

**BALANZAS 5210, 5220, 5230 y 5240
5210, 5220, 5230 and 5240 SERIES SCALES
BALANCES DE LA SÉRIE 5210, 5220, 5230 et 5240**



Este manual es parte inseparable del aparato por lo que debe estar disponible a todos los usuarios del equipo. Le recomendamos leer atentamente el presente manual y seguir rigurosamente los procedimientos de uso para obtener las máximas prestaciones y una mayor duración del mismo.

This manual should be available for all users of these equipments. To get the best results and a higher duration of this equipment it is advisable to read carefully this manual and follow the processes of use.

Ce manuel est une partie indissociable de l'appareil et doit être mis à la disposition de tous les utilisateurs de l'équipement. Nous vous recommandons de lire attentivement ce manuel et de suivre scrupuleusement les procédures d'utilisation afin d'obtenir des performances maximales et une plus longue durée de vie de l'appareil.

LANGUAGE INDEX

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1 PRODUCT INFORMATION

1.1 Product Brief

The Nahita Blue balances, 5210, 5220, 5230, 5240 Series, provide enhanced user experience with new premium features, flexibility for use in a wide range of environments and applications. These high-quality balances are designed and intended for use only in laboratories and indoor areas under normal atmospheric conditions. They were developed specifically for the exact determination of the mass of materials in liquid, paste, powder or solid form. They are widely used in industry, agriculture, commerce, schools, scientific research and other institutions.

1.2 Application Advice/Technical Support

Please contact local distributor or seller for application advice and technical support.

2 SAFETY INFORMATION

Personnel need to read and understand this user manual, including the safety instructions. Improper use or handling can, however, result in damage and/or injury. Any improper use or operation of the balance, i.e. that is not consistent with the instructions, will result in forfeiture of all claims under the manufacturer's warranty.

Danger of explosion!

Do not use this equipment in hazardous areas where explosive materials exist.

- Make sure that the voltage rating printed on the AC adaptor is identical to your local mains voltage.
- Do not operate the balance if its housing or AC adaptor including any of the connections are damaged. Immediately disconnect the damaged equipment from the power by pulling the plug to turn off the power.
- Do not expose the balance and the accessories to extreme temperatures, aggressive chemical vapors, moisture, shocks, vibration, or strong electro-magnetic fields. Observe the described conditions of operation.
- The operator shall be solely responsible for any modifications to the equipment and for connecting any cables or equipment not supplied by manufacturer. Please only use original accessories.
- If glass breaks, there is a risk of injury posed by cuts on glass edges.
- Lay the cables where they pose no risk of causing someone to trip.



Avoid direct sunlight



Avoid vibrations

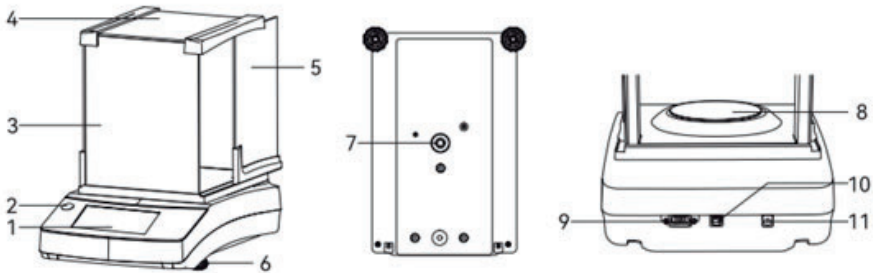


Avoid strong drafts

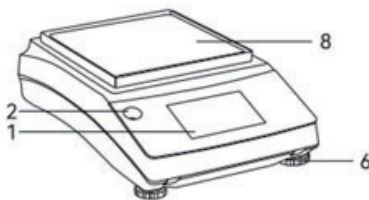


Avoid temperature fluctuations

3 GENERAL VIEW OF THE EQUIPMENT



- 1 – Touch screen
- 2 – Bubble level
- 3 – Front panel of draft shield
- 4 – Top door of draft shield
- 5 – Side door of draft shield (right/left)
- 6 – Leveling feet
- 7 – Below weighing
- 8 – Weighing pan
- 9 – RS232 interface
- 10 – USB-B port
- 11 – DC jack



4 USING THE BALANCE

4.1 Choosing a location

Choose a location that is not subject to the following negative influences:

- Heat (heater or direct sunlight)
- Drafts from open windows, AC systems, and doors
- Vibrations during weighing
- Heavy traffic areas (personnel)
- Excessive moisture
- Electromagnetic fields

4.2 Warm-up Time

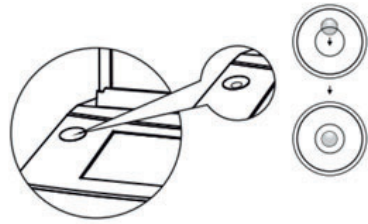
To ensure accurate results are delivered, the balance must warm up for at least 30 minutes after initial connection to the power supply. Only after this time the device reaches the required operating temperature.

IMPORTANT: When a verified balance of accuracy class I for use in legal metrology is connected to the mains power, it must warm up for at least one hour before operation.

