BIOBASE

Electronic Precision Balance
Electronic Analytical Balance
(External Calibration)
BP-B Series
BA-B Series
User Manual

Digitally signed by Jighili Tatiana
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BIOBASE GROUP

Version 2020.11

Preface

Thank you very much for purchasing our BP-B Series Electronic Precision Balance and BA-B Series Electronic Analytical Balance.

Please read the “Operating Instructions” and “Warranty” before operating this unit to assure proper operation. After reading these documents, be sure to store them securely together with the “Warranty” at a hand place for future reference.

 Warning: Before operating the unit, be sure to read carefully and fully understand important warnings in the operating instructions.

Content

1. Outline

Thank you for busying the type BP-B Series Electronic Precision Balance and BA-B Series Electronic Analytical Balance from our company. For correct and safe fixing and operation, as well as full function apply, we suggest that you should read that users' manual before using it Thanks
The balance is multifunctional electronic balance using MCS-51series SCM This balance has gram, cant, ounce for users to select (cant and ounce for export) besides having automatic calibration, integral time adjustment and stability adjustment functions This balance has RS232C data serial duplexing port to connect with microcomputer and serial port punter This balance is used for fast exact weight measuring widely in enterprise, university, graduate school lab as an ideal lab instrument.
Finally, after reading the manual, please keep it carefully for referring.

2.Main technical Specifications

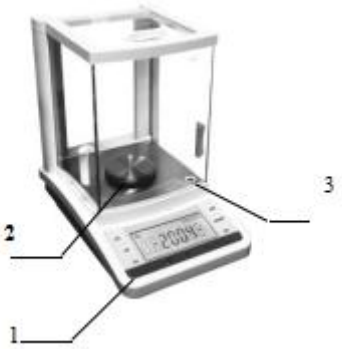
Model	BA100B	BA1104B	BA1604B	BA2004B	BA2204B	BA2104B
Accuracy Degree	Ⅰ	Ⅰ	Ⅰ	Ⅰ	Ⅰ	Ⅰ
Weighing Range(g)	100	110	160	200	220	210
Reading Accuracy(mg)	0.1	0.1	0.1	0.1	0.1	0.1
Taring Range(g)	0~100	0~110	0~160	0~200	0~220	0~210
Repeatability Standard Deviation(g)	±0.0002	±0.0002	±0.0002	±0.0002	±0.0002	±0.0002
Linear Error(g)	±0.0005	±0.0005	±0.0005	±0.0005	±0.0005	±0.0005
Stable Time (Typical)(s)	≤6	≤6	≤8	≤8	≤8	≤8
Integrating Time (Adjustable)(s)	2/4/8	2/4/8	2.5/5/10	2.5/5/10	2.5/5/10	2.5/5/10
Pan Dia.(mm)	Φ80					
Overall Dimensions (mm)	360×217×345					
Net Weight(kg)	6.8					
Power Supply	AC110/220V±10%, 50/60Hz					
Power Consumption (V .A)	15					
Auto-Cal Weight Range(g)	100	100	100	200	200	200
Warm-upTime(mis)	180	180	180	180	60	--

Weight the negative value of the weight display.Put the object to be weighed

Model	BP1003B	BP1203B	BP2003B	BP3003B	BP4103B	BP5003B	BP10003	BP1003P	BP2003P
Capacity	0~100g	0~120g	0~200g	0~300g	0~410g	0~500g	0~1000g	0~100g	0~200g
Readability	1mg								
Scale Size	Φ80mm				Φ110mm			Φ80mm	
Stable Time	1s								
Repeat ability	1mg						2mg		
Liner	1mg				2mg		3mg		
N.W.	6.8kg								
External Size	350*215*340mm								
Package Size	480*375*515mm								
G.W.	8.5kg								
Work Space Height	240mm								
Calibration	External Cal								

Note:The balance is turned on when the power is on. The panel switches activate display only. The power plug should be removed if the balance is not used for a long time.If it is used daily, the power needn’ t be turned off.The only thing needs to be done is to turn off the display.It is not necessarily to warm up due to the power on,so it can be used at any time.(“A long time”means more than 5 days.)

