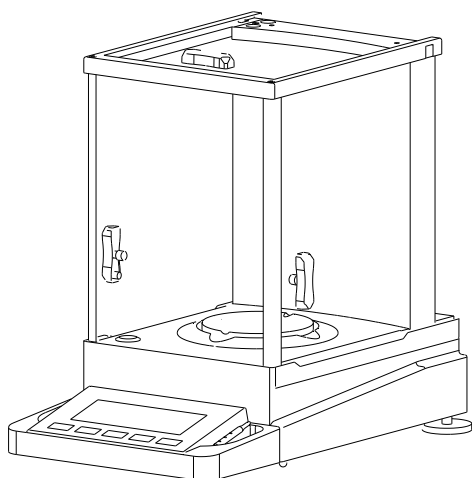


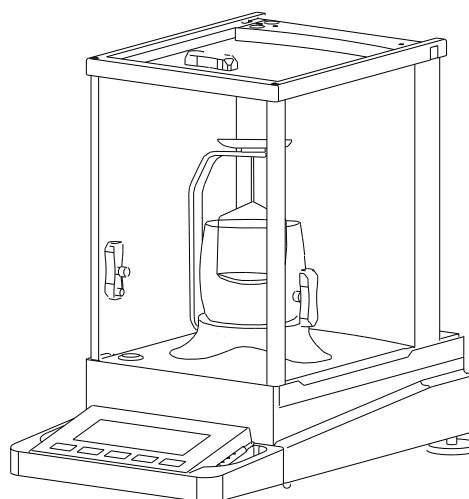
Manual

Balance Series

- **FA Electronic Balance (Electronic Analytical Balance)**
- **FB Electronic Balance (Auto Internal Calibration Electronic Analytical Balance)**
- **JA Electronic Balance (Electronic Precision Balance)**



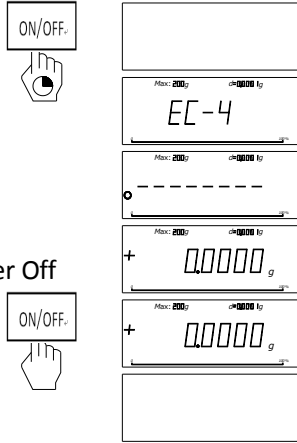
FA/FB/JA Series



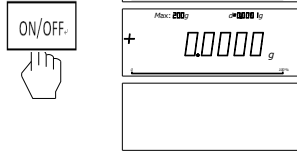
Quick Use Guide

Hold on to click the button until appear required hints

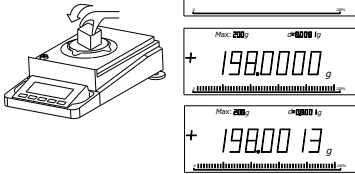
Power On



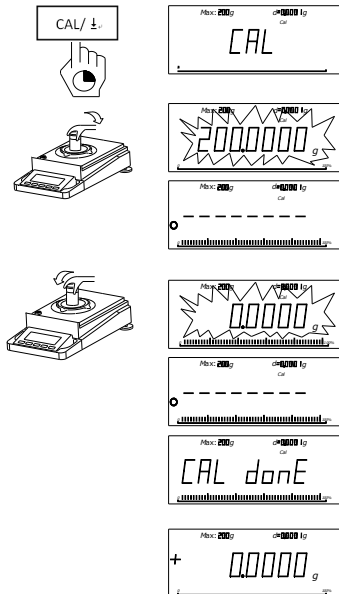
Power Off



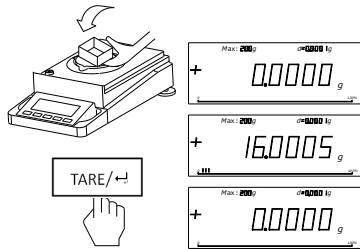
Basic Weighing



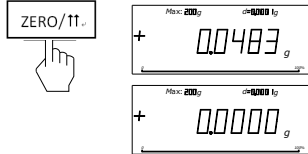
Calibration



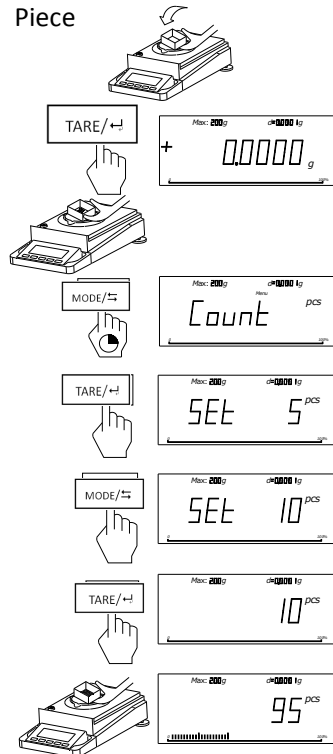
Tare



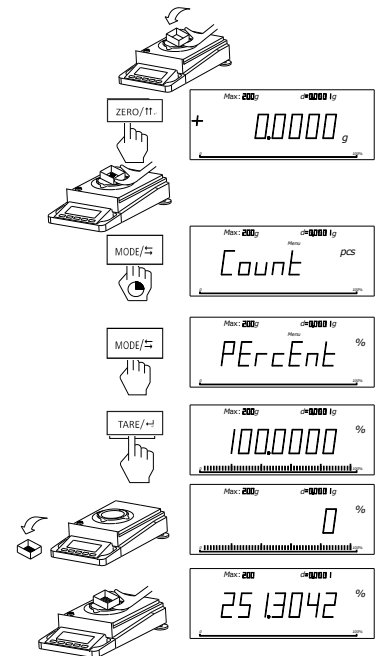
Zero



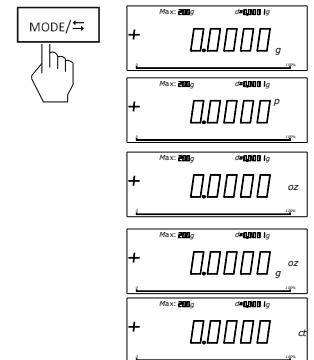
Piece



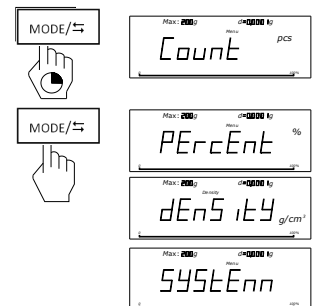
Percentage



Units Conversion



Function Mode Conversion



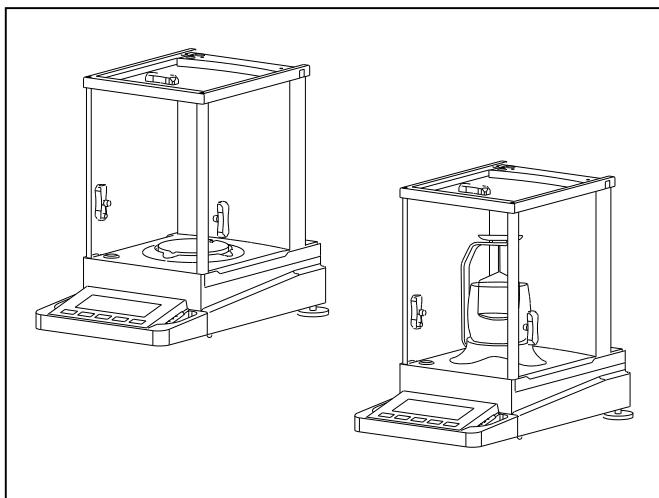
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1 BALANCE SERIES INTRODUCTION

1.1 Introduction



Same appearance, similar to the operation, not the same sensor module. It contains four series products:

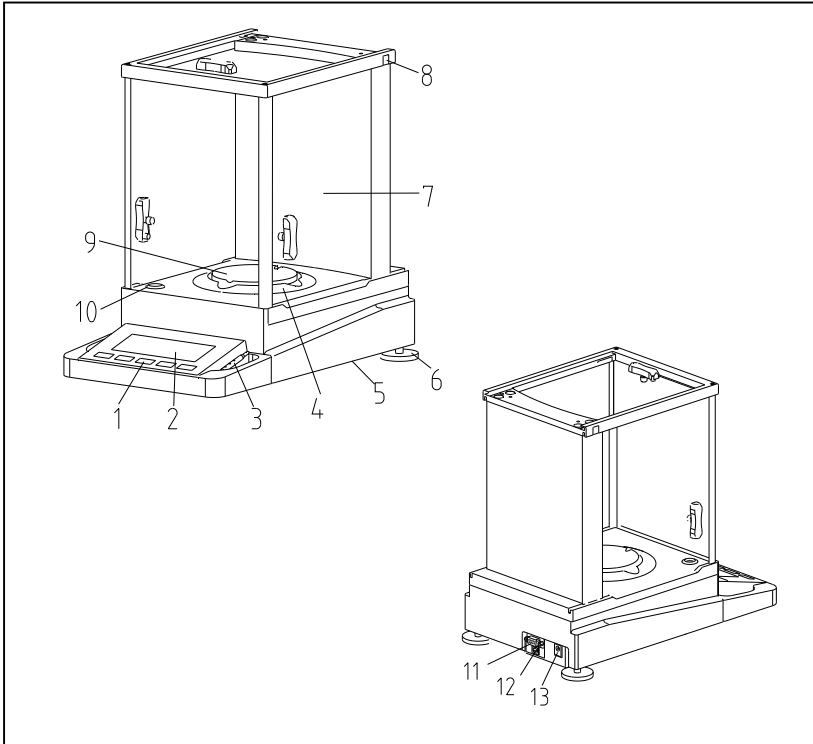
1. FA series electronic analytic balance
Readability: 0.1mg
2. FB series internal calibration balance
Readability: 0.1/1mg
3. JA series electronic precision balance
Readability: 1mg
4. JS series density balance
Readability: 0.1mg/1mg

The basic function of four series balance is almost same; expect special function (such as density measurement).

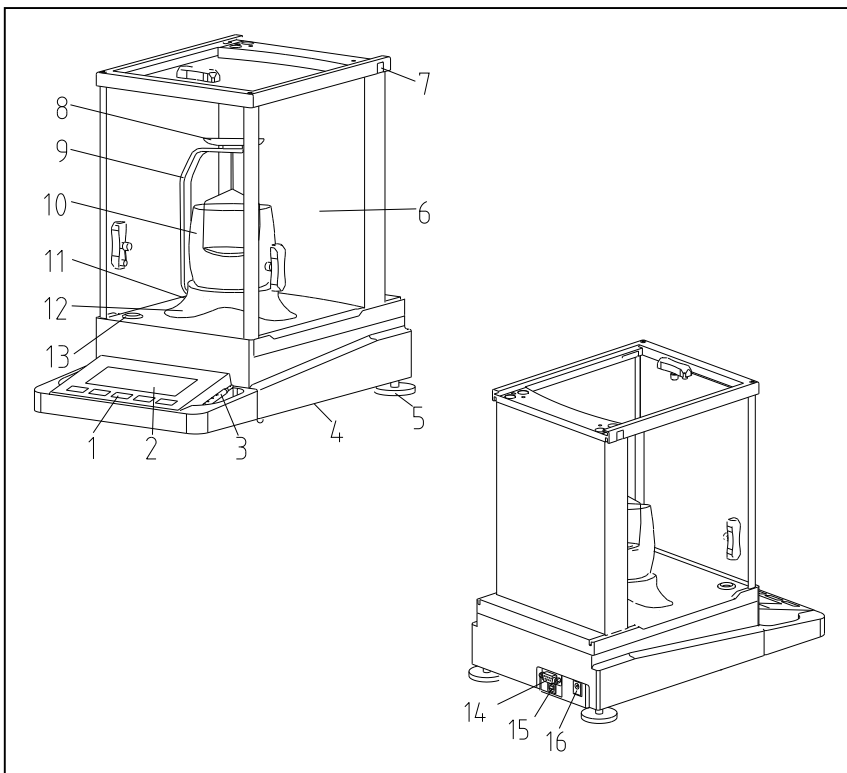
Detail as follow:

Series No	FA	FB		JA	JS	
Weighing capacity (g)	100- 220	120-220	220-420	100-500	110-210	300-500
Actual scale interval (g)	0.0001	0.0001	0.001	0.001	0.0001	0.001
Accuracy class	Ⓘ	Ⓘ	Ⓜ	Ⓜ	Ⓘ	Ⓜ
Calibration method	External	Internal		External	External	External
Density device	None	None		None	Have	
contour dimension (mm)	365×223×338 (length×width×height)					
Package dimension (mm)	498×313×453 (length×width×height)					
Pan size (mm)	ø 90					
Effective height above pan	150×165×2002 (length×width×height)					
Net weight (kg)	5.5	6		5.5	6	
Gross weight (kg)	7.5	8		7.5	8	

1.2 Balance Structure



- 1) Operating Key
- 2) Display Screen
- 3) Unlocked pen for glass doors
- 4) Windbreak
- 5) Hanging ring for hook
(In the bottom of balance)
- 6) Leveling foot
- 7) Windproof cover
- 8) Lock for glass
- 9) Weighting pan
- 10) Level indicator
- 11) RS232 port
- 12) USB port (optional)
- 13) Power adapter socket



- 1) Operating Key
- 2) Display Screen
- 3) Unlocked pen for glass doors
- 4) Hanging ring for hook
(In the bottom of balance)
- 5) Leveling foot
- 6) Windproof cover
- 7) Lock for glass
- 8) Testing Shelf
- 9) C-Style Bracket
- 10) Arched glass
- 11) Shelf table
- 12) Fixed Ring
- 13) Level indicator
- 14) RS232 port
- 15) USB port (optional)
- 16) Power adapter socket

1.3 Operating Key Function Index

The balance have two operating methods: **weighing mode and function mode**. According to the choice of operating mode and the length of pressing key. It has different meaning.

Weighing Mode

↓

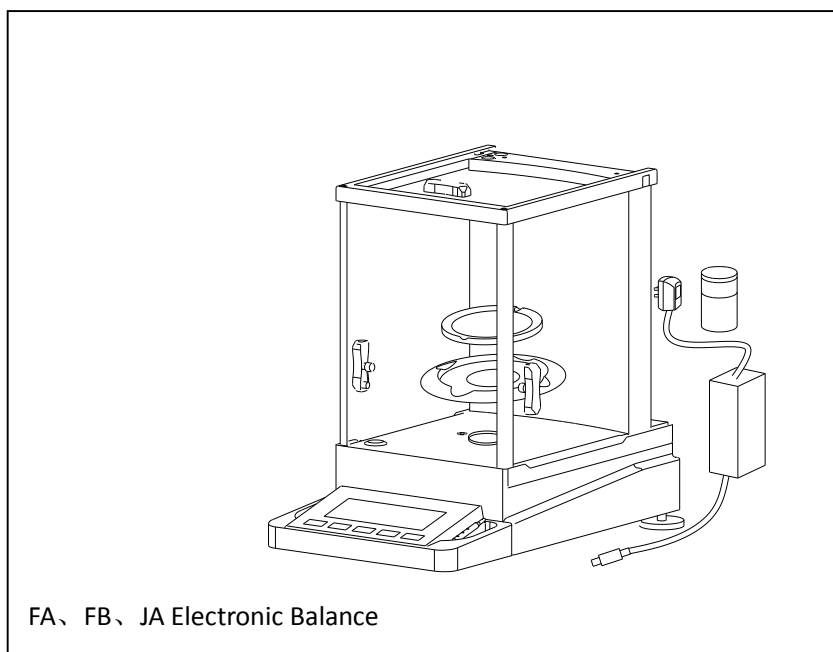
Function Mode

Operating key in weighing mode			
Press key for short time		Press key for long time	
ON/OFF	•ON (Shutdown State)	ON/OFF	•OFF (Start State)
MODE/↔	•Unit convert	MODE/↔	•Into function mode
CAL/↓	•Print	CAL/↓	•Calibration
TARE/←	•Weighting tare	TARE/←	
ZERO/↑	•Zero, cancel	ZERO/↑	

Operating key in function mode			
Press key for short time		Press key for long time	
ON/OFF		ON/OFF	• OFF (Start State)
MODE/↔	•Switch	MODE/↔	•Return to function menu
CAL/↓	•Print	CAL/↓	
TARE/←	•Enter, choice	TARE/←	
ZERO/↑	• Return to previous menu	ZERO/↑	•Return to basic weighing mode

