Value Each Gram A professional weighing products manufacturer and supplier

ANALYTIC BALANCE **BAE**

User Manual

v.201811

HiWEIGH Weighing system & solution
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Value Each Gram

HiWEIGH
Weighing system & solution

CONTENTS

1. Introduction

Before any assembly work, all scales from the main power supply must be disconnected

Open box and Packing List

Open the packing must be careful to remove all the accessories.

After opening the equipment, please check it immediately if there are any external damage.

If you detect any damage, please contact with after-sales service center.

Safe keeping any parts of packing and packaging in order to transport to use in the future. During the period of shipment, please pull out the cable!

The attached device consists of the following parts

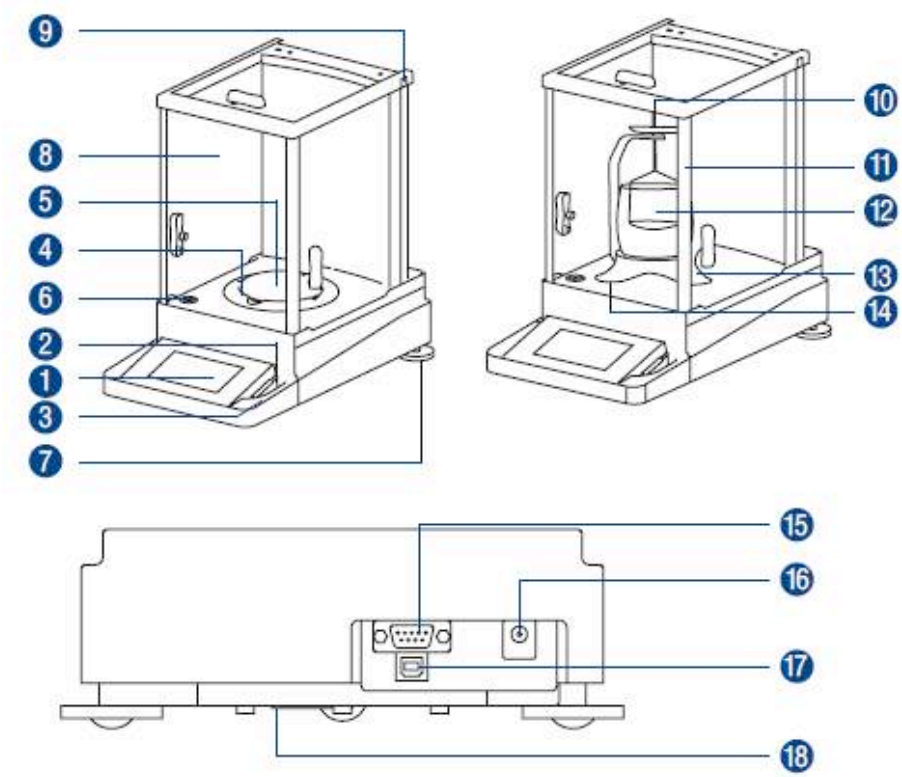
AE Series Balance

- Weighing Pan
- AC Power Adapter
- Calibration Weight (expect AE C)
- Windbreak
- Unlocked Pen for Glass Doors
- Quality Guarantee
- Manual

*Density Parts (Only for AE J)

- C-Style Bracket
- Shelve Table
- Arched Glass
- Testing Shelf X2
- Standard weight
- Retainer Ring

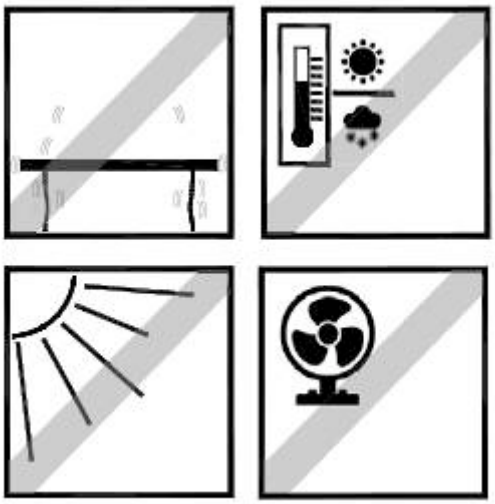
Identification of Electronic Balance Units



NO	Name	NO	Name
1	Touch Screen	10	Testing Shelf*
2	Unlocked Pen for Glass Doors	11	C-Style Bracket*
3	Panel shelter	12	Arched Glass*
4	Windbreak	13	Shelve Table*
5	Weighting Pan	14	Retainer Ring*
6	Level Indicator	15	RS232 Port
7	Leveling Foot	16	Power Adapter Socket
8	Windproof Cover	17	USB port（*optional）
9	Glass Door Lock	18	Under Hook

*Density Parts (only for AE J Series)

Using Environment

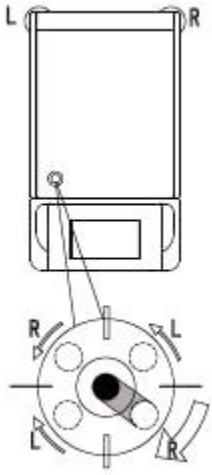


For high resolution analytical and precise balance, the right placed place is the key for accurately weighing. So please ensure that:

- Stable and no vibration position, as far as possible be level
- Avoid direct sunlight
- Avoid strenuous temperature variations
- Avoid air convection

Best placed place: the corner of shelter, stable table, as far as possible from the door, window, radiator and the outlet of air condition.

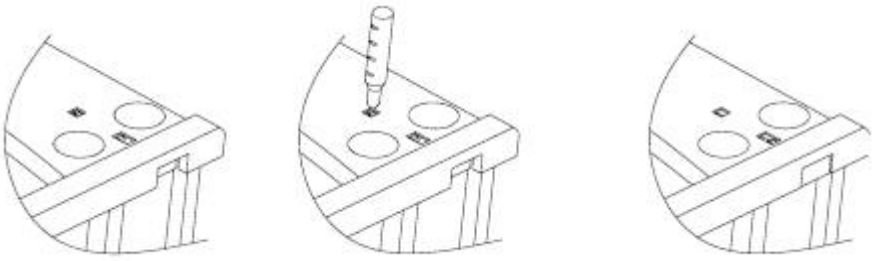
Adjust Level



Through regulating the leveling foot, make the level bubble moving to the center of circle (as shown).

