

Since 2001



# THE SCIENCE THAT WE DEAL WITH

## WEIGHING SOLUTIONS



- > LABORATORY BALANCES
  - Ultra Micro Lab Balances
  - Micro Lab Balances
  - Semi Micro Lab Balances
  - Analytical Lab Balances
  - Precision Lab Balances
  - Table Top Balances
- > Moisture Balances
- > Weights & Weight Boxes
- > Lab Water Purification Systems



# The Laboratory Balances that Meets Your Weighing Needs



Sartorius lab balances are equipped to meet the highest standards of speed, reliability, compliance and safety. Sartorius laboratory balances offer high levels of accuracy and precision in analytical testing and quantitative analysis.

-Suitable for use in laboratories, manufacture according to pharmacopeias and quality control, as well as academic research and any other professional use.

## CUBIS® II

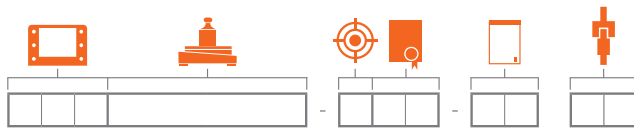
### The New Generation of Modular Premium Balances

#### Highlights:

- Leading performance. Monolithical weighing system, integrated climate sensors, individual sample holders.
- Error-free operation. Individual QApp workflows, motorized auto-leveling\*
- Full end-to-end data integrity. 21 CFR Part 11 compliance, integrated audit-trail, state-of-the-art user management.
- Outstanding service support. Integrated status center, integrated service functions preventive maintenance on accredited standards.



#### Technical Specifications:



#### Example



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



#### Cubis® Display and Control Units

Select the display and control unit and enter it in the field identified by the icon in the order code.

Type	MCA	Type	MCE
Display	Large high end 7" color touch TFT display in 16:9 format with new user interface	Display	State of the art TFT touch screen operation with brilliant, readable, display but uncomplex, easy to operate user interface
Software	Factory installed basic set of essential weighing applications (license free) and packages with special weighing applications and function extensions (license required)	Software	Factory installed basic set of essential weighing applications
Operation	Activated by touch key, touch-free using IR sensor (draft shield M) or gesture sensor (optional), learning capability.	Operation	Activated by touch key, touch-free using IR sensor (draft shield M) or gesture sensor (optional), learning capability



## Cubis® Weighing Modules

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

### Cubis II Series :

Model	Readability (mg)	Capacity (g)	Pan Size (mm)	Response Time (s)	Optimal Starting Range*
2.7S	0.0001	2.1	Ø20	10	0.082 mg
10.6S	0.001	10.1	Ø 30	8	0.82mg
6.6S	0.001	6.1	Ø 30	8	0.82 mg
3.6P	0.001   0.002   0.005	1.1   2.1   3.1	Ø 30	8	0.82 mg
225S	0.01	220	85 x 85	6	8.2 mg
225P	0.01   0.02   0.05	60   120   220	85 x 85	6	8.2 mg
524S	0.1	520	85 x 85	3	82 mg
324S	0.1	320	85 x 85	3	82 mg
224S	0.1	220	85 x 85	3	82 mg
5203S	1	5,200	140x140	2	820 mg
3203S	1	3,200	140x140	2	820 mg
2203S	1	2,200	140 x 140	1.5	820mg
1203S	1	1,200	140x140	1.5	820 mg
623S	1	620	140x140	1	820 mg
323S	1	320	140x140	1	820 mg
14202S	10	14,200	206 x 206	1.5	8.2 g
10202S	10	10,200	206 x 206	1.5	8.2 g
8202S	10	8,200	206 x 206	1.5	8.2 g
6202S	10	6,200	206 x 206	1.5	8.2 g
5202S	10	5,200	140x140	1	8.2 g
4202S	10	4,200	140x140	1	8.2 g
2202S	10	2,200	140x140	1	8.2 g
1202S	10	1,200	206 x 206	1	8.2 g
12201S	100	12,200	206 x 206	1	82 g
8201S	100	8,200	206 x 206	1	82 g
5201S	100	5,200	206 x 206	1	82 g
70201S	100	70,200	400 x 300	1.5	82 g
50201S	100	50,200	400 x 300	1.5	82g
36201S	100	36,200	400 x 300	1.2	82 g
70200S	1000	70,200	400 x 300	1.2	820g
36200S	1000	36,200	400 x 300	1.2	820g

\*According to USP chapter 41, the optimal operating range is defined. May vary as per installation location and environmental conditions.



### Cubis® Leveling

Select the type of leveling mode and enter “0” or “1” in the field identified by the icon in the order code.

0

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

1

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



### Test Certificates

Select a test certificate and enter the certificate type in the field identified by the icon in the order code.

00

Standard certificate of conformity to specifications

TR

Like 00, but with a detailed test report



### Cubis® Draft Shields

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



### Interface Module Options

For every balance, you can select an additional interface module.

