

KILOTECH

KHA SERIES

**ELECTRONIC BALANCE
INSTRUCTION MANUAL**



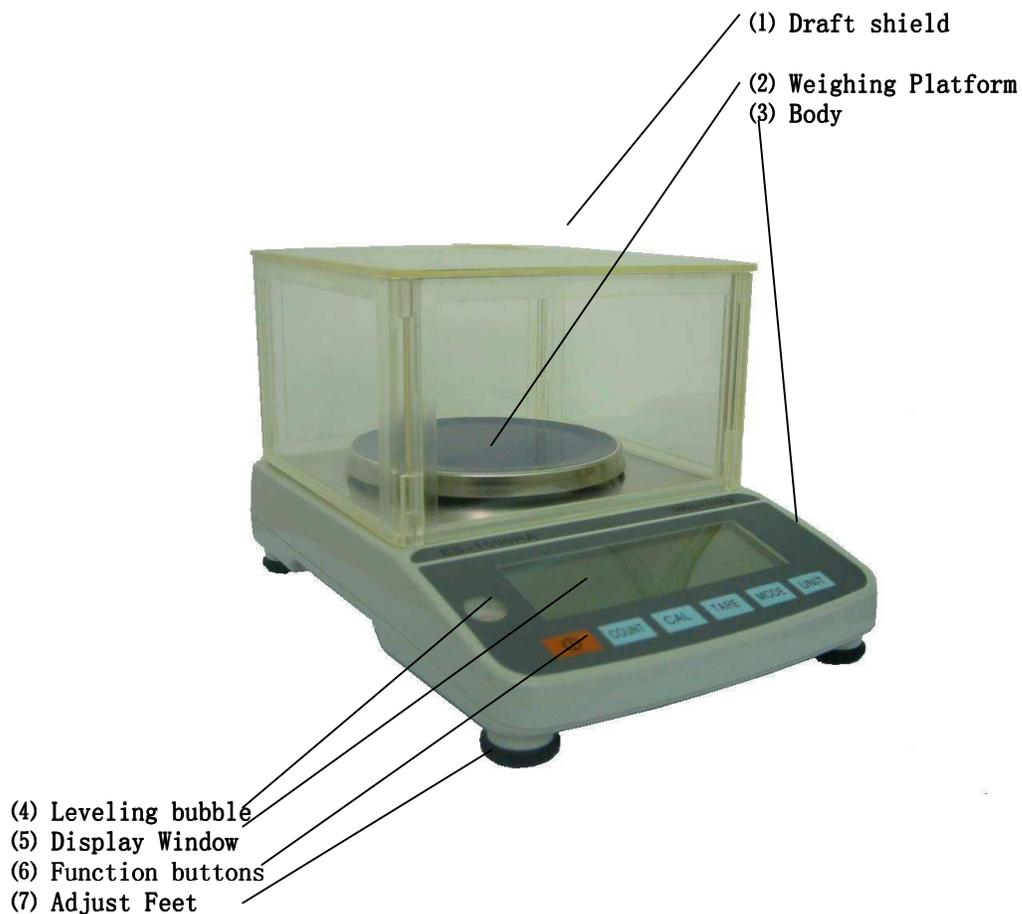
Thank you for purchasing a high quality Kilotech KHA precision balance. The KHA will give you accurate readings as long as you give it the proper care and maintenance.

1. Description

The Kilotech KHA series electronic balances are constructed for weighing and measuring with a high precision load cell, microcomputer and big liquid crystal display screen. It has the advantage of a simple operation, speedy weighing, accuracy and stability.

The KHA series is an excellent low priced precision balance which is well suited for laboratory and educational applications. They should not be used in production lines, in food preparation or any other environment where high heat, cold, humidity or vibration are a factor. The KHA series is widely used in laboratories in factories, mines, institutions, agriculture, water conservation, medicine, food analysis, precious goods etc.

2. Construction and installation



3. Packing list

Please check the contents of this box carefully.

- One electronic balance and weighing platform.
- One AC adapter
- One draft shield (On 0.01g models only)
- One operation instruction manual

- One calibration weight (With 200g and 600g only)

Weight standard to use when calibrating.

