VI.PACKING LIST

NO.	ITEM	NUMBER
1	MAIN MACHINE	1
2	PAN	1
3	POWER CORD	1
4	USER MANUAL	1
5	CERTIFICATE OF CONFORMITY	1
6	CAL.WEIGHT(FA-E)	1
7	PACKAGE	1

Note: After unpacking, please keep the balance packaging properly for later maintenance

A & E LAB (UK) CO.,LTD.

Website: ukaelab.com

Email: sales@ukaelab.com

FA-E/FA-EN Series Analytical Balance

USER MANUAL

A & E LAB (UK) CO.,LTD.

CATALOG

V.MAINTENANCE

The FA-E(N) series multifunctional electronic balance is a precision mechatronics intelligent measuring instrument, so it must be treated as seriously and carefully maintained as other precision instruments.

1. Do not use sharp objects (such as pencils, ball-point pens) to press keys, only use your fingers to press keys;

2. Be careful not to let objects fall from a high place on the weighing pan, so as not to damage the weighing mechanism;

3. Do not expose the balance to high humidity or dusty environment for a long time;

4. After the balance is used up, it is best to cover it with a cover to prevent dust intrusion;

5. When weighing powder and fine particles, please use it with the container to avoid dust and particles falling into the load cell under the weighing pan;

6. Please wear gloves when calibrating with weights, and do not take the weights directly with your hands;

7. Keep the balance clean and dry.

Matters needing attention when cleaning:

Before cleaning, unplug the power supply;

Do not use corrosive cleaning agents (such as solvents). Use a lint-free soft cloth dipped in water and then some neutral detergent (soap) for cleaning.

When cleaning, be careful not to let water drop into the balance;

After cleaning, wipe the balance carefully with a soft, dry, lint-free cloth.

IV.FAULT JUDGMENT

FAULT	REASON	EXCLUDE
No display	Not connected to the power supply; Fuse is broken; Power transformer damage;	Plug in the power line; Replace the fuse; Replacement of power transformer; Contact factory
Weighing unstable	1. Bad working environment; 2. The windproof door is not closed properly; 3. There are foreign objects or scratches between the weighing pan and the work surface; 4. The power supply is unstable and exceeds the allowable value; 5. The weighing object is unstable; (Such as absorbing moisture or evaporating) or Plastic particles or powders are electrostatically charged 6. Static electricity generated by dry weather	Improve the working environment and avoid the interference of vibration and airflow; Close the windproof door; Take out the foreign body, turn the weighing pan to prevent scratching; External access 9V DC power adapter; Operate with static eliminator or wristband with static electricity
The displayed value does not match the actual weight	The balance is not calibrated; Not cleared before weighing; Did not adjust the level;	Calibrate the balance; Press →0← to clear; Use level feet to adjust the level.
Err.	CAL ERROR	Refer to the manual to re-operate
Err.1	COUNTING ERROR	
Err.2	PUT PAN WRONGLY	
Err.3	OVERLOAD	
Err.5	PERCENTAGE SETTING ERROR	

ABOUT THE BALANCE

This manual is used for FA-E(N) series multifunctional analytical balance.
FA-E (N)series multifunctional electronic balance is a new generation product newly developed. Using high-precision electromagnetic force balance sensor. It makes the measurement results more accurate, faster response, and fewer failures. FA-E(N) series multifunctional electronic balances have:

◇ Fast weighing. The speed can be adjusted
◇ Easy to operate
◇ Full range tare,clear, accumulate, overload, under load display, fault alarm within the full range;
◇ Counting function
◇ Rs232 Interface to connect with computer or printer
◇ Optional configuration and function expansion
◇ **FA-E: External Calibration;　　FA-EN: Internal Calibration**

Model	FA1004E(N)	FA1104E(N)	FA1204E(N)	FA2004E(N)	FA2104E(N)	FA2204E(N)
Max.CAP	100g	110g	120g	200g	210g	220g
Accuracy	Ⅰ					
Readability	0.0001g (0.1mg)					
Repeatability	±0.0002g					
Liner	±0.0003g					
Stable time	≤3s					
Operation Temp	15℃～35℃					
Pan size	Φ80mm (Φ90mm optional)					
Dimensions	300X200X295mm					
Power Supply	Power Cord					
Cal	FA-E: External Calibration（FA-EN: Internal Calibration ）					
G.W	6.0kg					
N.W	5.0kg					
Package Size	425x320x415mm					
Interface	RS232（RS485 and USB made custom）					

I. INSTALLATION

1.1.Unboxing

Please carefully open the packing box, gently take out the balance and the contents in the box, and save the packing materials for reuse.

