

UYA 4Y SERIES MICROBALANCES

release date: 01-07-2016



APPLICATION

4Y series is a modern weighing device, especially useful when the measurement requires perfect accuracy and high speed.

FEATURES OF 4Y SERIES MICROBALANCE

REPEATABILITY (SD)
< 1d

MEASUREMENT DURATION
< 5 s.



UYA 2.4Y
(standard solutions for any operating conditions)



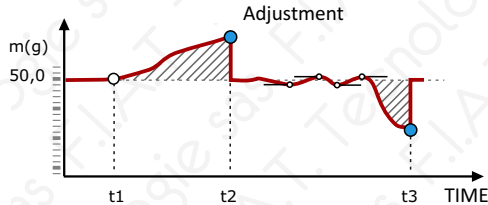
UYA 2.4Y.F
(filters weighing)



UYA 2.4Y
(control of piston pipettes volume)

ACCURACY

Measurement accuracy is guaranteed with an adjustment procedure carried out using an internal adjustment weight. This fully automatic process is controlled by a module intended to diagnose ambient conditions change (on-line). Adjustment processes (internal and external) can be performed in accordance with a specially designed schedule.



FUNCTIONALITY

4Y series microbalance is an optimized modern device which features an option of automatic level control (Level SENSING) as one of numerous functions.

The practical effect of balance customization are individual user profiles and gradable permission levels for access to balance menu.

Programmable proximity sensors offer wide range of possibilities: weighing chamber control, zeroing, tarring, printout.

Several functions such as differential weighing facilitate multi-stage mass control of one and the same sample subjected to various processes. Pipettes calibration function is an ergonomic tool designed to calibrate and control piston pipettes with the use of gravimetric method. MEDIA module, as one of the greatest 4Y series assets, provides the user with an on-screen help and support.

COMPLIANCE WITH REGULATIONS

Owing to security system and possibility to document the process by means of printouts (standard/editable), the 4Y balance meets requirements imposed by GLP/GMP systems for various industries (pharmacy, petrochemistry, environmental protection).

- PARTS COUNTING
- DOSING
- CHECKWEIGHING
- FORMULATION
- PERCENT WEIGHING [%]
- STATISTICS
- ANIMAL WEIGHING
- DIFFERENTIAL WEIGHING
- PIPETTES CALIBRATION
- SQC
- AUTOTEST
- AUTOMATIC DOOR
- AIR DENSITY CORRECTION
- GLP / GMP PROCEDURES
- INFRARED SENSORS
- AMBIENT COND. MONITORING
- UNITS

MEDIA module support within a reach of your hand

A sheer novelty of 4Y microbalance is the MEDIA module. With it you can learn using videos providing information on any relevant matter.



MEDIA module is a convenient way allowing you to broaden your knowledge on mass measurement but not exclusively (recommendations, SOP, reminders, self-designed testing procedures).

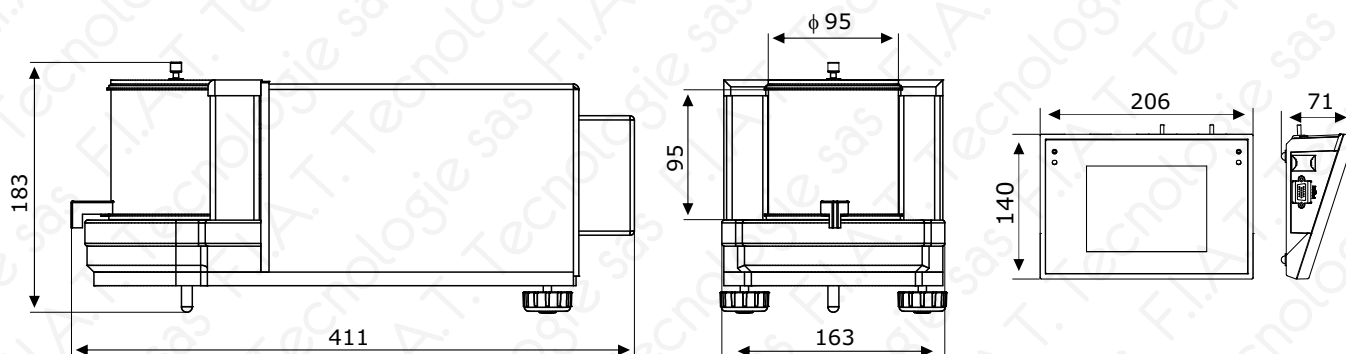
Technical specification:

	UYA 2.4Y M16	UYA 2.4Y.F M16
Max load	2,1 g	2,1 g
Min load	0,01 mg	0,01 mg
Readability	0,1 µg	0,1 µg
Repeatability	0,3 µg (Rt≤0,2g) 0,6 µg (0,2g<Rt≤2g)	0,4 µg (Rt≤0,2g) 0,6 µg (0,2g<Rt≤2g)
Linearity	±1,5 µg	±1,5 µg
Eccentric load deviation	1,5 µg	1,5 µg
Sensitivity offset	$1,5 \times 10^{-6} \times Rt$	$1,5 \times 10^{-6} \times Rt$
Sensitivity temperature drift	$1 \times 10^{-6} / ^\circ\text{C} \times Rt$	$1 \times 10^{-6} / ^\circ\text{C} \times Rt$
Sensitivitytime drift	$1 \times 10^{-6} / \text{Year} \times Rt$	$1 \times 10^{-6} / \text{Year} \times Rt$
Minimum weight (USP)	0,8 mg	0,8 mg
Minimum weight (U = 1%, k = 2)	0,08 mg	0,08 mg
Pan size	ø 16 mm	ø 50 mm
Weighing chamber dimensions	ø 90 × 90 mm	ø 118 × 35 mm
Stabilization time	10 - 20 s	
Adjustment / Calibration	automatic (internal)	
Power supply	13,5 ÷ 16 V DC / 700 mA	
Casing of the terminal	ABS plastic	
Display	colour 5,7"(640x480) with a resistive touch screen	
Processor	2 × 1 GHz	
Memory	RAM: 256 MB DDR2, flash: 8 GB microSD	
Interface	2×USB host, 2×RS 232, Ethernet 10/100 Mbit, WiFi 802.11 b,g,n	
Audio module	YES (voice messages support)	
Video support	YES (videos and multimedia instructions)	
IN / OUT	4 in / 4 out (digital)	
Ambient conditions:		
Working temperature	+10 ° ÷ +30 °C	
Change rate of working temperatures	±0,3°C/1h (±1°C / 8h)	
Relative air humidity**	40% ÷ 80%	
Change rate of atmospheric humidity	±1%/h (±4%/8h)	

Rt - net weight

** - Non-condensing conditions

Dimensions:

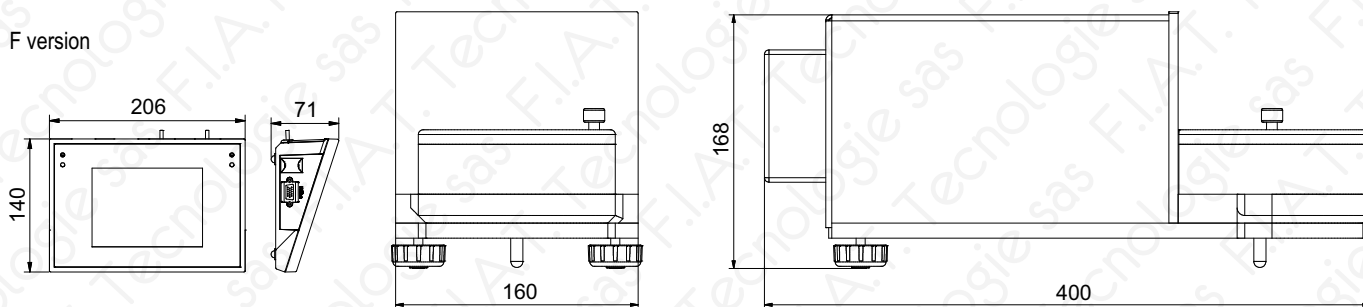


Owing to fastidious selection of mechanical design components our balance allows to obtain great stability and repeatability of indications regardless of measured sample size and conditions of use. Multi-shield mechanical design of the weighing module provides excellent thermal stability. Even with challenging ambient temperature your weighing is precise and accurate.

4Y microbalances offer modern hardware and software. In-built programs, Windows Embedded Compact 7 operating system, Flash memory, Double Hardware system guarantee fast measurement and reliability when it comes to data acquiring and processing. The 4Y series comprises 5,7" colour touchscreen providing ever more increased balance operation functionality and even more practical results presentation. Complex databases allow measurement record along with printout and export option.

Dimensions:

F version



Additional equipment:

Anti vibration table for microbalance	Ambient conditions module
Professional weighing table	Additional LCD display "WD-5"
Impact Epson printer	PC keyboard
Label printer Citizen	Power adapter with battery and charger ZR-02
Anti draft shield for microbalances	Mass standard
"Tare" and "Print" foot button	Antistatic cable
"PW-WIN" computer software	Bar code scanner
"RAD-KEY" computer software	Cable RS 232 (balance - computer) "P0108"
"REC-FS" computer software	Cable RS 232 (balance - Epson, Citizen printer) "P0151"
Antistatic ionizer DJ-03	

ANALYTICAL BALANCES AS 3Y



release date 14-06-2016



Balances AS 3Y series are laboratory weighing instruments featuring 5,7" LCD colour touch panel which provides new possibilities of balance operation and presenting measurement results. Personalization of balance settings is carried out in extended user profiles. AS 3Y series comes standard with system of automatic adjustment using an internal mass standard. Level control is based on LevelSENSING system, RADWAG patented solution, which uses a system of an electronic level. New function of AS 3Y series is online monitoring of ambient conditions through built-in sensors or an external ambient conditions module THB 3 series. AS 3Y series comes standard with esthetic weighing chamber protected by an anti-draft shield. Design of the weighing chamber enables easy disassembling of its glass parts, for keeping clean sterile. Interactive formulation mode in the AS 3Y series is a reliable tool for creating various mixtures with application of databases. Differential weighing mode aids mass control of the same sample subjected to differed processes over time. Extended databases enable storing all carried out measurements, with option of printing and exporting them. Standard and user defined printouts allow for maintaining documentation complying with GLP/GMP requirements practically in any application. AS 3Y series features an independent mass control mode carried out with application of an automatic feeder PA-02/H.

- Parts counting
- Dosing
- Checkweighing
- Formulation
- Percent deviations
- Statistics
- Animal weighing
- Differential weighing
- Pipettes calibration
- Statistical Quality Control
- Autotest (GLP, Filter)
- Density determination
- Air buoyancy compensation
- GLP procedures
- Infrared sensors
- Ambient conditions monitoring
- Newton unit measurement
- Replaceable units
- Mass control
- Mass for titrator

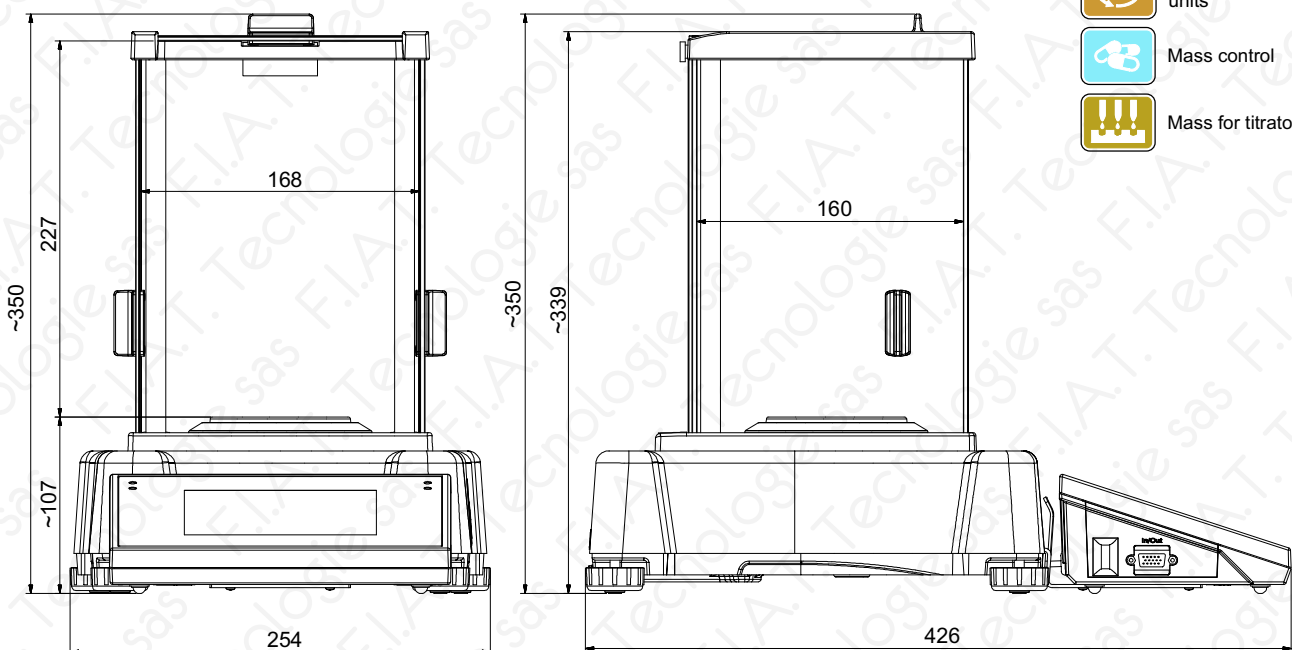
✓ Removable glass parts: side, top and back!



Additionally option: AS xx.3Y.B

NOVELTY: 3Y series balances are equipped with **802.11b/g/n WiFi** communication interface operating with frequency range 2.4÷ 2.472 GHz (1÷13 channels). Communication is established likewise as for any other interfaces, e.g.: RS 232, Ethernet.

Dimensions:



Technical specification:

	AS 220.3Y M16	AS 310.3Y M16	AS 510.3Y -
Max capacity	220 g	310 g	510 g
Minimal load	10 mg	10 mg	10 mg
Readability	0,1 mg	0,1 mg	0,1 mg
Tare range	-220 g	-310 g	-510 g
Working temperature *	+10° ÷ +40°C		
Relative air humidity ***	40% ÷ 80%		
Repeatability **	0,1 mg (Rt ≤ 220g)	0,1 mg (Rt ≤ 220g) 0,2 mg (220g < Rt ≤ 310g)	0,1 mg (Rt ≤ 220g) 0,2 mg (220g < Rt ≤ 310g) 0,3 mg (310g < Rt ≤ 510g)
Linearity	± 0,2 mg	± 0,3 mg	± 0,4 mg
Stabilization time	3,5 s	3,5 s	3,5 s
Sensitivity drift	1 ppm/°C in temperature +15° ÷ +35°C		
Minimum weight (USP)	100 mg		
Minimum weight (U = 1%, k = 2)	10 mg		
Interface	2×USB, 2×RS 232, 1×Ethernet, Wi-Fi 802.11 b/g/n, 4 Inputs / 4 Outputs (digital)		
Power supply	13,5 ÷ 16 V DC / 2,1 A		
Adjustment / Calibration	internal (automatic)		
Pan size	Ø 100 mm	Ø 100 mm	Ø 100 mm
Display	5,7" touch panel		

* The balance maintains its parameters in accordance with type approval in temperature 18°C ÷ 30°C

** Repeatability is expressed as a standard deviation from 10 weighing cycles (mass of 60g for balances with d=0,01mg and 220g for balances with d=0,1mg)

*** Non-condensing conditions

Additional equipment:

Antivibration table for laboratory balances	Additional LCD display "WD-5"
Professional weighing table	Density determination kit
Dot matrix Epson printer	PC USB keyboard
Label printer Citizen	Automatic feeder PA-02/H
Holders for glass vessels	Power adapter with battery and charger ZR-02
Tare and "Print" foot button	Rack for under hook weighing
PW-WIN computer software	Standard mass
RAD-KEY computer software	Antistatic cable PA 1
Antistatic ionizer DJ-02	Bar code scanner
THB 3 ambient conditions module	Cable RS 232 (scale, Epson , Citizen printer) "P0151"

AS.R ANALYTICAL BALANCES



release date 01-03-2016



✓ Removable glass parts: side, top and back!

Quick access to information

Direct access to functions and databases is possible from the level of keyboard.

Database – a direct access to databasis

Function - a direct access to the basic functions

F1 to F4 – programmable function and navigation keys on the menu

ALIBI memory

The used ALIBI memory is a data secure area and allows to record up to 100 000 weighing records. It ensures security of constant data register in the long time period.

The AS.R series represents a new standard level for analytical balances. They feature a **new, readable LCD display** which allows a clearer presentation of the weighing result. Besides, the display has a new text information line allowing to show additional messages and data, e.g. product name or tare value.

Additionally, the new R series balances by means of pictograms signal the activated working mode, connection with the Internet, the battery charge level, balance service functions. Also a number of displayed measuring units has been increased.

The balance precision and the measurement accuracy is assured by automatic internal adjustment, which takes into consideration temperature changes and time flow.

AS.R series balances feature several communication interfaces: **2 x RS 232, type A USB, type B USB and optional WiFi**. The housing is made of plastic, and the pan is made of stainless steel.

DATABASES IN R SERIES BALANCES

In new AS.R series balances the information system is based on 5 databases, which allows for several users to work with several products databases, and the registered weighing results can be subject to further analysis.

The data is registered in 5 databases:

- users (up to 10 users),
- products (up to 1000 products),
- weighments (up to 5000 weighments),
- tares (up to 100 tares),
- ALIBI memory (up to 100 000 weighments).

There is two directions **data exchange** within the system thanks to a quick USB interface. New balances allow to import and export databases using **USB pen drives**.

R series balances fulfill GLP requirements.

- Parts counting
- Dosing
- Checkweighing
- Percent deviations
- Statistics
- Animal weighing
- Pipettes calibration
- Statistical Quality Control
- Autotest (GLP, Filter)
- GLP procedures
- Under hook weighing
- Totalizing
- Density determination
- Peak hold
- Packaged Goods Control
- Newton unit measurement
- Replaceable units
- ALIBI Memory

Technical specification:

	AS 62.R2 M	AS 60/220.R2 M	AS 82/220.R2 M
Max capacity	62 g	60 g / 220 g	82 g / 220 g
Minimum load	1 mg	1 mg	1 mg
Readability	0,01 mg	0,01 mg / 0,1 mg	0,01 mg / 0,1 mg
Tare range	-62 g	-220 g	-220 g
Repeatability *	0,015 mg (Rt ≤ 2 g)	0,015 mg (Rt ≤ 2 g)	0,015 mg (Rt ≤ 2 g)
	0,02 mg (2 g < Rt ≤ 50 g)	0,02 mg (2 g < Rt ≤ 50 g)	0,02 mg (2 g < Rt ≤ 50 g)
	0,03 mg (50 g < Rt ≤ 60 g)	0,03 mg (50 g < Rt ≤ 60 g)	0,03 mg (50 g < Rt ≤ 82 g)
		0,1 mg (60 g < Rt ≤ 220 g)	0,1 mg (82 g < Rt ≤ 220 g)
Linearity	± 0,06 mg	± 0,06 mg (to 60 g) ± 0,2 mg (60 g ÷ 220 g)	± 0,06 mg (to 82 g) ± 0,2 mg (82 g ÷ 220 g)
Pan size	open-work pan Ø 90 mm or (Ø 85 mm - option)		
Working temperature	+10° ÷ +40°C		
Relative air humidity **	40% ÷ 80%		
Stabilization time	6 s	6 s / 3,5 s	6 s / 3,5 s
Sensitivity drift	1 ppm/°C in temperature +10° ÷ +40°C		
Minimum weight (USP)	30 mg	30 mg	30 mg
Minimum weight (U = 1%, k = 2)	3 mg	3 mg	3 mg
Interface	2 x RS 232, USB-A, USB-B, WiFi - option		
Power supply***	12 ÷ 16 V DC / 2,1 A		
Adjustment/calibration	internal (automatic)		
Display	LCD (backlit)		
Net weight/Gross weight	5,4 kg / 7,5 kg	5,4 kg / 7,5 kg	5,4 kg / 7,5 kg
Packaging size	495 x 400 x 515 mm		

* Repeatability is expressed as a standard deviation from 10 weighing cycles.

** Non-condensing conditions

*** 250 mA for balances without WiFi module, 350 mA for balances with installed WiFi module

Technical specification:

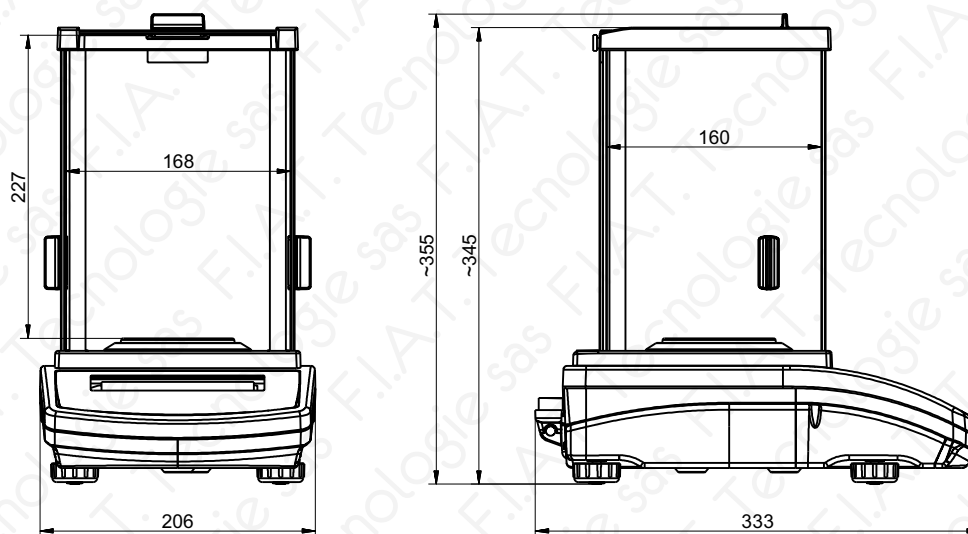
	AS 110.R2 M	AS 160.R2 M	AS 220.R2 M	AS 310.R2 M
Max capacity	110 g	160 g	220 g	310 g
Minimum load	10 mg	10 mg	10 mg	10 mg
Readability	0,1 mg	0,1 mg	0,1 mg	0,1 mg
Tare range	-110 g	-160 g	-220 g	-310 g
Repeatability *	0,1 mg (Rt ≤ 110g)	0,1 mg (Rt ≤ 160g)	0,1 mg (Rt ≤ 220g)	0,1 mg (Rt ≤ 220g) 0,2 mg (220g < Rt ≤ 310g)
Linearity	± 0,2 mg	± 0,2 mg	± 0,2 mg	± 0,3 mg
Pan size	Ø 100 mm	Ø 100 mm	Ø 100 mm	Ø 100 mm
Working temperature	+10° ÷ +40°C			
Relative air humidity **	40% ÷ 80%			
Stabilization time	3,5 s			
Sensitivity drift	1 ppm/°C in temperature +10° ÷ +40°C			
Interface	2 × RS 232, USB-A, USB-B, WiFi - option			
Power supply***	12 ÷ 16 V DC / 2,1 A			
Adjustment/calibration	internal (automatic)			
Display	LCD (backlit)			
Net weight/Gross weight	5,4 kg / 7,5 kg	5,4 kg / 7,5 kg	5,4 kg / 7,5 kg	5,4 kg / 7,5 kg
Packaging size	495×400×515 mm			

* Repeatability is expressed as a standard deviation from 10 weighing cycles.

** Non-condensing conditions

*** 250 mA for balances without WiFi module, 350 mA for balances with installed WiFi module

Dimensions:



Accessories:

Antivibration table SAL/STONE	Density determination kit
Rack for under hook weighing	Additional LCD display "WD-6"
Professional weighing table	Power adapter with battery and charger ZR-02
Impact printer Epson	PC keyboard USB
Printer USB PCL	External USB memory (FAT files format)
Holders for glass vessels	Mass standard
"PW-WIN" computer software	Adjustment weight
"RAD-KEY" computer software	USB A- USB B cable (balance - computer, balance - PLC printer)
Antistatic ionizer DJ-02	Cable RS 232 (scale - computer) "P0108"
Bar code scanner	Cable RS 232 (scale, Epson, Citizen printer) "P0151"
Bar code scanner USB HID	"Tare" or "Print" foot button

AS.X2 ANALYTICAL BALANCES



release date 14-06-2016



✓ Removable panes: side, top and back!

Personalization taken to the next level

The X2 is the only balance available on the market that provides a user with the option to design display using wide selection of widgets. Customised display of X2 series offers direct access to the results of your work and other important information directly from the home screen.

Weighing Data Management

USB interface facilitates quick transfer and copying of any results of your work (measurements, reports, databases) to other balances. Managing the databases of balances may be also carried out over network thanks to E2R system also offering the possibility of remote control. Network management of the weighing data increases effectivity, productivity and safety of the important data to the maximum.

The AS.X2 series represents a new advanced level for analytical balances. The X2 series balances feature the latest generation capacitive display providing the maximum comfort of use, available right at your fingertips. Ease of operation, clear menu and practical arrangement of the display guarantee the best ergonomics for your everyday tasks. A wide array of available interfaces facilitate selection of the most optimal means for communication. The X2 series balances offer unlimited possibilities for cooperation with external devices, providing printing, copying, archiving and data transfer. Built-in IR sensors allow numerous operations (e.g. tarring, transmitting the result to a printer or selecting successive steps of a particular process, etc.) to be performed hands-free, by simply moving a hand across the sensor. The housing is made of plastic, and the pan is made of stainless steel.

DATABASES IN X2 SERIES BALANCES

In new AS.X2 series balances the information system is based on 7 databases which allow several users to work with database storing several products. The registered weighing results can be subject to further analysis.

The data is registered in 7 databases:

- Users (up to 100 users),
- Products (up to 5 000 products),
- Weighments (up to 50 000 weighments),
- Packaging (up to 100 packaging types),
- Formulas (up to 100 formulas),
- Clients (up to 100 clients),
- ALIBI memory (up to 500 000 weighments).

The X2 series features option of making reports of 2 different categories:

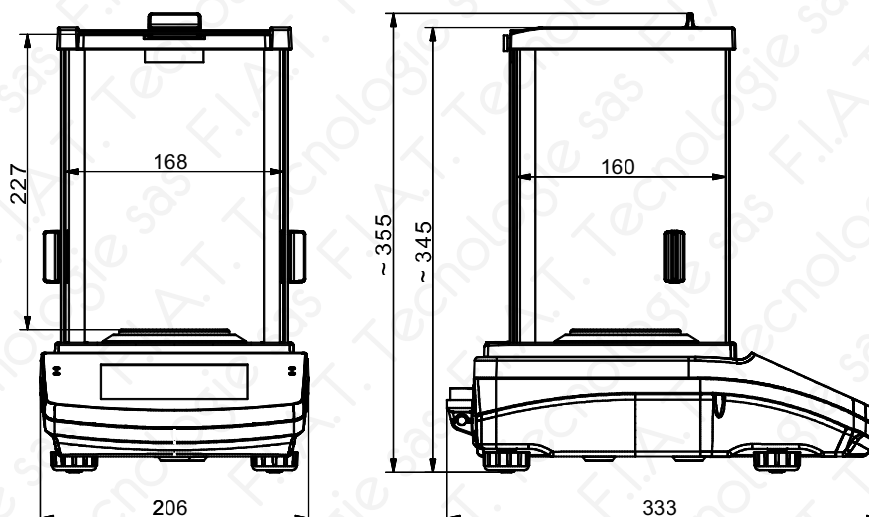
- Reports on formulas (up to 200 reports),
- Reports on density determination (up to 500 reports).

ALIBI Memory

The X2 series balances feature ALIBI memory that is a warranty for safety and automatic recording of your measurements. Options such as data preview, copying and archiving are available to users as well. The ALIBI memory allows to record up to 500 000 weighment records.

- Parts counting
- Dosing
- Checkweighing
- Formulation
- Percent deviations
- Statistics
- Animal weighing
- Autotest (GLP, Filter)
- Density determination
- Air buoyancy compensation
- GLP procedures
- Under hook weighing
- Peak hold
- Infrared sensors
- Ambient conditions monitoring
- Newton unit measurement
- Replaceable units
- ALIBI Memory
- Mass for titrator

Dimensions:



Technical specification:

	AS 62.X2 M 16	AS 60/220.X2 M 16	AS 82/220.X2 M 16
Max capacity	62 g	60 g / 220 g	82 g / 220 g
Minimum load	1 mg	1 mg	1 mg
Readability	0,01 mg	0,01 mg / 0,1 mg	0,01 mg / 0,1 mg
Tare range	-62 g	-220 g	-220 g
Repeatability *	0,015 mg (Rt ≤ 2 g) 0,02 mg (2 g < Rt ≤ 50 g) 0,03 mg (50 g < Rt ≤ 60 g)	0,015 mg (Rt ≤ 2 g) 0,02 mg (2 g < Rt ≤ 50 g) 0,03 mg (50 g < Rt ≤ 60 g) 0,1 mg (60 g < Rt ≤ 220 g)	0,015 mg (Rt ≤ 2 g) 0,02 mg (2 g < Rt ≤ 50 g) 0,03 mg (50 g < Rt ≤ 82 g) 0,1 mg (82 g < Rt ≤ 220 g)
Linearity	± 0,06 mg	± 0,06 mg (to 60 g) ± 0,2 mg (60 g ÷ 220 g)	± 0,06 mg (to 82 g) ± 0,2 mg (82 g ÷ 220 g)
Pan size	open-work pan Ø 90 mm or Ø 85 mm (option)		
Working temperature	+10° ÷ +40°C		
Relative air humidity **	40% ÷ 80%		
Stabilization time	6 s	6 s / 3,5 s	6 s / 3,5 s
Sensitivity drift	1 ppm/°C in temperature +10° ÷ +40°C		
Minimum weight (USP)	30 mg	30 mg	30 mg
Minimum weight (U = 1%, k = 2)	3 mg	3 mg	3 mg
Interface	2 × RS 232, USB-A, USB-B, Ethernet, WiFi - option		
Power supply***	12 ÷ 16 V DC / 2,1 A		
Adjustment	internal (automatic)		
Display	5" colour capacitive touchscreen		
Net weight/Gross weight	5,4 kg / 7,5 kg	5,4 kg / 7,5 kg	5,4 kg / 7,5 kg
Packaging size	495 × 400 × 515 mm		

* Repeatability is expressed as a standard deviation from 10 weighing cycles.

** Non-condensing conditions

*** 250 mA for balances without WiFi module, 450 mA for balances with installed WiFi module

Technical specification:

	AS 110.X2 M 16	AS 160.X2 M 16	AS 220.X2 M 16	AS 310.X2 M 16
Max capacity	110 g	160 g	220 g	310 g
Minimum load	10 mg	10 mg	10 mg	10 mg
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Linearity	± 0,2 mg	± 0,2 mg	± 0,2 mg	± 0,3 mg
Pan size	Ø 100 mm	Ø 100 mm	Ø 100 mm	Ø 100 mm
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Barcode scanner USB HID	"Tare" or "Print" foot button

MYA 4Y.F SERIES MICROBALANCES



release date: 14-12-2015



APPLICATION

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FEATURES OF 4Y SERIES MICROBALANCE

REPEATABILITY (SD)
< 1d

MEASUREMENT DURATION
< 5 s.