Code	Item
QP1	QApp Package Pharma
QP2	QApp Package Advanced Applications
QP3	QApp Package Utilities
QP4	QApp Package Connectivity
Qp99	All inclusive package

### Optional Accessories

- Data Printer
- Filter weighing and antistatic accessories
- Pipette calibration Hardware and software
- Density determination kit

CODE	ITEM
0	Flat, stainless steel weight pan with no draft shield for weighing modules with a pan size of 206 *206 mm and 400 * 300 mm.
A	Automatic, glass motorized draft shield with learning capability for user-friendly operation and easy customization to the changing requirements of different applications
E	Manual glass draft shield for precision balances
F	Manual stainless steel draft shield for weighing filters with diameters of up to 50 mm (75 mm and 90 mm pans optional)
I	Identical to the A draft shield, but also includes an integrated ionizer to eliminate interfering electrostatic charges on samples and sample containers
M	Automatic, motorized, round 100% glass draft shield with learning capability for ultra-micro balance and micro balances
R	Flat, stainless steel weighing pan draft shield (removable, with no glass components) for all precision balances
U	Manual glass analytical draft shield chamber, with smooth-action doors that open wide and provide unimpeded access to the weighing chamber without interfering braces

## HIGH CAPACITY MICRO BALANCES: (CUBIS® I)

- Reliably weigh small samples directly into large sample containers of upto 50mL
- Advanced weighing with a resolution of upto 60 Million Divisions
- Weighing capacity of 31g and 61g and a readability of 1 µg
- Two polyrange models with weighing capacity range levels of 6g | 31g and 12g | 31g and readability levels of 1 µg | 10 µg

Weighing Modules	MSA 66S	MSA 66P	MSA 36S	MSA 36P
Readability   µg	1	1   10	1	1   10
Weighing capacity   g	61	12   61	31	6   31
Typical stabilization time   s	3.5	3.5	3.5	3.5
Typical response time   s	10	10	10	10
Repeatability   ±µg	4	10	2	8
Linearity   ±µg	20	20	15	15
Off- center loading (eccentricity)   ±µg	20	20	15	15
Optimal minimum weight*   mg	0.82	0.82	0.82	0.82

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

You can configure your micro balance using the following order number codes explained below:

### Display units:

xxx= MSA

### Weighing modules:

yyy= 66S,66P,36S or 36P

### Leveling:

0= Software –supported leveling by a bar graph shown on display

### Test reports:

zz = 00 = Standard report as proof of compliance with specifications

zz= TR = As for 00, but with a detailed test report showing specific measurement data

### Draft shields:

ww= DH; automatic, motorized draft shield with learning capability and choice of operation either by ergonomic, pal-activated key or by touch-free infrared sensor YHS01MS



# SECURA SERIES

## The New Secura

### Easy, Reliable weighing in Regulated Areas

- Reliable weighing easier than before
- Compliance in regulated areas
- Advanced Pharma compliance operation
- Stress free-USP minimum sample measurements
- Isocal feature gives temp free influences on accuracy
- Easy cleaning
- Comes with pass code protection
- Interaction user guidance for quick operation.



Model	Readability (mg)	Capacity (g)	Pan Size (mm)	Stabilization (s)	Optimal Starting Range*
Secura26-10IN	0.002	21	Ø 50	8	0.00164
Secura225D-10IN	0.01   0.01   0.1	60   120   220	Ø 80	6   6   2	0.0082
Secura125-10IN	0.01   0.01	60   120	Ø 80	6   6	0.0082
Secura324-10IN	0.1	320	Ø 90	2	0.082
Secura224-10IN	0.1	220	Ø 90	2	0.082
Secura124-10IN	0.1	120	Ø 90	2	0.082
Secura1103-10IN	1	1100	Ø 120	1.5	0.82
Secura613-10IN	1	610	Ø120	1	0.82
Secura513-10IN	1	510	Ø120	1	0.82
Secura313-10IN	1	310	Ø120	1	0.82
Secura213-10IN	1	210	Ø120	1	0.82
Secura6102-10IN	10	6,100	Ø180	1	8.2
Secura5102-10IN	10	5,100	Ø180	1	8.2
Secura3102-10IN	10	3,100	Ø180	1	8.2
Secura2102-10IN	10	2,100	Ø180	1	8.2
Secura1102-10IN	10	1,100	Ø180	1	8.2
Secura612-10IN	10	610	Ø180	1	8.2
Secura6101-10IN	100	6100	Ø180	1	82
Secura3101-10IN	100	3100	Ø180	1	82

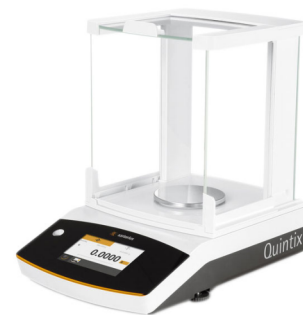
### Optional Accessories

- Data printer
- Density Determination Kit
- Anti static weighing pan
- Power Adapter
- Interface cable

# QUINTIX SERIES:

## Features:

- Entirely new touch screen user interface with built-in application programs
- Chemically resistant housing
- Easy and convenient data transfer to your PC without the need of extra software by integrated PC -direct function
- Highest accuracy and convenience with fully automatic internal temperature and time controlled adjustment feature (isoCAL)
- GLP/GMP-complaint



Quintix					
Model	Readability (mg)	Capacity (g)	Pan Size (mm)	Stabilization (s)	Optimal Starting Range*
Quintix 125D-10IN	0.01   0.01   .01	40   60   120	Ø 80	6   6   2	8.2 mg
Quintix 65-10IN	0.01   0.01	40   60	Ø 80	6   6	8.2 mg
Quintix 35-10IN	0.01	30	Ø 80	6	8.2 mg
Quintix 224-10IN	0.1	220	Ø 90	2	82 mg
Quintix 124-10IN	0.1	120	Ø 90	2	82 mg
Quintix 64-10IN	0.1	60	Ø 90	2	82 mg
Quintix 613-10IN	1	610	Ø 120	1	820 mg
Quintix 513-10IN	1	510	Ø 120	1	820 mg
Quintix 313-10IN	1	310	Ø 120	1	820 mg
Quintix 213-10IN	1	210	Ø 120	1	820 mg
Quintix 6102-10IN	10	6,100	Ø 180	1	8.2 g
Quintix 5102-10IN	10	5,100	Ø 180	1	8.2 g
Quintix 3102-10IN	10	3,100	Ø 180	1	8.2 g
Quintix 2102-10IN	10	2,100	Ø 180	1.5	8.2 g
Quintix 1102-10IN	10	1,100	Ø 180	1.5	8.2 g
Quintix 612-10IN	10	610	Ø 180	1.5	8.2 g
Quintix 412-10IN	10	410	Ø 180	1.5	8.2 g
Quintix 6101-10IN	100	6,100	Ø 180	1.5	82 g
Quintix 5101-10IN	100	5,100	Ø 180	1.5	82 g
Quintix 6100-10IN	1000	6,100	Ø 180	1.5	820 g