4.3 Leveling the Balance

Balances are fitted with a conventional level indicator. This is located to the left of the display. The position of the air bubble in the indicator shows whether the balance is correctly leveled.

Rotate both leveling feet of the balance to move the air bubble so that it is centered in the circular marking.



Bubble right above – Rotate the two leveling feet clockwise

Bubble right below – Rotate the two leveling feet counterclockwise

Bubble left - Rotate the left leveling foot counterclockwise and the right leveling foot clockwise

Bubble right - Rotate the right leveling foot counterclockwise and the left leveling foot clockwise

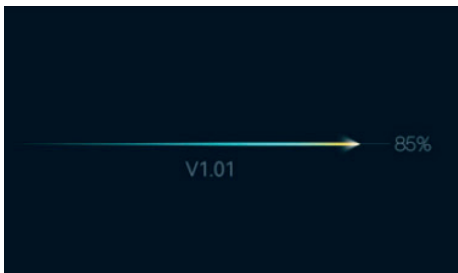
4.4 Switching the Balance On/Off

Check the voltage rating on the AC adapter's type plate. Make sure that the voltage rating printed on this unit matches the local supply voltage at the place of installation.

If the stated supply voltage does not comply with the local supply voltage or there is no suitable AC adapter available: Do not use the AC adapter, only use original AC adapters.



Balance when connected with power

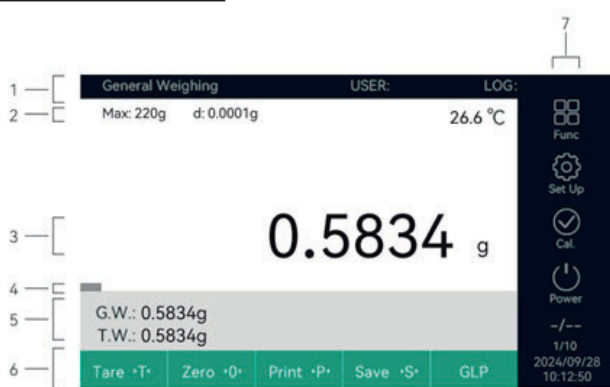


Standby display



The balance will show the weighing screen

4.5 Touch screen display



- 1 Top bar includes the information of selected weighing mode, user quick access, reading log.
- 2 Metrology line (information for capacity, readability and temperature).
- 3 Current measurement value.
- 4 Bar graph: scaled measurement value display (percentage weighing capacity).
- 5 Gross weight, tare weight and some calculation result.
- 6 Toolbar with currently available buttons: Tare, Zero, and eventually Print (data output), Save (data saving) and GLP printout.
- 7 Side bar with currently available buttons: Func (function application), Set up, Cal (calibration), Power, 1/10 (0.0001g and 0.00001g alternative), date and time setting area.

4.6 List of Applications

Press Function button



General Weighing

This is the standard application that appears when the balance is first switched on. Use this application to determine the weight of a sample within the device's specific weighing range.

Piece Counting

Use this application to determine the number of parts of approximately equal weight. The weight of a counted reference sample is calculated and then the objects with an unknown piece count are weighed. The balance displays the number of parts and the piece weight.

Dynamic Weighing (Animal Weighing)

It is used to weigh unstable samples. Use the balance to read the average value of unstable output during the weighing process.

Density Determination

Use this application to determine the density of solid and liquid samples using a density set based on the buoyancy method. The density is determined using Archimedes' Principle.

Percent Weighing

This application is used to determine the percentage share or the percentage difference of the sample related to a reference weight.

Accumulation

It is used to totalize weight values. You can save up different components weight and get total weight and average weight.

Unit conversion

Select different units for different weighing.

5 CALIBRATION AND ADJUSTMENT



To achieve the highest accuracy possible, regularly calibrate and adjust the balance.

- Daily after switching on the balance.
- Each time the balance is leveled.
- Each time ambient conditions have changed (temperature, humidity or air pressure).
- Each time the balance is set up at a new location or moved in its current location.

Tips: please run calibration function under "General Weighing" window.

5.1 Using an external calibration weight

An external calibration weight is required for this function. Please note the tolerance of the calibration weight being used.

- Make sure that the weighing pan is empty.
- Put the balance reading to zero by pressing the button 
- Press  button to access the calibration function.

Cal.

The calibration window appears.

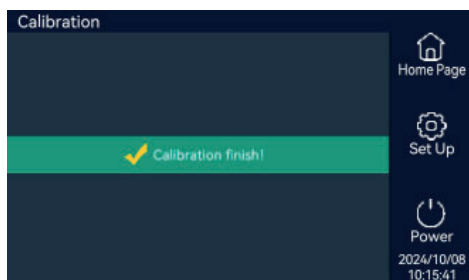
Click “External Calibration” to access the external calibration process.



According to the weight value appeared, put the corresponding weight on balance pan. For example, in a balance calibrated with a 100g weight, the following window appears.





When “Calibration finish!” appears, remove the weight on the pan, external calibration is completed.



5.2 Using an internal calibration weight

The balance is fitted with an internal calibration weight. This calibration weight is automatically placed on the balance by a motor during internal calibration and adjustment.