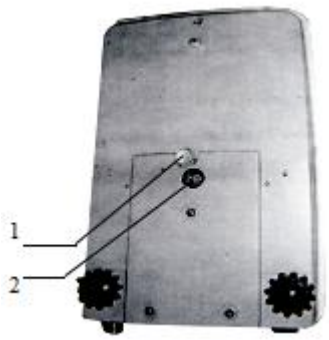
3. Drawings for Balance Installation



1. Panel 2. Gradienter 3. Scalepan

1. Data Interface 2. Transformer 3. Electrical Outlet

Single Measuring Range



1.Cover Honrd 2..Pothook

4. Operating

4.1Preparation

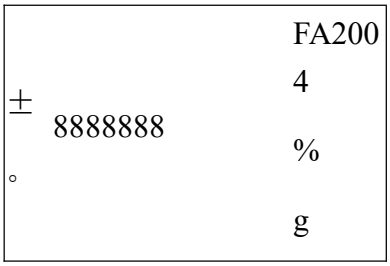
·Unpack the box and remove all packings . Take out buffer sponge in the wind proof cover and install pans.
·Put the balance on a stable working table free form vibration, sunshine and air flow.
·Ambient temperature:
20℃±5℃ for the first class balance with a fluctuation of temperature not greater than 1℃/h;
20℃±7.5℃ for the second class balance with a fluctuation of temperature not greater than 5℃/h;
·Relative humidity:50%-75% for the first class lance, 50%-80% for the second class balance.
·Working voltage: 220V +22V -33 V 50Hz 、110V ±11V 60Hz

4.2Operation

·Check the level meter before opertion,lf the bubble is not in the center, adjust the level legs to make the bubble in the center..
·The balance adopts soft touch buttons , so it can be controlled with multikey boards .lt is easy to operate .Function change and selection can be realized simply by depressing the corresponding buttons.

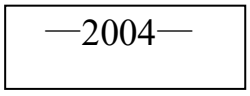
4.3 Start

·Select an appropriate line voltage and set the voltage switch to the corresponding position.
·Turn the power on and the balance is ready to run(but the display doesn't work),normally one hour after power is one , the display can be operated.
Function of the keyboard:



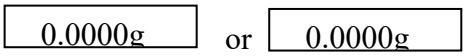
"ON"DISPLAY ON
Depress slightly the button "ON" the display will be lighted..
Check the function of the display ,about 2 seconds later ,the model of the balance will be displayed.

For example:



then the weighing mode.

0.0000g or 0.000g



"OFF" DISPLAY OFF
Depress slightly the button "OFF" ,the display will go out. If the balance will not be used for a long time ,the power plug should be taken off.
"TAR" Clear and Tare

Put the container on the pan,the weight of the container should be displayed:

+18.9001g

Depress “TAR” button,the display will go out and the display will be all zeroes. Taring ia completed:

0.0000g

When the container is removed, a negative value of the container weight will be displayed.

-18.9001g

Depress “TAR” again, the display will be all zeroes,i.e.the balance clears.

0.0000g

4.4 “RNG” Weighing

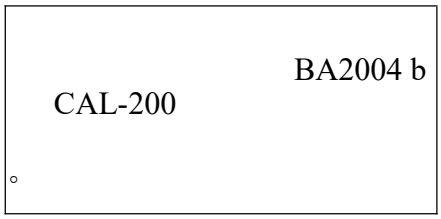
The balance should be calibrated after a long period of storage, movement, change of environment or in order to obtain precise measurement.

Preparation for the balance calibration:

(a).Take away all the objects to be weighed on the pan. Depress slightly TAR for clear the balance.

(b).Depress slightly CAL.CAI-200 will be on the flash-display. Therefore, put the prepared 200g standard weight on the pan ,the flash-display will stop.

After several seconds, 200.000g will be displayed. Remove the calibration weight,the display should indicate 0.000g. if not clear once again and repeat the above procedures. (Attention:More than two times of calibration are mcommended in order to get accurate result.)



Notice:

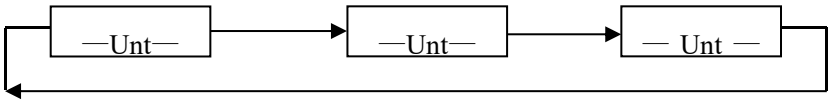
1,The TAR button can stop the calibration at any time

2,Depress the TAR button until displaying 0.0000g before calibrating

4.5 UNT Unit Change

If the accuracy of the reading needs to be 0.1mg release when the display is mg-60; and the appears waiting state...,the weighing state will be shown at last.

Depress ERY button and hold until the display is shown as the following figure circulating continuously.

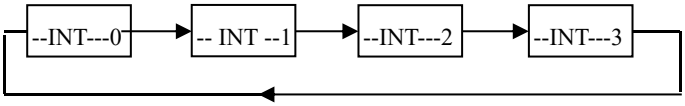


“g” means the value is expressed in gram .“—” means the value is expressed in metric carat

“y” means the value is expressed in oz.t.The unit will be set same as RNG.