## Optional Accessories

- Data printer
- Density Determination Kit
- Anti static weighing pan
- Power Adapter
- Interface cable

## PRACTUM SERIES:

### Features:

- Practical and Sturdy Draft Shield
- Rugged Weigh Cell for Reliable Results- Every Time, All the Time
- Hassle-Free Below-Balance Weighing of Oversize Containers
- Extra-large Feet and Up-front Level Indicator for Easy Leveling
- Built in application programs like weighing, counting, checkweighing, Animal Weighing, Percentage weighing, Density determination & peak hold function.



Model	Readability (mg)	Capacity (g)	Pan Size (mm)	Stabilization (s)
Practum 224-10IN	0.1	220	Ø90	2
Practum 124-10IN	0.1	120	Ø 90	2
Practum 64-10IN	0.1	60	Ø 90	2
Practum 513-10IN	1	510	Ø 120	1
Practum 313-10IN	1	310	Ø 120	1
Practum 213-10IN	1	210	Ø 120	1
Practum 3102-10IN	10	3,100	Ø 180	1.5
Practum 2102-10IN	10	2,100	Ø 180	1.5
Practum 1102-10IN	10	1,100	Ø 180	1.5
Practum 612-10IN	10	610	Ø 180	1.5
Practum 412-10IN	10	410	Ø 180	1.5
Practum 6101-10IN	100	6,100	Ø 180	1.5
Practum 5101-10IN	100	5,100	Ø 180	1.5
Practum 2101-10IN	100	2,100	Ø 180	1.5
Practum 6100-10IN	1000	6,100	Ø 180	1
Practum 5100-10IN	1000	5,100	Ø 180	1

### Optional Accessories

- Data printer
- Density Determination Kit
- Anti static weighing pan
- Power Adapter
- Interface cable



# Entris® II – Essential Line

## Benefits

- Highly accurate results—guaranteed via monolithic weigh cell technology invented by Sartorius
- Fastest stabilization time in its class – using state-of-the-art--weighing sensors
- High chemical resistance—ensured using parts made from hard-wearing polybutylene terephthalate (PBT), stainless steel and glass.



## Key Features:

- Easy leveling
- Plug & play for user convenience
- Hybrid screen for Excellent readability and use
- Data Output for Dynamic weighing applications
- Easily adapts to ambient conditions
- IsoCAL (Internal Calibration & adjustment ) for Total Assurance of Accurate weighing Results
- Easy external Calibration

## Entris® II Technical Specifications

Model	Weighing capacity	Readability	Repeatability, typical	Stabilization time, typical	Weighing pan size	Weighing chamber height	Dimensions (W x D x H)
	[g]	[mg]	[mg]	[s]	[mm]	[mm]	[mm]
<b>Analytical balances</b>							
BCE64i-10in	60	0.1	0.1	≤1,5	Ø 90	240	219x317x345
BCE124i-10in	120	0.1	0.1	≤1,5	Ø 90	240	219x317x345
BCE224i-10in	220	0.1	0.1	≤1,5	Ø 90	240	219x317x345
<b>Precision balances</b>							
BCE223i-10in	220	1	1	≤1,0	Ø 120	240	219x317x345
BCE323i-10in	320	1	1	≤1,0	Ø 120	240	219x317x345
BCE423i-10in	420	1	1	≤1,0	Ø 120	240	219x317x345
BCE623i-10in	620	1	1	≤1,0	Ø 120	240	219x317x345
BCE653i-10in	650	1	1	≤1,0	Ø 120	50	219x317x345
BCE622i-10in	620	10	10	≤0,9	182x182	-	219x317x94
BCE822i-10in	820	10	10	≤0,9	182x182	-	219x317x94
BCE1202i-10in	1,200	10	10	≤0,9	182x182	-	219x317x94
BCE2202i-10in	2,200	10	10	≤0,9	182x182	-	219x317x94
BCE3202i-10in	3,200	10	10	≤0,9	182x182	-	219x317x94
BCE4202i-10in	4,200	10	10	≤0,9	182x182	-	219x317x94
BCE6202i-10in	6,200	10	10	≤0,9	182x182	-	219x317x94
BCE2201i-10in	2,200	100	100	≤0,9	182x182	-	219x317x94
BCE5201i-10in	5,200	100	100	≤0,9	182x182	-	219x317x94
BCE8201i-10in	8,200	100	100	≤0,9	182x182	-	219x317x94
BCE6200i-10in	6,200	1000	1000	≤0,9	182x182	-	219x317x94
BCE8200i-10in	8,200	1000	1000	≤0,9	182x182	-	219x317x94

## Entris® II – Advanced Line

- Simplifies balance leveling — with built-in real-time level support
- Increases reliability of weighing results — using integrated protection systems
- Controlled access to balance settings — with user management
- Gapless documentation—thanks to CalAuditTrail



