

ELECTRONIC BALANCE

MT-H Series



This manual should be available for all users of these equipments. To get the best results and a higher duration of this equipment it is advisable to read carefully this manual and follow the processes of use.

Thank you for choosing this equipment. We sincerely wish that you enjoy your electronic balances, series MT. We highly recommend looking after this equipment according to what is stated in this manual.

We develop its products according to the CE marking regulations as well as emphasizing the ergonomics and security for its user.

The correct using of the equipment and its good quality will permit you to enjoy this equipment for years.

The improper use of the equipment can cause accidents and electric discharges, circuit breakers, fires, damages, etc. Please read the point of Maintenance, where we expose the security notes.

TO GET THE BEST RESULTS AND A HIGHER DURATION OF THE EQUIPMENT IT IS ADVISABLE TO READ THOROUGHLY THIS MANUAL BEFORE OPERATING WITH THE EQUIPMENT.

Please bear in mind the following:

- This manual is inseparable from the electronic balances MT series, so it should be available for all the users of this equipment.
- You should carefully handle the balance avoiding sudden movements, knocks, free fall of heavy / sharp objects on it. Avoid spilling liquids inside the equipment.
- Never dismantle the different pieces of the balance to repair it yourself, since it could produce a defective use of the whole equipment and a loss of the product warranty, as well as injuries on people that handle the balance.
- To prevent fire or electric discharges avoid dry or dusty environments. In case it may happen unplug the equipment immediately.
- If you have any doubt about setting up, installation or functioning do not hesitate in contacting your wholesaler.
- This equipment is protected under the Warranties.
- Overhaul is not covered by the equipment warranty.
- Operations made by non-qualified staff will automatically produce a loss of the warranty.
- Accessories (including their loss), are not covered by the product's warranty. The warranty neither covers piece's deterioration due to the course of time.
- Please make sure you keep the invoice, either for having the right to claim or asking for warranty coverage. In case you have to send the equipment to us you should enclose the original invoice or a copy as guarantee.
- Manufacturer reserves the right to modify or improve the manual or equipment.

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1. SPECIFICATIONS

Precision balances MT series work on high precision strain gauge load cell which implements high speed stabilization and high reliability.

Technical parameters

Code(MT)	302H	602H	1002H	2002H
Max. capacity (g)	300	600	1000	2000
Tare range (g)	0-300	0-600	0-1000	0-2000
Readability	0.01g			
Pan size (mm)	Φ130mm			
Dimensions (LxWxH)	280x190x270mm			
Power supply	AC 110-120V/220-240V			
Code(MT)	1003H	2003H	3003H	5003H
Max. capacity (g)	100	200	300	500
Tare range (g)	0-100	0-200	0-300	0-500
Readability	0.001g			
Pan size (mm)	Φ110mm			
Dimensions (LxWxH)	280x190x270mm			
Power supply	AC 110-120V/220-240V			

- High precision load cell
- Full plastic housing
- Stainless steel pan
- Easy to read LCD with backlight
- Overload display indicator
- Low or charged battery display indicator
- Mains adapter supplied as standard
- With built-in rechargeable battery. (for optional)
- Lock/Unlock battery switch
- Height adjustable feet
- Full capacity taring
- Simple 5 key menu for easy operation
- Intelligent calibration
- Selectable measuring units: g, ct, oz, ozt, lb, kg, dr, gn, m, mm, tIJ, tlt, tlh, gsm, tmr, TAR, PKT.
- Piece counting function

2. DESCRIPTION

Structure

Stainless Steel#304 Weighing Pan

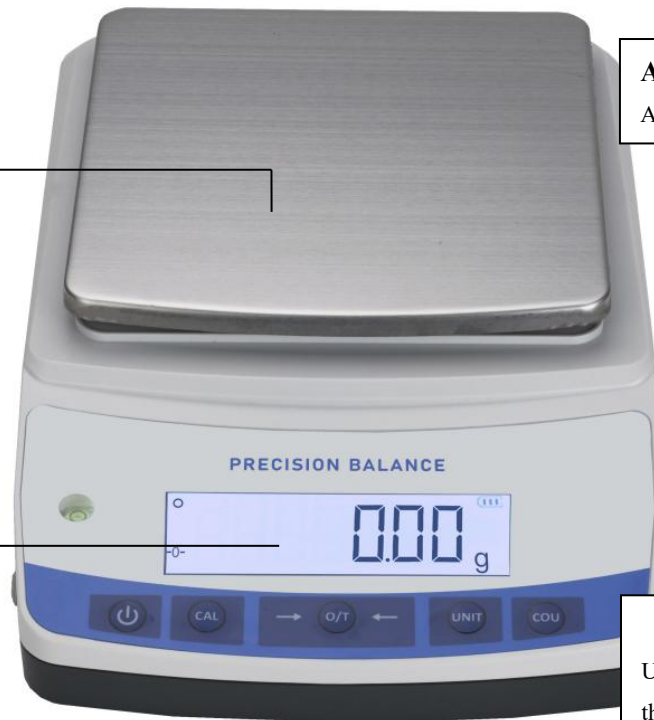
Place the object to be weighed here

Adjustable Four Feet

Adjust to level the balance

Display panel

Shows the weighing results and parameter information



Operation keys

Used to turn the balance on and off, tare the balance and perform calibration.

