

# AS R PLUS Analytical Balances

Innovative design and system solutions for standard-class products



# 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 weihging 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.

#### Levelling System

Clearly visible levelling device located at the front of the weighing chamber facilitates level control.

## Antistatic Weighing Chamber

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

## **Uncomplicated and Intuitive Operation**

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. Quick access keys located on the operation panel enable you to run a given function with just one click.

#### Data Management

AS R PLUS 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.

#### **Kensington Lock**

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

	AS 60/220.R2 PLUS	AS 62.R2 PLUS	AS 82/220.R2 PLUS	AS 120.R2 PLUS
Maximum capacity [Max]	60 g / 220 g	62 g	82 g / 220 g	120 g
Minimum load	1 mg	1 mg	1 mg	1 mg
Readability [d]	0.01 mg / 0.1 mg	0.01 mg	0.01 mg / 0.1 mg	0.01 mg
Verification scale interval [e]	1 mg	1 mg	1 mg	1 mg
Tare range	–220 g	-62 g	–220 g	–120 g
Standard values				
Repeatability(5% Max)*	0.012 mg	0.012 mg	0.012 mg	0.012 mg
Repeatability(Max)*	0.08 mg	0.02 mg	0.08 mg	0.03 mg
Minimum weight (USP)	24 mg	24 mg	24 mg	24 mg
Minimum weight (U=1%, k=2)	2.4 mg	2.4 mg	2.4 mg	2.4 mg
Permissible values				
Repeatability(5% Max)*	0.02 mg	0.018 mg	0.02 mg	0.02 mg
Repeatability(Max)*	0.1 mg	0.03 mg	0.1 mg	0.05 mg
Linearity	± 0.05 mg / ±0.2 mg	± 0.05 mg	± 0.05 mg / ±0.2 mg	± 0.07 mg
Stabilization time***	2 s	2 s	2 s	2 s
Adjustment	internal	internal	internal	internal
Verification	Yes	Yes	Yes	Yes
OIML Class	1	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 (interchangeable)	2	2	2	2
USB-B	1	1	1	1
RS 232	2	2	2	2
Wi-Fi® ****	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			
Power consumption	3 W	3 W	3 W	3 W
Operating temperature	+10 ÷ +40 °C			
Atmospheric humidity*****	40% ÷ 80%	40% ÷ 80%	40% ÷ 80%	40% ÷ 80%
Transport and storage temperature	-20 ÷ +50 ℃	-20 ÷ +50 ℃	−20 ÷ +50 °C	-20 ÷ +50 ℃
Weighing pan dimensions	ø 90 mm open-work ø 85 mm standard (option)******			
Weighing chamber dimensions	190 × 190 × 222 mm			
Weighing device dimensions	351 × 205.5 × 348 mm			
Net weight	7.3 kg	7.3 kg	7.3 kg	7.3 kg
Gross weight	9.3 kg	9.3 kg	9.3 kg	9.3 kg
Packaging dimensions	495 × 400 × 515 mm			