2 USAGE

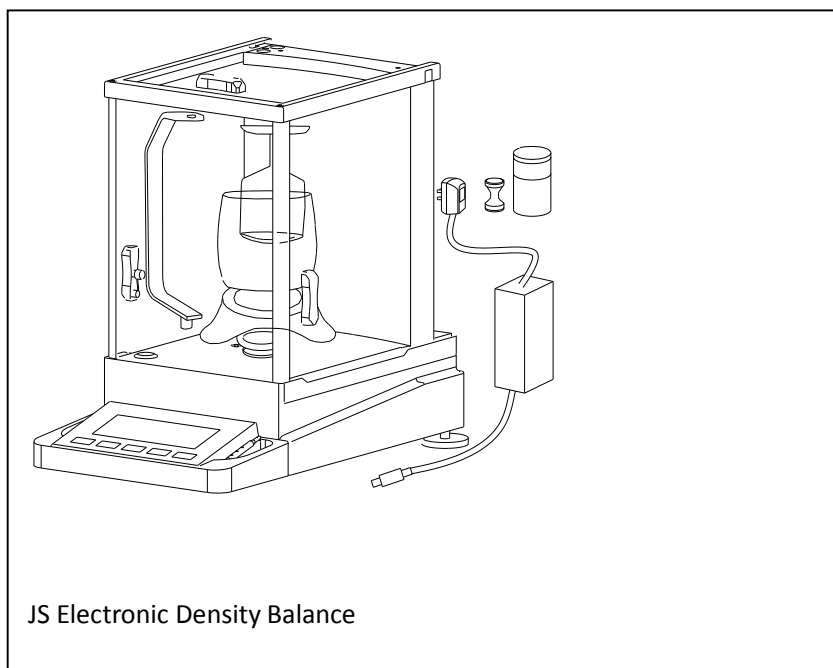
2.1 Package List



FA、FB、JA Balance Standard

Configuration:

- ◆ Balance 1 pc
- ◆ AC Power 1 pc
- ◆ Pan 1 pc
- ◆ Windbreak 1 pc
- ◆ Calibration weight 1 pc (Except internal calibration balance)
- ◆ Manual 1 pc
- ◆ Certificate of quality 1 pc
- ◆ Guarantee card 1 pc
- ◆ Unlocked pen for glass doors 1pc
- ◆ Panel shelter 1 pc



JS Density balance

Configuration:

- ◆ Balance 1 pc
- ◆ AC Power 1 pc
- ◆ Pan 1 pc
- ◆ Windbreak 1 pc
- ◆ Calibration weight 1 pc (Except internal calibration balance)
- Manual 1 pc
- ◆ Certificate of quality 1 pc
- ◆ Guarantee card 1 pc
- ◆ Unlocked pen for glass doors 1pc
- ◆ Panel shelter 1 pc

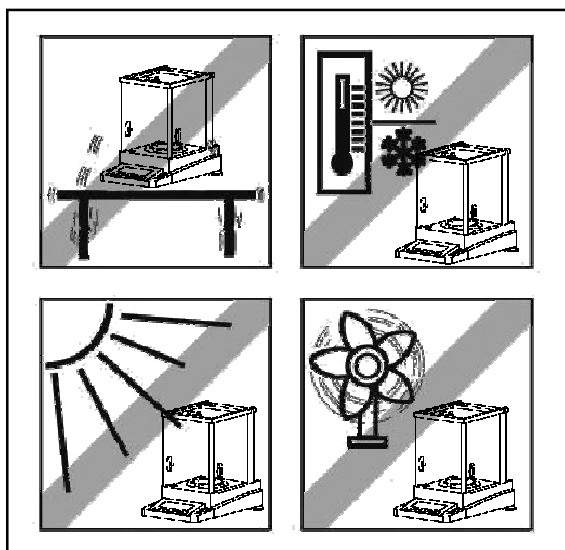
- ◆ C-Style bracket 1pc
- ◆ Shelf table 1pc
- ◆ Arched glass 1pc
- ◆ Testing shelf 2pc
- ◆ Standard weight 1pc

Explanation:

● Open the package, take out the balance and accessories. Then check the balance if there is damage, accessories are complete. Check all the windproof door is in perfect condition and operation normally. If there is any fault, please connect to the agency of Shanghai Sunny Hengping.

- Different model balance has different calibration weight, please see parameter list at part six.
- Please keep packing materials properly for transport

2.2 Install, level Adjustment

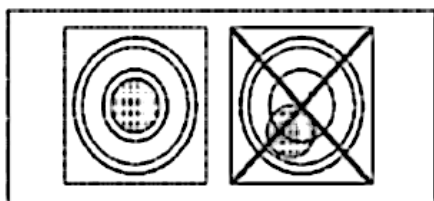


Best placed place

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

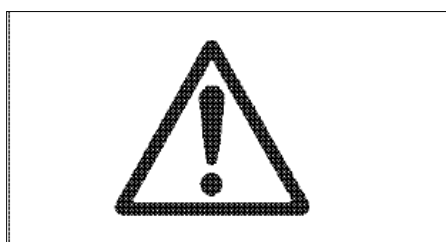
Best placed place: the corner of shelter, stable table, as far as possible from the door, window, radiator and the outlet of air condition



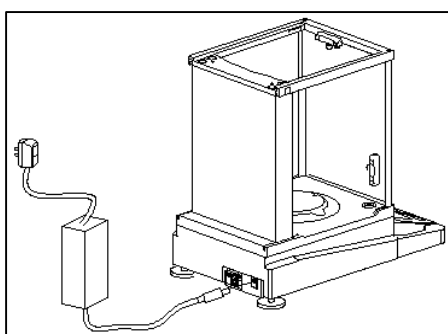
Through regulating the leveling foot, make the level bubble moving to the center of circle. Please adjust balance in the stable table, avoid the position of the large air flow, vibration and high rate temperature change.
(as shown)

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

2.3 Safety Guidelines/Power



- Do not use the balance equipped with standard AC power in the damage area.
- Please confirm the power adapter whether is match to your local volatge before getting through the power.
- The balance can only be used in dry enviroment.



Power connection:

→ Plug jack-plug of AC adapter in the socket of balance, another side connect the power.

→ Turn on the power, a buzzer emits beep. The balance could be used.

Notice: The balance should be warmed-up for 60 minutes in first time, to

achieve the working temperature, in order to obtain the accurate results.

2.4 Calibration

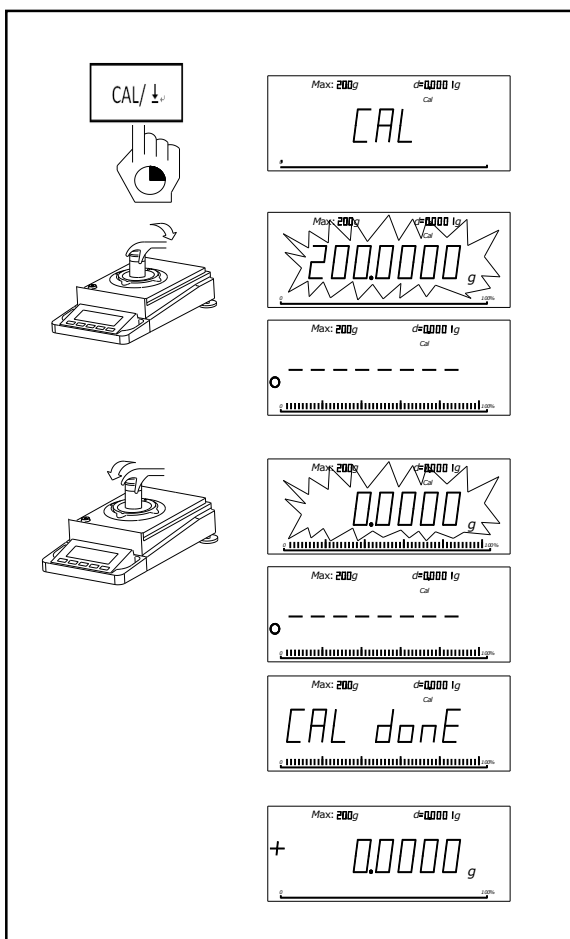
In order to obtain the accurate results, it is need to calibration according to the local acceleration of gravity.

Necessary situations to calibrate the balance:

- Before the first measurement
- After weighing for a period
- Weighing location changed

Should start the balance for 60 minutes before calibration to achieve the working temperature, in order to obtain the accurate.

External Calibrtaion



Clear weighting pan, perpare calibration weights.

Press **CAL/±** , untill display " *CAL* ".

The needed calibraion weight value will flicker on the display screen.

Put the right calibration weight on the scale pan. When it shows" *0.0000 g* ", remove weight.

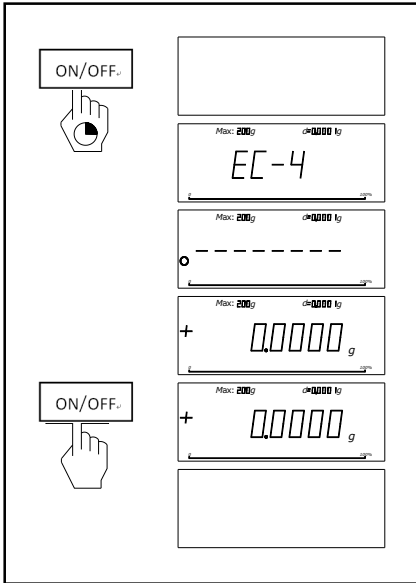
When it displays " *CAL done* " and emits prompting voice, the calibration is over. The balance return to the working situtaion. When shows " *0.0000 g* ", the balance is ready.