Name and function of the components

Numeric value area

Unit display area

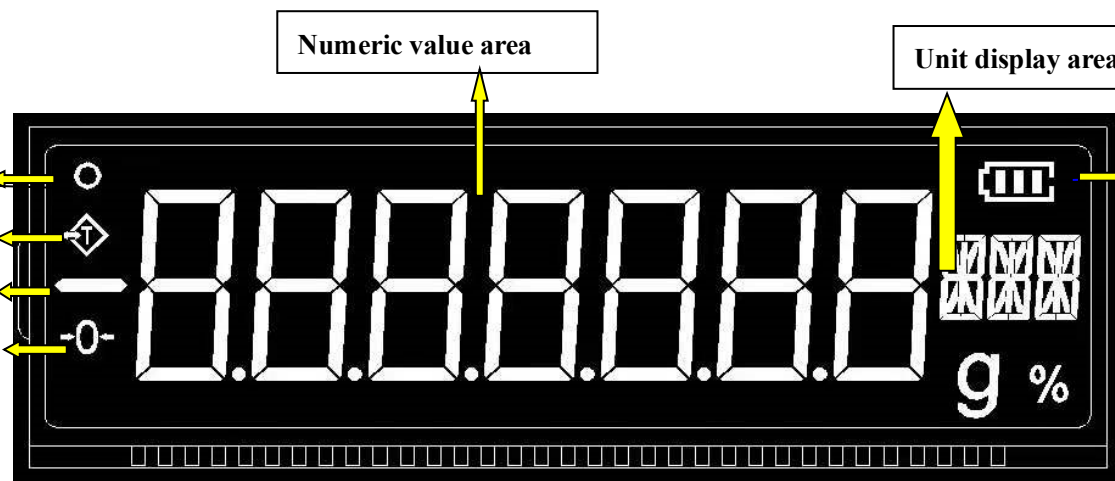
Stable symbol

Tare symbol


Negative

Zero symbol

Power



Operation keys function

Key	In weighing mode	
	Press once and release	Keep pressed for a while
	Turn the balance on and off	—
CAL	—	To make calibration
O/T	To be ZERO or TARE	
UNIT	Convery the units	—
COU	—	Counting mode

3. INSTALLATION

Choosing the installation place

The measuring performance of the balance is greatly influenced by the environment where it is installed.

Observe the following points to ensure a safe and accurate weighing.

Caution



Do not use the balance anywhere exposed to explosive, combustibile or corrosive gases.

This could cause fire or other kind of serious problems.





Instructions

Use the correct power supply and voltage with the balance.

Using an incorrect power supply or voltage with the balance will lead to fire or trouble with the balance.

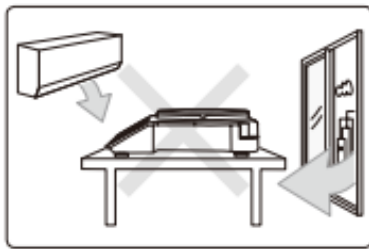
Note also that if the power supply or voltage is unstable or if the power supply capacity is insufficient, it will not be possible to obtain satisfactory performance from the balance.



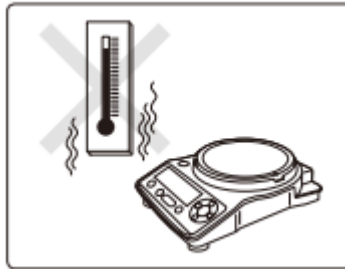
Prohibitions

Avoid locations where the balance will be exposed to any of the following situations:

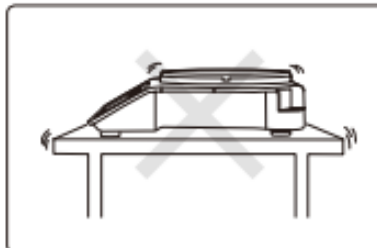
- Air flow from an air conditioner, ventilator, door or window.