### Entris® II Technical Specifications

Models with Internal Adjustment feature

Model	Weighing capacity	Readability	Repeatability, typical	Stabilization time, typical	Weighing pan size	Weighing chamber height
	[g]	[mg]	[mg]	[s]	[mm]	[mm]
BCA 324i-10IN	320	0.1	0.1	≤ 1..5	Ø90	240
BCA 224i-10IN	220	0.1	0.1	≤ 1.5	Ø90	240
BCA 64i-10IN	60	0.1	0.1	≤ 1.5	Ø90	240
BCA 1203i-10IN	1200	1	1	≤ 1.0	Ø120	240
BCA 623i-10IN	620	1	1	≤ 1.0	Ø120	240
BCA 423i-10IN	420	1	1	≤ 1.0	Ø120	240
BCA 223i-10IN	220	1	1	≤ 1.0	Ø120	240
BCA 6202i-10IN	6200	10	10	≤ 0.9	182 x 182	-
BCA 4202i-10IN	4200	10	10	≤ 0.9	182 x 182	-
BCA 2202i-10IN	2200	10	10	≤ 0.9	182 x 182	-
BCA 12201i-10IN	12200	100	100	≤ 0.9	182 x 182	-
BCA 10201i-10IN	10200	100	100	≤ 0.9	182 x 182	-
BCA 8201i-10IN	8200	100	100	≤ 0.9	182 x 182	-
BCA 5201i-10IN	5200	100	50	≤ 0.9	182 x 182	-

\* upper edge of the weighing pan to the lower edge of the upper draft shield panel

## MOISTURE BALANCES

### Features:

- Time-saving and convenient alternative to a drying oven
- Comprehensive range of options for flexible adaptation to various drying tasks
- Ideally suited for ambitious measuring tasks in the fields of quality control or research
- Particularly well suited for samples with demanding drying behavior and very dry samples
- Adjustable temperature range
- GLP complaint printout connecting to the Sartorius printer
- Different Analysis modes
- Display mode for Results available in different parameters



Model	Accuracy (mg)	Capacity (g)	Readability	Temperature Range	Heating unit	Calibration	Program memories	Printer
MA100H	0.1mg	100gr	0.001%	30°-180° C	Halogen	Built-in	30	Integratable
MA100C	0.1mg	100gr	0.001%	30°-180° C	Ceramic IR Heating	Built-in	30	Integratable
MA160	1mg	200gr	0.01%	40° -200° C	IR Heating	External	100	External
MA37	1mg	70gr	0.01%	40°-200° C	IR Heating	External	Standard	External
MA35	1mg	35gr	0.01%	40°-160° C	IR Heating	External	Standard	External

# WEIGHT BOXES

## Features

- OIML approved
- Available in E1/E2/F1/F2 classification
- With DKD/ NABL certifications
- Available in Polygonal/Wire Weight in mg Variants
- Available in wooden boxes/Aluminium cases for weight sets

## Optional accessories

- a. Pair of Gloves
- b. Forceps
- c. Brush

## Safety measure for Handling weights

To ensure that you can rely on the accuracy of your weights and mass standards over the long term, you need to handle them with particular care.

Below you will find a list of factors that determine the level of the care required.

- Maximum permissible errors for weights (accuracy class)  
Material properties-Surface characteristics
- Storage
- Handling
- Environmental conditions
- Frequency of use
- Uncertainty of measurement according to calibration certificate



## OIML CLASSIFICATION

Normal Value*	Class E1	Class E2	Class F1	Class F2	Class M1	Class M1-2	Class M2	Class M2-3	Class M3
5000 Kg	--	--	25000	80000	250000	500000	800000	1600000	2500000
2000 Kg	--	--	10000	30000	100000	200000	300000	600000	1000000
1000 Kg	--	1600	5000	16000	50000	100000	160000	300000	500000
500kg	--	800	2500	8000	25000	50000	80000	160000	250000
200kg	--	300	1000	3000	10000	20000	30000	60000	100000
100kg	--	160	500	1600	5000	10000	16000	30000	50000
50kg	25	80	250	800	2500	5000	8000	16000	25000
20kg	10	30	100	300	1000	--	3000	--	10000
10kg	5.0	16	50	160	500	--	1600	--	5000
5 kg	2.5	8.0	25	80	250	--	800	--	2500
2 kg	1.0	3.0	10	30	100	--	300	--	1000
1 kg	0.5	1.6	5.0	16	50	--	160	--	500
500g	0.25	0.8	2.5	8.0	25	--	80	--	250
200g	0.10	0.3	1.0	3.0	10	--	30	--	100
100g	0.05	0.16	0.5	1.6	5.0	--	16	--	50
50g	0.03	0.10	0.3	1.0	3.0	--	10	--	30
20g	0.025	0.08	0.25	0.8	2.5	--	8.0	--	25
10g	0.020	0.06	0.20	0.6	2.0	--	6.0	--	20
5g	0.016	0.05	0.16	0.5	1.6	--	5.0	--	16
2g	0.012	0.04	0.12	0.4	1.2	--	4.0	--	12
1g	0.010	0.03	0.10	0.3	1.0	--	3.0	--	10
500mg	0.008	0.025	0.08	0.25	0.8	--	2.5	--	--
200mg	0.006	0.020	0.06	0.20	0.6	--	2.0	--	--
100mg	0.005	0.016	0.05	0.16	0.5	--	1.6	--	--
50mg	0.004	0.012	0.04	0.12	0.4	--	--	--	--
20mg	0.003	0.010	0.03	0.10	0.3	--	--	--	--
10mg	0.003	0.008	0.025	0.08	0.25	--	--	--	--
5mg	0.003	0.006	0.020	0.06	0.20	--	--	--	--
2mg	0.003	0.006	0.020	0.06	0.20	--	--	--	--
1mg	0.003	0.006	0.020	0.06	0.20	--	--	--	--

## WEIGHING VOCABULARY

### **Accuracy:**

A qualitative concept that defines the extent to which the weight readouts of a scale approach the true value of the quantities weighed. Accuracy is quantified by an instruments readability, standard deviation, resolution, accuracy class or the uncertainty of measurement given

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### **Calibration:**

Calibration determines the relationship between the displayed value and true mass by comparison with a known mass. During calibration no intervention occurs which would change the parameters of the weighing instrument (Then it would be adjustment).