Hint:

Press **Zero/↑** short time, could interrupt calibration any time.

3 WEIGHING

3.1 Power On/Off



Power On

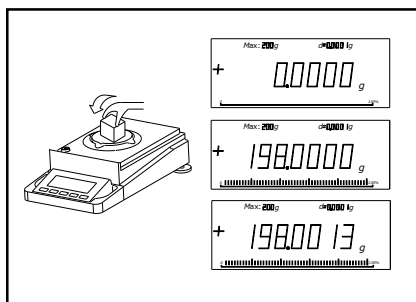
→ Press **ON/OFF**

A self-test will be performed, and then return to zero, now it can be used.

Power Off

→ Press **ON/OFF** for a while, then display screen power off.

3.2 Basic Weighing

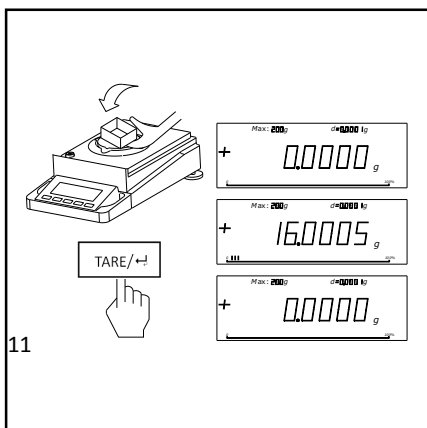


→ Put the sample on the weighing pan.

→ Wait until it is stable.

→ Read the data

3.3 Tare



→ Put vacant container on the weighing pan.

→ It shows weight of container.

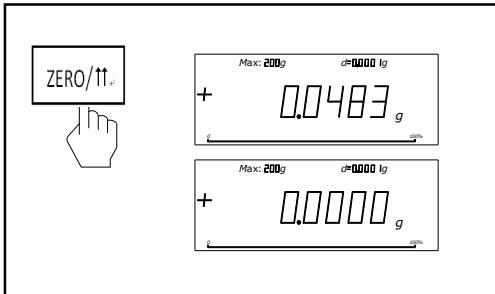
→ Press **Tare/←**

→ Put the sample on the container, it reads data of weight of sample.

If remove the container from balance, the data will be negative. The data will keep until power off or press **Tare/←**.

Notice: This function can not be used under zero or above the maximum weighing.

3.4 Zero



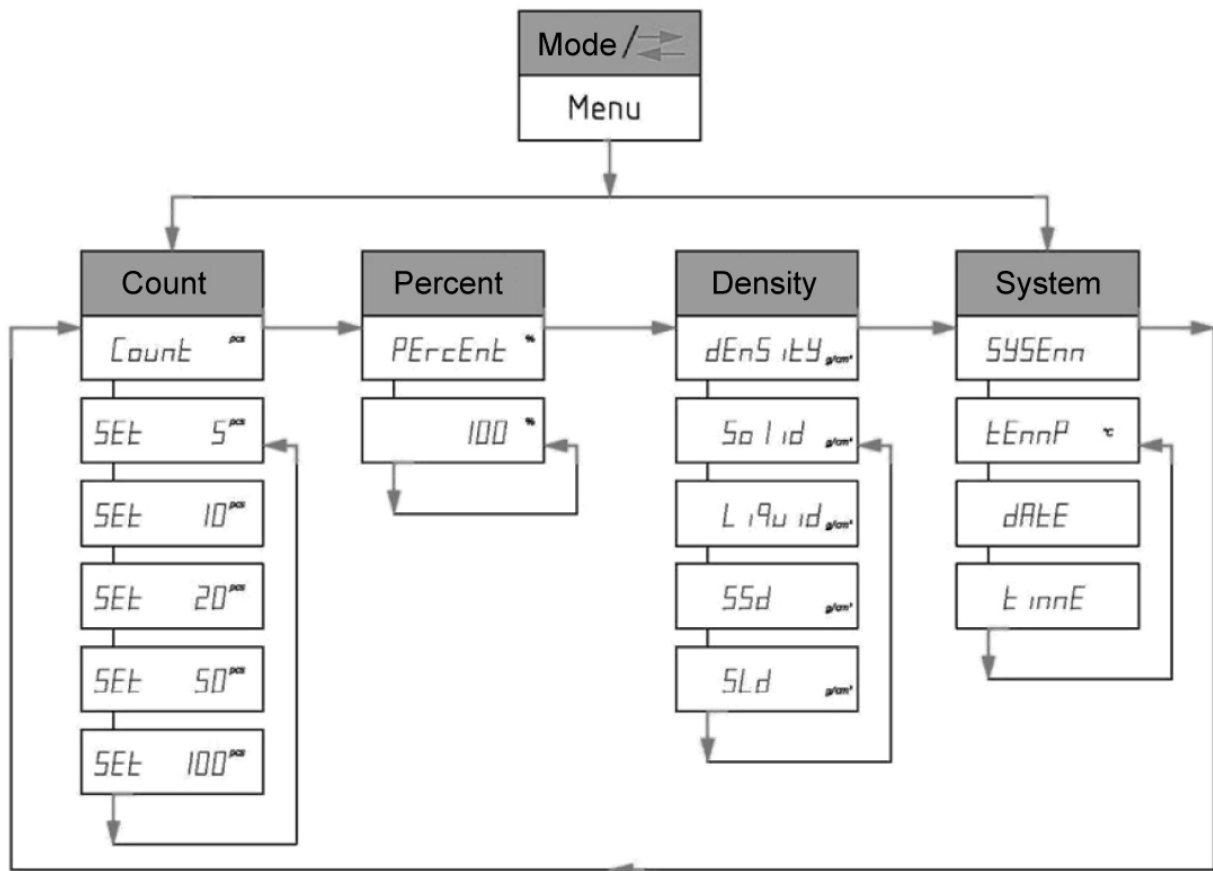
Press **ZERO/⇧** balance return to zero.

4 MENU

4.1 Overview

In the menu, you can change the weighing unit or choose other functions for different settings. It can be found in the 4.2.

Function menu



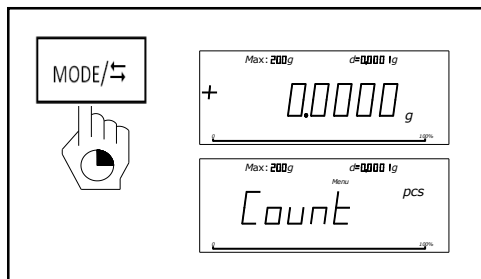
MODE/⇨

Into the function menu: Press

Menu Navigation: Press **MODE/↔** to switch menu items.

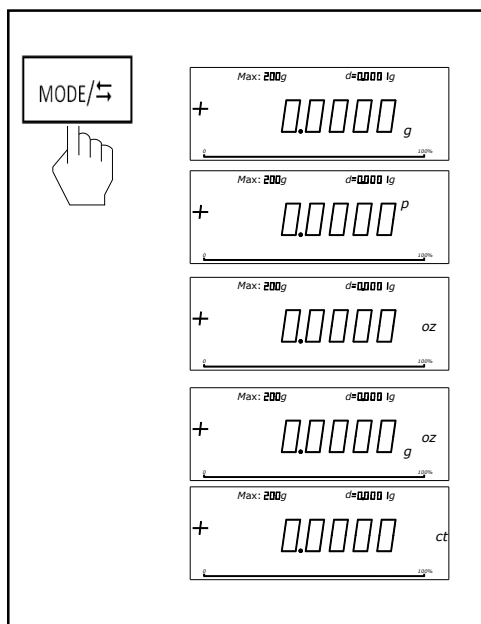
Exit menu: Press **ZERO/↑↑** for long time to return weighing mode, or press **ZERO/↑↑** for short time to return to last menu.

4.2 Function Menu Operation



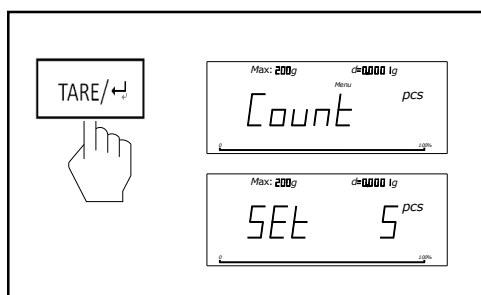
Enter the function mode.

