



Operational Manual

Sensor Analytical Balance

LX40SAB

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1. Safety Measures

- Must follow the guidelines and preheat it before using it.
- The maximum capacity should not be exceeded by the combined mass of the tare and weighing material.
- Please calibrate the balance by weight if the weighting is incorrect.
- If you are going to remove the circular pan, please turn it clockwise first. Don't overload too much upward to prevent harm to the load cell.

2. Introduction

Sensor Analytical Balance LX40SAB 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 No.	LX40SAB
Weighing capacity	100 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

To prevent shaking, static electricity, sunlight, airflow, and interference from electromagnetic waves, set the balance in a level, stable area.

6.2 Starting up

- 1) Connect the AC power supply to one end of the power adapter or power line and plug the other end into the balance input.

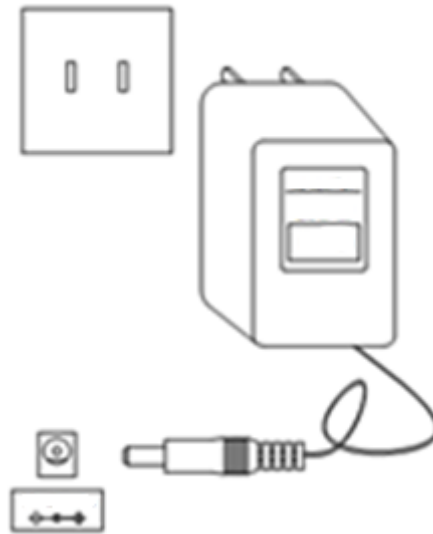


Figure-1

- 2) Turn on the power.



Figure-2

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



Figure-4

6.3 Calibration

- It might be more accurate if you turn on the electricity, let it warm up for 30 minutes, and then begin the calibration process.
- **Calibration operation:**
Taking 300g/10mg, for example:
 - 1) Press " **CAL** " (calibration) "for 3 seconds. When no subject on the balance. After entering the calibration state, "CAL-d2" and "200.00g" flash. When you put on 200g of weight, the screen says "- - CAL-" before showing "200.00g," which indicates that the weighing status has been entered. Repeat the calibration procedures above if the weighing is inaccurate.

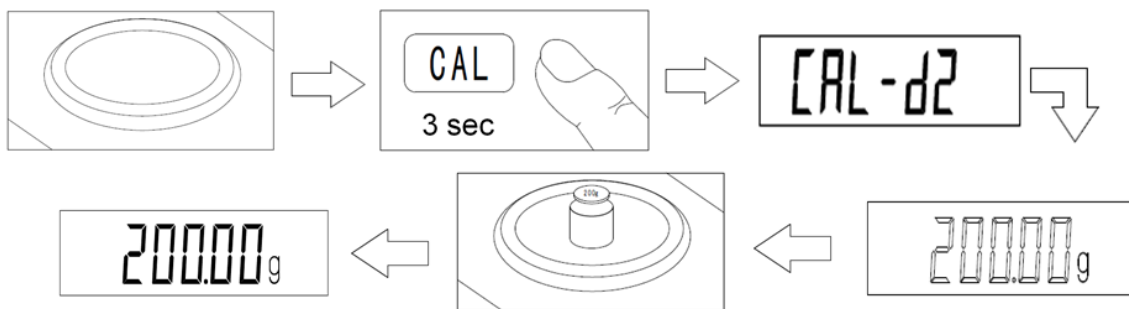


Figure-5

2) **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 following the data on display, one point for calibration has been done, and a fixed calibration data will be on display. When the next calibration data flashes, remove the weight and replace it appropriately until all calibration points have been completed.

