



**Sensor
Analytical Balance
LX43SAB**

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1. Safety Measures

- 1) Preheat the instrument as per the rule before using it.
- 2) The total mass of the tare and weighing substance should not exceed the limitation of maximum capacity.
- 3) If the weighing is inaccurate, calibrate the balance by weight.
- 4) If users take out the round pan, turn it around clockwise and take it out.
- 5) Do not put out upward hard, to avoid the damage of the load cell.
- 6) Do not keep the instrument in direct sunlight or high temperature.
- 7) Do not keep any corrosive or hazardous substances near the instrument.

2. Introduction

It is a high-speed analytical balance designed with a new-generation single-chip microcomputer control. Built-in superior wireless sensor, no buttons, waved at top of the sensor window can be controlled easily peeled. Equipped with large backlit LCD display, side concave mask decoration, and flat matt finish. Its performance is stable and reliable. Adaptable to both, AC and DC power supply.

3. Features

- Externally calibrated weight
- Large LCD display
- High-precision load cell sensor
- Adaptable to AC and DC power supply
- Aluminum cast base plate is used for its low weight

4. Specifications

Model	LX43SAB
Weighing capacity	600 g
Minimum weighing	0.01 g
Pan size	130 mm
Operational temperature	10 °C - 30 °C
Calibration system	Externally calibrated weight
Interface	RS232
Display	LCD
Bottom thickness of weighing plate	1.2 mm
Power	220 V / 110 V
Outer dimensions	340 × 210 × 90 mm
Packing dimensions	380 x 220 x 250 mm
Gross weight	4 kg

5. Applications

Used for sample/standard preparation, formulation, differential weighing, density determination, interval weighing, and pipette routine testing.

6. Operations

6.1 Operation preparation

Put the balance on a stable, flat place, to avoid shake, static electricity, sunlight, airflow, and electromagnetic wave interference.

6.2 Starting up

- 1) Plug in one end of the power adapter or power line to the balance input, and another end Connecting the AC power supply.

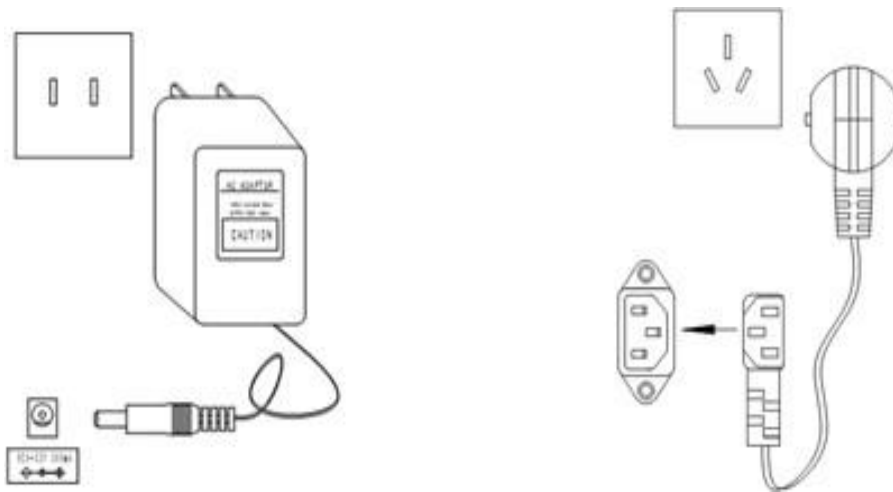


Figure-1

- 2) Turn **ON** the power.



Figure-2

- 3) Taking 300g/10mg for example, after turning on the balance, it will display in order.