4.6 INT Integrating Time Adjustment

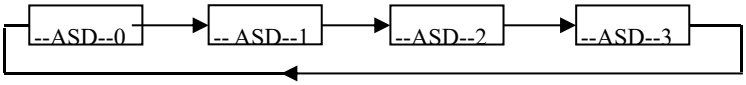
Four modes of integrating time can be selected circularly as shown in the figure



The corresponding integrating time is as follows:
INT-0 fast, NT-1 shorter, INT-2 short, INT-3 longer
The selection of the integrating time will be the same as RNG

4.7 ASD Sensitivity Adjustment

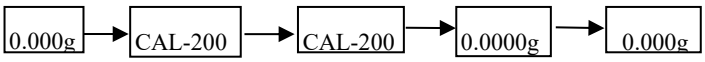
Same as INT interrating time adjustment button: there are four circulating modes provided for sensitivity adjustment.



ASD—0 the highest ASD—1 high ASD—2 higher ASD—3 low
ASD-0 is used for test run and not to be used by the users.
The selection of sensitivity is the same as RNG.
Here is a list of ASD used with INT for user’ s reference only.
The fastest weighing: INT-1 ASD-3
Normal: INT-3 ASD-2
With undesirable environment INT-3 ASD-3

4.8BALANCE CALIBRATION

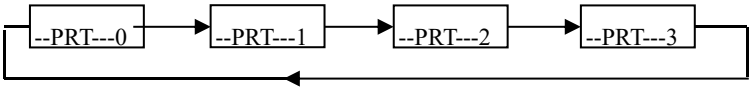
Normally, the balance should be calibrated after a long period of storage, movement, change of environment or in order to obtain precise measurement.
Preparation for the balancce calibration:
Take away all the objects to be weighed on the pan. Set RNG-60,INT-3, ASD-2, and unt-g. Depress slightly TAR for clear thebalance.
BALANCE CALIBRATION
Depress slightly CAL.CAI-200 will be on the flash-display. Therefore, put the prepared 200g standard weight on the pan ,the flash-display will stop.
After several seconds, 200.000g will be displayed. Remove the calibration weight,the display should indicate 0.000g. if not clear once again and repeat the above procedures. (Attention:More than two times of calibration are mcommended in order to get accurate result.)
The display sequence of the calibration is shown as the figure.



4.9 PRT Output Mode setting

Depress PRT and hold there will be four modes displayed circularly for user to select at will..

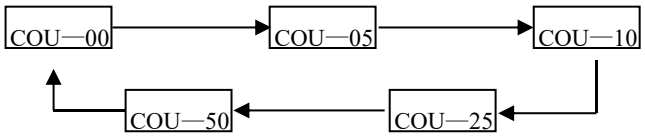
PRT-O is the mode of indefinite time output ; slightly depress PRT once ,the weighing result will be.out on the output interface once.
Attention: At this time you should depress the button slightly and quickly, otherwise, the next output mode will be displayed
PRT-1 output once every half a minute
PRT-2 output once every minute
PRT-3 output once every two minutes



The setting of PRT is the same as RNG

4.10 COU Count Function

The balance has a function of counting. The average number are 5,l0,25and 50,total of four .The Setting of Range of Average Numbers
Only depress COU and hold ,the display will be circulating continuously as the following.



It means the average value of (5,10,25,50)objects respectively
If a normal weighing function is required ,release when COU-00 display, and waiting status “……” will be indicated ,at last0.000g weighing status will be indicated .lf the average value of five is required, release when COU-5 displays, then put5 objectson the pan Depress CAL once again. “……” waiting status displays ,and about several seconds later,5 will be displayed. Take away the objects to be weighed ,zero displays. At that time the counting of the same objects to be weighed can be done (Attention :the weight of the objects to be weighed must not be greater than the maximum weighing rang of the balance). If you average over 10,25 even SO objects ,then the accuracy of counting will be higher Depress TAR,“0”will be indicated in the display and counting can be done at that time.

4.11 Weighing ,Taring ,Add Objects ,Read Devitions WEIGHING

WEIGHING
After the selection of the above modes(all the modes can be used for weighing after the power is off ,due to the memorv function of the balance),depress TAR,zero will display.Put the object to be weight on the pan.When the number is stable, i.e.“0”on the left of the displaygoes out,the number display goes out,the number displayed will be the weight of the object.
TARING
Put the container on the pan, the weight will display.Depress TAR,zero displays. That is taring. Put the objects to be weighed into the container, the value displayed is the net weight of the object to be weighed
ACCUMULATIVE WETGHTNG
Pat the objects be weighed on the pan one by one with taring method and tare and clear for each

one.Take away all the objects to be weighed , the absolute value display in the total weight of the objects to be weighed.

