

# AS X2 Analytical Balances

'Advanced level' measurements, maximum operation comfort and countless display customization options









Communication interfaces



5" colour touch screen with customized keys layout

#### **Functions**



counting













Percent weighing



Statistics



Animal weighing



Autotest









Cooperation with

procedures

Proximity

sensors



Ambient conditions measurement



Replaceable unit



Multilingual menu

# **Features**

#### **High Quality Measurements and Weighing Performance**

Combination of easy operation and excellent weighing accuracy makes AS X2 balances an ideal solution for most of the demanding applications in laboratory processes.

#### **Excellent Weighing Parameters and Comfort of Operation**

Thanks to a clear and intuitive menu layout and 5" colour touch screen, maximum comfort and incredibly easy operation are both ensured.

# **Customization via Widgets**

AS X2 software enables designing screen widgets layout. Display customization allows you to run any selected function directly from the home screen.

#### **Numerous Options of Data Management**

Extensive storage capacity enables record of all measurement data in a form of complex reports.

# Second to None Repeatability and Compliance with USP

AS X2 analytical balances feature the highest measurements accuracy, excellent repeatability and are compliant with USP requirements (Chapter 41 and 1251).

#### **Spacious Weighing Chamber**

Large weighing chamber enables convenient operation using laboratory vessels of different dimensions.

# **Touch-Free Operation**

Two programmable proximity sensors can be assigned with any function or application. The given function when assigned is both run and operated touch-free.

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# **Technical Specifications**

	AS 60/220.X2	AS 62.X2	AS 82/220.X2
Maximum capacity [Max]	60 g / 220 g	62 g	82 g / 220 g
Minimum load	1 mg	1 mg	1 mg
Readability [d]	0.01 mg / 0.1 mg	0.01 mg	0.01 mg / 0.1 mg
Verification scale interval [e]	1 mg	1 mg	1 mg
Tare range	–220 g	-62 g	–220 g
Repeatability*	0.015 mg (Rt $\leq$ 2 g) 0.02 mg (2 g < Rt $\leq$ 50 g) 0.03 mg (50 g < Rt $\leq$ 60 g) 0.1 mg (60 g < Rt $\leq$ 220 g)	0.015 mg (Rt $\leq$ 2 g) 0.02 mg (2 g $<$ Rt $\leq$ 50 g) 0.03 mg (50 g $<$ Rt $\leq$ 62 g)	0.015 mg (Rt $\leq$ 2 g) 0.02 mg (2 g < Rt $\leq$ 50 g) 0.03 mg (50 g < Rt $\leq$ 82 g) 0.1 mg (82 g < Rt $\leq$ 220 g)
Linearity	± 0.06 mg / ±0.2 mg	± 0.06 mg	$\pm$ 0.06 mg / $\pm$ 0.2 mg
Sensitivity temperature drift**	$1 \times 10^6 / ^{\circ}C \times Rt$	$1 \times 10^{-6}$ / $^{\circ}$ C $\times$ Rt	$1 \times 10^6 / ^{\circ}C \times Rt$
Minimum weight (U=1%, k=2)	3 mg	3 mg	3 mg
Minimum weight (USP)	30 mg	30 mg	30 mg
Stabilization time	6 s / 3.5 s	6 s	6 s / 3.5 s
Adjustment	internal	internal	internal
Verification	Yes	Yes	Yes
OIML Class	1	T	I
Display	5" capacitive colour touch screen	5" capacitive colour touch screen	5" capacitive colour touch screen
Keypad	6 keys	6 keys	6 keys
Protection class	IP 43	IP 43	IP 43
Databases	7	7	7
Touch-free operation	2 programmable proximity sensors	2 programmable proximity sensors	2 programmable proximity sensors
USB-A	1	1	1
USB-B	1	1	1
RS 232	2	2	2
Wireless connection	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n
Ethernet	10 / 100 Mbit	10 / 100 Mbit	10 / 100 Mbit
Power supply	12 ÷ 16 V DC	12 ÷ 16 V DC	12 ÷ 16 V DC
Power consumption	10 W	10 W	10 W
Operating temperature	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C
Atmospheric humidity***	40 ÷ 80%	40 ÷ 80%	40 ÷ 80%
Transport and storage temperature	-20 ÷ +50 °C	–20 ÷ +50 °C	−20 ÷ +50 °C
Weighing pan dimensions	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)****
Weighing chamber dimensions	160 × 168 × 223 mm	160 × 168 × 223 mm	160 × 168 × 223 mm
Weighing device dimensions	333 × 206 × 355 mm	333 × 206 × 355 mm	333 × 206 × 355 mm
Net weight	5.3 kg	5.3 kg	5.3 kg
Gross weight	7.3 kg	7.3 kg	7.3 kg
Packaging dimensions	495 × 400 × 515 mm	495 × 400 × 515 mm	495 × 400 × 515 mm

