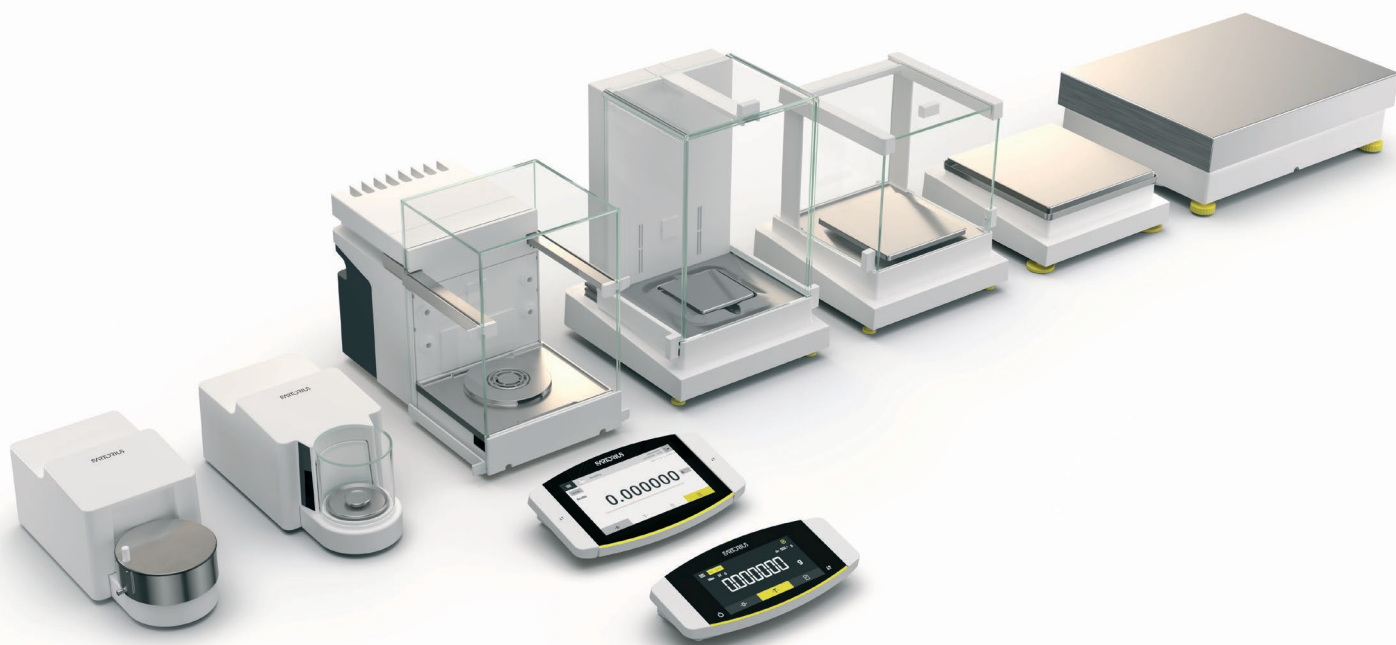


## Cubis® II

The New Generation of Modular Premium Balances



# Highlights

## Superior weighing performance

Fast measurement time and accurate weighing results are guaranteed thanks to monolithic weighing system and built-in engineering solutions.

## No more issues with charged samples

The glass draft shields coated with conductive layer prevents from outer electrostatic effects. The built-in ionizer at draft shield versions D and I effectively eliminates electrostatic charges from samples.

## Cleaning process guidance

The cleaning QApp provides visual guidance, information about chemical compatibility as well as electrical tracking of these events and is now freely available in all Cubis® II MCA models.

## Hardware upgradeability

Motorized draft shield function or built-in ionizer can be activated post-purchase for high-capacity and semi-micro balances. An automated inner draft shield is available as a click-in accessory.

## Compliance and Data Integrity

The end-to-end data integrity, technical controls for 21 CFR Part 11 compliance, integrated audit-trail and state-of-the-art user management ensure laboratories can meet regulatory requirements. These features are directly available on the Cubis® II balances, without the need of additional software.

## Balances Fleet Management

The Ingenix Suite is a flexible, open solution that works with or without an ELN/LIM system. It offers unlimited connections to easily manage the entire Cubis® II MCA lab balance fleet across all labs within the same network.

## Ease of use

The teaching function with learning capability of the motorized draft shield, guided workflows for various weighing applications (QApps), automated motorized leveling and automatic internal adjustment (isoCAL) help with easy and error-free operation of the balance.

# Example: Hardware Upgradeability

## Motorized inner draft shield

Installation of Cubis® II high-capacity or semi-micro balances in a workbench or laminar hood with filtered air flow subjects the instrument to drafty conditions. The motorized inner draft shield YDS125A ensures best weighing performances and ease of use even under drafty conditions.



# Application Example: Pipette Check

## Pipette calibration kits

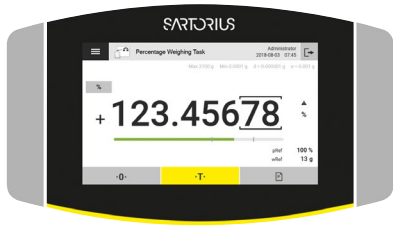
Cubis® II balances with pipette calibration kit VF988, YCP04MS or YCP07MC and software application Pipette Check Advanced (QAPP005) are a complete solution to test Pipettes according to DIN EN ISO 8655.



# Product Information

The Cubis® II premium laboratory balances with a maximum load range between 2.1 g and 70 kg and a readability between 0.1 µg to 1 g provide an ideal solution for every laboratory weighing application. Because these balances are modular the display, the weighing module, the draft shield and the software QApps can be individually configured offering a flexible solution for individual needs.

## Cubis® II Display and Control Units



Type	MCA	Type	MCE
<b>Display*</b>	7" color touch TFT display in 16:9 format with intuitive user interface	<b>Display*</b>	TFT touch screen for routine weighing tasks
<b>Software</b>	Factory installed set of basic weighing applications (license free) and licensable software packages (QPs) for various applications (QApps) and functional extensions.	<b>Software</b>	Factory installed set of basic weighing applications. No licensable software packages.

\* LED backlight 50,000 hours (if used with max. contrast), cable length 25 cm

# Technical Specifications

## Cubis® II Weighing Modules Ultra-Micro Balances 0.0001 mg

	Units	2.7S
Scale interval (d)	mg	0.0001
Maximum capacity (Max)	g	2.1
<b>Repeatability up to 5% load</b>		
Standard deviation of the load values, tolerance	mg	0.0002
Standard deviation of the load values, typical value	mg	0.00015
<b>Repeatability near Max</b>		
Standard deviation of the load values, tolerance	mg	0.00025
Standard deviation of the load values, typical value	mg	0.00018
<b>Linearity deviation</b>		
Tolerance	mg	0.0009
Typical value	mg	0.0007
<b>Deviation at eccentric loading, positions according to OIML R76</b>		
Test weight	g	1
Tolerance	mg	0.0007
Typical value	mg	0.0005
Sensitivity drift between +10° C and +30° C	ppm/K	1
<b>Tare maximum capacity: Less than 100% of maximum capacity</b>		
Accuracy class according to Directive 2014   31   EU		I
Verification scale interval (e) according to Directive 2014   31   EU	mg	1
Minimum load (Min) according to Directive 2014   31   EU	mg	0.01
<b>Minimum weight according to USP (United States Pharmacopeia), Chap. 41</b>		
Optimum minimum weight	mg	0.082
Typical minimum weight	mg	0.3
Typical stabilization time	s	7
Typical measurement time	s	10
<b>Recommended calibration weight</b>		
External test load	g	2
Accuracy class, according to OIML R111-1		E2
<b>isoCAL</b>		
Temperature change	K	1.5
Time span	h	12
<b>Dimensions</b>		
MCE   MCA Weighing module (L×W×H)*	mm	340×139×129
MCE Electronics module (L×W×H)	mm	315×240×61
MCA Electronics module (L×W×H)	mm	355×240×61
Weighing pan size	mm	Ø 20
Filter weighing pan	mm	Ø 50
Weight, approx.*	kg	6.4   7.1

\* depending upon weighing pan size, filter weighing pan and draft shield

## Cubis® II Weighing Modules Micro Balances 0.001 mg

	Units	10.6S	6.6S	3.6P
Scale interval (d)	mg	0.001	0.001	0.001 0.002 0.005
Maximum capacity (Max)	g	10.1	6.1	1.1 2.1 3.1
<b>Repeatability up to 5% load</b>				
Standard deviation of the load values, tolerance	mg	0.001	0.001	0.003
Standard deviation of the load values, typical value	mg	0.0005	0.0005	0.0005
<b>Repeatability near Max</b>				
Standard deviation of the load values, tolerance	mg	0.001	0.001	0.005
Standard deviation of the load values, typical value	mg	0.0006	0.0006	0.0006
<b>Linearity deviation</b>				
Tolerance	mg	0.004	0.004	0.004
Typical value	mg	0.003	0.003	0.003
<b>Deviation at eccentric loading, positions according to OIML R76</b>				
Test weight	g	5	2	1
Tolerance	mg	0.004	0.004	0.005
Typical value	mg	0.003	0.003	0.003
Sensitivity drift between +10° C and +30° C	ppm/K	1	1	1
<b>Tare maximum capacity: Less than 100% of maximum capacity</b>				
Accuracy class according to Directive 2014   31   EU		I	I	I
Verification scale interval (e) according to Directive 2014   31   EU mg		1	1	1
Minimum load (Min) according to Directive 2014   31   EU	mg	0.1	0.1	0.1
<b>Minimum weight according to USP (United States Pharmacopeia), Chap. 41</b>				
Optimum minimum weight	mg	0.82	0.82	0.82
Typical minimum weight	mg	0.82	0.82	0.82
Typical stabilization time	s	5	5	5
Typical measurement time	s	8	8	8
<b>Recommended calibration weight</b>				
External test load	g	10	5	3
Accuracy class, according to OIML R111-1		E2	E2	E2
<b>isoCAL</b>				
Temperature change	K	1.5	1.5	1.5
Time span	h	12	12	12
<b>Dimensions</b>				
MCE   MCA Weighing module (L×W×H)*	mm	340×139×129	340×139×129	340×139×129
MCE Electronics module (L×W×H)	mm	315×240×61	315×240×61	315×240×61
MCA Electronics module (L×W×H)	mm	355×260×61	355×260×61	355×260×61
Weighing pan size	mm	Ø 30	Ø 30	Ø 30
Filter weighing pan	mm	Ø 50	Ø 50	Ø 50
Weight, approx.*	kg	6.4 7.1	6.4 7.1	6.4 7.1

