

NEW FREQUENCY BALANCE SERIES XAS WITH LCD DISPLAY in place of currently manufactured balance series WAS)

AIM OF INTRODUCING NEW MODEL OF BALANCE

A process of introduction of a new analytical balance with $d=0.1$ mg has been started.

Main issue in this case is improvement in the **quality of the balances** and technical development.

Apart from that, there will be software change, allowing for faster and more stable operation of the balance.

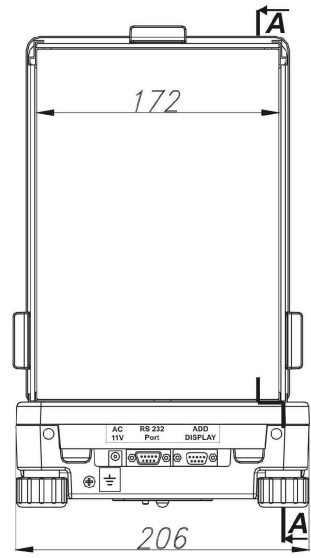
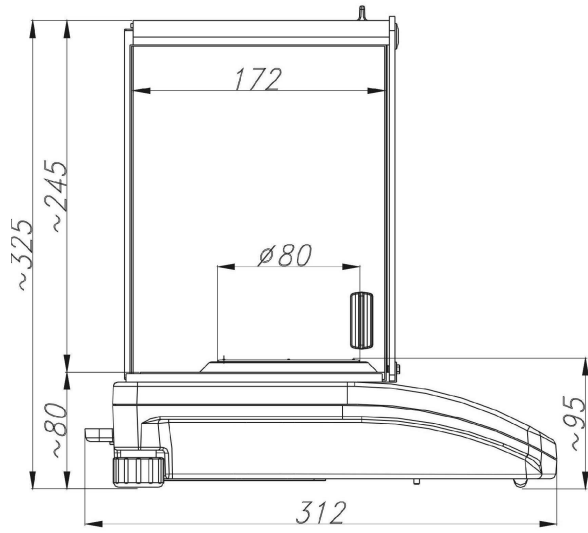
Introduced balances are to **replace** currently manufactured model WAS (WAS series will not be continued when XAS series enters into production).

Applied solutions **will not cause increase in price** which are valid for series WAS.

DIFERENCES IN TECHNICAL PARAMETERS

Balance type		WAS 60/C/2	WAS 160/C/2	WAS 220/C/2
Maxiamal capacity	Max	60 g	160 g	220 g
Minimal load	Min	2 mg		
Readability	d	0,1 mg		
Verifying unit	e	1 mg		
Class		I		
Tare range	-T	-60 g	-160 g	-220 g
Repeatability (standard deviation s)		0,2mg		
Linearity		0,3mg		
Working temperature		+ 10°C do +30°C		
Power supply		Power adapter 230V 50Hz AC / 11V AC		
Pan size		ø 80 mm		

Balance type		XAS 60	XAS 160	XAS 220
Maxiamal capacity	Max	60 g	160 g	220 g
Minimal load	Min	2 mg		
Readability	d	0,1 mg		
Verifying unit	e	1 mg		
Class		I		
Tare range	-T	-60 g	-160 g	-220 g
Repeatability (standard deviation s)		0,1mg		
Linearity		0,2mg		
Working temperature according to CE type approval		+ 10°C do +30°C		
Permissible working temperature		+ 5°C do +45°C		
Power supply		Power adapter 230V 50Hz AC / 11V AC		
Pan size		ø 80 mm		



DESCRIPTION OF APPLIED SOLUTIONS

New idea of measurement (similar to solution in XA balances):

- Consist in negative, electro-mechanical feedback. Placing a load on the weighing pan causes deflection of the optical sensor from equilibrium state. Lack of equilibrium creates a signal which causes higher current flow in the coil, which forced come back to equilibrium state. Measuring signal is digitally measured width of impulse which runs through the coil, as in this case the current which supplies the coil in an impulse one.

New construction of electronic circuits, thanks to which metrological features of the balances will be improved (linearity and repeatability).

New temperature converter has been applied: allows for extension of temperature range of the surrounding environment, in which the balance operates well. A balance can be used in temperatures ranging from 5°C to 40° C.

Expected range of working temperatures by type approval is from 10°C to 30°C.

Changes in mechanical construction:

Change in technology of manufacturing the casing of the mechanism which improves the strength of material (decrease of hysteresis errors).

Improvement in technology of manufacturing spring elements (flexures) – decreasing hysteresis and improve of transport durability.

Application of better protection system against overloading – decreasing the possibility of damage in use.

New software of the balance (differences in structure as mentioned below): faster operation of the software, resistance against disturbances and simplification of usage.

Applied changes in use of balances are similar to solution present in balances series XA and WPX and competitive products (Mettler).

After finishing the process of introducing and manufacturing the first production balances, Radwag is planning to send one piece of XAS balance to Notified Body for purpose of testing and obtaining type approval for series XAS.

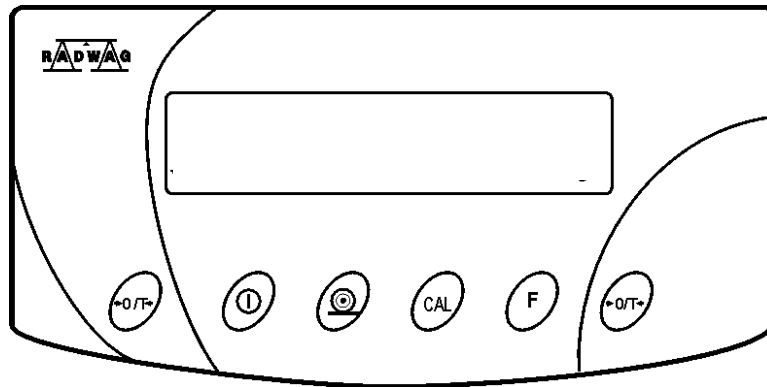
Plans for introduction timetable:

- approximately 05.07 – start of serial assembling – non-verified balances
- approximately 18.09 – finish term of tests and obtaining type approval and start of manufacturing verified model of balance.