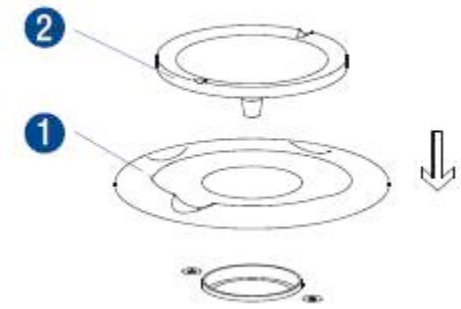
Notice: Please adjust level, when the balance moves to a new place.

Glass door unlock



This series balance owns function to lock the glass door. Use unlock pen to click yellow part then the glass door could open.

Install Weighing Pan



As show:

1. Install windbreak
2. Install weighing pan

Power connection

Using the wrong power adapter may cause severe shock, and damage to equipment. Use the correct power adapter for the main power supply.

Please use only the original ac power adapter.

Please make sure the rated voltage marked on the ID tags with local power supply voltage is consistent.

Must be according to your country/region applicable specifications for the power supply connection.

1) Insert the ac power adapter into the socket on the reverse of the balance.
2) Connect the ac power adapter socket (mains)

Preheat time:

In the use of this series balance, in order to obtain accurate weighing results, please preheat balance more than 60minutes for first using.

If the balance in environment that has different temperature, should be appropriately increased preheat time.

2. Operation Introduction

Function Application Menu

Function Application Menu is composed by three functions key and one standby key.

Application (to select weighing program)

Setup (set basic setup and change)

Calibration (to calibrate balance when move place or have error of weighting result)

Standby (switch balance standby)

Operation of Balance

Start/OFF (Standby) Balance

After connecting the power supply, the balance into the startup interface.

Balance self-inspection.

Balance into weighing mood

If the balance must be switched to standby mode, please select the menu key.

Into Application interface

Should be selected standby in application interface

Switch balance into standby

Balance in the system to enter standby mode.

Standby mode, touch any part of screen to exit the standby mode.

Operation Concept

The basic interface and operation of balance

Operating on a screen and display elements

Sharp tools (such as ballpoint pen) might damage the equipments. Could wear laboratory glovers to operate.

1	Toolbar the currently available button Inculding: Zero Tare Print
2	Max weighing range d actual degree value
3	Current weighing value
4	Weighing unit (click unit to switch unit)
5	Show current application.
6	Menu key: to switch application menu
7	Error warning, click to see the error information.

Menu Interface

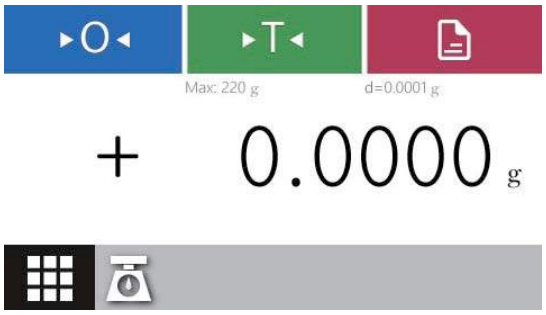
Select application program through application menu

Click this bottom into the application interface at any program.

1	Selcet area, to select application program. Inculding: weighing, counting, percentage, density, convertion, check weight and peak hold.
2	Standby: switch balance to standby mood
3	Function select area: application、 setup、 calibration

Select Application Program

Select application program you need. (such as weighing)



Select weighing program, show as picture.

3 Weighing

Application List of Menu

Weighing

The weighing is as default application in the first start. This application is used to determine the sample weight within range.

Counting

Used to determine quantity of almost same weight sample. Can calculate already counting the weight of the reference sample, and then weighing on the unknown number of objects. Balance will show the number of objects, and the weight of single piece.

Percentage

Used to determine the percentage of sample.

Density

Used to test density of solid or liquid sample

Conversion

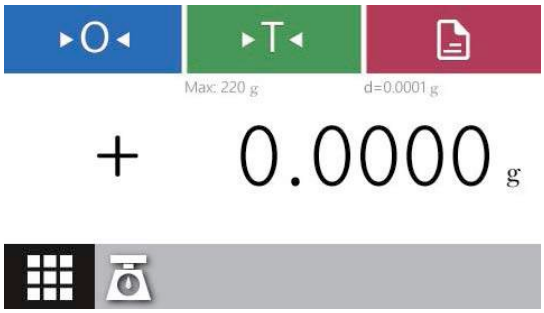
Used to plus the certain number.

Weighing

Objective: to determine the weight of sample within the weighing range

Menu key

Select weighing

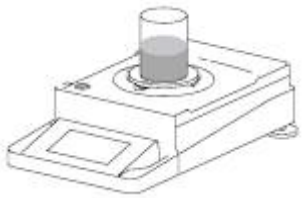


Weighing interface

Zero empty weighing pan/ select 0 to zero balance.

Tare

If you use a container to weight, put the container on the weighing pan, then choose tare to remove the tare weight. Then balance will show zero again.

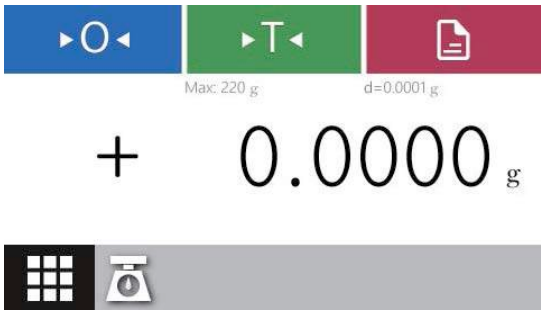


Put sample on the weighing pan

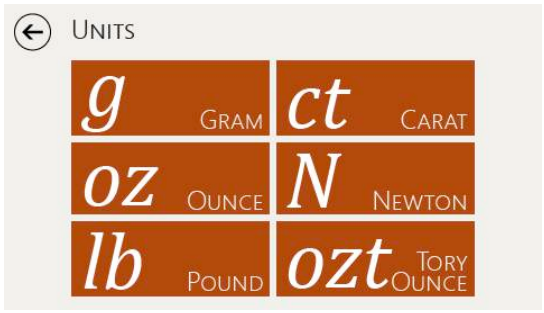
When the value does not change and the unit shows black, then could read value.