In the mode of basic weighing, press **MODE/↔** for long time until screen displays "Count". It now in the piece mode.



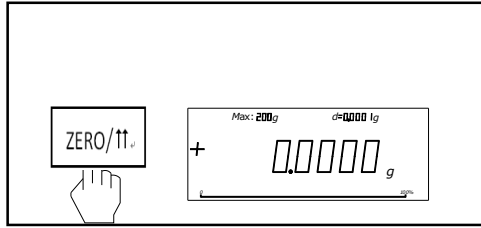
Function menu switch

Press **MODE/↔** for short time to switch different items



Function menu enter

Press **TARE/↵** for short time to into the next menu

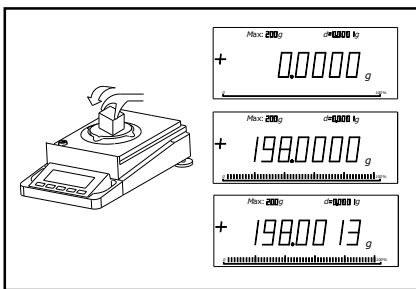


Return

Press **ZERO/⇧** for short time to return last menu.

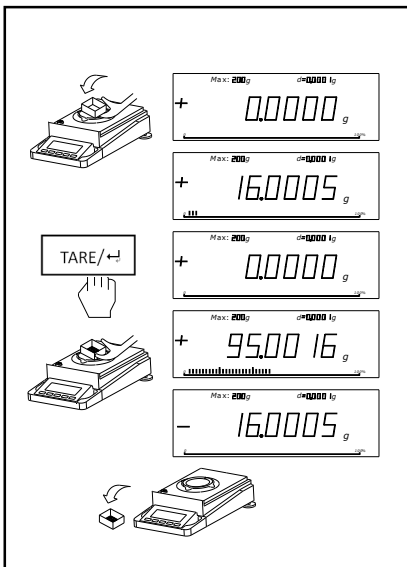
4.3 Basic Weighing Operation

1、 Basic Weighing



Press **ZERO/⇧** , to make the balance return to zero, the balance shows" **0.0000g** ", put the sample on the weighing pan. When it is stable, read the data.

2、 Weighing with Container

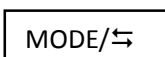
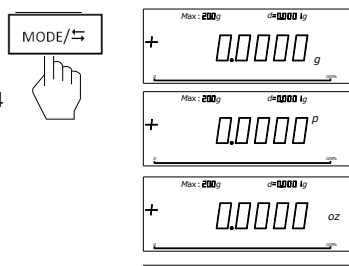


If it is necessary to weight the object (such as liquid) with a container (the weight of container will not be including), please follow the steps:

- Put the vacant container on the scale pan firstly.
- Press **TARE/⇧** , then it shows" **0.0000g** ".
- Then put the object for weighing into the container. Please read the data after the balance is stable.

3、 Unit Conversion

There are several units in the balance, including gram, pound, gold ounces,



ounces and carat. Press

to shift the units.

Their relationship as follows

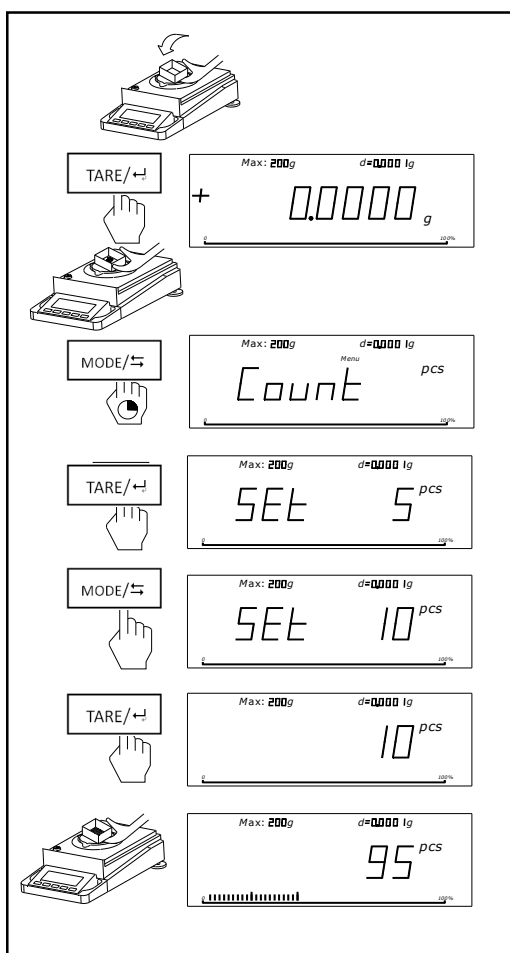
Pound	1P=453.59237g	Gold Ounces	1oz.g=31.1034768g
Ounces	1oz=28.349523125 g	Carat	1ct=0.2g

4.4 Function Weighing Operation

Press **MODE/↔** to switch piece count, percentage and system.

1、 Piece Count

The reference coefficient could be chose from 5pcs, 10pcs, 20pcs, 50pcs and 100pcs. The bigger the coefficient is, the higher precision the result is.



Steps (Such as 10pcs):

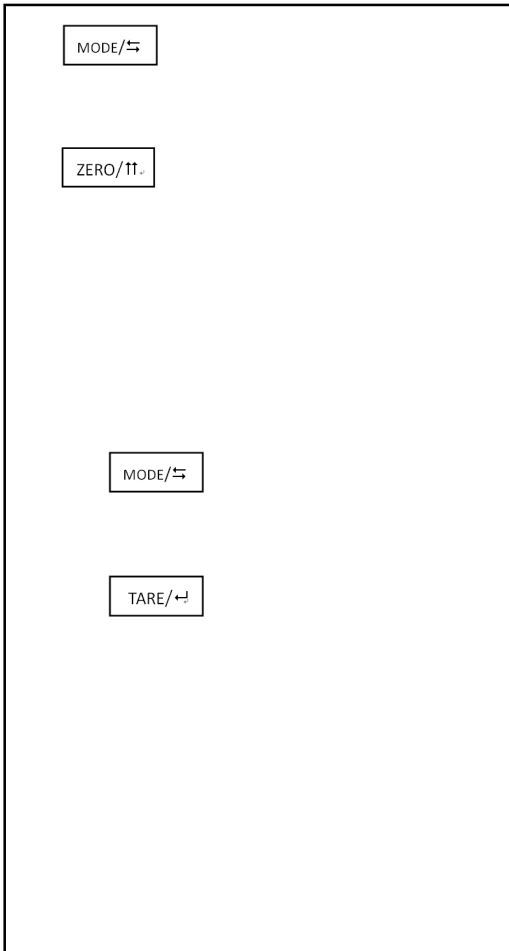
- Put container on the balance. (Quit this step if no container is needed.)
- Press **TARE/↔** , then balance shows " 0.0000 g ";
- Place 10 sample on the weighing pan.
- Press **MODE/↔** for long time, then balance shows "Count^{PCS}"
- Press **TARE/↔** enter into piece count mode.
- Press **MODE/↔** to choose reference coefficient.
- Press **TARE/↔** to switch to "10^{PCS}"
- Put the same quantity of sample
- Press **TARE/↔** for longtime to exit.

Notice: The minimum weight =10d (d: minimum scale) , Minimum weight of one piece not less than 1d. The sample could not be more than maximum weight.

Switching between piece and weight reading

- Add sample on the container, shows piece count
- Press TARE/↵, shows weight.
- Press TARE/↵ again, return to showing piece.

2、 Weighing in Percent

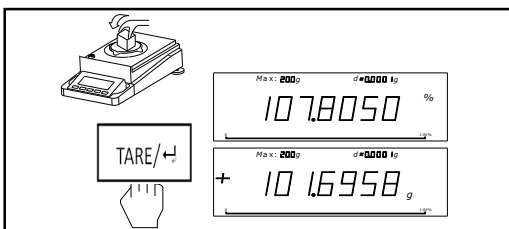


Steps:

- Put container on the balance. (Quit this step if no container is needed.)
- Press ZERO/↑, then balance shows " $\overline{00000}g$ ".
- Place sample on the weighing pan. \overline{Count}^{pcs}
- Press MODE/↵ until balance show \overline{Count}^{pcs} " $\overline{100}^{\%}$ ".
- Press MODE/↵ to switch " *PERCENT* % ".
- Press TARE/↵ twice, then shows " $\overline{100}^{\%}$ ".
- Remove reference sample, then balance shows " $\overline{0}^{\%}$ ".
- Put the tested sample on the weighing pan.
- Press ZERO/↑ for long time to exit.

Notice: Notice: The minimum weight =10d (d: minimum scale) ,. The sample could not be more than maximum weight.