The above terms may be changed, if obtained test results are negative.

DIFFERENCES IN STRUCTURE OF MENU OF CURRENT VERSION AND NEW VERSION OF BALANCES

User menu structure in 'old' version of WAS balances



Functions accessible for users has been composed in 4 blocks:

- ✓ **change of weighing unit (F)**
 - weighing in grams,
 - putting off last digit after decimal point,
 - weighing in [mg],
 - weighing in carats [ct],
 - weighing in non – SI weighing unit: [GN], [mo], [oz], [dwt].

- ✓ **Functions referring to modes of operation (ZERO/TARE+F)**
 - Counting pieces <PIECES>
 - Percentage deviations in relation to set standard mass <Perc A>, <Perc B>
 - Density determination of solids <Co>
 - Density determination of liquids

- ✓ **Functions referring to adjusting the balance to operation conditions pracy (ZERO/TARE+CAL)**
 - Display backlight <bl>
 - Autozero on/off <AUTO>
 - Switching on/off internal calibration for temperature changes <AC_t>
 - Switching on/off calibration in relation to recently performed calibration process <AC_C>
 - Declaring the speed of stabilization <Con>
 - Setting the average filter for measurements <AuE>
 - Dosing the materials – digital filter <Fil>
 - Setting the default measuring unit <st_uni>

- ✓ **Functions related to RS 232 application (ZERO/TARE + PRINT)**
 - Choice of speed of transmission <bod>
 - Determining the sent data as stable/unstable <StAb>
 - Continuous transmission <cont>
 - Setting date as additional parameter on the printouts <dAtE>
 - Switching on/off the marker of last digit on the printouts <Pd_d>

User menu structure in 'new' balances series XAS

New structure is based on the menu structure as used in balances with graphic display and new products manufactured on basis of measuring indicators series PUE C/30 and PUE C/31.

P1 CAL

- P1.1 iCAL – internal calibration
- P1.2 uCAL – external calibration
- P1.3 tCAL – calibration test
- P1.4 ACAL – setting automatic calibration
- P1.5 CALt – setting time for automatic calibration
- P1.6 CALr – printout of calibration report (yes/no)

P2 rEAAd

- P2.1 AvE - filter
- P2.2 Auto - autozero (yes/no)

P3 Print

- P3.1 bAud – speed of transmission
- P3.2 CntA – continuous printout in basic weighing unit
- P3.3 Cntb – continuous printout of present display state
- P3.4 rEPL – automatic printout
- P3.5 PStb – printout settings (when stable or no)
- P3.6 Lo – setting the threshold for operation of automatic printout

P4 Unit

- P4.1 StUn – initial weighing unit

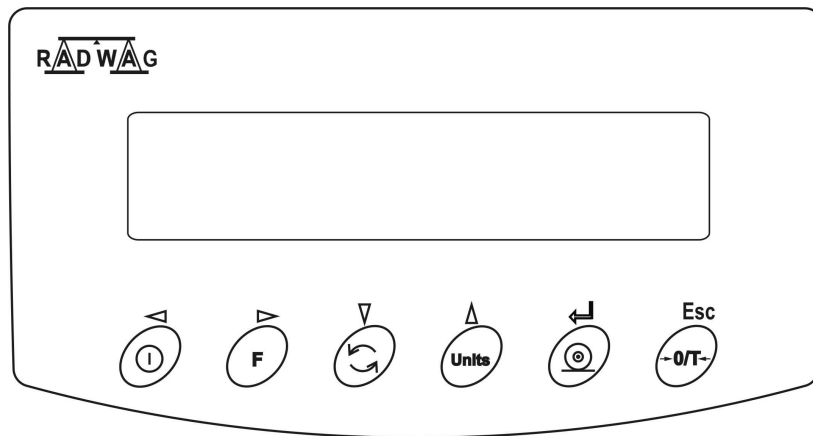
P5 Func







- P5.1 FFun
- P5.2 PcS
- P5.3 HiLo
- P5.4 PrcA
- P5.5 Prcb
- P5.6 Co
- P5.7 Li

P6 othEr






- P6.1 bL – display backlight
- P6.2 bEEP – beep sound after each pressing of a button
- P6.3 PrnS – printout of parameters

Functions of the balance's buttons



-  Switching on/off the display of the balance.
-  F button, is a function key.
-  Choice of mode of operation of the balance
-  Button used for changing the weighing unit.
-  Sending the display state to a peripheral device (PRINT) or confirming set parameter value or function (ENTER).
-  ^{Esc}
Zeroing the display indication

Moving through the user menu with balance's buttons

-  Enter to main menu
-  Scrolling down though menu or change the value of active parameter
-  Scroll up through menu or change the value of active parameter
-  Choice of submenu, which is to be activated. After pressing the button the display will show next communicate of the menu or will activate a parameter to be changed.
-  ^{Esc}
resign from changing parameter value

Going back to weighing mode



Introduced changes will only be saved when the user goes back to weighing mode with procedure of saving changes. Please press ESC button for a few times. The display will indicate following question. Choose one of below options: ENTER – save / ESC – regisn.

Menu of the new balances is:

- More user friendly
- Intuitive way of moving through menu and changing parameter settings.