

# Entris® II Advanced Line



## Benefits

- 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

## Product Information

No matter what you are weighing, the new Entris® II balance is always the right choice. Offering unrivalled value and backed by almost 150 years of German engineering expertise, the Entris® II comes in two product lines, so you can find the balance that meets your specific weighing needs.

Our Entris® II Advanced line gives additional value to the Entris II portfolio, with over 38 models offering benefits such as real-time level support, integrated protection systems, Cal Audit Trail, a graphic touch display and 13 built-in application programs.

# Technical Specifications

## General Technical Data

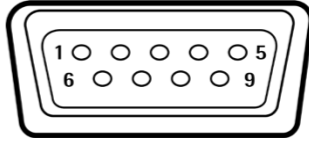
Ambient Conditions		Value
Installation site	For indoor use only, max. height above sea level	3000 m
Temperature	Environment (metrological data)* Environment Storage and transport	+10 - +30° C +5 - +40° C -10 - +60° C
Relative humidity**	At temperatures up to 31° C, non-condensing, then linear decrease from max. 80% at 31° C to max. 50% at 40° C	15 - 80%
No heat from heating systems or direct sunlight		
No electromagnetic fields		
Power Supply Device		Value
Input voltage		15 V <sub>DC</sub> (±10%)
Power consumption, max		4 W
Only by Sartorius power supply unit YEPS01-15V0W with interchangeable country-specific plug-in AC adaptors		
Power Supply Unit		Value
Type: Sartorius power supply unit YEPS01-15V0W		
Primary	Voltage	100 - 240 V <sub>AC</sub> (±10%)
	Frequency	50 - 60 Hz
	Current consumption, maximum	0.2 A
Secondary	Voltage	15 V <sub>DC</sub> (±5%)
	Current, maximum	0.53 A
Short-circuit protection		Electronic
Protection class according to IEC 60950-1		II
Pollution level according to IEC 61010-1		2
Overvoltage category according to IEC 60664-1		II
Other data: See label on the power supply unit		
Electromagnetic Compatibility		
Interference resistance: Suitable for use in industrial areas		
Transient emissions	Class B Suitable for use in residential areas and areas that are connected to a low voltage network that also supplies residential buildings	
Materials		
Housing	Polybutylene terephthalate (PBT)	
Control module	Glass	
Draft shield	Glass   polybutylene terephthalate (PBT)	
Weighing pan	Stainless steel	
Warm-up Time		Value
Device, approx		2 h

\* For conformity-assessed (verified) balances in accordance with EU requirements, refer to the information on the balance.

\*\* For conformity-assessed (verified) balances in accordance with EU requirements, the legal regulations apply.

## Interfaces

### Specifications of the RS232 Interface

Type of interface	Serial interface		
Interface operation	Full duplex		
Level	RS232		
Connection	D-sub connector, 9-pin		
Maximum cable length	10 m		
Pin assignment			
	Pin 1: Not assigned	Pin 6: Not assigned	
	Pin 2: Data output (TxD)	Pin 7: Clear to Send (CTS)	
	Pin 3: Data input (RxD)	Pin 8: Request to Send (RTS)	
	Pin 4: Not assigned	Pin 9: Universal key	
	Pin 5: Internal ground		

### Specifications for the USB-C Interface

Communication	USB UTL
Connectable devices	Sartorius printers, Sartorius second display, FTDI cable or USB memory stick

### Specifications for the PC-USB Interface

Communication	USB Device
Connectable devices	PC

## Calibration

Internal calibration isoCAL (models with marking i-1x)

External calibration

## Selectable Weight Units\*

Gram, kilogram, carat, pound, ounce, troy ounce, Hong Kong tael, Singapore tael, Taiwan tael, grain, pennyweights, milligram, parts per pound, China tael, mommes, Austrian carat, tola, baht, mesghal and Newton

## Display

Intuitive graphic touch technology

## Built-in Applications

- Weighing | Dosing
- Counting
- Percentage weighing
- Mixing | Net total
- Components | Totalizing
- Animal weighing
- Calculation | Free factor
- Density determination
- Underfloor weighing feature for bigger samples
- Statistics
- Peakhold
- Checkweighing
- Mass unit conversion
- Pipette smart test