\* depending upon weighing pan size, filter weighing pan and draft shield

**Cubis® II Weighing Modules**  
**High-Capacity Micro Balances 0.001 - 0.002 mg**

	Units	36S	36P	66S
Scale interval (d)	mg	0.001	0.01   0.001	0.001
Maximum capacity (Max)	g	32	32   10.1	61
<b>Repeatability up to 5% load</b>				
Standard deviation of the load values, tolerance	mg	0.0015	0.002	0.0015
Standard deviation of the load values, typical value	mg	0.0007	0.0007	0.0007
<b>Repeatability near Max</b>				
Standard deviation of the load values, tolerance	mg	0.0025	0.007	0.004
Standard deviation of the load values, typical value	mg	0.0018	0.005	0.0025
<b>Linearity deviation</b>				
Tolerance	mg	0.012	0.015	0.02
Typical value	mg	0.005	0.006	0.005
<b>Deviation when load is off-center, positions according to OIML R76</b>				
Test weight	g	10	10	20
Tolerance	mg	0.015	0.02	0.02
Typical value	mg	0.006	0.008	0.01
Sensitivity drift between +10° C and +30° C	ppm/K	1	1	1
<b>Tare maximum capacity: Less than 100% of maximum capacity</b>				
Accuracy class according to Directive 2014   31   EU		I	I	I
Verification scale interval (e) according to Directive 2014   31   EU mg		1	1	1
Minimum load (Min) according to Directive 2014   31   EU	mg	0.1	0.1	0.1
<b>Minimum weight according to USP (United States Pharmacopeia), Chap. 41 and Ph.Eur. 2.1.7</b>				
Optimum minimum weight	mg	0.82	0.82	0.82
Typical minimum weight	mg	1.4	1.4	1.4
Typical stabilization time	s	3.5	3.5   2.5	3.5
Typical measurement time	s	10	10   6	10
<b>Recommended calibration weight</b>				
External test load	g	20	20	50
Accuracy class, according to OIML R111-1		E2	E2	E2
<b>isoCAL</b>				
Temperature change	K	1.5	1.5	1.5
Time span	h	12	12	12
<b>Dimensions</b>				
MCE   MCA Weighing module (L×W×H)*	mm	486   510×240×302	486   510×240×302	486   510×240×302
Weighing pan size	mm	Ø 50	Ø 50	Ø 50
Weight, approx.*	kg	15	15	15

\* depending upon weighing pan size, filter weighing pan and draft shield

**Cubis® II Weighing Modules**  
**High-Capacity Micro Balances 0.001 - 0.002 mg**

	Units	66P	116S
Scale interval (d)	mg	0.01   0.001	0.002
Maximum capacity (Max)	g	61   12	111
<b>Repeatability up to 5% load</b>			
Standard deviation of the load values, tolerance	mg	0.002	0.004
Standard deviation of the load values typical value	mg	0.0007	0.0025
<b>Repeatability near Max</b>			
Standard deviation of the load values, tolerance	mg	0.01	0.01
Standard deviation of the load values, typical value	mg	0.006	0.005
<b>Linearity deviation</b>			
Tolerance	mg	0.02	0.03
Typical value	mg	0.008	0.02
<b>Deviation when load is off-center, positions according to OIML R76</b>			
Test weight	g	20	50
Tolerance	mg	0.03	0.03
Typical value	mg	0.012	0.02
Sensitivity drift between +10° C and +30° C	ppm/K	1	1
<b>Tare maximum capacity: Less than 100% of maximum capacity</b>			
Accuracy class according to Directive 2014   31   EU		I	I
Verification scale interval (e) according to Directive 2014   31   EU mg		1	1
Minimum load (Min) according to Directive 2014   31   EU	mg	0.1	0.2
<b>Minimum weight according to USP (United States Pharmacopeia), Chap. 41 and Ph.Eur. 2.1.7</b>			
Optimum minimum weight	mg	0.82	1.64
Typical minimum weight	mg	1.4	5.0
Typical stabilization time	s	3.5   2.5	3.5
Typical measurement time	s	10   6	8
<b>Recommended calibration weight</b>			
External test load	g	50	50
Accuracy class, according to OIML R111-1		E2	E2
<b>isoCAL</b>			
Temperature change	K	1.5	1.5
Time span	h	12	12
<b>Dimensions</b>			
MCE   MCA Weighing module (L × W × H)*	mm	486   510 × 240 × 302	510 × 240 × 302
Weighing pan size	mm	Ø 50	
Weight, approx.*	kg	15	

\* depending upon weighing pan size, filter weighing pan and draft shield

## Cubis® II Weighing Modules Semi-Micro Balances 0.01 mg

	Units	226S	225S	225P	125S	125P
Scale interval (d)	mg	0.005	0.01	0.01 0.1	0.01	0.01 0.1
Maximum capacity (Max)	g	220	220	120 220	120	60 120
<b>Repeatability up to 5% load</b>						
Standard deviation of the load values, tolerance	mg	0.01	0.015	0.015	0.015	0.015
Standard deviation of the load values, typical value	mg	0.004	0.007	0.007	0.007	0.007
<b>Repeatability near Max</b>						
Standard deviation of the load values, tolerance	mg	0.025	0.025	0.04	0.025	0.06
Standard deviation of the load values, typical value	mg	0.015	0.015	0.02	0.015	0.02
<b>Linearity deviation</b>						
Tolerance	mg	0.07	0.07	0.1	0.07	0.15
Typical value	mg	0.03	0.03	0.03	0.03	0.1
<b>Deviation when load is off-center, positions according to OIML R76</b>						
Test weight	g	100	100	100	50	50
Tolerance	mg	0.12	0.15	0.2	0.12	0.2
Typical value	mg	0.04	0.05	0.06	0.04	0.1
Sensitivity drift between +10° C and +30° C	ppm/K	1	1	1	1	1
<b>Tare maximum capacity: Less than 100% of maximum capacity</b>						
Accuracy class according to Directive 2014   31   EU		I	I	I	I	I
Verification scale interval (e) according to Directive 2014   31   EU mg		1	1	1	1	1
Minimum load (Min) according to Directive 2014   31   EU	mg	1	1	1	1	1
<b>Minimum weight according to USP (United States Pharmacopeia), Chap. 41</b>						
Optimum minimum weight	mg	4.1	8.2	8.2	8.2	8.2
Typical minimum weight	mg	8.0	13.0	13.0	13.0	13.0
Typical stabilization time	s	1.5	1.5	1.5	1.5	2
Typical measurement time	s	6	4	4	4	6
<b>Recommended calibration weight</b>						
External test load	g	200	200	200	100	100
Accuracy class, according to OIML R111-1		E2	E2	E2	E2	E2
<b>isoCAL</b>						
Temperature change	K	1.5	1.5	1.5	1.5	1.5
Time span	h	12	12	12	12	12
<b>Dimensions</b>						
MCE   MCA Weighing module (L×W×H)*	mm		301×240×301			404×240×373
MCE Electronics module (L×W×H)	mm	-	-	-	-	315×240×61
MCA Electronics module (L×W×H)	mm	-	-	-	-	355×240×61
Weighing pan size	mm	Ø 50	Ø 90			85×85
Weight, approx.*	kg		15			10.2   11.7

\* depending upon weighing pan size, filter weighing pan and draft shield

\*\* Module 125P has different dimensions than other 5-digit balances (please see Balance Dimensions)



## Cubis® II Weighing Modules Analytical Balances 0.1 mg

	Units	524S	524P	324S	324P	224S	124S
Scale interval (d)	mg	0.1	0.1 0.2 0.5	0.1	0.1 0.2 0.5	0.1	0.1
Maximum capacity (Max)	g	520	120 240 520	320	80 160 320	220	120
<b>Repeatability up to 5% load</b>							
Standard deviation of the load values, tolerance	mg	0.08	0.08	0.08	0.08	0.07	0.1
Standard deviation of the load values, typical value	mg	0.04	0.04	0.04	0.04	0.05	0.05
<b>Repeatability near Max</b>							
Standard deviation of the load values, tolerance	mg	0.1	0.15	0.1	0.1	0.07	0.1
Standard deviation of the load values, typical value	mg	0.05	0.05	0.05	0.05	0.05	0.05
<b>Linearity Deviation</b>							
Tolerance	mg	0.4	0.5	0.3	0.5	0.2	0.2
Typical value	mg	0.2	0.2	0.2	0.2	0.13	0.13
<b>Deviation when load is off-center, positions according to OIML R76</b>							
Test weight	g	200	200	200	200	100	50
Tolerance	mg	0.3	0.4	0.3	0.4	0.2	0.2
Typical value	mg	0.2	0.2	0.2	0.2	0.12	0.12
Sensitivity drift between +10° C and +30° C	ppm/K	1	1	1	1	1	1
<b>Tare maximum capacity: Less than 100% of maximum capacity</b>							
Accuracy class according to Directive 2014   31   EU		I	I	I	I	I	I
Verification scale interval (e) according to Directive 2014   31	mg	1	1	1	1	1	1
Minimum load (Min) according to Directive 2014   31   EU	mg	10	10	10	10	10	10
<b>Minimum weight according to USP (United States Pharmacopeia), Chap. 41</b>							
Optimum minimum weight	mg	82	82	82	82	82	82
Typical minimum weight	mg	82	82	82	82	100	100
Typical stabilization time	s	1	1	1	1	1	1
Typical measurement time	s	3	3	3	3	3	3
<b>Recommended calibration weight</b>							
External test load	g	500	500	300	300	200	100
Accuracy class, according to OIML R111-1		E2	E2	E2	E2	E2	E2
<b>isoCAL</b>							
Temperature change	K	1.5	1.5	1.5	1.5	1.5	1.5
Time span	h	6	6	12	12	12	12
<b>Dimensions</b>							
Weighing module (L×W×H)*	mm	425×240×373					
Weighing pan size	mm	85×85					
Weight, approx.*	kg	8.2   10.0					