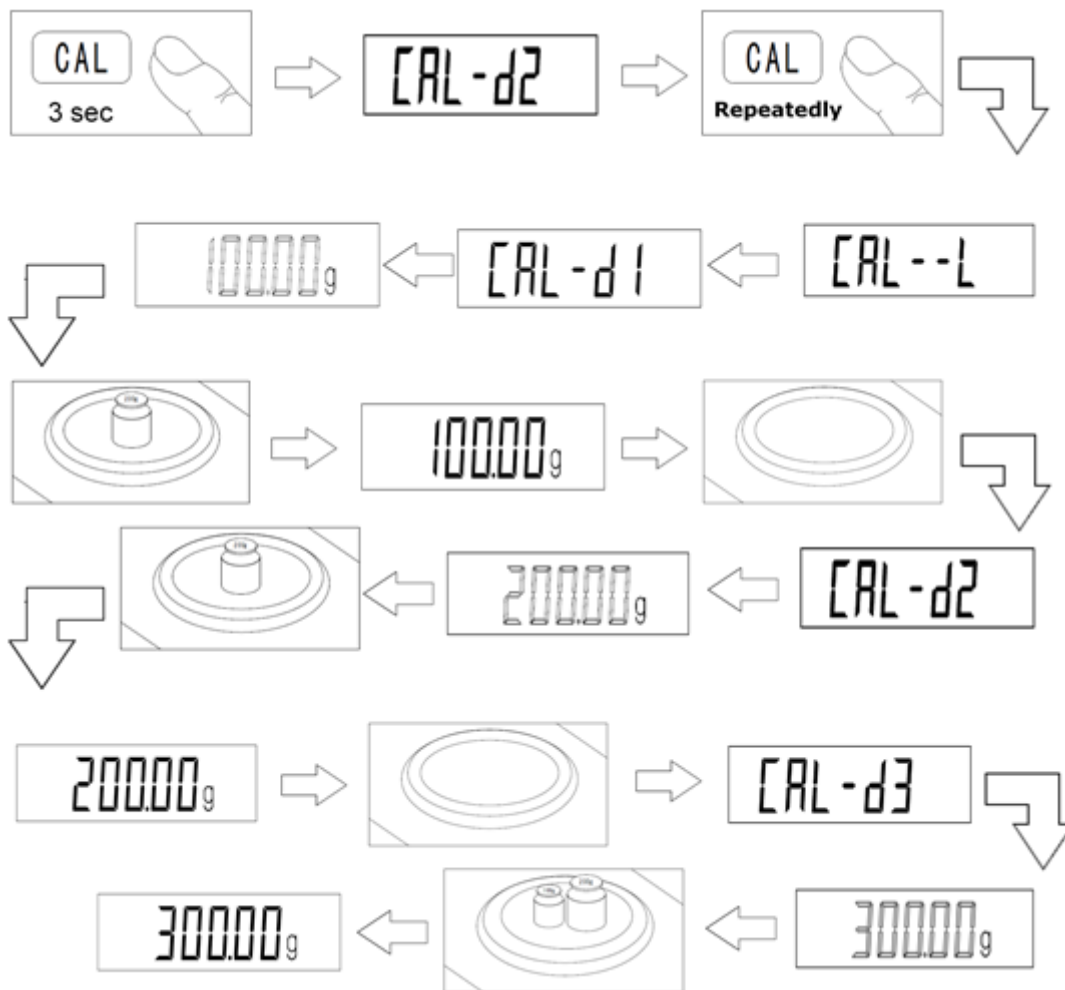


Figure-6

NOTE:

"No CAL" will show up if the weight is not placed on it within 10 seconds of entering the calibration status. To stop the calibration, it indicates that no calibration has been completed.

