

# AS R2 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.

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

## **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 R2 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 R2 PLUS balances are equipped with Kensington Lock, which allows to secure the device against theft.

# **Technical Specifications**

	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)*	0.015 mg	0.012 mg	0.015 mg	0.015 mg
Repeatability(Max)*	0.08 mg	0.02 mg	0.08 mg	0.04 mg
Minimum weight (USP)	30 mg	24 mg	30 mg	30 mg
Minimum weight (U=1%, k=2)	3.0 mg	2.4 mg	3.0 mg	3.0 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	± 0,05 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	1	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
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	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 ℃
Atmospheric humidity*****	40% ÷ 80%	40% ÷ 80%	40% ÷ 80%	40% ÷ 80%
Transport and storage temperature	-20 ÷ +50 ℃	-20 ÷ +50 ℃	-20 ÷ +50 ℃	-20 ÷ +50 ℃
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)******	ø 90 mm open-work ø 85 mm standard (option)******
Weighing chamber dimensions	190 × 190 × 222 mm	190 × 190 × 222 mm	190 × 190 × 222 mm	190 × 190 × 222 mm
Weighing device dimensions	351 × 205,5 × 348 mm	351 × 205,5 × 348 mm	351 × 205,5 × 348 mm	351 × 205,5 × 348 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

\* 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.

Wi-Fi® is a registered trademark of Wi-Fi® Alliance.

