

# AS X2 PLUS Analytical Balances

Innovative design and system solutions for advanced-class products



AS X2 PLUS, d = 0,01 mg



AS X2 PLUS, d = 0,1 mg



Communication interfaces



5" colour touch screen with customized keys layout

## Functions

- |                |                  |                       |                            |                                |
|----------------|------------------|-----------------------|----------------------------|--------------------------------|
| Parts counting | Percent weighing | Density determination | GLP procedures             | Ambient conditions measurement |
| Dosing         | Statistics       | Under hook weighing   | Proximity sensors          | Replaceable unit               |
| Checkweighing  | Animal weighing  | Peak hold             | Cooperation with titrators | Multilingual menu              |
| Formulations   | Autotest         |                       |                            |                                |

## Features

### Ergonomic Mechanical Design

Spacious weighing chamber and large open-door clearance allow easy access to the weighing pan and facilitate use of laboratory glassware of various sizes and dimensions. Improved aluminium base of the balance guarantees stability of the weighing system. DUAL-CLICK system facilitates tool-free disassembly and assembly of the weighing chamber. Locating the USB interface at the balance front makes it easier to communicate with peripherals

### LevelSENSING System

The in-built sensors measure tilt and display graphic message on the weighing device screen. Levelling system facilitates adjustment, controls the level state, and informs about level deviations, all this in accordance with GLP and GMP.

### SMARTLab

AS X2 PLUS balances feature numerous functions supporting and supervising mass measurement in laboratory, facilitating operation and limiting the risk of „human factor“ errors, e.g. automatic adjustment, data control, ALIBI memory, automatic reports and ambient conditions monitoring

### Antistatic Weighing Chamber

Weighing chamber panes feature antistatic coating compensating electrostatic charges on the sample and accessories used for mass measurement.

\*Antistatic coating has been applied in balances with the readability of d=0.01mg

### Display Customization

Functions displayed on the colour 5" touch screen can be customized to suit carried out process and user's needs. Flexible configuration of buttons, labels and text fields is also a great advantage.

### Kensington Lock

AS X2 PLUS balances are equipped with Kensington Lock, which allows to secure the device against theft.