Weighing Unit Conversion

Objective: Configure weighing unit



Click unit to switch other weighing unit



Show Units interface

Choose the unit you need.

Weighing unit conversion factor

Unit	Factor	Shown
Gram	1.00000000000	g
Carat	5.00000000000	ct
Ounce	0.03527396200	oz
Newton	0.00980665000	N
Pound	0.00220462260	lb
Gold ounce	0.03215074700	ozt

Counting

Objective: to determine the number of weight almost equal parts. It can calculate the weight of the reference sample, then to weigh the unknown number of objects. Balance will show the number of objects, and the weight of single piece.

Minimize counting error:

- ensure that the average distribution of the weight of each part.

- the more reference number, the higher the accuracy.

Menu key

Select counting

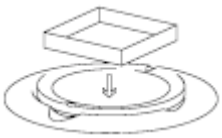
Shown counting interface

default reference number: 10 pc

If want to change number, please select gray bottom.

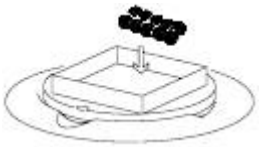
Choose the number needed

Zero balance



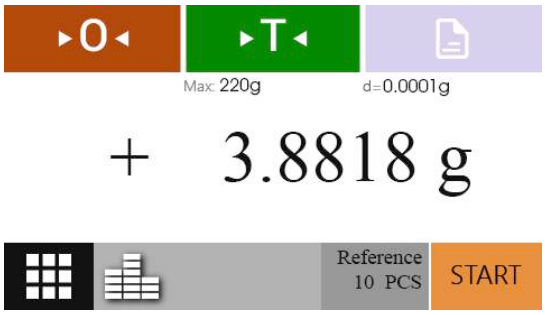
Put container on the weighing pan

Tare balance

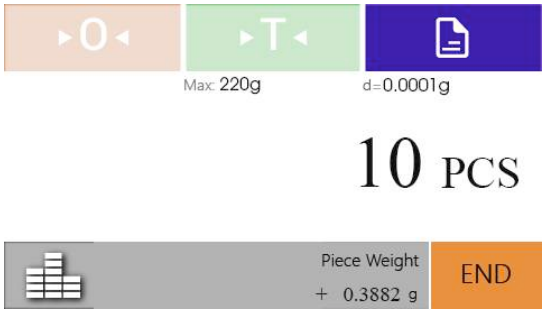


Put the sample an the container

Shown the weight of sample



Press start



Shown reference number

and shown the weight of each sample

Put the unknown-number objective on the container

The balance will calculate the number and shown it.

Press End to back to the menu

Weighing in Percent

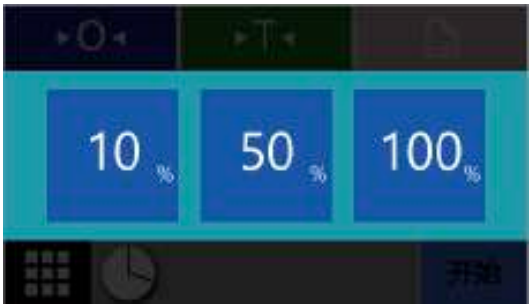
Objective: to determine the percentage of the sample and the reference weight related or percentage difference.

Menu Key

Select Percentage

The default percentage is 100%

Press gray bottom to change percentage.



Choose you needed

Zero balance

Put container on the weighing pan

Tare balance

Put the reference sample on the container

Shown reference percentage

Shown the weight of reference sample

Put the sample on the container

Balance will show the percentage of sample

Press End to back to Menu

Density (Only for AE J Series Density Balance)

Objective: to determine the density of solid and liquid

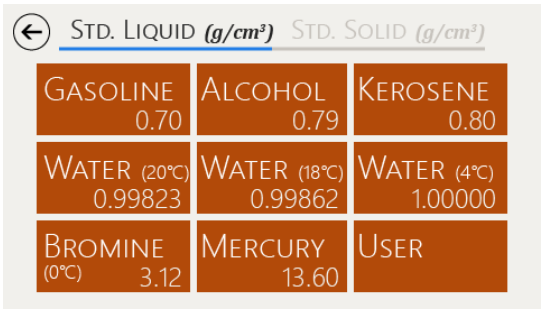
Menu Key

Select density mood

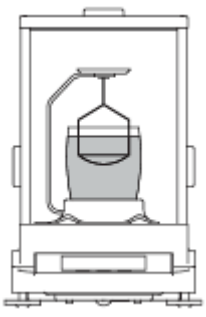
Shown density interface

Shown default standard material water

If change standard material, please press gray bottom.



Select the standard material you needed

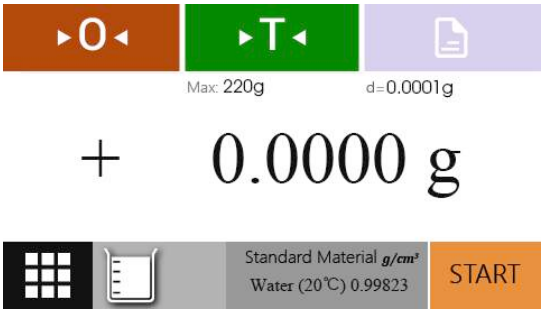


Put the testing shelf on the density part

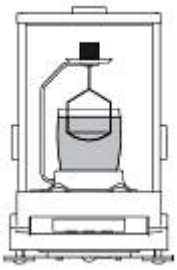
Ensure that the test frame hanging basket fully immersed in the standard liquid, to support the sample later.