Ensure that the balance is stable, the draft shield is closed and the weighing pan is empty.

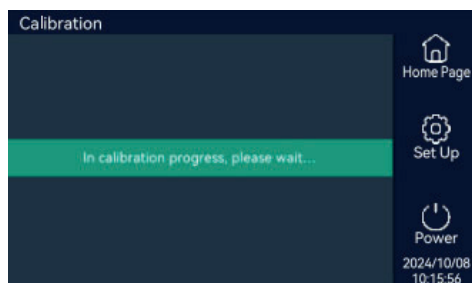
- Put the balance reading to zero by pressing the button 
- Press  button to access the calibration function.

The calibration window appears.

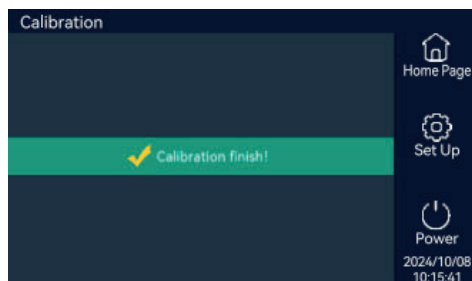
Click "Internal Calibration" to access the internal calibration process.



The balance will calibrate automatically, please wait for the calibration process to finish.




When "Calibration finish!" appears, internal calibration is completed.



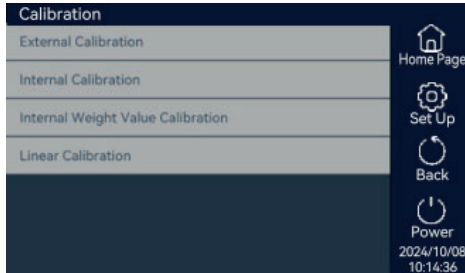
5.3 Internal weight value calibration

The purpose of re-writing internal weight value is to eliminate the deviation between user's weight and balance internal weight.

- Put the balance reading to zero by pressing the button Zero -0-
- Press  button to access the calibration function.

The calibration window appears.

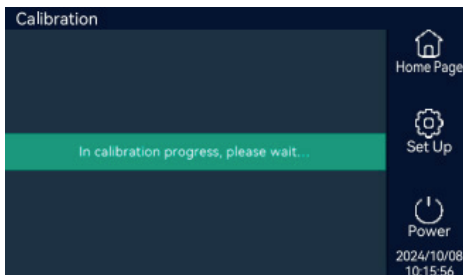
Click "Internal Weight Value Calibration" to access the internal weight value calibration process.



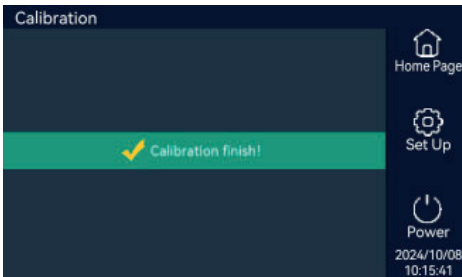
Put corresponding weight, e.g. if the screen shows 200.0000, put a 200g weight on the balance pan.



Wait for the process to be completed.



Remove the weight when the screen shows “Calibration finish!”.



5.4 Linear Calibration

Administrator's permission required. Please consult your local distributor for access.

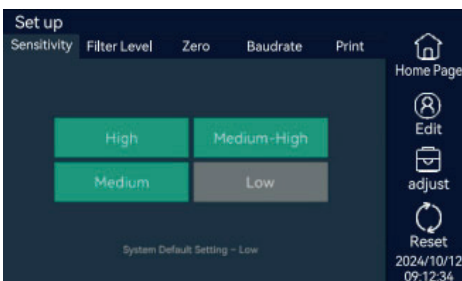
6 SYSTEM SETTINGS

6.1 Accessing the Menu of settings

Press “Set Up” button to access System settings.

The Menu of settings appears. You will see different settings: Sensitivity, Filter Level, Zero (zero tracking), Baud rate, Print. You can set the balance by touching the different settings.

System Default Setting – Low

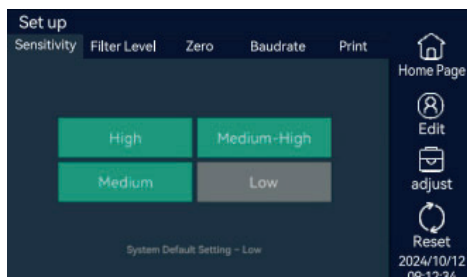


6.2 Change Settings

6.2.1 Sensitivity

Press “Sensitivity” to set the balance sensitivity; there are four different choices: High, Medium-High, Medium, Low
Touch the selected option to get the corresponding setting.

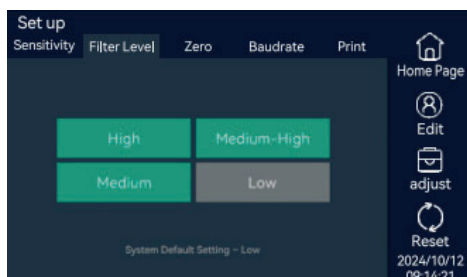
System Default Setting - Low



6.2.2 Filter Level

Press “Filter Level” to set the balance speed; there are four different choices: High, Medium-High, Medium, Low
Touch the selected option to get the corresponding setting.