## Technical Specifications

	AS 60/220.X2 PLUS	AS 62.X2 PLUS	AS 82/220.X2 PLUS	AS 120.X2 PLUS
<b>Maximum capacity [Max]</b>	60 g / 220 g	62 g	82 g / 220 g	120 g
<b>Minimum load</b>	1 mg	1 mg	1 mg	1 mg
<b>Readability [d]</b>	0.01 mg / 0.1 mg	0.01 mg	0.01 mg / 0.1 mg	0,01 mg
<b>Verification scale interval [e]</b>	1 mg	1 mg	1 mg	1 mg
<b>Tare range</b>	-220 g	-62 g	-220 g	-120 g
<b>Standard values</b>				
<b>Repeatability(5% Max)*</b>	0.012 mg	0,01 mg	0.012 mg	0.012 mg
<b>Repeatability(Max)*</b>	0.07 mg	0.017 mg	0.07 mg	0.03 mg
<b>Minimum weight (USP)</b>	24 mg	20 mg	24 mg	24 mg
<b>Minimum weight (U=1%, k=2)</b>	2.4 mg	2.0 mg	2.4 mg	2.4 mg
<b>Permissible values</b>				
<b>Repeatability(5% Max)*</b>	0.02 mg	0.018 mg	0.02 mg	0.02 mg
<b>Repeatability(Max)*</b>	0.1 mg	0.03 mg	0.1 mg	0.05 mg
<b>Linearity</b>	± 0.05 mg / ±0.2 mg	± 0.05 mg	± 0.05 mg / ±0.2 mg	± 0,05 mg
<b>Stabilization time***</b>	2 s	2 s	2 s	2 s
<b>Adjustment</b>	internal	internal	internal	internal
<b>Verification</b>	Yes	Yes	Yes	Yes
<b>OIML Class</b>	I	I	I	I
<b>Display</b>	5" capacitive colour touch screen	5" capacitive colour touch screen	5" capacitive colour touch screen	5" capacitive colour touch screen
<b>Keypad</b>	6 keys	6 keys	6 keys	6 keys
<b>Protection class</b>	IP 43	IP 43	IP 43	IP 43
<b>Databases</b>	7	7	7	7
<b>Touch-free operation</b>	2 programmable proximity sensors	2 programmable proximity sensors	2 programmable proximity sensors	2 programmable proximity sensors
<b>USB-A (interchangeable)</b>	2	2	2	2
<b>USB-B</b>	1	1	1	1
<b>RS 232</b>	1	1	1	1
<b>DB9</b>	Tare and Print External Buttons	Tare and Print External Buttons	Tare and Print External Buttons	Tare and Print External Buttons
<b>Wi-Fi®</b>	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n
<b>Ethernet</b>	10 / 100 Mbit	10 / 100 Mbit	10 / 100 Mbit	10 / 100 Mbit
<b>Power supply</b>	12 ÷ 16 V DC	12 ÷ 16 V DC	12 ÷ 16 V DC	12 ÷ 16 V DC
<b>Power consumption</b>	4 W	4 W	4 W	4 W
<b>Operating temperature</b>	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C
<b>Atmospheric humidity****</b>	40 ÷ 80%	40 ÷ 80%	40 ÷ 80%	40 ÷ 80%
<b>Transport and storage temperature</b>	-20 ÷ +50 °C	-20 ÷ +50 °C	-20 ÷ +50 °C	-20 ÷ +50 °C
<b>Weighing pan dimensions</b>	ø 90 mm open-work ø 85 mm standard (option)*****	ø 90 mm open-work ø 85 mm standard (option)*****	ø 90 mm open-work ø 85 mm standard (option)*****	ø 90 mm open-work ø 85 mm standard (option)*****
<b>Weighing chamber dimensions</b>	190 × 190 × 222 mm	190 × 190 × 222 mm	190 × 190 × 222 mm	190 × 190 × 222 mm
<b>Weighing device dimensions</b>	351 × 205,5 × 348 mm	351 × 205,5 × 348 mm	351 × 205,5 × 348 mm	351 × 205,5 × 348 mm
<b>Net weight</b>	7.3 kg	7.3 kg	7.3 kg	7.3 kg
<b>Gross weight</b>	9.3 kg	9.3 kg	9.3 kg	9.3 kg
<b>Packaging dimensions</b>	495 × 400 × 515 mm	495 × 400 × 515 mm	495 × 400 × 515 mm	495 × 400 × 515 mm

\* repeatability is expressed as a standard deviation from 10 weighing cycles

\*\* parameter determined in the following temperature range: +15 ÷ +35 °C

\*\*\* stabilization time depends on external conditions and dynamics of placing loads on a pan, determined for FAST profile

\*\*\*\* non-condensing conditions

\*\*\*\*\* ø 85 mm standard weighing pan on purchase order

Values of parameters provided in Technical Specifications table, have been determined under stable laboratory conditions. Due to ambient conditions impact or/and balance setup, the above parameters may vary for environments other than laboratory.