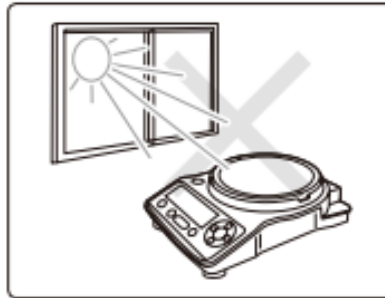
- Extreme temperature changes



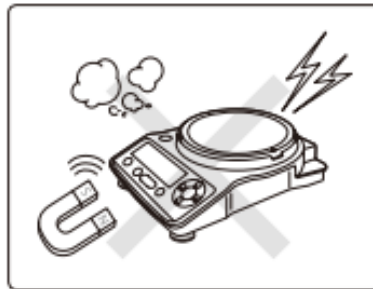
- Vibration from surroundings or nearby equipments



⌘ Direct sunlight



⌘ Dust, electromagnetic waves or a magnetic field



Install the balance on a strong and stable flat table or floor.

Placing the balance in an unstable site could lead to troubles with the balance or injury to users.

When selecting the installation site, take into account the combined weight of the balance and the item to be weighed.

Unpacking and delivery inspection

Check that all of the items indicated below are included in the package, and that nothing has been damaged:

- Balance
- Pan
- Instruction manual
- Adapter
- Calibrated weight (Standard for 1mg balance only).

In case the balance or any component presents any damage due to transport tell it immediately to your transport agent or dealer so that they can make the claims in the correct time limit.

Turning the power on

1. Insert the plug of the power cord into the DC connector at the back of the balance.
2. Unlock the rechargeable battery by the switch at the rear side of the balance.

Note: if you are not using the balance for a long period of time lock the battery to preserve it in good conditions.

3. Connect the power cord to the power outlet.
4. Press “ON”; The display will automatically light on and go through the changes indicated below:

0.00g

0.000g

Warming up

Before performing calibration on the balance or measuring its accuracy it is necessary to ensure that the balance is in a stable state.

For balance stabilization it is important that environmental temperature is stable.

Leave the balance on and in weighing mode for at least 15-30 minutes before performing calibration; this is called “warming up”.

Calibration

Perform balance calibration each time after moving it or temperature changes a lot or humidity changes a lot. Weights are required for external calibration balances.

Necessary calibration weight depending on maximum capacity of the balance. Suggested as below:

Max. capacity	Calibration weight
300 g	200 g
500 g	200 g
1000 g	500 g
2000 g	1000 g
3000 g	2000 g
5000 g	2000 g
6000 g	5000 g
8000g	5000g

Tips: Suggested F2 or higher class weight for 1mg balance.

Before performing calibration, warm up the balance in advance. (Remove the bag from the windshield, and stand it for 1 to 2 hours to release the static.)

1. Keep pressed "**CAL**" key; The necessary weight value will flash.
2. Place the calibration weight on the pan; Wait until the flashing weight value display changes to a steady state (e.g. 500.00 g).
3. Remove the weight of the pan; "0.00" will be displayed and the balance will return to the weighing mode.

Linearity Calibration

If tolerance (error) after calibration is too high, then it is necessary to make linearity calibration. For this, proceed as follows:

1. Long press CAL key when the number flashes, and long press CAL again.
2. The necessary weight value will flash, and put the weight accordingly until the display shows 0.00g.

4. USE OF THE BALANCE

Weighing function

1. Enter the weighing mode
2. Place a container on the pan
3. Once the weight on display has been stabilized, press "TARE" key; value on display will change to 0.00.
4. Place the sample to be weighed in the container.
5. Once the value on display has been stabilized, read the display.

Piece counting function

1. Long Press "**COU**" key to enter in piece counting mode; The display will show 10-20-50-100 in circle.
2. Place the corresponding sample of pieces on the pan. (e.g. put 10pcs sample on the pan, when the display shows 10, press "**COU**" to save the data.) Then it works.

Note: In counting mode, the weight of the pieces must be even and the weight of an individual piece should not be less than the readability of the balance.

6. To return to weighing mode, press "UNIT/COU" key.

Weighing unit selection

Balance can perform weighing in different measuring units.

In weighing mode press repeatedly "**UNIT**" key to consecutively display all available weighing units and select the desired one.

The weighing unit by default is g.

Overload

The weight of the sample cannot exceed the rated maximum capacity of the balance; when exceeded, the upper line "----OL-----" will be displayed. Remove the sample immediately to avoid damages in the balance.

Energy saving mode

Press **"ON/OFF"** key, before entering the weight mode, Double press **"O/T"** key, then press **"UNIT"** key to enter the setting mode. It will show "01-diu". Press **"O/T"** until it shows "07-LED", press **"CAL"** enter the setting for backlight saving mode. And press **"UNIT"** to choose below mode.

- 0: display backlit is off
- 1: backlight on always.
- 2: backlight of display will be off after 15 seconds of no use.