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

\*\* parameter determined in the following temperature range:  $+15 \div +35$  °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 100.22 PLUSAS 160.82 PLUSAS 20.82 PLUSAS 310,82 PLUSMaximum capacity [Max]110g160g220 g310 gReadability [d]0.1 mg0.1 mg0.1 mg0.1 mgReadability [d]0.1 mg1.1 mg1.1 mg1.1 mgTare range-110 g-20 g-20 g-310 gStandard values					
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±0.2 mg         ±0.2 mg         ±0.2 mg         ±0.2 mg         ±0.2 mg           Stabilization time***         2 s         2 s         2 s         2 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         I4 keys         I4 keys           Protection class         IP 43         IP 43         IP 43         IP 43           Databases         5         5         5         2           USB-A (interchangeable)         2         2         2         2           USB-B         1         1         1         1           Rys         802.11 b/g/n         802.11 b/g/n         802.11 b/g/n         802.11 b/g/n           Power supply         12 + 16 VDC         12 + 16 VDC         12 + 16 VDC         12 + 16 VDC           Power supply         12 + 16 VDC         12 + 16 VDC         10 + 40 °C         10 +	Repeatability(5% Max)*	0.09 mg	0.09 mg	0.09 mg	0.12 mg
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Protection class         IP 43         IP 43         IP 43         IP 43           Databases         5         5         5         5           USB-A (interchangeable)         2         2         2         2           USB-B (interchangeable)         1         1         1         1           RS 232         2         2         2         2         2           Wi-Fi*****         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           Power supply         12 ± 16 V DC           Power consumption         3W         3W         3W         3W         3W           Operating temperature         +10 ± +40 °C         +10 ± +40 °C         +10 ± +40 °C         +10 ± +40 °C           Atmospheric humidity*****         40 + 80%         40 + 80%         40 + 80%         40 + 80%           Meighing pan dimensions         >100 mm         910 mm         910 mm         910 mm           Weighing chamber dimensions         910 × 190 × 226 mm           Weighing device dimensions         51 × 205,5 × 348 mm         51 × 2	Display	LCD (with backlight)	LCD (with backlight)	LCD (with backlight)	LCD (with backlight)
Databases         5         5         5           Databases         5         5         5           USB-A (interchangeable)         2         2         2           USB-B         1         1         1           NUSB-B         1         1         1           RS 232         2         2         2         2           Wi-Fi*****         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           Power consumption         3W         3W         3W         3W           Operating temperature         +10 + +40 °C         +10 + +40 °C         +10 + +40 °C         +10 + +40 °C           Atmospheric humidity*****         40 + 80%         40 + 80%         40 + 80%         40 + 80%           Meighing pan dimensions         0100m         -20 + +50 °C         -20 + +50 °C         -20 + +50 °C           Weighing chamber dimensions         9100m         900m         900m         900 mm         900 mm           Weighing device dimensions         51 × 205,5 × 348 mm         351 × 205,5 × 348 mm         351 × 205,5 × 348 mm         351 × 205,5 × 348 mm           We	Keypad	14 keys	14 keys	14 keys	14 keys
USB-A (interchangeable)         2         2         2         2           USB-B         1         1         1         1           RS 232         2         2         2         2         2           Wi-Fi*****         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         802.11 b/g/n           Power supply         12 ÷ 16 V DC           Power consumption         3W         3W         3W         3W         3W           Operating temperature         +10 ÷ +40 °C         +10 ÷ +40 °C         +10 ÷ +40 °C         +10 ÷ +40 °C           Atmospheric humidity*****         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%           Meighing pan dimensions         >100 mm         >100 mm         >100 mm         >100 mm           Weighing chamber dimensions         910 nm         \$10 × 190 × 226 mm         \$11 × 205,5 × 348 mm         \$11 × 205,5 × 348 mm         \$11 × 205,5 × 348 mm           Weighing device dimensions         \$15 × 205,5 × 348 mm           Net weight         7.3 kg         7.3 kg         7.3 kg         7.3 kg </td <td>Protection class</td> <td>IP 43</td> <td>IP 43</td> <td>IP 43</td> <td>IP 43</td>	Protection class	IP 43	IP 43	IP 43	IP 43
USB-B         1         1         1           RS 232         2         2         2         2           Wi-Fi*****         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           Power consumption         3W         3W         3W         3W           Operating temperature         +10 ÷ +40 °C         +10 ÷ +40 °C         +10 ÷ +40 °C           Atmospheric humidity*****         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%           Meighing pan dimensions         9100 mm         9100 mm         9100 mm           Weighing chamber dimensions         190 × 190 × 226 mm         190 × 190 × 226 mm         190 × 190 × 226 mm           Weighing device dimensions         351 × 205,5 × 348 mm           Net weight         7.3 kg         7.3 kg         7.3 kg         7.3 kg         7.3 kg	Databases	5	5	5	5
RS 232         2         2         2           Wi-Fi****         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           Power consumption         3W         3W         3W         3W         3W           Operating temperature         +10 ÷ +40 °C         +10 ÷ +40 °C         +10 ÷ +40 °C         +10 ÷ +40 °C           Atmospheric humidity*****         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%           Meighing pan dimensions         >100 mm         910 mm         >20 ÷ +50 °C         -20 ÷ +50	USB-A (interchangeable)	2	2	2	2
Wi-Fi°****         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           Power supply         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%         40 ÷ 80%           Transport and storage temperature         -20 ÷ +50 °C           Weighing pan dimensions         Ø 100 mm           Weighing chamber dimensions         190 × 190 × 226 mm         190 × 190 × 226 mm         190 × 190 × 226 mm         351 × 205,5 × 348 mm         351 × 205,5	USB-B	1	1	1	1
Power supply         12 ÷ 16 V DC         10 ÷ 140 °C         410 ÷ ±40 °C         410 ÷ ±40 °C         410 ÷ ±40 °C         410 ÷ ±40 °C         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%	RS 232	2	2	2	2
Power consumption         3W         3W         3W         3W           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           Weighing chamber dimensions         190 × 190 × 226 mm         190 × 190 × 226 mm         190 × 190 × 226 mm         351 × 205,5 × 348 mm         351 × 205,5 × 348 mm           Net weight         7.3 kg         7.3 kg         7.3 kg         7.3 kg         9.3 kg	Wi-Fi <sup>®</sup> ****	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n	802.11 b/g/n
Operating temperature         +10 ÷ +40 °C         40 ÷ 80%         40 ÷ 40 °C         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%         40 ÷ 80%	Power supply	12 ÷ 16 V DC	12 ÷ 16 V DC	12 ÷ 16 V DC	12 ÷ 16 V DC
Atmospheric humidity*****       40 ÷ 80%       40 ÷ 80%       40 ÷ 80%       40 ÷ 80%         Transport and storage temperature       -20 ÷ +50 °C       -20 ÷ ± ±	Power consumption	3 W	3 W	3 W	3 W
Transport and storage temperature       -20 ÷ +50 °C       -20 ÷ ± ± +50 °C       -20 ÷ ± ± ± ± ± ± ± ± ± ± ± ± ± ± ± ± ± ±	Operating temperature	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C
temperature           Weighing pan dimensions         Ø 100 mm         Ø 100 mm         Ø 100 mm         Ø 100 mm           Weighing chamber dimensions         190 × 190 × 226 mm           Weighing device dimensions         351 × 205,5 × 348 mm           Net weight         7.3 kg         7.3 kg         7.3 kg         7.3 kg         7.3 kg           Gross weight         9.3 kg         9.3 kg         9.3 kg         9.3 kg         9.3 kg	Atmospheric humidity*****	40 ÷ 80%	40 ÷ 80%	40 ÷ 80%	40 ÷ 80%
Weighing chamber dimensions         190 × 190 × 226 mm           Weighing device dimensions         351 × 205,5 × 348 mm         351 × 205,5 × 348 mm <td></td> <td>-20 ÷ +50 ℃</td> <td>-20 ÷ +50 ℃</td> <td>−20 ÷ +50 °C</td> <td>-20 ÷ +50 ℃</td>		-20 ÷ +50 ℃	-20 ÷ +50 ℃	−20 ÷ +50 °C	-20 ÷ +50 ℃
Weighing device dimensions         351 × 205,5 × 348 mm         351	Weighing pan dimensions	ø 100 mm	ø 100 mm	ø 100 mm	ø 100 mm
Net weight         7.3 kg         9.3	Weighing chamber dimensions	190 × 190 × 226 mm	190 × 190 × 226 mm	190 × 190 × 226 mm	190 × 190 × 226 mm
Gross weight         9.3 kg         9.3 kg         9.3 kg         9.3 kg	Weighing device dimensions	351 × 205,5 × 348 mm	351 × 205,5 × 348 mm	351 × 205,5 × 348 mm	351 × 205,5 × 348 mm
Gross weight         9.3 kg         9.3 kg         9.3 kg         9.3 kg	Net 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