\* depending upon weighing pan size, filter weighing pan and draft shield

## Cubis® II Weighing Modules Precision Balances

	Units	5203S	5203P	3203S	2203S	2203P	1203S
Scale interval (d)	mg	1	1 2 5	1	1	1 10	1
Maximum capacity (Max)	g	5200	1200 2400  5200	3200	2200	1010 2200	1200
<b>Repeatability up to 5% load</b>							
Standard deviation of the load values, tolerance	mg	1	1	1	0.7	0.7	0.7
Standard deviation of the load values, typical value	mg	0.6	0.6	0.6	0.5	0.5	0.5
<b>Repeatability near Max</b>							
Standard deviation of the load values, tolerance	mg	1	1	1	1	1	0.7
Standard deviation of the load values, typical value	mg	0.6	0.6	0.6	0.6	0.6	0.6
<b>Linearity Deviation</b>							
Tolerance	mg	5	5	5	3	5	2
Typical value	mg	2	3	2	2	3	1
<b>Deviation when load is off-center, positions according to OIML R76</b>							
Test weight	g	2000	2000	1000	1000	1000	500
Tolerance	mg	2	2	2	2	3	2
Typical value	mg	1	1	1	1	2	1
Sensitivity drift between +10° C and +30° C	ppm/K	1	1	1	1	1	1.5
<b>Tare maximum capacity: Less than 100% of maximum capacity</b>							
Accuracy class according to Directive 2014   31   EU		I	I	I	I	I	I
Verification scale interval (e) according to Directive 2014   31   EU	mg	10	10	10	10	10	10
Minimum load (Min) according to Directive 2014   31   EU	mg	100	100	100	100	100	100
<b>Minimum weight according to USP (United States Pharmacopeia), Chap. 41</b>							
Optimum minimum weight	mg	820	820	820	820	820	820
Typical minimum weight	mg	1200	1200	1200	1000	1000	1000
Typical stabilization time	s	1	1	1	1	1	1
Typical measurement time	s	2	2	2	1.5	1.5	1.5
<b>Recommended calibration weight</b>							
External test load	g	5000	5000	3000	2000	1000	1000
Accuracy class, according to OIML R111-1		E2	E2	E2	E2	E2	E2
<b>isoCAL</b>							
Temperature change	K	1.5	1.5	1.5	1.5	1.5	1.5
Time span	h	6	6	6	12	12	12
<b>Dimensions</b>							
Weighing module (L × W × H)*	mm	425 × 240 × 122   284   373					
Weighing pan size	mm	140 × 140					
Weight, approx.*	kg	5.9   7.5   9.4   10.2					

\* depending upon weighing pan size, filter weighing pan and draft shield

## Cubis® II Weighing Modules Precision Balances

	Units	623S	623P	323S	14202S	14202P
Scale interval (d)	mg	1	1 2 5	1	10	10 20 50
Maximum capacity (Max)	g	620	150 300 620	320	14200	3500 7000 14200
<b>Repeatability up to 5% load</b>						
Standard deviation of the load values, tolerance	mg	0.7	1	0.7	10	10
Standard deviation of the load values, typical value	mg	0.4	0.4	0.4	5	5
<b>Repeatability near Max</b>						
Standard deviation of the load values, tolerance	mg	0.7	1	0.7	10	10
Standard deviation of the load values, typical value	mg	0.5	0.5	0.5	5	5
<b>Linearity deviation</b>						
Tolerance	mg	2	5	2	30	50
Typical value	mg	0.6	1.5	0.6	10	20
<b>Deviation when load is off-center, positions according to OIML R76</b>						
Test weight	g	200	200	200	5000	5000
Tolerance	mg	2	4	2	20	40
Typical value	mg	1	3	1	10	10
Sensitivity drift between +10° C and +30° C	ppm/K	2	2	2	1.5	1.5
<b>Tare maximum capacity: Less than 100% of maximum capacity</b>						
Accuracy class according to Directive 2014   31   EU		II	II	II	I	I
Verification scale interval (e) according to Directive 2014   31   EU	mg	10	10	10	100	100
Minimum load (Min) according to Directive 2014   31   EU	mg	20	20	20	1000	1000
<b>Minimum weight according to USP (United States Pharmacopeia), Chap. 41</b>						
Optimum minimum weight	mg	820	820	820	8200	8200
Typical minimum weight	mg	820	820	820	8200	8200
Typical stabilization time	s	0.8	0.8	0.8	0.8	0.8
Typical measurement time	s	1	1	1	1.5	1.5
<b>Recommended calibration weight</b>						
External test load	g	500	500	200	14000	14000
Accuracy class, according to OIML R111-1		E2	E2	E2	E2	E2
<b>isoCAL</b>						
Temperature change	K	2	2	2	1.5	1.5
Time span	h	12	12	12	6	6
<b>Dimensions</b>						
Weighing module (L×W×H)*	mm	425×240×122   284   373			425×240×95	
Weighing pan size	mm	140×140			206×206	
Weight, approx.*	kg	5.9   7.5   9.4   10.2			5.4	

\* depending upon weighing pan size, filter weighing pan and draft shield

## Cubis® II Weighing Modules Precision Balances

	Units	10202S	8202S	6202S	6202P	5202S	4202S	2202S
Scale interval (d)	mg	10	10	10	10 20 50	10	10	10
Maximum capacity (Max)	g	10200	8200	6200	1500  3000 6200	5200	4200	2200
<b>Repeatability up to 5% load</b>								
Standard deviation of the load values, tolerance	mg	7	7	7	7	6	7	7
Standard deviation of the load values, typical value	mg	5	4	4	4	2	4	4
<b>Repeatability near Max</b>								
Standard deviation of the load values, tolerance	mg	7	7	7	40	6	7	7
Standard deviation of the load values, typical value	mg	5	4	4	15	2	4	4
<b>Linearity deviation</b>								
Tolerance	mg	20	20	20	50	10	20	20
Typical value	mg	6	6	6	20	5	6	6
<b>Deviation when load is off-center, positions according to OIML R76</b>								
Test weight	g	5000	5000	2000	2000	2000	2000	1000
Tolerance	mg	20	30	20	30	10	30	20
Typical value	mg	10	10	10	30	5	10	10
Sensitivity drift between +10° C and +30° C	ppm/K	1.5	2	2	2	2	2	2
<b>Tare maximum capacity: Less than 100% of maximum capacity</b>								
Accuracy class according to Directive 2014   31   EU		II	II	II	II	I	II	II
Verification scale interval (e) according to Directive 2014   31   EU	mg	100	100	100	100	100	100	100
Minimum load (Min) according to Directive 2014   31   EU	mg	1000	500	500	500	1000	500	500
<b>Minimum weight according to USP (United States Pharmacopeia), Chap. 41</b>								
Optimum minimum weight	mg	8200	8200	8200	8200	8200	8200	8200
Typical minimum weight	mg	8200	8200	8200	8200	8200	8200	8200
Typical stabilization time	s	0.8	1	1	1	0.8	1	0.8
Typical measurement time	s	1.5	1.5	1.5	1.5	1	1	1
<b>Recommended calibration weight</b>								
External test load	g	10000	7000	5000	5000	5000	3000	1500
Accuracy class, according to OIML R111-1		E2	E2	E2	E2	E2	E2	E2
<b>isoCAL</b>								
Temperature change	K	1.5	2	2	2	2	2	2
Time span	h	6	12	12	12	12	12	12
<b>Dimensions</b>								
Weighing module (L×W×H)*	mm	425×240×95			425×240 x122 284  373		425×240×95	
Weighing pan size	mm	206×206			140×140		206×206	
Weight, approx.*	kg	5.4			5.9 7.5  9.4 10.2		5.4	