The result of calibration is a measured value and a value for uncertainty of measurement.

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### **Drift:**

Gradual change in the readout of a weighing instrument at a constant load.

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### **Dual range Instrument:**

Weighing instrument that has two or more weighing ranges, which differ in their maximum capacity and scale interval. Each range extends from zero to its individual maximum capacity.

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### **Eccentric loading error:**

Also referred to as "corner load error" or " off- center loading error". This is the change in readout when the same object is placed in various positions on the weighing pan.

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### **Level indicator or spirit level:**

Device used as a guide to find the horizontal position of a balance or scale. Usually consists of a small, liquid-filled, slightly curved container in which an air bubble shows the highest point.

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### **Linearity:**

The deviation from the theoretically straight- lined Linear slope of two interdependent values. For weighing instruments this means the positive or negative deviation of the readout from the actual load, when the zero point and the span have been correctly adjusted.

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### **Maximum capacity (max):**

Upper limit of the weighing range. It does not take into account the additive tare capacity of a tare device.

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### **Overload protection:**

A locking device which prevents weighing above the maximum capacity of a scale or which protects components from overloading and damage.

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### **Polyrange:**

Weighing instruments with readouts in partial weighing ranges; for example 60g readable to 0.1 mg; between 60g and 120g, to 0.2mg; and between 120g and 200g to 0.5mg. The variable scale interval depends on the net weight displayed. Therefore, after taring, the display will start with the smallest scale interval. Also called "multi-interval" or "Polyrange" instruments.

**Readability:**

Smallest difference that can still be read on a display. For balances and scales with a scale indicating device (analogic), the readability is equal to the smallest fraction of a scale interval that can still be estimated with reasonable reliability or which can be determined by an auxiliary device.

For balances and scales with a numeric indicator (digital display), the readability is equal to one digital step.

**Repeatability:**

The ability of a weighing instrument to display corresponding results under constant testing conditions, when the same load is repeatedly placed onto the weighing pan in the same manner.

**Resolution:**

A term that has not yet been precisely standardized. It is commonly used for the quotient of the maximum capacity and the readability (“a resolution of 10000 steps or digits”), or for the readability (“a resolution of 0.1g”)

**Scale interval (d):**

For weighing instruments with an analog indicator: The difference between the values, corresponding to two consecutive scale marks. For instruments with a digital display, this is the smallest digital step: i.e., the difference between any two consecutive indicated values.

**Stabilization time:**

The time between complete placement of an object on the pan and display of the final result.

**Standard deviation:**

A mathematic quantity for evaluating a weighing instrument (or a sequence of measurements) in terms of repeatability: The standard deviation “s” is defined as

$$S = s = \sqrt{\frac{1}{n-1} \sum_{i=1}^n (x_i - \bar{x})^2}$$

Where n= number of the individual results  $\bar{x} = \frac{1}{n} \cdot \sum_{i=1}^n x_i$

**Taring:**

Zeroing the display when a weighing instrument is loaded. This allows the weight readout of an empty container to be rest to zero and the net weight to be read after filling the container.

A subtractive taring device reduces the available weighing capacity by the tare value.

**Temperature compensation:**

A device or measure that either reduces or eliminates the influence of a change in temperature on mechanical or electronic systems.

**Traceability:**

The property of a result of measurement whereby this result must be related to a national or international standard, through an unbroken chain of documented comparisons.

**Uncertainty (of measurement):**

The uncertainty of measurement “u” specifies the range for a measured value, within which the unknown, error free result lies, usually with a statistical certainty of 95%. (This corresponds to u=2s.

**Weighing cell:**

A mechanical –electrical transducer that converts the force(weight) exerted by the mass of an object into a signal which is uniquely allocated to that particular force.

# Water Purification Systems

## arium® mini Ultrapure Water Systems

for 20 Ltrs per day consumption with unique Bagtank technology



### arium® mini

- ASTM Type 1 ultrapure water
- Feed water: Purified/ Distilled/ RO water

### arium® mini essential

- ASTM Type 1 ultrapure water
- Directly connects to a pretreated water supply line (RO/DI/EDI)

### arium® mini plus

- ASTM Type 1 ultrapure water and Type 3 pure water
- Feed water : Tap water

### Features & Benefits:

#### Integrated Illumination for Easy visual Support:

- Flashing light during water dispensing
- Pulse signal emitted to accompany error messages
- Dimmed light in standby mode

#### arium® Scientific pack for the Highest Ultrapure water Quality

- The highest cartridge capacity
- Optimal flow over the semiconductor – grade mixed bed resin
- Designed for quality standard ASTM Type 1

#### Well –Thought –Out Functions for Reliable Performance

- Integrated pump to increase the water pressure
- Filling arium® mini with pretreated water: 2 minutes
- Filling arium® mini plus with RO permeate : 8 liters per hour

#### Intuitive Menu Navigation for Total Ease of operation

- Icon –guided interface with touch –activated display
- Displays current measured values and messages
- Favorites function for repeated dispensing of identical volumes