System Default Setting – Low

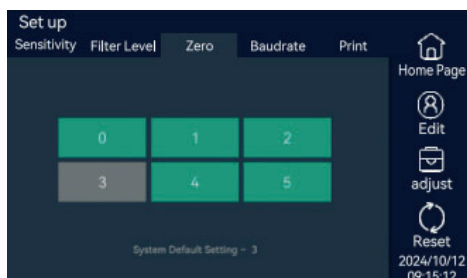


6.2.3 Zero

Press “Zero” to set the balance Zero tracking; there are six different choices:

- 0 - disable
- 1 - within 1 graduation
- 2 - within 2 graduations
- 3 - within 3 graduations
- 4 - within 4 graduations
- 5 - within 5 graduations

System Default Setting – 3



6.2.4 Baud rate

Press “Baud rate” to set the balance Baud rate; there are four different values: 1200, 2400, 4800, 9600

System Default Setting – 1200



6.2.5 Print

Press “Print” to set the balance print method; there are four print methods:

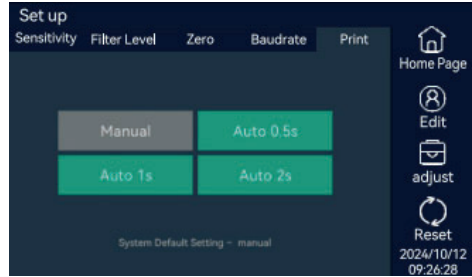
Manual - manual print

Auto 0.5s - auto print 0.5s interval

Auto 1s - auto print 1s interval

Auto 2s - auto print 2s interval

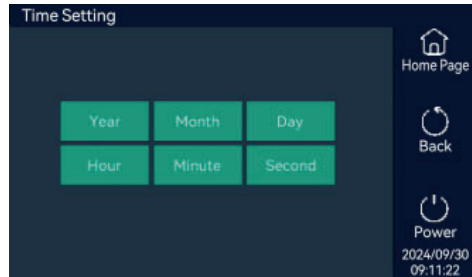
System Default Setting – manual



6.2.6 Date and Time

Press the area of date and time in the bottom right corner. The balance will enter date and time setting.

Select Year, Month, Day, Hour, Minute, Second to set up the date and time.

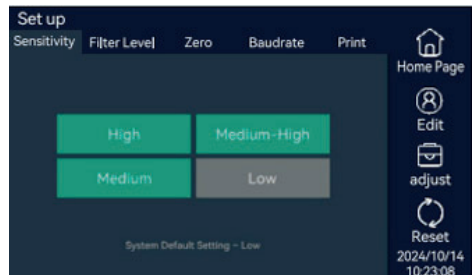


System Default Settings: please do not change the System Default Settings without consulting your distributor.

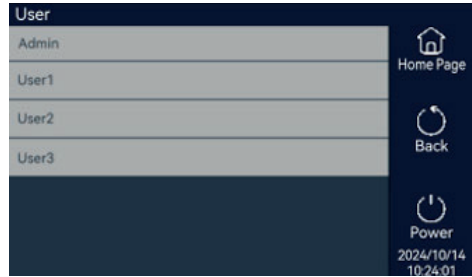
6.2.7 User setting

User permission setting can be found here.

Press “Edit” in set up window.



The balance will enter User setting.

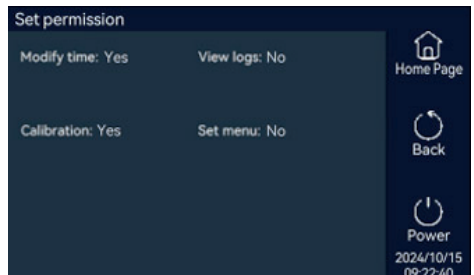
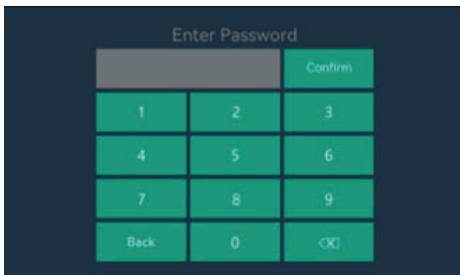


The administrator has all permission. Press “Admin” to set the administrator password. Set new password and confirm.



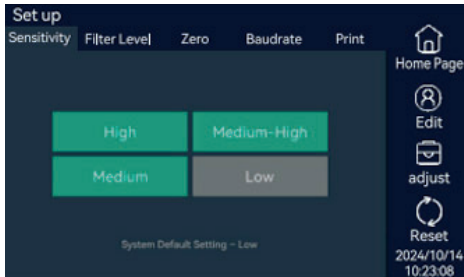
Please set the administrator password first when you use the balance.

Press User 1, 2, 3, to enter Password and Permission setting.