## Cubis® II Weighing Modules Precision Balances

\* depending upon weighing pan size, filter weighing pan and draft shield

	Units	1202S	12201S	8201S	5201S
Scale interval (d)	mg	10	100	100	100
Maximum capacity (Max)	g	1200	12200	8200	5200
<b>Repeatability up to 5% load</b>					
Standard deviation of the load values, tolerance	mg	7	50	50	50
Standard deviation of the load values, typical value	mg	4	20	20	20
<b>Repeatability near Max</b>					
Standard deviation of the load values, tolerance	mg	7	50	50	50
Standard deviation of the load values, typical value	mg	4	20	20	20
<b>Linearity deviation</b>					
Tolerance	mg	20	100	100	100
Typical value	mg	6	30	30	20
<b>Deviation when load is off-center, positions according to OIML R76</b>					
Test weight	g	500	5000	5000	2000
Tolerance	mg	20	200	200	200
Typical value	mg	10	100	100	100
Sensitivity drift between +10° C and +30° C	ppm/K	2	4	4	4
<b>Tare maximum capacity: Less than 100% of maximum capacity</b>					
Accuracy class according to Directive 2014   31   EU		I	II	II	II
Verification scale interval (e) according to Directive 2014   31   EU	mg	100	1000	1000	1000
Minimum load (Min) according to Directive 2014   31   EU	mg	500	5000	5000	5000
<b>Minimum weight according to USP (United States Pharmacopeia), Chap. 41</b>					
Optimum minimum weight	mg	8200	82000	82000	82000
Typical minimum weight	mg	8200	82000	82000	82000
Typical stabilization time	s	0.8	0.8	0.8	0.8
Typical measurement time	s	1	1	1	1
<b>Recommended calibration weight</b>					
External test load	g	700	12000	8000	5000
Accuracy class, according to OIML R111-1		E2	F1	F1	F1
<b>isoCAL</b>					
Temperature change	K	2	4	4	4
Time span	h	6	12	12	12
<b>Dimensions</b>					
Weighing module (L×W×H)*	mm			425×240×95	
Weighing pan size	mm			206×206	
Weight, approx.*	kg			5.4	

\* depending upon weighing pan size, filter weighing pan and draft shield

## Cubis® II Weighing Modules High Capacity Balances

	Units	32202P	70201S	50201S	36201S	36201P
Scale interval (d)	mg	10   100	100	100	100	100   1000
Maximum capacity (Max)	g	4200   32200	70200	50200	36200	10200   36200
<b>Repeatability up to 5% load</b>						
Standard deviation of the load values, tolerance	mg	40	100	100	100	100
Standard deviation of the load values, typical value	mg	20	40	40	20	20
<b>Repeatability near Max</b>						
Standard deviation of the load values, tolerance	mg	40   100	100	100	100	100
Standard deviation of the load values, typical value	mg	20   50	40	40	50	20
<b>Linearity deviation</b>						
Tolerance	mg	200	500	500	200	200
Typical value	mg	100	150	150	100	100
<b>Deviation when load is off-center, positions according to OIML R76</b>						
Test weight	g	10000	20000	20000	10000	10000
Tolerance	mg	200	500	500	300	300
Typical value	mg	100	300	300	200	200
Sensitivity drift between +10° C and +30° C	ppm/K	2	2	2	2	2
<b>Tare maximum capacity: Less than 100% of maximum capacity</b>						
Accuracy class according to Directive 2014   31   EU		-	II	II	II	II
Verification scale interval (e) according to Directive 2014   31   EU	mg	-	1000	1000	1000	1000
Minimum load (Min) according to Directive 2014   31   EU	mg	-	5000	5000	5000	5000
<b>Minimum weight according to USP (United States Pharmacopeia), Chap. 41</b>						
Optimum minimum weight	mg	8200	82000	82000	82000	82000
Typical minimum weight	mg	8200	82000	82000	82000	82000
Typical stabilization time	s	2	1.5	1.5	1.5	1.5
Typical measurement time	s	2	1.5	1.5	2	2
<b>Recommended calibration weight</b>						
External test load	g	30000	70000	50000	30000	30000
Accuracy class, according to OIML R111-1		F1	F1	F1	F1	F1
<b>isoCAL</b>						
Temperature change	K	2	2	2	4	4
Time span	h	12	12	12	12	12
<b>Dimensions</b>						
Weighing module (L×W×H)*	mm	412×400×159			412×400×126	
Weighing pan size	mm	Ø 233			400×300	
Weight, approx.*	kg	17.1			15.8	

## Cubis® II Weighing Modules High Capacity Balances

\* depending upon weighing pan size, filter weighing pan and draft shield

	Units	20201S	11201S	70200S	36200S
Scale interval (d)	mg	100	100	1000	1000
Maximum capacity (Max)	g	20200	11200	70200	36200
<b>Repeatability up to 5% load</b>					
Standard deviation of the load values, tolerance	mg	100	100	500	500
Standard deviation of the load values, typical value	mg	20	20	200	200
<b>Repeatability near Max</b>					
Standard deviation of the load values, tolerance	mg	100	100	500	500
Standard deviation of the load values, typical value	mg	20	20	200	200
<b>Linearity Deviation</b>					
Tolerance	mg	200	200	1000	1000
Typical value	mg	60	60	200	200
<b>Deviation when load is off-center, positions according to OIML R76</b>					
Test weight	g	5000	5000	20000	10000
Tolerance	mg	300	300	1000	1000
Typical value	mg	200	200	600	500
Sensitivity drift between +10° C and +30° C	ppm/K	2	2	3	3
<b>Tare maximum capacity: Less than 100% of maximum capacity</b>					
Accuracy class according to Directive 2014   31   EU		II	II	II	II
Verification scale interval (e) according to Directive 2014   31   EU	mg	1000	1000	10000	1000
Minimum load (Min) according to Directive 2014   31   EU	mg	5000	5000	50000	50000
<b>Minimum weight according to USP (United States Pharmacopeia), Chap. 41</b>					
Optimum minimum weight	mg	82000	82000	820000	820000
Typical minimum weight	mg	82000	82000	820000	820000
Typical stabilization time	s	1.5	1.5	1	1
Typical measurement time	s	2	2	1.2	1.2
<b>Recommended calibration weight</b>					
External test load	g	20000	10000	70000	30000
Accuracy class, according to OIML R111-1		F1	F1	F1	F1
<b>isoCAL</b>					
Temperature change	K	4	4	2	4
Time span	h	12	12	12	12
<b>Dimensions</b>					
Weighing module (L×W×H)*	mm	412×400×126			
Weighing pan size	mm	400×300			
Weight, approx.*	kg	15.8			

\* depending upon weighing pan size, filter weighing pan and draft shield

# Technical Specifications

## Electrical data

		Ultra-micro, micro, analytical, precision and high capacity balances	High-capacity micro and semi-micro balances
	Units	Value	Value
<b>Installation Site</b>			
AC voltage	V	100–240 (±10%)	100–240 (±10%)
Frequency	Hz	50–60 (±5%)	47–63
Current consumption, maximum	A	1.0	0.8
Overvoltage category according to IEC 60664-1		II	II
Pollution level according to IEC 61010-1  IEC 60664-1		2	2
<b>Device power supply (secondary)</b>			
Max. DC voltage	V	14.25–15.75 at 2 A output current	15 ± 15% at 4.3 A output current
Power, maximum	W	30	64.5
Power supply cable		According to IEC 60320-1/C14: Country-specific, 3-pin, two-sided plug	According to IEC 60320-1 C13   C14, with IEC plug, 3-pin, and with country-specific power plug
<b>Safety of Electrical Equipment</b>		According to EN 61010-1 / IEC 61010-1 Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General Requirements	
<b>Electromagnetic Compatibility</b>			
Interference Immunity		Suitable for use in industrial areas	
Transient emissions		Class B; suitable for use in residential areas and areas that are directly connected to a low voltage network that (also) supplies residential buildings.	
<b>Ambient conditions</b>			
Standard laboratory rooms			
Installation site according to IEC 60259-1, maximum altitude above sea level	m	3000	3000
For indoor use only			
Temperature			
In operation	°C	+5 – +40	+10 – +30
In operation for conformity-assessed devices: see information on the device's ID plate			
During storage and transport	°C	-20 – +60	
<b>Relative humidity</b>			
At temperatures of up to 31° C	%	80	80
Then linear decrease from 80% at 31° C to 50% at 40° C			
No heat from heating systems or direct sunlight, drafts from open windows, AC systems, or doors, vibrations, "heavy traffic" areas (personnel) electromagnetic fields, dry air			



## Interfaces

### Specifications for the COM-RS232 Interface

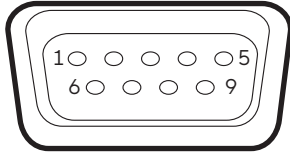
Type of interface: Serial interface

Interface operation: Full duplex

Level: RS232

Connection: D-sub connector, 9-pin

Pin assignment:



Pin 1: Not assigned

Pin 2: Data output (TxD)

Pin 3: Data input (RxD)

Pin 4: Not assigned

Pin 5: Internal ground

Pin 6: Not assigned

Pin 7: Clear to Send (CTS)

Pin 8: Request to Send (RTS)

Pin 9: Not assigned

### Specifications for the USB-A Interface

Communication: USB host (master)

Connectable devices: Sartorius printers, USB sticks with software update

### Specifications for the USB-B Interface

Communication: USB device (slave)

Type of interface: Virtual serial interface (virtual COM-port, VCP) and "PC direct" communication

### Specifications for the USB-C Interface (high-capacity micro and semi-micro balances)

Communication: Downstream-facing port (DFP), USB host (Master)

Communication: RS232 connection with accessory YCC-USB-C-D09M

\* RS232 adapter cable YCC-USB-C-D09M available for high-capacity micro and semi-micro balance

## Materials

Housing: Die-cast aluminum, plastic PBT, Optiwhite float glass and stainless steel 1.4401 | 1.4404, PA handles, aluminum trim

Control unit: Die-cast aluminum, painted, float glass and plastic PBT, PP

## Integrated Clock

Maximum deviation per month (RTC): 30 s

## Backup Battery

Lithium battery: type CR2032

Service life at room temperature, minimum: 10 Years

## Alibi Memory Value

Maximum number of data records: 150,000

## Audit-Trail memory

Maximum number of data points: 300,000

## Software packages

Code	Item
QP1	QApp Package Pharma
QP2	QApp Package Advanced Applications
QP3	QApp Package Utilities
QP4	QApp Package Connectivity
QP10	QApp Package Hardware

## Draft Shields

Code	Item
0	Flat, stainless steel weight pan with no draft shield for weighing modules
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
D	Manual glass draft shield with licensable ionizer and motors

