



Moisture Analyzer Balance

LB-12MAB

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1. Safety Measures

For safe and dependable operation, please comply with the following instructions:

- 1) This Moisture Analyzer is used for the determination of the moisture in the samples.
- 2) Any improper operation can endanger personnel and damage the instrument or other property.
- 3) Confirm the input voltage on the label and plug type match your local AC.
- 4) This Moisture Analyzer is supplied with a 3-pin power cable with an equipment grounding conductor. Disconnecting the grounding conductor is prohibited.
- 5) Make sure the plug will not be an obstacle or cause any tripping risk.
- 6) Never use this moisture analyzer in a hazardous, wet, or unstable environment.
- 7) Unplug when cleaning the instrument.
- 8) Never convert power during the test. (e.g. From 110V convert to 220V or contrary)
- 9) Ensure sufficient free space around the instrument. (approximately 1 m free space above)
- 10) This Moisture Analyzer must be operated by trained personnel who are familiar with the properties of the samples and with the handling of the instrument.
- 11) Users can use goggles, gloves, protective clothing, and masks to operate the instrument.
- 12) Never make any modifications or constructional alterations to the instrument or others.
- 13) Moisture analyzer works through heating.
- 14) Never place flammable materials on, below, or next to the instrument as the area around the dryer unit warms up.
- 15) Exercise caution when removing the sample, the sample itself, the sample chamber, and any sample containers may still be very hot. Special care for parts of samples.
- 16) For samples of any potential danger, be careful to analyze the probable danger consequences.
- 17) **Fire/Explosion:** During heating, some solvents, and samples of flammable or explosive will liberate flammable or explosive gas or steam. Avoiding fire or explosion, using such samples in a dry environment with low temperature.
- 18) **Toxin/Inflammability:** Only dry toxic or corrosive samples in a stink cupboard.
- 19) **Corrosion:** Samples which release corrosive vapors. In the case of such samples, we advise users to work with small amounts of samples as the vapor can condense on cooler housing parts and cause corrosion.

Note: If the use of the above types of samples caused any damage is at your peril.

2. Introduction

Moisture Analyzer Balance LB-12MAB is a rapid moisture testing instrument with digital display. The instrument is used to weigh a range of substances up to 50 g and measure their moisture content. A halogen lamp heats up the chamber to 180 °C / 356 °F. The moisture analyzer dries the substance to be weighed within the heating chamber and determines the moisture content from the difference in weight.

3. Features

1. Weighing capacity- 50 g
2. Uniquely designed halogen radiator to ensure effective sample drying
3. Maximum temperature- 180 °C
4. Accuracy- 10 mg
5. Adaptation of time, temperature, and drying profile of the examined material
6. High precision determination of material humidity
7. Superior sensitivity, rapid response and calibration stability

4. Specifications

Model No.	LB-12MAB
Maximum weighing capacity	50 g
Accuracy	10 mg
Pan size	90 mm
Maximum temperature	180 °C
Ambient temperature	10 – 30 °C
Interface	RS232
Outline dimensions	300 × 160 × 140 mm
Weight	5 kgs

5. Applications

Moisture Analyzer Balance LB-12MAB is used for rapid determination of free water chemicals, grain, mineral, biological products, food, pharmaceutical raw materials, paper, textile raw materials and other types of samples.

6. Installation

6.1 Placement

- The operation table remains stable and horizontal all along.
- Choosing a safe and ventilative place. Special place for corrosive and toxic gas or danger samples.
- Avoid placing the moisture analyzer in severe temperature fluctuations, excessive humidity, airlessness, vibration, electromagnetic fields, overheating, or direct sunlight.

6.2 Components Installation



1. Place underpan



2. Place bracket and screw



3. Place pan on bracket.



OR



4. Correct placement method



WRONG

5. Placed wrong method

Note: Do not make the handle tray touch with the bracket,

6.3 Power Connection

Plugging at the back of the moisture analyzer and attached to the power outlet at the other.

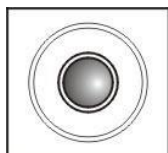


Note: To get the best testing results, please warm up 30 minutes at least before the test.