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

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

\*\*\* 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

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 520.R2 PLUS
Maximum capacity [Max]	520 g
Minimum load	_
Readability [d]	0.1 mg
Verification scale interval [e]	_
Tare range	–520 g
Standard values	
Repeatability(5% Max)*	0.08 mg
Repeatability(Max)*	0.25 mg
Minimum weight (USP)	160 mg
Minimum weight (U=1%, k=2)	16 mg
Permissible values	
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	LCD (with backlight)
Keypad	14 keys
Protection class	IP 43
Databases	5
USB-A (interchangeable)	2
USB-B	1
RS 232	2
Wi-Fi <sup>◎</sup> ****	802.11 b/g/n
Power supply	12 ÷ 16 V DC
Power consumption	3 W
Operating temperature	+10 ÷ +40 ℃
Atmospheric humidity*****	40 ÷ 80%
Transport and storage temperature	-20 ÷ +50 ℃
Weighing pan dimensions	ø 100 mm
Weighing chamber dimensions	190 × 190 × 226 mm
Weighing device dimensions	351 × 205,5 × 348 mm
Net weight	7.3 kg
Gross weight	9.3 kg
Packaging dimensions	495 × 400 × 515 mm

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

\*\* parameter determined in the following temperature range:  $+15 \div +35$  °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

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.