## Draft Shield Inner Dimensions

Draft Shield Version	Depth (mm)	Height (mm)	Width (mm)
F	-	33	Ø 109
M	-	67	Ø 80
U	191	261	193
I and A**	154	250	192
E	191	172	193
R	154	275	154
D	159	234	185

\*\* max. 500,000 opening/closing cycles guaranteed if serviced at regular intervals of 100,000 cycles

## Approvals

Code	Item
SØØ	Standard version non-verified, all units
SØ1	Standard version non-verified, metric units only
CCN	Balance with Type Approval Certificate for China
CEU	Verified balance with EC Type Approval Certificate (for EU except France)
CFR	Verified balance with EC Type Approval Certificate for France only
OBR	Balance with Type Approval Certificate for Brazil
OIN	Balance with Type Approval Certificate for India
OJP	Balance with Type Approval Certificate for Japan
ORU	Balance with Type Approval Certificate for Russia

## Accessories

Printers and Communication	Quantity	Cat. No.
Thermal transfer   thermal printer for GMP   GLP printouts on continuous paper and labels	1	YDP30
Laboratory thermal transfer printer YDP30 with USB and ethernet connection	1	YDP30-NET
Wireless Nano USB Adapter	1	YWLAN01MS
WIFI Nano Router	1	YWLAN02MS
Standard paper and ink ribbon, set, 90 m, for YDP30	1	69Y03285
Self-adhesive paper and ink ribbon, 90 m, for YDP30	1	69Y03286
Standard thermal paper, 24 m roll, for YDP30   YDP40	5	69Y03287
Self-adhesive thermal paper, 13 m roll, for YDP30	5	69Y03288
Self-adhesive labels for YDP30		
58 mm × 100 mm	350	69Y03094
58 mm × 76 mm	500	69Y03093
58 mm × 30 mm	1000	69Y03092
<b>Displays and Input   Output Elements</b>		
MCE Display	1	69MS0218
Display head MCA for balances with automatic draft shield	1	69MS0212
Display head MCA for balances without automatic draft shield	1	69MS0215
MCA display for high-capacity balances (including short distance adapter)	1	69MS0216
Motion sensor with USB connection cable	1	YHS02USB
Display stand for weigh cells with scale interval of 100 mg   1 g and weighing capacity > 20 kg for raising the operating unit	1	YDH04MS
Display stand for weigh cells with scale interval of 10 mg   100 mg for raising the operating unit	1	YDH03MS
Barcode and QR Reader with USB	1	YBR05
Foot switch for draft shield, tara, print	1	YFS02

**Accessories (continued)**

Hardware for Pipette Calibration (Analytical Balances)	Quantity	Cat. No.
Pipette calibration kit (hardware). Consists of moisture trap and all required adapters	1	YCP04MS
<b>Density Determination Kits</b>		
Density determination kit for solids and liquids for 0.1 and 0.01 mg weighing modules	1	YDK03MS
Density determination kit for solids and liquids for 1 mg weighing modules	1	YDK04MS
<b>Filter Pans, Ionizer and Weighing Scoops</b>		
Grid pan for model with a scale interval of 10 mg or 100 mg for weighing in laboratory hoods, safety weighing cabinets and workbenches, reduced wind attack surface of the weighing pan, replaces standard pan	1	YWP07MS
Anti-static weighing pan, 100 mm diameter, for weighing module for semi-micro balance and analytical balances with 0.1 mg or 0.01 mg scale interval	1	YWP04MS
Filter weighing pan made of titanium, diameter 52 mm, for ultra-micro and micro balances only together with F draft shield	1	YSH34
Filter weighing pan made of titanium, diameter 75 mm, for ultra-micro balance or micro balance models only together with F draft shield	1	YSH35
Safe-lock Tube Holder for reaction tubes up to 2 mL volume, for ultra-micro or micro balances only together with draft shield F	1	YSH13
Safe-lock Tube Holder for reaction tubes, up to 2 mL volume, for analytical balances	1	YSH15
Safe-lock Tube Holder for bigger reaction tubes up to 5 mL volume, for analytical balances	1	YSH19
Vial Holder for conical -, centrifuge-, round bottom- and test tubes up to 40 mL volume, for analytical balances	1	YSH23
Holder for titration vessels, round bottom flasks and test tubes with diameter up to 50 mm, for analytical balances	1	YSH37
Filter weighing pan made of titanium, diameter 90 mm, for ultra-micro balance or micro balance models only together with F draft shield	1	YSH36
Ionization blower for electrostatically charged samples	1	YIB01-ODR
Ionizer with U-shaped electrode for 230 V	1	YIB02-230V
Ionizer with U-shaped electrode for 115 V	1	YIB02-115V
Stat-Pen ionization pen for discharging electrostatically charged samples	1	YSTP01
Compact U-shaped ionizer for 230 V/115 V	1	YIB03-C
Aluminum weighing scoop, 4.5 mg for ultra-micro balance and micro balance models	250	6565-250
Aluminum weighing scoop, 52 mg for ultra-micro balance and micro balance models	50	6566-50
Weighing scoop made from chrome-nickel steel, L 90 mm × W 32 mm × H 8 mm	1	641214

## Accessories (continued)

Other Accessories	Quantity	Cat. No.
Display cable, 3 m, for separate installation of MCE or MCA display and weighing unit, installation by Sartorius Service or at the factory	1	YCC01-MCD3
Cable RS232 9-pin to M12 inlet for connecting Watson-Marlow pumps 530DuN and 630DuN, 2 m	1	YCC-D09M-M12F-2M
Cable RS232 9-pin (male) to 9-pin (male) for connecting e.g. Watson-Marlow 323Du pump, 2.9 m	1	YCC-D09MM-EC-2.9M
Cable DSUB25 DIO to USB for connecting e.g. signal light, 0.5 m	1	YCC01-MC05
Ethernet extension cable, 1 m	1	YCC-RJ45-CAT7
RS232C connection cable, 9 pin male to 9 pin female, 1.5 m	1	YCC-D09MF
Below-balance weighing hook for precision balances with scale interval of 100 mg   1 g and weighing capacity > 20 kg, not for verified models	1	69EA0040
Sartorius Wedge, software for data communication between the PC and balance	1	YSW02
Pipette calibration set micro balances	1	VF988
Signal light for displays MCE and MCA	1	VF4763
Connection cable for eBox 1.2 m   2.5 m	1	VF4755
Extension cable for climate tower 0.8 m	1	VF4756
Extension cable for motion sensor 0.8 m	1	VF4757
Connection cable for fermenter	1	VF4758
RS232 analog converter	1	VF4759
YRB11Z modified for Cubis® balances	1	VF4476
External battery pack	1	YRB11Z
<b>Weighing Tables</b>		
Made from synthetic stone, with vibration dampening	1	YWT03
Made from wood with synthetic stone	1	YWT09
Wall console	1	YWT04
<b>Climate Modules</b>		
Climate module, uncalibrated, for draft shield A and user interface MCA	1	YCM20MC
Calibration of a climate module YCM20MC with DAkkS calibration certificate	1	YCM20DAkkS
Climate module with DAkkS calibration certificate for draft shield A and user interface MCA	1	YCM20MC-DAkkS
Tower for climate module, for mounting YCM20MC; incl. climate module YCM20MC; can be ported to all Cubis® II weighing modules with user interface MCA	1	YCM20MC-Tower













## Accessories (continued)

For weighing modules 36S, 36P, 66S, 66P, 116S, 226S, 225S, 225P and 125S

Hardware options*	Quantity	Cat. No.
Ionizer & motorized draft shield license	1	QP10
Ionizer licence	1	QAPP1001
Motorized draft shield license	1	QAPP1002
<b>Inner Draft Shield</b>		
Motorized	1	YDS125A
Manual	1	YDS125U
Glass base, for height reduction of weighing compartment	1	YDSHR
<b>Outer Draft Shield</b>		
Left door outer draftshield	1	YCCDSL
Right door outer draftshield	1	YCCDSR
Cover slide outer draftshield	1	YCCDSU
Front panel outer draftshield	1	YCCDSF
<b>Displays and Input   Output Elements</b>		
Motion sensor with USB connection cable	1	YHS02USB
<b>Density Determination Kit</b>		
Density determination set for solids and liquids	1	YDK03MC
<b>Hardware for Pipette Calibration</b>		
Pipette calibration kit. Consists of moisture trap and all required adapters	1	YCP07MC
<b>Titanium Weighing Pans &amp; Sample Holders</b>		
90 mm weighing pan, slotted	1	YWP10-3
50 mm weighing pan, slotted, with protective plate for 50 mm	1	YWP09-3
Adjustable sample holder for vessels of up to 50 mL	1	YSH02-3
For coronary stents (up to 38 mm)	1	YSH12-3
For save-lock tubes, 1.5 mL – 2 mL	1	YSH14-3
For save-lock tubes up to 5 mL	1	YSH18-3
For vials	1	YSH22-3
For weighing boats	1	YSH26-3
For filters, 150 mm diameter	1	YSH30-3
For filters up to 75 mm	1	YSH35-3
For titration vessels and round bottom flasks	1	YSH47-3
For syringes, vertical	1	YSH46-3
<b>Other Accessories</b>		
Connection cable for operating display, length 3 m	1	YCC01-MCD3-3
Dust cover Cubis® II MCE ultra-high resolution	1	YDCC2MCE
Dust cover Cubis® II MCA ultra-high resolution	1	YDCC2MCA
Cleaning Kit	1	YCK01MC