7. Operations

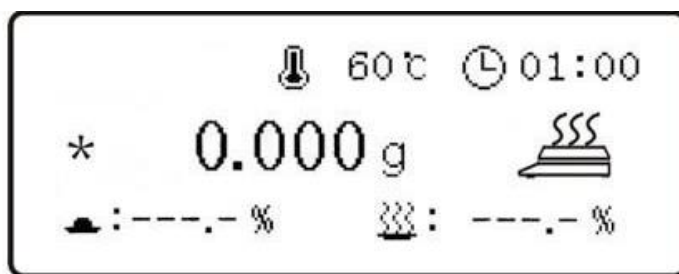
7.1 Level Adjustment

Adjusting the level with a level indicator and adjustable feet. As illustrated in the pictures below:



Note: Must re-adjust the level if the location changes.

7.2 Display



LB-12MAB	Model
*	Unstable
	Percentage of dry weight
	Percentage of moisture
g	Gram
	Temperature setting or Current temperature
	Time setting (M / S)
	Heating now

7.3 Operation Panel



Key	Title		Meanings
	ON/OFF		Turn on /Turn off
	TARE/BACK (shout press)		Stop to test, cancel the current setting
	TEMPERATURE (shout press)		Temperature Setting
	TIME (shout press)		Time Setting
	UP	(shout press)	Temperature or time rise in sequence
		(long press)	Temperature or time rise steadily
	DOWN	(shout press)	Temperature or time reduction in sequence
		(long press)	Temperature or time reduce constantly
	CAL/ PRINT	(long press)	Calibration
		(shout press)	Print
	TEST (shout press)		Begin to test

Moisture Analyzer Balance LB-12MAB

7.4 Operation Mode

1) Standby

The moisture analyzer is in standby mode when connected to AC power.

 (shout press)	Begin to work and go to weighing mode.
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2) Weighing Mode

 (shout press)	Zero clearing.
 (shout press)	Digits shining, go to set temperature.
 (shout press)	Digits shining, go to set time.
 (shout press)	Go to testing mode. The weight of the sample must be > 0.5g. If < 0.5g, "< 0.5g" flicker, then press it to cancel.
 (long press)	Begin to calibrate.

3) Temperature Setting

	(shout press)	Go to temperature mode, digits flicker.
	(shout press)	Temperature increases in sequence by 1°C
	(long press)	Temperature increases steadily.
	(shout press)	Temperature reduces in sequence by 1°C
	(long press)	Temperature reduces steadily.
	(shout press)	Confirm the value and save.
	(shout press)	Exit without saving.

Working temperature is 50°C-180°C stepping is 1 °C

4) Time Setting

Setting time from 1-99 minutes, stepping is 10 seconds.

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	(shout press)	Go to time setting mode, digits flicker
	(shout press)	Time reduces by 10s
	(long press)	Time reduces steadily
	(shout press)	Time increases in sequence by 10s
	(long press)	Time increases steadily
	(shout press)	Confirm the value and save
	(shout press)	Exit without saving

BM series provides two easier time-setting ways:

(1) Automatic Mode

During heating, if the weight of moisture is reduced $< 0.1\%$, the moisture analyzer will stop working.

AUTO Mode Setting

→ or (Choose “**AUTO**” mode) → (confirm)

(2) Time Setting Mode

Setting heating time manually. The moisture analyzer will stop heating if the setting time is up.

Time Setting

→ or (choose time setting) → (confirm) →
 → (change time) → (save and back to weighing mode)

7.5 Test Procedure

Temperature Setting → Time Setting → Sample Preparation → Put on empty pan →



(clear the weight of pan) → Put sample on pan ($> 0.5\text{ g}$) → Close cover

→ (test) → Show dry weight % and moisture % → Beeping → (back)

Note: If the heating cover opens, it will stop heating and go back to weighing mode. The test is invalid.

7.6. Testing

In the process of heating and drying, we obtain the moisture according to the weight loss of the sample. The speed and quality of testing could refer to the following parameters. Setting parameters can be confirmed by several trial tests.