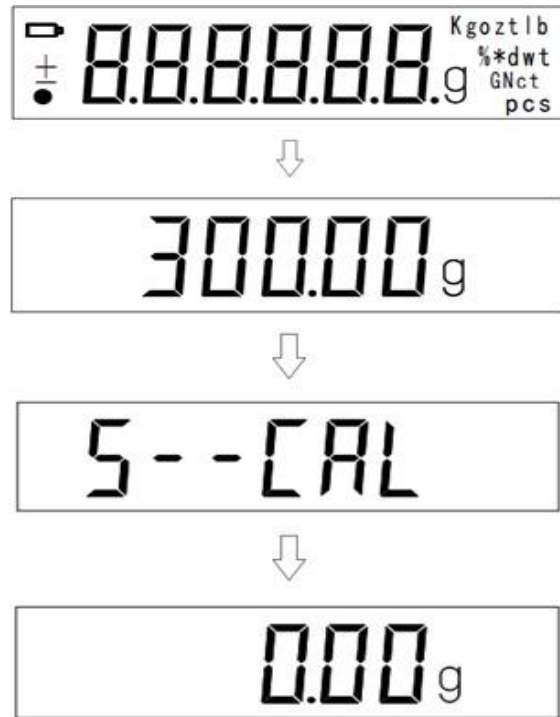


Figure-3

6.3 Calibration

Turn ON the power preheat it for half an hour then start calibration it will be more accurate.

1) Calibration operation

Take 300g/10mg for example

- Press “ CAL ” (calibration) “for 3 seconds. when no subject on the balance.
- It enters the calibration status, it appears “ CAL-d2”, then “ 200.00g “ flashing appears.
- Put 200g weight on, and it displays “ - - CAL- “, and then “ 200.00g” on display, which means entering the weighing status.
- If the weighing is not accurate, then repeat the above-mentioned calibration steps.

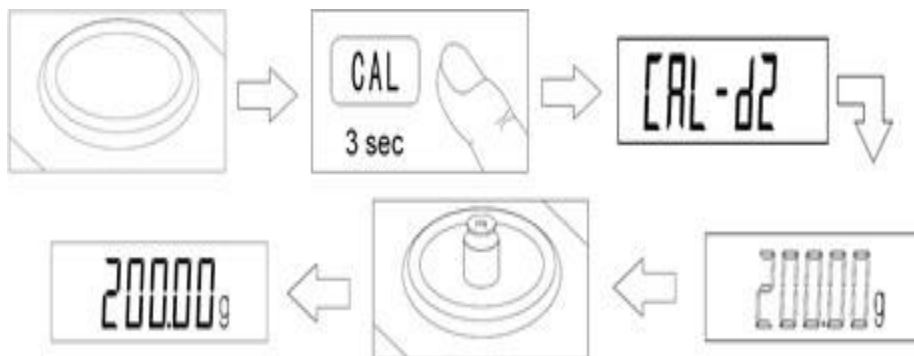


Figure-4

Linear calibration

- Press “ CAL (calibration) ” [for 0.1mg accuracy balance, press TARE for 3 seconds, it enters the calibration status, then press CAL till it appears “ CAL- L”, it enters the linear calibration.
- Put on the weight by the data on display, one point for calibration has been done, and a fixed calibration data will be on display
- Take off the weight, the next calibration data is on flashing, and put on the weight accordingly, till all points for calibration have been done.