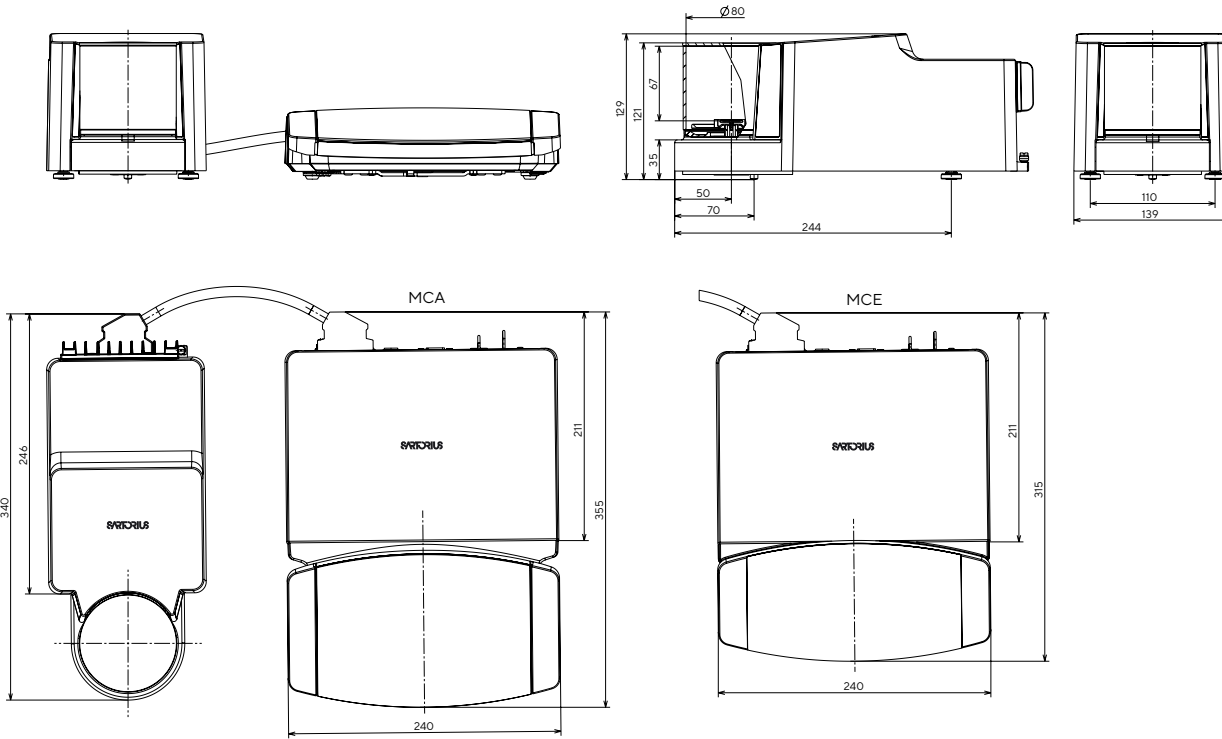
\*After purchase licensing of hardware options for high-capacity micro and semi-micro balances with MCA Display only

## Accessories (continued)

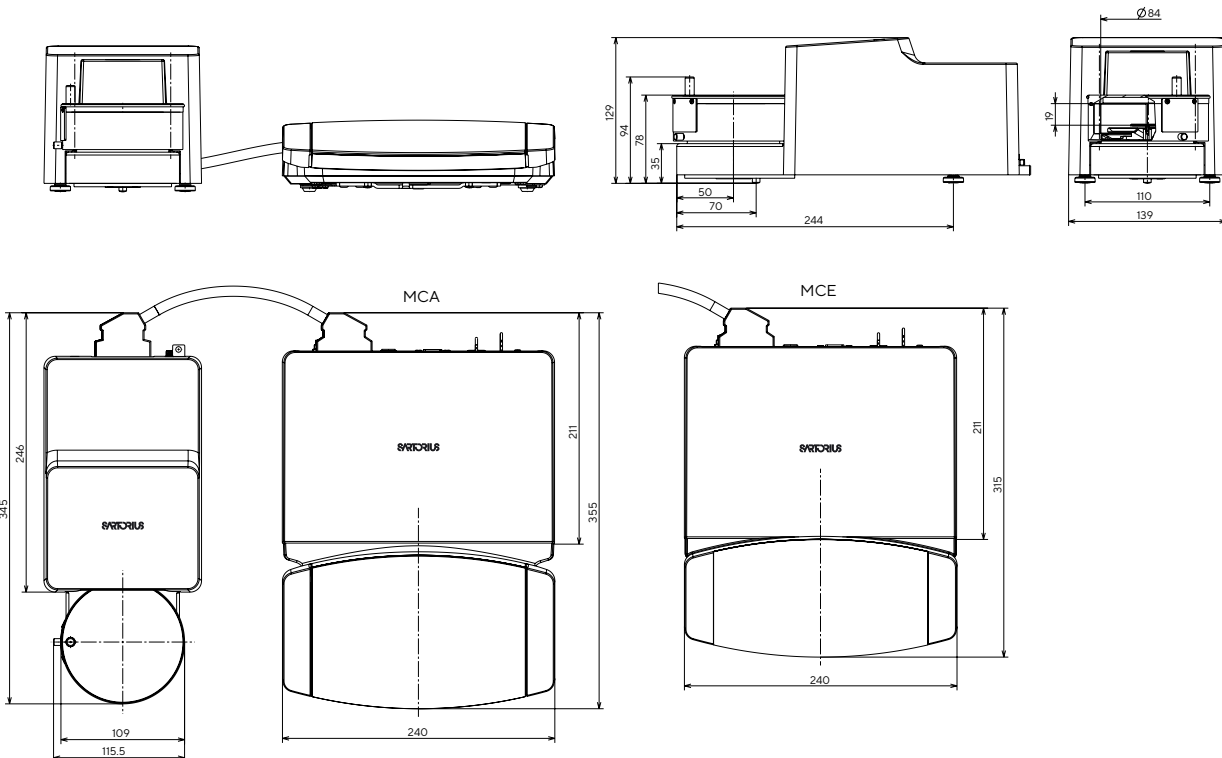
Sample Holders Made of Titanium		Quantity	Cat. No.	Balance type
Adjustable sample holder for vessels of up to 50 mL		1	YSH02-3	High capacity micro and semi-micro
For coronary stents (up to 38 mm)		1	YSH12-3	High capacity micro and semi-micro
			YSH10	Ultra-micro and micro
For save-lock tubes, 1.5 mL – 2 mL		1	YSH14-3	High capacity micro and semi-micro
			YSH13	Ultra-micro and micro
			YSH15	Analytical and weighing module 125P
For save-lock tubes up to 5 mL		1	YSH18-3	High capacity micro and semi-micro
			YSH19	Analytical and weighing module 125P
For vials		1	YSH22-3	High capacity micro and semi-micro
			YSH23	Analytical and weighing module 125P
For weighing boats		1	YSH26-3	High capacity micro and semi-micro
			YSH26	Analytical and weighing module 125P
For filters, 150 mm diameter		1	YSH30-3	High capacity micro and semi-micro
			YSH30	Analytical and weighing module 125P
For filters up to 75 mm		1	YSH35-3	High capacity micro and semi-micro
For filters up to 50 mm			YSH35	Ultra-micro and micro
			YSH34	Ultra-micro and micro
For filters up to 90 mm			YSH34	Ultra-micro and micro
For titration vessels and round bottom flasks		1	YSH47-3	High capacity micro and semi-micro
				Analytical and weighing module 125P
For syringes, vertical		1	YSH46-3	High capacity micro and semi-micro
			YSH46	Analytical and weighing module 125P

# Balance Dimensions

Ultra-Micro and Micro Balance | All dimensions are given in millimeters



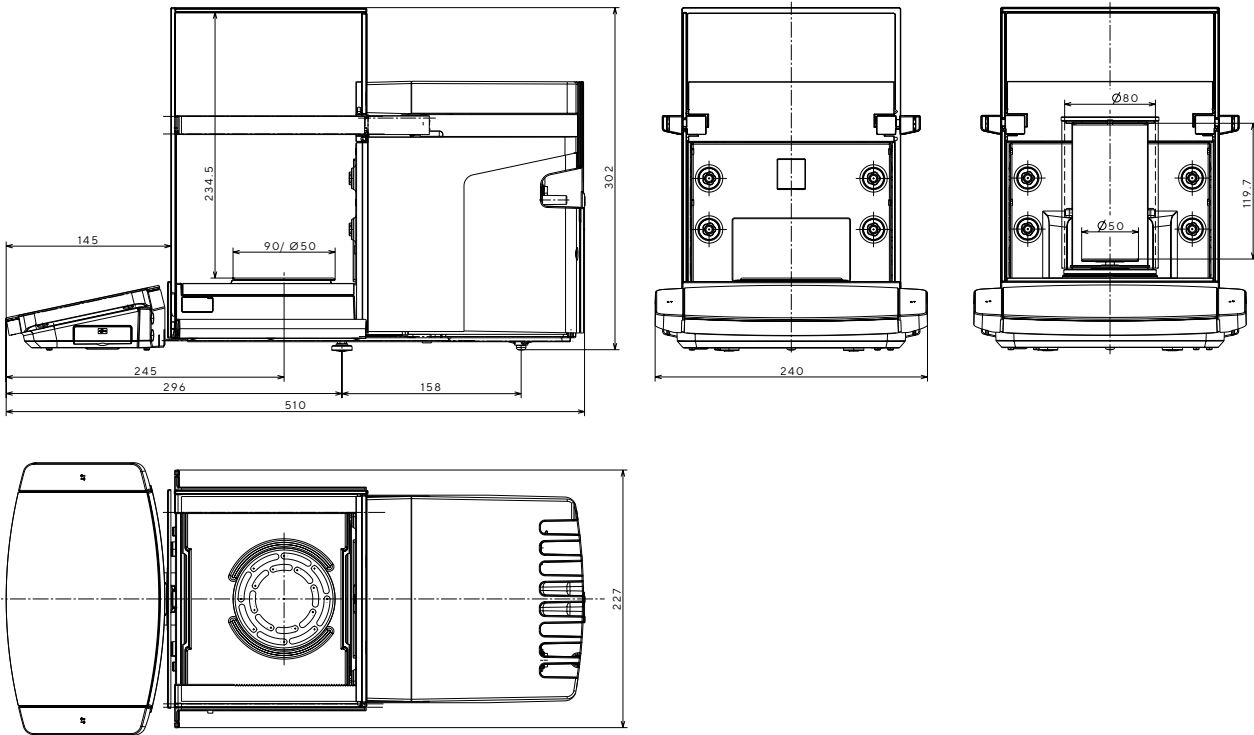
Ultra-Micro and Micro Filter Balance | All dimensions are given in millimeters