# **Technical Specifications**

Stabilization time***   2 s   2 s   2 s   2 s   2 s s     Adjustment   internal   internal   internal   internal   internal     Verification   Yes   Yes   Yes   Yes   Yes     OIML Class   I   I   I   I   I     Display   LCD (with backlight)     Keypad   14 keys   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     Stabase   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 consumption   3W   3W   3W   3W     Operating temperature   +10 + 40 °C   +10 + 40 °C   +10 + 40 °C     Atmospheric humidity******					
Minimum load10 mg10 mg10 mg10 mgReadability (id)0.1 mg0.1 mg0.1 mg0.1 mgReadability (id)1 mg1 mg1 mg1 mgBrear ange-10 g-160 g-220 g-310 gStandard values220 g-310 gRepeatability (ids)0.06 mg0.07 mg0.07 mg0.08 mgRepeatability (ids)0.06 mg0.07 mg0.08 mg0.08 mgMinimum weight (U=1%, k=2)12 mg14 mg14 mg16 mgPermissible valuesRepeatability (idsx)*0.09 mg0.09 mg0.09 mg0.12 mgRepeatability (Max)*0.10 mg0.11 mg0.15 mg-Stabilization time***2 s2 s2 s2 sAdjustmentinternalinternalinternalinternalUnerficationYesYesYesYesYesDisplayLC0 (with backlight)LCD (with backlight)LCD (with backlight)10 mgUsB-A11111Stabilization time***3 S551DisplayLC0 (with backlight)LCD (with backlight)LCD (with backlight)10 keysDisplay14 keys14 keys14 keys14 keysDisplay14 keys12 keys12 keys1Display14 keys14 keys14 keys14 keysDisplay14 keys14 keys1< t	Maximum capacity [Max]				
Readability [d]0.1 mg0.1 mg0.1 mg0.1 mgVerification scale interval [e]1 mg1 mg1 mg1 mgTare range-10 g-160 g-220 g-310 gStandard values220 g-310 gRepeatability (5% Max)*0.06 mg0.07 mg0.08 mg0.08 mgRepeatability (Max)*0.08 mg0.07 mg0.08 mg0.12 mgMinimuw weight (USP)120 mg140 mg140 mg160 mgMinimuw weight (USP)12 mg0.1 mg0.1 mg0.12 mgPermissible valuesRepeatability (Max)*0.09 mg0.09 mg0.09 mg0.12 mgIterarity± 0.2 mg± 0.2 mg± 0.2 mg± 0.2 mgStabilization time***2 s2 s2 s2 sStabilization time***2 s2 s2 s2 sVerificationYesYesYesYesOhld ClassIIIIDisplayLCD (with backlight)LCD (with backlight)LCD (with backlight)VerificationYes14 keys14 keys14 keysDatabases55552Verification10111USB-A1111Stabilization time2 × 16 VDC2 × 16 VDC2 × 16 VDCProtection class10 × 10 × 10 °C10 × 10 °C10 × 10 °CStabilization time10 × 10 °C10 × 10 °C10 × 10 °C <td></td> <td>3</td> <td>3</td> <td>3</td> <td>5</td>		3	3	3	5
Verification scale interval [4]1 mg1 mg1 mg1 mgTare range-10 g-60 g-220 g-310 gStandard values-10 g0.07 mg0.08 mgRepeatability(Max)*0.06 mg0.07 mg0.08 mgNinimum weight (USP)120 mg140 mg140 mg160 mgMinimum weight (USP)120 mg140 mg140 mg160 mgPermissible values12 ng0.01 mg0.09 mg0.09 mg0.12 mgRepeatability(Max)*0.09 mg0.09 mg0.09 mg0.12 mg13 mgBrepatability(S% Max)*0.09 mg0.10 mg0.11 mg11 mgStabilization time***2 s2 s2 s2 sStabilitation time***2 s2 s2 s2 sVerificationYesYesYesYesVerificationYes14 keys14 keys14 keysDiplay12 CD (with backlight)1CD (with backlight)1CD (with backlight)12 with backlight)Verification class14 keys14 keys14 keys14 keysDisbase22222Stabilization time***12 with backlight)12 with backlight)12 with backlight)12 with backlight)Verification14 keys14 keys14 keys14 keys14 keysStabilization time***12 with backlight)12 with backlight)12 with backlight)12 with backlight)Verification14 keys14 keys14 keys14 keys14 key		-	-	5	5
