



Electromagnetic Analytical Balance

FM-EAB-A102

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1. Safety Measures

- Preheat it as per the rule before using it.
- The total mass of the tare and weighing substance should not exceed the limitation of Max capacity.
- If the weighing is inaccurate, kindly calibrate the balance by weight.
- In case of taking out the round pan, kindly first turn it around clockwise and take it out. Do not put out upward hardly, to avoid damage to the load cell.

2. Introduction

Electromagnetic Analytical Balance FM-EAB-A102 is designed for precise weighing. Offering 300 g capacity for reliable measurements. Its 80mm diameter pan provides ample space for different items. Operates reliably in temperatures between 15 and 35°C. Features include a tare function to ensure precise measurements. Alerts for overload and faults, guaranteeing steady performance.

3. Features

- ✓ Electromagnetic Analytical Balance comes with a convenient level indicator
- ✓ Stable operation in ≤ 3 seconds
- ✓ Optional draft shield
- ✓ Compatible with printers and underweighing
- ✓ Electromagnetic sensor
- ✓ LCD display with white backlight
- ✓ Adjustable sensitivity and speed settings

4. Specifications

Model	FM-EAB-A102
Capacity	300 g
Readability	0.0001 g
Minimum Load	0.0004 g
Repeatability	± 0.0002 g
Linearity	± 0.0003 g
Stable time	≤ 3 S
Pan size	Ø 80 mm
Operational temperature	15 to 35 °C
Draft shield size	240 × 190 × 265 mm
Calibration	External calibration
Calibration weight	200 g
Interface	RS232
Dimensions (W × D × H)	340 × 215 × 350 mm
Packing Dimensions (W × D × H)	490 × 360 × 510 mm
Gross Weight	10 kg

5. Applications

- Scientific Research
- Pharmaceutical Industry
- Chemical Industry
- Food and Beverage Industry
- Environmental Monitoring
- Jewellery and Precious Metals

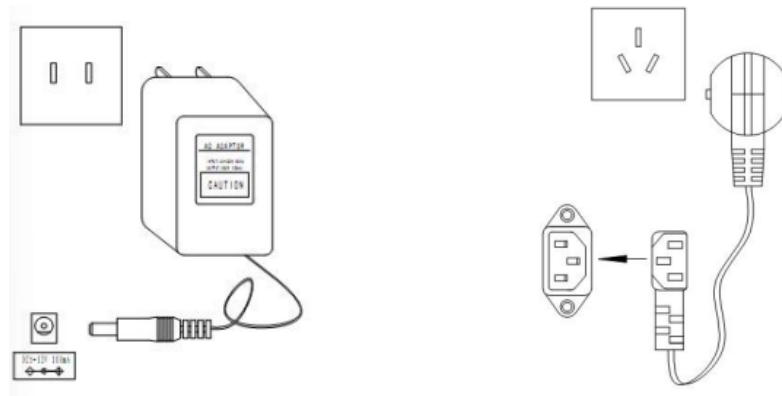
6. Operations

6.1 Operation Preparation

Put the balance on a stable, flat place, to avoid shaking, 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.