Press CAL key to confirm the setting. And turn off the balance to enter new mode.

Baudrate setting

Press **"ON/OFF"** key, before entering the weight mode, Double press **"O/T"** key, then press **"UNIT"** key to enter the setting mode. It will show "01-diu". Then press **"O/T"** until it shows "08-BUD", press **"CAL"** to enter the Baudrate setting mode, press **"O/T"** to choose the required baudrate, then press **"CAL"** to confirm the setting.

Default Baudrate is 9600.

Data output setting

Press **"ON/OFF"** key, before entering the weight mode, Double press **"O/T"** key, then press **"UNIT"** key to enter the setting mode. It will show "01-diu". Then press **"O/T"** until it shows "09-odE". Press **"CAL"** to enter the data output setting mode, And press **"TARE"** to choose below mode.

- 0: no output.
- 1: press key to output. (press **"CAL"** as print)
- 2: stability output. (When the balance weighing stable, it can output automatically.)
- 3. continuous output.

Press **"CAL"** key to confirm the setting. And turn off the balance to enter new mode.

RS232 interface

1. Balance (DB9 pin)

Connection

	Balance (9 pins)	PC/Printer (9 pins)
RXD (Input)	2.....	3
TXD (Output)	3.....	2
GND (Ground)	5.....	5

2. Balance (USB)

USB male ports.....USB male ports

When the balance USB connect with PC, pls download the PL2303 driver software.

- The baudrate by default is 9600 bps (see *Baudrate setting*)
- Data format: 10 bits, 0 as start bit, 1 as stop bit, 8 digits (ASCII code)
- No odd and even numbers adjusting
- Data output: by default is continuous mode. The data output mode can be changed into press output, timing output and continuous output (see *Data output setting*)
- Output data format

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Space	Space	Space or *	±	data	data	data	data or dot	data or dot	data	data	data	Unit1	Unit2	end	return

5. MAINTENANCE AND CLEANING

To get the best results and a higher duration of the balance it is essential to follow the processes of use.

Note: All the processes of use mentioned below will not have any value unless you keep a continued and careful maintenance.

- Please follow the processes of use of this manual.
- This manual should be available for all users of this equipment.
- Prevent the balance from sudden movements and knocks, as well as from direct sunlight or air flows. The balance is a precision instrument, you must handle it carefully.
- The balance is supplied with an adapter. It has to be plugged to an earth connection and the socket should be handy and ready to unplug the equipment in case of emergency.

- Never unplug the adapter by pulling the wire, do it from the base.
- Never use the balance in a wedged location as for example a shelf.
- Never use sharp objects as pens, etc... to press the buttons of the control panel; only use your fingers.
- Never place on the pan an object heavier than the maximum capacity of the balance, the sensor could be damaged.
- Neither submerge the balance nor spill liquids on it.
- When you are not using the balance for a long period of time, lock the rechargeable battery.
- If any liquid comes into contact with the electric parts of the balance please do immediately disconnect it from the net and send it to the technical service, as soon as possible, for its checking and adjustment.
- Always use original components and supplies. Other devices can be similar but they can damage the equipment.

Cleaning

- Never use scourers or substances that can grate for cleaning metallic parts such as stainless steel, aluminium, coatings, etc. as they damage the balance and produce an early ageing of the equipment.
- Use a fluff-free cloth dampened with soaped water that does not contain abrasives.

ATTENTION!! IF EQUIPMENTS ARE NOT PROPERLY CLEAN AND DISINFECTED THEY WOULD NOT BE ALLOWED TO REPAIR BY OUR TECHNICAL SERVICE.

Note: According to the in force legislation regarding “Non-automatic weighting instruments” in which balances are included, by means of writ dating from 22nd October, 1994 (BOE 1/3rd/95), these balances must not be used for:

- *Commercial transactions*
- *Calculating taxes, tariffs, rates, indemnities and other similar canons*
- *Judicial surveys*
- *Pharmaceutical medicine preparations, as well as analysis made in medical or pharmaceutical laboratories*
- *Determining the price or total amount in sale price or in pre-packaged preparations*



Instructions on environmental protection

The electronic balances MT series can operate with rechargeable batteries. Batteries contain heavy metals (zinc, lithium, mercury, etc.) that could contaminate water, soils, etc.

At the end of its life cycle, please, do not dispose of this equipment by throwing it in the usual garbage; hand it over a collection point for the recycling of electrical and electronic appliances. It does not contain dangerous or toxic products for humans but a non adequate disposal would damage the environment.

The materials are recyclable as mentioned in its marking. By recycling material or by other forms of re-utilization of old appliances, you are making an important contribution to protect our environment.

Please inquire at the community administration for the authorized disposal location.