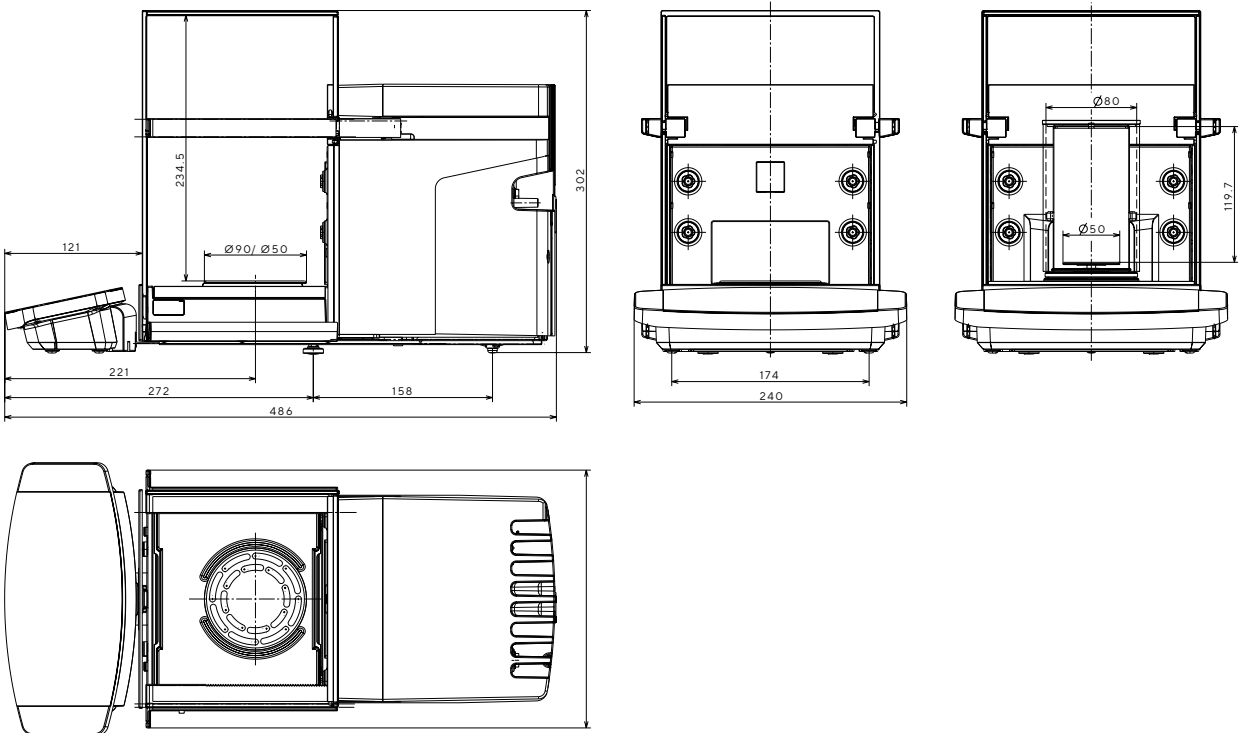


**High Capacity and Semi-Micro Balances** | All dimensions are given in millimeters  
 Weighing modules 36S, 36P, 66S, 66P, 116S, 226S, 225S, 225P and 125S