Tare range-110 g-160 g-220 g-310 gStandard valuesStandard valuesRepeatability(Max)*0.06 mg0.07 mg0.07 mg0.08 mgBapeatability(Max)*0.08 mg0.08 mg0.12 mgMinimu weight (USP)120 mg140 mg140 mg16 mgMinimu weight (USP)120 mg0.09 mg0.09 mg0.09 mg0.12 mgPermissibe values0.09 mg0.09 mg0.10 mg0.15 mgRepeatability(Max)*0.1 mg0.1 mg0.1 mg0.15 mgLinearity4.02 mg4.02 mg4.02 mg4.03 mgStabilization time***2 s2 s2 s2 sStabilization time***2 s2 s2 s2 sOlleL Gas1111DisplayLCD (with backlight)LCD (with backlight)LCD (with backlight)LCD (with backlight)Keypad14 keys14 keys14 keys14 keys14 keysDatabases55551Stabilization time?***10 1111Keypad12 + 16 VDC12 + 16 VDC12 + 16 VDC12 + 16 VDCDisplay12 + 16 VDC12 + 16 VDC12 + 16 VDC12 + 16 VDCStabilization time?***30 N3W3W3WRepeatability10 + 40 °C10 + 40 °C12 + 16 VDCDisplay14 keys12 + 16 VDC12 + 16 VDC12 + 16 VDCStability12 + 16 VDC <td>•</td> <td>3</td> <td>3</td> <td>3</td> <td>5</td>	•	3	3	3	5
Standard values   Control   Control   Control     Repeatability(Max)*   0.06 mg   0.07 mg   0.08 mg   0.08 mg     Repeatability(Max)*   0.08 mg   0.08 mg   0.08 mg   0.12 mg     Minimum weight (USP)   120 mg   140 mg   144 mg   16 mg     Permissible values   0.09 mg   0.09 mg   0.09 mg   0.12 mg     Repeatability(Max)*   0.09 mg   0.09 mg   0.12 mg   14 mg     Internity   ± 0.2 mg     Stabilization time***   2 s   2 s   2 s   2 s   2 s     Adjustment   internal   internal   internal   internal     Verification   Yes   Yes   Yes   Yes     ODML Class   I   I   I   I     Display   LCD (with backlight)   LCD (with backlight)   LCD (with backlight)   LCD (with backlight)     USB-A   1   1   1   1   1     Stabilization time   So		Ū	5		
Repeatability(%% Max)*0.06 mg0.07 mg0.07 mg0.08 mgRepeatability(Max)*0.08 mg0.08 mg0.12 mgMinimu weight (U=1%, k=2)12 mg140 mg140 mg160 mgMinimu weight (U=1%, k=2)12 mg140 mg140 mg160 mgPermissible values0.09 mg0.09 mg0.12 mgRepeatability(Max)*0.1 mg0.1 mg0.1 mg1.1 mgAlgo mg±0.2 mg±0.2 mg±0.2 mg±0.3 mgStabilization time***0.1 mg0.1 mg1.1 mg1.1 mgUnearly±0.2 mg2 s2 s2 s2 sVefficationinternalinternalinternalinternalUeffication time***VesVesVesVesOIML ClassIIIIIDisplayLCD (with backlight)LCD (with backlight)LCD (with backlight)LCD (with backlight)Veffection classI1111Veffer12 mg2222Veffer80.211 b/g/n80.211 b/g/n80.211 b/g/n80.211 b/g/nVeffer80.211 b/g/n80.211 b/g/n3/m3/m3/mVeffer10 mm10 mm10 mm10 mm10 mmVeffer10 mm<	5	-110 g	–160 g	–220 g	-310 g
Repeatability(Max)*0.08 mg0.08 mg0.08 mg0.12 mgMinimu weight (USP)120 mg140 mg140 mg160 mgMinimu weight (USP)12 mg14 mg14 mg16 mgPermissible values12 mg0.09 mg0.09 mg0.12 mgPermissible values0.09 mg0.09 mg0.09 mg0.12 mgRepeatability(S% Max)*0.09 mg0.01 mg0.1 mg0.12 mgRepeatability(S% Max)*0.1 mg0.1 mg0.1 mg0.1 mgStabilization time**2 s2 s2 s2 sAdjustmentinternalinternalinternalinternalVerificationYesYesYesYesOIML Class1111DisplayLCD (with backlight)LCD (with backlight)LCD (with backlight)LCD (with backlight)Stabilization time**914 keys14 keys14 keysDisplayLCD (with backlight)LCD (with backlight)LCD (with backlight)LCD (with backlight)Minimu Keypado11111Stabilization time***81111Keypado111111Display111111Keypado111111Keypado111111Keypado111111Keypado11		0.07	0.07	0.07	0.00
Minimum weight (USP)120 mg140 mg140 mg160 mgMinimum weight (USP)12 mg14 mg14 mg16 mgPermissible values14 mg0.09 mg0.09 mg0.09 mg0.12 mgRepeatability(Max)*0.1 mg0.1 mg0.1 mg0.1 mg1.02 mg±0.2 mg±0.3 mgStabilization time***2 s2 s2 s2 s2 s2 sAdjustmentinternalinternalinternalinternalVerificationYesYesYesYesYesOIML Class14 keys14 keys14 keys14 keysProtection class14 keys14 keys14 keys14 keysDatabases5555Stabilization time***2 s2 s2 s2 sVerification12 keys14 keys14 keys14 keysVerification14 keys14 keys14 keys14 keysVespad14 keys<		-	-	-	-