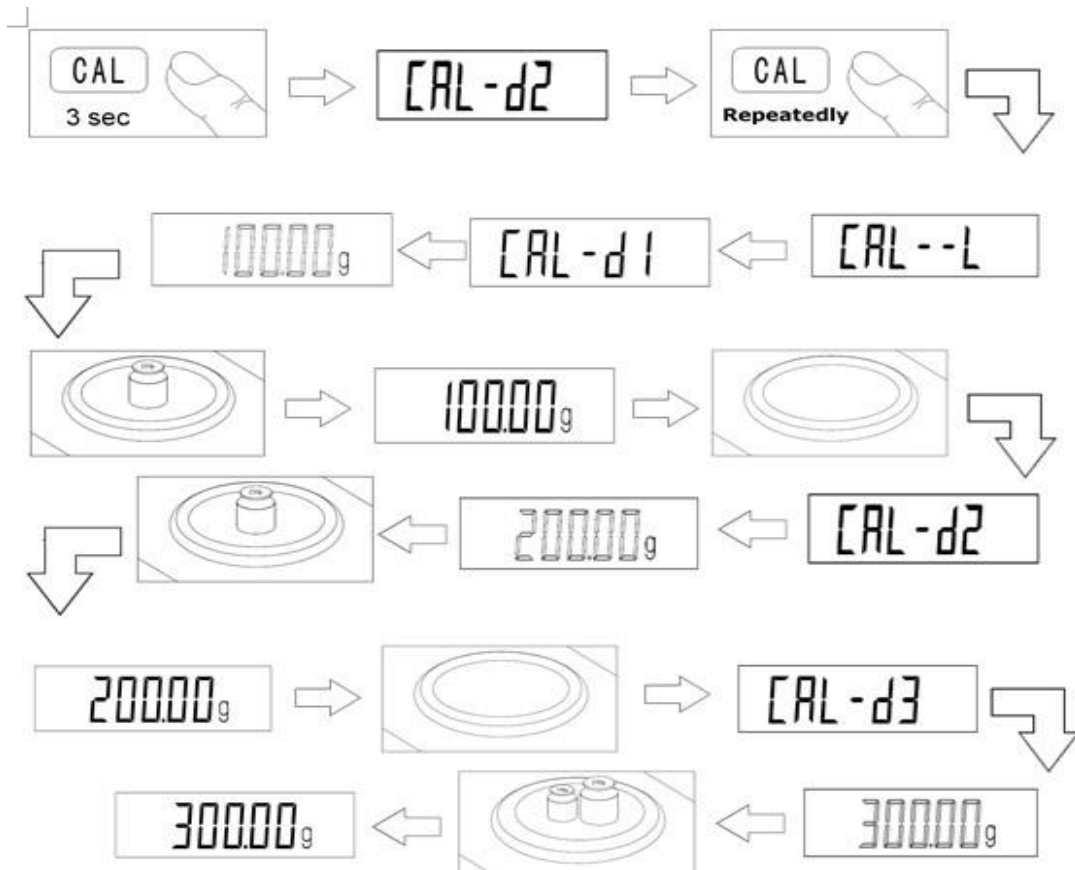


Figure-5

6.4 Weighing

- 1) After preheating or calibration, put the subject on the balance, till a black point on the bottom left side disappears, the value of the subject can be read out.



Figure-6

- 2) The max. capacity of the balance +9e appeared when it was turned **ON**.
(e=10d, d is a minimal readout to be appeared)

6.5 Tare

Press , the **TARE** tare weight of the pan can be taken out.



Figure-7

6.6 Backlit

- 1) The backlit is **ON** when turning **ON** the balance.
- 2) Press **BL** to turn **OFF** the backlit.
- 3) The service time of the balance can be prolonged if switched **OFF** in case of using the rechargeable battery or dry battery.