## Languages

English, German, France, Italian, Spanish, Portuguese, Russian, Polish, Chinese, Japanese, Korean, Turkish, Hungarian

## Protection

- Chemical resistant housing parts
- Glass parts of the draft shield are coated to reduce electrostatic influences
- Display foil (available as accessory)
- Dust cover for balances (also available as accessory)

## Anti-theft Lock

Kensington lock and lockdown capability for cable or chain

\* The availability of units depends on national legislation and is therefore country-specific.

# Models with Internal Adjustment Feature

Model	Unit	324i-1x <sup>1</sup>	224i-1x <sup>1</sup>	124i-1x <sup>1</sup>	64i-1x <sup>1</sup>	1203i-1x <sup>1</sup>	623i-1x <sup>1</sup>	423i-1x <sup>1</sup>	323i-1x <sup>1</sup>	223i-1x <sup>1</sup>	6202i-1x <sup>1</sup>	4202i-1x <sup>1</sup>	3202i-1x <sup>1</sup>	2202i-1x <sup>1</sup>	1202i-1x <sup>1</sup>	822i-1x <sup>1</sup>	12201i-1x <sup>1</sup>	10201i-1x <sup>1</sup>	8201i-1x <sup>1</sup>	5201i-1x <sup>1</sup>	2201i-1x <sup>1</sup>
Readability   Scale interval (d)	mg	0.1	0.1	0.1	0.1	1	1	1	1	1	10	10	10	10	10	10	100	100	100	100	100
Maximum capacity (Max)	g	320	220	120	60	1,200	620	420	320	220	6,200	4,200	3,200	2,200	1,200	820	12,200	10,200	8,200	5,200	2,200
Weighing system		EMC	EMC	EMC	EMC	EMC	EMC	EMC	EMC	EMC	EMC	EMC	EMC	EMC	EMC	EMC	EMC	EMC	EMC	EMC	EMC
<b>Repeatability</b>																					
At 5% load, typical value	± mg	0.08	0.08	0.08	0.08	0.5	0.5	0.5	0.5	0.5	5	5	5	5	5	5	50	50	50	50	50
At approx. maximum load, typical value	± mg	0.1	0.1	0.1	0.1	1	1	1	1	1	10	10	10	10	10	10	100	100	100	50	50
<b>Linearity deviation</b>																					
Limits	± mg	0.3	0.2	0.2	0.2	2	2	2	2	2	20	20	20	20	20	20	100	100	100	100	100
Typical value	± mg	0.06	0.06	0.06	0.06	0.6	0.6	0.6	0.6	0.6	6	6	6	6	6	6	60	60	60	60	60
Sensitivity drift between +10° C and +30° C	± ppm/K	1	1	1	1	1.5	2	2	2	2	2	2	2	2	2	2	4	4	4	2	2
Tare maximum capacity (subtractive)		<100% of maximum capacity										<100% of maximum capacity									
<b>isoCAL (only for i-1x models):</b>																					