MYA 0,8/3.4Y
(standard solutions for any operating conditions)



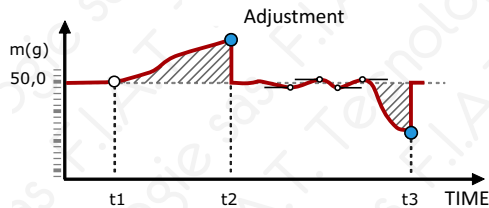
MYA 5.4Y.F
(filters weighing)



MYA 5.4Y.F1
(filters weighing)

ACCURACY

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- SQC
- AUTOTEST
- AUTOMATIC DOOR
- AIR DENSITY CORRECTION
- GLP / GMP PROCEDURES
- INFRARED SENSORS
- AMBIENT COND. MONITORING
- UNITS
- MOVABLE RANGE

Technical specification:

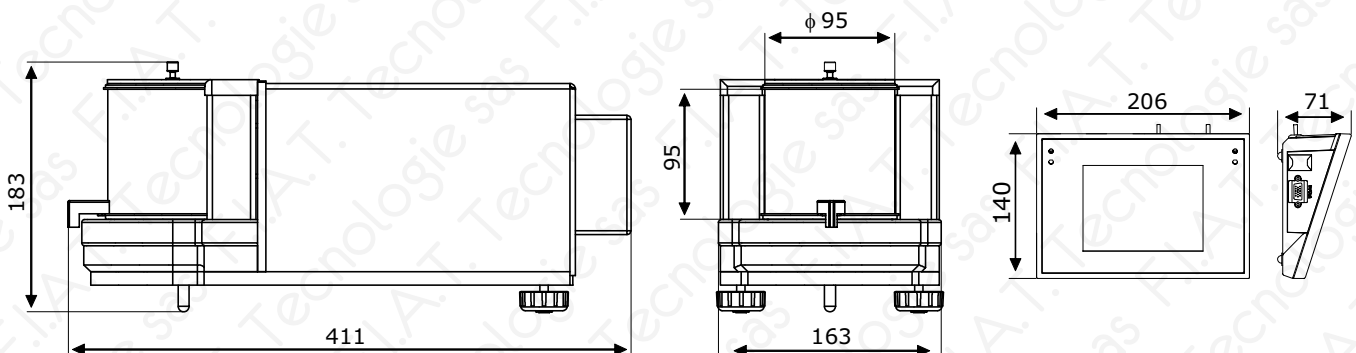
	MYA 0,8/3.4Y M	MYA 5.4Y.F M	MYA 5.4Y.F1 M
Max load	0,8/3 g	5 g	5 g
Readability	1/10 µg	1 µg	1 µg
Repeatability *	1 µg / 5 µg	1 µg (Rt ≤ 2g) 1,6 µg (2g < Rt ≤ 5g)	1 µg (Rt ≤ 2g) 1,6 µg (2g < Rt ≤ 5g)
Linearity	±3 µg / ±4 µg	±5 µg	±5 µg
Eccentric load deviation	3 µg / 4 µg	5 µg	5 µg
Sensitivity offset	$1,5 \times 10^{-6} \times Rt$	$1,5 \times 10^{-6} \times Rt$	$1,5 \times 10^{-6} \times Rt$
Sensitivity temperature drift	$1 \times 10^{-6} / ^\circ C \times Rt$	$1 \times 10^{-6} / ^\circ C \times Rt$	$1 \times 10^{-6} / ^\circ C \times Rt$
Sensitivity stability	$1 \times 10^{-6} / \text{Year} \times Rt$	$1 \times 10^{-6} / \text{Year} \times Rt$	$1 \times 10^{-6} / \text{Year} \times Rt$
Minimum weight (USP)	2 mg	2 mg	2 mg
Minimum weight (U = 1%, k = 2)	0,2 mg	0,2 mg	0,2 mg
Pan size	Ø 26 mm Ø 60 mm (weighing pan for filters)	Ø 26mm, Ø 100mm	Ø 26mm, Ø 160mm
Weighing chamber dimensions	Ø 90 × 90 mm	Ø 118 × 35 mm	Ø 168 × 35 mm
Stabilization time		~ 5 s	
Adjustment/Calibration		automatic (internal)	
Power supply		13,5 ÷ 16 V DC / 2,1 A	
Casing of the terminal		ABS plastic	
Display		colour 5,7"(640x480) with a resistive touch screen	
Processor		2 × 1 GHz	
Memory		RAM: 256 MB DDR2, flash: 8 GB microSD	
Interface		2×USB host, 2×RS 232, Ethernet 10/100 Mbit, WiFi 802.11 b,g,n - optional	
Audio module		YES (voice messages support)	
Video support		YES (videos and multimedia instructions)	
IN / OUT		4 in / 4 out (digital)	
Ambient conditions			
Working temperature		+10 ° ÷ +40 °C	
Change rate of working temperature		±0,3 °C/h (±1 °C/8h)	
Atmospheric humidity **		40% ÷ 80%	
Change rate of atmospheric humidity		±1%/h (±4%/8h)	

Rt - net weight

* - repeatability expressed as standard deviation from 10 weighing cycles

** - Non-condensing conditions

Dimensions:

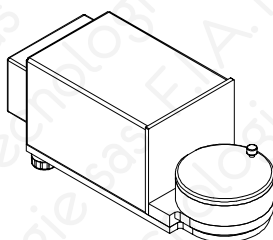
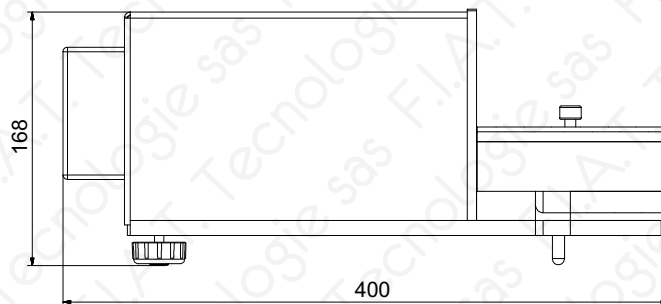
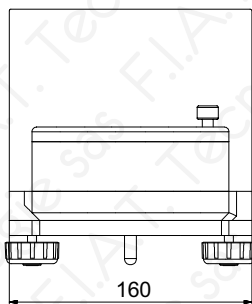
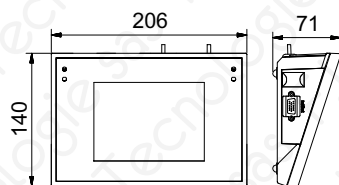


Owing to fastidious selection of mechanical design components our balance allows to obtain great stability and repeatability of indications regardless of measured sample size and conditions of use. Multi-shield mechanical design of the weighing module provides excellent thermal stability. Even with challenging ambient temperature your weighing is precise and accurate.

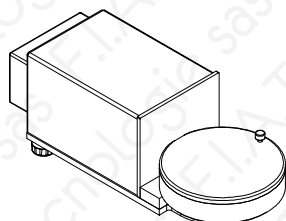
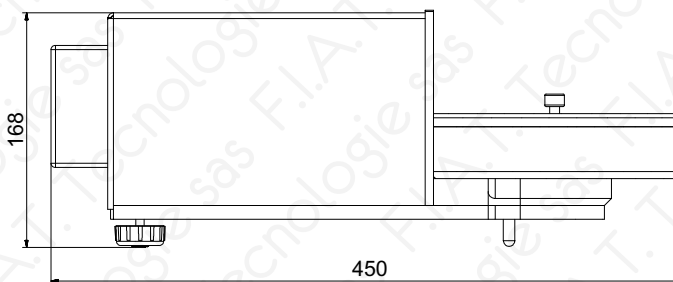
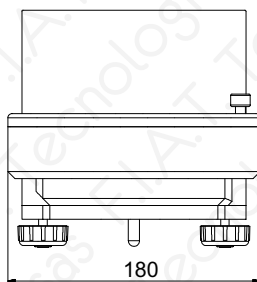
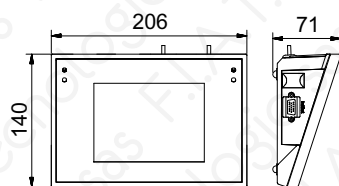
4Y microbalances offer modern hardware and software. In-built programs, Windows Embedded Compact 7 operating system, Flash memory, Double Hardware system guarantee fast measurement and reliability when it comes to data acquiring and processing. The 4Y series comprises 5,7" colour touchscreen providing ever more increased balance operation functionality and even more practical results presentation. Complex databases allow measurement record along with printout and export option.

Dimensions:

F version



F1 version



Additional equipment:

Antivibration table for microbalances	Antistatic ionizer DJ-03
Professional weighing table	THB 3 ambient conditions module
Impact Epson printer	Additional LCD display "WD-5"
Label printer Citizen	PC USB keyboard
Anti draft shield for microbalances	Power adapter with battery and charger ZR-02
Tare and Print foot button	Mass standard
PW-WIN computer software	Antistatic cable PA 1
RAD-KEY computer software	Bar code scanner
REC-FS computer software	Cable RS 232 (balance - Epson, Citizen printer) "P0151"

MYA 4Y.P Microbalances for calibration of pipettes



release date 14-12-2015



APPLICATION

4Y series is a modern weighing device, especially useful when the measurement requires perfect accuracy and high speed.

FEATURES OF 4Y SERIES MICROBALANCE

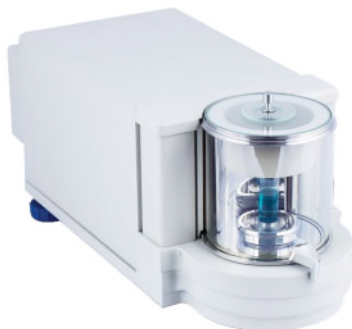
REPEATABILITY (SD)
< 1d

MEASUREMENT DURATION
< 5 s.



MYA 21.4Y.P

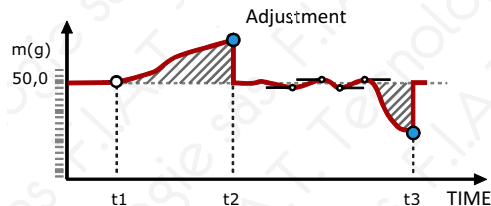
(control of piston pipettes volume)



(control of piston pipettes volume)

ACCURACY

Measurement accuracy is guaranteed with an adjustment procedure carried out using an internal adjustment weight. This fully automatic process is controlled by a module intended to diagnose ambient conditions change (on-line). Adjustment processes (internal and external) can be performed in accordance with a specially designed schedule.



FUNCTIONALITY

4Y series microbalance is an optimized modern device which features an option of automatic level control (Level SENSING) as one of numerous functions.

The practical effect of balance customization are individual user profiles and gradable permission levels for access to balance menu.

Programmable proximity sensors offer wide range of possibilities: weighing chamber control, zeroing, tarring, printout.

Several functions such as differential weighing facilitate multi-stage mass control of one and the same sample subjected to various processes. Pipettes calibration function is an ergonomic tool designed to calibrate and control piston pipettes with the use of gravimetric method. MEDIA module, as one of the greatest 4Y series assets, provides the user with an on-screen help and support.

COMPLIANCE WITH REGULATIONS

Owing to security system and possibility to document the process by means of printouts (standard/editable), the 4Y balance meets requirements imposed by GLP/GMP systems for various industries (pharmacy, petrochemistry, environmental protection).

- PARTS COUNTING
- DOSING
- CHECKWEIGHING
- FORMULATION
- PERCENT WEIGHING [%]
- STATISTICS
- ANIMAL WEIGHING
- DIFFERENTIAL WEIGHING
- PIPETTES CALIBRATION
- SQC
- AUTOTEST
- AUTOMATIC DOOR
- AIR DENSITY CORRECTION
- GLP / GMP PROCEDURES
- INFRARED SENSORS
- AMBIENT COND. MONITORING
- UNITS

MEDIA module support within a reach of your hand

A sheer novelty of 4Y microbalance is the MEDIA module. With it you can learn using videos providing information on any relevant matter.



MEDIA module is a convenient way allowing you to broaden your knowledge on mass measurement but not exclusively (recommendations, SOP, reminders, self-designed testing procedures).

Technical specification:

MYA 21.4Y.P



Max load	21 g
Readability	1 µg
Repeatability *	1,5 µg (Rt ≤ 0,2g) 2,0 µg (0,2g < Rt ≤ 5g) 2,5 µg (5g < Rt ≤ 11g) 3,0 µg (11g < Rt ≤ 21g)
Linearity	±7 µg
Eccentric load deviation	7 µg
Sensitivity offset	4 × 10 ⁻⁶ × Rt
Sensitivity temperature drift	1 × 10 ⁻⁶ / °C × Rt
Sensitivity time drift	1 × 10 ⁻⁶ / Year × Rt
Minimum weight (USP)	3,0 mg
Minimum weight (U = 1%, k = 2)	0,3 mg
Pan size	∅ 26 mm
Weighing chamber dimensions	∅ 90 × 90 mm
Stabilization time	~ 5 s
Adjustment / Calibration	automatic (internal)
Working temperature	+10 ° ÷ +40 °C
Relative air humidity **	40% ÷ 80%
Power supply	13,5 ÷ 16 V DC / 2,1 A
Casing of the terminal	ABS plastic
Display	colour 5,7"(640x480) with a resistive touch screen
Processor	2 × 1 GHz
Memory	RAM: 256 MB DDR2, flash: 8 GB microSD
Interface	2×USB host, 2×RS 232, Ethernet 10/100 Mbit, WiFi 802.11 b,g,n - optional
Audio module	YES (voice messages support)
Video support	YES (videos and multimedia instructions)
IN / OUT	4 in / 4 out (digital)

Rt - net weight

* Repeatability is expressed as a standard deviation from 10 weighing cycles

** Non-condensing conditions

Accessories:

Antivibration table for microbalance	Antistatic ionizer DJ-03
Professional weighing table	Ambient conditions module
Impact Epson printer	Additional LCD display "WD-5"
Label printer Citizen	PC keyboard
Anti draft shield for microbalances	Power adapter with battery and charger ZR-02
Air density determination kit	Mass standard
Tare and "Print" foot button	Antistatic cable
PW-WIN computer software	Bar code scanner
RAD-KEY computer software	Cable RS 232 (scale - computer) "P0108"
REC-FS computer software	Cable RS 232 (scale, Epson, Citizen printer) "P0151"
Pipettes computer software	

XA 4Y.A SERIES ANALYTICAL BALANCES



release date: 19-01-2016



APPLICATION

4Y series is a modern weighing device, especially useful when the measurement requires perfect accuracy and high speed.

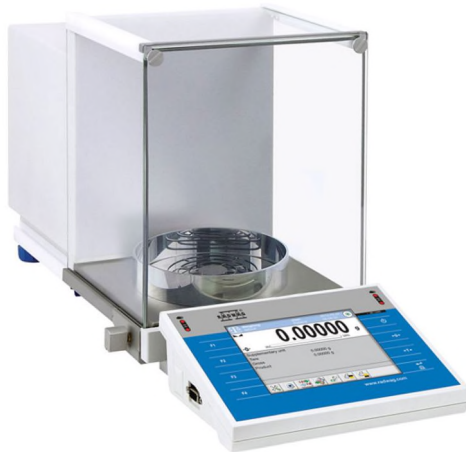
FEATURES OF 4Y SERIES BALANCES

REPEATABILITY (SD)
< 1d

MEASUREMENT DURATION
< 5 s.



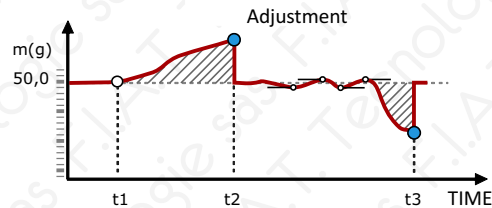
$d = 0,1 \text{ mg}$



$d = 0,01 \text{ mg}$

ACCURACY

Measurement accuracy is guaranteed with an adjustment procedure carried out using an internal adjustment weight. This fully automatic process is controlled by a module intended to diagnose ambient conditions change (on-line). Adjustment processes (internal and external) can be performed in accordance with a specially designed schedule.



FUNCTIONALITY

4Y series balance is an optimized modern device which features an option of automatic level control (LevelSENSING) as one of numerous functions.

The practical effect of balance customization are individual user profiles and gradable permission levels for access to balance menu.

Programmable proximity sensors offer wide range of possibilities: weighing chamber control, zeroing, tarring, printout.

Several functions such as differential weighing facilitate multi-stage mass control of one and the same sample subjected to various processes. Pipettes calibration function is an ergonomic tool designed to calibrate and control piston pipettes with the use of gravimetric method. MEDIA module, as one of the greatest 4Y series assets, provides the user with an on-screen help and support.

COMPLIANCE WITH REGULATIONS

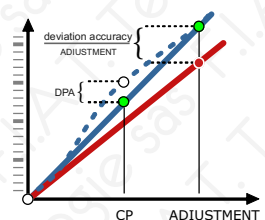
Owing to security system and possibility to document the process by means of printouts (standard/editable), the 4Y balance meets requirements imposed by GLP/GMP systems for various industries (pharmacy, petrochemistry, environmental protection).

- PARTS COUNTING
- DOSING
- CHECKWEIGHING
- FORMULATION
- PERCENT WEIGHING [%]
- STATISTICS
- ANIMAL WEIGHING
- DIFFERENTIAL WEIGHING
- PIPETTES CALIBRATION
- STATISTICAL QUALITY CONTROL
- AUTOTEST
- DENSITY
- AIR DENSITY CORRECTION
- AUTOMATIC DOOR
- COOPERATION WITH TITRATORS
- GLP / GMP PROCEDURES
- INFRARED SENSORS
- AMBIENT COND. MONITORING
- UNITS
- MOVABLE RANGE

MECHANICAL DESIGN

The 4Y series features reliable measuring system housed within a tight casing. With this feature, the balance provides accuracy and fast measurement for any working environment. DPA SYSTEM (Dual Point Adjustment), which is the great novelty of RADWAG analytical balances, guarantees perfect linearity even for challenging ambient conditions. DPA is a standard solution of the XA.4Y.A series regardless of the reading unit value.

4Y balances offer modern hardware and software. In-built programs, Windows Embedded Compact 7 operating system, Flash memory, Double Hardware system guarantee fast measurement and reliability when it comes to data acquiring and processing. The 4Y series comprises 5,7" colour touchscreen providing ever more increased balance operation functionality and even more practical results presentation. Complex databases allow measurement record along with printout and export option. The system supports 13 languages.



Technical specification:

	XA 52.4Y.A M	XA 110.4Y.A M	XA 210.4Y.A M	XA 82/220.4Y.A** M	XA 120/250.4Y.A** M
Maximum capacity	52 g	110 g	210 g	82 g / 220 g	120 g / 250 g
Minimum capacity	1 mg	1 mg	1 mg	1 mg	1 mg
Readability	0,01 mg	0,01 mg	0,01 mg	0,01 mg / 0,1 mg	0,01 mg / 0,1 mg
Tare range	-52 g	-110 g	-210 g	-220 g	-250 g
Operating temperature	+10° ÷ +40°C				
Relative humidity ***	40% ÷ 80% (non-condensing conditions)				
Repeatability *	0,01 mg (Rt≤20g) 0,012 mg (20g<Rt≤52g)	0,01 mg (Rt≤20g) 0,02 mg (20g<Rt≤50g) 0,025 mg (50g<Rt≤82g) 0,03 mg (82g<Rt≤110g)	0,01 mg (Rt≤20g) 0,02 mg (20g<Rt≤50g) 0,025 mg (50g<Rt≤82g) 0,03 mg (82g<Rt≤100g) 0,04 mg (100g<Rt≤210g)	0,01 mg (Rt≤20g) 0,02 mg (20g<Rt≤50g) 0,025 mg (50g<Rt≤82g) 0,08 mg (82g<Rt≤220g)	0,01 mg (Rt≤20g) 0,02 mg (20g<Rt≤50g) 0,025 mg (50g<Rt≤82g) 0,03 mg (82g<Rt≤120g) 0,08 mg (120g<Rt≤250g)
Linearity	±0,03 mg	±0,06 mg	±0,1 mg	±0,06/0,2 mg	±0,06/0,2 mg
Eccentricity	0,03 mg	0,06 mg	0,1 mg	0,2 mg	0,2 mg
Sensitivity offset	$2 \times 10^{-6} \times Rt$				
Sensitivity temperature drift	$1 \times 10^{-6} / ^\circ C \times Rt$				
Sensitivity time drift	$1 \times 10^{-6} / Rok \times Rt$				
Minimum sample weight (USP)	20 mg				
Minimum weight (U = 1%, k = 2)	2 mg				
Stabilization time	~ 4 s				
Interface	2×USB, 2×RS 232, 1×Ethernet, Wi-Fi 802.11 b/g/n, 4 in / 4 out (digital)				
Power supply - balance	13,5 ÷ 16 V DC / 700 mA				
Power supply - terminal ****	13,5 ÷ 16 V DC / 1 A				
Adjustment	internal (automatic)				
Weighing pan	grid pan Ø 90 mm (additional weighing pan Ø 85 mm - option)				
Weighing chamber dimensions	170 × 200 × 220 mm				
Net/Gross weight	12,7 kg / 16,4 kg				
Packaging dimensions	715 × 385 × 485 mm				

Technical specification:

	XA 100.4Y.A M	XA 160.4Y.A M	XA 220.4Y.A M	XA 310.4Y.A M
Maximum capacity	100 g	160 g	220 g	310 g
Minimum capacity	10 mg	10 mg	10 mg	10 mg
Readability	0,1 mg	0,1 mg	0,1 mg	0,1 mg
Tare range	-100 g	-160 g	-220 g	-310 g
Operating temperature	+10° ÷ +40°C			
Relative humidity	40% ÷ 80% (non-condensing conditions)			
Repeatability *	0,08 mg	0,08 mg (Rt≤100g) 0,12 mg (100g<Rt≤160g)	0,08 mg (Rt≤100g) 0,12 mg (100g<Rt≤220g)	0,08 mg (Rt≤100g) 0,12 mg (100g<Rt≤220g) 0,2 mg (220g<Rt≤310g)
Linearity	±0,2 mg	±0,2 mg	±0,2 mg	±0,3 mg
Eccentricity	0,2 mg	0,2 mg	0,2 mg	0,3 mg
Sensitivity offset	$2 \times 10^{-6} \times Rt$			
Sensitivity temperature drift	$1 \times 10^{-6} / ^\circ C \times Rt$			
Sensitivity time drift	$1 \times 10^{-6} / Rok \times Rt$			
Minimum sample weight (USP)	160 mg			
Minimum weight (U = 1%, k = 2)	16 mg			
Stabilization time	~ 2,5 sek.			
Interface	2×USB, 2×RS 232, 1×Ethernet, Wi-Fi 802.11 b/g/n, 4 in / 4 out (digital)			
Power supply - balance	13,5 ÷ 16 V DC / 700 mA			
Power supply - terminal ****	13,5 ÷ 16 V DC / 1 A			
Adjustment	internal (automatic)			
Weighing pan	Ø 100 mm			
Weighing chamber dimensions	170×200×220 mm			
Net/Gross weight	9,8 kg / 14,3 kg			
Packaging dimensions	715×385×485 mm			

Rt - net weight, * Repeatability is expressed as a standard deviation from 10 weighing cycles, **Balance with Movable Range function

**** Power supply of terminal for wireless transmission version of XA.4Y.B

The above parameters values have been determined for standard laboratory conditions. Owing to ambient conditions influence or/and balance setup the above parameters may vary for environment other than laboratory.

Mass measurement support

OPENWORK WEIGHING PAN



Recommended for measurements with $d=0.01\text{mg}$ and wherever heavy air drafts occur.

DATA EXCHANGE / COLLECTION



Using USB port it is possible to exchange and archive any information, besides the port allows you to copy your balance parameters.

DATA EXCHANGE / COLLECTION



Proximity sensors stand for various ergonomic solutions, they facilitate remote control of functions such as tarring, zeroing, printout.

AMBIENT CONDITIONS MODULE



Air pressure, temperature and humidity are parameters measured on-line, signalling system informs when their maximum and minimum values are out of range.

HOLDERS



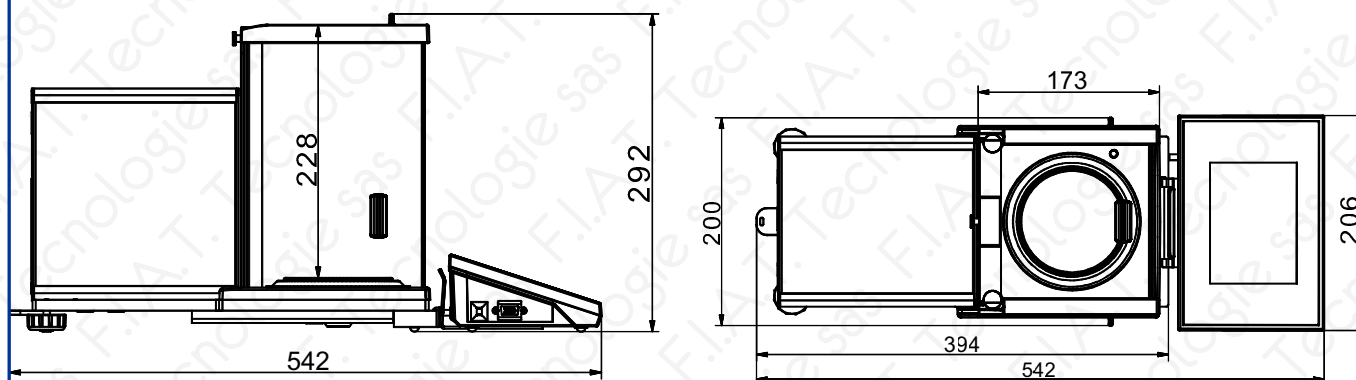
The holders are especially useful in course of weighing oval-shaped objects (bulbs, measuring vessels, test tubes etc.)

IONIZER



Application: removing electrostatic charges from samples, adjustable operating power, various options of load emission type (plus, minus, both).

Dimensions:



Accessories:

Anti-vibration table for microbalances	Density determination kit
Professional weighing table	THB 3 ambient conditions module
Impact printer - Zebra	LCD „WD-5“
Label printer - Citizen	PC USB keyboard
Holders for glass vessels	Adapter for pipettes calibration
"Tare" or "Print" footswitch	ZR-02 power supplier
"PW-WIN" PC software	Mass standard
"RAD-KEY" PC software	Anti-static cable PA 1
"Pipettes" PC software	Barcode scanner
DJ-02 Anti-static ioniser	Cable RS 232 (balance - printer: drukarka Epson, Citizen) "P0151"

**Small samples weighing
with the highest accuracy**
even with the use of large tare containers



Movable weighing range

OF RADWAG LABORATORY BALANCES



MOVABLE RANGE: function used in Radwag balances of high resolution. By means of movable range it is possible to determine sample weight precisely no matter how high or low weight value of tare container is.

The least complicated example to be analysed is sampling of small amount of powder (80 mg) to a vessel (flask) of heavy weight (100 g). Standard analytical balance ($d=0,1$ mg) performs weighing process using accuracy of constant value which in practice equals about 0,2 mg. This result is an effect of balance indications repeatability. It can be easily concluded that the sample error must equal at least 0,2 mg likewise. When it comes to uncertainty budget for this weighing process, value of reading unit $d=0,1$ mg must also be taken into account. Needless to say, it even more increases value of uncertainty parameter.

In order to measure the same sample with a greater accuracy, it is necessary to use balance with a reading unit $d = 0,01$ mg. Radwag offers two lines of such balances. The first line features balances weighing with 0,01 mg accuracy exclusively. Quite problematic issue of these balances is their maximum capacity. For the discussed example it shall be at least 110 g. Another important decisive factor might be the price. Regardless of it, the balance still provides weighing range with maximum capacity of 110 g, which might turn out to be insufficient. Currently 220 g weighing range is considered to be the standard.

The second line features balances with an option of weighing with two different reading units. In the lowest weighing range the balance performs measurement with 0,01 mg accuracy. Above certain threshold level, the reading unit automatically changes from $d = 0,01$ mg to $d = 0,1$ g. Supposing that the said threshold value is 82 g, the weighing process for the described sample practically remains unchanged. The sample weight will still be measured for reading unit $d = 0,1$ mg.

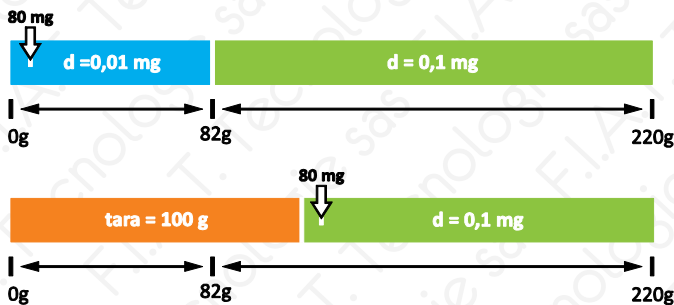


Fig. 1. Balance without movable range function.

Balances featuring function **MOVABLE RANGE**



Microbalance
MYA 0,8/3.3Y



Microbalance
MYA 11/52.3Y



Analytical balance
XA 82/220.3Y.A



Analytical balance
XA 82/220.3Y

Max capacity [Max]	0,8 / 3 g	11 - 52 g	82 / 220 g	82 / 220 g
Readability [d]	1 / 10 μ g	1 - 10 μ g	0,01 / 0,1 mg	0,01 / 0,1 mg
Automatically opened door	•	•	•	-
Display			5,7" colour resistive touch panel	
Adjustment			automatic internal adjustment	

Movable weighing range

The best solution is such one that regardless of used tare container guarantees reading accuracy characteristic for the early weighing range. Balances providing such an option are generally addressed by a colloquial phrase "movable range balances". This notion perfectly suits the balances since it reflects their nature. Owing to "movable weighing range" function, the balance can weigh even 80 mg heavy sample packed in a container of 200 g weight.

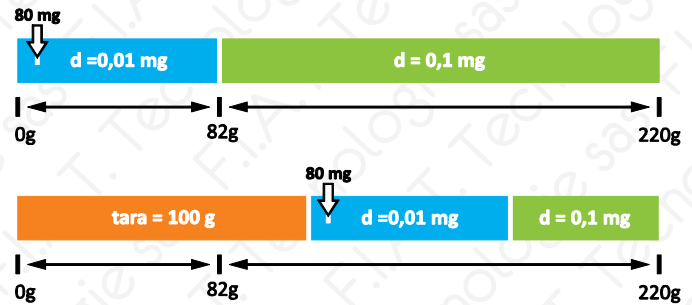


Fig. 2. Balance with movable range function turned on.

There is no need to mention how much "movable range" function influences balance versatility. With it, RADWAG provides accurate mass measurement and at the same time offering possibility of heavy samples weighing. Additionally, the said function positively influences calculated value of measurement uncertainty making it much lower, this is a result of reading unit value $d = 0,01$ mg.

Wondering if the above solution is the best possible option? For those who have to sample precisely portions of considerable weight, balance with reading unit $d = 0,01$ mg and 220 g maximum capacity is a good, nevertheless quite expensive solution. Another option are mass comparators that can be used instead of typical balances. Mass comparators offer at least one order of magnitude better accuracy of measurement. Before you decide to perform weighing procedure by means of mass comparator, pay attention to the fact that the comparator and the balance differ significantly in terms of measurement methodology.

Judging by experience, sampling of considerable weights with accuracy of reading unit $d = 0,01$ mg is not a common case therefore movable range balances shall be able to meet most of your needs.

MYA 4Y SERIES MICROBALANCES



release date: 07-07-2016



APPLICATION

4Y series is a modern weighing device, especially useful when the measurement requires perfect accuracy and high speed.

FEATURES OF 4Y SERIES MICROBALANCE

REPEATABILITY (SD)
< 1d

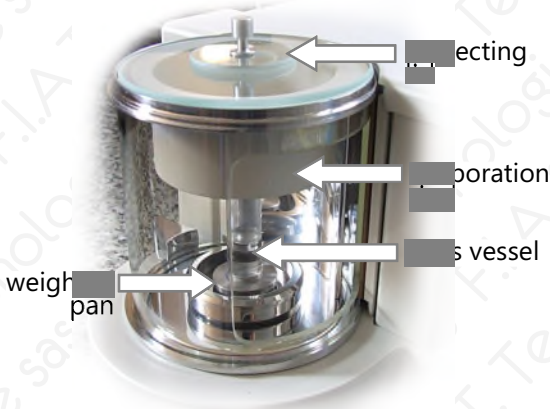
MEASUREMENT DURATION
< 5 s.



MYA 2.4Y
(standard solutions for any operating conditions)



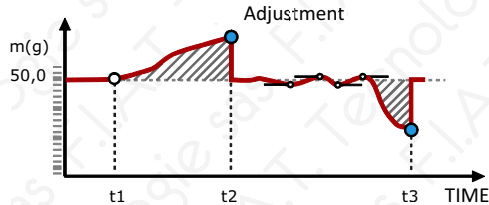
MYA 5.4Y.F
(filters weighing)



MYA 21.4Y.P
(control of piston pipettes volume)

ACCURACY

Measurement accuracy is guaranteed with an adjustment procedure carried out using an internal adjustment weight. This fully automatic process is controlled by a module intended to diagnose ambient conditions change (on-line). Adjustment processes (internal and external) can be performed in accordance with a specially designed schedule.