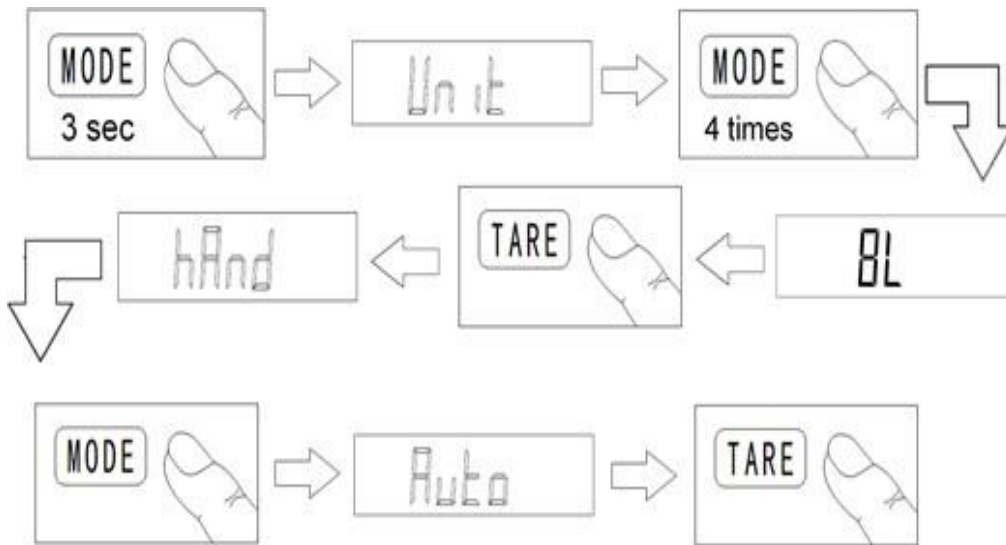


Figure-8

6.7 Zero-tracking & Auto, Tare

- Press **CAL** at the same time as turning on the power (within 3 seconds) till "- Zero-" flashing, press, **TARE** "Zero*d" on **TARE** display, and press repeatedly, Class I "*" variation from "0 - 20", class II "*" variation from "0 - 5", "Zero0d" means no Zero point **CAL** tracing.
- Press again, "- tArE -" flashing, press, **TARE** "tArE*d" on display, **TARE** press again, class I "*" variation from "0 - 30", class II "*" variation from "0 - 9", "tArE0d" means no auto tare.
- Setting end, press, **BL** it restarts and is back to normal weighing mode.

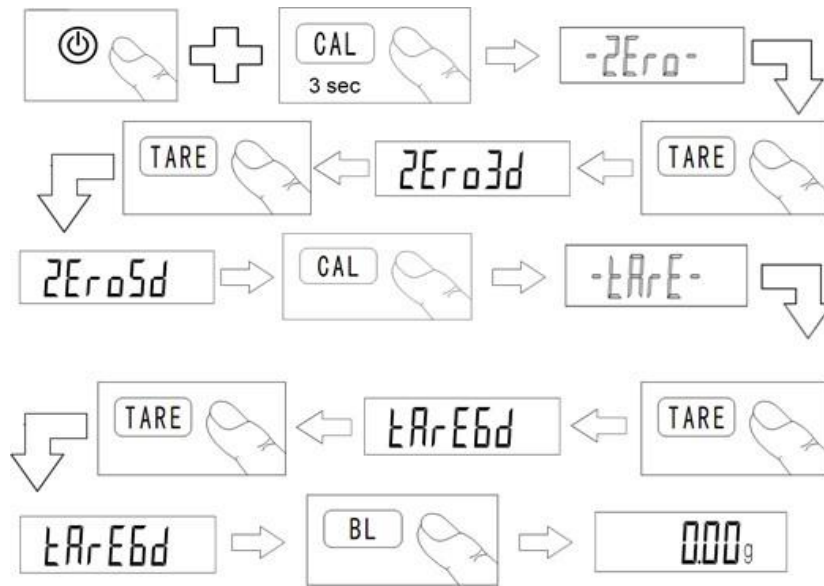


Figure-9

6.8 Other function

1) Unit conversion

- Press for 3 **MODE** seconds till "Unit" flashing on the press, "Unit*" flashing, **MODE** press, to choose the **TARE** unit required, and press to make sure, the unit conversion has been done.