Mode	KHA 200	KHA 600	KHA 1000	KHA 201	KHA 601	KHA 1201	KHA 2401	KHA 5001
Cal. Weight	100/200g	200/500g	500/1000g	100/200g	200/600g	500/1200g	1000/2400g	2000/5000g

4. Operation

Always make sure that the balance is level and on a solid surface in order to eliminate vibration as much as possible. Only use the balance in a clean and dry environment.

4.1 Turn ON

Use either the AC adapter or install **4** alkaline **AA SIZE** batteries (not included) in the battery compartment under the balance. With no load on the platform, press “”.

All the segments of the indicator will be shown, then the software version is displayed. When “0” is displayed, the balance can be used.

4.2 Turn off

To turn OFF the balance, press “”.

4.3 Weighing method

Press “TARE” to set the display to zero. Put the object to be weighted on the platform . Wait until the measuring unit symbol (example “g”) appears and is stable, then the weight can be read.

4.4 Balance calibration

Two types of calibration can be done:
 Balance sensitivity (SCALE is displayed),
 Balance linearity (LINE is displayed).

When precision weighing is done, calibrate the balance as follows:

4.4.1 Sensitivity calibration

1. Empty the platform.
2. Press “TARE” to put balance to 0.
3. Press “CAL” and the balance will display “SCALE”.
4. Press “TARE” and the balance will display a weight required for calibration. When calibrating the balance sensitivity, two different weight values can be used (interchangeable). You can press “MODE” to display a second weight that can be used to do sensitivity calibration. Select one of the two requested weights.
5. Press “TARE”. The weight will flash.
6. Put the corresponding test weight on the center of the platform. The display will continue flashing for a few seconds and stop flashing but still showing the weight of the test weight.
7. Calibration is complete.
8. Remove the test weight from the platform. Normal weighing can be done.

4.4.2 Linear calibration

1. Empty the platform.
2. Press “TARE” to put balance to 0.
3. Press “CAL” and the balance will display “SCALE”.
4. Press “MODE” and the balance will display “LINE”.
5. Press “TARE” and the balance will display the first weight required for calibration.
6. Put the corresponding test weight on the platform. The same weight value will flash while the balance is calibrating.

7. The display will change to show (and flash) the 2nd weight value. Put the corresponding weight on the platform. The weight value will flash while the balance is calibrating.
8. In a few seconds, the balance will stop flashing and will display the 2nd capacity weight value.

NOTE:

- Press “**CAL**”, and balance will display “**SCALE**” or “**LINE**”. Press **MODE** to toggle between “**SCALE**” and “**LINE**”
- Press “**TARE**” and balance will display the needed calibration weights. Press **MODE** to toggle between weights.
- The factory has completed the linear calibration. This should not be re-done unless the load-cell needs to be changed or the weight is linearly inaccurate.

4.5 Counting Function

1. The balance will count pieces based on the weight of a reference sample: **5, 10, 20, 30, 40, or 50** pieces.
2. Press “**COUNT**”, the balance will display “**CON pcs.**”.
3. If you plan to use a container to hold the pieces during the count, place the empty container on the platform, then press “**TARE**”. **If not, just press “TARE”**. The balance displays “**pc ADD 5**”.
4. Press the “**MODE**” button to toggle between **ADD 5, 10, 20, 30, 40, or 50** pieces. Select the appropriate weighing sample for your application. **IMPORTANT:** The larger the sample, the less error there will be when counting.
5. Press “**TARE**” to activate the reference count.
6. Remove the sample weight.
7. The balance is ready to count. Add pieces to the balance/container as desired and read the quantity on the display.

NOTE:

- Once you are ready to count, this reference sample will stay recorded in the balance even if the balance is turned off.
- If you want to count parts of another weight, repeat the steps above in order to establish the new reference count.
- If “**PC Err**” is displayed, this means the sample is too light to provide accurate results within the error range set by the balance.
- Press “**UNIT**” to switch between parts counting and weighing.

4.6 Unit Selection

Press “**UNIT**” to switch between **g, oz, ozt, dwt, lb, ct and pcs**.

4.7 Back-light Function

Press “**MODE**” to turn the back-light on or off.