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## Technical Specifications

	AS 110.X2 PLUS	AS 160.X2 PLUS	AS 220.X2 PLUS	AS 310.X2 PLUS
<b>Maximum capacity [Max]</b>	110 g	160 g	220 g	310 g
<b>Minimum load</b>	10 mg	10 mg	10 mg	10 mg
<b>Readability [d]</b>	0.1 mg	0.1 mg	0.1 mg	0.1 mg
<b>Verification scale interval [e]</b>	1 mg	1 mg	1 mg	1 mg
<b>Tare range</b>	-110 g	-160 g	-220 g	-310 g
<b>Standard values</b>				
<b>Repeatability(5% Max)*</b>	0.05 mg	0.06mg	0.06 mg	0.07 mg
<b>Repeatability(Max)*</b>	0.06 mg	0.07 mg	0.07 mg	0.1 mg
<b>Minimum weight (USP)</b>	100 mg	120 mg	120 mg	140 mg
<b>Minimum weight (U=1%, k=2)</b>	10 mg	12 mg	12 mg	14 mg
<b>Permissible values</b>				
<b>Repeatability(5% Max)*</b>	0.09 mg	0.09 mg	0.09 mg	0.12 mg
<b>Repeatability(Max)*</b>	0.1 mg	0.1 mg	0.1 mg	0.15 mg
<b>Linearity</b>	± 0.2 mg	± 0.2 mg	± 0.2 mg	± 0.3 mg
<b>Stabilization time***</b>	2 s	2 s	2 s	2.5 s
<b>Adjustment</b>	internal	internal	internal	internal
<b>Verification</b>	Yes	Yes	Yes	Yes
<b>OIML Class</b>	I	I	I	I
<b>Display</b>	5" capacitive colour touch screen	5" capacitive colour touch screen	5" capacitive colour touch screen	5" capacitive colour touch screen
<b>Keypad</b>	6 keys	6 keys	6 keys	6 keys
<b>Protection class</b>	IP 43	IP 43	IP 43	IP 43
<b>Databases</b>	7	7	7	7
<b>Touch-free operation</b>	2 programmable proximity sensors	2 programmable proximity sensors	2 programmable proximity sensors	2 programmable proximity sensors
<b>USB-A (interchangeable)</b>	2	2	2	2
<b>USB-B</b>	1	1	1	1
<b>RS 232</b>	1	1	1	1
<b>DB9</b>	Tare and Print External Buttons	Tare and Print External Buttons	Tare and Print External Buttons	Tare and Print External Buttons
<b>Wi-Fi®</b>	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n
<b>Ethernet</b>	10 / 100 Mbit	10 / 100 Mbit	10 / 100 Mbit	10 / 100 Mbit
<b>Power supply</b>	12 ÷ 16 V DC	12 ÷ 16 V DC	12 ÷ 16 V DC	12 ÷ 16 V DC
<b>Power consumption</b>	4 W	4 W	4 W	4 W
<b>Operating temperature</b>	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C
<b>Atmospheric humidity****</b>	40 ÷ 80%	40 ÷ 80%	40 ÷ 80%	40 ÷ 80%
<b>Transport and storage temperature</b>	-20 ÷ +50 °C	-20 ÷ +50 °C	-20 ÷ +50 °C	-20 ÷ +50 °C
<b>Weighing pan dimensions</b>	ø 100 mm	ø 100 mm	ø 100 mm	ø 100 mm
<b>Weighing chamber dimensions</b>	190 × 190 × 226 mm	190 × 190 × 226 mm	190 × 190 × 226 mm	190 × 190 × 226 mm
<b>Weighing device dimensions</b>	351 × 205,5 × 348 mm	351 × 205,5 × 348 mm	351 × 205,5 × 348 mm	351 × 205,5 × 348 mm
<b>Net weight</b>	7.3 kg	7.3 kg	7.3 kg	7.3 kg
<b>Gross weight</b>	9.3 kg	9.3 kg	9.3 kg	9.3 kg
<b>Packaging dimensions</b>	495 × 400 × 515 mm	495 × 400 × 515 mm	495 × 400 × 515 mm	495 × 400 × 515 mm

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\*\* parameter determined in the following temperature range: +15 ÷ +35 °C

\*\*\* stabilization time depends on external conditions and dynamics of placing loads on a pan, determined for FAST profile

\*\*\*\* non-condensing conditions

Values of parameters provided in Technical Specifications table, have been determined under stable laboratory conditions. Due to ambient conditions impact or/and balance setup, the above parameters may vary for environments other than laboratory.