(1) BALANCE   (2) PAN   (3)ADAPTER

(4) USER MANUAL   (5) WEIGHING MASS
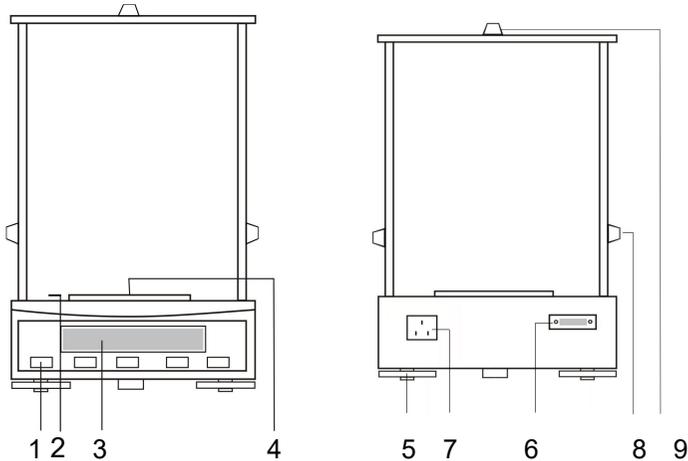
1.Keyboard   2. Bubble   3. Data display window   4 .Pan   5. Adjustable feet
6. Adjustable feet   7.Power outlet   8.Side sliding door   9.Top sliding door

1.2.Working Environment

If conditions do not permit, the working environment should be selected according to the following requirements:

(1) The studio should be kept clean and dry;

(2) The balance should be placed on a stable and fixed workbench (it is recommended to be placed on a marble platform);

(3) The workbench should be far away from doors and windows, so as to reduce the influence of airflow caused by opening windows and doors;

(4) The workbench should be set up where there is little vibration interference. The surroundings of the room are less affected by vibration, and the ideal position of the workbench should be placed;

(5) The balance should be placed in a place that is easy to cause temperature changes,

3.4 Baud Rate Setting:

The steps are as below:

1.Press "SET" for several seconds until the display show "UNIT",Then press "SET" again until it shows"BAUD";

2. Press "O/T" to enter baud rate choosing,it shows" 1200".

3. Press "UNIT" to choose you need,press "O/T" to confirm.

3.5 Frame Data

The output sequence of one frame data of the balance is as follows:

1	Frame header('E')	Fixed
2	Space（0X20）	Fixed
3	stable state	* (unstable),Space（stable）
4	Symbol	+,-,Space
5-13	Weighing data	Decimal point included,Meaningless front 0,print space
14	Space	Fixed
15-17	Weighing unit	
18	0x0d	Fixed
19	0x0d	Fixed

2.2.07 Internal Calibration Time Setting (Only For FA-EN)

1. Press "SET" for several seconds to enter menu,Until the display show "UNIT",Press "SET" again,until it shows "AUTOCAL".

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AUtoCAL
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2. Press "O/T" to confirm. Then Press "UNIT" to choose time,It will show "OFF min". "10min"."20min"..."90min".

3. Press "O/T" to confirm the time you need. (Default time is 30 min.)
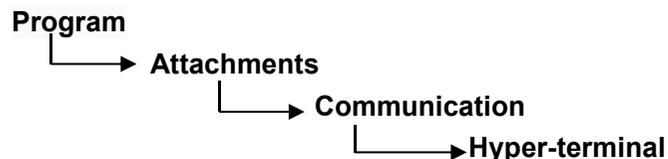
III.DATA OUTPUT

3.1 Serial Port Connection

BALANCE（9 Pin）   PC（9 Pin）

RXD   2···································· 3

TXD   3···································· 2

GND   5···································· 5

Pin2 - RxD
Pin3 - TxD
Pin5 - GND

The steps of connecting to computers:

Click the "start menu "

Program

→ **Attachments**

→ **Communication**

→**Hyper-terminal**

3.2 Serial Port parameters:

（1）Baud rate :1200(Default)

(2) The data format is 10 bits, with one starting bit (0), 8-bit data bit (ASCII code, low first), one stop bit (1);

（3）No Parity

3.3 Output Mode Setting :

Press "SET"for several seconds and enter into Menu. Press "SET"again until the balance shows "PRINT"; Press"0/T"enter into output mode,It will shows "CO-R"、 "CO-S"、"ONCE", Press "UNIT"to choose and "0/T"to confirm.