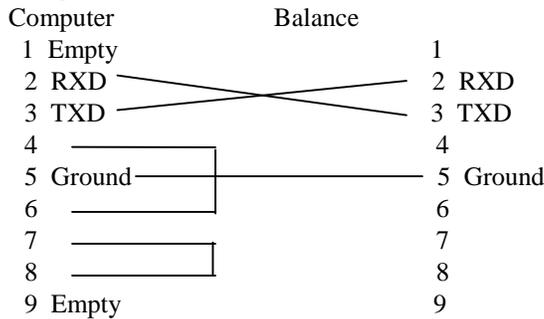
4.8 RS232C Communication (ASCII)

4.8.1 Baud rate =9600

4.8.2 Data form output by KHA series electronic balances

+ (-) XXX. XX UNIT< CR>

4.8.3 Wiring method



4.8.4 Demonstrating communication software (BASIC)

```

10 CLS
20 OPEN "COM2: 9600, N, 8, 1" FOR RANDOM AS I#
30 Z$=INKEY $
40 INPUT #1,A$
50 PRINT A$
60 INPUT #1, A$
70 PRINT A$
80 I=I+1
90 IF I<10 THEN GOTO 60
100 PRINT "TIME="; I
110 END

```

5. Care and maintenance

- To keep the balance operating properly, the housing and platform should be kept clean and free from foreign material. If necessary, a cloth dampened with a mild detergent may be used. Keep calibration weights in a safe dry place.
- Unplug the AC Adapter when not in use. For long term storage, remove the batteries.

6. Error Codes

The following list describes the various errors which may appear on the display and the suggested remedy.

Display description

- **Err 0** With the platform on, this signal indicates the platform is too light. If this error still occurs, the sensor or the circuit board may be faulty/damaged. The balance must be sent to the manufacturer to be serviced.
- **Err 1** The sample being weighed exceeds the capacity of the balance. If the error occurs when the sample is within the balance capacity, the balance may not be correctly calibrated. Re-calibrate the balance.
- **Err 2** This indicates, when turning the balance on, that there is no platform on the balance or the platform is too light. Please put the platform on before turning on the balance or calibrate the balance once again.
- **Err 3** This indicates there was weight on the platform when turned on. Remove the weight from the platform before turning on the balance.

7. Troubleshooting

SYMPTOM	PROBABLE CAUSE	REMEDY
No Display	Power Adapter not connected. Batteries are dead.	Connect power Adapter. Replace batteries
Low Battery Indicator	Batteries are weak	Replace batteries
Incorrect Weight Reading	Balance was not set to zero. Balance has not been correctly calibrated.	With no load on the platform, press " TARE ". Then weighing can be done. Recalibrate the balance.

Calibration Procedure does not work	Incorrect weights being used	Use correct weights.
-------------------------------------	------------------------------	----------------------

8. Warranty

This product is warranted against manufacturer defect but not for damages caused by abuse. The warrantee is to the original end user and is not transferable. Call your original scale dealer.

This warrantee does not cover damage, mal function or breakdown due to mal-operation, erosion from corrosive or radioactive substances, penetration of foreign matter, damage of load-cell and battery, breakdown resulting from improper maintenance or any modification, or attempt to repair by unauthorized personnel.

9. Specifications

MODEL	KHA 200	KHA 500	KHA 1000	KHA 201	KHA 501	KHA 1201	KHA 2401	KHA 5001
Weighing capacity and readability (g)	200×0.01	500×0.01	1000×0.01	200×0.1	600×0.1	1200×0.1	2400×0.1	5000×0.1
Standard deviation (e)	1	1	1	1	1	1	1	1
Linearity (e)	±1							
Corner deviation (e)	±1							
Minimum capacity (g)	0.01	0.01	0.01	0.1	0.1	0.1	0.1	0.1
Taring range	0-200g	0-500g	0-1000g	0-200g	0-600g	0-1200g	0-2400g	0-5000g
Overload capacity	Maximum capacity +9e							
Time of stabilizing (s)	3							
Applicable temperature range	10-35℃							
Power source	AC adapter (supplied with balance); or 6 AA Batteries (not included)							
Pan size (mm)	φ 120							
Housing dimension (mm)	251 (L) × 172 (W) × 58 (H)							
Net weight	1.05kg							