Minimum weight (U=1%, k=2)12 mg14 mg14 mg14 mgPermissible valuesRepeatability(5% Max)*0.09 mg0.09 mg0.09 mg0.12 mgRepeatability(Max)*0.1 mg0.1 mg0.1 mg0.15 mgLinearity±0.2 mg±0.2 mg±0.2 mg±0.3 mgStabilization time***2 s2 s2 s2 sAdjustmentinternalinternalinternalVerificationYesYesYesYesOIML ClassIIIIDisplayLCD (with backlight)LCD (with backlight)LCD (with backlight)Keypad14 keys14 keys14 keys14 keysProtection classIP 43IP 43IP 43IP 43Databases5555USB-A1111RS 2322222Wi-Fi*****802.11 b/g/n802.11 b/g/n802.11 b/g/nPower consumption3W3W3W3WOperating temperature40+80%40+80%40+80%Atmospherichemidity*****40-80%40+80%40+80%Weighing damber dimensions190×190×226 mm190×190×226 mm190×190×226 mmWeighing device dimensions190×190×226 mm190×190×226 mm190×190×226 mmWeighing device dimensions190×190×226 mm190×190×226 mm190×190×226 mmWeighing device dimensions191×190×226 mm190×190×226 mm190×190×226 mmWeighing dev		U.S. C.S. C.S. C.S. C.S. C.S. C.S. C.S.	U U	0	
Permissible values   No.9 mg   0.09 mg   0.09 mg   0.09 mg   0.1 mg     Repeatability(Max)*   0.1 mg   0.1 mg   0.1 mg   0.1 mg   0.1 mg     Linearity   ±0.2 mg   ±0.2 mg   ±0.2 mg   ±0.3 mg     Stabilization time****   2 s   2 s   2 s   2 s     Adjustment   internal   internal   internal     Verification   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     USB-A   1   1   1     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   3W     Operating temperature   +10 + +40 °C	-	Ū	0		-
Repeatability(5% Max)*0.09 mg0.09 mg0.09 mg0.12 mgRepeatability(Max)*0.1 mg0.1 mg0.1 mg0.1 mgLinearity±0.2 mg±0.2 mg±0.2 mg±0.3 mgStabilization time**2 s2 s2 s2 sAdjustmentinternalinternalinternalinternalVerificationYesYesYesYesDIML ClassIIIIDisplayLCD (with backlight)LCD (with backlight)LCD (with backlight)LCD (with backlight)Keypad14 keys14 keys14 keys14 keysDatabases5555USB-A1111USB-B0.211 b/g/n0.211 b/g/n0.211 b/g/n0.211 b/g/nPower supply24 for QC24 for QC12 for QC24 for QCPower supply10+440 °C10+440 °C10+440 °C10+440 °CRespat and storage temperature-00 mm010 mm010 mm010 mmWeighing damber dimension190 x 190 x 226 mm100 x 190 x 226 mm100 x 190 x 226 mm100 x 190 x 226 x 348 mmWeighing device dimension191 x 205 x 348 mm51 x 205 x 348 mm51 x 205 x 348 mm51 x 205 x 348 mm	-	12 mg	14 mg	14 mg	16 mg
Repeatability(Max)*   0.1 mg					
Linearity $\pm 0.2 \text{ mg}$ $\pm 0.2 \text{ mg}$ $\pm 0.2 \text{ mg}$ $\pm 0.3 \text{ mg}$ Stabilization time***2 s2 s2 s2 s2 sAdjustmentinternalinternalinternalinternalVerificationYesYesYesYesOIML ClassIIIIDisplayLCD (with backlight)LCD (with backlight)LCD (with backlight)LCD (with backlight)Keypad14 keys14 keys14 keys14 keys14 keysProtection classIP 43IP 43IP 43IP 43Databases55555USB-A1111USB-B11111RS 23222222Wi-Fi*****802.11 b/g/n802.11 b/g/n802.11 b/g/n802.11 b/g/nPower consumption3W3W3W3W3WOperating temperature+10 ÷ +40 °C+10 ÷ +40 °C+10 ÷ +40 °CHot +40 °C+10 ÷ +40 °C+10 ÷ +40 °C+10 ÷ +40 °C-20 ÷ +50 °Ctemperature%00 mm%100 mm%100 mm%100 mm%100 mmWeighing an dimensions%100 mm%100 mm%100 mm%100 mmWeighing an dimensions%100 mm%100 mm%100 mm%100 mmWeighing and imensions%100 mm%100 mm%100 mm%100 mmWeighing device dimensions%10 × 190 × 226 mm190 × 190 × 226 mm190 × 190 × 226 mm <td></td> <td>-</td> <td>-</td> <td>-</td> <td>-</td>		-	-	-	-
Stabilization time***   2 s   2 s   2 s   2 s   2 s s     Adjustment   internal   internal   internal   internal   internal     Verification   Yes   Yes   Yes   Yes   Yes     OIML Class   I   I   I   I   I     Display   LCD (with backlight)     Keypad   14 keys   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     Stabase   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 consumption   3W   3W   3W   3W     Operating temperature   +10 + 40 °C   +10 + 40 °C   +10 + 40 °C     Atmospheric humidity******		3	3	0.1 mg	0.15 mg