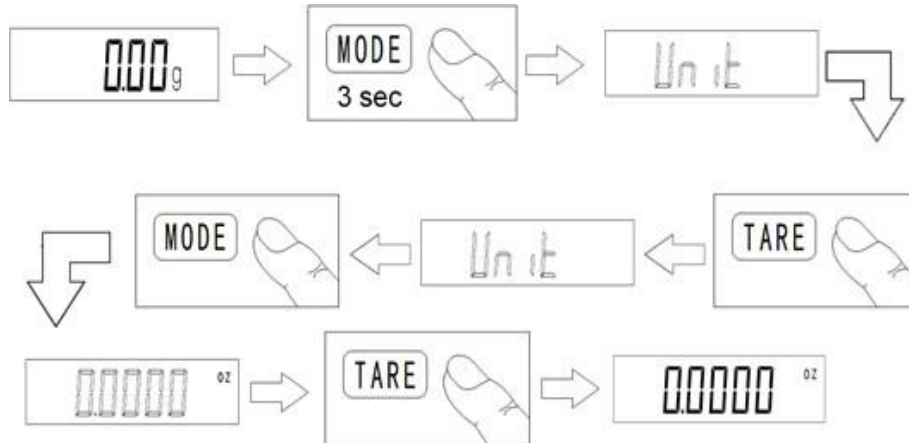


Figure-10

2) Counting

- Press **MODE** for 3 seconds till "Unit" flashes on, **MODE** press again, "Count" **MODE** flashing on, press to make sure, "10pcs" flashing **MODE** on, (press, basic counting number can be changed from "10pcs" to "500pcs", the bigger the number, the higher the counting accuracy).
- Put on the same number of the articles as per flashing data on display, press to **TARE** make sure, "-----" is on display, then counting setup has been done. When a single article for counting is less than 2d, it shows "no-Cou", the counting setup cannot be done.

3) Take an article of 10 pc counting for example

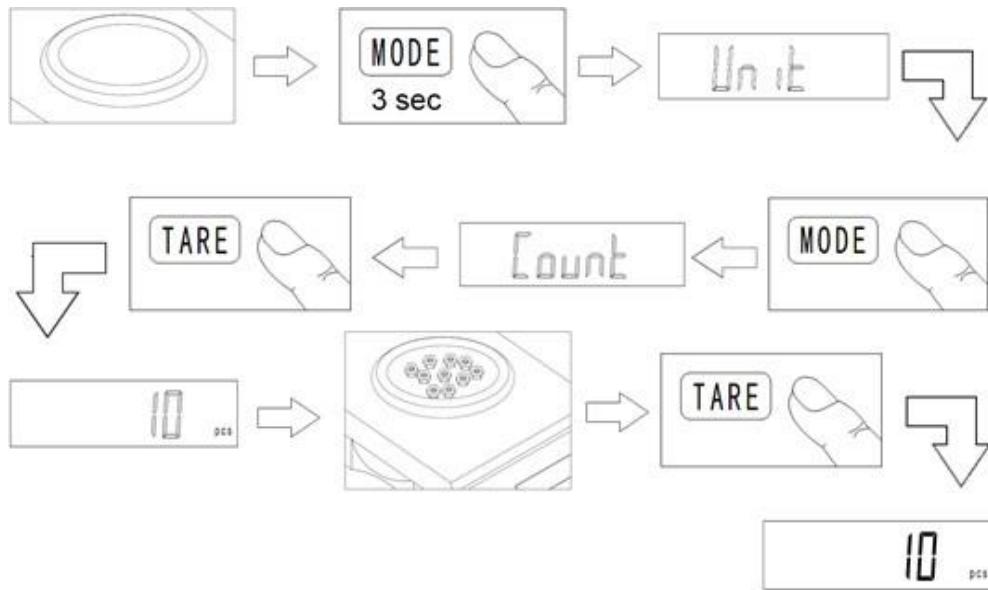


Figure-11

4) Percentage

- Press **MODE** two times, “PEA” flashing on, **TARE** press to make sure, “100%” flashing on, put on the article to be set as 100%
- Press, **TARE** “100%” on display, take out the article, and put on another substance, the percentage on display is that of one of the substances vs the former article.
- In case the value of the setting article divided by 100 is less than 2d, “no-PER” is on display, which means that the percentage setting up cannot be done, the mass of the article to be set must be increased.