Maximum capacity (Max)120g220gMinimum load10mg10mgReadability (d)0.1mg0.1mgReadability (d)0.1mg0.1mgVerification scale interval (e)120g-220gStandard values		AS 120.R1 PLUS	AS 220.R1 PLUS
NinimunoalIongIongReadality (d)0.1mg0.1mgVerification scale interval (e)1.2mg-2mgTare rango1.2mg-2mgStandard values-2mg-2mgRepeatability (Max)*0.6mg0.6mgMinimu weight (USP)0.0mg0.6mgMinimu weight (USP)12mg0.6mgPersibility (Max)*0.9mg0.9mgPersibility (Max)*0.9mg0.9mgMinimu weight (USP)0.9mg0.9mgRepeatability (Max)*0.9mg0.9mgPersibility (SMax)*0.9mg0.9mgRepeatability (Max)*0.9mg0.9mgRepeatability (Max)*	Maximum capacity [Max]		
Readability[d]0.1mg0.1mgVerification scale interval [e]1mg1mgTare range- 10.01mg1mgStandar ValuesRepeatability(Max)*0.06 mg0.07 mg0.08 mgMinimu weight (USP)120 mg140 mg140 mgMinimu weight (USP)120 mg0.09 mg0.09 mgPermissibusRepeatability(Max)*0.09 mg0.09 mg0.09 mgRepeatability(Max)*0.09 mg0.09 mg0.09 mgRepeatability(Max)*0.09 mg0.09 mg0.09 mgRepeatability(Max)*0.01 mg0.09 mg0.01 mgRepeatability(Max)*0.01 mg0.01 mg0.01 mgRepeatability(Max)* <th></th> <th></th> <th>-</th>			-
Verification scale interval (e)IngIngTarenge-200 c.200 c.20		-	-
Tare range-120 g-220 gStandard valuesRepeatability(5% Max)*0.06 mg0.07 mgRepeatability(Max)*0.08 mg0.08 mgMinimu weight (USP)12 mg14 mgMinimu weight (USPs, k=2)12 ng14 mgPermissible values0.09 mg0.09 mgRepeatability(Max)*0.1 mg0.1 mgLinearity±0.2 mg±0.2 mgStabilization time**2 s2 sAdjustmentExternalExternalVerificationNoNoOlful ClassDisplayLD (with backlight)LD (with backlight)Keypad14 keys14 keysProtection class11USR-A (interchangeable)22Verification22Protection class12 + 16V DC2Display12 + 16V DC2Verification3W3WOperating temperature+10 + 40 °CA mospheric humidity****40 % +80%A function function100 mmWiefling na dimensions100 mmWiefling na dimensions\$10 × 100 × 200 mmWiefling na dimensions\$10 × 100 × 200 mmWeighing na dimensions\$10 × 100 × 200 mmWeighing natures31 × 205 × 348 mmWeighing natures31 × 205 × 348 mmWeighing natures31 × 205 × 348 mmWeighing nature31 × 205 × 348 mmWeighing nature31 × 205 × 348 mmWeighing nature31 × 205 × 3		-	-
Standard values           Repeatability(5% Max)*         0.06 mg         0.07 mg           Repeatability(Max)*         0.08 mg         0.08 mg           Minimum weight (U=196, k=2)         12 mg         140 mg           Minimu weight (U=196, k=2)         12 mg         140 mg           Permissible values         0.09 mg         0.09 mg         0.09 mg           Repeatability(Max)*         0.1 mg         0.1 mg         1           Linearity         ± 0.2 mg         ± 0.2 mg         2 s           Adjustment         External         External         External           Verification time***         2 s         2 s         2           Adjustment         External         External         No           OIML Class         -         -         -           Display         LCD (with backlight)         LCD (with backlight)         Keys           Kagad         14 keys         14 keys         14 keys           Protection class         1         -         -           USB-A (interchangeable)         2         2         2           Verif****         802111 b/g/n         802111 b/g/n         80211 b/g/n           Power soumption         3W         3W         - </th <th>Tare range</th> <th></th> <th>-</th>	Tare range		-
Repeatability(Max)*0.08 mg0.08 mgMinimum weight (USP)120 mg144 mgPermissible values12 mg14 mgRepeatability(Max)*0.09 mg0.09 mgRepeatability(Max)*0.09 mg0.09 mgRepeatability(Max)*0.1 mg0.09 mgLinearity±0.2 mg±0.2 mgStabilization time***2 s2 sAdjustmentExternalExternalVerificationNoNoOILLassDisplay(DO with backlight)(DO with backlight)Keypad14 kays14 kaysProtection classP3USB-811R5 23222Wirfi****802.11 b/g/n802.11 b/g/nPower onsumption3W3WOperating temperature40% + 80%40 + 80%Tansport and storage temperature-20 + 450 °CWeighing hammensions800 mm801 0 mmWeighing device dimensions190 × 190 × 220 mmWeighing devic			
Minimum veight (USP)120 mg140 mgMinimum weight (U=1%, k=2)12 mg14 mgPermissible values	Repeatability(5% Max)*	0.06 mg	0.07 mg
Minimum veight (USP)120 mg140 mgMinimum weight (U=1%, k=2)12 mg14 mgPermissible values	Repeatability(Max)*	0.08 mg	0.08 mg