AdjustmentinternalinternalinternalinternalVerificationYesYesYesYesOIML ClassIIIIDisplayLCD (with backlight)LCD (with backlight)LCD (with backlight)LCD (with backlight)Keypad14 keys14 keys14 keys14 keysProtection classIP43IP43IP43IP43Databases5555USB-A1111USB-B1111RS 23222222Power onsumption3W302.11 b/g/n802.11 b/g/n802.11 b/g/n802.11 b/g/nPower onsumption3W3W3W3W3WOperating temperature+10 + +40°C+10 + +40°C+10 + +40°C+10 + +40°CWeighing na dimensions9100 mm9100 mm9100 mm9100 mmWeighing device dimensions351 × 205,5 × 348 mm351 × 205,5 × 348 mm351 × 205,5 × 348 mm351 × 205,5 × 348 mmNet weight5.3 kg5.3 kg5.3 kg5.3 kg5.3 kg	Linearity	± 0.2 mg	± 0.2 mg	± 0.2 mg	± 0.3 mg
VerificationYesYesYesYesVerificationIIIIDML ClassIIIIIDisplayLCD (with backlight)LCD (with backlight)LCD (with backlight)LCD (with backlight)IKeypad14 keys14 keys14 keys14 keysI4 keysProtection classIP 43IP 43IP 43IP 43Databases5555IDSB-A1111INUSB-B111IIRS 232222222Power supply12 + 16 V DC12 + 16 V DC12 + 16 V DC12 + 16 V DCPower consumption3W3W3W3W3WOperating temperature+10 + 40 °C+10 + 40 °C+10 + 40 °C+10 + 40 °CAtmospheric humidity*****40 + 80%40 + 80%40 + 80%40 + 80%Weighing na dimensions100 mm\$100 mm\$100 mm\$100 mmWeighing chamber dimensions100 × 190 × 226 mm190 × 190 × 226 mm190 × 190 × 226 mmWeighing device dimensions351 × 205,5 × 348 mm351 × 205,5 × 348 mm351 × 205,5 × 348 mmNet weight5.3 kg5.3 kg5.3 kg5.3 kg	Stabilization time***	2 s	2 s	2 s	2.5 s
OML ClassIIIIIDisplayLCD (with backlight)LCD (with backlight)LCD (with backlight)LCD (with backlight)LCD (with backlight)Keypad14 keys14 keys14 keys14 keys14 keysProtection classIP 43IP 43IP 43IP 43Databases5551USB-A111IINSB-B111IINSB-B222221NGT Fir ****802.11 b/g/n802.11 b/g/n802.11 b/g/n802.11 b/g/nNower consumption12 + 16 V DC12 + 16 V DC12 + 16 V DC12 + 16 V DCPower consumption10 + 40 °C+ 10 + 44 °C10 + 44 °C10 + 44 °CAtmospheric humidity*****40 + 80%40 + 80%40 + 80%40 + 80%Veighing na dimensions100 nm90 × 190 × 226 nm90 × 190 × 226 nm100 × 190 × 226 nmWeighing chamber dimensions51 × 205,5 × 348 nm51 × 205,5 × 348 nm51 × 205,5 × 348 nm51 × 205,5 × 348 nmNet weight53 kg53 kg53 kg53 kg53 kg53 kg	Adjustment	internal	internal	internal	internal
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     USB-A   1   1   1     USB-B   1   1   1     82 32   2   2   2   2     Wi-Fj*****   802.11 b/g/n   802.11 b/g/n   802.11 b/g/n   802.11 b/g/n     Power onsumption   3W   3W   3W   3W   3W     Operating temperature   +10 ÷ +40°C   +10 ÷ +40°C   20 ÷ +50°C   -20 ÷ +5	Verification	Yes	Yes	Yes	Yes
Kepad14 keys14 keys14 keys14 keysProtection classIP43IP43IP43IP43Databases551IUSB-A111IUSB-A111IRS 23222222Power supply02.11 b/g/n80.211 b/g/n80.211 b/g/n80.211 b/g/n80.211 b/g/nPower supply10 + 40°C10 + 40°C10 + 40°C10 + 40°C10 + 40°CAtmospheric humidity****40.80%40.80%40.80%40.80%40.80%Power supply-010mm910mm910mm910mm910mmAtmospheric humidity****10.10mm100mm100mm10.10mmWeighing and imensione100mm9101mm9101mm9101mmWeighing clamber dimensione31x 205x 348 mm31x 205x 348 mm31x 205x 348 mm31x 205x 348 mmNetweight53 kg53 kg53 kg53 kg53 kg53 kg	OIML Class		I		I
Protection class   IP 43   IP 43   IP 43   IP 43     Databases   5   5   5     USB-A   1   1   1     USB-B   1   1   1   1     USB-B   2   2   2   2     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 ∨ 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%   40 ÷ 80%     Weighing pan dimensions   >100 mm   90 × 190 × 226 mm   90 × 190 × 226 mm   90 × 190 × 226 mm     Weighing chamber dimensions   10 × 190 × 226 mm   190 × 190 × 226 mm   190 × 190 × 226 mm   191 × 205 × 348 mm     Weighing device dimensions   31 × 205 × 348 mm   351 × 205 × 348 mm   351 × 205 × 348 mm	Display	LCD (with backlight)	LCD (with backlight)	LCD (with backlight)	LCD (with backlight)