If the distilled water is used as the standard liquid, please add 3 drops of surfactant to reduce surface tension plays the role of the measurement result.

Zero balance

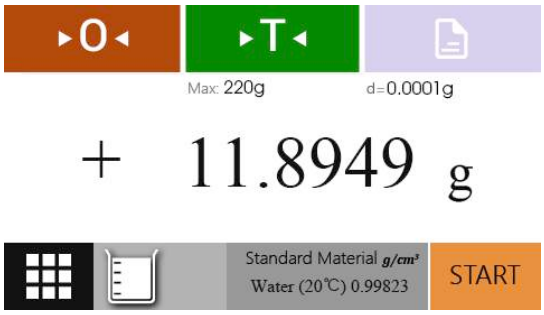


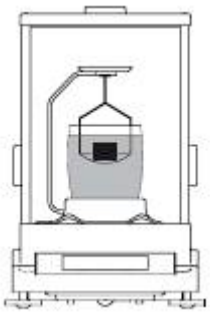
Press start



Put the sample on the densely part

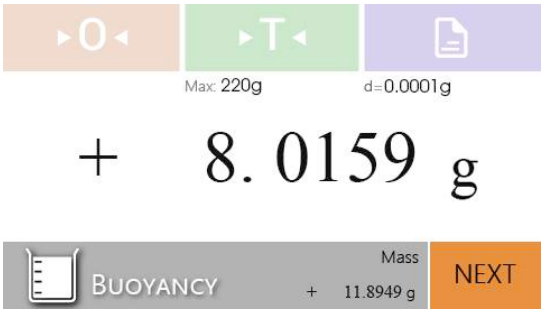
Shown the sample weight on the air



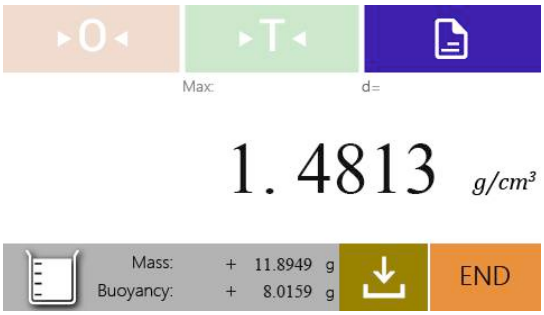


Take off the sample and put it on the basket

Shown the weight of sample on the liquid. Press next



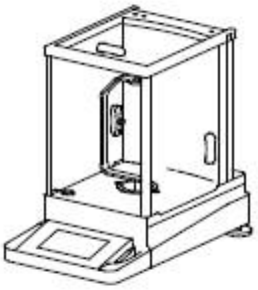
Balance will calculate the density of sample



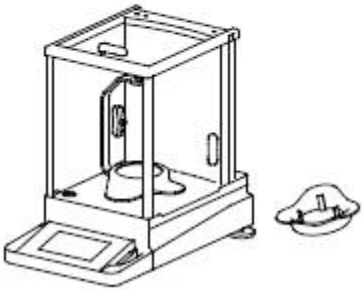
Press End to back to menu

1) Adjust balance level

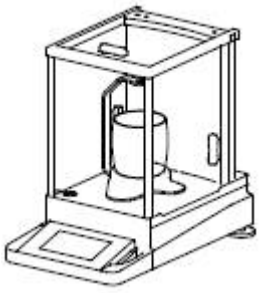
2) Install the retainer ring



3) C bracket is installed on the scale; can be flexible with your hand lightly in the activity.



4) Put table on the table panel. Put aside a round card on the edge of the retainer ring. Rotary level do not touch C shelf.



5) Put arched glass

Density Parameter Table

	Valid decimal:3 (Repetitive≤ ±0.0001g/cm^3)		Valid decimal:4 (Repetitive≤ ±0.0001g/cm^3)	
Density (g/cm^3)	Sample Quality (≥ g)	Sample Quality (≥ g)	Sample Quality (≥ g)	Sample Quality (≥ g)
0.10	0.020	0.020	0.0020	0.0020
0.20	0.080	0.080	0.0080	0.0080
0.30	0.180	0.180	0.0180	0.0180
0.40	0.320	0.320	0.0320	0.0320
0.50	0.500	0.500	0.0500	0.0500
0.60	0.720	0.720	0.0720	0.0720
0.70	0.980	0.980	0.0980	0.0980
0.80	1.280	1.280	0.1280	0.1280
0.90	0.620	1.620	0.1620	0.1620
1.00	2.000	2.000	0.2000	0.2000
2.00	8.000	8.000	0.8000	0.8000
3.00	18.000	18.000	1.8000	1.8000
4.00	32.000	32.000	3.2000	3.2000
5.00	50.000	50.000	5.0000	5.0000
6.00	72.000	72.000	7.2000	7.2000
7.00	98.000	98.000	9.8000	9.8000
8.00	128.000	128.000	12.8000	12.8000
9.00	162.000	162.000	16.2000	16.2000
10.00	200.000	200.000	20.000	20.000
11.00	242.000	242.000	24.2000	24.2000
12.00	288.000	288.000	28.8000	28.8000
13.00	-	338.000	33.8000	33.8000
14.00	-	392.000	39.2000	39.2000
15.00	-	450.000	45.0000	45.0000

Commonly used material density table.