Rt

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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repeatability is expressed as a standard deviation from 10 weighing cycles parameter determined in the following temperature range:  $+15 \div +35$  °C

<sup>\*\*\*</sup> non-condensing conditions

ø 85 mm standard weighing pan on purchase order

Maximum capacity (Max)         110 g         160 g         200 g         310 g           Minimum load         10 mg         10 mg         10 mg         10 mg         11 mg           Verification scale interval (e)         1 mg         1 mg         1 mg         1 mg           Tare range         −10 g         −160 g         −20 g         −30 g         −30 g           Repeatability*         −20 mg (R±210 g)         −10 g (R±20 g)         −20 g         −30 g         −20 g         −30 g         −20 g         −20 g         −20 g         −20 g         −30 g         −20 g         −20 g         −20 g         −30 g         −20 g         −		AS 110.X2	AS 160.X2	AS 220.X2	AS 310.X2
Readability (d)         0.1 mg         0.1 mg         1 mg         2 mg         3 mg         3 mg         2 mg	Maximum capacity [Max]	110 g	160 g	220 g	310 g
Verification scale interval [e]         1 mg         1 mg         1 mg         1 mg           Tare range         −110 g         −160 g         −220 g         −310 g	Minimum load	10 mg	10 mg	10 mg	10 mg
Tare range         −110 g         −160 g         −220 g         −310 g         −310 g           Repeatability*         −1 mg (Rt ≤ 100 g)         −1 mg (Rt ≤ 200 g)         −2 mg (Rt ≤ 220 g) <th>Readability [d]</th> <th>0.1 mg</th> <th>0.1 mg</th> <th>0.1 mg</th> <th>0.1 mg</th>	Readability [d]	0.1 mg	0.1 mg	0.1 mg	0.1 mg
Repeatability*         0.1 mg Rt ≤ 10 g mg         0.1 mg Rt ≤ 20 g mg         0.1 mg Rt ≤ 20 g mg         0.2 mg Rt ≤ 20 g mg         20 mg         20 mg Rt ≤ 30 g mg         20 mg         ≥ 0.2 mg         ≥ 0.3 mg         ≥ 0.3 mg         ≥ 0.3 mg         ≥ 0.3 mg         ≥ 0.0 mg	Verification scale interval [e]	1 mg	1 mg	1 mg	1 mg
Linearity         ±0.2 mg         ±0.2 mg         ±0.2 mg         ±0.3 mg         ±0.3 mg           Sensitivity temperature drift***         1 × 10°/°C×Rt         2 × 00 mg         200 mg	Tare range	–110 g	–160 g	-220 g	-310 g
Sensitivity temperature driff**         1 × 10°/°C×Rt         20 mg	Repeatability*	0.1 mg (Rt ≤ 110 g)	0.1 mg (Rt ≤ 160 g)	0.1 mg (Rt ≤ 220 g)	
Minimum weight (U=1%, k=2)         20 mg         20 mg         20 mg         200 mg	Linearity	± 0.2 mg	± 0.2 mg	± 0.2 mg	± 0.3 mg
Minimum weight (USP)         200 mg         200 mg         200 mg         200 mg           Stabilization time         3.5 s         3.5 s         3.5 s         3.5 s           Adjustment         internal         internal         internal         internal           Verification         Yes         Yes         Yes           OIML Class         I         I         I         I         I           Display         5" capacitive colour touch screen         6 keys         6 key	Sensitivity temperature drift**	$1 \times 10^{-6}$ / °C × Rt	$1 \times 10^{-6}$ / °C × Rt	$1 \times 10^{-6}$ / °C × Rt	$1 \times 10^{-6}$ / °C × Rt
Stabilization time         3.5 s         3.5 s         3.5 s         3.5 s         3.5 s         3.5 s         Adjustment         internal	Minimum weight (U=1%, k=2)	20 mg	20 mg	20 mg	20 mg
Adjustment         internal         internal         internal         internal         internal           Verification         Yes         Yes         Yes         Yes           OIML Class         I         I         I           Display         5"capacitive colour touch screen         6 keys           Potention for power screen         4" 43         1	Minimum weight (USP)	200 mg	200 mg	200 mg	200 mg
Verification         Yes         Yes         Yes         Yes           OIML Class         I         I         I         I           Display         5" capacitive colour touch screen         6 keys         6 ke	Stabilization time	3.5 s	3.5 s	3.5 s	3.5 s