Temperature change	K	1.5	1.5	1.5	1.5	1.5	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Time interval	h	4	4	4	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
<b>For models with approval:</b>																					
Accuracy class		I	I	I	I	I	II	II	II	II	II	II	II	II	II	II	II	II	II	II	II
Type		BC-AA	BC-AB	BC-AB	BC-AB	BC-AC	BC-AD	BC-AD	BC-AD	BC-AD	BC-AE	BC-AE	BC-AE	BC-AE	BC-AE	BC-AE	BC-AG	BC-AG	BC-AG	BC-AE	BC-AE
Verification scale interval (e)	mg	1	1	1	1	10	10	10	10	10	100	100	100	100	100	100	1,000	1,000	1,000	100	100
Minimum load (Min)	mg	10	10	10	10	100	20	20	20	20	500	500	500	500	500	500	5,000	5,000	5,000	5,000	5,000
<b>Minimum initial weighing according to USP (United States Pharmacopeia), Chap. 41</b>																					
Optimum minimum initial weighing	g	0.082	0.082	0.082	0.082	0.82	0.82	0.82	0.82	0.82	8.2	8.2	8.2	8.2	8.2	8.2	82	82	82	82	82
Typical minimum initial weighing	g	0.16	0.16	0.16	0.16	1	1	1	1	1	10	10	10	10	10	10	100	100	100	100	100
Typical measurement time	s	≤2.0	≤2.0	≤2.0	≤2.0	≤1.5	≤1.5	≤1.5	≤1.5	≤1.5	≤1.0	≤1.0	≤1.0	≤1.0	≤1.0	≤1.0	≤1.0	≤1.0	≤1.0	≤1.0	≤1.0
Typical stabilization time	s	≤1.5	≤1.5	≤1.5	≤1.5	≤1.0	≤1.0	≤1.0	≤1.0	≤1.0	≤0.9	≤0.9	≤0.9	≤0.9	≤0.9	≤0.9	≤0.9	≤0.9	≤0.9	≤0.9	≤0.9
<b>Recommended calibration weight</b>																					
External calibrated test weight	g	200	200	100	50	1,000	500	200	200	200	5,000	2,000	2,000	2,000	1,000	500	10,000	10,000	5,000	5,000	2,000
Accuracy class in accordance with OIML R111-1		E2	E2	E2	E2	E2	F1	F1	F1	F1	F1	F1	F1	F1	F1	F2	F2	F2	F2	F2	F2
Weighing pan size	mm	∅ 90	∅ 90	∅ 90	∅ 90	∅ 120	∅ 120	∅ 120	∅ 120	∅ 120	182 x 182	182 x 182	182 x 182	182 x 182	182 x 182	182 x 182	182 x 182	182 x 182	182 x 182	182 x 182	182 x 182
Weighing chamber height*	mm	240	240	240	240	240	240	240	240	240	-	-	-	-	-	-	-	-	-	-	-
Net weight, approx.	kg	6.20	6.20	6.20	6.20	6.30	6.30	6.30	6.30	6.30	6.20	6.20	6.20	6.20	6.20	6.20	6.20	6.20	6.20	6.20	6.20
Gross weight, approx.	kg	8.00	8.00	8.00	8.00	8.10	8.10	8.10	8.10	8.10	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00