a) N, K, C, CH, B, A, G series connect

b) X, L series connection sketch

Figure-1

- 2) Turn on the power

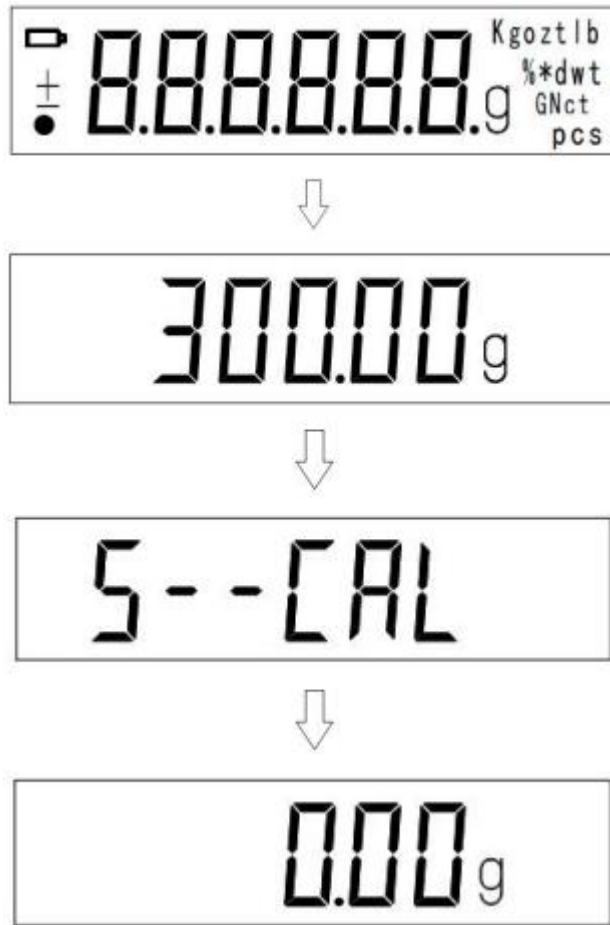


a) N, K, C, CH, B, A, G series turning on sketch

b) X, L models turning on sketch

Figure-2

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

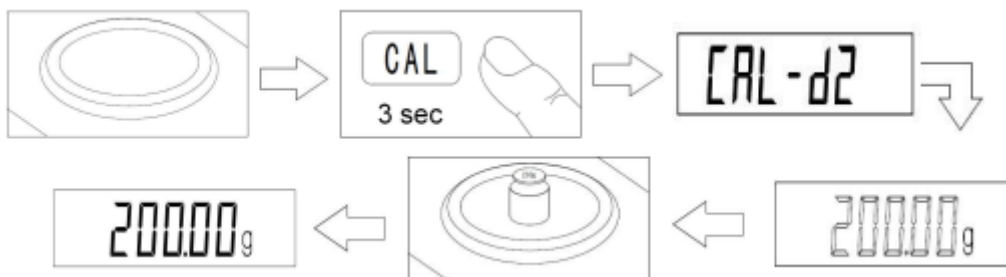


6.3 Calibration

- 1) Turning on the power, preheating it for half an hour, and then starting calibration, could be more accurate.
- 2) Calibration operation

Take 300g/10mg for Example

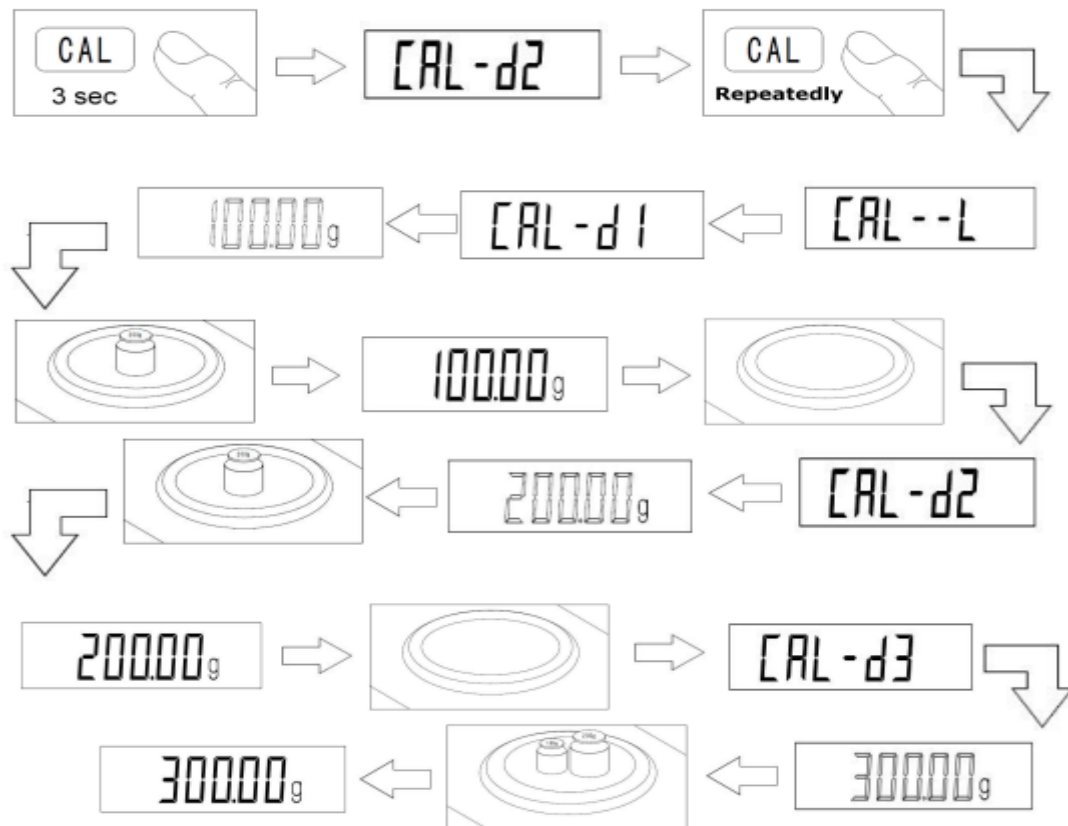
- 1) Press "CAL" (calibration) for 3 seconds when no subject on the balance. It enters the calibration status, it appears "CAL-d2", then "200.00g" flashing appears. Put 200g weight on, and it displays "--CAL-", and then "200.00g" on display, which means entering the weighing status. If the weighing is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