No	Name	Density	No	Name	Density
1	Construction Steel	7.85	27	Interleaving Paper	0.9
2	Cast Steel	7.8	28	Fiber Paperboard	1.1~1.4
3	Grey Cast Steel	6.8~7.2	29	Waterproof Paper	1.0~1.1
4	High-Quality Cast Iron	7.0~7.6	30	Felt	0.24~0.38
5	Malleable Cast Iron	7.2~7.4	31	Rubber	1.3~1.8
6	Hard Alloy (Tungsten Alloy)	13.9~14.9	32	Cork	0.25~0.45
7	Tungsten Carbide (Titanium Alloy)	9.5~12.2	33	Mica	2.8~3.2
8	Aluminum	2.77	34	Amino Plastic	1.45~1.55
9	Pressure Processing Aluminum Alloy	2.67~2.8	35	Asbestos Cloth Plastic	2
10	Foundry Aluminum Alloy	2.6~2.85	36	Asbestos Screen Plastic	2
11	Babbitt Metal	7.5~10.5	37	Fibre Resin	1.35~1.45
12	Red Copper	8.89	38	Paper Fillin Plastic	1.4~1.7
13	Pressure Processing with Brass	8.4~8.85	39	Fabric Bakelite	1.3~1.4
14	Casting Brass	8.622	40	Polyvinyl Chloride Plastics	1.28~1.37
15	Cast Bronze without Tin	7.5~8.6	41	Celluloid	1.35~1.40
16	Pressure Processing Tin Bronze	8.65~8.9	42	Organic Glass	1.18
17	Nickel	8.9	43	Glass	2.5~2.7
18	Manganese	7.44	44	Leather	0.86~1.02
19	Magnesium	1.74	45	Graphite	1.9~2.3
20	Tin	7.3	46	Gasoline	0.66~0.75
21	Lead	11.34	47	Kerosene	0.78~0.82
22	Silver	10.5	48	Alcohol	0.807~0.810
23	Gold	19.361	49	Charcoal	0.27~0.58
24	Platinum	21.561	50	Smokey Coal	1.2~1.5
25	Zinc (Casting)	6.872	51	Anthracite	1.4~1.8
26	Wood（Humidity 15%）	0.4~1.05	52	Coke	0.27

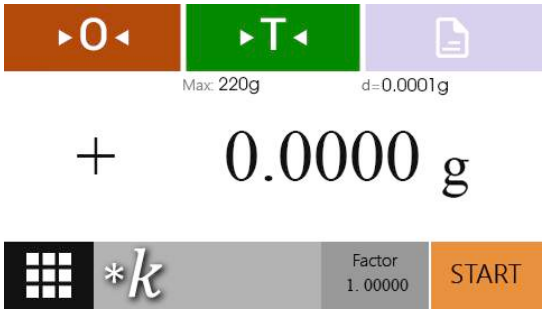
Conversion

Purpose: used to weight value plus number

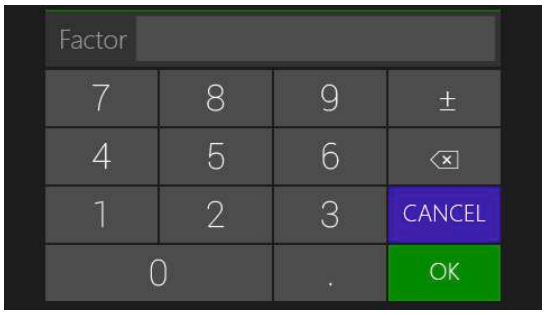
Menu Key

Select conversion mood

Conversion interface



Press gray bottom to change conversion



Use number key to enter conversion

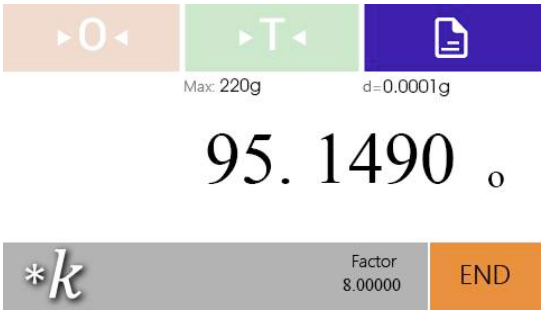
Then press OK to enter

Press cancel to back to menu

Zero balance

Select Start

Put sample an the weighing pan



The number is shown that weight plus conversion

Press end to back to menu

Calibration

Before using balance， must calibrate in the place of placing balance.
Calibration can choose external or internal calibration.

Time and frequency

To achieve the highest accuracy, please regular calibrate balance

Every day calibrate balance after start.

Every time, after balance level adjustment.

Environmental conditions (temperature, temperature or pressure) changes.

Location changes or move to a new place.

Balance with the following options:

External calibration,

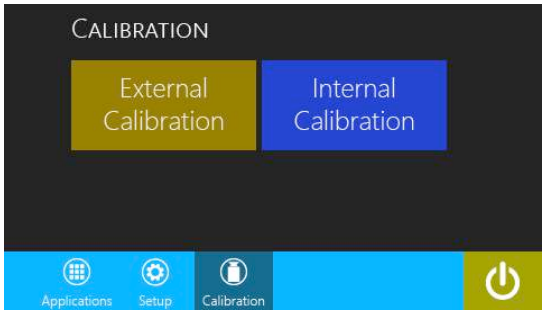
Internal calibration (only for AE C series)

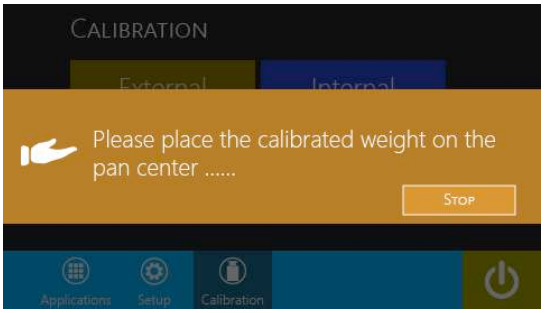
External Calibration

Clean weighing pan

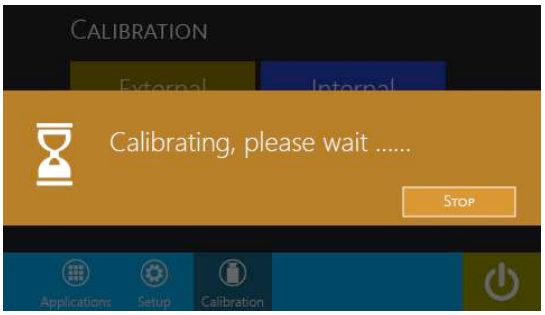
Select calibration

Select External Calibration.