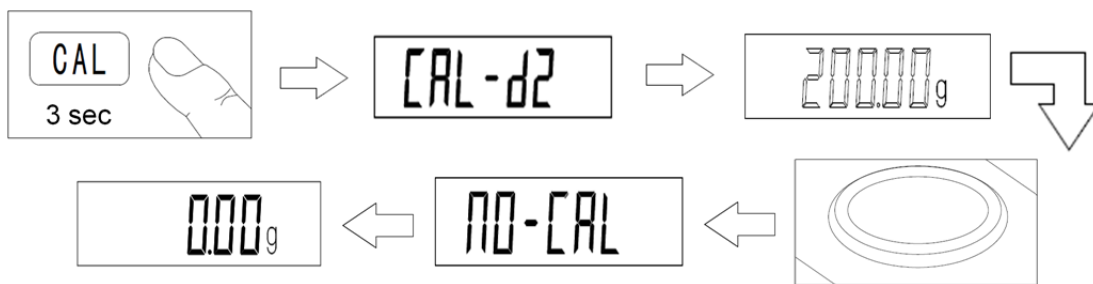


Figure-7

6.4 Weighing

- 1) Once the subject has been preheated or calibrated, place it on the balance until the black point on the lower left side disappears, allowing you to read the subject's value.

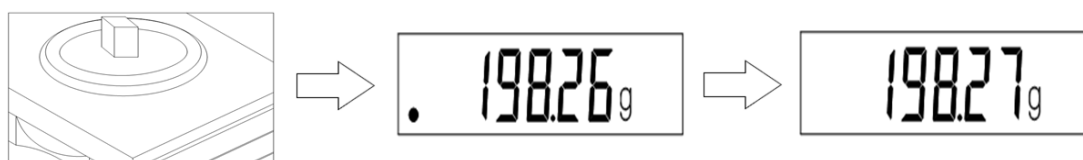


Figure-8

- 2) When the balance is turned on, its maximum capacity +9e is displayed (e=10d, d is a minimal readout to appear).

6.5 Tare

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



Figure-9

6.6 Backlit

The backlit is on when turning on the balance. Press **BL** to turn off the backlit. Turning off the backlight when using a dry or rechargeable battery can extend the balance's operating time.