Databases5555USB-A11111USB-B111111RS 232222222Wi-Fi****802.11 b/g/n802.11 b/g/n802.11 b/g/n802.11 b/g/n802.11 b/g/nPower supply12 ± 16 V DC12 ± 16 V DC12 ± 16 V DC12 ± 16 V DC12 ± 16 V DCPower consumption3W3W3W3W3WOperating temperature+10 ± 40 °C+10 ± 40 °C+10 ± 40 °C40 ± 80%Atmospheric humidity*****40 ± 80%40 ± 80%40 ± 80%40 ± 80%Weighing pan dimensions910 nm910 nm910 nm910 nmWeighing device dimensions51 × 205,5 × 348 nm51 × 205,5 × 348 nm51 × 205,5 × 348 nm51 × 205,5 × 348 nmNet weight53 kg53 kg53 kg53 kg53 kgGross weight73 kg73 kg73 kg73 kg73 kg	Keypad	14 keys	14 keys	14 keys	14 keys
USB-A   1   1   1     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   3W   3W   3W   3W     Operating temperature   +10 ÷ +40 °C   +10 ÷ +40 °C   +10 ÷ +40 °C     Atmospheric humidity*****   40 ÷ 80%   40 ÷ 80%   40 ÷ 80%     Veighing pan dimensions   9 100 mm   9 100 mm   9 100 mm   9 100 mm     Weighing chamber dimensions   9 100 x 190 x 226 mm   190 x 190 x 226 mm   190 x 190 x 226 mm   190 x 190 x 226 mm     Weighing device dimensions   51 x 205,5 x 348 mm   351 x 205,5 x 348 mm     Net weight   5.3 kg   5.3 kg   5.3 kg   5.3 kg   5.3 kg	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   +10 ÷ +40 °C     Atmospheric humidity*****   40 ÷ 80%   40 ÷ 80%   40 ÷ 80%   40 ÷ 80%   40 ÷ 80%     Weighing pan dimensions   >100 mm   9100 mm   9100 mm   9100 mm   9100 mm     Weighing chamber dimensions   190 × 190 × 226 mm     Weighing device dimensions   351 × 205,5 × 348 mm     Net weight   5.3 kg   5.3 kg   5.3 kg   5.3 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   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 9 100 mm   Weighing chamber dimensions 190 × 190 × 226 mm 31 × 205,5 × 348 mm   Net weight 5.3 kg 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 7.3 kg	USB-A	1	1	1	1
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%   Transport and storage temperature -20 ÷ +50 °C -20 ÷ +50 °C -20 ÷ +50 °C -20 ÷ +50 °C   Weighing pan dimensions Ø 100 mm   Weighing device dimensions 351 × 205,5 × 348 mm   Net weight 5.3 kg 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 7.3 kg	USB-B	1	1	1	1
Power supply   12 ÷ 16 V DC     Power consumption   3 W   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   -20 ÷ +50	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     Weighing device dimensions   51 × 205,5 × 348 mm   351 × 205,5 × 348 mm     Net weight   5.3 kg   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   7.3 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 +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   Weighing device dimensions 351 × 205,5 × 348 mm   Net weight 5.3 kg 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 7.3 kg	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 ÷ ± +50 °C -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
Weighing pan dimensions   Ø 100 mm   Ø 100	Atmospheric humidity*****	40 ÷ 80%	40 ÷ 80%	40 ÷ 80%	40 ÷ 80%
Weighing chamber dimensions   190 × 190 × 226 mm   351 × 205,5 × 348 mm <t< td=""><td>Transport and storage temperature</td><td>-20 ÷ +50 ℃</td><td>-20 ÷ +50 ℃</td><td>-20 ÷ +50 ℃</td><td>-20 ÷ +50 ℃</td></t<>	Transport and storage temperature	-20 ÷ +50 ℃	-20 ÷ +50 ℃	-20 ÷ +50 ℃	-20 ÷ +50 ℃
Weighing device dimensions   351 × 205,5 × 348 mm     Net weight   5.3 kg   5.3 kg   5.3 kg   5.3 kg   7.3 kg	Weighing pan dimensions	ø 100 mm	ø 100 mm	ø 100 mm	ø 100 mm
Weighing device dimensions   351 × 205,5 × 348 mm     Net weight   5.3 kg   5.3 kg   5.3 kg   5.3 kg   7.3 kg	Weighing chamber dimensions	190 × 190 × 226 mm	190 × 190 × 226 mm	190 × 190 × 226 mm	190 × 190 × 226 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   7.3 kg	Weighing device dimensions				
Gross weight   7.3 kg   7.3 kg   7.3 kg   7.3 kg	Net weight			5.3 kg	
	Gross weight	-		5	
	Packaging dimensions	-	-	-	-

