intelligent®
Weighing Technology

User Manual

Electronic Balance

Model PBW-A & PMW-A

(Advanced Version)

This balance is an Intelligent-Lab unit made with a highly stable sensor and single-chip microcomputer. It features multi-unit conversion, counting, percentage, RS232, tare, calibration, and memorizing. It is precise, fast, stable, easy to operate, and multi-functional, used in many industries including manufacturing, agriculture, commerce, laboratories, pharmacies and schools, etc.

Technical parameters

Model	120-320	1002~30002
Measurement range	120 g-320 g	100g~3000g
d	1mg	10mg
e	10 mg	100mg
Power supply	AC 120V 50/60 Hz	
Power capacity	1W	
Grade	III	

1.Preparation

1.Place the balance on a stable and even surface. Avoid vibration, direct sunlight, airflow, air-conditioning or strong electromagnetic wave disturbances.

2.Working environment:

Operating temperature range: 41° F (5°C) ～95 ° F (35°C)

Temperature fluctuation: ≤ 9° F (5°C) / Hour

RH   50%～85%

2.Start

1.Plug one side of adapter or power cord to balance power inlet, the other side to

AC mains (120 VAC).

2.Turn on the power switch ⏻. Display will show "8.8.8.8.8.8." 、 "followed by the max measurement value" 、 "－－－－－－" . When stable, it displays "0.00" or "0.000" to enter weighing status.

3.Calibration

1. Preparations before calibration:

i) Turn on scale and warm up for over 30minutes.

ii) Make sure platter is empty.

2. Single-point calibration instructions：

PLEASE NOTE THAT CALIBRATION SHOULD ONLY BE UNDERTAKEN BY TRAINED STAFF. MISTAKES IN CALIBRATION ARE NOT COVERED BY WARRANTY.

ⅰ）Press "CAL" button display will show "CAL" and then will flash with the weight value. Press "CAL" and choose the weight value to be added. Add corresponding weight and it displays "-----" . After the balance is stable, it displays the calibrated value. Remove the weight from the platter, it displays "-----" . After the balance is stable, it displays 0.00 or 0.001 Calibration is complete and the balance returns to weighing status.

ⅱ）During calibration, you can press "TARE" button to stop calibration and return to weighing status.

3.Multi-points calibration (Linearity)

ⅰ）Press and hold "CAL" until balance displays "CAL-L". Release the button and then it will flash with weight value to be added. Add the corresponding weight to the platter, the balance displays "------　" . When balance is stable and displaying the corresponding value, remove the weight, and balance displays "------　" . When balance is stable, it automatically flashes with the weight value to be added for the next point. Repeat above operation until all points of calibration are completed. Return to weighing status.

ⅱ）During calibration, you can press "TARE" button to stop calibration and return to weighing status.

4. Weighing

1.After warm up or calibration, place the object to be weighed on the balance platter. When the black dot ● on the bottom left of the screen disappears, the weight of the object can be read.

2.The maximum measurement weight is the maximum value +9d displayed digits (d), when the balance starts up, it shows the maximum capacity. (d is the minimum display reading).If the weight exceeds maximum value, the display will show upper line " ------ " showing the weight exceeds the range. Remove the object immediately, overloading can damage the mach**ine. Overloading is not covered by warranty.**

5.Tare Function

Press "TARE" once it displays "-------" . When balance is stable it displays 0.00 or 0.000, depending upon capacity and readability. The weight of the object on the tray is removed.

6.Back-light

When machine starts up it enters backlight-on status. If you need to adjust the brightness, press and hold "TARE" and in the meantime press the "UNIT" button once, then the brightness can be adjusted in a loop. Release both buttons after the suitable brightness is selected.

7. Modes

Balance modes can be switched according to your needs. Press and hold "PCS" button the balance displays "COU" "100%" "-END-" in a loop ."COU" is counting mode, "100%" is percentage mode, "-END-" is to quit "counting" or "percentage" mode and return to weighing status.

8. Other features

8.1 .Units conversion

Press "units" button once and choose the units in "scale parameters setup". To choose certain unit, must ensure this unit has been opened for access. Refer to "units setup" in "scale parameters setup"

8.2. Counting

i) Press and hold "PCS" until it displays "COU". It flashes with the sample number. Press "PCS" and choose the number to be set between 10.20.50.100.200.500, then add the corresponding quantity of objects to the platter. Note! Do not add the sample piece by piece as the Auto Zero Tracking may not recognize each addition. Add them all at once is preferable. Press "PCS" to confirm and the balance displays "------" . When the balance is stable, the counting setup is complete. When the unit weight of object for counting is less than 2d, the balance displays "Err-3" and counting setup cannot be completed as the unit piece weight is too small to be carried out.

Need to take more objects as one collectively for re-setup. Push "Tare" to return to weighing status.

During "counting" setup, you can press the "TARE" button to stop setup and return to weighing status.

2）After "counting" setup is done, press "PCS" button to switch between counting and weighing status.

8.3. Percentage

1）Hold "PCS" button until it displays "100%". Let the button go and it flashes with "100". Put on the object to be setup as 100% and push "CAL" to confirm Scale displays "------". When it is stable, it displays "100%". Take the object off the platter and put on other object and it displays the percentage of this object to the object setup. When the object set up is less than 20d, it displays "Err-4" meaning the setup object is too small and need to increase the weight of the setup object. Press "Tare" button to return to weighing status.

2）During percentage setup, you can press "TARE" to return to weighing status.

3）After setup is done, press "PCS" button to switch between percentage and weighing status.