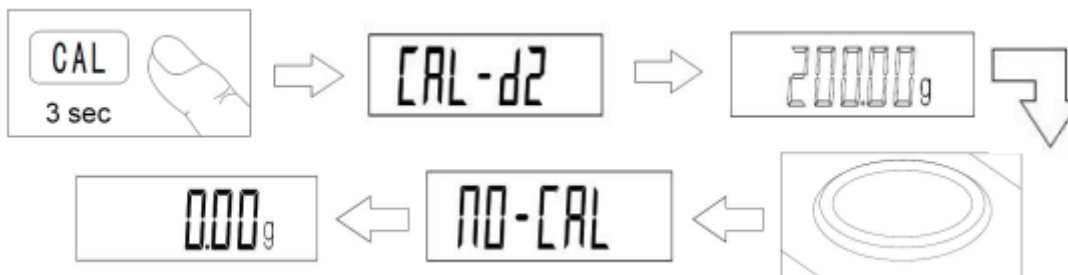
Electromagnetic Analytical Balance FM-EAB-A102

NOTE: For model L or bench scale, you must press **BL** or **UNIT** confirm after the above calibration process.

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 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, put on the weight accordingly, till all points for calibration have been done.

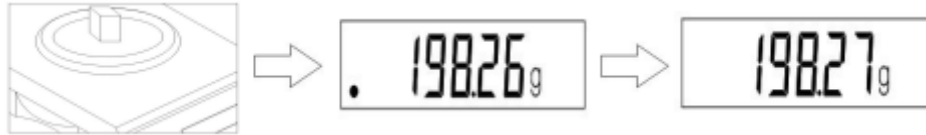


Note: If not put on the weight within 10 seconds after entering the calibration status," no CAL" will appear, which means no calibration has been done, to quit the calibration.



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.



- 2) The max. the capacity of the balance +9e has appeared when it is turning on, (e=10d, d is a minimal readout to appear).

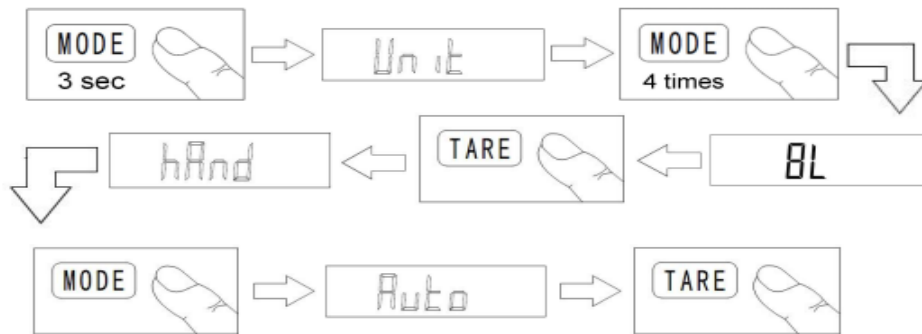
6.5 Tare

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



6.6 Backlit

The backlit is on when turning on the balance. Press to turn off the backlit. The service time of the balance can be prolonged if to switch off the backlit in case of using the rechargeable battery or dry battery.