OIML Class         I         I         I         I           Display         5" capacitive colour touch screen           Keypad         6 keys         6 keys         6 keys         6 keys           Protection class         IP 43         IP 43         IP 43         IP 43         IP 43           Databases         7         7         7         7         7         7         7         7         7         7         7         7         7         7         7         2 programmable proximity sensors         sensor	Adjustment	internal	internal	internal	internal
Display         5° capacitive colour touch screen         6 keys         7 bis or         7 bis or         7 bis or <th>Verification</th> <th>Yes</th> <th>Yes</th> <th>Yes</th> <th>Yes</th>	Verification	Yes	Yes	Yes	Yes
Keypad         6 keys         6 keys         6 keys         6 keys         6 keys         6 keys           Protection class         IP 43         IP 40         IP 40         IP 440         IP 440 IP 440         IP 440 IP 4	OIML Class	I	I	I	I
Protection class         IP 43         IP 48         IP 43         IP 440         IP 43         IP 43 <th>Display</th> <th>· ·</th> <th>· ·</th> <th>· ·</th> <th>· ·</th>	Display	· ·	· ·	· ·	· ·
Databases         7         7         7         7           Touch-free operation         2 programmable proximity sensors         2 programmable proximity sensors         2 programmable proximity sensors         2 programmable proximity sensors           USB-A         1         1         1         1         1           RS 232         2         2         2         2         2           Wireless connection         802.11 b/g/n         802.11 b/g/	Keypad	6 keys	6 keys	6 keys	6 keys
Touch-free operation         2 programmable proximity sensors           USB-A         1         1         1         1         1           USB-B         1         1         1         1         1           RS 232         2         2         2         2         2           Wireless connection         802.11 b/g/n         10.0 b/g/n         10.0 b/g/n         10.0 b/g/n         10.0 b/g/n </th <th>Protection class</th> <th>IP 43</th> <th>IP 43</th> <th>IP 43</th> <th>IP 43</th>	Protection class	IP 43	IP 43	IP 43	IP 43
USB-A         1         2         2         2 <th>Databases</th> <th>7</th> <th>7</th> <th>7</th> <th>7</th>	Databases	7	7	7	7
USB-B         1         1         1         1         1           RS 232         2         2         2         2           Wireless connection         802.11 b/g/n         802.11 b/g/n         802.11 b/g/n         802.11 b/g/n           Ethernet         10 / 100 Mbit           Power supply         12 ÷ 16 V DC           Power consumption         10 W         10 W         10 W         10 W           Operating temperature         +10 ÷ +40 °C         +10 ÷ +40 °C         +10 ÷ +40 °C         +10 ÷ +40 °C           Atmospheric humidity****         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%           Transport and storage temperature         -20 ÷ +50 °C         -20 ÷ +50 °C         -20 ÷ +50 °C         -20 ÷ +50 °C           Weighing pan dimensions         Ø 100 mm         Ø 100 mm         Ø 100 mm         Ø 100 mm           Weighing chamber dimensions         160 × 168 × 227 mm           Weighing device dimensions         333 × 206 × 355 mm         333 × 206 × 355 mm         333 × 206 × 355 mm	Touch-free operation			· · · · · · · · · · · · · · · · · · ·	
RS 232       2       2       2       2         Wireless connection $802.11 \text{ b/g/n}$ $802.11 \text{ b/g/n}$ $802.11 \text{ b/g/n}$ $802.11 \text{ b/g/n}$ Ethernet $10 / 100 \text{ Mbit}$ Power supply $12 \div 16 \text{ VDC}$ Power consumption $10 \text{ W}$ $10 \text{ W}$ $10 \text{ W}$ $10 \text{ W}$ Operating temperature $+10 \div +40 \degree \text{C}$ $-20 \div +50 \degree \text{C}$ $-20$	USB-A	1	1	1	1
Wireless connection         802.11 b/g/n         802.11 b/g/n         802.11 b/g/n         802.11 b/g/n         802.11 b/g/n           Ethernet $10/100  \text{Mbit}$	USB-B	1	1	1	1
