation needed

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