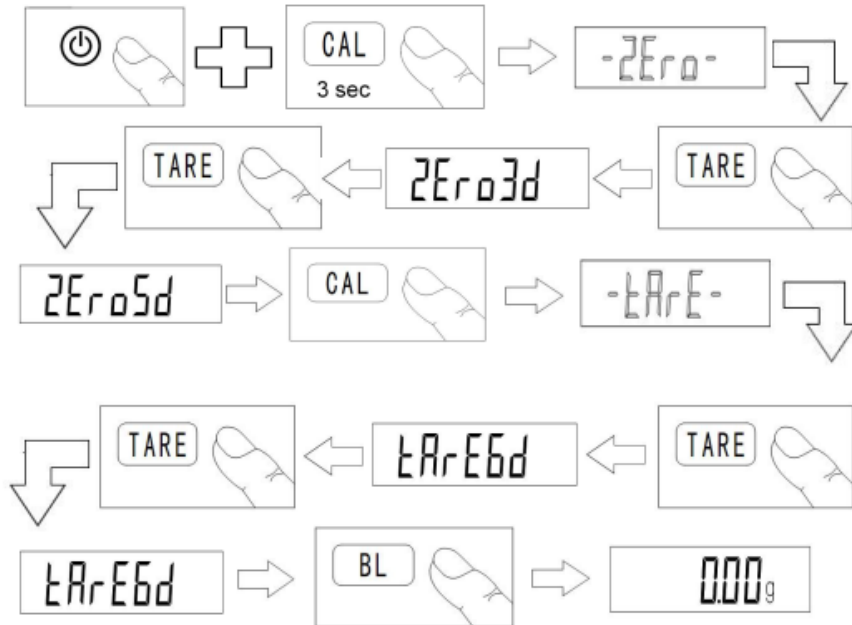


6.7 Zero-Tracking and Auto. Tare

- 1) Press **CAL** at the same time as 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.

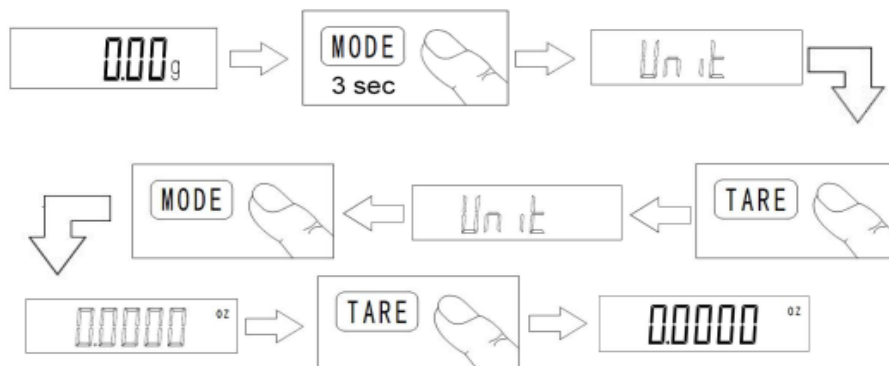


6.8 Other Functions

6.8.1 Unit Conversion

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

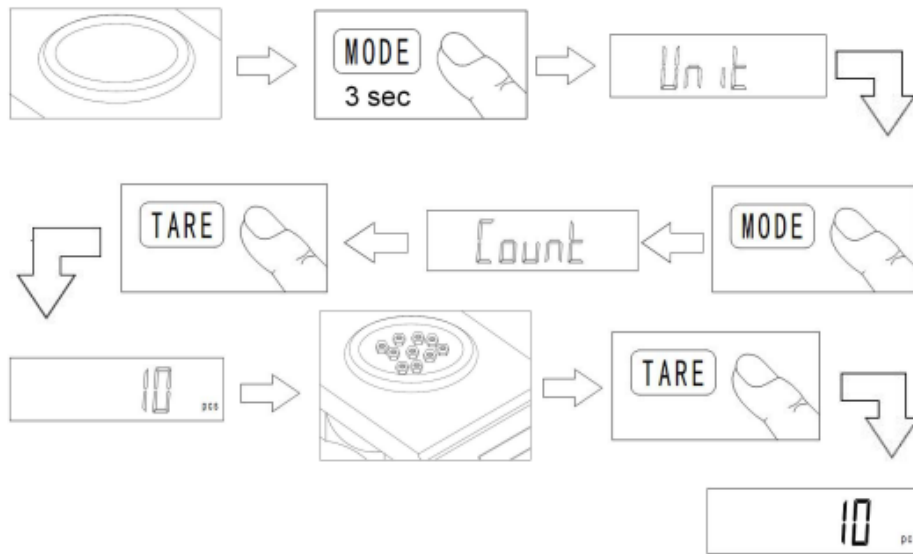
Taking the unit “g “converses to unit “OZ” for the example:



6.8.2 Counting

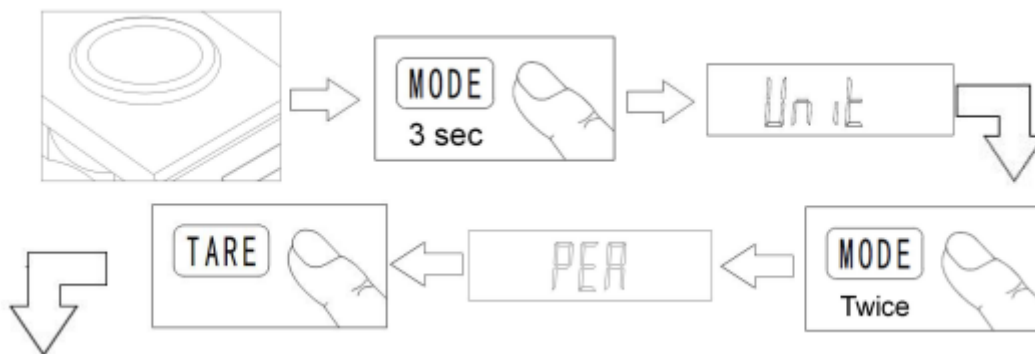
Press **MODE** for 3 seconds till “Unit” flashes on, press **MODE** again, “Count” flashing on, press **TARE** to make sure, “10pcs” flashing on, (press **MODE**, basic counting number can be changed from “10pcs” to “500pcs”, the bigger the number, the higher the counting accuracy). Put on the same number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

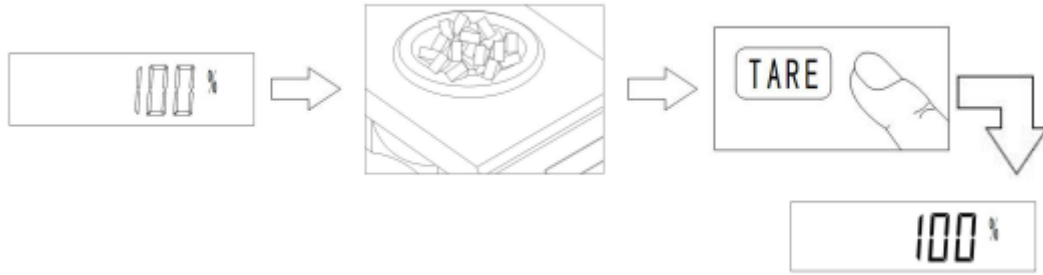
Take an article of 10 pcs counting for example



6.8.3 Percentage

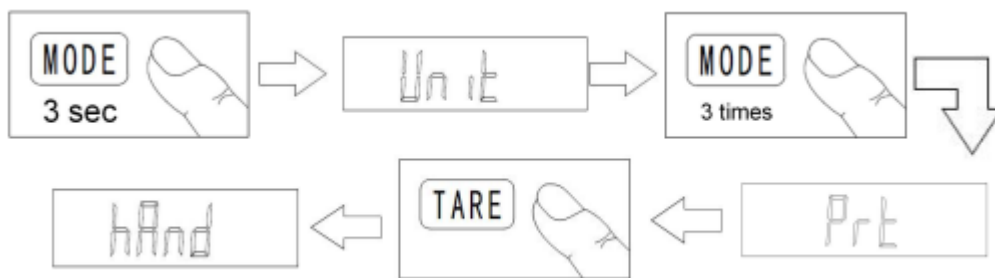
Press **MODE** for 3 seconds till “Unit” flashes on, Press **MODE** two times, “PEA” flashing on, press **TARE** to make sure, “100%” flashing on, put on the article to be set as 100%, press **TARE**, “100%” on display, take out the article, and put on other substance, the percentage on display is that one of the substances vs 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 percentage setting up cannot be done, and the mass of the article to be set must be increased.





6.8.4 Printing

Press **MODE** for 3 seconds till "Unit" flashes on, press **MODE** three times, "Prt" on display, and press **TARE** to make sure, "hAnd" is on display.



