



BM-50 Series Rapid Moisture Meter

BM-50-10

BM-50-5

BM-50-1

USER MANUAL

Thank you very much for purchasing our BM-50 Series Rapid Moisture Meter.

Please read the “Operating Instructions” and “Warranty” before operating this unit to assure proper operation. After reading these documents, be sure to store them securely together with the “Warranty” at a hand place for future reference.



Warning: Before operating the unit, be sure to read carefully and fully understand important warnings in the operating instructions.

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1. Brief introduction

Moisture Analyzer is used for determination of the moisture in samples.

1.1 Safely Precautions

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

1) This Moisture Analyzer is used for determination of the moisture in the samples.

Any improper operation can endanger personnel and damage the instrument or other property .

2) Please confirm the input voltage on label and plug type match your local AC.

3) This Moisture Analyzer is supplied with a 3-pin power cable with an equipment grounding conductor. Disconnecting grounding conductor is prohibited.

4) Make sure plug will not be obstacle or cause any tripping risk.

5) Never use this Moisture Analyzer in hazardous, wet or unstable environment.

6) Please unplug when clean the instrument.

7) Never convert power during test. (eg. From 110V convert to 220V or contrary)

8) Ensure sufficient free space around the instrument. (approximately 1 m free space above)

9) 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.

10) You can use goggles, gloves, protective clothing and masks to operate the instrument.

11) Never make any modifications or constructional alterations to the instrument or others.

12) After-sale service is offered only by professionals authorized by our company.

Moisture analyzer works through heating

Never place inflammable materials on, below or next to the instrument as the area around the dryer unit warms up.

13)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.

14)For samples with any potential danger, be careful to analyze the probable dangerous. Consequences. We propose to keep this Moisture Analyzer by professionals.

15)Fire/Explosion: During heating, some solvents, 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.

16)Toxin/Inflammability: Only dry toxic or corrosive samples in a stink cupboard.

17)Corrosion: Samples which release corrosive vapors. In the case of such samples, we advise you to work with small amounts of samples as the vapor can condense on cooler housing parts and cause corrosion.

Note: If use above types of samples caused any damages at your peril.

2.Installation

2.1 Placement

1)Operation table keeps stable and horizontal all along.

2)Choosing an enough safe and ventilative place. Special place for corrosive and toxic gas or danger samples.

3)Please avoid to place moisture analyzer in the severe temperature fluctuations, excessive humidity, airless, vibration, electromagnetic fields, overheat or direct sunlight.

2.2Components Installation



(1)Place underpan (2) Place bracket and screw (3) Place pan on bracket.



OR



WRONG



(4) Correct placement method

(5) Placed wrong method

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

2.3 Power Connection

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



Note: For getting the best testing results, please warm-up 30 minutes at least before test.

3.Operation

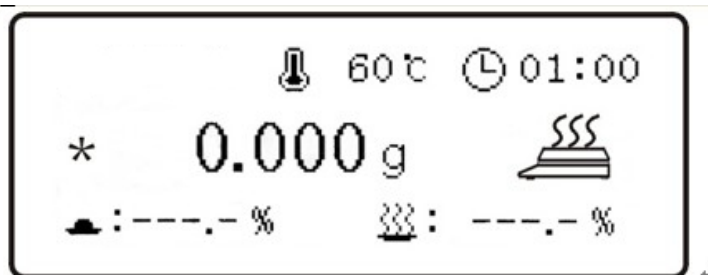
3.1 Level Adjustment

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



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

3.2 Display



BM-50-1	Model
*	Unstable
	Percentage of dry weight
	Percentage of moisture
g	Gram
	Temperature setting or Current temperature
	Time setting (M / S)
	Heating now

3.3 Operation Panel



Key	Title	Meanings
	ON/OFF	Turn on /Turn off
	TARE/BACK (shout press)	Stop to test, cancel 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 reduce in sequence
		(long press)	Temperature or time reduce constantly
	CAL/PRI NT	(long press)	Calibration
		(shout press)	Print
	TEST (shout press)		Begin to test

3.4 Operation Mode

Standby

Moisture analyzer is in standby mode when connects to AC power.

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

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

Temperature Setting

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

Working temperature is 50℃-180℃, stepping is 1℃

Time Setting

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

	(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 provide two easier time setting ways.

(1) Automatic Mode

During heating, if the weight of moisture reduce < 0.1%, moisture analyzer will stop to work.

AUTO Mode Setting

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

(2) Time Setting Mode

Setting heating time manually. Moisture analyzer will stop to heat if the setting time is up.

Time Setting

 →  or  (choose  time setting) → (confirm) →

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

3.5 Test Procedure

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

 (clear the weight of pan) → Put sample on pan (> 0.5 g) → Close cover
→  (test) → Show dry weight % and moisture % → Beeping →  (back)

Note: If heating cover opens, it will stop to heat and back to weighing mode. Test is invalid.

4. Testing

In the process of heating and drying, we obtain the moisture according to the weight loss of sample.

The speed and quality of testing could refer to the following parameters. Setting parameters can be confirmed by several trial testing.