FUNCTIONALITY

4Y series microbalance is an optimized modern device which features an option of automatic level control (Level SENSING) as one of numerous functions.

The practical effect of balance customization are individual user profiles and gradable permission levels for access to balance menu.

Programmable proximity sensors offer wide range of possibilities: weighing chamber control, zeroing, tarring, printout.

Several functions such as differential weighing facilitate multi-stage mass control of one and the same sample subjected to various processes. Pipettes calibration function is an ergonomic tool designed to calibrate and control piston pipettes with the use of gravimetric method. MEDIA module, as one of the greatest 4Y series assets, provides the user with an on-screen help and support.

COMPLIANCE WITH REGULATIONS

Owing to security system and possibility to document the process by means of printouts (standard/editable), the 4Y balance meets requirements imposed by GLP/GMP systems for various industries (pharmacy, petrochemistry, environmental protection).

MEDIA module support within a reach of your hand

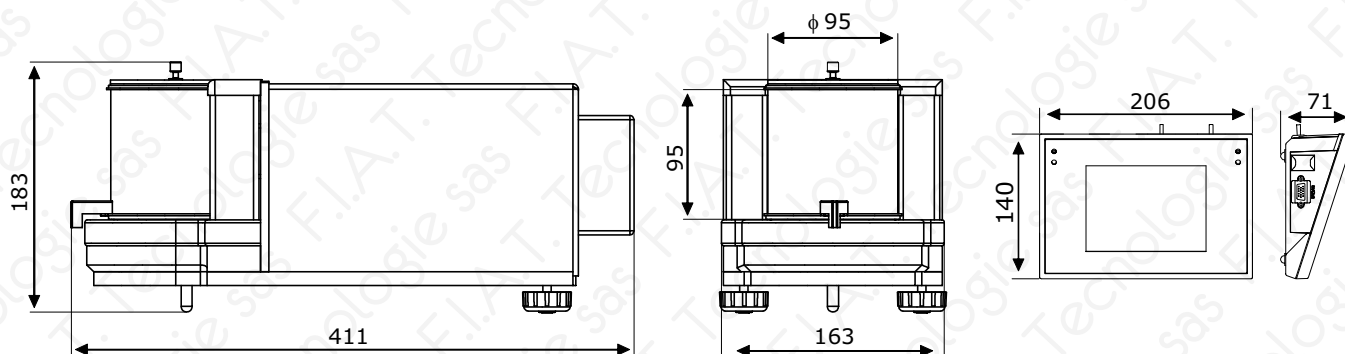
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MEDIA module is a convenient way allowing you to broaden your knowledge on mass measurement but not exclusively (recommendations, SOP, reminders, self-designed testing procedures).

- PARTS COUNTING
- DOSING
- CHECKWEIGHING
- FORMULATION
- PERCENT WEIGHING [%]
- STATISTICS
- ANIMAL WEIGHING
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- PIPETTES CALIBRATION
- SQC
- AUTOTEST
- AUTOMATIC DOOR
- AIR DENSITY CORRECTION
- GLP / GMP PROCEDURES
- INFRARED SENSORS
- AMBIENT COND. MONITORING
- UNITS
- MOVABLE RANGE

Dimensions:



Owing to fastidious selection of mechanical design components our balance allows to obtain great stability and repeatability of indications regardless of measured sample size and conditions of use. Multi-shield mechanical design of the weighing module provides excellent thermal stability. Even with challenging ambient temperature your weighing is precise and accurate. 4Y microbalances offer modern hardware and software. In-built programs, Windows Embedded Compact 7 operating system, Flash memory, Double Hardware system guarantee fast measurement and reliability when it comes to data acquiring and processing. The 4Y series comprises 5,7" colour touchscreen providing ever more increased balance operation functionality and even more practical results presentation. Complex databases allow measurement record along with printout and export option.

Technical specification:

	MYA 2.4Y M16	MYA 0,8/3.4Y M16	MYA 5.4Y M16	MYA 11.4Y M16	MYA 21.4Y M16
Maximum capacity	2,1 g	0,8 g / 3 g	5,1 g	11 g	21 g
Readability	1 μ g	1 μ g / 10 μ g	1 μ g	1 μ g	1 μ g
Repeatability *	0,7 μ g	1 μ g (Rt \leq 0,8g) 4,1 μ g (0,8g < Rt \leq 3g)	1 μ g (Rt \leq 2g) 1,6 μ g (2g < Rt \leq 5,1g)	1,5 μ g (Rt \leq 2g) 2,0 μ g (2g < Rt \leq 5g) 2,5 μ g (5g < Rt \leq 11g)	1,5 μ g (Rt \leq 2g) 2,0 μ g (2g < Rt \leq 5g) 2,5 μ g (5g < Rt \leq 11g) 3,0 μ g (11g < Rt \leq 21g)
Linearity	± 3 μ g	± 3 μ g / ± 10 μ g	± 5 μ g	± 6 μ g	± 7 μ g
Eccentricity	3 μ g	3 μ g / 10 μ g	5 μ g	6 μ g	7 μ g
Sensitivity offset	$1,5 \times 10^{-6} \times$ Rt	$1,5 \times 10^{-6} \times$ Rt	$1,5 \times 10^{-6} \times$ Rt	$3 \times 10^{-6} \times$ Rt	$4 \times 10^{-6} \times$ Rt
Sensitivity temperature drift	$1 \times 10^{-6} / ^\circ\text{C} \times$ Rt	$1 \times 10^{-6} / ^\circ\text{C} \times$ Rt	$1 \times 10^{-6} / ^\circ\text{C} \times$ Rt	$1 \times 10^{-6} / ^\circ\text{C} \times$ Rt	$1 \times 10^{-6} / ^\circ\text{C} \times$ Rt
Sensitivity time drift	$1 \times 10^{-6} / \text{Rok} \times$ Rt	$1 \times 10^{-6} / \text{Rok} \times$ Rt	$1 \times 10^{-6} / \text{Rok} \times$ Rt	$1 \times 10^{-6} / \text{Rok} \times$ Rt	$1 \times 10^{-6} / \text{Rok} \times$ Rt
Minimum sample weight (USP)	1,4 mg	2 mg	2 mg	3,0 mg	3,0 mg
Minimum weight (U = 1%, k = 2)	0,14 mg	0,2 mg	0,2 mg	0,3 mg	0,3 mg
Weighing pan	ϕ 16 mm	ϕ 26 mm, ϕ 60 mm (weighing pan for filters)	ϕ 26 mm	ϕ 26 mm	ϕ 26 mm
Weighing chamber	ϕ 90 \times 90 mm				
Stabilization time	~ 5 s				
Adjustment	automatic (internal)				
Power supply - balance	13,5 \div 16 V DC / 700 mA				
Power supply - terminal **	13,5 \div 16 V DC / 1 A				
Terminal housing	ABS plastic				
Terminal display	5,7"(640x480) colour with resistive touchscreen				
Processor	2 \times 1 GHz				
Memory	RAM: 256 MB DDR2, memory card: 8 GB microSD				
Interfaces	2 \times USB host, 2 \times RS 232, Ethernet 10/100 Mbit, WiFi 802.11 b,g,n				
Audio module	YES (voice messages support)				
Video support	YES (videos and user manuals in multimedia form)				
IN / OUT	4 IN / 4 OUT (digital)				
Packaging size	565 \times 565 \times 355 mm				
Net weight/Gross weight	10,2 kg / 14,7 kg				
Ambient conditions:					
Operating temperature	+10 $^\circ$ \div +40 $^\circ$ C				
Operating temperature change rate	$\pm 0,3$ $^\circ$ C/h (± 1 $^\circ$ C/8h)				
Relative humidity	40% \div 80%				
Relative humidity change rate	$\pm 1\%$ /h ($\pm 4\%$ /8h)				

Rt - net weight

* Repeatability is expressed as a standard deviation from 10 weighing cycles.

** Power supply of terminal for wireless transmission version of MYA.4Y.B

The above parameters values have been determined for standard laboratory conditions. Owing to ambient conditions influence or/and balance setup the above parameters may vary for environment other than laboratory.

Technical specification:

MYA 11/52.4Y	
M 16	
Maximum capacity	11 g / 52 g
Readability	1 µg / 10 µg
Repeatability	1,5 µg (Rt ≤ 2g)
	3,0 µg (2g < Rt ≤ 11g)
	10 µg (11g < Rt ≤ 52g)
Linearity	±10µg / ±30 µg
Eccentricity	6 µg / 10 µg
Sensitivity offset	3 × 10 ⁻⁶ × Rt
Sensitivity temperature drift	1 × 10 ⁻⁶ / °C × Rt
Sensitivity time drift	1 × 10 ⁻⁶ / Rok × Rt
Minimum sample weight (USP)	3,0 mg
Minimum weight (U = 1%, k = 2)	0,3 mg
Weighing pan	Ø 26 mm / Ø 40 mm
Weighing chamber	Ø 90 × 90 mm
Stabilization time	~ 5 s
Adjustment	automatic (internal)
Power supply - balance	13,5 ÷ 16 V DC / 700 mA
Power supply - terminal **	13,5 ÷ 16 V DC / 1 A
Terminal housing	ABS plastic
Terminal display	5,7"(640x480) colour with resistive touchscreen
Processor	2 × 1 GHz
Memory	RAM: 256 MB DDR2, memory card: 8 GB microSD
Interfaces	2×USB host, 2×RS 232, Ethernet 10/100 Mbit, WiFi 802.11 b,g,n
Audio module	YES (voice messages support)
Video support	YES (videos and user manuals in multimedia form)
IN / OUT	4 IN / 4 OUT (digital)
Packaging size	565×565×355 mm
Net weight/Gross weight	10,2 kg / 14,7 kg
Ambient conditions:	
Operating temperature	+10 ° ÷ +40 °C
Operating temperature change rate	±0,3 °C/h (±1 °C/8h)
Relative humidity	40% ÷ 80%
Relative humidity change rate	±1%/h (±4%/8h)

Rt - net weight

* Repeatability is expressed as a standard deviation from 10 weighing cycles.

** Power supply of terminal for wireless transmission version of MYA.4Y.B

The above parameters values have been determined for standard laboratory conditions. Owing to ambient conditions influence or/and balance setup the above parameters may vary for environment other than laboratory.

Accessories:

Anti-vibration table for microbalances	DJ-03 Anti-static ioniser
Professional weighing table	THB 2 ambient conditions module
Impact printer - Epson	LCD "WD-5"
Label printer - Citizen	PC USB keyboard
Draft shield for microbalances	ZR-02 power supplier
"Tare" or "Print" footswitch	Mass standard
"PW-WIN" PC software	Anti-static cable PA 1
"RAD-KEY" PC software	Barcode scanner
"REC-FS" PC software	Cable RS 232 (balance - printer: Epson, Citizen) "P0151"

MOISTURE ANALYZER MA 3Y



release date 06-10-2014



Moisture analyzer is a laboratory measuring instrument intended to determine relative moisture content in samples of different substances. **MA 3Y** features 5,7" LCD colour touch panel which provides new possibilities of instrument's operation and presenting measurement results. It features extended databases containing programmable drying modes related to the database of samples. MA 3Y series enables printing and exporting charts presented on its display to a BMP file.

Highlights of moisture analyzer MA 3Y series:

- accuracy of moisture content readout 0,0001%
- heating components: halogen, IR emitter or a heater in metal housing,
- graphic presentation of drying result, charts: Δm , %M, %D, %R,
- drying profiles: standard, mild, step, quick
- finish mode: AUTO 1–5, manual, automatic, time defined
- database of drying procedures: ~1000 records for each data type
- database of samples
- interfaces: 2 x USB 2.0; 4IN / 4OUT; RS 232; Ethernet 10/100Mbit.



2 years warranty period

NOVELTY:

3Y series balances are equipped with **802.11b/g/n WiFi** communication interface operating with frequency range 2.4+2.472 GHz (1+13 channels). Communication is established likewise as for any other interfaces, e.g.: RS 232, Ethernet.

Personalization of instrument's settings is carried out in extended user profiles. Level control is based on LevelSENSING system, RADWAG patented solution, which uses a system of an electronic level. Standard and user defined printouts allow for maintaining documentation complying with GLP/GMP requirements practically in any application.

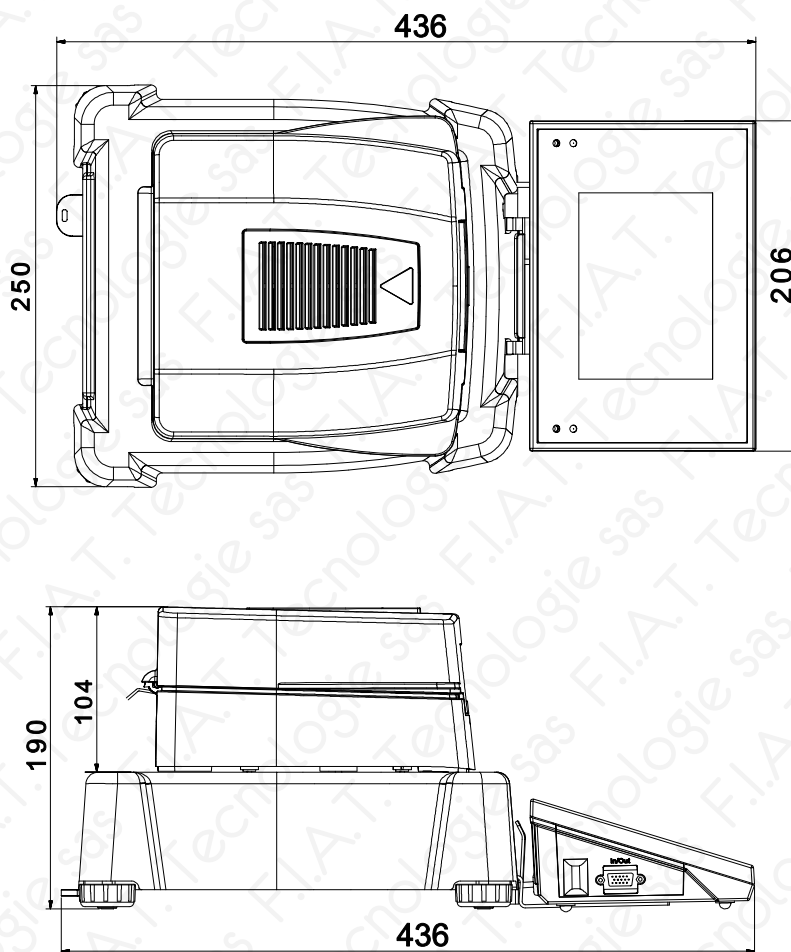
Technical data:

	MA 60.3Y	MA 200.3Y
Max capacity	60 g	200 g
Reading unit	0,1 mg	1 mg
Tare range	-60 g	-200 g
Max sampling mass	60 g	200 g
Accuracy of moisture readout	0,0001 %	0,001 %
Repeatability of moisture readout	0,05% (sample 2 g), 0,01% (sample 10 g)	
Maximal height of the tested sample	h= 20 mm	
Pan size	ø 90 mm, h= 8 mm	
Range of drying temperature *	max. 160° C	
Heating module **	IR emitter	
Power of heating device	400 W	
Drying modes	4 drying modes (standard, quick, step, mild)	
Auto switch off options	3 modes (manual, automatic, time defined)	
Additional functions	sample identification, drying diagram	
Working temperature	+10° ÷ +40 °C	
Power supply	220÷240 V AC, 50+60 Hz	
Display	LCD 5,7" with touch panel	
Interface	2 x USB 2.0, 4 Inputs / 4 Outputs, RS 232, Ethernet 10/100Mbit, Wi-Fi 802.11 b/g/n	
Net weight/Gross weight	6 / 10 kg	
Packaging size	595 x 395 x 420 mm	

* Moisture analyzer available with upgraded maximum drying temperature to 250°C

** Optionally available heating elements:
 - halogen (max= 250°C)
 - metal heater (max= 160°C)

Dimensions:



Additional equipment:

Antivibration table for laboratory balances	Computer Software: PW-WIN 2005, RAD-KEY 2000
Kafka thermal printer	Control Thermometer GT105k-12
Dot matrix Epson printer	Disposable Weighing Pans
Label printer Citizen	Mass Standard
PC USB keyboard	Cable RS 232 (scale - Kafka printer) "P0136"
Antistatic cable PA1	Cable RS 232 (scale, Epson, Citizen printer) "P0151"

MA.R MOISTURE ANALYZERS



release date 15-05-2015



Moisture analyzer is a laboratory measuring instrument intended to determine relative humidity for small samples of different materials. MA.R series redefines moisture analyzers standards. This series has been equipped with brand new readable LCD display providing an extra text line for information such as supplementary messages and data, e.g. product name or tare value. The moisture analyzer, using respective pictograms, signalizes currently activated mode, computer connection and functions, both balance and service ones.

The MA.R series is enriched with various interfaces: RS232, USB type A, USB type B and Wifi as an option. The moisture analyzer is housed in a plastic casing.

DATABASES

Information system of R series moisture analyzers is based on 6 databases, allowing many operators to operate product database comprising many samples. Collected measurements may be subjected to subsequent analysis.

Collected data is registered in 6 databases:

- Users (up to 100 users)
- Products (up to 1000 products)
- Weighments (up to 1000 weighments)
- Tares (up to 100 tares)
- Programs (up to 100 drying programs)
- Drying process reports (up to 1000 reports)

Exchange of information within the system is performed by means of USB port on bi-directional basis. It is possible to import and export databases using memory sticks.

Direct access to information

It is possible to access functions and databases directly, using keyboard soft keys.

Database – access to databases

Function – access to basic functions

F1 and F2 – programmable function keys and menu navigation keys

Reports – access to database of drying process reports

Profile – access to parameters settings

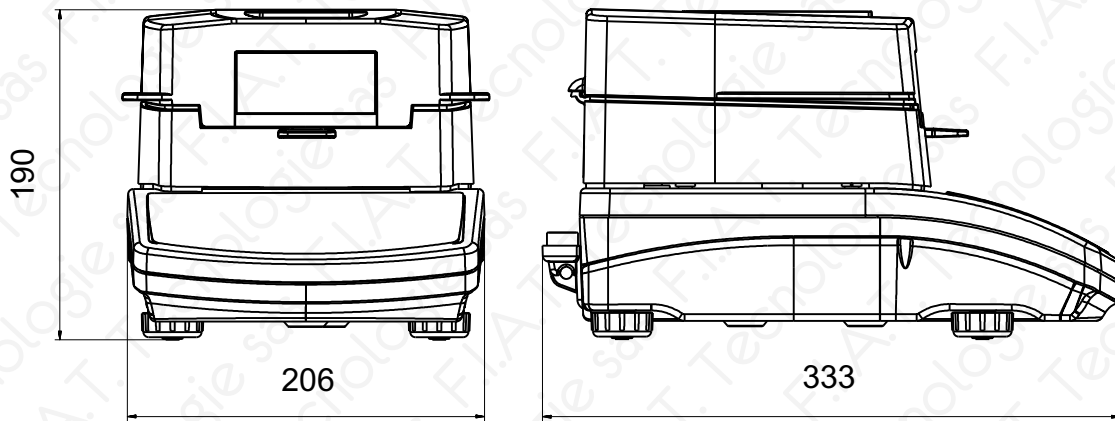
Sample – access to products database

Technical specification:

	MA 50/1.R	MA 50.R	MA 110.R	MA 210.R
Max capacity	50 g	50 g	110 g	210 g
Reading unit	0,1 mg	1 mg	1 mg	1 mg
Tare range	-50 g	-50 g	-110 g	-210 g
Max sample weight	50 g	50 g	110 g	210 g
Moisture readout accuracy	0,0001 %	0,001 %	0,001 %	0,001 %
Moisture content repeatability	0,05% (sample weight of 2 g), 0,01% (sample weight of 10 g)			
Max sample height	h= 20 mm			
Weighing pan size	Ø 90 mm, h= 8 mm			
Drying temperature range	max. 160° C			
Heating module *	IR emitter			
Drying mode	4 drying modes (standard, quick, step, mild)			
Auto switch-off options	4 options (time-defined, automatic, manual, user-defined)			
Additional functions	sample identification			
Power supply	230V			
LCD display	LCD (backlit)			
Interface	1 × RS 232, USB-A, USB-B, WiFi (option)			
Net weight/gross weight	4,9 / 6,4 kg			
Packaging size	470×380×336 mm			

* Heating element options: WH - halogen (max= 250° C), NS - metal heater (max=160° C)

Dimensions:



Additional equipment:

Anti-Vibration Table (coated or stainless steel)	GT105k-12/Z Control Thermometer
EPSON Printer	Adjustment Weight
Disposable Weighing Pans	PW-WIN, RAD-KEY PC Software
PC Keyboard	Calbe RS 232 (balance - computer) "P0108"
Water Vapour Permeability Determination Set	Cable RS 232 (balance - Epson, Citizen printer) "P0151"

PRECISION BALANCES APP 3Y



release date 23-06-2016



APP 10.3Y

Balances APP 3Y series are laboratory weighing instruments featuring 5,7" LCD colour touch panel which provides new possibilities of balance operation and presenting measurement results. Personalization of balance settings is carried out in extended user profiles. 3Y series comes standard with system of automatic internal adjustment. Level control is based on LevelSENSING system, RADWAG patented solution, which uses a system of an electronic level. Balances APP 3Y series enable online monitoring of ambient conditions through built-in sensors or an external ambient conditions module THB 3 series.

Large weighing pan 347 x 259 mm enables weighing loads with large dimensions. Balances with reading unit 10 mg feature a dedicated openwork weighing pan limiting influence of air movement onto the measurement result. APP 3Y series is successfully used in applications such as parts counting, differential weighing also in industrial conditions.

- Parts counting
- Dosing
- Checkweighing
- Formulation
- Percent deviations
- Statistics
- Animal weighing
- Differential weighing
- Density determination
- Statistical Quality Control
- Autotest (GLP, Filter)
- GLP procedures
- Infrared sensors
- Ambient conditions monitoring
- Newton unit measurement
- Replaceable units
- Mass for titrator

Communication interfaces

- Ethernet 10/100 Mbps
- Wi-Fi 802.11 b,g,n,
- RS 232
- 2xUSB 2.0
- 4 in/out



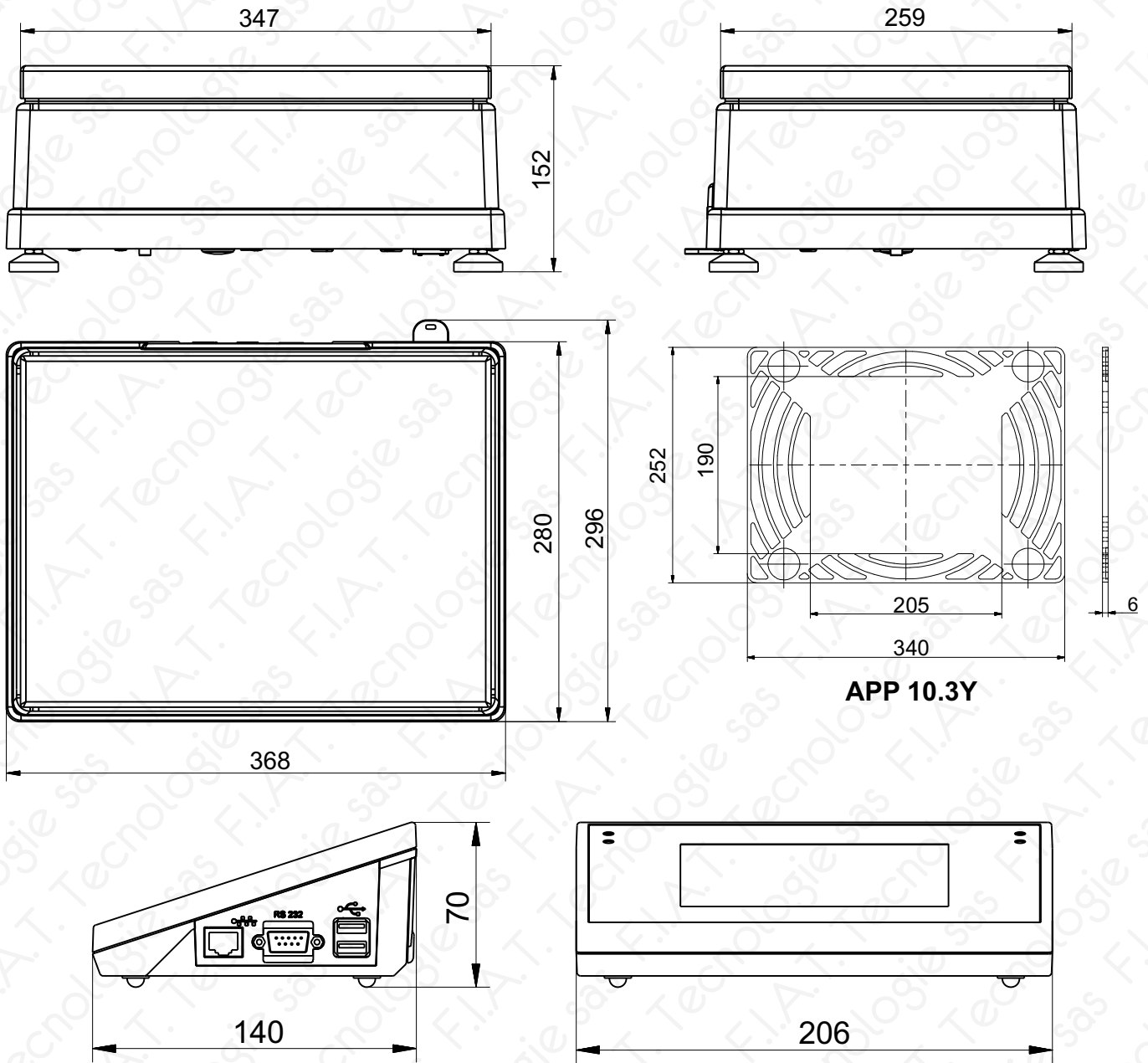
Additionally option: APP xx.3Y.B

Technical specification:

	APP 10.3Y M16	APP 25.3Y M16	APP 35.3Y M16	APP 10/50.3Y -
Max capacity	10 kg	25 kg	35 kg	10 kg / 50 kg
Minimum load	0,5 g	5 g	5 g	5 g
Readability	0,01 g	0,1 g	0,1 g	0,1 g / 0,5 g
Tare range	-10 kg	-25 kg	-35 kg	-50 kg
Repeatability *	0,01 g	0,1 g	0,1 g	0,1 g / 0,5 g
Linearity	± 0,02 g	± 0,2 g	± 0,3 g	± 0,1 g / ± 0,5 g
Adjustment / Calibration	internal			
Pan size	290 x 190 mm	347 x 259 mm		
Stabilization time	3 s	2 s	2 s	2 s
Sensitivity drift	2 ppm/°C in temperature +15 ° ÷ +35 °C			
Minimum weight (USP)	10 g	100 g	100 g	100 g
Minimum weight (U=1%,k=2)	1 g	10 g	10 g	10 g
Interface	2xUSB, 2xRS 232, 1xEthernet, Wi-Fi 802.11 b,g,n, 4 in / 4 out (digital)			
Power supply	13,5 ÷ 16 V DC / 2,1 A			
Display	5,7" touch screen			
Net weight / Gross weight	19,9 / 22,9 kg			
Packaging size	570 x 560 x 325 mm			

* Repeatability is expressed as a standard deviation from 10 weighing cycles

Dimensions:



Additional equipment:

Antivibration table for laboratory balances	THB 3 ambient conditions module
Dot matrix Epson printer	Power adapter with battery and charger ZR-02
Label printer Citizen	Mass standard
Tare and "Print" foot button	Power loop module AP2-1 (wersja plastikowa)
PW-WIN computer software	Antistatic cable PA 1
RAD-KEY computer software	Bar code scanner
Additional LCD display "WD-5"	Cable RS 232 (scale, Epson, Citizen printer) "P0151"
PC USB keyboard	

APP.R PRECISION BALANCES



release date 29-06-2016



DATABASES IN R SERIES BALANCES

The information system is based on 5 databases, which allows for several users to work with several products databases, and the registered weighing results can be subject to further analysis.

The data is registered in 5 databases:

- users (up to 10 users),
- products (up to 1000 products),
- weighments (up to 5000 weighments),
- tares (up to 100 tares),
- ALIBI memory (up to 100 000 weighments).

ALIBI memory

The used ALIBI memory is a data secure area and allows to record up to 100 000 weighment records. It ensures security of constant data register in the long time period.

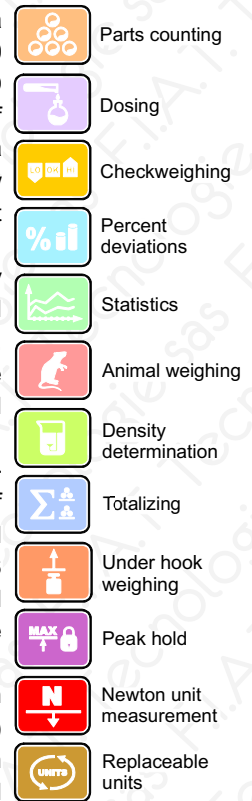
The new precision **APP.R balances** are a continuation of the APP line and have 348x260 mm pan. They **feature a new, readable LCD display** which allows a clearer presentation of the weighing result. Besides, the display has a new text information line allowing to show additional messages and data, e.g. product name or tare value.

Additionally, the new R series balances by means of pictograms signal the activated working mode, connection with the Internet, the battery charge level, balance service functions. Also a number of displayed measuring units has been increased.

Every R series balance feature a magneto-electric measuring system and a possibility of internal adjustment (for R2 balances) as well as several communication interfaces: **2 x RS 232, type A USB, type B USB and optional WiFi**. The housing is made of plastic, and the pan is made of stainless steel.

The balances have a possibility to weigh products out of the pan (under hook weighing) - the load hangs under the pan. This is an alternative way of measuring non-standard dimensions and shapes products or products emitting electromagnetic field. This method is also used in case of density determination. APP.R balances are also offered in a head on a 1 m cable version.

Optionally the scale can feature a pillar for the terminal. The pillar is mounted to the weighing unit as an additional equipment.