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# Technical Specifications

	<b>AS 520.X2 PLUS</b>
Maximum capacity [Max]	520 g
Minimum load	—
Readability [d]	0.1 mg
Verification scale interval [e]	—
Tare range	-520 g
<b>Standard values</b>	
Repeatability(5% Max)*	0.07 mg
Repeatability(Max)*	0.2 mg
Minimum weight (USP)	140 mg
Minimum weight (U=1%, k=2)	14 mg
<b>Permissible values</b>	
Repeatability(5% Max)*	0.12 mg
Repeatability(Max)*	0.4 mg
Linearity	± 0.4 mg
Stabilization time***	2.5 s
Adjustment	internal
Verification	—
OIML Class	—
Display	5" capacitive colour touch screen
Keypad	6 keys
Protection class	IP 43
Databases	7
Touch-free operation	2 programmable proximity sensors
USB-A (interchangeable)	2
USB-B	1
RS 232	1
DB9	Tare and Print External Buttons
Wi-Fi®	802.11 b/g/n
Ethernet	10 / 100 Mbit
Power supply	12 ÷ 16 V DC
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Operating temperature	+10 ÷ +40 °C
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Weighing pan dimensions	ø 100 mm
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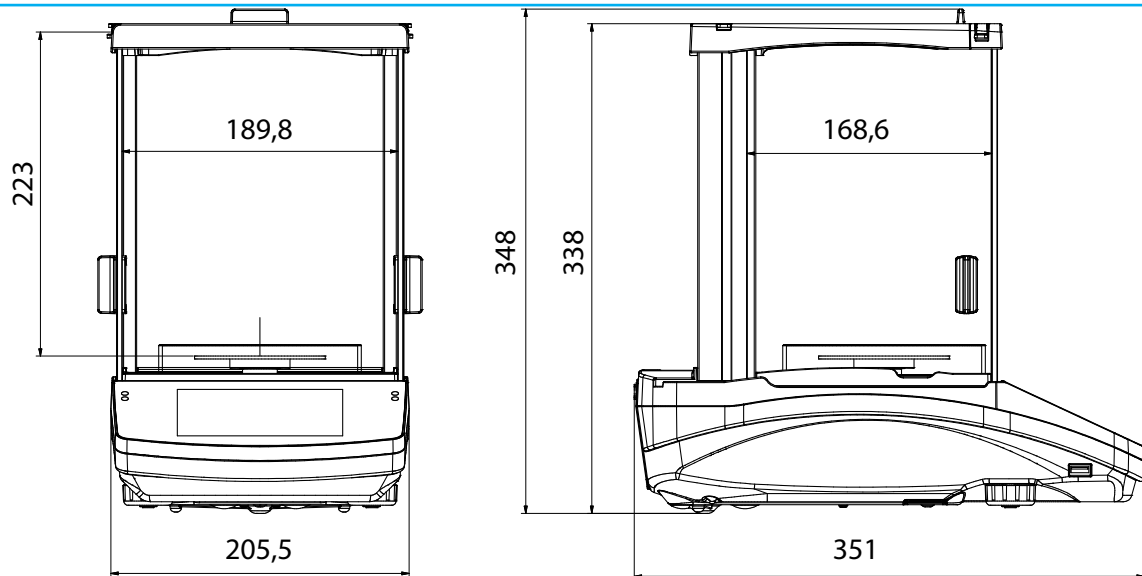
\*\*\* stabilization time depends on external conditions and dynamics of placing loads on a pan, determined for FAST profile