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

<sup>1</sup> Country-specific marking in model:

x = S: Standard balances without country-specific additions  
 x = SAR: Standard balances with country-specific additions for Argentina  
 x = SJP: Standard balances with country-specific additions for Japan  
 x = SKR: Standard balances with country-specific additions for South Korea  
 x = CCN: Balances with approval for China  
 x = CEU: Conformity-assessed balances with EU type examination certificate without country-specific additions

x = CFR: Conformity-assessed balances with EU type examination certificate only for France  
 x = OBR: Balances with approval for Brazil  
 x = OIN: Balances with approval for India  
 x = OJP: Balances with approval for Japan  
 x = ORU: Balances with approval for Russia

# Models without Internal Adjustment Feature, without Approval

Model BCA	Unit	224-1x <sup>1</sup>	124-1x <sup>1</sup>	64-1x <sup>1</sup>	623-1x <sup>1</sup>	423-1x <sup>1</sup>	323-1x <sup>1</sup>	223-1x <sup>1</sup>	6202-1x <sup>1</sup>	4202-1x <sup>1</sup>	3202-1x <sup>1</sup>	2202-1x <sup>1</sup>	1202-1x <sup>1</sup>	822-1x <sup>1</sup>	12201-1x <sup>1</sup>	10201-1x <sup>1</sup>	8201-1x <sup>1</sup>	5201-1x <sup>1</sup>	2201-1x <sup>1</sup>	
Readability   Scale interval (d)	mg	0.1	0.1	0.1	1	1	1	1	10	10	10	10	10	10	100	100	100	100	100	
Maximum capacity (Max)	g	220	120	60	620	420	320	220	6,200	4,200	3,200	2,200	1,200	820	12,200	10,200	8,200	5,200	2,200	
Weighing system		EMC	EMC	EMC	EMC	EMC	EMC	EMC	EMC	EMC	EMC	Strain gauge	Strain gauge	Strain gauge	EMC	EMC	Strain gauge	Strain gauge	Strain gauge	
<b>Repeatability</b>																				
At 5% load, typical value	± mg	0.08	0.08	0.08	0.5	0.5	0.5	0.5	5	5	5	5	5	5	50	50	50	50	50	
At approx. maximum load, typical value	± mg	0.1	0.1	0.1	1	1	1	1	10	10	10	10	10	10	100	100	100	100	100	
<b>Linearity deviation</b>																				
Limits	± mg	0.2	0.2	0.2	2	2	2	2	20	20	20	20	20	20	100	100	300	300	300	
Typical value	± mg	0.06	0.06	0.06	0.6	0.6	0.6	0.6	6	6	6	6	6	6	60	60	100	100	100	
Sensitivity drift between +10° C and +30° C	± ppm/K	1	1	1	2	2	2	2	2	2	2	3.5	3.5	3.5	4	4	7	7	7	
Tare maximum capacity (subtractive)		<100% of maximum capacity													<100% of maximum capacity					
<b>isoCAL (only for i-1x models):</b>																				
Temperature change	K	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Time interval	h	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<b>For models with approval:</b>																				
Accuracy class		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Type		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Verification scale interval (e)	mg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Minimum load (Min)	mg	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<b>Minimum initial weighing according to USP (United States Pharmacopeia), Chap. 41</b>																				
Optimum minimum initial weighing	g	0.082	0.082	0.082	0.82	0.82	0.82	0.82	8.2	8.2	8.2	8.2	8.2	8.2	82	82	82	82	82	
Typical minimum initial weighing	g	0.16	0.16	0.16	1	1	1	1	10	10	10	10	10	10	100	100	100	100	100	
Typical measurement time	s	≤2.0	≤2.0	≤2.0	≤1.5	≤1.5	≤1.5	≤1.5	≤1.0	≤1.0	≤1.0	≤1.0	≤1.0	≤1.0	≤1.0	≤1.0	≤1.0	≤1.0	≤1.0	
Typical stabilization time	s	≤1.5	≤1.5	≤1.5	≤1.0	≤1.0	≤1.0	≤1.0	≤0.9	≤0.9	≤0.9	≤0.9	≤0.9	≤0.9	≤0.9	≤0.9	≤0.9	≤0.9	≤0.9	
<b>Recommended calibration weight</b>																				
External calibrated test weight	g	200	100	50	500	200	200	200	5,000	2,000	2,000	2,000	1,000	500	10,000	10,000	5,000	5,000	2,000	
Accuracy class in accordance with OIML R111-1		E2	E2	E2	F1	F1	F1	F1	F1	F1	F1	F1	F1	F2	F2	F2	F2	F2	F2	
Weighing pan size	mm	Ø 90	Ø 90	Ø 90	Ø 120	Ø 120	Ø 120	Ø 120	182 x 182	182 x 182	182 x 182	182 x 182	182 x 182	182 x 182	182 x 182	182 x 182	182 x 182	182 x 182	182 x 182	
Weighing chamber height*	mm	240	240	240	240	240	240	240	-	-	-	-	-	-	-	-	-	-	-	
Net weight, approx.	kg	5.90	5.90	5.90	5.90	5.90	5.90	5.90	4.60	4.60	4.60	4.30	4.30	4.30	4.60	4.60	4.30	4.30	4.30	
Gross weight, approx.	kg	7.70	7.70	7.70	7.70	7.70	7.70	7.70	5.10	5.10	5.10	5.10	5.10	5.10	5.10	5.10	5.10	5.10	5.10	