#### arium® Pretreatment Cartridge for Effective Purification:

- Effective adsorption using high-quality activated carbon
- Special catalyst removes oxidants
- Impurities retained by reverse osmosis

#### arium® Sterile plus for effective Microbe Removal:

- Validated according to HIMA and ASTM F -838-05
- Meets quality standards in accordance with the USP
- Reliably removes microorganisms using a 0.2µm membrane

#### 5- Liter Bag for Minimum Maintenance:

- Easy bag exchange in less than 5 minutes
- No need to use chemicals for cleaning
- Practical and leak – tight connection using a quick – connect coupling

#### Innovative Technology to prevent secondary contamination:

- Optimum water quality by prevention of a permanent biofilm
- Closed system guarantees purity
- Stable quality - special multilayer S71 bag material

#### arium® UV Lamp for Critical Analyses (185/254 nm)

- Optimum temperature gradient due to horizontal installation
- Degradation of total organic carbons (TOCs) by irradiation ( $\leq 5$ ppb)
- Inactivates microorganisms by damaging their DNA

### Product Water Quality:

	arium® mini / mini essential	arium® mini plus	
Water type	ASTM Type 1 ultrapure water	ASTM Type 1 ultrapure water	Type 3 pure water
Production output <sup>1</sup>	-	Upto 8 l/h	-
Water dispensing flow rate <sup>2</sup>	Upto 1.0 l/min	Upto 1.0 l/min	Depressurized via ball valve
Volume – controlled dispensing <sup>2</sup>	50 ml steps, between 0.05 and 5 l	50 ml steps, between 0.05 and 5 l	-
Volume accuracy <sup>3</sup>	$\pm 2\%$ between 0.05 and 5l	$\pm 3\%$ between 0.25 and 5l	-
Typical Conductivity	0.055 $\mu\text{S}/\text{cm}$ compensated to 25°C <sup>6</sup>	0.055 $\mu\text{S}/\text{cm}$ compensated to 25°C <sup>6</sup>	< 20 $\mu\text{S}/\text{cm}$ <sup>7</sup>
Typical resistivity	18.2 M $\Omega$ x cm compensated to 25°C <sup>6</sup>	18.2 M $\Omega$ x cm compensated	< 0.05 M $\Omega$ x cm <sup>7</sup>
TOC content <sup>4</sup> (system with UV Lamp)	$\leq 5$ ppb	$\leq 5$ ppb	-
Microorganism content <sup>5</sup>	< 1 CFU/1,000 ml	< 1 CFU/1,000 ml	< 1 CFU/1,000 ml
Particle content > 0.2µm <sup>5</sup>	< 1/ml	< 1/ml	< 1/ml
Typical ion retention	-	-	Up to 98%
Retention of dissolved organic substances (MW > 300 Dalton)	-	-	> 99 %
Particle and microorganism retention	-	-	> 99%

# arium® Comfort Systems

## Best Technology Without Compromise

### arium® comfort I (Type 1 and Type 3 water)

The arium® comfort I is a combined system for producing ASTM Type 1 ultrapure water and Type 3 pure water. The system features the latest reverse osmosis technology and a unique filter cartridge for producing ultrapure water of the highest quality. The arium® comfort I delivers consistently high-grade water quality at rates of up to 2 l/min.

### arium® comfort II (Type 1 and Type 2 water)

The arium® comfort II is a combined system for producing ASTM Type 1 ultrapure water and Type 2 pure water. This system features the latest EDI technology and a unique filter cartridge for providing ultrapure water of the highest quality. The arium® comfort II delivers consistently high-grade water quality at rates of up to 2 l/min.

	Flow Rate Type 3	Flow Rate Type 1		Flow Rate Type 2	Flow Rate Type 1
Comfort I	8 l/h	2 l/min	Comfort II	5 l/h	2 l/min
Comfort I	16 l/h	2 l/min	Comfort II	10 l/h	2 l/min

#### Advantages:

- Reliable - Consistently high Type 2 water quality -EDI technology
- Time-saving - Use of innovative Bag technology, eliminates costly tank cleaning
- Optimized water consumption - Automatic with iJust
- Quick – Favorites function with direct access for recurring volumes
- Space-saving, compact design;
- Water is dispensed directly at the display level.

#### Applications:

- HPLC
- GC-MS, AAS, ICP-MS
- Ion exchange chromatography
- TOC analysis
- Photometry
- Microbiological media & reagents
- Histology
- ELISA, RIA
- Buffer solutions
- Feeding of laboratory equipment: autoclaves, dishwashers, humidifiers, water baths, etc.



#### Features:

**Safe:** TOC content < 2 ppb for reproducible results; continuously updated TOC readings can be conveniently viewed on the display

**Reliable:** Consistently high Type 2 water quality thanks to the most advanced EDI technology used

**Efficient:** Optimized water usage ensured by intelligent iJust feature

**Easy:** Glass display with touch-screen; functions and intuitive menu navigation

**Flexible:** Adapts to any laboratory environment thanks to flexible positioning of the system, control unit and dispensing unit

**Space-saving:** Compact design saves valuable work space

The system's integrated UV lamp (185 | 254 nm) prevents microbiological growth and reduces the TOC content to a minimum. The current TOC value is continuously checked by an integrated TOC monitor specially developed for this ultrapure water system and is continuously displayed. Moreover, arium® comfort II delivers Type 2 pure water at rates of 5 or 10 l/h. As it uses the most advanced EDI technology, this water is electrochemically desalted. Upstream RO modules with low-energy TFC reverse osmosis membranes and a pretreatment cartridge result in the highest ion retention rates. Both types of water are practically free of microorganisms when a Sartopore® 2 150 final filter is used.

