

# AS R Analytical Balances

Versatility of solutions along with accuracy and reliability of the measurements for instruments of economic class



AS.R, d = 0,01 mg



AS.R, d = 0,1 mg



Communication interfaces



Large LCD display with text information section

## Functions

- |   |   |   |   |   |
|---|---|---|---|---|
|  Parts counting |  Statistics      |  Density determination |  Totalizing                     |  Alibi memory      |
|  Dosing         |  Animal weighing |  Under hook weighing   |  GLP procedures                 |  Replaceable unit  |
|  Checkweighing  |  Autotest        |  Peak hold             |  Ambient conditions measurement |  Multilingual menu |
|  Formulations   |   |   |   |   |

## Features

### Ease of Use and Measurements Accuracy

Combination of operation simplicity, measurement accuracy and robust design enables applying AS R balances in majority of the universal laboratory solutions.

### Measurements Precision and Repeatability

Automatic adjustment in R series balances is an advanced control and correction system that enables accurate weighing under any conditions.

### Perfect Readability and Clear Information Layout

Large, easy-to-read LCD display offers not only a clear presentation of the weighing result, but also enables displaying messages related to the drying process as well as pictograms of active functions and working modes.

### Spacious Weighing Chamber

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

### Data Management

AS.R information system is based on operators, products, weighings and tares databases. All saved data can be analysed, exported, imported or exchanged between weighing instruments.

### ALIBI Memory

Internal ALIBI memory guarantees safety and automatic record of measurements copies, it also offers possibility to preview, copy and archive data.

### Quick Access to Selected Functions

Quick access keys located on the operation panel enable you to run a given function with just one click. You can assign some of the keys with a function of your choice.

## Technical Specifications

	AS 60/220.R2	AS 62.R2	AS 82/220.R2
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 (5% Max)*	0.015 mg (Rt ≤ 3 g)	0.015 mg (Rt ≤ 3 g)	0.015 mg (Rt ≤ 5 g)
Repeatability (Max)*	0.1 mg	0.03 mg	0.1 mg
Linearity	± 0.06 mg / ±0.2 mg	± 0.06 mg	± 0.06 mg / ±0.2 mg
Sensitivity temperature drift**	1 × 10 <sup>-6</sup> / °C × Rt	1 × 10 <sup>-6</sup> / °C × Rt	1 × 10 <sup>-6</sup> / °C × Rt
Minimum weight (U=1%, k=2)	3 mg	3 mg	3 mg
Minimum weight (USP)	30 mg	30 mg	30 mg
Stabilization time***	2 s	2 s	2 s
Adjustment	internal	internal	internal
Verification	Yes	Yes	Yes
OIML Class	I	I	I
Display	LCD (with backlight)	LCD (with backlight)	LCD (with backlight)
Keypad	14 keys	14 keys	14 keys
Protection class	IP 43	IP 43	IP 43
Databases	5	5	5
USB-A	1	1	1
USB-B	1	1	1
RS 232	2	2	2
Wireless connection (option)****	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n
Power supply	12 ÷ 16 V DC	12 ÷ 16 V DC	12 ÷ 16 V DC
Power consumption	3 W	3 W	3 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 × 227 mm	160 × 168 × 227 mm	160 × 168 × 227 mm
Weighing device dimensions	333 × 206 × 325 mm	333 × 206 × 325 mm	333 × 206 × 325 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 net weight

\* 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

\*\*\*\* optional solution on purchase order

\*\*\*\*\* 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.

	AS 110.R2	AS 160.R2	AS 220.R2	AS 310.R2
Maximum capacity [Max]	110 g	160 g	220 g	310 g
Minimum load	10 mg	10 mg	10 mg	10 mg
Readability [d]	0.1 mg	0.1 mg	0.1 mg	0.1 mg
Verification scale interval [e]	1 mg	1 mg	1 mg	1 mg
Tare range	-110 g	-160 g	-220 g	-310 g
Repeatability (5% Max)*	0.08 mg (Rt ≤ 10 g)	0.08mg (Rt ≤ 10 g)	0.08 mg (Rt ≤ 10 g)	0.08 mg (Rt ≤ 15 g)
Repeatability (Max)*	0,1 mg	0,1 mg	0,1 mg	0,15 mg
Linearity	± 0.2 mg	± 0.2 mg	± 0.2 mg	± 0.3 mg
Sensitivity temperature drift**	$1 \times 10^{-6} / ^\circ\text{C} \times \text{Rt}$	$1 \times 10^{-6} / ^\circ\text{C} \times \text{Rt}$	$1 \times 10^{-6} / ^\circ\text{C} \times \text{Rt}$	$1 \times 10^{-6} / ^\circ\text{C} \times \text{Rt}$
Minimum weight (U=1%, k=2)	16 mg	16 mg	16 mg	16 mg
Minimum weight (USP)	160 mg	160 mg	160 mg	160 mg
Stabilization time***	2 s	2 s	2 s	2,5 s
Adjustment	internal	internal	internal	internal
Verification	Yes	Yes	Yes	Yes
OIML Class	I	I	I	I
Display	LCD (with backlight)	LCD (with backlight)	LCD (with backlight)	LCD (with backlight)
Keypad	14 keys	14 keys	14 keys	14 keys
Protection class	IP 43	IP 43	IP 43	IP 43
Databases	5	5	5	5
USB-A	1	1	1	1
USB-B	1	1	1	1
RS 232	2	2	2	2
Wireless connection (option)****	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n
Power supply	12 ÷ 16 V DC	12 ÷ 16 V DC	12 ÷ 16 V DC	12 ÷ 16 V DC
Power consumption	3 W	3 W	3 W	3 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	160 × 168 × 227 mm	160 × 168 × 227 mm	160 × 168 × 227 mm
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
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 net weight