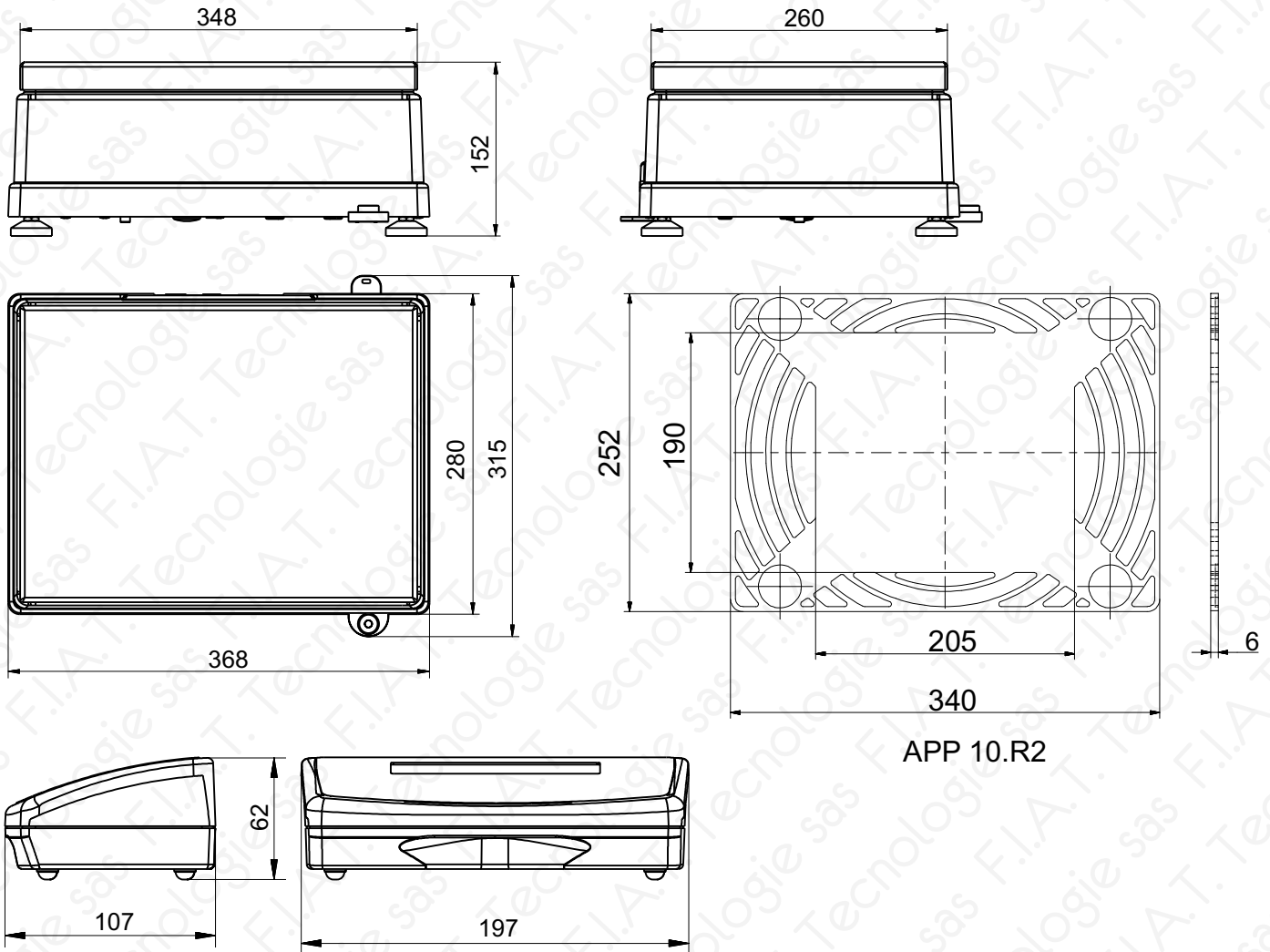
Technical specification:

	APP 10.R2 M16	APP 25.R2 M16	APP 30.R2 M16	APP 35.R2 M16	APP 6/35.R2 M16	APP 10/50.R2 -
Max capacity	10 kg	25 kg	30 kg	35 kg	6 kg / 35 kg	10 kg / 50 kg
Minimum load	0,5 g	5 g	5 g	5 g	5 g	5 g
Readability	0,01 g	0,1 g	0,1 g	0,1 g	1 / 5 g	0,1 g / 0,5 g
Tare range	-10 kg	-25 kg	-30 kg	-35 kg	-35 kg	-50 kg
Repeatability *	0,01 g	0,1 g	0,1 g	0,1 g	1 / 5 g	0,1 g / 0,5 g
Linearity	± 0,02 g	± 0,2 g	± 0,3 g	± 0,3 g	± 1 / 5 g	± 0,1 g / ± 0,5 g
Pan size	205 × 190 mm	348 × 260 mm				
Working temperature	+10° ÷ +40 °C					
Stabilization time	3 s	2 s	2 s	2 s	2 s	2 s
Sensitivity drift	2ppm/°C in temperature +10 ° ÷ +40 °C					
Interface	2×RS 232, USB-A, USB-B, WiFi - option					
Power supply**	12 ÷ 16 V DC / 250 mA (**)					
Adjustment/calibration	internal					
Display	LCD (backlit)					
Net weight/Gross weight	19,9 / 22,9 kg					
Packaging size	570 × 560 × 325 mm					

* Repeatability is expressed as a standard deviation from 10 weighing cycles.

** 250 mA for balances without WiFi module, 350 mA for balances with installed WiFi module

Dimensions:



APP 10.R2

Accessories:

Impact printer Epson	USB A- USB B cable (balance - computer, balance - PLC printer)
"PW-WIN" computer software	Adjustment weight (R1 version)
"RAD-KEY" computer software	Mass standard
Additional LCD display "WD-6"	Power loop output AP2-1 (plastic housing)
Power adapter with battery and charger ZR-02	Pillar for the indicator of APP balance
PC keyboard USB	Cable RS 232 (scale - computer) "P0108"
Bar code scanner	Cable RS 232 (scale, Epson, Citizen printer) "P0151"
External USB memory (FAT files format)	"Tare" or "Print" foot button

APP.X2 PRECISION BALANCES



release date 29-06-2016



pan for reducing indication errors - APP 10.X2

Personalization taken to the next level

The X2 is the only balance available on the market that provides a user with the option to design display using wide selection of widgets. Customised display of X2 series offers direct access to the results of your work and other important information directly from the home screen.

Weighing Data Management

USB interface facilitates quick transfer and copying of any results of your work (measurements, reports, databases) to other balances. Managing the databases of balances may be also carried out over network thanks to E2R system also offering the possibility of remote control. Network management of the weighing data increases effectivity, productivity and safety of the important data to the maximum.

The APP.X2 series represents a new advanced level for precision balances. The X2 series balances feature the latest generation capacitive display providing the maximum comfort of use, available right at your fingertips. Ease of operation, clear menu and practical arrangement of the display guarantee the best ergonomics for your everyday tasks. A wide array of available interfaces facilitate selection of the most optimal means for communication. The X2 series balances offer unlimited possibilities for cooperation with external devices, providing printing, copying, archiving and data transfer. Built-in IR sensors allow numerous operations (e.g. tarring, transmitting the result to a printer or selecting successive steps of a particular process, etc.) to be performed hands-free, by simply moving a hand across the sensor. The housing is made of plastic, and the pan is made of stainless steel. The balances feature under-pan weighing option - the weighed load is suspended under the balance.

DATABASES IN X2 SERIES BALANCES

In new APP.X2 series balances the information system is based on 7 databases, which allows for several users to work with several products databases, and the registered weighing results can be subject to further analysis.

The data is registered in 7 databases:

- Users (up to 100 users),
- Products (up to 5 000 products),
- Weighments (up to 50 000 weighments),
- Packaging (up to 100 packaging types),
- Formulas (up to 100 formulas),
- Clients (up to 100 clients),
- ALIBI memory (up to 500 000 weighments).

The X2 series features option of making reports of 2 different categories:

- Reports on formulas (up to 200 reports),
- Reports on density determination (up to 500 reports).

ALIBI Memory

The X2 series balances feature ALIBI memory that is a warranty for safety and automatic recording of your measurements. Options such as data review, copying and archiving are available to users, as well. The used ALIBI memory allows to record up to 500 000 weighment records.

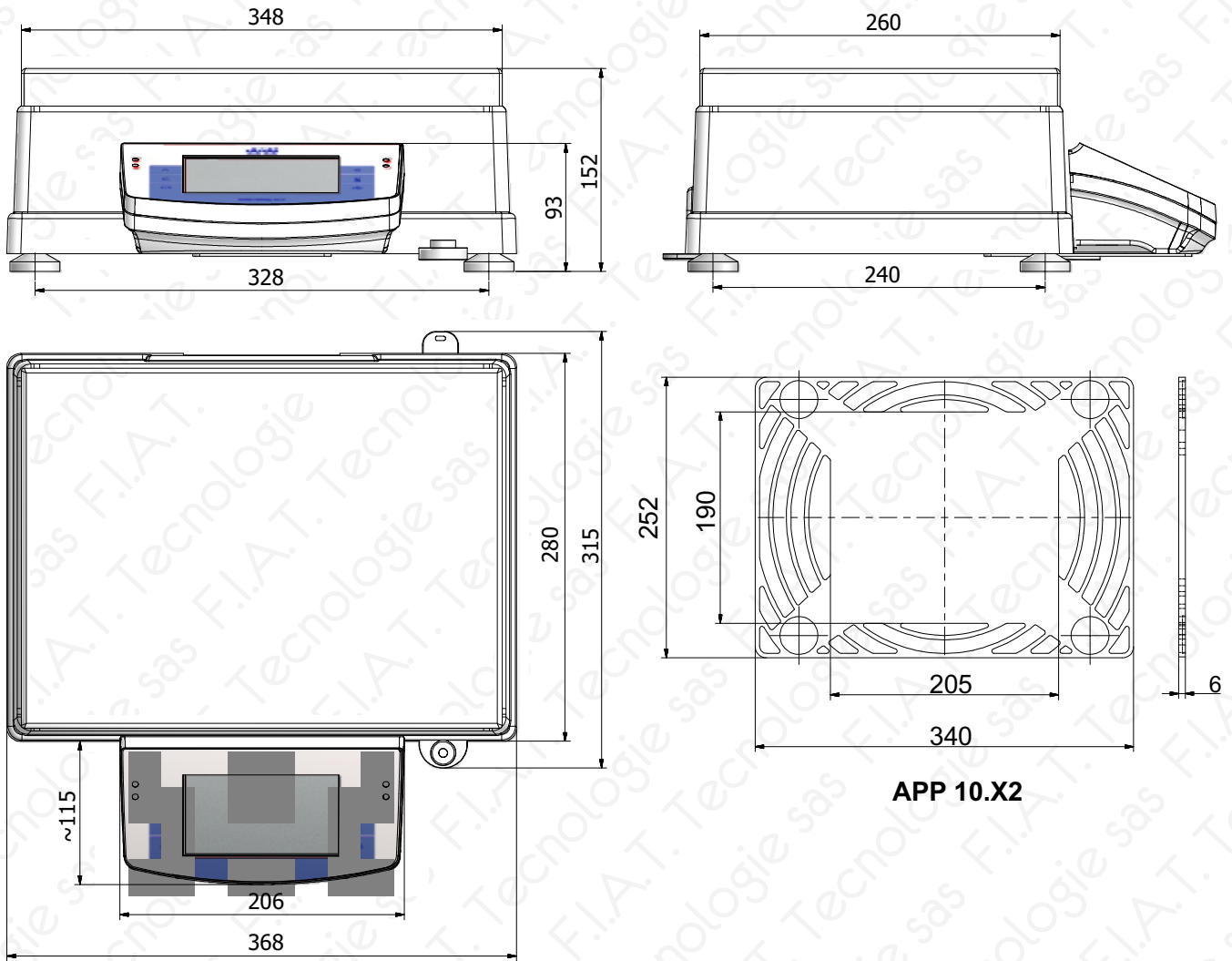
- Parts counting
- Dosing
- Checkweighing
- Percent deviations
- Statistics
- Animal weighing
- Autotest (GLP, Filter)
- Density determination
- Statistical Quality Control
- GLP procedures
- Under hook weighing
- Peak hold
- Infrared sensors
- Ambient conditions monitoring
- Newton unit measurement
- Replaceable units
- ALIBI Memory

Technical specification:

	APP 10.X2	APP 25.X2	APP 30.X2	APP 35.X2	APP 6/35.X2	APP 10/50.X2
Max capacity	10 kg	25 kg	30 kg	35 kg	6 kg / 35 kg	10 kg / 50 kg
Minimum load	0,5 g	5 g	5 g	5 g	5 g	5 g
Readability	0,01 g	0,1 g	0,1 g	0,1 g	1 / 5 g	0,1 g / 0,5 g
Tare range	-10 kg	-25 kg	-30 kg	-35 kg	-35 kg	-50 kg
Repeatability *	0,01 g	0,1 g	0,1 g	0,1 g	1 / 5 g	0,1 g / 0,5 g
Linearity	± 0,02 g	± 0,2 g	± 0,3 g	± 0,3 g	± 1 / 5 g	± 0,1 g / ± 0,5 g
Pan size	205 × 190 mm	348 × 260 mm				
Working temperature	+10° ÷ +40 °C					
Stabilization time	3 s	2 s	2 s	2 s	2 s	2 s
Sensitivity drift	2ppm/°C in temperature +10 ° ÷ +40 °C					
Interface	2 × RS 232, USB-A, USB-B, Ethernet, WiFi 2,4 GHz b,g,n					
Power supply	12 ÷ 16 V DC / 450 mA					
Adjustment/calibration	internal (automatic)					
Display	5" colour capacitive touchscreen					
Net weight/Gross weight	19,9 / 22,9 kg					
Packaging size	570 × 560 × 325 mm					

* Repeatability is expressed as a standard deviation from 10 weighing cycles.

Dimensions:



APP 10.X2

Accessories:

Impact printer Epson	USB A- USB B cable (balance - computer, balance - PLC printer)
"PW-WIN" computer software	Adjustment weight (R1 version)
"RAD-KEY" computer software	Mass standard
Additional LCD display "WD-6"	Power loop output AP2-1 (plastic housing)
Power adapter with battery and charger ZR-02	Cable RS 232 (scale - computer) "P0108"
PC keyboard USB	Cable RS 232 (scale, Epson, Citizen printer) "P0151"
Bar code scanner	"Tare" or "Print" foot button
External USB memory (FAT files format)	

PRECISION BALANCES PS 3Y



release date 14-06-2015



Additionally option: PS xx.3Y.B

Balances PS 3Y series are laboratory weighing instruments featuring 5,7" LCD colour touch panel which provides new possibilities of balance operation and presenting measurement results.

Personalization of balance settings is carried out in extended user profiles. 3Y series comes standard with system of automatic internal adjustment.

Level control is based on LevelSENSING system, RADWAG patented solution, which uses a system of an electronic level. New function of PS 3Y series is online monitoring of ambient conditions through built-in sensors or an external ambient conditions module THB 3 series.

PS 3Y series offers two models of weighing pans which enable weighing with different accuracy. New working mode of the PS 3Y series: differential weighing, allows the balance to control mass of the same sample subjected to differed processes over time. Extended databases enable storing all carried out measurements, with option of printing and exporting them. Standard and user defined printouts allow for maintaining documentation complying with GLP/GMP requirements practically in any application. PS 3Y series features an independent mass control mode carried out with application of an automatic feeder PA-02/H.

NOVELTY:

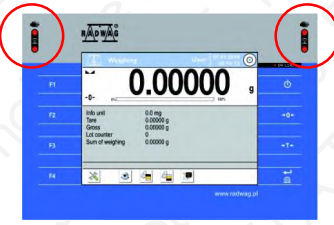
3Y series balances are equipped with **802.11b/g/n WiFi** communication interface operating with frequency range 2.4 + 2.472 GHz (1+13 channels). Communication is established likewise as for any other interfaces, e.g.: RS 232, Ethernet.

-  Parts counting
-  Dosing
-  Checkweighing
-  Formulation
-  Percent deviations
-  Statistics
-  Animal weighing
-  Differential weighing
-  Density determination
-  Statistical Quality Control
-  Autotest (GLP, Filter)
-  GLP procedures
-  Infrared sensors
-  Ambient conditions monitoring
-  Newton unit measurement
-  Replaceable units
-  Mass control
-  Mass for titrator

Technical specification:

	PS 200/2000.3Y	PS 250.3Y	PS 450.3Y	PS 600.3Y	PS 750.3Y	PS 1000.3Y	PS 1500.3Y	PS 2500.3Y	PS 4500.3Y	PS 6000.3Y
	M 16	M 16	M 16	M 16	M 16	M 16	M 16	M 16	M 16	M 16
Max capacity	200/2000 g	250 g	450 g	600 g	750 g	1000 g	1500 g	2500 g	4500 g	6000 g
Minimal load	20 mg	20 mg	20 mg	20 mg	20 mg	20 mg	500 mg	500 mg	500 mg	500 mg
Readability	1/10 mg	1 mg	1 mg	1 mg	1 mg	1 mg	10 mg	10 mg	10 mg	10 mg
Tare range	-200/-2000 g	-250 g	-450 g	-600 g	-750 g	-1010 g	-1500 g	-2500 g	-4500 g	-6000 g
Linearity	±2/10 mg	±2 mg	±2 mg	±3 mg	±3 mg	±3 mg	±20 mg	±20 mg	±20 mg	±30 mg
Repeatability	1/10 mg	1 mg	1 mg	1,5 mg	1,5 mg	1,5 mg	10 mg	10 mg	10 mg	15 mg
Pan size	128x128 mm						195x195 mm			
Stabilization time	2 s / 1,5 s	2 s	2 s	2 s	2 s	2 s	1,5 s	1,5 s	1,5 s	1,5 s
Sensitivity drift	2 ppm/°C in temperature +15 + +35 °C									
Minimum weight (USP)	1 g						10 g			
Minimum weight (U = 1%, k = 2)	0,1 g						1 g			
Working temperature	+10 + +40 °C (**)									
Power supply	13,5 + 16 V DC / 2,1A									
Interface	2xUSB, 2xRS 232, 1xEthernet, Wi-Fi 802.11 b/g/n, 4 inputs / 4 outputs (digital)									
Packaging size	716 x 360 x 260 mm									
Display	5,7" touch panel									

** Balance maintains parameters in accordance with type approval in temperatures 15 + 35°C;



Infrared proximity sensors

- PRINT function
- TARE function
- opening weighing chambers
- sensors' sensitivity



Data exchange through USB storage devices

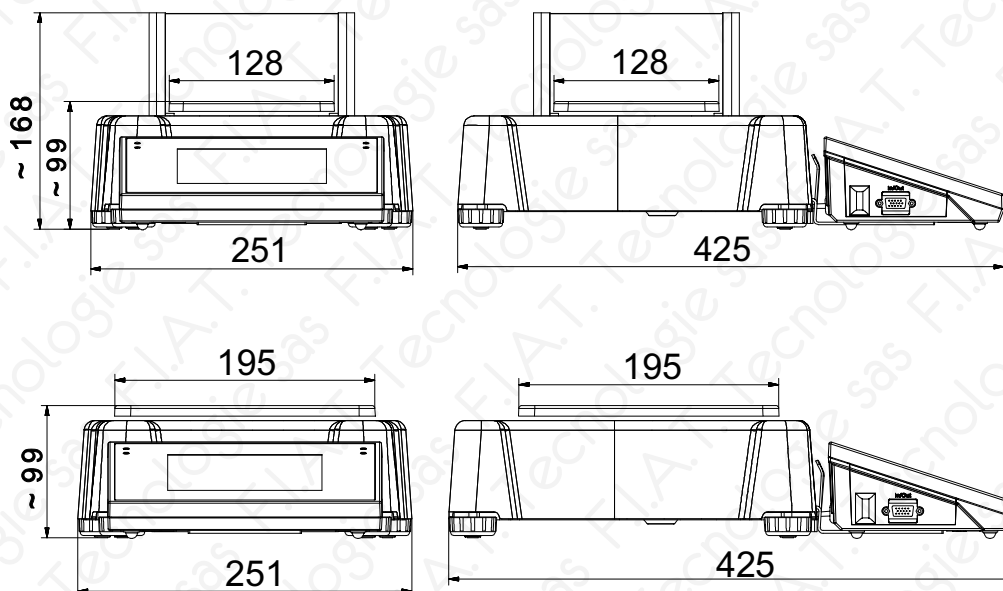
- export weighing data
- export/import databases
- export/import balance settings
- exchanging data between balances



Communication interfaces

- Ethernet 10/100 Mbps
- Wi-Fi 802.11 b,g,n,
- RS 232
- 2xUSB 2.0
- 4 in/out

Dimensions:



Additional equipment:

Anti vibration table for laboratory balances	Automatic feeder PA-02/H
Printer Epson, Citizen	Mass standard
Foot button for tare or print functions	LCD display WD-5
Density determination kit for solids and liquids	Power adapter with battery and charger ZR-02
PC USB keyboard	Power loop output AP2-1 (plastic version)
Anti draft shield	Antistatic cable PA 1
Bar code scanner	Computer software: PW-WIN, RAD-KEY
THB 3 ambient conditions module	Cable: P0136, P0151

PS.R1 PRECISION BALANCES



release date 05-03-2015



PS.R1 series balances represent a new standard of precision balances. They **feature a new, readable LCD display** which allows a clearer presentation of the weighing result. Besides, the display has a new text information line allowing to show additional messages and data, e.g. product name or tare value.

New PS.R1 balances, like previously designed PS series balances, have pans in two possible dimensions: 128x128 mm or 195x195 mm. Balances with a smaller pan have a draft shield. They were equipped with **the system of external mass adjustment**.

PS.R2 balances feature several communication interfaces: **2 x RS 232, type A USB, type B USB and optional WiFi**. The housing is made of plastic, and the pan is made of stainless steel. The balances have a possibility to weigh products out of the pan (under hook weighing) - the load hangs under the pan.

DATABASES IN R SERIES BALANCES

The information system is based on 5 databases, which allows for several users to work with several products databases, and the registered weighing results can be subject to further analysis.

The data is registered in 5 databases:

- users (up to 10 users),
- products (up to 1000 products),
- weightings (up to 5000 weightings),
- tares (up to 100 tares),
- ALIBI memory (up to 100 000 weightings).

There is two directions data exchange within the system thanks to a quick USB interface. New balances allow to import and export databases using USB pen drives.

ALIBI memory

The used ALIBI memory is a data secure area and allows to record up to 100 000 weighting records. It ensures security of constant data register in the long time period.

- Parts counting
- Dosing
- Checkweighing
- Percent deviations
- Statistics
- Animal weighing
- Statistical Quality Control
- Autotest (GLP, Filter)
- GLP procedures
- Newton unit measurement
- Replaceable units
- Summing function
- Caps lock of max indication
- Density determination
- Under-hook weighing
- ALIBI Memory

Quick access to information

Direct access to functions and databases is possible from the level of keyboard.

Database – a direct access to databasis

Function - a direct access to the basic functions

F1 to F4 – programmable function and navigation keys on the menu

Technical data:

	PS 200/2000.R1	PS 110.R1	PS 210.R1	PS 360.R1	PS 510.R1	PS 750.R1	PS 1000.R1
Max capacity	200 / 2000 g	110 g	210 g	360 g	510 g	750 g	1000 g
Minimum load	20 mg	20 mg	20 mg	20 mg	20 mg	20 mg	20 mg
Readability	1 / 10 mg	1 mg	1 mg	1 mg	1 mg	1 mg	1 mg
Tare range	-2000 g	-110 g	-210 g	-360 g	-510 g	-750 g	-1000 g
Repeatability *	1 / 10 mg	1 mg	1 mg	1 mg	1 mg	1,5 mg	1,5 mg
Linearity	±2 / ±20 mg	±2 mg	±2 mg	±2 mg	±2 mg	±3 mg	±3 mg
Pan size	128x128 mm						
Working temperature	+10 ÷ +40 °C						
Stabilization time	2 s / 1,5 s	2 s					
Sensitivity drift	2 ppm/°C in temperature +10 ÷ +40 °C						
Interface	2 x RS 232, USB-A, USB-B, WiFi - option						
Power supply**	12 ÷ 16 V DC / 250 mA						
Adjustment/calibration	external						
Display	LCD (backlit)						
Net weight/Gross weight	3,5 / 5,5 kg	3,5 / 5,5 kg	3,5 / 5,5 kg	3,5 / 5,5 kg	3,5 / 5,5 kg	3,5 / 5,5 kg	3,5 / 5,5 kg
Packaging size	470x380x336 mm						

* Repeatability is expressed as a standard deviation from 10 weighing cycles.

** 250 mA for balances without WiFi module, 350 mA for balances with installed WiFi module

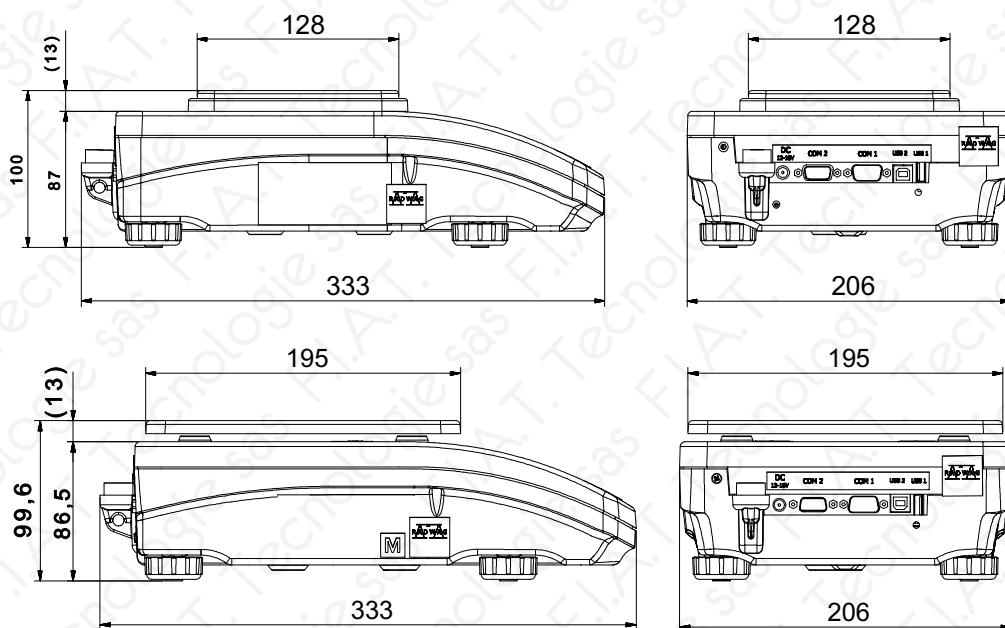
Technical data:

	PS 1200.R1	PS 2100.R1	PS 3500.R1	PS 4500.R1	PS 6000.R1	PS 6001.R1
Max capacity	1200 g	2100 g	3500 g	4500 g	6000 g	6000 g
Minimum load	500 mg	500 mg	500 mg	500 mg	500 mg	500 mg
Readability	10 mg	10 mg	10 mg	10 mg	10 mg	100 mg
Tare range	-1200 g	-2100 g	-3500 g	-4500 g	-6000 g	-6000 g
Repeatability *	10 mg	10 mg	10 mg	10 mg	15 mg	100 mg
Linearity	±20 mg	±20 mg	±20 mg	±20 mg	±30 mg	±100 mg
Pan size	195×195 mm					
Working temperature	+10 ÷ +40 °C					
Stabilization time	1,5 s					
Sensitivity drift	2 ppm/°C w temperature +10 ÷ +40 °C					
Interface	2 × RS 232, USB-A, USB-B, WiFi - option					
Power supply**	12 ÷ 16 V DC / 250 mA					
Adjustment/calibration	external					
Display	LCD (backlit)					
Net weight/Gross weight	3,6 / 5,1 kg	3,6 / 5,1 kg	3,6 / 5,1 kg	3,6 / 5,1 kg	3,6 / 5,1 kg	3,6 / 5,1 kg
Packaging size	470×380×336 mm					

* Repeatability is expressed as a standard deviation from 10 weighing cycles.

** 250 mA for balances without WiFi module, 350 mA for balances with installed WiFi module

Dimensions:



Accessories:

Antivibration table for laboratory balances	Bar code scanner USB HID
Antivibration table SAL/STONE	Power loop output AP2-1 (plastic housing)
Impact printer Epson	Additional LCD display "WD-6"
Label printer Citizen	Power adapter with battery and charger ZR-02
Printer USB PCL	Mass standard
Density determination kit	Szafka przeciwpodmucha (do wag z szalką 128x128)
Rack for under hook weighing	USB A - USB B cable (balance - computer, balance - PLC printer)
"Tare" or "Print" foot button	Cable RS 232 (scale - computer) "P0108"
PC keyboard USB	Cable RS 232 (scale, Epson, Citizen printer) "P0151"
External USB memory (FAT files format)	"PW-WIN" computer software
Bar code scanner	"RAD-KEY" computer software

PS.R2 PRECISION BALANCES



release date 20-04-2016



PS.R2 series balances represent a new standard of precision balances. They **feature a new, readable LCD display** which allows a clearer presentation of the weighing result. Besides, the display has a new text information line allowing to show additional messages and data, e.g. product name or tare value.

New PS.R2 balances, like previously designed PS series balances, have pans in two possible dimensions: 128x128 mm or 195x195 mm. balances with a smaller pan have a draft shield. The balance precision and the measurement accuracy is assured by **automatic internal adjustment**, which takes into consideration temperature changes and time flow.

PS.R2 balances feature several communication interfaces: **2 x RS 232, type A USB, type B USB and optional WiFi**. The housing is made of plastic, and the pan is made of stainless steel. The balances have a possibility to weigh products out of the pan (under hook weighing) - the load hangs under the pan.

DATABASES IN R SERIES BALANCES

The information system is based on 5 databases, which allows for several users to work with several products databases, and the registered weighing results can be subject to further analysis.

The data is registered in 5 databases:

- users (up to 10 users),
- products (up to 1000 products),
- weighments (up to 5000 weighments),
- tares (up to 100 tares),
- ALIBI memory (up to 100 000 weighments).

There is two directions data exchange within the system thanks to a quick USB interface. New balances allow to import and export databases using USB pen drives.

ALIBI memory

The used ALIBI memory is a data secure area and allows to record up to 100 000 weighment records. It ensures security of constant data register in the long time period.

- Parts counting
- Dosing
- Checkweighing
- Percent deviations
- Statistics
- Animal weighing
- Statistical Quality Control
- Autotest (GLP, Filter)
- GLP procedures
- Newton unit measurement
- Replaceable units
- Summing function
- Caps lock of max indication
- Density determination
- Under-hook weighing
- ALIBI Memory

Quick access to information

Direct access to functions and databases is possible from the level of keyboard.

Database – a direct access to databasis

Function - a direct access to the basic functions

F1 to F4 – programmable function and navigation keys on the menu

Technical data:

	PS 200/2000.R2 M16	PS 210.R2 M16	PS 360.R2 M16	PS 600.R2 M16	PS 750.R2 M16	PS 1000.R2 M16
Max capacity	200 / 2000 g	210 g	360 g	600 g	750 g	1000 g
Minimum load	20 mg	20 mg	20 mg	20 mg	20 mg	20 mg
Readability	1 / 10 mg	1 mg	1 mg	1 mg	1 mg	1 mg
Tare range	-2000 g	-210 g	-360 g	-600 g	-750 g	-1000 g
Repeatability *	1 / 10 mg	1 mg	1 mg	1,5 mg	1,5 mg	1,5 mg
Linearity	±2 / ±20 mg	±2 mg	±2 mg	±3 mg	±3 mg	±3 mg
Pan size	128x128 mm					
Working temperature	+10 ÷ +40 °C					
Stabilization time	2 s / 1,5 s		2 s			
Sensitivity drift	2 ppm/°C in temperature +10 ÷ +40 °C					
Interface	2 x RS 232, USB-A, USB-B, WiFi - option					
Power supply**	12 ÷ 16 V DC / 2,1 A					
Adjustment/calibration	internal (automatic)					
Display	LCD (backlit)					
Net weight/Gross weight	3,5 / 5,5 kg	3,5 / 5,5 kg	3,5 / 5,5 kg	3,5 / 5,5 kg	3,5 / 5,5 kg	3,5 / 5,5 kg
Packaging size	470x380x336 mm					

* Repeatability is expressed as a standard deviation from 10 weighing cycles.