ADD OBJECTS

Set the mode of INT-0 and put the container on the pan , then tare. Add the objects to be weighed (liquid or loose objects) into the container one by one the continuous reading value can be obtained quickly. when the added objects reach the required“0”on the left of the display goes out and the number display is the weighing value required by the user. When adding the mixed objects.the net weight of each object can be measured by taring method.

PEAD DEVIATIONS

Put the reference weight(or rample) on the pan and tare . then take off the reference on the pan.The corre sponding plus or minus deviution will display, comparing the weighed object with the reference weight

UNLOAD

Loose the screwn of the bottom cover,raveal the hook.Put the balance on a woking table with a hole. Level and calibrate the balance .An object can be weighed with the hook

5.Maintenance and troubleshooting

MATNTENANCE OF THE BALANCE

The balance should be used carefully.Clean the pan and the case frequently with soft cloth and toothpaste.Don,t wipe the balance with strong agent.

TROUBLESHOOTING

SN	TROUBLE	CAUSE	REMEDY
1	No light on Display	·Power is not on ·Display switch is not on ·Instant interference	·Check and turn it on again ·Depress ON button ·Switch on again and replug power
2	Display the upper half only	·Overload ·The calibration in the internal memory may be damaged ·The pan is not installed correctly	·Reduce the load immediately ·Recalibrate according to the above procedures. About 8 seconds after the standard weight has been put on,the calibrated result may be displayed. A certain stable time is necessary. ·Take out the pan and reinstall it.
3	Display the lower half Only———	·without pan,too light ·he pun is not installed correctly	·Reinstall the pan

4	The weighing result is not stable (date changed swiftly)	·due to air flow ·the working table it net stable ·the integrating time is too short ·Roam tetnpeealtsre flucttsates	·Cheek the windproof cover tu see if it is closed. ·Change to a longer integrating time
5	The result is not correct	·not zeroing before weighing ·Use the balance without calibration or the cal weight is not accurate ·The line voltage is too low or net correct	·Depress TAR button ·Reclibrate ·Change to the correct voltage
6	Display remains at a certain digit or indicates nonsense symbol	·Instant interference ·Wrong line voltage	·Turn on the balance once again or replug the power cord ·Chang to normal line voltage
7	The stable mark “0”on the left of the display does not go out	·A higher balance sensitivity ·undesirable environment such as strong air flow or vibration	·Set to lower sensitlivity ·Improve the environment
8	Remain at Waiting Status————	·The balance position is not correct, e.g. With strong air flow, vibration or great fluctuation of room temp. ·The selected sensitivity is too high	Improve the environment ASD-3
9	Cal Err Displays	·There is an object on the pan before calibration ·not clear before calibration	·Take away the object,clear and recalibrate ·Clear and recalibrate

		·Depress CAL before the	
10	Err-1 Err-2 Display	·Instant interference ·Something wrong with the balance	·Turn on the balance once again ·Send it to the service center
11	The weighing unit on the right dose not display	·not calibrated ·The calibrated number in the internal memory of the balance has been erased	·Calibrate the balance
12	Cou-Err Display	·No Constant be set before operating counting function ·Overload when setting constant ·Underload when setting constant	·Set average number before operating counting function

6.Date Interface

Date interface adopts the standard 9-core RS-232C sDcket. The date interface is provided with RS232C universal two - way serial interface, which
can be connected to the microprocessor and various printers.No.Standard Parallel Output.The pin and the corresponding signanls are as follows:

PIN	SIGNAL	ILLUSTATE
1	SI	input signal
2	GND	
3	SO	serial output signal(baud rate is 1200)
4	GND	

7.Serial Single (RS232C)

The connection method between the scale and computer serial port is as follows:

Computer(9pins)	Scale(9pins)
2	3
3	2
5	5

1) The baud rate of the serial port of scale is 1200.
2) The date format is 10digits, one start digit is(0) ,8 digits are date positions (ASCII Code,low digits in the front),1 stop digit.
3) No odd-even check

4) The date will be output continuously without any special reading commands A detailed output frame is as follows:

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Type	Space	*/Space	+/-	Date	Date	Date	Dot	Date	Date	Date	Date	Unit1	Unit2	CR	LF

8. Random Accessories

No.	Name	Qty
1	200g(and 100g)calibration weights	1
2	Wire with both-side plug	1
3	Weights tweezers	1
4	Handkerchief	1
5	Operation manual	1
6	Certification	1

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