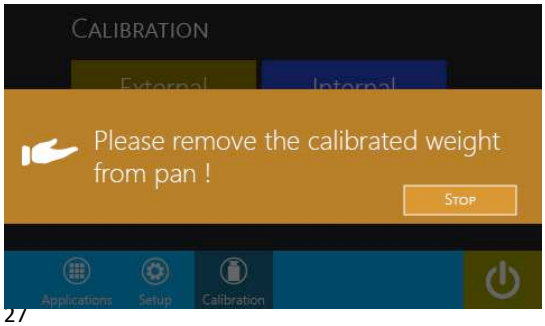




Place the calibrated weight on the pan center.



The balance starts calibrating until complete of it.

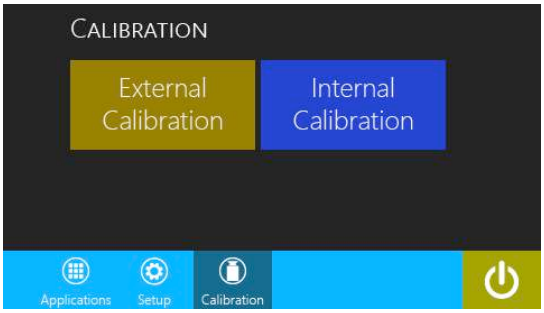


According the tips, remove the weights, and then balance start calibrating. When finish calibration, press enter.

Internal Calibration (Only for AE C internal balance)

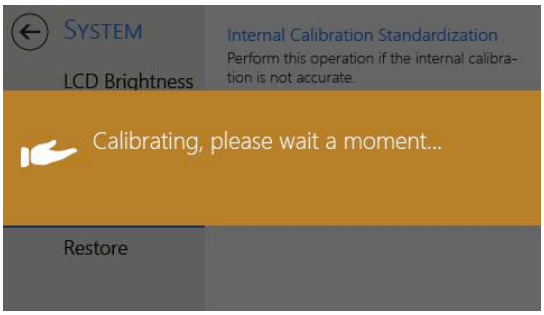
Clean weighing pan

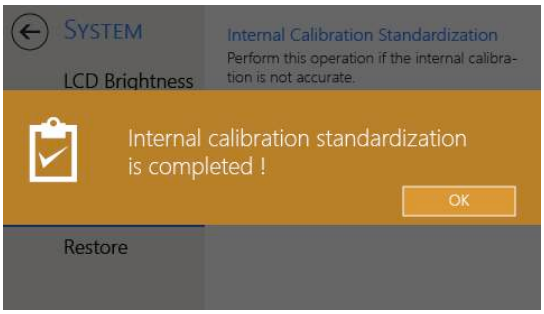
Select calibration



Select Internal Calibration.

The balance will do the internal calibration, when finish, please press enter.





4 Setup

Set Application List of Menu

Weighing set
Set basic weighing function

Printing set
Set printing mood

System set
Set system parameter and restore factory set

Information
Balance basic information

Enter menu and change set

Click the set you needed

Select item to change

This is the current selected.

Change the settings the settings is instant activation, do not need to restart.

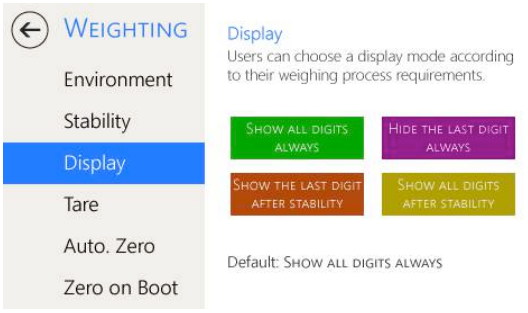
Weighing Setup

Weighing Environment

Environment factors have inevitable interference and influence on the balance process. If air or vibration in the experimental environment is large, please choose unstable.

Stability

When weighing results is stable within a certain range, balance will immediately show stability. Before achieving stability, weighing units shows grey. When the balance is stable, the units will become black.



Weighing Display

Customer could select all kinds of display according to needed.

Tare

Use this function means that when the balance is stable, then do tare function.

Auto Zero

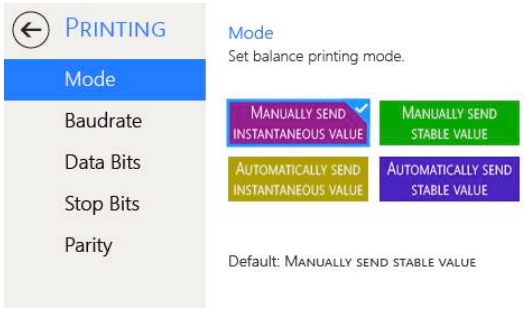
Use this function, the balance will atomically do zero near zero position.

Zero on boot

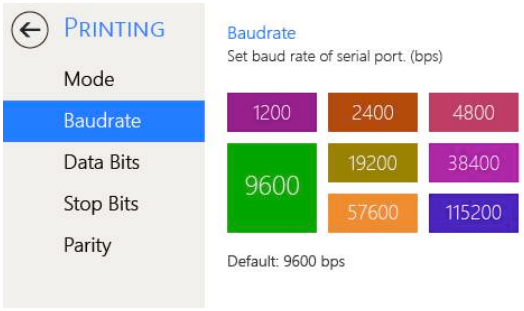
When startup, balance will automatically boot to zero.