** 250 mA for balances without WiFi module, 350 mA for balances with installed WiFi module

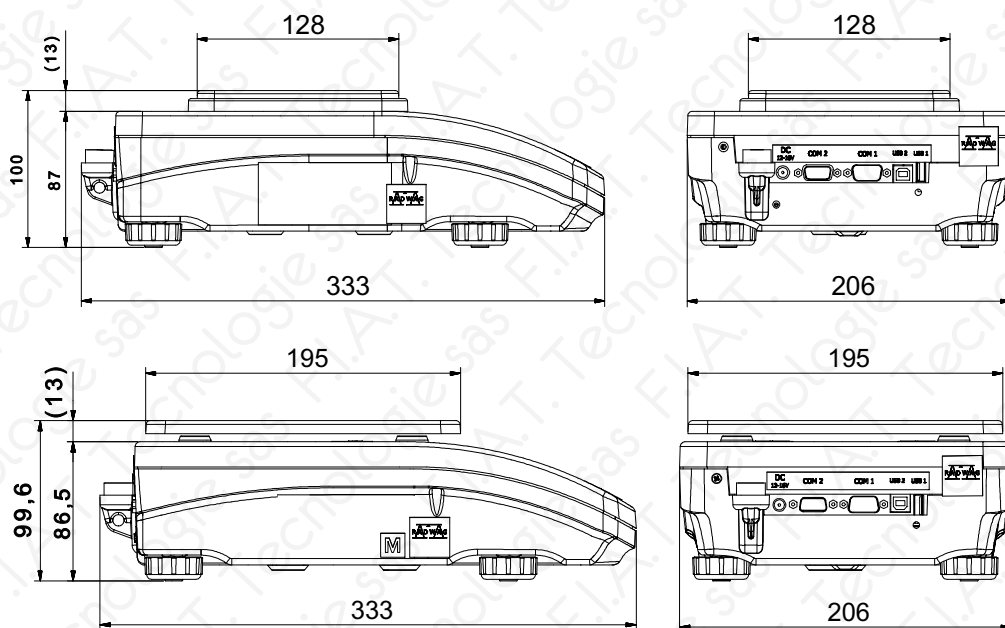
Technical data:

	PS 1200.R2 M 16	PS 2100.R2 M 16	PS 3500.R2 M 16	PS 4500.R2 M 16	PS 6000.R2 M 16	PS 6001.R2 M 16
Max capacity	1200 g	2100 g	3500 g	4500 g	6000 g	6000 g
Minimum load	500 mg	500 mg	500 mg	500 mg	500 mg	500 mg
Readability	10 mg	10 mg	10 mg	10 mg	10 mg	100 mg
Tare range	-1200 g	-2100 g	-3500 g	-4500 g	-6000 g	-6000 g
Repeatability *	10 mg	10 mg	10 mg	10 mg	15 mg	100 mg
Linearity	±20 mg	±20 mg	±20 mg	±20 mg	±30 mg	±100 mg
Pan size	195×195 mm					
Working temperature	+10 ÷ +40 °C					
Stabilization time	1,5 s					
Sensitivity drift	2 ppm/°C in temperature +10 ÷ +40 °C					
Interface	2 × RS 232, USB-A, USB-B, WiFi - option					
Power supply**	12 ÷ 16 V DC / 2,1 A					
Adjustment/calibration	internal (automatic)					
Display	LCD (backlit)					
Net weight/Gross weight	3,6 / 5,1 kg	3,6 / 5,1 kg	3,6 / 5,1 kg	3,6 / 5,1 kg	3,6 / 5,1 kg	4,8 / 6,3 kg
Packaging size	470×380×336 mm					

* Repeatability is expressed as a standard deviation from 10 weighing cycles.

** 250 mA for balances without WiFi module, 350 mA for balances with installed WiFi module

Dimensions:



Accessories:

Antivibration table for laboratory balances	Bar code scanner USB HID
Antivibration table SAL/STONE	Power loop output AP2-1 (plastic housing)
Impact printer Epson	Additional LCD display "WD-6"
Label printer Citizen	Power adapter with battery and charger ZR-02
Printer USB PCL	Mass standard
Density determination kit	Szafka przeciwpodmuchowa (do wag z szalką 128x128)
Rack for under hook weighing	USB A- USB B cable (balance - computer, balance - PLC printer)
"Tare" or "Print" foot button	Cable RS 232 (scale - computer) "P0108"
PC keyboard USB	Cable RS 232 (scale, Epson, Citizen printer) "P0151"
External USB memory (FAT files format)	"PW-WIN" computer software
Bar code scanner	"RAD-KEY" computer software

PS.R2.H PRECISION BALANCES



release date 21-02-2014



- Parts counting
- Checkweighing
- Percent setup
- Filling
- Summing function
- Statistics
- Density determination
- Animal weighing
- Caps lock of max indication

PS R2.H series balances redefine the level of standard precision balances. Not only do they share all the features of R series balances, but can also work in adverse operating conditions (condensed dust, drops of water falling down at different angles typical for IP 54). These balances are equipped with innovative LCD display allowing for clear and legible presentation of a measurement result. Moreover, it offers new text line which supplies the user with some additional messages and information, e.g. product name or tare value.

PS.R.H balances are offered with round pans of two possible sizes: $\varnothing 115\text{mm}$ and $\varnothing 170\text{mm}$. Balances with pans of a smaller size feature draft shield as well.

Additional asset of **PS R2.H balances** are their interfaces build-in a hermetic closed housing which is separated from the balance. The interfaces include 2×RS 232, USB type A, USB type B, and WiFi optionally. Balance housing is made of plastic, whereas its pan of stainless steel.

DATABASES IN R SERIES BALANCES

The information system is based on 5 databases, which allows for several users to work with several products databases, and the registered weighing results can be subject to further analysis.

The data is registered in 5 databases:

- users (up to 10 users),
- products (up to 1000 products),
- weightings (up to 5000 weightings),
- tares (up to 100 tares),
- ALIBI memory (up to 100 000 weightings).

There is two directions data exchange within the system thanks to a quick USB interface. New balances allow to import and export databases using USB pen drives.

Quick access to information

Direct access to functions and databases is possible from the level of keyboard.

Database – a direct access to databasis

Function - a direct access to the basic functions

F1 to F4 – programmable function and navigation keys on the menu

ALIBI memory

The used ALIBI memory is a data secure area and allows to record up to 100 000 weighing records. It ensures security of constant data register in the long time period.

Technical data:

	PS 200/2000.R2.H	PS 210.R2.H	PS 360.R2.H	PS 600.R2.H	PS 750.R2.H	PS 1000.R2.H
Max capacity	200 / 2000 g	210 g	360 g	600 g	750 g	1000 g
Minimum load	20 mg	20 mg	20 mg	20 mg	20 mg	20 mg
Readability	1 / 10 mg	1 mg	1 mg	1 mg	1 mg	1 mg
Tare range	-2000 g	-210 g	-360 g	-600 g	-750 g	-1000 g
Repeatability *	1 / 10 mg	1 mg	1 mg	1 mg	1,5 mg	1,5 mg
Linearity	±2 / ±20 mg	±2 mg	±2 mg	±3 mg	±3 mg	±3 mg
Pan size	Ø 115 mm					
Working temperature	+10 ÷ +40 °C					
Stabilization time	2 s / 1,5 s	2 s				
Sensitivity drift	2 ppm/°C in temperature +10 ÷ +40 °C					
Interface	2 × RS 232, USB-A, USB-B, WiFi - option					
Power supply**	12 ÷ 16 V DC / 250 mA					
Adjustment/calibration	internal (automatic)					
Display	LCD (backlit)					
Net weight/Gross weight	4,5 / 6,5 kg	4,2 / 6,2 kg	4,2 / 6,2 kg	4,3 / 6,3 kg	4,3 / 6,3 kg	4,5 / 6,5 kg
Packaging size	470×380×336 mm					

* Repeatability is expressed as a standard deviation from 10 weighing cycles.

** 250 mA for balances without WiFi module, 350 mA for balances with installed WiFi module

Technical data:

	PS 1200.R2.H	PS 2100.R2.H	PS 3500.R2.H	PS 4500.R2.H	PS 6000.R2.H
Max capacity	1200 g	2100 g	3500 g	4500 g	6000 g
Minimum load	500 mg	500 mg	500 mg	500 mg	500 mg
Readability	10 mg	10 mg	10 mg	10 mg	10 mg
Tare range	-1200 g	-2100 g	-3500 g	-4500 g	-6000 g
Repeatability *	10 mg	10 mg	10 mg	10 mg	15 mg
Linearity	±20 mg	±20 mg	±20 mg	±20 mg	±30 mg
Pan size	Ø 170 mm				
Working temperature	+10 ÷ +40 °C				
Stabilization time	1,5 s				
Sensitivity drift	2 ppm/°C in temperature +10 ÷ +40 °C				
Interface	2 × RS 232, USB-A, USB-B, WiFi - option				
Power supply**	12 ÷ 16 V DC / 250 mA				
Adjustment/calibration	internal (automatic)				
Display	LCD (backlit)				
Net weight/Gross weight	4,3 / 5,8 kg	4,8 / 6,3 kg	4,8 / 6,3 kg	4,8 / 6,3 kg	4,8 / 6,3 kg
Packaging size	470×380×336 mm				

* Repeatability is expressed as a standard deviation from 10 weighing cycles.

** 250 mA for balances without WiFi module, 350 mA for balances with installed WiFi module

Accessories:

Antivibration table for laboratory balances	Bar code scanner USB HID
SAL/STONE granite laboratory bench	Power loop output AP2-1 (plastic housing)
Kafka thermal printer	Additional LCD display "WD-6"
Impact printer Epson	Power adapter with battery and charger ZR-02
Label printer Citizen	Mass standard
Printer USB PCL	USB A- USB B cable (balance - computer, balance - PLC printer)
Density determination kit	Cable RS 232 (scale - Kafka printer) "P0136"
Rack for under hook weighing	Cable RS 232 (scale - computer) "P0108"
"Tare" or "Print" foot button	Cable RS 232 (scale, Epson, Citizen printer) "P0151"
PC keyboard USB	"PW-WIN" computer software
External USB memory (FAT files format)	"RAD-KEY" computer software
Bar code scanner	

PS.X2 PRECISION BALANCES



release date 24-06-2016



The PS.X2 series represents a new advanced level for precision balances.

The X2 series balances feature the latest generation capacitive display providing the maximum comfort of use, available right at your fingertips. Ease of operation, clear menu and practical arrangement of the display guarantee the best ergonomics for your everyday tasks. A wide array of available interfaces facilitate selection of the most optimal means for communication. The X2 series balances offer unlimited possibilities for cooperation with external devices, providing printing, copying, archiving and data transfer. Built-in IR sensors allow numerous operations (e.g. tarring, transmitting the result to a printer or selecting successive steps of a particular process, etc.) to be performed hands-free, by simply moving a hand across the sensor. The housing is made of plastic, and the pan is made of stainless steel.

The balances feature under-pan weighing option - the weighed load is suspended under the balance.

DATABASES IN X2 SERIES BALANCES

In new PS.X2 series balances the information system is based on 7 databases, which allows for several users to work with several products databases, and the registered weighing results can be subject to further analysis.

The data is registered in 7 databases:

- Users (up to 100 users),
- Products (up to 5 000 products),
- Weighments (up to 50 000 weighments),
- Packaging (up to 100 packaging types),
- Formulas (up to 100 formulas),
- Clients (up to 100 clients),
- ALIBI memory (up to 500 000 weighments).

The X2 series features option of making reports of 3 different categories:

- Reports on formulas (up to 200 reports),
- Reports on density determination (up to 500 reports).

ALIBI Memory

The X2 series balances feature ALIBI memory that is a warranty for safety and automatic recording of your measurements. Options such as data preview, copying and archiving are available to users, as well. The used ALIBI memory allows to record up to 500 000 weighment records.

- Parts counting
- Dosing
- Checkweighing
- Formulation
- Percent deviations
- Statistics
- Animal weighing
- Autotest (GLP, Filter)
- Density determination
- GLP procedures
- Under hook weighing
- Peak hold
- Infrared sensors
- Ambient conditions monitoring
- Newton unit measurement
- Replaceable units
- ALIBI Memory

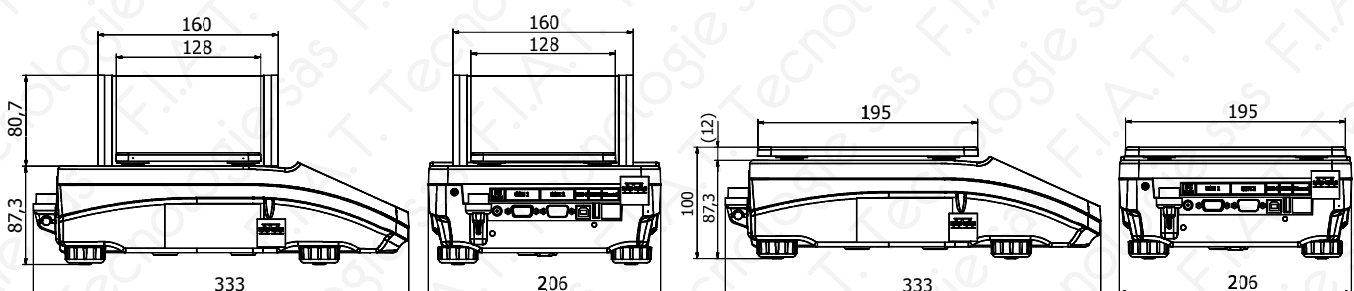
Personalization taken to the next level

The X2 is the only balance available on the market that provides a user with the option to design display using wide selection of widgets. Customised display of X2 series offers direct access to the results of your work and other important information directly from the home screen.

Weighing Data Management

USB interface facilitates quick transfer and copying of any results of your work (measurements, reports, databases) to other balances. Managing the databases of balances may be also carried out over network thanks to E2R system also offering the possibility of remote control. Network management of the weighing data increases effectivity, productivity and safety of the important data to the maximum.

Dimensions:



Technical specification:

	PS 200/2000.X2 M 16	PS 210.X2 M 16	PS 360.X2 M 16	PS 600.X2 M 16	PS 750.X2 M 16	PS 1000.X2 M 16
Max capacity	200 / 2000 g	210 g	360 g	600 g	750 g	1000 g
Minimum load	20 mg	20 mg	20 mg	20 mg	20 mg	20 mg
Readability	1 / 10 mg	1 mg	1 mg	1 mg	1 mg	1 mg
Tare range	-2000 g	-210 g	-360 g	-600 g	-750 g	-1000 g
Repeatability *	1 / 10 mg	1 mg	1 mg	1,5 mg	1,5 mg	1,5 mg
Linearity	±2 / ±20 mg	±2 mg	±2 mg	±3 mg	±3 mg	±3 mg
Pan size	128×128 mm					
Working temperature	+10 ÷ +40 °C					
Stabilization time	2 s / 1,5 s	2 s				
Sensitivity drift	2 ppm/°C in temperature +10 ÷ +40 °C					
Minimum weight (USP)	1 g					
Minimum weight (U = 1%, k = 2)	0,1 g					
Interface	2 × RS 232, USB-A, USB-B, Ethernet, WiFi - option					
Power supply**	12 ÷ 16 V DC / 2,1 A					
Adjustment/calibration	internal (automatic)					
Display	5" colour capacitive touchscreen					
Net weight/Gross weight	3,5 / 5,5 kg	3,5 / 5,5 kg	3,5 / 5,5 kg	3,5 / 5,5 kg	3,5 / 5,5 kg	3,5 / 5,5 kg
Packaging size	470×380×336 mm					

Technical specification:

	PS 1200.X2 M 16	PS 2100.X2 M 16	PS 3500.X2 M 16	PS 4500.X2 M 16	PS 6000.X2 M 16	PS 6001.X2 M 16
Max capacity	1200 g	2100 g	3500 g	4500 g	6000 g	6000 g
Minimum load	500 mg	500 mg	500 mg	500 mg	500 mg	500 mg
Readability	10 mg	10 mg	10 mg	10 mg	10 mg	100 mg
Tare range	-1200 g	-2100 g	-3500 g	-4500 g	-6000 g	-6000 g
Repeatability *	10 mg	10 mg	10 mg	10 mg	15 mg	100 mg
Linearity	±20 mg	±20 mg	±20 mg	±20 mg	±30 mg	±100 mg
Pan size	195×195 mm					
Working temperature	+10 ÷ +40 °C					
Stabilization time	1,5 s					
Sensitivity drift	2 ppm/°C in temperature +10 ÷ +40 °C					
Minimum weight (USP)	10 g					
Minimum weight (U = 1%, k = 2)	1 g					
Interface	2 × RS 232, USB-A, USB-B, Ethernet, WiFi - option					
Power supply**	12 ÷ 16 V DC / 2,1 A					
Adjustment/calibration	internal (automatic)					
Display	5" colour capacitive touchscreen					
Net weight/Gross weight	3,6 / 5,1 kg	3,6 / 5,1 kg	3,6 / 5,1 kg	3,6 / 5,1 kg	3,6 / 5,1 kg	4,8 / 6,3 kg
Packaging size	470×380×336 mm					

* Repeatability is expressed as a standard deviation from 10 weighing cycles.

** 250 mA for balances without WiFi module, 450 mA for balances with installed WiFi module

Accessories:

Antivibration table for laboratory balances	Bar code scanner USB HID
Antivibration table SAL/STONE	Power loop output AP2-1 (plastic housing)
Impact printer Epson	Additional LCD display "WD-6"
Printer USB PCL	Power adapter with battery and charger ZR-02
Density determination kit	Mass standard
Rack for under hook weighing	Draft shield (for balances featuring 128x128 weighing pan)
"Tare" or "Print" foot button	USB A- USB B cable (balance - computer, balance - PLC printer)
PC keyboard USB	Cable RS 232 (scale - computer) "P0108"
External USB memory (FAT files format)	Cable RS 232 (scale, Epson printer) "P0151"
Bar code scanner	"PW-WIN" computer software
	"RAD-KEY" computer software

WLC.X2 PRECISION BALANCES










release date 24-06-2016



The **WLC.X2 series** represents a **new advanced level** for precision balances.

The X2 series balances feature the latest generation capacitive display providing the maximum comfort of use, available right at your fingertips. Ease of operation, clear menu and practical arrangement of the display guarantee the best ergonomics for your everyday tasks. A wide array of available interfaces facilitate selection of the most optimal means for communication. The X2 series balances offer unlimited possibilities for cooperation with external devices, providing printing, copying, archiving and data transfer. Built-in IR sensors allow numerous operations (e.g. tarring, transmitting the result to a printer or selecting successive steps of a particular process, etc.) to be performed hands-free, by simply moving a hand across the sensor. The housing is made of plastic, and the pan is made of stainless steel.

The balances feature under-pan weighing option - the weighed load is suspended under the balance.

-  Parts counting
-  Dosing
-  Checkweighing
-  Formulation
-  Percent deviations
-  Statistics
-  Animal weighing
-  Autotest (GLP, Filter)
-  Density determination
-  GLP procedures
-  Under hook weighing
-  Peak hold
-  Infrared sensors
-  Ambient conditions monitoring
-  Newton unit measurement
-  Replaceable units
-  ALIBI Memory

DATABASES IN X2 SERIES BALANCES

In new WLC.X2 series balances the information system is based on 7 databases, which allows for several users to work with several products databases, and the registered weighing results can be subject to further analysis.

The data is registered in 7 databases:

- Users (up to 100 users),
- Products (up to 5 000 products),
- Weighments (up to 50 000 weighments),
- Packaging (up to 100 packaging types),
- Formulas (up to 100 formulas),
- Clients (up to 100 clients),
- ALIBI memory (up to 500 000 weighments).

The X2 series features option of making reports of 2 different categories:

- Reports on formulas (up to 200 reports),
- Reports on density determination (up to 500 reports).

Technical specification:

	WLC 0,6.X2	WLC 2.X2	WLC 6.X2	WLC 1/10.X2	WLC 10.X2	WLC 20.X2	WLC 21.X2
Max capacity	0,6 kg	2 kg	6 kg	1 kg / 10 kg	10 kg	20 kg	21 kg
Reading unit [d]	0,01 g	0,01 g	0,1 g	0,01 g / 0,1 g	0,1 g	0,1 g	1 g
Tare range	-0,6 kg	-2 kg	-6 kg	-10 kg	-10 kg	-20 kg	-21 kg
Repeatability	0,008 g	0,01 g	0,1 g	0,015 g / 0,08 g	0,08 g	0,1 g	0,8 g
Linearity	±0,03 g	±0,03 g	±0,3 g	±0,03 g / ±0,3 g	±0,3 g	±0,3 g	±3 g
Stabilization time	2 s	2 s	2 s	~ 4 s / 2 s	2 s	3 s	3 s
Pan size	128 × 128 mm	195 × 195 mm					
Working temperature	+10° + +40 °C						
Power supply	12 + 16 V DC						
Adjustment	external						
IP rating	IP 43						
Display	5" colour capacitive touchscreen						
Interfaces	2×RS232, USB-A, USB-B, Wi-Fi 2,4 GHz b,g,n						
Database	7 databases						
Net weight / Gross weight	2,2 kg / 3,8 kg						
Packaging dimensions	470 × 380 × 336 mm						

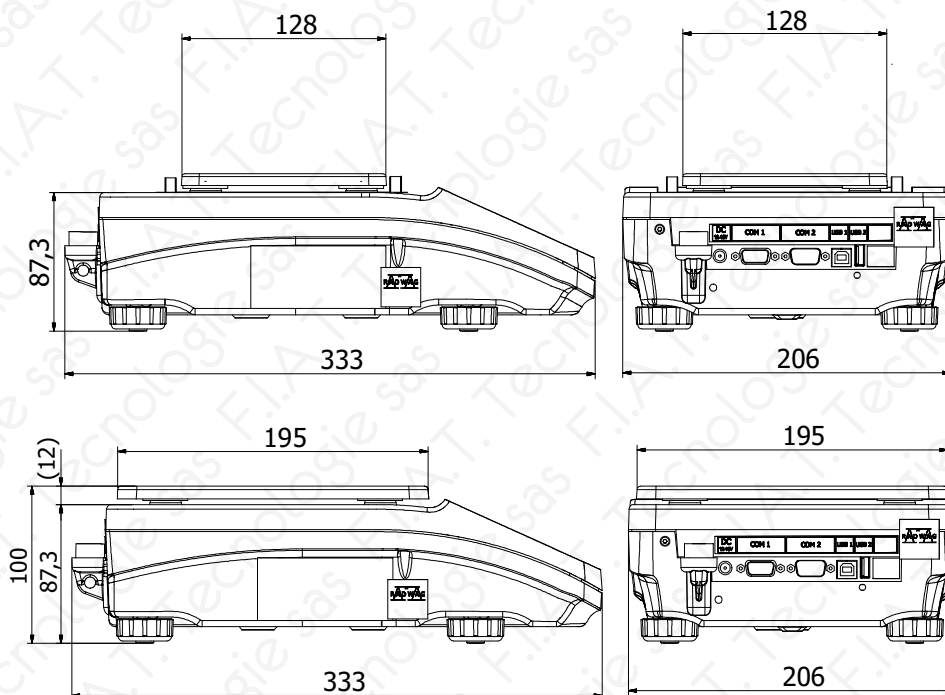
* Repeatability is expressed as a standard deviation from 10 weighing cycles

Technical specification:

	WLC 0,6X2.C	WLC 2.X2.C
Max capacity	0,6 kg	2 kg
Reading unit [d]	0,01 g	0,01 g
Tare range	-0,6 kg	-2 kg
Repeatability	0,008 g	0,01 g
Linearity	±0,03 g	±0,03 g
Stabilization time	2 s	2 s
Pan size	128 × 128 mm	195 × 195 mm
Working temperature	+10° + +40 °C	
Power supply	12 + 16 V DC	
Adjustment	internal	
IP rating	IP 43	
Display	5" colour capacitive touchscreen	
Interfaces	2×RS232, USB-A, USB-B, Wi-Fi 2,4 GHz b,g,n	
Database	7 databases	
Net weight / Gross weight	2,6 kg / 4,2 kg	3,1 kg / 4,7 kg
Packaging dimensions	470 × 380 × 336 mm	

* Repeatability is expressed as a standard deviation from 10 weighing cycles

Dimensions:



Accessories:

Antivibration table for laboratory balances	Bar code scanner USB HID
Antivibration table SAL/STONE	Power loop output AP2-1 (plastic housing)
Impact printer Epson	Additional LCD display "WD-6"
Printer USB PCL	Power adapter with battery and charger ZR-02
Density determination kit	Mass standard
Rack for under hook weighing	USB A- USB B cable (balance - computer, balance - PLC printer)
"Tare" or "Print" foot button	Cable RS 232 (scale - computer) "P0108"
PC keyboard USB	Cable RS 232 (scale, Epson printer) "P0151"
External USB memory (FAT files format)	"PW-WIN" computer software
Bar code scanner	"RAD-KEY" computer software

PRECISION BALANCES WLY



release date 03-06-2015



Precision balances series WLY are the response for the growing market demands concerning simple operation and maximum automation of the weighing process.

WLY series can cooperate with barcode scanners, receipt and label printers, RFID scanners and PC peripherals (mouse, keyboard, USB flash data storage devices).

DESIGN AND FUNCTIONALITY

All models of WLY series feature stainless steel weighing pan and a touch panel covering a 5.7" colour graphic display and membrane keyboard. WLY balances can cooperate with an additional weighing platform.

WLY highlights:


- programmable display and function keys
- programmable infrared proximity sensors
- desining custom printouts
- desining text data in display's window.

- Parts counting
- Labeling
- Dosing
- Checkweighing
- Percent deviations
- Statistics
- Animal weighing
- Differential weighing
- Formulation
- Plus/Minus Control
- Under hook weighing
- Totalizing
- Density determination
- Peak hold
- Packaged Goods Control
- Infrared sensors
- Newton unit measurement
- Replaceable units
- ALIBI Memory



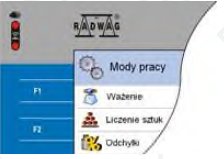
Data exchange through USB storage devices

- update balance software
- export weighing data




5,7" touch screen

Infrared proximity sensors
Programmable 40 functions (PRINT, TARE and others).



In standard balance offers modes of "Parts counting" and "Checkweighing".



Communication interfaces

- Ethernet
- 2×RS 232
- 2×USB
- 4 in/4 out
- WiFi 2,4GHz b, g, n

Technical data:

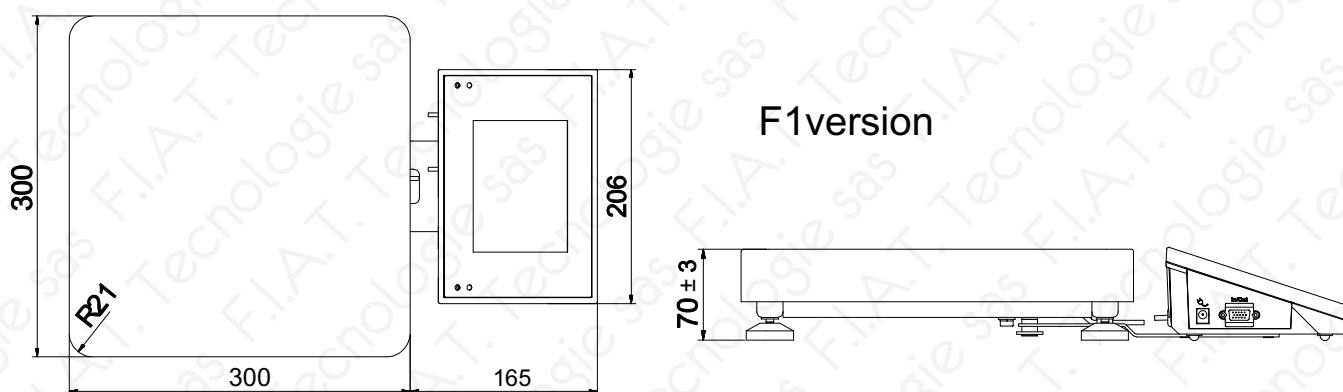
	WLY 1/D2	WLY 2/D2	WLY 6/D2 M	WLY 10/D2	WLY 20/D2
	-	-	-	-	-
Max capacity	1 kg	2 kg	6 kg	10 kg	20 kg
Minimal load	-	-	5 g	-	-
Readability	0,01 g	0,01 g	0,1 g	0,1 g	0,1 g
Verifying unit	-	-	1 g	-	-
Tare range	-1 kg	-2 kg	-6 kg	-10 kg	-20 kg
Repeatability	0,3 g	0,03 g	0,1 g	0,3 g	0,3 g
Linearity	± 0,03 g	± 0,03 g	± 0,1 g	± 0,3 g	± 0,3 g
OIML class	-	-	II	-	-
Pan size	195 × 195 mm				
Stabilization time	3 s				
Working temperature	+15 ° ± +30 °C				
Storage temperature	-25 ° ± +70 °C				
IP rating	IP 43				
Power supply	110÷230VAC 50/60Hz / 10,5÷15VDC				
Adjustment / Calibration	external				
Display	5,7" touch screen				
Interface	2×USB, 2×RS 232, Ethernet, 4 I/O digital, WiFi 2,4GHz b,g,n				
Net weight/Gross weight	2,7 / 3,6 kg				
Packaging dimensions	490 × 300 × 150 mm				

Technical data:

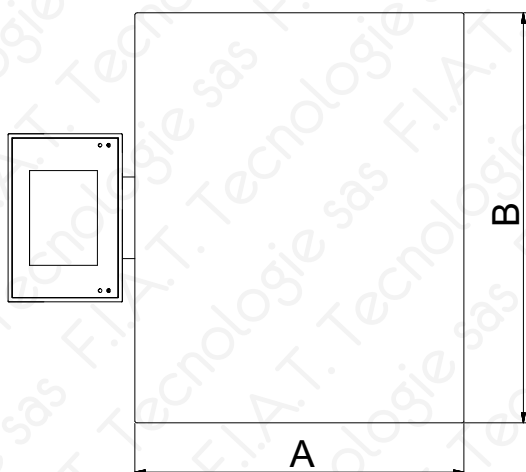
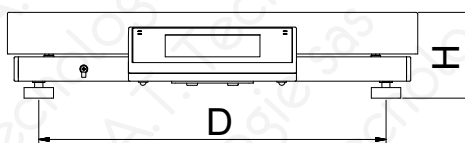
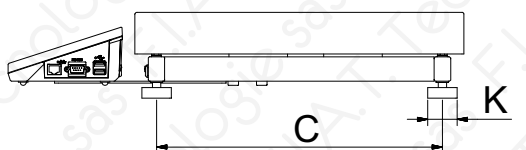
	WLY 6/F1/R WLY 6/F1/K M	WLY 12/F1/R WLY 12/F1/K	WLY 30/F1/R WLY 30/F1/K	WLY 60/C2/R WLY 60/C2/K M	WLY 120/C2/R WLY 120/C2/K
	-	-	-	-	-
Max capacity	6 kg	12 kg	30 kg	60 kg	120 kg
Minimal load	5 g	-	-	50 g	-
Readability	0,1 g	0,2 g	0,5 g	1 g	2 g
Verifying unit	1 g	-	-	10 g	-
Tare range	-6 kg	-12 kg	-30 kg	-60 kg	-120 kg
Repeatability	0,1 g	0,6 g	1,5 g	1 g	2 g
Linearity	±0,1 g	±0,6 g	±1,5 g	±1 g	±2 g
OIML class	II	-	-	II	-
Pan size	300×300 mm			400×500 mm	
Stabilization time	3 s				
Working temperature	+15 ° - +30 °C				
Storage temperature	-25 ° - +70 °C				
IP rating	IP 43				
Power supply	110÷230VAC 50/60Hz / 10,5÷15VDC				
Adjustment / Calibration	external				
Display	5,7" touch screen				
Interface	2×USB, 2×RS 232, Ethernet, 4 I/O digital, WiFi 2,4GHz b,g,n				
Net weight/Gross weight	5,2 / 6 kg			15,5/17,8 kg	
Packaging dimensions	570×390×170 mm			720×580×220 mm	

Additional equipment:

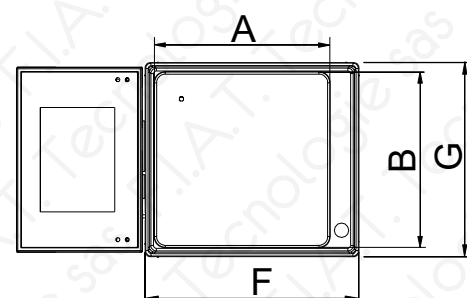
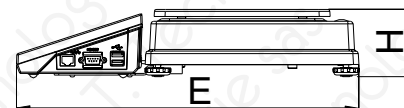
"Epson" impact printer	Handle for PUE 7 indicator
"Citizen" label printer	Barcode scanner
Computer software „PW-WIN“	Transponder card scanner CK-01
Computer software „RAD-KEY“	Weighing module DP2
LCD display „WD-4/4“	RS 232 cable: balance - "Epson/Citizen" printer: P0151
PC keyboard	RS 232 cable: balance - computer: P0108
Calibration weight	Power adapter with jack for car lighter „K0047“
Mass standard	



C2 version



D2 version



Name	A [mm]	B [mm]	C [mm]	D [mm]	H [mm]	E [mm]	F [mm]	G [mm]	K [mm]
WLY ... F1/K	300	300	230	314	70±3	-	-	-	Ø 36
WLY ... F1/R	300	300	230	314	70±3	-	-	-	Ø 36
WLY ... C2/K	402	502	350	425	105±5	-	-	-	Ø 36
WLY ... C2/R	402	502	350	425	105±5	-	-	-	Ø 36
WLY ... D2	195	195	-	-	77	381	238	216	-

sd ≤ 1d
weighing faster than you think
2-point adjustment system



www.radwag.com

4Y **Brand new series**
of laboratory balances

PROFESSIONAL LEVEL



Professional level of weighing The highest measurement accuracy

4Y

Brand new series
of laboratory balances

RADWAG

Innovative 2-point adjustment system

Brand new adjustment system guarantees the highest measurement accuracy. It minimizes linearity errors simultaneously providing reliable indications for the whole weighing range.