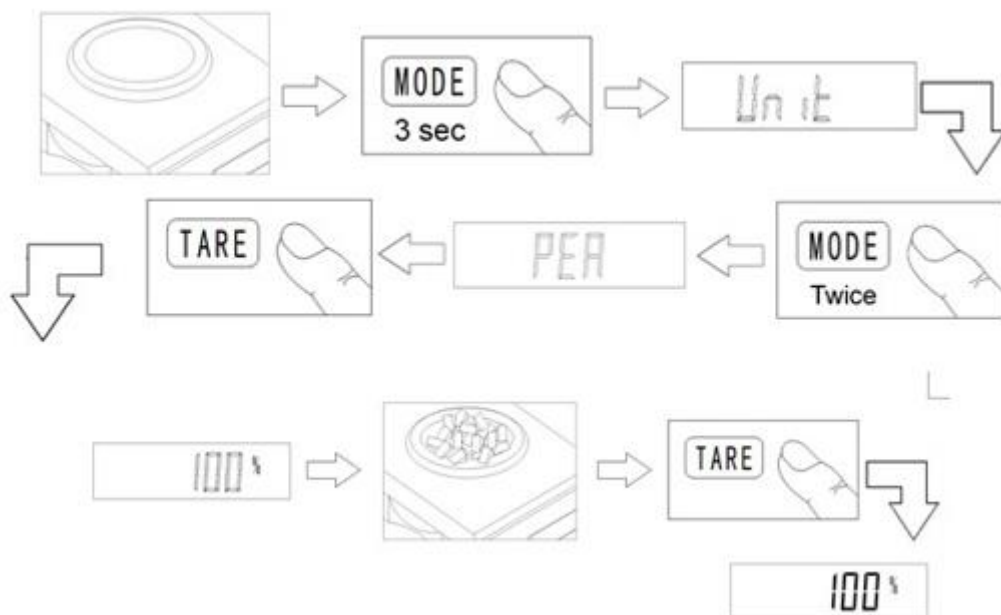


Figure-12

5) Printing

- Press for **MODE** 3 seconds till “Unit ‘flashes on, press **MODE** three times, “Prt’ on display, and press to **TARE** make sure, “hand “is on display.

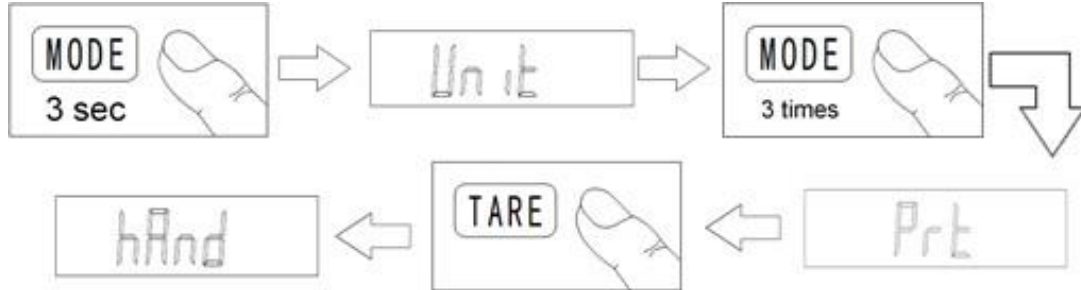


Figure-13

- **Manual printing mode:** Press **TARE** again to make sure. Press or printer **PRT** code key to end the printing setup
- **Auto printing mode:** after the mentioned “hAnd “is on display, press again, **MODE** “Auto” on display, again to make **TARE** sure, put the substance which should be bigger than 5d, the weight value on display will be printed out after the black point for stable reading disappears
- **Continuous printing mode:** after the above-mentioned “hAnd “is on display, press two times, **MODE** press to make **TARE** sure, the data can be printed out continuously.