Printing Setup

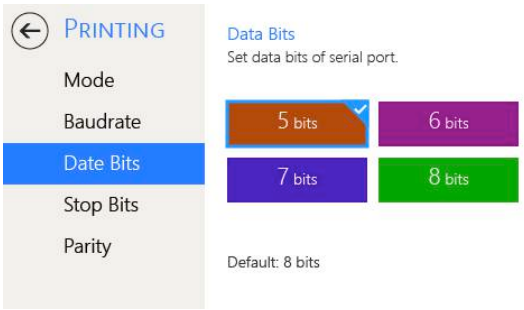
Set print mood



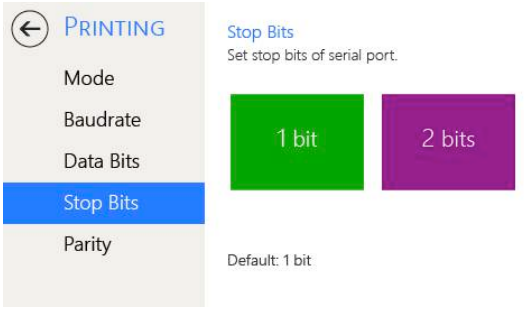
Print mood (set balance print mood)



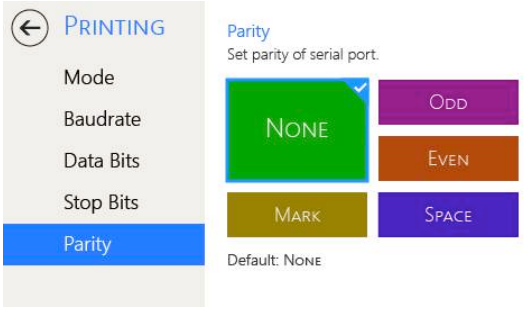
Baud rate (set baud rate of balance printing)



Date bits (set data bits of balance)

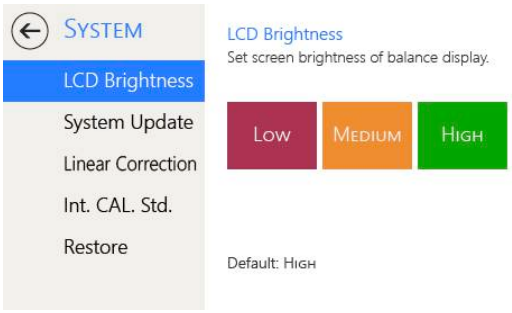


Stop bits (set stop bits of balance)



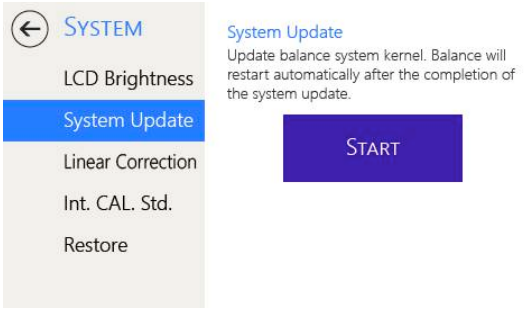
Parity (set parity of balance)

System set

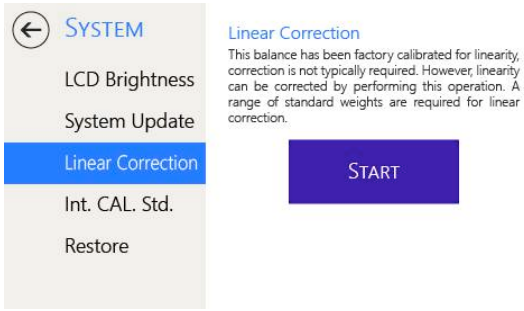


LCD Brightness

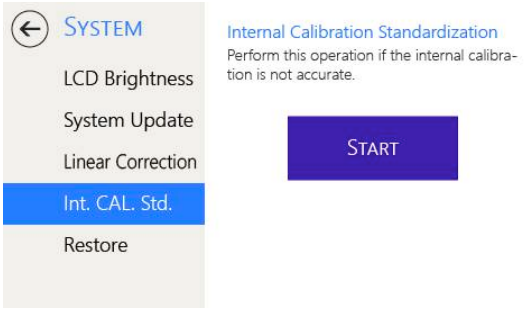
Set screen brightness of balance display



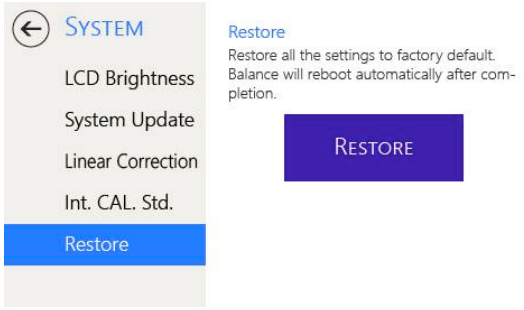
System update



Liner correction



Inter calibration standardization



Restore factory set

Information

Manufactory information

5. Specification

Product Overview

Balance standard configuration

Balance power output: 100-240VAC； 50， 60Hz

Output: DC12V; 600mA

Raw material

Base: die casting aluminum alloy; paint

Cover: plastic (ABS/PC)

Weighing pan: stainless steel

Protection level

Dustproof and waterproof

Level of pollution prevention: Ⅱ

Level of installation: Ⅱ

Use of environment requirements

Balance of technology parameters in following conditions:

Working environment temperature: Ⓘ 20℃ ±2.5℃,the temperature fluctuation is not more than 1 ℃/ h

Ⓘ 20℃ ±7.5℃,the temperature fluctuation is not more than 5 ℃/ h

Relative humidity: Ⓘ 50% ~ 75%;

Ⓘ 40% ~ 80%

Working voltage Ⓘ 12VDC

Ⓘ 12VDC

In a stable environment, the preheating time of at least 60 minutes of the scale, the power supply shall be reliable grounding.