Minimu weight (U=1%, k=2)I2 mg14 mgPermissible valuesI2 mg100 mgRepeatability(S% Max)*0.09 mg0.09 mgRepeatability(Max)*0.1 mg0.1 mgLinearity4.02 mg4.02 mg2.02 mgStabilization time***2.5 G2.5 Kernal2.5 KernalVerificationNoNo0.01 mgOll LicasDisplayLCD (with backlight)LCD (with backlight)KeypadVerification14 keys14 keys14 keysProtection class952Databases552VBF-R0.211 b/g/n0.211 b/g/n0.211 b/g/nPower consumption3W3U3UOperating temperature4.04 +4.0°C4.04 +4.0°CAtomspherichumidity****4.04 +5.0°C3UWeighing and timensions9.04 y0.9222 mm9.09 y0.9225 x0.84 mmWeighing device dimensions31 x205 x348 mm31 x205 x348 mmKerseight31 x205 x348 mm31 x205 x348 mmKerseight31 x205 x348 mm31 x205 x348 mm		-	
Permissible valuesRepeatability(5% Max)*0.09 mg0.09 mgRepeatability(Max)*0.1 mg0.1 mgLinearity±0.2 mg±0.2 mgStabilization time***2 s2 sAdjustmentExternalExternalVerificationNoNoOIML ClassDisplayLDD (with backlight)LDD (with backlight)Keypad14 keysLDD (with backlight)Protection classP4314 keysDisblay22USB-A (interchangeable)22Verif****80211 b/g/n802.11 b/g/nPower supply12+16 VDC2Power consumption3W3WOperating temperature+10+440°CAtmospher humidity****40% +80%40+80%Weighing chamber dimensions190 ×190 ×222 mmWeighing chamber dimensions51 × 205 × 348 mmNetweight7.3 kg31 × 205 × 348 mm	-	-	
Repeatability(Max)*0.1 mg0.1 mgLinearity±0.2 mg±0.2 mgStabilization time***2 s2 sAdjustmentExternalExternalVerificationNoNoOIML ClassDisplayLCD (with backlight)LCD (with backlight)Keypad14 keys14 keysProtection classP4314 keysDisblay22USB-A (interchangeable)22USB-A (interchangeable)22Wi-Fi*****802.11 b/g/n802.11 b/g/nPower consumption3W3WOperating temperature+10 ± 40°C+10 ± 40°CAtmospheric humidity*****90x 190 × 222 mm90x 190 × 190 × 226 mmWeighing chamber dimensions190 × 190 × 222 mm90x 190 × 190 × 226 mmWeighing chamber dimensions31x 2055 × 348 mm31x 2055 × 348 mmNet weight7.3 kg7.3 kg7.3 kg			
Linearity         ±0.2 mg         ±0.2 mg           Stabilization time***         2 s         2 s           Adjustment         External         External           Verification         No         No           OIML Class         -         -           Display         LCD (with backlight)         LCD (with backlight)           Keypad         14 keys         14 keys           Protection class         P43         14 keys           Databases         5         5           USB-A (interchangeable)         2         2           ViFiF*****         802.11 b/g/n         802.11 b/g/n           Power consumption         3W         3W           Operating temperature         +10 + 40°C         +10 + 40°C           Atmospheric humidity*****         400 mm         40 + 80%           Weighing and imensions         90 × 190 × 222 mm         910 mm           Weighing chamber dimensions         100 mm         100 mm           Weighing device dimensions         151 × 2055 × 348 mm         51 × 2055 × 348 mm           Net weight         73 kg         73 kg         73 kg	Repeatability(5% Max)*	0.09 mg	0.09 mg
Stabilization time***2 s2 sAdjustmentExternalExternalVerificationNoNoOIML ClassDisplayLCD (with backlight)LCD (with backlight)Keypad14 keys14 keysProtection classIP 43IP 43Databases55USB-A (interchangeable)22VSB-B11Rs 23222Wi-Fi*****802.11 b/g/n802.11 b/g/nPower onsumption3W3WOperating temperature+10 ± +40 °CAtmospheric humidity*****400 mmVielghing pan dimensions100 mmWielghing chamber dimensions51 × 205 × 348 mmNeighing device dimensions51 × 205 × 348 mmNeighing device dimensions93 kgOst93 kg	Repeatability(Max)*	0.1 mg	0.1 mg
AdjustmentExternalExternalVerificationNoNoOIML ClassDisplayLCD (with backlight)LCD (with backlight)Keypad14 keys14 keysProtection classIP43IP43Databases55USB-A (interchangeable)22VSB-B11Ry Sag222Vi-Fi*****802.11 b/g/n802.11 b/g/nPower consumption3W3WOperating temperature-20 ÷ 50°C-20 ÷ 50°CVielging pan dimensions100 mm100 mmVielging chamber dimensions51 × 205 × 348 mm351 × 205 × 348 mmNet weight351 × 205 × 348 mm351 × 205 × 348 mm	Linearity	± 0.2 mg	± 0.2 mg