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

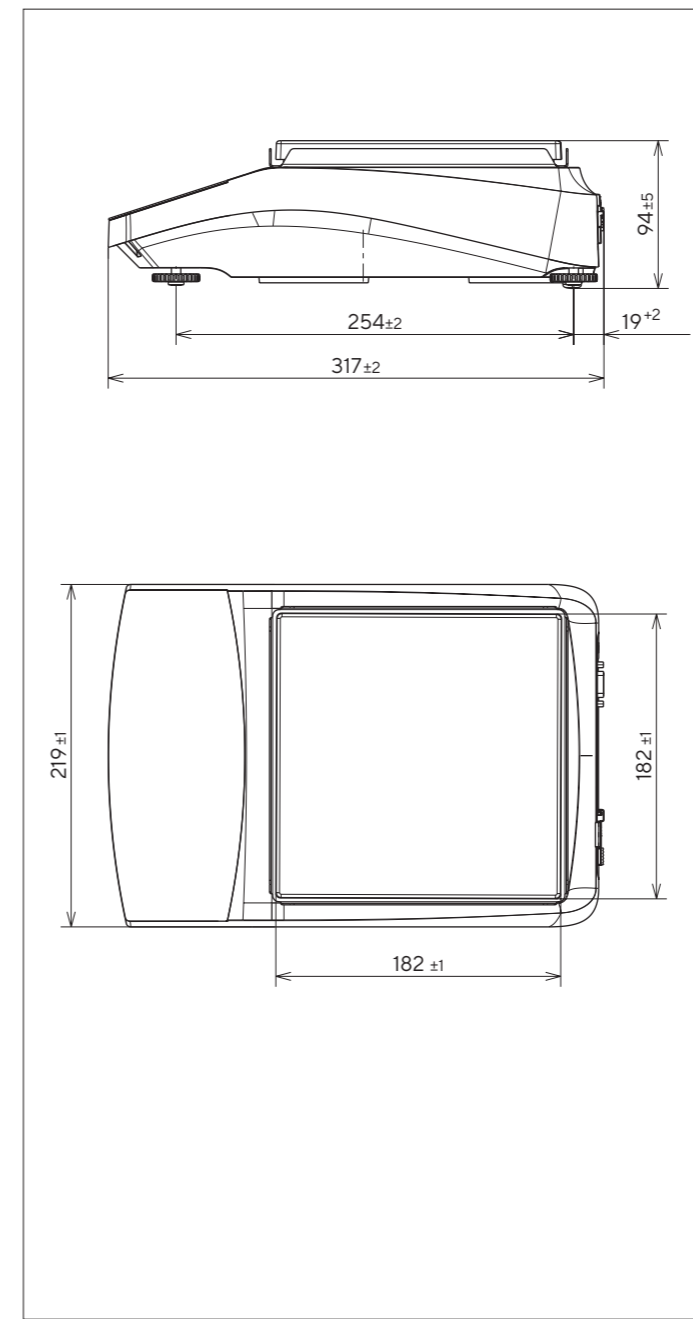
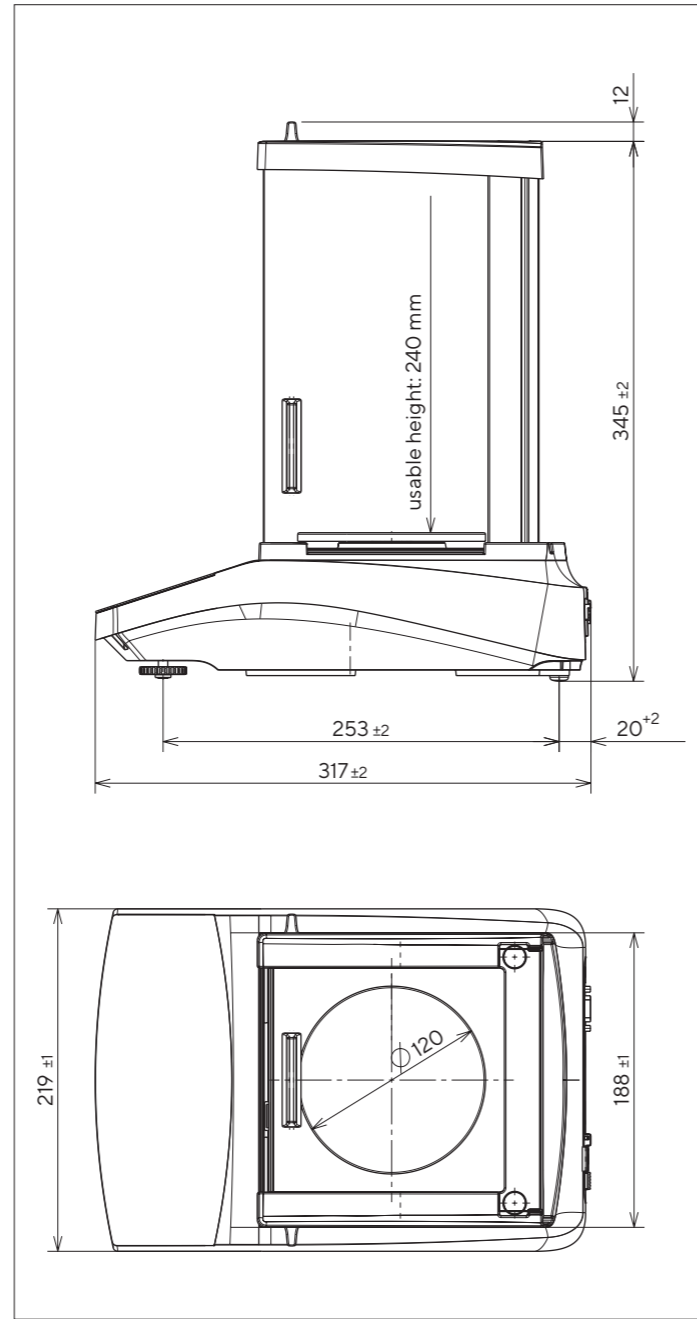
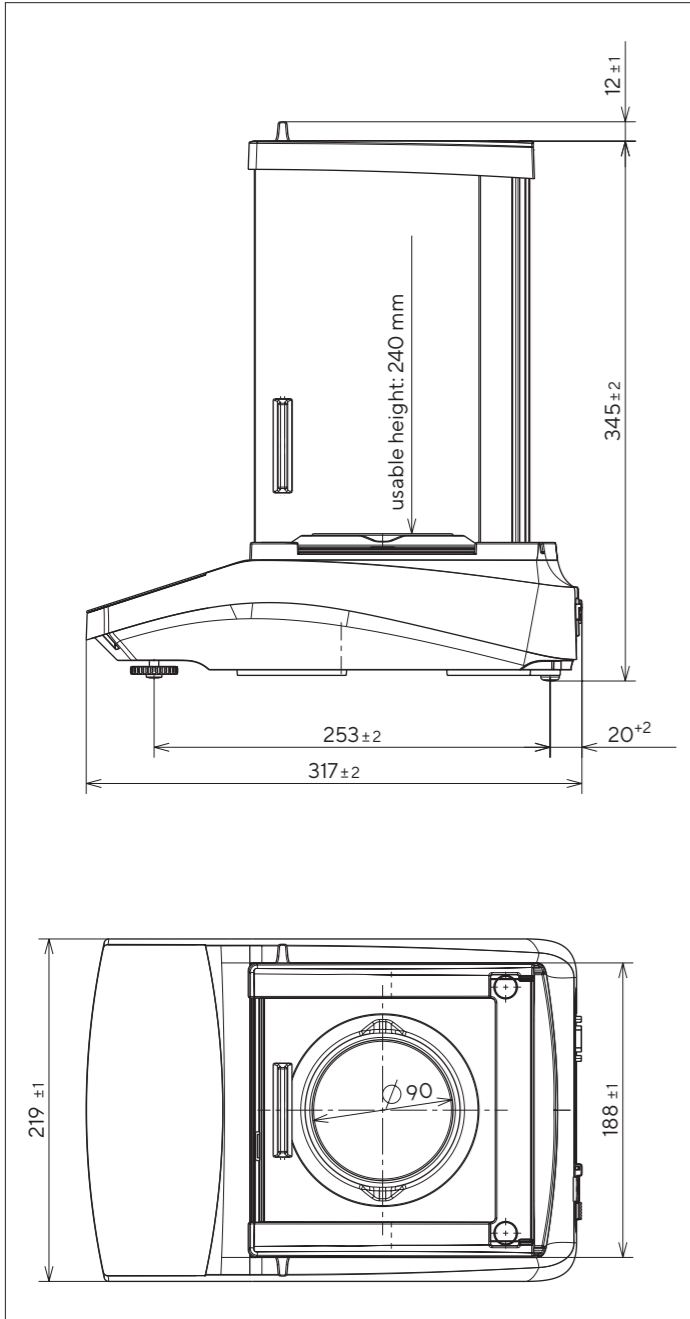
<sup>1</sup> Country-specific marking in model:  
x = S: Standard balances without country-specific additions  
x = SAR: Standard balances with country-specific additions for Argentina  
x = SJP: Standard balances with country-specific additions for Japan  
x = SKR: Standard balances with country-specific additions for South Korea