Technical Parameters

External Calibration Models

Model	BAE124	BAE224	BAE223	BAE323	BAE523
Actual division value（d）	0.0001	0.0001	0.001	0.001	0.001
Weighing Capacity（Max）（g）	120	220	220	320	520
Repeatability（s）	0.0001	0.0001	0.0001	0.0001	0.0001
Calibraion Weight	100	200	200	200	500
Type	Standard				
Dimension（W/D/H）（mm）	365×225×338				
Packing Measurement（W/D/H）（mm）	500×310×450				
Pan Size（mm）	φ90				
Effective height above pan（mm）	160×165×200				
Net Weight （kg）	5.5				
Gross Weight （kg）	8				

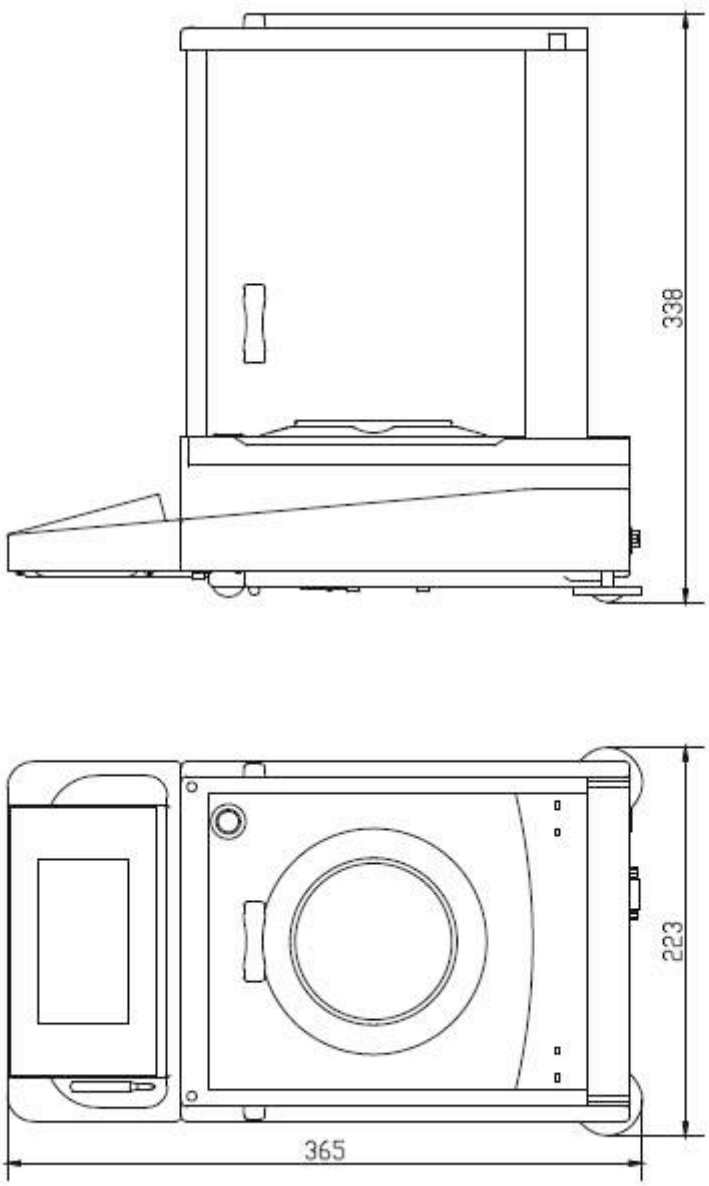
Internal Calibration Models

Model	BAE124C	BAE224C	BAE223C	BAE323C	BAE523C
Actual division value（d）	0.0001	0.0001	0.001	0.001	0.001
Weighing Capacity（Max）（g）	120	220	220	320	520
Repeatability（s）	0.0001	0.0001	0.0001	0.0001	0.0001
Calibraion Weight	100	200	200	200	500
Type	Internail Calibration				
Dimension（W/D/H）（mm）	365×225×338				
Packing Measurement（W/D/H）（mm）	500×310×450				
Pan Size（mm）	φ90				
Effective height above pan（mm）	160×165×200				
Net Weight （kg）	5.5				
Gross Weight （kg）	8				

Density Weighing Models

Model	BAE124J	BAE224J	BAE323J	BAE523J
Actual division value（d）	0.0001	0.0001	0.001	0.001
Weighing Capacity（Max）（g）	120	220	320	520
Repeatability（s）	0.0001	0.0001	0.0001	0.0001
Calibraion Weight	100	200	200	500
Type	Density			
Dimension（W/D/H）（mm）	365×225×338			
Packing Measurement（W/D/H）（mm）	500×310×450			
Pan Size（mm）	φ90			
Effective height above pan（mm）	160×165×200			
Net Weight （kg）	6			
Gross Weight （kg）	8			

Figure Dimension



6 TROUBLESHOOTING

Fault Information and Solutions

The balance will show the fault, and tip you to do how to solve it.

A Data communication

This series of balance is equipped with standard RS232 serial port output, can be connected to the computer and printer. With the microcomputer serial port connections are as follows:

Microcomputer (9 core hole) ------- Balance (9 core hole)

2 (RXD) ------- 2(TXD)

3 (TXD) ------- 2(RXD)

5 (GND) ------- 5 (GND)

Balance a serial port baud rate 9600 BPS.

Data format for 10, one of the start bit (0), 8 bits of data (ASCII, low in the front), a stop bit (1).

No odd-even check

For continuous output data, don't need special reading command.

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
symbol	blank	weighing value									blank	unit		CR	LF
±	␣	␣	1	9	9	.	9	9	9	9		g		CR	LF

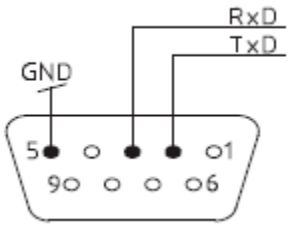
0: Expressed as a plus or minus sign

2-10: According to quantity, for the right alignment, less than a complement by Spaces; Consistent with the balance display;

12-13: Unit may show is different with balance display

Balance display	Output	
	13	14
g	g	blank
oz	o	z
ozt	g	z
ct	c	f
lb	l	b
N	n	blank

Port



B Maintain and clean

Power off: disconnect device connected to the power supply.

If necessary, disconnect the data cable connected to balance

Ensure that no liquid, or dust into the balance or ac adapter.

Do not open the balance or the ac power adapter.

Do not use the volume or composition of abrasive cleaner, which ultimately may cause damage to equipment.

Please use soft non-fluffy cloth to clean the enclosure or weighing pan, if necessary please use neutral detergent.

After cleaning, use dry soft cloth to wipe balance.

Value Each Gram

HiWEIGH
Weighing system & solution

Value Each Gram A professional weighing products manufacturer and supplier

v.201811

User Manual

BAE

HiWEIGH Weighing system & solution

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