Switching between percentage and weight reading



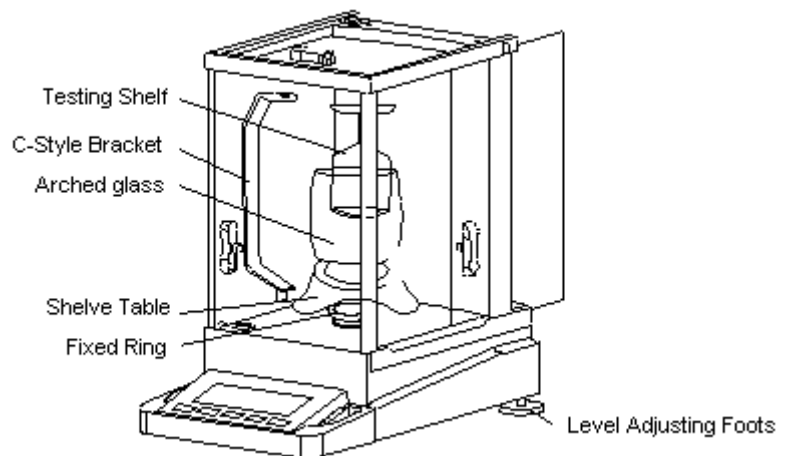
- Add sample on the container, shows percentage.
- Press TARE/↵, shows weight.
- Press TARE/↵ again, return to showing percentage.

4.5 Density Weighing* (The function is just for JS series)

1、 Density device installation

Adjust two level adjusting feet.

The fixed ring is mounted to the table top.



Install the C-Style on the core of
weighing pan, and it could
turn agilely.

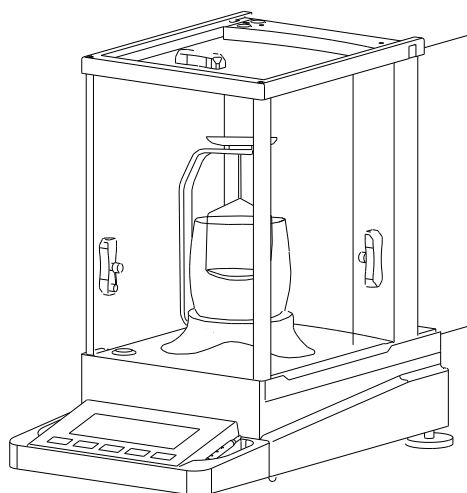
Put the shelve table on the working platform, the limited post fix



on the edge of fixed circle. Level rotate and the shelf table do not meet the C-style bracket.

Put arched glass on the shelf table.

Then put the testing shelf on the C-style bracket.

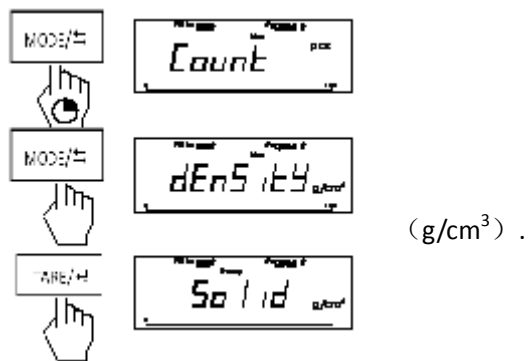


2. Density Mode Select

Long press **MODE/↵** into the mode menu

Short press **MODE/↵** to shift unit of density

Short press **TARE/⇐** into the density mode.

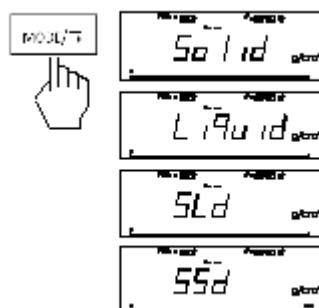


In the Density Mode, short press **MODE/↵** to shift:

Solid Density Measure → Liquid Density Measure

→ Standard Solid Set → Standard Liquid Set

Short press **TARE/⇐** to confirm.



3. Standard Material Select

When the material is soluble in water or the density of material is close to the density of water, user could choose appropriate standard media to measure. The system has set eight kinds of solid density and eight kinds of liquid density for chosen, also the system store the last choose, avoid repetitive operation. Factory preset material density in system as follows:

Table One: Standard Liquid Density (Windows Default: 4)

Table Two: Standard Liquid Density (Windows Default: 4)

Table one:

S-LD	Name	Standard Density Value (g/cm ³)
1	Gasoline	0.70
2	Alcohol	0.79
3	Kerosene	0.80
4	Water (20°C)	0.998229
5	Water (4°C)	1.0000
6	Honey	1.40
7	Bromine (0°C)	3.12
8	Mercury	13.60
9	User-defined	

Table two:

S-SD	Name	Standard Density Value (g/cm ³)
1	Wax	0.9
2	Aluminum	2.7
3	Copper	8.9
4	Steel	7.8597
5	Silver	10.5
6	Aluminum	11.3
7	Gold	19.3
8	Osmium	22.5
9	User-defined	

4.
Opera
tion
1)
Solid
Densit
y
Measu
re
1.

Balance display **SOLi d**, and then remove the object on the weighting pan and press

2. Balance display **SOLi d - 1**, until showing **0.0000 g** put the measure solid on the weighting pan. When the balance is table, press **TARE/↵**

3. Balance display **SOLi d - 2**, until showing **0.0000 g**, immerse the measure solid to the liquid. When the balance is stable, press **TARE/↵**.

4. Balance display **SOLi d - 3**, Showing the density of measure solid.

5. Short press TARE/↵, return to the step one.
6. In the process of measurement, press ZERO/⇧, to return to the step one directly.

2) Liquid Density Measure

1. Balance display L1 ρ_{LI} d, and remove the object on the weighing pan and basket, then short press TARE/↵
2. Balance display L1 ρ_{LI} d-1, until showing 0.0000g put the solid which have known the density on the weighing pan. When the balance is stable, press. TARE/↵
3. Balance display L1 ρ_{LI} d-2, until showing 0.0000g. Immerse the solid into the measure liquid. When balance is stable, press. TARE/↵
4. Balance display L1 ρ_{LI} d-3, showing the density of measure liquid.
5. Short press TARE/↵, return to the step one.
6. In the process of measurement, short press ZERO/⇧ to return to the step one directly.

3) Standard Solid Set

1. Balance display S-Sd XX, XX means the solid system selecting currently.
2. Short press MODE/⇧, to shift the kind of solid. Balance display S-Sd -XX the range of XX is from 01 to 09. Each number stands each kind of standard solid.
3. Short press TARE/↵, select current solid. Balance display S-Sd XX to return to the step one.

4) Standard Liquid Set

1. Balance display S-Ld XX, XX means the liquid system selecting currently.
2. Short press MODE/⇧, to shift the kind of liquid. Balance display S-Ld -XX, the range of XX is from 01 to 09. Each number stands each kind of standard liquid.
3. Short press TARE/↵, select current solid. Balance display S-Ld XX to return to the step one.

Notice: In the process of measurement, press TARE/↵ at any time to return to the mode of basic weighing.




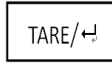
5) User-defined Standard Material

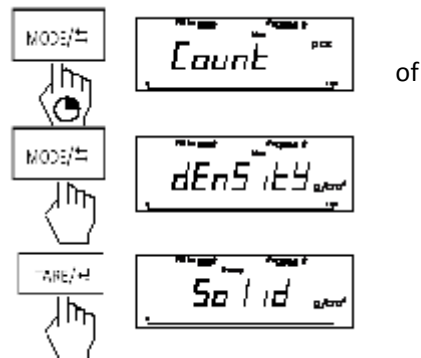
According to the method of test of solid density or liquid density to measure the density of a standard material. When balance display the density of material, long press CAL/↵


Then store the density of standard material to the corresponding table number 09

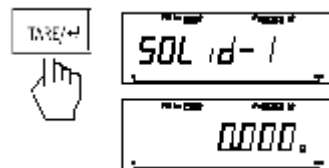
6) Example----Solid Density Measure (Example for JA3003J)

1. Start the Balance and warm-up. Then install the density device.

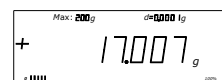
2. Long press  enter the mode of switching –mode, short press  to . Short press  enter the mode density of solid.



3. Short press  to start measure.



4. Put the determined object into the weighting pan




5. After weighting stably, press 



6. Put the determined object on the nacelle under the testing shelf.



Notice: Immerse the object into the liquid.