# Technical Drawings

Models with a readability of 0.1 mg  
All dimensions are given in millimeters

Models with a readability of 1 mg  
All dimensions are given in millimeters

Models with a readability of  $\geq 10$  mg  
All dimensions are given in millimeters



# Accessories

These tables contain an excerpt of the accessories that can be ordered. For information on other products, contact Sartorius.

## Balance Accessories

Item	Quantity	Order number
Display protection film (set of 5)	1	YDC10
Dust cover for balances with an analytical draft shield	1	6960BC01
Dust cover for balances with rectangular weighing pan	1	YDC30
In-use cover (set of 5)	1	YIC01
Density determination set for solids and liquids for balances with a readability of 0.1 mg   1 mg	1	YDK03
"Kensington Lock" anti-theft device	1	YKL01
Pedal button   foot switch	1	YFS03
Second display   remote display	1	YSD01
Below-balance weighing (not for models in legal metrology)		
Hook M5	1	69EA0039
Weighing table		
Made from wood with natural stone	1	YWT09
Made from natural stone, with vibration dampening	1	YWT03
Wall console made from natural stone	1	YWT04
Converter cable 5 V <sub>DC</sub> > 15 V <sub>DC</sub>	1	YCC-5V-15V

## Printer and Accessories for Data Communication

Item	Quantity	Order number
Thermal printer (USB-B)	1	YDP40
Thermal transfer printer (USB-B, RS232)	1	YDP30
Dot matrix printer (RS232)*	1	YDP20-OCE
Data cable USB-C > USB-B (>YDP30, YDP40)	1.5 m	YCC-USB-C-B
Data cable USB-C > USB-A (>PC)	1.5 m	YCC-USB-C-A
Data cable RS232 (9-pin) > USB-A (>PC)	1.5 m	YCC-D09M-USB-A
Data cable RS232 (9-pin) male > RS232 (9-pin) male (>YDP30)	1.5 m	YCC-D09MM
Data cable RS232 (9-pin) male > RS232 (9-pin) female (>YDP20-OCE, YSD01)	1.5 m	YCC-D09MF
Y-adapter RS232 (9-pin) male > 2x RS232 (9-pin) female	1.5 m	YCC-D09M-2D09F

\*additional power supply e.g. YEPS01-PS4 or YEPS01-PS5 is required

## External Calibration and Adjustment Weights

BCA model	Weight	Accuracy class	Order number
324   224	200 g	E2	YCW522-AC-02
124	100 g	E2	YCW512-AC-02
64	50 g	E2	YCW452-AC-02
1203	1,000 g	E2	YCW612-AC-02
623	500 g	F1	YCW553-AC-02
423   323   223	200 g	F1	YCW523-AC-02
6202	5,000 g	F1	YCW653-AC-02
4202   3202   2202	2,000 g	F1	YCW623-AC-02
1202	1,000 g	F1	YCW613-AC-02
822	500 g	F2	YCW554-AC-02
12201   10201	10,000 g	F2	YCW714-AC-02
8201   5201	5,000 g	F2	YCW654-AC-02
2201	2,000 g	F2	YCW624-AC-02

## Sales and Service Contacts

For further contacts, visit  
[www.sartorius.com](http://www.sartorius.com)

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