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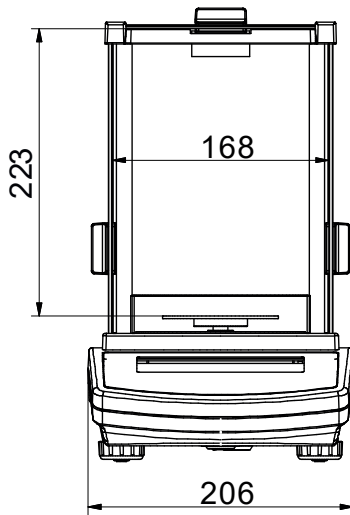
\*\*\* Stabilization time depends on external conditions and dynamics of placing loads on a pan, determined for FAST profile

\*\*\*\* optional solution on purchase order

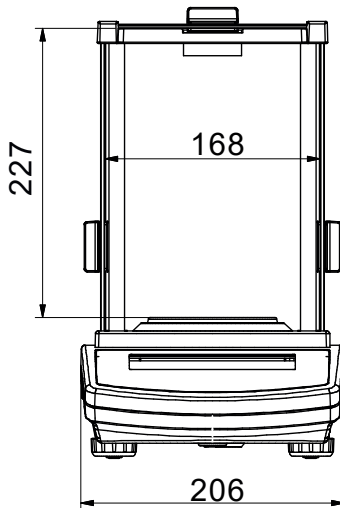
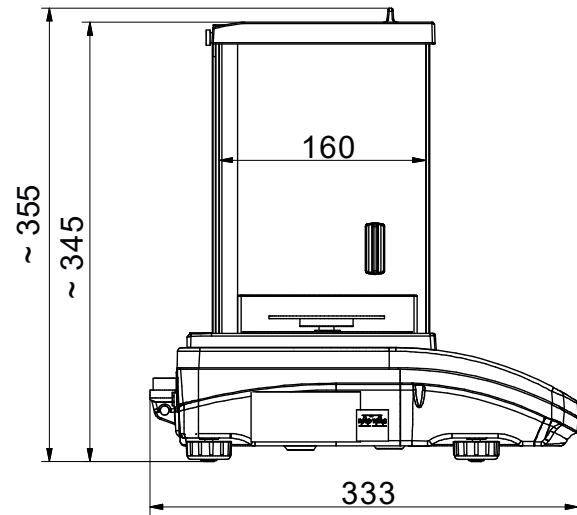
\*\*\*\*\* non-condensing conditions

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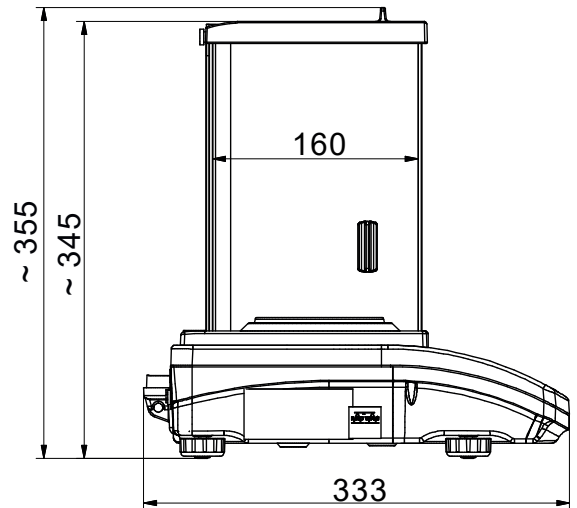
## Dimensions



AS R, d = 0.01 mg



AS R, 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
- AP2-1 power loop output

### Draft shields and anti-draft chambers

- protective cover for R series indicator

### Electrical accessories

- ZR-02 power supply with battery
- panel box

## 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

### **RAD KEY**

- Establishing cooperation between a weighing instrument and a computer

### **R.Barcode**

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

### **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

### **R Panel**

- operator access to all keys and functions that are to be found on an operation panel
- communication via COM1, COM2 or USB,
- compatible with: Windows Vista, 7, 8, 8.1, 10, Server 2008R2, 2012, 2016.