The best testing results depend on the following settings:

·Heating Temperature ·Heating Time ·Sample Weight ·Sample Work ·Sample Types

4.1 Heating Temperature

- Heating temperature control heating time. (eg. Lower temperature will need more time.)
- Heating temperature requires no any disintegration and change of chemical structure. (Generally setting is 105℃, except for special requirements of samples and industry.)
- For some samples, different moisture content will be measured at different heating temperature.

In this case, try to increase the temperature to compensate the errors of testing.

4.2 Weight of Sample

The weight of sample affect testing time and repeatability of results. Max. weight is 50 g.

More samples, more moisture to evaporate.

Following table show the relationship between sample and repeatability .

(The figure is just for reference)

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

4.3 Sample Preparation

Samples should be representative then can get accurate and repeated results.

Preparing the sample, make sure to place the sample on the pan evenly and avoid excessive accumulation and too much samples.

4.4 Types of Samples

·Mushy, fatty and liguefiable materials

Enlarge surface area of sample with glass fibre haptor. (eg. Butter. Moisture is distributed more evenly through haptor. Moisture evaporates faster and more completely by enlarging surface)

·Liquid

Liquid will become drop and hinder to dry fast. Using haptor to distribute liquid evenly on a larger area to save drying time.

·Easily Incrustive, Temperature-Sensitive Materials

Sample will be incrustive on its surface which will hinder testing. Using haptor to cover the sample with mild and suitable temperature. Then it will make repeatability better.

·Sugary Materials

Sugary sample will become scorched easily. Choosing modest temperature, and making sure distribute the sample evenly and thinly. Improving repeatability of testing with haptor too.

Above materials may cause fire, explosion, damage or injury.

For any samples with security risks, please be carefully for the possible dangers. In this case,

moisture analyzer should be kept specially.

5.Maintenance

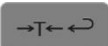
5.1 Calibration

Moisture analyzer works out testing results with relative weight. So for the samller errors of absolute weight, it affects the acurrancy slightly. The calibration is not necessary because of the stable weighing,slight effect by temperature,keep the result of calibration for long time.

No-load in weighing mode.  Long press , show “cal” and “50.00 g” flicker

Put an 50g weight on the pan as calibration weight , and show “☆”

Later the LCD show “50.00 g” ,it means the calibration is finished . and back to weight mode .

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

5.2 Problems and Solutions

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 weight of sample  to back weighing mode
 flickers on right side	Heating cover open	Close cover or  to back
Low Accuracy	Wrong calibration Unstable working enviroment	Calibration in right way Choose suitable place
No Calibarion	Wrong calibration Wrong Calibrator	Calibration in right way Use Standard Calibrator
Err01	Faults in Storage Circuit	Please contact with your distributor
Err02	Faults in Weighing Circuit	Please contact with your distributor

Err03	Faults in Temperature Measurement Circuit	Please contact with your distributor
Err04	Temperature Sensor Damages or Gets Loose	Please contact with your distributor
Err05	Faults in Temperature Controlled Circuit	Please contact with your distributor
Err06	Calibration Data Lost	Re-calibration
Err07	Temperature Sensor Lost Data	Please contact with your distributor
Err08	Overheat	Please contact with your distributor
Err10	Input power unsuitable	Using correct power
No Data Buzzer Beeps	Display Broken	Please contact with your distributor

6.Parameter

Environment For Using

Parameters is valid:

Temperature: 10℃ - 30℃.

(Still working under 5℃ - 40℃. Under extreme temperature, testing is unstable.)

Relative Humidity: 15 % - 80 %,

Warm-up: 30 mins after power connection

Power: Input AC: 100VAC - 130VAC / 200VAC - 240VAC, 3A, 50Hz

Voltage Fluctuation: $110 \pm 10\%$ / $220 \pm 10\%$ (The rear of the machine Tags)

Power Load: Max. Output is 250 W in using

Protection: Avoiding Dust, Damping, Pollution

Degree: Class II

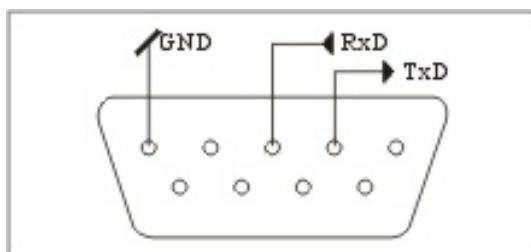
6.1 Specifications

Model	BM-50-1	BM-50-5	BM-50-10
Capacity (g)	50 g		
Readability (g)	0.001 g	0.005 g	0.01 g
Repeatability (g) (3g sample)	0.2 %	0.3 %	0.5 %
Min. Weight of Sample (g)	0.5 g		
Propose Sample Weight (g)	0 - 10 g		
Heating Time (M.)	1 - 99 minutes (stepping is 10 seconds.)		
Heating	Standard		
Working Temperature (°C)	10 °C - 30 °C		
Interface	RS232C		
Time Control	Setting time by artificially or automatically		
Heating Temperature (°C)	50 °C - 180 °C (stepping is 1°C)		
Display	Solid %, Moisture %, Weight, Time, Temperature		
Pan (mm)	100 mm		
Outline (mm)	285×160×150 mm		
N.W. / G. W. (kg)	3 kg / 4.2 kg		

Heating Way	Halogen
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6.2 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

7. Standard Configuration

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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