"CO-R"：Continuous Output   "CO-S"：Continuous output when data stable

"ONCE": Single-Point.   (When you choose "ONCE",Press SET to print.)

Note: The output mode of the balance is continuous(Default Setting).

such as avoiding direct sunlight and away from heaters;

(6) Please avoid connecting with large machines or devices with interference, and avoid the interference of other devices;

(7) The dry environment is prone to static electricity, so corresponding measures can be taken to avoid the influence of static electricity on weighing.

(8) Keep the balance away from objects and equipment with magnets or capable of generating magnetic fields;

(9) The balance shall not be used in areas with explosive danger;

(10) Do not use the balance for a long time in a high humidity or high dust environment;

(11) When the balance is transferred from a colder environment to another warmer environment, the moisture in the air will be on the balance.The internal condensation of the weighing system affects the accuracy and reliability of weighing. In order to eliminate the influence of moisture condensation, the balance can be left unplugged at room temperature for 2 hours before use.

1.3 Installation

Put the weighing pan on first, then plug the power adapter into the balance, then plug the power supply (input voltage 220V) and wait for it to turn on. Please place the weighing pan correctly, otherwise a prompt will appear that the weighing cannot be performed.

1.4 Keyboard/Display

The display and keyboard are like icons.
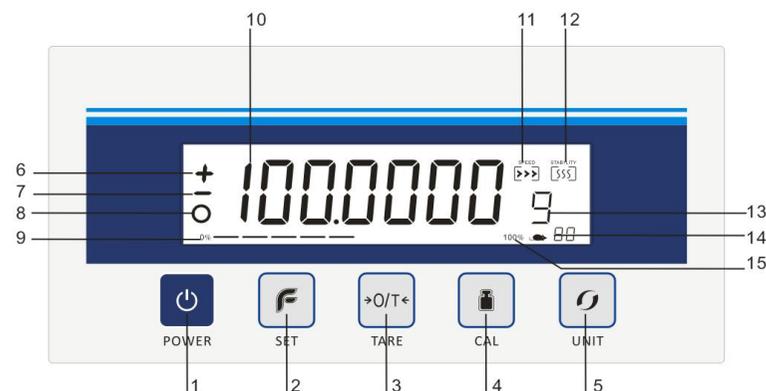
1. POWER   2. SET   3.TARE(→0/T←),CONFRIM   4.CAL   5.UNIT   6.+ 7.-

8. STABILITY SYMBOL   9.RANGE PROGRESS BAR   10.WEIGHING

11.SPEED   12.STABILITY   13.UNIT   14.ANIMAL WEIGHING ICON

II.OPERATION

Before using the balance, the balance should be placed horizontally. Use the adjustment foot screw at the bottom of the balance to adjust the level, so that the bubble in the leveler is adjusted to the center of the circle, and then quickly press the POWER button to turn on the display. To ensure accurate weighing of the balance, please ensure that the balance is fully warmed up (the recommended warm-up time is one hour).

2.1 Calibration The Balance

2.1.01 Cal Weight (0IMLF1)

MODEL	CAL.WEIGHT
FA1004E（N）	100g
FA1104E（N）	100g
FA1204E（N）	100g
FA2004E（N）	200g
FA2104E（N）	200g
FA2204E（N）	200g

2.1.02 Cal.Step

For FA-E(N) series balances, please warm up for 1 hour and wait until the balance is stable before calibrating.

Take FA2004E as an example,Before calibration, ensure that the scale is empty and free of any loading material.

1). Press "→0←" to tare first, the balance will display 0.0000g,

2). Then press the "CAL" button, the display shows "CAL-200" flashing,

3) At this time, put a "200g" calibration weight on the weighing pan, and after a few seconds, it will display "200.0000g" calibration is complete and can be used.

2.2.05 Factory Setting

Flat on the day in set or in the process of using the improper operation, can restore the factory Settings will be all set to return to the factory Settings, so that we can guarantee the balance is suitable for most of the operating practices and use place, when found abnormal scales and unstable, can restore the factory Settings to adjust the stability of the balance. Take FA2004E as an example and perform the following steps:

1.Press "SET" for several seconds ,until the display shows 'UNIT" and Press "SET" again,until it shows"DEFAULT";

2.Press" O/T"to confirm.The balance appears a prompt tone, and then returns to the boot interface to restore factory Settings.

Important: This setting only applies to the balance after setting confusion caused by wrong operation. Do not operate frequently to restore factory Settings.