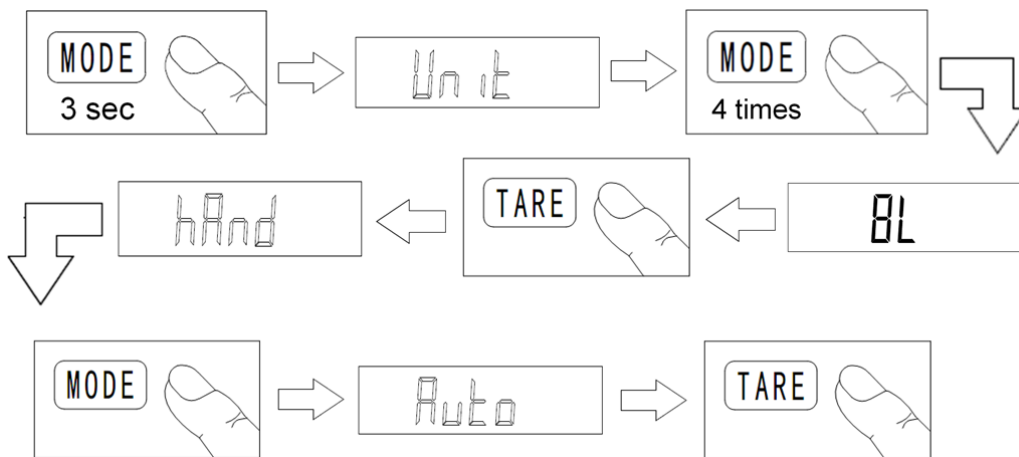


Figure-10

6.7 Zero-Tracking & Auto.Tare

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

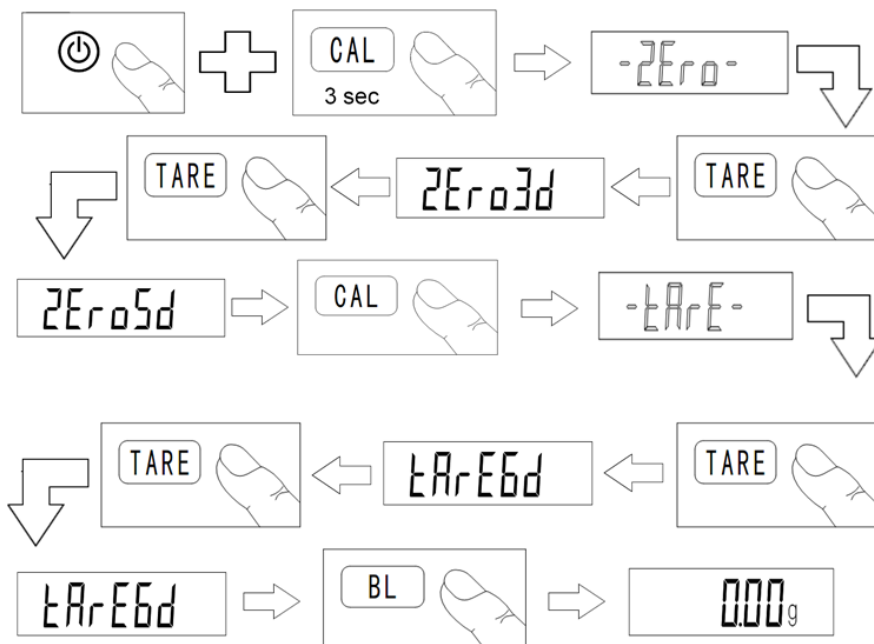


Figure-11

6.8 Other function

6.8.1 Unit conversion

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

Taking the unit “g” converts to the unit “OZ”, for example:

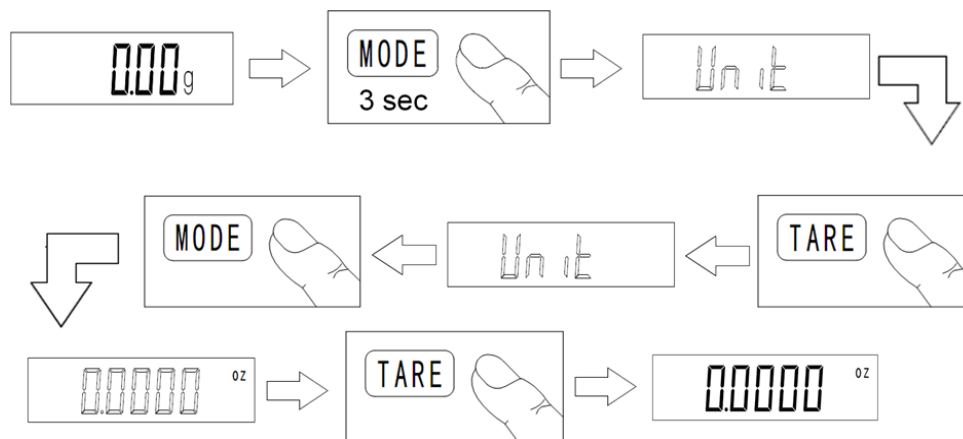


Figure-12

6.8.2 Counting

press **MODE** for 3 seconds till “Unit” flashes on, press **MODE** again, “Count” flashing on, press **TARE** to make sure, “10pcs” flashing on, (press **MODE**, 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 **TARE** to make sure, “-----” on display, then the 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.

Taking an article of 10 pcs counting for example:

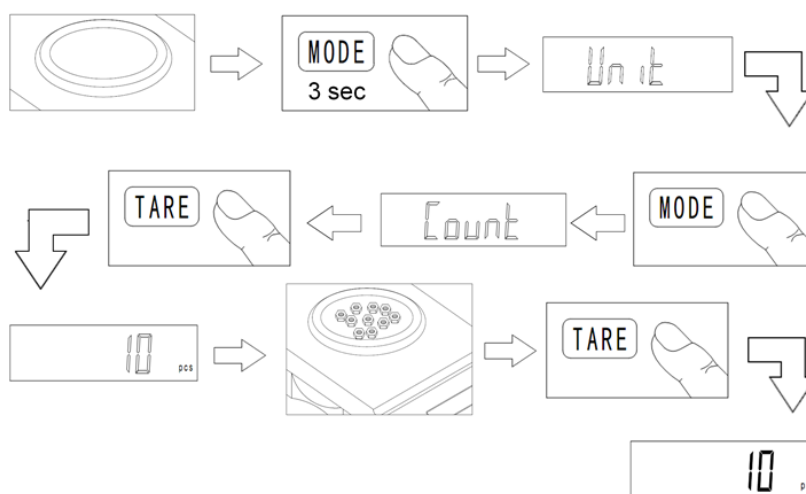


Figure-13

6.8.3 Percentage

Press **MODE** for 3 seconds till “Unit” flashing on, press **MODE** two times, “PER” flashing on, press **TARE** 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 other substance, the percentage on display is that one of the substance vs former article. “No-PER” is displayed if the setting article's value divided by 100 is less than 2d. This indicates that the mass of the article setting needs to be increased because the percentage setting up cannot be completed.

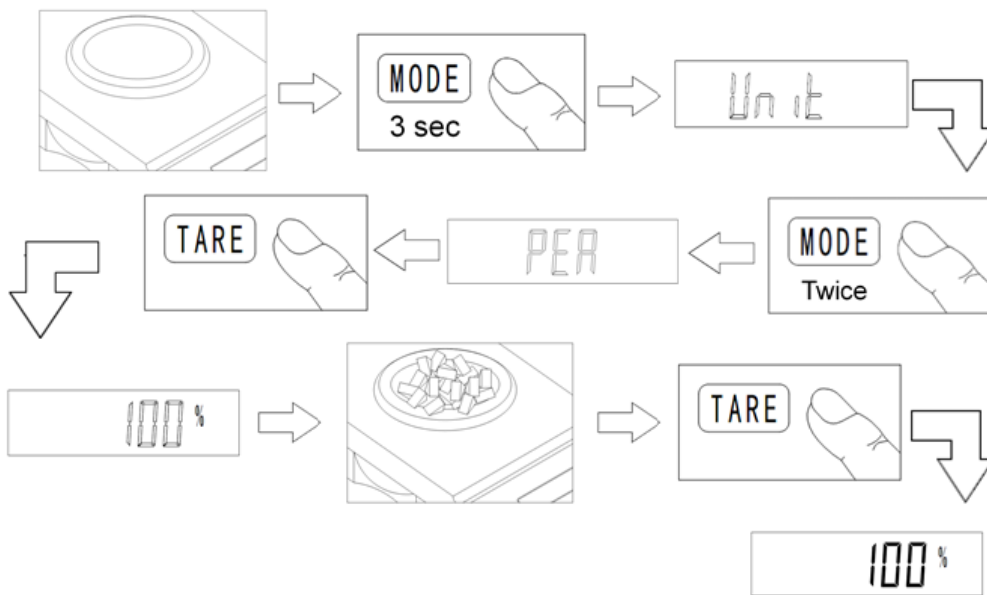


Figure-14

6.8.4 Printing

Press **MODE** for 3 seconds till “Unit” flashing on, press **MODE** three times, “Prt” on display, press **TARE** to make sure, “hAnd” on display.