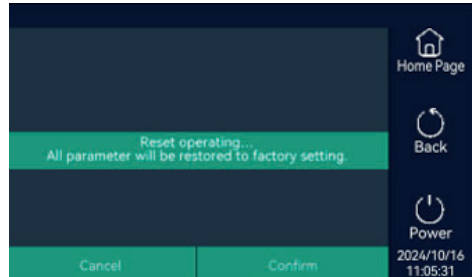


Press “Yes” or “No” to set user permission:
Modify time, Calibration, View logs, Set menu.

6.2.8 Restore factory settings



Press “Reset” in set up window.



The balance prompts that the factory settings can be restored. Press the “Confirm” button and all system parameters of the balance will be restored to their initial state. If you need to restore the factory settings, please consult your local distributor.

7 WEIGHING

7.1 General weighing

Use this mode to determine the weight of a sample within the balance's specific weighing range (see “Specifications”).

Place an empty container on the balance pan. Select “T” to tare the balance.

- The balance displays zero again after being tared.
- The tared value is subtracted from the overall weighing range of the balance.
- The balance can be tared throughout its entire weighing range.

Remove the load from the balance.

- Select “O” to Zero the balance.

All weight values are measured based on this zero point (zeroing within $\pm 4\%$ of the weighing range around the zero point).

Place the sample on the weighing pan.

- The measured value can be read as soon as the weight value stops changing, and the unit is displayed. Balance stability is displayed as soon as the weighing result is constant within a defined range. Until stability is reached, the measured value is shown in gray on the display and only turns black once the balance is deemed stable.

g — g



7.2 Density determination

The density of solids can be determined using the buoyancy method. The density is determined using Archimedes' Principle. The upward buoyant force exerted on a body immersed in a fluid is equal to the weight of the fluid the body displaces.

Calculation basis for density determination:

Density determination using the buoyancy method is based on the following formula:

$$\text{Buoyancy: } \rho = (W_a / (W_a - W_1)) * \rho_1$$

ρ Density of sample

ρ_1 Density of buoyancy liquid

W_a Weight of sample in air

W_1 Weight of sample in liquid

A density determination kit is required for this weighing mode:

Mount the density determination kit on the balance and prepare it as described in the kit instructions.

1. Attach the sample holder to the frame of the density determination kit.
2. Fill the beaker in the density determination kit with the buoyancy liquid. Ensure that the sample holder is sufficiently immersed in the liquid to hold the sample later.
3. After fixing the density kit, press "Tare".

Press Function button



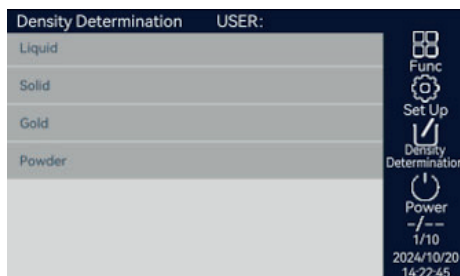
Select "Density Determination". The density application appears.



Press "Density Determination" symbol in side bar.

Select the form of object (solid).

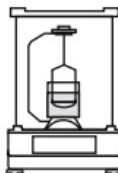
Gold (K) and Powder density should be customized.



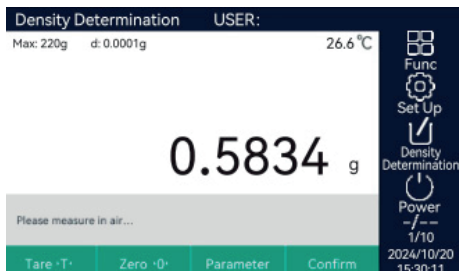
Select “Parameter” to set the density of the buoyancy liquid (e.g. water 1.0) and confirm, screen back to density weighing.



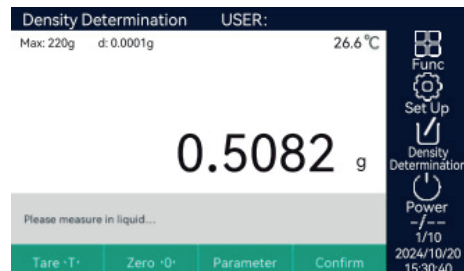
Place the sample on the balance pan above on the frame of the density determination kit, screen shows the weight in air.



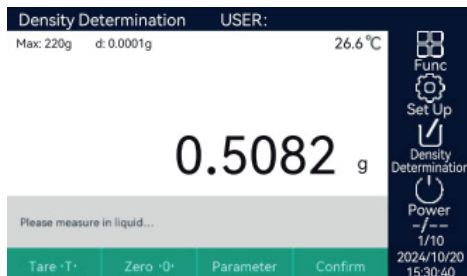
Press “Confirm” to keep the data and switch to next step.



Display shows “Please measure in liquid”.



Remove the sample from the weighing pan and place it in the sample holder of the density determination kit using forceps (ensure that the sample is completely submerged in the buoyancy liquid and that no air bubbles have formed on the sample).



The display shows the step “Weight in medium”. Press “Confirm”.

The balance calculates the density of the sample and displays the value.