7. When balance is stable, shore press , balance display the density of measured solid.

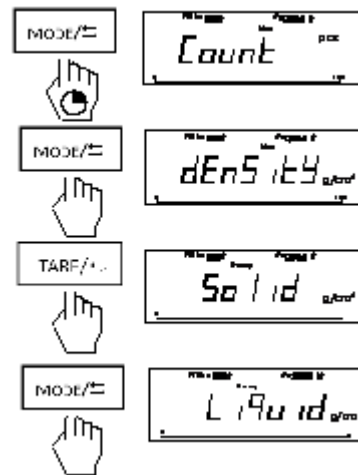


Notice: In order to ensure the accuracy of measurement, in the process of measurement, the test shelf do not touch the glass, the C-style bracket do not touch the shelf table.

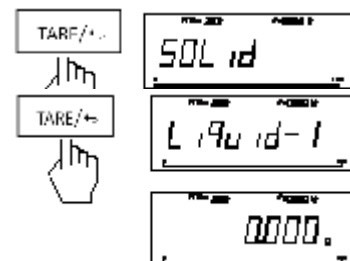
7). Example----Liquid Density Measure (Example for JA3003J)

1. Start the Balance and warm-up. Then install the density device.

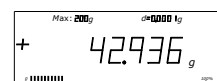
2. Long press **MODE/↵** enter the mode of switching –mode, short press **MODE/↵** enter **dEnS itY**. Short press **TARE/↵** enter the mode of density Short press **MODE/↵** to into the **LI Qu id**. Press **TARE/↵** enter the density of liquid.



3. Short press **TARE/↵** to start measure.
 4. Use the determined liquid into cup (about 2/3 of cup)
 Press **TARE/↵** to start measure.



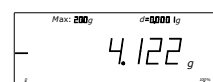
5. Put the standard plumb on the weighting pan



6. Press **TARE/↵** after stable.

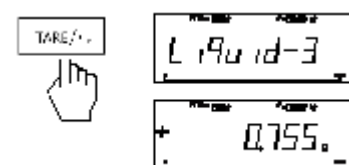


7. Put the standard plumb on the nacelle



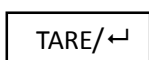
Notice: Immerse plumb into the liquid.

8. Press **TARE/↵** after stable. The balance display the density of the determined liquid.



4.6 System

This series balance can check temperature, data and time. Press **MODE/↵** untill shows "SYStEm", then



press key shortly to choose. Press to switch after enter system.

4.7 Date Communication

Press CAL/↕, could output the current reading of weight from RS232C port. There is another way to output reading date, shown at part seven.

5 CONFIGURING BALANCE

5.1 Operating the Configuring Keys

- Connet to the power. Keep pressing both the MODE/↵ and ON/OFF on the shutdown of balance.
- Balance full – screen displays and displays self-inspection sign, then display C ×

Page area
line area
word area
- Page area, line area and word area all display number from “ zero ” to a certain number automatic circulated
- The zero show in page, line or word area means that if now press TARE/↵ shortly, the balance will return to last menu.
- Nonzero digital in page or ine zrea, if press TARE/↵ shortly, enter to the next menu.
- Nonzero digital in word area, if press TARE/↵ shortly, select setting and showing “V” at same time.
- When balance displays C × × × V, the “V” means the new setting is valid.

Page area
line area
word area
- All functions are set on when produced. No need to set all the functions. You can set some of the functions to meet your special requirements.

5.2 Balance Function Setting List (* measn factory set)

	Page	Line	Word	Function	Optional	
C	1	1	1	Adapting the balance to ambient conditions	Very stable	
C	1	1	2		stable	*
C	1	1	3		Unstable	
C	1	1	4		Very unstable	
C	1	2	1	Ambient conditions Stability range	0.25 digit	
C	1	2	2		0.5 digit	
C	1	2	3		1 digit	*
C	1	2	4		2 digit	
C	1	2	5		4 digit	
C	1	2	6		8 digit	
C	1	2	7		16 digit	
C	1	2	8		32 digit	
C	1	2	9		64 digit	
C	1	3	1	Display	Display all decimal places	*
C	1	3	2		Not displaying the last decimal place	
C	1	3	3		Display the last decimal place stability	
C	1	3	4		Display all decimal places at stability	
C	1	4	1	Remove the container	Remove regardless of stability	
C	1	4	2		Remove at stability	*
C	1	5	1	Auto-zero function	Auto-zero on	*
C	1	5	2		Auto-zero off	
C	2	1	1	RS232C output	Print on request regardless of stability	
C	2	1	2		Print on request after stability	*
C	2	1	3		Auto print no stoppable regardless of stability	
C	2	1	4		Auto print not stoppable at stability	
C	2	2	1	Baud	1200	
C	2	2	2		2400	
C	2	2	3		4800	
C	2	2	4		9600	*
C	2	2	5		19200	

C	2	2	6		38400	
C	2	2	7		57600	
C	2	2	8		115200	
C	2	3	1	Data Bit	5	
C	2	3	2		6	
C	2	3	3		7	
C	2	3	4		8	*
C	2	4	1	Stop Bit	1	*
C	2	4	2		2	
C	2	5	1	Parity	无	*
C	2	5	2		Odd	
C	2	5	3		Even	
C	2	5	4		Retention for 1	
C	2	3	5		Retention for 0	
C	3	1	1		Version	
C	3	1	2		Linear correction	
C	3	1	3		Recovery factory set	

End

5.3 Balance Setting Function Explain

【Adapting the balance to ambient conditions】: Room to place the balance uses ordinary air-condition, generally select C113. If the air is large, should select C114.

【Ambient conditions Stability range】: If need to weighing quickly, can extend the display range. If the air is lager,should extend the range.

【Display】: Select your desired mode.

【Remove the container】: Please operate carefully if you select 141.

【Auto zero】: To do measurement ranging from a few to tens of digit around zero, please choose C152, and please pay attention to drifting of the zero digit, that might affect the precision of the measurement.

5.4 Balance Setting for Quick Weighing

【Adapting the balance to ambient conditions】: Select C111or C112, the speed is more fast.

5.5 Balance Setting for Strong Air Enviroment

Avoid strong air , select C114, C126, C127, C128, C129, C141 or C211.

5.6 Balance Setting for Linear Correction

Balance completely preheating, first to calibraion, then shutdown the balance. Restart the balance, then enter the setting mode. Choose linear correction function (C312)

“L1 nE 0” flickering means that there is nothing on the weighing pan. Press TARE/← shortly. When send out voice of “du” and stop flickering, it is means finishing correction. Then the balance auto turn to the next correcting point “ L1 nE 50 ”, it need to add 50g weight. Then press TARE/← shortly to ensure. After finishing all the correction point, the balance will display “ L1 nE OFF ”. Now the balance is still processing the data, please wait. Finishing data processing, the balance will shut down automatically.

5.7 Recover Factory Setting

If customer need to recovery the factory setting, please enter the balance setting mode when starting. Choose C313 to recover, then the balance will shut down automatically. Also it need to do linear correction.

6 TECHNICAL PARAMETERS, FUNCTION OPTIONS, PARTS OPTIONAL, DIMENSION

6.1 Technical Parameters

Standard Configuration

- Power: 100-240VAC、50/60Hz。
- Output: DC12V、600mA

Protection Class

- dustproof, waterproof
- Pollution prevention level: 2
- Installation category: 11

Raw Material

- Bass: pack alloy, painting
- Cover: plastic (ABS/PC)
- Weighing pan: stainless steel

Environment Requirement:

- Environment Conditions:
- Environment Temperature: ① 20°C ± 2.5°C fluctuations in temperature is not more than 1°C/h
- ② 20°C ± 7.5°C, fluctuations in temperature is not more than 5°C/h
- Relative Humidity: ① 50%~75%; ② 40%~80%
- Working Voltage: ① 124DC; ② 12VDC

- There is no vibration, air and magnetic to effect measurement.
- The preheating is at least 45 minutes, 1 hours is more better.