2.2.06 Peak Hold

This function can keep the maximum value displayed on the screen for a long time, easy for customers to operate when using.

The steps are as below:

1.Press "SET" for several seconds ,Until the display shows "UNIT" and press "SET"again,then until it shows"PEAK";

2. Press "O/T" shows" ON/OFF",press "UNIT" to choose,press "O/T" to confirm ON/OFF;

2.2.04 Counting

There are counting functions in the balance, and you can use this for count the quantity.And please keep the products have the same weight, and the minimum weight must be ≥0.5mg.

The details operation as blow：

1.Press "SET" for several seconds until the display shows"UNIT", Then press "SET" again, until it shows"COU";

2.Press"O/T"to enter,it shows" COU 5pcs";

3.Press "UNIT" to choose quantity,and put matched sample quantity,press "O/T" ,it shows;

4..when "COU' disappearing,and showing digital,then you will operate;

5.After testing,press"SET"to choose"weight,press"0/T"back to weighing;

2.2.Function Setting

2.2.01 Unit conversion

FA-E(N) series analytical balance has UNIT conversion function, which can be selected by UNIT key to meet the requirements of different units. Or enter the menu to select, the specific requirements are as follows:

Step 1.Press"SET"for several seconds until show "UNIT";

Step 2.Press"O/T"to enter；

Step 3.Press"UNIT"choose you need,press"O/T"confirm the unit.;

2.2.02 Speed Adjustment

If your environment meets the requirements, you can adjust the speed of the balance to speed up the balance stability time, so as to improve the work efficiency. The specific operation steps are shown below:

1.Press "SET" for several seconds until the display shows "UNIT",The press "SET" until it shows "SPEED";

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SPEEd
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2.Press"O/T"to enter,Press "UNIT" to choose.[ ]lowest speed,increasing in order, [>>>] highest speed,press "O/T" to confirm;

Note：According to the different using environment, please carefully choose the speed
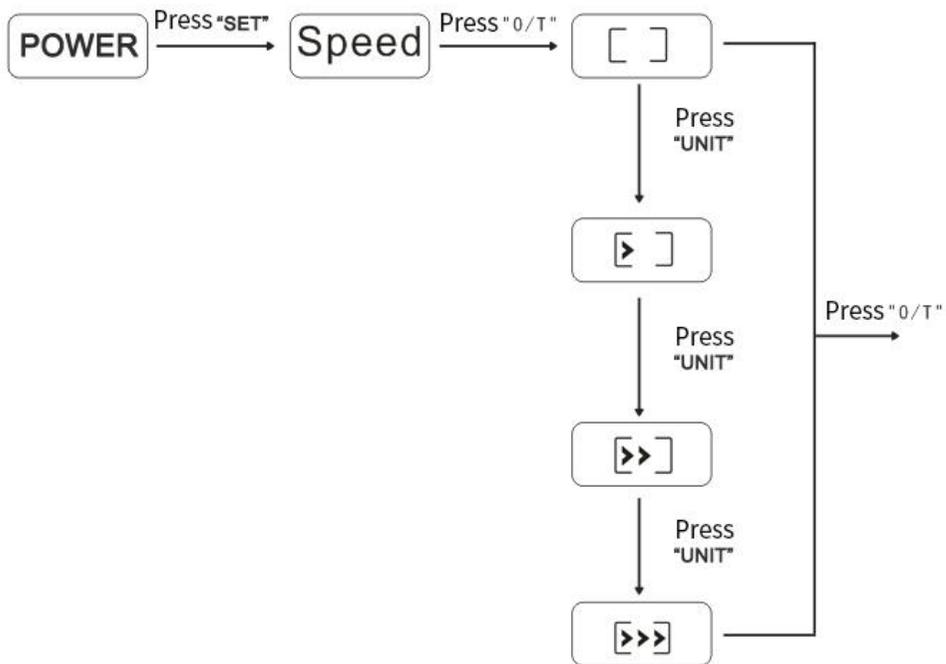
2.2.03 Stability Adjustment

According to different operating environments, the balance can be in a relatively stable state by selecting and adjusting the stability of the balance (it is suggested that the balance can be properly adjusted in the environment to ensure the normal operation of the balance). Specific operation steps can be seen below:

1.Press "SET" for several seconds until the display shows"UNIT", Then press "SET" again. Until it shows" STAB";

```
StAb.
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2.Press "O/T" to enter STAB setting.Press "UNIT" to choose sensitivity, [ ]Poorest Sensitivity, [SSS] High Sensitivity,press 'O/T' to confirm;