Faster measurement with the new CPU

4Y balances feature Dual Core 2 x 1 GB processor which delivers noticeable performance improvements including faster operation and shorter stabilization time retaining high repeatability values.

Monitoring and elimination of electrostatics

Installation of an additional deionizer module in a weighing chamber facilitates automatic detection and elimination of electrostatics effect to which both, sample and container intended for measurement may be subjected.

8 GB RAM – more data management possibilities

8 GB RAM offers possibility of recording data in a form of complex reports. Time and statistic data diagrams on series of weighments are another useful option.

The best possible repeatability and USP regulations conformity

The best weighing accuracy and repeatability – with $sd \leq 1d$ combined with USP regulations conformity (Section 41 and 1251) make 4Y balances a new standard for mass measurement quality.

Ergonomics and safety

Wireless communication between balance terminal and a weighing unit make it possible to comfortably operate 4Y series balances in laminar air flow cabinets and fume cupboards.

Remote control operation

WiFi module offers wireless transfer of data recorded by 4Y balance to any portable device powered by iOS or Android systems using special applications intended for data management.

Data safety

Every single 4Y balance features ALIBI memory designed to provide protection and automatic recording of your measurements. Options such as data preview, copying and archiving are also available to users.



UYA 4Y
Ultra-microbalances

MYA 4Y
Microbalances

MYA 4Y.P
Microbalances
for pipettes calibration

MYA 4Y.F
Microbalances
for filter weighing

XA 4Y.A
Analytical balances

XA 4Y
Analytical balances

Max capacity [Max]	2,1 g	0,8 - 21 g	21 g	5 g	52 - 310 g	52 - 310 g
Readability [d]	0,1 - 1 µg	1 - 10 µg	1 µg	1 µg	0,01 - 0,1 mg	0,01 - 0,1 mg
USP minimum sample weight	0,8 mg	2 mg	2 mg	2 mg	20 mg	20 mg
Pan size	ø 16 mm	ø 16 or ø 26 mm	ø 26 mm	ø 100 or ø 160 mm	ø 85 or ø 100 mm	ø 85 or ø 100 mm
Automatically opened door	•	•	•	-	•	-
Display	5,7" colour resistive touch screen					
Adjustment	automatic internal adjustment					
Interfaces	USB (2 ports), RS 232 (2 ports), Wi-Fi, Ethernet, 4 In / 4 Out (digital)					





RADWAG BALANCES AND SCALES
ADVANCED WEIGHING TECHNOLOGIES



4Y Series Balances

Optimization, Accuracy, Safety

4Y Series



Checkweighing



Dosing



Formulation



Innovative Adjustment System

The new 2-point adjustment system guarantees the highest measurement accuracy and it also minimizes linearity errors, providing reliable results over the entire weighing range.

Second to None Measurement Accuracy

The newest Tegra series processor and original solutions designed to enable adjusting filters to environmental conditions ensure excellent working conditions repeatability and quick result stabilization

New Data Management Experience

Memory expandable up to 32 GB allows recording measurement data in a form of complex reports and graphs presenting statistics and more.

Maximum Repeatability and Adherence to USP

The best weighing accuracy and $sd \leq 1d$ repeatability along with adherence to USP requirements (chapter 41 and 1251) set a new benchmark for mass measurement quality.

Ergonomics and Safety for Operation

Wireless communication established between the terminal and the weighing unit enables utilization of the balances in laminar flow cabinets and in fume cupboards.

Operation via Mobile Devices

Wi-Fi option supports transfer of data from a balance to a mobile device featuring iOS or Android system.

Data Safety

With automatically performed measurement record possible due to ALIBI memory your data is safe and can be analysed whenever you need.



Statistics



Differential weighing



Percent weighing



Pipettes calibration



Parts counting

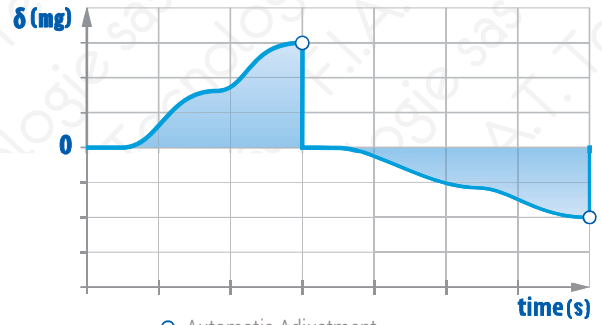
Optimization of Operation in a Laboratory

Adjustment Accuracy for Any Conditions

Automatic adjustment is a warrant for accuracy of each weighing process. It is carried out at specified time intervals or upon temperature variation. A sheer novelty here is a schedule function. With it you can plan when to adjust your device, specify adjustment type (internal, external) and determine by means of which mass standard the adjustment is to be carried out.

```

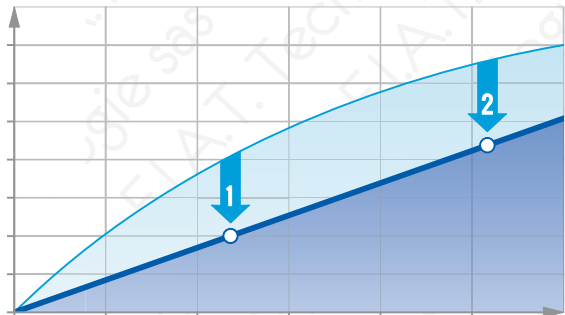
----- Adjustment: Internal -----
Date                2015.10.19
Time                09:12:38
Balance type       MYA 4Y
Balance ID         392543
User               Smith
Level status       Yes
Difference          0.000000
Temperature        25 °C
-----
Signature
    
```



Dual Point Adjustment System

Innovative 2-point adjustment system has been designed to provide you with maximum measurement accuracy and to minimize linearity errors. With the system you are guaranteed that your results are reliable for the entire weighing range.

You can take it for granted that your device when monitored with Dual Point Adjustment system shall provide precise indications even for changing working environment. The DPA system is an integral part of XA 4Y and XA 4Y.A balances.



— Prior adjustment performance (linearity errors)
 — Past 2-point adjustment performance

Yes for Speed and Accuracy No for Compromise

4Y balances with a new powerful processor redefine the speed of operation. Needless to say, the processor delivers noticeable performance improvements including faster operation and shorter stabilization time retaining high repeatability values.

Weighing chamber opening time takes just 1 second, whereas weighing operation takes less than 5 seconds. For measurements with readability of 0.1 mg you need just about 2.2 seconds!

XA 4Y $d=0,1\text{ mg}$ **2,2 s**

XA 4Y $d=0,01\text{ mg}$ **3,5 s**

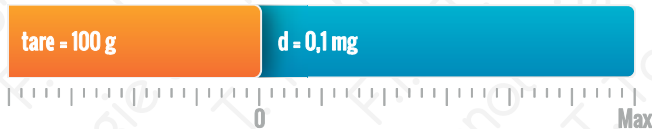
MYA 4Y $d=0,001\text{ mg}$ **4,5 s**

Time taken to reach stable weighing result

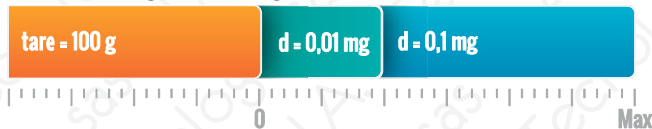
An exemplary dual range balance



Balance lacking Movable Range function



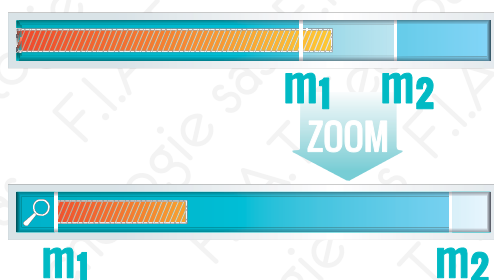
Balance featuring Movable Range function



Load Bargraph Graphic Presentation of Indication

Balance load visualization presented in a graphic form, i.e. in a form of graph displaying per cent load as compared to max balance capacity.

When sample weight increase results with preset threshold exceeding, Zoom function activates automatically. The function enlarges particular bargraph section, which in effect becomes as wide as the whole bargraph. This option lets you observe sample weight variation in a greater scale thus making it clearer.



Movable Weighing Range

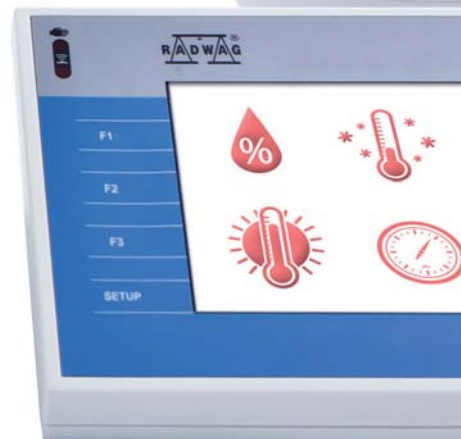
Dual range balances of 4Y series offer Movable Range function. With this, maximum accuracy for weighing of even small samples is guaranteed regardless of applied tare container.

Movable Range function, which is activated automatically, means green light for extremely precise weighing of milligram heavy samples put in a several tens of grams heavy container.

Ambient Conditions Monitoring

4Y balances offer unique ambient conditions monitoring solution, applied to supervise environmental conditions at the balance workplace. The monitoring is carried out in real time with use of internal sensors (and optionally with use of external THB sensors).

The system has been designed to monitor several different parameters: temperature, humidity, atmospheric pressure and air density. To enable that, numerous sensors have been applied. Upon either detection of variation or when weight is out of permissible range, respective message is automatically displayed on a balance screen. With this message, being a result of AutoCal system operation, you are informed on need for balance adjustment performance. Trying to make it even more convenient for you, each readout is saved to balance memory.



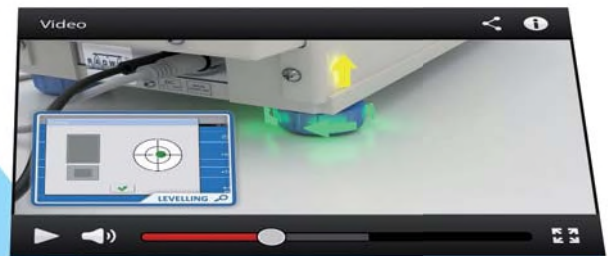
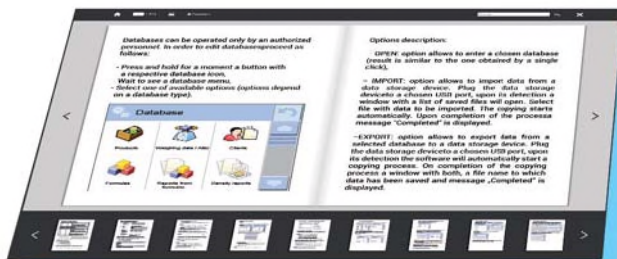


Databases As Support for the Weighing Process

Complex databases are a distinctive feature of the 4Y series. The databases size is dynamically shared within 32 GB memory.

4Y balances offer unlimited databases management options, plus they enable record of advanced reports and graphs carried out for series of weighings.

Option of databases import and export enables ease of databases management as well as their copying and archiving.



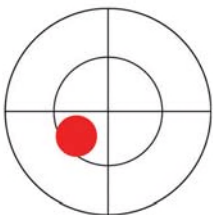
Video-Guidance And an On-screen Manuals

4Y balances feature "Media" module providing you with complex guidance, i.e. direct assistance in operating the device. With easily accessed context help you are fully supported when it comes to operation of particular functions and applications.

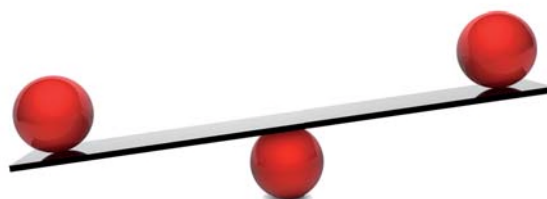
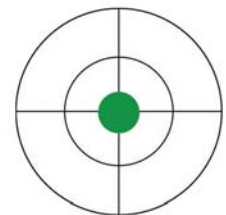
The help is offered in a form of an on-screen displayed user manual, text and drawing instruction and short video guides.



AutoLevel an On-line Control of Balance Level



Each sample requires level control for every single weighing performance, only then precise weighing is guaranteed. Any balance deviation from permissible level tolerance is immediately recorded and signalled by means of respective messages and colour scheme. Monitoring and level recording are fully automatic facilities.



Proximity Sensors Comfort of Touch-free Operation

Either workplace characteristics or required testing methodology may limit operator and his mobility (e.g. need for suit or gloves use). For such an instance, proximity sensors turn out to be an indispensable asset. They support touch-free balance operation thus allowing access to particular functions regardless of potential limitations.

Each sensor may be assigned with any freely selected action, e.g. with weighing, tarring, opening or closing the draft shield. Purchase any 4Y model, each of them is equipped with proximity sensors.



RadConnect Mobile Balance Operation

RadConnect software has been designed to enable bi-directional communication between 4Y series balances and a portable device featuring iOS or Android system.

Using the software, it is possible to transfer weighing operation data on-line (measurement results, statistical data etc.) from the balance to a tablet or a smartphone. By means of the particular mobile device you can start tarring or zeroing operation on your balance, plus you can record weighing results.

Bi-directional communication may be established via Wi-Fi or Ethernet interface.



Wireless Connection Flexibility for Balance Application

With wireless communication it is possible to place the terminal anywhere in the vicinity of a weighing chamber, the terminal can be located at a distance of up to 10 meters. Use this convenient option when placing your balance inside Glove Box type of a chamber. Battery power supply provides 8-hour-long, continuous operation



Weighing Processes Control and Analysis



Autotest Control Procedures

GLP Autotest is a fully automatic control procedure. It has been designed to allow balance repeatability tests.

The GLP Autotest applies an internal adjustment system for testing purposes and it is a perfect solution used in quality management systems (ISO, GMP, GLP, USP, ICH Q10, SOP). The GLP Autotest provides quick and objective feedback when it comes to operated balance quality. There is an option of generating control procedure report, which is permanently stored in balance memory and which can be either printed or exported.

----- Autotest GLP: Report -----

Balance type	XA 4Y.A
Balance ID	544121
User	Admin
Software revision	L1.4.15 K
Date	2015.09.30
Time	13:42:13

Number of measurements	10
Reading unit	0.00001 g
Internal weight mass	201.03411 g
Filter	Slow
Value release	Reliable
Temperature: Start	23.99 °C
Temperature: Stop	23.96 °C
Humidity: Start	58 %
Humidity: Stop	58 %

Deviation for Max.	0.00004 g
Repeatability	0.000006 g

Signature



----- Autotest Filter Report -----

Filter Fast
 Value release Fast
 Repeatability 0.00008 g
 Stabilization time 1.688 s



Filter Fast
 Value release Fast and Reliable
 Repeatability 0.00006 g
 Stabilization time 2.255 s

Filter Fast
 Value release Reliable
 Repeatability 0.00008 g
 Stabilization time 2.760 s

Filter Average
 Value release Fast
 Repeatability 0.00007 g
 Stabilization time 2.760 s

Filter Average
 Value release Fast and Reliable
 Repeatability 0.00005 g
 Stabilization time 2.423 s



Filter Slow
 Value release Fast and Reliable
 Repeatability 0.00004 g
 Stabilization time 2.533 g



The fastest measurement
 The shortest measurement time



The most accurate measurement
 Maximum repeatability



Optimal measurement
 Optimal time and repeatability settings

Autotest Filter Balance settings and diagnostics

4Y series balances offer vast range of settings optimization possibilities – with this the balance can be adjusted to any workplace. In order to ease setup of countless number of parameters, Autotest Filter function has been designed.

The function is used to enable automatic test performance for all possible setup combinations, it provides you with information on weighing duration and repeatability. Upon completed procedure your balance displays results of carried out tests, allowing you to decide on optimal solution complying to your needs.



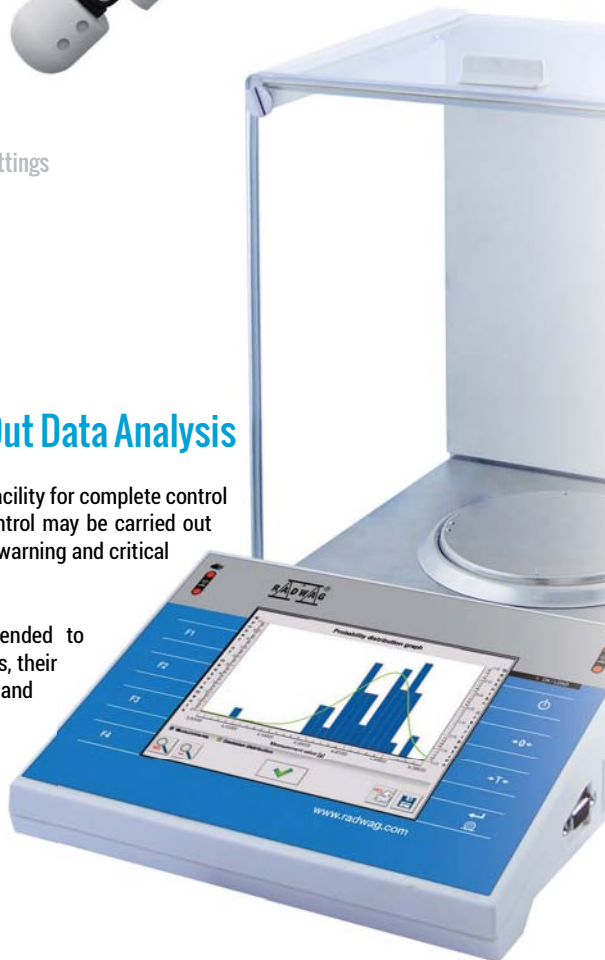
SQC		
User		Lab
Product		Pill
Start date	2015.10.02 10:10:18	
End date	2015.10.02 10:14:41	
Batch number		1\A
Batch quantity		10
Nominal mass		0.361 g
Limit T2-	0.0361 g	10 %
Limit T1-	0.01805 g	5 %
Limit T1+	0.01805 g	5 %
Limit T2+	0.0361 g	10 %
----- Measurement 1 -----		
Net		0.366185 g
----- Measurement 2 -----		
Net		0.369271 g
----- Measurement 3 -----		
Net		0.385184 g
----- Measurement 4 -----		
Net		0.324771 g
----- Measurement 5 -----		
Net		0.356942 g
----- Measurement 6 -----		
Net		0.368712 g
----- Measurement 7 -----		
Net		0.355558 g
----- Measurement 8 -----		
Net		0.368694 g
----- Measurement 9 -----		
Net		0.368100 g
----- Measurement 10 -----		
Net		0.368100 g
Number of T2- errors	1	10 %
Number of T1- errors	1	10 %
Number of T1+ errors	1	10 %
Number of T2+ errors	0	0 %
Average		0.3631517 g
Standard deviation		0.01487272 g

Signature		

SQC Automatically Carried Out Data Analysis

SQC statistics module is an excellent facility for complete control of a particular sample weight. The control may be carried out in course of a manufacturing process (warning and critical limits) and during other tests.

SQC Reports is an precise tool intended to acquire information on carried out tests, their numbers, names, statistical data, etc., and to record it into a particular database.



Data Safety

Monitored Data Access and Protection

Particular balance can be operated by numerous users whereas no risk of individual operator's data loss is taken, all this owing to customized permissions levels allowing access to specified functions.

Four access levels offer unlimited monitoring options, especially when it comes to supervision over operators, and protection of especially sensitive data. Each access level is secured with an individual password.



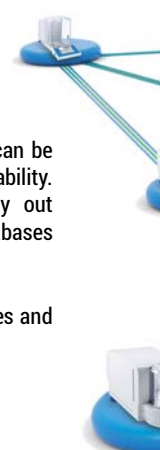
Alibi Memory Secure

Alibi Memory is a special partition for measurement data storing. The memory content can be viewed by means of free computer software, Alibi Reader.

Synchronizing and Archiving Data

4Y series provide data transfer and copying option. Your data can be exchanged between any balances regardless of their type or readability. With export/import function at your disposal you can carry out balance-to-balance synchronization of profiles and databases (operators, products, printouts, formulations, packaging, etc.).

The 4Y series offers complex archiving of databases, user profiles and memory stored data.





Settings Customization as Working Environment Optimization Tool

The 4Y series offers balance customization option, with this, any balance can be adjusted to individual requirements of yours. The customization option allows you to match balance functionality to scope of tests you carry out.

You and other operators likewise, can be assigned with an individual profile featuring language version, quick access keys, working modes settings, filters, printout types, etc. of your choice.

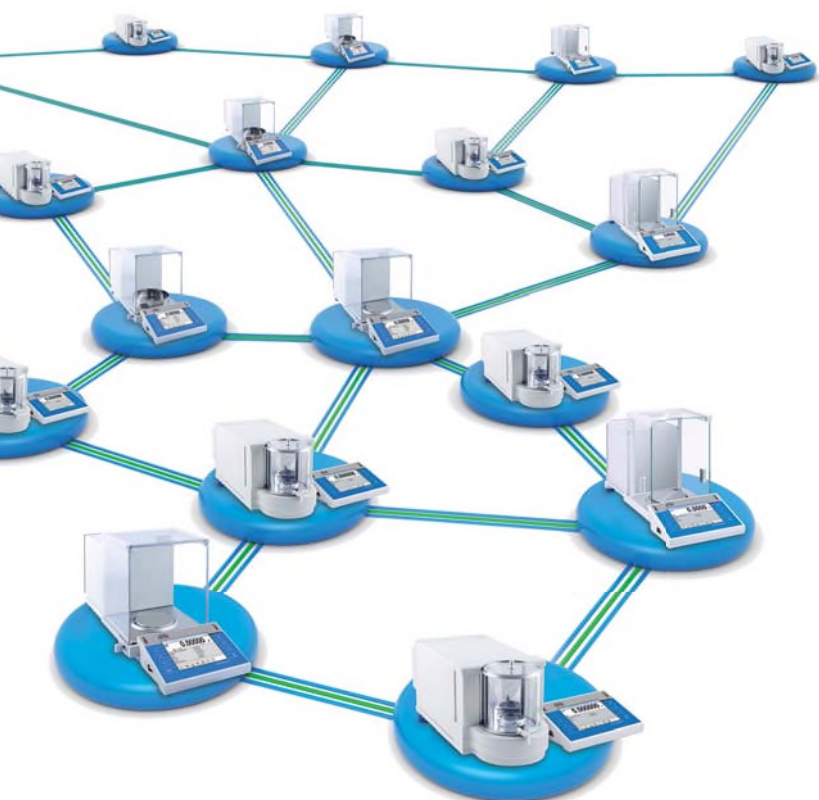


Managing Data of IT Systems

Your balance data can be managed on-line, this useful option is conditioned by remote access to a particular balance and its databases. Another practical alternative when it comes to data management is USB interface. With the USB it is easy to copy or transfer results of your work, e.g. measurements, reports, databases, from balance to a computer.

All weighing processes can be supported by external PC software. E2R SYSTEM is an example of such application. This multi-module program, designed by RADWAG, is a convenient tool providing complex management and control of data transferred between a weighing workstation and a computer.

E2R SYSTEM may serve you as a handy tool for archiving and analysing your weighing results. Its core is SQL database along with PC software, which is integrated with weighing workstations linked via ETHERNET and Wi-Fi.

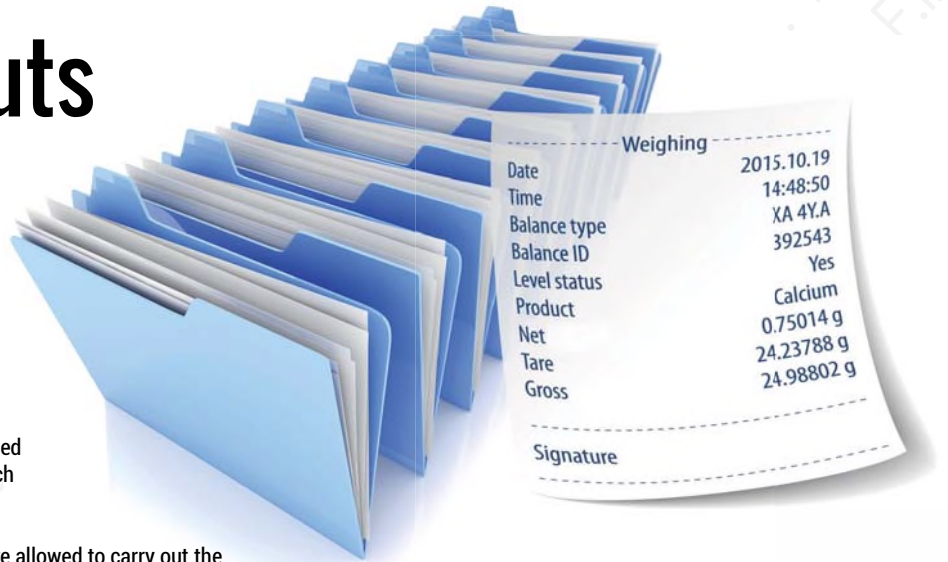


Reports and Printouts

Documentation on Weighing Processes

Upon each completed weighing process, carried out using 4Y balance, you are provided with an automatically generated report which is next recorded into a database.

As a user operating reports database you are allowed to carry out the following practical report-related operations: preview, printout, export, archiving and free setup.



Flexibility of Printout Setup

4Y balances facilitate two printout types. At your disposal there are standard printouts generated on the basis of fixed template and customized non-standard printouts.

The standard printout comprises three sections: a header, a data section and a footer. Each section content can be freely adjusted thus ensuring that any demand of yours is faced. When it comes to a non-standard printout you can design it in a way reflecting your wish as it is not limited by any templates. The printout of your design may contain personal data, freely selected sections and variables.

----- Weighing -----	
Date	2015.04.02
Time	14:07:43
Balance ID	419036
User	Admin
Level status	Yes
Product	Calcium
Packaging	Blister

Temperature during measurements	26.79 °C
Humidity during measurements	24 %
Pressure during measurements	994 hPa

Net	0.1118376 g
Tare	0.5000000 g
Gross	0.6118376 g
Supplementary unit	0.5591880 ct
Minimum sample status	OK

Net	0.1118071 g
Tare	0.5000000 g
Gross	0.6118071 g
Supplementary unit	0.5590355 ct
Minimum sample status	OK

Net	0.1118071 g
Tare	0.5000000 g
Gross	0.6118071 g
Supplementary unit	0.5590355 ct
Minimum sample status	OK

Signature	

Header

Measurement Data

Footer



4Y balances are compatible with a vast range of label printers and barcode scanners.



Regulations and conformity



OIML Legal Metrological Control

Legal metrological control is one of numerous means of supervision over measuring equipment. It is intended for control of devices featuring type approval. If a balance has been positively evaluated you may be sure that it complies to requirements of legal regulations.

Please note that OIML specified tolerance for max permissible errors is several times higher than GMP RADWAG tolerance.



WELMEC 2.3 Software Protection

Software for each application management adheres to all requirements for reliability and for data safety. This is true for every single balance.

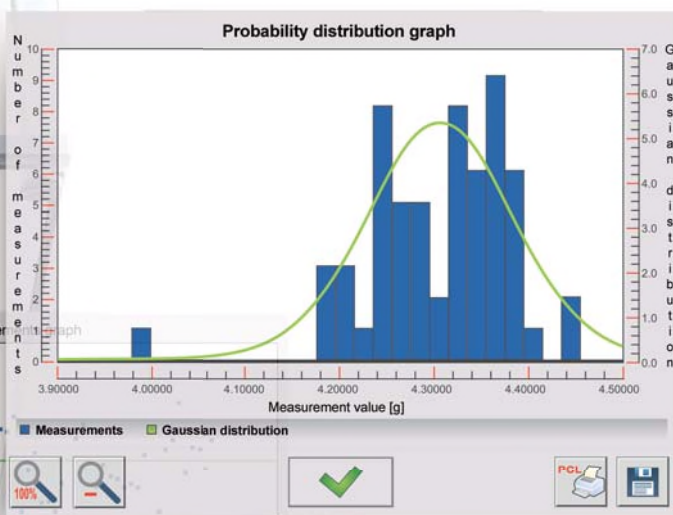
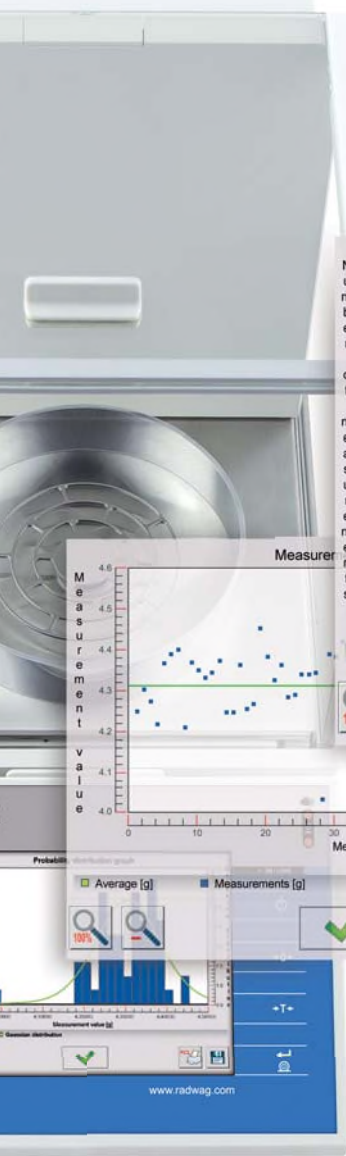
Software structure is protected against intrusion by means of system of passwords and permissions levels. Metrological settings as well as settings of operational nature can be restored (verified) when such need occurs.



USP, CFR 21 Mass Measurement Accuracy

Each balance accuracy is an effect of use of extremely stable weighing system which guarantees correct operation even when ambient conditions change.

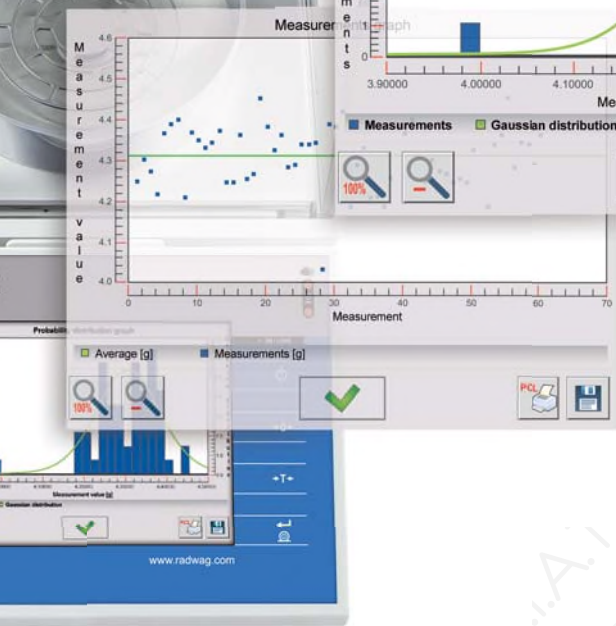
Owing to very stable electronics, A/D converter signal is properly interpreted thus providing desirable metrological parameters. Weighing system accuracy is subjected to control and periodical verification realized by means of so called automatic adjustment operation.



Visualization and statistics

Selected working modes of the 4Y series (Statistics, SQC) feature chart function. The chart is generated for a particular weighing upon its completion.

The aforementioned modes enable you to generate charts presenting average value determined for set of measurements, additionally you can create probability distribution charts for particular measurement series. Each chart can be scaled, printed or saved to a BMP file.