#### Water Quality:

- Conductivity for Type 1: 0.055 µS/cm (18.2 MW x cm)
- Typical conductivity for Type 2: 0.2–0.07 µS/cm (5–15 MW x cm)
- TOC content for Type 1: < 2 ppb
- Microorganisms: < 1 CFU/1,000 ml
- Particles: < 1/ml

1) Depending on the feed water pressure, temperature, and condition of the RO modules. 2) Depending on the hydrostatic pressure, and connected accessories and/or final filter. 3) Under constant operating conditions. 4) Determined with municipal water, TOC approx 1000 ppb. 5) When using an arium® sterile filter (Sartopore® 2 150). 6) Measured value output adjustable to 25°C compensated or uncompensated. 7) Depending on feed water.

# arium® pro Ultrapure Water Systems

## Application-oriented and flexible to meet the highest demand

The arium® pro series consist of flexible systems with device configurations that can be specially custom-tailored to your applications and feature an outstanding cost-benefit ratio. All systems meet and exceed ASTM Type 1 water quality and ensure the best, reproducible results. Per minute, an arium® pro can deliver up to 2 l of ultrapure water with a conductivity of 0.055 µS/cm (□ 18.2 MΩ x cm) and consistently high quality. If a Sartopore® 2 150 final filter is used, arium® pro will deliver ultrapure water that is practically free of microorganisms.



### Advantages:

- Modular – System selection specifically for your application
- Flexible – Perfect integration into your laboratory
- Easy to use – Display with touch function and intuitive menu
- Fast – favourites function with direct access for recurring volumes

### Applications:

General Laboratory & Analytical Application	Pro	Pro DI	Pro UV	Pro UF	Pro VF
Buffer , media and pH solutions	•	•	•	•	•
Histology	•	•	•	•	•
ELISA (Enzyme –Linked Immunosorbent Assay)	•	•	•	•	•
AAS (Atomic Absorption Spectroscopy)	•	•	•	•	•
Solutions for chemical Analysis and synthesis	•	•	•	•	•
GF-AAS (Graphite Furnace Atomic Absorption Spectrometry)	•	•	•	•	•
Preparation of reagents	•	•	•	•	•
Photometry	•	•	•	•	•
SPE (Solid phase extraction)			•		•
Trace metal analysis			•		•
IC (Ion Chromatography)			•		•
ICP-MS (Inductively coupled plasma Mass spectrometry )			•		•
GC-MS (Gas Chromatography –Mass Spectrometry )			•		•
HPLC (High –Performance Liquid Chromatography)			•		•
TOC Analysis			•		•

### Technical Specifications:

Dimensions	: width x height x depth - 35.0 x 49.2 x 45.1 cms.
Empty weight	: 17 – 19 kg, depending on the device type
Operating weight	: 27 – 29 kg, depending on the device type
Power supply	: 100 – 240 VAC (± 10 %); 50 – 60 Hz, 130 VA (max.)
Operating temperature	: 2 °C – 35 °C at max. 80% relative humidity
Storage temperature	: 5 °C – 45 °C at max. 80% relative humidity
Data output	: SD card slot <sup>2</sup> , RS-232 interface

### Feed water quality:

Treated water by reverse osmosis, distillation or deionization<sup>1</sup>

Input pressure	: 0 – 6.9 bar, recommended > 2 bar
Temperature	: 2 – 30 °C
Specific conductivity	: < 100 µS/cm compensated to 25 °C
TOC	: < 50 ppb
Turbidity	: < 1 NTU
pH value	: 4 – 10

1) With the Universal Kit, Arium® Pro can be directly fed with untreated drinking water to produce ultrapure water. The appropriate Sartorius application specialists should be consulted to check the feed water specifications.

2) Does not apply to Arium® Pro

3) Dynamic pressure/flow pressure 100 L/h



# arium® Advance Systems

## arium® advance EDI

The arium® advance EDI delivers Type 2 water of consistently the best quality at rates of 5 or 10 l/h. The system attains the highest retention rates of ions along with optimal water yield, and reliably removes oxidants, heavy metal ions and particulates from feed water. The pure water produced is stored in arium® bagtank systems and, if a Sartopore® 2 150 final filter is used in the system, is practically free of microorganisms.

### Standard Applications

- Microbiological media and reagents
- Solutions for chemical analysis and synthesis
- Histology
- ELISA, RIA
- Buffers and pH solutions
- Feed water for various laboratory devices, such as autoclaves, glassware washers, etc.

### Water Quality

- Typical conductivity: 0.2–0.07 µS/cm (5–15 MΩ x cm)
- Microorganisms: < 1 CFU/1,000 ml
- Particles: < 1/ml

	Flow Rate - Type 2
Advance EDI	5 l/h
Advance EDI	10 l/h

## arium® advance RO

The arium® advance RO delivers Type 3 water of consistently the best quality at rates of 8, 16 or 24 l/h. The system attains the highest retention rates of ions along with optimal water yield, and reliably removes oxidants, heavy metal ions and particulates from feed water. The pure water produced is stored in arium® bagtank systems and, if a Sartopore® 2 150 final filter is used in the system, is practically free of microorganisms.

### Standard Applications

- Buffers and pH solutions
- Feed water for various laboratory devices, such as autoclaves, glassware washers, humidifiers, water baths etc.