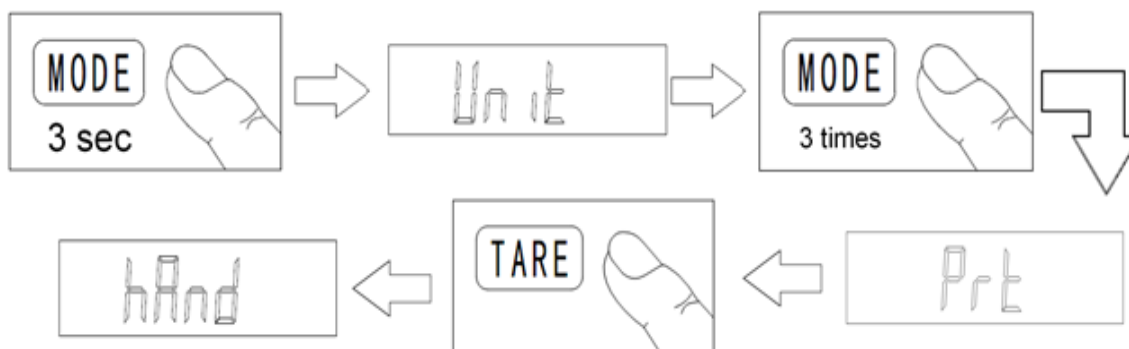


Figure-15

- 1) **Manual printing mode:** Press **TARE** again to make sure. Press **PRT** or printer code key to end the printing setup.
- 2) **Auto printing mode:** After above mentioned "hAnd " on display, press **MODE** again, "Auto" on display, press **TARE** to make sure, put on 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.
- 3) **Continuous printing mode:** After above mentioned "hAnd" on displayed, press **MODE** two times, press **TARE** to make sure, the data can be printed out continuously.

RS232 communication protocol:

It adopts a general RS232 UART signal, a 10-bit 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 frame format +/- symbol + data + unit + frame end.

- **Data symbol:** 1byte ASCII code: " + " or " - ". Symbol +: 2B -: 2D
- **Data field:** 7bytes ASCII code, one byte is the radix point ".", its position is the same as the display position.
- **Unit:** 3 bytes ASCII code, if unit is less than 3 bytes, filled up with 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.

6.8.5 IR sensor control function

The calibration and tare operation can be controlled and carried out by placing the finger over the "IR sensor" (IR sensor window). Simply place the finger briefly above the infrared window to do the Tare function. To calibrate it, place your finger on the infrared window for three seconds. The red indicator on the infrared sensor illuminates when it is functioning.

- 1) The function stops when two IR windows are touched; it can resume once the equilibrium is restored.
- 2) It is possible to activate or deactivate the Mode function.

The following are the ways to stop the IR sensor from functioning:

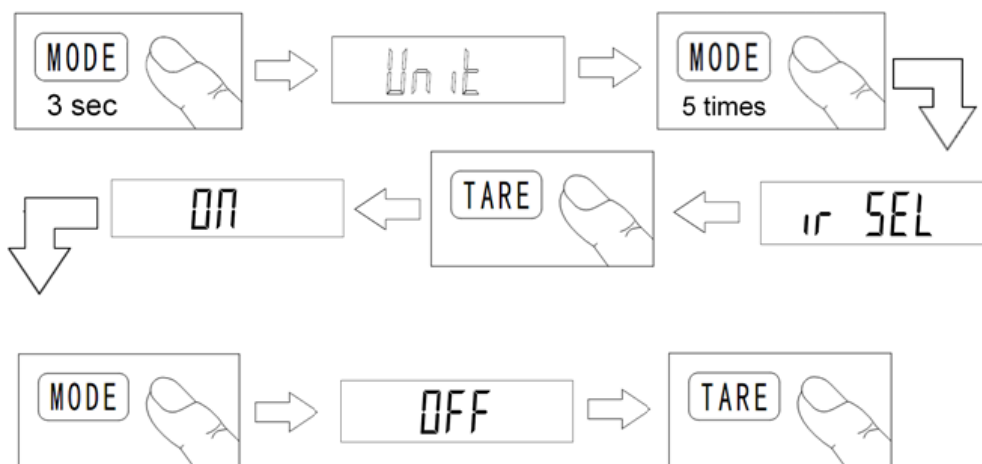


Figure-16

- 3) Strong light or being close to windows may have an impact on the IR sensor's control function.
- 4) If a black arrow shows up in the top right corner of the screen after turning on the balance, it indicates that the infrared sensing feature has been automatically turned off. Please move it to a different location and turn the balance on again.
- 5) If one sensing red indication illuminates during the operation, simply move the balance until the indicator turns off. The balance will then function normally until the displayed data reaches zero.

6.8.6 Low voltage indication

If a battery sign shows on the top side of the screen, it means that either a dry battery or a rechargeable battery is being used. In that case, replace it with a new one.