\*\*\*\* non-condensing conditions

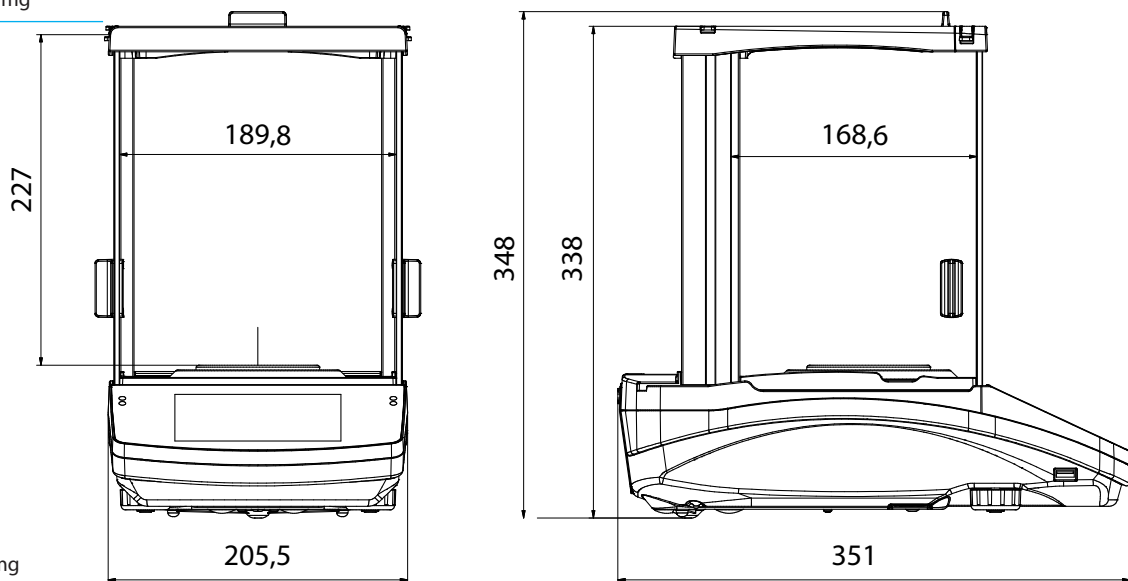
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## Dimensions



AS X2 PLUS, d = 0.01 mg



AS X2 PLUS, d = 0.1 mg

## Accessories

### Weighing Tables

- granite antivibration table
- antivibration tables for laboratory balances
- professional weighing table

### Professional Weighing

- laboratory ware holders • KIT 85 density determination kit
- under-hook weighing rack

### Ambient Conditions

- DJ-04 anti-static ioniser

### Peripheral Devices

- label printer
- receipt printer
- Epson dot matrix printer
- barcode scanners
- WD-6 LCD display

### Cables, Converters

- P0108: RS 232 cable (balance-computer)
- P0151: RS 232 cable (balance - Epson printer)
- USB cable type A-B

### Draft shields and anti-draft chambers

- protective cover for X2 series indicator

### Electrical Accessories

- ZR-02 power supply with battery

## Dedicated Software

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### **R-LAB**

- collecting measurements
- carrying out statistical analysis of measurements
- customized graphs and reports

### **E2R Weighing Records**

- complete, automated databases synchronization
- fully supported processes of labelling and parts counting
- record of weighings, weighings archiving
- basic and advanced (with graphs) reports

### **Alibi Reader**

- readout of data saved to Alibi memory
- export of data saved to Alibi memory
- data filtering and reports generating
- saving ALIBI database to CSV file

### **R.Barcode**

- The basic function software is presentation of the data sent by barcode scanners connected to PC via USB or RS232

### **RAD KEY**

- Establishing cooperation between a weighing instrument and a computer

### **Radwag Development Studio**

- presentation of functions (and subfunctions) of communication protocol (Common Communication Protocol)
- possibility of connection with weighing equipment on which each

function is carried out,

- library with mass control, contained within the development environment
- complete documentation of the communication protocol
- set of user manuals for different solutions addressed for programmers employed in companies using RADWAG-manufactured weighing equipment

### **RADWAG Connect**

- establishing communication with all balances, scales and weighing modules using Common Communication Protocol
- communication via local network,
- support of basic functions
- auto searching for devices
- connecting with few devices simultaneously, swapping between them
- clear list of connected platforms
- record of measurements in the program,
- export of carried out measurements to CSV file,
- work performed using freely selected device with Windows 10 operating system

### **LabView Driver**

- operation of RADWAG balances in LabView environment