Verification         No         No           OIML Class         -         -           Display         LCD (with backlight)         LCD (with backlight)           Keypad         14 keys         14 keys           Protection class         IP 43         IP 43           Databases         5         5           USB-A (interchangeable)         2         2           VSB-B         1         1           RS 232         2         2           Wi-Fi*****         802.11 b/g/n         802.11 b/g/n           Power supply         12 + 16 V DC         12 + 16 V DC           Power consumption         3W         3W           Operating temperature         +10 ÷ 44 °C         +10 ÷ 44 °C           Atmospheric humidity*****         40% ÷ 80%         40 ÷ 80%           Vieighing pan dimensions         ø 100 mm         9 × 100 xm           Weighing chamber dimensions         190 × 190 × 222 mm         190 × 190 × 226 mm           Weighing device dimensions         351 × 205.5 × 348 mm         351 × 205.5 × 348 mm           Net weight         7.3 kg         7.3 kg         7.3 kg	Stabilization time***	2 s	2 s
OMUL Cass         -           Display         LCD (with backlight)         LCD (with backlight)           Keypad         14 keys         14 keys           Protection class         IP 43         IP 43           Databases         5         5           USB-A (interchangeable)         2         2           VSB-B         1         1           RS 232         2         2           Wi-Fi*****         802.11 b/g/n         802.11 b/g/n           Power supply         12 ± 16 V DC         12 ± 16 V DC           Power consumption         3W         3W           Operating temperature         +10 ± +40 °C         +10 ± +40 °C           Atmospheric humidity*****         40% ± 80%         40 ± 80%           Weighing pan dimensions         910 mm         9100 mm           Weighing chamber dimensions         190 × 190 × 222 mm         190 × 190 × 226 mm           Weighing device dimensions         351 × 2055 × 348 mm         51 × 2055 × 348 mm           Net weight         7.3 kg         7.3 kg	Adjustment	External	External
DisplayLCD (with backlight)LCD (with backlight)Keypad14 keys14 keysProtection classIP 43IP 43Databases55USB-A (interchangeable)22USB-B11Rs 23222Wi-Fi*****802.11 b/g/n802.11 b/g/nPower supply12 ± 16 V DC12 ± 16 V DCPower consumption3W3WOperating temperature+10 ± +40 °C+10 ± +40 °CAtmospheric humidity*****4006 ± 80%40 ± 80%Vieighing pan dimensions100 nm90 × 190 × 220 mmWeighing device dimensions51 × 2055 × 348 mm551 × 2055 × 348 mmNet weight73 kg73 kg73 kgGross weight93 kg93 kg93 kg	Verification	No	No
Keypad14 keys14 keysProtection classIP 43IP 43Databases55USB-A (interchangeable)22USB-B11RS 23222Wi-Fi*****802.11 b/g/n802.11 b/g/nPower supply12 ÷ 16 V DC12 ÷ 16 V DCPower consumption3W3WOperating temperature+10 ÷ +40 °C+10 ÷ +40 °CAtmospheric humidity*****400 m-20 ÷ +50 °CVieighing pan dimensions190 × 190 × 222 mm190 × 190 × 226 mmWeighing device dimensions51 × 205 × 348 mm351 × 205 × 348 mmNet weight7.3 kg7.3 kg7.3 kg	OIML Class	_	_
Protection class         IP 43         IP 43           Databases         5         5           USB-A (interchangeable)         2         2           USB-B         1         1           RS 232         2         2           Vi-Fi*****         802.11 b/g/n         802.11 b/g/n           Power supply         12÷16V DC         12÷16V DC           Power consumption         3W         3W           Operating temperature         +10÷+40°C         +10÷+40°C           Atmospheric humidity*****         40%÷ 80%         40÷ 80%           Weighing pan dimensions         9100 mm         9100 mm           Weighing chamber dimensions         190 × 190 × 222 mm         51 × 205.5 × 348 mm           Weighing device dimensions         351 × 205.5 × 348 mm         51 × 205.5 × 348 mm           Net weight         7.3 kg         9.3 kg	Display	LCD (with backlight)	LCD (with backlight)