\* 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.

Wi-Fi® is a registered trademark of Wi-Fi® Alliance.

# **Technical Specifications**

AS 52	0.R2 PLUS		
num capacity [Max] 520 g			
um load —			
bility [d] 0.1 m	1		
ation scale interval [e]			
inge –520 (	1		
ard values			
tability(5% Max)* 0.08 n	g		
tability(Max)* 0.25 n	g		
um weight (USP) 160 m	g		
um weight (U=1%, k=2) 16 mg			
ssible values			
tability(5% Max)* 0.12 n	0.12 mg		
tability(Max)* 0.4 mg	1		
ity ± 0.4	ng		
zation time*** 2.5 s			
intern	al		
ation —			
Class —			
y LCD (1	vith backlight)		
<b>d</b> 14 key	S		
tion class IP 43			
ases 5			
. 1			
1			
2			
**** 802.1	b/g/n		
<b>supply</b> 12 ÷ 1	6 V DC		
consumption 3 W			
ting temperature +10 ÷	+40 ℃		
pheric humidity***** 40 ÷ 8	0%		
port and storage temperature -20 ÷	+50 ℃		
ing pan dimensions Ø 100	mm		
-	190 × 190 × 226 mm		
-	351 × 205,5 × 348 mm		
	5.3 kg		
weight 7.3 kg	7.3 kg 495 × 400 × 515 mm		
ging dimensions 495 ×			

\* 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

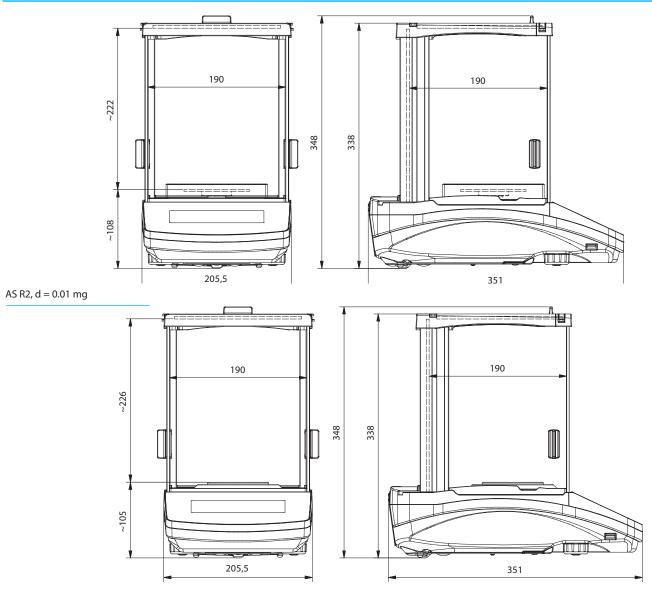
\*\*\*\* optional solution on purchase order

\*\*\*\*\* 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.

Wi-Fi® is a registered trademark of Wi-Fi® Alliance.

## Dimensions



AS R2, 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
- $\boldsymbol{\cdot}$  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.