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" is on display, press **MODE** again, "Auto" again 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" is on display, 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 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 frame format +/- symbol +DATA + Unit + frame end.

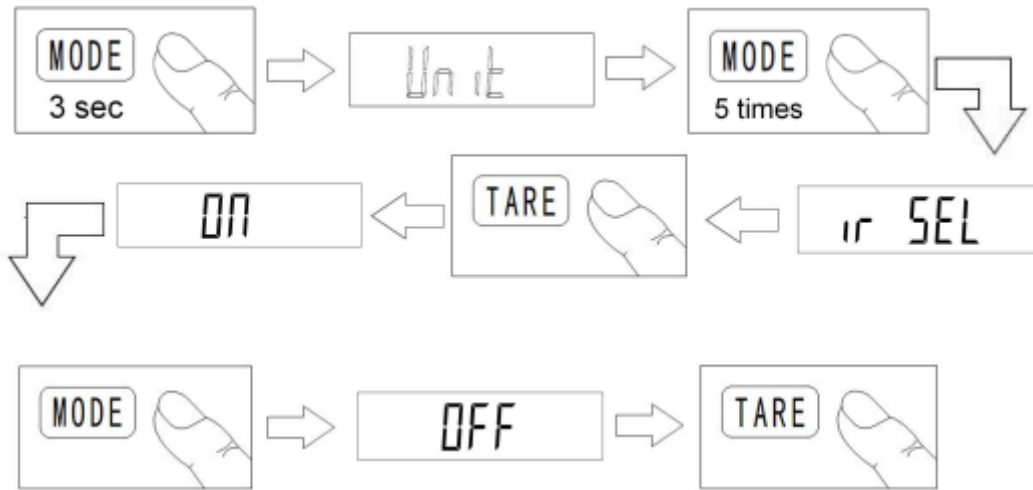
- 1) **Data symbol:** 1byte ASCII code: “+ “or “- “. Symbol +: 2B -: 2D
- 2) **Data field:** 7bytes ASCII code, one byte is radix point “. , its position is the same as the display position.
- 3) **Unit:** 3 bytes ASCII code, if the unit is less than 3 bytes, filled by blank (20). lb: 6c 62 oz:6F 7A GN:47 4E Kg: 6B 67
- 4) **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 (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.

- 1) To touch two IR windows, the function shuts down, the function can be restored when turning on the balance again.
- 2) The Mode function can be turned on or off.

The steps for shutting down the IR sensor function as below



- 3) The IR sensor control function could be possibly affected by strong light or in the case of nearby windows.
- 4) After turning on the balance, if a black arrow appears on the upper right side of the screen, it means that the IR sensor function has been shut down automatically, so Kindly adjust its position, and turn on the balance again.
- 5) During the operation, if a single sensing 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 is on display and comes to zero.

6.8.6 Low Voltage Indication

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



7. Troubleshooting

1) Unable to turn on the balance.

- Check the power adapter is properly plugged in.
- 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 Damage.

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. (fit for all models).
- The switch of overlay is damaged, so replace it with a new one. (fit for K, N, G, A, B, and C models).

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 a 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 is damaged.

4) "Zero" appears after turning it 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.
- To replace with a new one if the load cell is damaged.

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


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



6) "Zero" on flashing after turning on the balance.

The "Calibration" button is damaged. To replace with new one (fit for X, B, A models) or replace with new overlay (fit for N, K, G, C models). The "calibration" function is affected by hard lights for the IR sensor function. Move the balance position till the red indicator of the "calibration" sensing window lights off.

7) The G series with IR Sensoring 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. Kindly move the balance to the position and turn on it again till two IR windows work normally.

- 8) Nothing is 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 Mainboard storage chip (BL24C02) was damaged, to be replaced 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 “flashes 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 the 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).
- The indicator power voltage is unstable, just to have the battery recharged 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) The reading value stopped suddenly during the weighing process and remained unchanged even by adding the substance weight. T

The balance crashed due to static electricity interference, to shut down and restart it.

13) “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).

14) “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 has to be greater than 200d to carry out the percentage function normally.

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 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 the 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.

The “print “button is damaged. To replace it with a new one.

8. Accessories

Optional Accessories

Printer



Fison Instruments Ltd 272 Bath Street Glasgow G2 4JR UK
Email: info@fison.com | Website: www.fison.com