Technical Specification



UYA 4Y



UYA 4Y.F



MYA 4Y

Max capacity [Max]	2,1 g	2,1 g	0,8 g – 52 g
Readability [d]	0,1 µg	0,1 µg	1 µg – 10 µg
Minimum weight USP	0,8 mg	0,8 mg	2 mg *
Minimum weight (U = 1%, k = 2)	0,08 mg	0,08 mg	0,2 mg *
Weighing pan size	ø 16 mm	ø 50 mm	ø 16 mm, ø 26 mm, ø 40 mm, ø 60 mm
Stabilization time	10 s – 20 s	10 s – 20 s	~ 5 s
Adjustment	Automatic (internal)	Automatic (internal)	Automatic (internal)
Display	5,7" touchscreen	5,7" touchscreen	5,7" touchscreen
Communication interfaces	USB, RS 232, Ethernet, WiFi, IN/OUT	USB, RS 232, Ethernet, WiFi, IN/OUT	USB, RS 232, Ethernet, WiFi, IN/OUT
Pipettes calibration	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>
Filters weighing	<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>



Read QR code
and view complete
technical specification
of all 4Y series balances





MYA 4Y.P

MYA 4Y.F

XA 4Y

XA 4Y.A

XA 4Y.F

21 g	5,1 g	52 g – 310 g	52 g – 310 g	52 g – 110 g
1 µg	1 µg	0,01 mg – 0,1 mg	0,01 mg – 0,1 mg	0,01 mg
3 mg	2 mg	20 mg *	20 mg *	20 mg *
0,3 mg	0,2 mg	2 mg *	2 mg *	2 mg *
∅ 26 mm	∅ 26 mm, ∅ 100 mm, ∅ 160 mm	∅ 85 mm, ∅ 90 mm, ∅ 100 mm	∅ 85 mm, ∅ 90 mm, ∅ 100 mm	210 × 254 mm, ∅ 85 mm, ∅ 90 mm
~ 5s	~ 5 s	2,5 s – 4 s	2,5 s – 4 s	~ 5 s (30 s for filters)
Automatic (internal)	Automatic (internal)	Automatic (internal)	Automatic (internal)	Automatic (internal)
5,7" touchscreen	5,7" touchscreen	5,7" touchscreen	5,7" touchscreen	5,7" touchscreen
USB, RS 232, Ethernet, WiFi, IN/OUT	USB, RS 232, Ethernet, WiFi, IN/OUT	USB, RS 232, Ethernet, WiFi, IN/OUT	USB, RS 232, Ethernet, WiFi, IN/OUT	USB, RS 232, Ethernet, WiFi, IN/OUT
●	○	●	●	○
○	●	○	○	●

○ Not applicable ● Selected balance models ● All balances
* valid for majority of models

4Y Balances Accessories

- Antivibration tables
- Thermal and impact printers
- Computer cables, printer cables
- Laboratory ware holders
- Density determination kit
- Additional external display
- Ambient conditions modules
- Barcode reader
- Adapter for pipettes calibration
- Workstation for pipettes calibration

PC Software

- **PW Win:**
Balance-computer cooperation, measurements presentation, statistics
- **Database Editor:**
Readout, databases editing and record of computer stored databases on balance
- **RAD Key:**
Balance data readout carried out by means of Hot Key
- **E2R Weighing Records:**
Record of measurements carried out by means of network-connected balances





RADWAG Balances and Scales

Bracka 28, 26-600 Radom, POLAND
export@radwag.com

www.radwag.com

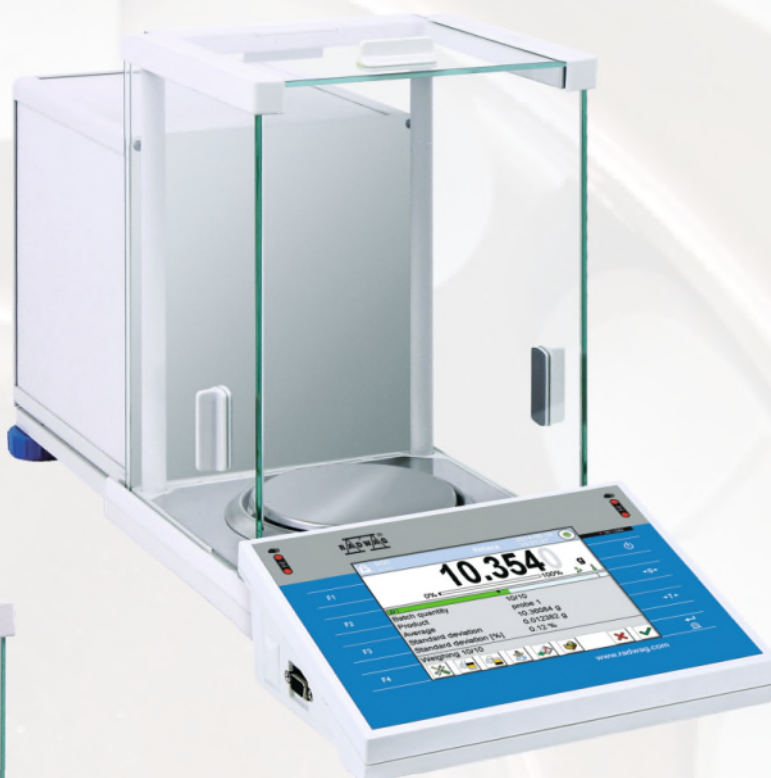
SQC in laboratory

the more data the higher precision

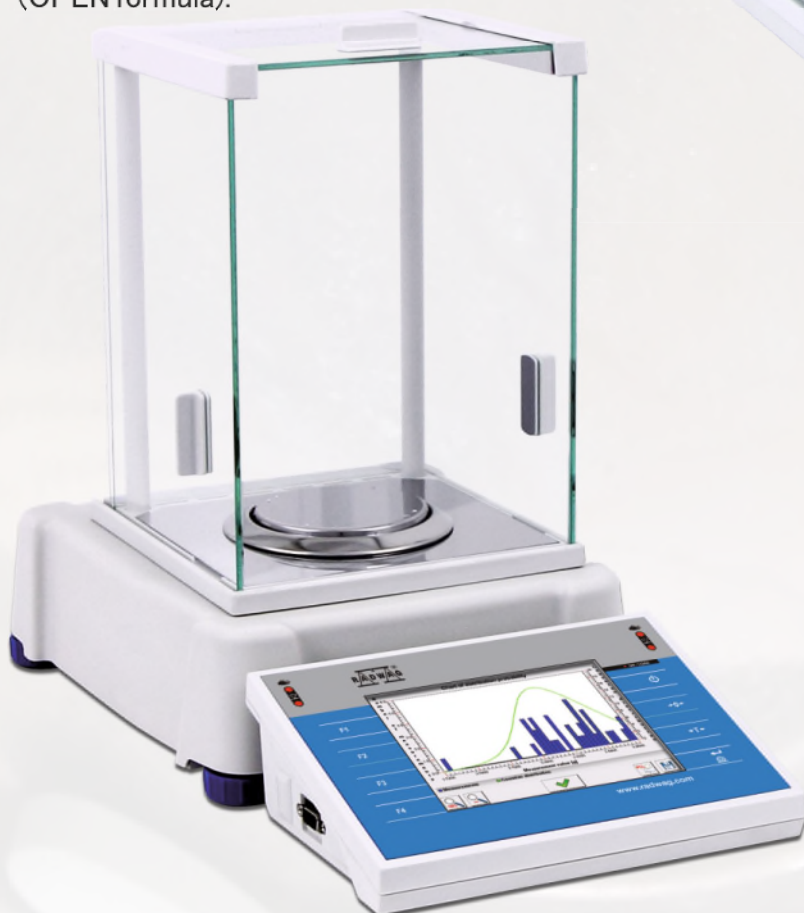
Only series of measurements analysis can provide information on the measurement result accuracy. Automaton of this process by means of Auto-SQC, like in Radwag balances, guarantees quick reaction. It is especially crucial for these laboratories that work in feedback kind of cooperation with production departments.

Analysis of plethora of information is not a problematic issue whenever ergonomic solutions offered by Radwag are in use.

Being aware of the multiple possibilities of usage, Radwag applications consist of two modules of Statistics. These modules are different in terms of functional capabilities. The first one enables statistical operation performance on freely selected data. Statistical operation provides the user with information on sum, mean value, Min and Max value, range, standard deviation and variance. This module is characteristic for offering the possibility of adding new measurements to an already performed series of measurements (OPEN formula).



The second module, called SQC, i.e. Statistical Quality Control, is intended for mass control of a sample, wherein the weight tolerance has been specified. The particular process may be defined clearly by a batch number and by a quantity of measurements performed per series. The module's characteristic feature is the lack of possibility to add new measurements to an already performed series (CLOSE formula)



Considerable advantage of this module is presentation of sample weight by means of graph (SQC-GRAPH). The visual presentation is an invaluable asset for the process of sampling.

Statistics

Statistics module offers possibility of quick analysis of data regardless of rigors driven by tolerance. Net weight measurement may be performed with different tare settings (single, sum of all, autotare etc.)



Chart of Probability Distribution for a series of measurements

initial filtration of measuring data

Initial filtration is possible, when for a product selected from a database which is to be analyzed, the percent tolerance has been specified in relation to reference mass. In addition to that, the result control function has to be activated. Through such operation only those measurements which are within the weighing tolerance will be selected for analysis. Initial filtration procedure allows to eliminate not only those measurement which are not within the weighing tolerance but also random ones.

Tolerance settings for a sample

The screenshot shows a multi-tabbed interface. The 'Database' tab is active, showing a list of products with callouts for 'products database' and 'products list'. The 'Edit record' tab shows a table with callouts for 'products specification'.

Field	Value
EAN code	5904327162321
Mass	250 g
Min	248 g
Max	254 g
Tolerance	5 %
Tare	0 g

measurement series

Statistical data are displayed in an Info workspace, all the information is updated on-line after each performed measurement.

The user can:

- Adjust content of Info workspace (personalization);
- View complete information on measurement data at any time;
- Save information, print reports.

The screenshot shows the 'Statistics' workspace with a large display of '2.7532 g' and a progress bar from 0% to 100%. Below the display, statistical data is shown:

N	35
X	2.82301 g
MIN	2.7426 g
MAX	2.8589 g
SDV	0.022589 g
RDV	0.80 %

Callouts point to 'personalization' and 'add measurement'.

report example

Statistics	
N	35
SUM	98.8054 g
X	2.82301 g
MIN	2.7426 g
MAX	2.8589 g
D	0.1163 g
SDV	0.022589 g
RDV	0.80 %



Data archiving is possible by print or by means of USB data storage device.

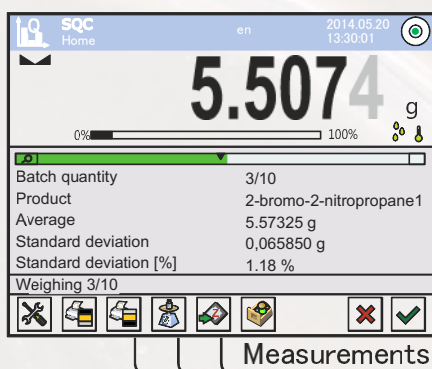
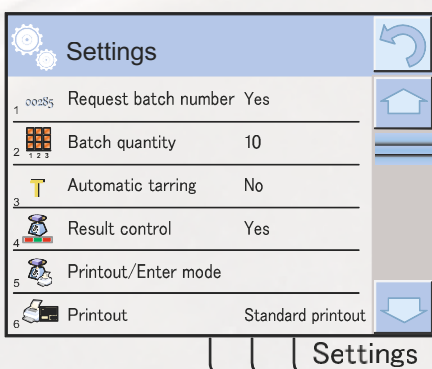
SQC Statistical Quality Control

Statistics module SQC is an ingenious device for control of various samples' weight. The tests may be performed either within production (critical limits and warning limits) or in-course of other monitoring processes.

All data is permanently saved to balance ██████████ thus allowing for its potential verification (compliance with legal acts, branch regulations, etc.)

Ergonomics, personalization

The user has three touch panels at his disposal allowing him to freely configure measuring procedures, e.g. number of measurements, names, printouts etc.



Panel allowing for specification of test parameters such as batch quantity, control performed accordingly to a given tolerance, the user can design adjusted to his needs printout of a given procedure.

The user can specify the record mode of measurements (manual, automatic, for stable measurements, with the use of low or high threshold value).

Viewer-Graph

The graph can be freely and easily adjusted. All the user has to do is to touch the panel and move finger to a demanded position in order to enforce automatic adjustment of the graph. When willing to return to the initial settings the user has to press the zoom icon.

Precise weighing module serves for performing measurements with specified parameters for stability and filtering of the measuring signal. It guarantees measurement accuracy regardless of any influence factors.

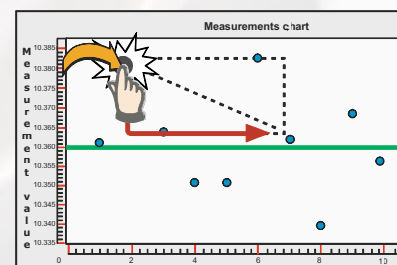
SQC-Graph

The user has at his disposal function of automatic adjustment of weightment tolerance (bargraph) thus being able to perform sampling as safely and quickly as needed.



SQC Reports is a brand new device intended for storing and processing great deal of information. It records various information on performed test to a database, ie. test number, name, statistical data, information data.

SQC Reports contain Viewer-Graph module which enables dynamic adjustment of the graphs.

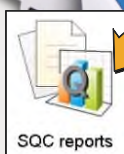


SQC Statistical Quality Control

Statistics module SQC is an ingenious device for control of various samples' weight. The tests may be performed either within production (critical limits and warning limits) or in-course of other monitoring processes.

record

Information on the monitoring process allows to verify data at any moment. This guarantees compliance with quality systems such as ISO, GLP, GMP, HACCP, etc.



AS 220.3Y
Databases / SQC Reports

- batch number
- start date
- end date
- operator
- product
- batch quantity
- average
- standard deviation
- Min
- Max
- T2 (-) errors quantity
- T1 (-) errors quantity
- T1 (+) errors quantity
- T2 (+) errors quantity
- measurements chart
- measurements chart with tolerance thresholds

report example

SQC		
Operator	en	
Product	probe 1	
Start date	2014.05.19	13:18:28
End date	2014.05.19	13:21:54
Batch number	43786	
Batch quantity	10	
Nominal mass	10.3 g	
T2- threshold	1.03 g	10 %
T1- threshold	0.515 g	5 %
T1+ threshold	0.515 g	5 %
T2+ threshold	1.03 g	10 %

Measurement 1		
Net	10.361[0] g	

Measurement 2		
Net	10.373[1] g	

Measurement 3		
Net	10.364[2] g	

Measurement 4		
Net	10.349[6] g	

Measurement 5		
Net	10.349[6] g	

Measurement 6		
Net	10.381[4] g	

Measurement 7		
Net	10.362[0] g	

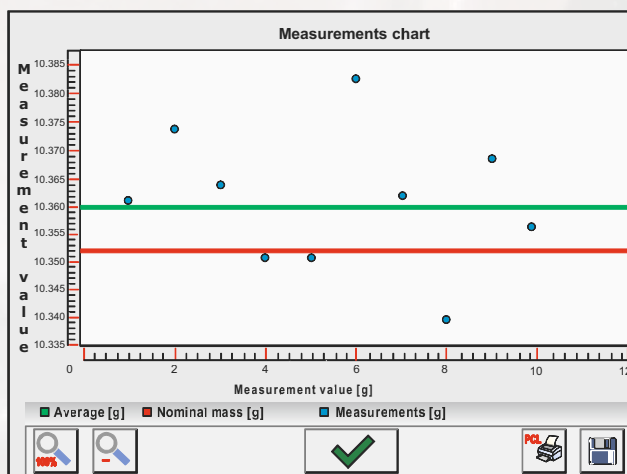
Measurement 8		
Net	10.338[7] g	

Measurement 9		
Net	10.368[0] g	

Measurement 10		
Net	10.354[6] g	

T2- errors quantity	0	0 %
T1- errors quantity	0	0 %
T1+ errors quantity	0	0 %
T2+ errors quantity	0	0 %
Average	10.36022 g	
Standard deviation	0.011895 g	

Signature		



Measurements chart in relation to average value.


SQC Statistical Quality Control

Statistics module SQC is an ingenious device for control of various samples' weight. The tests may be performed either within production (critical limits and warning limits) or in-course of other monitoring processes.

archiving

Export of information guarantees data safety and possibility to analyze the data by means of other computer systems. Regular printout means quick assessment of a particular series in terms of tolerance and specified thresholds (T1/T2).

report

The analysis results may be sent to a chosen peripheral device (printer/computer). 

SQC


Operator	en	
Product	probe 1	
Start date	2014.05.19	13:18:28
End date	2014.05.19	13:21:54
Batch number	43786	
Batch quantity	10	
Nominal mass	10.3	g
T2- threshold	1.03 g	10 %
T1- threshold	0.515 g	5 %
T1+ threshold	0.515 g	5 %
T2+ threshold	1.03 g	10 %

	Measurement 1	
Net	10.361	[0] g

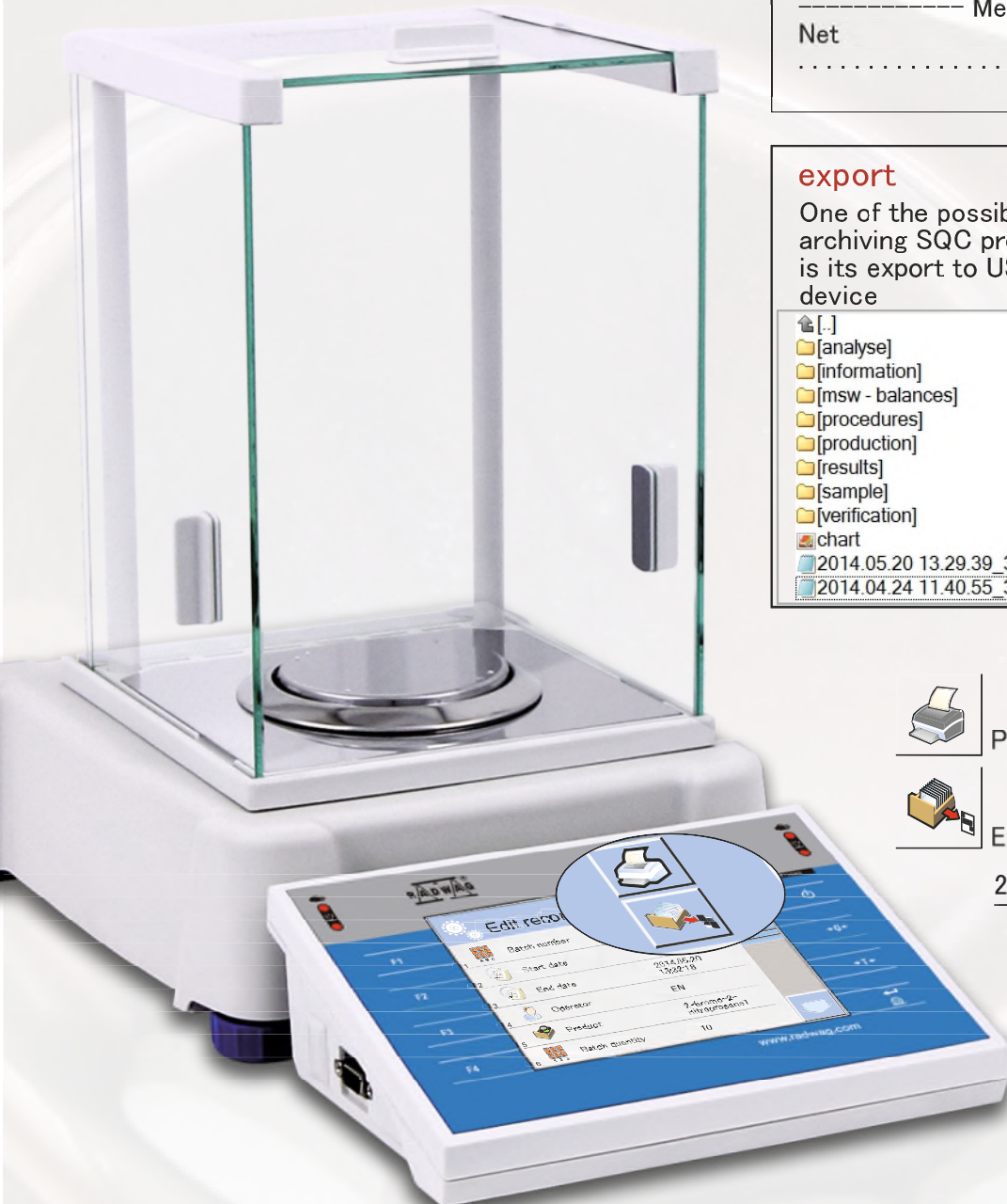
	Measurement 2	
Net	10.373	[1] g

.....


export

One of the possible ways of archiving SQC procedure report is its export to USB data storage device 

- ↑ [.]
- 📁 [analyse]
- 📁 [information]
- 📁 [msw - balances]
- 📁 [procedures]
- 📁 [production]
- 📁 [results]
- 📁 [sample]
- 📁 [verification]
- 📄 chart
- 📄 2014.05.20 13.29.39_392543 bmp
- 📄 2014.04.24 11.40.55_392543 tdb
- 📄 tdb



 Printout

 Export – record form

2014.05.20 13.29.39 392543
(time) (serial no.)

SQC automatic cycle measurement

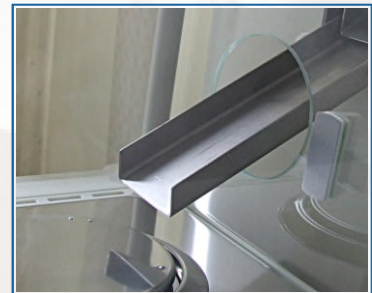
Automatic cycle measurement requires cooperation of at least two devices. The first one is PA-02/H automatic feeder which forms an ordered set out of a particular number of randomly arranged elements. Thus prepared sample's elements are separately transferred one by one by means of a chute to a weighing pan. The second device is balance which measures the elements and records their mass. These two devices work in feedback kind of cooperation for which the vibration level may be adjusted.

detector of elements



all the tested elements are recorded

special solutions



resistance to influence factors

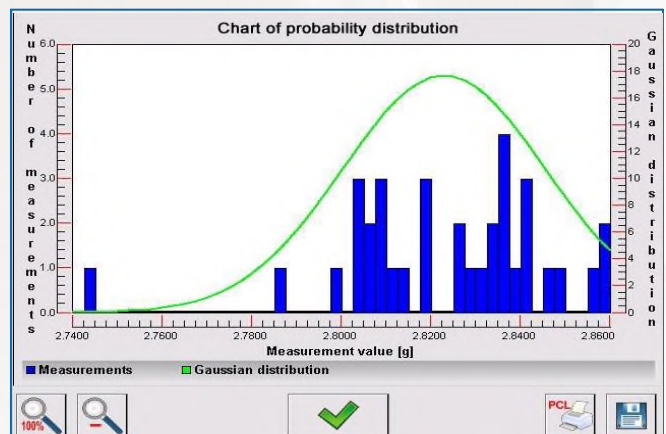
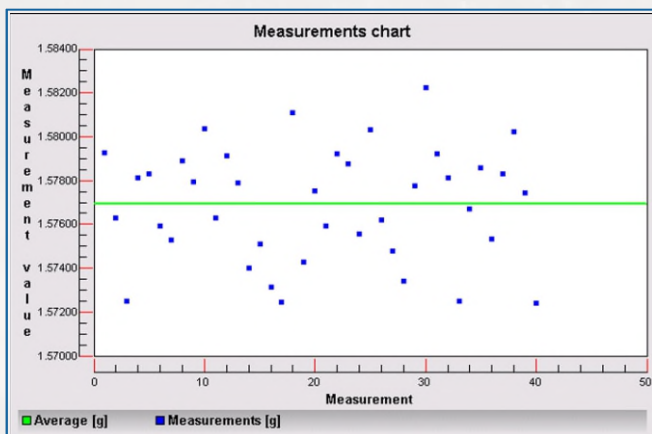


label printer

PA-02/H automatic feeder

AS 220.3Y balance

SQC MODULE of .3Y series balances presents statistical analysis in a form of chart directly on a balance display. The charts may be printed on a freely chosen printer (PLC) or exported to .bmp file (transfer to USB port).



PA-02/H TECHNICAL DATA	PA-02/H
Fed object diameter	ϕ 3 ÷ 10 mm
Feeder diameter	ϕ 180 mm
Height of feeder's vibrating element	70 mm
Feeder speed	1 ÷ 15 pcs / min

SQC automatic cycle measurement

All statistical operations related to a tested sample are performed by SQC MODULE. This makes the statistical control workstation a mobile one and therefore it can be located in various production or control areas. EXPORT option of .3Y series balances allows sending demanded data concerning tested sample to a superior computer system.

report example

```

----- Mass control -----
Report number      04/10/06/15/08
Operator           Admin
Product            tab 100
Start date         2013.03.12 15:08:56
End date           2013.03.12 15:09:56
Batch number       10
Reference quantity 10
Nominal mass       1.065 g
T2- threshold      0.0426 g  4 %
T1- threshold      0.0213 g  2 %
T1+ threshold      0.0213 g  2 %
T2+ threshold      0.0426 g  4 %
    
```

```

----- Measurement 1 -----
Net                1.095 g
----- Measurement 2 -----
Net                1.049 g
----- Measurement 3 -----
Net                1.033 g
----- Measurement 4 -----
Net                1.097 g
----- Measurement 5 -----
Net                1.038 g
----- Measurement 6 -----
Net                1.057 g
----- Measurement 7 -----
Net                1.091 g
----- Measurement 8 -----
Net                1.090 g
----- Measurement 9 -----
Net                1.037 g
----- Measurement 10 -----
Net                1.209 g
    
```

```

T2- errors quantity  0  0 %
T1- errors quantity  3 30 %
T1+ errors quantity  5 50 %
T2+ errors quantity  1 10 %
Average              1.0796 g
Standard deviation    0.052373021045 g
    
```

Signature

MAIN INFORMATION

The tested sample may be defined in a balance DATABASE. Its reference value must be specified in terms of mass and quantity. The tolerance thresholds must be given. Information may be updated by means of DATABASE EDITOR computer software.



MEASUREMENTS

The measurement accuracy depends on applied balance type. Generally while selecting balance one should remember that the smaller sample weight is (this condition refers to a single element weight) the smaller scales interval should be.

REPESTABILITY is the most important balance parameter that needs to be considered while selecting an appropriate balance type for cooperation with an automatic feeder.

RESULTS

Sample analysis results are recorded into database and into ALIBI MEMORY. Both, text and graphic form of the measurements can be analyzed.



Transfer of data to other applications is possible due to EXPORT option.

Statistics

The R2 series balance is a reliable device which meets requirements of any laboratory. It features an LCD display with a new text information line, 14-button keypad and automatic adjustment.

Statistics function is one of many applications to which the user gets access via the user menu. The function is supported with information contained within databases such as Users Database, Products Database, Packagings Database (tares). Statistics report consists of 3 defined areas, header, footer and measurements area where statistical results are printed.

Statistics report consists of 3 defined areas, header, footer and measurements area where statistical results are printed.

report example

Operation mode	Statistics
Date	22.05.2014
Time	15:06:13
Operator	Jack

7.202[8] g	
7.114[5] g	
7.174[3] g	
7.168[3] g	
7.216[7] g	
7.180[1] g	
7.171[2] g	
7.210[7] g	
7.204[0] g	
7.176[2] g	

Statistics	
N	10
Sum	71.8188 g
Avg	7.18188 g
Min	7.1145 g
Max	7.2167 g
Dif	0.1022 g
Sdv	0.028109 g
Rdv	0.39 %

Signature	
.....	

The R2 series comprises various balance types with weighing accuracy ranging from 0.01 mg to 0,1 g. Capabilities of all the series types in terms of statistical analysis are identical.



AS 220.R2
Max 220 g, d = 0,1 mg

Functions

- Weighing
- Parts Counting
- Checkweighing
- Dosing
- Percent Setup
- Solids Density
- Liquids Density
- Animal Weighing
- **Statistics**
- Tare
- Peak Hold

quick access to information

The balance comprises 2 buttons enabling easy access to DataBase and Functions. Additionally it is equipped with 4 programmable function keys F1-F4. The function keys can perform different operations for each mode:

- header printout
- tare editing,
- footer printout,
- product selection



ergonomics and area of use



PS 6000.R2
Max 6000 g, d = 10 mg

Statistics

analysis with the use of computer software

PC computer software is a truly universal tool by means of which it is possible to transfer any data from a freely chosen balance. Connection between the balance and the software is either wireless (WiFi) or established via communication interface (usually RS 232) or Ethernet.

PW-Win
flexibility and reliability



Balance-Win v.4.0.5

File Measurement Settings Language Help

Table of measurements

No.	Date	Time	Timer	Reading	Unit	Note
1	2014-05-23	12:01:16	0	1,60010	g	
2	2014-05-23	12:01:46	30	1,60060	g	
3	2014-05-23	12:01:54	38	1,60150	g	
4	2014-05-23	12:02:05	49	1,60030	g	
5	2014-05-23	12:02:14	58	1,60230	g	
6	2014-05-23	12:02:24	68	1,60160	g	
7	2014-05-23	12:02:40	84	1,59200	g	
8	2014-05-23	12:02:50	94	1,59720	g	
9	2014-05-23	12:03:26	130	1,60470	g	
10	2014-05-23	12:03:39	143	1,60050	g	

Accept measurements no lower: 1,4
Accept measurements no superior: 1,7

Current statistic:

Number of measurements:
Minimum value:
Maximum value:
Average value:
Average deviation:
Standard deviation:
Mean square deviation:
Variance:
Estimated deviation:
Estimated variance:
Total:

- manual operation
- automatic operation
- automatic operation in a cycle
- modifiable date form
- Hot-key (tare)
- Hot-key (readout)
- message-box
- measurement series graph
- export
- language versions: Polish, Czech, German, English, French, Slovak, Spanish

PW-WIN collects data in a form of a table.

A balance adjustment report may be added to the measurement series as a confirmation of correct operation of the balance. To do it the user has a dialog box at his disposal.

Calibration Report

Adjustment: Internal

Date: 2014.05.23
Time: 14:39:42
Balance type: XA 3Y
Balance ID: 392543
Operator: en
Level status: Yes
Difference: 0.0002

Save as ... Save report Print report Exit

RadKey,
simple software, endless possibilities



There is no need to own a dedicated software for statistical analysis. The measurement result may be "captured" by means of RadKey – a terminate and stay resident program, and next sent to a freely chosen spreadsheet or text PC software.

Usually the data is transferred to a spreadsheet where the user can create his own formulae and balance sheets for a measurement series and where it is possible to compare results performed at different dates or taken from either various balances or series of measurements.

- collecting data from measurements and transferring them to any PC software (.txt, .xls, doc, rtf)
- saving data to a file
- programmable Hot-key for indication tarring and readout
- text characters converted to numeric ones (accepted by spreadsheets)
- record of data in a form of column or row (control character)
- language versions: Polish, Czech, German, English, French



RADWAG BALANCES AND SCALES
ADVANCED WEIGHING TECHNOLOGIES



Ultra-microbalances and microbalances

Micro Scale Measurement - Laboratory Applications

4Y series microbalances

Extraordinary precision and comfort of operation for small mass measurement performed with the highest accuracy

- 5,7" touch screen
- Interactive menu
- Wireless connection
- Conformity with regulations (GLP, GMP System)
- Database (weighing records, samples, operators, reports)
- Dynamic control sample weight (bargraph)
- Statistics, SQC
- Printouts, reports (PCL standard)
- Multilingual menu
- Interfaces: Ethernet (network applications), USB, RS 232, IN/OUT
- Wide spectrum of use (industry, laboratories, universities, research and development centres)

1



1 Weighing module

A Automatically opened draft shield

B Weighing pan

2 Terminal

C Information on a selected working mode and on an adopted profile

D Information on a logged in operator

E Area for date, time, connection type information, battery state, etc.