Ethernet $10/100  \text{Mbit}$ $10/100  \text{Mbit}$ $10/100  \text{Mbit}$ $10/100  \text{Mbit}$ $10/100  \text{Mbit}$ Power supply $12 \div 16  \text{VDC}$ $10  \text{W}$ Power consumption $10  \text{W}$ $10  \text{W}$ $10  \text{W}$ $10  \text{W}$ Operating temperature $+10 \div +40  ^{\circ}\text{C}$ Atmospheric humidity**** $40 \div 80\%$ Transport and storage temperature $-20 \div +50  ^{\circ}\text{C}$ $-20 \div +50  ^{\circ}\text{C}$ $-20 \div +50  ^{\circ}\text{C}$ $-20 \div +50  ^{\circ}\text{C}$ Weighing pan dimensions $\emptyset \ 100  \text{mm}$ Weighing chamber dimensions $333 \times 206 \times 355  \text{mm}$ Net weight $5.3  \text{kg}$ $5.3  \text{kg}$ $5.3  \text{kg}$ $5.3  \text{kg}$ $5.3  \text{kg}$ $5.3  \text{kg}$	RS 232	2	2	2	2
Power supply $12 \div 16 \text{ VDC}$ Power consumption $10 \text{ W}$ $10 \text{ W}$ $10 \text{ W}$ $10 \text{ W}$ Operating temperature $+10 \div +40 \text{ °C}$ Atmospheric humidity*** $40 \div 80\%$ Transport and storage temperature $-20 \div +50 \text{ °C}$	Wireless connection	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n
Power consumption $10  \text{W}$ $10  \text{W}$ $10  \text{W}$ $10  \text{W}$ $10  \text{W}$ Operating temperature $+10 \div +40  ^{\circ}\text{C}$ </th <th>Ethernet</th> <th>10 / 100 Mbit</th> <th>10 / 100 Mbit</th> <th>10 / 100 Mbit</th> <th>10 / 100 Mbit</th>	Ethernet	10 / 100 Mbit	10 / 100 Mbit	10 / 100 Mbit	10 / 100 Mbit
Operating temperature $+10 \div +40 ^{\circ}\text{C}$ $-20 \div +50 ^{\circ}\text{C}$	Power supply	12 ÷ 16 V DC	12 ÷ 16 V DC	12 ÷ 16 V DC	12 ÷ 16 V DC
Atmospheric humidity*** $40 \div 80\%$ Transport and storage temperature $-20 \div +50 ^{\circ}\text{C}$ $-20 \div +50 ^{\circ}\text{C}$ $-20 \div +50 ^{\circ}\text{C}$ $-20 \div +50 ^{\circ}\text{C}$ Weighing pan dimensions $\emptyset$ 100 mm $\emptyset$ 100 mm $\emptyset$ 100 mm $\emptyset$ 100 mm         Weighing chamber dimensions $160 \times 168 \times 227  \text{mm}$ Weighing device dimensions $333 \times 206 \times 355  \text{mm}$ Net weight $5.3  \text{kg}$ $5.3  \text{kg}$ $5.3  \text{kg}$ $5.3  \text{kg}$ Gross weight $7.3  \text{kg}$ $7.3  \text{kg}$ $7.3  \text{kg}$ $7.3  \text{kg}$	Power consumption	10 W	10 W	10 W	10 W
Transport and storage temperature $-20 \div +50 ^{\circ}\text{C}$ $-20 \div +50 ^{\circ}\text{C}$ $-20 \div +50 ^{\circ}\text{C}$ $-20 \div +50 ^{\circ}\text{C}$ Weighing pan dimensions         Ø 100 mm         Ø 100 mm         Ø 100 mm         Ø 100 mm           Weighing chamber dimensions $160 \times 168 \times 227  \text{mm}$ Weighing device dimensions $333 \times 206 \times 355  \text{mm}$ $333 \times 206 \times 355  \text{mm}$ $333 \times 206 \times 355  \text{mm}$ Net weight $5.3  \text{kg}$ $5.3  \text{kg}$ $5.3  \text{kg}$ $5.3  \text{kg}$ Gross weight $7.3  \text{kg}$ $7.3  \text{kg}$ $7.3  \text{kg}$	Operating temperature	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C
Weighing pan dimensions       Ø 100 mm         Weighing chamber dimensions $160 \times 168 \times 227 \text{ mm}$ Weighing device dimensions $333 \times 206 \times 355 \text{ mm}$ Net weight $5.3 \text{ kg}$ $5.3 \text{ kg}$ $5.3 \text{ kg}$ $5.3 \text{ kg}$ Gross weight $7.3 \text{ kg}$ $7.3 \text{ kg}$ $7.3 \text{ kg}$	Atmospheric humidity***	40 ÷ 80%	40 ÷ 80%	40 ÷ 80%	40 ÷ 80%
Weighing chamber dimensions $160 \times 168 \times 227 \text{ mm}$ $333 \times 206 \times 355 \text{ mm}$ $333 \times 206 $	Transport and storage temperature	-20 ÷ +50 °C	-20 ÷ +50 °C	-20 ÷ +50 °C	-20 ÷ +50 °C
Weighing device dimensions $333 \times 206 \times 355 \text{ mm}$ Net weight $5.3 \text{ kg}$ $5.3 \text{ kg}$ $5.3 \text{ kg}$ $5.3 \text{ kg}$ Gross weight $7.3 \text{ kg}$ $7.3 \text{ kg}$ $7.3 \text{ kg}$	Weighing pan dimensions	ø 100 mm	ø 100 mm	ø 100 mm	ø 100 mm
Net weight         5.3 kg         5.3 kg         5.3 kg         5.3 kg         5.3 kg         5.3 kg         7.3	Weighing chamber dimensions	160 × 168 × 227 mm	160 × 168 × 227 mm	160 × 168 × 227 mm	160 × 168 × 227 mm
<b>Gross weight</b> 7.3 kg 7.3 kg 7.3 kg 7.3 kg	Weighing device dimensions	333 × 206 × 355 mm	333 × 206 × 355 mm	333 × 206 × 355 mm	333 × 206 × 355 mm
	Net weight	5.3 kg	5.3 kg	5.3 kg	5.3 kg
Packaging dimensions         495 × 400 × 515 mm	Gross weight	7.3 kg	7.3 kg	7.3 kg	7.3 kg
	Packaging dimensions	495 × 400 × 515 mm	495 × 400 × 515 mm	495 × 400 × 515 mm	495 × 400 × 515 mm