Parameter List

FA series

	FA1204	FA2204
Actual division value (d)	0.0001g	0.0001g
Verification scale interval (g)	0.001g	0.001g
Weighing Capacity (Max)	120g	220g
Repeatability (s)	0.0001g	0.0001g
Linearity (-/+)	0.0002g	0.0003g
Maximum Permissible Error (Mpe)	GB/T26497-2011	
Calibraion Weight	50g	50g
Type	Standard	
Dimension (W/D/H) (mm)	238×335×364	
Packing Measurement (W/D/H) (mm)	520×385×555	
Pan Size (mm)	φ 90	
Effective height above pan (mm)	220	
Net Weight (Gross Weight) kg	5.8 (8.2)	

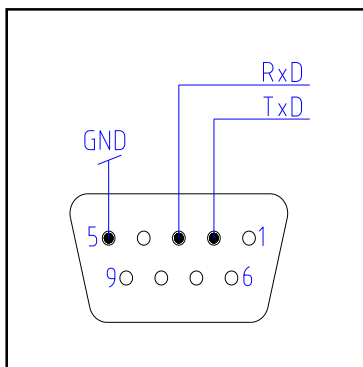
FB series

	FB124	FB224	FB223	FB323	FB423
Actual division value (g)	0.0001	0.0001	0.001	0.001	0.001
Weighing Capacity (g)	120	220	220	320	420
Repeatability (g)	0.0001	0.0001	0.001	0.001	0.001
Maximum Permissible Error (MPE)	GB/T26497-2011				
Calibraion Weight (g)	100	200	200	200	200
Type	Standard				
Dimension (W/D/H) (mm)	365×223×338				
Packing Measurement (W/D/H) (mm)	500×310×450				
Pan Size (mm)	φ 90				
Effective height above pan (mm)	150×165×200				
Net Weight (kg)	6				
Gross Weight (kg)	8				

JS series

	FA1104J	FA2104J	JA3003J	JA5003J
Actual division value (g)	0.0001	0.0001	0.001	0.001
Weighing Capacity (g)	110	210	300	500
Measured the air quality	≥0.25			
Measured by the buoyancy of water	< - 0.125			
Output	RS232C			
Maximum Permissible Error (MPE)	GB/T26497-2011			
Calibraion Weight (g)	100	200	200	500
Type	安装			
Dimension (W/D/H) (mm)	365×223×338			
Packing Measurement (W/D/H) (mm)	500×310×450			
Pan Size (mm)	φ 90			
Effective height above pan (mm)	150×165×200			
Net Weight (kg)	6			
Gross Weight (kg)	8			

6.2 RS232 Port

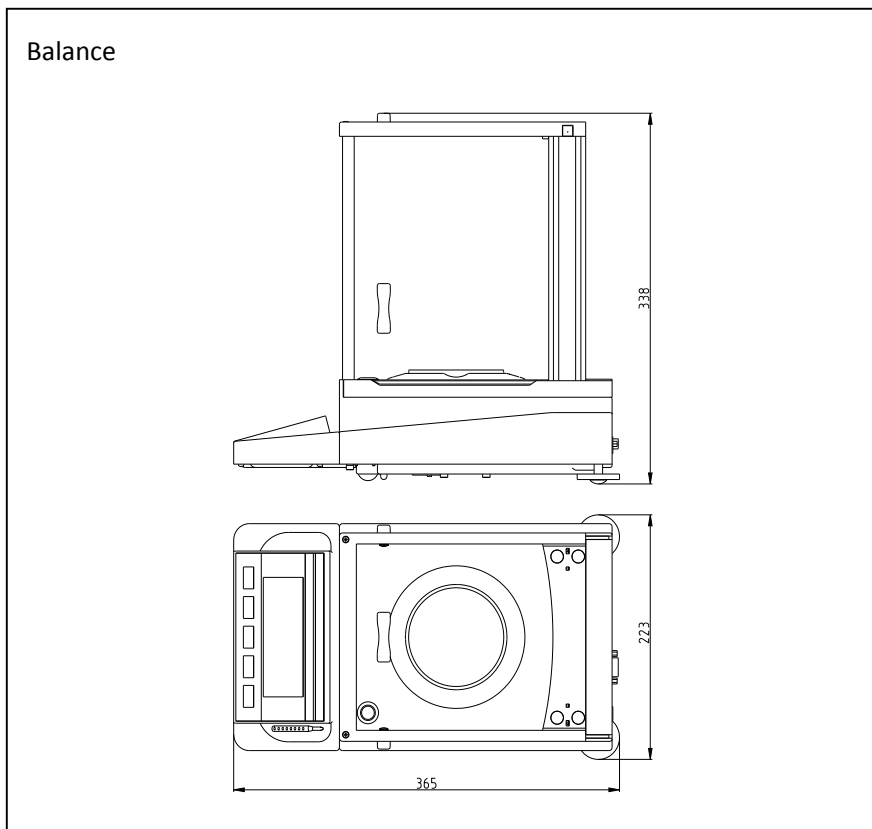


Each balance can be connected to equipment through RS232. (For example: RS232 series printer or Computer with 9 needles).

Connect to printer, parameter setting:

C2 2×、C2 3×、C2 4×、C2 5× then press TARE/ ↓ shortly.

6.3 Figure Dimension



7 APPENDIX

7.1 RS232 Port Date Communication

Connect to microcomputer setting as follow:

Microcomputer: (9 needle hole) ——Balance (9 needle hole)

2 (SI) ——3 (SO)

5 (GND) ——5 (GND)

- Port baud: 9600bps。
- Data format: 10 bit Start bit: (0) Data bit: 8 (ASCII code, low in the former) Stop bit (1)
- No Parity
- The data is for continuous output, does not need special reading command.

One string output format:

<u>1</u>	<u>2</u>	<u>3</u>	4	5	6	7	8	9	10	11	<u>12</u>	<u>13</u>	<u>14</u>	<u>15</u>	<u>16</u>
±	Vacant code										Weighting area	Vacant code	Unit area	Return	Line feed

3~11 weighing area, same to the balance. The byte no showing is vacant code.

13~14 unit area, may be not same to the balance.

Balance display	Output	
	13	14
g	g (lowercase)	vacant code
oz	o (lowercase)	z (lowercase)
oz.g	o (lowercase)	g (lowercase)
ct	c (lowercase)	t (lowercase)
p	p (lowercase)	vacant code
pcs	p (lowercase)	s (lowercase)
%	%	vacant code

7.2 Failure Information and Solutions

Recovery Processing: Please contact your sales department or us if your balance works wrongly.

Some problems can be solved immediately.

1) If the self-test is not correctly performed, will display as follow:

CPU broken, need to repair.

Keyboard error

Storage lost

A/D model is not started

2) Errors occurred during weighing

a. Weight is too heavy, exceed the max weight:

- The sample is too heavy, please decrease the weight.
- The balance may be calibrated incorrectly (using calibration weight lighter than the standard),

please re-calibrate your balance.

b. Weight is too light:

- The weighing pan is not in place.
- Check below the weighing pan, see if it is touching any objects.

c. Display over 9999999. Display capacity exceeded.

- If occurred at piece count, unload the balance (disappear), re-select the samples.

20,50,100 or more pieces of samples can be taken as 10 pieces of samples. Each time multiply the weight by the number (divide the number of the pieces you take by 10)

If occurred at weighing in percent, unload the balance (disappear), and reselect sample.

d. When gross value <- 0, no tare

- Press "tare" key, tare.
- Unplug the power adapter. Then plug in after 10 seconds.

e. Error occurs when receiving data through RS232C

- Press , if disappears, please check data communication.
- Unplug the power adapter. Then plug in after 10 seconds., recheck the set of data communication.

f. The weighting data do not changeable with weighting changing.

- Recheck the data communication.
- The balance may be calibrated incorrectly (using calibration weight heavier than the standard), please re-calibrate your balance.

3) When balance display , it means storage lost. Please press "MODE" & "TARE" to try to restore data.

4) After power connection, press , the balance display for long time in self-checking. It indicates an unstable weighing location.

- The glass door is improperly shut down.
- Check below the weighing pan, see if it is touching any objects.
- Strong airflow, please reset the balance.
- There is more than 20% object on the weighing pan.

7.3 Maintenance and Cleaning

Maintenance

The regular maintenance will extend the life of balance.

Cleaning

Please use a soft and non-fluffy cloth to clean the figure and pa. If necessary, can use neuter cleaner.

Explain

It is recommended that clean the pan and workbench after weighing chemicals.

7.4 Density Parameter Table

Table 1 (Sample size table)

Density ρ (g/cm ³)	Density effective number of three digital (Repeatability $\leq \pm 0.0001\text{g/cm}^3$)		Density effective number of three digital (Repeatability $\leq \pm 0.0001\text{g/cm}^3$)	
	JA3003J Sample Quality ($\geq \text{g}$)	JA5003J Sample Quality ($\geq \text{g}$)	FA1104J Sample Quality ($\geq \text{g}$)	FA2104J Sample Quality ($\geq \text{g}$)
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	1.620	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	20.0000	20.0000
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

Explanation: the solid density measurement, the sample of different quality, dimensional accuracy and repeatability is different. In order to improve the measurement accuracy, reduce the measuring error; please refer to the sample chart to choose the appropriate sample size

Table 2 (Commonly used material density table)

No	Material	Density	No	Material	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

Note: the value in the table is mostly approximation, for reference only.