### Water Quality

- Typical conductivity: < 20 µS/cm (> 0.05 MΩ x cm)
- Microorganisms: < 1 CFU/1,000 ml
- Particles: < 1/ml

	Flow Rate - Type 3
Advance RO	8 l/h
Advance RO	16 l/h
Advance RO	24 l/h

## Applications & Systems - Lab Water

<b>Arium Pro (Type 1)</b>	Pro VF	<ul style="list-style-type: none"> <li>• HPLC, GC-MS, AAS, ICP-MS, ICHPLC, GC-MS, AAS, ICP-MS, IC</li> <li>• PCR</li> <li>• Electrophoresis</li> <li>• Endotoxin –Analysis</li> </ul>	<ul style="list-style-type: none"> <li>• Immunocyto chemistry</li> <li>• Nutrient media for cell culture</li> <li>• Production of monoclonal antibodies</li> <li>• Photometry</li> </ul>
	Pro UF		
	Pro UV		
	Pro DI		
	Pro		
<b>Arium Comfort (Combi System)</b>	Comfort II	<ul style="list-style-type: none"> <li>• HPLC, GC-MS, AAS, ICP-MS, ICHPLC, GC-MS, AAS, ICP-MS</li> <li>• Ion Chromatography</li> <li>• TOC Analysis</li> <li>• Photometry</li> <li>• Microbiological media &amp; reagents</li> </ul>	<ul style="list-style-type: none"> <li>• Histology , ELISA, RIA</li> <li>• Buffer solutions</li> <li>• Feed water for laboratory devices:</li> <li>• Autoclaves, dishwashers, humidifiers, water baths etc</li> </ul>
	Comfort I		
<b>Arium Advance (Type 2 &amp; 3)</b>	Advanced EDI	<ul style="list-style-type: none"> <li>• Buffer solutions</li> <li>• Feed water for laboratory devices</li> <li>• Autoclaves, dishwashers, humidifiers, water baths etc</li> </ul>	<ul style="list-style-type: none"> <li>• Atomic adsorption</li> <li>• Spectrophotometry</li> <li>• Histopathology</li> </ul>
	Advance RO		

## Feed water Quality:

Exclusively potable tap water pursuant to the drinking water standards of the USA, the European Union, or Japan

Input pressure	2.0 -6.9 bar
Temperature	2-30°C
Specific conductivity	<1,500 µS/cm compensated to 25°C
TOC	<2,000 ppb
Max. total hardness (max CaCO <sub>3</sub> )	360 ppm
Iron (total Fe content )	<0.1 ppm
Manganese	< 0.05 ppm
Aluminium	<0.05 ppm
CO <sub>2</sub> in solution	≤ 40 ppm
Fouling Index (SD)	< 5
Turbidity	<1 NTU
pH Value	4- 10



## ACCESSORIES FOR MORE FLEXIBILITY:

The different modules of arium® systems offer the perfect solution for every task in the laboratory. The display is positioned at eye level. You can set up the dispensing location exactly where you need it. Depending on your given space requirements, the system can be integrated as desired at any location within the laboratory.



### Arium® Bag Tank Water Storage

Reliable Intermediate Water Storage That Protects Your Water Quality

The innovative Arium® Bagtank uses a closed system to store your purified water and protect it from secondary contamination and keep the quality. Instead of a regular tank the Bagtank utilizes exchangeable bags to simplify maintenance and remove the need for time intensive cleaning procedures. Simply exchange the bag in 5 minutes, fill it up and you are ready to go.

Integrated ventilation filter with non-return valve provides reliable protection against CO<sub>2</sub> pollution

*High flexibility through the 4 rollers available as an option (50 & 100 L Bagtank)*

*Easy and fast exchange of the Arium® Bags  
 No chemical cleaning required*

### Arium® Smart Station

Sartorius Introduces Arium® Smart Station for the Ultimate in Convenience and Flexibility for Dispensing Pure and Ultrapure Water.

- Compact design allows placement of stations in laboratory locations where bench space is limited
- Ergonomic design and intuitive touch-activated color display provides greater user convenience and control
- Connect multiple Smart Stations to one water system to provide access throughout the lab



### Wall-mounted Unit:

The wall-mounted unit saves valuable space on your lab benchtop. The display and dispensing unit are positioned at the bottom to ensure user-friendly, ergonomic operation.



### Built-in Unit:

This version saves space on and above your lab bench. You can choose to mount both the display and water dispensing units on a wall or on a multifunctional stand.



### Remote Dispenser with Wall-mounting Plate:

This ergonomically designed and easy-to-use remote dispenser is simply mounted on a wall to save space. It is suitable for all benchtop, wall-mounted and built-in units.



### Multifunctional Stand:

This convenient stand combines a design that allows unlimited access to all display and dispensing functions and flexibility provided by its height that is adjustable by up to 70 cm (around 30 inches).



## OUR PRODUCT RANGE



### Electronic Balances

Sartorius, Germany

### Ovens, Incubators & Climatic Chambers

Memmert, Germany

### Viscometers & Rheometers

Brookfield, USA

### Biological Safety Cabinets, LAF

ESCO, Singapore.

### Magnetic Stirrers/ Overhead Stirrers

Velp, Italy

### GC, GC-MS

Chromatec, Russia

### Deep Freezers & Refrigerators

Arctiko, Denmark

### Anaerobic Chambers & Glove Boxes

Plas-Labs, USA

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Bourestnik, Russia

### 3D Laser Scanners

FARO, USA

### pH, Conductivity & Laboratory Standards

Reagecon, Ireland

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Spectro, Germany

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An **Application Lab** where technology is demonstrated to provide and in support with

- e-Learning
- e-Focus
- Sample Analysis
- Demonstration
- Technical presentations
- Method Analysis
- Trouble shooting solutions
- Application Library



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