Figure-17

7. Troubleshooting

1) Not able to activate the balance

- Ensure that the power adapter is plugged in correctly.
- If the adapter is damaged, replace it with a new one.
- If the overlay is broken or disconnected, replace the connection wire or insert a new one.
- There is damage to the main board.

2) After turning on, every character on screen is unable to return to their typical weighting state.

- An AD chip malfunction caused the balance to crash. To switch the balance off and back on after half an hour.
- The overlay's switch needs to be changed because it is damaged.

3) "After turning on, "S-CAL" or "UER2.0" appears on the screen and cannot function correctly.

- An AD chip malfunction caused the balance to crash. After half an hour, switch the balance back on.
- To switch out the damaged AD chip for a new one.
- The wire from the load cell is unplugged. Examine the connector for the wire.
- To switch it out with a new one if the load cell is broken.

4) Even after weighing the weighing material, "zero" displays after turning on, making it unable to operate.

- An AD chip malfunction caused the balance to crash. After half an hour, switch the balance back on.
- The load cell's wire became loose. Examine the connector for the wire.
- To switch it out with a new one if the load cell is broken.

5) "-----" on display after turning on the balance and is unable to come to zero after press **TARE**

- There is a disconnect in the load cell wiring. Inspect the connector for the wire.
- To switch it out with a new one if the load cell is broken.

6) After turning on the balance, "Zero" begins to flash.

The "calibration" button is broken. Switch out for a new overlay. Hard lights have an impact on the "calibration" function for the infrared sensing function. To adjust the balancing position until the "calibration" sensing window's red indicator goes out.

7) After turning on, the IR sensing function goes to zero and has no effect.

Two windows with infrared sensors automatically shut off when exposed to intense light. To ensure that the two IR windows are operating normally, please shift the balance to the desired position and turn it on once more.

- 8) After turning on the balance, the only thing visible is the backlit flashing**
 There is defective soldering between pins 6 or 7 of the screen driving chip and pins 12 or 13 of the program slices on the main board. to have them securely soldered.
- 9) When it first turns on, the screen displays a white screen or random digits instead of the maximum capacity.**
 Replace the damaged main board storage chip with a new one.
- 10) Put on a small object, the zero point is unstable, the reading data on the screen is significantly greater than its actual weight, or "----" displays. Unable to have a normal calibration after press **CAL** button**
 Wearing the incorrect weight causes the inner criterion to be increased when the calibration or the weighing substance is significantly less than the calibration weight. Press **CAL** till "CAL-d*" on display (it has a different d on display by different capacities), press **TARE** repeatedly till "CAL-d" which is as same as max. capacity, then keep waiting till "CAL-d" flashes on the screen, and put on the weight corresponding to the data on display.
- 11) During the weighing procedure, reading data becomes unsteady.**
- The working space is surrounded by vibration or airflow. to alter the work environment.
 - Other objects may have come into contact with the pan or load cell. To ensure that the pan and load cell are clean enough.
 - The indicator power voltage is unreliable, so simply recharge the battery or connect it to the main power supply.
 - The indicator's inner AD chip or the load cell power circuit is damaged. Replace the AD chip or check the voltage of the power supply.
- 12) During the weighing procedure, the reading value abruptly stopped and stayed the same even after the substance weight was added.**
 Interference from static electricity caused the balance to crash. Do restart it after shutting it down.
- 13) "no Cou" appears during the counting process**
 For counting purposes, a single substance weight is less than 2d (d is a real division value and also a minimum reading on display).
- 14) "no PEA" appears during the percentage process**
 Less than 200d is the weight of the substance sample used to measure the percentage (d is a real division value, which is also a minimum reading on display). For the % function to function normally, it must be greater than 200.

15) The data on display and the screen flash simultaneously when the balance with RS232C serial transmission automatically shuts down.
The main board's RS232 serial communication chip (MAX232) is broken. Switch it out for 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

- Configure a print output error. Configure the data output mode as manual print mode among the balance mode features.
- The connecting line for printing was disconnected. Check the connection line plug by opening it while performing any necessary inspections.
- The "print" button is broken. Switch it out for a new one.