W1: 0.5834g

W2: 0.5082g



Print Print the result

Exit Exit density determination application

7.3 Piece counting

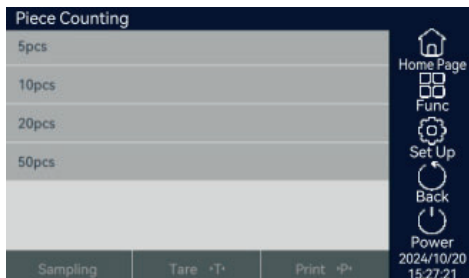
Use this application to determine the number of parts of approximately equal weight. The weight of a counted reference sample is calculated and then the objects with an unknown piece count are weighed. The balance displays the number of parts and the piece average weight.



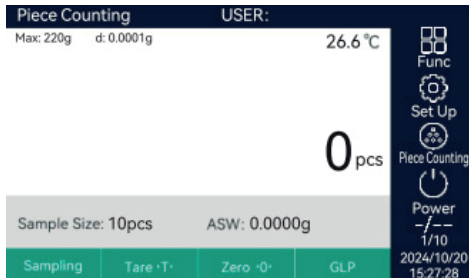
Press Function button
Select “Piece Counting”. The counting application appears.

Press “Piece Counting” symbol in side bar.
Chose sample size (e.g. 10 pcs). Select 10 pcs as reference sample quantity.

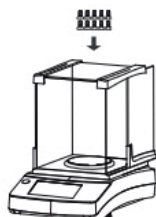




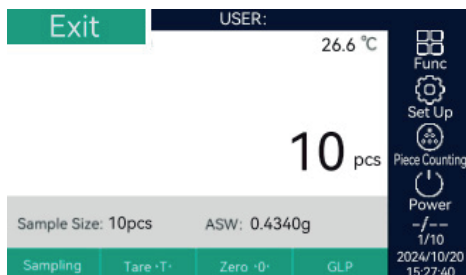
Back to weighing display.
 Sample size: 10 pcs
 ASW (Average Sample Weight): 0.0000g



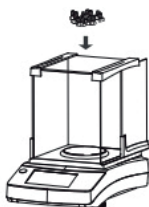
Select "0" to zero the balance if necessary.
 Place the set number of reference samples
 on the balance pan.



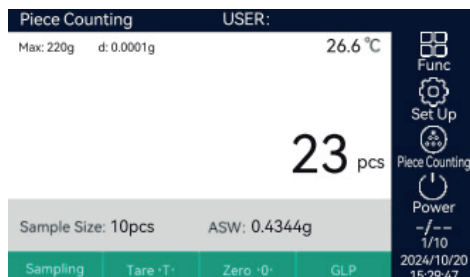
Select "Sampling". Display shows 10 pcs.
 Sample size: 10 pcs. ASW: 0.4340g.



Place the sample with the unknown piece count
 on the balance pan.



The piece count is calculated and displayed.

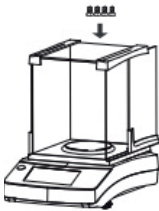


Select GLP to print as GLP format.

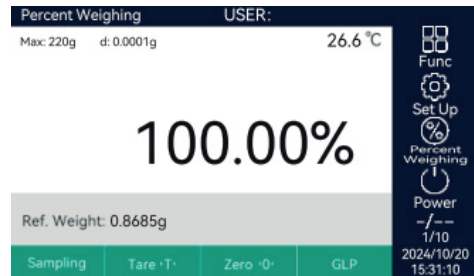
7.4 Percent weighing

This application is used to determine the percentage share or the percentage difference of the sample related to a reference weight.

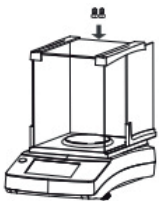
Press Function button  Func
Select "Percent Weighing". The percent weighing application appears.



Select "0" to zero the balance if necessary. Place the reference sample on the balance pan and press "Sampling".



The display shows 100.00%.



Remove the reference sample and place the unknown sample on the weighing pan.



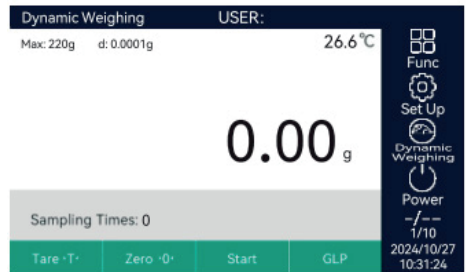
The balance shows the percentage of the sample based on the reference sample.

7.5 Dynamic weighing

It is used to weigh unstable samples. Use the balance to read the average value of unstable output during the weighing process.



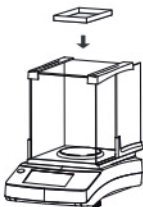
Press Function button
Select "Dynamic Weighing". The dynamic weighing application appears.
Press "Dynamic Weighing" symbol in side bar.



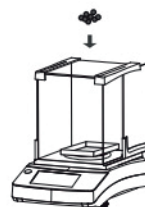
Select how many times you want to test (e.g. 10 times).