The best testing results depend on the following settings:

1) Heating Temperature

Heating temperature controls heating time. (e.g. Lower temperature will need more time.) Heating temperature requires no disintegration or change of chemical structure. (Generally, the setting is 105°C except for special requirements of samples and industry.) For some samples, different moisture content will be measured at different heating temperatures. In this case, try to increase the temperature to compensate for the errors of testing.

2) Weight of Sample

The weight of the sample affects testing time and repeatability of results maximum weight is 50 g with more samples, more moisture evaporates.

The following table shows the relationship between the sample and repeatability for reference.

Weight	Repeatability
0.5g	±1.0%
1g	±0.6
2g	±0.3%
5g	±0.12%
10g	±0.06%

3) Sample Preparation

Samples should be representative so that they can get accurate and repeated results. When preparing the sample, make sure to place the sample on the pan evenly and avoid excessive accumulation and too many samples.

4) Types of Samples

Mushy, fatty, and liquefiable materials

Enlarge the surface area of the sample with a glass fiber haptor. (e.g. Butter, moisture is distributed more evenly through the haptor, and moisture evaporates faster and more completely by enlarging the surface)

Liquid

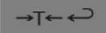
- Liquid will drop and hinder drying fast.
- Using a haptor to distribute the liquid evenly on a larger area to save drying time.
- Easily Incrustive, temperature-sensitive materials
- The sample will be intrusive on its surface which will hinder testing.
- Using a haptor to cover the sample with a mild and suitable temperature.
- Then it will make repeatability better.

Sugary Materials

- Sugary samples will become scorched easily.
- Choosing a modest temperature and making sure to distribute the sample evenly and thinly.
- Improving repeatability of testing with haptor too.
- The above materials may cause fire, explosion, damage, or injury.
- For any samples with security risks, please be careful of the possible dangers.
- In this case, the moisture analyzer should be kept specially.

8. Maintenance

- Moisture analyzer works out   testing results with relative weight.
- So, the smaller errors of absolute weight affect the accuracy slightly.
- The calibration is not necessary because the stable weighing, slightly affected by temperature, keeps the result of calibration for a long time.
- No load in weighing mode. Long press, show "cal" and "50.00 g" flicker Put a 50g weight on the pan as calibration weight, and show "☆"
- Later the LCD shows "50.00 g", which means the calibration is finished and back to the weight mode.

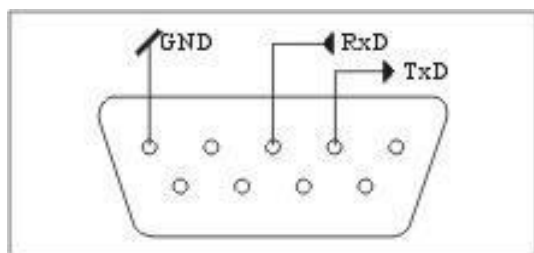
ATTENTION:  Press to quit from calibration mode and back to weight mode.

9. Troubleshooting

Phenomenon	Reasons	Solutions
No turn on	No connecting with power	Check power and voltage
"<0.5g" flickers on right side	Weight of sample < 0.5g	Add the weight of the sample  back to weighing mode.
 flickers on the right side	Heating cover open	Close cover or  to back.
Low Accuracy	Wrong calibration Unstable working environment	Calibration in the right way Choose a suitable place
No Calibration	Wrong calibration	Calibration in the right way
	Wrong Calibrator	Use Standard Calibrator
No Data Buzzer Beeps	Display Broken	

Interface

Rs232 connect with DB9



Pin 2: TxD, Sending
 Pin 3: RxD, Received
 Pin: 5: GND, Grounding
 Rs232 Setting (Default)

Baudrate: 9600
 Data-bits: 8
 Even-odd: N
 Stop bit: 1

10. Accessories

Main Unit	1 pc
Sample Bracket	1 pc
Adaptor	1 pc
Wind Cover	1 pc
Weighing Pan	2 pcs
50 g weight	1 pc
Operation Manual	1 pc



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