Rt

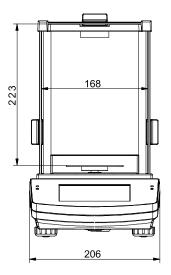
Values of parameters provided in Technical Specifications table, have been determined under stable laboratory conditions. Due to ambient conditions impact or/and balance setup, the above parameters may vary for environments other than laboratory.

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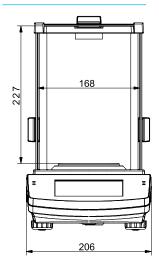
repeatability is expressed as a standard deviation from 10 weighing cycles parameter determined in the following temperature range: +15  $\div$  +35  $^\circ\text{C}$ 

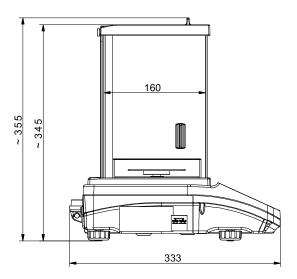
<sup>\*\*</sup> 

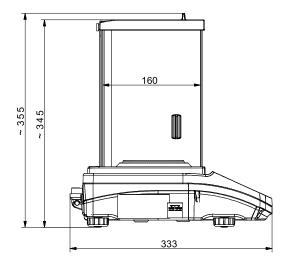
<sup>\*\*\*</sup> non-condensing conditions



AS X2, d = 0.01 mg







# Accessories

AS X2, d = 0.1 mg

#### **Weighing Tables**

- granite antivibration table
- antivibration tables for laboratory balances
- professional weighing table
- workstation for pipettes calibration

# **Professional Weighing**

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

#### **Ambient Conditions**

- DJ-04 anti-static ioniser
- THB-X ambient conditions modules

#### **Peripheral Devices**

- 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

#### **Electrical Accessories**

• ZR-02 power supply with battery

# **Dedicated Software**

#### LabView Driver

• operation of RADWAG balances in LabView environment

# 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-LAB

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