F Measurement indication area

G Load bargraph

H Checkweighing function bargraph (thresholds)

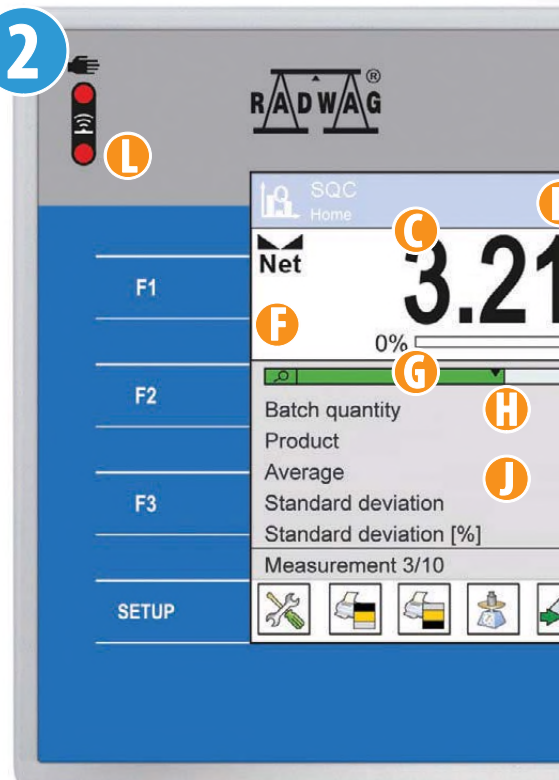
I Pictograms for ambient conditions monitoring

J Configurable area for extra information

K Quick access bar

L Proximity sensors (optimization of operation)

2





Standard design of UYA 4Y Ultra-microbalance and MYA 4Y Microbalance



MYA 4Y.P Microbalance for pipettes calibration



MYA 4Y.F Microbalance and Ultra-microbalances UYA 4Y.F for filters weighing



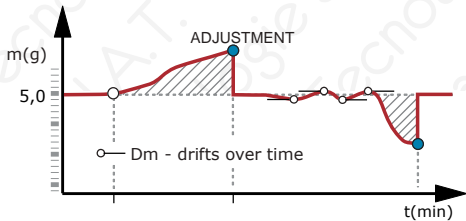
MYA 4Y.F1 Microbalance for weighing filters of large-diameter



Quality built into the product

Adjustment and an automatic cycle

Accuracy of indication for MYA 4Y microbalances is guaranteed owing to automatic adjustment process. This process takes into account the dynamics of temperature variation and time flow. It is possible to generate a report upon each completed adjustment.



Principle of operation for an automatic adjustment

-----	Adjustment: Internal	-----
Date	2016.07.26	
Time	09:12:38	
Balance type	MYA 4Y	
Balance ID	234986	
Operator	Smith	
Level status	Yes	
Difference	0.000000	
Temperature	25 °C	
-----	Signature:	-----



Adjustment history			
239	2016.07.26	07:44:28	Triggered by time
240	2016.07.26	08:46:30	Triggered by time
241	2016.07.26	09:12:38	Internal
242	2016.07.26	09:29:07	External
243	2016.07.26	09:53:49	Triggered by temp.
244	2016.07.26	10:14:20	Triggered by temp.

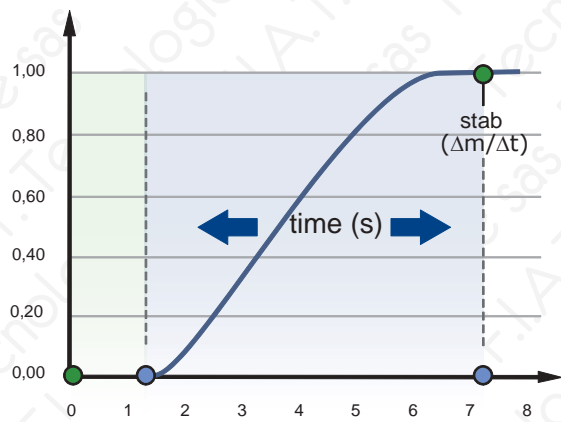
Adjustment history	
1	Date 2016.07.26 09:12:38
2	Adjustment mode Internal
3	Working mode Weighing
4	Operator Smith
5	Level status Yes
6	Nominal mass 4.897654
7	Current mass 4.897653
8	Difference 0.000000
9	Temperature 25°C

Printout or export of a report on adjustment

Result of each adjustment is recorded in microbalance memory, it can be previewed

Fast measurement for any sample

System designed to control process of opening the draft shield provides instant access to the weighing pan. Determining weight of a particular sample takes just a few seconds.



Conformity with USP Conventions

General Chapters: Apparatus for Tests and Assays <41, 'BALANCES'>
General Information: <1251, 'WEIGHING ON AN ANALYTICAL BALANCE'>

Applied design solutions provide the best possible micro scale measurement accuracy. MSW-dedicated software features programmable thresholds for low limit of a weighing range wherein variable tare loads can be used.

Microbalance software is used to specify and control MSW certificate validity

Auto-Level an On-line Control of Balance Level

Each sample requires level control for every single weighing performance, only then precise weighing is guaranteed. Any balance deviation from permissible level tolerance is immediately recorded and signalled by means of respective messages and colour scheme. Monitoring and level recording are fully automatic facilities.



Universal and specific solutions

Micro and ultra-micro scale measurement

When it comes to standard solutions, RADWAG offers series of microbalances (MYA 4Y) and ultra-microbalances (UYA 4Y) comprising devices varying in terms of max. capacity, readability and weighing pan size. Each balance features glass draft shield comprising automatically opened door.



Using MYA 4Y microbalance for liquid weight measurement

Filters weight measurement differential weighing

Owing to special design of a weighing chamber, precise absorption level may be determined by means of filter weight measurement. F series balances and ultra-microbalances intended to weigh filters comprise specific weighing chamber characterized by airtightness and featuring an open work weighing pan.



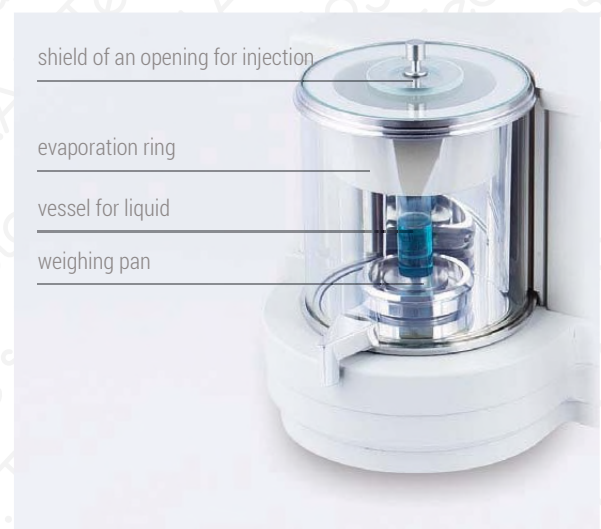
Using MYA 4Y.F microbalance for filters weight measurement

Pipettes calibration gravimetric method for control of volume

Dedicated set, installed inside the weighing chamber, allows a microbalance operator to check piston pipettes volume. The procedure is performed in accordance with the respective standard, ISO 8655.

Used evaporation ring limits the effect of particular liquid evaporation, this considerably improves measurement accuracy.

MYA 4Y.P series microbalances provide functionality also when it comes to mass measurement.



MYA 4Y.P microbalance for pipettes calibration

Automatic cycle optimization

Autotest GLP automatic control of accuracy

Auto-test function provides the user with possibility of manual confirmation of the performed measurements quality (record, export). Autotest GLP is a perfect solution used in quality management systems (ISO, GMP, GLP, USP, ICH Q10, SOP).

----- Autotest GLP: Report -----	
Balance type	MYA 4Y
Balance ID	544121
User	Admin
Software revision	L1.4.15 K
Date	2016.07.30
Time	13:42:13

Number of measurements	10
Reading unit	0.000001 g
Internal weight mass	17.673852 g
Filter	Slow
Value release	Reliable
Temperature: Start	23.99 °C
Temperature: Stop	23.96 °C
Humidity: Start	58 %
Humidity: Stop	58 %

Deviation for Max.	0.000004 g
Repeatability	0.0000017 g

Signature	

Autotest Filter automatically performed selection of working parameters

Some weighing operations need accuracy, other require speed. An indispensable help for both features, speed and accuracy, is Autotest FILTER application. The Autotest FILTER is offered by every single Radwag-manufactured laboratory balance.

10	Slow	0.00005 g
	Fast	3.179 s
11	✓ Slow Fast and reliable	0.00007 g 4.392 s
12	Slow	0.00006 g
	Reliable	8.340 s

Autotest Filter operation consists in determining standard deviation value and weighing time needed for all possible combinations of settings for Filter/Value release parameter. Upon Autotest Filter procedure completion, the balance presents its results, allowing the user to select the most optimal options, i.e. such that provide the shortest time of weighing or the best repeatability.

On-line monitoring of ambient conditions

Mechanisms implemented in a microbalance are used to facilitate automatic monitoring of elementary ambient conditions (temperature, humidity). Specifying limit values and dynamicity of changes for these values, combined with visualization, provide ergonomic and efficient means of operation.

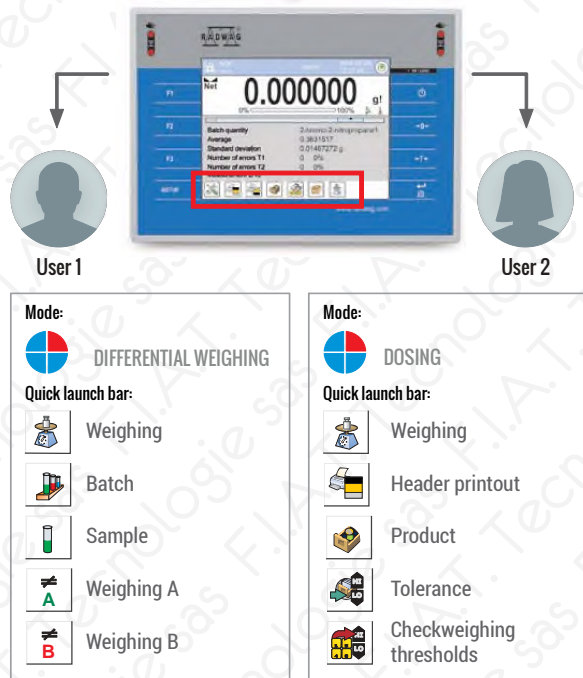
Ambient conditions			
IS T1:	24.26 °C	THB H:	59%
IS T2:	24.26 °C	THB T:	24.26 °C
IS H:	59%	THB P:	994 hPa
ISP:	994 hPa	P:	1.161 kg/m ³
THB T:	23.9 °C		



Ergonomics and comfort of operation

Customization of balance settings and access level

Unique user profiles with modifiable settings and access permissions provide flexibility of balance customization. Each profile comprises information, pre-set settings and a quick access shortcut dedicated for a particular operation. Number of operators and profiles is not limited.



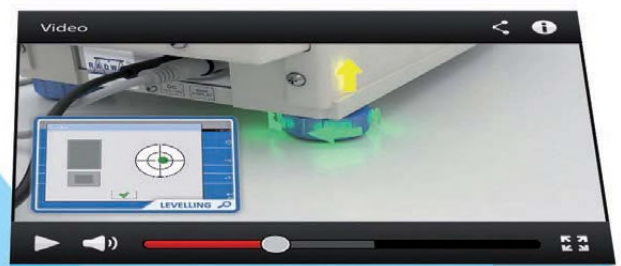
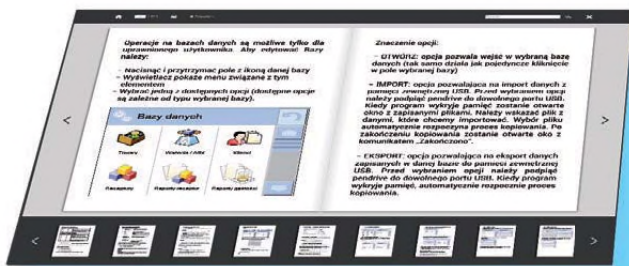
Databases As Support for the Weighing Process

Complex databases are a distinctive feature of the 4Y series. The databases size is dynamically shared within 32 GB memory.

4Y balances offer unlimited databases management options, plus they enable record of advanced reports and graphs carried out for series of weighings.



Option of databases import and export enables ease of databases management as well as their copying and archiving.



Video-Guidance and an On-screen Manuals

4Y balances feature "Media" module providing you with complex guidance, i.e. direct assistance in operating the device. With easily accessed context help you are fully supported when it comes to operation of particular functions and applications. The help is offered in a form of an on-screen displayed user manual, text and drawing instruction and short video guides.



Programmable proximity sensors

Manual abilities of an operator may be limited by characteristics of a workplace or by a required testing methodology (suit, gloves etc.). Owing to proximity sensors, microbalances and ultra-microbalances may be operated hands-free regardless of the said limitations.



RadwagConnect cooperation with portable devices

RadwagConnect software enables communication between any 4Y series balance and a portable user-owned device. The software allows online transfer of various information, recorded by a balance, to any device featuring iOS or Android system.

The communication is established via Wi-Fi or Ethernet interface.



Portability balance - terminal wireless communication

Wireless communication provides possibility of placing the terminal in the vicinity of up to 10 meters distant from a balance. Battery-powered terminal allows 8-hour-long, continuous operation. This is especially convenient solution when placing a balance inside fume cupboard or Glove Box type of chamber.

Standard cable connection is an optional solution allowing for balance-terminal communication.



up to 10 m



Data monitoring and safety

Protecting data user authorization levels

When there is a need for one balance to be operated by several users, the option of customizing access rights for particular functions may turn out to be indispensable. Four access levels ensure many possibilities of supervision over users and provide important data protection (e.g. formulas).



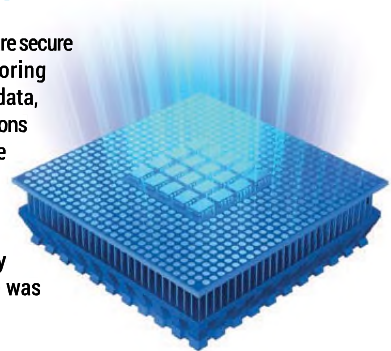
Numerous operations such as defining language of the menu, selecting a desired working mode or personalizing main screen layout may be limited according to the access level, with respective password protection.

Access level		Edit record	
1 Anonymous operator	Guest	1 Name	Admin EN
2 Date and time	Administrator	2 Code	
3 Printouts	Administrator	3 Password	*****
4 Database		4 Access level	Administrator
		5 Language	English
		6 Default profile	Fast filters

Possibility of associating a given profile with a particular user allows such balance personalization, that upon log in, a given working mode and filters are automatically selected

Alibi secure data storage partition

4Y series balances feature secure partition for data storing where all weighment data, reports, ambient conditions measurements are recorded and secured for a specified amount of time. All these can be easily restored in case there was such a need.



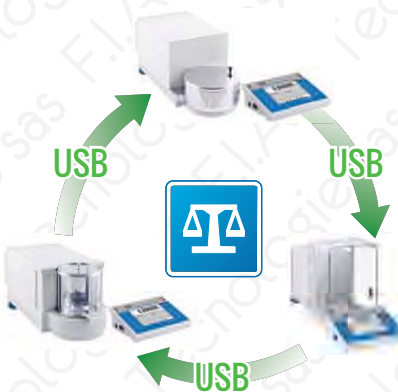
Data archiving and exchange

The 4Y series offers complex archiving of databases, user profiles and data stored in the memory. All the data can be exported, imported, copied and transferred between balances.



Exemplary information to be found in a weighing record

WEIGHING RECORD	
Date	Operator
Mass	Customer
Tare	Working mode
Air buoyancy compensation	Warehouse
Product	Packaging



Exchange of databases between balances via USB port by means of standard storage devices

Reports and printouts

Reports reports database

Upon completion of each process, a respective report is generated and recorded in a proper report database. The users have possibility to preview, print, export or archive reports but not only. They can also freely configure them.

Weighing	
Date	2016.07.19
Time	14:48:50
Balance type	XA 4Y
Balance ID	392543
Level status	Yes
Product	Calcium
Net weight	0.7502 g
Tare	24.23788 g
Gross weight	24.9881 g
Signature	

Printouts flexibility of configuration

There are two printout types for 4Y series balances: standard (generated according to a fixed template) and non-standard, customized ones.

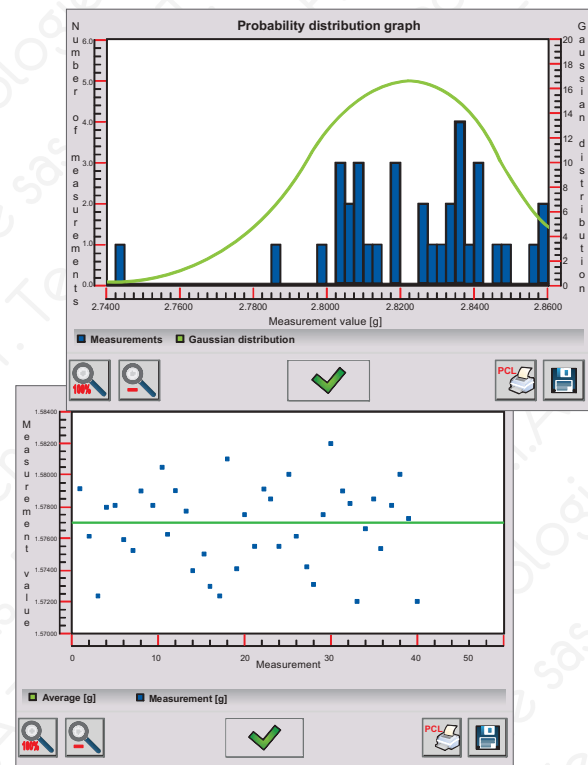
Standard printout comprises three sections: header [A], weight data [B] and footer [C].

Each section can be freely adjusted by a user, it can also be extended with a non-standard printout.

Weighing	
Date	2016.07.02
Time	14:07:43
Balance ID	419036
Operator	Admin
Level status	Yes
Product	Calcium
Packaging	Blister
Temperature during measurements: 26.79 °C	
Humidity during measurements: 24 %	
Pressure during measurements: 994 hPa	
Net weight	0.1118376 g
Tare	0.5000000 g
Gross weight	0.6118376 g
Supplementary unit	0.5591880 ct
Minimum sample status	OK
Net weight	0.1118071 g
Tare	0.5000000 g
Gross weight	0.6118071 g
Supplementary unit	0.5590355 ct
Minimum sample status	OK
Net weight	0.1118071 g
Tare	0.5000000 g
Gross weight	0.6118071 g
Supplementary unit	0.5590355 ct
Minimum sample status	OK
Signature	

Charts measurements visualization and statistics

Selected working modes (Statistics, SQC) apart from generating report offer possibility of creating a chart for a particular completed weighing. The balance allows to generate weighments charts (with mean value calculated) and probability distribution chart out of series of measurements. Each chart can be freely scaled, printed or saved to BMP file.



Graph of probability distribution (Gaussian distribution)

Operating the printouts import, export and printing

Technology used for 4Y series enables free exchange of printouts and labels (TXT or LB file format) between balances. The balances are compatible with vast range of PCL printers and label printers, wherein connection between printers and balances is established by RS 232, USB, Ethernet.

SQC statistics on a micro scale

SQC automatic data analysis

SQC statistics module is an excellent operating mode for complete control over measurement series of a particular sample. The control may be carried out in course of a manufacturing process (warning and critical limits) and during other tests.



SQC Reports homogeneous and clear information

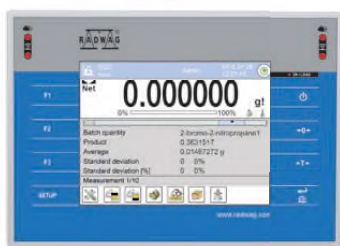
SQC Reports is a modern tool for collecting information on carried out measurements, measurement numbers, names, statistic data, information data etc. The collected data is recorded in a database.



Viewer graph automatic tolerance scaling

Viewer graph facilitates automatic scaling of checkweighing thresholds online, thus providing possibility of comparing current sample weight to a reference value. This tool permits safe and quick sampling wherein optimal accuracy is maintained.

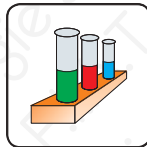
SQC	
User	Lab
Product	caps
Start date	2016.07.02 10:10:18
End date	2016.07.02 10:14:41
Batch number	1a
Batch quantity	10
Mominal mass	0.361 g
Limit T2-	0.0361 g 10%
Limit T1-	0.01805 g 5%
Limit T1+	0.01805 g 5%
Limit T2+	0.0361 g 10%
----- Measurement 1 -----	
Net	0.366185 g
----- Measurement 2 -----	
Net	0.369271 g
----- Measurement 3 -----	
Net	0.385184 g
----- Measurement 4 -----	
Net	0.324771 g
----- Measurement 5 -----	
Net	0.356942 g
----- Measurement 6 -----	
Net	0.368712 g
----- Measurement 7 -----	
Net	0.355558 g
----- Measurement 8 -----	
Net	0.368694 g
----- Measurement 9 -----	
Net	0.368100 g
----- Measurement 10 -----	
Net	0.368100 g
Number of T2- errors	1 10%
Number of T1- errors	1 10%
Number of T1+ errors	1 10%
Number of T2+ errors	0 0%
Average	0.3631517 g
Standard deviation	0.01487272 g
----- Signature -----	



Differential weighing

Analysis of sample weight variation

"Differential Weighing" module facilitates analysis of weight changes of a particular sample subjected to various processes. Two key components are of significant importance for the module operation, these are databases and methods.



Measurement specification

Ambient conditions prevailing in the course of a particular measurement are recorded automatically. Comparison of respective data registered for various cycles lets the user prove conformity with standard guidelines.

Measuring methods

Diversity of measuring methods requires maximum flexibility of differential weighing function. The said function has to do with measuring methods used for weighing samples, even those that are grouped within one batch.

Conformity with regulations

OIML legal metrological control

Legal metrology requirements concern verification scale interval (e), the lowest value of which is 0,001 g. For declared deviation value of +/- 0,000003 g, resolution of microbalances is 0,000001 g. This allows to affirm that legal requirements are met.



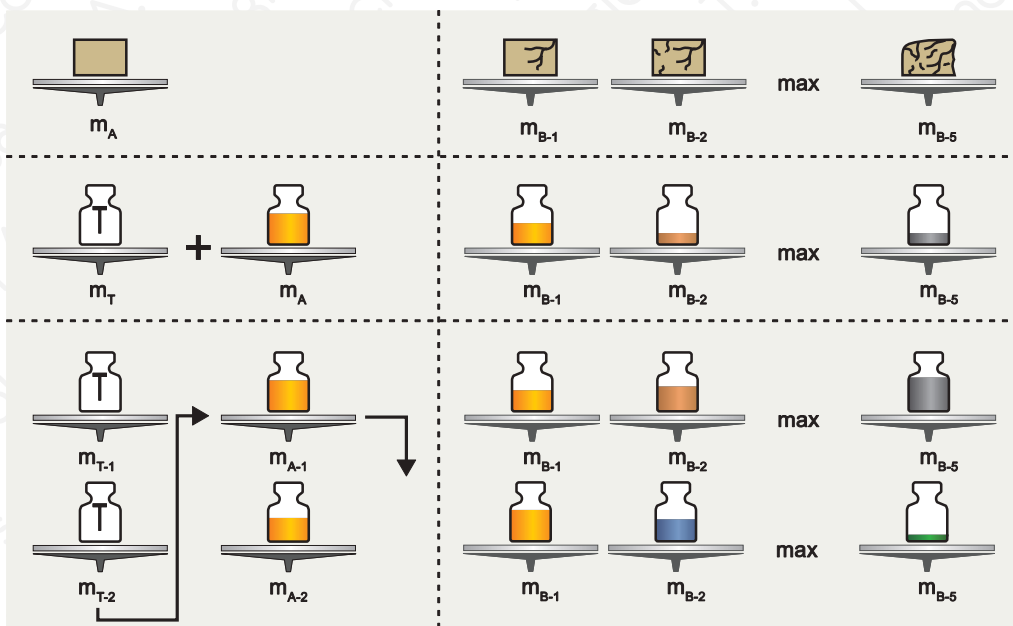
WELMEC 2.3 software reliability

Program responsible for managing microbalance applications has been designed in a way providing that any reliability and data safety requirements are met (e.g. ALIBI memory). The program is protected against unwanted intrusion. Its structure may be restored when it comes to usage and metrology aspects (RADWAG Quality Management System).



USP, CFR 21 weight measurement accuracy

Within the scope of which there is data safety, password protected access to the program menu, various user authorization levels, traceability of balance settings modification (Trail System) and weighing system structures. MYA microbalances efficiency is confirmed in course of validation process.



Methods are understood as sequence of steps. Any batches and samples may be selected and measured using any weighing cycle, e.g. mixed system

Data Sheet



UYA 4Y



UYA 4Y.F



MYA 4Y

	UYA 2.4Y	UYA 2.4Y.F	MYA 0.8/3.4Y	MYA 2.4Y	MYA 5.4Y
OIML accuracy class	I	I	I	I	I
Max capacity [Max]	2.1 g	2.1 g	0.8 g / 3 g	2.1 g	5.1 g
Readability [d]	0.1 µg	0.1 µg	1 µg / 10 µg	1 µg	1 µg
Verification scale interval [e]	1 mg	1 mg	1 mg	1 mg	1 mg
Tare range	-2.1 g	-2.1 g	-3 g	-2.1 g	-5.1 g
Repeatability *	0.4 µg	0.4 µg	1 µg	1 µg	1 µg
Linearity	±1.5 µg	±1.5 µg	±3 µg / ±4 µg	±3 µg	±5 µg
Eccentricity	1.5 µg	1.5 µg	3 µg / 4 µg	3 µg	5 µg
Sensitivity drift	1 ppm / °C (temperature range +15 ÷ +35 °C)				
Sensitivity stability	$1 \times 10^{-6} / \text{Rok} \times \text{Rt}$	$1 \times 10^{-6} / \text{Rok} \times \text{Rt}$	$1 \times 10^{-6} / \text{Rok} \times \text{Rt}$	$1 \times 10^{-6} / \text{Rok} \times \text{Rt}$	$1 \times 10^{-6} / \text{Rok} \times \text{Rt}$
Sensitivity offset	$1.5 \times 10^{-6} \times \text{Rt}$	$1.5 \times 10^{-6} \times \text{Rt}$	$1.5 \times 10^{-6} \times \text{Rt}$	$1.5 \times 10^{-6} \times \text{Rt}$	$1.5 \times 10^{-6} \times \text{Rt}$
Sensitivity temperature drift	$1 \times 10^{-6} / ^\circ\text{C} \times \text{Rt}$	$1 \times 10^{-6} / ^\circ\text{C} \times \text{Rt}$	$1 \times 10^{-6} / ^\circ\text{C} \times \text{Rt}$	$1 \times 10^{-6} / ^\circ\text{C} \times \text{Rt}$	$1 \times 10^{-6} / ^\circ\text{C} \times \text{Rt}$
Minimum weight	0.08 mg	0.08 mg	0.2 mg	0.2 mg	0.2 mg
Minimum weight USP	0.9 mg	0.8 mg	2 mg	2 mg	2 mg
Stabilization time	10-20 s	10-20 s	5 s	5 s	5 s
Adjustment	automatic (internal)				
Display	colour 5,7" resistive touch screen				
Communication interface	2 × USB. 2 × RS 232. Wi-Fi. Ethernet. 4 × IN / 4 × OUT				
Working temperature	+18 ÷ +30 °C	+10 ÷ +30 °C	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C
Atmospheric humidity **	40% ÷ 80%	40% ÷ 80%	40% ÷ 80%	40% ÷ 80%	40% ÷ 80%
Weighing pan size	ø 16 mm	ø 50 mm	ø 16 + 60 mm (for filters)	ø 16 mm	ø 26 mm

PC software

Radwag-designed PC software is a considerable support for microbalances, enhancing the device capability and functionality.



PW Win

Balance and computer cooperation, display of measurements and statistics.



RAD Key

Readout of balance data by means of defined Hot Key.



Database Editor

Databases support for 4Y balances.



E2R Weighing Records

E2R Weighing Records – Recording measurements performed by means of balances cooperating in a network.



MYA 4Y.P



MYA 4Y.F



MYA 4Y.F1

MYA 11.4Y

MYA 11/52.4Y

MYA 21.4Y

MYA 21.4Y.P

MYA 5.4Y.F

MYA 5.4Y.F1

11 g	11 g / 52 g	21 g	21 g	5 g	5 g
1 µg	1 µg / 10 µg	1 µg	1 µg	1 µg	1 µg
1 mg	1 mg	1 mg	1 mg	1 mg	1 mg
-11 g	-52 g	-21 g	-21 g	-5 g	-5 g
1.5 µg	1.5 µg	1.5 µg	1.5 µg	1.6 µg	1.6 µg
±6 µg	±10 µg / ±30 µg	±7 µg	±7 µg	±5 µg	±5 µg
6 µg	6 µg / 10 µg	7 µg	7 µg	5 µg	5 µg
1 ppm / °C (temperature range +15 ÷ +35 °C)					
1 × 10 ⁻⁶ / Rok × Rt	1 × 10 ⁻⁶ / Rok × Rt	1 × 10 ⁻⁶ / Rok × Rt	1 × 10 ⁻⁶ / Rok × Rt	1 × 10 ⁻⁶ / Rok × Rt	1 × 10 ⁻⁶ / Rok × Rt
3 × 10 ⁻⁶ × Rt	3 × 10 ⁻⁶ × Rt	4 × 10 ⁻⁶ × Rt	4 × 10 ⁻⁶ × Rt	1.5 × 10 ⁻⁶ × Rt	1.5 × 10 ⁻⁶ × Rt
1 × 10 ⁻⁶ / °C × Rt	1 × 10 ⁻⁶ / °C × Rt	1 × 10 ⁻⁶ / °C × Rt	1 × 10 ⁻⁶ / °C × Rt	1 × 10 ⁻⁶ / °C × Rt	1 × 10 ⁻⁶ / °C × Rt
0.3 mg	0.3 mg	0.3 mg	0.3 mg	0.32 mg	0.32 mg
3.0 mg	3.0 mg	3.0 mg	3.0 mg	3.2 mg	3.2 mg
5 s	5 s	5 s	5 s	5 s	5 s
automatic (internal)					
colour 5,7" resistive touch screen					
2 × USB. 2 × RS 232. Wi-Fi. Ethernet. 4 × IN / 4 × OUT					
+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C	+10 ÷ +40 °C
40% ÷ 80%	40% ÷ 80%	40% ÷ 80%	40% ÷ 80%	40% ÷ 80%	40% ÷ 80%
∅ 26 mm	∅ 26 mm / ∅ 40 mm	∅ 26 mm	∅ 26 mm	∅ 100 mm + ∅ 26 mm	∅ 160 mm + ∅ 26 mm

Additional equipment

- Anti-vibration weighing tables,
- Thermal and dot matrix printers,
- Printer Cables and PC,
- Additional LCD display,
- Ambient conditions module,
- Barcode scanners,
- Additional adapter for pipettes calibration,
- Pipettes calibration workstation

Complete offer is to be found on www.radwag.com website.

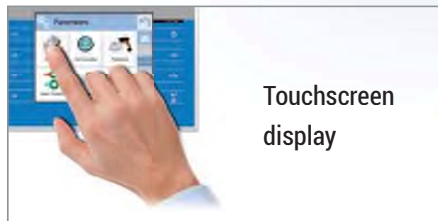
Additional Services

- Calibration of electronic weighing equipment,
- Calibration of mass standards,
- Installation Qualification PQ/PP/IQ
- Calibration of piston pipettes.

Complete offer is to be found on www.radwag.com website.

Rt - net weight,
 * repeatability is expressed as a standard deviation from 10 weighing cycles of a particular load,
 ** non-condensing conditions.

Features:



Touchscreen display



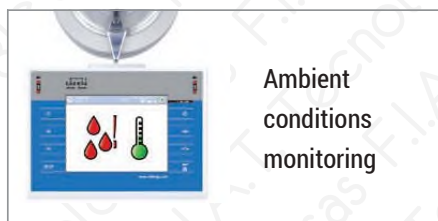
Portable terminal



Proximity sensors



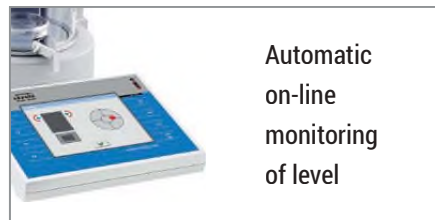
Profiles



Ambient conditions monitoring



Databases



Automatic on-line monitoring of level



Interfaces: USB, Wi-Fi, Ethernet, IN/OUT and RS 232





Alibi Memory





Multimedia


Functions:


-  Checkweighing


-  Filling


-  Percent setup


-  Infrared sensors


-  Formulation


-  Statistics


-  Pipette calibration


-  Differential weighing

-  Statistical Quality Control

-  GLP procedures

-  Air density compensation

-  Ambient conditions monitoring

-  Autotest (GLP, Filter)