Databases         5         5           Databases         5         5           USB-A (interchangeable)         2         2           USB-B         1         1           RS 232         2         2           Wi-Fi*****         802.11 b/g/n         802.11 b/g/n           Power supply         12 ± 16 V DC         12 ± 16 V DC           Power consumption         3W         3W           Operating temperature         +10 ± +40 °C         +10 ± +40 °C           Atmospheric humidity******         40% ± 80%         40 ± 80%           Transport and storage temperature         -20 ± +50 °C         -20 ± + 50 °C           Weighing pan dimensions         9 100 mm         9100 mm           Weighing chamber dimensions         910× 190× 222 mm         190× 190× 226 mm           Weighing device dimensions         51 × 205.5 × 348 mm         351 × 205.5 × 348 mm           Net weight         7.3 kg         7.3 kg           Gross weight         9.3 kg         9.3 kg	Keypad	14 keys	14 keys
USB-A (interchangeable)         2         2           USB-B         1         1           RS 232         2         2           Wi-Fi® ****         802.11 b/g/n         802.11 b/g/n           Power supply         12 ÷ 16 V DC         12 ÷ 16 V DC           Power consumption         3W         3W           Operating temperature         +10 ÷ +40 °C         +10 ÷ +40 °C           Atmospheric humidity*****         40% ÷ 80%         40 ÷ 80%           Vieighing pan dimensions         0 100 mm         -20 ÷ +50 °C           Weighing chamber dimensions         190 × 190 × 222 mm         190 × 190 × 226 mm           Weighing device dimensions         51 × 205.5 × 348 mm         51 × 205.5 × 348 mm           Net weight         7.3 kg         7.3 kg	Protection class	IP 43	IP 43
USB-B         1         1           RS 232         2         2           Wi-Fi®****         802.11 b/g/n         802.11 b/g/n           Power supply         12 ÷ 16 V DC         12 ÷ 16 V DC           Power consumption         3W         3W           Operating temperature         +10 ÷ +40 °C         +10 ÷ +40 °C           Atmospheric humidity*****         40% ÷ 80%         40 ÷ 80%           Transport and storage temperature         -20 ÷ +50 °C         -20 ÷ ÷ 50 °C           Weighing pan dimensions         Ø 100 mm         Ø 100 mm           Weighing device dimensions         190 × 190 × 222 mm         190 × 190 × 226 mm           Net weight         7.3 kg         7.3 kg         7.3 kg           Gross weight         9.3 kg         9.3 kg         9.3 kg	Databases	5	5
RS 232         2         2           Wi-Fi*****         802.11 b/g/n         802.11 b/g/n           Power supply         12 ÷ 16 V DC         12 ÷ 16 V DC           Power consumption         3 W         3 W           Operating temperature         +10 ÷ +40 °C         +10 ÷ +40 °C           Atmospheric humidity*****         40% ÷ 80%         40 ÷ 80%           Transport and storage temperature         -20 ÷ +50 °C         -20 ÷ +50 °C           Weighing pan dimensions         9 100 mm         9 100 mm           Weighing device dimensions         190 × 190 × 222 mm         190 × 190 × 226 mm           Net weight         7.3 kg         7.3 kg         7.3 kg           Gross weight         9.3 kg         9.3 kg         9.3 kg	USB-A (interchangeable)	2	2
Wi-Fi*****         802.11 b/g/n         802.11 b/g/n           Power supply         12 ÷ 16 V DC         12 ÷ 16 V DC           Power consumption         3W         3W           Operating temperature         +10 ÷ +40 °C         +10 ÷ +40 °C           Atmospheric humidity*****         40% ÷ 80%         40 ÷ 80%           Transport and storage temperature         -20 ÷ +50 °C         -20 ÷ +50 °C           Weighing pan dimensions         Ø 100 mm         Ø 100 mm           Weighing chamber dimensions         190 × 190 × 222 mm         190 × 190 × 226 mm           Net weight         7.3 kg         7.3 kg           Post serieft         9.3 kg         9.3 kg	USB-B	1	1
Power supply         12 ÷ 16 V DC         12 ÷ 16 V DC           Power consumption         3W         3W           Operating temperature         +10 ÷ +40 °C         +10 ÷ +40 °C           Atmospheric humidity*****         40% ÷ 80%         40 ÷ 80%           Transport and storage temperature         -20 ÷ +50 °C         -20 ÷ +50 °C           Weighing pan dimensions         Ø 100 mm         Ø 100 mm           Weighing chamber dimensions         190 × 190 × 222 mm         190 × 190 × 226 mm           Weighing device dimensions         351 × 205.5 × 348 mm         351 × 205.5 × 348 mm           Net weight         7.3 kg         7.3 kg           Gross weight         9.3 kg         9.3 kg	RS 232	2	2