6.9 RS232 Communication protocol

It adopts a general RS232 UART signal, a 10BIT for each data frame, frame format as below:

bit1	Bit2	bit3	bit 4	bit 5	bit 6	bit 7	bit 8	bit 9	bit 10
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- **BIT1:** Data symbol
- BIT2~BIT9: Data bits
- **BIT10:** Stop bit
- Baud rate:9600bps, no parity Stop bit 1.
- **Data symbol:** 1byte ASCII code: “ + “ or “ - “. Symbol +: 2B -: 2D
- **Data field:** 7bytes ASCII code, one byte is radix point “. , its position is the same as the display position
- **Unit:** 3 bytes ASCII code, if the unit is less than 3 bytes, filled up by blank(20). lb: 6c 62 oz:6F 7A GN:47 4E Kg: 6B 67
- **Frame end:** enter new line ASCII code, 0DH, 0AH
- Serial port connection line (9 core) connected with the computer: 2pins to 2pins, 5pins to 5 pins.

1) IR sensor control function (G series)

- Put the finger above the “IR sensor “ (IR sensor window), it can control and carry out the calibration and tare operation.
- For Tare operation just put the finger above the IR window shortly, it can be done.
- For the calibration, put the finger above the IR window for 3 seconds, it can be calibrated. When the IR sensor is working, its red indicator lights **ON**.
- To touch two IR windows, the function shuts down, the function can be restored when turning on the balance again.
- For Mode function, it can be turned **ON** or turned **OFF**.

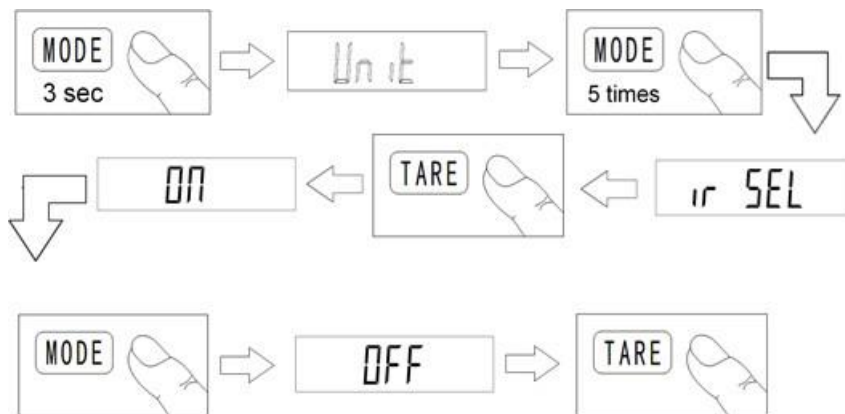


Figure-14

- The IR sensor control function could be possibly affected by strong light or in the case of nearby windows
- After turning **ON** the balance if a black arrow appears on the upper right side of the screen, it means that the IR censoring function has been shut down automatically, so adjusting its position, and turning on the balance again.
- During the operation, if a single censoring red indicator lights up, just move the balance to the position where the red indicator lights **OFF** and it will start to work normally after the data on display comes to zero.

2) Low voltage indication

In case the dry battery or rechargeable battery is used, to replace with the new one, if a symbol of battery appears on the upper side of the screen.

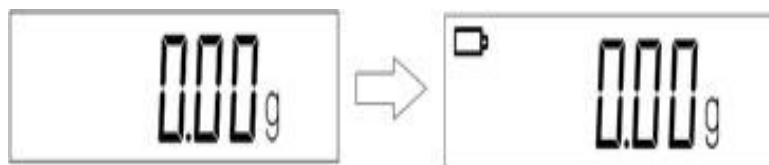


Figure-15

7. Troubleshooting

1. Unable to turn on the balance

- Check the power adapter properly plugged in.
- To replace with a new adapter if it is damaged.
- Insert the overlay connection wire or replace it with a new one if the overlay is disconnected or damaged.
- Main board damaged.

2. All characters on display after turning on and unable to return to normal weighing status

The balance crashed due to the AD chip being affected. Turn off the balance and turn **ON** it again after 30 minutes.