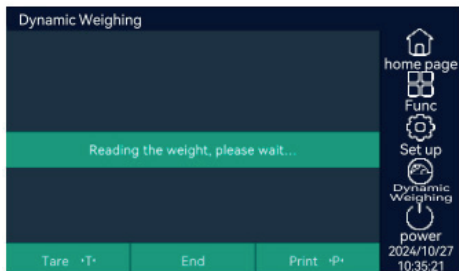
Back to weighing display.
Sampling times: 10



Place a container on the weighing pan.
Tare the balance by pressing T button.
Place the reference dynamic sample in the container.



Press "Start" to read the weight 10 times;
you can press "End" to stop the process.



Display shows final reference sample weight after reading 10 times.



Print the result

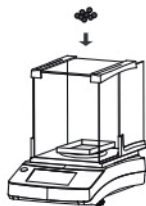
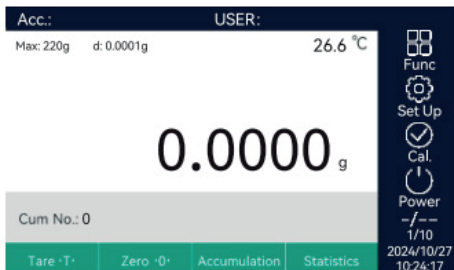
Exit dynamic weighing application

7.6 Accumulation

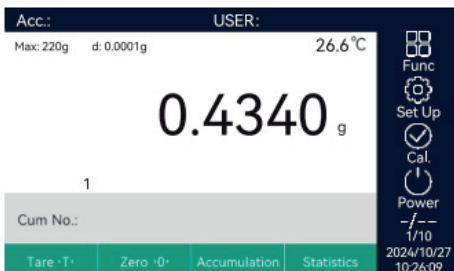
It is used to totalize weight values. You can save up different components weight and get total weight and average weight. Max you can save 99 components.



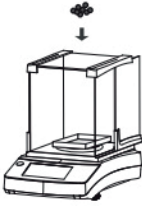
Press Function button
Select "Accumulation". The accumulation application appears.
Select "0" to zero the balance if necessary.



Place the first component on the balance pan.



Press "Accumulation" to save the first component weight. Display shows 0.4340g.



Remove the first component and tare the balance. Place the second component on the weighing pan.

Continue this procedure with additional components.

To view the statistical data, press the "Statistics" button on the display.

Display shows:

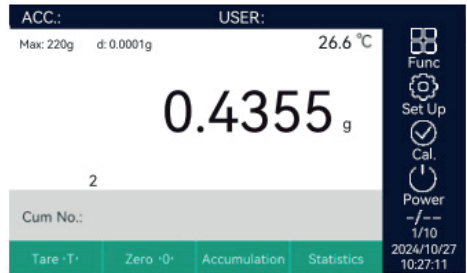
Sample Size: 5

Maximum Value: 0.4355g

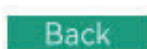
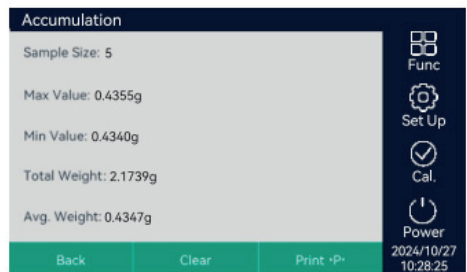
Minimum Value: 0.4340g

Total Weight: 2.1739g

Average Weight: 0.4347g



Press "Accumulation" to save the second component weight. Display shows 0.4355g.



To switch back to see last display



To clear all data



Print the result

7.7 Unit conversion

Select different units for different weighing.



Press Function button
Select "Unit Conversion". Press to change the unit.



8 LOG

Weighing record and calibration record can be saved.

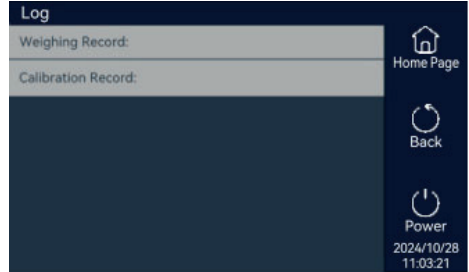
Select LOG on top bar.

There are two options:

Weighing Record

Calibration Record

Select “Weighing Record” to view the weighing data.



LOG		Back
2025/01/10 13:23:26	19.99998g	
2025/01/10 13:23:34	21.79578g	
2025/01/10 13:23:34	21.79577g	
2025/01/10 13:23:34	21.79577g	
2025/01/10 13:23:35	21.79577g	
2025/01/10 13:23:36	21.79577g	
2025/01/10 13:23:36	21.79577g	
2025/01/10 13:23:36	21.79577g	

← PgUp PgDn →

Calibration Record			Back
Calibration time:	Deviation:	Operator:	
2024/11/15 15:34:07	0.0001g	00	
2024/11/15 15:36:15	0.0001g	00	
2024/11/15 15:39:45	0.0001g	00	
2024/11/15 14:22:12	0.0003g	00	
2024/11/15 15:12:26	0.0002g	00	
2024/11/15 15:19:06	0.0002g	00	
2024/11/15 15:26:15	0.0001g	00	
2024/11/15 15:28:42	0.0001g	00	

Select “Calibration Record” to view the calibration data.