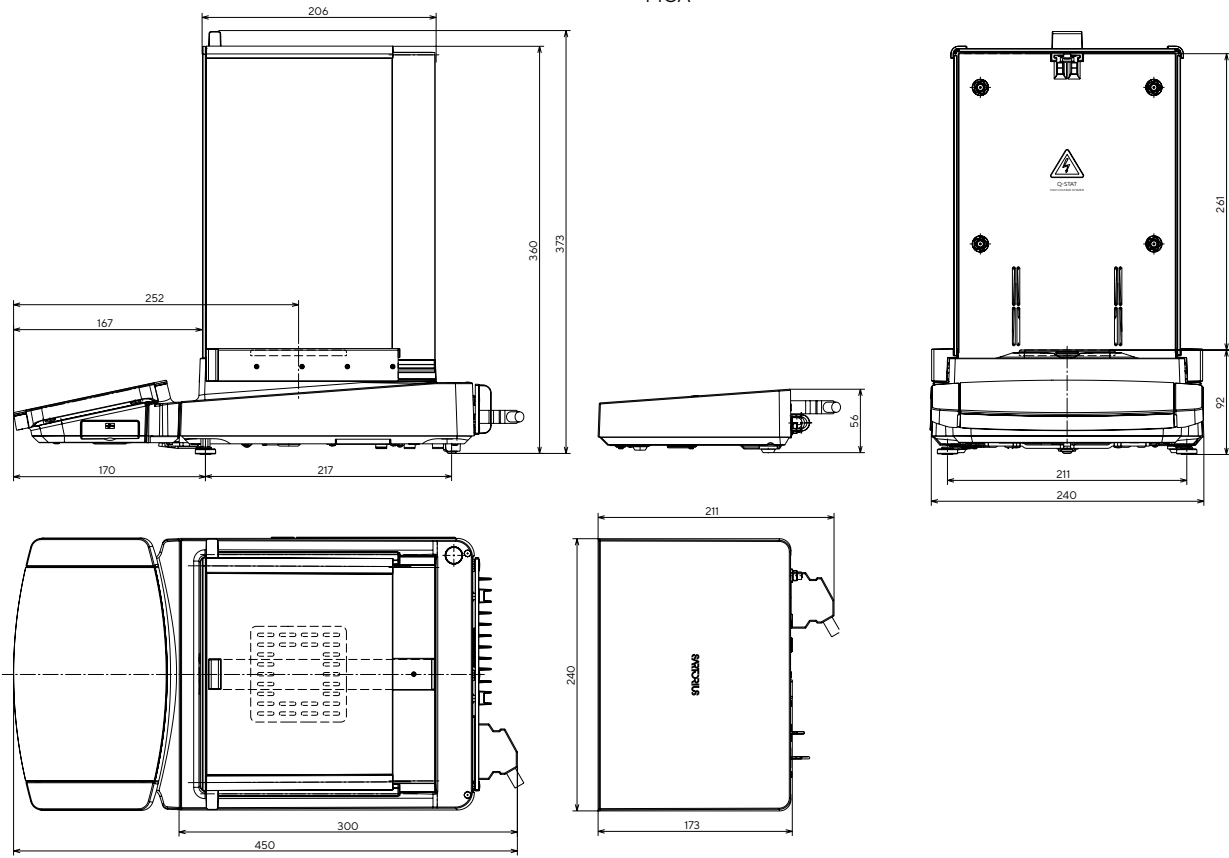
MCA



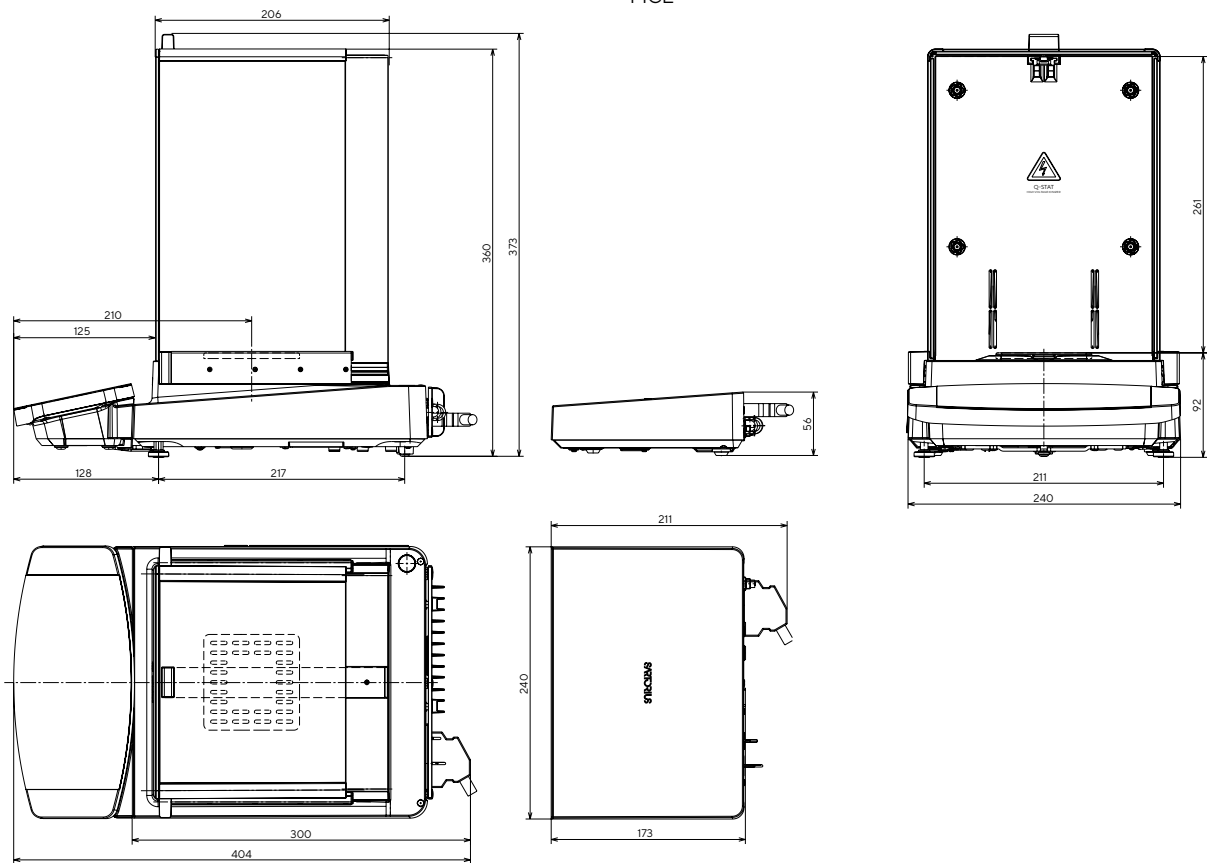
MCE



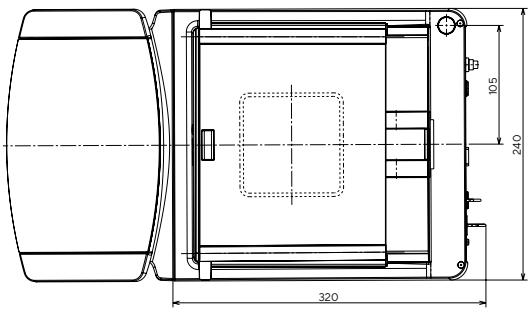
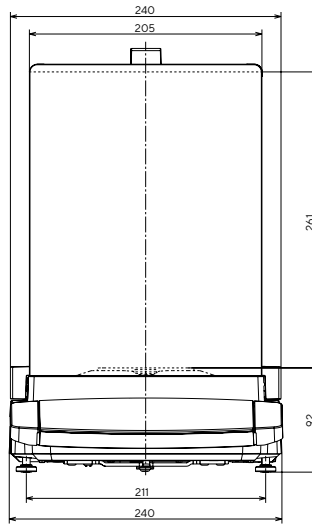
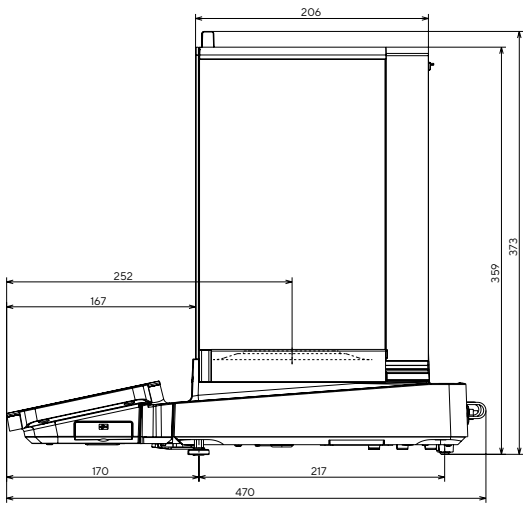
MCA



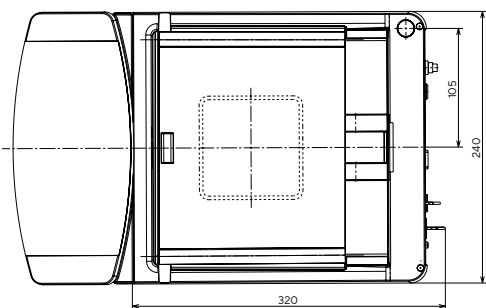
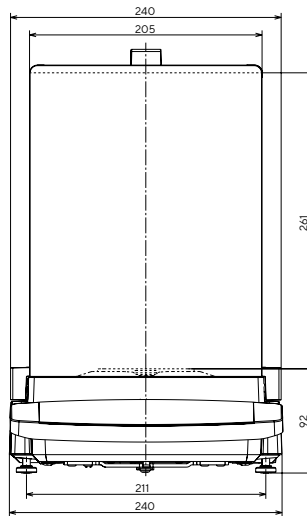
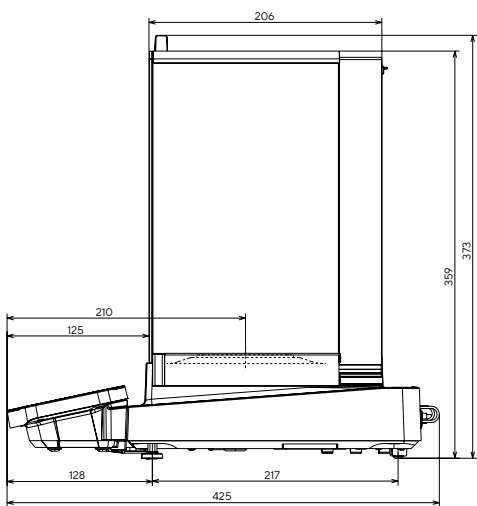
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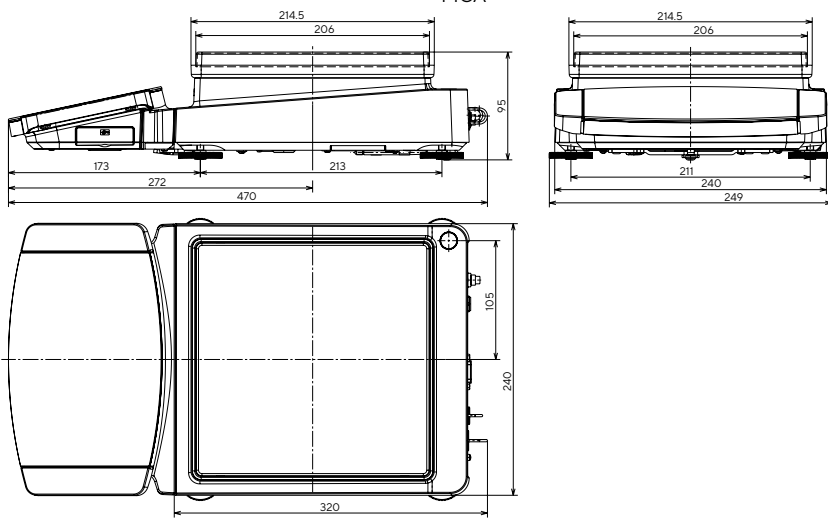
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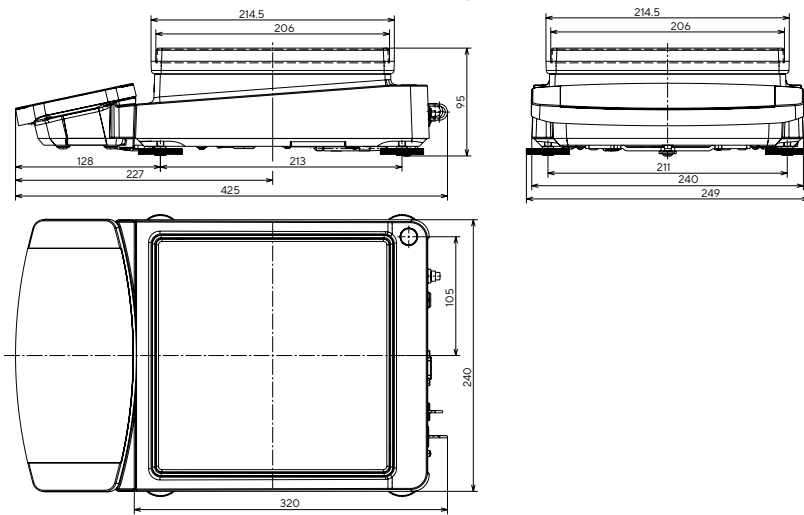
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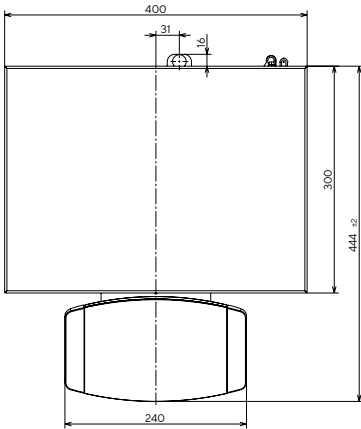
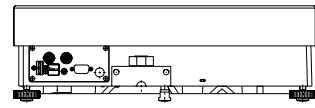
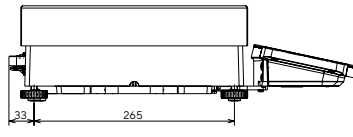
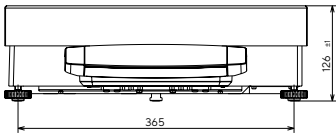
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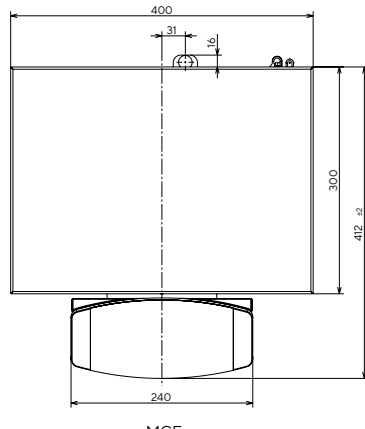
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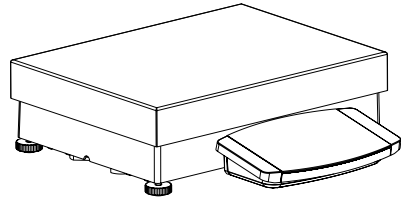
High-Capacity Balance | All dimensions are given in millimeters



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For further contacts, visit  
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