3. "S-CAL" or "UER2.0" on display after turning on, unable to work normally

- The balance crashed due to the AD chip being affected. Turn **OFF** the balance and turn **ON** it after 30 minutes.
- To replace with new AD chip if it is damaged.
- Load cell wire disconnected. Check the wire connector.
- To replace with a new one if the load cell damaged.

4. "Zero" appears after turning on, even after putting on the weighing substance, unable to work

- The balance crashed due to the AD chip being affected. Turn **OFF** the balance and turn **ON** it after 30 minutes.
- Load cell wire disconnected. Check the wire connector display.
- The main board storage chip (BL24C02) was damaged, replace it with a new one.
- To replace with a new one if the load cell damaged.

5. "-----" on display after turning on the balance and unable to come to zero after **TARE** pressing

- Load cell wire disconnected. Check the wire connector.
- To replace with a new one if the load cell damaged.

6. To replace with a new one if the load cell is damaged

- The " **Calibration** " button is damaged. replace with a new overlay.
- The " **calibration** " function is affected by hard lights for the IR sensor function. To move the balance position till the red indicator of " **calibration** " censoring window lights **OFF**.

7. The G series with IR censoring function comes to zero after turning ON and not on effect

Two IR sensoring windows auto turn **OFF** due to being affected by hard light move the balance to the position and turn **ON** it again till two IR windows work normally

8. Nothing on display after turning on the balance, except backlit on flashing

Pin 12 or pin 13 of the program slices (D78F0511A) on the main board have faulty soldering with pin 6 or pin 7 of the screen driving chip (BL55066). To have them soldered firmly

9. No Max. capacity appears initially on the screen after turning on but only the random numbers or white screen on display

The main board storage chip (BL24C02) was damaged, to replace it with a new one.

10. Zero point not stable, put on small substance, the reading data on display is much more than its real weight or "----" appears. Unable to have a normal calibration after pressing the button

Put on wrong weight when calibration or the weighing substance is much less than calibration weight which leads to inner criterion amplified. Press till "CAL-d*" on display (it has different d on display by different capacity), press repeatedly till "CAL-d" which is as same as max. capacity, then keep waiting till "CAL-d" flashing on the screen, put on the weight corresponding to the data on display

11. Reading data unstable during the weighing process

- There is airflow or vibration around the working area. To change the working place
- Maybe the pan or load cell is touched by some other things. To make the surroundings of the pan and load cell clean enough
- The plug between the load cell and indicator is looseness or its touch spot oxidation (or B, L, D models only). To tighten and fasten it, if still not working, should replace the plug on the indicator (9 core serial port socket)
- Indicator power voltage is unstable, just to have the battery or connected to the main power supply
- Indicator inner AD chip (CS5530) or load cell power circuit (GM6155) damaged. To replace the AD chip or check the power supply voltage, to replace the chip (GM6155).

12. "No Cou" appears during the counting process

A single substance weight for counting purposes is less than $2d$ (d is an actual division value which is also a minimum reading on display)

13. "No PEA" appears during the percentage process

- The substance sample weight for percentage measuring is less than $200d$ (d is an actual division value which is also a minimum reading on display).
- It must be greater than $200d$ to carry out the percentage function normally.

14. The balance with RS232C serial communication automatically shuts down or the data on display as well as the screen are all flashing at the same time

- The RS232 serial communication chip (MAX232) on the main board was damaged.
- To replace it with a new one.

15. The balance with RS232C serial communication automatically shuts down or the data on display as well as the screen are all flashing at the same time

RS232 serial communication chip (MAX232) on the main board was damaged. To replace it with a new one.

16. The printer cannot print out by pressing PRT after the balance with the RS232C serial communication feature connected to the printer

- Setup error for print output. Among the balance mode functions, to set data output mode as manual print mode
- Printing connection line disconnected.
- Check-up connection line plug, to open the plug and check it, if necessary, print the damaged button. To replace it with a new one.



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