9 GLP- COMPLIANT PRINTOUT

The balance information, ID, current date and weighing result can be printed in GLP header, the signature will be printed in GLP footer.

```

GLP header
- Date and Time:
- Balance ID:
- Balance Name:
-User Name:
- Count Quantity:
- Gross:
- Net:
- Tare:
- AwP:
- Sample Size:

GLP footer
- Signature:
- Verified By:
    
```

10 RS232C PORT SPECIFICATION

Balance can be connected with RS232 interface.

Balance (9 pins) PC/Printer (9 pins)

RXD (Input) 2 ----- 2

TXD (Output) 3 ----- 3

GND (Ground) 5 ----- 5

- The baudrate by default is 1200 bps (see Baudrate setting).
- Data format: 10 bits, 0 as start bit, 1 as stop bit, 8 digits (ASCII code).
- No odd and even numbers adjusting.
- Data output: by default is continuous mode. The data output mode can be changed into press output, timing output and continuous output (see Data output setting).

- Output data format

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Type or data	Data	Data	Data	Data	Data or dot	Data or dot	Data	Data	Data	Unit.	Unit.	Unit.	Returr	Line feed

11 ERROR MESSAGES IN APPLICATIONS

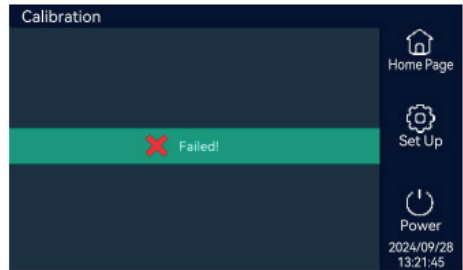
Overload protection

The object weight exceed the balance Max capacity, Remove the object, select a weighing object within the range.



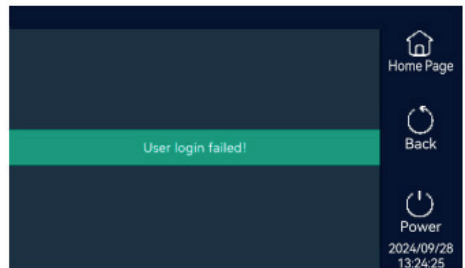
Calibration failed

When display prompt to put weight, but not put corresponding weight.
Calibrate again and put corresponding weight.



User login failed

Wrong password entered.
Enter correct password.



Tare failed

Display shows "Press 0".
Balance pan without load, press Zero.



Zero failed

Display shows "Press T".
The load exceed weighing range around the zero point (>4%).



12 SPECIFICATIONS

12.1 Components

Balance – 1
AC/DC adapter – 1

Calibration weight – 1
Glove – 1

Instruction Manual – 1

12.2 Specifications of models

5210 Series

Code (external calibration)	KBC020	KBC021	KBC022
Capacity	1000 g	2000 g	5000 g
Readability	0,01 g		
Stabilisation time	2 s		
Preheating time	30-60 min		
Units	g/oz/ct/mg		
Minimum weight	0,2 g	0,5 g	
Repeatability	±0,02 g		
Linearity	±0,02 g		
Interface	RS232/USB		
Weighing pan size	170 x 170 mm		
Approximate weight	5 kg		
Power supply	110-240 VCA, 50/60 Hz		

5220 Series

Code (external calibration)	KBD029	KBD031	KBD033	KBD035
Code (internal calibration)	KBD030	KBD032	KBD034	KBD036
Capacity	220 g	320 g	620 g	1000 g
Readability	1 mg			
Stabilisation time	2 s			
Preheating time	30-60 min			
Units	g/oz/ct/mg			
Minimum weight	20 mg			
Repeatability	±1 mg			
Linearity	±2 mg			
Interface	RS232/USB			
Weighing pan size	Ø 90 mm			Ø 110 mm
Approximate weight	5,5 kg			
Power supply	110-240 VCA, 50/60 Hz			

5230 Series

Code (external calibration)	KBF022	KBF024	KBF026
Code (internal calibration)	KBF023	KBF025	KBF027
Capacity	120 g	220 g	320 g
Readability	0,1 g		
Stabilisation time	1,5 s		2,5 s
Preheating time	30-60 min		
Units	g/oz/ct/mg		
Minimum weight	10 mg		
Repeatability	±0,1 mg		±0,2 mg
Linearity	±0,2 mg		±0,3 mg
Interface	RS232/USB		
Weighing pan size	Ø 90 mm		
Approximate weight	5,5 kg		
Power supply	110-240 VCA, 50/60 Hz		

5240 Series

Code (external calibration)	KBK003	KBK005	KBK007
Code (internal calibration)	KBK004	KBK006	KBK008
Capacity	31 g/100 g	51 g/200 g	81 g/200 g
Readability	0,01 mg/0,1 mg		
Stabilisation time	2 s		
Preheating time	30-60 min		
Units	g/oz/ct/mg		
Minimum weight	1 mg/10 mg		
Repeatability	±0,03 mg/±0,1 mg		
Linearity	±0,05 mg/±0,2 mg		
Interface	RS232/USB		
Weighing pan size	Ø 90 mm		
Approximate weight	5,5 kg		
Power supply	110-240 VCA, 50/60 Hz		