Power consumption         3 W         3 W           Operating temperature         +10 ÷ +40 °C         +10 ÷ +40 °C           Atmospheric humidity*****         40% ÷ 80%         40 ÷ 80%           Transport and storage temperature         -20 ÷ +50 °C         -20 ÷ +50 °C           Weighing pan dimensions         Ø 100 mm         Ø 100 mm           Weighing chamber dimensions         190 × 190 × 222 mm         190 × 190 × 226 mm           Weighing device dimensions         351 × 205.5 × 348 mm         351 × 205.5 × 348 mm           Net weight         7.3 kg         7.3 kg           Gross weight         9.3 kg         9.3 kg	Wi-Fi® ****	802.11 b/g/n	802.11 b/g/n
Operating temperature       +10 ÷ +40 °C       +10 ÷ +40 °C         Atmospheric humidity*****       40% ÷ 80%       40 ÷ 80%         Transport and storage temperature       -20 ÷ +50 °C       -20 ÷ +50 °C         Weighing pan dimensions       Ø 100 mm       Ø 100 mm         Weighing chamber dimensions       190 × 190 × 222 mm       190 × 190 × 226 mm         Weighing device dimensions       351 × 205.5 × 348 mm       351 × 205.5 × 348 mm         Net weight       7.3 kg       7.3 kg       7.3 kg         Gross weight       9.3 kg       9.3 kg       9.3 kg	Power supply	12 ÷ 16 V DC	12 ÷ 16 V DC
Atmospheric humidity*****       40% ÷ 80%       40 ÷ 80%         Transport and storage temperature       -20 ÷ +50 °C       -20 ÷ +50 °C         Weighing pan dimensions       Ø 100 mm       Ø 100 mm         Weighing chamber dimensions       190 × 190 × 222 mm       190 × 190 × 226 mm         Weighing device dimensions       351 × 205.5 × 348 mm       351 × 205.5 × 348 mm         Net weight       7.3 kg       7.3 kg       7.3 kg         Gross weight       9.3 kg       9.3 kg       9.3 kg	Power consumption	3 W	3 W
Transport and storage temperature         -20 ÷ +50 °C         -20 ÷ +50 °C           Weighing pan dimensions         Ø 100 mm         Ø 100 mm           Weighing chamber dimensions         190 × 190 × 222 mm         190 × 190 × 226 mm           Weighing device dimensions         351 × 205.5 × 348 mm         351 × 205.5 × 348 mm           Net weight         7.3 kg         7.3 kg         7.3 kg           Gross weight         9.3 kg         9.3 kg         9.3 kg	Operating temperature	+10 ÷ +40 °C	+10 ÷ +40 ℃
Weighing pan dimensions         Ø 100 mm         Ø 100 mm           Weighing chamber dimensions         190 × 190 × 222 mm         190 × 190 × 226 mm           Weighing device dimensions         351 × 205.5 × 348 mm         351 × 205.5 × 348 mm           Net weight         7.3 kg         7.3 kg           Gross weight         9.3 kg         9.3 kg	Atmospheric humidity*****	40% ÷ 80%	40 ÷ 80%
Weighing chamber dimensions         190 × 190 × 222 mm         190 × 190 × 226 mm           Weighing device dimensions         351 × 205.5 × 348 mm         351 × 205.5 × 348 mm           Net weight         7.3 kg         7.3 kg           Gross weight         9.3 kg         9.3 kg	Transport and storage temperature	-20 ÷ +50 ℃	−20 ÷ +50 °C
Weighing device dimensions         351 × 205.5 × 348 mm         351 × 205.5 × 348 mm           Net weight         7.3 kg         7.3 kg           Gross weight         9.3 kg         9.3 kg	Weighing pan dimensions	ø 100 mm	ø 100 mm
Net weight         7.3 kg         7.3 kg           Gross weight         9.3 kg         9.3 kg	Weighing chamber dimensions	190 × 190 × 222 mm	190 × 190 × 226 mm
Gross weight 9.3 kg 9.3 kg	Weighing device dimensions	351 × 205.5 × 348 mm	351 × 205.5 × 348 mm
	Net weight	7.3 kg	7.3 kg
Packaging dimensions         495 × 400 × 515 mm         495 × 400 × 515 mm	Gross weight	9.3 kg	9.3 kg
	Packaging dimensions	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  $\div$  +35  $^\circ\mathrm{C}$ 

\*\*\* 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

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.

## Dimensions



AS R2, AS R1 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

#### 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.