8.4. Printing

1）One-time printing: Set up as manual printing mode in "scale parameters setup". Press "Print" button once for one-time data output.

2）Continuous printing: Set up as continuous output in "scale parameters setup". Scale outputs data continuously.

3）Timing output: Set up as timing output in "scale parameters setup". Scale outputs data at the time set.

4）Printing mode setup refers to "printing mode setup" in "scale parameters setup"

8.5 .Baud rate

Scale has 4 baud rates to choose from: 1200.2400.4800.9600. Refer to "Baud rate setup" in "scale parameters setup"

8.6.RS232 communication

Scale uses RS232 UART communication. Data format is 10 digits:

One digit as start position, 8 digits as data and one digit stop position. No verification.

Data frame format:

1   2   3   4   5   6   7   8   9   10   11   12   13   14   15   16

K, */space, +/-,   data, data, data, data, decimal point, data, data, data, unit, unit, unit, OD, OA

1. K: start code

2.*/space: * indicates data unstable; space indicates data stable

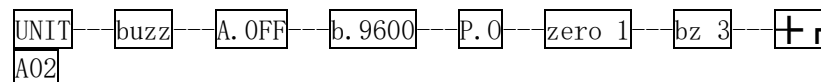3. +/-：+ indicates positive data，- indicates negative data

4.4-11： weighing data output by balance. Position of decimal point changes for different balance models.

5.12-14: Unit of data output. For example, unit g output as :space+space+g.

6.15-16: Data end mark

9.Parameters setup

Press and hold "PCS" to start balance. Let button go when it displays "UNIT". Press "PCS" again once and balance displays as follows in a loop:

UNIT----buzz----A.0FF----b.9600----P.0---zero 1----bz 3----┼┏
A02

9.1. Unit setup

Press "PCS" button and choose "UNt". Press "UNIT" button and choose units between g-kg-ct-lb-oz-ozt in a loop. Press "CAL" button to close or open the unit chosen.

9.2 .Buzzer setup

 Press "Count" button and choose "buzz1". Press "UNIT" button and choose ON or Off. 1 indicates ON and 0 indicates off.

9.3 .Timing shutdown setup

Press "PCS" button and choose A.OFF. Then press "UNIT" and choose:

OFF: indicates no shutdown

30: indicates automatic shutdown if no button pressed and no weighing for 30seconds.

2：indicates automatic shutdown if no button pressed and no weighing for 2miniutes.

5: indicates automatic shutdown if no button pressed and no weighing for 5miniutes.

10：indicates automatic shutdown if no button pressed and no weighing for 10miniutes.

9.4. Baud rate setup

Press "PCS" button and choose "b.9600". Then press "UNIT" and choose baud rates between "9600-1200-2400-4800".

9.5 .Printing mode setup

Press "PCS" button and choose "P.0". Then press "UNIT" and choose between "0-1-2-3-4":

0：indicates manual print out.

1: indicates print one time every 30seconds

2: indicates print one time every 60seconds

3：indicates print one time every 120seconds

4：indicates continuous output.

9.6. Zero point display range setup

Press "PCS" button and choose "zero 1". Then press "UNIT" and choose between 0-4d.

9.7. Back to zero setup (Auto-Zero Tracking)

Press" PCS" button and choose "bz 4". Then press "UNIT" and choose between 0-5d. O indicates 1/3d; 1：indicates 2/3d; 2：indicates 1d; 3：indicates 4/3d; 4：indicates 5/3d; 5 indicates 2d.

9.8.Zero point tracking setup

Press "PCS" button and choose " ⌐A0 2". Then press "UNIT" and choose between 0-5.

When parameters setup is done or during setup, hold "PCS" button until it displays "stored" to save parameter set up and return weighing status. If you press "TARE" button then the parameters will not be saved, but the balance will return to weighing status.

10.Error messages:

Err_1:	Weighing module (Sensor) broken. Need to return to factory for repair, or to local scale dealer.
Err_2:	Weighing/Calibration data lost. Need to do multi-point calibration (linearity) again.
Err_3:	Counting setup error. Object unit weight for counting setup too light. Need to add more objects and take them as one sample for re-setup.
Err_4:	Percentage setup error. Need to increase the weight of object for setup.
Err_5:	Percentage calculated value exceeds display range. Need to increase the weight of object for setup or decrease the weight of object to be calculated.

Flashing with upper line: indicates accumulated weight of objects to weigh exceeds range. Remove objects from platter immediately or do multi-point calibration again.

Flashing with bottom line: indicates weight of object to weigh is too light. Need to do multi-point calibration again; or indicates broken sensor.

11. Application notice:

1). Plug in and warm up as per instructions before use.

2). Tare weight and weights added together cannot exceed weighing range.

3). If weighing is not accurate, you should perform a calibration by using standard weights.

4). If the balance has a round platter please turn the platter clockwise and lift gently. Do not pull up the platter by force, or you will damage the sensor. This damage is not covered by warranty.

12. Components

1）Electronic scale　　　　　　　　　　　　　　1unit

2）Manual　　　　　　　　　　　　　　　　　　1pc

3）Approval card/packing slip　　　　　　　　　1pc

4）Balance platter　　　　　　　　　　　　　　1pc

    Notes: weighing 100g-800g has a round platter

        weighing 1000g-2000g square platter 130*130

        weighing 3000g-8000g large square platter 175*165

5）. Power adapter (or power cord)　　　　　　　1pc

6）Standard weight　　　　　　　　　　　　　　1pc

Attention: some contents of the manual may change without prior notice due to product updates.

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